

INDEX OF SHEETS

SHEET NO. DESCRIPTION

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PROJECT LOCATION REFERENCE

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STATE OF TEXAS  
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED  
STATE HIGHWAY IMPROVEMENTS

STATE AID PROJECT No. C 37-8-42

US 83  
DIMMIT COUNTY  
CCSJ: 0037-08-042, ETC.

NET LENGTH OF PROJECT : 57,273.00 FT = 10.833 MI

LIMITS: FROM: 1.741 MILES SOUTH OF FM 2688  
TO: WEBB/DIMMIT CO LINE (SURVEYED MONUMENT)

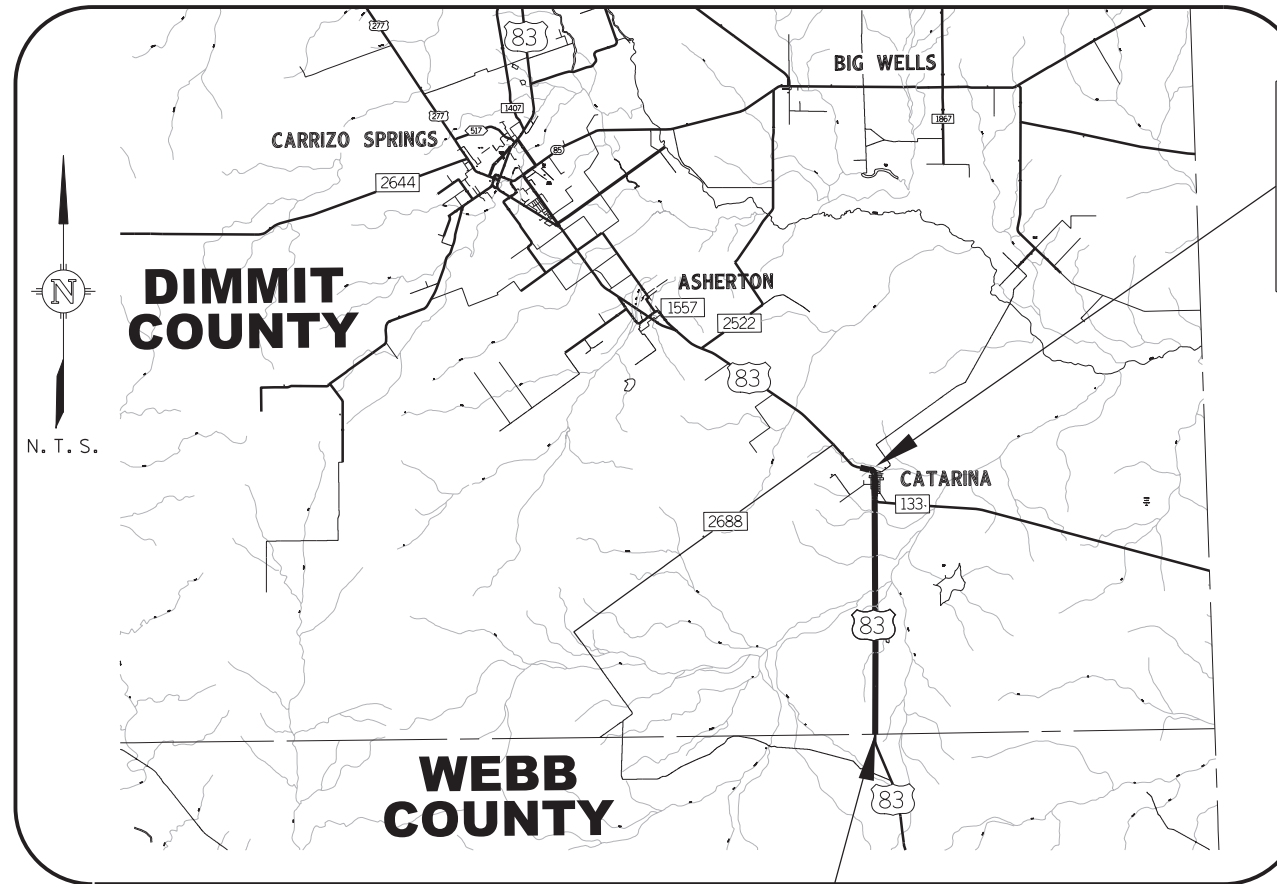
ROADWAY = 56,280.27 FT = 10.606 MI.

BRIDGE = 1198.56 FT = 0.2270 MI.

FOR THE CONSTRUCTION OF REHABILITATION OF AN EXISTING ROAD  
CONSISTING OF GRADING, BASE, STRUCTURES, SURFACING, SIGNING AND PAV. MARKING

CSJ: 0037-06-106  
Roadway = 1351.68 Ft. = 0.256 Mi.  
Bridge = 000.00 Ft. = 0.000 Mi.  
TOTAL = 1351.68 Ft. = 0.256 Mi.

CSJ: 0037-08-042  
Roadway = 54,928.59 Ft. = 10.350 Mi.  
Bridge = 1198.56 Ft. = 0.2270 Mi.  
TOTAL = 55,921.32 Ft. = 10.577 Mi.



BEG PROJECT CCSJ: 0037-08-042, ETC.  
STA. 1504+42.08  
BEGIN REF.MRK.: RM 654+0.008 MI.  
BEGIN CSJ: 0037-06-106  
STA. 1504+42.08  
BEGIN REF.MRK.: RM 654+0.008 MI.

END CSJ: 0037-06-106  
END REF.MRK.: RM 654+0.264 MI.  
STA. 1517+93.76  
BEGIN CSJ: 0037-08-042  
STA. 1517+93.76  
BEGIN REF.MRK.: RM 654+0.264 MI.

EQUATIONS: Sta 1536+22.37 BK+  
Sta 1536+39.83 AH (+17.46 ft)  
EXCEPTIONS: NONE  
RAILROAD CROSSINGS: NONE

END PROJECT  
END CCSJ: 0037-08-042  
STA. 2077+15.08  
END REF.MRK.: RM 666+0.041 MI.  
END CCSJ: 0037-08-042, ETC.  
STA. 2077+15.08  
END REF.MRK.: RM 666+0.041 MI.

FEDROAD DIV NO	STATE	STATE AID PROJECT NO	SHEET NO
6	TEXAS	C 37-8-42	I
STATE DIST NO	COUNTY	STATE CONTROL NO	HIGHWAY NO
22	DIMMIT	0037-08-042, ETC	US 83

DESIGN CRITERIA: 3R

ADT (2025): 5,900

ADT (2045): 8,500

% TRUCK IN ADT: 12.5

FUNCTIONAL CLASS: PRINCIPAL ARTERIAL-OTHER

DESIGN SPEED: 40 MPH RURAL (URBAN CATARINA)

TDLR REQUIRED YES NO

FINAL PLANS

LETTING DATE: \_\_\_\_\_

DATE CONTRACTOR BEGAN WORK: \_\_\_\_\_

DATE WORK WAS ACCEPTED: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

TOTAL CONTRACTOR COST: \_\_\_\_\_

FINALS AS BUILT

THE CONSTRUCTION WAS PERFORMED UNDER MY SUPERVISION IN ACCORDANCE WITH THE PLANS AND CONTRACT

AREA ENGINEER \_\_\_\_\_

DATE \_\_\_\_\_

SUBMITTED FOR LETTING: 5-7-2024

*[Signature]*  
TRANSPORTATION ENGINEER

RECOMMENDED FOR LETTING: 5/10/2024

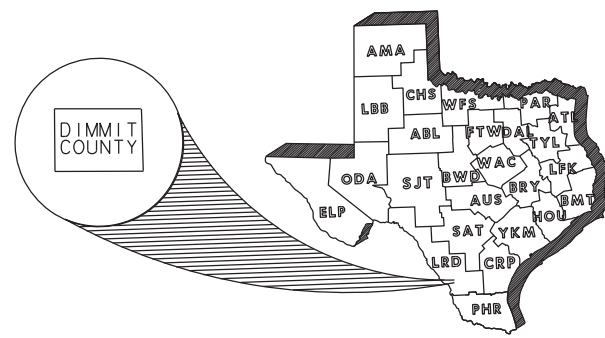
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*[Signature]*  
AREA ENGINEER

RECOMMENDED FOR LETTING: 5/10/2024

DocuSigned by:  
*[Signature]*  
DIRECTOR OF TRANSPORTATION, PLANNING, & DEVELOPMENT

APPROVED FOR LETTING: 5/10/2024

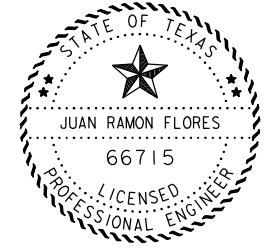
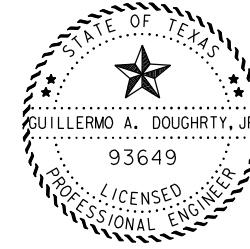
DocuSigned by:  
*[Signature]*  
DISTRICT ENGINEER



100% STATE FUNDED  
SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000---008)

4/30/2024 \$USER\$ pw: \\azb-pw-bentley.com\azb-pw-01\Documents\Collaboration Projects\TXDOT\217017.002\042\4 - Design\Plan Set\1. General\001-TITLE SHEET.dgn

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## 171	SGT(11S)31-18	## 325	PM(2)-22
	SGT(12S)31-18		



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

*Guillermo A. Dougherty, Jr.* 5-2-2024  
 NAME DATE

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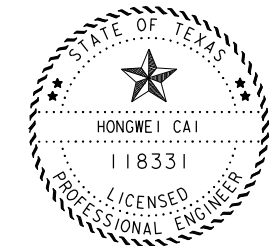
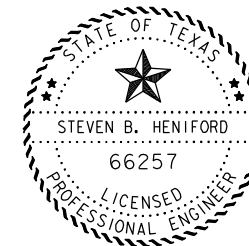
*Juan Ramon Flores* 5-2-2024  
 NAME DATE

**ENVIRONMENTAL**

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350-373	SW3P LAYOUT

**STANDARDS (ENVIRONMENTAL)**

## 374	EC(1)-16
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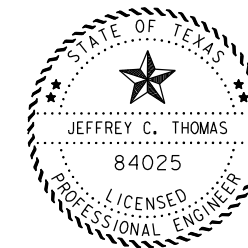


THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "<<" HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

*Steven B. Heniford* July 1, 2020  
 NAME DATE

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*Hongwei Cai* July 1, 2020  
 NAME DATE

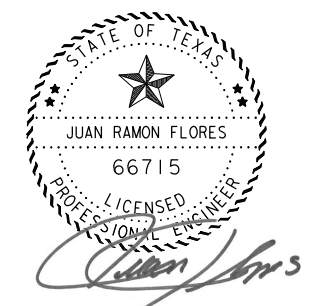
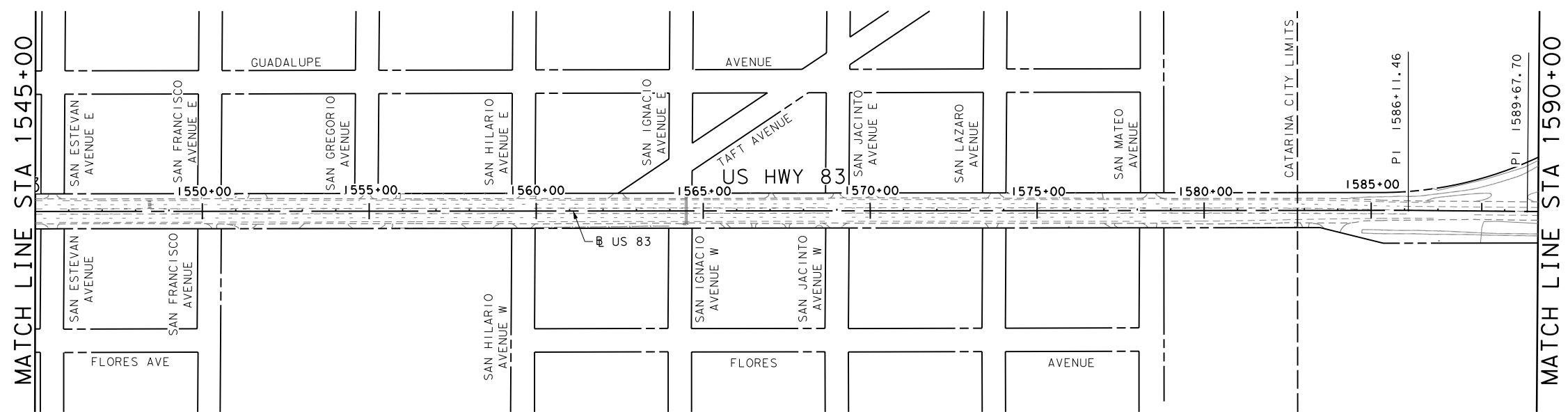
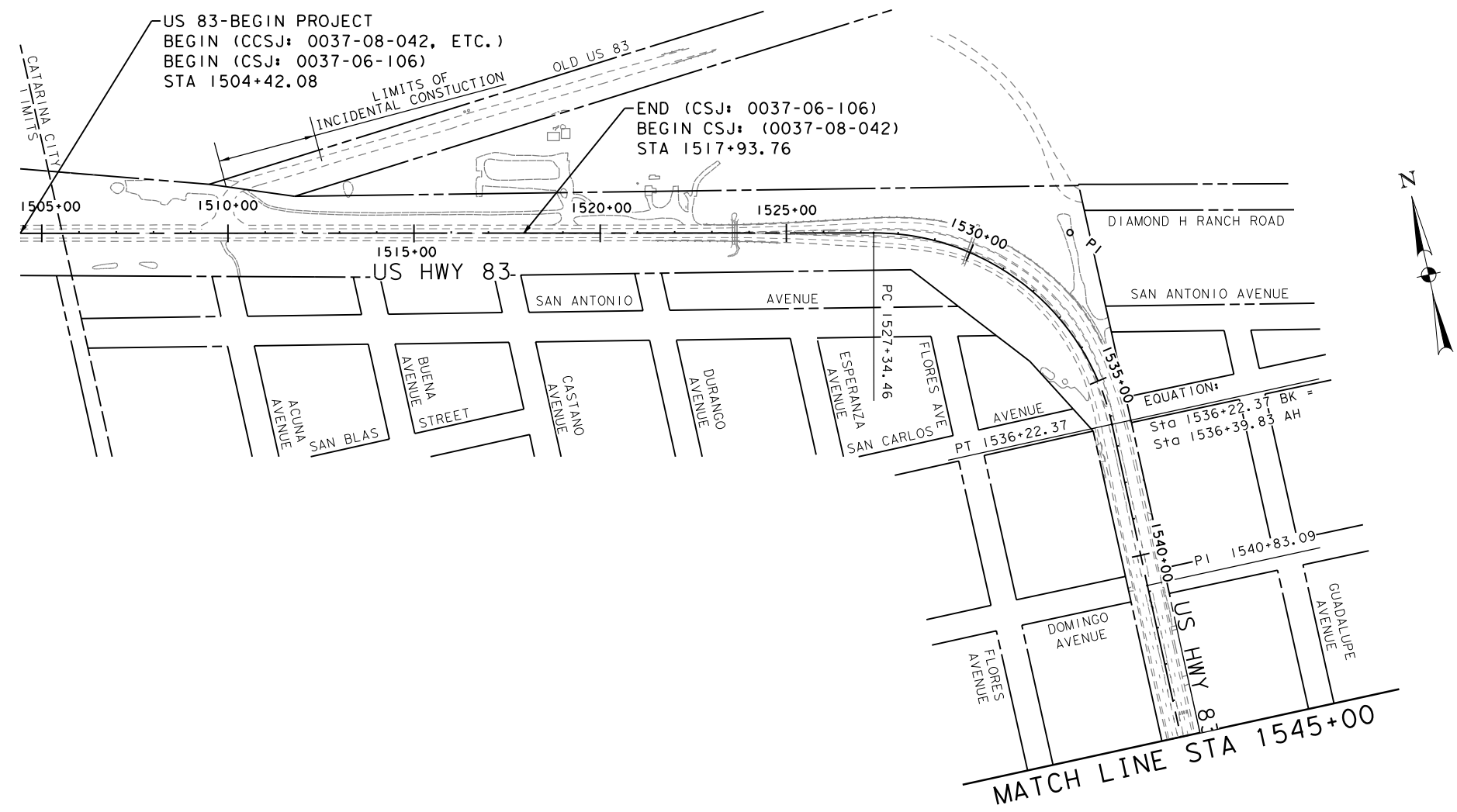


THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "&&" HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

*Jeffrey C. Thomas* 5-2-2024  
 NAME DATE

SHEET 1 OF 1

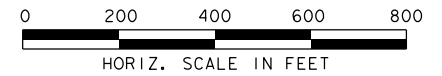
NO.		REVISIONS	BY	DATE
A7&B		ARREDONDO, ZEPEDA & BRUNZ, LLC		
		11355 McCree Road - Dallas, Texas 75238		
		(214) 341-8900		
		FIRM REGISTRATION No. F-10098		
Texas Department of Transportation				
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US 83 INDEX OF SHEETS				
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.	
6	C 37-8-42		2	
STATE	DISTRICT	COUNTY		
TEXAS	LRD	DIMMIT		
CONTROL	SECTION	JOB	HIGHWAY NO.	
0037	08	042, ETC.	US 83	



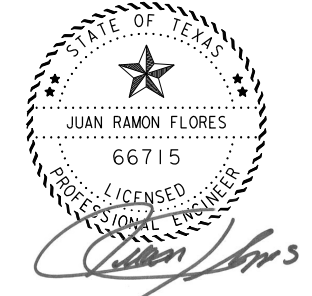
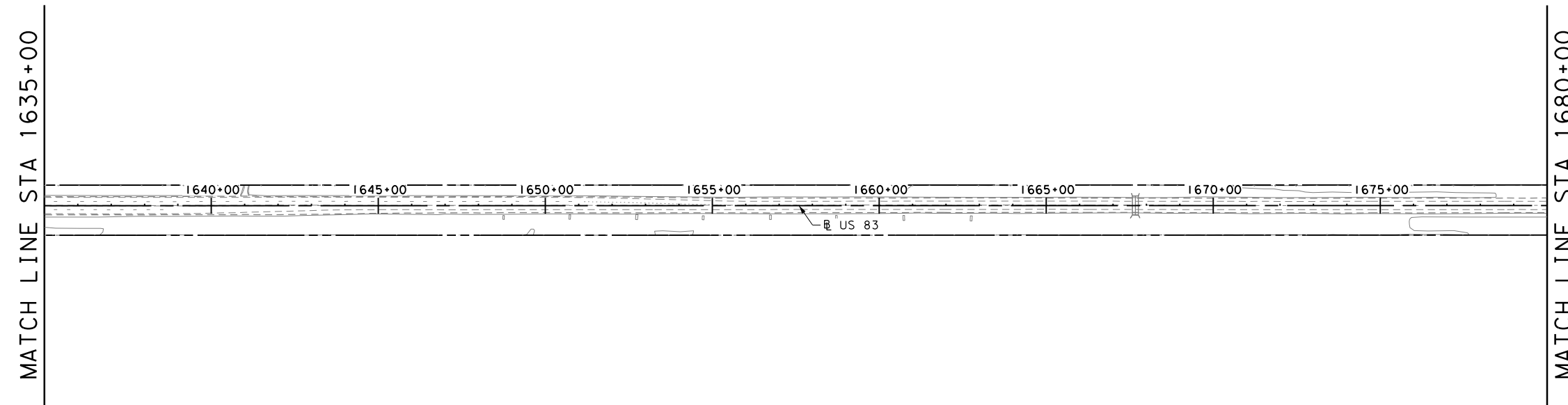
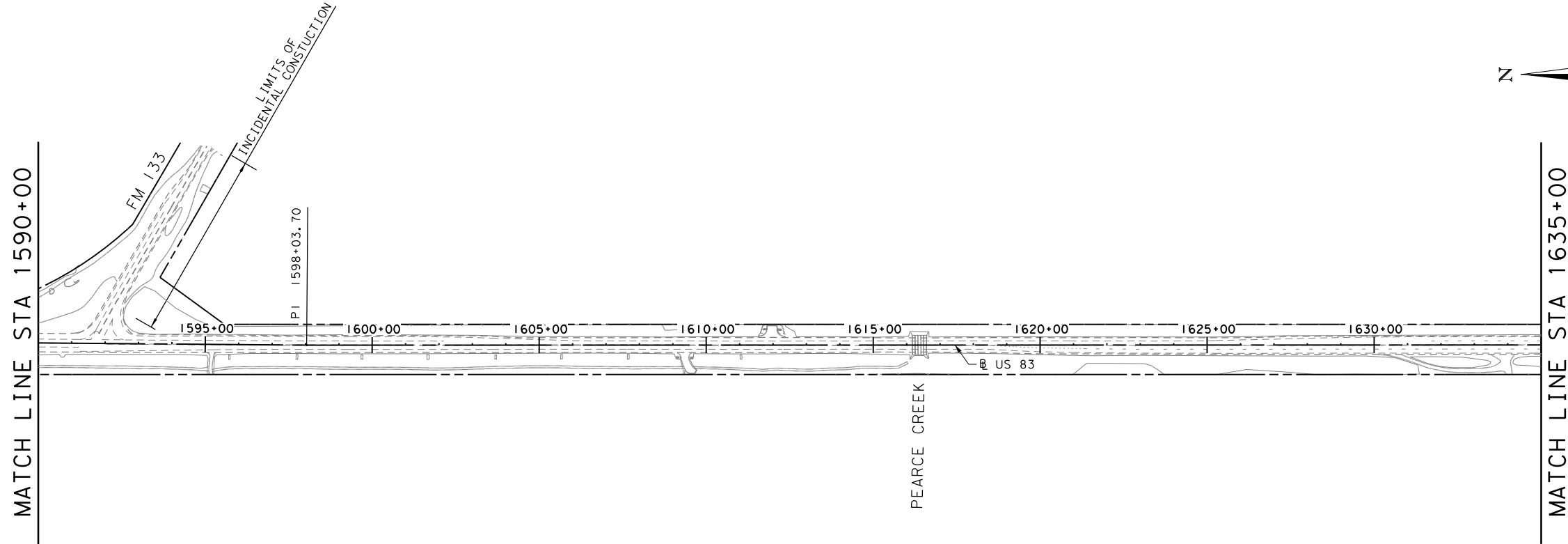
5-2-2024

SHEET 1 OF 7

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>PROJECT LAYOUT</b> <b>STA 1504+42.08</b> <b>TO STA 1590+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
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STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.



5-2-2024

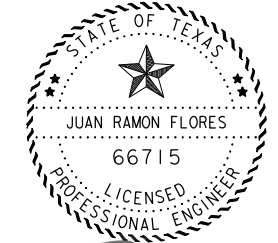
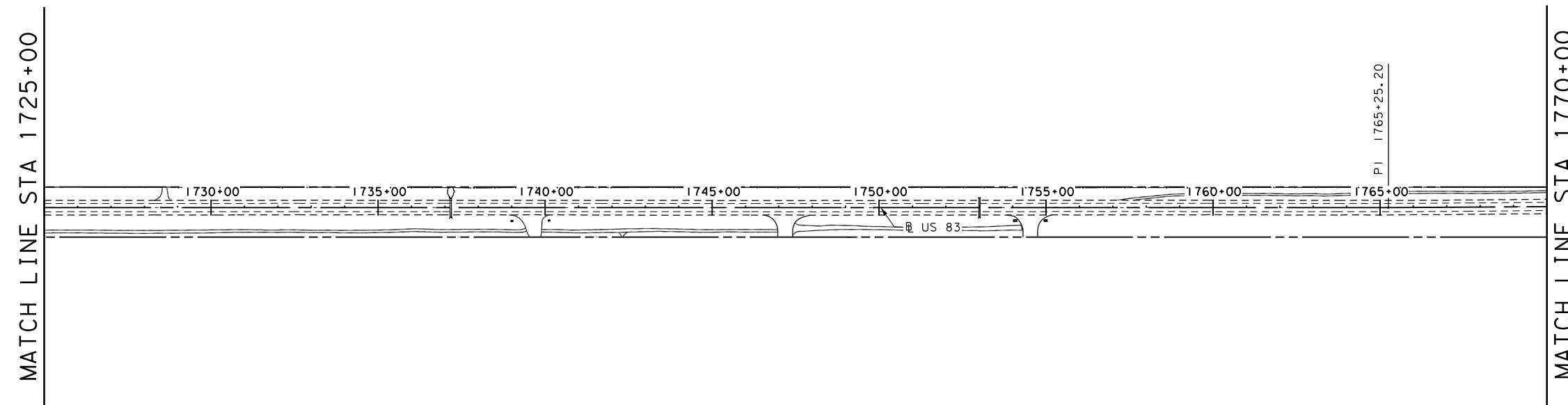
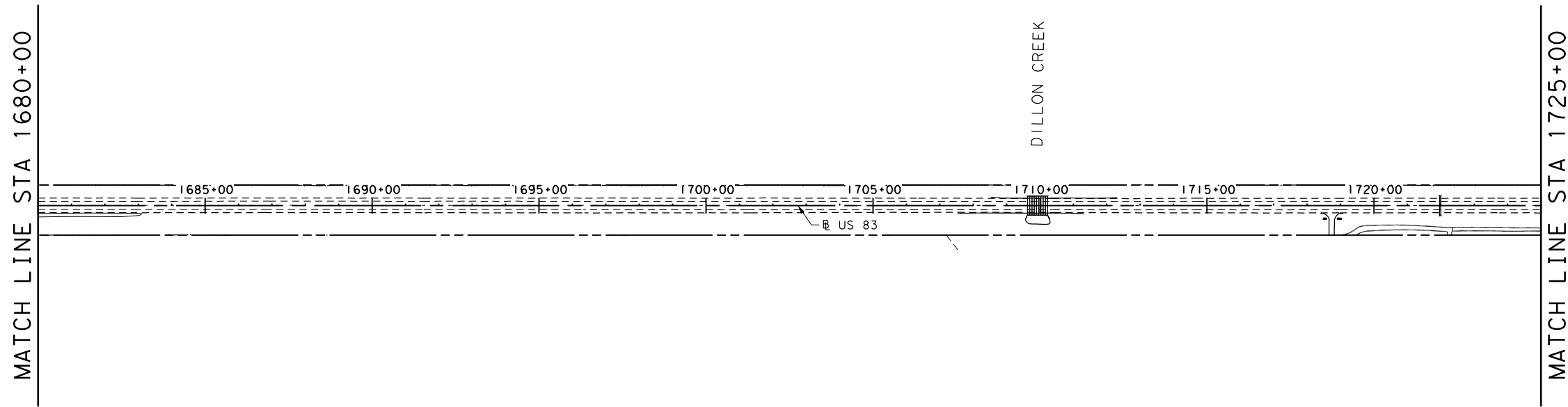
SHEET 2 OF 7

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>PROJECT LAYOUT</b> <b>STA 1590+00 TO STA 1680+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		4
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83





**NOTE:**

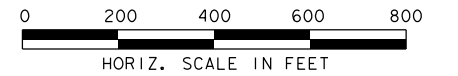
1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.



*Juan Flores* 6-22-2020

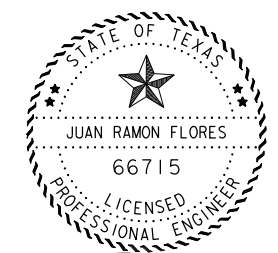
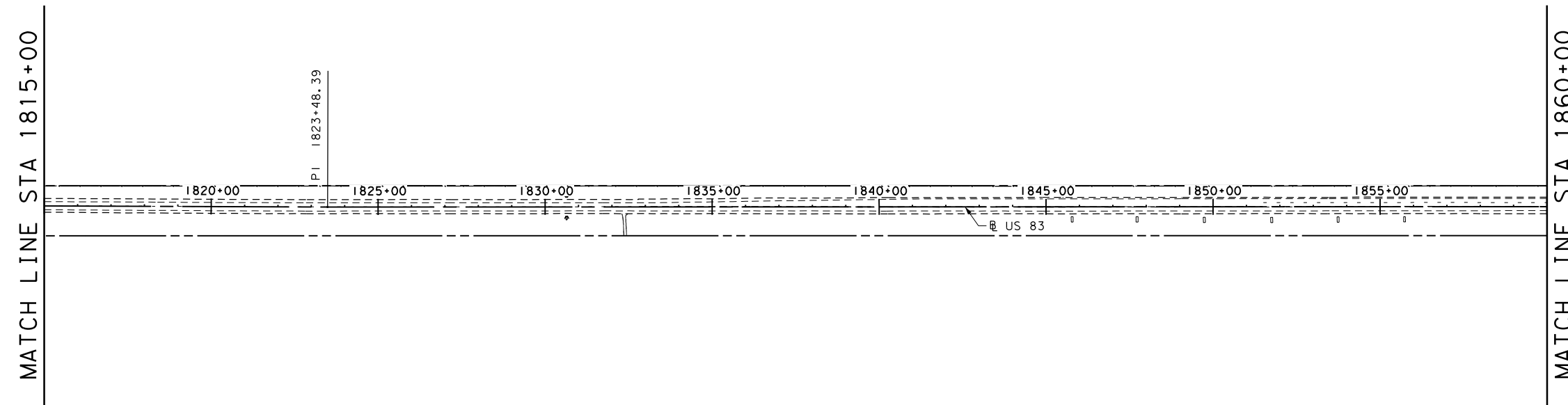
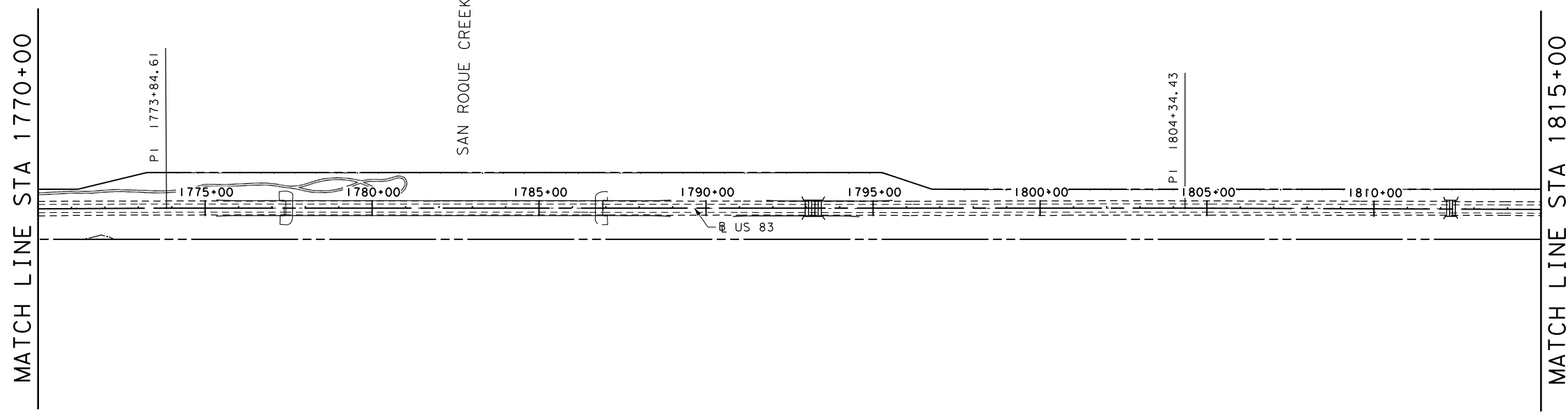
SHEET 3 OF 7

NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>PROJECT LAYOUT</b> <b>STA 1680+00 TO STA 1770+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		5
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83





**NOTE:**

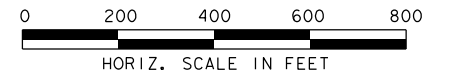
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*Juan Flores* 6-22-2020

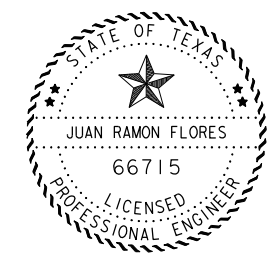
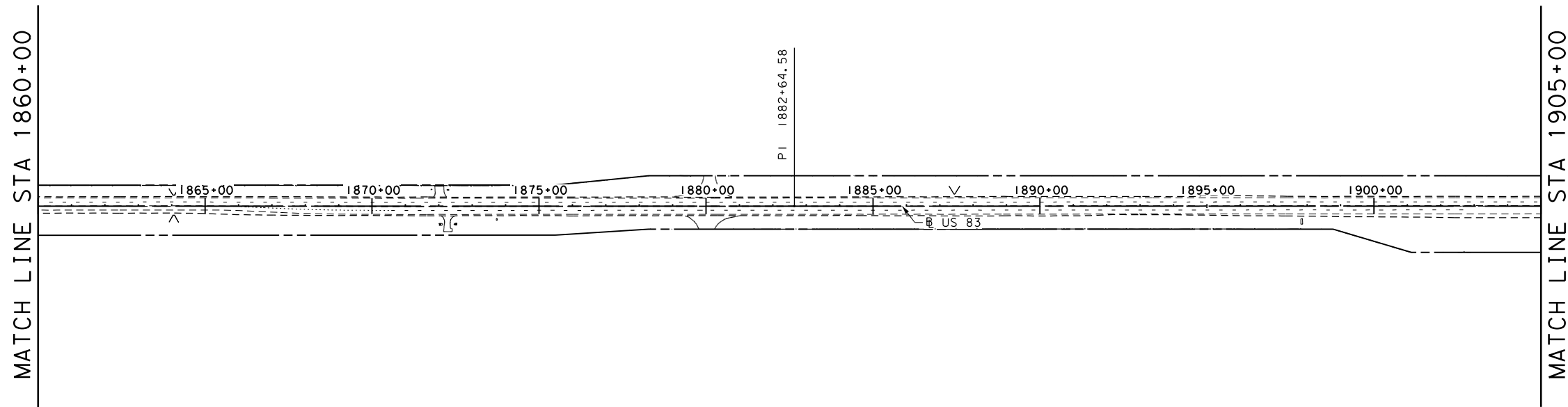
SHEET 4 OF 7

NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>PROJECT LAYOUT</b> <b>STA 1770+00 TO STA 1860+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		6
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

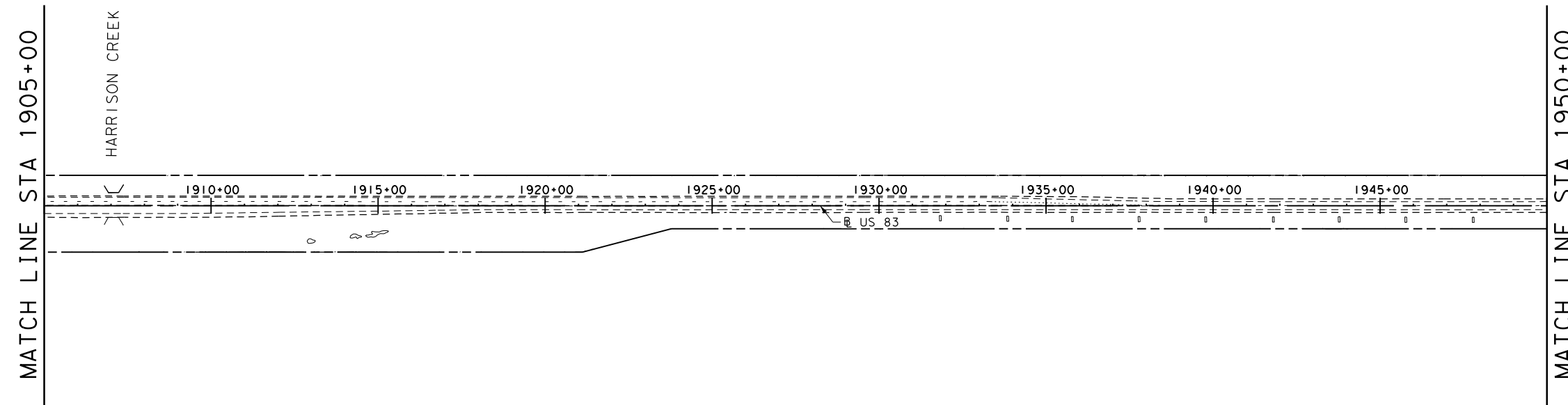


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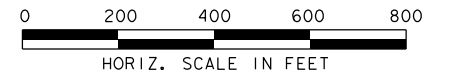


*Juan Flores* 6-22-2020



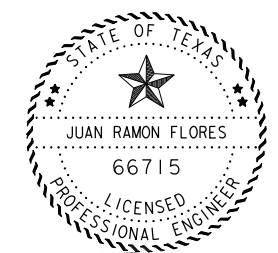
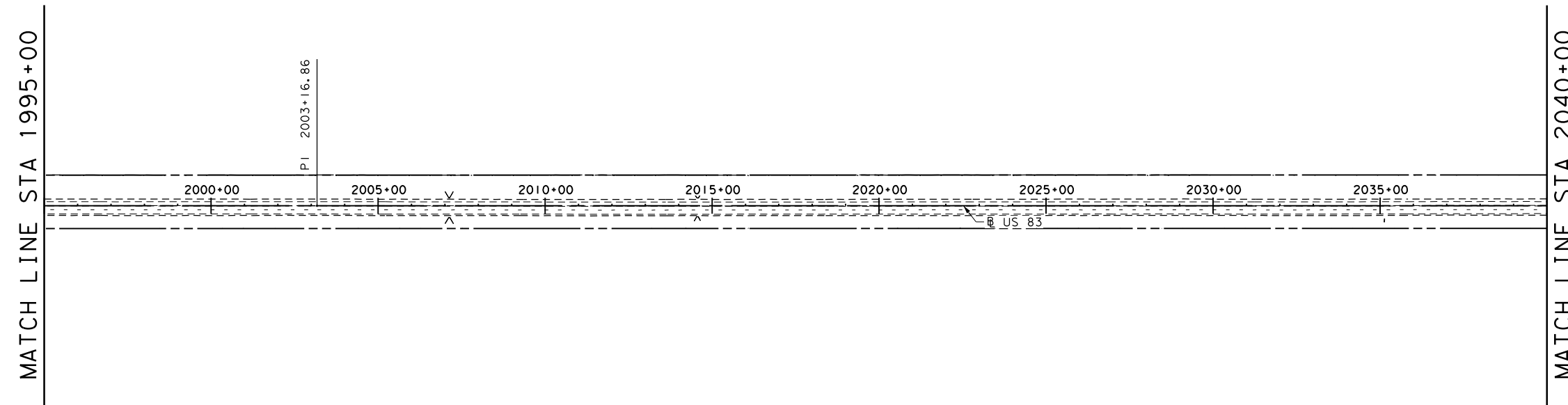
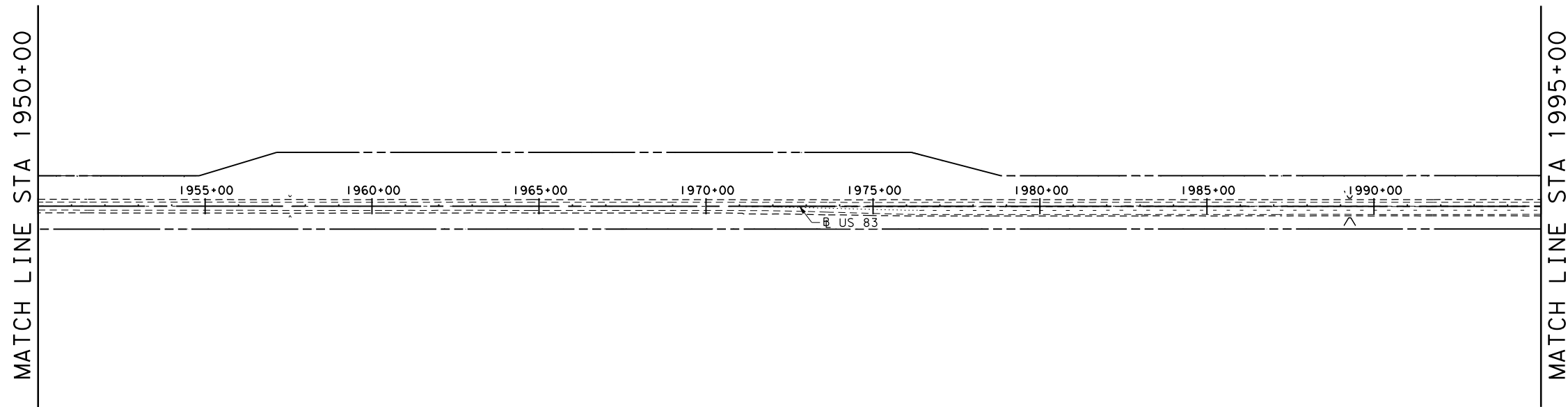
SHEET 5 OF 7

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>PROJECT LAYOUT</b> STA 1860+00 TO STA 1950+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		7
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



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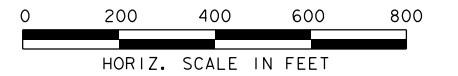


*Juan Flores* 6-22-2020

SHEET 6 OF 7

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>PROJECT LAYOUT</b> <b>STA 1950+00 TO STA 2040+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		8
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

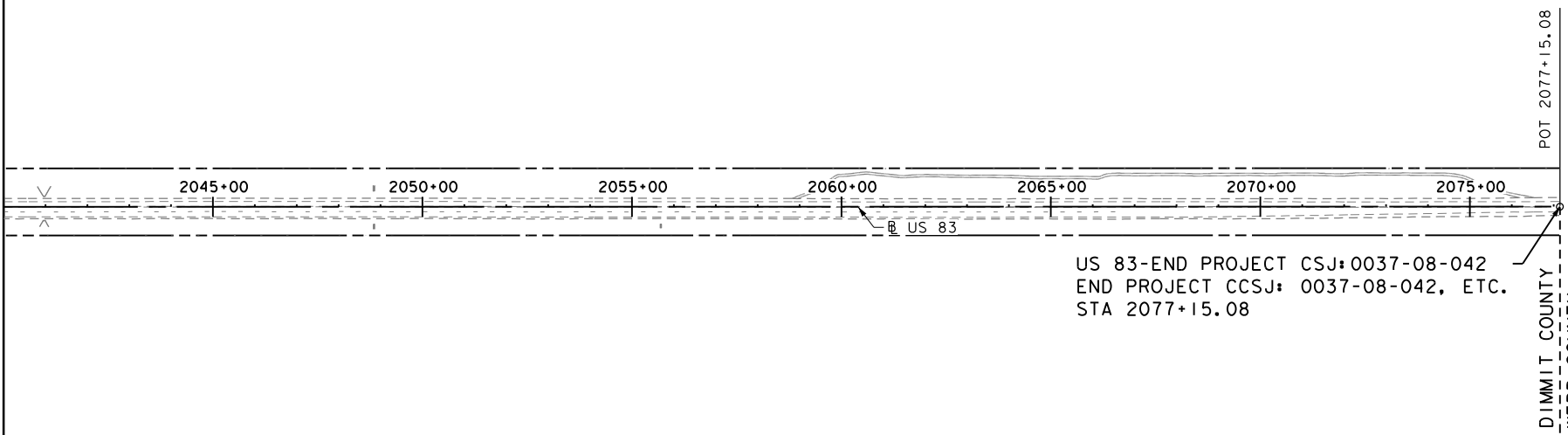




**NOTE:**

- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.

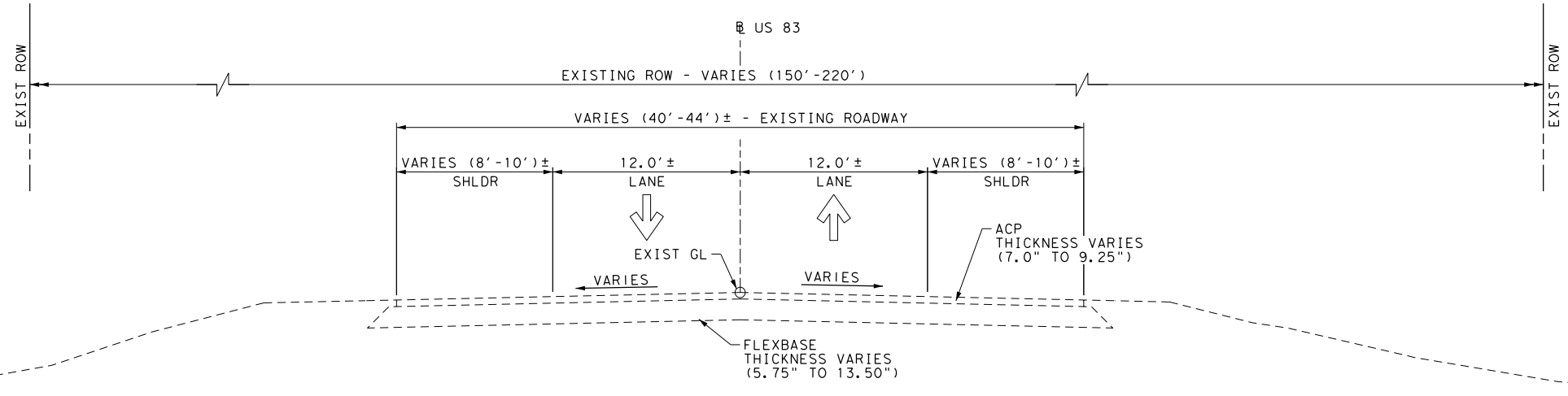
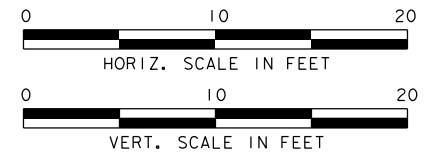
MATCH LINE STA 2040+00



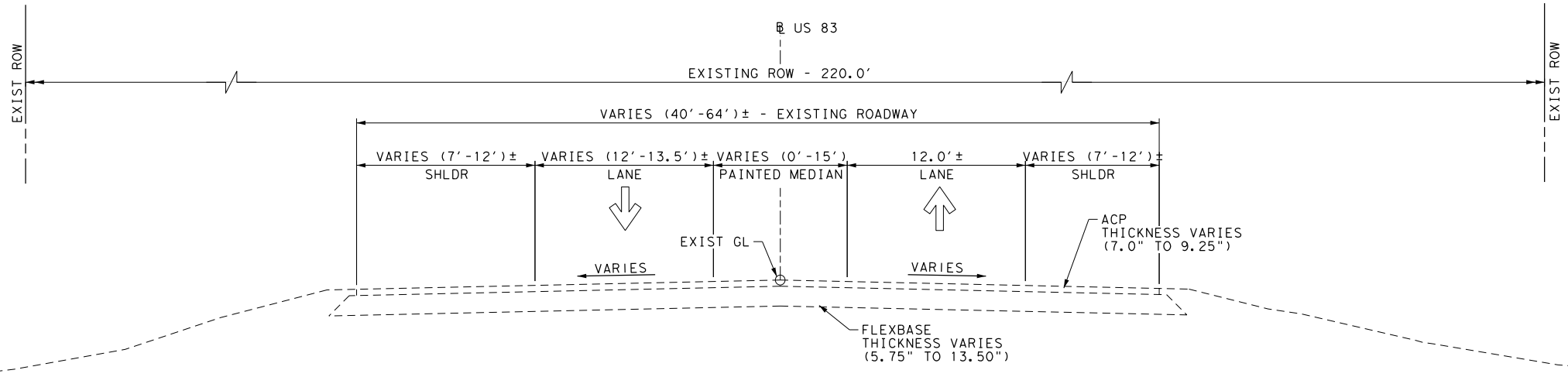
5-2-2024

SHEET 7 OF 7

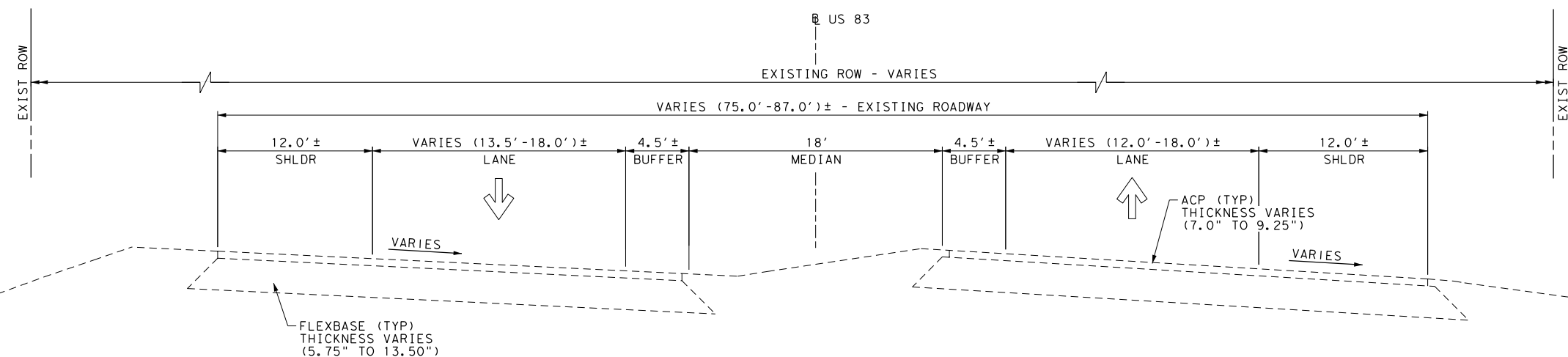
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>PROJECT LAYOUT</b> <b>STA 2040+00</b> <b>TO STA 2077+15.08</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		9
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



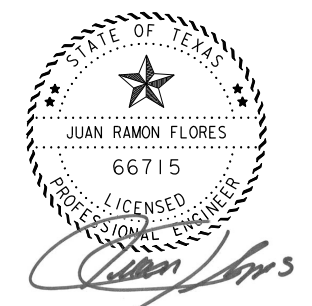
**EXISTING TYPICAL SECTION**  
 STA 1504+42.08 R4 TO STA 1523+16.42 R4  
 STA 1606+66.77 R5 TO STA 1618+26.35 R5  
 STA 1655+91.83 R5 TO STA 1831+70.78 R5  
 STA 1938+86.02 R5 TO STA 1971+13.30 R5  
 STA 2076+52.24 R5 TO STA 2077+15.08 R5



**EXISTING TYPICAL SECTION**  
 STA 1523+16.42 R4 TO STA 1526+16.55 R4



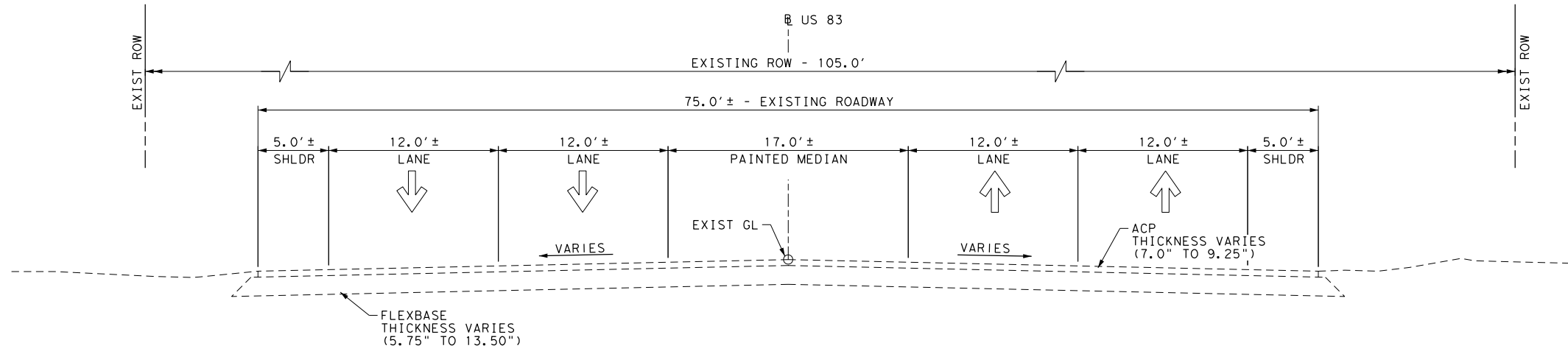
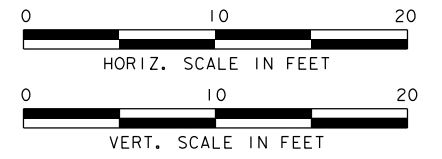
**EXISTING TYPICAL SECTION**  
 STA 1526+16.55 R4 TO STA 1535+71.98 R4



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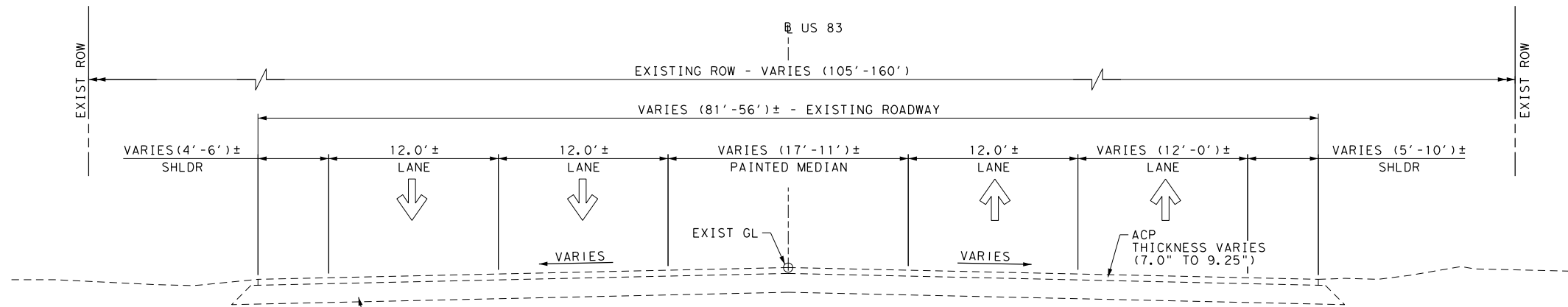
SHEET 1 OF 5

NO.		REVISIONS		BY	DATE
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<b>US 83</b> <b>EXISTING</b> <b>TYPICAL SECTIONS</b>					
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.		
6	C 37-8-42		10		
STATE	DISTRICT	COUNTY			
TEXAS	LRD	DIMMIT			
CONTROL	SECTION	JOB	HIGHWAY NO.		
0037	08	042, ETC.	US 83		



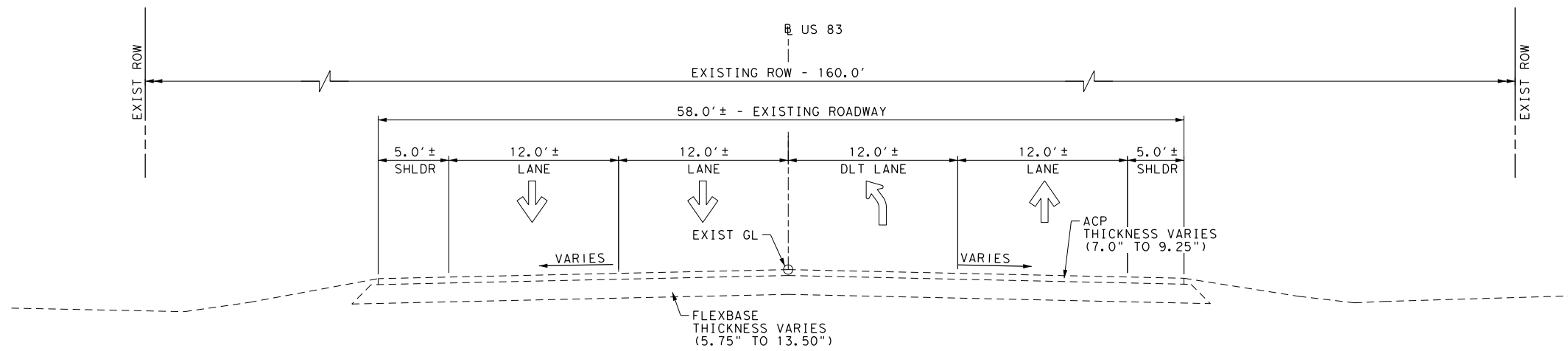
**EXISTING TYPICAL SECTION**

STA 1535+71.98 R4 TO STA 1578+25.01 R5



**EXISTING TYPICAL SECTION**

STA 1578+25.01 R5 TO STA 1585+77.48 R5



**EXISTING TYPICAL SECTION**

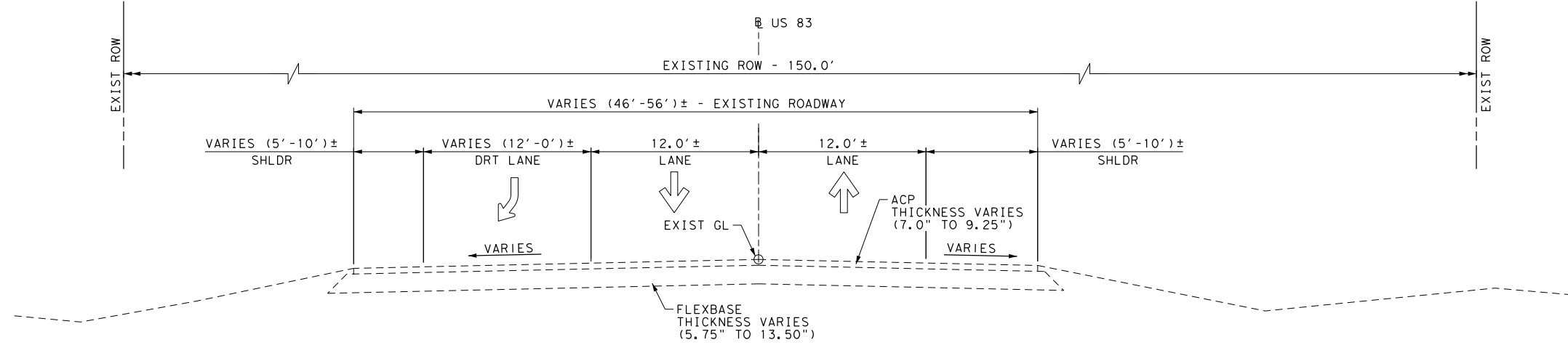
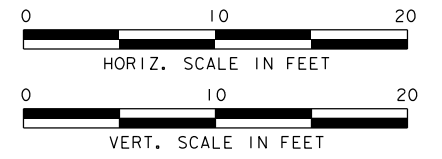
STA 1585+77.48 R5 TO STA 1592+18.39 R5



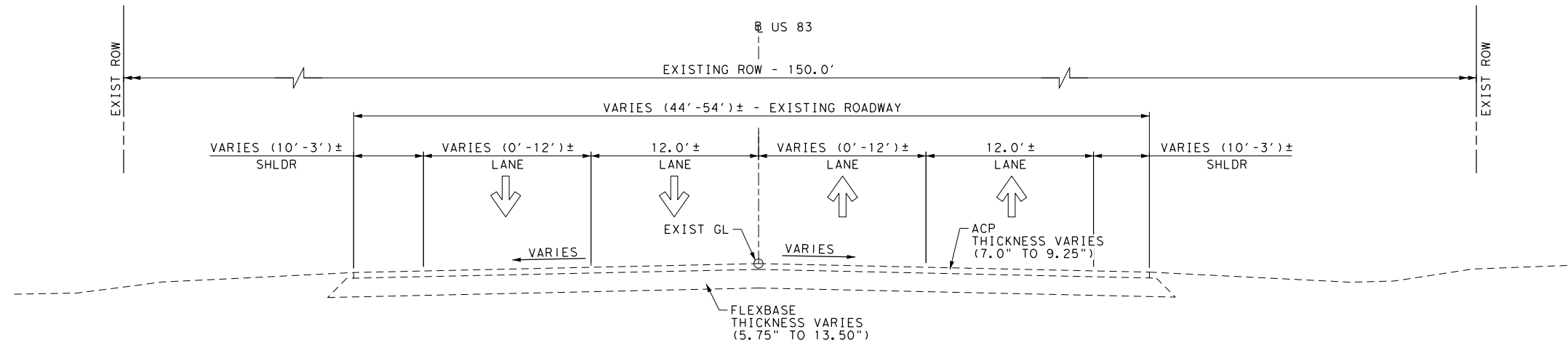
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SHEET 2 OF 5

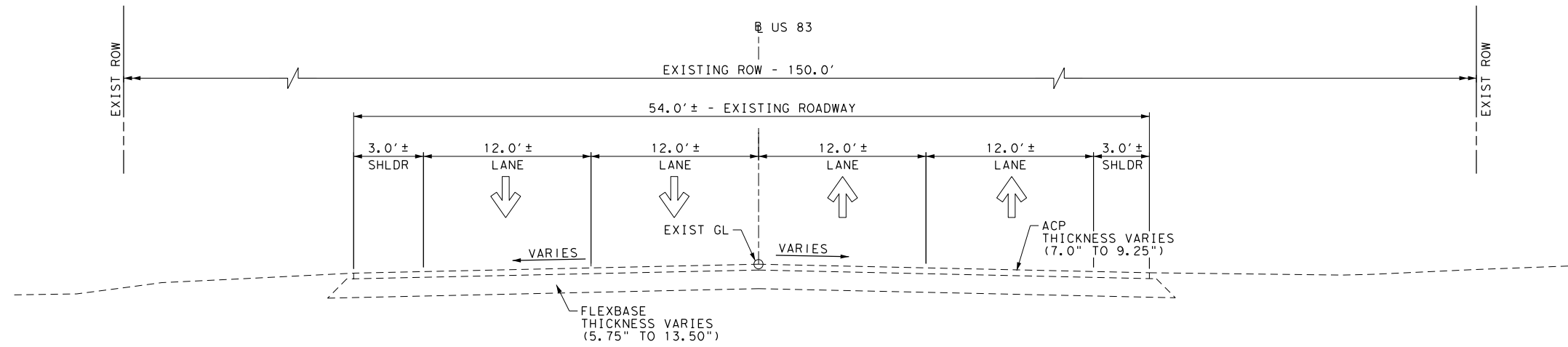
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<b>US 83</b> <b>EXISTING</b> <b>TYPICAL SECTIONS</b>				
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.	
6	C 37-8-42		11	
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0037	08	042, ETC.	US 83	



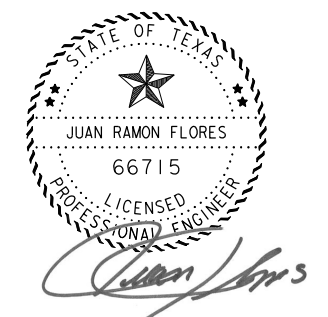
**EXISTING TYPICAL SECTION**  
STA 1592+18.39 R5 TO STA 1606+66.77 R5



**EXISTING TYPICAL SECTION**  
STA 1618+26.35 R5 TO STA 1631+72.03 R5  
STA 1831+70.78 R5 TO STA 1870+60.52 R5



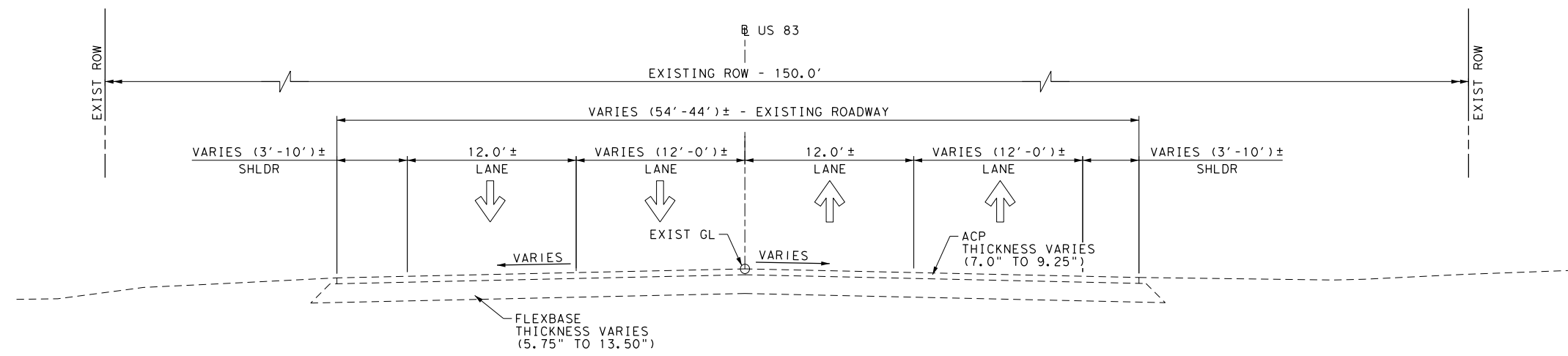
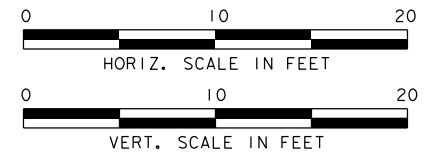
**EXISTING TYPICAL SECTION**  
STA 1631+72.03 R5 TO STA 1638+56.20 R5  
STA 1870+60.52 R5 TO STA 1902+36.76 R5



5-2-2024

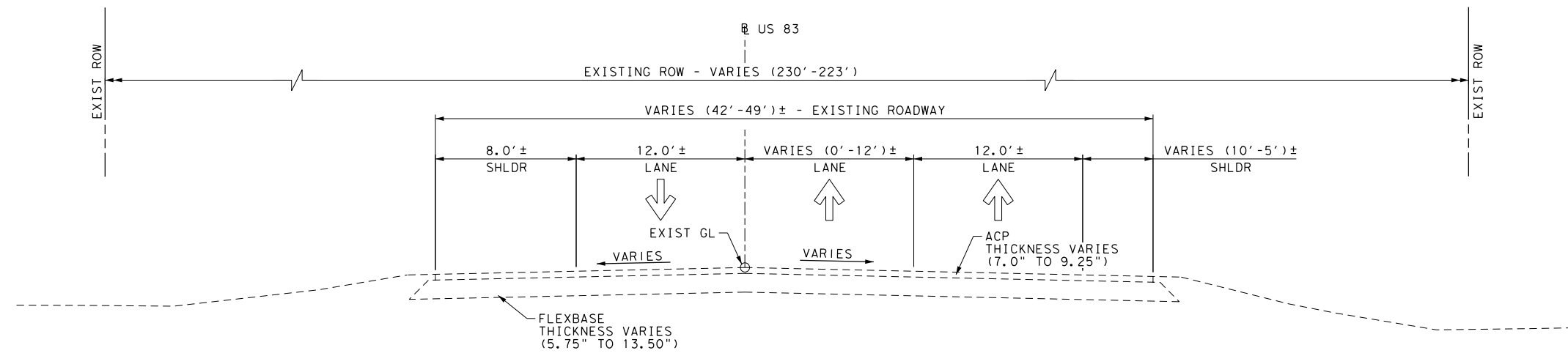
SHEET 3 OF 5

NO.		REVISIONS		BY	DATE
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<b>US 83</b> <b>EXISTING</b> <b>TYPICAL SECTIONS</b>					
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.		
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CONTROL	SECTION	JOB	HIGHWAY NO.		
0037	08	042, ETC.	US 83		



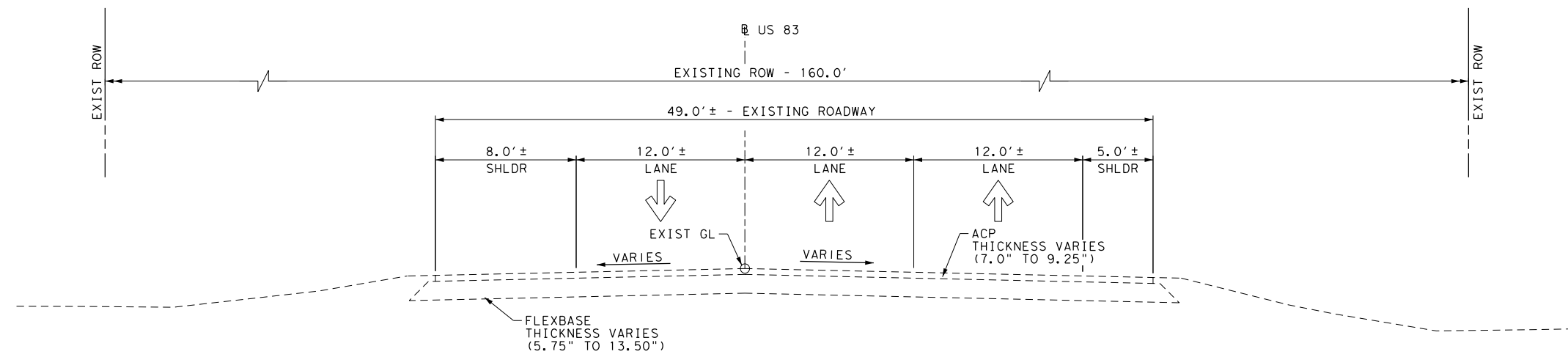
**EXISTING TYPICAL SECTION**

STA 1638+56.20 R5 TO STA 1655+91.83 R5  
 STA 1902+36.76 R5 TO STA 1938+86.02 R5



**EXISTING TYPICAL SECTION**

STA 1971+13.30 R5 TO STA 1976+40.78 R5



**EXISTING TYPICAL SECTION**

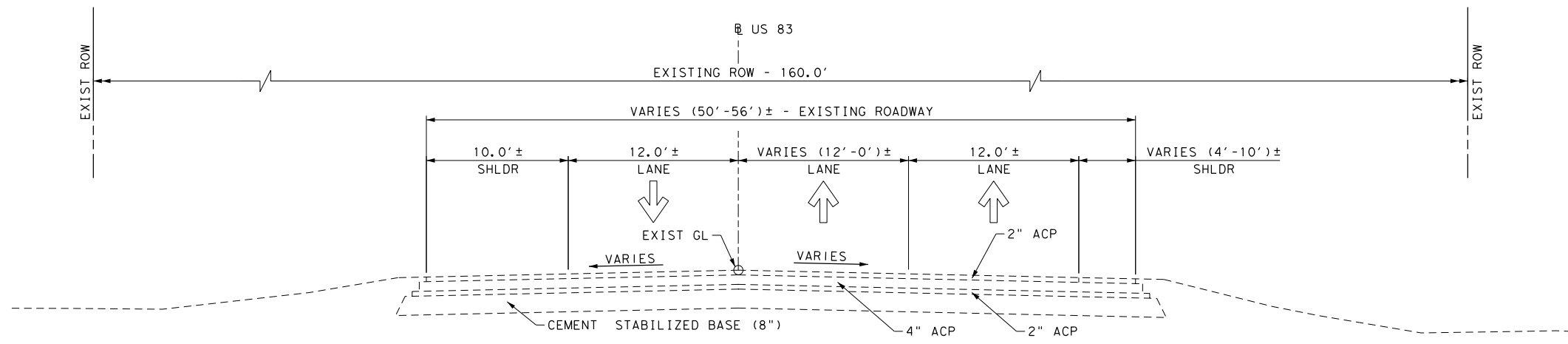
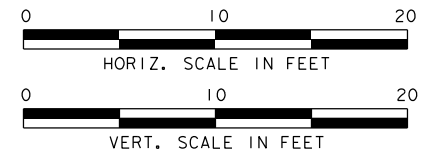
STA 1976+40.78 R5 TO STA 2067+00.00 R5



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NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>EXISTING</b> <b>TYPICAL SECTIONS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	13	
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CONTROL	SECTION	JOB	HIGHWAY NO.
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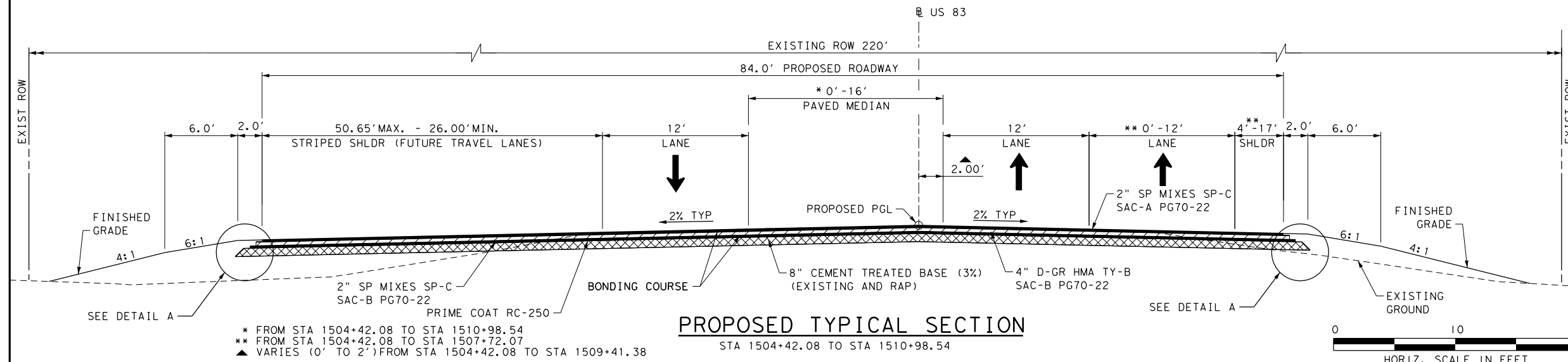
**EXISTING TYPICAL SECTION**  
 STA 2067+00.00 R5 TO STA 2076+52.24 R5



5-2-2024

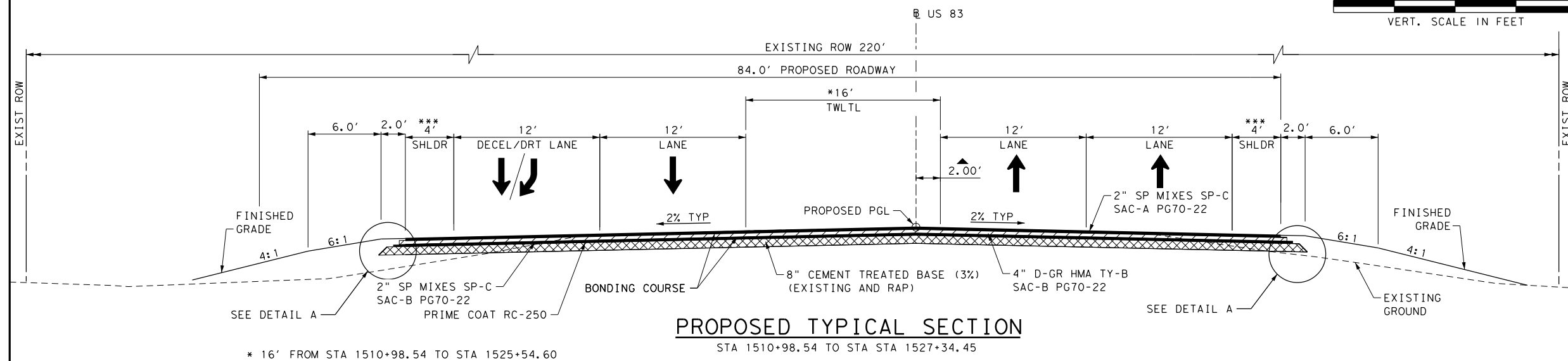
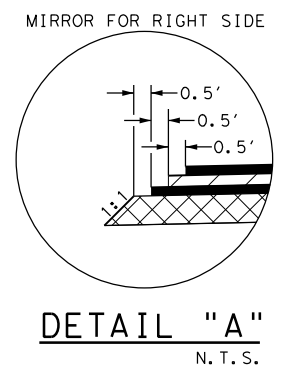
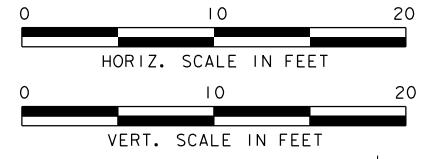
SHEET 5 OF 5

NO.	REVISIONS	BY	DATE
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FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
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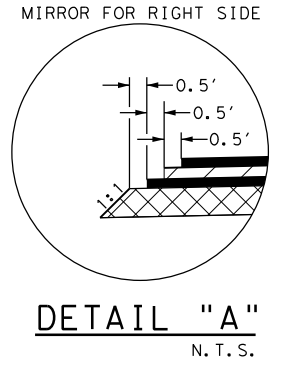
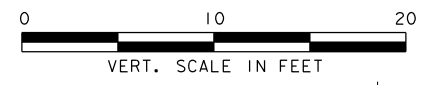
\* FROM STA 1504+42.08 TO STA 1510+98.54  
 \*\* FROM STA 1504+42.08 TO STA 1507+72.07  
 ▲ VARIES (0' TO 2') FROM STA 1504+42.08 TO STA 1509+41.38

**PROPOSED TYPICAL SECTION**  
 STA 1504+42.08 TO STA 1510+98.54

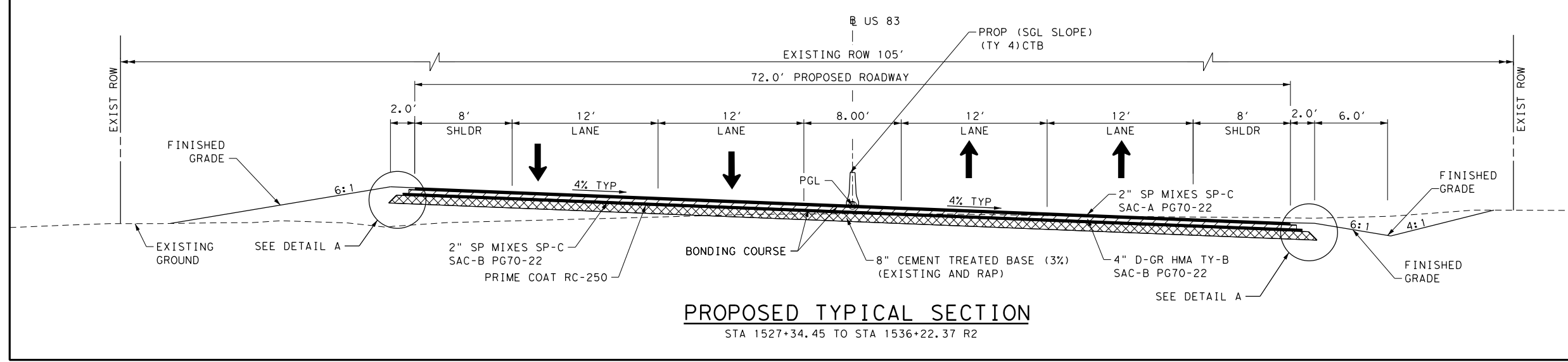


\* 16' FROM STA 1510+98.54 TO STA 1525+54.60  
 \*\* VARIES (16' TO 4') FROM STA 1525+54.60 TO STA 1527+34.45  
 \*\*\* 2' FROM STA 1510+98.54 TO STA 1525+69.75  
 VARIES (2' TO 8') FROM STA 1525+69.75 TO STA 1527+34.46  
 ▲ 2' FROM STA 1504+42.08 TO STA 1522+24.99  
 VARIES (2' TO 7.73') FROM STA 1522+24.99 TO STA 1525+54.60  
 VARIES (7.73' TO 4') FROM STA 1525+54.60 TO STA 1527+34.46

**PROPOSED TYPICAL SECTION**  
 STA 1510+98.54 TO STA 1527+34.45



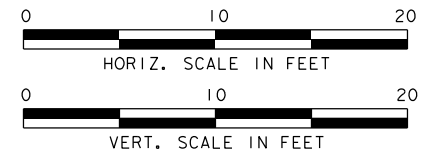
5-2-2024



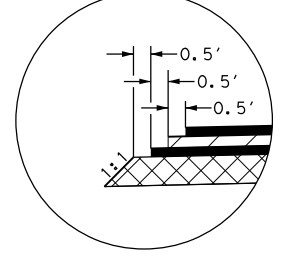
**PROPOSED TYPICAL SECTION**  
 STA 1527+34.45 TO STA 1536+22.37 R2

SHEET 1 OF 7

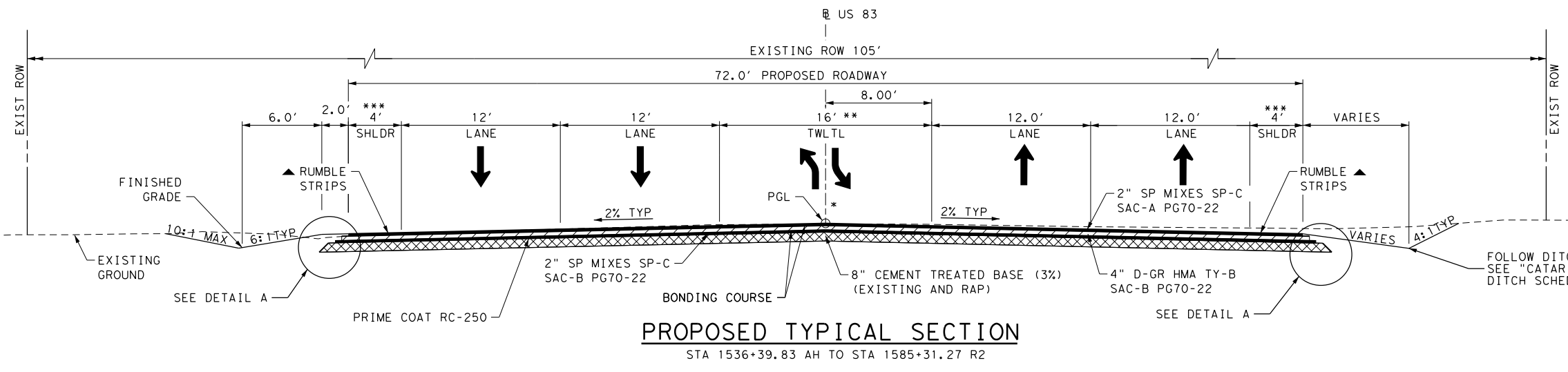
NO.		REVISIONS	BY	DATE
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<b>US 83</b> <b>PROPOSED</b> <b>TYPICAL SECTIONS</b>				
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.	
6	C 37-8-42		15	
STATE	DISTRICT	COUNTY		HIGHWAY NO.
TEXAS	LRD	DIMMIT		
CONTROL	SECTION	JOB	JOB	
0037	08	042, ETC.	US 83	



MIRROR FOR RIGHT SIDE



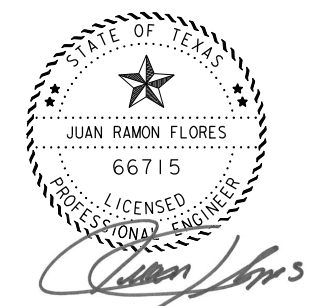
**DETAIL "A"**  
N. T. S.



**PROPOSED TYPICAL SECTION**  
STA 1536+39.83 AH TO STA 1585+31.27 R2

▲ Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.

- \* FROM STA 1535+00.00 TO STA 1536+22.37
- \*\* VARIES (8'-16') FROM STA 1536+22.37 TO STA 1538+19.83
- \*\* VARIES (16'-4') FROM STA 1583+31.27 TO STA 1585+31.27
- \*\*\* VARIES (8' TO 4') FROM STA 1536+39.83 TO STA 1538+19.83



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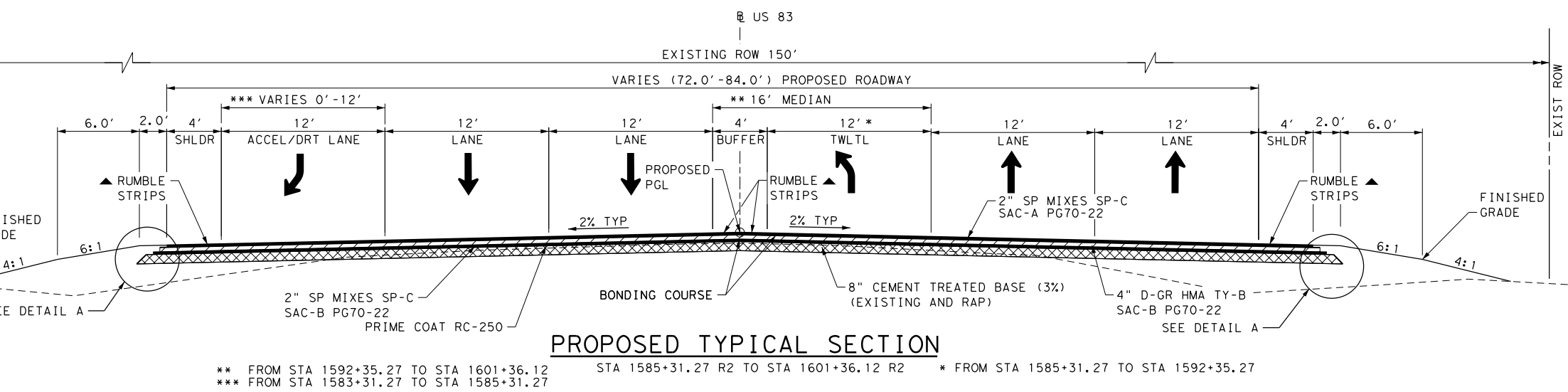
SHEET 2 OF 7

NO.	REVISIONS	BY	DATE
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**US 83  
PROPOSED  
TYPICAL SECTIONS**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	16	
STATE	DISTRICT	COUNTY	
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CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

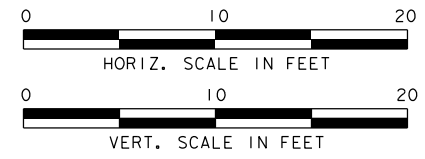


**PROPOSED TYPICAL SECTION**  
STA 1585+31.27 R2 TO STA 1601+36.12 R2

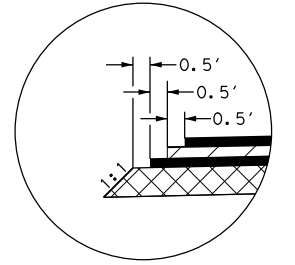
- \*\* FROM STA 1592+35.27 TO STA 1601+36.12
- \*\*\* FROM STA 1583+31.27 TO STA 1585+31.27
- \* FROM STA 1585+31.27 TO STA 1592+35.27

▲ Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.

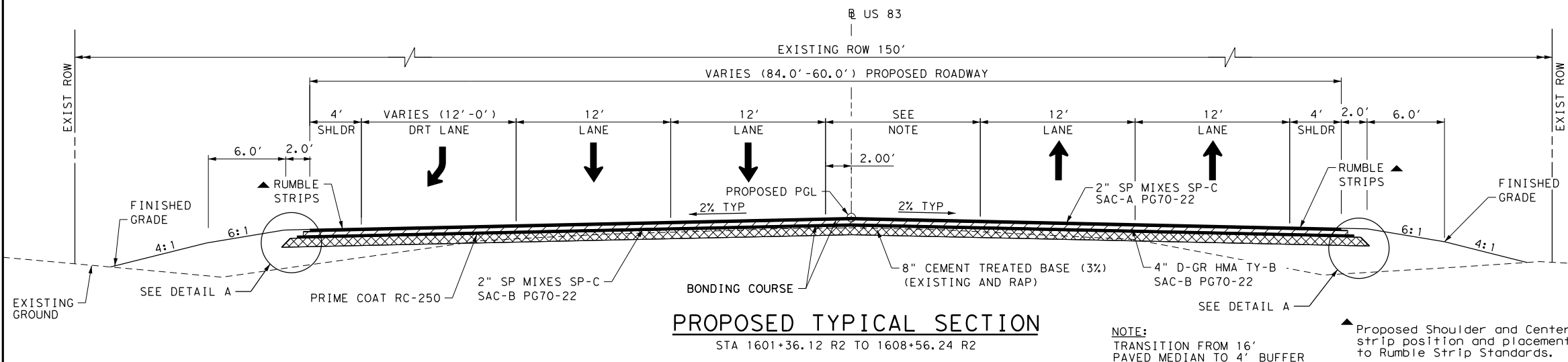




MIRROR FOR RIGHT SIDE



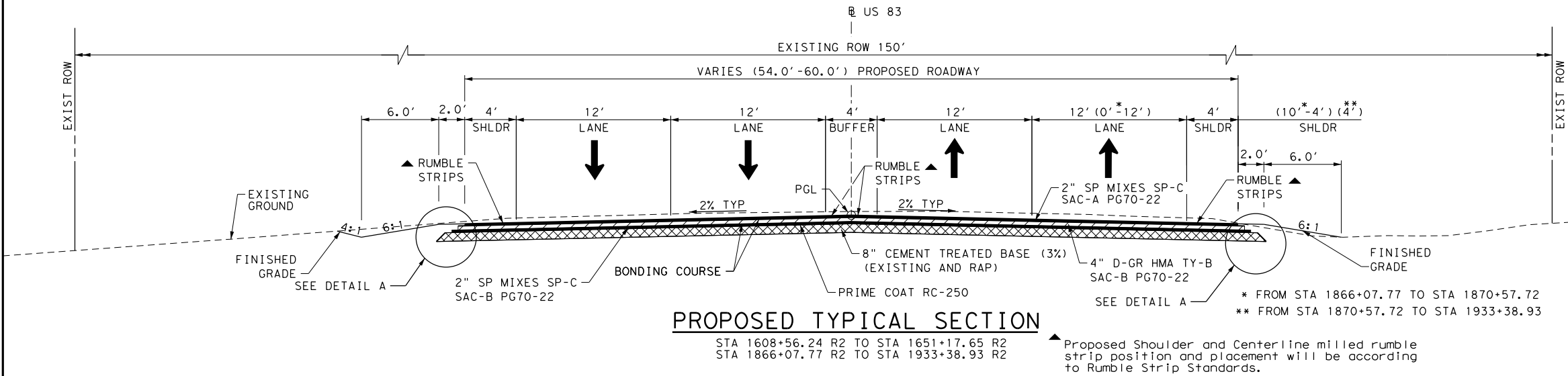
**DETAIL "A"**  
N.T.S.



**PROPOSED TYPICAL SECTION**

STA 1601+36.12 R2 TO 1608+56.24 R2

**NOTE:**  
TRANSITION FROM 16' PAVED MEDIAN TO 4' BUFFER  
Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.

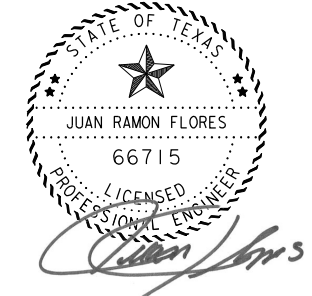


**PROPOSED TYPICAL SECTION**

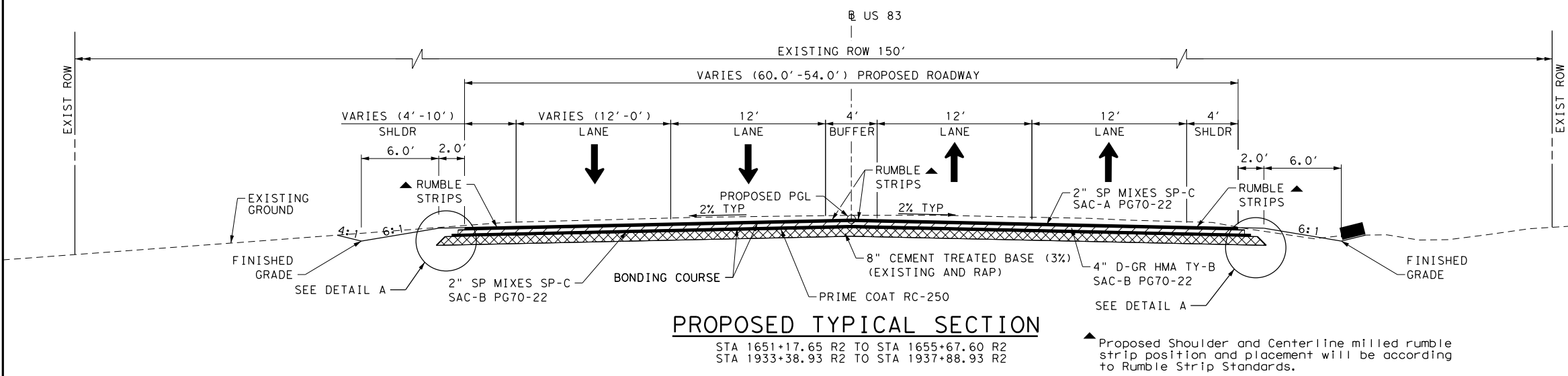
STA 1608+56.24 R2 TO STA 1651+17.65 R2  
STA 1866+07.77 R2 TO STA 1933+38.93 R2

**NOTE:**  
Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.

\* FROM STA 1866+07.77 TO STA 1870+57.72  
\*\* FROM STA 1870+57.72 TO STA 1933+38.93



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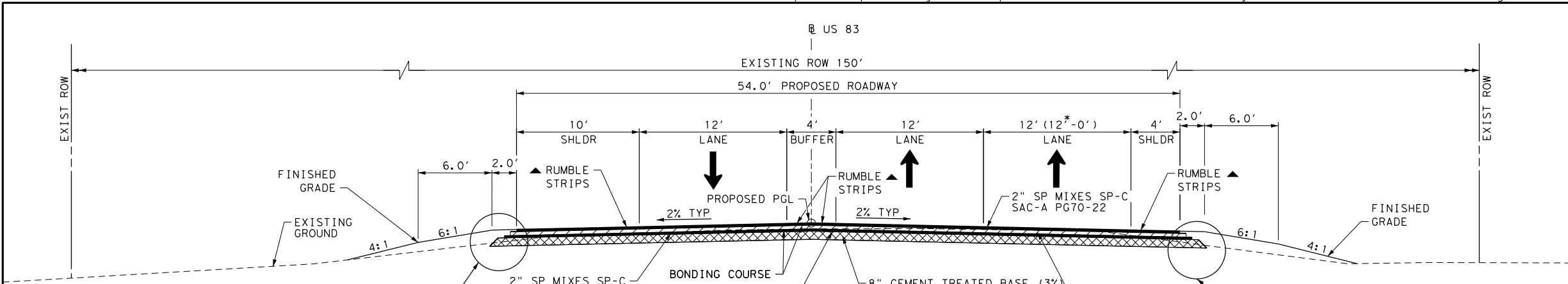
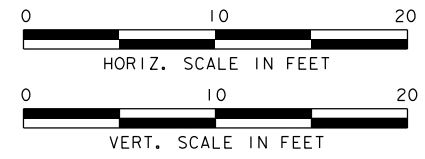
**PROPOSED TYPICAL SECTION**

STA 1651+17.65 R2 TO STA 1655+67.60 R2  
STA 1933+38.93 R2 TO STA 1937+88.93 R2

**NOTE:**  
Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.

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<b>US 83</b> <b>PROPOSED</b> <b>TYPICAL SECTIONS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	17	
STATE	DISTRICT	COUNTY	
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CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



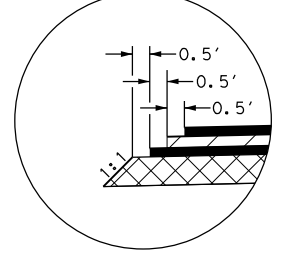
**PROPOSED TYPICAL SECTION**

STA 1655+67.60 R2 TO STA 1689+75.41 R2  
 STA 1937+88.93 R2 TO STA 2066+53.57 R2  
 STA 2066+53.57 R2 TO STA 2067+00.00 R2

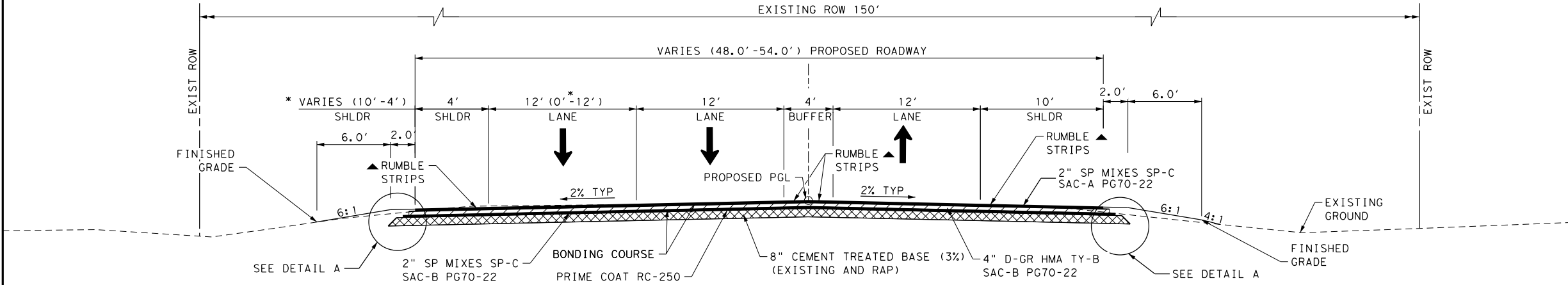
\* FROM STA 1689+75.41 TO STA 1698+75.36  
 \* FROM STA 2066+53.57 TO STA 2075+53.57  
 \* VARIES 12' TO 11.78' (FROM STA 2066+53.57 TO STA 2067+00.00)

Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.

MIRROR FOR RIGHT SIDE



**DETAIL "A"**  
N. T. S.

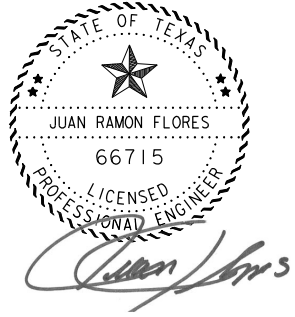


**PROPOSED TYPICAL SECTION**

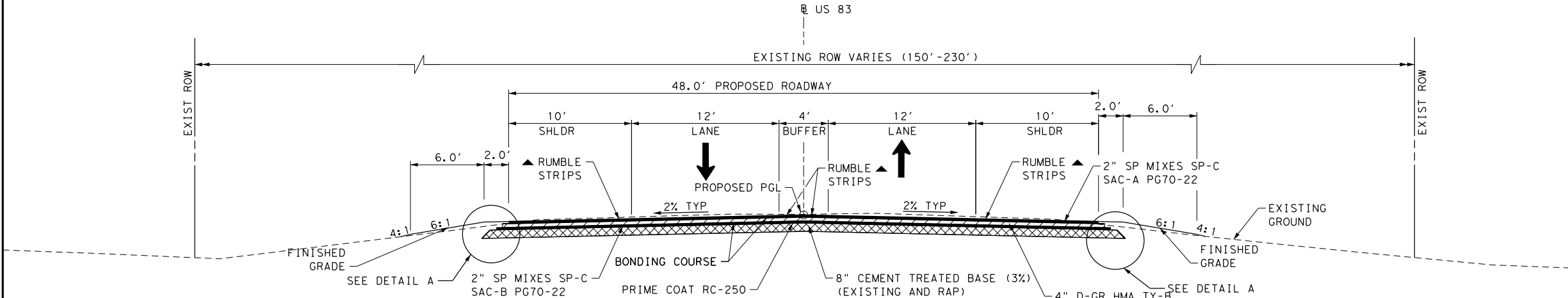
STA 1832+54.02 R5 TO STA 1866+07.77 R2

\* FROM STA 1832+54.02 TO STA 1841+54.02

Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.



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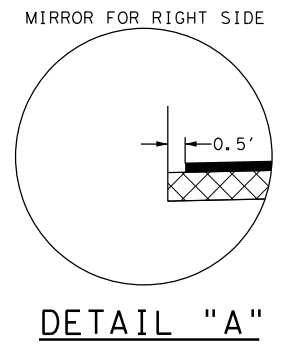
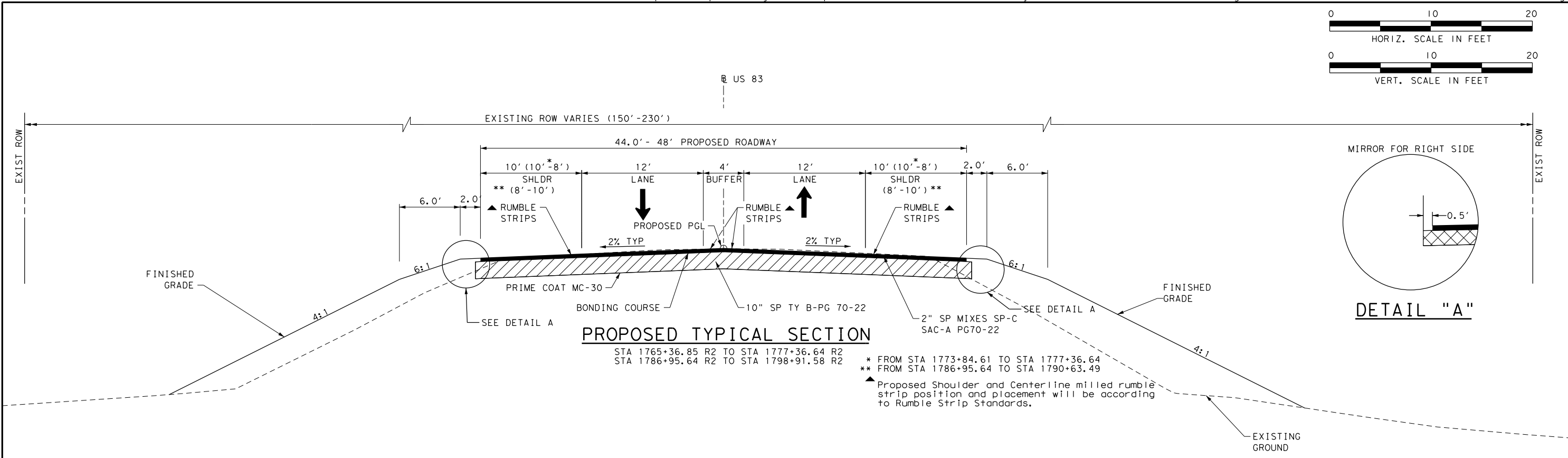
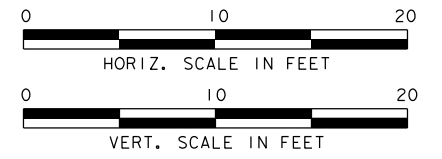
**PROPOSED TYPICAL SECTION**

STA 1698+75.36 R2 TO STA 1765+36.85 R2  
 STA 1798+91.58 R2 TO STA 1832+54.01 R2

Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.

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NO.		REVISIONS	BY	DATE
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<b>US 83                      PROPOSED                      TYPICAL SECTIONS</b>				
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6	C 37-8-42		18	
STATE	DISTRICT	COUNTY		HIGHWAY NO.
TEXAS	LRD	DIMMIT		
CONTROL	SECTION	JOB		
0037	08	042, ETC.	US 83	

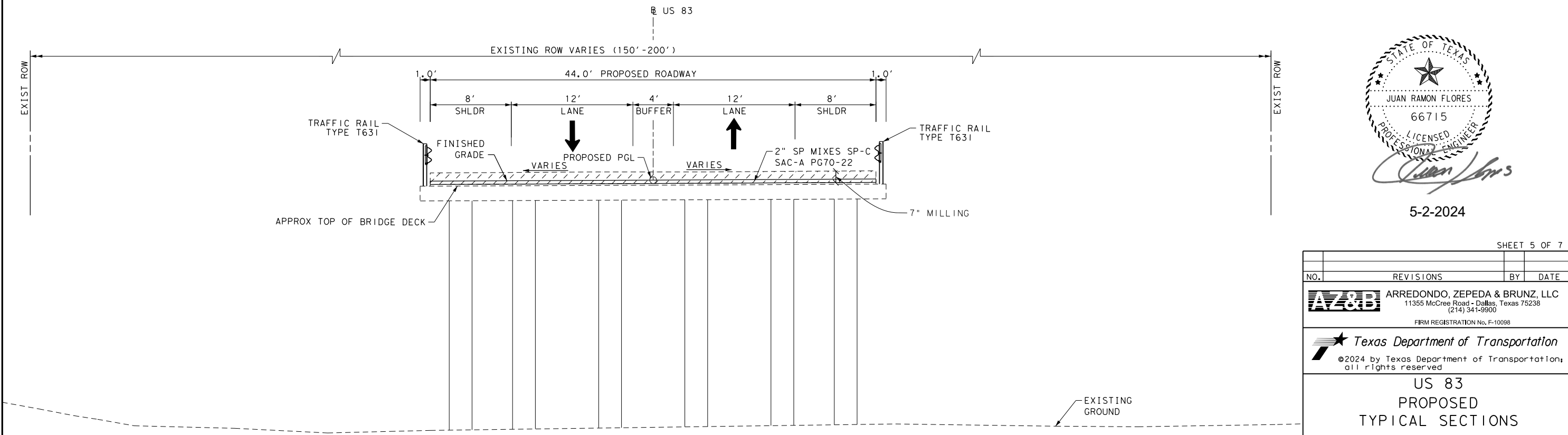


**PROPOSED TYPICAL SECTION**

STA 1765+36.85 R2 TO STA 1777+36.64 R2  
 STA 1786+95.64 R2 TO STA 1798+91.58 R2

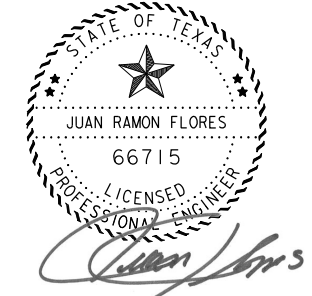
\* FROM STA 1773+84.61 TO STA 1777+36.64  
 \*\* FROM STA 1786+95.64 TO STA 1790+63.49

Proposed Shoulder and Centerline milled rumble strip position and placement will be according to Rumble Strip Standards.



**PROPOSED TYPICAL SECTION**

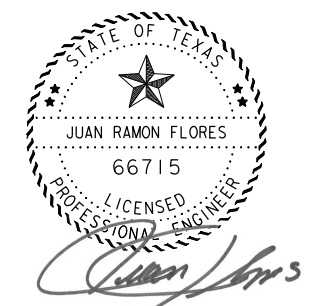
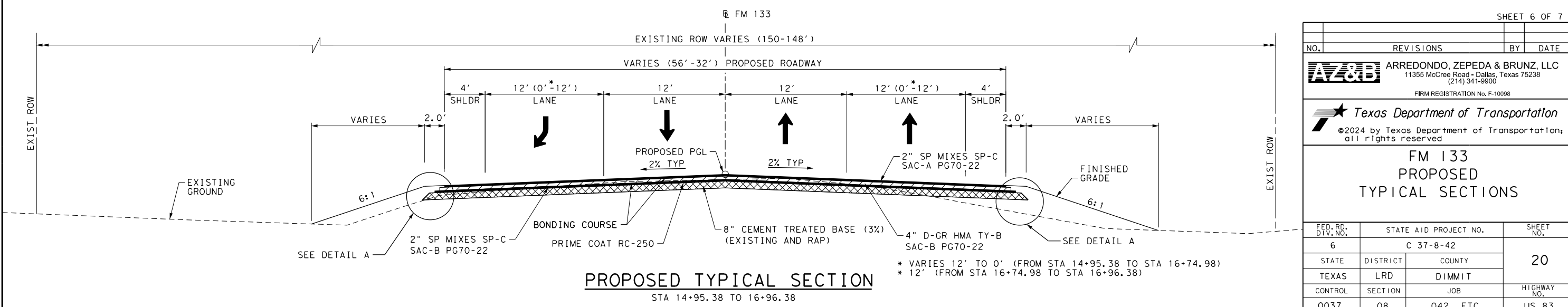
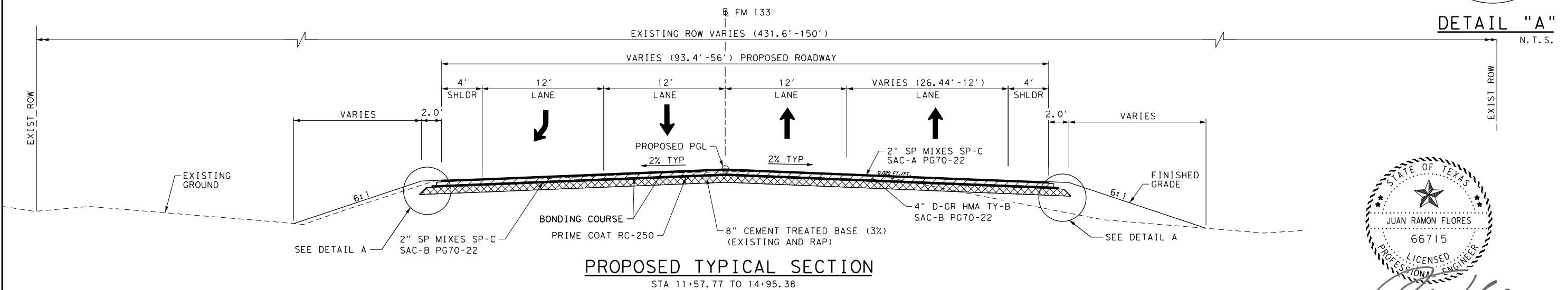
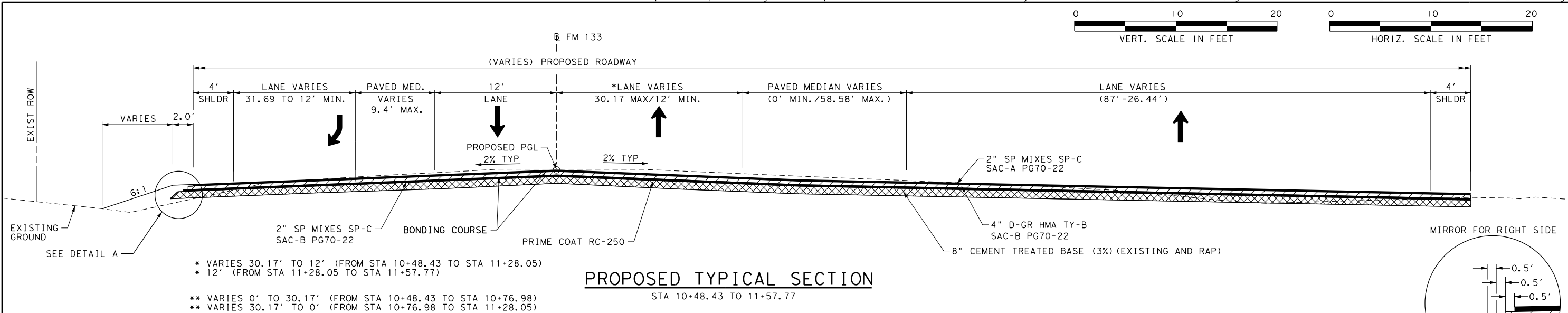
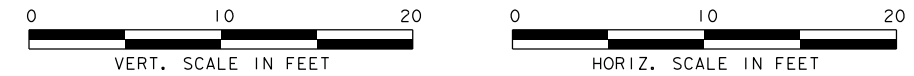
STA 1777+36.64 R2 TO STA 1786+95.64 R2



5-2-2024

SHEET 5 OF 7

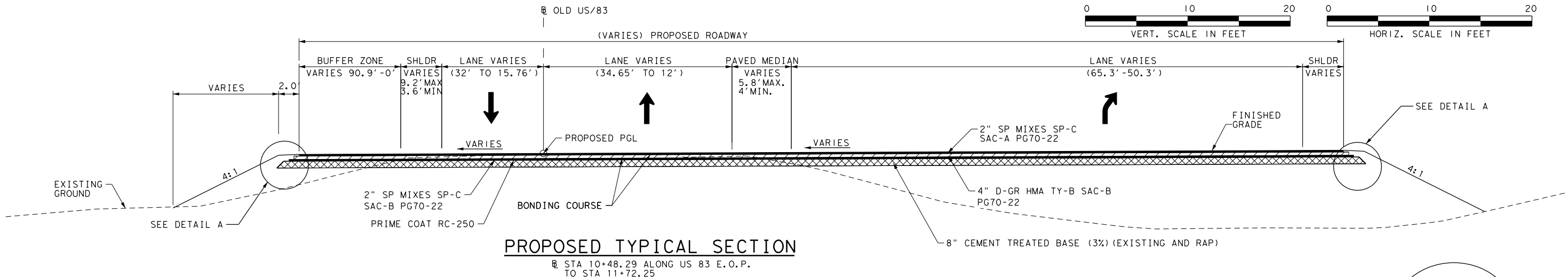
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation, all rights reserved.			
<b>US 83</b> <b>PROPOSED</b> <b>TYPICAL SECTIONS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		19
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



5-2-2024

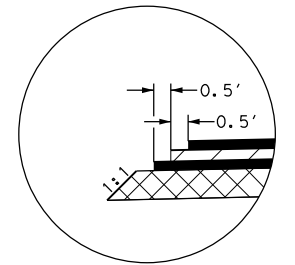
SHEET 6 OF 7

NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>FM 133                      PROPOSED                      TYPICAL SECTIONS</b>			
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42	SHEET NO. 20	
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT	HIGHWAY NO. US 83
CONTROL 0037	SECTION 08	JOB 042, ETC.	

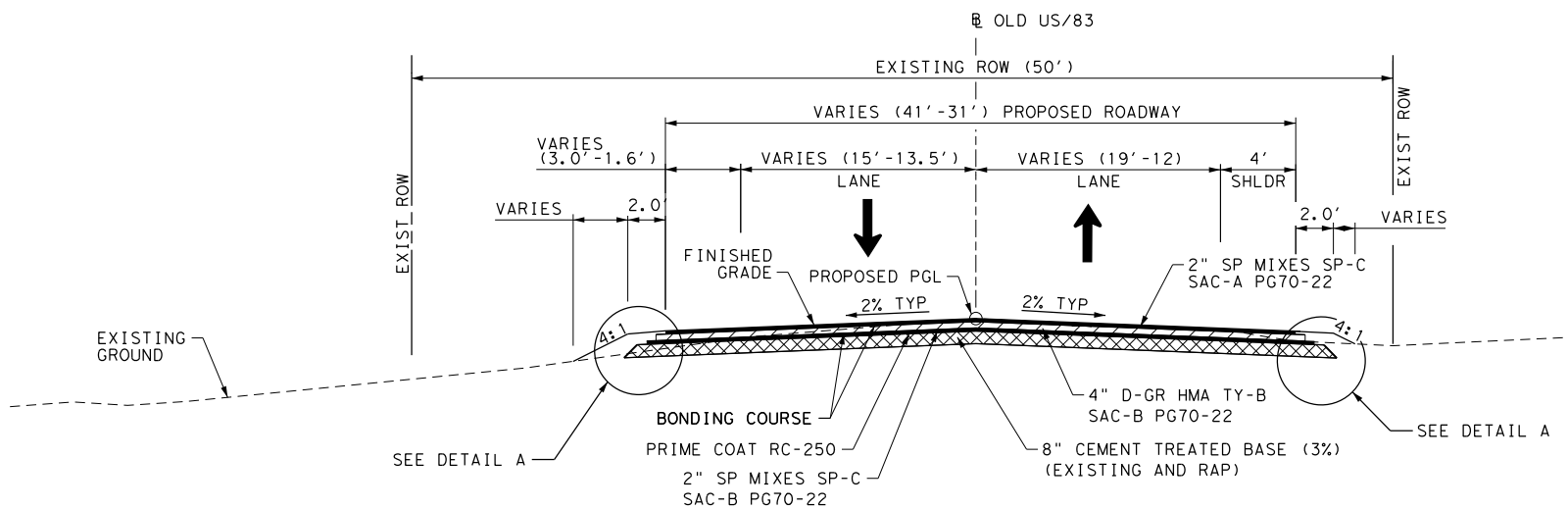


**PROPOSED TYPICAL SECTION**

Ⓜ OLD US/83  
 Ⓜ STA 10+48.29 ALONG US 83 E.O.P.  
 TO STA 11+72.25



**DETAIL "A"**  
 N.T.S.  
 MIRROR FOR RIGHT SIDE

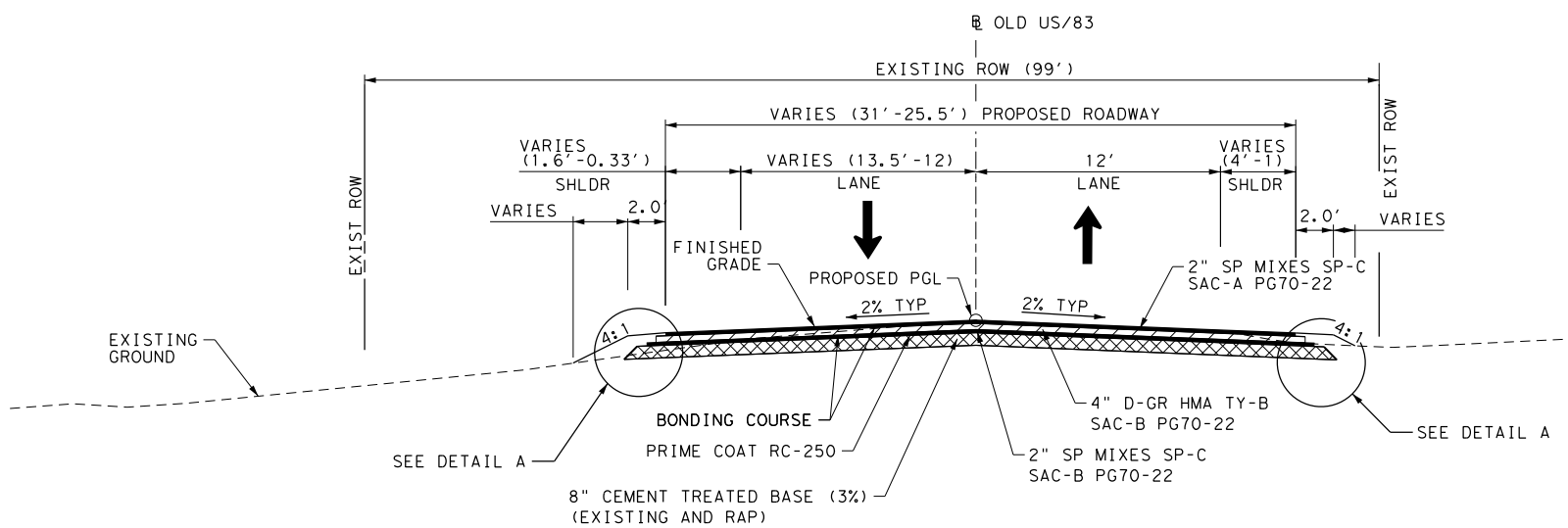


**PROPOSED TYPICAL SECTION**

Ⓜ OLD US/83  
 Ⓜ STA 11+72.25 TO 12+92.78



5-2-2024



**PROPOSED TYPICAL SECTION**

Ⓜ OLD US/83  
 Ⓜ STA 12+92.78 TO 13+70.95

SHEET 7 OF 7

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>OLD 83                      PROPOSED                      TYPICAL SECTIONS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	21	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
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**GENERAL NOTES:**

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

Project Manager – [Luis.Urbina@txdot.gov](mailto:Luis.Urbina@txdot.gov)  
Angel Martinez – [Angel.Martinez@txdot.gov](mailto:Angel.Martinez@txdot.gov)

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

<https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors>

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

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

**Item 5 - Control of the Work**

The Contractor shall maintain and preserve the integrity of all “existing survey markers” by avoiding the disturbance of such markers; which include all control points (horizontal and/or vertical), stakes, marks, and right-of-way markers. The Department will repair all Contractor disturbed control points, stakes, marks, and right-of-way markers. The cost for any type of repairs to the “existing survey markers” will be deducted from money due or to become due to the Contractor.

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

Contact the Laredo District Signal Section (956-712-7770) for coordination with TxDOT underground lines and/or facilities.

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Prior to construction must call 811 to verify any utilities located within project limits. Contractor will also coordinate with utility owners listed below for any adjustments needed to sanitary sewer manholes, water valves, gas valve, telecommunication, television manhole located within project limits. The utility company is responsible for any adjustment when necessary. The work should be performed in a manner as to not delay construction contractor work activity.

Contractor will make necessary arrangements with the utility owner(s) when utility adjustments are required, as a result of construction activities.

**Utility Owner Phone Number City/County**

Dimmit County Utilities 830-876-4230 Catarina, TX, Dimmit

**Contractor Force Account Work (Unknown Utility)**

Force Account work will provide utility-related activities in adjustment of the utility conflicts, including Subsurface Utility Engineering (SUE) for locations of unmarked or unknown utilities can be identified.

Utility conflicts adjustment shall consider alternative solution that are feasible and cost-effective. Available strategies resolving those conflicts include one or more of the following options:

- Remove, abandon, or relocate the utility.
- Modify the proposed roadside drainage ditch, e.g., by changing the side slopes or other characteristics, as approved by the Engineer.
- Implement an engineering (protect-in-place) countermeasure.
- Other corrective action as approved by the Engineer.

The conflict resolution of the utility facilities will be in accordance with the Texas Codes and Regulations, and other provisions related with the adjustment.

**Item 6 - Control of Materials**

Contact the project engineer to request material a minimum of one workday prior to pick up. Load material with contract personnel. Store material in a safe

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location off TxDOT property or Right of Way, unless otherwise approved. Use material furnished by TxDOT only on the TxDOT project(s) intended. Return any unused material as soon as possible.

#### **Item 7 - Legal Relations and Responsibilities**

No significant traffic generator events identified.

#### **Jurisdictional Waters of the United States and Project Specific Locations (PSL) Coordination:**

This project requires permit(s) with environmental resource agencies. There is a high probability that environmentally sensitive areas will be encountered on contractor designated project specific locations (PSLS) for the project (including but not limited to haul roads, equipment staging areas, parking areas, etc.).

Requirements for work within Jurisdictional Waters of the United States:  
The department has been authorized to perform work within designated areas of the project under U.S. Army Corps of Engineers (USACE) nationwide permit (NWP) #14 and/or #3a and/or #3b.

The contractor will not initiate activities in a project specific location (PSL) associated with a U.S. Army Corps of Engineers (USACE) permit area (i.e. an area where the USACE has jurisdiction) that has not been previously evaluated by the USACE as part of the permitting for this project. Such activities include, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here includes materials delivered to or from the PSL. The permit area includes all waters of the U.S. and their associated wetlands affected by activities associated with this project. Special restrictions may be required for such work in these USACE jurisdictional areas. The contractor will be responsible for all consultations with the USACE regarding activities, including PSLs, which have not been previously evaluated by the USACE. The Contractor will provide the department with a copy of all consultation(s) or approval(s) from the USACE prior to initiating activities.

The contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non-jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The contractor is solely responsible for documenting any determination(s) that their activities do not affect a USACE

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permit area. The contractor will maintain copies of their determination(s) for review by the department and/or any regulatory agency.

The disturbed area for all project locations in the Contract, and the Contractor project specific locations (PSLs) within 1 mile of the project limits for the Contract, will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, the Contractor shall provide a copy of the Contractor Notice of Intent (NOI) for the PSLs to the Engineer and to the local government operating a municipal separate storm sewer system (MS4) if applicable. If the total area of project disturbed areas and PSLs total between 1-acre but less than 5-acres, the Contractor shall post the appropriate Contractor Construction Site Notice for all Contractor PSLs to comply with TCEQ storm water regulations.

In order to expedite the approval process for PSLs or to eliminate or minimize potential impacts to project progress, initiate coordination efforts with the U.S.A.C.E. within 30 days from the date of "authorization to begin work" for all PSLs that are in areas where the USACE has jurisdiction (i.e. USACE permit areas). If this is not done, the contractor waives the right to request any contract time considerations if project progress is impacted and PSL'S approval is still pending.

Requests submitted to the area engineer will be evaluated on this basis and will require documentation showing substantial early coordination efforts to expedite the approval process as herein stated. The request will include a detailed chronological summary status with dates of coordination activities with the resource agencies, including those occurring after the initial coordination, to be reviewed and confirmed by the district's environmental section.

PSLs that fall within USACE permit areas, the Contractor must document and coordinate with the USACE, if required, before any excavation hauled from or embankment hauled into a USACE permit area by either (1) or (2) requirements.

1. Restricted Use of Materials for Previously Evaluated Permit Areas. The Contractor will document both the project specific location (PSL) and their authorization and the Contractor will maintain copies for review by the Department and/or any regulatory agency. When an area within the project

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limits has been evaluated by the USACE as part of the permit process for this project, then:

- a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110, "Excavation", is used for permanent or temporary fill (Item 132, "Embankment") within a USACE permit area may be restricted;
- b. Suitable embankment (Item 132, "Embankment") from within the USACE permit area is used as fill within a USACE evaluated area may be restricted; and,
- c. Unsuitable excavation or excess excavation ["Waste"] (Item 110, "Excavation") that is disposed of at an approved location within a USACE evaluated area may be restricted.

2. Contractor Materials from Areas Other than Previously Evaluated Areas. The Contractor will provide the Department with a copy of all USACE coordination or approvals before initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right-of-way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites, including:

- a. Item 132, "Embankment", used for temporary or permanent fill within a USACE permit area; and,
- b. Unsuitable excavation or excess excavation ["Waste"] (Item 110, "Excavation") that is disposed of outside a USACE evaluated area.

**Storm Water Regulations Requirements:**

The Contractor shall be responsible for (off ROW) PSLs applicable to the TCEQ Construction General Permit (CGP) requirements and will notify the Engineer of the disturbed acreage within one (1) mile of the project limits. The Contractor shall obtain any required authorization form the TCEQ for any Contractor PSLs for construction support activities on or off ROW.

The total area disturbed for this project is 64.2 acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities

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shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, the Contractor shall provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer and to the local government that operates a municipal separate storm sewer system (MS4), if applicable.

**Item 8 - Prosecution and Progress**

Before starting work, provide a sequence of work and estimated progress schedule meeting the requirements of Section 8.5.2, "Progress Schedule."

No closures will be allowed on the weekends which include the following holidays: January 1<sup>st</sup>, the last Monday in May, July 4<sup>th</sup>, the first Monday in September, the fourth Thursday in November, December 25<sup>th</sup> and Easter weekend.

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

**Item 9 – Measurement and Payment**

Coordinate and provide off-duty law enforcement officers with officially marked vehicles (if patrol cruisers are available from the enforcement agency involved) during the following operations: transitioning to a new sequence of construction, lane closures, *and/or* during a one-way traffic control situation. For payment through TxDOT state force account method, complete the weekly tracking forms provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Submit Material on hand (MOH) payment requests at least 10 working days prior to the end of the month for payment on that month's estimate. For out-of-town MOH submit requests at least 10 working days prior to the end on the month.

**Item 100 - Preparing Right of Way**

Burning of brush will not be permitted.



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Do not begin any clearing operations until the trees and areas of vegetation that should not be removed or disturbed by construction activities have been identified. To ensure that these areas are not disturbed, place protection fencing as shown in the plans or as directed/approved by the Engineer.

All right of way clearing operations will be coordinated with the project's SW3P and as directed/approved by the Engineer.

Perform work as necessary to clean and remove all debris from drainage structures and under bridges. The cost of this work will be included in the unit price bid for this item.

Trim and remove brush and trees in order to construct the project or to provide a horizontal clearance of approximately 2 feet inside the right of way line and a vertical clearance of at least 12 feet. For this operation, no vertical flailing equipment is allowed, and the Engineer will approve the method used. The limits are as shown on plans.

**Item 105 - Removing Treated and Untreated Base and Asphalt Pavement**

The existing asphalt pavement and base materials to be removed will become the property of the Contractor.

Stockpile salvageable asphalt pavement and base materials at Mixing Plant Facility or as directed by the Engineer.

**Item 110 - Excavation**

In accordance with Article 160.3., "Construction", windrow and salvage approximately 6 inches of topsoil. Stockpile topsoil along the right of way line or as directed. Place and shape approximately 5 inches of topsoil to designated areas as directed.

The work performed and the materials furnished in accordance with this Article will not be paid for directly but will be subsidiary to pertinent Items.

**Item 132 - Embankment**

Meet the requirement as shown below, for fill sections from the embankment finished grade line and below, to a depth of 4 feet:

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Field compact density to  $\geq 98\%$  dry density.  
Plasticity Index (PI) limit is  $5 \leq PI \leq 25$ .  
Liquid limit  $\leq 45$   
Bar linear shrinkage  $\geq 2$  Plasticity Index (PI)

For all other fill sections, Plasticity Index (PI) limit is less than or equal to 30.

In accordance with Article 160.3., "Construction", windrow and salvage approximately 6 inches of topsoil. Stockpile topsoil along the right of way line or as directed. Place and shape approximately 5 inches of topsoil to designated areas as directed.

The work performed and the materials furnished in accordance with this Article will not be paid for directly but will be subsidiary to pertinent Items.

**Item 164 - Seeding for Erosion Control**

Drill seeding will be used for this project. Refer to the Laredo District Standard Revegetation notes and specifications for additional information.

**Item 166 - Fertilizer**

Fertilize all areas of project to be seeded.

**Item 168 - Vegetative Watering**

Maintain the seed bed in a condition favorable for the growth of grass. Watering can be postponed immediately after a rainfall on the site of 1/2 in. or greater but will be resumed before the soil dries out. Watering will continue until final acceptance.

Obtain water at a source that is metered or furnish the manufacturer's specifications showing the tank capacity for each truck used. Notify the Engineer before watering so meter readings or truck counts may be verified.

Establish 70% uniform vegetative coverage during this period in order to comply with stabilization requirements. Operate and meter water equipment under pumping pressure in order to deliver the required quantities of water necessary.

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During periods of adequate moisture, as determined by the Engineer, mechanical watering may not be required. In addition to metering the water equipment, provide a logbook showing daily water usage and receipts of water applied upon request of the Engineer.

Upon establishment of 70% vegetative coverage as determined by the Engineer, the Engineer has the option to require the Contractor to continue watering as specified for a period not to exceed 30 days.

#### **Item 247 - Flexible Base**

Conform to the following flexible base (TY E GR 1-2) requirements:

A pre-placement meeting must be conducted at least 48 hrs. prior to flex base placing operations.

Ride quality will be required on the base.

If the flexible base comes from a stockpile, test the stockpile before delivery to the project. Stockpile must be labeled and designated the contractor and the project. Follow the department guide schedule for testing frequency. The Contractor's attention is called to the fact that the preliminary test will require approximately 30 days and it is the Contractor's responsibility to advise the Engineer of the location of the flexible base source sufficiently in advance to avoid delays. Blade the side slopes to remove all grass from the area of construction before placing flexible base on that portion of the roadway to be widened, level-up, seal coat, or HMA overlay. Blade the sod back onto the side slopes after the proposed items of work have been completed. This work is subsidiary to pertinent work items.

Density and Moisture Control. Compact to a minimum of 100% of the maximum dry density and within  $\pm 2.0\%$  of the optimum moisture content as determined in accordance with Tex-113-E, unless otherwise shown on the plans. Provide the Engineer with the beginning and ending station numbers of the area completed for testing. The Engineer will determine roadway density and moisture content of completed sections in accordance with Tex-115-E, Part I. The Engineer will determine random locations for testing in accordance with Tex-115-E, Part IV. Do not achieve density by drying the material after compaction. When the density is less than 100% of the maximum dry density, the Engineer may perform additional testing to determine the extent of the area to correct. The Engineer may accept the section if no more than one of the five most recent density tests is below the specified density and the failing test is no more than 3 pcf below the specified density.

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**Sheet 22D**

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#### **Item 276 – Cement Treatment (Plant-Mixed)**

Produce a mixture that meets strength requirements for Class "N" with a "7-Day Unconfined Compressive Strength, Min. PSI of 225. Perform verification on field samples for every 2-mile section.

A pre-placement meeting must be conducted at least 48 hours prior to placing operations.

Apply cement with whole percent rates. Fractions of percent required to obtain minimum strength requirements must be round up to next whole percent. The State will pay for the required cement content as shown on plans. However, actual percentage will be determined by Tex-120 E. Any additional cement required beyond that shown on plans will need TxDOT approval.

**Materials.** Existing asphalt pavement and base, and new base materials will be used in the mix design. Limit the amount of asphalt pavement to 50% of the mix or as directed. The existing pavement materials is approximately 50% asphalt and 50% base. The cement treated base mix may require new flexible base to be added to provide the specified depth base layer.

Reclaimed asphalt pavement (RAP) is allowed, do not exceed 20% RAP by weight.

Furnishing of existing asphalt pavement and base will be paid for in accordance with Item 105 "Removing Treated and Untreated Base and Asphalt Pavement.

**Ride Quality.** Measure ride quality in accordance with Item 247, "Flexible Base", or as directed by the Engineer.

#### **Item 310 - Prime Coat**

When necessary, use blotter material at the rate of 1 cubic yard per 140 square yards or as directed by the Engineer.

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#### **Item 320 – Equipment for Asphalt Concrete Pavement**

For staged construction, all longitudinal ACP joints shall be constructed with a 3:1 to 6:1 taper. For placement of 2 inches or more, the device will provide a maximum ½ inch vertical edge. Outside edges (next to the grass/earth) will also have a taper or will be backfilled the same day.

Final Surface course: all longitudinal ACP joints for the final hot-mix surface course shall be in widths equal to travel lane widths so that all final course ACP joints will match the proposed lane striping (pavement markings), unless otherwise directed by the Engineer.

#### **Item 354 - Planing and Texturing Pavement**

Contractor to retain ownership of planed materials.

The contractor will not be allowed to remove all existing asphalt from (edge of pavement to edge of pavement) when TCP requires to be done in phases.

The contractor will be responsible for verifying the existing asphalt depth at the bridge before beginning planing operations. The contractor will be responsible for any needed repairs to the armor joint(s) and/or deck(s) as a result of the planing operations. The repairs will be conducted to the satisfaction of the Engineer. The Contractor will be responsible for all costs incurred for the repairs, including but not limited to materials, labor, equipment, and pertinent incidentals.

Stockpile salvaged materials at Mixing Plant Facility or as directed.

#### **Item 429 - Concrete Structure Repair**

Use the types of repair materials as shown on plans.

#### **Item 432 - Riprap**

Provide Class B Concrete for riprap.

Provide Class II Concrete for pneumatically placed concrete.

#### **Item 496 - Removing Structures**

Salvaged the following items:

General Notes

Sheet K

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**Sheet 22E**

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Brass plaque with engraving of "1932 STATE HIGHWAY COMMISSION CAGE BROTHERS CONTRACTORS" to be removed carefully and deliver to the Carrizo Spring Area Office.

Brass plaques are imbedded in head wall of the structures located at Sta.1667+67, Sta. 1721+99, Sta. 1737+17 and Sta. 1753+01.

#### **Item 500 - Mobilization**

"Materials-on-Hand" payments will not be considered in determining percentages used to compute mobilization payments.

#### **Item 502 - Barricades, Signs, and Traffic Handling**

Designate, as the Contractor Responsible Person (CRP), an English-speaking employee on-call nights and weekends (or any other time that work is not in progress) with a local address and telephone number for maintenance of signs and barricades. This employee will be located within one (1) hour of traveling time to the project site. Notify the Engineer in writing of the name, address and telephone number of this employee. Furnish this information to local law enforcement officials.

The time frame for the Contractor to provide properly maintained traffic control devices before being considered non-compliance with this Item, is 48 hours regardless of the days of the week involved after notification is done in writing by the Engineer.

Traffic control required for this project will not be paid for directly but will be considered subsidiary to the various bid items.

Provide two-way radios in areas where flagmen do not have visual contact with one another or cannot communicate with one another.

Limit lane closures to a maximum of 2 miles. If more than one lane closure location is desired, provide a minimum of a 2-mile passing zone between locations. Provide a separate sign set up for each location.

Ensure equipment not in use, stockpile aggregate, and other working materials are:

- A minimum of 30 feet from the edge of the travel lane

General Notes

Sheet L

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- Do not obstruct traffic or sight distance
- Do not interfere with the access from abutting property; or
- Do not interfere with roadway drainage.

Erect signs in locations not obstructing the traveling public's view of the normal roadway signing or necessary sight distance at intersections and curves.

During the holiday time frame of December 21<sup>st</sup> through January 1<sup>st</sup>, all effort should be taken to ensure that all travel lanes remain open where possible.

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

#### **Item 504 - Field Office and Laboratory**

Provide a Type D Structure and Asphalt Content by Ignition Method for TxDOT Quality Assurance Testing. Contractor's quality control testing shall be performed in a separate space or facility. If a separate space is utilized within a shared facility, partition the space with a floor to ceiling wall with a door access for indoor use that is lockable with a key. Each separate space shall have an exterior door access.

Ensure that the field lab has an office for TxDOT use along with lockable file cabinet, desk and chair.

The floor and landing of the facility shall support the weight of all equipment and personnel providing a stable, essentially zero deflection during testing operations, acceptable to the Engineer.

Contractor is responsible to transport to and from the field lab TxDOT owned testing equipment required for hot-mix operations. Contractor will pick up, deliver, install, and set up TxDOT owned equipment required in the field lab.

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**Sheet 22F**

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TxDOT owned equipment required in the field lab will be picked up at LRD DST LAB, or as determined by the LRD DST LAB supervisor.

Pick up and deliver TxDOT owned equipment under the supervision of a TxDOT lab technician. A TxDOT lab technician will verify the installation and set-up of the equipment at least 48 hrs. prior to beginning of hot-mix operations (trial batch included).

All equipment will be returned by the contractor in the same manner and location as it was picked up. Contractor is responsible for any damages incurred to TxDOT equipment.

#### **Item 506 - Temporary Erosion, Sedimentation, and Environmental Controls**

The Department will not consider acceptance of the project until a vegetative cover of 70% density of existing adjacent undisturbed areas is obtained and completion of all other work in accordance with the contract and final acceptance.

#### **Item 512 - Portable Traffic Barrier**

Do not use different types of Portable Traffic Barriers in a single continuous installation.

Furnish connection hardware. The hardware will not be paid separately but will be subsidiary to this pay item.

Place PTB at ½" GAP over SPAN BRIDGE DECKS for Expansion to AVOID THERMAL SLAB vs. PTB Extreme THERMAL Movement.

When no longer needed on the project, storage portable traffic barrier (PTB) to the Carrizo Maintenance Office .

#### **Item 585 - Ride Quality for Pavement Surfaces**

Payment adjustments for ride quality use Schedule 1.

Measure ride quality of the base course after placement of the prime coat and before placement of the surface treatment, unless otherwise approved. Use a certified

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profiler operator from the Department's MPL. When requested, furnish the Engineer documentation for the person certified to operate the profiler.

Provide all profile measurements to the Engineer in electronic data files within 3 days after placement of the prime coat using the format specified in Tex-1001-S. The Engineer will use Department software to evaluate longitudinal profiles to determine areas requiring corrective action. Correct 0.1-mi. sections having an average international roughness index (IRI) value greater than 125.0 in. per mile to an IRI value of 125.0 in. per mile or less for each wheel path, unless otherwise shown on the plans.

Re-profile and correct sections that fail to maintain ride quality until placement of the next course, as directed. Correct re-profiled sections until specification requirements are met, as approved. Perform this work at no additional expense to the Department.

#### **Item 618 - Conduit**

If using the trenching method outside of existing pavement, place conduit on a 2-inch sand cushion and then backfill with a minimum of 6 inches of sand fill. Backfill the remainder of the trench with flexible base, soil, or two-sack concrete as directed.

Place conduit in an area not exceeding 2 feet in any direction from a straight line and the depth of the conduit will be 2 feet, except when crossing a roadway, where the depth will not be more than 3 feet or less than 1 foot below the bottom of the base material in the roadway when placed by the jacking or boring method.

Any evidence of damage to the roadway during the jacking or boring operation will be enough grounds to stop the method being used. Repair any roadway damage, due to daily operations in jacking or boring, at no additional cost to the State.

#### **Item 620 - Electrical Conductors**

Provide a sized, self-insulated, solderless terminal to ends of wires to be attached to terminal posts. Attach these terminals to wires with a ratchet type compression crimping tool properly sized to the wire. Place pre-numbered identification tags of plastic or tape around each wire adjacent to wire ends in the controller, signal heads, and signal pole terminal blocks.

#### **Item 624 - Ground Boxes**

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Do not place ground boxes in driveways or wheelchair ramps. Alternate ground box locations will be as directed. Ground box aprons will have a 2% slope.

Match concrete aprons to proposed rip rap elevations shown on plans.

#### **Item 628 - Electrical Services**

All traffic signal electrical service pole(s) for this project will be as shown on the plans.

Consider all costs associated with the installation and connection of electrical services to the electrical utility company subsidiary to this Item "Electrical Services." This includes conduit, conduit fittings, and electrical conductors.

Ground all electrical service poles in accordance with the latest edition of the National Electrical Code (NEC) and TXDOT Standards. Include the cost of such grounding in the unit price for this bid item.

Provide breakaway electrical connectors for breakaway poles. Use BUSSMAN HEBW, LITTLEFUSE LEB, FERRAZ-SHAWMUT FEB, or equal on ungrounded conductors. For grounded conductors, use BUSSMAN HET, LITTLEFUSE LET, FERRAZ-SHAWMUT FEBN, or equal. These breakaway connectors have a white colored marking and a permanently installed solid neutral. See the latest RID (2) standard for additional details.

#### **Item 636 - Signs**

Stockpile salvageable aluminum signs and deliver to the local TxDOT maintenance office.

#### **Item 644 - Small Roadside Sign Assemblies**

Stockpile reusable sign components and deliver to the local TxDOT maintenance office.

General Notes

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### **Item 658 – Delineator and Object Marker Assemblies**

Proposed delineators for this project will consist of oval shape tube flexible post with a quick release embedded anchor insert stub only, such as Flexstake Inc. – 650 series or Shur-Tite – SD series or equal flexible driveable delineators.

Provide and place delineator Type 1, 2, 3, 4, object markers/chevrons and large arrows signs project 4' or 7' above the pavement surface and not the ground line. (Provide adequate length for proper anchor and projection above ground line).

### **Item 666 – Retroreflectorized Pavement Markings**

Reflectivity requirements for Type I will be as per Item 666.

Payment on Type I markings requiring retroreflective testing will be made at a 75% rate until passing test results are received.

### **Item 680 - Highway Traffic Signals**

All workers installing electrical materials, including conduit in trenches, services poles and all others system electrical apparatus, will be directly supervised by persons who have completed a TxDOT approved course in electrical underground installations. Furnish evidence of satisfactory completion of the underground electrical installation for roadway illumination and signal control course for all personnel responsible for direct supervision of electrical installation work.

Unless otherwise shown on the plans, provide complete installations of highway traffic signals that consist of the following principal items for traffic signals and flashing beacons:

1. Furnish and install a complete controller cabinet compatible with the existing closed loop system when applicable, steel poles with mast arms, luminaires, photocells, signal cables, signal heads, LEDs, pedestrian signal heads, and pedestrian push buttons and signs that meet the "American with Disabilities Act" (ADA) standards and "Texas Accessibility Standards" (TAS), video imaging vehicle detection systems (VIVDS), ground boxes, conduit runs, striping, curb & gutter, and ADA and TAS compliant wheelchair ramps.
2. Furnish and install steel strain poles, luminaries, photocells, pole mounted flasher controller assembly, signal heads, LEDs, signal cables, conduits, span wires, and pavement markings.

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3. Furnish and install all other items not listed above which are needed to provide for a complete traffic signal installation as shown in the plans; the items needed, can include, but are not limited to, the following: signs, ground rods, roadway lights, damping devices, and/or photoelectric cells. Meters will be mounted at the specified height required by the respective utility company. The work performed and materials furnished will be paid under Item 628, "Electrical Services."

The signal installation will be wired to operate in accordance with the wiring diagram shown in the plans. The contractor will ensure that the timing and phasing are the same as shown in the plans. All timing and phasing will be approved and/or provided by the Transportation Operations Engineer prior to downloading to the controller.

On the terminal block, use the left side for the home runs and the right side for the signal heads. This pattern will be used in all signal installations. For grounding and bonding install a green insulated copper wire no. 6.

### **Item 682 - Vehicle and Pedestrian Signal Heads**

All new signal heads will be covered with burlap from the time of installation until the signal is placed in operation. Provide signal heads made of polycarbonate material and yellow in color. All signal heads will have detachable visors.

Position all vehicle signal section heads and pedestrian signal heads to provide the best view for motorists and pedestrians.

### **Item 730 – Roadside Mowing**

Mow the highway right of way in the project limits a maximum of 2 cycles per year, as directed by the Engineer.

Provide approved mowing equipment capable of mowing on slopes without unduly marring of finished slope surfaces or damaging existing growth. The minimum cutting width should not be less than 5 ft unless otherwise approved.

Mow all areas of existing vegetation and vegetation placed during the project, as directed. The mowing height should be 5 in. unless otherwise directed. Repair portions of sod or grass which are damaged during mowing operations in an acceptable manner.

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Mow as close as possible to all fixed objects, exercising extreme care not to damage trees, plants, shrubs, signs, delineators or other appurtenances which are part of the facility. Hand trim around such objects, unless otherwise specified.

Use safety chains or other manufacturer's safety devices to prevent injury to people or damage to property caused by flying debris propelled out from under rotary mowers. Chains should be a minimum size of 5/16 in. and links spaced side by side around the front, sides and rear of mower. When mowing at the specified cutting height, the chains should be long enough to drag the ground. If at any time it is determined that mowing or rimming equipment is defective to the point that it may affect the quality of work or create unsafe conditions, then immediately repair or replace the equipment.

Remove large debris off the right of way prior to mowing.

**Item 3076 - Dense-Graded Hot-Mix Asphalt**

Use aggregate that meets the SAC-A, only for the final riding surface.

Apply the Bonding Course in accordance with Item 3084.

Substitute Binders (grade dumping) will not be allowed on the final riding surface.

Refer to item 585 for ride quality requirements.

The use of RAP or RAS will not be allowed on the final riding surface.

For Mill inlays sections:

Only mill what can be paved at the end of the workday.

RAP 20% is allowed for TY B mixes, but RAS will not be allowed. Substitute Binders in the intermediate layer (grade dumping) may be allowed when the surface HMA layer is placed not more than 6 months after the intermediate layer is complete or as approved by the engineer.

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**Special Specification 3077 – Superpave Mixtures**

Use aggregate that meets the SAC-A only for final riding surface.

Excess RAP will be retained by the contractor.

The tack coat material shall be placed at a rate of approximately 0.07 gal/sy.

Underseals will be tacked at a rate of 0.04 gal/sy when left open to traffic for more than 14 days.

Waterproof thermal tarps are required on all loads unless otherwise approved by the Engineer.

For mill and inlay sections: Only mill what can be paved by the end of the workday.

The use of RAP, RAS, and/or Substitute Binders will not be allowed on the final riding surface.

Up to 20% of RAP is allowed for Mixture Type SP-B (Intermediate). Substitute Binders (grade dumping) will not be allowed.

Overlay test requirements will only be for the final riding surface.

Mixture Property	Test Method	Surface Mixtures
Critical Fracture Energy (CFE), in.-lb./in. <sup>2</sup> , Min	Tex-248-E <sup>1</sup>	1.0
Crack Progression Rate (CPR), Max		0.45

1) For JMF 2 and greater, Tex-250-F and the IDEAL CT correlation developed during the trial batch may be used to monitor cracking performance. If at any time the minimum correlation limit is not met, use Tex-248-F and the limits above to determine specification compliance.

2) Methylene Blue (AASHTO T 330.07) will be tested for informational purposes only.

**Mixture Design.** During design and production, produce an Aggregate Gradation that does not exceed the values in the table below. Take immediate corrective action if the gradation exceeds the specified limits in the table below. If the

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corrective action does not yield satisfactory results, suspend operations immediately.

Sieve Size	SP-B	SP-C
#8 % Passing	32	36

Asphalt content will be determined by nuclear gauge.

**Ride Quality.** Measure ride quality in accordance with Item 585, "Ride Quality for Pavement Surface" or as directed by the Engineer.

**Item 3084 – Bonding Course**

An average rate of 0.20 GAL/SY was used for estimation purposes. Contractor shall choose an option shown below and bid accordingly.

OPTIONS:

MATERIAL	MINIMUM TYPICAL APPLICATION RATE (GAL/SY)
TRAIL – Emulsified Asphalt	#
TRAIL – Hot Applied	#
Spray Applied Underseal Membrane	#

# Typical Application Rate may vary from 0.07 to 0.20 GAL/SY depending on option.

Apply bonding course at every intermediate layer, unless otherwise directed. The type of tack coat must be approved by the Engineer.

The Engineer may adjust the application rates as per field conditions.

Shear Bond Strength Test will be performed for informational purposes, and will not be used for specification compliance. The target shear bond strength is a minimum of 40 psi and for final surface layer a minimum of 50 psi.

**Item 6001 - Portable Changeable Message Sign**

Provide Two (2) electronic portable changeable message signs as required by the Engineer. Provide backups and keep operational and available on the jobsite at all times during traffic control operations. The electronic portable changeable message signs will be made available for utilization for the entire duration of the project, including all alternative locations.

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**Item 6158 – Trailer Mounted Solar Powered Radar Speed Control Monitor**

Provide Two (2) trailer mounted solar powered radar speed detection radar unit with light emitting diode (LED) display panel. Install as per plans or as directed by The Engineer.

Provide a display panel that consist of two characters, each a minimum of 18 in. height. Display Panel shall be in amber color and visible from a minimum of 600 Ft. Provide a display panel that is equipped to alert motorist when they are traveling over the posted speed, either by flashing the traveling speed, changing the display color, or by blinking out the display.

**Item 6185 – Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)**

Provide four (4) truck mounted attenuators (TMA) or as required by the Engineer. Plus, provide backup and always keep operational and available on the jobsite at all times during traffic control operations.

The truck mounted attenuator will be made available for utilization for the entire duration of the project, including all alternative locations.





# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0037-08-042

DISTRICT Laredo  
HIGHWAY US 83

COUNTY Dimmit

CONTROL SECTION JOB				0037-06-106		0037-08-042		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00133126		A00119320			
COUNTY				Dimmit		Dimmit			
HIGHWAY				US 83		US 83			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	100-6002	PREPARING ROW	STA	32.500		559.210		591.710	
	104-6009	REMOVING CONC (RIPRAP)	SY			354.000		354.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY			2,025.000		2,025.000	
	105-6041	REMOVING STAB BASE AND ASPH PAV(8")	SY	15,195.000		307,886.000		323,081.000	
	110-6001	EXCAVATION (ROADWAY)	CY	719.000		9,386.000		10,105.000	
	132-6004	EMBANKMENT (FINAL)(DENS CONT)(TY B)	CY	5,314.000		39,671.000		44,985.000	
	164-6034	DRILL SEEDING (PERM) (RURAL) (SANDY)	AC	4.210		65.400		69.610	
	216-6001	PROOF ROLLING	HR	35.100		463.000		498.100	
	247-6057	FL BS (CMP IN PLC)(TYE GR1-2)(FNAL POS)	CY	586.000		1,262.000		1,848.000	
	276-6226	CEM TRT(PLNT MX) (CL N)(TY E)(GR 4)(8")	SY	26,498.000		363,730.000		390,228.000	
	310-6012	PRIME COAT (RC-250)	GAL	5,286.000		70,543.000		75,829.000	
	316-6128	AGGR(TY-PB GR-5 SAC-A)	CY	191.000		2,475.000		2,666.000	
	354-6044	PLANE ASPH CONC PAV (7")	SY			4,688.000		4,688.000	
	354-6066	PLANE ASPH CONC PAV (0" TO 7")	SY			3,161.000		3,161.000	
	401-6001	FLOWABLE BACKFILL	CY			27.000		27.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF			608.000		608.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	48.000		120.000		168.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	26.400		26.400		52.800	
	429-6002	CONC STR REPAIR (EPOXY MORTAR)	SF			53.500		53.500	
	429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF			20.000		20.000	
	432-6001	RIPRAP (CONC)(4 IN)	CY			72.700		72.700	
	432-6002	RIPRAP (CONC)(5 IN)	CY	9.500		251.400		260.900	
	432-6006	RIPRAP (CONC)(CL B)	CY	2.100		5.250		7.350	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY			134.000		134.000	
	451-6019	RETROFIT RAIL (TY T631)	LF			1,918.700		1,918.700	
	462-6007	CONC BOX CULV (5 FT X 3 FT)	LF			281.000		281.000	
	462-6012	CONC BOX CULV (6 FT X 5 FT)	LF			103.000		103.000	
	462-6013	CONC BOX CULV (6 FT X 6 FT)	LF			198.000		198.000	
	462-6045	CONC BOX CULV (3 FT X 2 FT)(EXTEND)	LF			54.000		54.000	
	462-6048	CONC BOX CULV (4 FT X 3 FT)(EXTEND)	LF	43.000		32.000		75.000	
	462-6049	CONC BOX CULV (4 FT X 4 FT)(EXTEND)	LF			8.000		8.000	
	462-6050	CONC BOX CULV (5 FT X 2 FT)(EXTEND)	LF			26.000		26.000	
	462-6052	CONC BOX CULV (5 FT X 4 FT)(EXTEND)	LF			21.000		21.000	
	462-6053	CONC BOX CULV (5 FT X 5 FT)(EXTEND)	LF			70.000		70.000	
	462-6054	CONC BOX CULV (6 FT X 3 FT)(EXTEND)	LF			19.000		19.000	
	462-6056	CONC BOX CULV (6 FT X 5 FT)(EXTEND)	LF			82.000		82.000	
	462-6057	CONC BOX CULV (6 FT X 6 FT)(EXTEND)	LF			72.000		72.000	



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0037-08-042

DISTRICT Laredo  
HIGHWAY US 83

COUNTY Dimmit

CONTROL SECTION JOB				0037-06-106		0037-08-042		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00133126		A00119320			
COUNTY				Dimmit		Dimmit			
HIGHWAY				US 83		US 83			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	462-6063	CONC BOX CULV (8 FT X 4 FT)(EXTEND)	LF			98.000		98.000	
	462-6067	CONC BOX CULV (8 FT X 8 FT)(EXTEND)	LF			80.000		80.000	
	462-6068	CONC BOX CULV (9 FT X 5 FT)(EXTEND)	LF			102.000		102.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF			581.000		581.000	
	464-6007	RC PIPE (CL III)(30 IN)	LF			316.000		316.000	
	464-6031	RC PIPE (ARCH)(CL III)(DES 2)	LF			62.000		62.000	
	465-6153	INLET (COMPL)(PAZD)(RC)(4FTX4FT)	EA			1.000		1.000	
	466-6143	WINGWALL (FW - 0) (HW=11 FT)	EA			1.000		1.000	
	466-6186	WINGWALL (PW - 2) (HW=11 FT)	EA			1.000		1.000	
	466-6193	WINGWALL (PW - 2) (HW=4 FT)	EA			2.000		2.000	
	466-6197	WINGWALL (PW - 2) (HW=8 FT)	EA			1.000		1.000	
	466-6198	WINGWALL (PW - 2) (HW=9 FT)	EA			1.000		1.000	
	467-6109	SET (TY I)(S=3 FT)(HW= 3 FT)(6:1)(C)	EA			1.000		1.000	
	467-6112	SET (TY I)(S=3 FT)(HW= 4 FT)(4:1)(C)	EA			2.000		2.000	
	467-6115	SET (TY I)(S=3 FT)(HW= 4 FT)(6:1)(C)	EA			5.000		5.000	
	467-6143	SET (TY I)(S= 4 FT)(HW= 4 FT)(3:1) (C)	EA			1.000		1.000	
	467-6144	SET (TY I)(S= 4 FT)(HW= 4 FT)(4:1) (C)	EA			1.000		1.000	
	467-6152	SET (TY I)(S= 4 FT)(HW= 5 FT)(6:1) (C)	EA	2.000		2.000		4.000	
	467-6154	SET (TY I)(S= 4 FT)(HW= 6 FT)(3:1) (C)	EA			4.000		4.000	
	467-6177	SET (TY I)(S= 5 FT)(HW= 4 FT)(4:1) (C)	EA			4.000		4.000	
	467-6179	SET (TY I)(S= 5 FT)(HW= 4 FT)(6:1) (C)	EA			4.000		4.000	
	467-6185	SET (TY I)(S= 5 FT)(HW= 6 FT)(3:1) (C)	EA			2.000		2.000	
	467-6186	SET (TY I)(S= 5 FT)(HW= 6 FT)(4:1) (C)	EA			1.000		1.000	
	467-6188	SET (TY I)(S= 5 FT)(HW= 6 FT)(6:1) (C)	EA			11.000		11.000	
	467-6214	SET (TY I)(S= 6 FT)(HW= 4 FT)(6:1) (C)	EA			1.000		1.000	
	467-6220	SET (TY I)(S= 6 FT)(HW= 5 FT)(6:1) (C)	EA			1.000		1.000	
	467-6224	SET (TY I)(S= 6 FT)(HW= 6 FT)(4:1) (C)	EA			3.000		3.000	
	467-6228	SET (TY I)(S= 6 FT)(HW= 7 FT)(4:1) (C)	EA			3.000		3.000	
	467-6276	SET (TY I)(S= 8 FT)(HW= 5 FT)(4:1) (C)	EA			6.000		6.000	
	467-6280	SET (TY I)(S= 8 FT)(HW= 6 FT)(4:1) (C)	EA			4.000		4.000	
	467-6308	SET (TY I)(S= 9 FT)(HW= 7 FT)(4:1) (C)	EA			12.000		12.000	
	467-6390	SET (TY II) (24 IN) (RCP) (4: 1) (C)	EA			1.000		1.000	
	467-6391	SET (TY II) (24 IN) (RCP) (4: 1) (P)	EA			2.000		2.000	
	467-6394	SET (TY II) (24 IN) (RCP) (6: 1) (C)	EA			1.000		1.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA			22.000		22.000	
	467-6419	SET (TY II) (30 IN) (RCP) (4: 1) (C)	EA			2.000		2.000	
	467-6422	SET (TY II) (30 IN) (RCP) (6: 1) (C)	EA			6.000		6.000	

DISTRICT	COUNTY	CCSJ	SHEET
Laredo	Dimmit	0037-08-042	23A



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0037-08-042

DISTRICT Laredo  
HIGHWAY US 83

COUNTY Dimmit

CONTROL SECTION JOB				0037-06-106		0037-08-042		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00133126		A00119320			
COUNTY				Dimmit		Dimmit			
HIGHWAY				US 83		US 83			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	479-6006	ADJUSTING INLET (CAP)	EA			1.000		1.000	
	480-6001	CLEAN EXIST CULVERTS	EA			1.000		1.000	
	496-6004	REMOV STR (SET)	EA			28.000		28.000	
	496-6005	REMOV STR (WINGWALL)	EA			38.000		38.000	
	496-6007	REMOV STR (PIPE)	LF			970.000		970.000	
	496-6008	REMOV STR (BOX CULVERT)	LF			154.000		154.000	
	496-6016	REMOV STR (PIPE)	EA			3.000		3.000	
	500-6001	MOBILIZATION	LS			1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3.000		18.000		21.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156.000		936.000		1,092.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	156.000		936.000		1,092.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	315.000		3,465.000		3,780.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	315.000		3,465.000		3,780.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	509.000		22,132.000		22,641.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	509.000		22,132.000		22,641.000	
	508-6003	CONSTRUCTING DETOURS (TY 1)	SY	1,219.000		32,672.000		33,891.000	
	512-6001	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	LF	3,250.000		14,968.000		18,218.000	
	512-6025	PORT CTB (MOVE)(SGL SLP)(TY 1)	LF			103,200.000		103,200.000	
	512-6037	PORT CTB (STKPL)(SGL SLP)(TY 1)	LF	3,250.000		14,968.000		18,218.000	
	514-6001	PERM CTB (SGL SLOPE) (TY 1) (42 )	LF			255.000		255.000	
	514-6012	PERM CTB (SGL SLOPE) (TY 4) (54 )	LF			888.000		888.000	
	530-6002	INTERSECTIONS (ACP)	SY			767.000		767.000	
	530-6004	DRIVEWAYS (CONC)	SY			1,973.000		1,973.000	
	530-6005	DRIVEWAYS (ACP)	SY			1,847.000		1,847.000	
	533-6001	RUMBLE STRIPS (SHOULDER)	LF	3,796.000		100,024.000		103,820.000	
	533-6002	RUMBLE STRIPS (CENTERLINE)	LF	3,796.000		98,284.000		102,080.000	
	540-6002	MTL W-BEAM GD FEN (STEEL POST)	LF			1,425.000		1,425.000	
	540-6009	MTL BEAM GD FEN TRANS (T6)	EA			4.000		4.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF	1,350.000		3,062.000		4,412.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA			12.000		12.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA	4.000		8.000		12.000	
	545-6003	CRASH CUSH ATTEN (MOVE & RESET)	EA			44.000		44.000	
	545-6005	CRASH CUSH ATTEN (REMOVE)	EA			28.000		28.000	
	545-6019	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	EA			27.000		27.000	
	545-6025	CRASH CUSHION ATTEN (INSTALL)(REACT)(N)	EA			2.000		2.000	
	610-6286	IN RD IL (TY SA) 50T-8 (400W EQ) LED	EA	6.000		11.000		17.000	
	610-6287	IN RD IL (TY SA) 50T-8-8 (400W EQ) LED	EA			4.000		4.000	

DISTRICT	COUNTY	CCSJ	SHEET
Laredo	Dimmit	0037-08-042	23B



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0037-08-042

DISTRICT Laredo  
HIGHWAY US 83

COUNTY Dimmit

CONTROL SECTION JOB				0037-06-106		0037-08-042		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00133126		A00119320			
COUNTY				Dimmit		Dimmit			
HIGHWAY				US 83		US 83			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	618-6023	CONDT (PVC) (SCH 40) (2")	LF	1,955.000		3,575.000		5,530.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF			285.000		285.000	
	620-6007	ELEC CONDR (NO.8) BARE	LF	1,330.000		3,870.000		5,200.000	
	620-6008	ELEC CONDR (NO.8) INSULATED	LF	2,660.000		10,080.000		12,740.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	740.000		40.000		780.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	20.000		20.000		40.000	
	621-6002	TRAY CABLE (3 CONDR) (12 AWG)	LF	2,250.000		450.000		2,700.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA	4.000		7.000		11.000	
	624-6008	GROUND BOX TY C (162911)W/APRON	EA	1.000		1.000		2.000	
	625-6003	ZINC-COAT STL WIRE STRAND (3/8")	LF	185.000		165.000		350.000	
	628-6045	ELC SRV TY A 240/480 060(NS)SS(E)SP(O)	EA			2.000		2.000	
	628-6298	ELC SRV TY T 120/240 000(NS)GS(L)SP(O)	EA	1.000		1.000		2.000	
	636-6001	ALUMINUM SIGNS (TY A)	SF			32.000		32.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	10.000		85.000		95.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1.000		7.000		8.000	
	644-6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	EA			2.000		2.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	1.000		6.000		7.000	
	644-6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	EA			1.000		1.000	
	644-6050	IN SM RD SN SUP&AM TYS80(2)SA(P)	EA			1.000		1.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	17.000		106.000		123.000	
	658-6053	INSTL OM ASSM (OM-3L)(TWT)GND	EA	2.000		20.000		22.000	
	658-6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	2.000		36.000		38.000	
	658-6100	INSTL OM ASSM (OM-2Z)(WFLX)GND(BI)	EA	2.000		20.000		22.000	
	662-6008	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	LF	14,004.000		257,280.000		271,284.000	
	662-6035	WK ZN PAV MRK NON-REMOV (Y)6"(BRK)	LF			10,630.000		10,630.000	
	662-6037	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	LF	14,004.000		243,860.000		257,864.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	700.000		13,346.000		14,046.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	341.000		1,522.000		1,863.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	3,183.000		3,250.000		6,433.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	950.000		24.000		974.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	3.000		26.000		29.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	2.000		5.000		7.000	
	666-6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	18.000				18.000	
	666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	260.000		379.000		639.000	
	666-6225	PAVEMENT SEALER 6"	LF	22,644.000		246,756.000		269,400.000	
	666-6226	PAVEMENT SEALER 8"	LF	1,061.000		3,250.000		4,311.000	
	666-6230	PAVEMENT SEALER 24"	LF	1,210.000		403.000		1,613.000	

DISTRICT	COUNTY	CCSJ	SHEET
Laredo	Dimmit	0037-08-042	23C



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0037-08-042

DISTRICT Laredo  
HIGHWAY US 83

COUNTY Dimmit

CONTROL SECTION JOB				0037-06-106		0037-08-042		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00133126		A00119320			
COUNTY				Dimmit		Dimmit			
HIGHWAY				US 83		US 83			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	540.000		13,950.000		14,490.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	8,659.000		110,896.000		119,555.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF			2,260.000		2,260.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	13,104.000		118,128.000		131,232.000	
	672-6007	REFL PAV MRKR TY I-C	EA	78.000		1,040.000		1,118.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	449.000		3,070.000		3,519.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF	5,630.000		113,491.000		119,121.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF			1,940.000		1,940.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF			100.000		100.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA			2.000		2.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA			2.000		2.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	3.000		19.000		22.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)	EA	2.000		4.000		6.000	
	678-6033	PAV SURF PREP FOR MRK (RPM)	EA	527.000		4,110.000		4,637.000	
	680-6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1.000		1.000		2.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA	4.000		4.000		8.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA	2.000		2.000		4.000	
	684-6008	TRF SIG CBL (TY A)(12 AWG)(3 CONDR)	LF	340.000		340.000		680.000	
	685-6001	INSTALL RDS FLASH BEACON ASSEMBLY	EA			5.000		5.000	
	685-6003	REMOVE RDS FLASH BEACON ASSEMBLY	EA			6.000		6.000	
	686-6008	INS TRF SIG PL AM (S)STR(TY B)LUM	EA	2.000		2.000		4.000	
	690-6100	REMOVE TRAFFIC SIGNAL	EA			1.000		1.000	
	730-6002	FULL - WIDTH MOWING	AC	8.000		534.000		542.000	
	752-6010	TREE REMOVAL (36" - 42" DIA)	EA			3.000		3.000	
	785-6002	BRIDGE JOINT REPAIR (POLYMER)	LF			966.000		966.000	
	786-6001	CARBON FIBER REINF POLYMER PROTECTION	SF			12.000		12.000	
	3076-6007	D-GR HMA TY-B SAC-B PG70-22	TON	6,369.000		93,623.000		99,992.000	
	3077-6022	SP MIXES SP-C SAC-A PG70-22	TON	3,030.000		41,123.000		44,153.000	
	3077-6023	SP MIXES SP-C SAC-B PG70-22	TON	3,075.000		42,632.000		45,707.000	
	3084-6001	BONDING COURSE	GAL	10,633.000		146,185.000		156,818.000	
	5109-6001	ADJ WTR VALVE COVER AND VALVE STACKS	EA			9.000		9.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000		4.000	
	6158-6001	TMSP RADAR SPEED CONTROL MONITOR	EA			2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	60.000		465.000		525.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	30.000		45.000		75.000	
	6376-6001	DRIVER FEEDBACK SPEED SIGN ASSM (SOLAR)	EA			2.000		2.000	
	7000-6002	REML & DISPL DRIFTWOOD & DEBRIS	LS			1.000		1.000	



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0037-08-042

DISTRICT Laredo  
HIGHWAY US 83

COUNTY Dimmit

CONTROL SECTION JOB				0037-06-106		0037-08-042		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00133126		A00119320			
COUNTY				Dimmit		Dimmit			
HIGHWAY				US 83		US 83			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	08	CONTRACTOR FORCE ACCOUNT WORK (NON-PARTICIPATING)	LS			1.000		1.000	
		CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS			1.000		1.000	
		CONTRACTOR FORCE ACCOUNT LAW ENFORCEMENT (NON-PARTICIPATING)	LS			1.000		1.000	
		CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS			1.000		1.000	







CCSJ:0037-08-042, ETC.

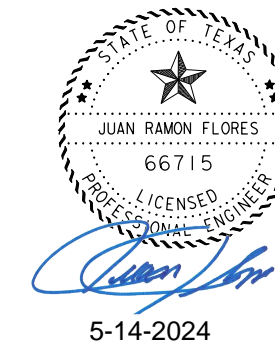
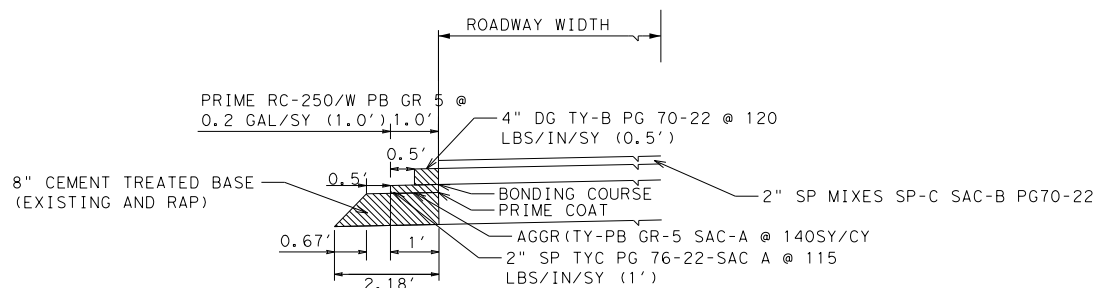
PAVEMENT SLOPE QUANTITIES

CSJ:0037-06-106 FROM STA 1504+42.08 TO STA 1517+93.76-----CSJ:0037-08-042 FROM STA 1517+93.76 TO STA 2077+15.08

US83 QUANTITIES(2)	OLD US83 QUANTITIES(1)	FM133 QUANTITIES(2)	US83 QUANTITIES(1)	CSJ-0037-08-042(2)	CSJ-0037-06-106(1)
3076-6007 DG-GR HMA TY-B SAC-B PG70-22 4" @ 120 LBS/IN/SY 0.5' X 55921.32 LF/9= 3107 SY 3107 X 480 / 2000 X 2(LT&RT) = 1491 TONS	3076-6007 DG-GR HMA TY-B SAC-B PG70-22 4" @ 120 LBS/IN/SY 0.5' X 332' LF/9 = 18 SY 18 X 480 / 2000 X 2(LT&RT) = 9 TONS	3076-6007 DG-GR HMA TY-B SAC-B PG70-22 4" @ 120 LBS/IN/SY 0.5' X 648' / 9 = 36 SY 36 X 480 / 2000 X 2(LT&RT) = 17 TONS	3076-6007 DG-GR HMA TY-B SAC-B PG70-22 4" @ 120 LBS/IN/SY 0.5' X 1351.68 LF/9= 75 SY 75 X 480 / 2000 X 2(LT&RT) = 36 TONS	3076-6007 DG-GR HMA TY-B SAC-B PG70-22 4" @ 120 LBS/IN/SY US 83: 1491 + FM 133: 17 PROJECT TOTALS = 1508 TONS	3076-6007 DG-GR HMA TY-B SAC-B PG70-22 4" @ 120 LBS/IN/SY US 83: 36 + OLD US83: 9 PROJECT TOTALS = 45 TONS
3084-6001 BONDING COURSE @ .2 GL/SY 0.5' X 55921.32 LF/9= 3107 SY 3107 X 0.2 X 2 (LT&RT) = 1243 GAL	3084-6001 BONDING COURSE @ .2 GL/SY 0.5' X 332' LF/9= 18 SY 18 X 0.2 X 2 (LT&RT) = 7 GAL	3084-6001 BONDING COURSE @ .2 GL/SY 0.5' X 648' LF/9= 36 SY 36 X 0.2 X 2 (LT&RT) = 14 GAL	3084-6001 BONDING COURSE @ .2 GL/SY 0.5' X 1351.68 LF/9= 75 SY 75 X 0.2 X 2 (LT&RT) = 30 GAL	3084-6001 BONDING COURSE @ .2 GL/SY US 83: 1243 + FM 133: 14 PROJECT TOTALS = 1257 GAL	3084-6001 BONDING COURSE @ .2 GL/SY US 83: 30 + OLD US83: 7 PROJECT TOTALS = 37 GAL
3077-6023 SP MIXES SP-C SAC-B PG70-22 2" @ 120 LBS/IN/SY 1.0' X 55921.32 LF/9= 6213 SY 6213 X 240 / 2000 X 2(LT&RT) = 1491.2 TONS	3077-6023 SP MIXES SP-C SAC-B PG70-22 2" @ 120 LBS/IN/SY 1.0' X 332' LF/9= 37 SY 37 X 240 / 2000 X 2(LT&RT) = 8.9 TONS	3077-6023 SP MIXES SP-C SAC-B PG70-22 2" @ 120 LBS/IN/SY 1.0' X 648' LF/9= 72 SY 72 X 240 / 2000 X 2(LT&RT) = 17.3 TONS	3077-6023 SP MIXES SP-C SAC-B PG70-22 2" @ 120 LBS/IN/SY 1.0' X 1351.68 LF/9= 150 SY 150 X 240 / 2000 X 2(LT&RT) = 36.0 TONS	3077-6023 SP MIXES SP-C SAC-B PG70-22 2" @ 120 LBS/IN/SY US 83: 1491.2 + FM 133: 17.3 PROJECT TOTALS = 1508.5 TONS	3077-6023 SP MIXES SP-C SAC-B PG70-22 2" @ 120 LBS/IN/SY US 83: 36.0 + OLD US83: 8.9 PROJECT TOTALS = 44.9 TONS
316-6128 AGGR(TY-PB GR-5 SAC-A @ 140SY/CY 1.0' X 55921.32' /9 = 6213.5 SY 6213.5 / 140 X 2 (LT&RT) = 44.4 CY	316-6128 AGGR(TY-PB GR-5 SAC-A @ 140SY/CY 1.0' X 332' /9 = 36.9 SY 36.9 / 140 X 2 (LT&RT) = 0.5 CY	316-6128 AGGR(TY-PB GR-5 SAC-A @ 140SY/CY 1.0' X 648' /9 = 72 SY 72 / 140 X 2 (LT&RT) = 1.0 CY	316-6128 AGGR(TY-PB GR-5 SAC-A @ 140SY/CY 1.0' X 1351.68' /9 = 150.2 SY 150.2 / 140 X 2 (LT&RT) = 2.2 CY	316-6128 AGGR(TY-PB GR-5 SAC-A @ 140SY/CY US 83: 44.4 + FM 133: 1.0 PROJECT TOTALS = 45.4 CY	316-6128 AGGR(TY-PB GR-5 SAC-A @ 140SY/CY US 83: 2.2 + OLD US83: 0.5 PROJECT TOTALS = 2.7 CY
310-6012 PRIME COAT (RC 250) @ 0.2 GAL/SY 2.18' X 55921.32' /9 = 13545 SY 13545 X 0.2 X 2 (LT&RT) = 5418 GAL	310-6012 PRIME COAT (RC 250) @ 0.2 GAL/SY 2.18' X 332' /9 = 80 SY 80 X 0.2 X 2 (LT&RT) = 32 GAL	310-6012 PRIME COAT (RC 250) @ 0.2 GAL/SY 2.18' X 648' /9 = 157 SY 157 X 0.2 X 2 (LT&RT) = 63 GAL	310-6012 PRIME COAT (RC 250) @ 0.2 GAL/SY 2.18' X 1351.68' /9 = 327 SY 327 X 0.2 X 2 (LT&RT) = 131 GAL	310-6012 PRIME COAT (RC 250) @ 0.2 GAL/SY US 83: 5418 + FM 133: 63 PROJECT TOTALS = 5481 GAL	310-6012 PRIME COAT (RC 250) @ 0.2 GAL/SY US 83: 131 + OLD US83: 32 PROJECT TOTALS = 163 GAL
276-6226 CEMENT TREAT(PLNT MX) (CL N) (TY E) (GR4) (8") 1.5'+(0.67'/2) X 55921.32' / 9 = 11402 SY 11402 X 2 (LT&RT) = 22803 SY	276-6226 CEMENT TREAT(PLNT MX) (CL N) (TY E) (GR4) (8") 1.5'+(0.67'/2) X 332' / 9 = 68 SY 68 X 2 (LT&RT) = 135 SY	276-6226 CEMENT TREAT(PLNT MX) (CL N) (TY E) (GR4) (8") 1.5'+(0.67'/2) X 648' / 9 = 132 SY 132 X 2 (LT&RT) = 264 SY	276-6226 CEMENT TREAT(PLNT MX) (CL N) (TY E) (GR4) (8") 1.5'+(0.67'/2) X 1351.68' / 9 = 276 SY 276 X 2 (LT&RT) = 551 SY	276-6226 CEMENT TREAT(PLNT MX) (CL N) (TY E) (GR4) (8") US 83: 22803 + FM 133: 264 PROJECT TOTALS = 23067 SY	276-6226 CEMENT TREAT(PLNT MX) (CL N) (TY E) (GR4) (8") US 83: 551 + OLD US83: 135 PROJECT TOTALS = 686 SY

(1) = CSJ:0037-06-106  
(2) = CSJ:0037-08-042

CSJ-0037-08-042, ETC. TOTALS	
3076-6007 DG-GR HMA TY-B SAC-B PG70-22 4" @ 120 LBS/IN/SY CSJ:0037-06-106 45 TONS CSJ:0037-08-042 1508 TONS PROJECT TOTALS = 1553 TONS	
3084-6001 BONDING COURSE @ .2 GL/SY CSJ:0037-06-106 37 GAL CSJ:0037-08-042 1257 GAL PROJECT TOTALS = 1294 GAL	
316-6128 AGGR(TY-PB GR-5 SAC-A @ 140SY/CY CSJ:0037-06-106 2.7 TONS CSJ:0037-08-042 45.4 TONS PROJECT TOTALS = 48.1 TONS	
3077-6023 SP MIXES SP-C SAC-B PG70-22 2" @ 120 LBS/IN/SY CSJ:0037-06-106 44.9 TONS CSJ:0037-08-042 1508.5 TONS PROJECT TOTALS = 1553.4 TONS	
310-6012 PRIME COAT (RC 250) @ 0.2 GAL/SY CSJ:0037-06-106 163 GAL CSJ:0037-08-042 5481 GAL PROJECT TOTALS = 5644 GAL	
276-6226 CEMENT TREAT(PLNT MX) (CL N) (TY E) (GR4) (8") CSJ:0037-06-106 686 SY CSJ:0037-08-042 23067 SY PROJECT TOTALS = 23753 SY	



SHEET 1 OF 1


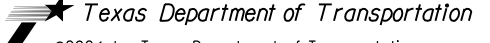
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation, all rights reserved			
<b>US 83 PAVEMENT SLOPE QUANTITIES</b>			
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42	SHEET NO. 26	
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT	HIGHWAY NO. US 83
CONTROL 0037	SECTION 08	JOB 042, ETC.	

SUMMARY OF BRIDGE CLASS CULVERT ITEMS														
LOCATION	DESCRIPTION	NBI #	402	429	432	462	462	462	462	462	466	466	466	
			6001	6007	6002	6013	6053	6057	6063	6067	6068	6143	6186	6197
			TRENCH EXCAVATION PROTECTION	CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (CONC)(5 IN)	CONC BOX CULV (6 FT X 6 FT)	CONC BOX CULV (5 FT X 5 FT)(EXTEND)	CONC BOX CULV (6 FT X 6 FT)(EXTEND)	CONC BOX CULV (8 FT X 4 FT)(EXTEND)	CONC BOX CULV (8 FT X 8 FT)(EXTEND)	CONC BOX CULV (9 FT X 5 FT)(EXTEND)	WINGWALL (FW - 0) (HW=11 FT)	WINGWALL (PW - 2) (HW=11 FT)	WINGWALL (PW - 2) (HW=8 FT)
CL STA			LF	SF	CY	LF	LF	LF	LF	LF	LF	EA	EA	EA
CSJ:0037-06-106 TOTALS			0	0	0	0	0	0	0	0	0	0	0	0
1616+38.81	Culvert 2-4	22-064-0-0037-08-027	20	20.0	26.2					80		1	1	
1709+92.91	Culvert 2-6	22-064-0-0037-08-028	166			198		72						1
1793+21.21	Culvert 2-10	22-064-0-0037-08-072			48.1						102			
1812+30.63	Culvert 2-11	22-064-0-0037-08-073			24.9				68					
1907+08.22	Culvert 2-15	22-064-0-0037-08-127			40.2		70							
CSJ:0037-08-042 TOTALS			186	20.0	139.4	198	70	72	68	80	102	1	1	1
PROJECT TOTALS			186	20.0	139.4	198	70	72	68	80	102	1	1	1



SUMMARY OF BRIDGE CLASS CULVERT ITEMS								
LOCATION	DESCRIPTION	NBI #	466	467	467	467	496	
			6198	6188	6276	6280	6308	6005
			WINGWALL (PW - 2) (HW=9 FT)	SET (TY I)(S= 5 FT)(HW= 6 FT)(6:1) (C)	SET (TY I)(S= 8 FT)(HW= 5 FT)(4:1) (C)	SET (TY I)(S= 8 FT)(HW= 6 FT)(4:1) (C)	SET (TY I)(S= 9 FT)(HW= 7 FT)(4:1) (C)	REMOV STR (WINGWALL)
CL STA			EA	EA	EA	EA	EA	EA
CSJ:0037-06-106 TOTALS			0	0	0	0	0	0
1616+38.81	Culvert 2-4	22-064-0-0037-08-027						2
1709+93	Culvert 2-6	22-064-0-0037-08-028	1					2
1793+21	Culvert 2-10	22-064-0-0037-08-072					12	2
1812+31	Culvert 2-11	22-064-0-0037-08-073			4	4		2
1907+08	Culvert 2-15	22-064-0-0037-08-127		10				2
CSJ:0037-08-042 TOTALS			1	10	4	4	12	10
PROJECT TOTALS			1	10	4	4	12	10

SUMMARY OF BRIDGE ITEMS						
DESCRIPTION	LOCATION/BRIDGE ELEMENT		429	451	785	786
			6002	6019	6002	6001
			CONC STR REPAIR (EPOXY MORTAR)	RETROFIT RAIL (TY T631)	BRIDGE JOINT REPAIR (POLYMER)	CARBON FIBER REINF POLYMER PROTECTION
	From Sta.	To Sta.	SF	LF	LF	SF
SAN ROQUE BRIDGE (NBI: 22-064-0-0037-08-029)	1777+36.73	1786+91.81				
	DECK SPANS			1918.7	966	
	ABUTMENT		4			
	BENTS		49.5			12
CHANNEL						
PROJECT TOTALS (CSJ:0037-08-042)			53.5	1918.7	966	12

SHEET 1 OF 1



NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SUMMARY OF BRIDGE/</b> <b>BRIDGE CLASS CULVERT</b> <b>QUANTITIES</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	27	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

SUMMARY OF DRAINAGE ITEMS																					
LOCATION	DESCRIPTION	402	432	462	462	462	462	462	462	462	462	462	462	464	464	464	465	466	467	467	
		6001	6002	6007	6012	6045	6048	6049	6050	6052	6054	6056	6063	6005	6007	6031	6153	6193	6109	6112	6115
		TRENCH EXCAVATION PROTECTION	RIPRAP (CONC)(5 IN)	CONC BOX CULV (5 FT X 3 FT)	CONC BOX CULV (6 FT X 5 FT)	CONC BOX CULV (3 FT X 2 FT)(EXTEND)	CONC BOX CULV (4 FT X 3 FT)(EXTEND)	CONC BOX CULV (4 FT X 4 FT)(EXTEND)	CONC BOX CULV (5 FT X 2 FT)(EXTEND)	CONC BOX CULV (5 FT X 4 FT)(EXTEND)	CONC BOX CULV (6 FT X 3 FT)(EXTEND)	CONC BOX CULV (6 FT X 5 FT)(EXTEND)	CONC BOX CULV (8 FT X 4 FT)(EXTEND)	RC PIPE (CL III)(24 IN)	RC PIPE (CL III)(30 IN)	RC PIPE (ARCH)(CL III)(DES 2)	INLET (COMPL)(PAZD)(RC)(4FTX4FT)	WINGWALL (PW - 2) (HW=4 FT)	SET (TY I)(S=3 FT)(HW= 3 FT)(6:1)(C)	SET (TY I)(S=3 FT)(HW= 4 FT)(4:1)(C)	SET (TY I)(S=3 FT)(HW= 4 FT)(6:1)(C)
		LF	CY	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	
C/L Sta.																					
1501+92	Culvert 1-1 (INCIDENTAL WORK)		9.5				43														
CSJ:0037-06-106 TOTALS		0	9.5	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1523+61.56	Culvert 2-1	68	19.2		103							82									
1529+95.52	Culvert 2-2		10.2								19										
1564+48.86	Culvert 2-3									26						62	1	2			
1667+67.15	Culvert 2-5		11.5					8						30							
1721+98.69	Culvert 2-7		4.3			17														1	1
1737+17.33	Culvert 2-8	100	13.0	201																	
1753+00.82	Culvert 2-9		3.9			10														1	1
1830+64.23	Culvert 2-12		11.2								13										
1864+06.92	Culvert 2-13		6.4							8											
1957+54.88	Culvert 2-16		4.4			17													1		1
1989+27.74	Culvert 2-17	120	7.2	80																	
2007+13.31	Culvert 2-18		5.8			10															2
2014+56.57	Culvert 2-19		8.1					16													
2035+13.49	Culvert 2-20														73						
2040+97.27	Culvert 2-21		7.0					16													
2048+84.51	Culvert 2-22	60																			
2055+69.45	Culvert 2-23	74														160					
CSJ:0037-08-042 TOTALS		422	112.2	281	103	54	32	8	26	21	19	82	30	73	316	62	1	2	1	2	5
PROJECT TOTALS		422	122	281	103	54	75	8	26	21	19	82	30	73	316	62	1	2	1	2	5

NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SUMMARY OF</b> <b>DRAINAGE QUANTITIES</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		28
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

SUMMARY OF DRAINAGE ITEMS																					
LOCATION	DESCRIPTION	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467	467
		6143	6144	6152	6154	6177	6179	6185	6186	6188	6214	6220	6224	6228	6276	6390	6394	6419	6422	479	496
		SET (TY I)(S= 4 FT)(HW= 4 FT)(3:1) (C)	SET (TY I)(S= 4 FT)(HW= 4 FT)(4:1) (C)	SET (TY I)(S= 4 FT)(HW= 5 FT)(6:1) (C)	SET (TY I)(S= 4 FT)(HW= 6 FT)(3:1) (C)	SET (TY I)(S= 5 FT)(HW= 4 FT)(4:1) (C)	SET (TY I)(S= 5 FT)(HW= 4 FT)(6:1) (C)	SET (TY I)(S= 5 FT)(HW= 6 FT)(3:1) (C)	SET (TY I)(S= 5 FT)(HW= 6 FT)(4:1) (C)	SET (TY I)(S= 5 FT)(HW= 6 FT)(6:1) (C)	SET (TY I)(S= 5 FT)(HW= 6 FT)(6:1) (C)	SET (TY I)(S= 6 FT)(HW= 4 FT)(6:1) (C)	SET (TY I)(S= 6 FT)(HW= 5 FT)(6:1) (C)	SET (TY I)(S= 6 FT)(HW= 6 FT)(4:1) (C)	SET (TY I)(S= 6 FT)(HW= 7 FT)(4:1) (C)	SET (TY I)(S= 8 FT)(HW= 5 FT)(4:1) (C)	SET (TY II) (24 IN) (RCP) (4: 1) (C)	SET (TY II) (24 IN) (RCP) (6: 1) (C)	SET (TY II) (30 IN) (RCP) (4: 1) (C)	SET (TY II) (30 IN) (RCP) (6: 1) (C)	ADJUSTING INLET (CAP)
EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	
C/L Sta.																					
1501+92	Culvert 1-1 (INCIDENTAL WORK)			2																	
<b>CSJ:0037-06-106 TOTALS</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
1523+61.56	Culvert 2-1																				
1529+95.52	Culvert 2-2										1	1	3	3							1
1564+48.86	Culvert 2-3																				
1667+67.15	Culvert 2-5				4												2				
1721+98.69	Culvert 2-7																				
1737+17.33	Culvert 2-8					3	3														
1753+00.82	Culvert 2-9																				
1830+64.23	Culvert 2-12								1	1											
1864+06.92	Culvert 2-13								1	1											
1957+54.88	Culvert 2-16																				
1989+27.74	Culvert 2-17					1	1														
2007+13.31	Culvert 2-18																				
2014+56.57	Culvert 2-19		1	1																	
2035+13.49	Culvert 2-20																1	1			2
2040+97.27	Culvert 2-21	1		1																	
2048+84.51	Culvert 2-22																		4	4	2
2055+69.45	Culvert 2-23																2	2			2
<b>CSJ:0037-08-042 TOTALS</b>		<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>6</b>
<b>PROJECT TOTALS</b>		<b>1</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>6</b>

SUMMARY OF DRAINAGE ITEMS				
LOCATION	DESCRIPTION	496	496	496
		6005	6007	6008
		REMOV STR (WINGWALL)	REMOV STR (PIPE)	REMOV STR (BOX CULVERT)
EA	LF	LF		
C/L Sta.				
1501+92	Culvert 1-1 (INCIDENTAL WORK)			
<b>CSJ:0037-06-106 TOTALS</b>		<b>0</b>	<b>0</b>	<b>0</b>
1523+61.56	Culvert 2-1	2		
1529+95.52	Culvert 2-2	2		
1564+48.86	Culvert 2-3	2		
1667+67.15	Culvert 2-5	2		
1721+98.69	Culvert 2-7	2		
1737+17.33	Culvert 2-8	2		58
1753+00.82	Culvert 2-9	2		
1830+64.23	Culvert 2-12	2		
1864+06.92	Culvert 2-13	2		
1957+54.88	Culvert 2-16	2		
1989+27.74	Culvert 2-17	2		96
2007+13.31	Culvert 2-18	2		
2014+56.57	Culvert 2-19	2		
2035+13.49	Culvert 2-20		75	
2040+97.27	Culvert 2-21	2		
2048+84.51	Culvert 2-22		8	
2055+69.45	Culvert 2-23		76	
<b>CSJ:0037-08-042 TOTALS</b>		<b>28</b>	<b>232</b>	<b>154</b>
<b>PROJECT TOTALS</b>		<b>28</b>	<b>232</b>	<b>154</b>




NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SUMMARY OF DRAINAGE QUANTITIES</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	29	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

SUMMARY OF ILLUMINATION										
ITEM	0416-6029	0432-6006	0610-6286	0610-6287	0618-6023	0618-6047	0620-6007	0620-6008	0624-6002	0628-6045
ROADWAY ILLUMINATION SUMMARY	DRILL SHAFT (RDWY ILL POLE) (30 IN)	RIP RAP (CONC) (CL B)	INS RD IL (TY SA) 50T-8 (400W EQ) LED	INS RD IL (TY SA) 50T-8-8 (400W EQ) LED	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") BORE	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311) W/APRON	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)
	LF	CY	EA	EA	LF	LF	LF	LF	EA	EA
PLAN SHEET 1 OF 8	48	2.1	6		1100		1130	2260		
PLAN SHEET 2 OF 8					190		200	400		
CSJ: 0037-06-106 TOTALS	48	2.1	6		1290		1330	2660		
PLAN SHEET 2 OF 8	56	2.45	6	1	2075	110	2245	6830	4	1
PLAN SHEET 3 OF 8	24	1.05		3	655		670	1340		
PLAN SHEET 4 OF 8										
PLAN SHEET 5 OF 8										
PLAN SHEET 6 OF 8										
PLAN SHEET 7 OF 8	32	1.4	4		765	100	900	1800	2	1
PLAN SHEET 8 OF 8	8	0.35	1		50		55	110		
CSJ: 0037-08-042 TOTALS	120	5.25	11	4	3545	210	3870	10080	6	2



SUMMARY OF FLASHING BEACONS/DRIVER FEEDBACK SIGNS										
ITEM	416 6032	618 6023	618 6047	620 6009	620 6010	621 6002	624 6002	624 6008	625 6003	628 6298
LOCATIONS	DRILL SHAFT (TRF SIG POLE) (36 IN)	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 80) (2") (BORE)	ELEC CONDUCTOR (NO. 6) BARE	ELEC CONDUCTOR (NO. 6) INSULATED	TRAY CABLE (3 CONDR) (12 AWG)	GROUND BOX TY A (122311) W/APRON	GROUND BOX TY C (162911) W/APRON	ZINC-COAT STL WIRE STRAND (3/8")	ELEC SRV TY T 120/240 000 (NS)GS(L)SP (O)
	LF	LF	LF	LF	LF	LF	EA	EA	LF	EA
FLASHING BEACON AT OLD US 83	26.4	665	75	740	20	2250	4	1	185	1
CSJ: 0037-06-106 TOTALS	26.4	665	75	740	20	2250	4	1	185	1
FLASHING BEACON AT FM 133	26.4	30	0	40	20	450	1	1	165	1
DRIVER FEEDBACK SIGN AT STA1522+03(RT)										
DRIVER FEEDBACK SIGN AT STA1522+25(RT)										
DRIVER FEEDBACK SIGN AT STA1543+13(LT)										
DRIVER FEEDBACK SIGN AT STA1543+13(LT)										
CSJ: 0037-08-042 TOTALS	26.4	30	0	40	20	450	1	1	165	1

SUMMARY OF FLASHING BEACONS/DRIVER FEEDBACK SIGNS								
ITEM	680 6001	682 6003	682 6005	684 6008	686 6008	690 6100	6376 6001	*
LOCATIONS	INSTALL HWY TRF SIG (FLASH BEACON)	VEH SIG SEC (12") (LED) (YEL)	VEH SIG SEC (12") (LED) (RED)	TRF SIG CBL (TY A) (12 AWG) (3 CONDR)	INS TRF SIG PLAM (S) STR (TY B) LUM	REMOVE TRAFFIC SIGNAL	DRIVER FEEDBACK SPEED SIGN ASSM(SOLAR)	REMOVE EXIST DRIVER FEEDBACK SPEED SIGN ASSM(SOLAR)
	EA	EA	EA	LF	EA	EA	EA	EA
FLASHING BEACON AT OLD US 83	1	4	2	340	2			
CSJ: 0037-06-106 TOTALS	1	4	2	340	2			
FLASHING BEACON AT FM 133	1	4	2	340	2	1		1
DRIVER FEEDBACK SIGN AT STA1522+03(RT)								1
DRIVER FEEDBACK SIGN AT STA1522+25(RT)							1	
DRIVER FEEDBACK SIGN AT STA1543+13(LT)							1	
DRIVER FEEDBACK SIGN AT STA1543+13(LT)							1	
CSJ: 0037-08-042 TOTALS	1	4	2	340	2	1	2	2

\* SUBSIDIARY TO BID ITEM 6376-6001

NO.	REVISIONS	BY	DATE
 TYPE Firm No. F-18636			
 ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SUMMARY OF ILLUMINATION/SIGNAL QUANTITIES</b>			
			SHEET 1 OF 1
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C-37-8-42		30
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

SUMMARY OF PAVEMENT MARKING ITEMS																						
LOCATION	LENGTH	PLAN SHEET	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666		
			6018	6036	6048	6054	6078	6102	6147	6225	6226	6230	6306	6309	6318	6321	6007	6009	6009	6016	6033	
			REFL PAV MRK TY I (W)6"(DOT)(100 MIL)	REFL PAV MRK TY I (W)8"(SLD)(100 MIL)	REFL PAV MRK TY I (W)24"(SLD)(100 MIL)	REFL PAV MRK TY I (W)(ARROW)(100 MIL)	REFL PAV MRK TY I (W)(WORD)(100 MIL)	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	REFL PAV MRK TY I (Y)24"(SLD)(100 MIL)	PAVEMENT SEALER 6"	PAVEMENT SEALER 8"	PAVEMENT SEALER 24"	RE PM W/RET REQ TY I (W)6"(BRK)(100 MIL)	RE PM W/RET REQ TY I (W)6"(SLD)(100 MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100 MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100 MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A	PAV SURF PREP FOR MRK (ARRCW)	PAV SURF PREP FOR MRK (WORD)	PAV SURF PREP FOR MRK (RPM)	
LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA				
From Sta.	To Sta.	Ft																				
1504+42	1517+93.76	1,352	PM01 OF 24	100	829	950	2	2	18	260	9629	829	12'0	260	3,755		5,514	64	259	2	2	323
1485+44	1504+42.00	1,898	INCIDENTAL WORK	241	232		1				13015	232	0	280	4,904		7,590	14	190	1	0	204
<b>CSJ:0037-06-106 TOTALS</b>				<b>341</b>	<b>1,061</b>	<b>950</b>	<b>3</b>	<b>2</b>	<b>18</b>	<b>260</b>	<b>22,644</b>	<b>1,061</b>	<b>1,210</b>	<b>540</b>	<b>8,659</b>	<b>0</b>	<b>13,104</b>	<b>78</b>	<b>449</b>	<b>3</b>	<b>2</b>	<b>527</b>
1517+93.76	1524+00		PM01 OF 24	108			1	1			3947			200	1,213		2,426		20			142
1524+00	1548+00	2,400	PM02 OF 24		0					289	12229		289	1180	4,765	490	5,794	59	103	0		162
1548+00	1572+00	2,400	PM03 OF 24				9				12000			1200	4,800	1,200	4,800	62		9		62
1572+00	1596+00	2,400	PM04 OF 24	136	2714	24	9	3		90	16099	2714	114	1200	5,918	570	8,275	213	302	9	3	515
1596+00	1620+00	2,400	PM05 OF 24	180	536		1	1			13613	536		1200	4,800		7,433	105	308	1	1	413
1620+00	1644+00	2,400	PM06 OF 24								10800			1200	4,800		4,800	120	120			240
1644+00	1668+00	2,400	PM07 OF 24	113							10493			780	4,800		4,800	50	120			170
1668+00	1692+00	2,400	PM08 OF 24	253			2				10143			290	4,800		4,800	40	120			160
1692+00	1716+00	2,400	PM09 OF 24								9600			0	4,800		4,800		120			120
1716+00	1740+00	2,400	PM10 OF 24								9600				4,800		4,800		120			120
1740+00	1764+00	2,400	PM11 OF 24								9600				4,800		4,800		120			120
1764+00	1788+00	2,400	PM12 OF 24								9600				4,800		4,800		120			120
1788+00	1812+00	2,400	PM13 OF 24								9600				4,800		4,800		120			120
1812+00	1836+00	2,400	PM14 OF 24								9600				4,800		4,800		120			120
1836+00	1860+00	2,400	PM15 OF 24	253			2				10063		210	4,800		4,800	21	120				141
1860+00	1884+00	2,400	PM16 OF 24	113							10653			940	4,800		4,800	47	120			167
1884+00	1908+00	2,400	PM17 OF 24								10800			1200	4,800		4,800	60	120			180
1908+00	1932+00	2,400	PM18 OF 24								10800			1200	4,800		4,800	60	120			180
1932+00	1956+00	2,400	PM19 OF 24	113							10353			640	4,800		4,800	32	120			152
1956+00	1980+00	2,400	PM20 OF 24								10200			600	4,800		4,800	30	120			150
1980+00	2004+00	2,400	PM21 OF 24								10200			600	4,800		4,800	30	120			150
2004+00	2028+00	2,400	PM22 OF 24								10200			600	4,800		4,800	30	120			150
2028+00	2052+00	2,400	PM23 OF 24								10200			600	4,800		4,800	30	120			150
2052+00	2077+15	2,515	PM24 OF 24	253			2				6363			110	3,000		3,000	31	75			106
<b>CSJ:0037-08-042 TOTALS</b>				<b>1522</b>	<b>3250</b>	<b>24</b>	<b>26</b>	<b>5</b>	<b>0</b>	<b>379</b>	<b>246756</b>	<b>3250</b>	<b>403</b>	<b>13950</b>	<b>110896</b>	<b>2260</b>	<b>118128</b>	<b>1040</b>	<b>3070</b>	<b>19</b>	<b>4</b>	<b>4110</b>
<b>PROJECT TOTALS</b>				<b>1863</b>	<b>4311</b>	<b>974</b>	<b>29</b>	<b>7</b>	<b>18</b>	<b>639</b>	<b>269400</b>	<b>4311</b>	<b>1613</b>	<b>14490</b>	<b>119555</b>	<b>2260</b>	<b>131232</b>	<b>1118</b>	<b>3519</b>	<b>22</b>	<b>6</b>	<b>4637</b>

NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SUMMARY OF PAVEMENT MARKING QUANTITIES</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	31	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83











SUMMARY OF MBGF ITEMS								
LOCATION			432	540	540	542	544	544
			6045	6002	6009	6001	6001	6003
			RIPRAP (MOW STRIP)(4 IN)	MTL W-BEAM GD FEN (STEEL POST)	MTL BEAM GD FEN TRANS (T6)	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (INSTALL)	GUARDRAIL END TREATMENT (REMOVE)
			CY	LF	EA	LF	EA	EA
From Sta.	To Sta.	Lt/Rt						
1522+68.00	1534+68.00	Lt				1100		2
1521+36.96	1524+84.96	Rt				250		2
<b>CSJ:0037-06-106 TOTALS</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>1350</b>	<b>0</b>	<b>4</b>
1613+35.82	1617+10.82	Rt	23	275			2	
1615+66.82	1619+41.79	Lt	24.5	275			2	
1706+94.75	1710+94.75	Rt	25	300		275	2	2
1708+84.48	1713+09.48	Lt	27.3	375		275	2	2
1775+94.00	1777+38.00	Rt	9.6	75	1	628	1	1
1776+44.00	1777+38.00	Lt	7.5	25	1	628	1	1
1786+94.00	1787+88.00	Rt	7.5	25	1	628	1	1
1786+94.00	1788+38.00	Lt	9.6	75	1	628	1	1
<b>CSJ:0037-08-042 TOTALS</b>			<b>134</b>	<b>1,425</b>	<b>4</b>	<b>3,062</b>	<b>12</b>	<b>8</b>
<b>PROJECT TOTALS</b>			<b>134</b>	<b>1,425</b>	<b>4</b>	<b>4,412</b>	<b>12</b>	<b>12</b>

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NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SUMMARY OF</b> <b>ROADWAY QUANTITIES</b> <b>(MBGF)</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		34
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

SUMMARY OF PARALLEL PIPE ITEMS											
LOCATION	FLOW LINE ELEVATION US	FLOW LINE ELEVATION DS	PAVED WIDTH	STRUCTURE O/S FROM C/L	EXIST RCP LENGTH	EXIST PIPE DIA.	464	467	467	496	496
							6005	6391	6395	6004	6007
							RC PIPE (CL III)(24 IN)	SET (TY II) (24 IN) (RCP) (4:1) (P)	SET (TY II) (24 IN) (RCP) (6:1) (P)	REMOV STR (SET)	REMOV STR (PIPE)
STATION -US 83	FT	FT	FT	FT	FT	IN	LF	EA	EA	EA	LF
<b>CSJ:0037 06 106 TOTALS</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
1609+40.72	503.82	502.76	12	48.13	36	24	28		2	2	36
1611+97.16	499.23	498.63	30	47.50	31	24	46		2	2	31
1718+73.09	490.40	490.34	16	44.15	34	24	32		2	2	34
1739+68.28	489.90	489.56	33	44.42	107	12	49		2	2	107
1739+68.28	489.90	489.56	31	48.00	107	12	49		2	2	107
1747+19.39	493.30	493.20	40	55.50	90	18	56		2	2	90
1747+19.39	493.30	493.20	40	59.00	90	18	56		2	2	90
1754+53.26	493.00	492.85	45	42.38	82	24	60		2	2	82
1754+53.26	493.00	492.85	42	45.96	82	24	60		2	2	82
1832+38.87	499.91	498.73	14	46.88	N/A	N/A	30		2	N/A	N/A
1872+01.82	542.09	541.27	12	49.00	44	24	14	2		2	44
1872+25.21	544.72	543.42	12	54.00	35	24	28		2	2	35
<b>CSJ:0037-08-042 TOTALS</b>							<b>508</b>	<b>2</b>	<b>22</b>	<b>22</b>	<b>738</b>
<b>PROJECT TOTALS</b>							<b>508</b>	<b>2</b>	<b>22</b>	<b>22</b>	<b>738</b>

NO.				REVISIONS				BY		DATE	
				ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098							
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US 83 SUMMARY OF ROADWAY QUANTITIES (PARALLEL PIPES)											
FED. RD. DIV. NO.		STATE AID PROJECT NO.						SHEET NO.			
6		C 37-8-42						35			
STATE		DISTRICT		COUNTY							
TEXAS		LRD		DIMMIT							
CONTROL		SECTION		JOB		HIGHWAY NO.					
0037		08		042, ETC.		US 83					



SUMMARY OF DRIVEWAY ITEMS																			
DRIVEWAY #	STREET NAME	STA.	SIDE	EXISTING MATERIAL	ANGLE	RADIUS		WIDTH	LENGTH	AREA	DRIVEWAY TYPE	247	310	3077	104	530	530	530	
						6057	6009					6033	6017	6002	6004	6005			
						FL BS (CMP IN PLC)(TYE GR1-2)(FNAL POS)	PRIME COAT (MC-30)					SP MIXES SP-C SAC-A PG76-22	REMOVING CONC (DRIVEWAYS)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)			
				TYPE	DEGREE	FT	FT	FT	FT	SF		CY	GAL	TON	SY	SY	SY	SY	
													0.20 GAL/SY	115 LBS/IN /SY		3 IN ACP	6 IN CONC	2 IN ACP	
CSJ:0037-06-106 TOTALS												0	0	0	0	0	0	0	
1		1519+10.01	LT	DIRT	90	30	30	24	55	1699	A	3.5	38	21.7				189	
2		1521+98.81	LT	DIRT	90	30	30	24	59	1800	A	3.7	40	23.0				200	
3		1536+10.42	RT	DIRT	90	15	15	23	17	503	A	1.0	11	6.4				56	
4		1539+05.21	LT	DIRT	90	15	15	12	16	294	A	0.6	7	3.8				33	
5		1540+31.16	LT	DIRT	90	15	15	12	17	298	A	0.6	7	3.8				33	
	DOMINGO	1540+83.22	RT	DIRT	90	15	15	22	16	451	A	0.9	10	5.8		50			
	DOMINGO	1540+86.51	LT	DIRT	90	15	15	22	17	467	A	1.0	10	6.0		52			
6		1542+10.34	LT	CONCRETE	90	15	15	12	17	298	B				33		33		
7		1543+55.30	LT	DIRT	90	15	15	12	17	298	A	0.6	7	3.8				33	
	SAN ESTEVAN	1545+51.88	LT	ASPHALT	90	15	15	22	17	469	A	1.0	10	6.0		52			
	SAN ESTEVAN	1545+53.39	RT	DIRT	90	15	15	22	16	450	A	0.9	10	5.8		50			
	SAN FRANCISCO	1550+26.95	LT	CONCRETE	90	15	15	22	17	471	A	1.0	10	6.0	52	52			
	SAN FRANCISCO	1550+36.00	RT	DIRT	90	15	15	22	16	448	A	0.9	10	5.7		50			
8		1551+28.04	RT	DIRT	90	15	15	24	16	480	A	1.0	11	6.1				53	
9		1551+63.92	LT	CONCRETE	90	15	15	45	17	863	B				96		96		
10		1554+87.86	RT	CONCRETE	90	15	15	45	16	814	B				90		90		
	SAN GREGORIO	1554+95.17	LT	DIRT	90	15	15	22	17	472	A	1.0	10	6.0		52			
11		1558+31.98	RT	CONCRETE	90	15	15	45	16	812	B				90		90		
	SAN HILARIO	1559+63.94	LT	DIRT	90	15	15	22	17	473	A	1.0	11	6.0		53			
	SAN HILARIO	1559+65.02	RT	ASPHALT	90	15	15	22	16	446	A	0.9	10	5.7		50			
12		1562+43.02	LT	DIRT	90	15	15	14	17	337	A	0.7	7	4.3				37	
13		1565+72.98	RT	DIRT	90	15	15	12	16	286	A	0.6	6	3.7				32	
14		1566+55.32	RT	DIRT	90	15	15	12	16	286	A	0.6	6	3.7				32	
15		1567+02.34	LT	DIRT	90	15	15	12	17	303	A	0.6	7	3.9				34	
16		1567+54.15	RT	DIRT	90	15	15	12	16	286	A	0.6	6	3.7				32	
	SAN JACINTO	1568+98.31	RT	DIRT	90	15	15	22	16	443	A	0.9	10	5.7		49			
	SAN JACINTO	1569+00.31	LT	DIRT	90	15	15	22	17	476	A	1.0	11	6.1		53			
17		1570+09.45	LT	CONCRETE	90	15	15	14	17	338	B				38		38		
	SAN LAZARO	1573+65.38	RT	DIRT	90	15	15	22	16	442	A	0.9	10	5.6		49			
	SAN LAZARO	1573+73.00	LT	DIRT	90	15	15	22	17	477	A	1.0	11	6.1		53			
	SAN MATEO	1578+41.32	LT	DIRT	90	15	15	22	17	478	A	1.0	11	6.1		53			
	SAN MATEO	1578+45.46	RT	DIRT	90	15	15	22	16	441	A	0.9	10	5.6		49			
18		1583+04.20	RT	DIRT	90	15	15	12	16	284	A	0.6	6	3.6				32	
19		1583+85.22	RT	CONCRETE	90	15	15	45	23.4	1149	B				128		128		
20		1595+19.12	RT	DIRT	90	15	15	12	48	677	A	1.4	15	8.7				75	
21		1609+40.72	RT	ASPHALT	90	15	15	12	58	794	A	1.6	18	10.1				88	
22		1611+97.16	LT	CONCRETE	90	20	20	30	32	1127	B				125		125		
23		1634+04.22	RT	ASPHALT	90	15	15	16	58	1028	A	2.1	23	13.1				114	
24		1641+06.11	LT	DIRT	90	15	15	12	32	478	A	1.0	11	6.1				53	
25		1718+73.09	RT	CONCRETE	90	15	15	16	64	1126	B				125		125		
26		1728+60.12	LT	DIRT	90	15	15	24	38	1000	A	2.1	22	12.8				111	
27		1739+68.28	RT	GRAVEL	90	30	30	30	64	2318	C	6.4	52	44.4				258	
28		1747+19.39	RT	CONCRETE	90	30	30	40	64	2961	B				329		329		
29		1754+53.26	RT	CONCRETE	90	30	30	40	64	2962	B				329		329		
30		1832+38.87	RT	DIRT	90	15	15	14	62	970	A	2.0	22	12.4				108	
31		1844+91.18	LT	CALICHE	90	30	30	16	33	921	C	2.5	20	17.7				102	
32		1872+01.82	LT	GRAVEL	90	15	15	12	33	492	A	1.0	11	6.3				55	
33		1872+25.21	RT	ASPHALT	90	15	15	12	57	780	A	1.6	17	10.0				87	
34		1880+02.04	RT	CONCRETE	90	35	35	45	39	2283	B				254		254		
35		1880+10.47	LT	CONCRETE	90	50	50	32	61	3023	B				336		336		
CSJ:0037-08-042 TOTALS (FOR CONTRACTORS INFORMATION ONLY)												50.7	524	321					
CSJ:0037-08-042 TOTALS																2025	767	1973	1847
PROJECT TOTALS																2025	767	1973	1847

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NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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US 83 SUMMARY OF ROADWAY QUANTITIES (DRIVEWAYS)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		36
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	
0037	08	042, ETC.	HIGHWAY NO. US 83



SUMMARY OF SIGNING ITEMS														
LOCATION		LENGTH	PLAN SHEET	636	644	644	644	644	644	644	658	658	658	
				6001	6001	6004	6007	6030	6033	6050	6076	6053	6100	6060
				ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	IN SM RD SN SUP&AM TYS80(1)SA(T)	IN SM RD SN SUP&AM TYS80(1)SA(U)	IN SM RD SN SUP&AM TYS80(2)SA(P)	REMOVE SM RD SN SUP&AM	INSTL OM ASSM (OM-3L)(TWT)GND	INSTL OM ASSM (OM-2Z)(WFLX)GND(B)	REMOVE DELIN & OBJECT MARKER ASSMS
				SF	EA	EA	EA	EA	EA	EA	EA	EA	EA	
From Sta.	To Sta.	Ft												
1504+42	1517+94	1,352	042-PM01		7					11				
1485+44	1504+42	1,898	INCIDENTAL WORK		3	1		1		6	2	2	2	
CSJ:0037-06-106 TOTALS				0	10	1	0	1	0	0	17	2	2	
1517+94	1524+00	606	042-PM01	11.25						1				
1524+00	1548+00	2,400	042-PM02	11.25	35	1				38				
1548+00	1572+00	2,400	042-PM03	9	10					12				
1572+00	1596+00	2,400	042-PM04		11	2	2		1	20				
1596+00	1620+00	2,400	042-PM05		7	2				10	2	2	4	
1620+00	1644+00	2,400	042-PM06		1					3				
1644+00	1668+00	2,400	042-PM07		1					1	1	1	2	
1668+00	1692+00	2,400	042-PM08		2									
1692+00	1716+00	2,400	042-PM09		1			1		1				
1716+00	1740+00	2,400	042-PM10								2	2	4	
1740+00	1764+00	2,400	042-PM11		1			1		1	1	1	2	
1764+00	1788+00	2,400	042-PM12		1			2		3				
1788+00	1812+00	2,400	042-PM13		1					1	2	2		
1812+00	1836+00	2,400	042-PM14		2			1		3	3	3	6	
1836+00	1860+00	2,400	042-PM15		2					2				
1860+00	1884+00	2,400	042-PM16		1					2	1	1	2	
1884+00	1908+00	2,400	042-PM17							3	3	3	6	
1908+00	1932+00	2,400	042-PM18		1					1				
1932+00	1956+00	2,400	042-PM19		1					1				
1956+00	1980+00	2,400	042-PM20		2					2	1	1	2	
1980+00	2004+00	2,400	042-PM21								1	1	2	
2004+00	2028+00	2,400	042-PM22								2	2	4	
2028+00	2052+00	2,400	042-PM23		1			1		1	1	1	2	
2052+00	2077+15	2,515	042-PM24		4	2								
CSJ:0037-08-042 TOTALS				32	85	7	2	6	1	1	106	20	20	36
PROJECT TOTALS				32	95	8	2	7	1	1	123	22	22	38

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NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> SUMMARY OF SIGNING QUANTITIES			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		37
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

SUMMARY OF EROSION CONTROL ITEMS											
LOCATION		LENGTH	PLAN SHEET	SEEDING AREA	164	506	506	506	506	506	506
					6034	6020	6024	6038	6039	6041	6043
					DRILL SEEDING (PERM) (RURAL) (SANDY)	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG ERCSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
					AC	SY	SY	LF	LF	LF	LF
From Sta.	To Sta.			SY							
1504+42	1517+94	1,352	049_83-SW3P01	8486	1.75	78	78	115	115	259	259
1485+44	1504+42	1,898	INCIDENTAL WORK	11900	2.46	78	78	200	200	250	250
CSJ:0037-06-106 TOTALS					4.21	156	156	315	315	509	509
1517+94	1524+00	606	049_83-SW3P01	3804	0.79	78	78	230	230	150	150
1524+00	1548+00	2,400	049_83-SW3P02	12764	2.64			170	170	1615	1615
1548+00	1572+00	2,400	049_83-SW3P03	10080	2.08	78	78	20	20	1055	1055
1572+00	1596+00	2,400	049_83-SW3P04	11019	2.28			110	110	1330	1330
1596+00	1620+00	2,400	049_83-SW3P05	12786	2.64	78	78	85	85	1530	1530
1620+00	1644+00	2,400	049_83-SW3P06	13302	2.75			0	0	1950	1950
1644+00	1668+00	2,400	049_83-SW3P07	12393	2.56	78	78	100	100	385	385
1668+00	1692+00	2,400	049_83-SW3P08	13900	2.87			0	0	790	790
1692+00	1716+00	2,400	049_83-SW3P09	14345	2.96	78	78	160	160	740	740
1716+00	1740+00	2,400	049_83-SW3P10	14067	2.91			270	270	300	300
1740+00	1764+00	2,400	049_83-SW3P11	14499	3.00			255	255	160	160
1764+00	1788+00	2,400	049_83-SW3P12	21736	4.49	78	78	0	0	1822	1822
1788+00	1812+00	2,400	049_83-SW3P13	15786	3.26			200	200	3080	3080
1812+00	1836+00	2,400	049_83-SW3P14	14360	2.97	78	78	175	175	1010	1010
1836+00	1860+00	2,400	049_83-SW3P15	13206	2.73			20	20	0	0
1860+00	1884+00	2,400	049_83-SW3P16	13271	2.74	78	78	210	210	465	465
1884+00	1908+00	2,400	049_83-SW3P17	11803	2.44			370	370	920	920
1908+00	1932+00	2,400	049_83-SW3P18	13443	2.78	78	78	0	0	0	0
1932+00	1956+00	2,400	049_83-SW3P19	14090	2.91			0	0	1800	1800
1956+00	1980+00	2,400	049_83-SW3P20	13635	2.82	78	78	190	190	1195	1195
1980+00	2004+00	2,400	049_83-SW3P21	13340	2.76			160	160	915	915
2004+00	2028+00	2,400	049_83-SW3P22	13288	2.75			320	320	920	920
2028+00	2052+00	2,400	049_83-SW3P23	12610	2.61	78	78	280	280	0	0
2052+00	2077+15	2,515	049_83-SW3P24	12875	2.66	78	78	140	140	0	0
CSJ:0037-08-042 TOTALS					65.40	936	936	3465	3465	22132	22132
PROJECT TOTALS					69.61	1092	1092	3780	3780	22641	22641

NOTE: LOCATIONS FOR ITEM 506-6020 TO BE DETERMINED BY THE CONTRACTOR.

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US 83 SUMMARY OF SW3P QUANTITIES			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		38
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

**SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS**

LOCATION	LENGTH	DESCRIPTION	502	* 508	512	512	512	545	545	545	662	662	662	662	677	677	677	677	677	
			6001	6003	6001	6025	6037	6019	6003	6005	6035	6111	6008	6037	6002	6003	6005	6008	6012	
			BARRICADES, SIGNS AND TRAFFIC HANDLING	CONSTRUCTIN G DETOURS (TY 1)	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	PORT CTB (MOVE)(SGL SLP)(TY 1)	PORT CTB (STKPL)(SGL SLP)(TY 1)	CRASH CUSH ATTEN (INSTL)(S)(N)(T L3)	CRASH CUSH ATTEN (MOVE & RESET)	CRASH CUSH ATTEN (REMOVE)	WK ZN PAV MRK NON- REMOV (Y)6"(BRK)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	WK ZN PAV MRK NON- REMOV (W)6"(SLD)	WK ZN PAV MRK NON- REMOV (Y)6"(SLD)	ELIM EXT PAV MRK & MRKS (6")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (12")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)	
MO	SY	LF	LF	LF	EA	EA	EA	LF	EA	LF	LF	LF	LF	LF	EA	EA				
From Sta.	To Sta.																			
1492+42	1517+94	2,552	Phase 1A-S1	1	1219	1352					0	255	5,104	5,104	2620					
1492+42	1517+94	2,552	Phase 1B-S1	1							0	255	5,104	5,104	1210					
1492+42	1517+94		Phase 11	1			1352													
1485+44	1504+42	1,898	INCIDENTAL WORK			1898	1898					190	3,796	3,796	1800					
<b>CSJ:0037-06-106 TOTALS</b>				<b>3</b>	<b>1219</b>	<b>3250</b>	<b>0</b>	<b>3250</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>700</b>	<b>14004</b>	<b>14004</b>	<b>5630</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
1517+94	1666+75	14,881	Phase 1A-S1	1.0	3,064	13,638			25			1488	29,762	29,762	20,555	1940	100	2	2	
1517+94	1666+75	14,881	Phase 1B-S1	1.0			14,500		2	25	2,350	1488	29,762	29,762	9,600					
1642+75	1777+36	13,461	Phase 1A-S2	1.5	10,164		12,730			9		1346	26,922	26,922	11,800					
1642+75	1777+36	13,461	Phase 1B-S2	1.5			13,260			2	4,690	1346	26,922	26,922	9,600					
1786+92	1950+00	16,308	Phase 1A-S3	2.0	7,164	950	14,990			4		1631	32,616	32,616	18,886					
1786+92	1950+00	16,308	Phase 1B-S3	1.5			15,490			2	3,070	1631	32,616	32,616	9,600					
1926+00	2089+15	16,315	Phase 1A-S4	2.0	12,280	350	15,940			1		1632	32,630	32,630	15,100					
1926+00	2089+15	16,315	Phase 1B-S4	2.0		30	16,290			1	520	1632	32,630	32,630	9,600					
1753+37	1810+92	5,755	Phase 1A-S5	1.5								576	6,710		6,850					
1753+37	1810+92	5,755	Phase 1B-S5	1.5								576	6,710		1,900					
1492+38	2089+15		Phase 11	1.5			14,968			28										
<b>CSJ:0037-08-042 TOTALS</b>				<b>19</b>	<b>32672</b>	<b>14968</b>	<b>103200</b>	<b>14968</b>	<b>27</b>	<b>44</b>	<b>28</b>	<b>10630</b>	<b>13346</b>	<b>257280</b>	<b>243860</b>	<b>113491</b>	<b>1940</b>	<b>100</b>	<b>2</b>	<b>2</b>
<b>PROJECT TOTALS</b>				<b>22</b>	<b>33891</b>	<b>18218</b>	<b>103200</b>	<b>18218</b>	<b>27</b>	<b>44</b>	<b>28</b>	<b>10630</b>	<b>14046</b>	<b>271284</b>	<b>257864</b>	<b>119121</b>	<b>1940</b>	<b>100</b>	<b>2</b>	<b>2</b>



**SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS**

LOCATION	LENGTH	DESCRIPTION	730	6001	6158	6185	6185	
			6002	6002	6001	6002	6005	
			FULL - WIDTH MOWING	PORTABLE CHANGEABLE MESSAGE SIGN	TMSP RADAR SPEED CONTROL MONITOR	TMA (STATIONARY)	TMA (MOBILE OPERATION)	
AC	EA	EA	DAY	DAY				
From Sta.	To Sta.							
1492+42	1517+94	2,552	Phase 1A-S1	2		30		
1492+42	1517+94	2,552	Phase 1B-S1	6		30		
1492+42	1517+94		Phase 11			30		
1485+44	1504+42	1,898	INCIDENTAL WORK	2				
<b>CSJ:0037-06-106 TOTALS</b>				<b>8</b>	<b>2</b>	<b>0</b>	<b>60</b>	<b>30</b>
1517+94	1666+75	14,881	Phase 1A-S1		2	1	30	
1517+94	1666+75	14,881	Phase 1B-S1	129		1	30	
1642+75	1777+36	13,461	Phase 1A-S2				45	
1642+75	1777+36	13,461	Phase 1B-S2	135			45	
1786+92	1950+00	16,308	Phase 1A-S3				60	
1786+92	1950+00	16,308	Phase 1B-S3	135			45	
1926+00	2089+15	16,315	Phase 1A-S4				60	
1926+00	2089+15	16,315	Phase 1B-S4	135			60	
1753+37	1810+92	5,755	Phase 1A-S5				45	
1753+37	1810+92	5,755	Phase 1B-S5				45	
1492+38	2089+15		Phase 11					45
<b>CSJ:0037-08-042 TOTALS</b>				<b>534</b>	<b>2</b>	<b>2</b>	<b>465</b>	<b>45</b>
<b>PROJECT TOTALS</b>				<b>542</b>	<b>4</b>	<b>2</b>	<b>525</b>	<b>75</b>

NOTE: QUANTITIES FOR ITEM 6001-6002 SHALL BECOME PROPERTY OF CONTRACTOR AT END OF PROJECT.

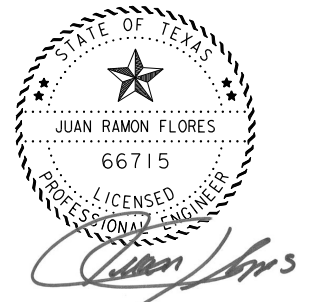
\*ITEM 508-6003

FOR CONTRACTORS INFORMATION ONLY: (AREAS AND QUANTITIES ARE APPROXIMATE)
APPROX AREA = 33,891 SY
4" SUPERPAVE TY B PG 70-22 SAC B = 8134 TONS
RC -250 @ 0.25 GAL/SY = 8473 GAL
W/PD GR5 @ 140/SY = 2373 TONS
10" FEXIBLE BASE TY B GR4 = 9410 CY

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<b>US 83</b> <b>SUMMARY OF</b> <b>TCP QUANTITIES</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		39
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

## TCP GENERAL NOTES

1. THIS IS A SUGGESTED TRAFFIC CONTROL PLAN (TCP). THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE TCP, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN TEXAS, FOR APPROVAL BY THE ENGINEER. WHEN MUTUALLY BENEFICIAL CHANGES ARE PROPOSED TO THE EXISTING TCP AND ARE AGREED UPON BY THE CONTRACTOR AND THE DEPARTMENT, THE PLAN SHEETS MAY BE DEVELOPED AND SIGNED AND SEALED BY THE ENGINEER.
2. REFER TO ITEM 8 "PROSECUTION AND PROGRESS" AND PROJECT GENERAL NOTES FOR ADDITIONAL INFORMATION REGARDING THE TRAFFIC CONTROL PLAN.
3. FURNISH AND INSTALL ALL TRAFFIC CONTROL PLAN DEVICES, INCLUDING BUT NOT LIMITED TO BARRICADES, SIGNS, AND WORK ZONE MARKINGS, IN COMPLIANCE WITH THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TXMUTCD), THE STATE STANDARD TCP SHEETS, AND THE BARRICADES AND CONSTRUCTION (BC) SHEETS. REFER TO THE PROJECT GENERAL NOTES FOR ADDITIONAL INFORMATION REGARDING THE TCP.
4. LIMIT THE LENGTH OF LANE CLOSURES TO APPROX. TWO MILE SEGMENTS. REFER TO SEQUENCE OF CONSTRUCTION FOR FURTHER INFORMATION. ANY OVERNIGHT LANE CLOSURES WILL REQUIRE APPROVAL BY THE ENGINEER.
5. VERIFY THE LOCATION AND SPACING OF SIGNS, BARRICADES, AND CHANNELIZING DEVICES PRIOR TO THEIR PLACEMENT ALONG VERTICAL CURVES, HORIZONTAL CURVES, AND OTHER GEOMETRIC CONSTRAINTS TO ASSURE VISIBILITY TO ALL MOTORISTS.
6. THE WORK HAS BEEN IDENTIFIED BY TCP PHASES. ONCE WORK HAS BEGUN AT A TCP PHASING, IT MUST BE WORKED ON CONTINUOUSLY THROUGH COMPLETION.
7. PLACE THE TRAFFIC CONTROL DEVICES ONLY WHILE WORK IS ACTUALLY IN PROGRESS OR A DEFINITE NEED EXISTS. ALWAYS HAVE ENOUGH BARRICADES, CHANNELIZING DEVICES, AND SIGNS AT ALL TIMES TO REPLACE THOSE DAMAGED.
8. COVER ALL EXISTING SIGNS THAT CONFLICT WITH THE TCP AND UNCOVER DURING NON-WORKING HOURS OR AS DIRECTED BY THE ENGINEER. PARTIAL COVERAGE OF THE SIGN OR COVERAGE BY MATERIAL THAT WILL NOT COVER THE ENTIRE SIGN ALL THE TIME IS NOT PERMITTED.
9. VARY THE SPACING OF SIGNS TO MEET TRAFFIC CONDITIONS OR AS DIRECTED BY THE ENGINEER AND ASSURE THAT ALL TRAFFIC CONTROL DEVICES AND WORK ZONE PAVEMENT MARKINGS ARE KEPT IN A HIGHLY VISIBLE CONDITION (CLEAN, UPRIGHT AND AT PROPER LOCATION).
10. MAINTAIN THE ROADWAY SURFACE AND WORK ZONE STRIPING WITHIN THE PROJECT WHILE THE TCP IS IN EFFECT. PLACE AND BE RESPONSIBLE FOR ALL WORK ZONE PAVEMENT MARKINGS IN ACCORDANCE WITH STANDARD SHEETS WZ(STPM)-13, BC (23), BC (12) AND THE TXMUTCD.
11. CONDUCT CONSTRUCTION OPERATIONS SO AS TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC AND TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL ALLOWABLE DIRECTIONS AT ALL TIMES OR AS ABUTTING PROPERTY, HIGHWAYS, PUBLIC ROADS, AND STREET CROSSINGS EXCEPT AS OTHERWISE SHOWN ON THE SEQUENCE OF CONSTRUCTION. THE CONTRACTOR WILL MAINTAIN AT ALL TIMES TWO-WAY TRAFFIC OR A MINIMUM OF ONE LANE USING TEMPORARY TRAFFIC CONTROL.
12. PLACE ALL STOCKPILED MATERIAL, WASTE MATERIAL, SIGNS, BARRICADES, CHANNELIZING DEVICES AND WORK VEHICLES NOT IN USE, AT A MINIMUM OF 30 FEET FROM THE OTHER EDGE OF THE NEAREST TRAVEL LANE.
13. MAINTAIN ALL EXISTING DRAINAGE CONDITIONS DURING ALL CONSTRUCTION PHASES UNTIL THE PERMANENT DRAINAGE FACILITIES ARE CONSTRUCTED AND READY TO USE. HANDLE EXCAVATED AND STOCKPILED MATERIAL IN SUCH A WAY THAT IT DOES NOT BLOCK DRAINAGE.
14. REGULATE ALL CONSTRUCTION TRAFFIC TO MINIMIZE INCONVENIENCE TO THE TRAVELING PUBLIC, AT THE TIMES WHEN IT IS NECESSARY FOR TRUCKS TO STOP, UNLOAD OR CROSS ROADWAYS UNDER TRAFFIC PROVIDE WARNING SIGNS AND FLAGGERS AS NEEDED TO ADEQUATELY PROTECT THE TRAVELING PUBLIC.
15. DURING NON-WORKING HOURS, ALL DROP-OFFS ARE TO BE FILLED. REFER TO STANDARD WZ(UL)-13 FOR LATERAL DROP-OFFS AND TO DETAILS SHOWN IN PLANS FOR LONGITUDINAL DROP-OFFS OR AS DIRECTED BY THE ENGINEER.
16. NOTIFY THE ENGINEER IN WRITING TWO WEEKS PRIOR TO SHIFTING OF TRAFFIC WITHIN EACH PHASE OF THE TCP.
17. DURING THE HOLIDAY TIME FRAME OF DECEMBER 21ST THROUGH JANUARY 1ST, EVERY EFFORT SHOULD BE TAKEN TO ENSURE THAT ALL TRAVEL LANES REMAIN OPEN WHERE POSSIBLE.
18. REMOVE FROM THE WORK AREA ALL LOOSE MATERIALS AND DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS AT THE END OF EACH WORK DAY.
19. MAINTAIN A MINIMUM OF ONE THROUGH LANE OPEN IN EACH DIRECTION AFTER WORK HOURS, AND OVER NIGHT EXCEPT AS DIRECTED BY THE ENGINEER.
20. IMPLEMENT ALL REQUIRED EROSION CONTROL MEASURES AS SHOWN IN THE PLANS DURING THE VARIOUS STAGES OF CONSTRUCTION.
21. MOVING AN EXISTING SIGN TO A TEMPORARY LOCATION IS SUBSIDIARY TO ITEM 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING. INSTALLATIONS WITH PERMANENT SUPPORTS AT PERMANENT LOCATIONS WILL BE PAID FOR UNDER THE APPLICABLE BID ITEMS.
22. USE OF PORTABLE CHANGEABLE MESSAGE SIGN AS ADVANCE NOTICE OF LANE CLOSURES WILL BE REQUIRED AS DIRECTED BY THE ENGINEER. FOR LOCATIONS THAT ARE ADJACENT TO EACH OTHER, A SINGLE SIGN IN ADVANCE OF THE ENTIRE WORK AREA IS ACCEPTABLE.
23. PLACE PORTABLE CHANGEABLE MESSAGE BOARDS AT LOCATIONS REQUIRING LANE CLOSURES FOR TWO (2) WEEKS BEFORE THE CLOSURES OR AS DIRECTED BY THE ENGINEER.
24. REFER TO BC(6)-21 PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) STANDARDS FOR A LISTING OF ABBREVIATED WORDS AND TWO-WORD PHRASES THAT ARE ACCEPTABLE FOR USE ON PCMS. SUBMIT THE SUGGESTED MESSAGE FOR THE BOARD TO THE ENGINEER FOR APPROVAL.
25. ADDITIONAL SIGNS, BARRICADES AND CHANNELIZING DEVICES MAY BE REQUIRED TO MAINTAIN TRAFFIC DURING CONSTRUCTION, AS SHOWN ON TCP STANDARDS. ADDITIONAL SIGNS, BARRICADES, ETC. (IF ANY), WILL BE SUBSIDIARY TO ITEM 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING".
26. USE OPPOSING LANE DIVIDERS AND VERTICAL PANELS TO CHANNELIZE TRAFFIC WHEN EXISTING PAVEMENT MARKINGS HAVE BEEN OBLITERATED.
27. REFER TO "TCP CONSTRUCTION JOINT DETAIL" SHEET TO BE USED WHEN OPENING ROADWAY TO TRAFFIC.
28. IF A PILOT CAR AND RADIO EQUIPPED FLAGGERS ARE REQUIRED FOR SOME ROADWAY LOCATIONS OR AS DIRECTED BY THE ENGINEER, THE PILOT CAR WITH NECESSARY FLAGGERS AND/OR RADIO EQUIPPED FLAGGERS AND ALL SIGNS, EQUIPMENT, LABOR AND INCIDENTALS REQUIRED FOR THIS METHOD OF TRAFFIC CONTROL WILL BE PAID FOR DIRECTLY THROUGH ITEM 510.
29. USE OF SHADOW VEHICLES WITH TRUCK MOUNTED ATTENUATORS (TMA) AS CALLED FOR IN THE STATE STANDARD SHEET(S) "TRAFFIC CONTROL PLAN" (TCP) IS NOT OPTIONAL.
30. PLACE WORK ZONE SIGNS ON INTERSECTING ROADWAYS WHEN TEMPORALLY CLOSING THROUGH TRAFFIC IN ACCORDANCE TO STANDARD WZ(RCD)-23 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.



5-2-2024

SHEET 1 OF 1

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<b>Texas Department of Transportation</b> <small>©2024 by Texas Department of Transportation, all rights reserved</small>			
<b>US 83</b>  <b>TCP</b> <b>GENERAL NOTES</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	40	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

## SEQUENCE OF CONSTRUCTION

### GENERAL INSTRUCTIONS

THE FOLLOWING WORK WILL BE PERFORMED ON THE ROADWAY. PLEASE REFER TO THE TCP PHASES, TCP GENERAL NOTES AND CORRESPONDING PLAN SHEETS FOR MORE DETAILED INFORMATION.

INSTALL ALL ADVANCE WARNING SIGNING, PCMS AND SW3P MEASURES TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION OF THE PROJECT. RELOCATE PCMS AS DIRECTED BY THE ENGINEER.

ONCE WORK HAS BEGUN AT A REFERENCE LOCATION, THE ENTIRE (+/-) TWO MILE SEQUENCE MUST BE WORKED ON CONTINUOUSLY TO COMPLETION BEFORE MOVING ON TO THE NEXT TCP PHASING SECTION. ROADWAY WORK SHALL BEGIN AT THE CATARINA NORTH CITY LIMITS AND PROCEED SOUTH.

REFER TO "TCP TYPICAL SECTIONS" FOR MORE INFORMATION ON PHASING.

LENGTHS OF LANE CLOSURES SHALL NOT EXCEED APPROX. TWO MILE SEGMENTS AS SHOWN ON THE TCP PHASING LAYOUTS, UNLESS APPROVED BY THE ENGINEER. PHASE I MUST BE COMPLETE PRIOR TO PHASE IA AND PHASE 1B. PHASE IA AND PHASE 1B MUST BE COMPLETE BEFORE MOVING ON TO THE NEXT APPROX. TWO MILE PHASING SECTION, OR AS DIRECTED BY THE ENGINEER.

ON PHASE 1A-S5 AND PHASE 1B-S5 AT THE END OF EACH WORK DAY, PROVIDE A SMOOTH TRANSITION AT WORK LIMIT ENDS, BEFORE OPENING TO TRAFFIC (REFER TO CONSTRUCTION JOINT DETAIL FOR MORE INFORMATION). INSTALL WORK ZONE TABS TO GUIDE TRAFFIC.

IF COUNTY ROADS AND OR STATE HIGHWAY ROADS NEED TO BE CONSTRUCTED ONE HALF (ROAD WIDTH) AT A TIME USE TCP(2-2)-18.

### GENERAL SEQUENCE OF WORK

INSTALL PROJECT SIGNS AND TEMPORARY EROSION CONTROL DEVICES

- A) EXTEND AND INSTALL SET'S ON EXISTING AND PROPOSED DRAINAGE STRUCTURES AS SHOWN ON THE "DRAINAGE STRUCTURES DETAILS" SHEET.
- B) PLACE DETOUR.
- C) EXCAVATION, SUBGRADE WIDENING TO PROPOSED TYPICAL SECTION.
- D) LIME TREAT SUBGRADE, PLACE CEMENT STABILIZED FLEXBASE.
- E) PLACE PRIME COAT & SEAL COAT OVER TREATED BASE.
- F) PLACE SP GRADED TYP B MIX.
- G) ADJUST, REMOVE AND/OR PLACE MBGF.
- H) PLACE FINAL ACP MIX LAYER SUPER PAVE TY C.
- I) PLACE ROADWAY SIGNS, FINAL PAVEMENT MARKINGS AND RAISED MRKS.
- J) PERFORM CLEAN UP.

### PHASE I- PLACE TEMPORARY DETOUR

PLACE APPROX. TWELVE FEET OF TEMPORARY PAVEMENT AS SHOWN IN TCP TYPICAL SECTIONS FOR THE APPROX. TWO MILE SEGMENT ON THE NORTH BOUND LANES. SHIFT TRAFFIC ACCORDING TO TCP (2-1)-18.

### PHASE IA & IB- WIDEN STRUCTURES

PLACE TRAFFIC CONTROL AS SHOWN ON THE TCP PLAN SHEETS, USE THE NECCESARY TCP AND BC STANDARDS.

REPLACE/EXTEND EXISTING DRAINAGE STRUCTURES AND INSTALL SET'S AND/OR HEADWALLS AS SHOWN ON THE "DRAINAGE STRUCTURES DETAILS" SHEET.

BACKFILL CULVERT STRUCTURES ACCORDING TO THE PROPOSED TYPICAL SECTIONS AND CULVERT LAYOUTS.

REFER TO THE DRAINAGE DETAILS SHEETS FOR ADDITIONAL INFORMATION DEFINING DRAINAGE STRUCTURE WORK TO BE PERFORMED.

### PHASE IA- REHAB AND WIDEN SB PAVEMENT

FOLLOW THE APPROX. TWO MILE SEGMENT AS SHOWN ON THE "TCP PHASING LAYOUT" SHEETS. WORK IN CONSECUTIVE PHASING SECTION SEGMENTS SECTIONS OR AS APPROVED BY THE ENGINEER. ALL WORK MUST BE COMPLETE BEFORE MOVING TO THE NEXT PHASING SEGMENT. DRIVEWAYS SHALL REMAIN ACCESSIBLE DURING CONSTRUCTION.

REPLACE PAVEMENT MARKINGS WITH WORK ZONE PAV MARK (NON REMOVABLE) WIDEN SOUTH BOUND LANE ACCORDING TO APPLICABLE TCP TYPICAL SECTIONS.

UPON COMPLETION OF THE APPROX. TWO MILE PHASING SEGMENT, TCP TRANSITIONS WILL BE MOVED FORWARD TO THE NEXT PHASING SECTION SEGMENT. SHIFT TRAFFIC IN COMPLETED SEGMENT AS SHOWN ON THE "TCP PHASING LAYOUT" SHEETS WITH WORK ZONE PAVE MARK (NON REMOVABLE) USE TCP(3-1)-13.

STEP 1 - APPLY TCP 2-3(18) TO SHIFT TRAFFIC TO AN OFFSET AS SHOWN IN TCP TYPICAL SECTIONS. REMOVE EXISTING CENTERLINE PAVE MARKINGS AND INSTALL WORK ZONE CENTERLINE PAVEMENT MARKINGS (NON REMOVABLE). MOVE MAILBOXES, PLACE ON APPROVED TEMPORARY MOUNTS AS DIRECTED BY THE ENGINEER AND SIGNS TO TEMPORARY LOCATION AS NEEDED.

STEP 2 - PROCESS EXISTING BASE AND STOCKPILE. PROVIDE TEMPORARY CUTS IN FRONT SLOPE TO FACILITATE DRAINAGE. CONSTRUCT LIME STABILIZED SUBGRADE, PLACE TREATED BASE PLACE PRIME COAT AND 5" SP TY B. CONSTRUCT ALL NON-ROADWAY ITEMS OF WORK INCLUDING DRIVEWAYS, GRADING, ETC. PROVIDE TEMPORARY SEEDING OF DISTURBED AREAS WITHIN 7 DAYS. PROVIDE ACCESS RAMPS TO DRIVEWAYS USING RAP.

AT THE DISCRETION OF THE ENGINEER, DRIVEWAY WORK IN A COMPLETED SECTION MAY TAKE PLACE AFTER MOVING FORWARD TO THE NEXT SEGMENT. WORK WILL NOT TAKE PLACE IN BOTH SOUTH BOUND AND NORTH BOUND DIRECTIONS AT THE SAME TIME. COORDINATE WITH ADJACENT PROPERTY OWNERS TO MAINTAIN ACCESS AND EGRESS.

### PHASE IB- REHAB AND WIDEN NB PAVEMENT

MIRROR THE SOUTH BOUND PHASE IA SEE THE "TCP TYPICAL SECTIONS" AND "TCP PHASING LAYOUT" SHEETS. PHASES IA AND IB MUST BE COMPLETE PRIOR TO MOVING TO THE NEXT TCP PHASING SECTION.

### CONTINUATION REHAB AND WIDEN PAVEMENT

CONTINUE REHABILITATION AND WIDENING PAVEMENT ACCORDING TO TCP TYPICAL SECTIONS IA, IB FOR THE PROPOSED STATION SEGMENTS LISTED ON THE "TCP PHASING LAYOUT" SHEETS UNTIL PROJECT LENGTH IS COMPLETE.

UTILIZE THE TCP STANDARDS WHERE APPLICABLE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

### PHASE II- SURFACE

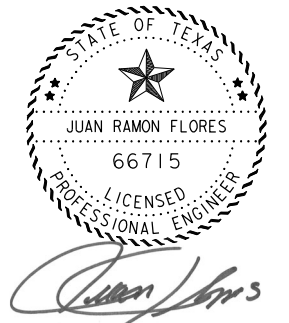
AS DIRECTED BY THE ENGINEER PROVIDE TEMPORARY TAPERS AT TRANSVERSE AND LONGITUDINAL DROP-OFFS BEFORE OPENING TO TRAFFIC (SHALL BE CONSIDERED INCIDENTAL TO OTHER TRAFFIC CONTROL ITEMS).

STEP 1 - PLACE FINAL SURFACE SB LANE. SURFACE ROADWAY UTILIZING STANDARD TCP (2-3)-18. USE REMOVABLE PAVEMENT MARKINGS.

STEP 2 - PLACE FINAL SURFACE NB LANE, PLACE PERMANENT PAVEMENT MARKINGS.

STEP 3 - PLACE MAILBOXES, MBGF, FINAL SIGNS.

STEP 4 - CLEAN UP SITE

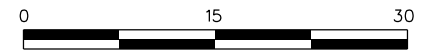


5-2-2024

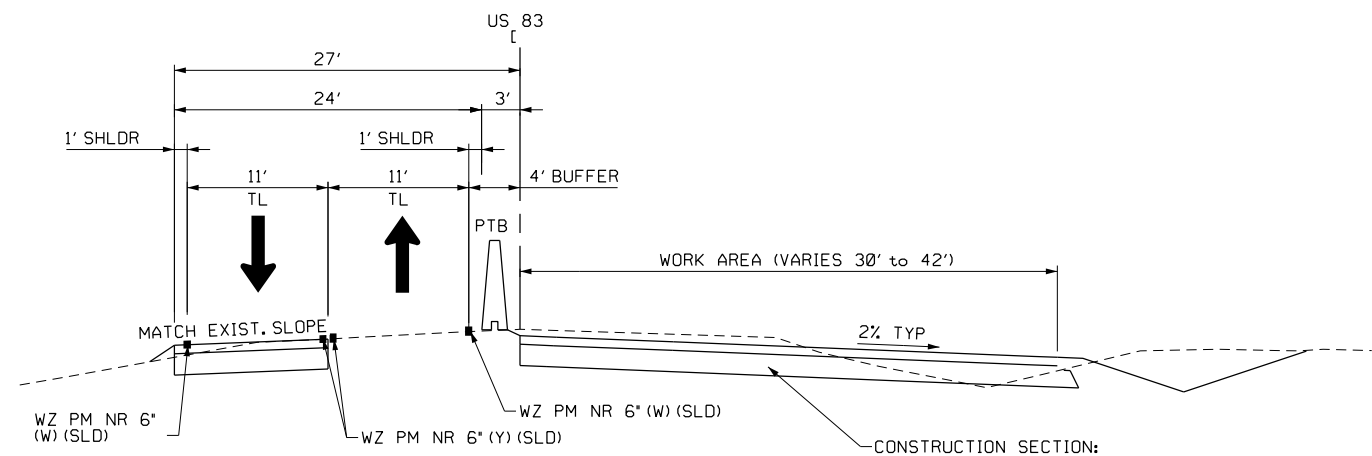
SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
<b>A7&amp;B</b> ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>TCP</b> <b>SEQUENCE OF CONSTRUCTION</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		41
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



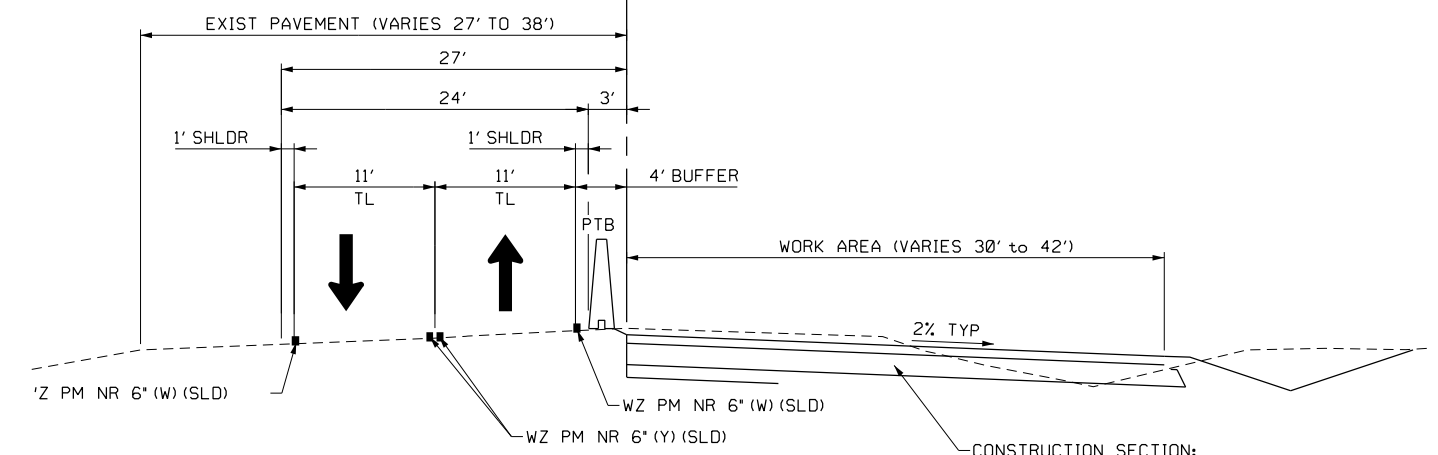


HORIZ. SCALE IN FEET  
(VERT. NOT TO SCALE)



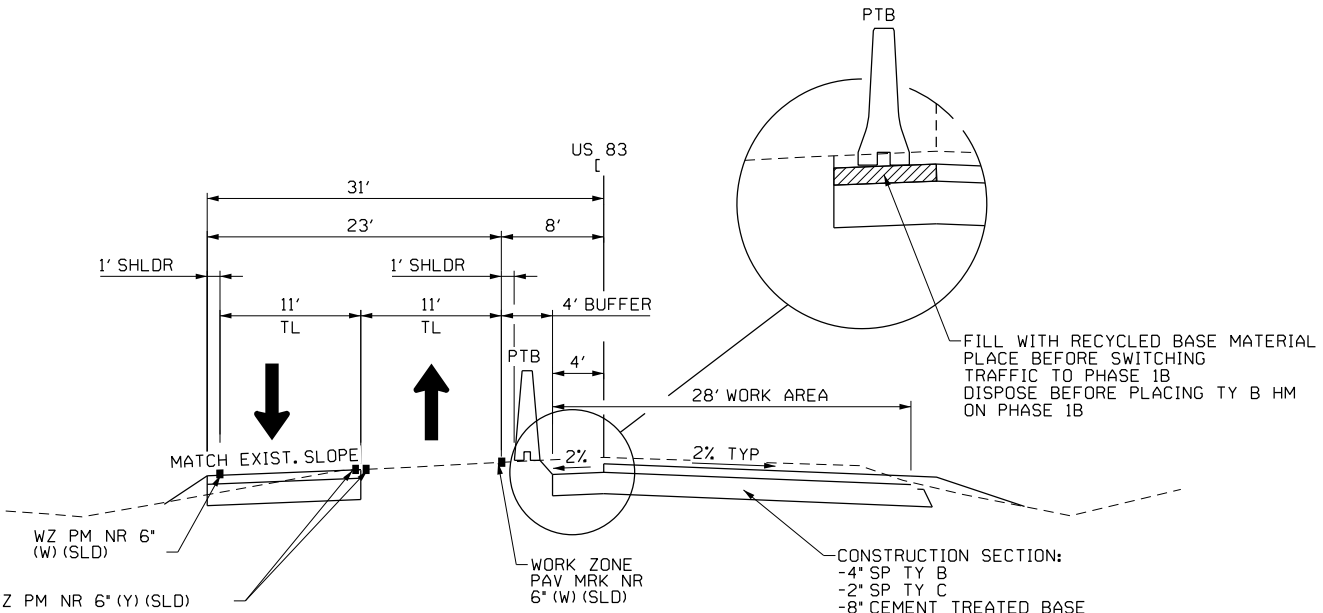
**TCP PHASE IA (SB)**

- STA 1504+42 TO 1525+30 (PH 1A-S1)
- STA 1602+82 TO 1639+14 (PH 1A-S1)
- STA 1650+33 TO 1654+75 (PH 1A-S1)
- STA 1654+75 TO 1689+75 (PH 1A-S2)
- STA 1870+58 TO 1879+07 (PH 1A-S3)
- STA 1934+39 TO 1938+00 (PH 1A-S3)
- STA 1938+00 TO 2066+54 (PH 1A-S4)



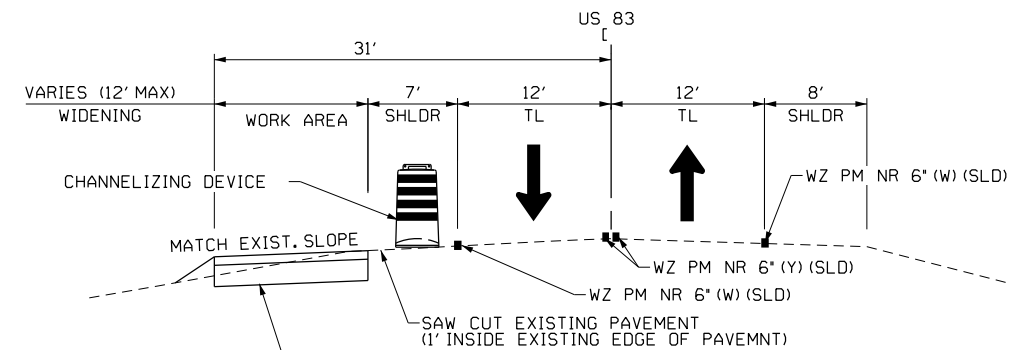
**PHASE IA (SB)**

- STA 1525+30 TO 1602+82 (PH 1A-S1)
- STA 1639+14 TO 1650+33 (PH 1A-S1)
- STA 1879+07 TO 1934+39 (PH 1A-S3)



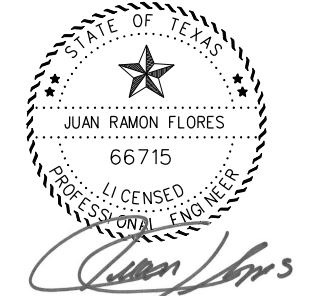
**PHASE IA (SB)**

- STA 1689+75 TO 1765+37 (1A-S2)
- STA 1798+92 TO 1870+58 (1A-S3)
- STA 2066+54 TO 2077+15 (1A-S4)

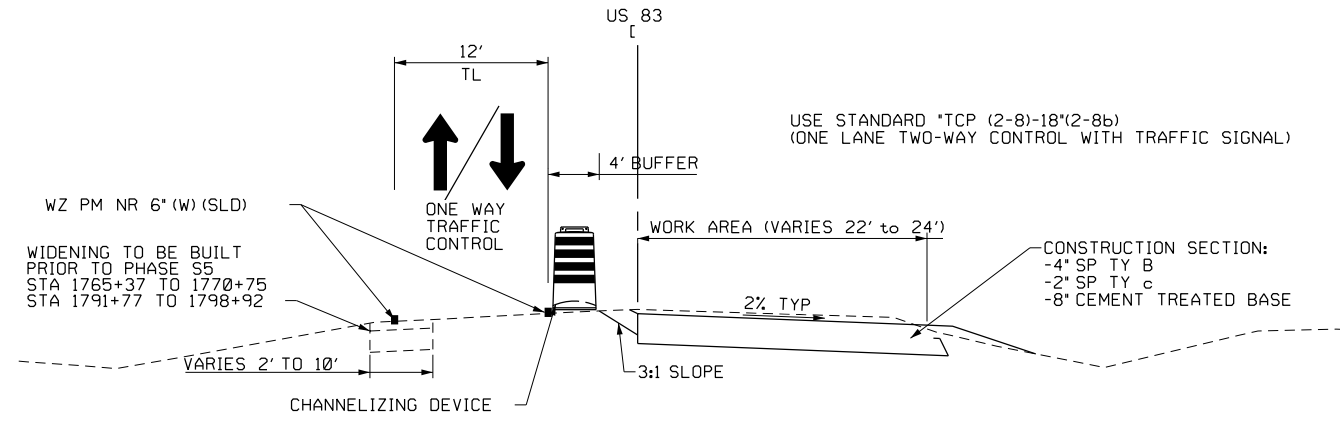


**PHASE I (NB DETOUR)**

- STA 1498+62 TO 1525+30
- STA 1602+82 TO 1639+14
- STA 1650+33 TO 1770+75
- STA 1791+77 TO 1879+07
- STA 1934+39 TO 2083+21



5-2-2024

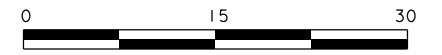


**PHASE IA-S5 SAN ROQUE BRIDGE**

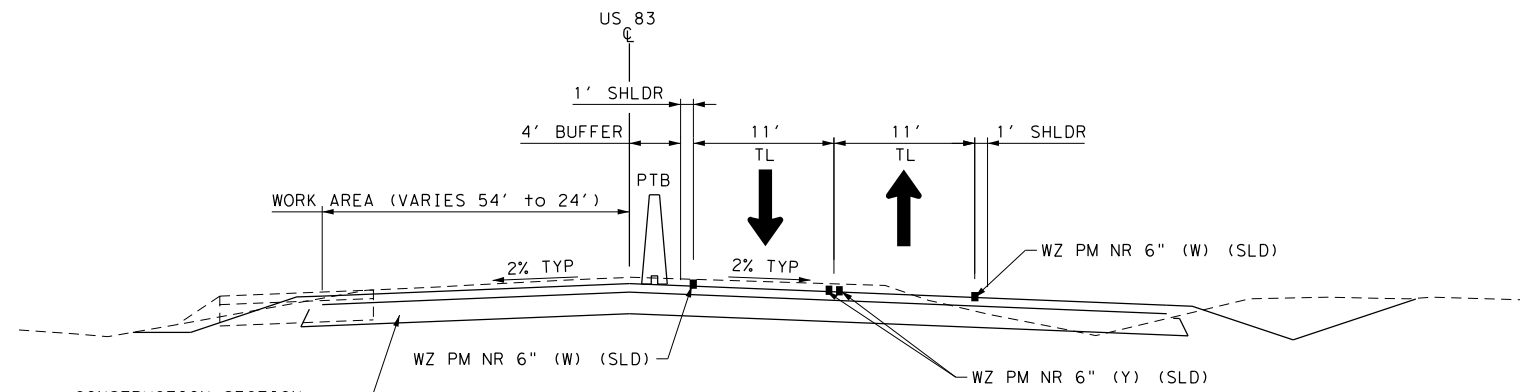
- STA 1765+37 TO 1777+37 (1A-S5)
- STA 1777+37 TO 1786+92 (1A-S5)(BRIDGE SECTION 7" MILLING, NO ACP TYB)
- STA 1786+92 TO 1798+92 (1A-S5)
- STA 1765+37 TO 1777+37 (1B-S5)
- STA 1777+37 TO 1786+92 (1B-S5)(BRIDGE SECTION 7" MILLING, NO ACP TYB)
- STA 1786+92 TO 1798+92 (1B-S5)

SHEET 1 OF 2

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>TCP</b> <b>TYPICAL SECTIONS</b> (PHASE A)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	42	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



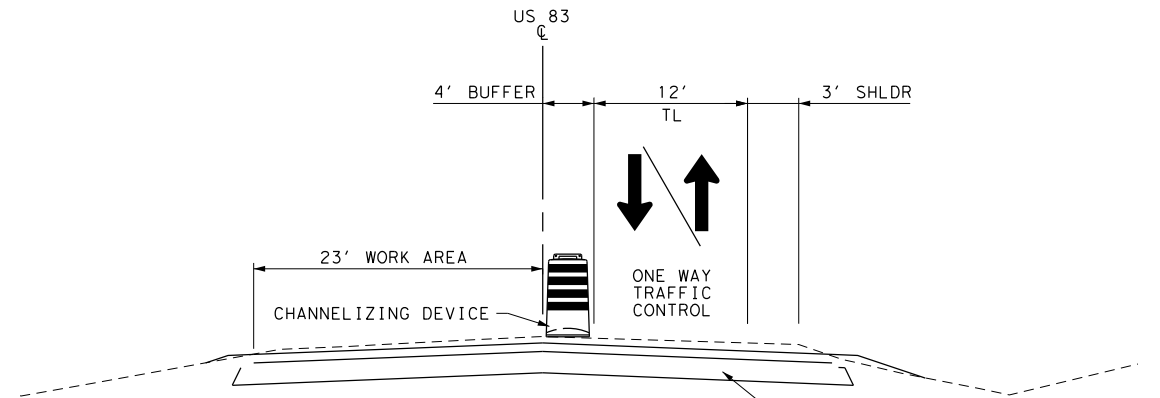
HORIZ. SCALE IN FEET  
(VERT. NOT TO SCALE)



CONSTRUCTION SECTION:  
-4" SP TY B  
-2" SP TY C  
-8" CEMENT TREATED BASE

**PHASE IB (NB)**

STA 1504+42 TO 1525+30 (PH 1B-S1)  
STA 1602+82 TO 1639+14 (PH 1B-S1)  
STA 1650+33 TO 1654+75 (PH 1B-S1)  
STA 1654+75 TO 1689+75 (PH 1B-S2)  
STA 1870+58 TO 1885+31 (PH 1B-S3)  
STA 1934+39 TO 1938+00 (PH 1B-S3)  
STA 1938+00 TO 2066+54 (PH 1B-S4)

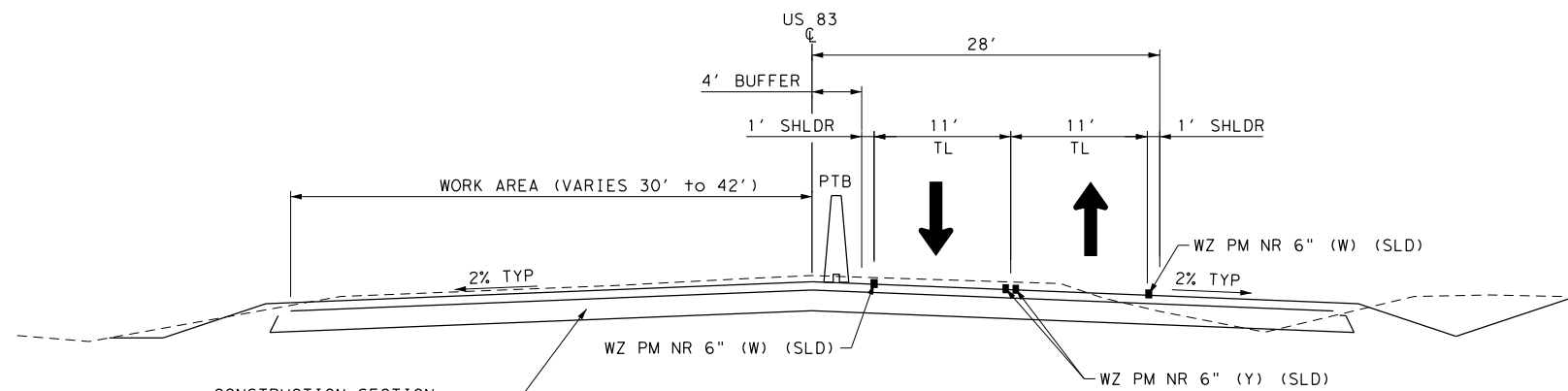


**PHASE IB-S2A SAN ROQUE BRIDGE**

STA 1765+37 TO 1798+92 (1B-S5)

USE STANDARD "TCP (2-8)-18" (2-8b)  
(ONE LANE TWO-WAY CONTROL WITH TRAFFIC SIGNAL)

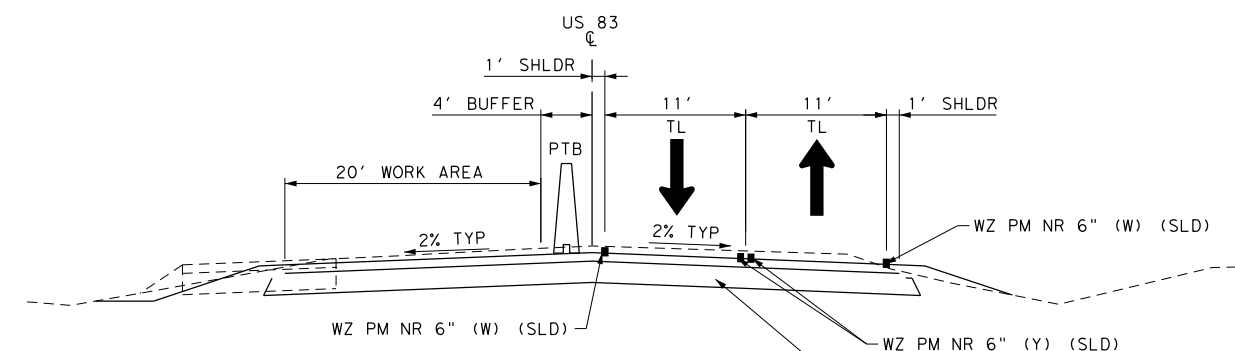
CONSTRUCTION SECTION:  
-4" SP TY B  
-2" SP TY C  
-8" CEMENT TREATED BASE



CONSTRUCTION SECTION:  
-4" SP TY B  
-2" SP TY C  
-8" CEMENT TREATED BASE

**PHASE IB (NB)**

STA 1525+30 TO 1602+82 (PH 1B-S1)  
STA 1639+14 TO 1650+33 (PH 1B-S1)  
STA 1885+31 TO 1934+39 (PH 1B-S3)



**PHASE IB (NB)**

STA 1689+75 TO 1765+37 (1B-S2)  
STA 1798+92 TO 1870+58 (1B-S3)  
STA 2066+54 TO 2077+15 (1B-S4)

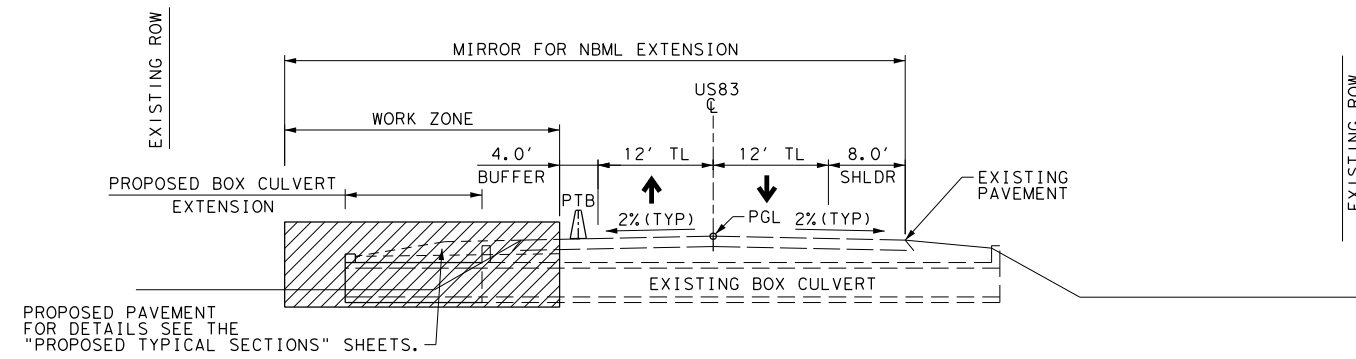
CONSTRUCTION SECTION:  
-4" SP TY B  
-2" SP TY C  
-8" CEMENT TREATED BASE



5-2-2024

SHEET 2 OF 2

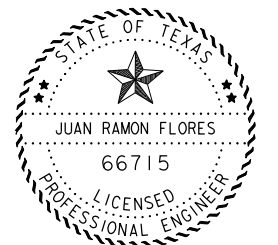
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 TCP TYPICAL SECTIONS (PHASE B)</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	43	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**PHASE I - EXISTING BOX CULVERTS TO BE EXTENDED PRIOR TO CONSTRUCTING DETOUR**

STRUCTURE LOCATIONS

STA	1523+61.56
STA	1532+62.52
STA	1616+38.81
STA	1667+67.15
STA	1709+92.91
STA	1721+98.69
STA	1737+17.33
STA	1753+01.00
STA	1793+21.00
STA	1864+06.00
STA	1957+55.00
STA	1989+28.00
STA	2007+13.00
STA	2014+57.00
STA	2040+97.00
STA	2048+85.00
STA	2055+69.00



*Juan Flores*

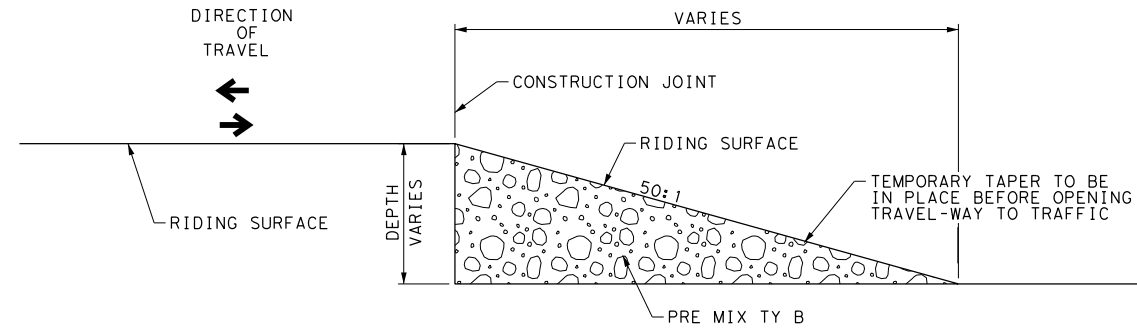
5-2-2024

SHEET 1 OF 1

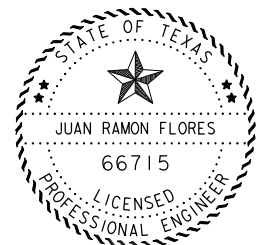
**NOTES:**

- REFER TO STANDARD BC(12)-14 FOR PAVEMENT MARKINGS DETAILS SET-UP, AND SPACING.
- REFER TO STANDARD TCP (2-1)-18 FOR TRAFFIC CONTROL SIGNING AND SPACING.
- REFER TO THE "CULVERT LAYOUT" PLAN SHEETS FOR ADDITIONAL INFORMATION.
- REMOVAL AND/OR EXTENSION OF DRAINAGE STRUCTURE WILL BE LIMITED TO LT SIDE OF THE ROADWAY, OR AS SPECIFIED BY THE ENGINEER.
- REFER TO "BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS" SHEETS FOR ADDITIONAL NOTES.
- THE WORK AREA WILL CONSIST OF THE REMOVAL AND/OR EXTENSION OF DRAINAGE STRUCTURE. WHEN ONE SIDE IS COMPLETE PROCEED WITH DETOUR CONSTRUCTION.
- TWO 11 FOOT TRAVEL LANES SHALL BE OPEN TO TRAFFIC AT ALL TIMES.

NO.	REVISIONS	BY	DATE
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<b>US 83</b> TCP DRAINAGE STRUCTURE DETAILS			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		44
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83





CONSTRUCTION JOINT TAPER - END OF WORK DAY (PROFILE)



*Juan Flores*

5-2-2024

SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>TCP CONSTRUCTION JOINT</b> <b>DETAIL</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		45
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

**NOTES:**

DURING ANY PHASE OF CONSTRUCTION, A CONSTRUCTION JOINT TAPER IS TO BE IN PLACE AT THE END OF THE WORK DAY PRIOR TO OPENING ALL LANES TO TRAFFIC, IN ALL DIRECTIONS.

USE FOR ALL LONGITUDINAL DROP-OFFS WHICH MAY RESULT FROM PLANING, OVERLAYS, OR ANY OTHER CONSTRUCTION OPERATIONS.

PLACEMENT AND REMOVAL OF THIS CONSTRUCTION TAPER DURING CONSTRUCTION WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO ITEM 502. TAPER MATERIAL SHALL BE PREMIX/TY B.

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LOC #	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION												
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE / RESET		L	L	R	R	S	S			
															MOVE / RESET	FROM LOC. #							N	W	N
1	1A-S1	53	BEGIN PTB	STA. 1492+31.40	TL-3	BI	N/A	N/A	SSCB	24"	42"		X										X		
2	1A-S1	53	SAN DOMINGO AVE	STA. 1539+93.79	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
3	1A-S1	53	SAN DOMINGO AVE	STA. 1541+78.93	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
4	1A-S1	53	SAN ESTEVAN AVE	STA. 1544+59.08	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
5	1A-S1	53	SAN ESTEVAN AVE	STA. 1546+44.48	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
6	1A-S1	53	SAN FRANCISCO AVE	STA. 1549+39.15	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
7	1A-S1	53	SAN FRANCISCO AVE	STA. 1551+24.63	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
8	1A-S1	53	SAN GREGORIO AVE	STA. 1552+64.86	TL-3	BI	N/A	N/A	SSCB	24"	42"	445'	X										X		
9	1A-S1	53	SAN GREGORIO AVE	STA. 1557+09.47	TL-3	BI	N/A	N/A	SSCB	24"	42"	445'	X										X		
10	1A-S1	53	SAN HILARIO AVE	STA. 1558+69.59	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
11	1A-S1	53	SAN HILARIO AVE	STA. 1560+54.24	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
12	1A-S1	53	SAN JACINTO AVE	STA. 1568+06.75	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
13	1A-S1	53	SAN JACINTO AVE	STA. 1569+91.11	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
14	1A-S1	53	SAN LAZARO AVE	STA. 1572+80.69	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
15	1A-S1	53	SAN LAZARO AVE	STA. 1574+65.86	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
16	1A-S1	53	SAN MATEO AVE	STA. 1577+51.93	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
17	1A-S1	53	SAN MATEO AVE	STA. 1579+36.49	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
18	1A-S1	53	PVT. DRWY	STA. 1582+93.20	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
19	1A-S1	53	PVT. DRWY	STA. 1584+77.92	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
20	1A-S1	53	PVT. DRWY	STA. 1594+26.93	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'	X										X		
21	1A-S1	53	PVT. DRWY	STA. 1596+10.91	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'	X										X		
22	1A-S1	54	PVT. DRWY	STA. 1608+43.32	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
23	1A-S1	54	PVT. DRWY	STA. 1610+28.73	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'	X										X		
24	1A-S1	54	PVT. DRWY	STA. 1630+60.12	TL-3	BI	N/A	N/A	SSCB	24"	42"	180'	X										X		
25	1A-S1	54	PVT. DRWY	STA. 1632+40.03	TL-3	BI	N/A	N/A	SSCB	24"	42"	180'	X										X		
26	1B-S1	55	OLD US83	STA. 1507+69.73	TL-3	BI	N/A	N/A	SSCB	24"	42"	444'										X			
27	1B-S1	55	OLD US83	STA. 1512+14.02	TL-3	BI	N/A	N/A	SSCB	24"	42"	444'										X			
																							X		
																								X	
												TOTALS	25										2		

LEGEND:  
 L=LOW MAINTENANCE  
 R=REUSABLE  
 S=SACRIFICIAL  
 N=NARROW  
 W=WIDE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.  
<http://www.dot.state.tx.us/insdot/orgchart/cmd/cserve/standard/rdwylse.htm>

## CRASH CUSHION SUMMARY SHEET

SHEET 1 OF 3			
FILE: ccss.dgn	DN: TxDOT	CK:	CK:
© TxDOT	CONT	SECT	JOB
REVISIONS	0037	08042, ETC.	US 83
	DIST	COUNTY	
	LRD	DIMMIT	
	STATE AID PROJECT NO.		SHEET NO.
	C-37-08-42		46

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LOC #	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION																				
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE / RESET		L	L	R	R	S	S											
															MOVE/RESET	FROM LOC. #							N	W	N	W	N	W					
28	1B-S1	55	PVT. DRWY	STA. 1521+49.68	TL-3	BI	N/A	N/A	SSCB	24"	42"			X	3							X											
29	1B-S1	55	PVT. DRWY	STA. 1523+33.53	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	4							X											
30	1B-S1	55	PVT. DRWY	STA. 1539+94.15	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	5							X											
31	1B-S1	55	PVT. DRWY	STA. 1541+78.57	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	6							X											
32	1B-S1	55	PVT. DRWY	STA. 1544+59.54	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	7							X											
33	1B-S1	55	PVT. DRWY	STA. 1546+44.18	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	8							X											
34	1B-S1	55	PVT. DRWY	STA. 1549+34.77	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	9							X											
35	1B-S1	55	PVT. DRWY	STA. 1551+19.13	TL-3	BI	N/A	N/A	SSCB	24"	42"	445'		X	10							X											
36	1B-S1	55	PVT. DRWY	STA. 1554+02.91	TL-3	BI	N/A	N/A	SSCB	24"	42"	445'		X	11							X											
37	1B-S1	55	PVT. DRWY	STA. 1555+87.51	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	12							X											
38	1B-S1	55	PVT. DRWY	STA. 1558+71.59	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	13							X											
39	1B-S1	55	PVT. DRWY	STA. 1560+56.09	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	14							X											
40	1B-S1	55	PVT. DRWY	STA. 1568+07.91	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	15							X											
41	1B-S1	55	PVT. DRWY	STA. 1569+92.47	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	16							X											
42	1B-S1	55	PVT. DRWY	STA. 1572+80.65	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	17							X											
43	1B-S1	55	PVT. DRWY	STA. 1574+65.26	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	18							X											
44	1B-S1	55	PVT. DRWY	STA. 1577+48.97	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	19							X											
45	1B-S1	55	PVT. DRWY	STA. 1579+33.49	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	20							X											
46	1B-S1	55	FM 133	STA. 1589+89.69	TL-3	BI	N/A	N/A	SSCB	24"	42"	444'		X	21							X											
47	1B-S1	55	FM 133	STA. 1594+33.97	TL-3	BI	N/A	N/A	SSCB	24"	42"	444'		X	22							X											
48	1B-S1	56	PVT. DRWY	STA. 1611+04.95	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	23							X											
49	1B-S1	56	PVT. DRWY	STA. 1612+89.30	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'		X	24							X											
50	1B-S1	56	END PBT	STA. 1666+75.59	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'		X	25							X											
51	1A-S2	57	BEGIN PBT	STA. 1642+75.07	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'		X	26							X											
52	1A-S2	57	PVT. DRWY	STA. 1717+81.08	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'		X	27							X											
53	1A-S2	57	PVT. DRWY	STA. 1719+65.12	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'		X	28							X											
54	1A-S2	57	PVT. DRWY	STA. 1738+76.17	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'		X	29							X											
55	1A-S2	57	PVT. DRWY	STA. 1740+60.37	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'		X	30							X											
																						X											
												TOTALS			28																		

LEGEND:  
 L=LOW MAINTENANCE  
 R=REUSABLE  
 S=SACRIFICIAL  
 N=NARROW  
 W=WIDE

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<http://www.dot.state.tx.us/insdot/orgchart/cmd/cserve/standard/rdwylse.htm>

### CRASH CUSHION SUMMARY SHEET

SHEET 2 OF 3

FILE: ccss.dgn	DN: TxDOT	CK:	CK:
© TxDOT	CONT	SECT	JOB
REVISIONS	0037	08042, ETC.	US 83
	DIST	COUNTY	
	LRD	DIMMIT	
	STATE AID PROJECT NO.		SHEET NO.
	C-37-08-42		47

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 TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

LOC #	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION												
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE / RESET		L	L	R	R	S	S			
															MOVE/RESET	FROM LOC. #							N	W	N
56	1A-S2	57	PVT. DRWY	STA. 1746+27.22	TL-3	BI	N/A	N/A	SSCB	24"	42"				X	31								X	
57	1A-S2	57	PVT. DRWY	STA. 1748+11.44	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'			X	32								X	
58	1A-S2	57	PVT. DRWY	STA. 1753+61.10	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'			X	33								X	
59	1A-S2	57	PVT. DRWY	STA. 1755+45.27	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'			X	34								X	
60	1B-S2	58	PVT. DRWY	STA. 1727+74.73	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	51								X	
61	1B-S2	58	PVT. DRWY	STA. 1729+51.97	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	52								X	
62	1B-S2	58	END PBT	STA. 1777+11.58	TL-3	BI	N/A	N/A	SSCB	24"	42"				X	53								X	
63	1A-S3	59	BEGIN PBT	STA. 1788+83.37	TL-3	BI	N/A	N/A	SSCB	24"	42"				X	60								X	
64	1A-S3	59	PVT. DRWY	STA. 1879+10.05	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	61								X	
65	1A-S3	59	PVT. DRWY	STA. 1880+94.06	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	62								X	
66	1B-S3	57	PVT. DRWY	STA. 1844+00.00	TL-3	BI	N/A	N/A	SSCB	24"	42"	184'			X	63								X	
67	1B-S3	58	PVT. DRWY	STA. 1845+83.00	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	64								X	
68	1B-S3	58	PVT. DRWY	STA. 1877+89.00	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	65								X	
69	1B-S3	58	PVT. DRWY	STA. 1882+32.00	TL-3	BI	N/A	N/A	SSCB	24"	42"		X											X	
70	1B-S3	59	END PBT	STA. 1950+00.00	TL-3	BI	N/A	N/A	SSCB	24"	42"		X											X	
71	1A-S4	59	BEGIN PBT	STA. 1925+48.00	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	70								X	
72	1B-S4	59	END PBT	STA. 2089+14.00	TL-3	BI	N/A	N/A	SSCB	24"	42"	185'			X	71								X	
												TOTALS	2	27	15										

LEGEND:  
 L=LOW MAINTENANCE  
 R=REUSABLE  
 S=SACRIFICIAL  
 N=NARROW  
 W=WIDE

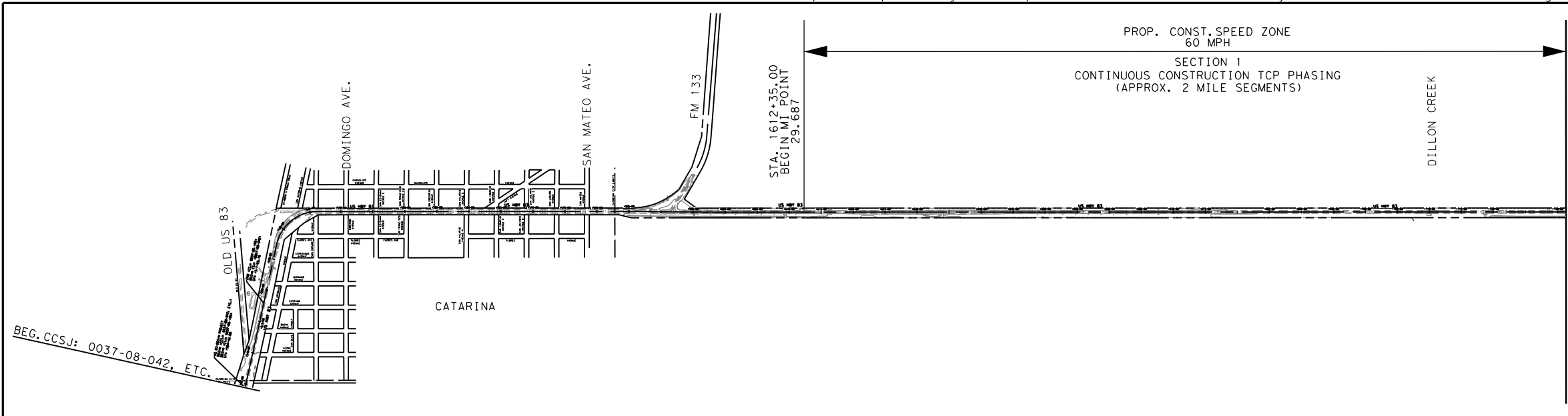
FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.  
<http://www.dot.state.tx.us/insdot/orgchart/cmd/cserve/standard/rdwylse.htm>

CRASH CUSHION SUMMARY SHEET

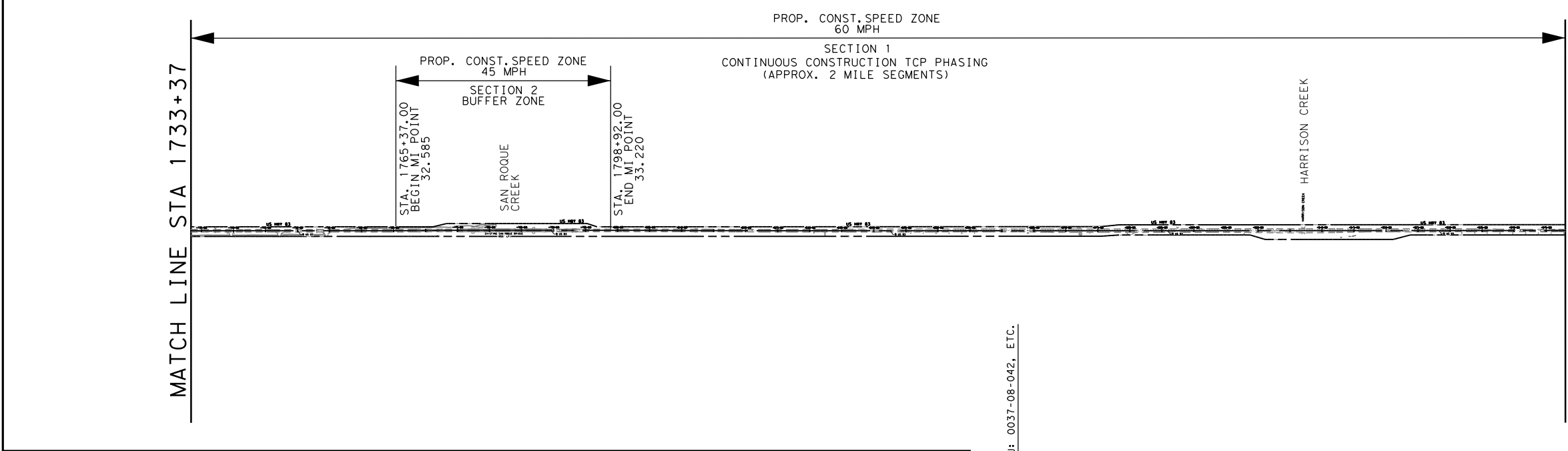
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© TxDOT	CONT	SECT	JOB
REVISIONS	0037	08042, ETC. US 83	
	DIST	COUNTY	
	LRD	DIMMIT	
	STATE AID PROJECT NO.		SHEET NO.
	C-37-08-42		48



NOTE:  
REDUCED SPEED SHOULD ONLY BE POSTED IN THE VICINITY OF WORK ACTIVITY AND NOT THROUGHOUT THE ENTIRE PROJECT.

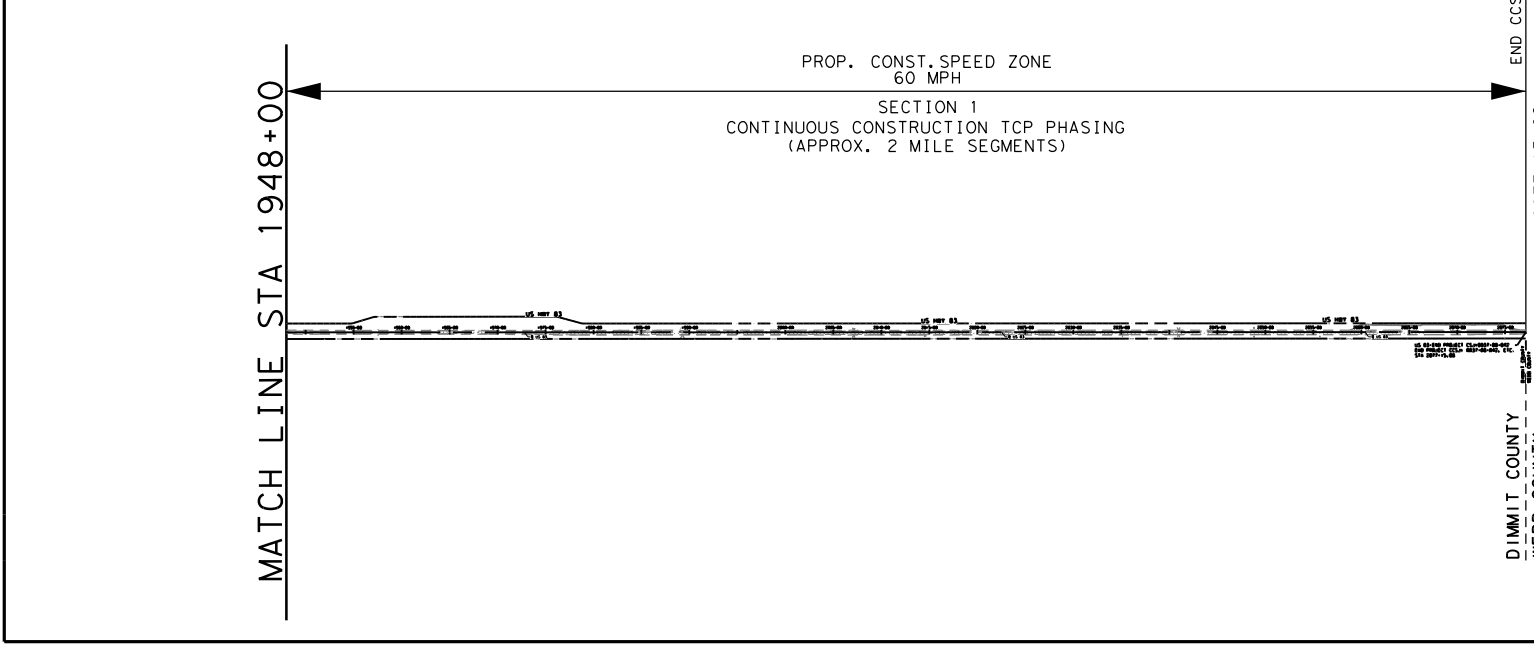


MATCH LINE STA 1733+37



MATCH LINE STA 1733+37

MATCH LINE STA 1948+00



MATCH LINE STA 1948+00

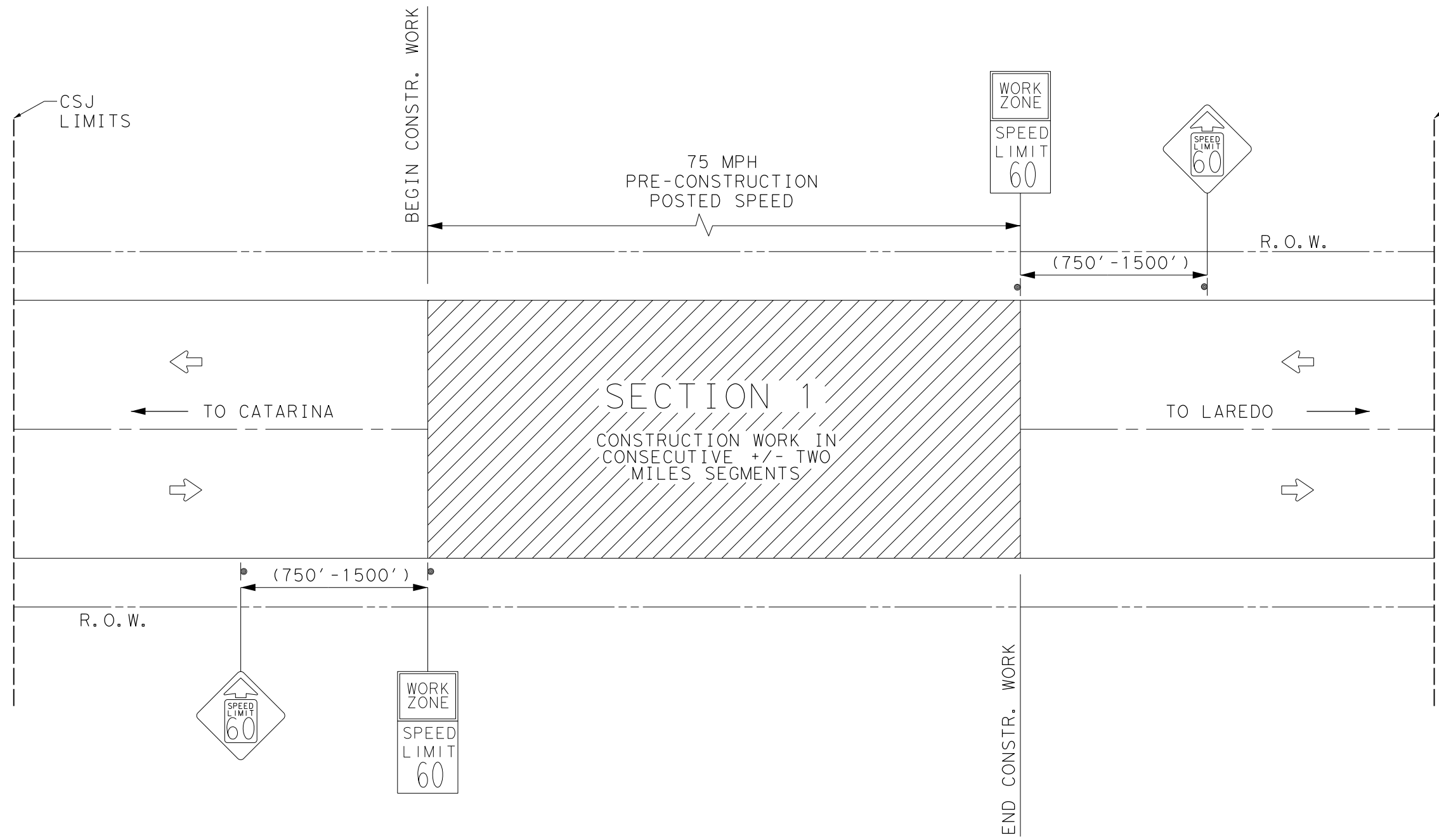
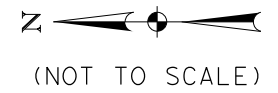
DIMMIT COUNTY  
WEBB COUNTY  
STA. 2077+15.08  
END MI POINT  
38.464  
END CCSJ: 0037-08-042, ETC.



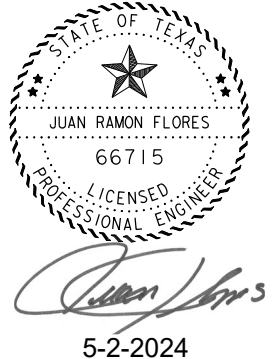
SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation; all rights reserved.			
<b>US 83 REGULATORY CONSTRUCTION SPEED ZONE DIAGRAM</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		49
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMITT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83





LEGEND	
	REGULATORY WORK ZONE SIGN
	WORK ZONE
	TRAFFIC FLOW



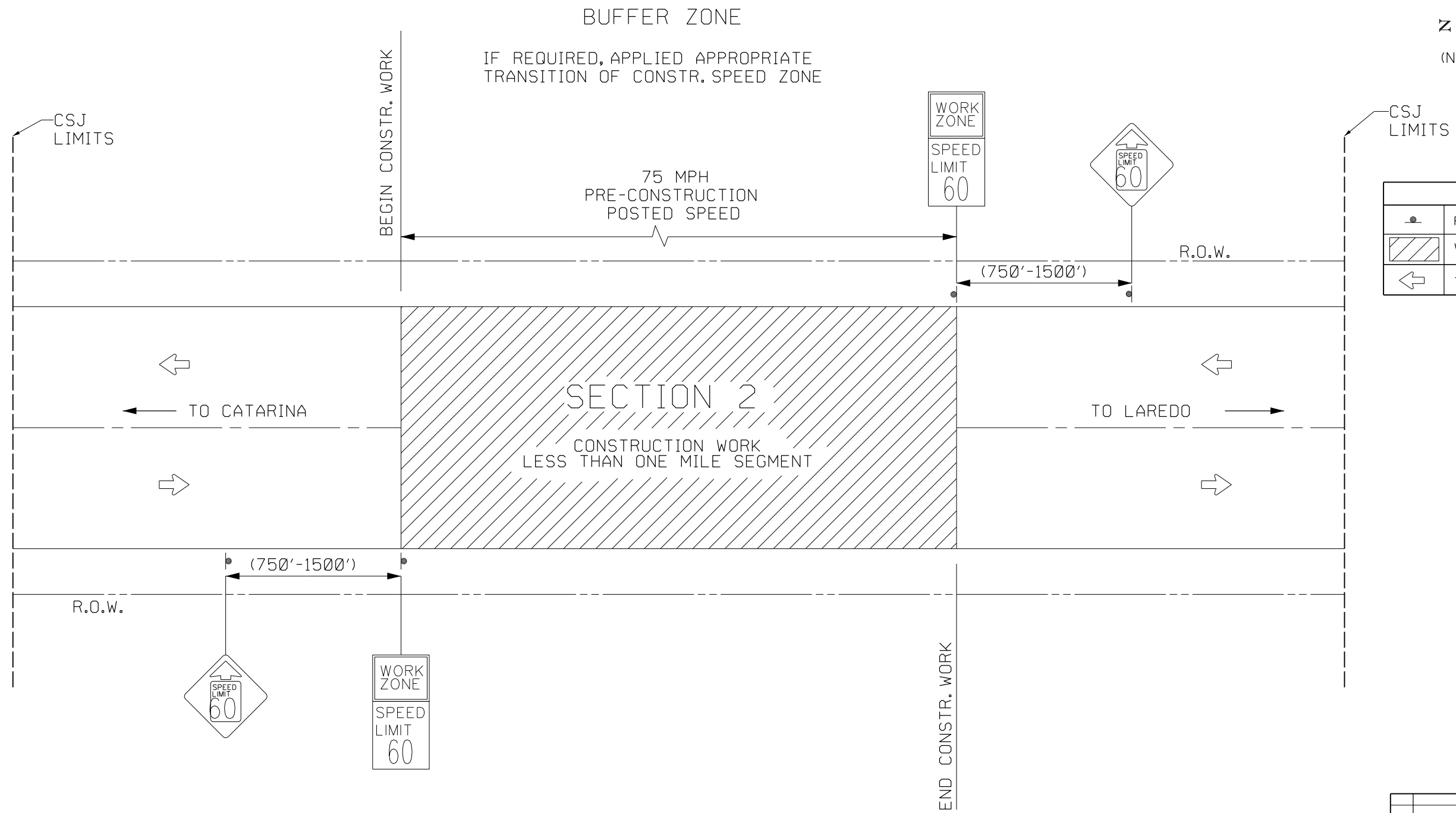
PROP. CONSTR. WORK ZONE SPEED LIMITS

NOTES:

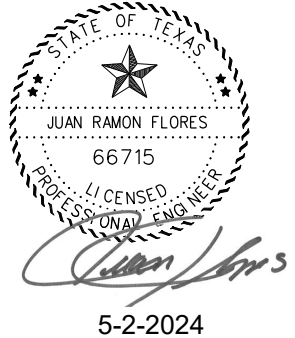
1. FOR PROP. CONSTR. SPEED ZONE SECTIONS, REFER TO DIAGRAM PLAN SHEET.
2. REGULATORY CONSTRUCTION SPEED ZONE REDUCTION SHOWN ON DETAIL ABOVE ARE FOR ILLUSTRATION ONLY.
3. TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS SHALL BE IN ACCORDANCE TO "BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT" STANDARD SHEETS.

SHEET 1 OF 2

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation, all rights reserved.			
<b>US 83</b> <b>CONSTRUCTION SPEED</b> <b>ZONE DETAIL</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		50
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



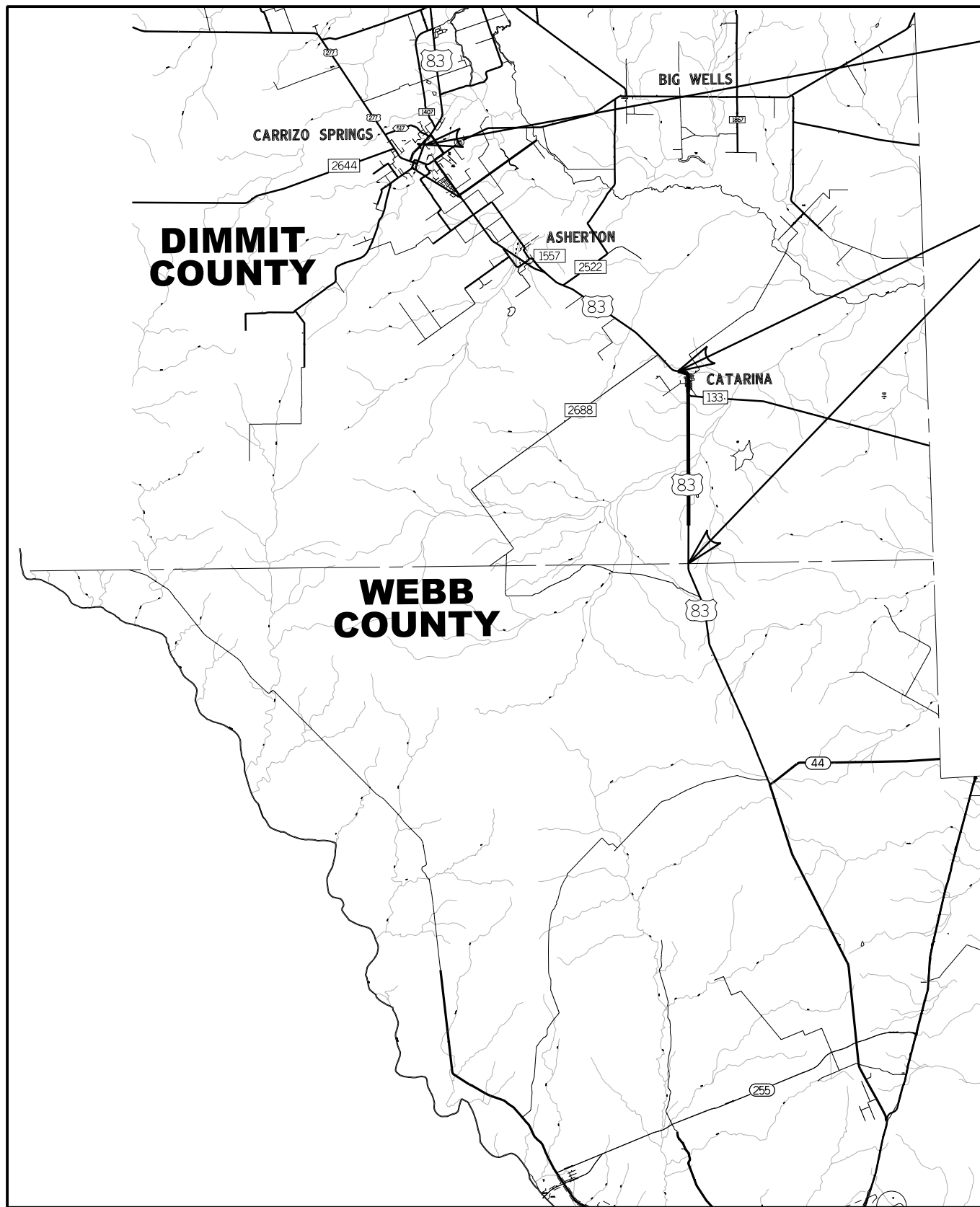
LEGEND	
	REGULATORY WORK ZONE SIGN
	WORK ZONE
	TRAFFIC FLOW



## PROP. CONSTR. WORK ZONE SPEED LIMITS

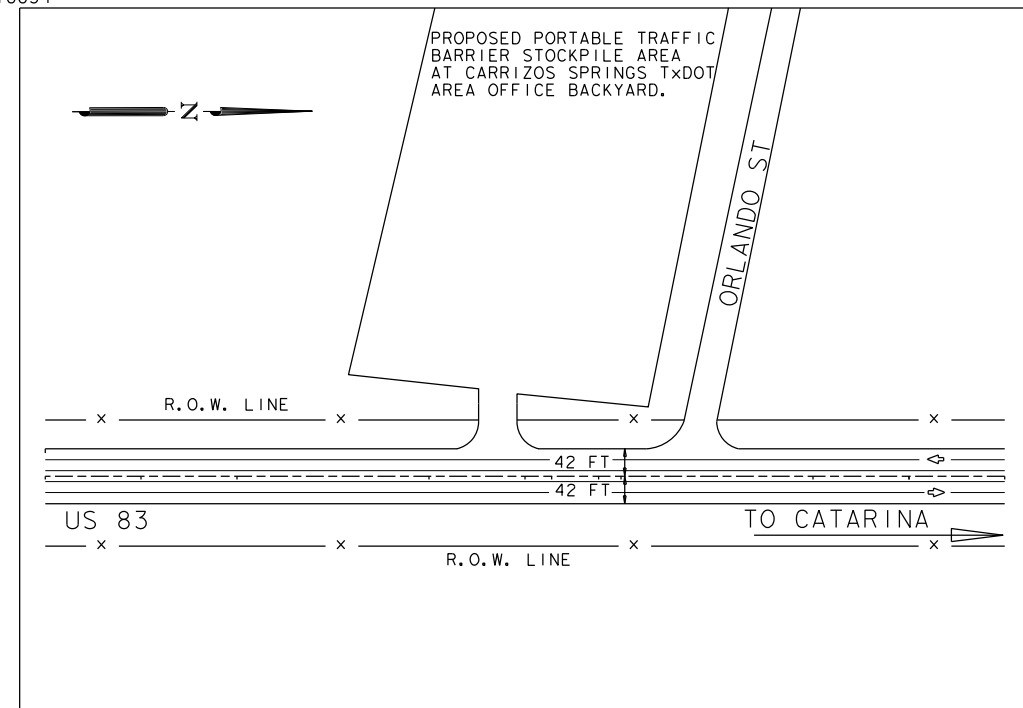
- NOTES:
- FOR PROP. CONSTR. SPEED ZONE SECTIONS, REFER TO DIAGRAM PLAN SHEET.
  - REGULATORY CONSTRUCTION SPEED ZONE REDUCTION SHOWN ON DETAIL ABOVE ARE FOR ILLUSTRATION ONLY.
  - TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS SHALL BE IN ACCORDANCE TO "BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT" STANDARD SHEETS.

REVISIONS			
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>CONSTRUCTION SPEED</b> <b>ZONE DETAIL</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		51
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



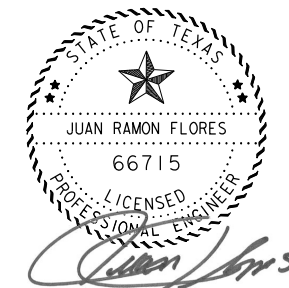
PROPOSED PCTB STOCKPILE LOCATION APPROXIMATELY 19.8 MILES FROM BEGIN PROJECT TO CARRIZO SPRINGS TxDOT AREA OFFICE 2001 N FIRST ST, CARRIZO SPRINGS, TX 78834

PROJECT LIMITS



PORTABLE TRAFFIC BARRIER STOCKPILE LOCATION (NOT TO SCALE)

- NOTE:
1. SPECIFIC LOCATION OF THE PTB TO BE APPROVED BY THE OFFICE AREA ENGINEER.
  2. CONTRACTOR TO NOTIFY TxDOT AREA OFFICE ENGINEER TWO WEEKS IN ADVANCE PRIOR TO HAULING PTB TO STOCKPILE LOCATION.

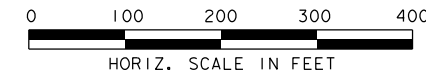


5-2-2024

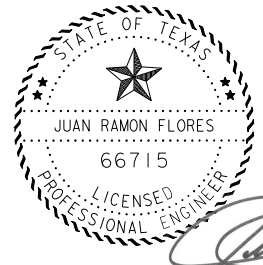
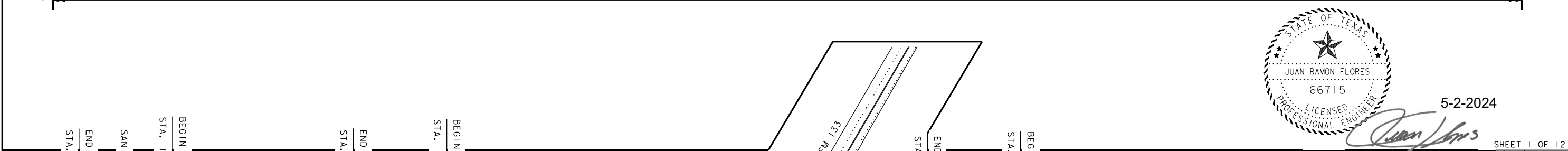
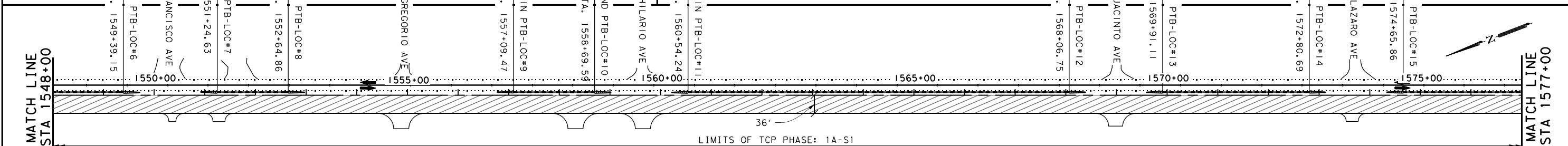
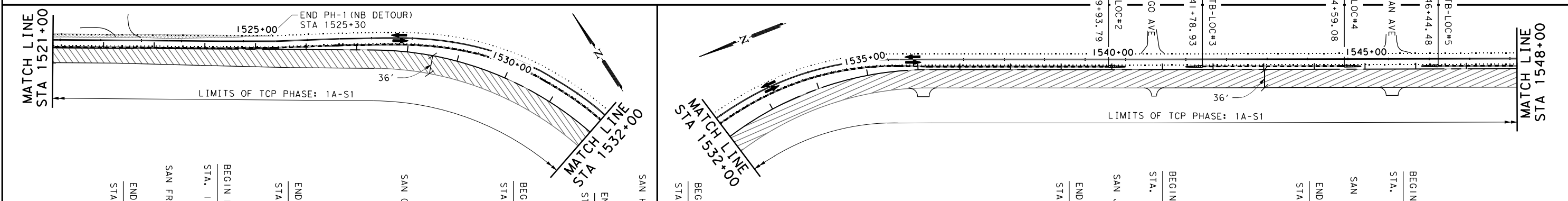
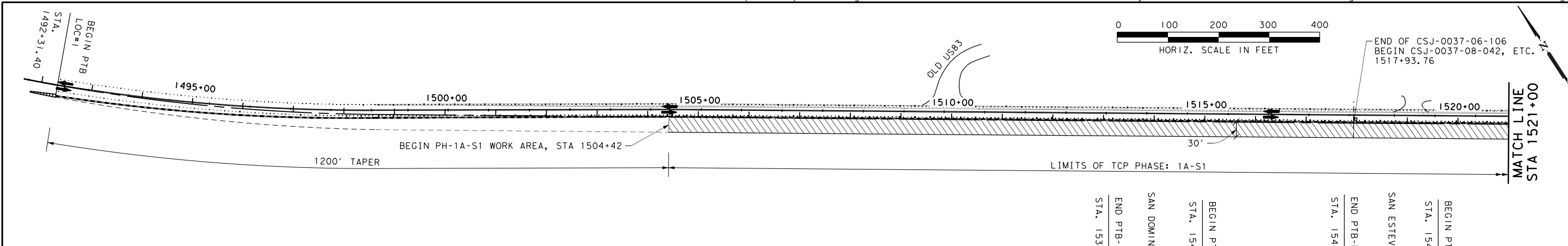
SCALE: 1 IN : 4000 FT (APPROX.)

SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation, all rights reserved			
<b>US 83 EXISTING PTB STOCKPILE LOCATION</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		52
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



END OF CSJ-0037-06-106  
BEGIN CSJ-0037-08-042, ETC.  
1517+93.76



5-2-2024

SHEET 1 OF 12

NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

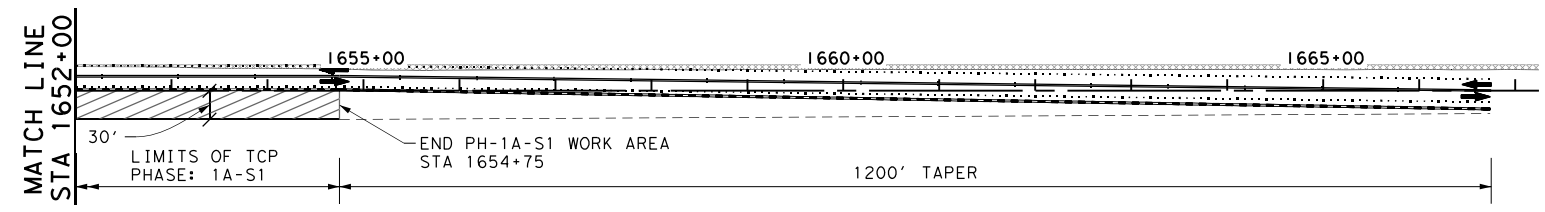
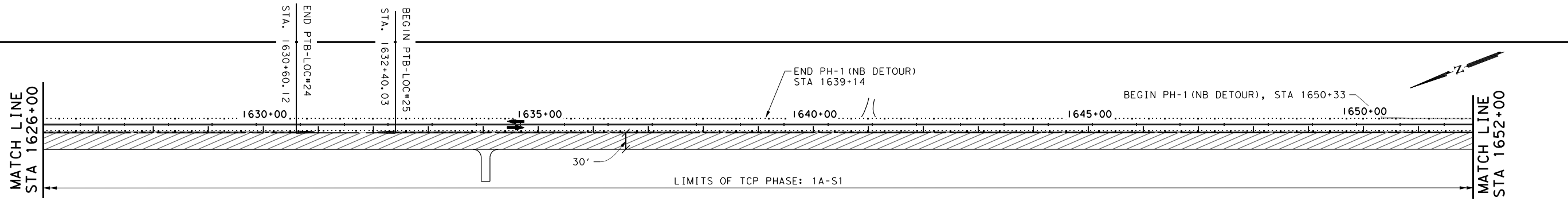
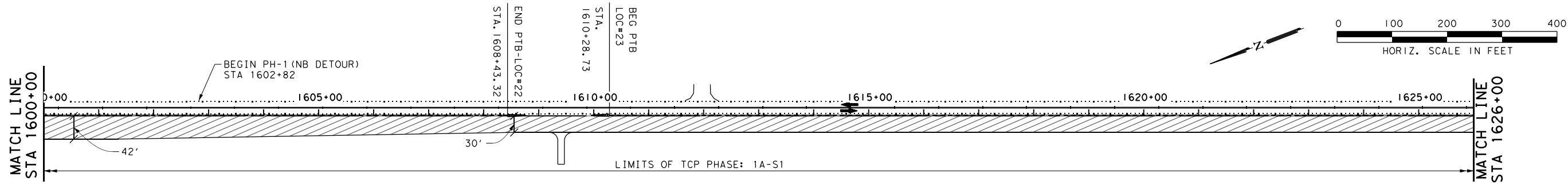
Texas Department of Transportation  
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**US 83**  
**TCP PHASING LAYOUT**  
**STA 1504+42 TO 1600+00**  
**(PHASE 1A-S1)**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	53	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

**LEGEND:**

	TCP C/L STRIPE
	TCP EDGE LINE STRIPE
	TCP WIDENING
	TCP WORK AREA
	TCP CRASH ATTENUATOR
	TCP TRAFFIC ARROWS
	TCP TRAFFIC BARRIER



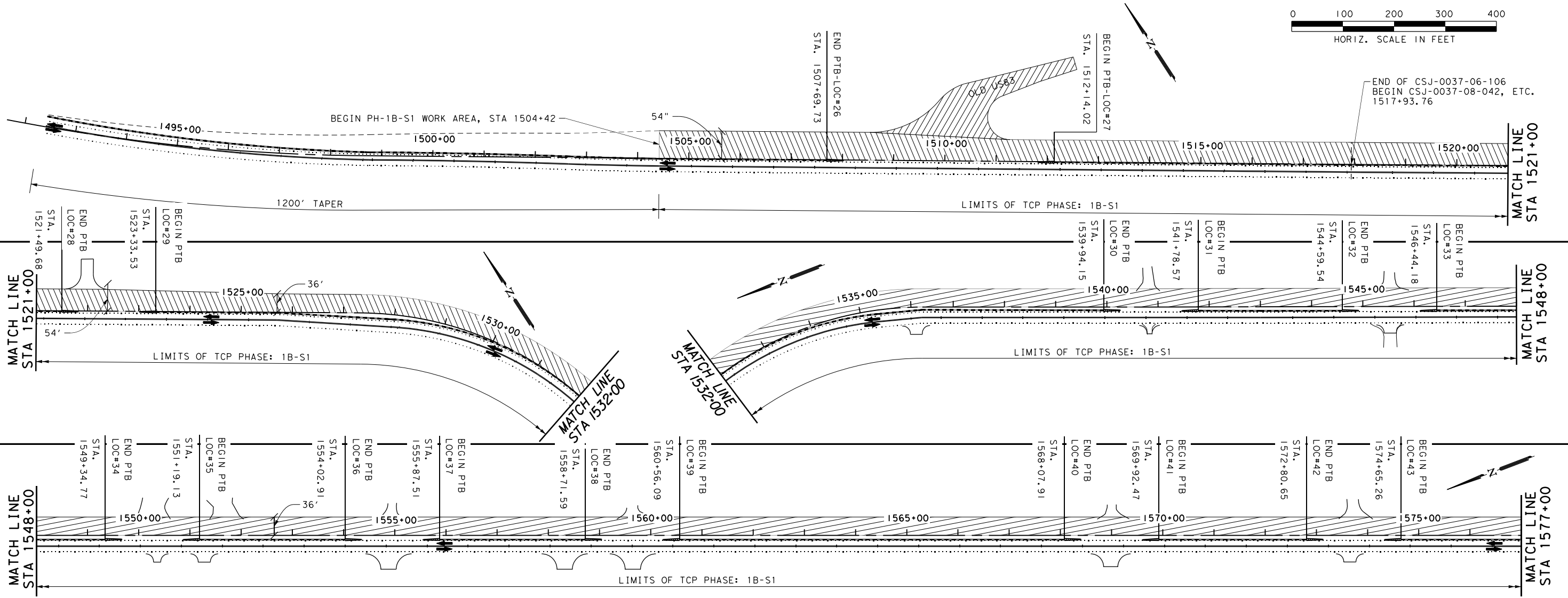
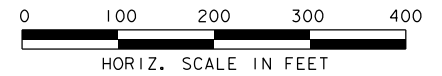
JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
  
 5-2-2024

SHEET 2 OF 12

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
 ©2020 by Texas Department of Transportation, all rights reserved.			
<b>US 83</b> <b>TCP PHASING LAYOUT</b> <b>STA 1600+00 TO 1654+75</b> (PHASE 1A-S1)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	54	
STATE	DISTRICT COUNTY		
TEXAS	LRD DIMMIT	HIGHWAY NO.	
CONTROL	SECTION JOB	US 83	
0037	08 042, ETC.		

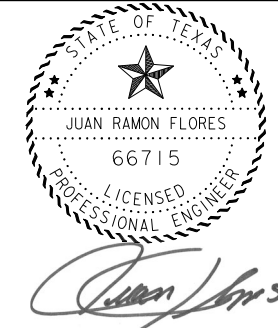
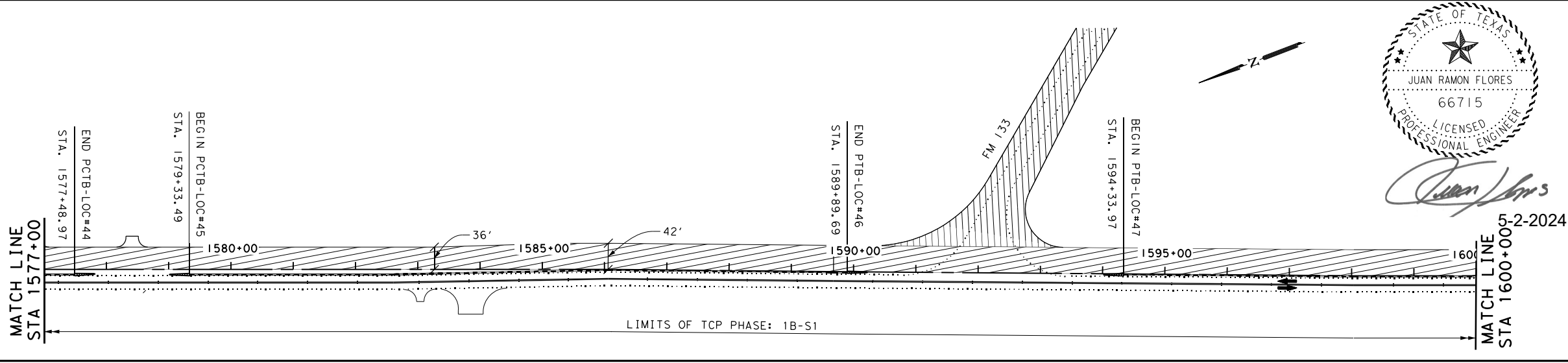
LEGEND:

	TCP C/L STRIPE
	TCP EDGE LINE STRIPE
	TCP WIDENING
	TCP WORK AREA
	TCP CRASH ATTENUATOR
	TCP TRAFFIC ARROWS
	TCP TRAFFIC BARRIER



LEGEND:

- TCP C/L STRIPE
- TCP EDGE LINE STRIPE
- TCP WIDENING
- TCP WORK AREA
- TCP CRASH ATTENUATOR
- TCP TRAFFIC ARROWS
- TCP TRAFFIC BARRIER



*Juan Flores*

SHEET 3 OF 12

NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

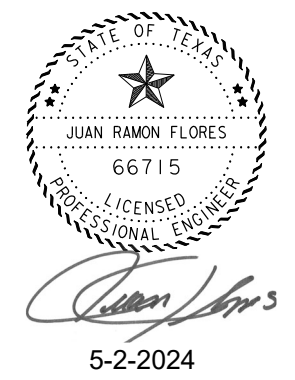
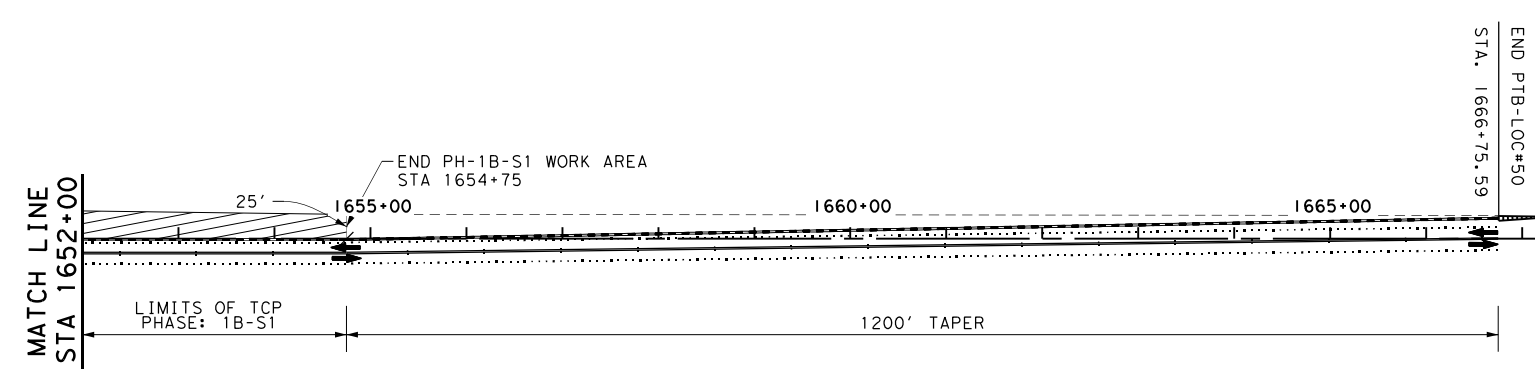
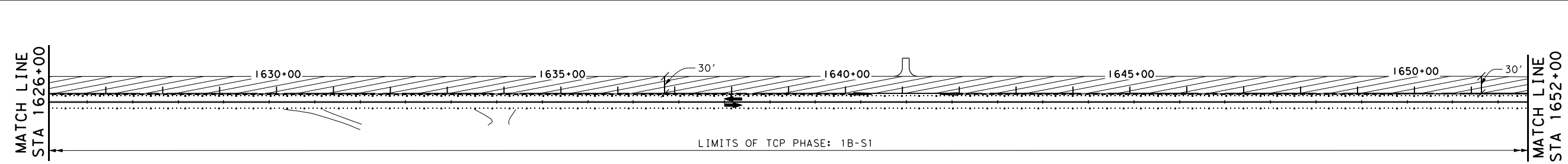
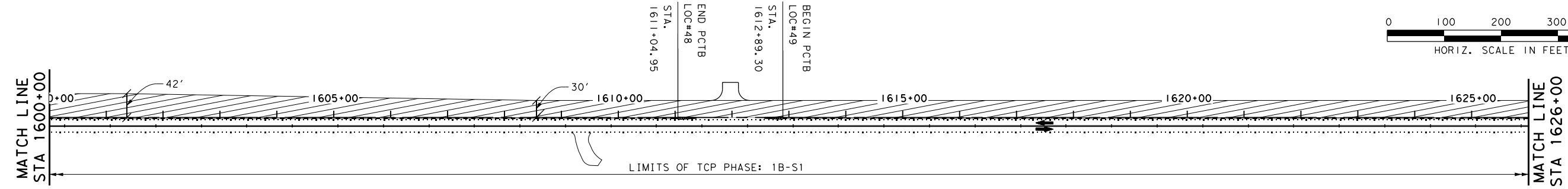
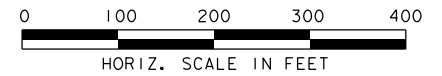
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**US 83**  
**TCP PHASING LAYOUT**  
**STA 1504+42 TO 1600+00**  
(PHASE 1B-S1)

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	55
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83

5-2-2024

6/11/2020 4:03:52 PM



SHEET 4 OF 12

NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

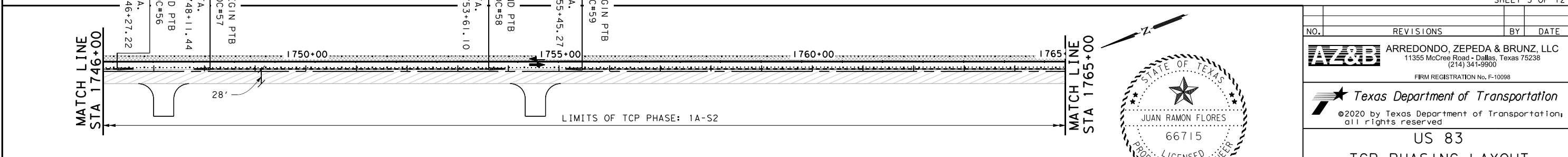
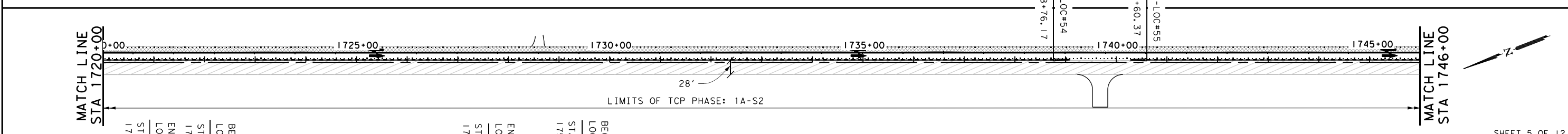
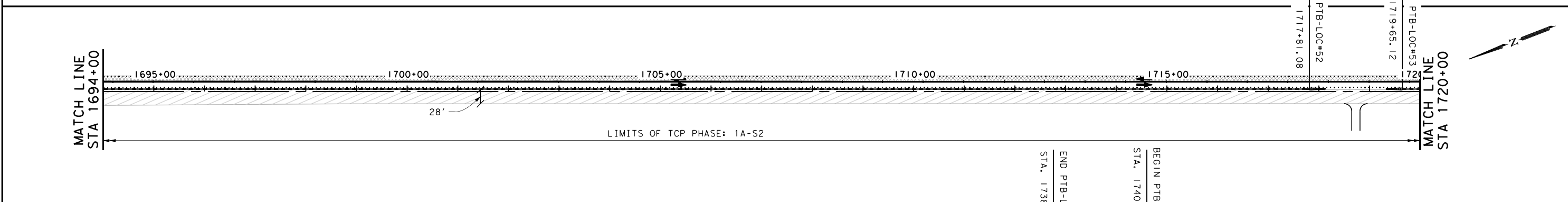
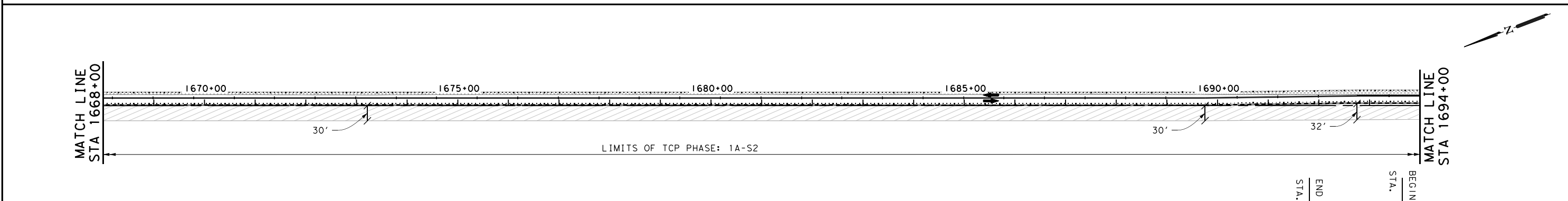
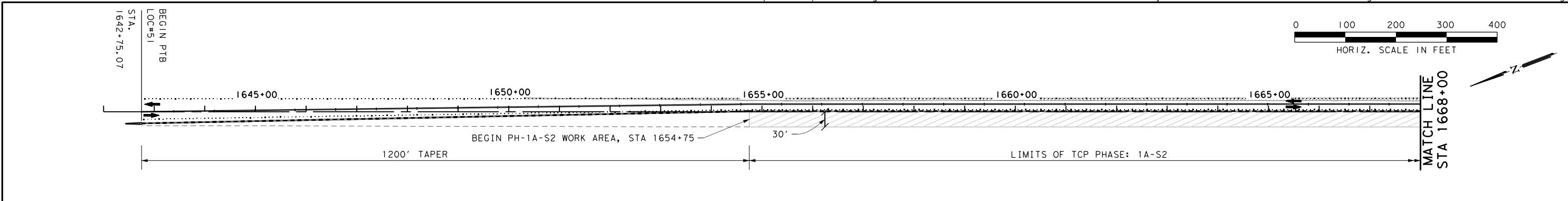
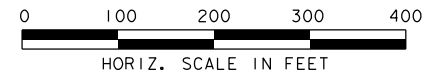
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**US 83**  
**TCP PHASING LAYOUT**  
**STA 1600+00 TO 1654+75**  
 (PHASE 1B-S1)

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	56
STATE	DISTRICT COUNTY	
TEXAS	LRD DIMMIT	HIGHWAY NO.
CONTROL	SECTION JOB	
0037	08 042, ETC.	US 83

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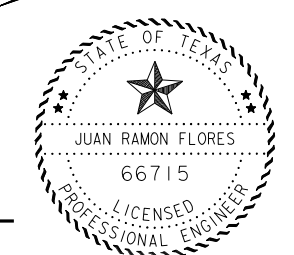
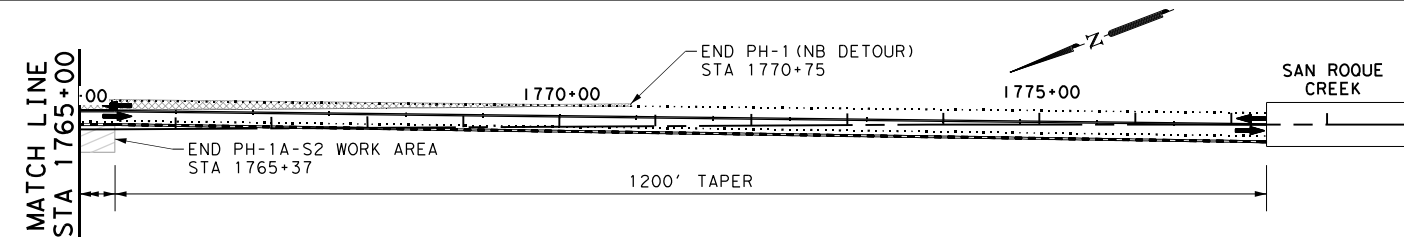
	TCP C/L STRIPE
	TCP EDGE LINE STRIPE
	TCP WIDENING
	TCP WORK AREA
	TCP CRASH ATTENUATOR
	TCP TRAFFIC ARROWS
	TCP TRAFFIC BARRIER



SHEET 5 OF 12

**LEGEND:**

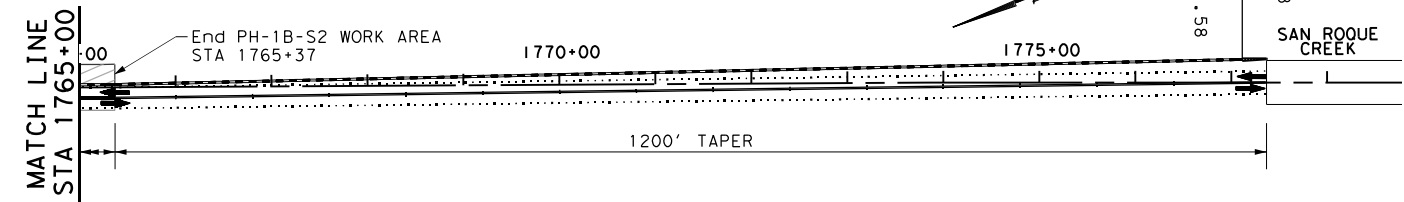
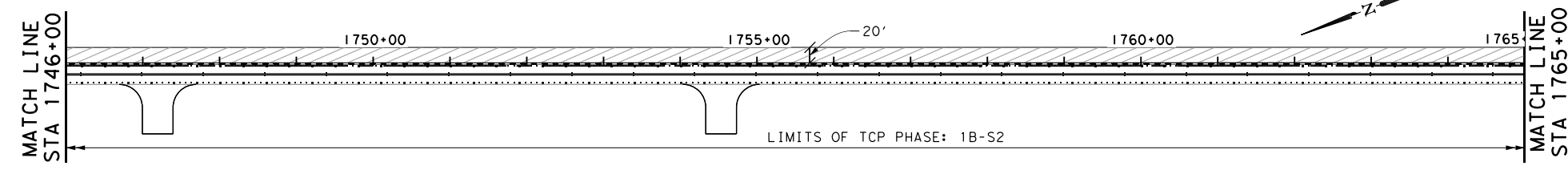
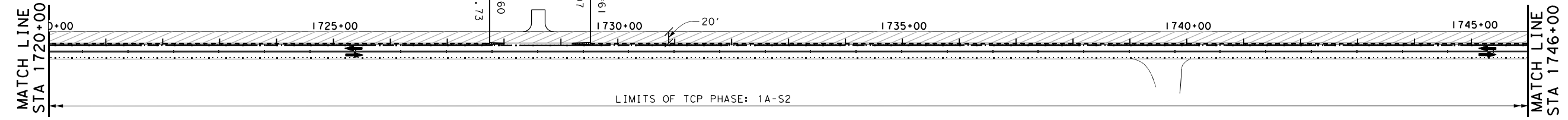
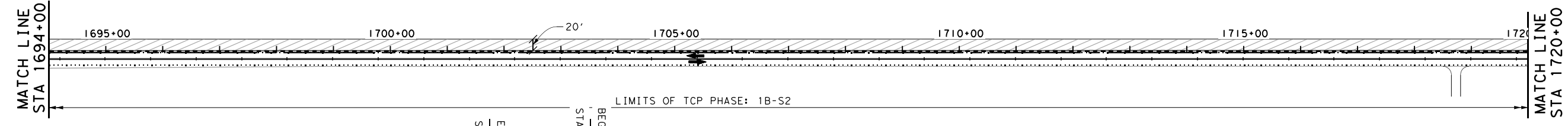
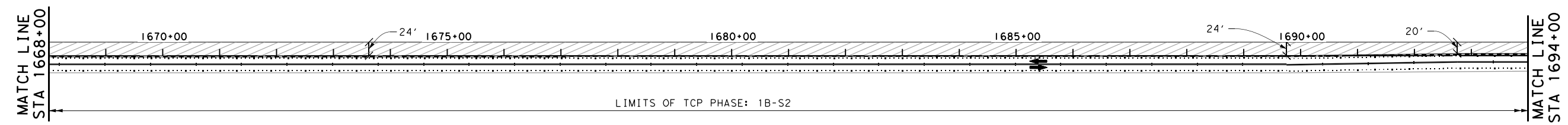
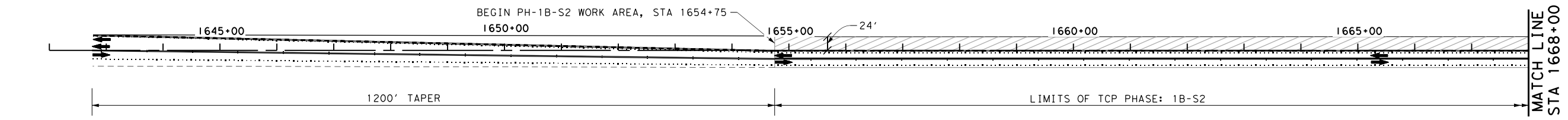
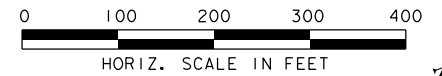
- TCP C/L STRIPE
- TCP EDGE LINE STRIPE
- TCP WIDENING
- TCP WORK AREA
- TCP CRASH ATTENUATOR
- TCP TRAFFIC ARROWS
- TCP TRAFFIC BARRIER



*Juan Flores*  
5-2-2024

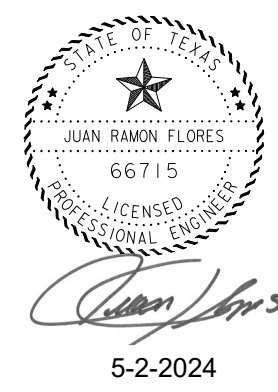
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>TCP PHASING LAYOUT</b> <b>STA 1654+75 TO 1765+37</b> <b>(PHASE 1A-S2)</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	57	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83





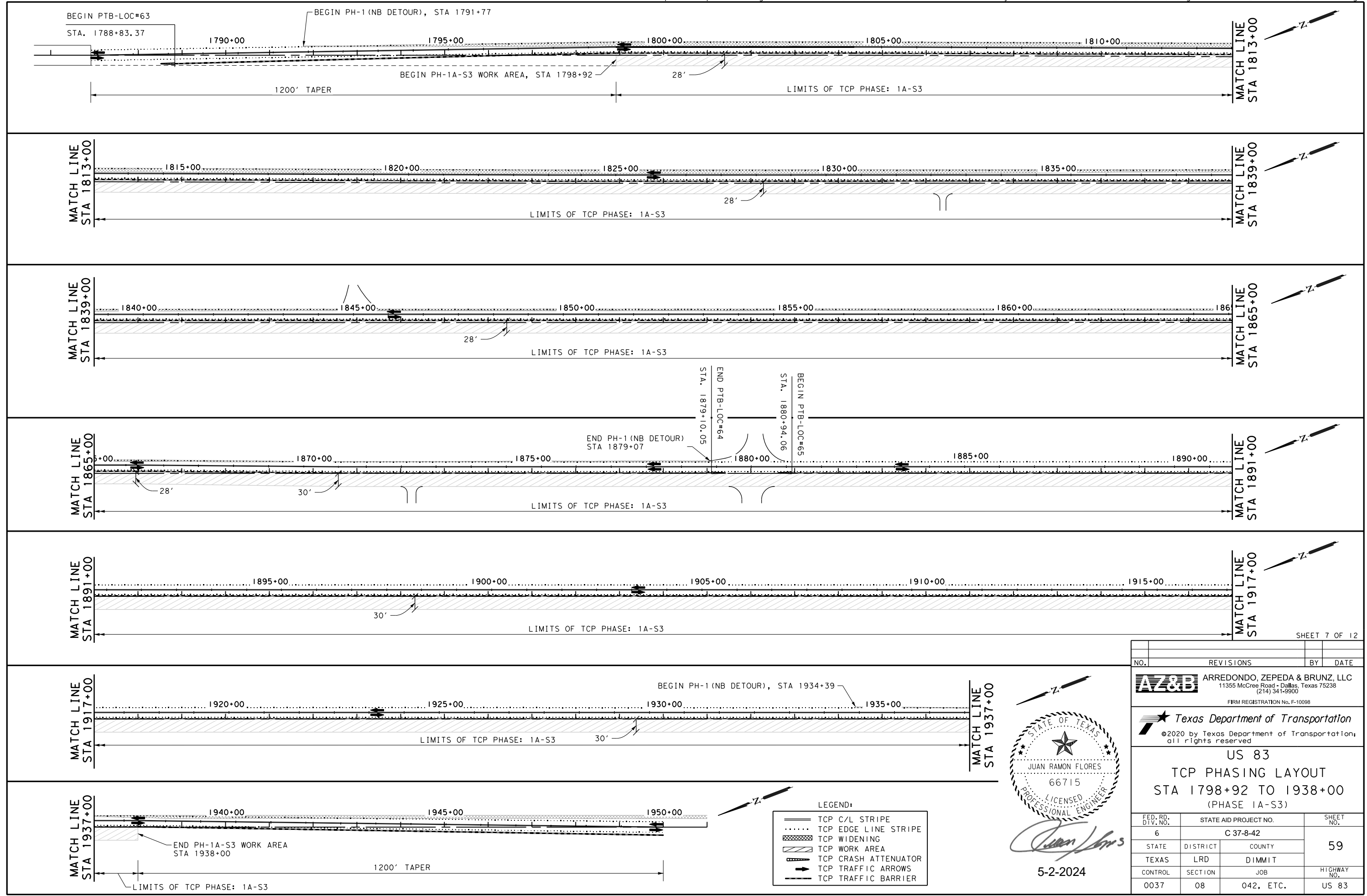
**LEGEND:**

- TCP C/L STRIPE
- TCP EDGE LINE STRIPE
- TCP WIDENING
- TCP WORK AREA
- TCP CRASH ATTENUATOR
- TCP TRAFFIC ARROWS
- TCP TRAFFIC BARRIER



SHEET 6 OF 12

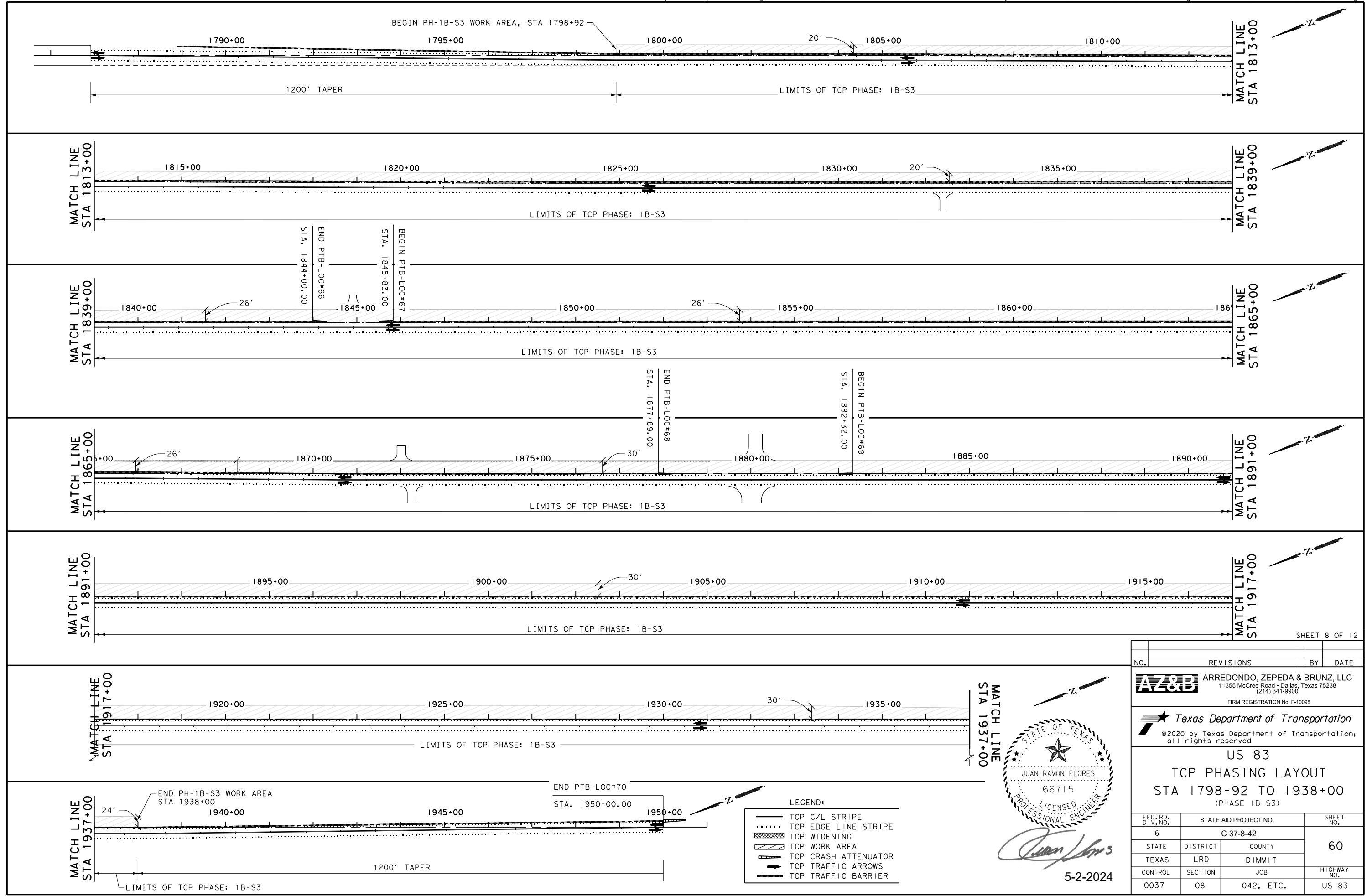
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>TCP PHASING LAYOUT</b> <b>STA 1654+75 TO 1765+37</b> (PHASE 1B-S2)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	58	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



SHEET 7 OF 12

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>TCP PHASING LAYOUT</b> <b>STA 1798+92 TO 1938+00</b> (PHASE 1A-S3)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	59	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

5-2-2024

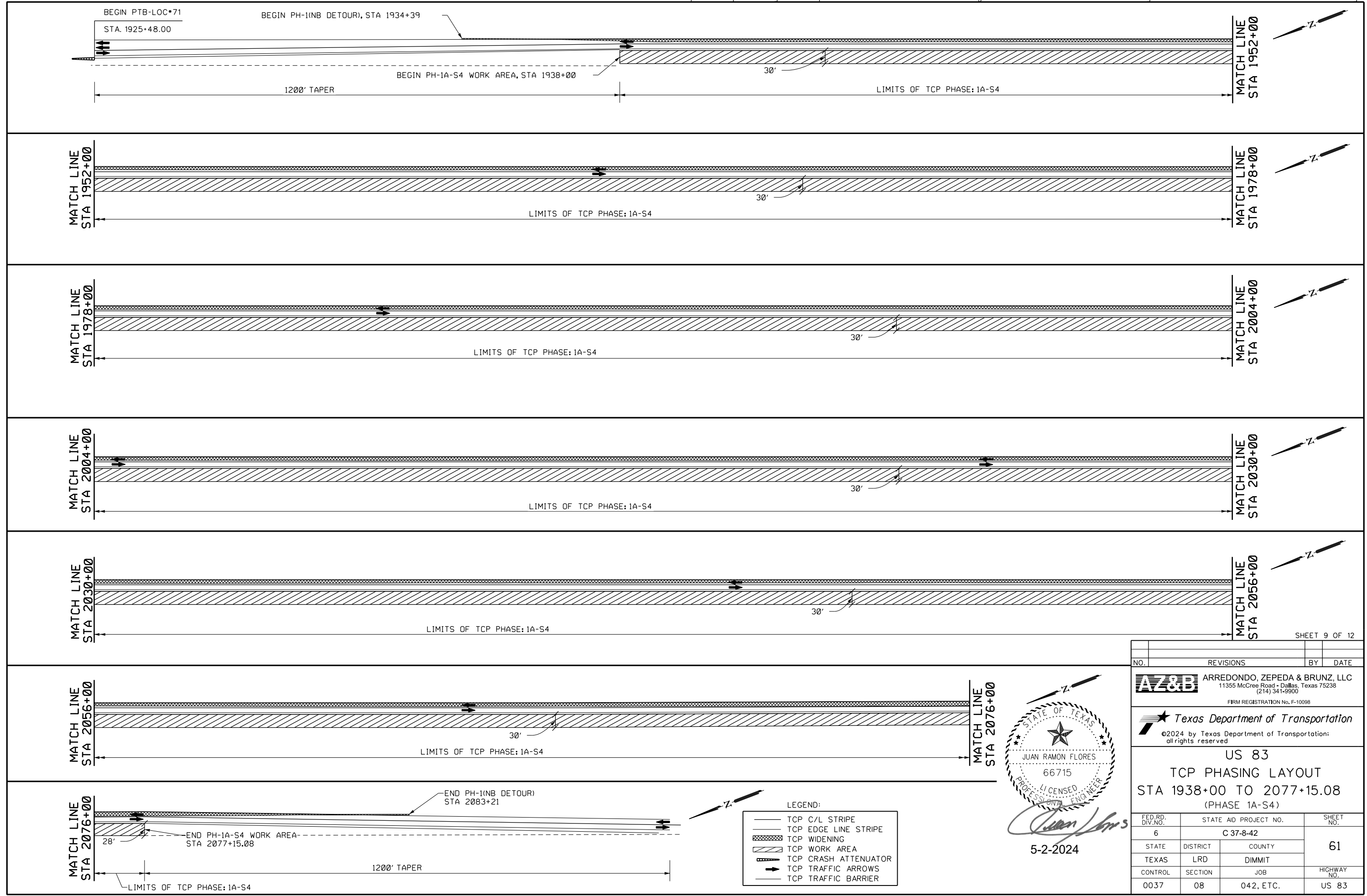


SHEET 8 OF 12

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>TCP PHASING LAYOUT</b> <b>STA 1798+92 TO 1938+00</b> (PHASE 1B-S3)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	60	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
  
 5-2-2024

- LEGEND:**
- TCP C/L STRIPE
  - TCP EDGE LINE STRIPE
  - TCP WIDENING
  - TCP WORK AREA
  - TCP CRASH ATTENUATOR
  - TCP TRAFFIC ARROWS
  - TCP TRAFFIC BARRIER



SHEET 9 OF 12

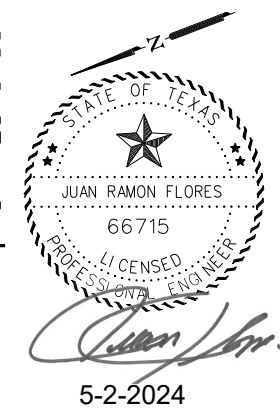
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

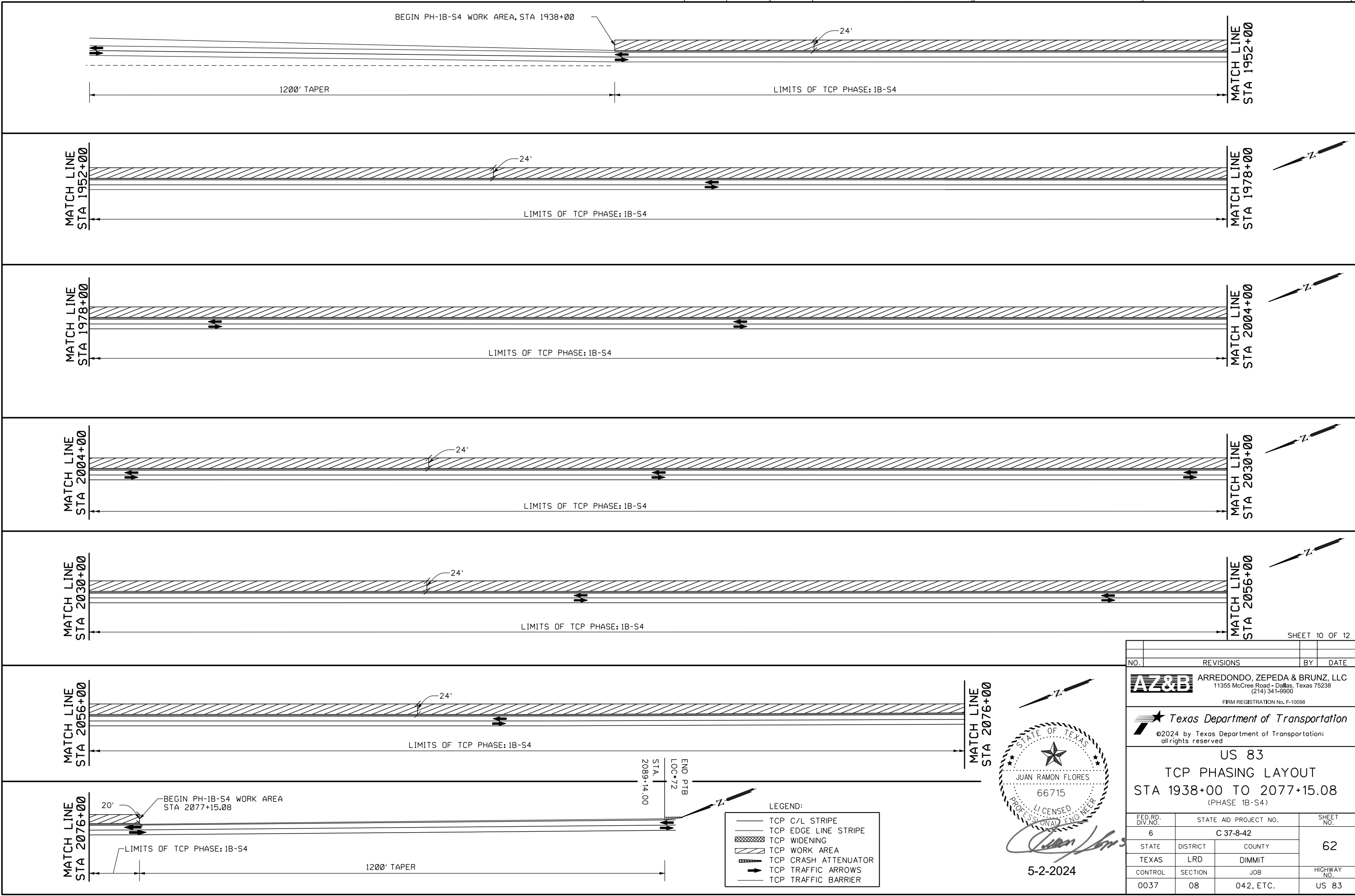
**Texas Department of Transportation**  
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**US 83**  
**TCP PHASING LAYOUT**  
**STA 1938+00 TO 2077+15.08**  
 (PHASE 1A-S4)

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	61	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:**
- TCP C/L STRIPE
  - TCP EDGE LINE STRIPE
  - ▨ TCP WIDENING
  - ▨ TCP WORK AREA
  - ▨ TCP CRASH ATTENUATOR
  - TCP TRAFFIC ARROWS
  - TCP TRAFFIC BARRIER



BEGIN PH-1B-S4 WORK AREA, STA 1938+00

1200' TAPER

LIMITS OF TCP PHASE: 1B-S4

MATCH LINE STA 1952+00

MATCH LINE STA 1952+00

LIMITS OF TCP PHASE: 1B-S4

MATCH LINE STA 1978+00

MATCH LINE STA 1978+00

LIMITS OF TCP PHASE: 1B-S4

MATCH LINE STA 2004+00

MATCH LINE STA 2004+00

LIMITS OF TCP PHASE: 1B-S4

MATCH LINE STA 2030+00

MATCH LINE STA 2030+00

LIMITS OF TCP PHASE: 1B-S4

MATCH LINE STA 2056+00

MATCH LINE STA 2056+00

LIMITS OF TCP PHASE: 1B-S4

MATCH LINE STA 2076+00

MATCH LINE STA 2076+00

BEGIN PH-1B-S4 WORK AREA STA 2077+15.08

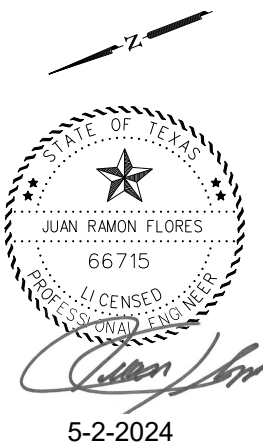
LIMITS OF TCP PHASE: 1B-S4

1200' TAPER

STA. 2089+14.00

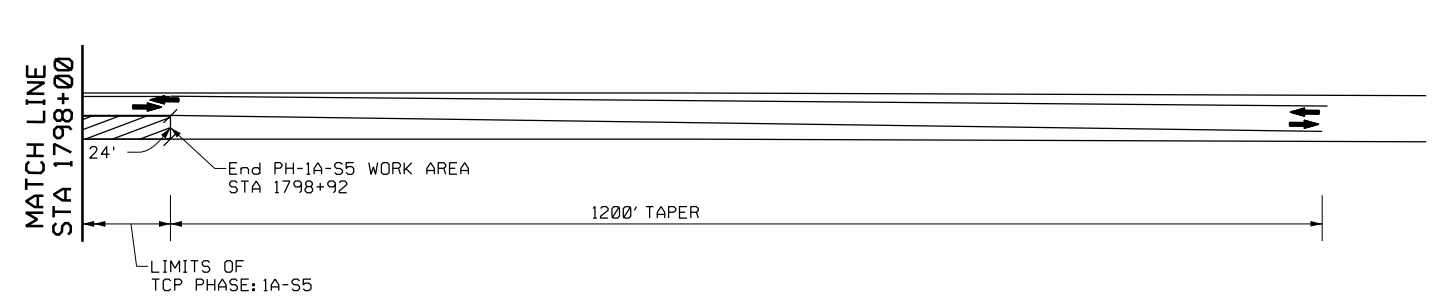
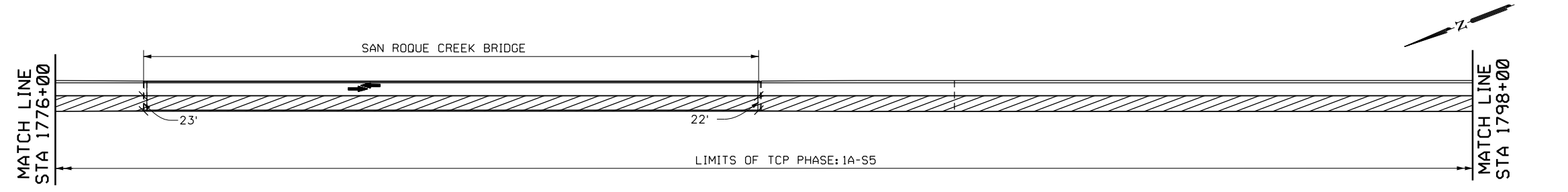
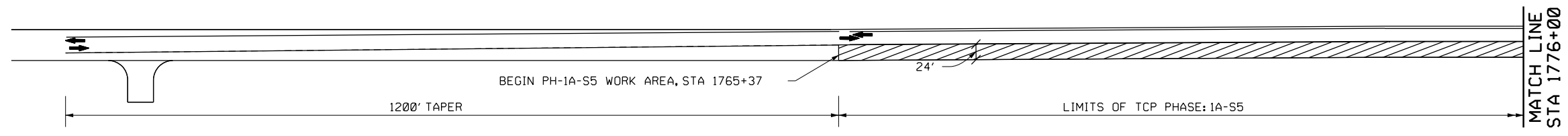
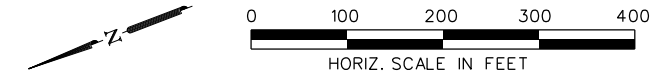
END PTB LOC+72

- LEGEND:
- TCP C/L STRIPE
  - TCP EDGE LINE STRIPE
  - ▨ TCP WIDENING
  - ▩ TCP WORK AREA
  - ▬ TCP CRASH ATTENUATOR
  - TCP TRAFFIC ARROWS
  - TCP TRAFFIC BARRIER



SHEET 10 OF 12

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>TCP PHASING LAYOUT</b> <b>STA 1938+00 TO 2077+15.08</b> (PHASE 1B-S4)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
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STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



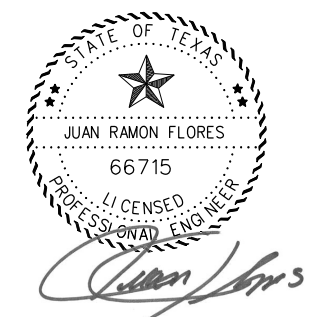
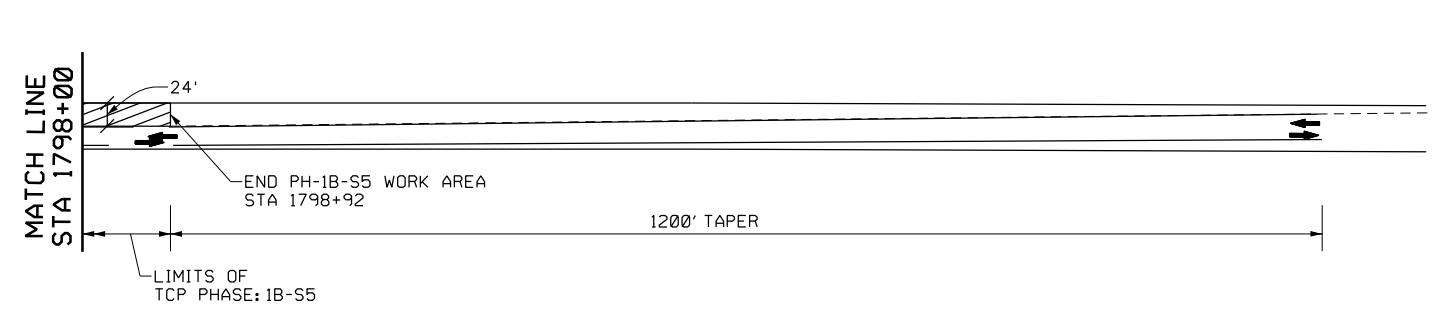
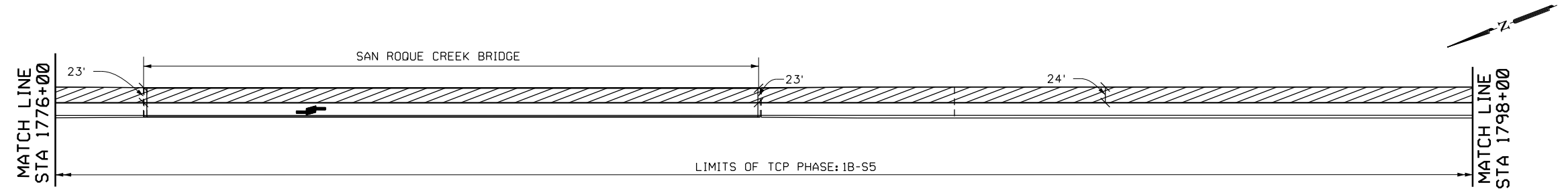
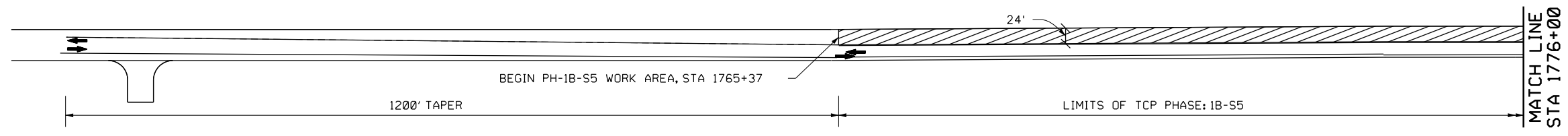
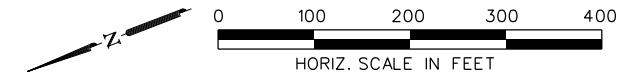
5-2-2024

SHEET 11 OF 12

LEGEND:

	TCP C/L STRIPE
	TCP EDGE LINE STRIPE
	TCP WIDENING
	TCP WORK AREA
	TCP CRASH ATTENUATOR
	TCP TRAFFIC ARROWS
	TCP TRAFFIC BARRIER

NO.	REVISIONS	BY	DATE
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US 83 TCP PHASING LAYOUT STA 1765+37 TO 1798+92 (PHASE 1A-S5)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		63
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



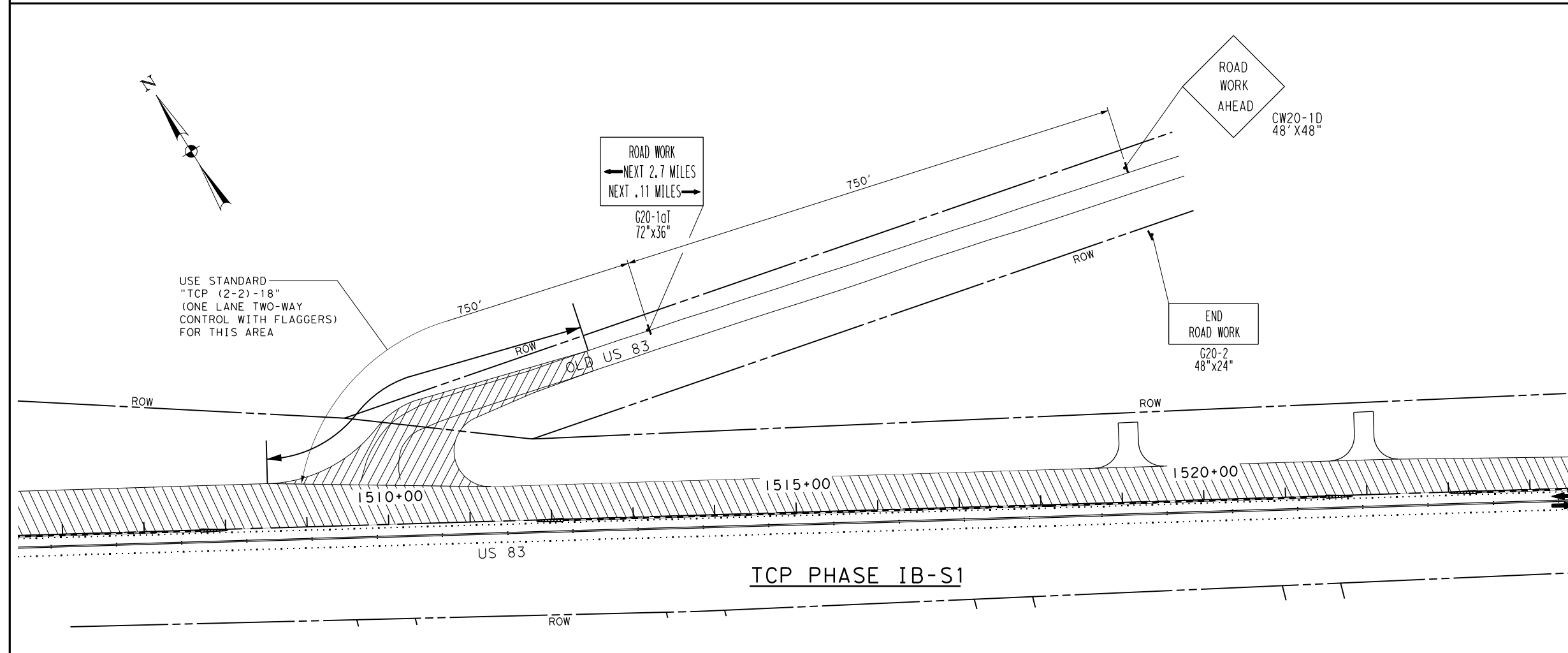
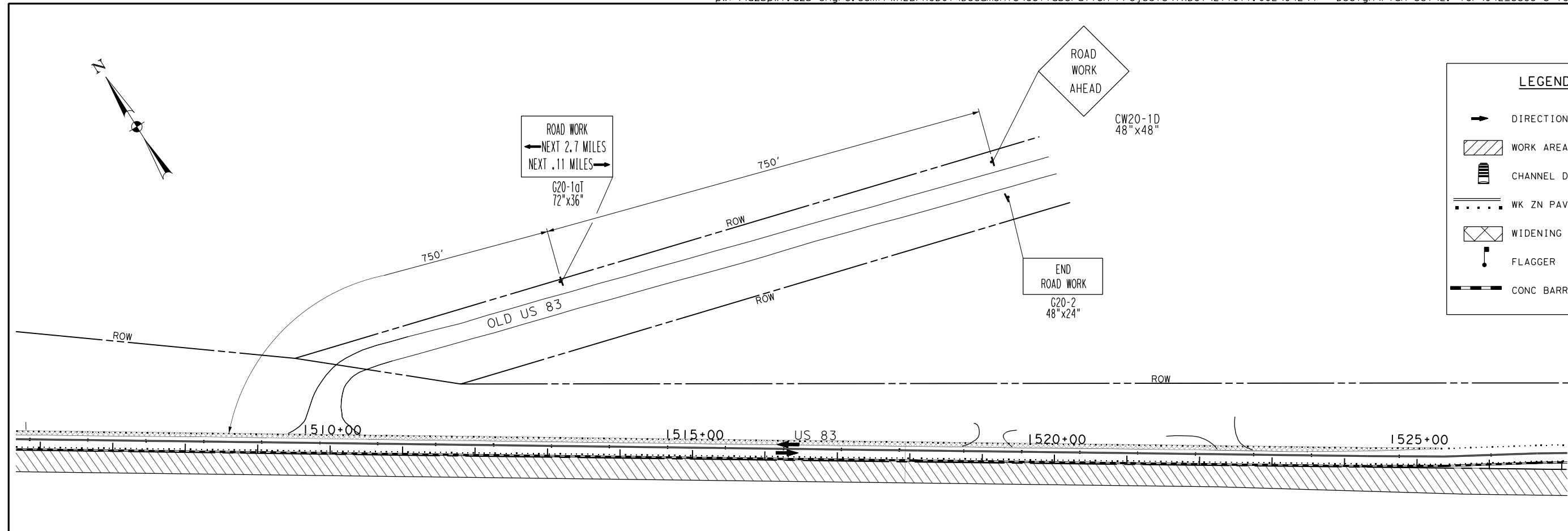
5-2-2024

SHEET 12 OF 12

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<b>US 83</b> <b>TCP PHASING LAYOUT</b> <b>STA 1765+37 TO 1798+92</b> (PHASE 1B-S5)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	64	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

LEGEND:

	TCP C/L STRIPE
	TCP EDGE LINE STRIPE
	TCP WIDENING
	TCP WORK AREA
	TCP CRASH ATTENUATOR
	TCP TRAFFIC ARROWS
	TCP TRAFFIC BARRIER



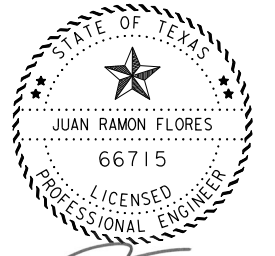
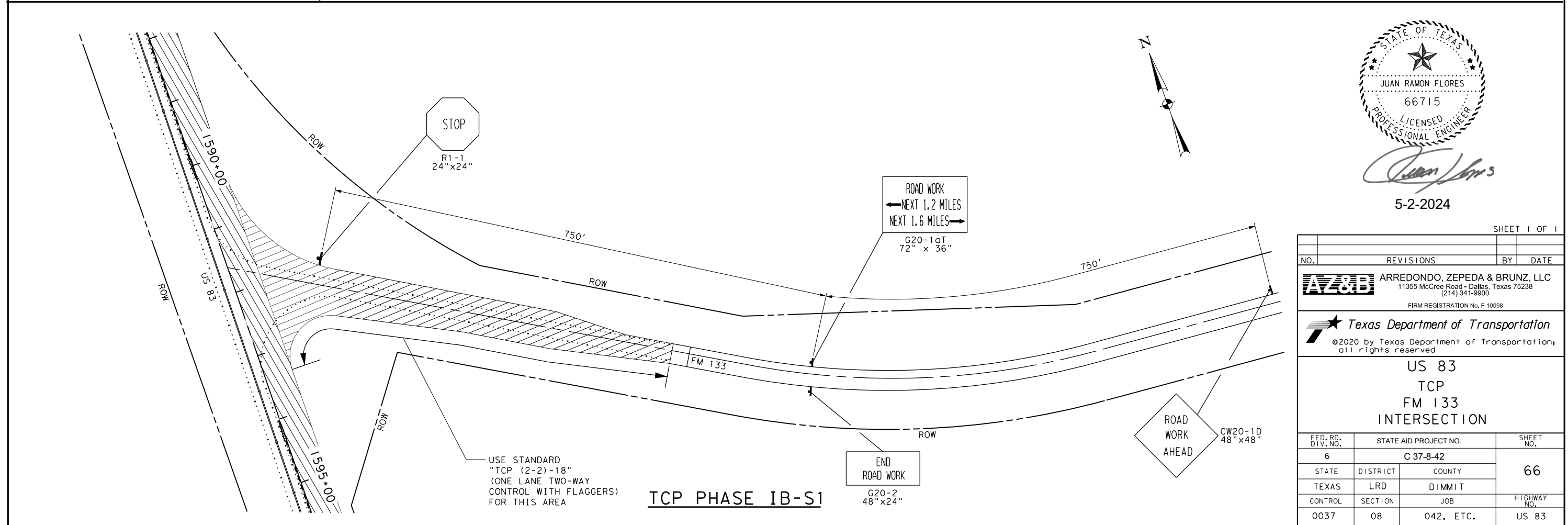
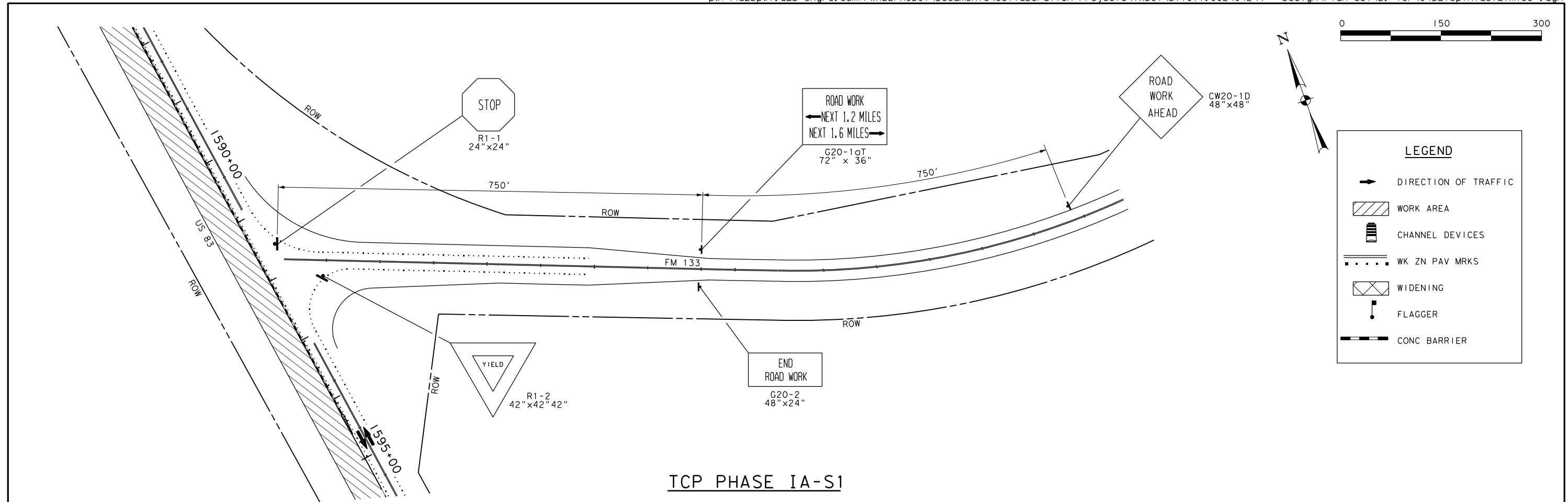
STATE OF TEXAS  
 JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
*Juan Flores*  
 5-2-2024

SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
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US 83 TCP OLD US 83 INTERSECTION			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
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STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

TCP PHASE IB-S1





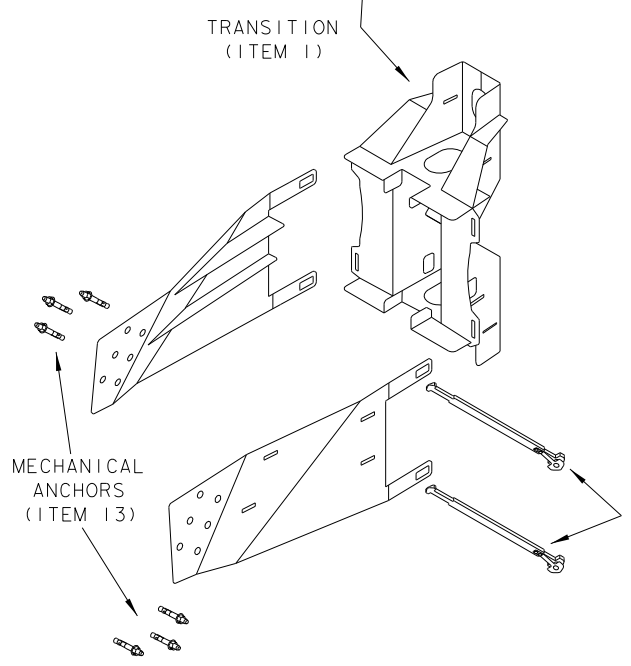
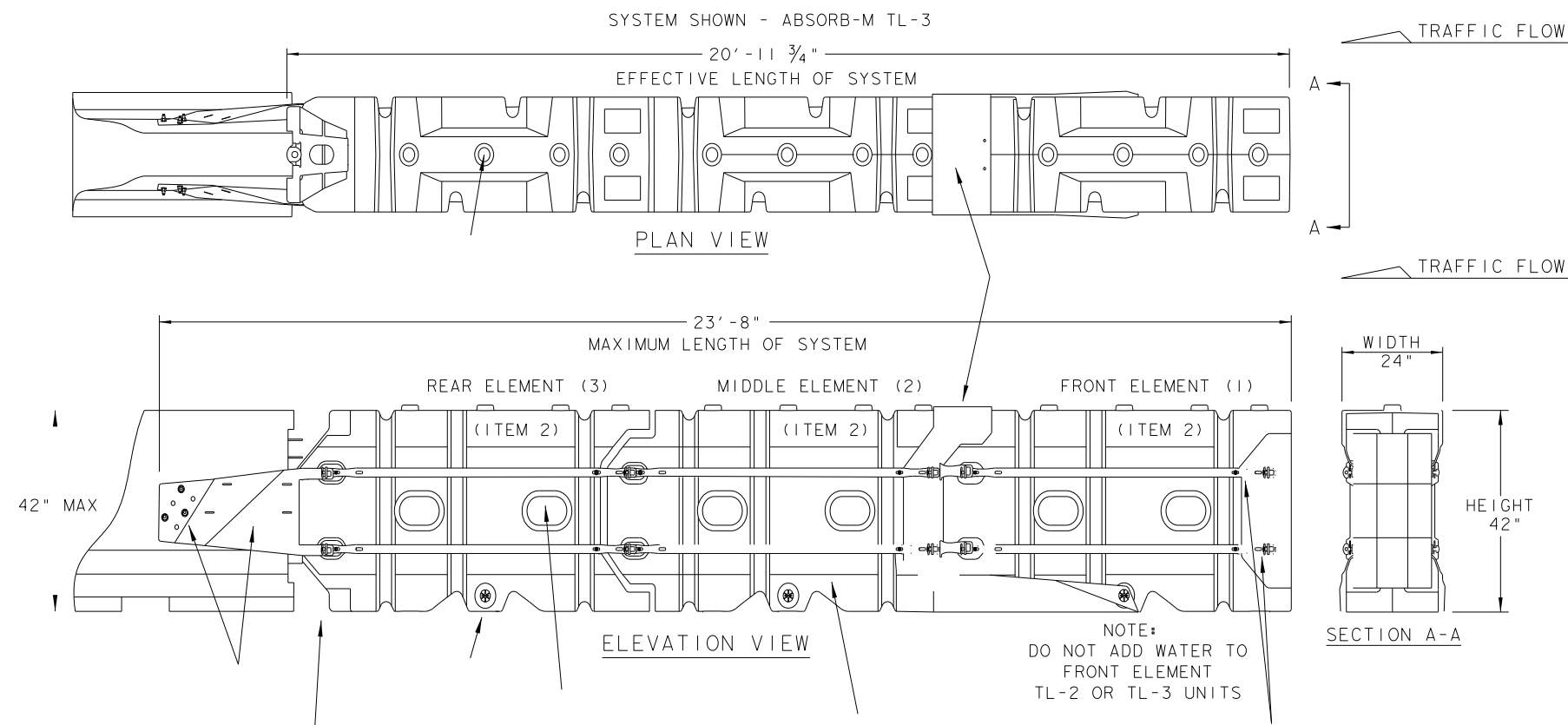
*Juan Flores*  
5-2-2024

SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
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<b>US 83 TCP FM 133 INTERSECTION</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	<b>66</b>	
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

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: 6/22/2020  
 FILE: pw:\azb\pw1...azb-engr.s.com:PWAZBPROD01\Documents\TxDOT\217017.002\042\4 - Design\Plan Set\2. TCP\Standards(TCP)\ABSORB(M) -19.dgn

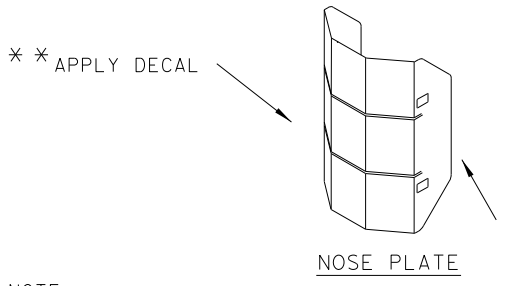
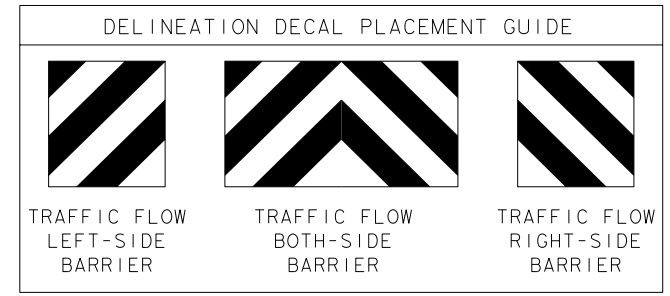


TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14' - 7 3/4"	17' - 4"
TL-3	3	20' - 11 3/4"	23' - 8"

- ### 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).

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



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: THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

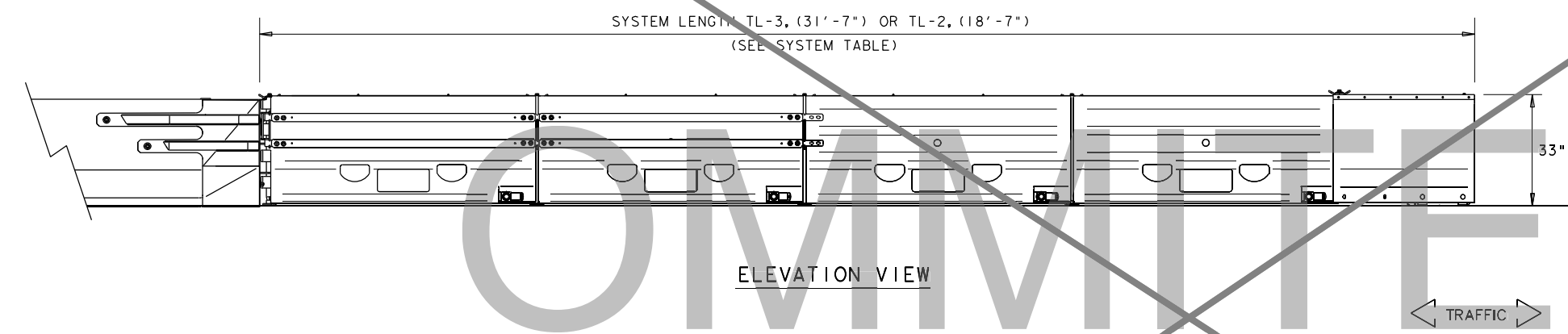
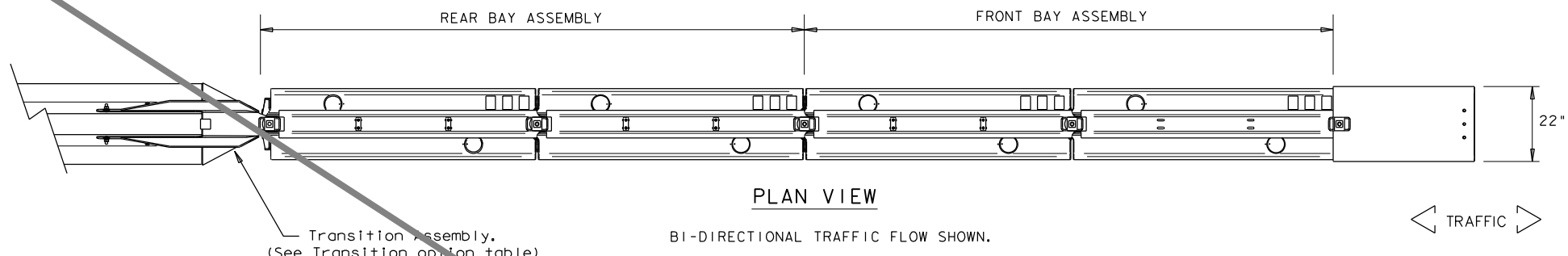
		<b>Design Division Standard</b>		
<b>LINDSAY TRANSPORTATION SOLUTIONS          CRASH CUSHION          (MASH TL-3 &amp; TL-2)          TEMPORARY - WORK ZONE          ABSORB(M) - 19</b>				
FILE: absorbmi9	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: JULY 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY		SHEET NO.
	LRD	DIMMIT		67

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DATE: 6/26/2020 9:00:05 AM  
 FILE: p:\azb\p1\azb-engr.s.com:PWAZBPR0001\Documents\TxDOT\217017.002\042\4 - Design\Plan\_Set\2. TCP\Standards(TCP)\ACZ(350)-16.dgn

**GENERAL NOTES**

- For specific information regarding installation and technical guidance of the system, contact: Trinity Highway - Energy Absorption at 1(888)323-6374, 70 W. Madison St. Suite 2350, Chicago, IL 60602
- Refer to installation manual and configuration chart for specific system assembly and element orientation.
- The ACZ 350 system is approved for use in temporary (Work Zone) locations. The ACZ 350 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.
- The ACZ 350 system consist of four major components, the transition assembly, rear bay assembly, front bay assembly, and nose assembly. See manufacturer's installation manual for details.
- Maximum permissible cross-slope is 8%.
- The installation area should be free from curbs, elevated objects, or depressions.
- The ACZ 350 should be approximately parallel with the barrier or  $\phi$  of merging barrier.



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	3595601-0000	FRONT BAY ASSY, ACZ-350, TL-3	1
2	3595601-0000	REAR BAY ASSY, ACZ-350, TL-3	1
* 3	3595608-*000	NOSE, ACZ-350, (See Below)	1
4	SEE TABLE	TRANSITION ASSEMBLY	1

\* SEE DETAILS BELOW FOR NOSE DELINEATION

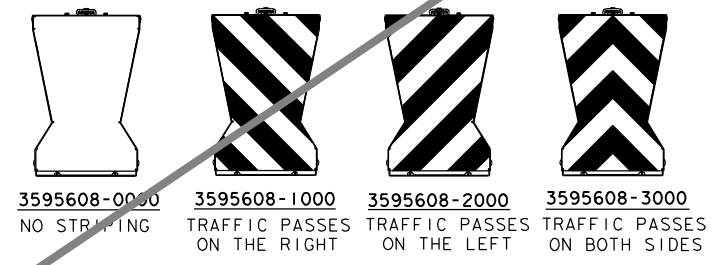
TRANSITION ASSEMBLY OPTIONS	
PART NO.	BARRIER
3595616-0000	CTB SAFETY SHAPE (8" TOP)
3595618-0000	CSB F-SHAPE (9 1/2" TOP)
3595620-0000	SSCB SINGLE SLOPE (8" TOP)

ACZ-350 (NARROW) SYSTEM	
TEST LEVEL	SYSTEM LENGTH
TL-2	18' - 7"
TL-3	31' - 7"

**TRANSITION OPTIONS**

The ACZ 350 system is approved for use at bi-directional sites, additional hardware may be required. (See the Manufacturer's product manual)

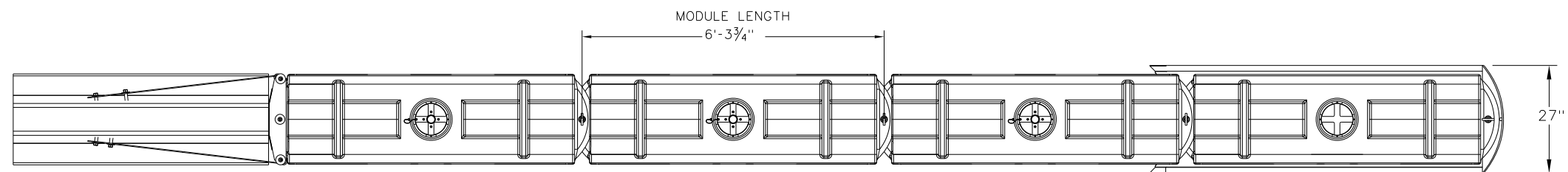
BACKUP AND TRANSITION TYPES ARE SHOWN ELSEWHERE ON THE PLANS (I.E. ATTENUATOR LOCATION DETAILS OR IN THE GENERAL NOTES).



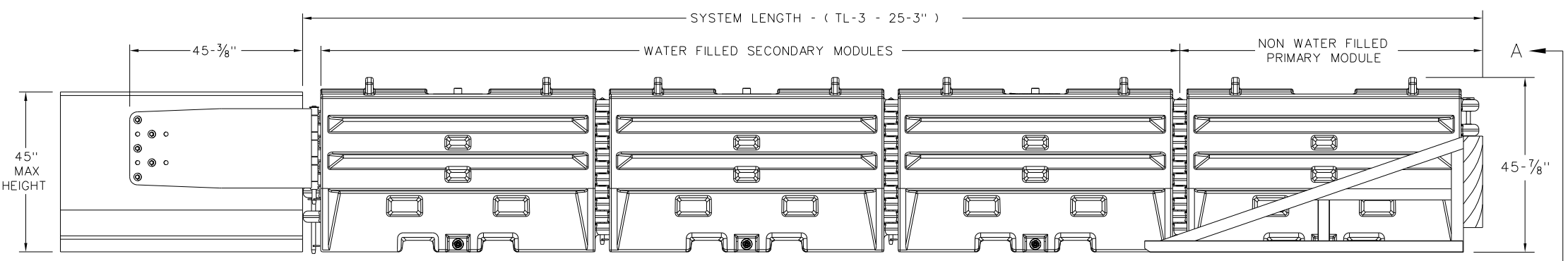
		<b>Design Division Standard</b>	
<b>TRINITY HIGHWAY ENERGY ABSORPTION</b> <b>ACZ-350 TEMPORARY - WORK ZONE</b> <b>ACZ(350)-16</b>			
FILE: acz35016.dgn	DW: TxDOT	CK: KM	DW: VP
© TxDOT: March 2010		CONT	SECT
REVISIONS		0037	08
REVISED 06, 2013 (VP)	DIST	042, ETC.	
REVISED 03, 2016 (VP)	LRD	COUNTY	US 83
SACRIFICIAL		SHEET NO. 68	

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 FILE: p:\aebpw\l\azb-engr-s.com\FWAZBPRD01\Documents\Collaboration\Projects\TxDOT\217017.002\042\4 - Design\Plan Set\2. TCP\Standards\TCP\SLED-19.dgn



PLAN VIEW

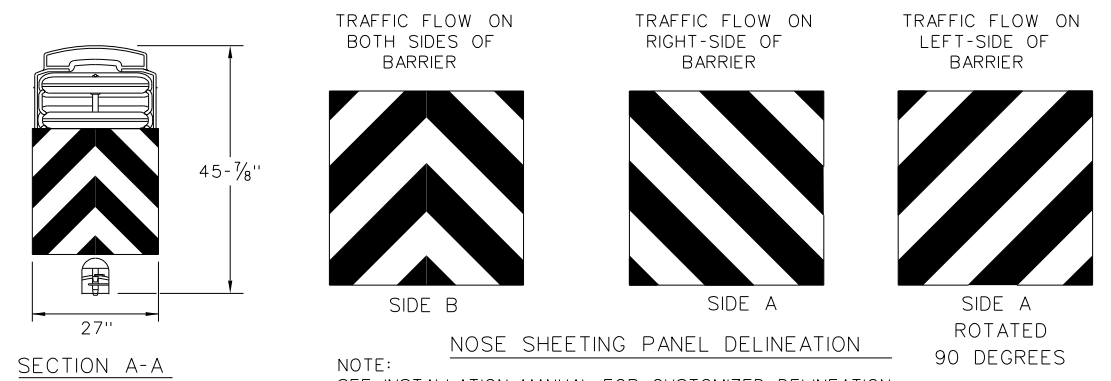


ELEVATION VIEW

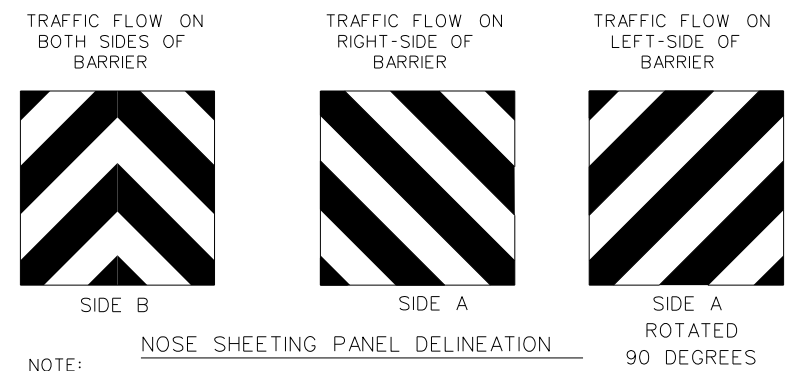
GENERAL NOTES

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



SECTION A-A

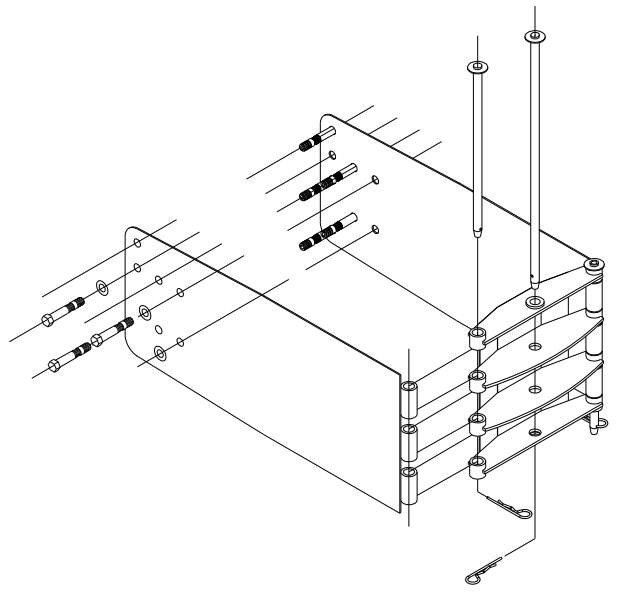


NOSE SHEETING PANEL DELINEATION

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




SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE: SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

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

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**

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©TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
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LRD	DIMMIT		69	

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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).

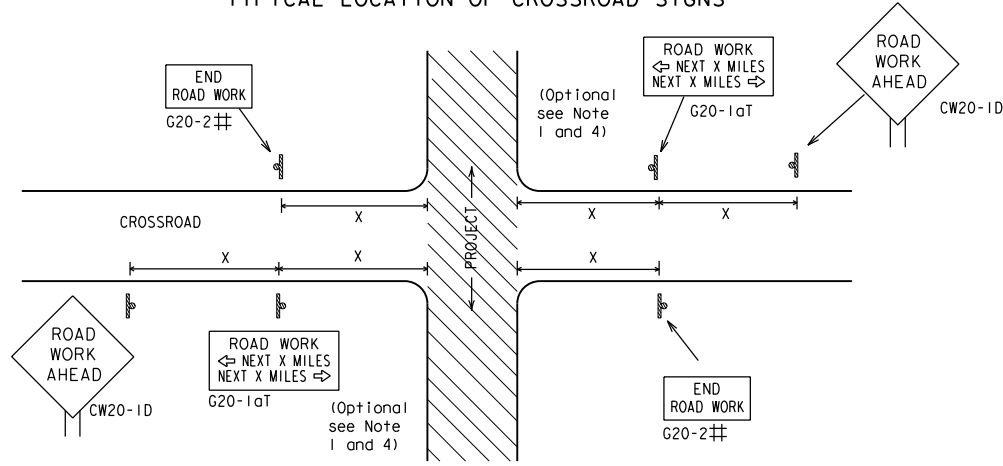
THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT <a href="http://www.txdot.gov">http://www.txdot.gov</a>
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY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

SHEET 1 OF 12

			
<b>BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS</b>			
<b>BC (1) - 21</b>			
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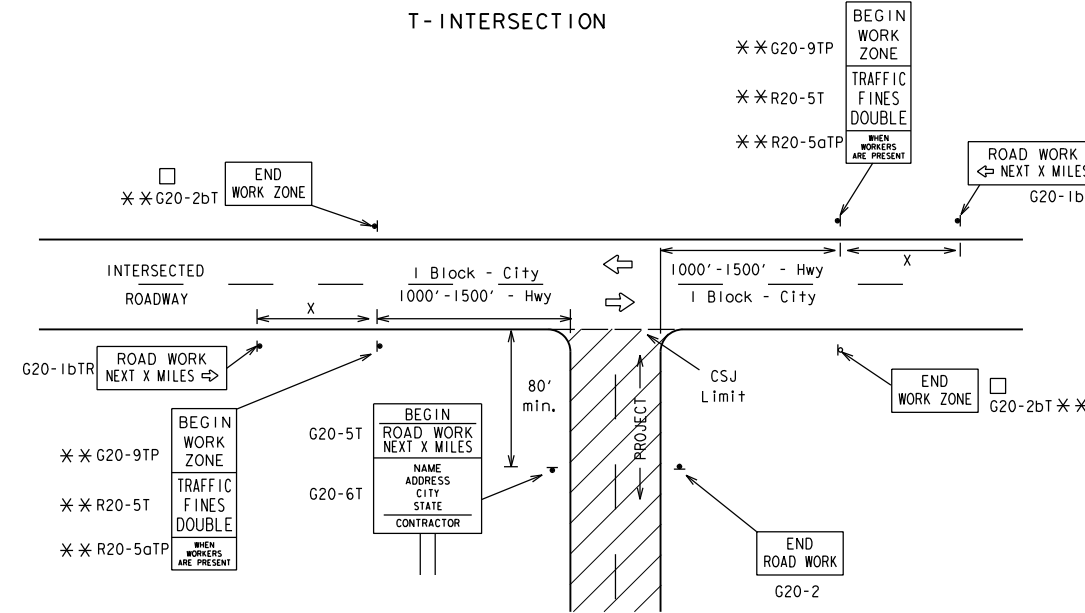
### TYPICAL LOCATION OF CROSSROAD SIGNS



## 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<sup>1,5,6</sup>

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign $\Delta$ Spacing "x"
CW20 <sup>4</sup>	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	50	400
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12			55	500 <sup>2</sup>
			60	600 <sup>2</sup>
			65	700 <sup>2</sup>
			70	800 <sup>2</sup>
			75	900 <sup>2</sup>
			80	1000 <sup>2</sup>
			*	* <sup>3</sup>

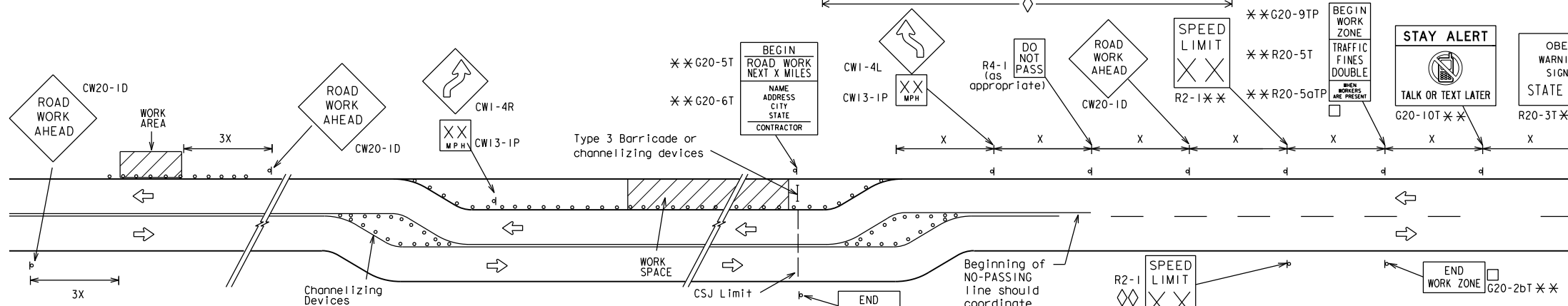
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

### GENERAL NOTES

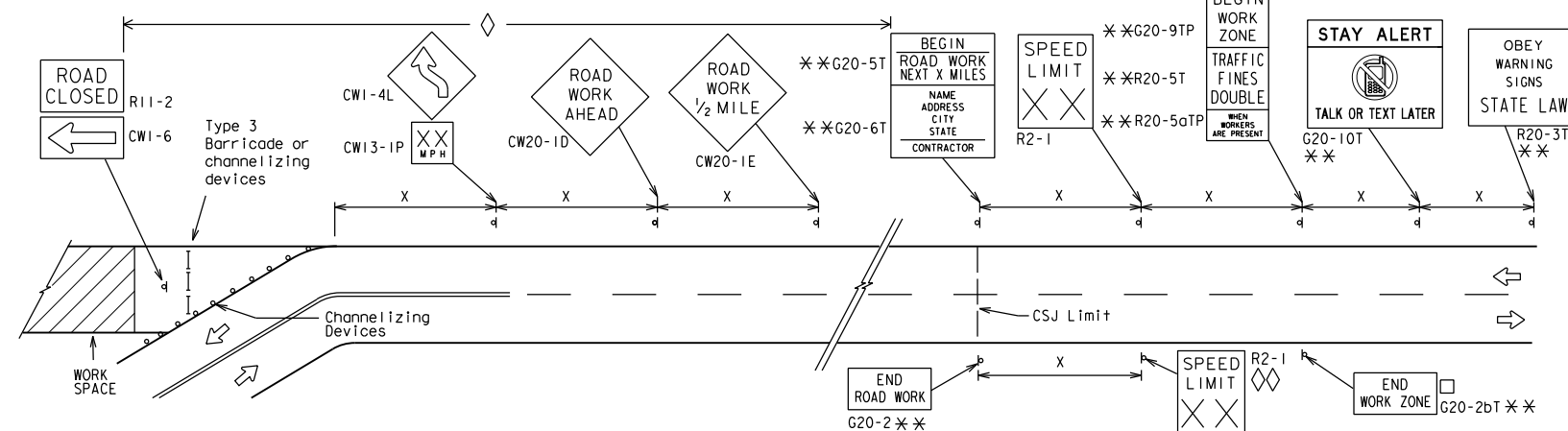
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

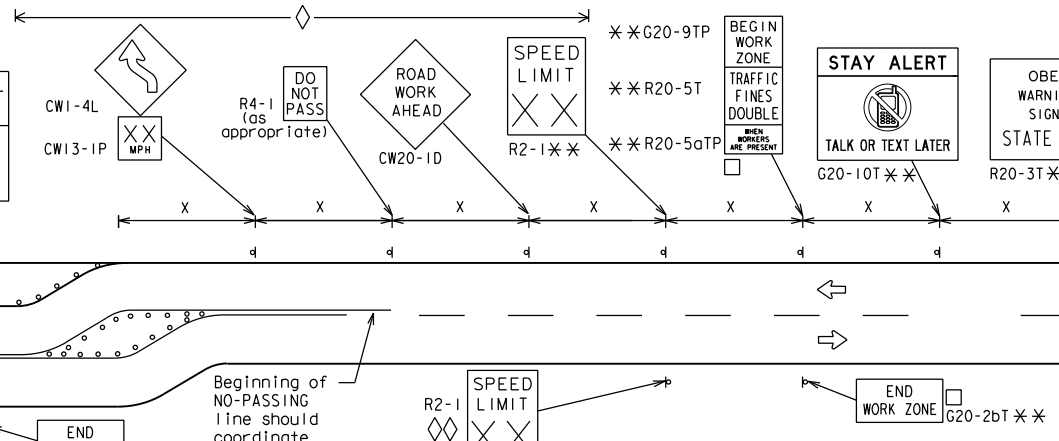


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SHEET 2 OF 12



## BARRICADE AND CONSTRUCTION PROJECT LIMIT

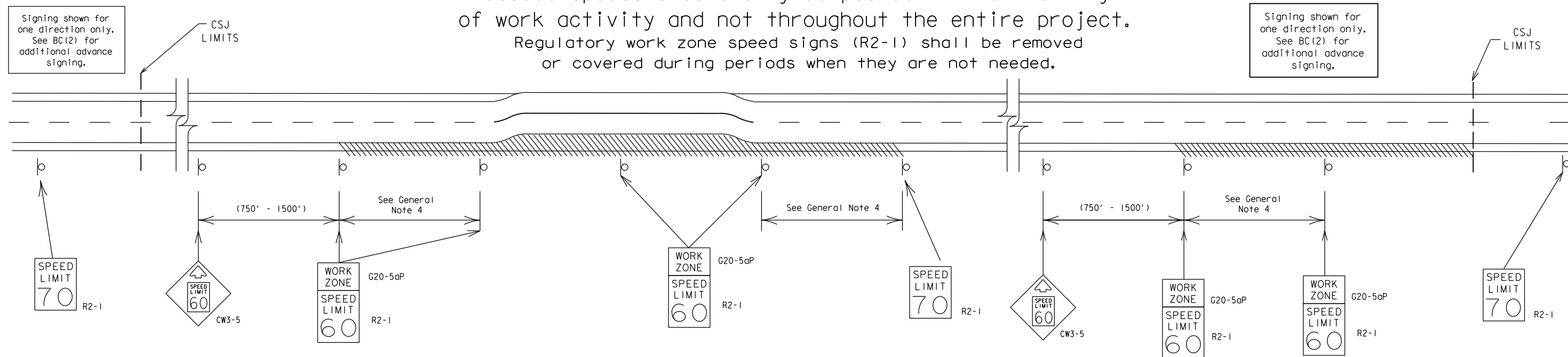
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# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project. Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

- 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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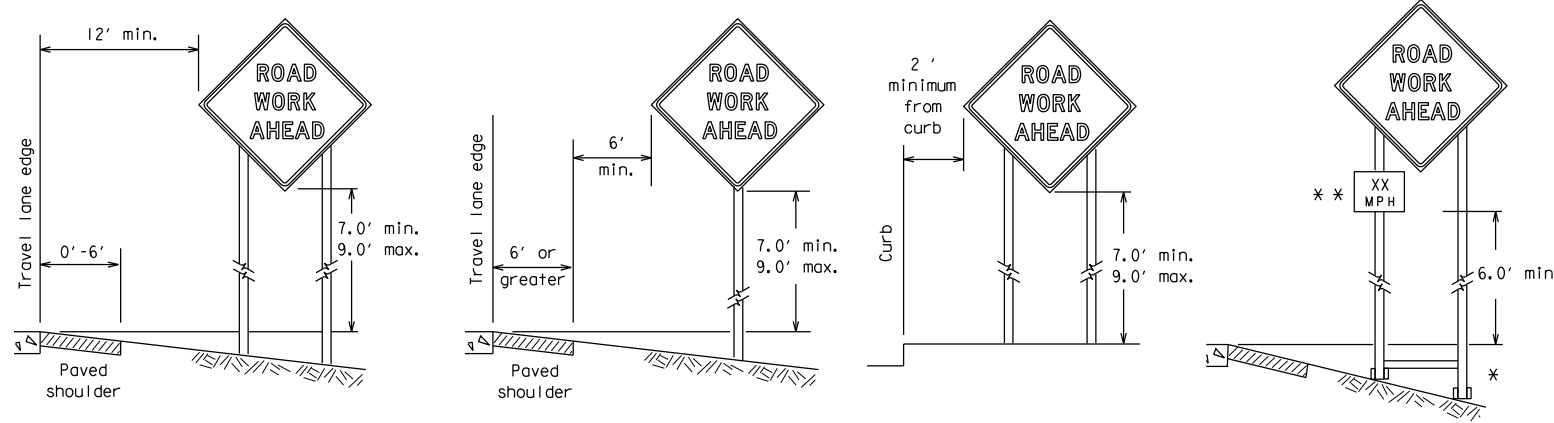
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SHEET 3 OF 12

<span style="font-weight: bold; font-size: small;">Texas Department of Transportation</span>		<span style="font-weight: bold; font-size: x-small;">Traffic Safety Division Standard</span>	
<h2 style="margin: 0;">BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT</h2>			
<h3 style="margin: 0;">BC (3) - 21</h3>			
FILE:	bc-21.dgn	DN: TxDOT	ck: TxDOT
© TxDOT	November 2022	CONT SECT	JOB HIGHWAY
REVISIONS	0037 08	042, ETC. US 83	
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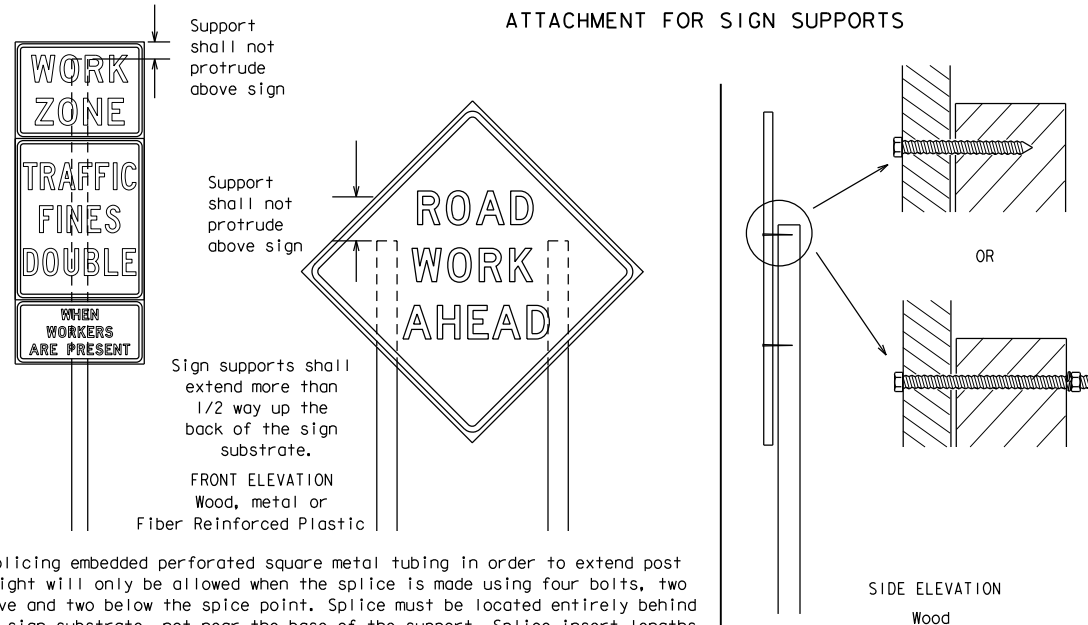
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



\* 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**



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

**GENERAL NOTES FOR WORK ZONE SIGNS**

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
- The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
- The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
- The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
- Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
- The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

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

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

**SIGN MOUNTING HEIGHT**

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

**SIZE OF SIGNS**

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

**SIGN SUBSTRATES**

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

**REFLECTIVE SHEETING**

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

**SIGN LETTERS**

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

**REMOVING OR COVERING**

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

**SIGN SUPPORT WEIGHTS**

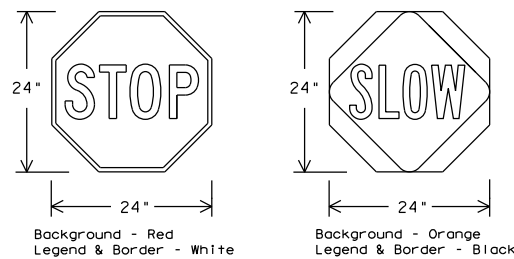
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not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

**FLAGS ON SIGNS**

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

**STOP/SLOW PADDLES**

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



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

**CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS**

- Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
- When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

**Texas Department of Transportation**

*Traffic Safety Division Standard*

## BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

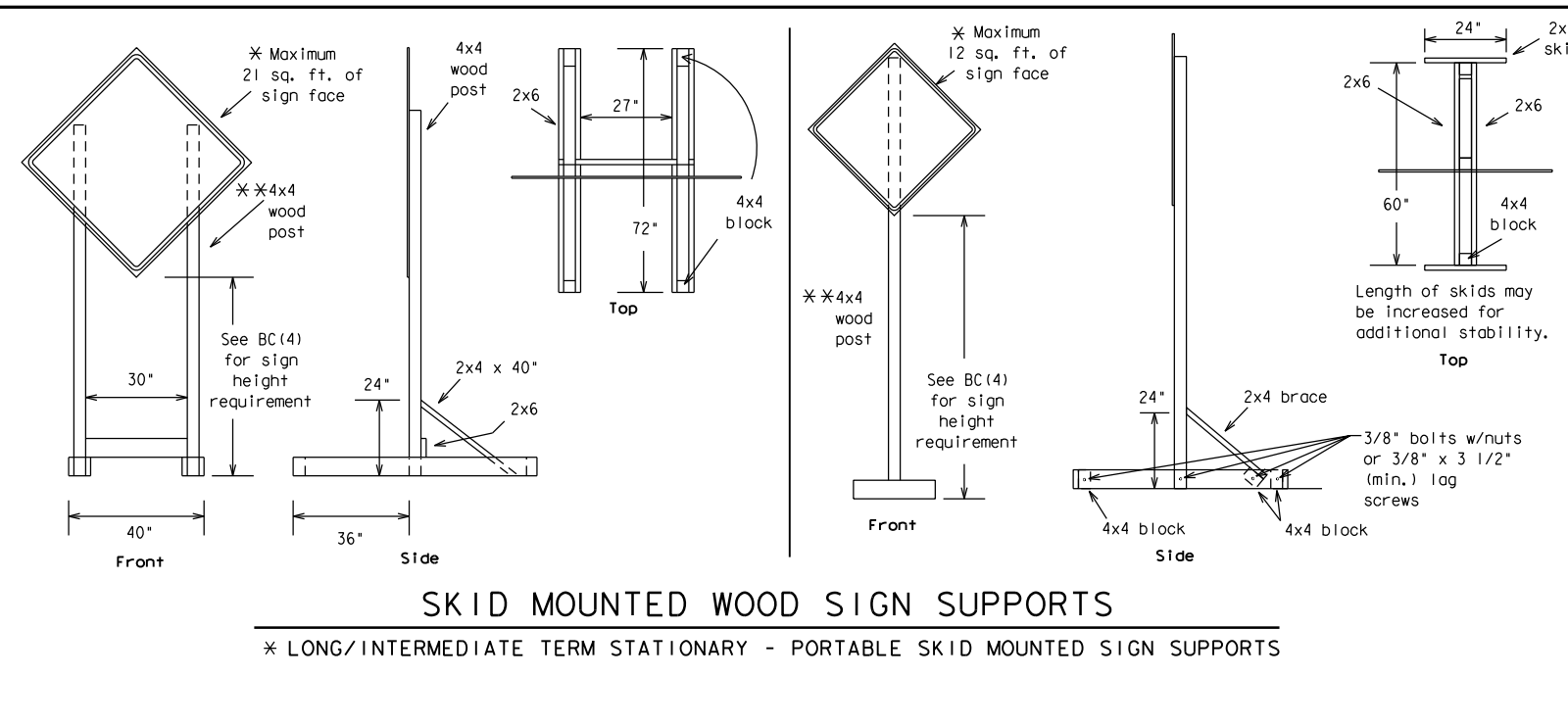
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		0037	08	042, ETC.	US 83
9-07	8-14	DIST	COUNTY	SHEET NO.	
7-13	5-21	LRD	DIMITT	73	



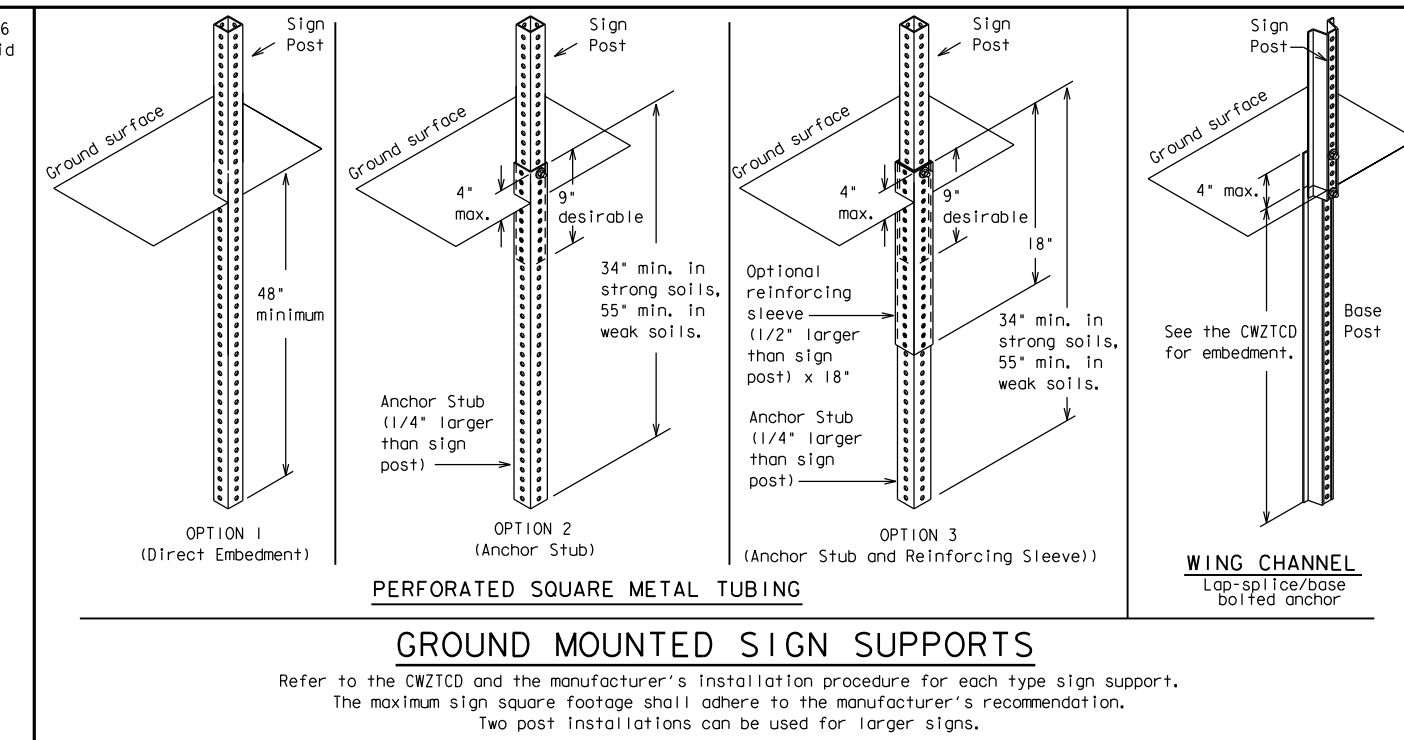
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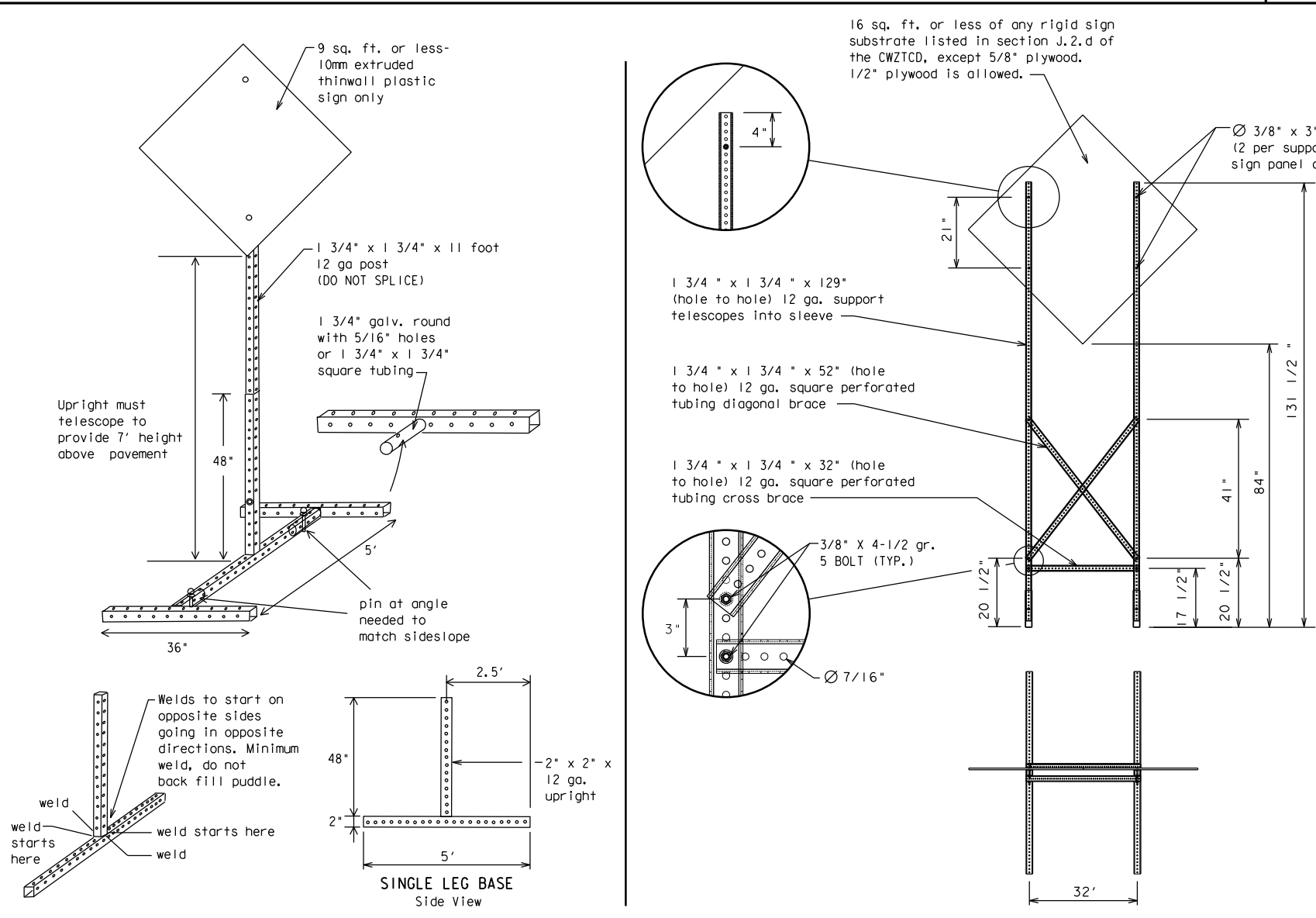
**SKID MOUNTED WOOD SIGN SUPPORTS**

\* 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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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0037	08	042, ETC.	US 83				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	LRD	DIMMIT	74					

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	HOV	Tuesday	TUES
Vehicle	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

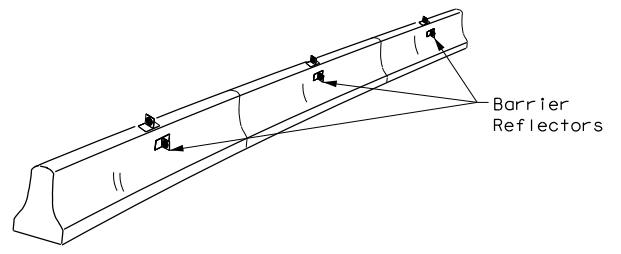
Roadway designation # IH-number, US-number, SH-number, FM-number

<b>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</b>			
<b>BC (6) - 21</b>			
FILE#	DC-21.dgn	DN# TxDOT	CK# TxDOT
© TxDOT	November 2002	CONT	SECT
REVISIONS		0037	08
9-07	8-14	042, ETC.	
7-13	5-21	DIST	COUNTY
		LRD	DIMMIT
		SHEET NO. 75	

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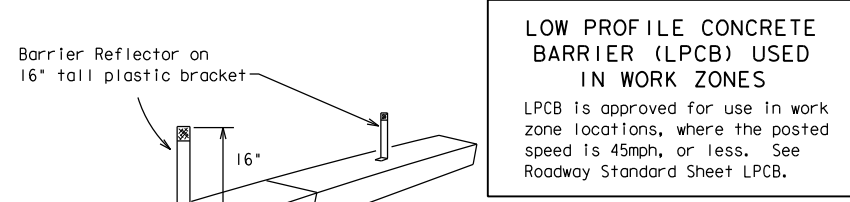
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



CONCRETE TRAFFIC BARRIER (CTB)

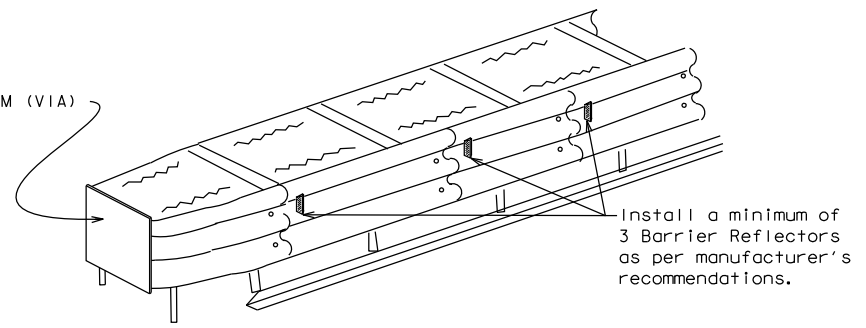
- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. 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**

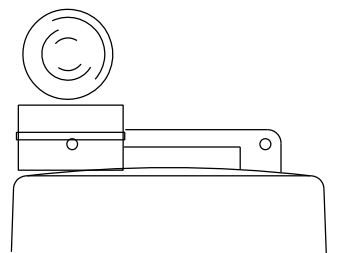
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

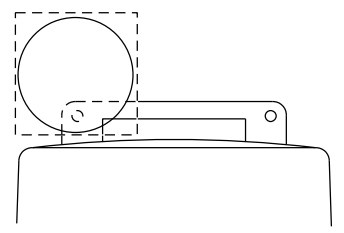
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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



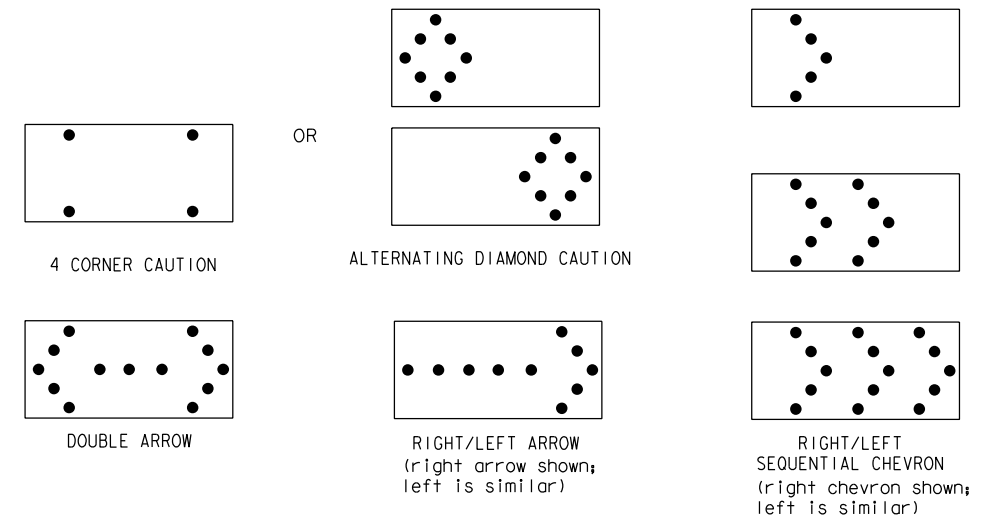
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



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**

SHEET 7 OF 12

**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**

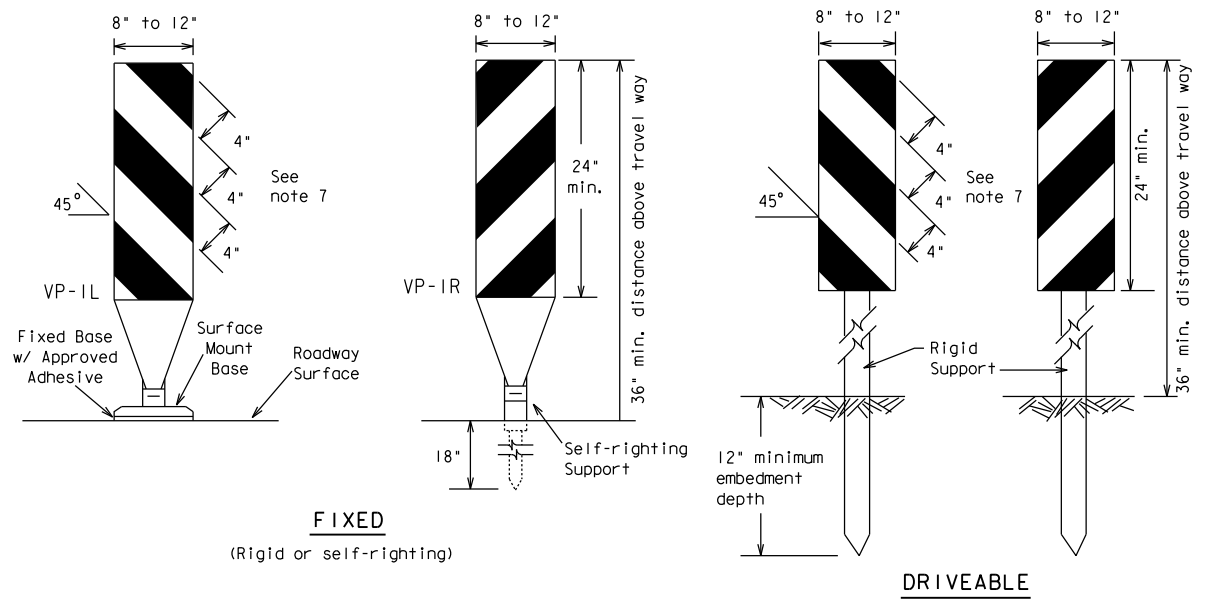
BC (7) - 21

FILE#	bc-21.dgn	DN#	TxDOT	CK#	TxDOT	DN#	TxDOT	CK#	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0037	08	042, ETC.		US 83			
9-07	8-14	DIST	COUNTY		SHEET NO.				
7-13	5-21	LRD	DIMMIT		76				



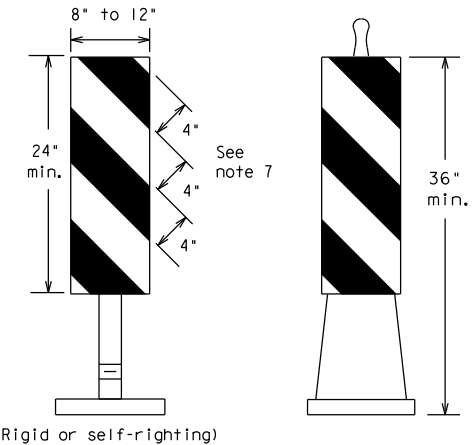
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**FIXED**  
(Rigid or self-righting)

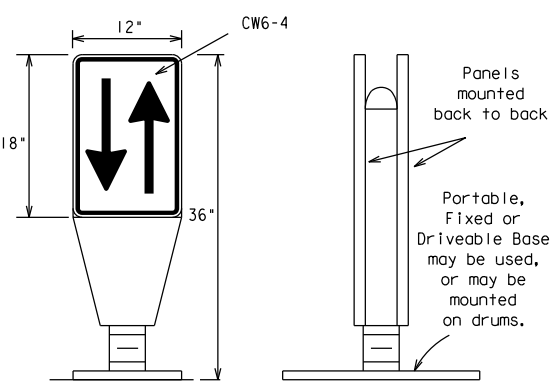
**DRIVEABLE**



**PORTABLE**

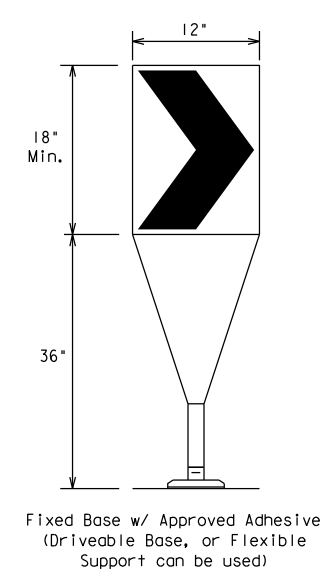
**VERTICAL PANELS (VPs)**

- 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.



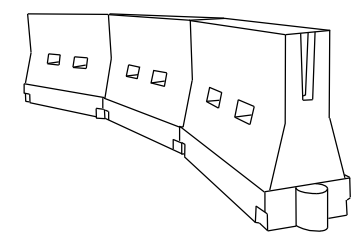
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

- 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<sub>FL</sub> or Type C<sub>FL</sub> conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



- 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<sub>FL</sub> or Type C<sub>FL</sub> 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 <sup>2</sup> / 60	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80	800'	880'	960'	80'	160'	

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

**SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS**

SHEET 9 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (9) - 21**

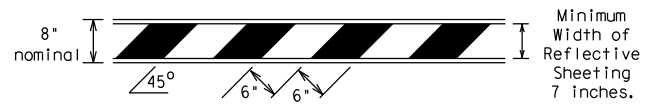
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REVISIONS		0037	08	042, ETC.		US 83			
9-07	8-14	DIST	COUNTY		SHEET NO.				
7-13	5-21	LRD	DIMMIT		78				

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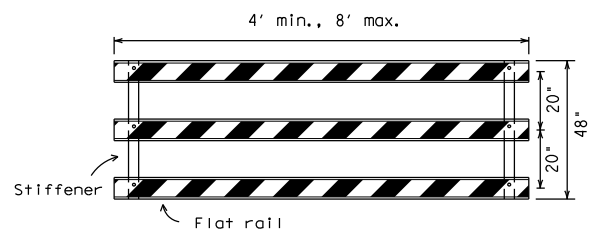
**TYPE 3 BARRICADES**

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.

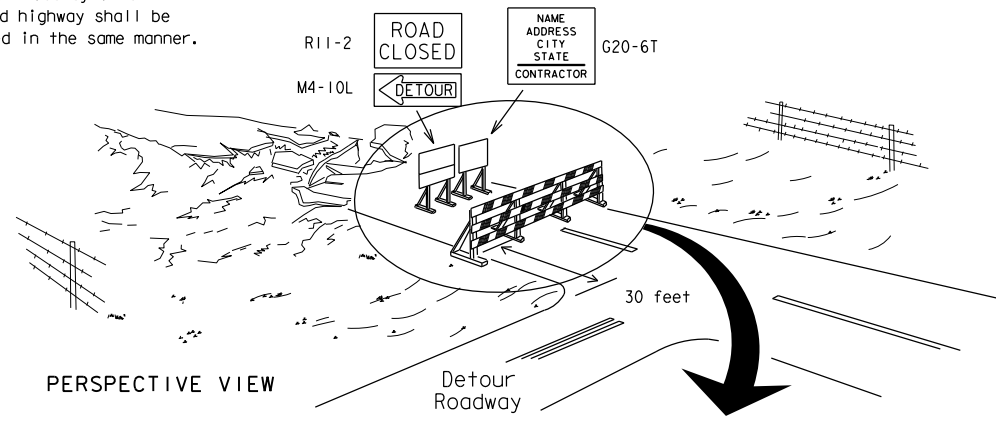


**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



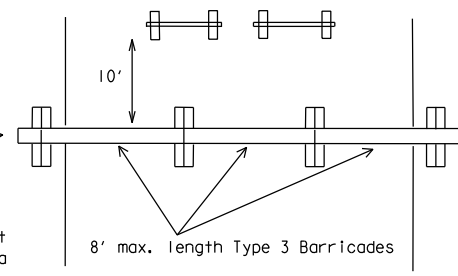
**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

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



PERSPECTIVE VIEW

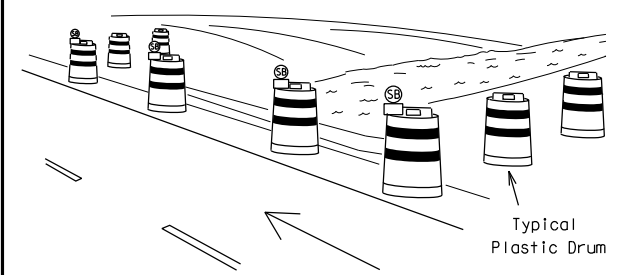
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



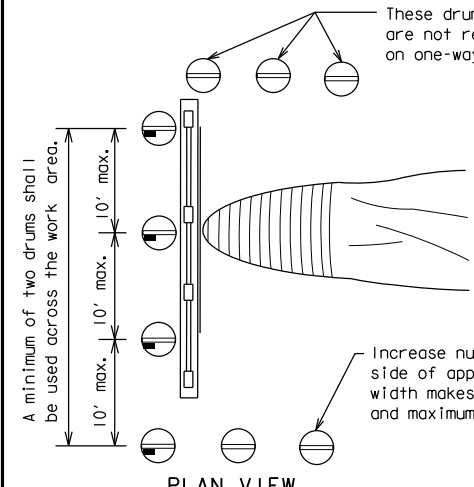
PLAN VIEW

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

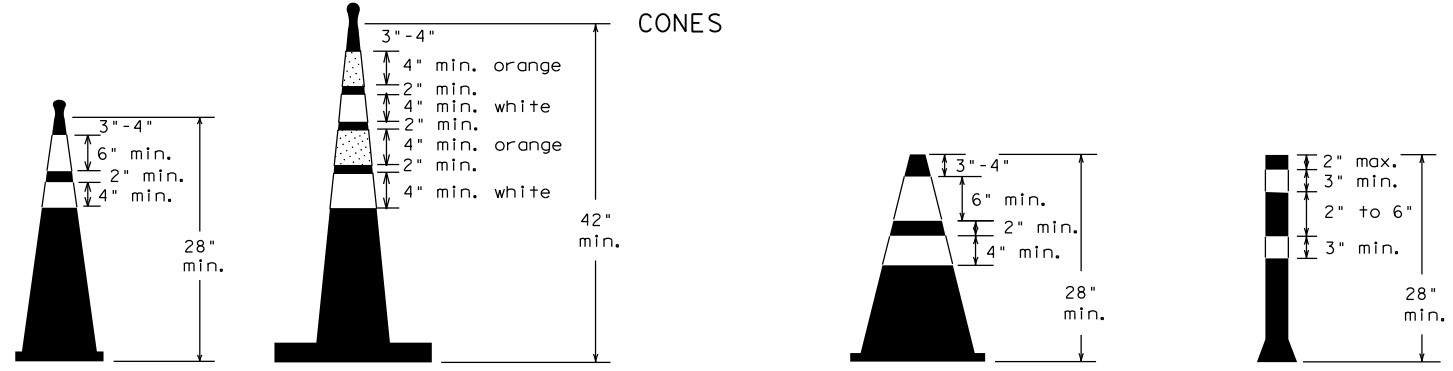


PLAN VIEW

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**



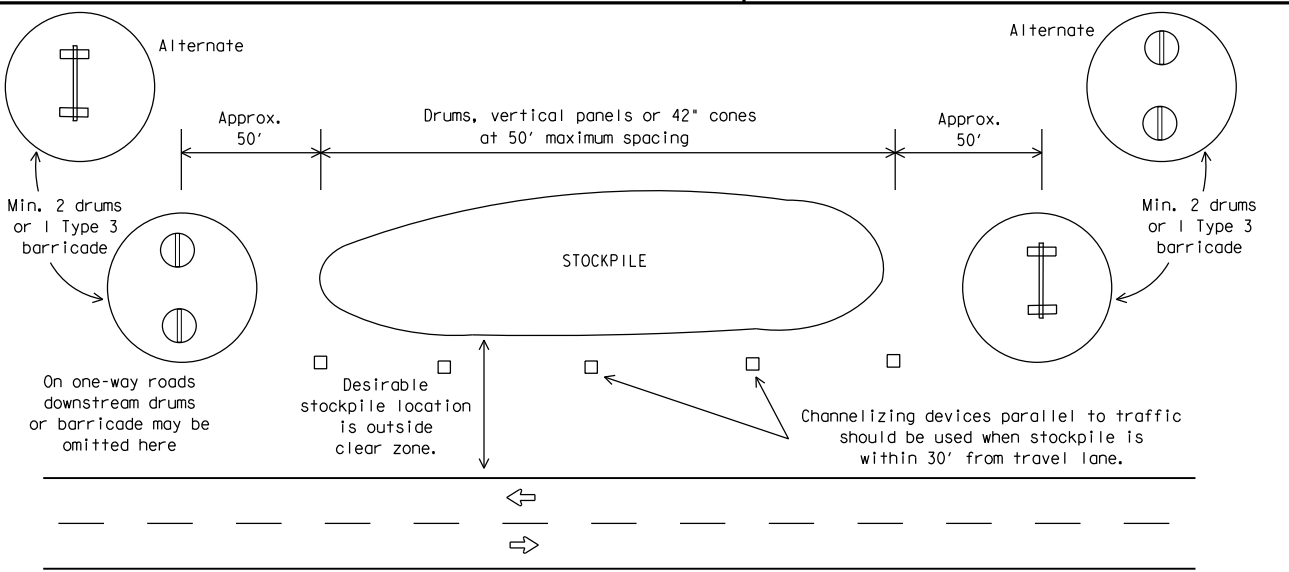
Two-Piece cones

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**

FILE#	bc-21.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
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9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	LRD	DIMMIT	79					

## 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.

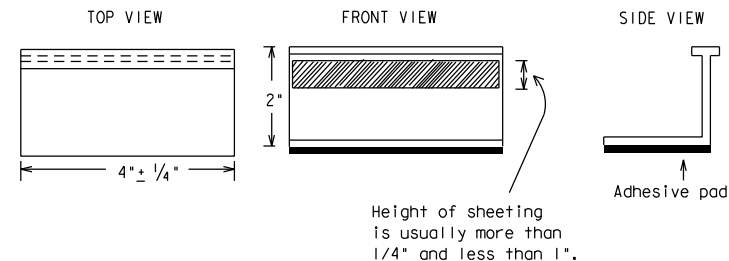
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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



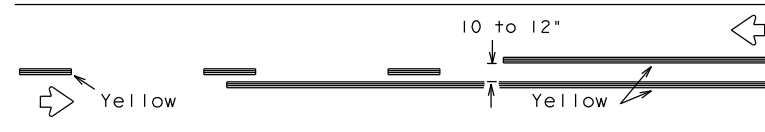
## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

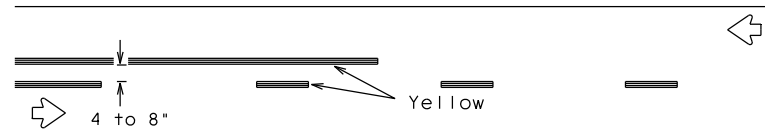
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11-02	8-14		LRD	DIMMIT
				SHEET NO.
				80

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## PAVEMENT MARKING PATTERNS

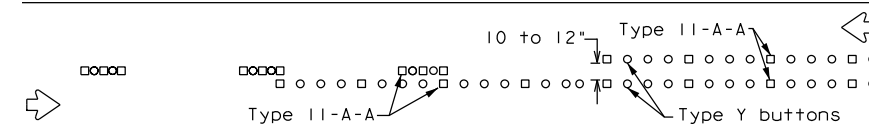


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

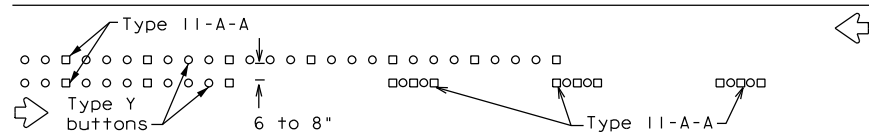


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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.

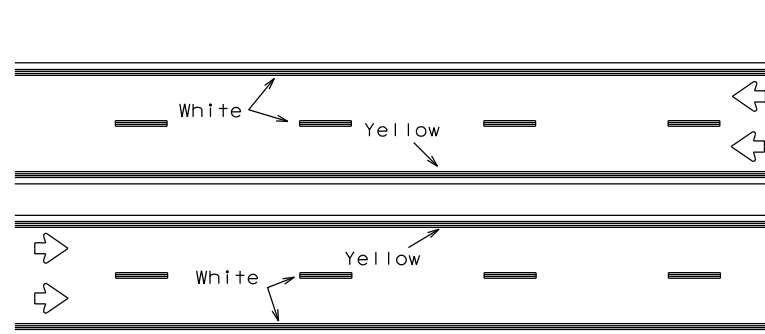


RAISED PAVEMENT MARKERS - PATTERN A



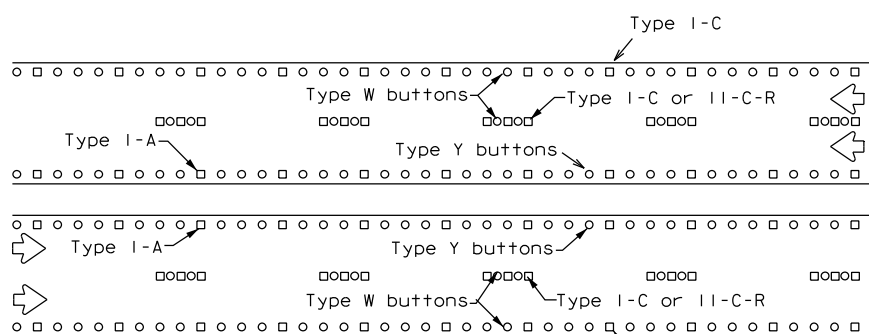
RAISED PAVEMENT MARKERS - PATTERN B

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



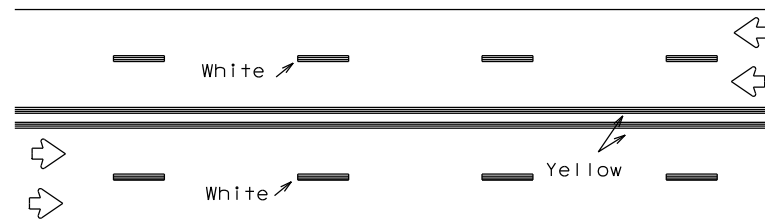
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



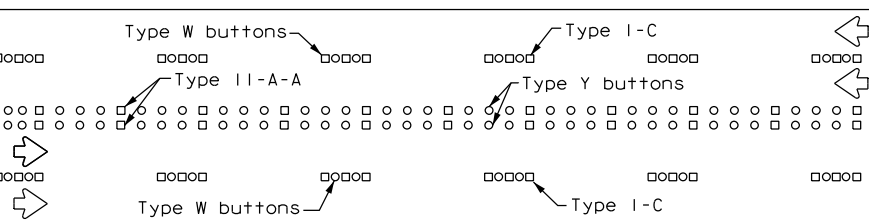
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



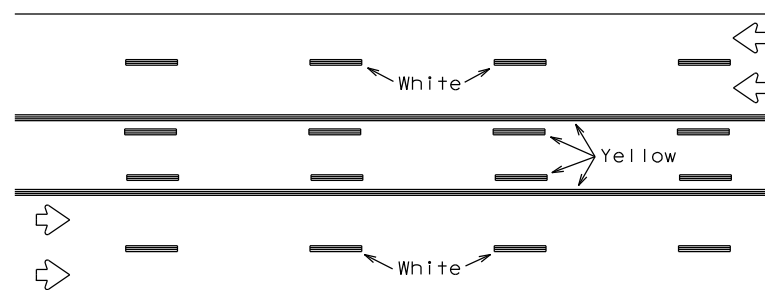
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



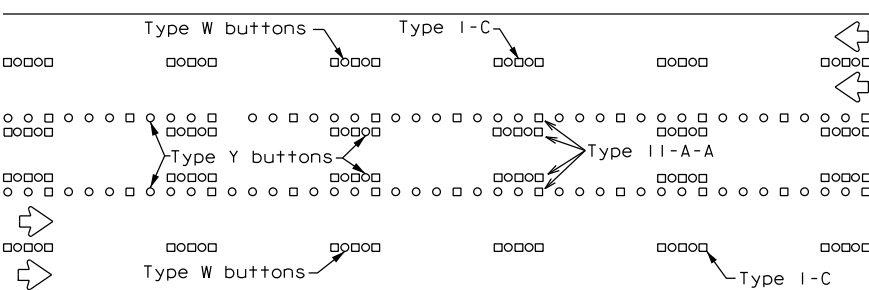
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

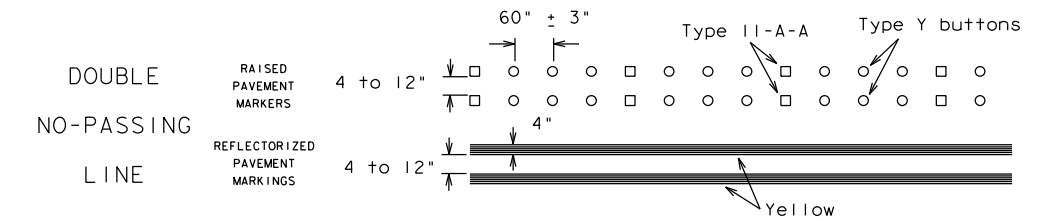
Prefabricated markings may be substituted for reflectorized pavement markings.



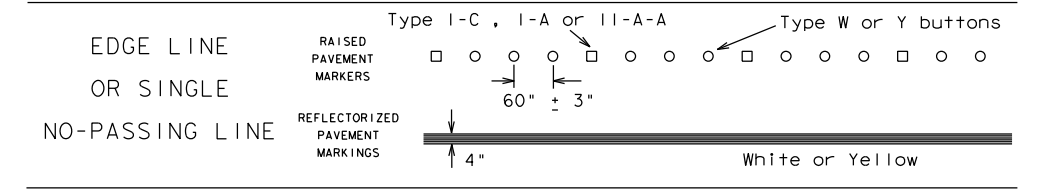
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



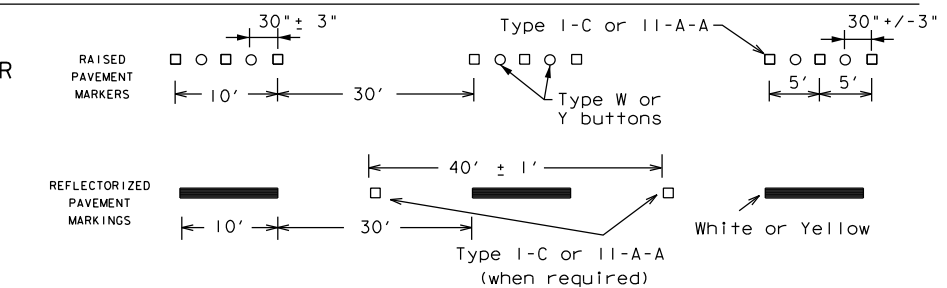
SOLID LINES



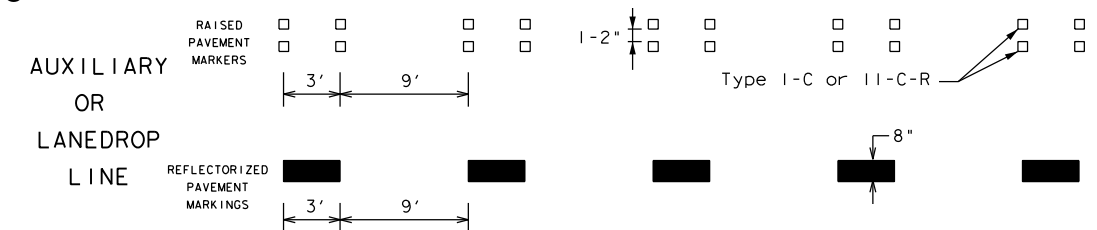
WIDE LINE



CENTER LINE OR LANE LINE

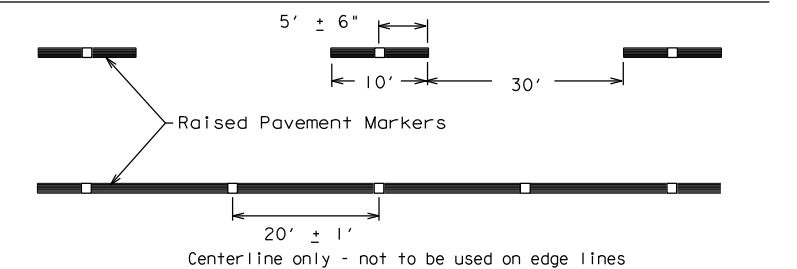


BROKEN LINES



## REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



SHEET 12 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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."

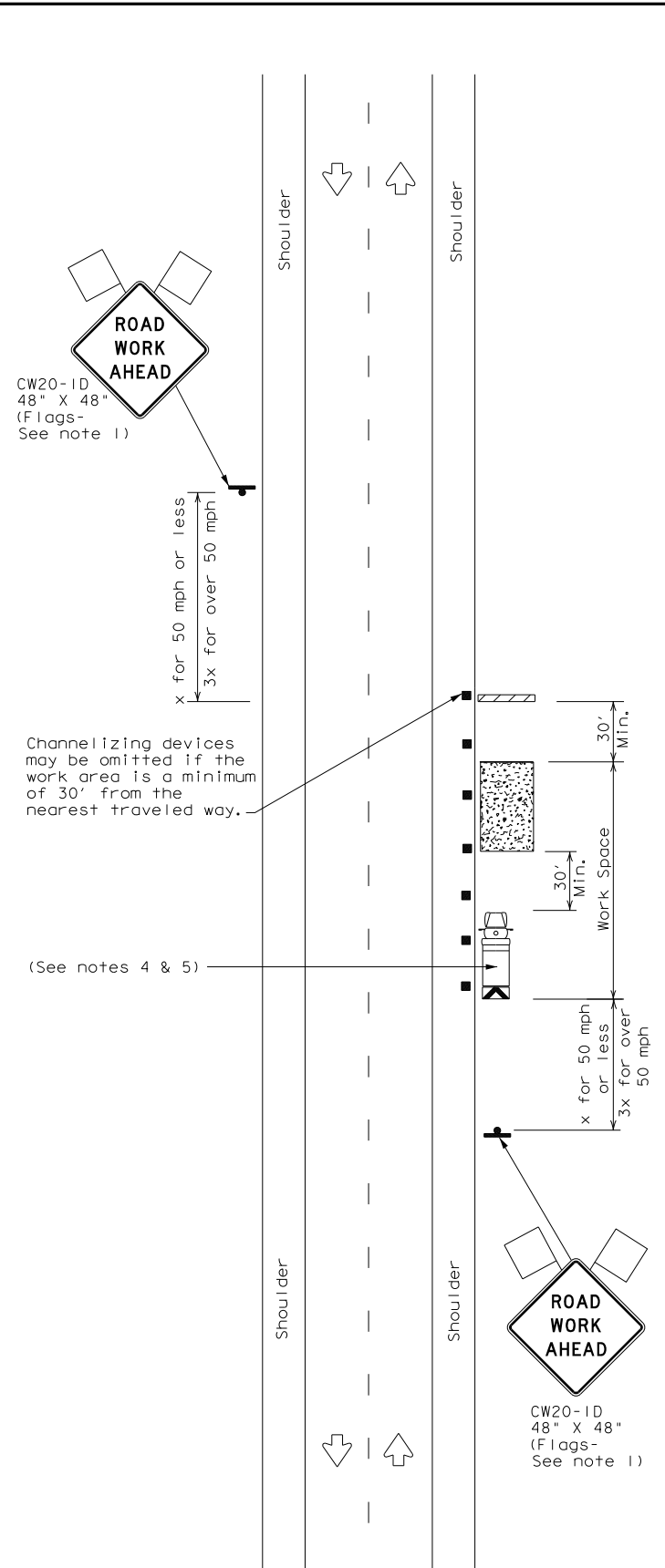
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©	TxDOT	February	1998	CONT	SECT	JOB	HIGHWAY		
REVISIONS		0037	08	042, ETC.					
1-97	9-07	5-21							
2-98	7-13								
11-02	8-14								
				LRD		COUNTY	SHEET NO.		
						DIMMIT	81		

DATE: 4/4/2024 3:04:40 PM  
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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TXDOT for any purpose whatsoever. TXDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect markings or damages resulting from its use.



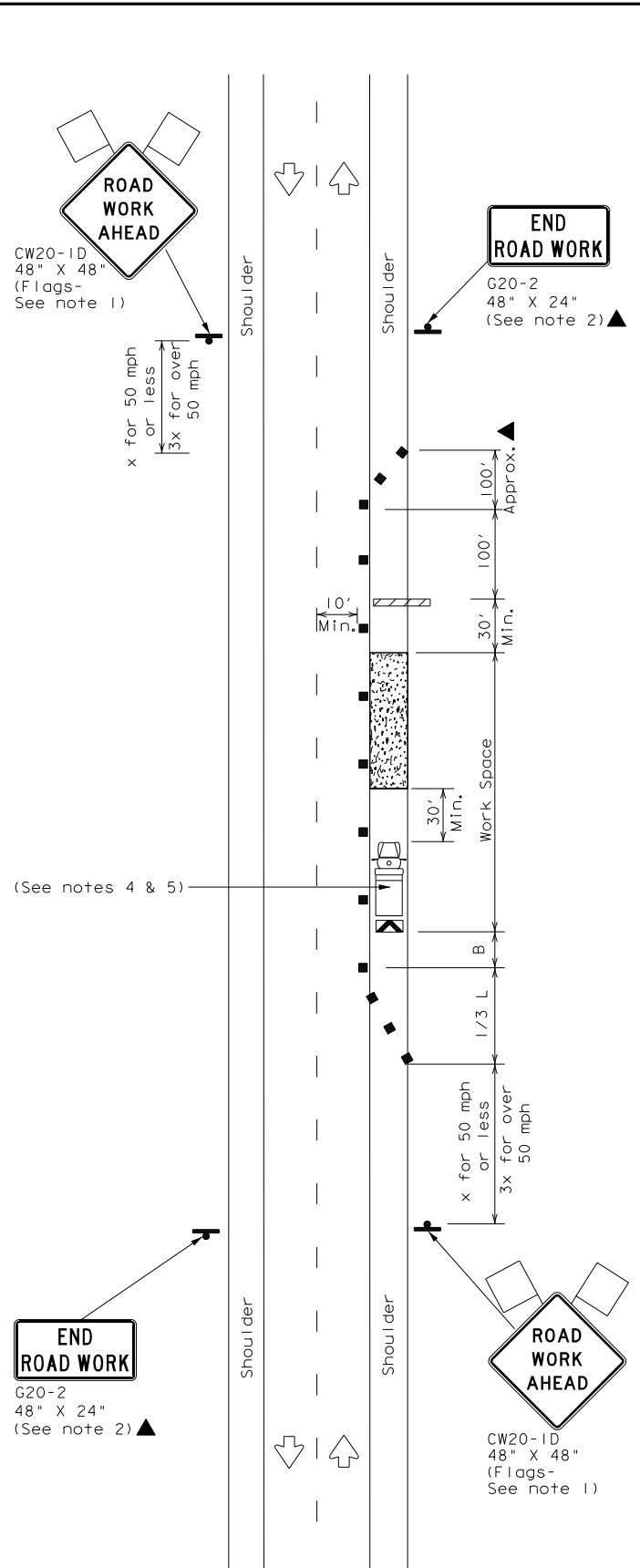
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or for the use of this standard in any project. It is the responsibility of the user to verify the applicability of this standard to their project.

DATE: 6/22/2020 9:42:15 AM  
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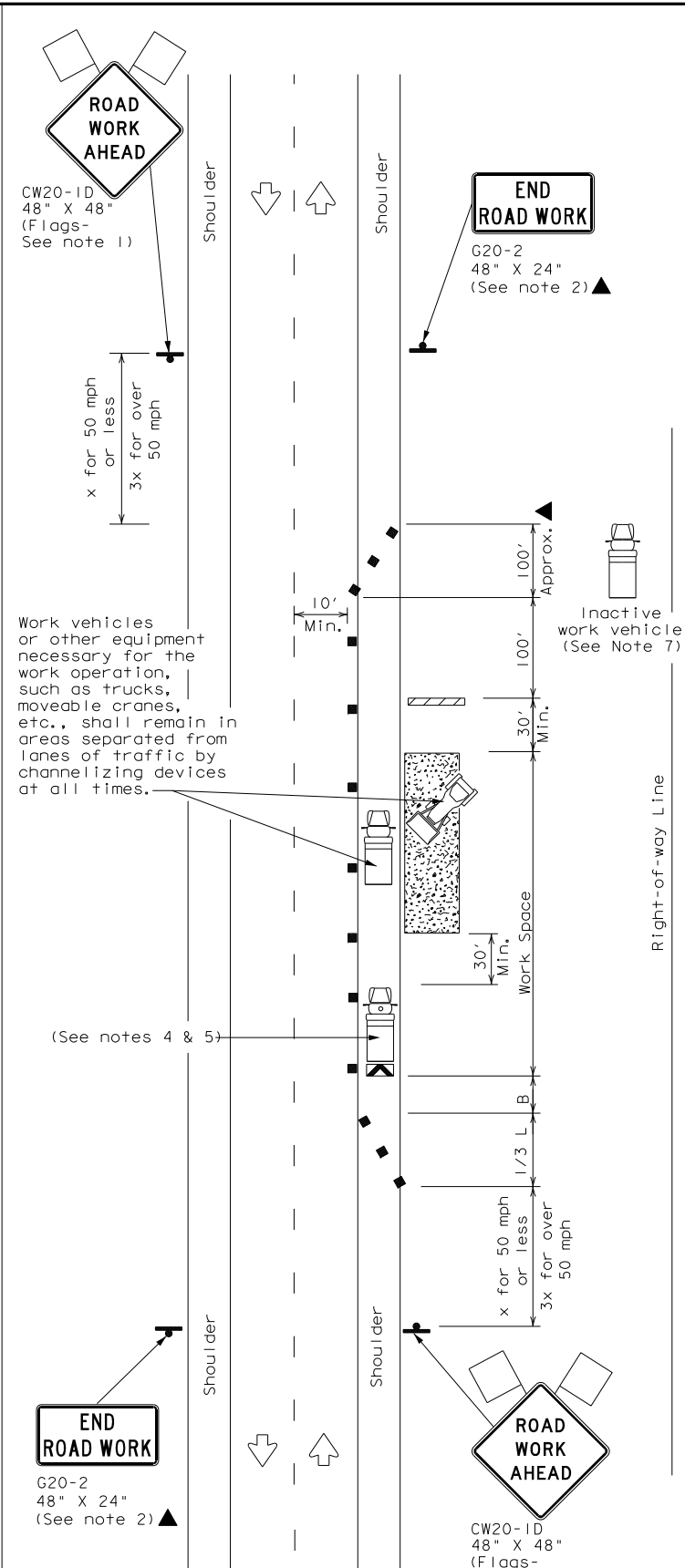
TCP (2-1a)

WORK SPACE NEAR SHOULDER  
 Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER  
 Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER  
 Conventional Roads

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

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

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

GENERAL NOTES

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



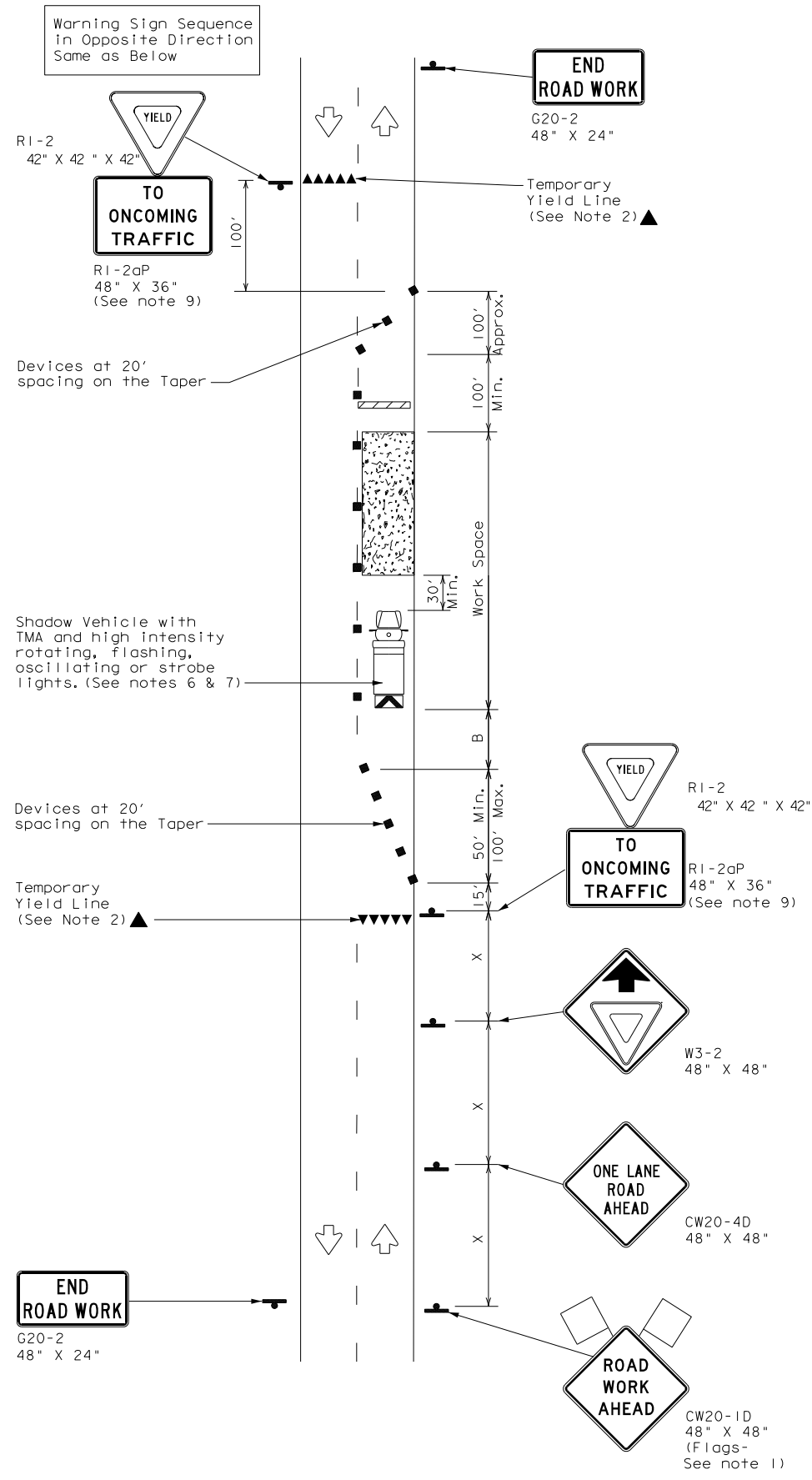
TRAFFIC CONTROL PLAN  
 CONVENTIONAL ROAD  
 SHOULDER WORK

TCP (2-1) - 18

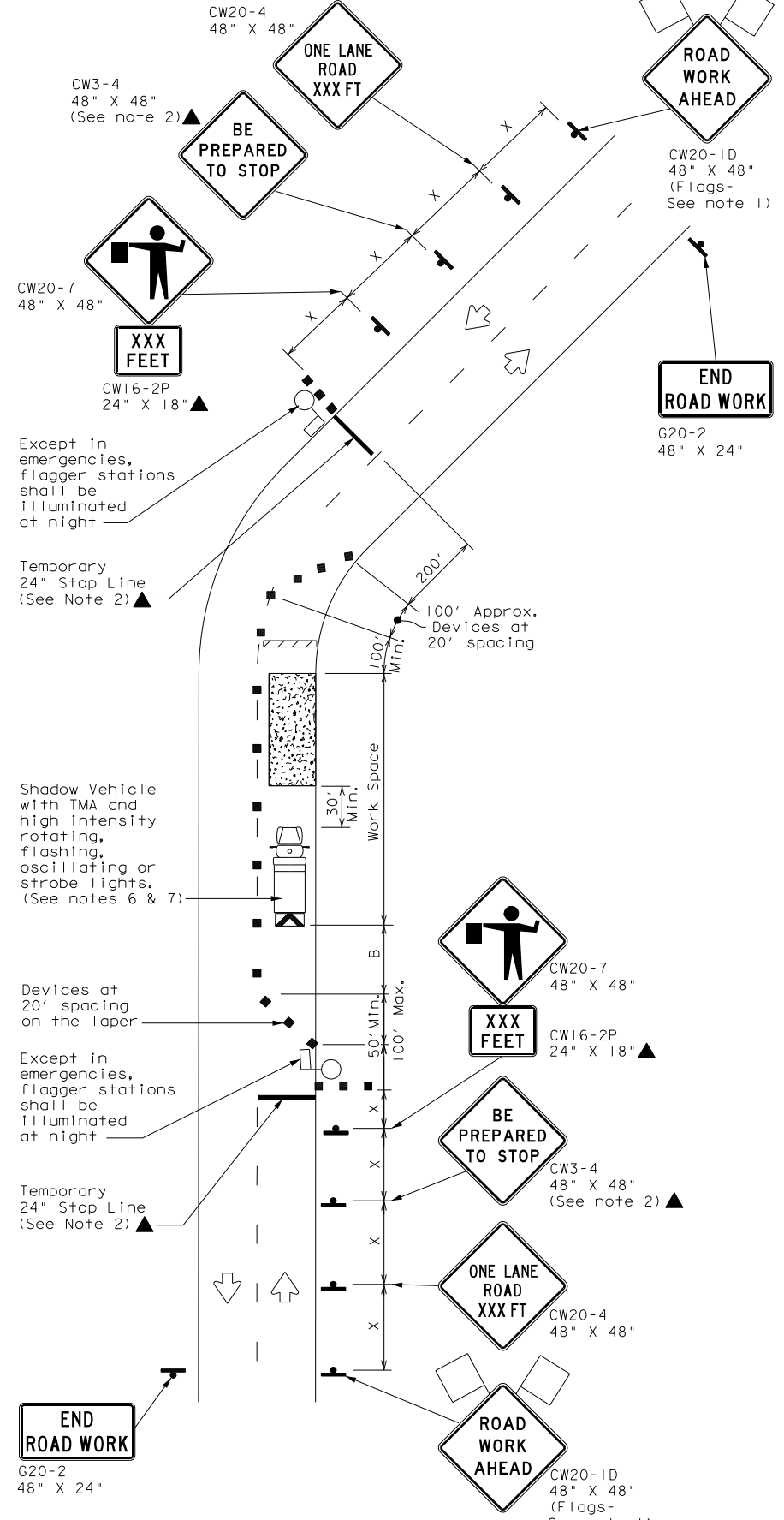
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© TxDOT	December 1985	CON:	SECT:	JOB:	HIGHWAY:
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2-94	4-98	DIST:		COUNTY:	SHEET NO.
8-95	2-12	LRD		DIMMIT	82
1-97	2-18				

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DATE: 6/22/2020 9:42:18 AM  
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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 <sup>2</sup> / 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 CONTROL PLAN  
 ONE-LANE TWO-WAY  
 TRAFFIC CONTROL

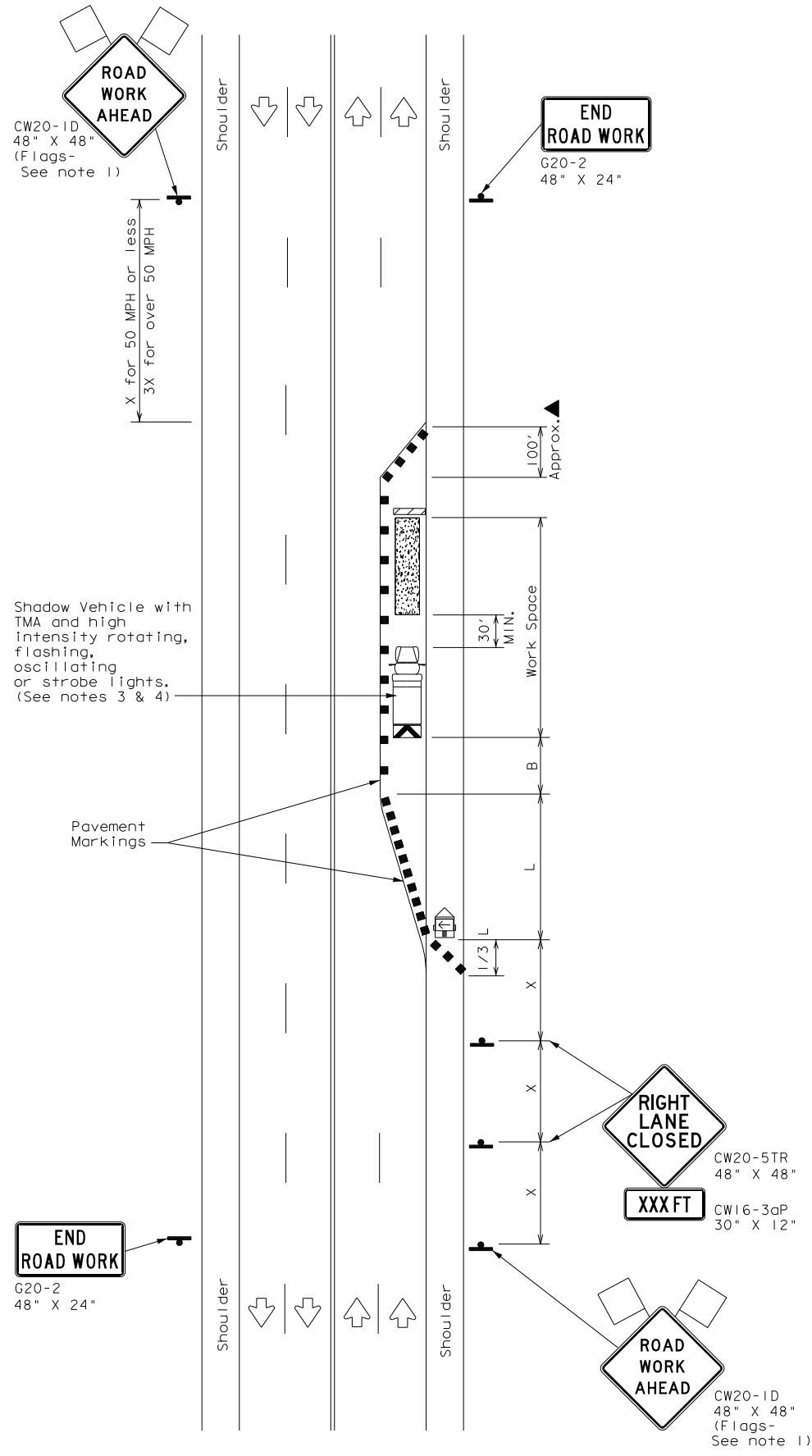
TCP (2-2) - 18

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© TxDOT	December 1985	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS		0037	08	042, ETC.	US 83
8-95	3-03	DIST:	COUNTY:	SHEET NO.	
1-97	2-12	LRD	DIMMIT	83	
4-98	2-18				

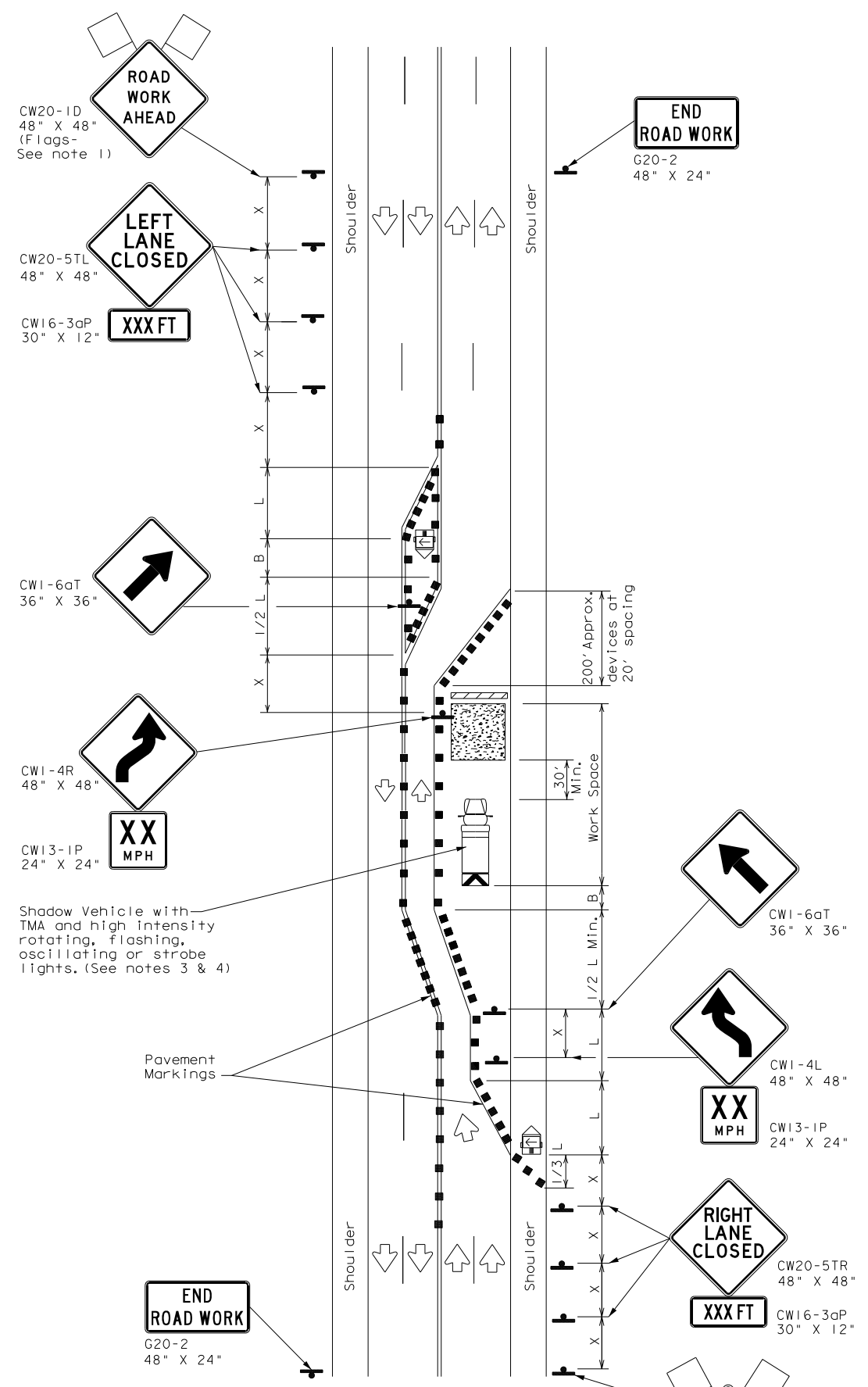


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TCP (2-5a)  
 ONE LANE CLOSED



TCP (2-5b)  
 TWO LANES CLOSED

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing *X* Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

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

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

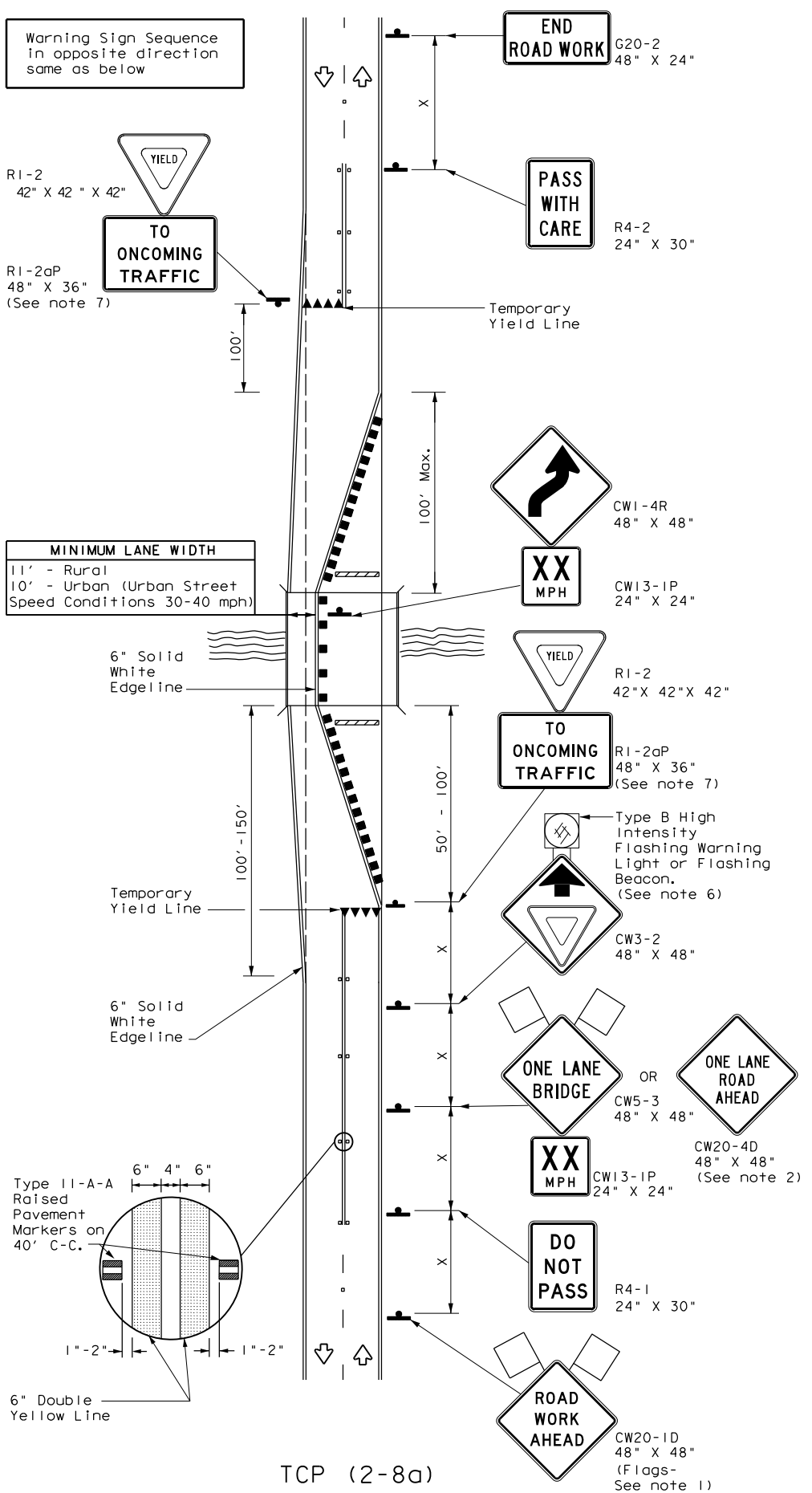
- GENERAL NOTES
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - A Shadow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

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

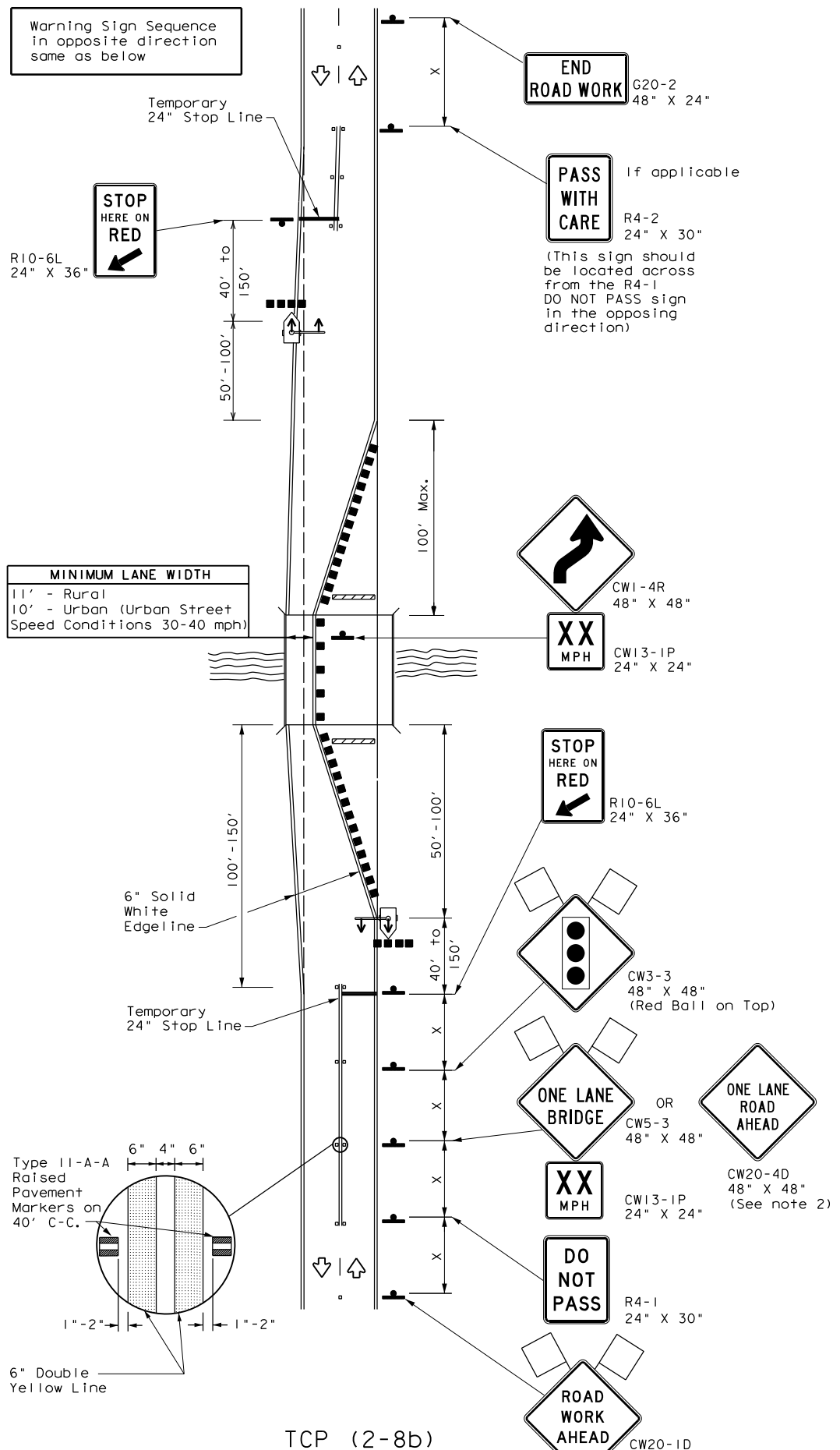
		Traffic Operations Division Standard	
TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS.			
TCP (2-5) - 18			
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© TxDOT December 1985	CON:	SECT:	JOB:
8-95 2-12	0037	08	042, ETC.
1-97 3-03	DIST:	COUNTY:	HIGHWAY:
4-98 2-18	LRD:	DIMMIT	US 83
			SHEET NO. 85

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TCP (2-8a)  
 ONE LANE TWO-WAY  
 TRAFFIC CONTROL WITH YIELD SIGNS  
 (Less Than 2000 ADT-See Note 5)



TCP (2-8b)  
 ONE LANE TWO-WAY  
 TRAFFIC CONTROL WITH TRAFFIC SIGNAL

LEGEND

	Type 3 Barricade		Channelizing Devices
	Sign		Traffic Flow
	Flag		Flagger
	Raised Pavement Markers Ty 11-AA		Temporary or Portable Traffic Signal

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 <sup>2</sup> / 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.
  - When this TCP is used at a location which does not involve a bridge, a 48" x 48" CW20-4D "ONE LANE ROAD AHEAD" signs should be used in lieu of the CW5-3 "ONE LANE BRIDGE" signs. The CW13-IP Advisory Speed Plaque is required with either warning sign.
  - Raised pavement markers shall be placed 40 feet c-c on centerline between DO NOT PASS signs and stop or yield lines.
  - For intermediate term situations, when it is not feasible to remove and restore pavement markings, the channelization must be made dominant by using a very close spacing. This is especially important in locations of conflicting information, such as where traffic is directed over a double yellow centerline. In such locations a maximum channelizing device spacing of 20 feet is recommended. The 20 foot channelizing device spacing recommendation is intended for the area of conflicting information and not the entire work zone.
- TCP (2-8a)
- Traffic control by CW3-2 "YIELD AHEAD" symbol signs for one lane two-way traffic control operations should be limited to work spaces less than 400 feet long and roadways with less than 2000 ADT. Otherwise, portable traffic signals should be used.
  - If power is available, a flashing beacon should be attached to the CW3-2 "YIELD AHEAD" symbol sign for emphasis.
  - The R1-2 "YIELD" and R1-2aP "TO ONCOMING TRAFFIC" signs and other regulatory signs shall be installed at 7 foot minimum mounting height.
- TCP (2-8b)
- A list of approved Portable Traffic Signals can be found in the "Compliant Work Zone Traffic Control Devices" list.
  - Portable traffic signals should be located to provide adequate stopping sight distance for approaching motorist (See table above).

Texas Department of Transportation  
 Traffic Safety Division Standard

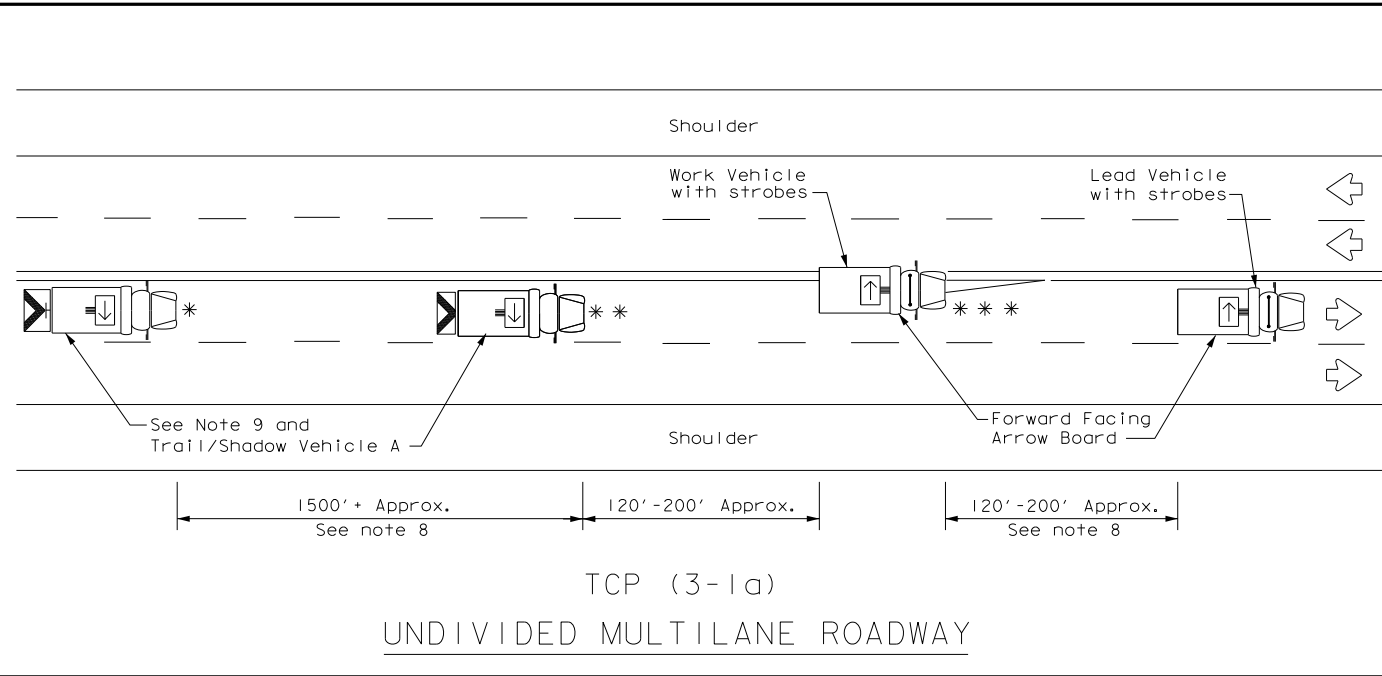
TRAFFIC CONTROL PLAN  
 LONG TERM ONE-LANE  
 TWO-WAY CONTROL

TCP (2-8) - 23

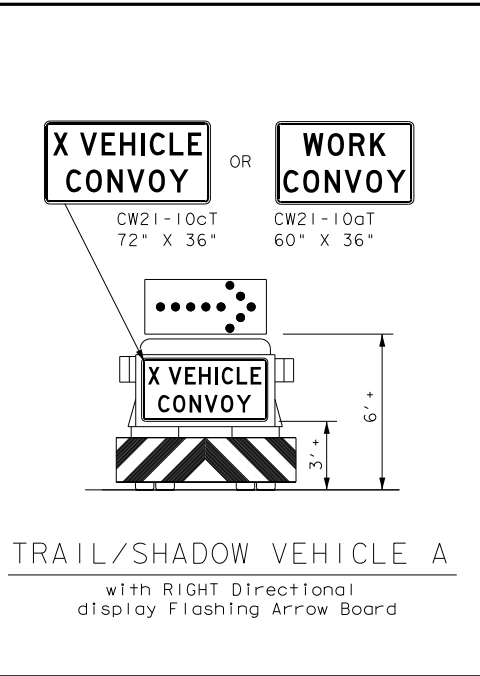
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© TxDOT	REVISIONS	CON: 12-85	SECT: 8-95	JOB: 3-03	HIGHWAY: 4-23
		DIST: LRD	COUNTY: DIMMIT	SHEET NO.: 86	

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TCP (3-1a)  
 UNDIVIDED MULTILANE ROADWAY



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

LEGEND

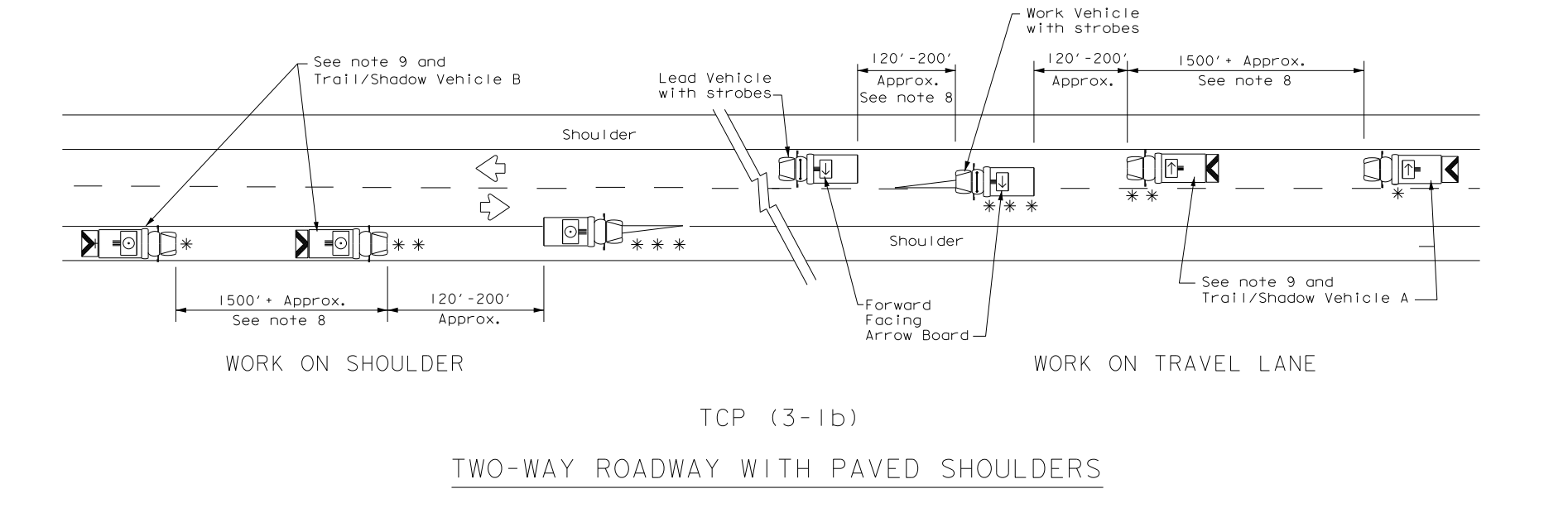
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**	Shadow Vehicle		
***	Work Vehicle	[Right Arrow]	RIGHT Directional
[Left Arrow]	Heavy Work Vehicle	[Left Arrow]	LEFT Directional
[TMA]	Truck Mounted Attenuator (TMA)	[Double Arrow]	Double Arrow
[Traffic Flow]	Traffic Flow	[CAUTION]	CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE

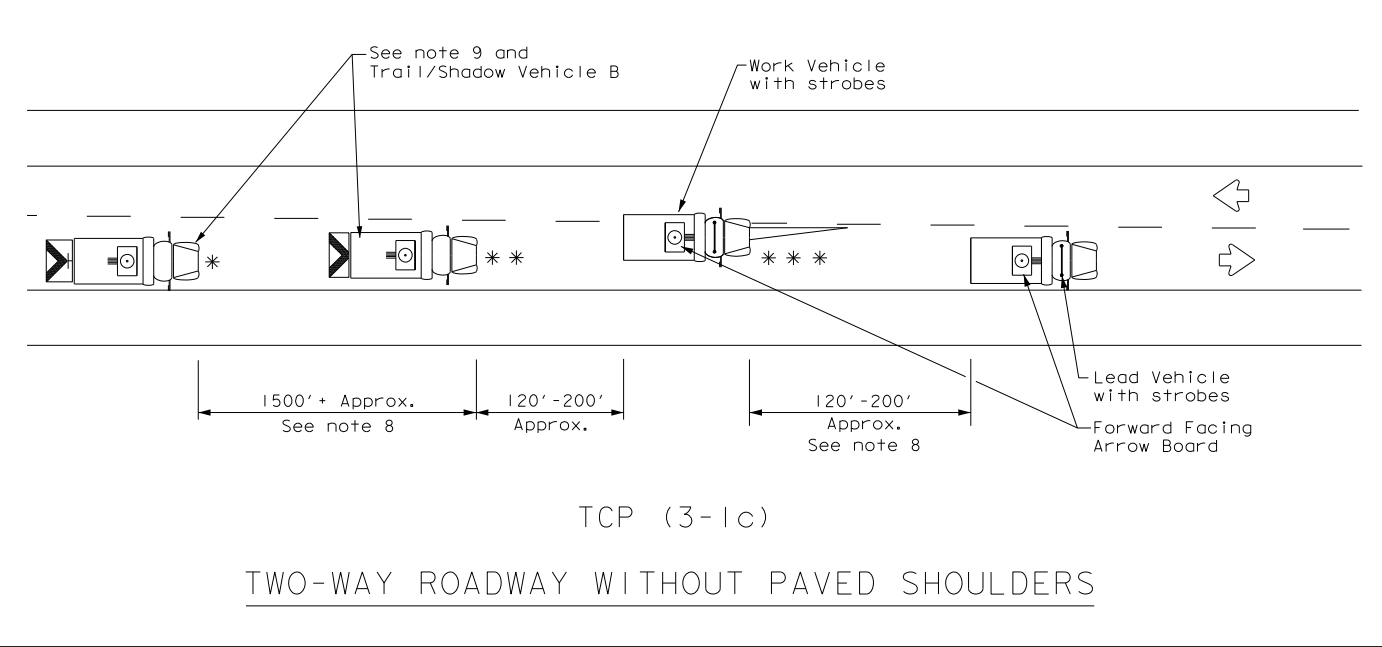
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[check]				

GENERAL NOTES

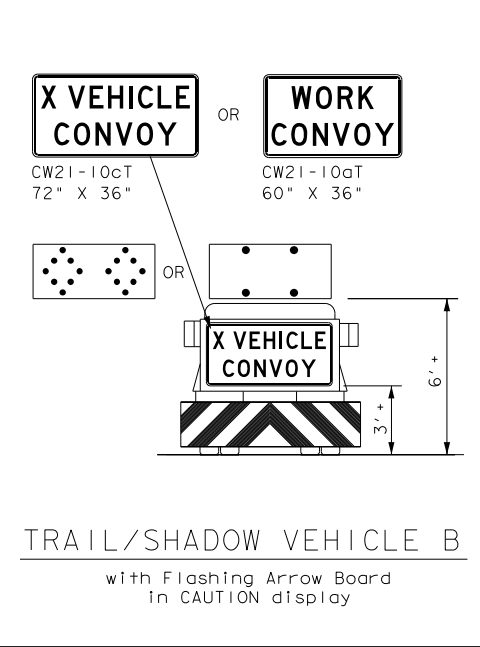
1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY" (CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



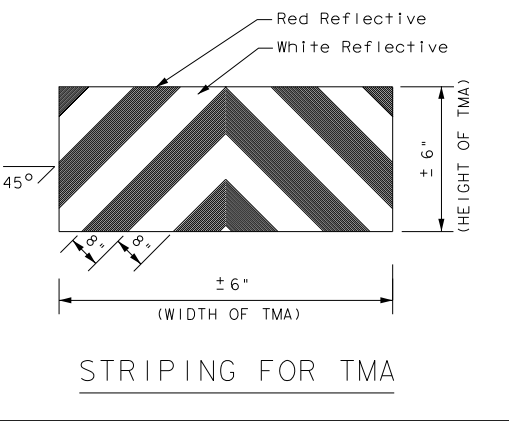
WORK ON SHOULDER      WORK ON TRAVEL LANE  
 TCP (3-1b)  
 TWO-WAY ROADWAY WITH PAVED SHOULDERS



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



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



Texas Department of Transportation Traffic Operations Division Standard

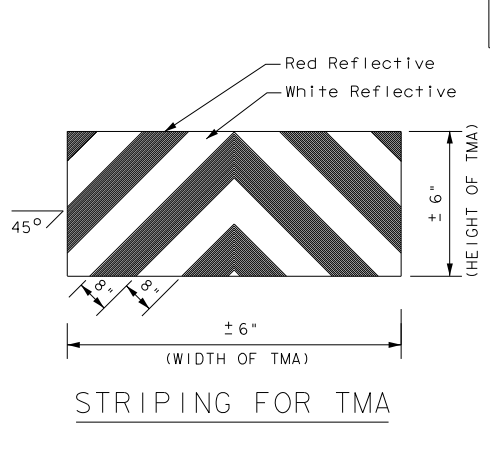
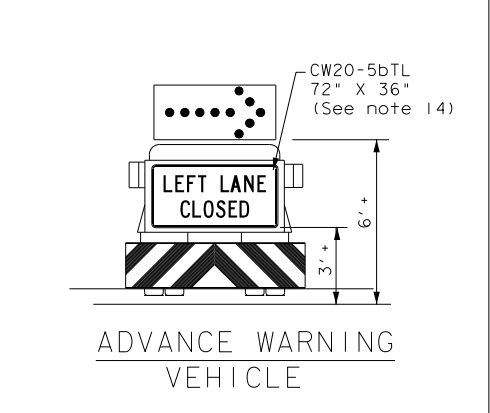
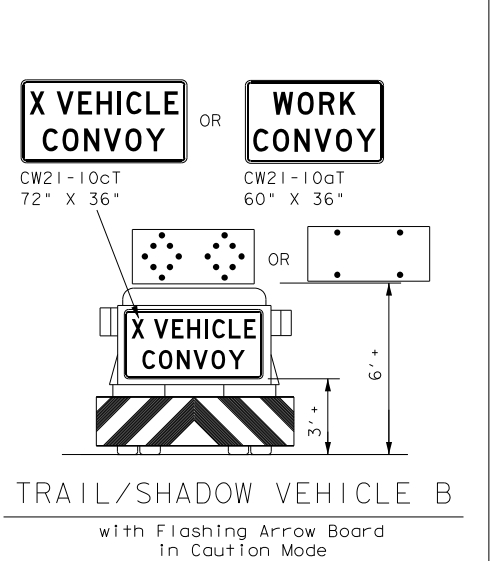
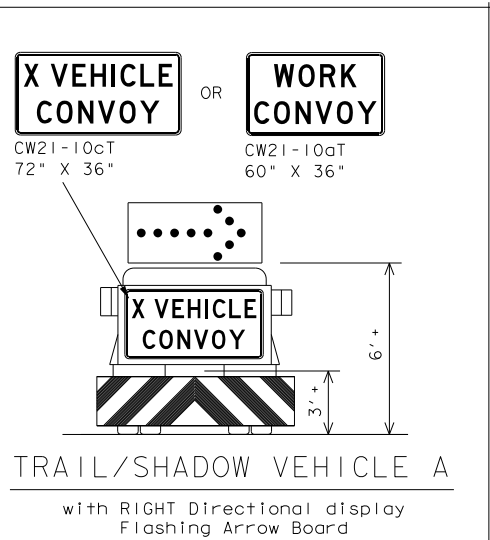
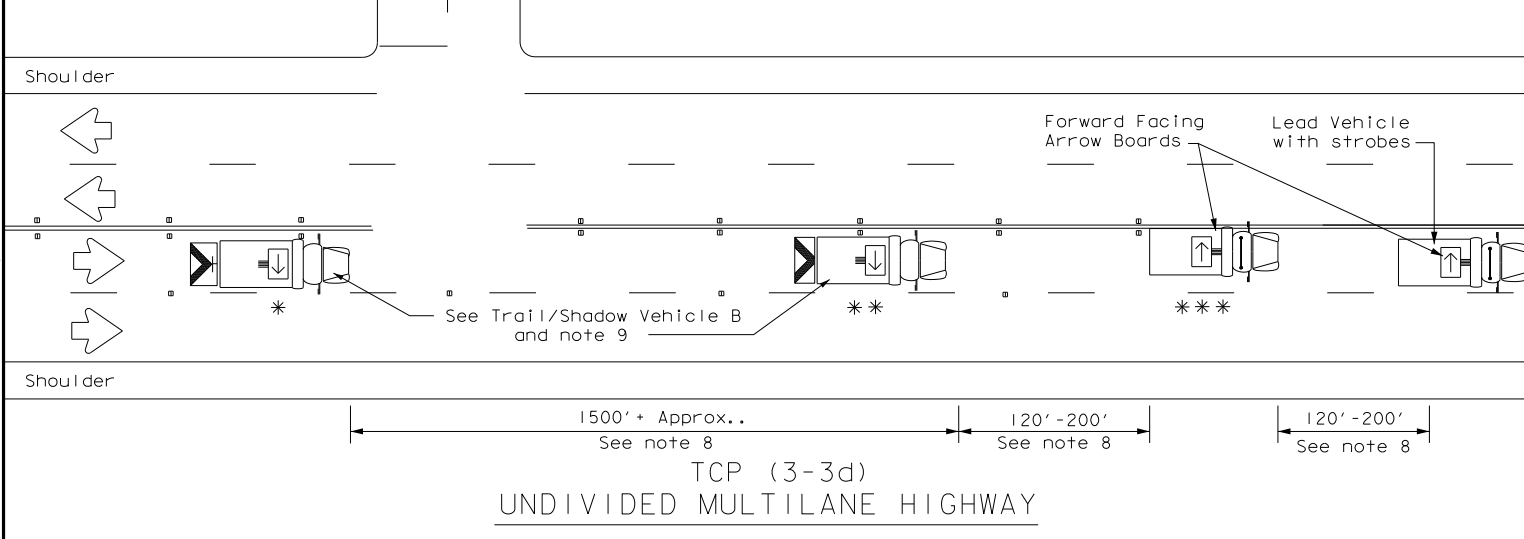
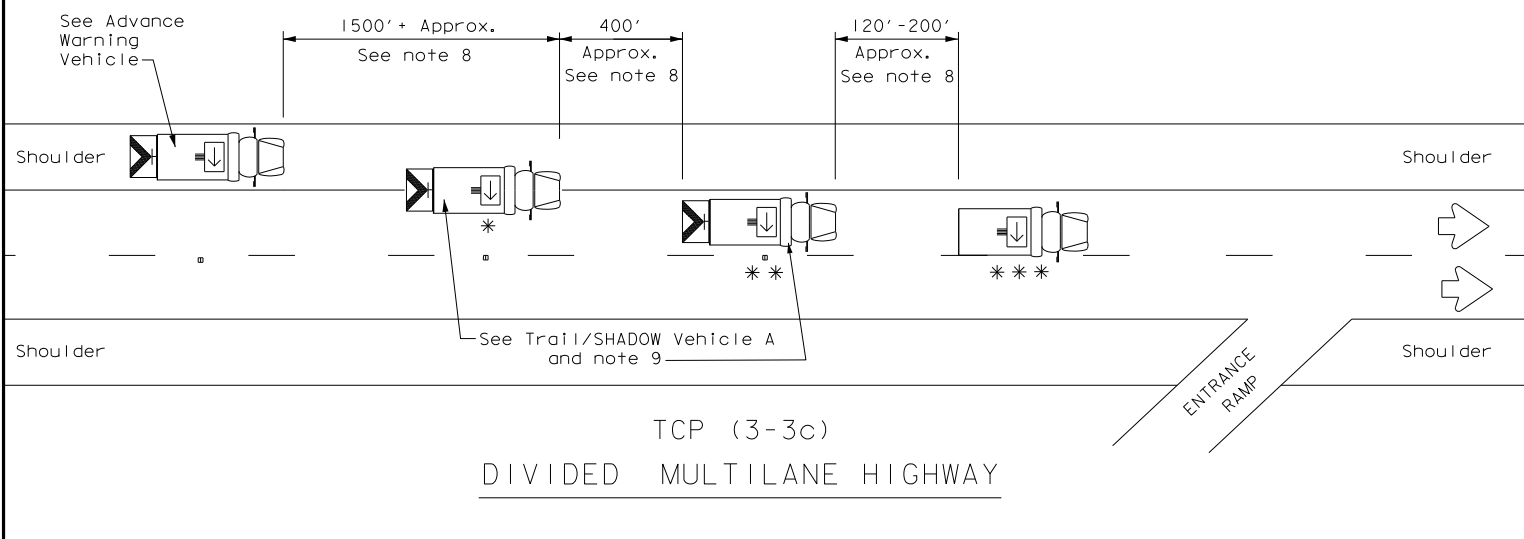
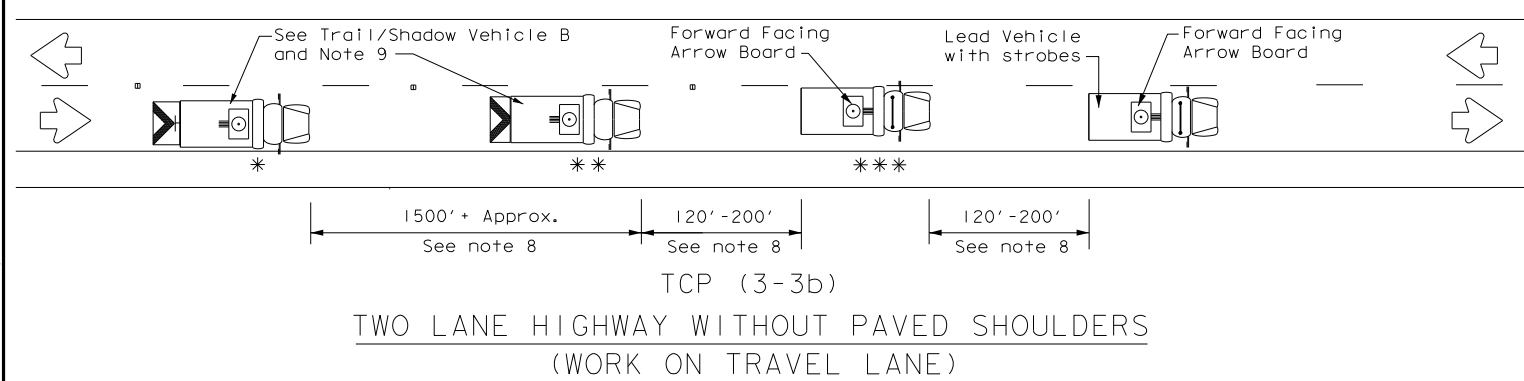
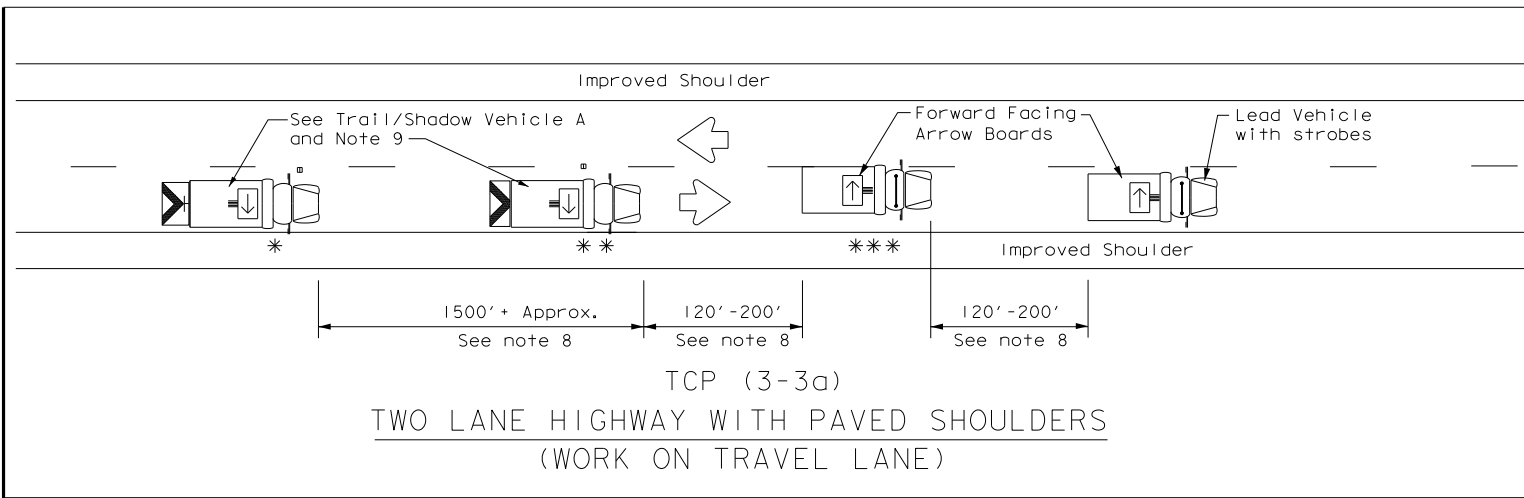
**TRAFFIC CONTROL PLAN  
 MOBILE OPERATIONS  
 UNDIVIDED HIGHWAYS**

**TCP(3-1)-13**

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175

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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
✓				

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.

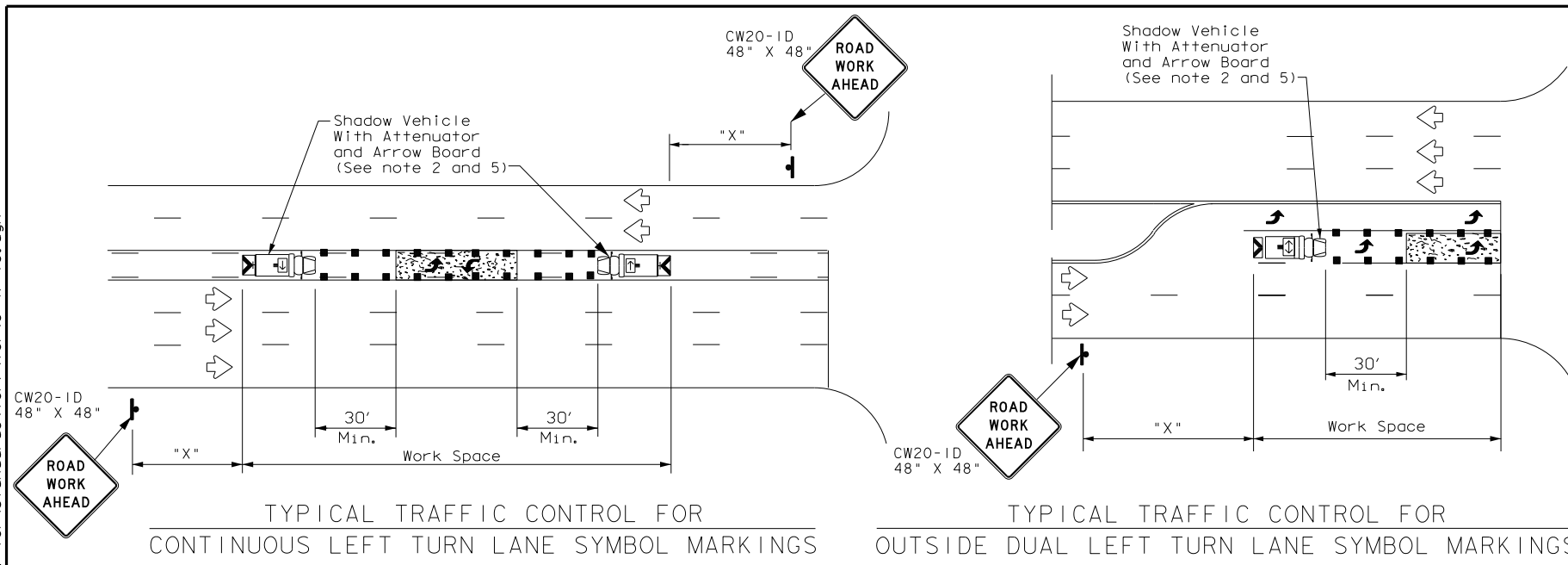
Texas Department of Transportation  
Traffic Operations Division Standard

## 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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8-95 7-13				
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	DIST	COUNTY		SHEET NO.
	LRD	DIMMIT		88

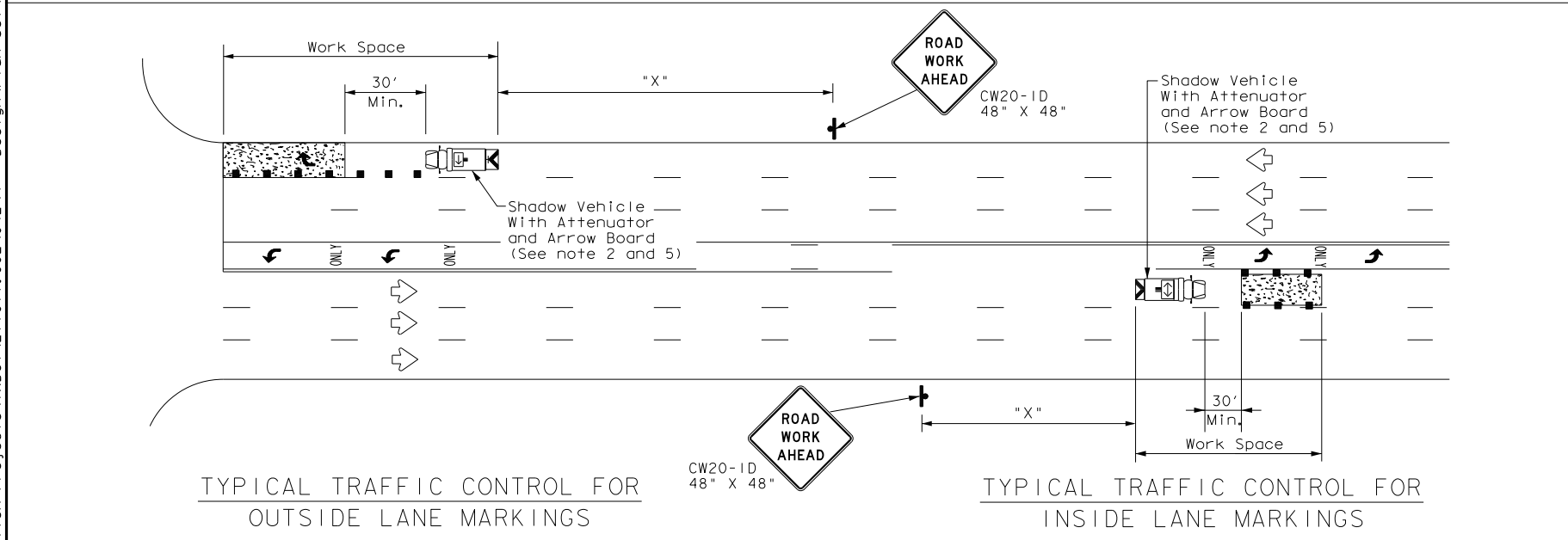
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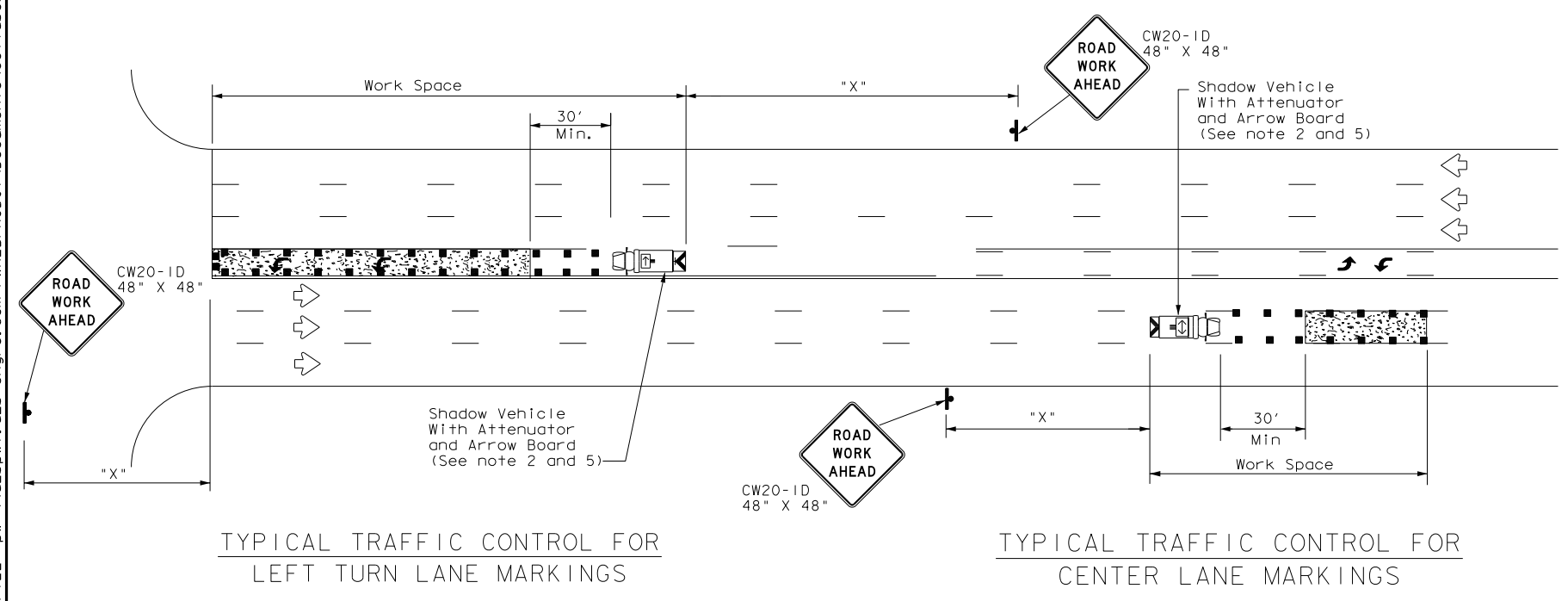
TYPICAL TRAFFIC CONTROL FOR CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

TYPICAL TRAFFIC CONTROL FOR OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR CENTER LANE MARKINGS

LEGEND		ARROW BOARD DISPLAY	
*	Trail Vehicle		RIGHT Directional
**	Shadow Vehicle		LEFT Directional
***	Work Vehicle		Double Arrow
	Heavy Work Vehicle		RIGHT Directional
	Truck Mounted Attenuator (TMA)		LEFT Directional
	Traffic Flow		Double Arrow
	Channelizing Devices		Double Arrow

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 = WS²/60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		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		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

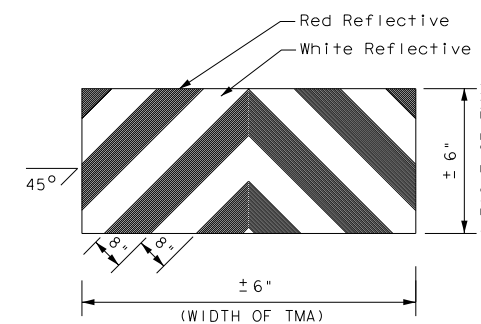
\*\* Taper lengths have been rounded off.

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

- This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.
- A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.
- All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
- The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
- Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation  
 Traffic Operations Division Standard

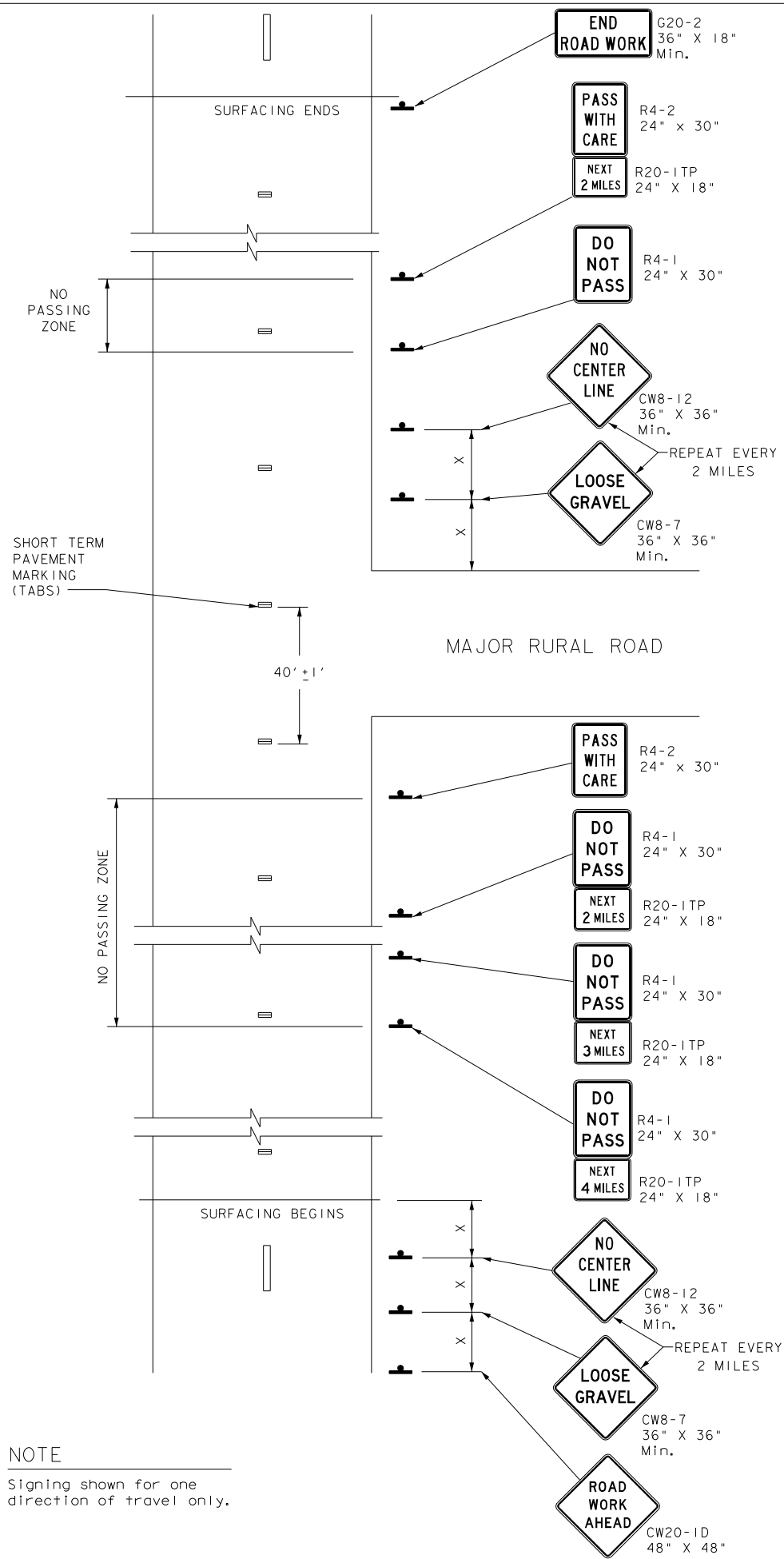
**TRAFFIC CONTROL PLAN  
 MOBILE OPERATIONS FOR  
 ISOLATED WORK AREAS  
 UNDIVIDED HIGHWAYS  
 TCP(3-4)-13**

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
© TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY	SHEET NO.	
	LRD	DIMMIT	89	



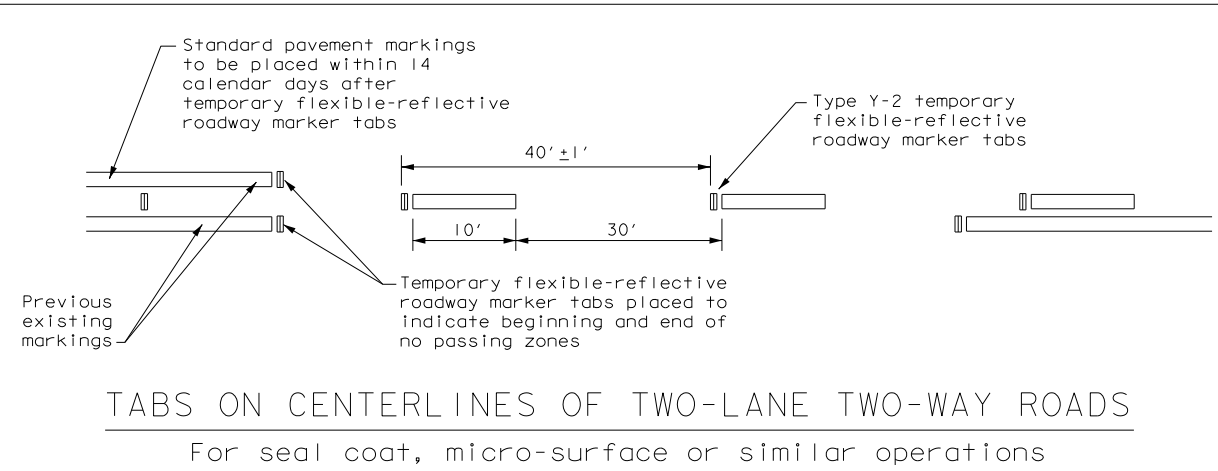
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NOTE  
 Signing shown for one direction of travel only.

**NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS**



**"DO NOT PASS" SIGN (R4-1) 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-ITP) 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 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 windshield 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 days 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. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

**"NO CENTER LINE" SIGN (CW8-12)**

- A. Center line markings are yellow pavement markings that delineate the separation of travel 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 centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 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 standard pavement markings are installed.

**"LOOSE GRAVEL" SIGN (CW8-7)**

- 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 2 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.

**PAVEMENT MARKINGS**

- A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs 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 (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.
- B. Tabs shall not be used to simulate edge lines.
- C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

**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 in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and 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 signs will then be repeated as described above.

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

\* Conventional Roads Only

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

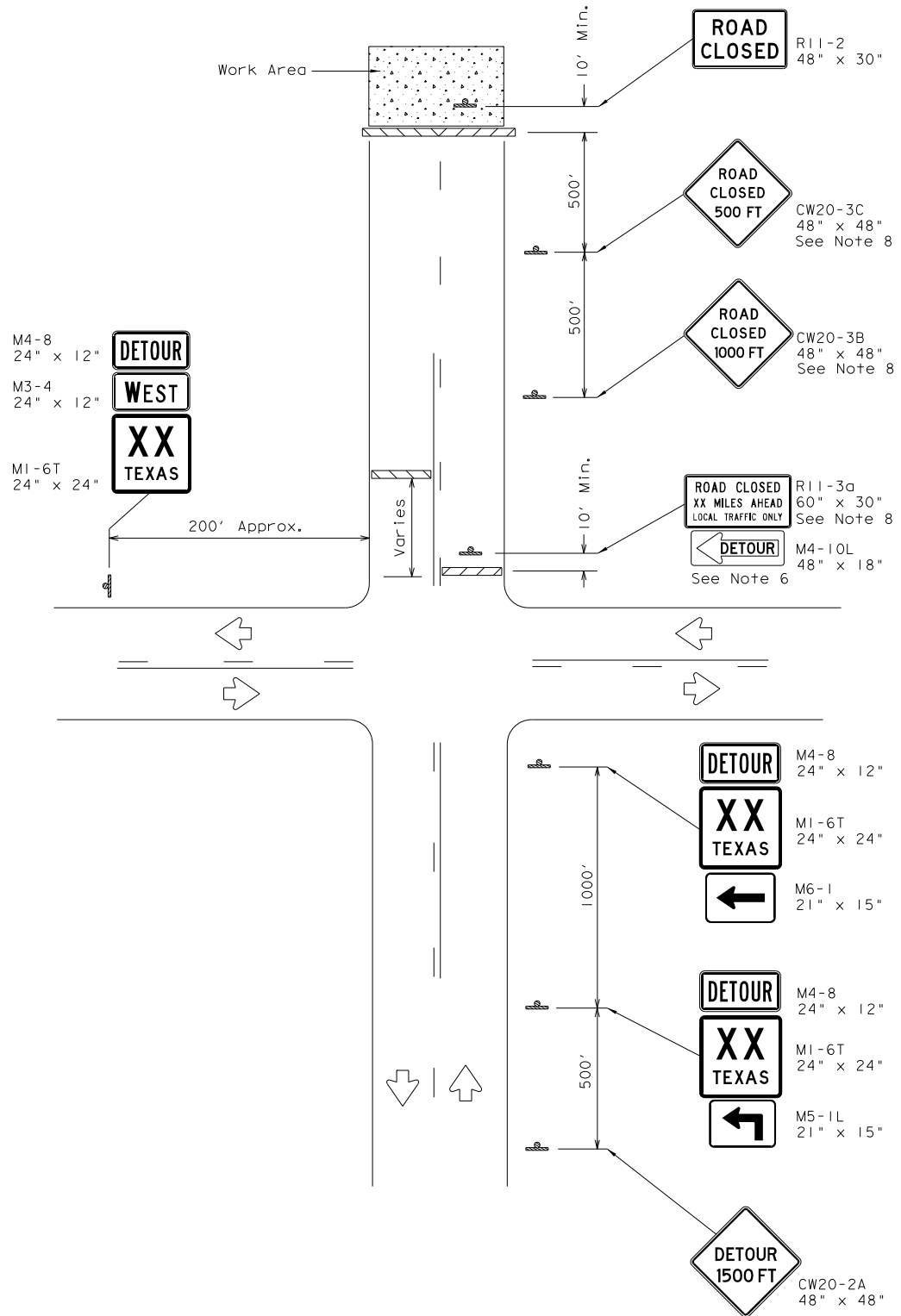
**GENERAL NOTES**

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
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 Long-Term / Intermediate-Term 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 will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

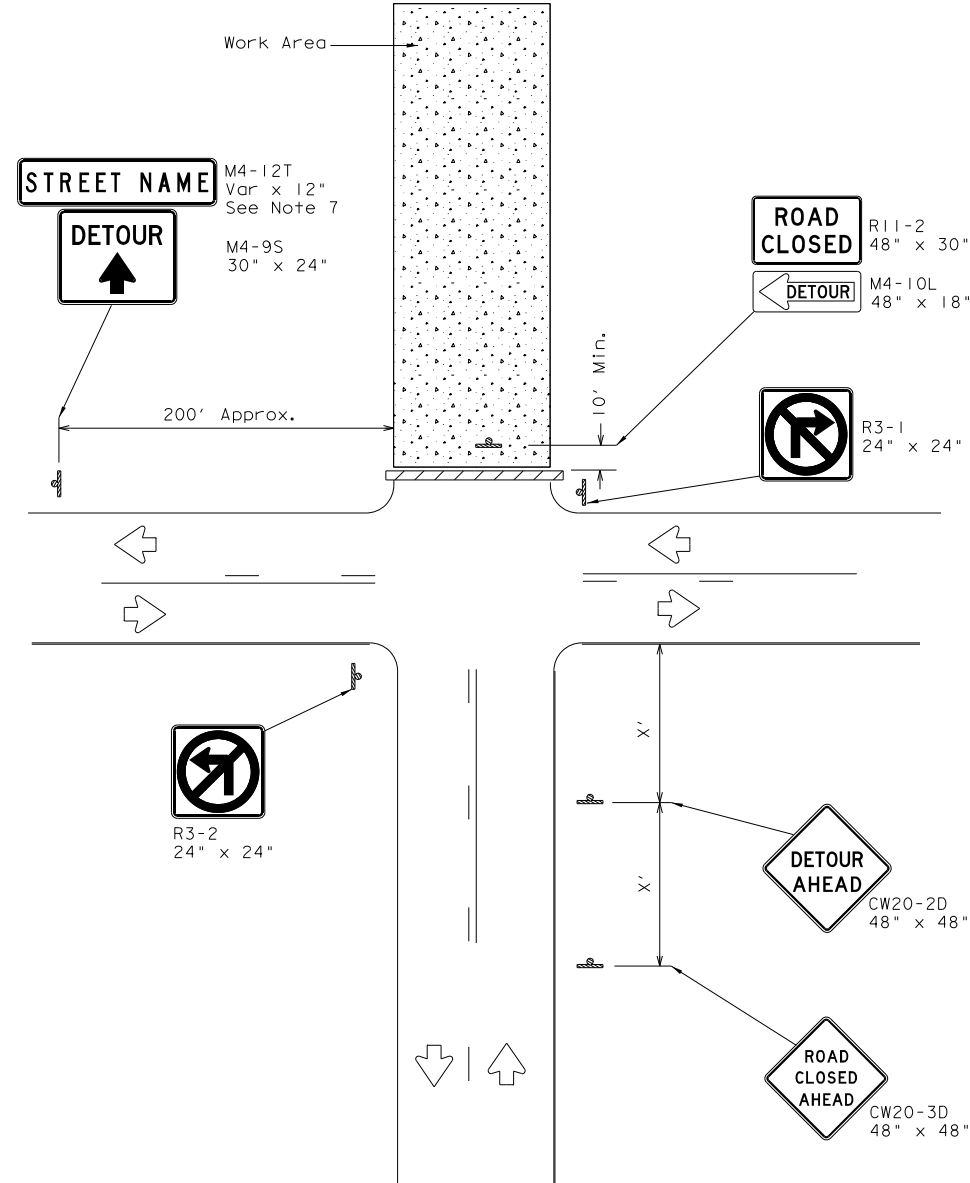
		Traffic Operations Division Standard	
<b>TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS</b>			
<b>TCP (7-1) - 13</b>			
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© TxDOT	March 1991	CONT:	SECT:
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4-92	4-98	042, ETC.	
1-97	7-13	DIST:	COUNTY:
		LRD	DIMMIT
			SHEET NO. <b>90</b>

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ROAD CLOSURE BEYOND THE INTERSECTION  
 Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION  
 Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

\* Conventional Roads Only

GENERAL NOTES

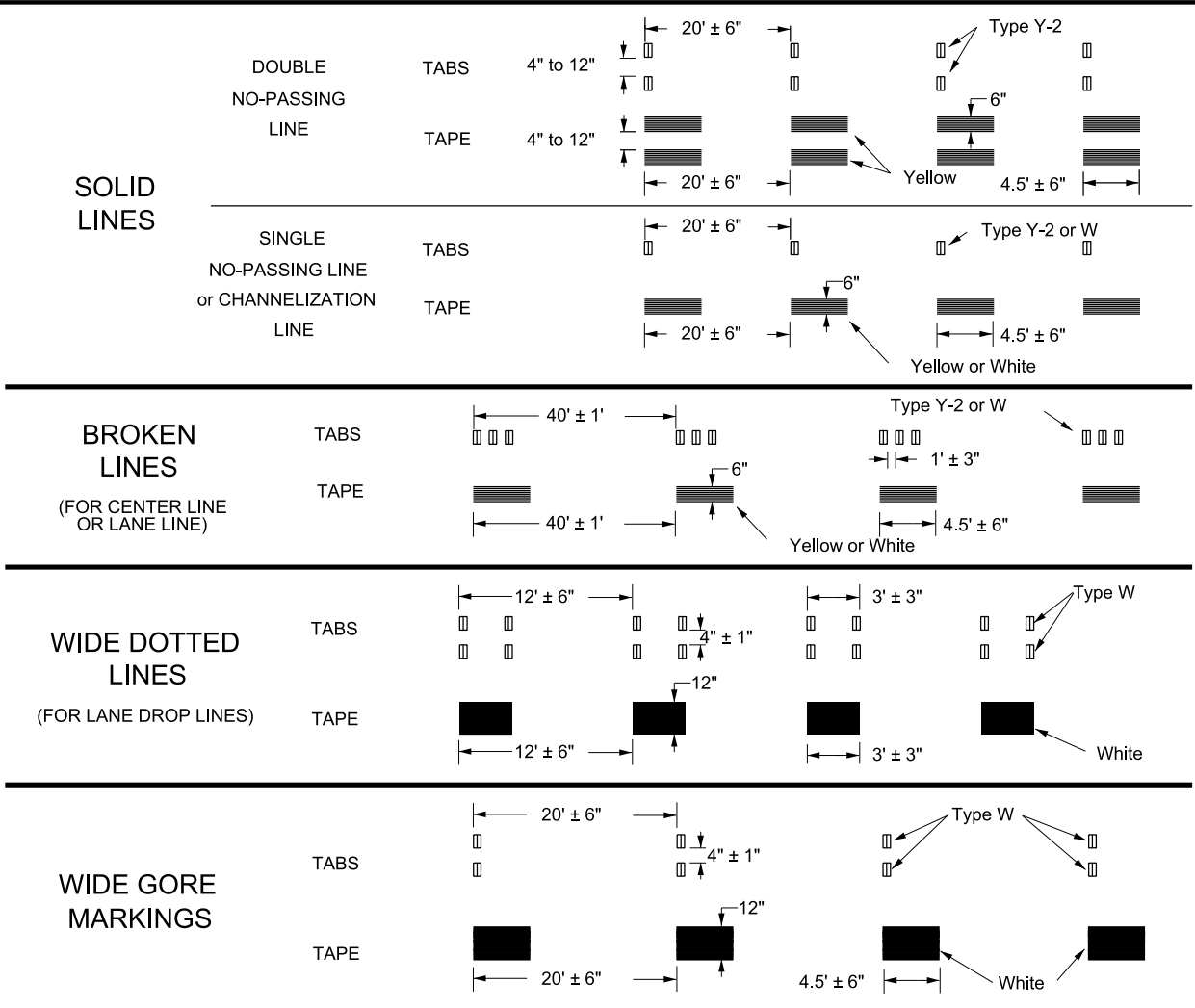
- This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
- Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices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

		Traffic Operations Division Standard	
WORK ZONE ROAD CLOSURE DETAILS			
WZ (RCD) - 13			
FILE: w2rcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT August 1995	CONT	SECT	JOB
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1-97 4-98 7-13	DIST	COUNTY	SHEET NO.
2-98 3-03	LRD	DIMMIT	91

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## WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



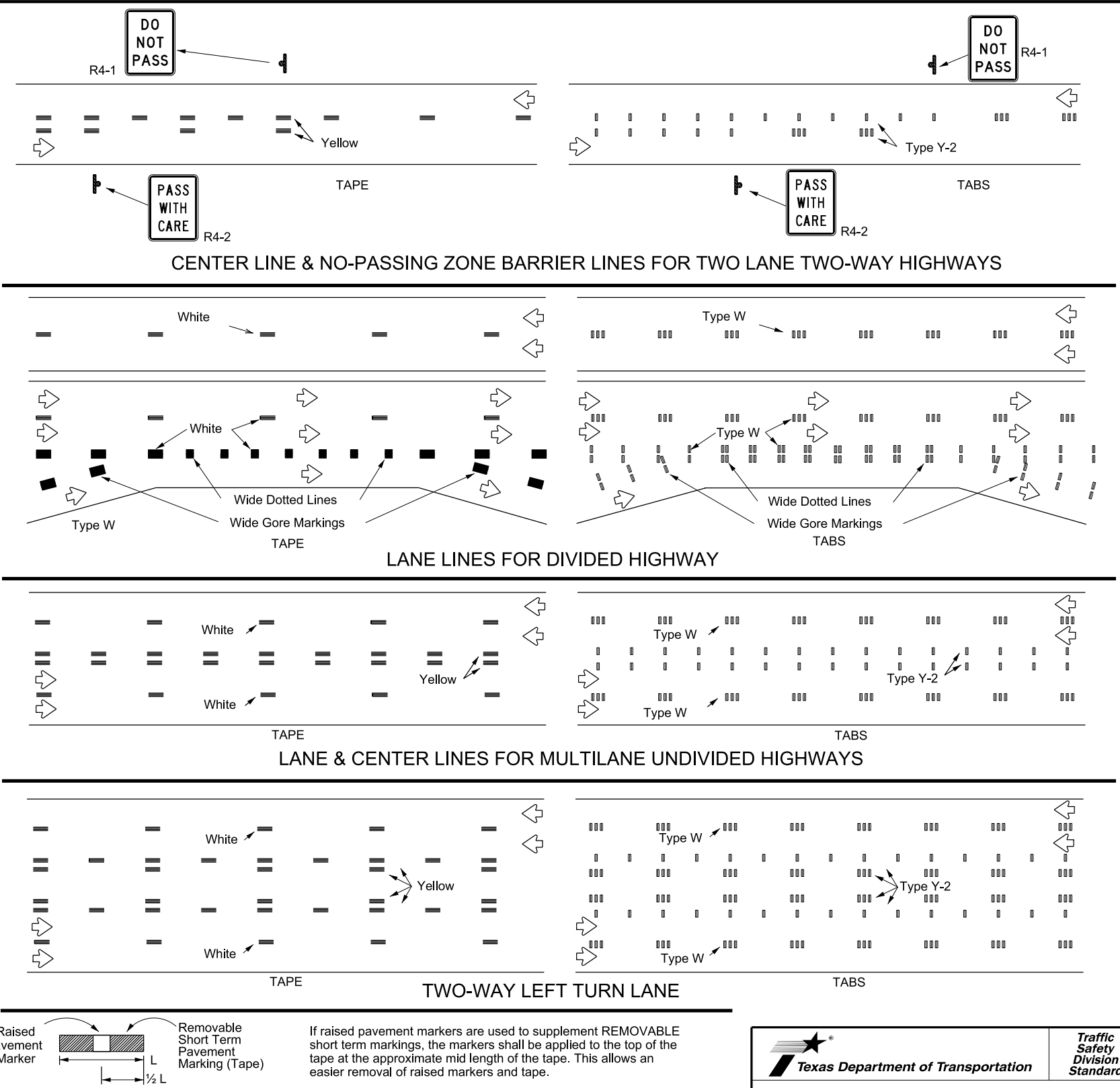
### NOTES:

- 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 for up to 14 calendar days. Permanent pavement markings should then be placed.
- For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
- For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

### TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

- Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
- Tabs shall meet requirements of Departmental Material Specification DMS-8242.
- When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
- No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

## 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](http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm)

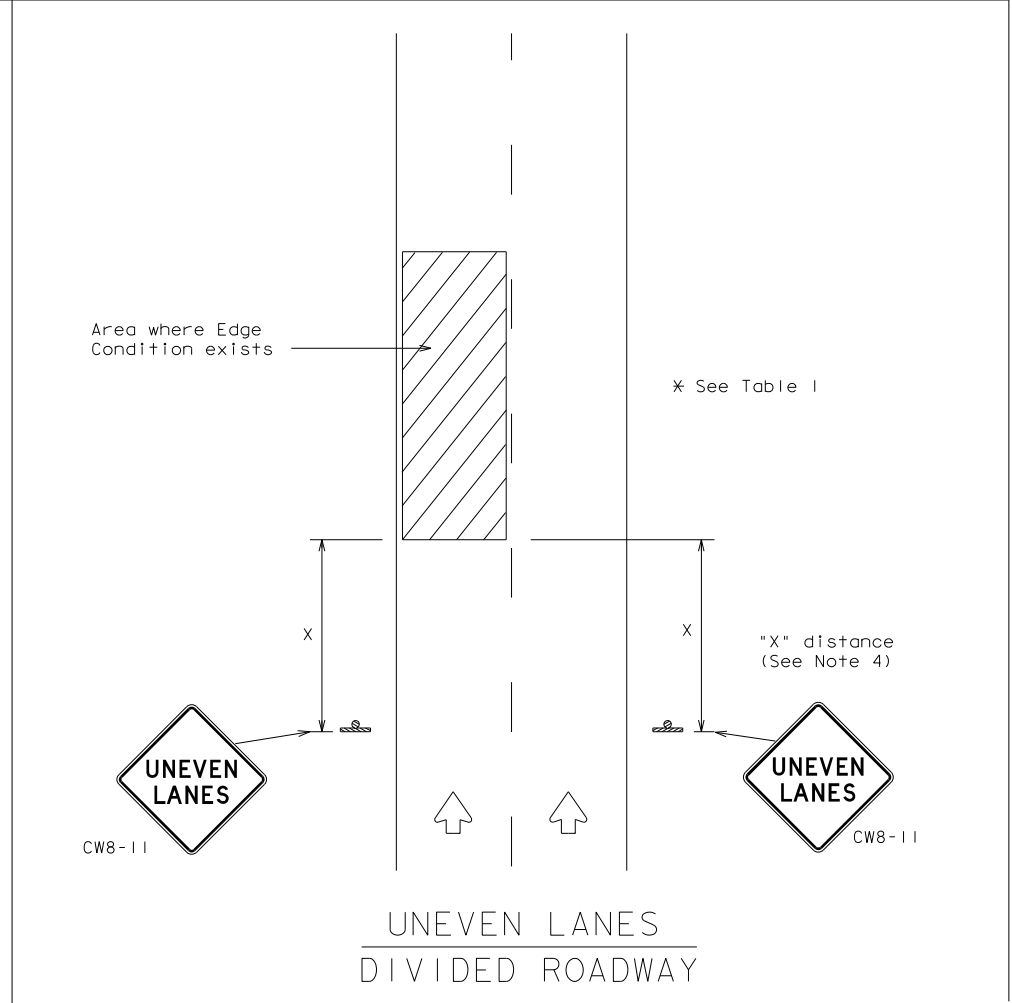
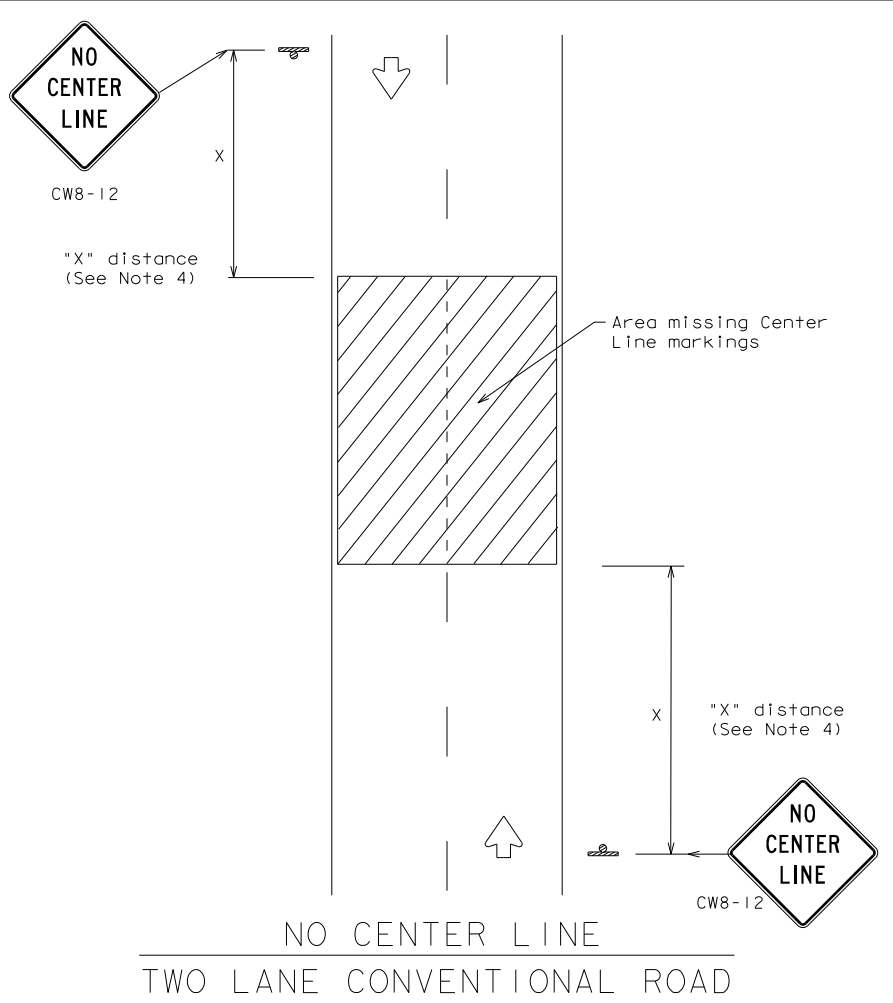
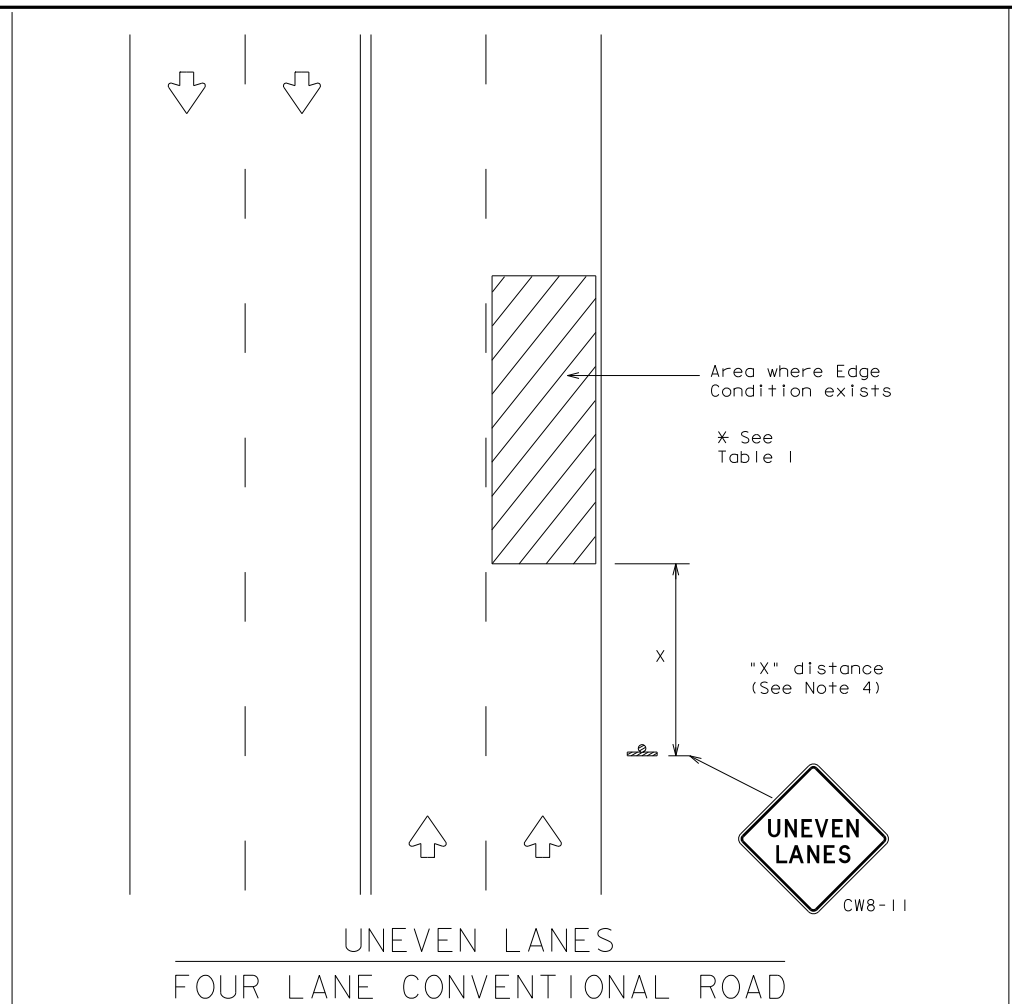
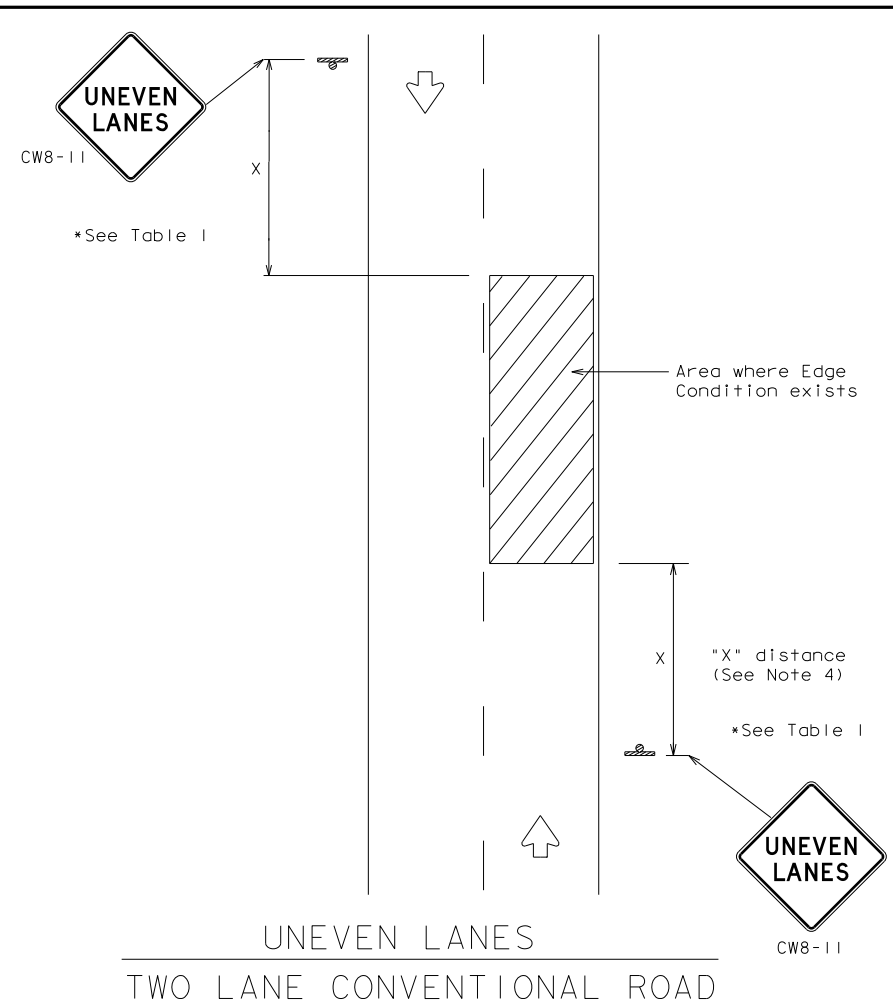


## WORK ZONE SHORT TERM PAVEMENT MARKINGS

### WZ(STPM)-23

FILE:	wzstpm-23.dgn	DN:	CK:	DW:	CK:
© TxDOT	February 2023	CONT	SECT	JOB	HIGHWAY
		0037	08	042, ETC.	US 83
REVISIONS		DIST	COUNTY	SHEET NO.	
4-92 7-13		LRD	DIMITT	92	
1-97 2-23					
3-03					

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 metric units. This standard is for informational purposes only and is not to be used for any other purpose.



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 <sub>FL</sub> OR TYPE C <sub>FL</sub> SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

**GENERAL NOTES**

- If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
- UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
- NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
- Signs shall be spaced at the distances recommended as per BC standards.
- Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
- Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
- Short term markings shall not be used to simulate edge lines.
- All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

Edge Condition	Edge Height (D)	* Warning Devices
①	Less than or equal to: 1/4" (maximum-planing) 1/2" (typical-overlay)	Sign: CW8-11
②	Less than or equal to 3"	Sign: CW8-11
③	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

**Texas Department of Transportation** Traffic Operations Division Standard

## SIGNING FOR UNEVEN LANES

### WZ (UL) - 13

FILE#	WZUL-13.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
© TxDOT	Apr 11 1992	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0037	08	042, ETC.	US 83				
8-95	2-98	7-13	DIST		COUNTY	SHEET NO.			
1-97	3-03	LRD	DIMMIT		93				

Beginning chain US83HALNPRS description			
Point US8365	N	13,313,611.70 E	1,768,240.52 Sta 1504+42.08
Course from US8365 to PC US83HALNPRS9 S 77- 10' 56.1604" E Dist 2,292.37			
Curve Data *-----*			
Curve US83HALNPRS9			
P.I. Station	1532+61.93 N	13,312,986.71 E	1,770,990.23
Delta	= 77- 44' 27.6006" (RT)		
Degree	= 8- 45' 19.6981"		
Tangent	= 527.48		
Length	= 887.91		
Radius	= 654.40		
External	= 186.12		
Long Chord	= 821.35		
Mid. Ord.	= 144.91		
P.C. Station	1527+34.46 N	13,313,103.14 E	1,770,475.77
P.T. Station	1536+22.37 N	13,312,459.25 E	1,770,985.69
C.C.	N 13,312,464.88 E	1,770,331.32	
Back	= S 77- 14' 52.2628" E		
Ahead	= S 0- 29' 35.3378" W		
Chord Bear	= S 38- 22' 38.4625" E		
End Region 1			
Equation: Sta 1536+22.37 (BK) = Sta 1536+39.83 (AH) -----			
Begin Region 2			
Point STEQP4	N	13,312,459.25 E	1,770,985.69 Sta 1536+39.83
Course from STEQP4 to US8366 S 0- 29' 35.3378" W Dist 443.26			
Point US8366	N	13,312,016.00 E	1,770,981.88 Sta 1540+83.09
Course from US8366 to US8368 S 0- 21' 26.6783" W Dist 4,528.37			
Point US8368	N	13,307,487.72 E	1,770,953.63 Sta 1586+11.46
Course from US8368 to US8369 S 0- 55' 44.3160" W Dist 356.23			
Point US8369	N	13,307,131.53 E	1,770,947.86 Sta 1589+67.70
Course from US8369 to US8370 S 0- 48' 44.3198" W Dist 836.00			
Point US8370	N	13,306,295.62 E	1,770,936.00 Sta 1598+03.70
Course from US8370 to US8371 S 0- 21' 13.1965" W Dist 16,721.50			
Point US8371	N	13,289,574.43 E	1,770,832.79 Sta 1765+25.20
Course from US8371 to US8372 S 0- 01' 10.9746" W Dist 859.42			
Point US8372	N	13,288,715.02 E	1,770,832.49 Sta 1773+84.61
Course from US8372 to US8373 S 0- 21' 28.8319" W Dist 3,049.81			
Point US8373	N	13,285,665.26 E	1,770,813.44 Sta 1804+34.43
Course from US8373 to US8374 S 0- 33' 48.9781" W Dist 1,913.96			
Point US8374	N	13,283,751.40 E	1,770,794.61 Sta 1823+48.39
Course from US8374 to US8375 S 0- 20' 45.9782" W Dist 5,916.19			
Point US8375	N	13,277,835.32 E	1,770,758.87 Sta 1882+64.58
Course from US8375 to US8376 S 0- 21' 32.9163" W Dist 12,052.28			
Point US8376	N	13,265,783.27 E	1,770,683.33 Sta 2003+16.86
Course from US8376 to US8377 S 0- 21' 12.9822" W Dist 7,398.23			
Point US8377	N	13,258,385.19 E	1,770,637.67 Sta 2077+15.08
Ending chain US83HALNPRS description			

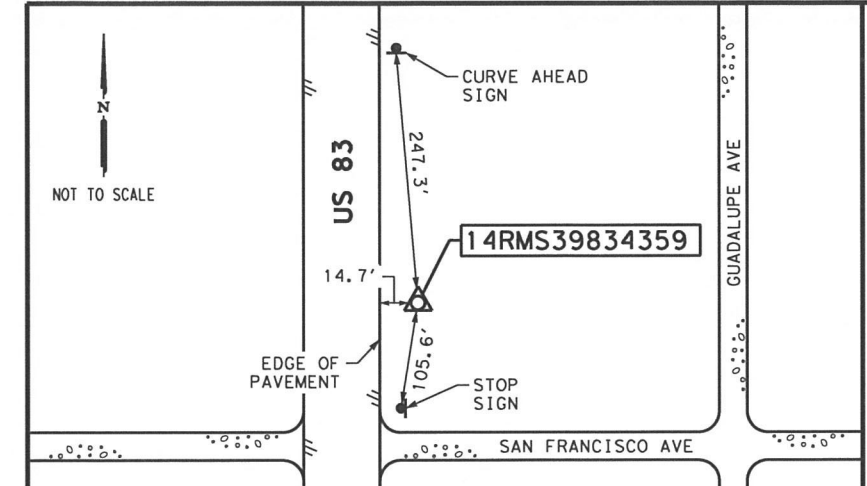
Beginning chain FM133 description			
Point FM13305	N	13,306,938.10 E	1,770,945.11 Sta 10+00.00
Course from FM13305 to FM13310 S 59- 25' 20.7040" E Dist 794.09			
Point FM13310	N	13,306,534.14 E	1,771,628.78 Sta 17+94.09
Ending chain FM133 description			

Point OLD8305	N	13,313,491.64 E	1,768,768.22 Sta 10+00.00
Course from OLD8305 to PC OLD8310 N 12- 49' 03.8399" E Dist 37.93			
Curve Data *-----*			
Curve OLD8310			
P.I. Station	10+53.79 N	13,313,544.09 E	1,768,780.15
Delta	= 26- 15' 48.5725" (RT)		
Degree	= 84- 15' 30.5974"		
Tangent	= 15.86		
Length	= 31.17		
Radius	= 68.00		
External	= 1.83		
Long Chord	= 30.90		
Mid. Ord	= 1.78		
P.C. Station	10+37.93 N	13,313,528.63 E	1,768,776.63
P.T. Station	10+69.10 N	13,313,556.41 E	1,768,790.15
C.C.	N 13,313,513.54 E	1,768,842.94	
Back	= N 12- 49' 03.8399" E		
Ahead	= N 39- 04' 52.4123" E		
Chord Bear	= N 25- 56' 58.1261" E		
Course from PT OLD8310 to PC OLD8315 N 39- 04' 52.4123" E Dist 18.17			
Curve Data *-----*			
Curve OLD8315			
P.I. Station	11+31.15 N	13,313,604.58 E	1,768,829.27
Delta	= 47- 23' 06.2286" (RT)		
Degree	= 57- 17' 44.8062"		
Tangent	= 43.88		
Length	= 82.70		
Radius	= 100.00		
External	= 9.20		
Long Chord	= 80.37		
Mid. Ord	= 8.43		
P.C. Station	10+87.27 N	13,313,570.51 E	1,768,801.61
P.T. Station	11+69.97 N	13,313,607.28 E	1,768,873.07
C.C.	N 13,313,507.47 E	1,768,879.23	
Back	= N 39- 04' 52.4123" E		
Ahead	= N 86- 27' 58.6410" E		
Chord Bear	= N 62- 46' 25.5267" E		
Course from PT OLD8315 to OLD8320 N 86- 27' 58.6410" E Dist 279.09			
Point OLD8320	N	13,313,624.48 E	1,769,151.63 Sta 14+49.07
Ending chain OLD_83 description			

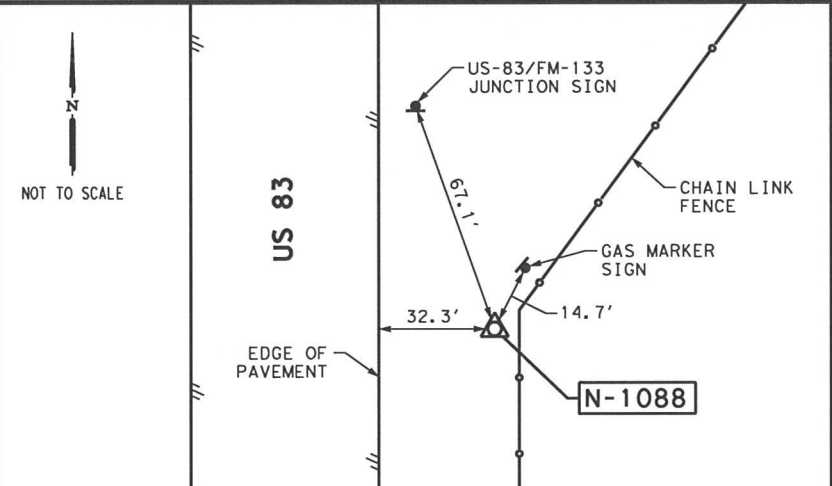


SHEET 1 OF 1

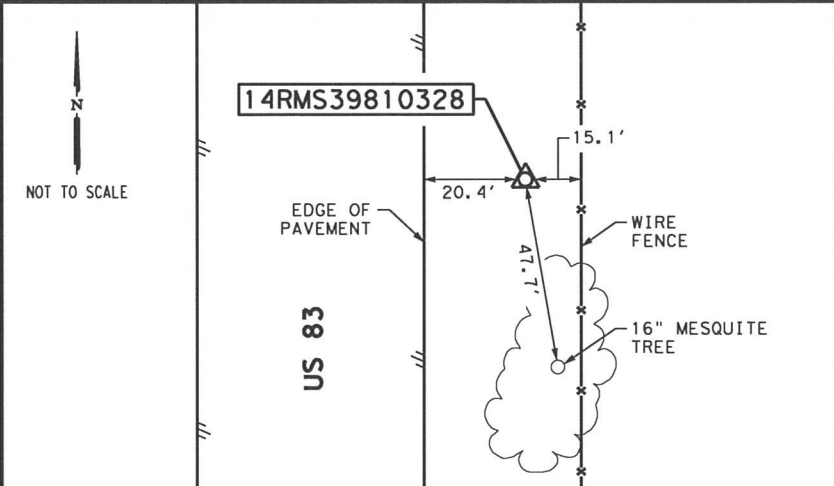
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation, all rights reserved.			
<b>US 83/OLD US 83/FM 133 HORIZONTAL ALIGNMENT DATA</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		94
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TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



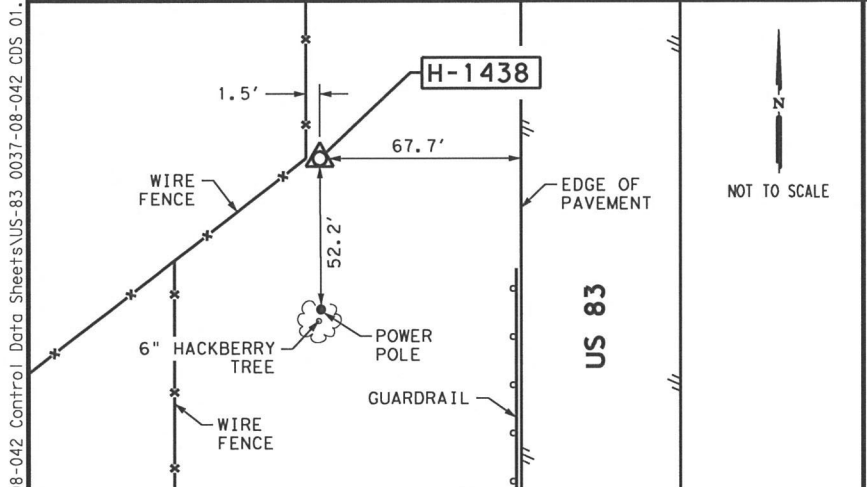
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 EASTING: 1,771,029.1318  
 ELEV: 541.211



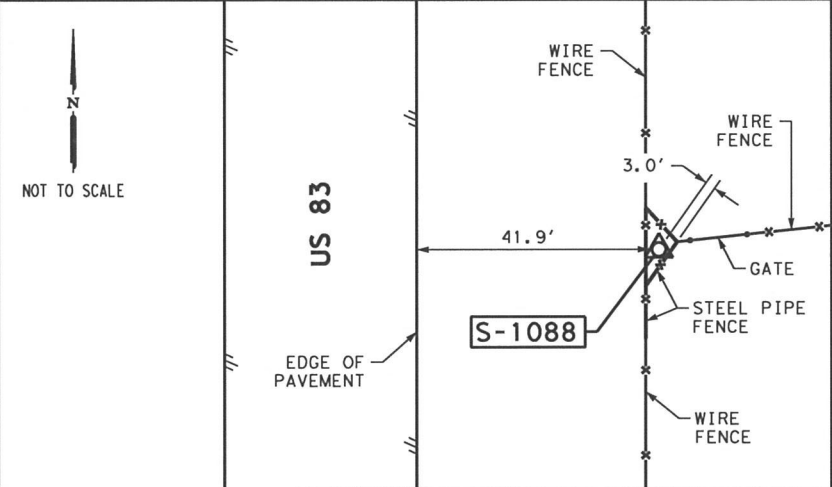
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 EASTING: 1,771,000.3884  
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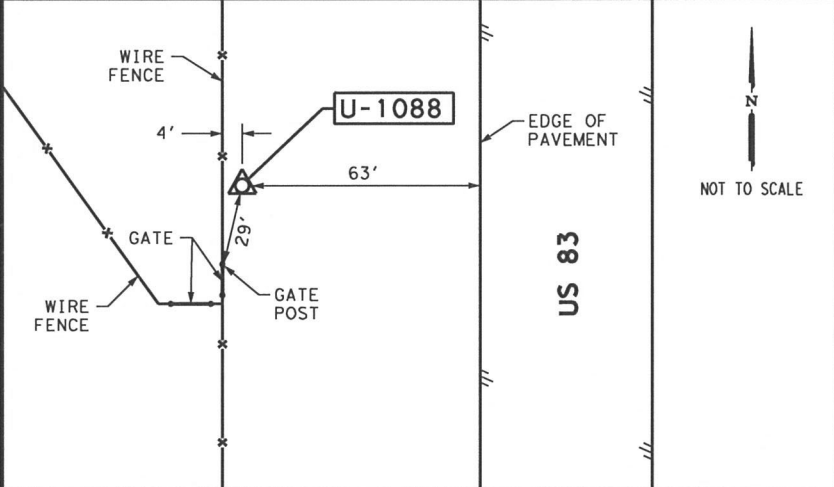
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 MONUMENT: 3/4" ALUMINUM BERNTSEN ROD W/ACCESS LID SET IN CONCRETE  
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 SURFACE COORDINATES:  
 NORTHING: 13,300,829.7303  
 EASTING: 1,770,949.3026  
 ELEV: 510.316



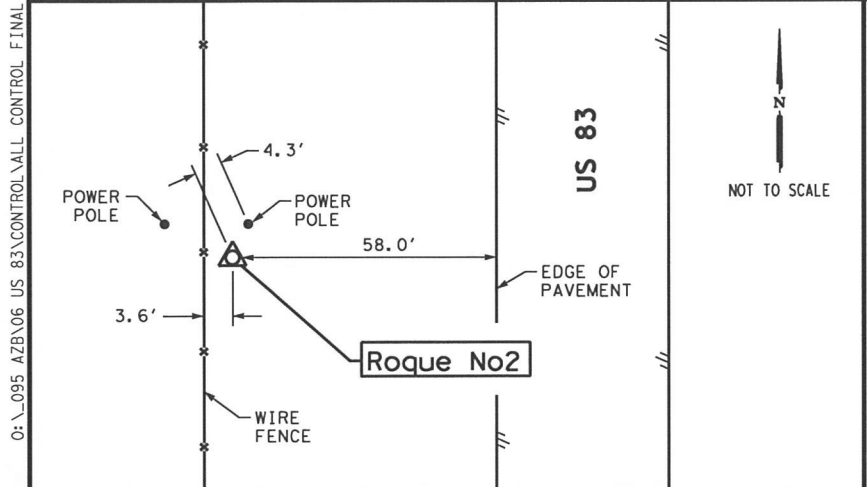
**PRIMARY CONTROL POINT: H-1438**  
 MONUMENT: NATIONAL GEODETIC SURVEY MONUMENT SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2.2 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
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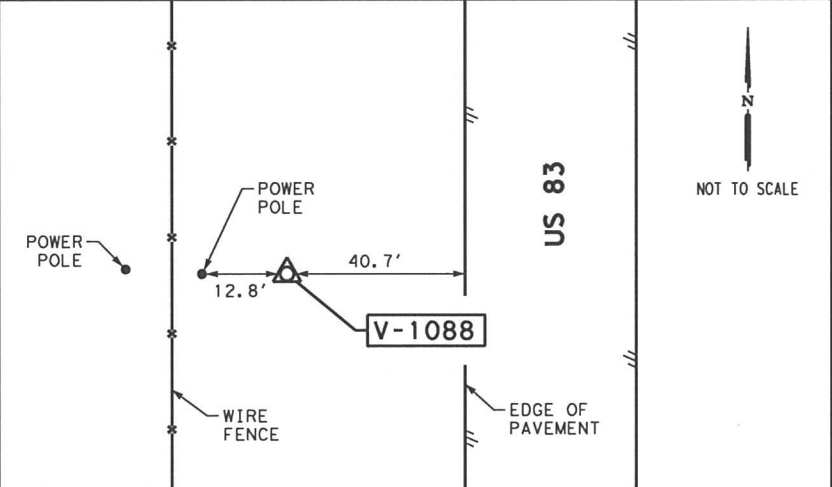
**PRIMARY CONTROL POINT: S-1088**  
 MONUMENT: US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 3.4 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING: 13,289,579.2049  
 EASTING: 1,770,896.0645  
 ELEV: 494.260



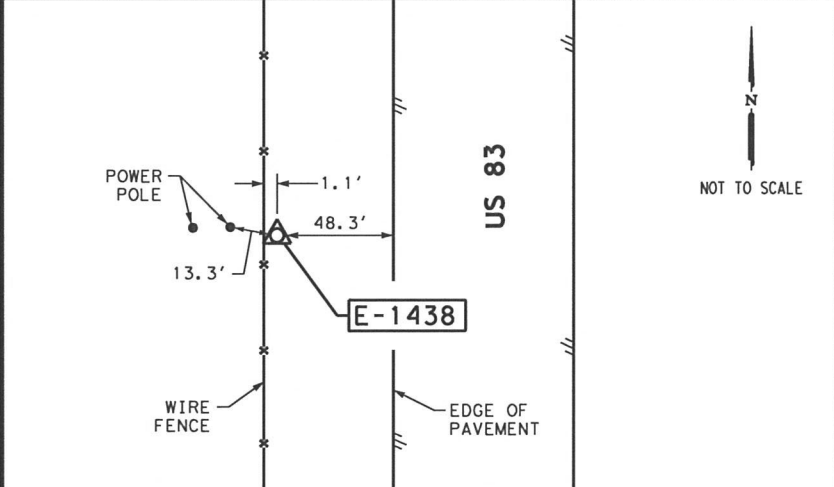
**PRIMARY CONTROL POINT: U-1088**  
 MONUMENT: US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 4.6 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,282,885.6291  
 EASTING: 1,770,702.7151  
 ELEV: 501.090



**PRIMARY CONTROL POINT: Roque No2**  
 MONUMENT: US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3.9 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,278,778.2619  
 EASTING: 1,770,678.6502  
 ELEV: 550.000



**PRIMARY CONTROL POINT: V-1088**  
 MONUMENT: US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3.7 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,277,668.0312  
 EASTING: 1,770,688.3845  
 ELEV: 557.800



**PRIMARY CONTROL POINT: E-1438**  
 MONUMENT: NATIONAL GEODETIC SURVEY MONUMENT SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2.9 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,273,277.6726  
 EASTING: 1,770,662.0427  
 ELEV: 539.970

- NOTES:**
- ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH CENTRAL ZONE (4204) NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00000
  - ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
  - UNIT OF MEASURE IS U.S. SURVEY FOOT
  - VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS, HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
  - FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017



*Christopher R. Freeman*  
 CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

**LTRA** LINA T. RAMEY & ASSOCIATES, INC.  
 3320 Belt Line Road  
 Farmers Branch, Texas 75234 - 214-979-1144  
 FIRM REGISTRATION NO. F-782  
 TBPLS REGISTRATION NO. 10140700

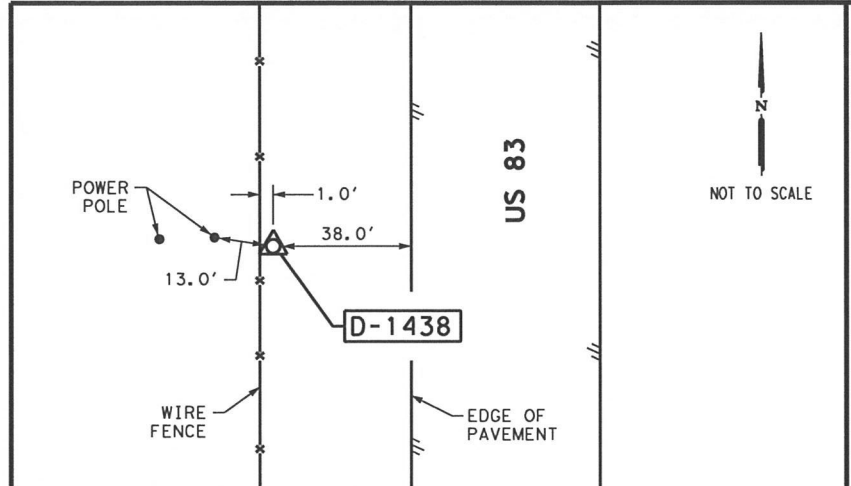
Texas Department of Transportation  
 © 2019

**US 83**  
 SURVEY CONTROL DATA SHEET  
 CSJ: 0037-08-042

FED. RD. DIV. NO.		STATE AID PROJECT NO.	SHEET NO.
6		C 37-8-42	95
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TEXAS	LAREDO	DIMMIT	
CONT.	SECT.	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

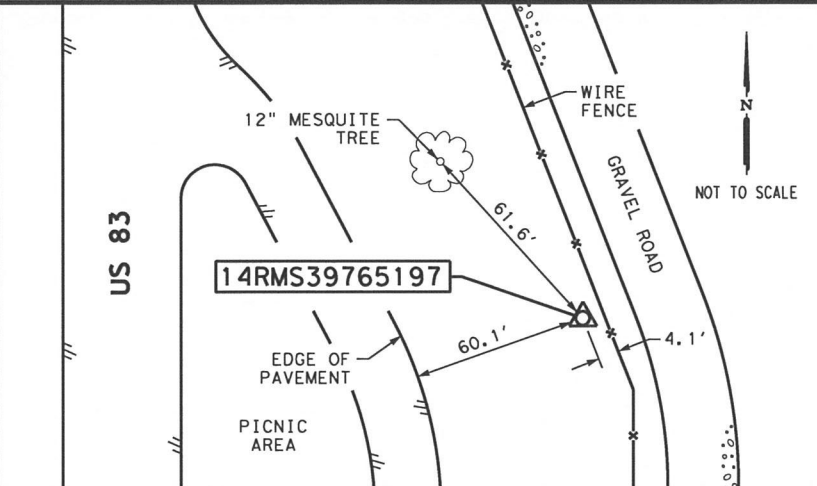
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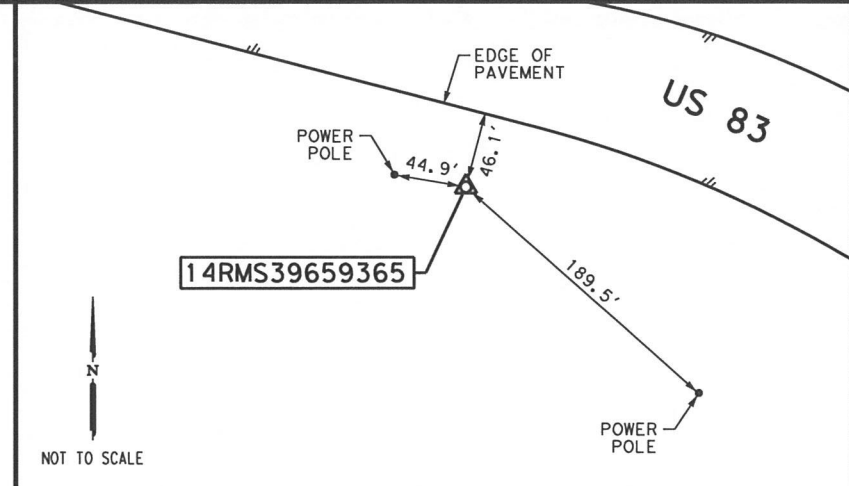
**PRIMARY CONTROL POINT: D-1438**

MONUMENT: NATIONAL GEODETIC SURVEY MONUMENT SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2.0 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES: NORTHING 13,268,263.5192 EASTING: 1,770,631.3669 ELEV: 588.510



**PRIMARY CONTROL POINT: 14RMS39765197**

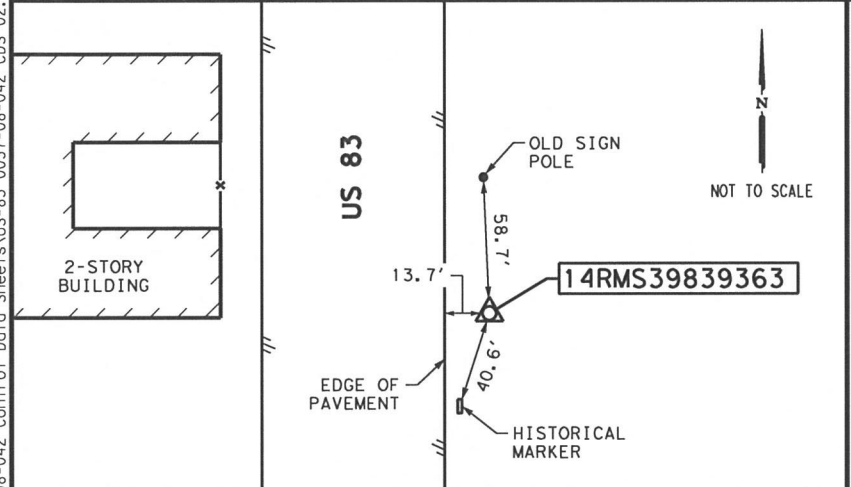
MONUMENT: 3/4" ALUMINUM BERNTSEN ROD W/ACCESS LID SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 53' NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES: NORTHING 13,258,003.6874 EASTING: 1,770,793.1349 ELEV: 650.480



**SECONDARY CONTROL POINT: 14RMS39659365**

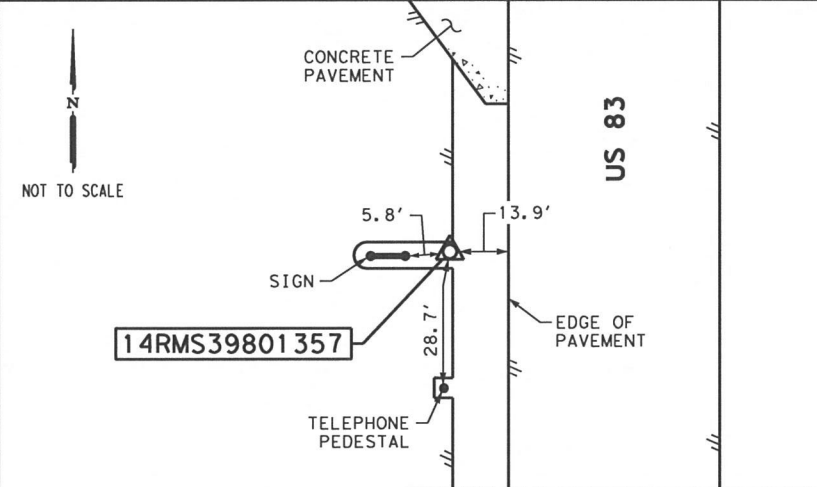
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 1,362' NORTHWEST OF THE INTERSECTION OF US-83 AND DOMINGO AVE IN CATALINA, TX  
 SURFACE COORDINATES: NORTHING 13,313,023.2500 EASTING: 1,770,453.8570 ELEV: 504.730

- NOTES:**
- ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH CENTRAL ZONE (4204) NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00000
  - ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
  - UNIT OF MEASURE IS U.S. SURVEY FOOT
  - VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
  - FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017



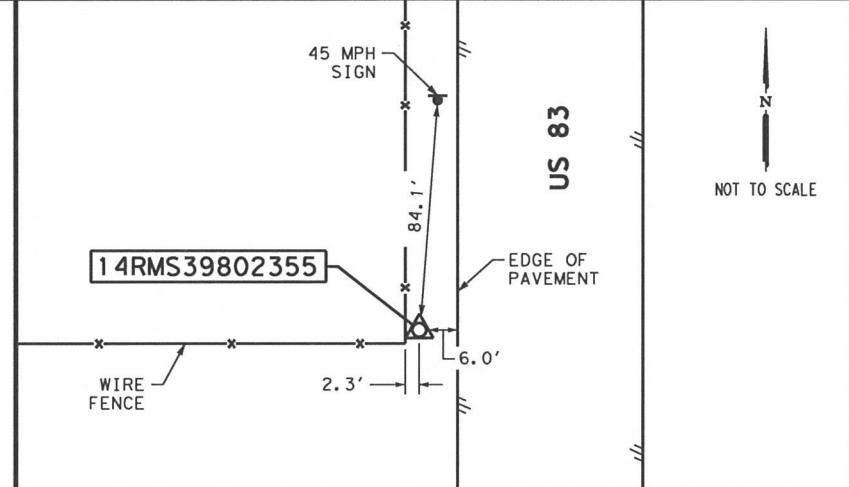
**SECONDARY CONTROL POINT: 14RMS39839363**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 310' NORTH OF THE INTERSECTION OF US-83 AND DOMINGO AVE IN CATALINA, TX  
 SURFACE COORDINATES: NORTHING 13,312,336.9500 EASTING: 1,771,045.3015 ELEV: 513.900



**SECONDARY CONTROL POINT: 14RMS39801357**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 80' SOUTH OF THE INTERSECTION OF US-83 AND SAN GREGORIO AVE IN CATALINA, TX  
 SURFACE COORDINATES: NORTHING 13,310,521.7550 EASTING: 1,770,921.8725 ELEV: 559.839



**SECONDARY CONTROL POINT: 14RMS39802355**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 37' NORTH OF THE INTERSECTION OF US-83 AND SAN IGNACIO AVE IN CATALINA, TX  
 SURFACE COORDINATES: NORTHING 13,309,701.4950 EASTING: 1,770,924.7985 ELEV: 551.158



*Christopher R. Freeman*  
 CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

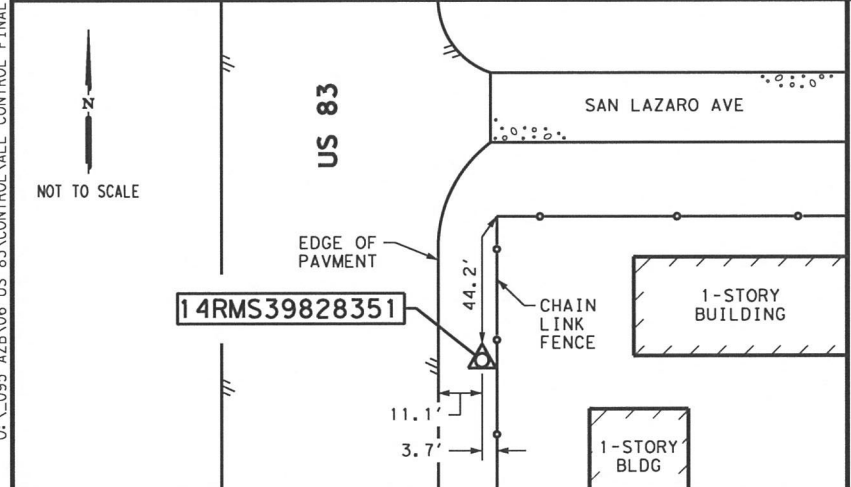
**LTRA** LINA T. RAMEY & ASSOCIATES, INC.  
 3320 Belt Line Road  
 Farmers Branch, Texas 75234 - 214-979-1144  
 FIRM REGISTRATION NO. F-782  
 TBPLS REGISTRATION NO. 10140700

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**US 83**  
 SURVEY CONTROL DATA SHEET  
 CSJ: 0037-08-042

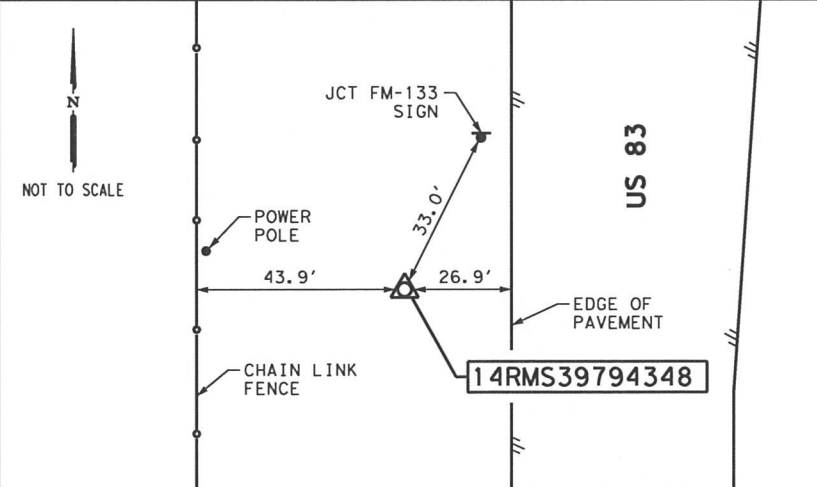
SHEET 2 OF 7

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	96
STATE	DIST.	COUNTY
TEXAS	LAREDO	DIMITT
CONT.	SECT.	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



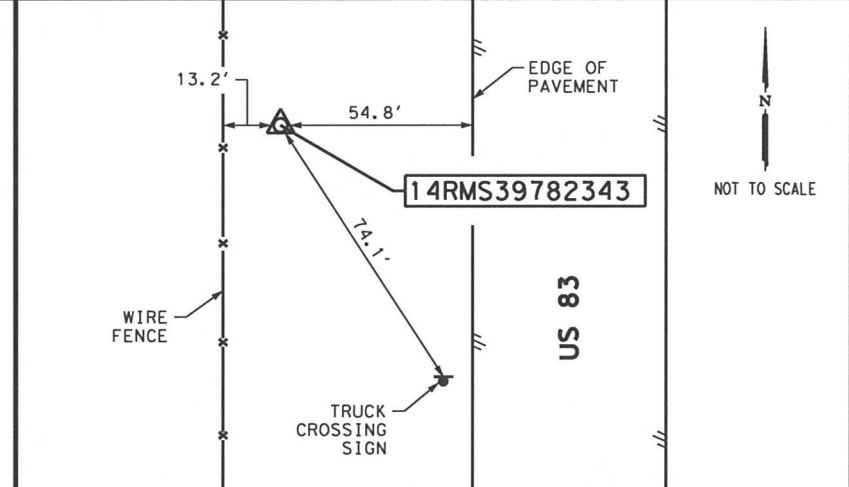
**SECONDARY CONTROL POINT: 14RMS39828351**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 83' SOUTH OF THE INTERSECTION OF US-83 AND SAN LAZARDO AVE IN CATALINA, TX  
 SURFACE COORDINATES: NORTHING 13,308,646.6400 EASTING: 1,771,009.4975 ELEV: 555.196



**SECONDARY CONTROL POINT: 14RMS39794348**

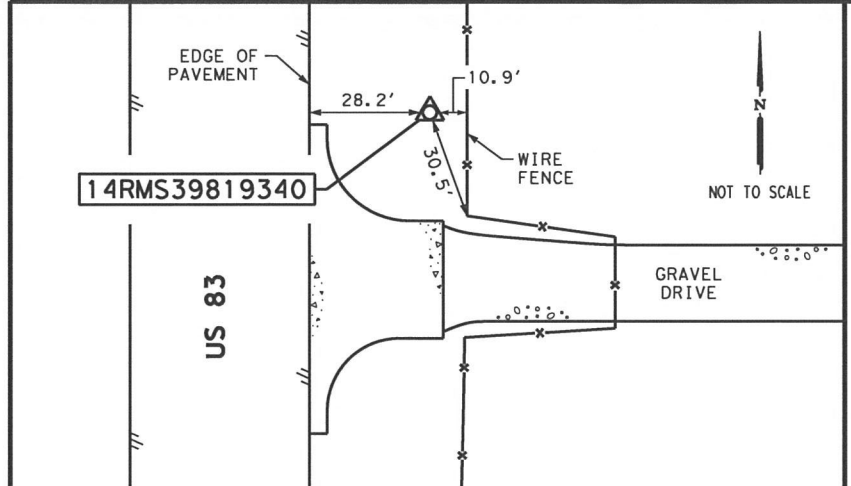
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 633' NORTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES: NORTHING 13,307,573.1900 EASTING: 1,770,896.7205 ELEV: 549.427



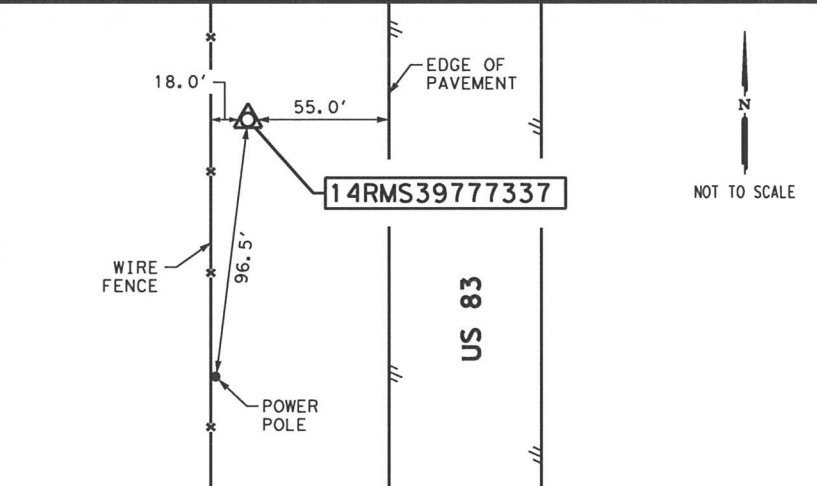
**SECONDARY CONTROL POINT: 14RMS39782343**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 1,138' SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES: NORTHING 13,305,799.7750 EASTING: 1,770,856.5585 ELEV: 516.901

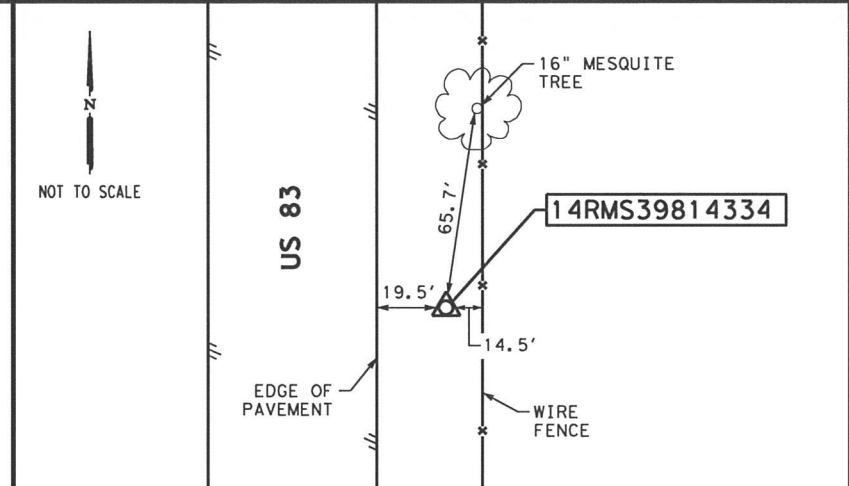
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 3/20/2019



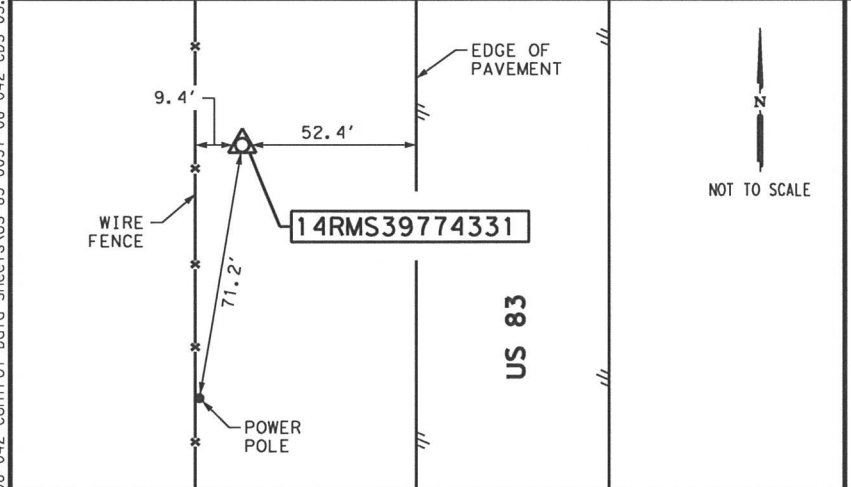
**SECONDARY CONTROL POINT: 14RMS39819340**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 1,988' SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,304,945.8900  
 EASTING: 1,770,979.3810  
 ELEV: 499.847



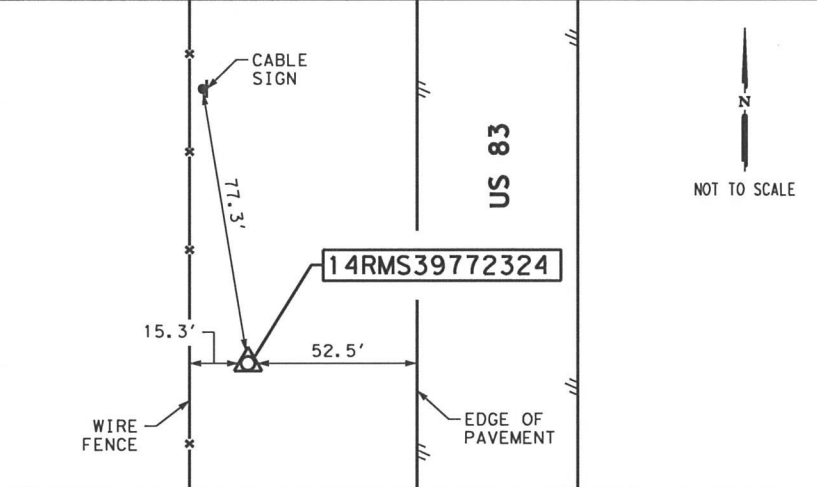
**SECONDARY CONTROL POINT: 14RMS39777337**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2,977' SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,303,963.4500  
 EASTING: 1,770,840.5975  
 ELEV: 500.291



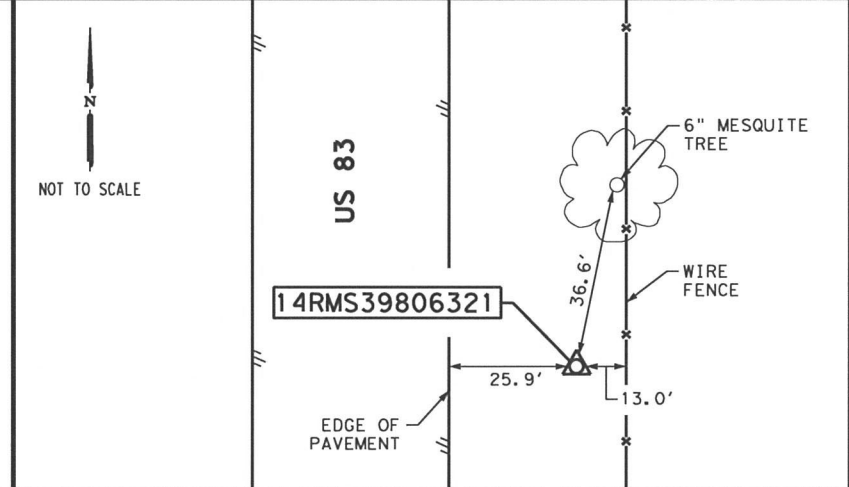
**SECONDARY CONTROL POINT: 14RMS39814334**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 3,964' SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,302,976.8250  
 EASTING: 1,770,962.4145  
 ELEV: 523.791



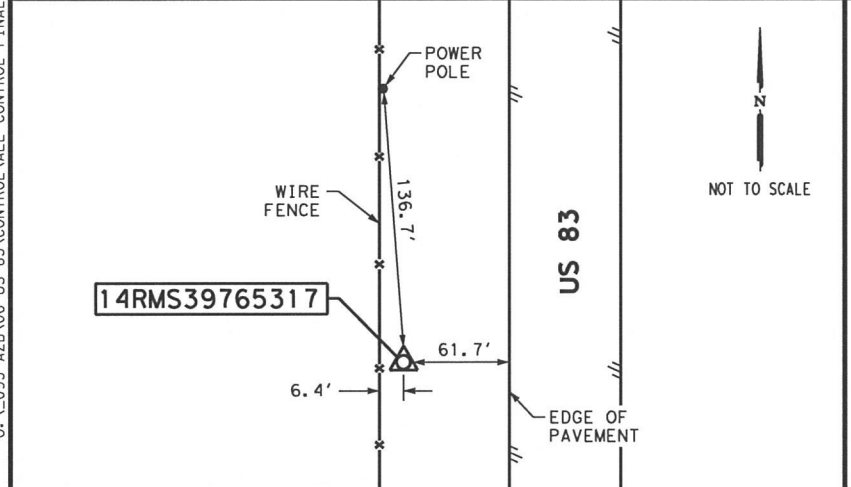
**SECONDARY CONTROL POINT: 14RMS39774331**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 5,039' SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,301,895.1000  
 EASTING: 1,770,830.1395  
 ELEV: 523.132



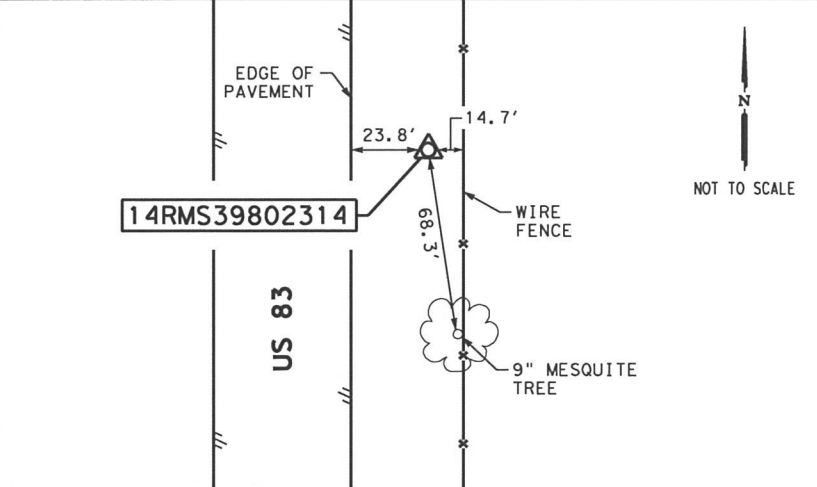
**SECONDARY CONTROL POINT: 14RMS39772324**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 1.4 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,299,571.6950  
 EASTING: 1,770,822.0590  
 ELEV: 500.262



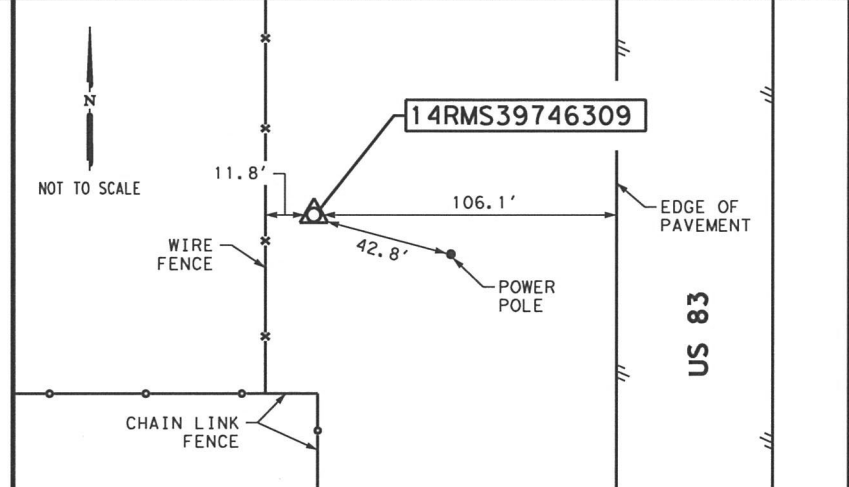
**SECONDARY CONTROL POINT: 14RMS39806321**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 1.6 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,298,520.7200  
 EASTING: 1,770,936.5725  
 ELEV: 498.787



**SECONDARY CONTROL POINT: 14RMS39765317**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 1.8 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,297,475.5300  
 EASTING: 1,770,799.7245  
 ELEV: 504.400



**SECONDARY CONTROL POINT: 14RMS39802314**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 2.0 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,296,426.9000  
 EASTING: 1,770,922.0190  
 ELEV: 496.554



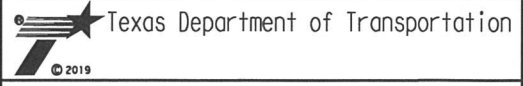
**SECONDARY CONTROL POINT: 14RMS39746309**  
 MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2.3 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,294,595.1500  
 EASTING: 1,770,736.4040  
 ELEV: 492.240

- NOTES:**
- ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH CENTRAL ZONE (4204) NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00000
  - ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
  - UNIT OF MEASURE IS U.S. SURVEY FOOT
  - VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS, HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
  - FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017



*Christopher R. Freeman*  
 CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

**LTRA** LINA T. RAMEY & ASSOCIATES, INC.  
 3320 Belt Line Road  
 Farmers Branch, Texas 75234 - 214-979-1144  
 FIRM REGISTRATION NO. F-782  
 TBPLS REGISTRATION NO. 10140700

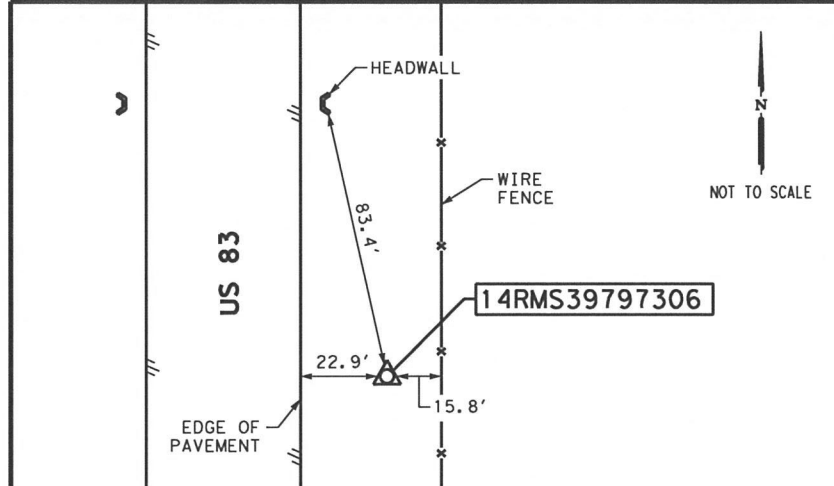


**US 83**  
 SURVEY CONTROL DATA SHEET  
 CSJ: 0037-08-042

FED. RD. DIV. NO.		STATE AID PROJECT NO.	SHEET NO.
6		C 37-8-42	97
STATE	DIST.	COUNTY	
TEXAS	LAREDO	DIMMIT	
CONT.	SECT.	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

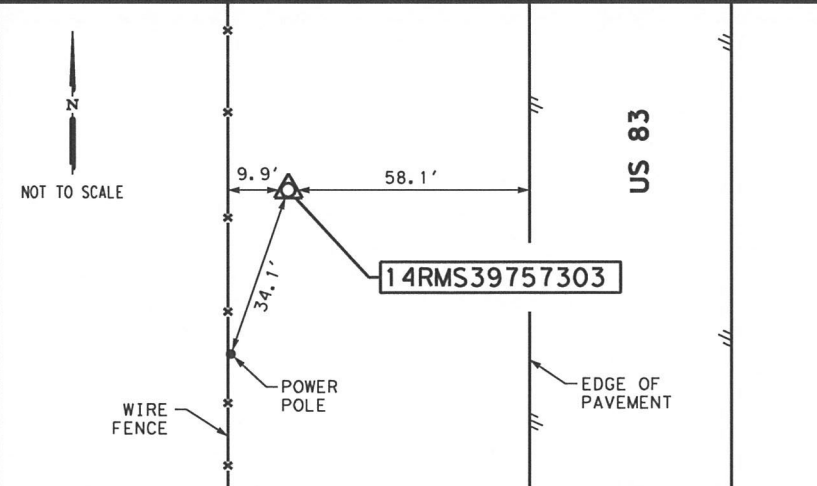


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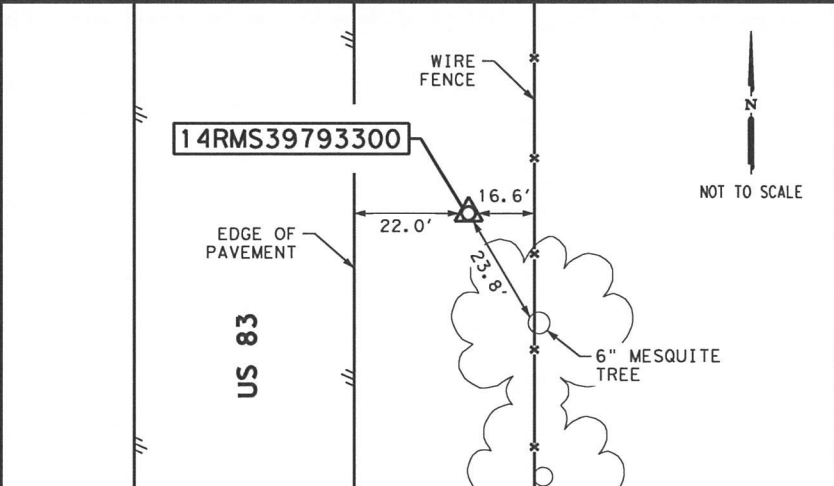
**SECONDARY CONTROL POINT: 14RMS39797306**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 2.5 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,293,817.1000  
 EASTING: 1,770,904.4175  
 ELEV: 491.379



**SECONDARY CONTROL POINT: 14RMS39757303**

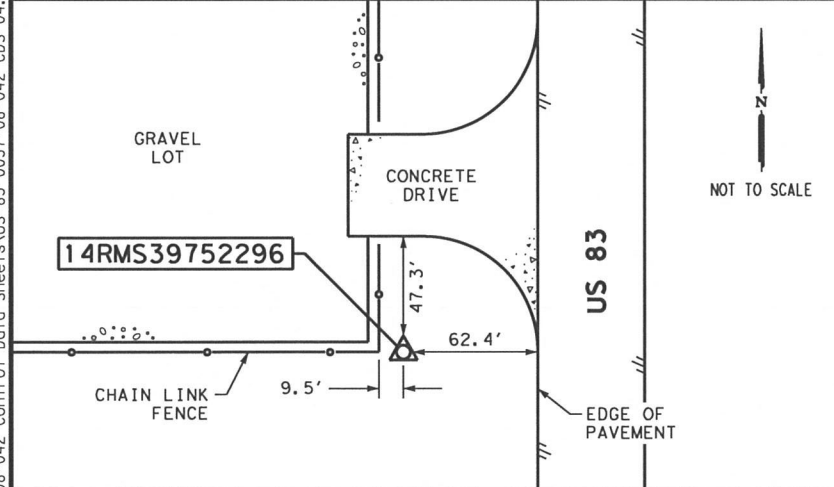
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2.7 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,292,772.9750  
 EASTING: 1,770,773.3130  
 ELEV: 490.962



**SECONDARY CONTROL POINT: 14RMS39793300**

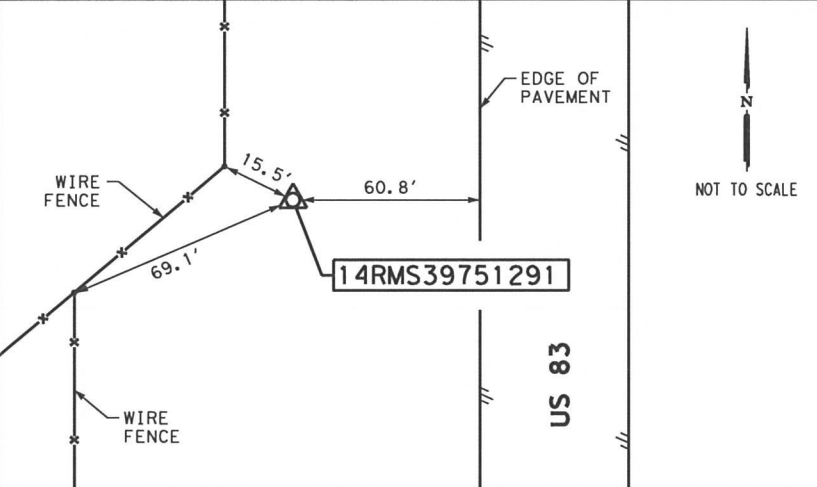
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 2.9 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,291,719.8100  
 EASTING: 1,770,889.9510  
 ELEV: 491.924

- NOTES:**
1. ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH CENTRAL ZONE (4204) NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00000
  2. ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
  3. UNIT OF MEASURE IS U.S. SURVEY FOOT
  4. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
  5. FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017



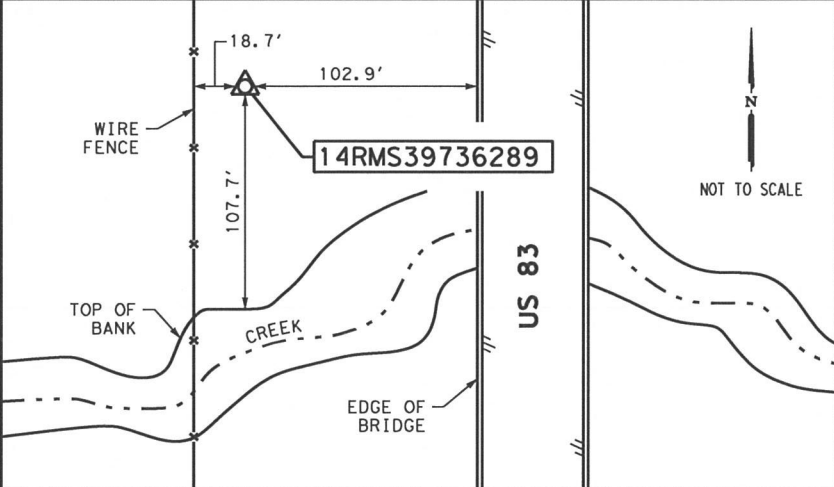
**SECONDARY CONTROL POINT: 14RMS39752296**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3.1 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,290,576.2500  
 EASTING: 1,770,755.0645  
 ELEV: 493.278



**SECONDARY CONTROL POINT: 14RMS39751291**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3.4 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,288,863.9600  
 EASTING: 1,770,751.4965  
 ELEV: 485.651



**SECONDARY CONTROL POINT: 14RMS39736289**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3.6 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,288,057.2150  
 EASTING: 1,770,702.7890  
 ELEV: 482.349



*Christopher R. Freeman*  
 CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

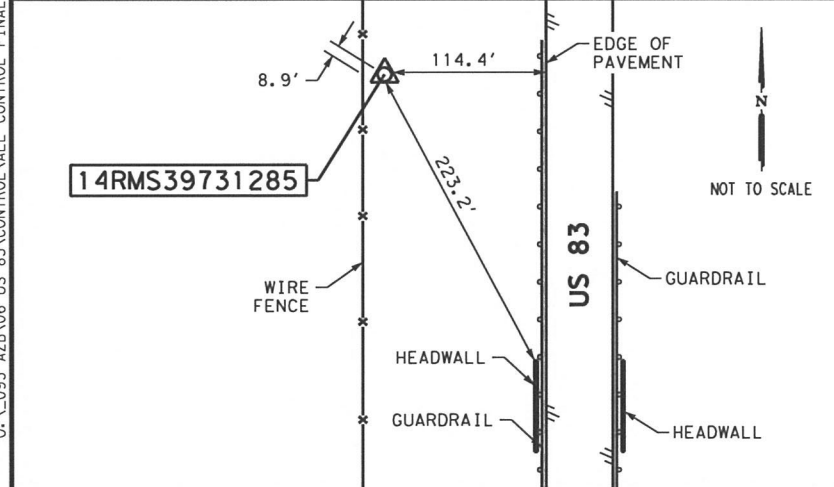
**LTRA** LINA T. RAMEY & ASSOCIATES, INC.  
 3320 Belt Line Road  
 Farmers Branch, Texas 75234 - 214-979-1144  
 FIRM REGISTRATION NO. F-782  
 TBPLS REGISTRATION NO. 10140700

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**US 83**  
 SURVEY CONTROL DATA SHEET  
 CSJ: 0037-08-042

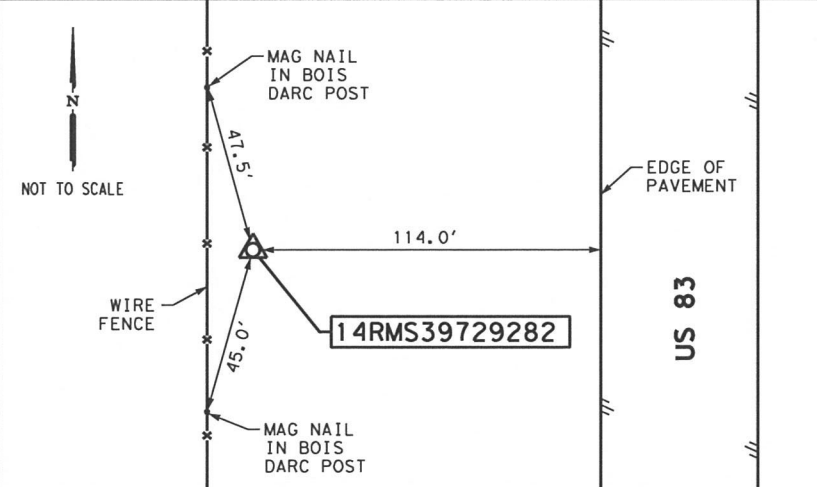
SHEET 4 OF 7

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	98
STATE	DIST.	COUNTY
TEXAS	LAREDO	DIMITT
CONT.	SECT.	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



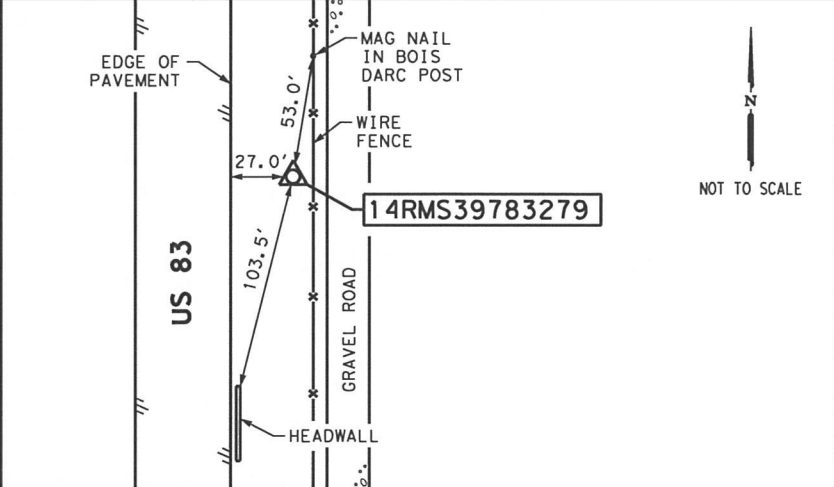
**SECONDARY CONTROL POINT: 14RMS39731285**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3.8 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,287,001.4650  
 EASTING: 1,770,685.6365  
 ELEV: 488.182



**SECONDARY CONTROL POINT: 14RMS39729282**

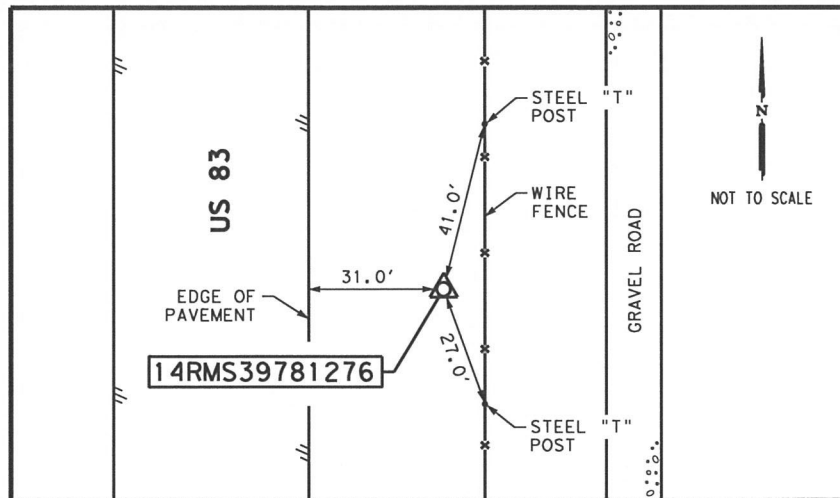
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 4.0 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,285,972.5250  
 EASTING: 1,770,680.1170  
 ELEV: 489.008



**SECONDARY CONTROL POINT: 14RMS39783279**

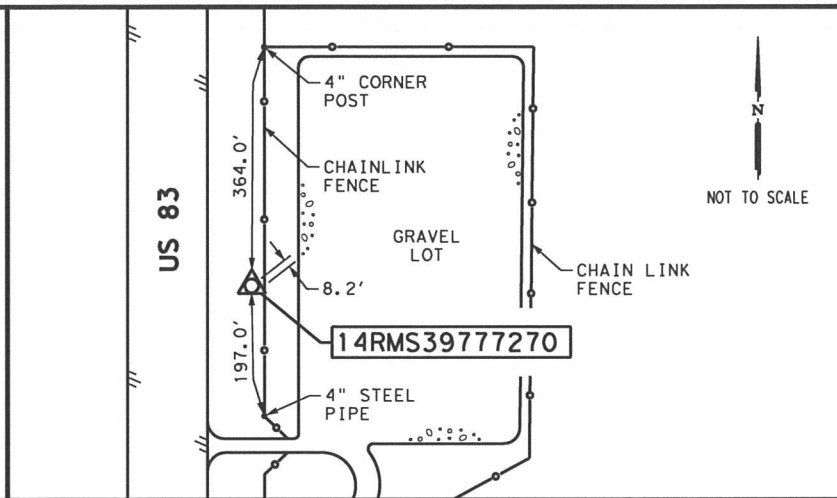
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 4.2 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,284,985.1050  
 EASTING: 1,770,856.9320  
 ELEV: 489.199

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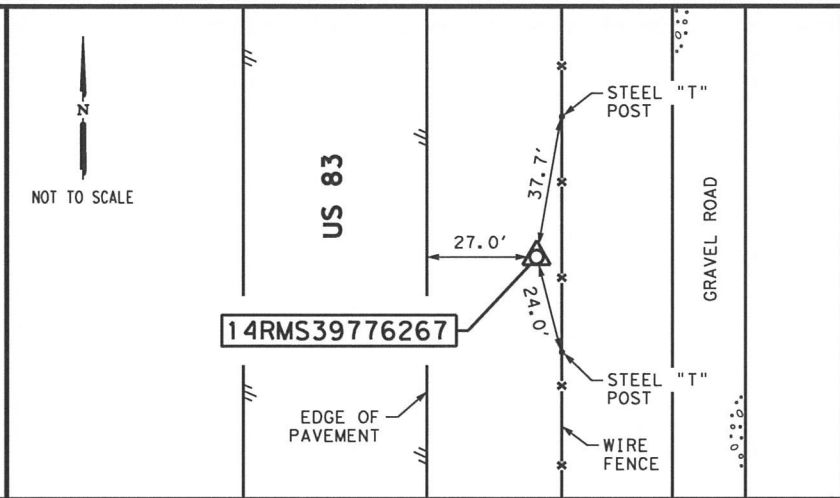
**SECONDARY CONTROL POINT: 14RMS39781276**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 4.4 MILES SOUTH OF THE INTERSECTION OF US-83 AND RR-133  
 SURFACE COORDINATES:  
 NORTHING 13,283,928.4750  
 EASTING: 1,770,848.8965  
 ELEV: 493.439



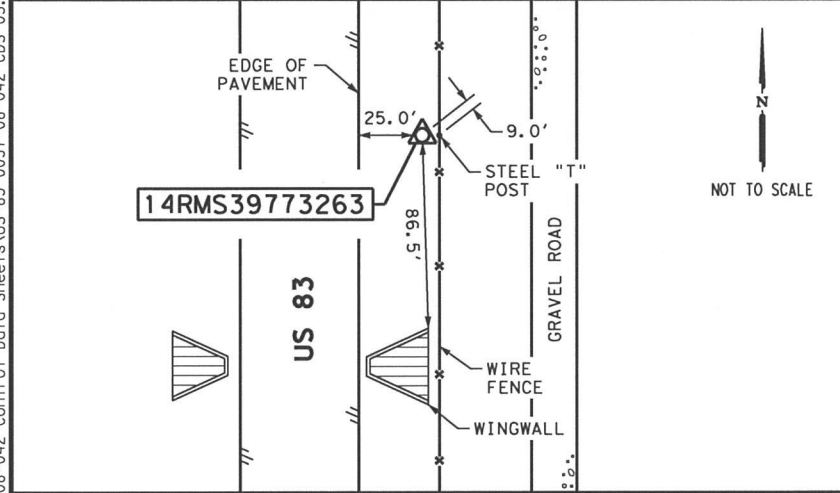
**SECONDARY CONTROL POINT: 14RMS39777270**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 4.5 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,281,849.6100  
 EASTING: 1,770,837.1845  
 ELEV: 505.778



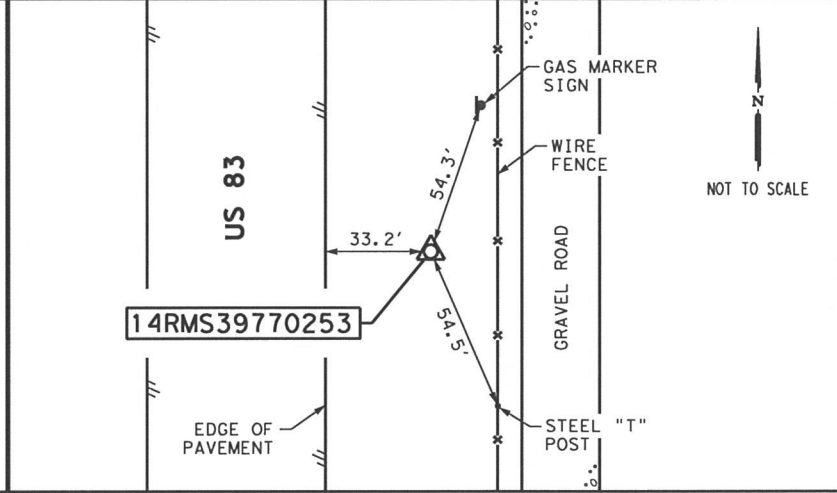
**SECONDARY CONTROL POINT: 14RMS39776267**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 4.3 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,280,850.8450  
 EASTING: 1,770,833.0685  
 ELEV: 517.868



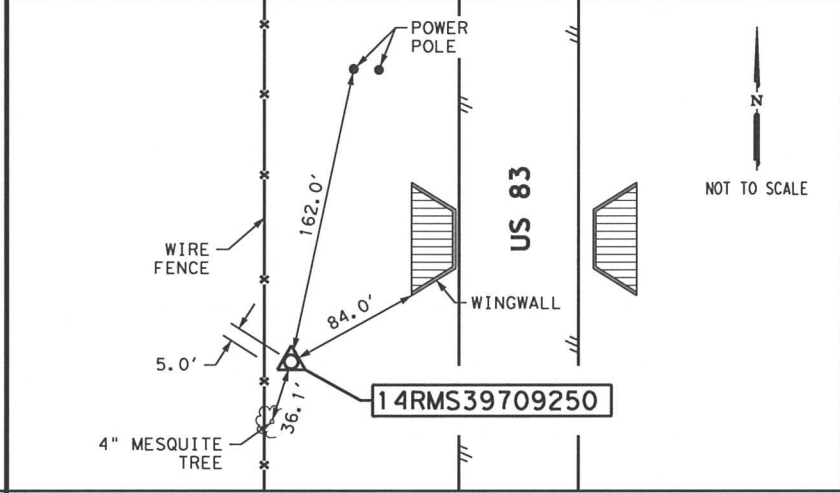
**SECONDARY CONTROL POINT: 14RMS39773263**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 4.1 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,279,791.1500  
 EASTING: 1,770,824.2715  
 ELEV: 530.291



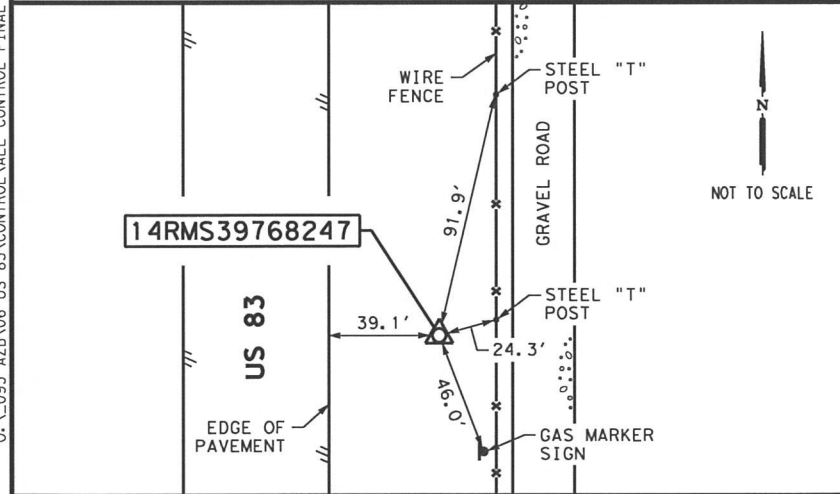
**SECONDARY CONTROL POINT: 14RMS39770253**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 3.5 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,276,457.4950  
 EASTING: 1,770,814.4540  
 ELEV: 539.578



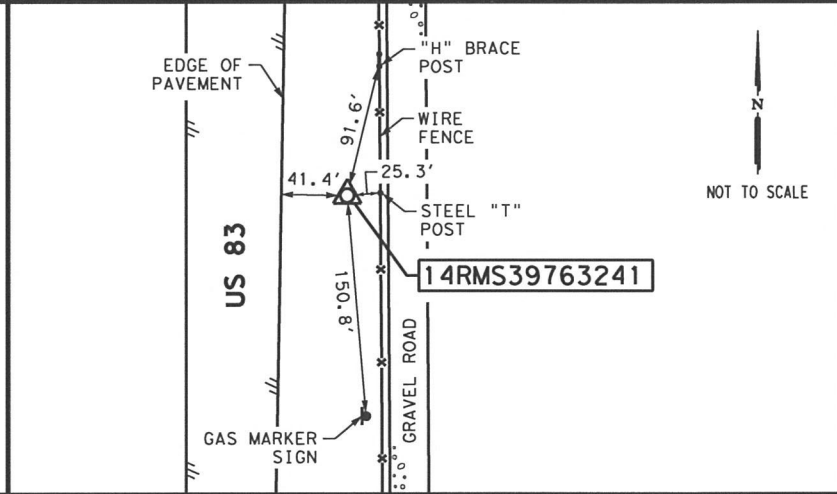
**SECONDARY CONTROL POINT: 14RMS39709250**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3.3 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,275,327.4750  
 EASTING: 1,770,611.1215  
 ELEV: 534.712



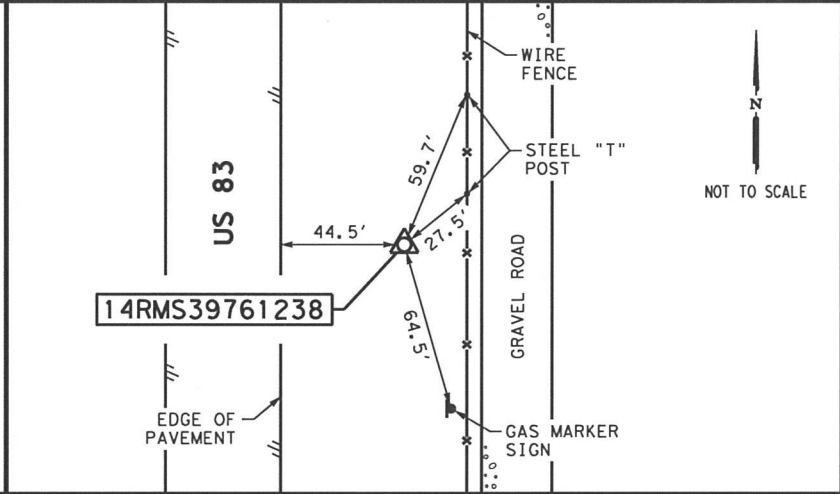
**SECONDARY CONTROL POINT: 14RMS39768247**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 3.1 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,274,328.1350  
 EASTING: 1,770,804.7125  
 ELEV: 534.490



**SECONDARY CONTROL POINT: 14RMS39763241**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 2.8 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,272,337.7100  
 EASTING: 1,770,790.2535  
 ELEV: 544.221



**SECONDARY CONTROL POINT: 14RMS39761238**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE  
 APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 2.6 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE  
 SURFACE COORDINATES:  
 NORTHING 13,271,383.9550  
 EASTING: 1,770,784.0655  
 ELEV: 552.486

- NOTES:**
- ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH CENTRAL ZONE (4204) NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00000
  - ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
  - UNIT OF MEASURE IS U.S. SURVEY FOOT
  - VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS, HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
  - FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017



*Christopher R. Freeman*  
 CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

**LTRA** LINA T. RAMEY & ASSOCIATES, INC.  
 3320 Belt Line Road  
 Farmers Branch, Texas 75234 - 214-979-1144  
 FIRM REGISTRATION NO. F-782  
 TBPLS REGISTRATION NO. 10140700

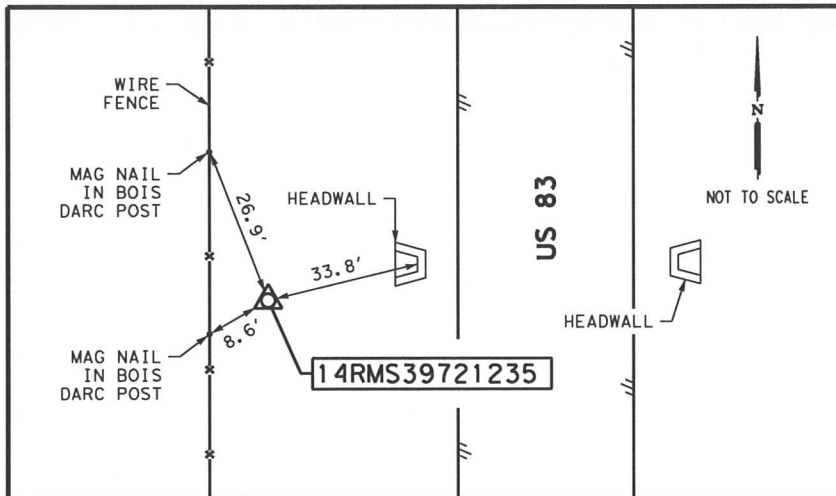
Texas Department of Transportation  
 © 2019

**US 83**  
**SURVEY CONTROL DATA SHEET**  
**CSJ: 0037-08-042**

FED. RD. DIV. NO.		STATE AID PROJECT NO.	SHEET NO.
6		C 37-8-42	99
STATE	DIST.	COUNTY	
TEXAS	LAREDO	DIMMIT	
CONT.	SECT.	JOB	HIGHWAY NO.
0037	08	042.ETC.	US 83

SHEET 5 OF 7

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 3/20/2019

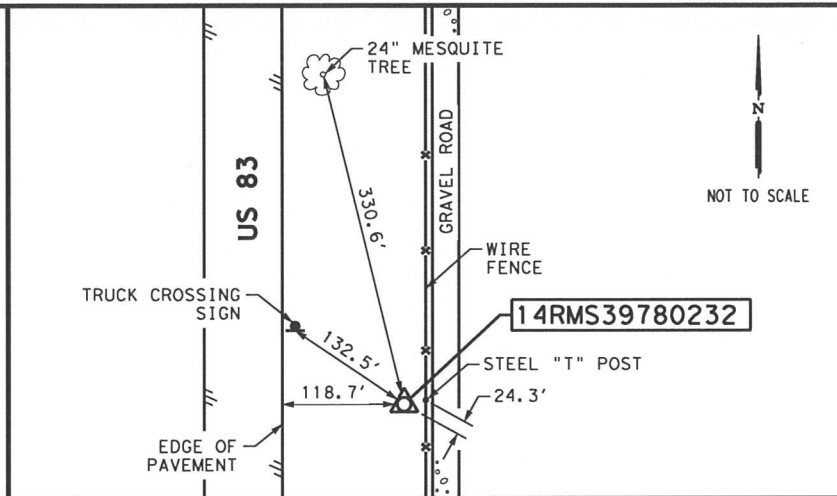


**SECONDARY CONTROL POINT: 14RMS39721235**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2.4 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,270,340.0000  
 EASTING: 1,770,650.5130  
 ELEV: 559.356

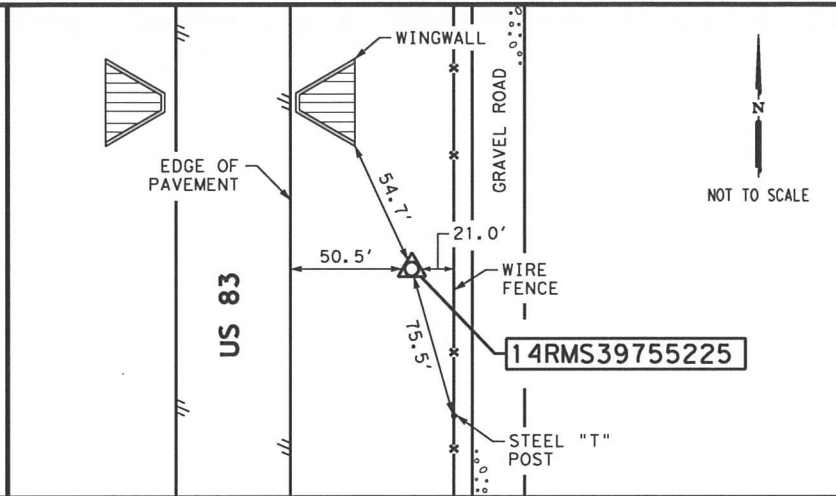


**SECONDARY CONTROL POINT: 14RMS39780232**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 2.2 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,269,298.5850  
 EASTING: 1,770,843.6280  
 ELEV: 572.401



**SECONDARY CONTROL POINT: 14RMS39755225**

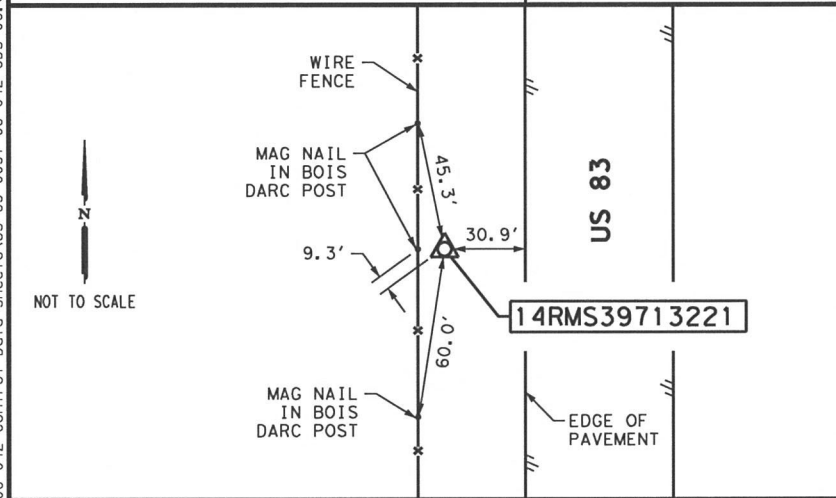
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 1.7 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,267,101.5300  
 EASTING: 1,770,762.4110  
 ELEV: 596.446

**NOTES:**

1. ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH CENTRAL ZONE (4204) NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00000
2. ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
3. UNIT OF MEASURE IS U.S. SURVEY FOOT
4. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS, HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
5. FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017

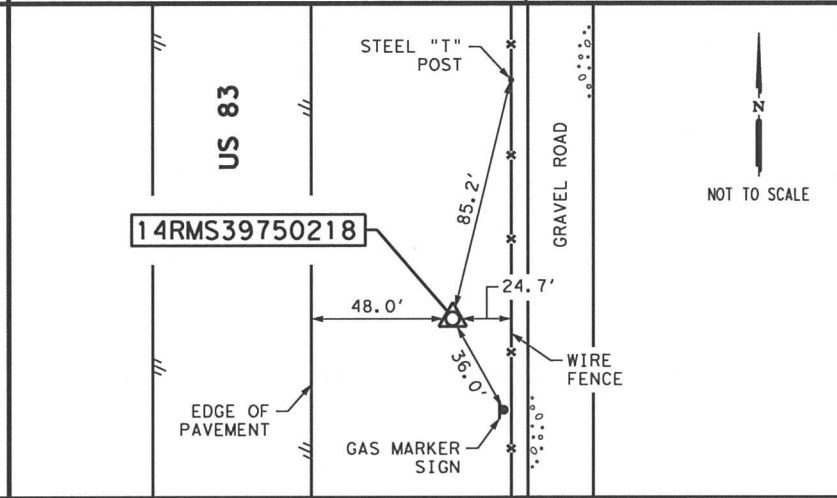


**SECONDARY CONTROL POINT: 14RMS39713221**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 1.5 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,265,956.8450  
 EASTING: 1,770,624.6950  
 ELEV: 602.099

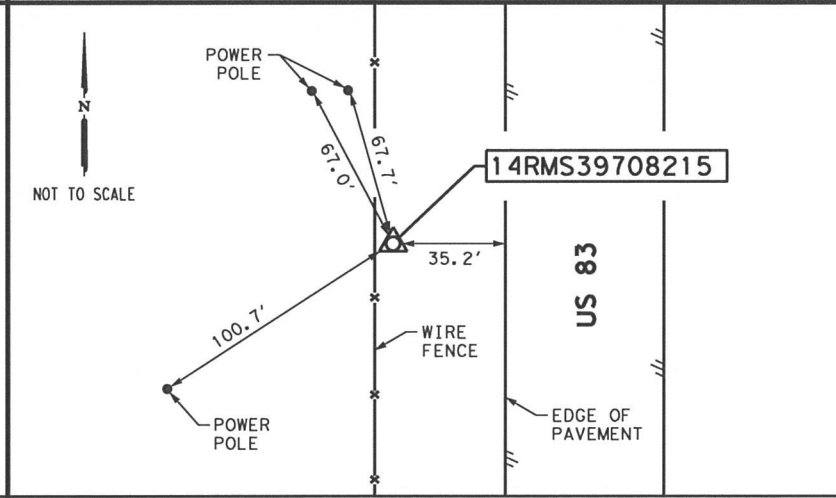


**SECONDARY CONTROL POINT: 14RMS39750218**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 1.3 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,264,959.2150  
 EASTING: 1,770,745.6280  
 ELEV: 614.819



**SECONDARY CONTROL POINT: 14RMS39708215**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 1.1 MILES NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,263,966.5000  
 EASTING: 1,770,607.1255  
 ELEV: 619.089



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 Farmers Branch, Texas 75234 - 214-979-1144  
 FIRM REGISTRATION NO. F-782  
 TBPLS REGISTRATION NO. 10140700

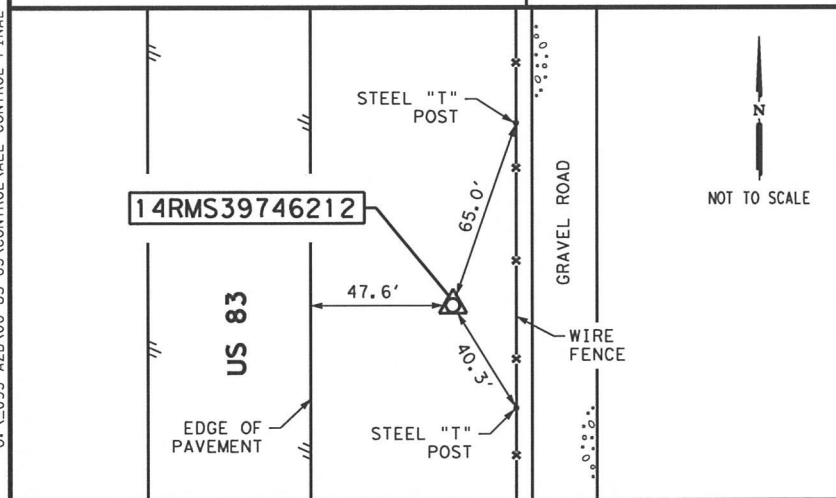
Texas Department of Transportation  
 © 2019

**US 83**

**SURVEY CONTROL DATA SHEET**  
 CSJ: 0037-08-042

SHEET 6 OF 7

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	100
STATE	DIST.	COUNTY
TEXAS	LAREDO	DIMMIT
CONT.	SECT.	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83

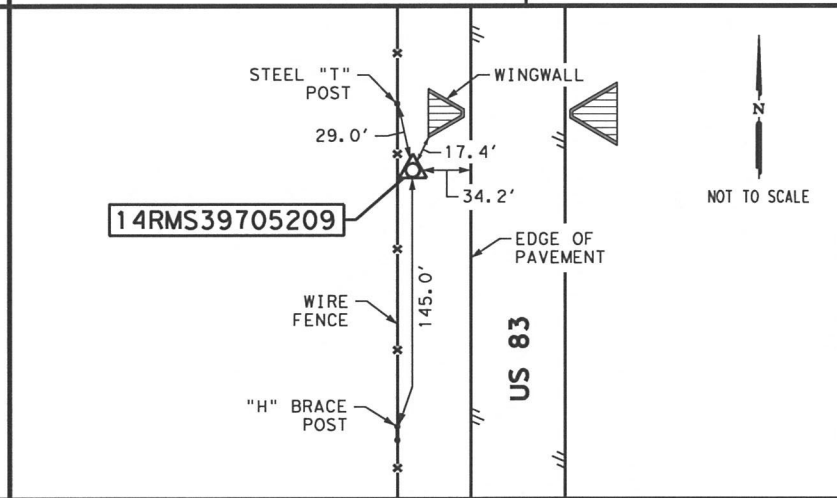


**SECONDARY CONTROL POINT: 14RMS39746212**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 5,028' NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,262,973.9150  
 EASTING: 1,770,733.4775  
 ELEV: 625.453

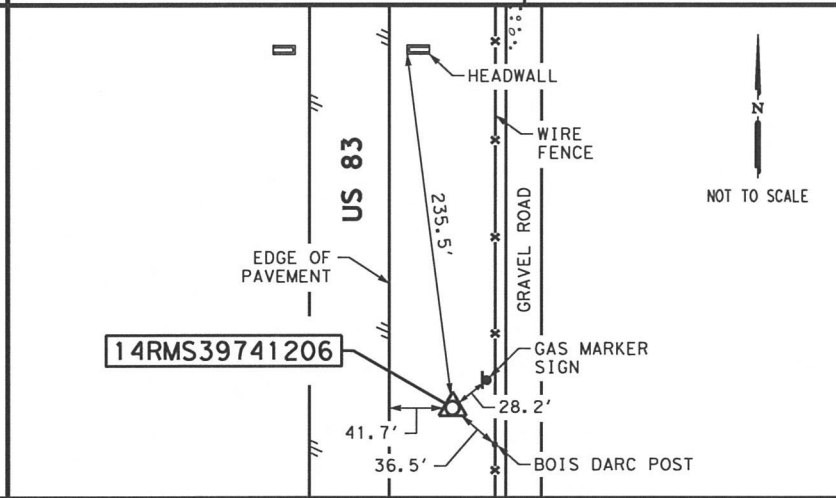


**SECONDARY CONTROL POINT: 14RMS39705209**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 4,040' NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,261,982.4650  
 EASTING: 1,770,597.0840  
 ELEV: 631.938



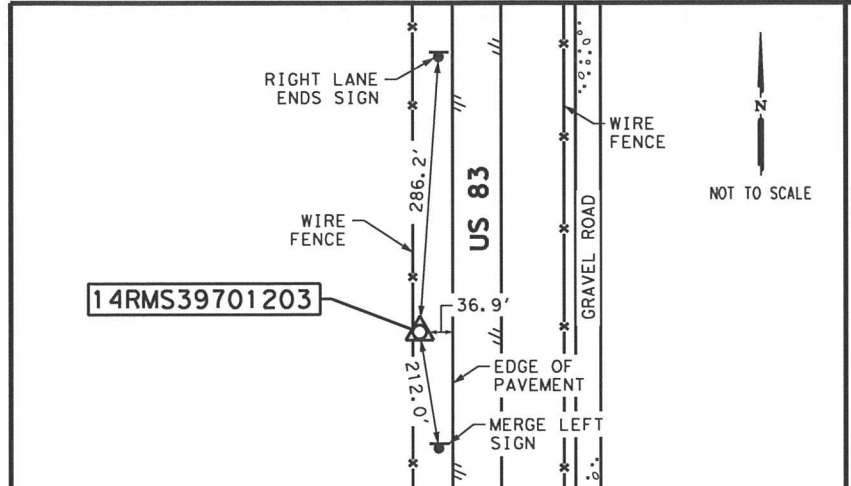
**SECONDARY CONTROL POINT: 14RMS39741206**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 3,041' NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE

SURFACE COORDINATES:  
 NORTHING 13,260,980.3550  
 EASTING: 1,770,716.5555  
 ELEV: 632.792

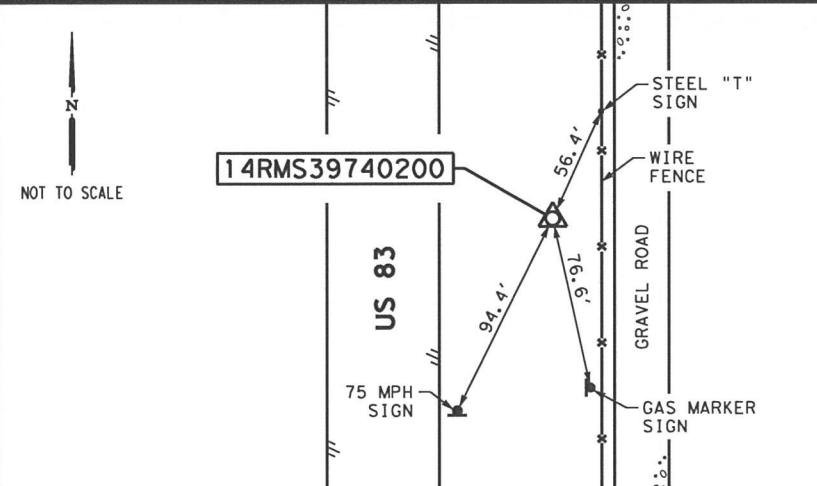
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**SECONDARY CONTROL POINT: 14RMS39701203**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

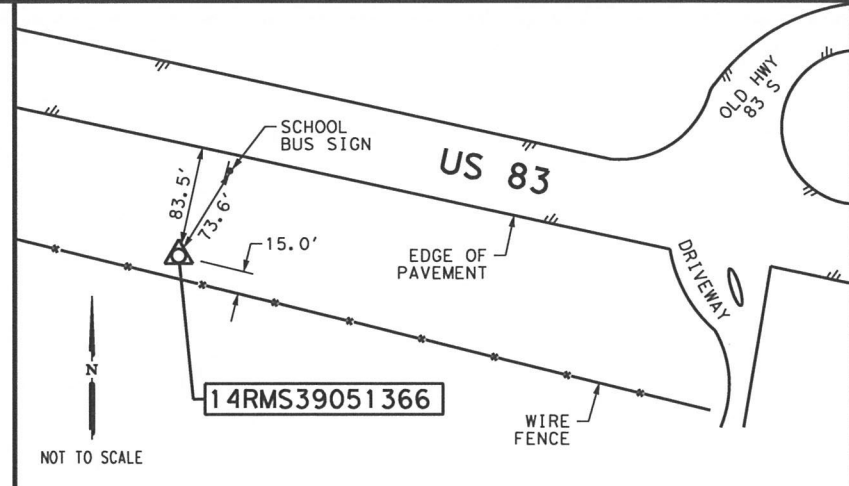
APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 2,048' NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE	SURFACE COORDINATES: NORTHING 13,259,987.8050 EASTING: 1,770,582.0570 ELEV: 636.732
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**SECONDARY CONTROL POINT: 14RMS39740200**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 1,053' NORTH OF THE INTERSECTION OF US-83 AND THE DIMMIT COUNTY LINE	SURFACE COORDINATES: NORTHING 13,258,996.4700 EASTING: 1,770,710.6210 ELEV: 640.014
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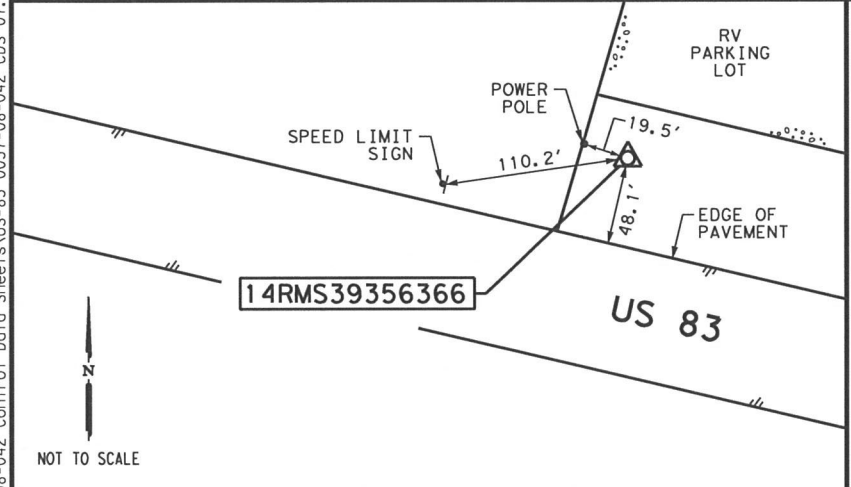


**SECONDARY CONTROL POINT: 14RMS39051366**

MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE WEST SIDE OF US-83, +/- 3,393' NORTHWEST OF THE INTERSECTION OF US-83 AND DOMINGO AVE IN CATALINA, TX	SURFACE COORDINATES: NORTHING 13,313,454.8600 EASTING: 1,768,458.5670 ELEV: 508.030
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- NOTES:**
- ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH CENTRAL ZONE (4204) NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00000
  - ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
  - UNIT OF MEASURE IS U.S. SURVEY FOOT
  - VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS, HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
  - FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017



**SECONDARY CONTROL POINT: 14RMS39356366**

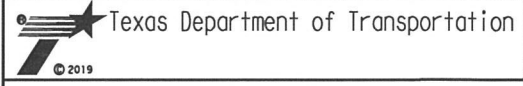
MONUMENT: TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" I.R. SET IN CONCRETE

APPROXIMATE LOCATION: LOCATED ON THE EAST SIDE OF US-83, +/- 2,408' NORTHWEST OF THE INTERSECTION OF US-83 AND DOMINGO AVE IN CATALINA, TX	SURFACE COORDINATES: NORTHING 13,313,405.4400 EASTING: 1,769,460.1595 ELEV: 504.065
--	--



*Christopher R. Freeman*  
CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

**LTRA** LINA T. RAMEY & ASSOCIATES, INC.  
3320 Belt Line Road  
Farmers Branch, Texas 75234 - 214-979-1144  
FIRM REGISTRATION NO. F-782  
TBPLS REGISTRATION NO. 10140700



**US 83**  
**SURVEY CONTROL DATA SHEET**  
**CSJ: 0037-08-042**

FED. RD. DIV. NO.		STATE AID PROJECT NO.		SHEET NO.
6		C 37-8-42		<b>101</b>
STATE	DIST.	COUNTY		
TEXAS	LAREDO	DIMMIT		
CONT.	SECT.	JOB	HIGHWAY NO.	
0037	08	042, ETC.	US 83	

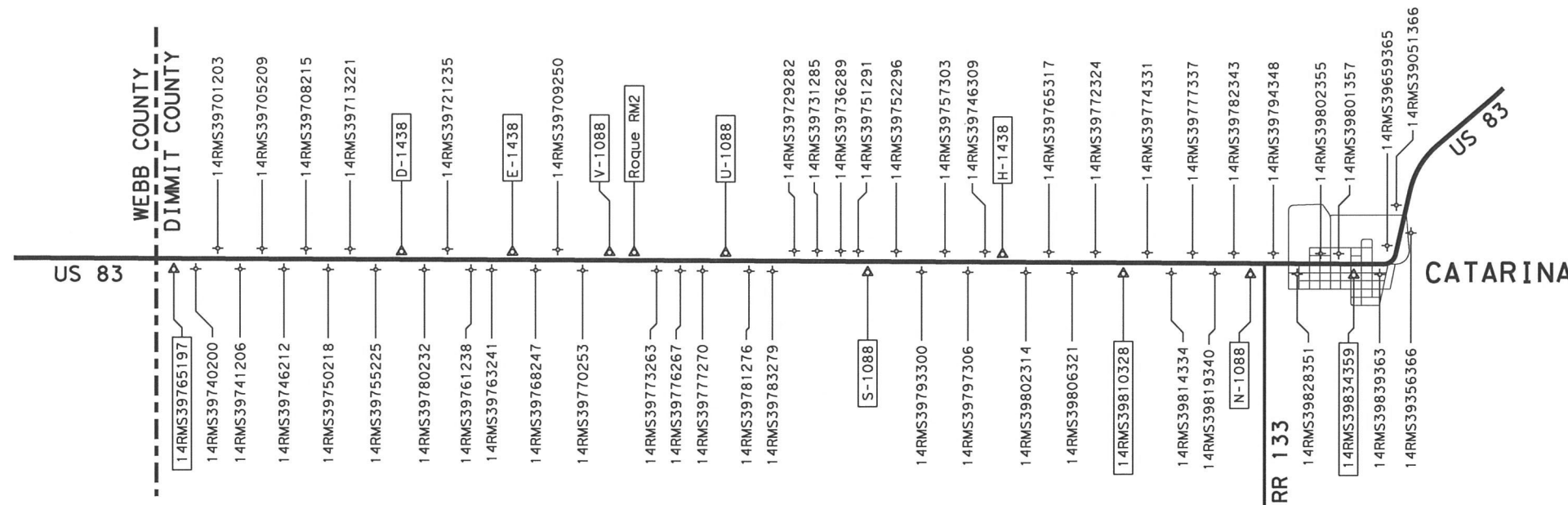
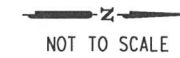
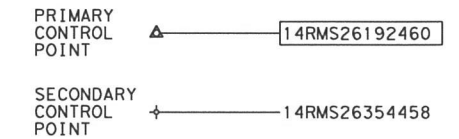
SHEET 7 OF 7

PRIMARY CONTROL POINTS

CONTROL POINT	SURFACE COORDINATES		GRID COORDINATES		LATITUDE	LONGITUDE	ELEVATION	DESCRIPTION
	NORTHING	EASTING	NORTHING	EASTING				
14RMS39834359	13,311,210.8677	1,771,029.1318	13,311,210.8677	1,771,029.1318	28°20'54.93311"	99°36'50.03969"	541.211	SET 3/4" ALUMINUM BERNTSEN ROD W/ACCESS LID IN CONCRETE
N-1088	13,306,536.9039	1,771,000.3884	13,306,536.9039	1,771,000.3884	28°20'08.65573"	99°36'50.08678"	533.670	FOUND US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE
14RMS39810328	13,300,829.7303	1,770,949.3026	13,300,829.7303	1,770,949.3026	28°19'12.14773"	99°36'50.32316"	510.316	SET 3/4" ALUMINUM BERNTSEN ROD W/ACCESS LID IN CONCRETE
H-1438	13,295,383.1073	1,770,780.7432	13,295,383.1073	1,770,780.7432	28°18'18.21341"	99°36'51.88892"	484.700	FOUND NATIONAL GEODETIC SURVEY MONUMENT SET IN CONCRETE
S-1088	13,289,579.2049	1,770,896.0645	13,289,579.2049	1,770,896.0645	28°17'20.75666"	99°36'50.25799"	494.260	FOUND US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE
U-1088	13,282,885.6291	1,770,702.7151	13,282,885.6291	1,770,702.7151	28°16'14.47565"	99°36'52.02726"	501.090	FOUND US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE
Roque No2	13,278,778.2619	1,770,678.6502	13,278,778.2619	1,770,678.6502	28°15'33.80878"	99°36'52.05505"	550.000	FOUND US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE
V-1088	13,277,668.0312	1,770,688.3845	13,277,668.0312	1,770,688.3845	28°15'22.81729"	99°36'51.88098"	557.800	FOUND US COAST & GEODETIC SURVEY BENCHMARK SET IN CONCRETE
E-1438	13,273,277.6726	1,770,662.0427	13,273,277.6726	1,770,662.0427	28°14'39.34861"	99°36'51.91761"	539.970	FOUND NATIONAL GEODETIC SURVEY MONUMENT SET IN CONCRETE
D-1438	13,268,263.5192	1,770,631.3669	13,268,263.5192	1,770,631.3669	28°13'49.70387"	99°36'51.96605"	588.510	FOUND NATIONAL GEODETIC SURVEY MONUMENT SET IN CONCRETE
14RMS39765197	13,258,003.6874	1,770,793.1349	13,258,003.6874	1,770,793.1349	28°12'08.13414"	99°36'49.55577"	650.480	SET 3/4" ALUMINUM BERNTSEN ROD W/ACCESS LID IN CONCRETE

NOTES:

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- ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY AVERAGED DOUBLE STATIC OBSERVATIONS AT A MINIMUM OF 2 HOURS PROCESSED THROUGH OPUS
- UNIT OF MEASURE IS U.S. SURVEY FOOT
- VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TXDOT VIRTUAL REFERENCE SYSTEM NETWORK (DIMMIT). CONTROL ESTABLISHED BY DIGITAL LEVELS, HOLDING PUBLISHED ELEVATION AT EXISTING MONUMENT B-1088 (PUBLISHED EL. 580.060) AND CHECKING INTO PUBLISHED ELEVATION AT EXISTING MONUMENT H-1438 (PUBLISHED EL. 484.700)
- FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2017



*Christopher R. Freeman*  
CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

**LTRA** LINA T. RAMEY & ASSOCIATES, INC.  
3320 Belt Line Road  
Farmers Branch, Texas 75234 - 214-979-1144  
FIRM REGISTRATION NO. F-782  
TBPLS REGISTRATION NO. 10140700

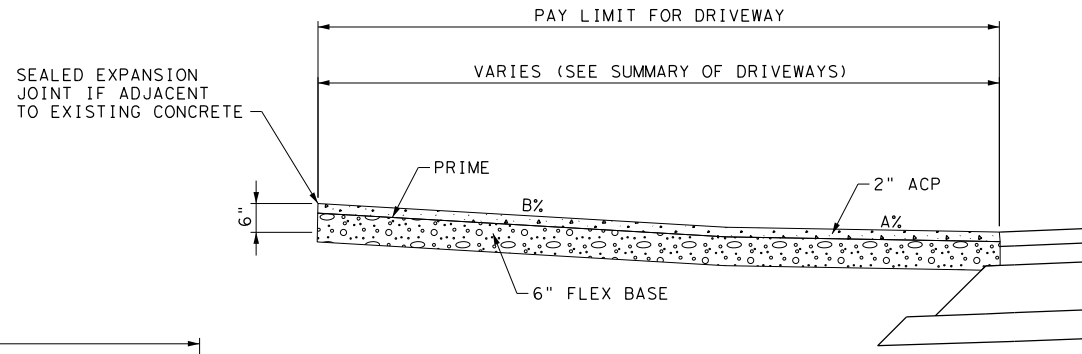


**US 83**  
SURVEY CONTROL INDEX SHEET  
CSJ: 0037-08-042

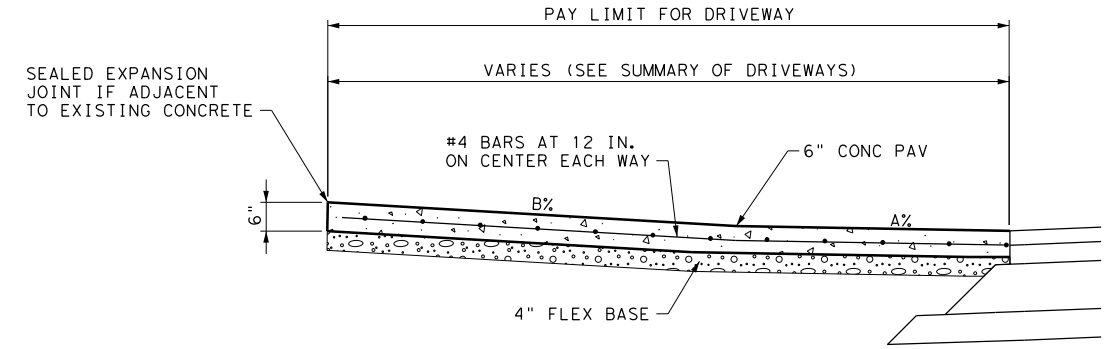
SHEET 1 OF 2

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	102	
STATE	DIST.	COUNTY	
TEXAS	LAREDO	DIMMIT	
CONT.	SECT.	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

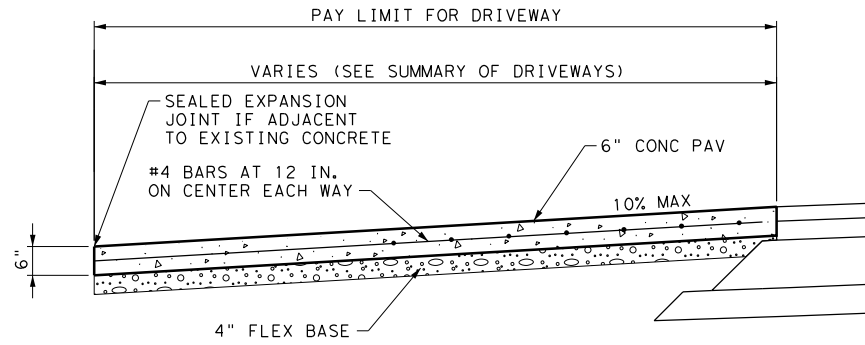




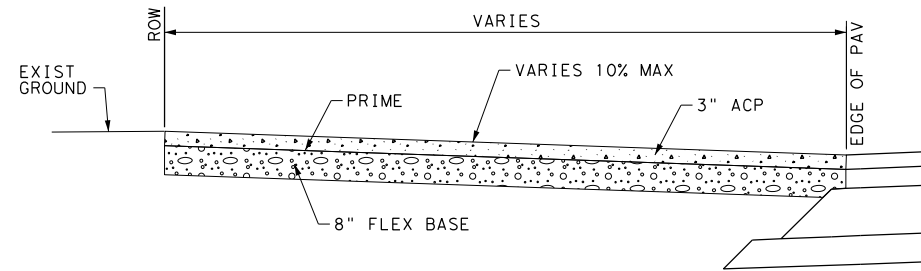
TYPICAL DRIVEWAY (TY A) PROFILE SECTION  
SECTION C-C (DIP SECTION)



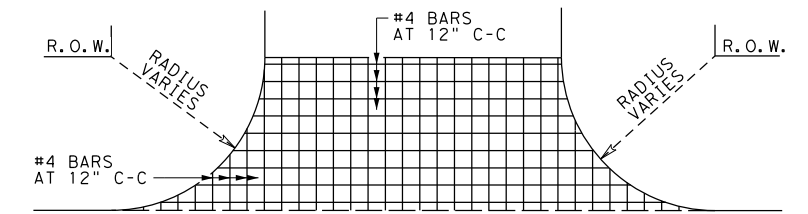
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SECTION C-C (DIP SECTION)



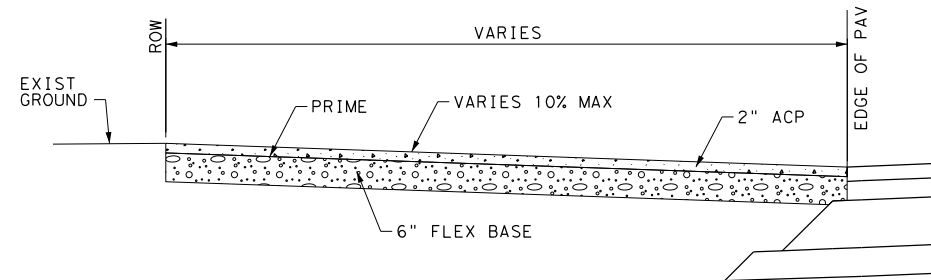
TYPICAL DRIVEWAY (TY B) PROFILE SECTION  
SECTION C-C



TYPICAL DRIVEWAY (TY C) PROFILE SECTION  
SECTION C-C



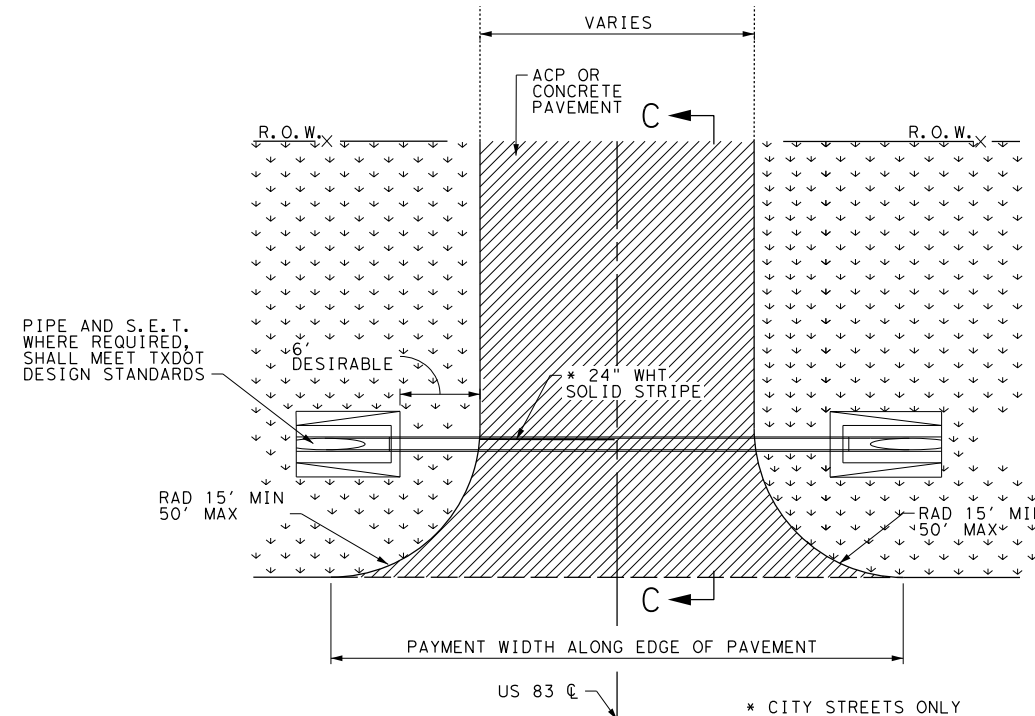
TYPICAL CONCRETE DRIVEWAY



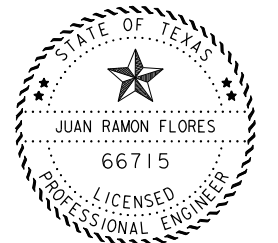
TYPICAL DRIVEWAY (TY A) PROFILE SECTION  
SECTION C-C

**NOTES:**

- DRIVEWAYS (TY A) WILL CONSIST OF:
  - 2" SUPERPAVE MIXTURES SP-C SAC-A PG76-22
  - PRIME COAT (SAME AS ROADWAY)
  - 6" FL BS(CMP IN PLC) (TY E GR1-2) (FINAL POS)
- DRIVEWAYS (TY C) WILL CONSIST OF:
  - 3" SUPERPAVE MIXTURES SP-C SAC-A PG76-22
  - PRIME COAT (SAME AS ROADWAY)
  - 8" FL BS(CMP IN PLC) (TY E GR1-2) (FINAL POS)
- FOR RADIUS LENGTHS SEE THE "SUMMARY OF DRIVEWAYS" SHEET, TURNING RADIUS MAY BE ALTERED AS APPROVED BY THE ENGINEER.
- THE WORK PERFORMED TO REMOVE EXISTING DRIVEWAYS AS ALL SUBGRADE MATERIAL AND PROOF ROLLING WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 530.
- MAXIMUM PERCENT SLOPE ON DRIVEWAY WILL BE 10% AS SHOWN ON DETAILS, WHEN BREAK IN GRADE IS PRESENT A% + B% SHOULD BE NO MORE THAN 10% MAX THIS APPLIES FOR BOTH CONCRETE AND ACP DRIVEWAYS.



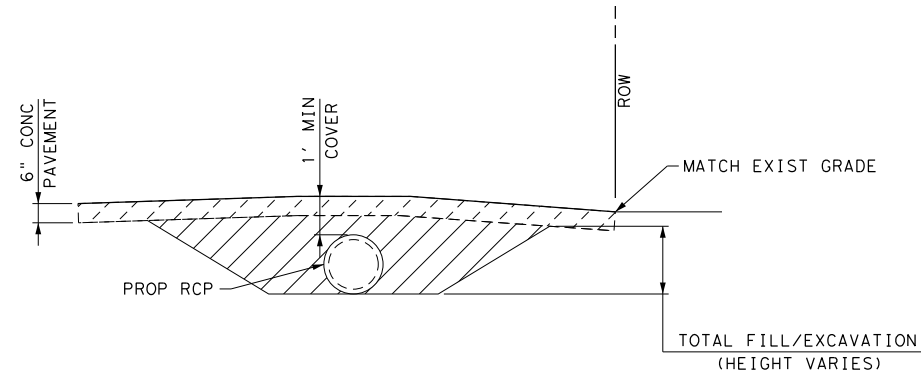
TYPICAL DRIVEWAY LAYOUT



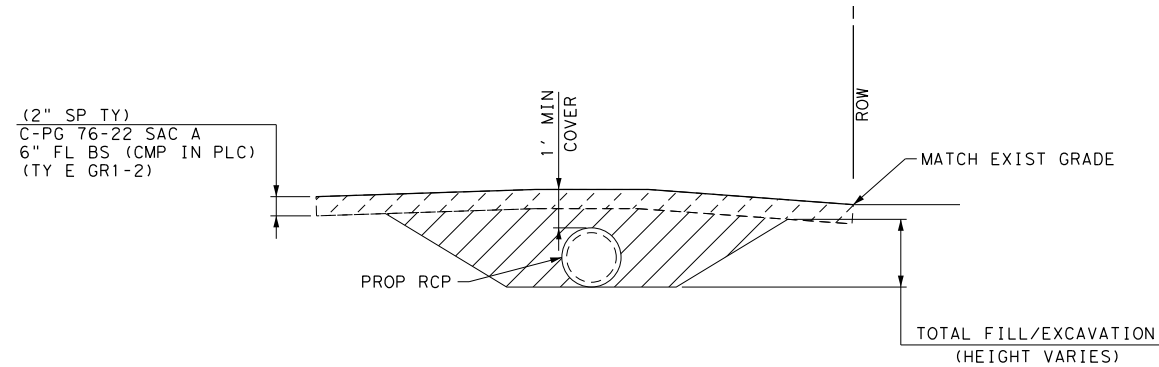
*Juan Flores*  
5-2-2024

SHEET 1 OF 3

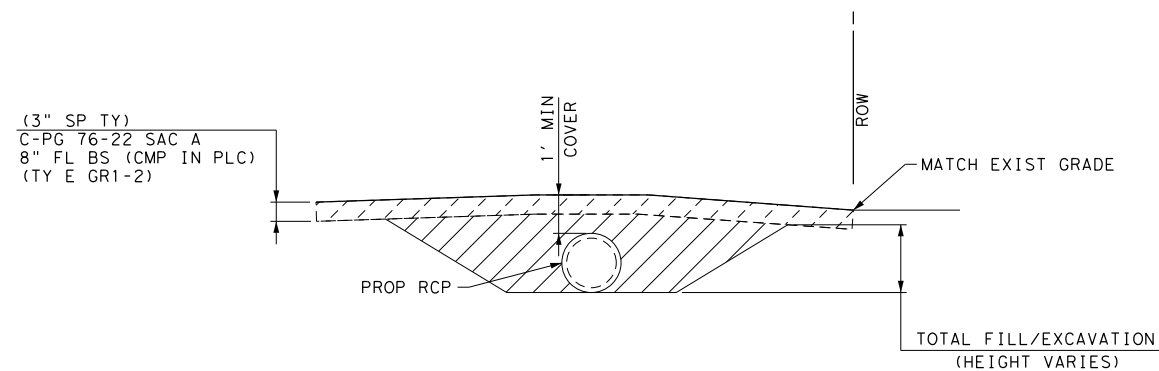
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ROADWAY DETAILS</b> (DRIVEWAYS)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	104	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



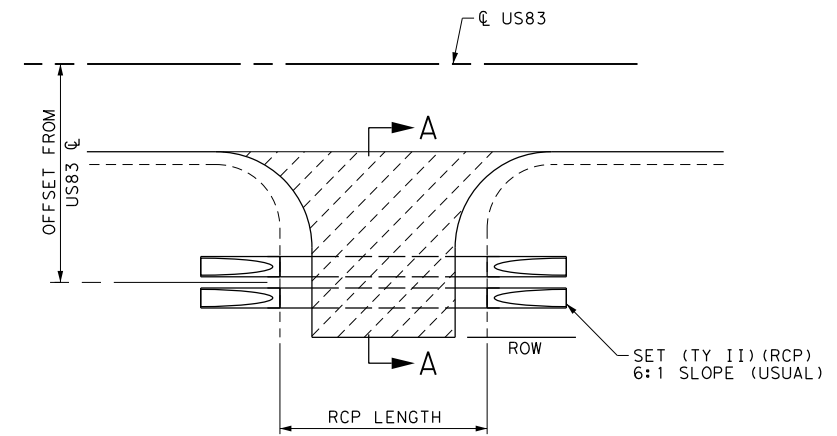
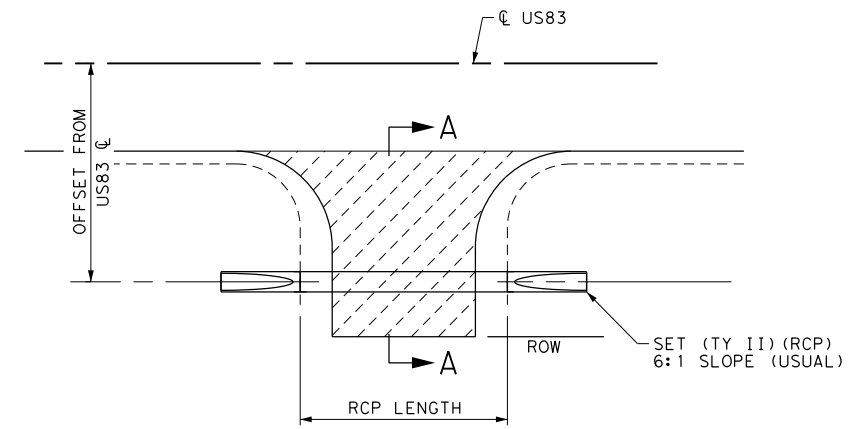
**SECTION A-A (CONCRETE)**



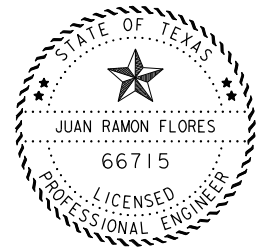
**SECTION A-A (HOT MIX) (TY A)**



**SECTION A-A (HOT MIX) (TY B)**



**TYPICAL DRIVEWAY LAYOUT**



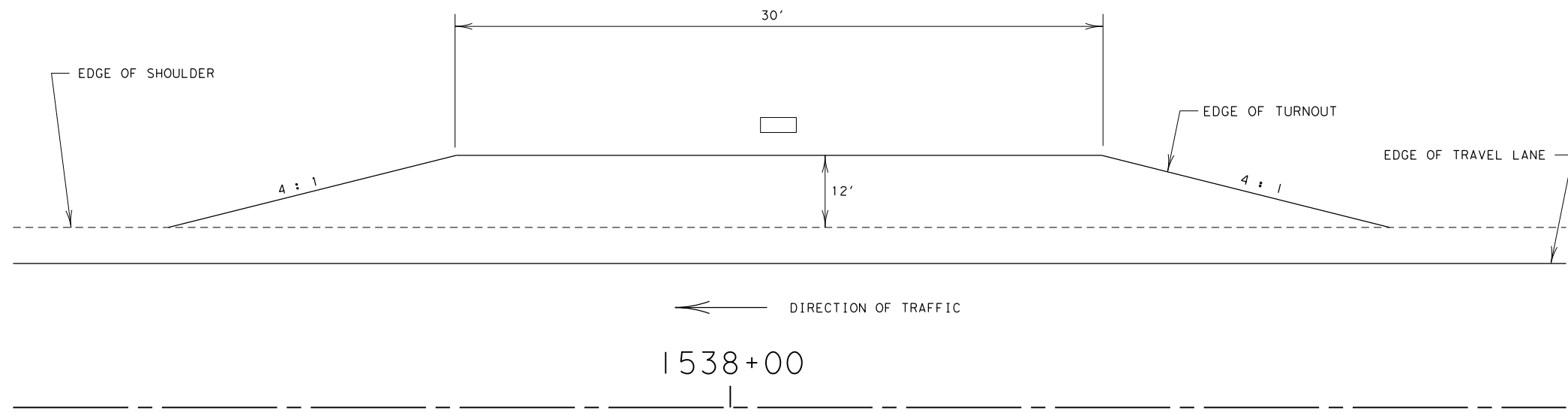
*Juan Flores*  
5-2-2024

SHEET 2 OF 3

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ROADWAY DETAILS</b> (PARALLEL PIPE DETAILS)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		105
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



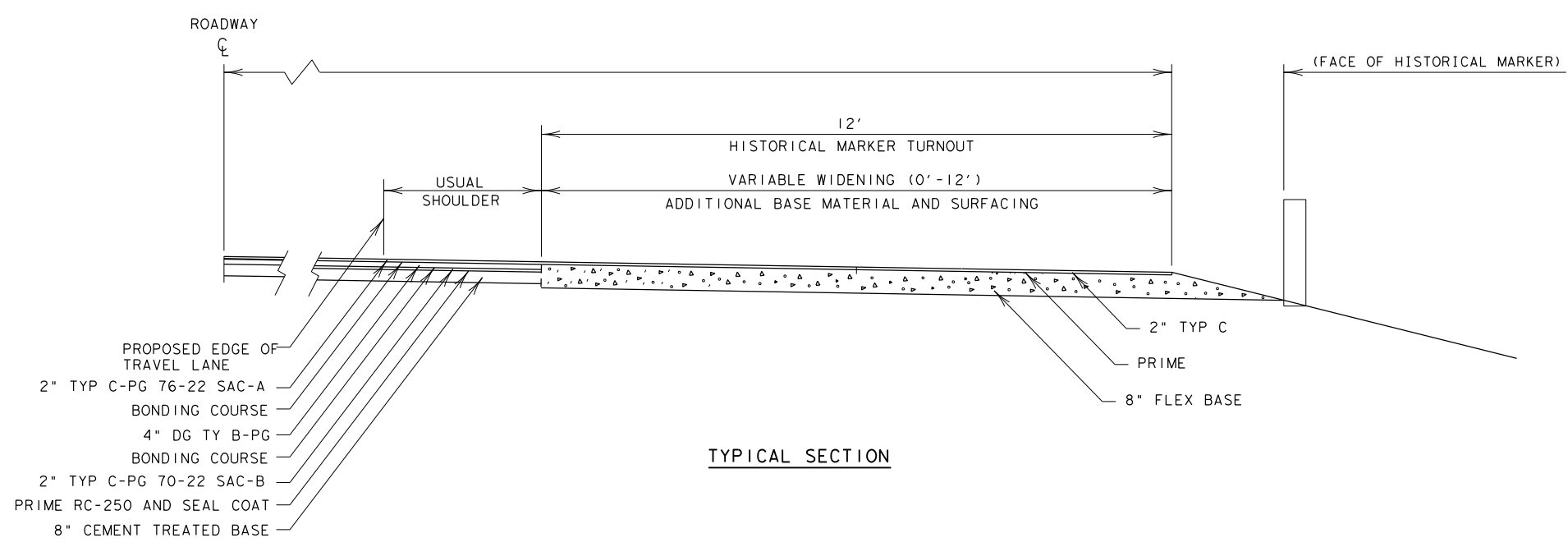
4/15/2024  
pw:\azb-pw.bentley.com\azb-pw-01\Documents\Collaboration Projects\TxDOT\217017.002\042\4 - Design\Plan Set\3. Roadway\106-ROADWAY DETAILS.dgn



PLAN

SUMMARY OF HISTORICAL MARKER TURNOUT

LOCATION (STATION)	247-6057	310-6009	3077-6033
	FL BS (CMP IN PLC) (TYPE GR1-2) (FINAL POS)	PRIME COAT (MC-30)	SUPERPAVE MIXTURES SP-C SAC-A PG76-22
		0.20 GAL/SY	115 LBS/IN/SY
STA	CY	GAL	TON
1538+04.07 LT	24	17.4	10



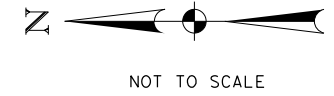
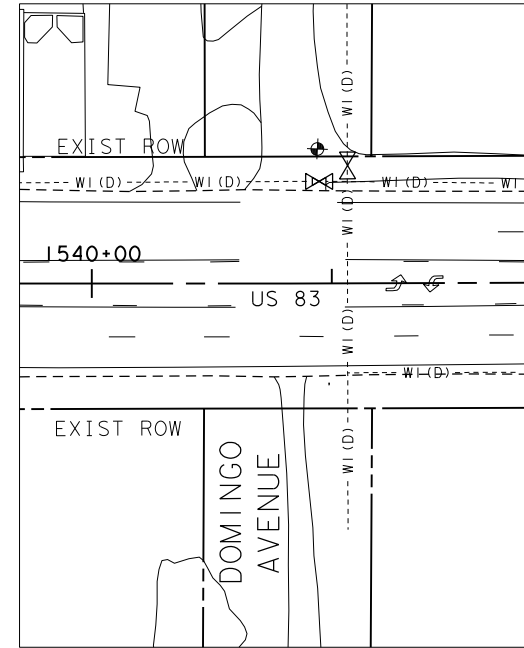
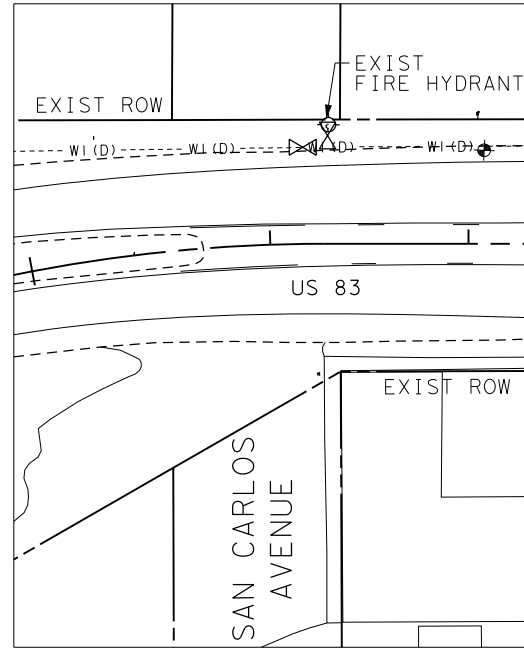
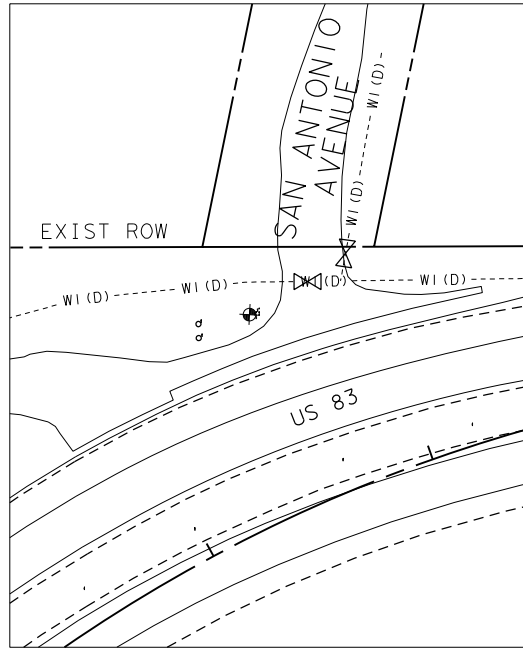
TYPICAL SECTION



5-2-2024

SHEET 3 OF 3

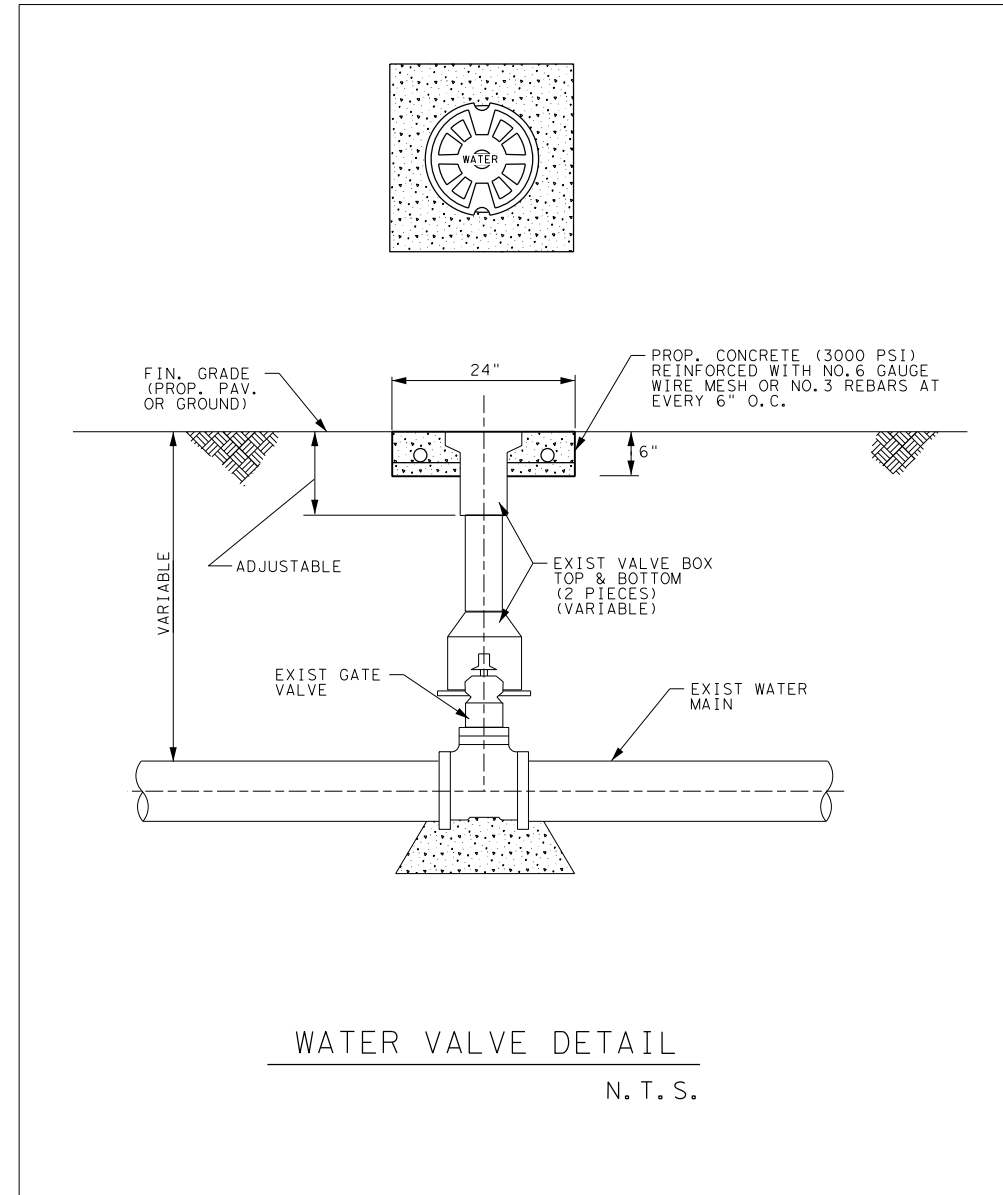
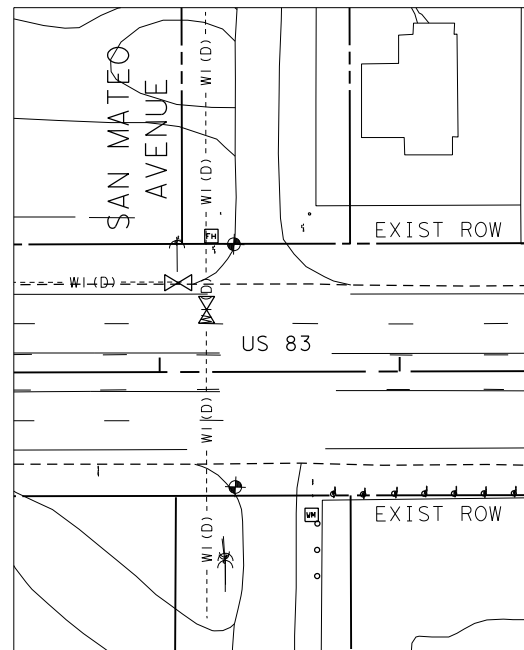
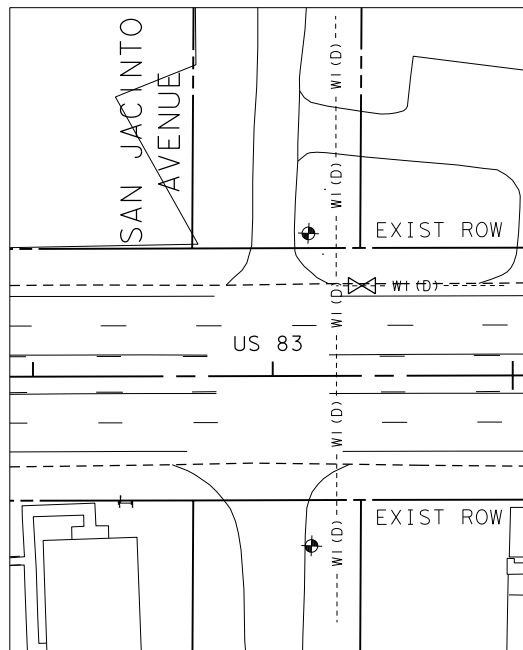
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<b>US 83</b> <b>ROADWAY DETAILS</b> (HISTORICAL MARKER TURNOUT)			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		106
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



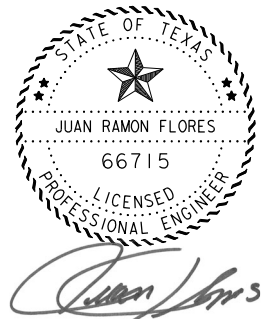
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⊗ ADJUST WATER VALVE

NOTE: FOR PAYMENT SEE THE ROADWAY QUANTITY SUMMARY SHEET UNDER PAY ITEM 5109-6001



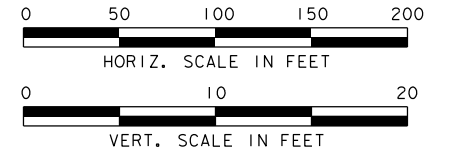
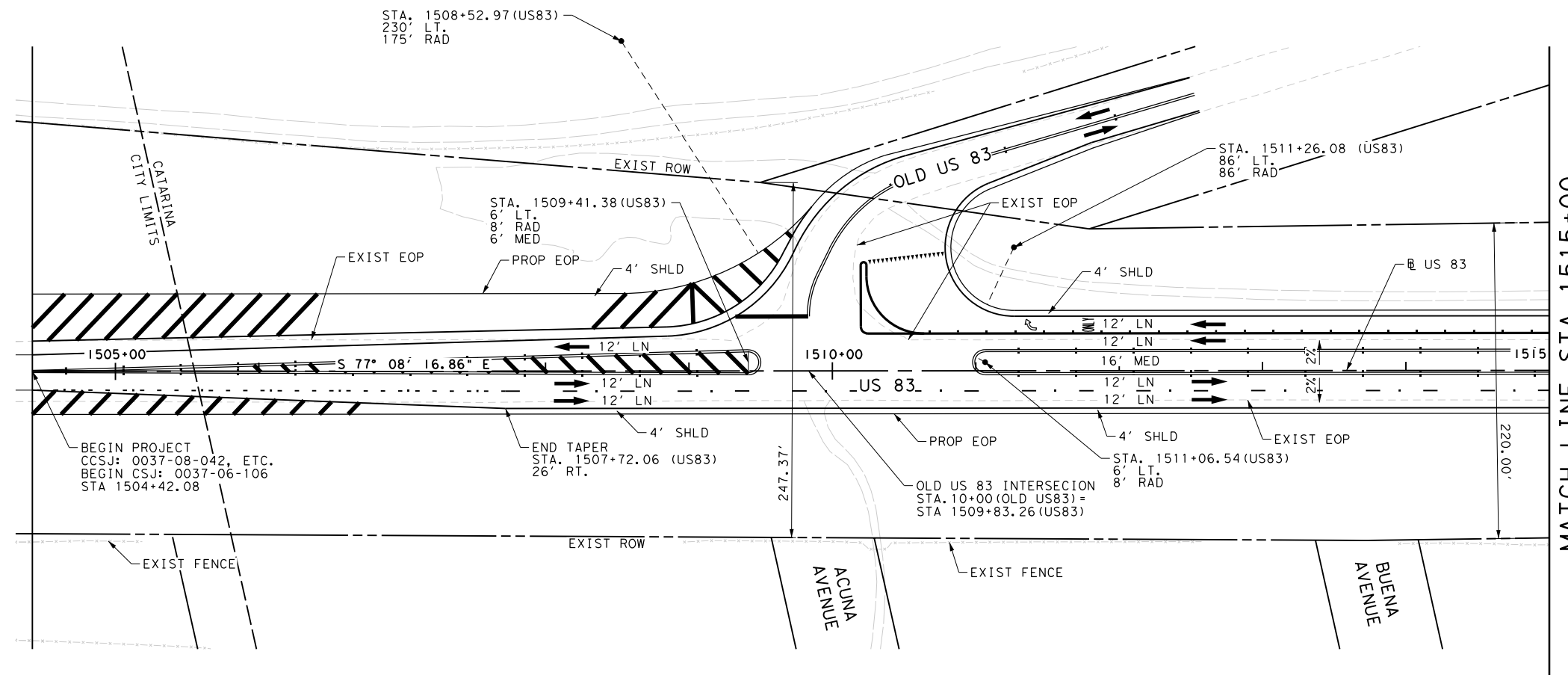
**WATER VALVE DETAIL**  
N. T. S.



5-2-2024 SHEET 2 OF 26

SHEET 1 OF 1

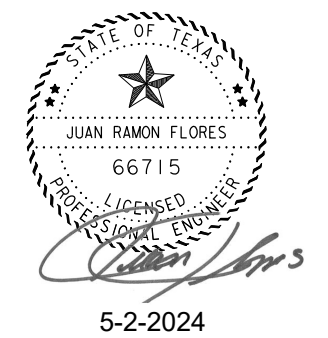
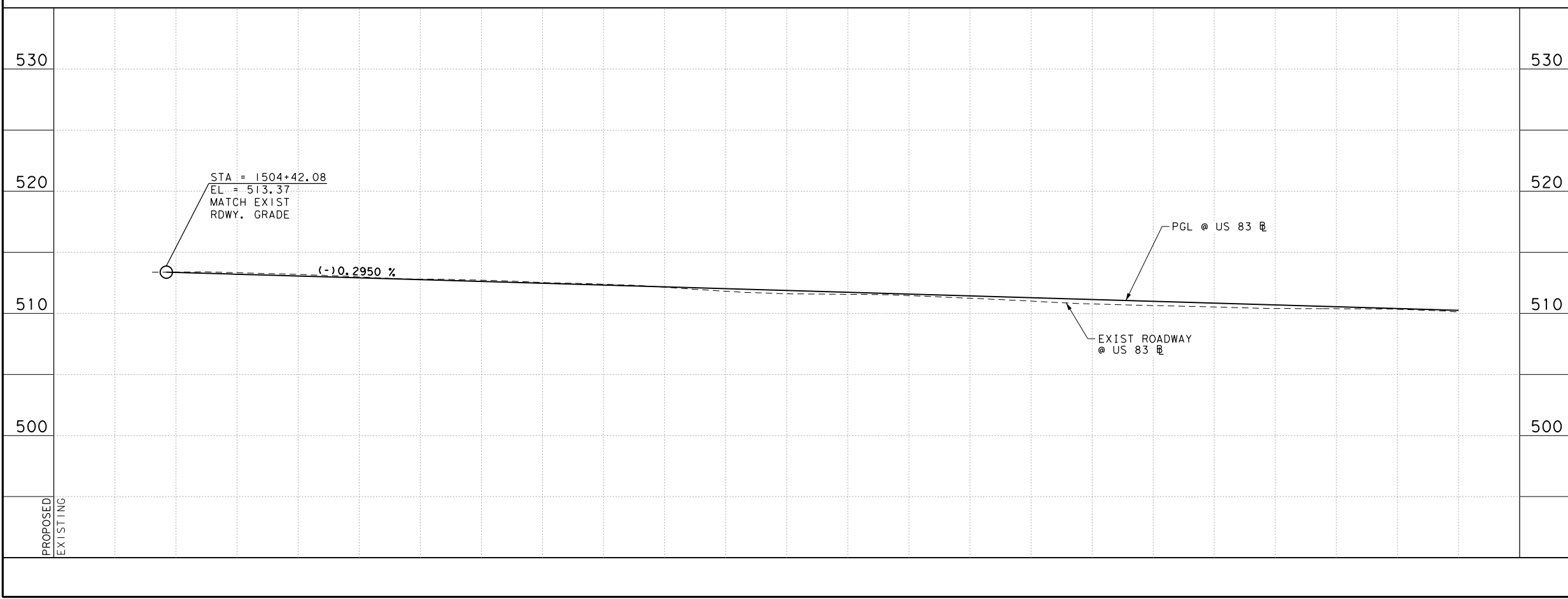
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<b>US 83</b> <b>MISC. ROADWAY</b> <b>DETAILS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	107	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

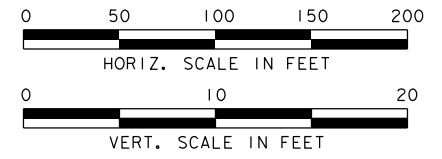
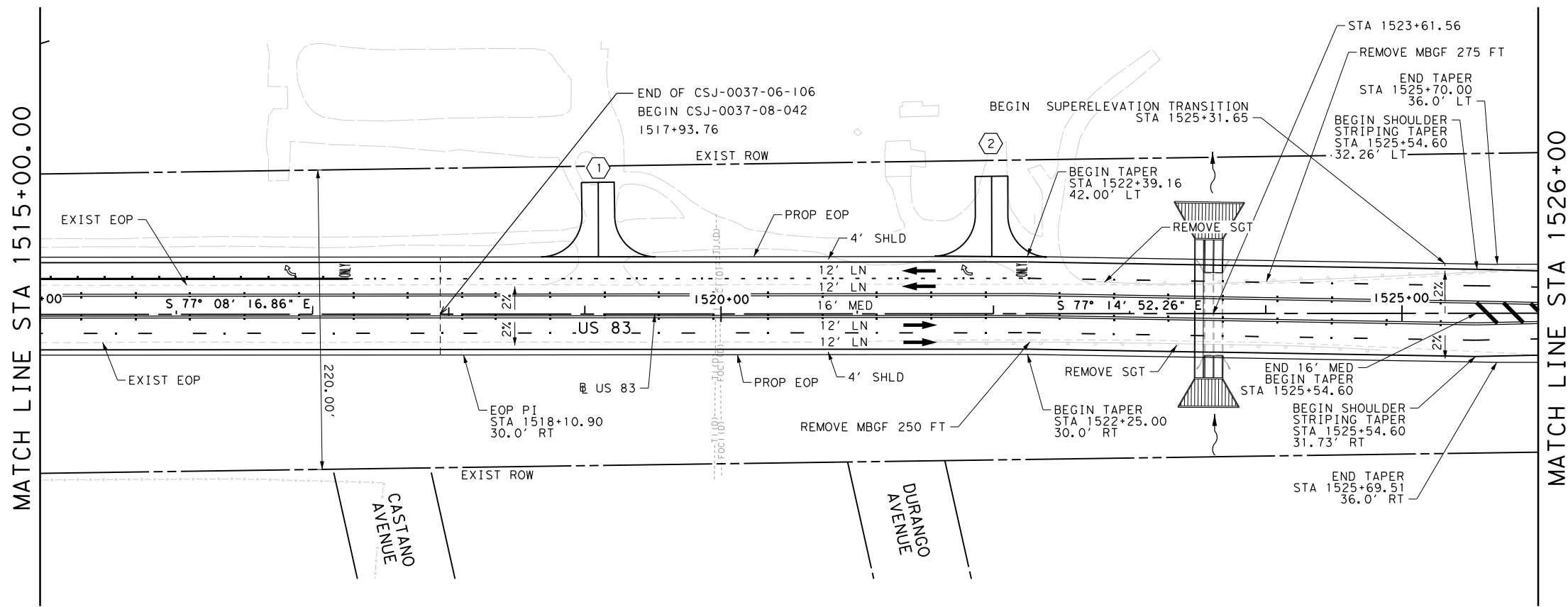
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EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO
24" SOLID WHITE	—



SHEET 1 OF 55

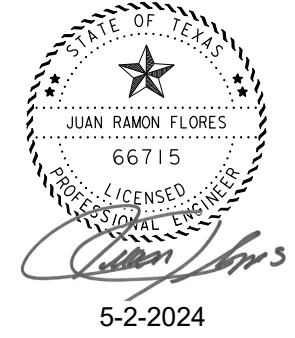
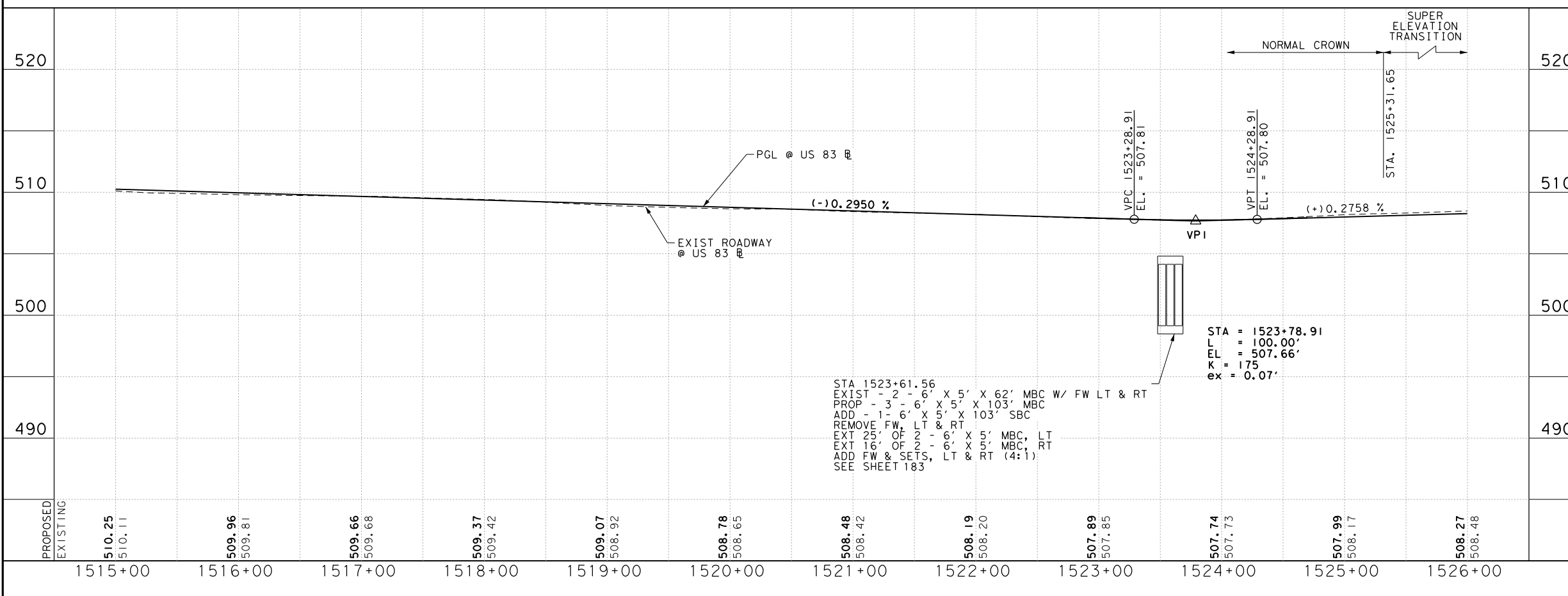
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY PLAN AND PROFILE STA 1504+42.08 TO 1515+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		108
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

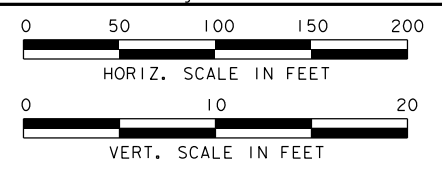
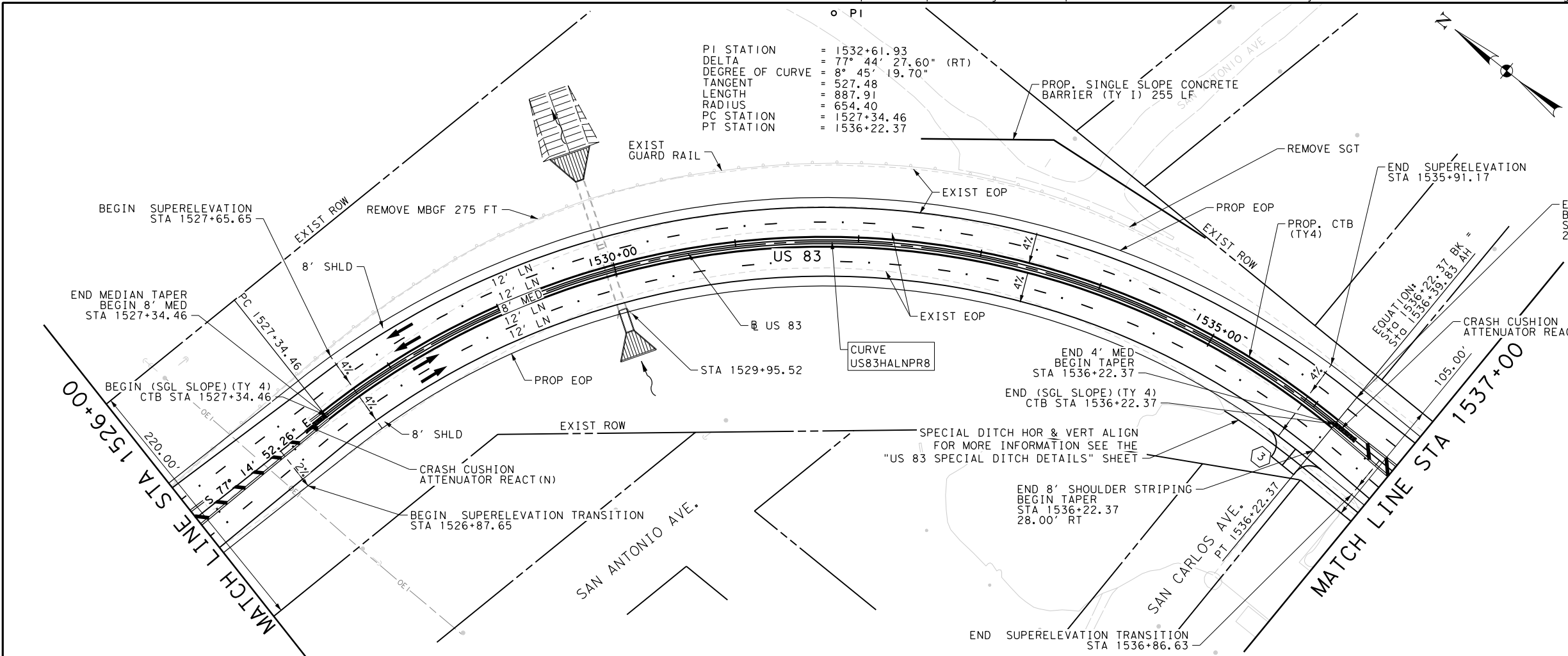
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EXIST ROW	---
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DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 2 OF 55

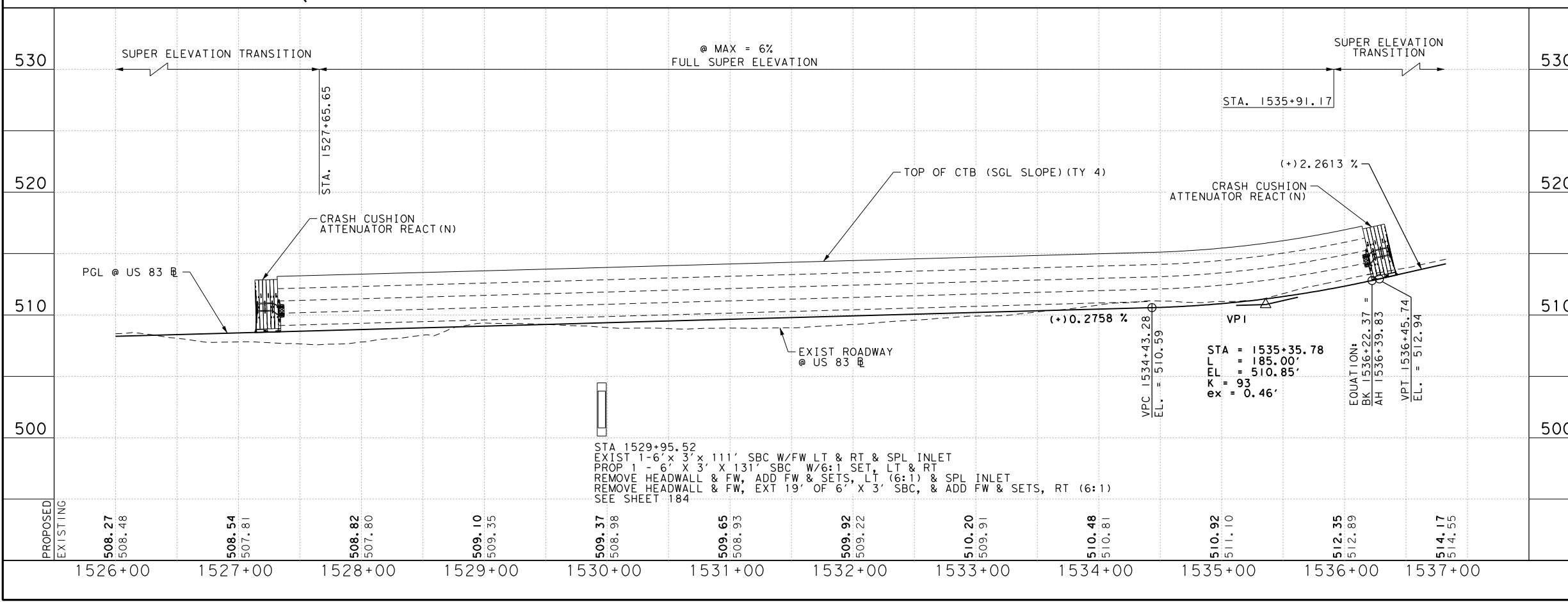
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1515+00 TO STA 1526+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	109	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	→
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



STATE OF TEXAS  
 JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
 5-2-2024

SHEET 3 OF 55

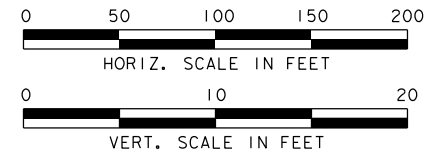
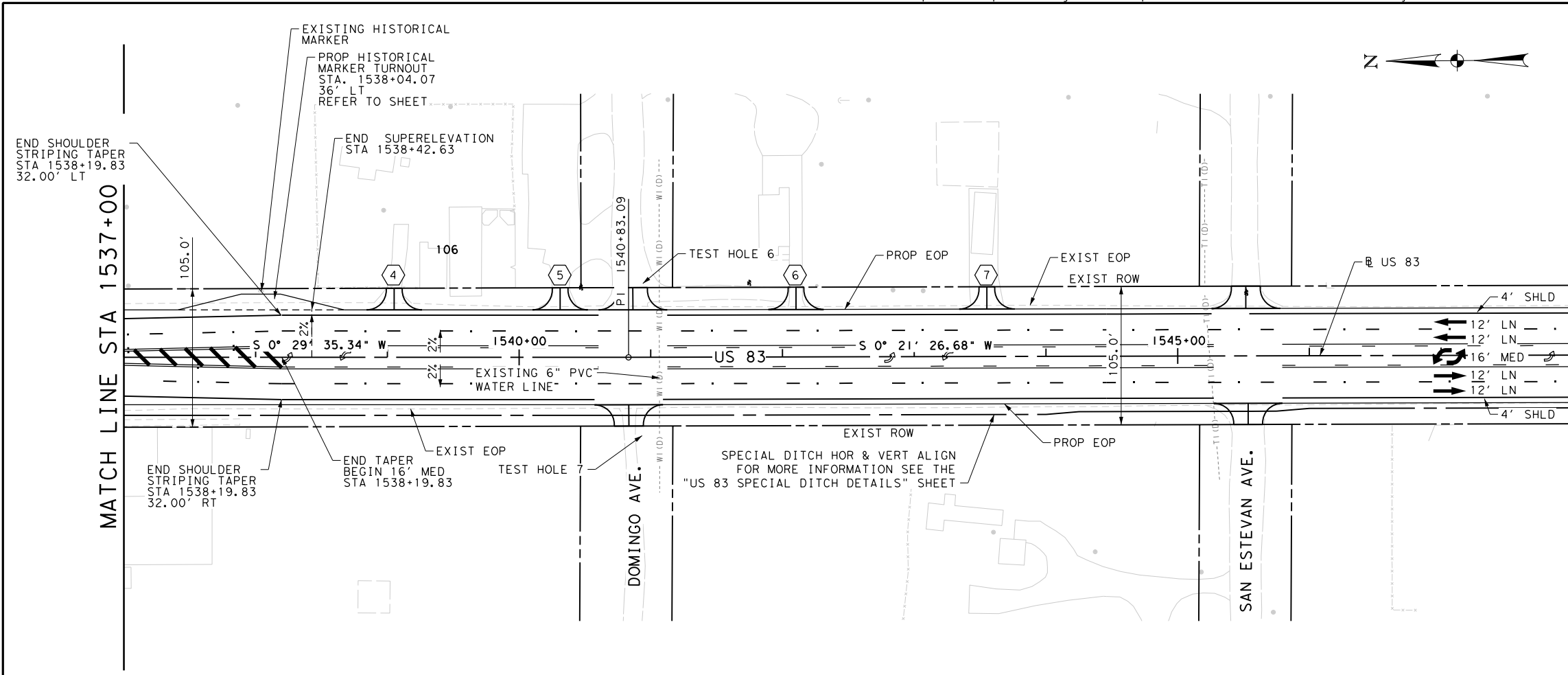
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83 ROADWAY**  
**PLAN AND PROFILE**  
**STA 1526+00 TO STA 1537+00**

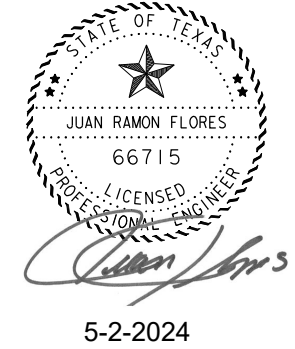
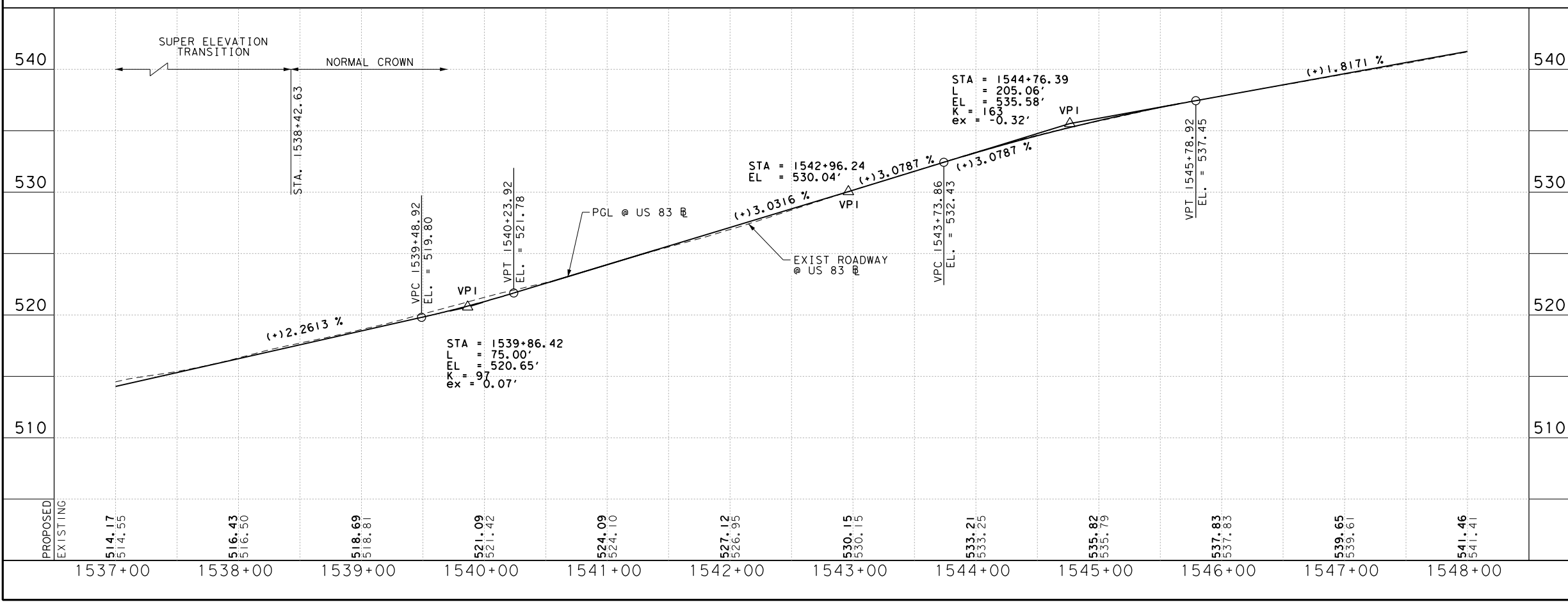
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6	C 37-8-42	110
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83



- NOTE:**
1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	→
DIRECTION OF TRAFFIC	⇄
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO
LT/RT TURN ARROWS	↵



SHEET 4 OF 55

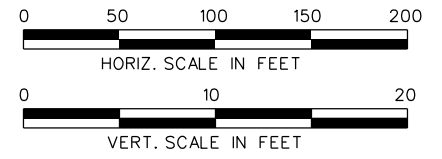
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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**US 83  
ROADWAY  
PLAN AND PROFILE  
STA 1537+00 TO STA 1548+00**

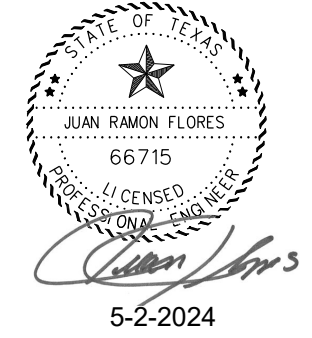
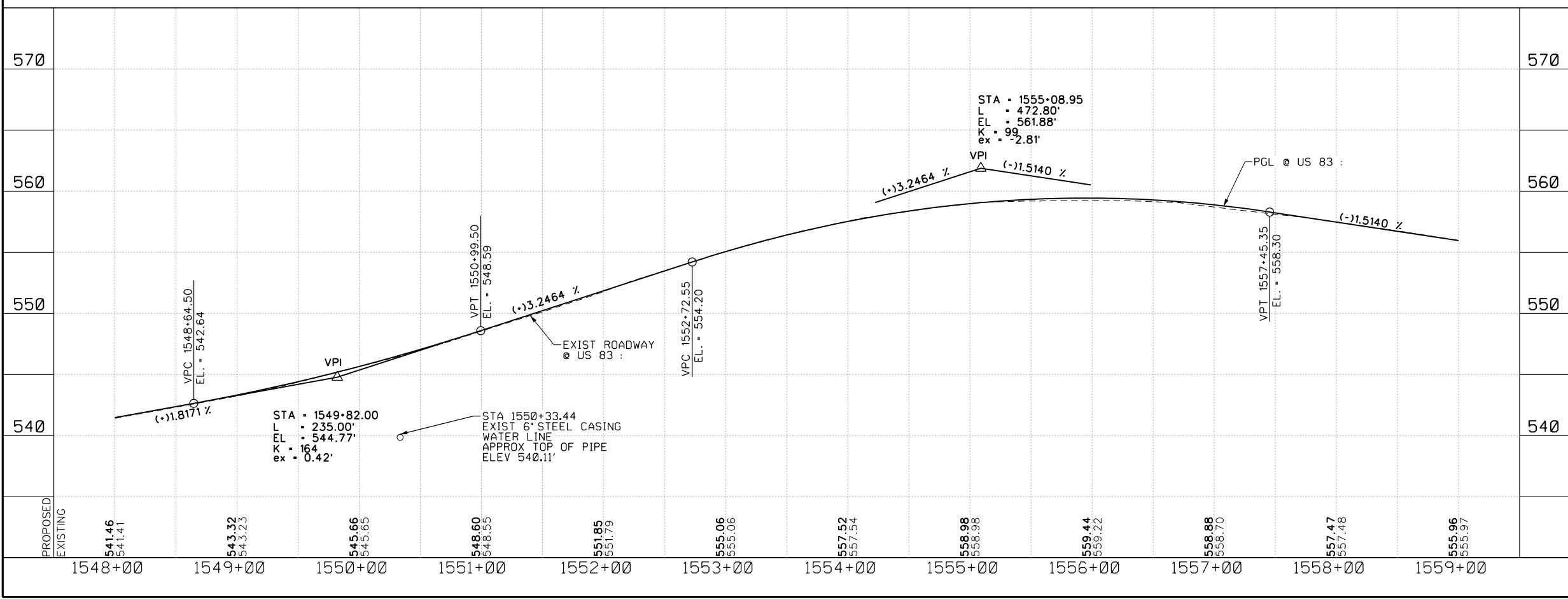
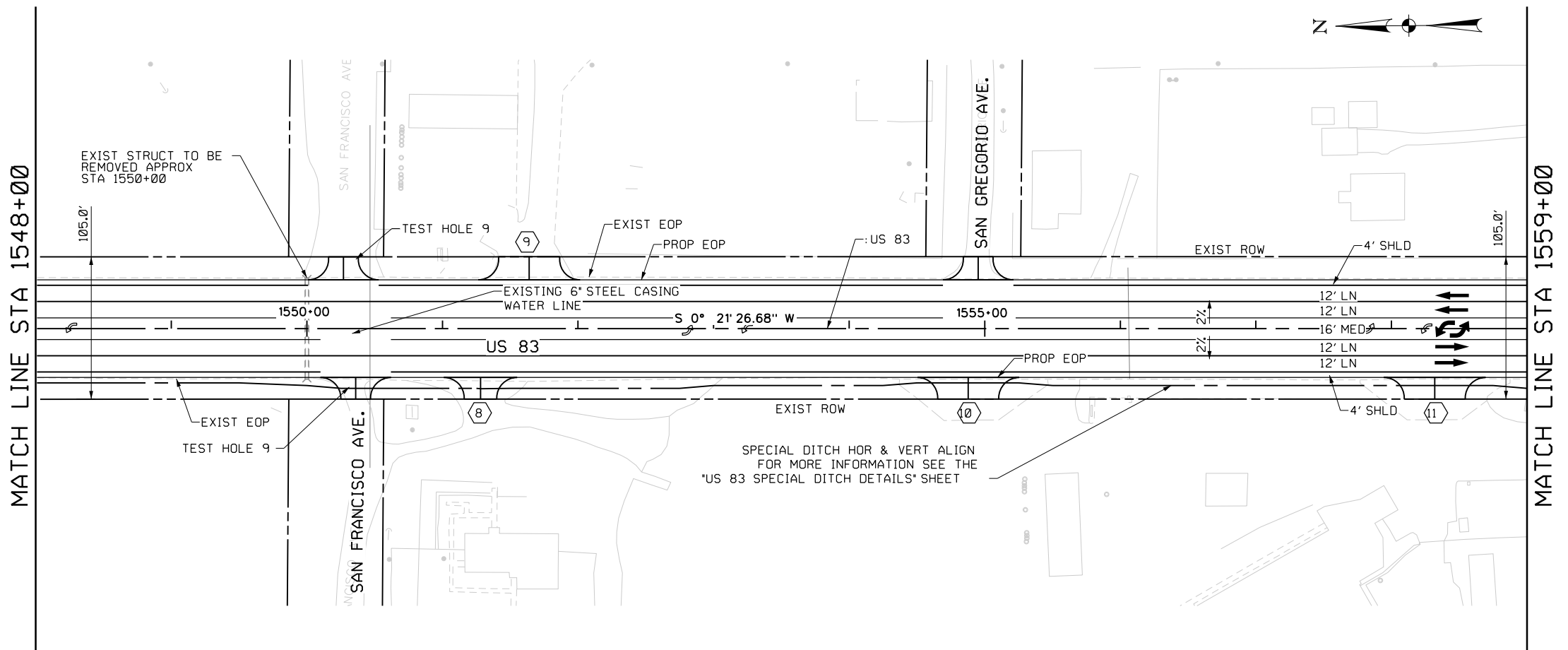
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	111
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

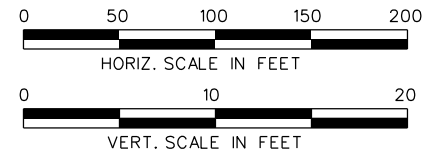
**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	⊗
ALIGNMENT CURVE NAME	⊗ CURVE-NO
LT/RT TURN ARROWS	↵



SHEET 5 OF 55

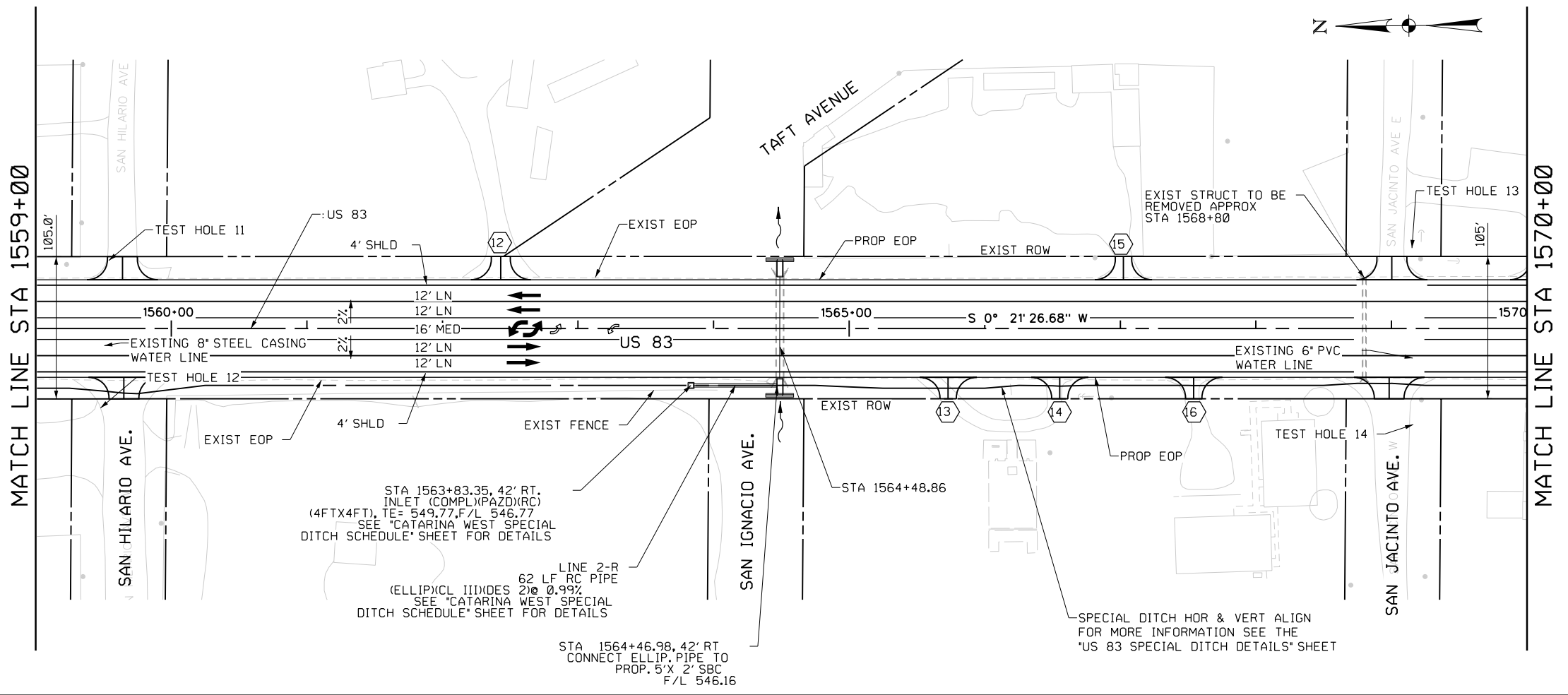
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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US 83 ROADWAY PLAN AND PROFILE STA 1548+00 TO STA 1559+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	112	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	⊗
ALIGNMENT CURVE NAME	⬡ CURVE-NO

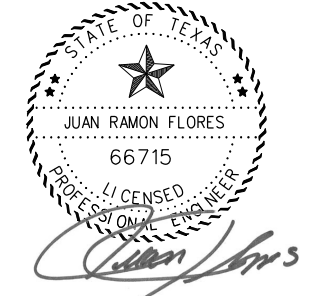
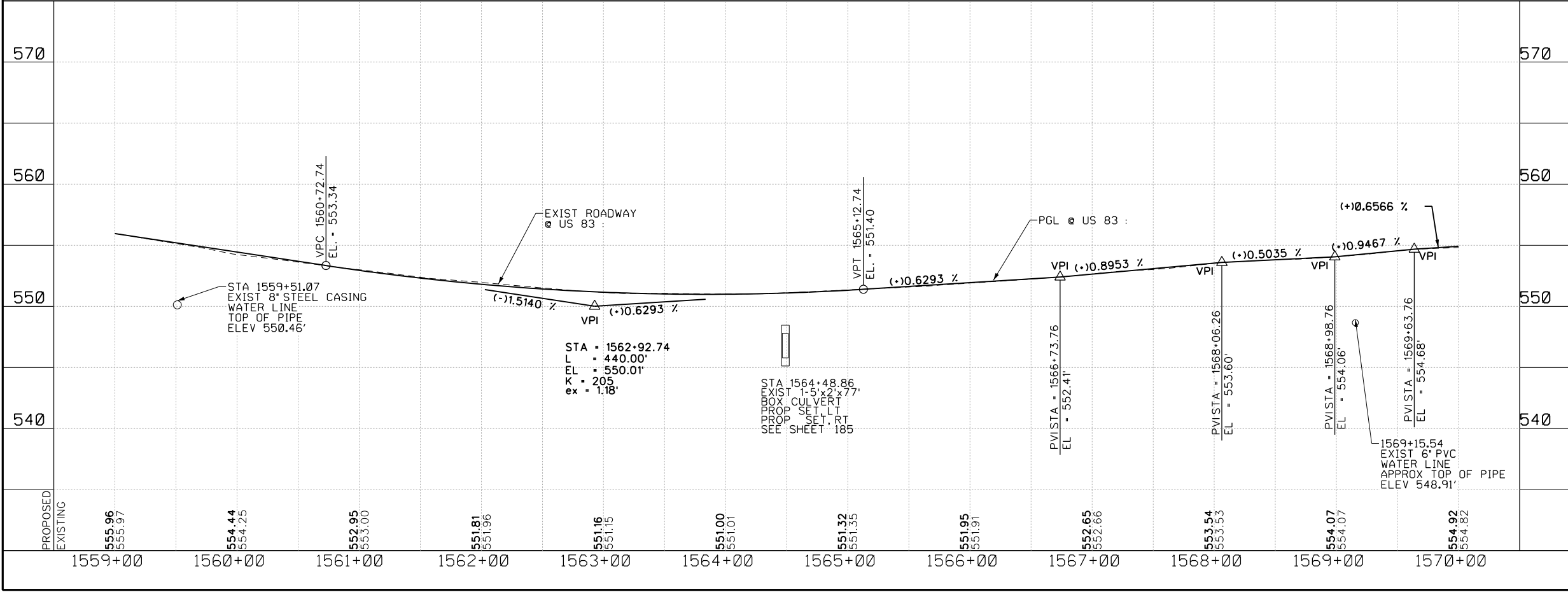


STA 1563+83.35, 42' RT. INLET (COMPL)(PAZD)(RC) (4FTX4FT), TE= 549.77, F/L 546.77 SEE "CATARINA WEST SPECIAL DITCH SCHEDULE" SHEET FOR DETAILS

LINE 2-R 62 LF RC PIPE (ELLIP)(CL III)(DES 2) @ 0.99% SEE "CATARINA WEST SPECIAL DITCH SCHEDULE" SHEET FOR DETAILS

STA 1564+46.98, 42' RT. CONNECT ELLIP. PIPE TO PROP. 5'X 2' SBC F/L 546.16

SPECIAL DITCH HOR & VERT ALIGN FOR MORE INFORMATION SEE THE "US 83 SPECIAL DITCH DETAILS" SHEET



5-2-2024

SHEET 6 OF 55

NO.	REVISIONS	BY	DATE

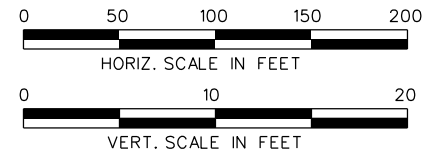
**ARREDONDO, ZEPEDA & BRUNZ, LLC**  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-9900  
 FIRM REGISTRATION No. F-10098

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**US 83 ROADWAY PLAN AND PROFILE STA 1559+00 TO STA 1570+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	113	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

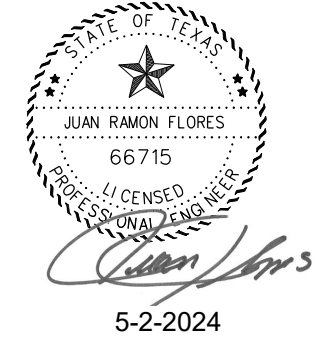
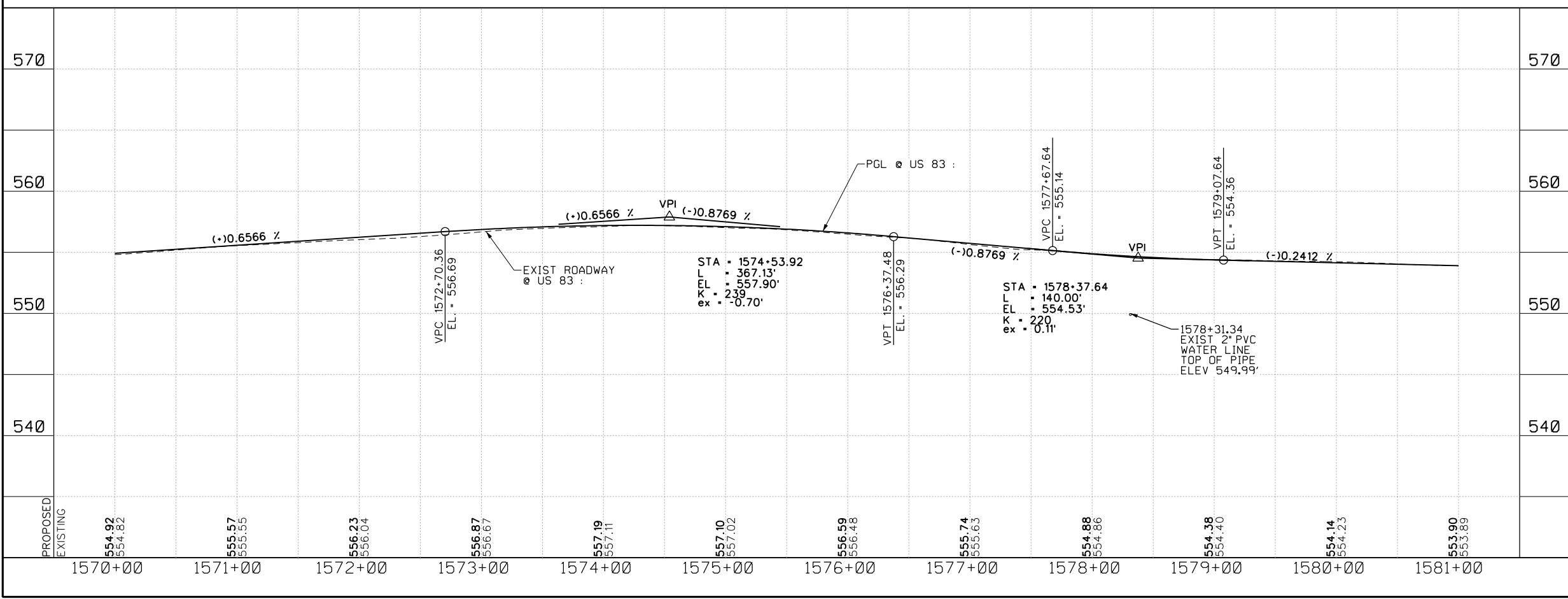
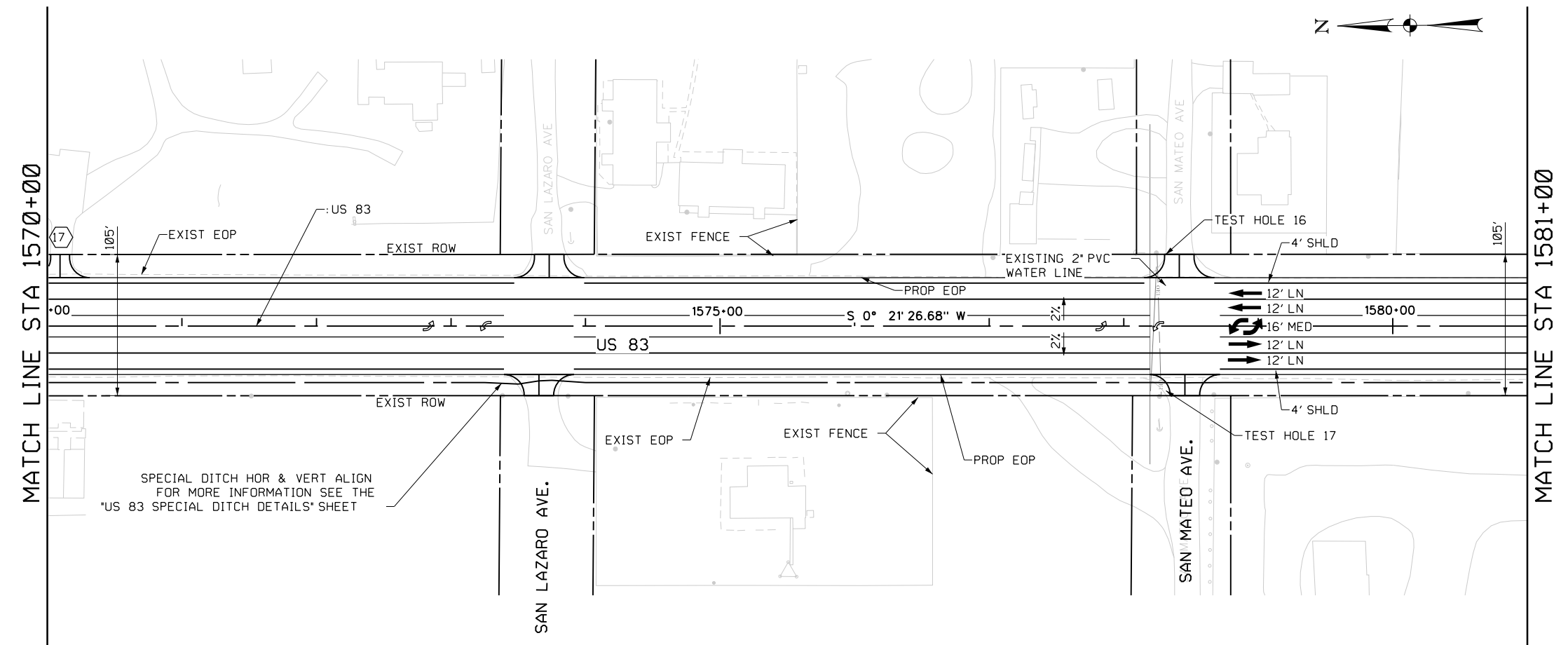




**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

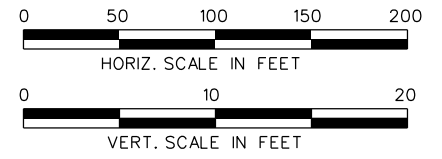
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EXIST ROW	
DIRECTION OF FLOW	
DIRECTION OF TRAFFIC	
DRIVEWAY NUMBER	
ALIGNMENT CURVE NAME	



SHEET 7 OF 55

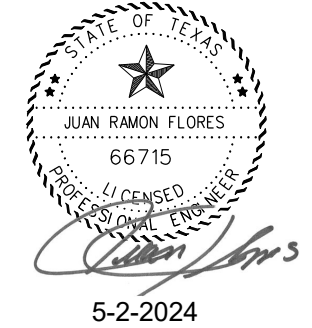
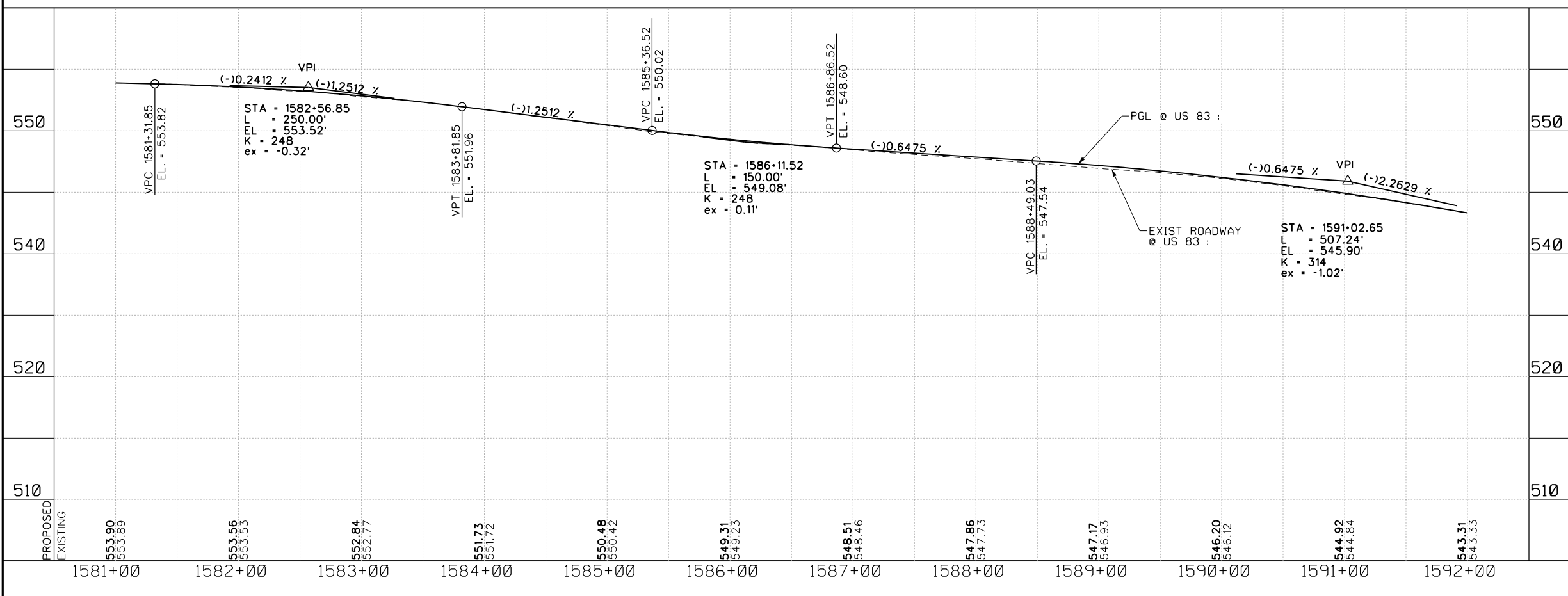
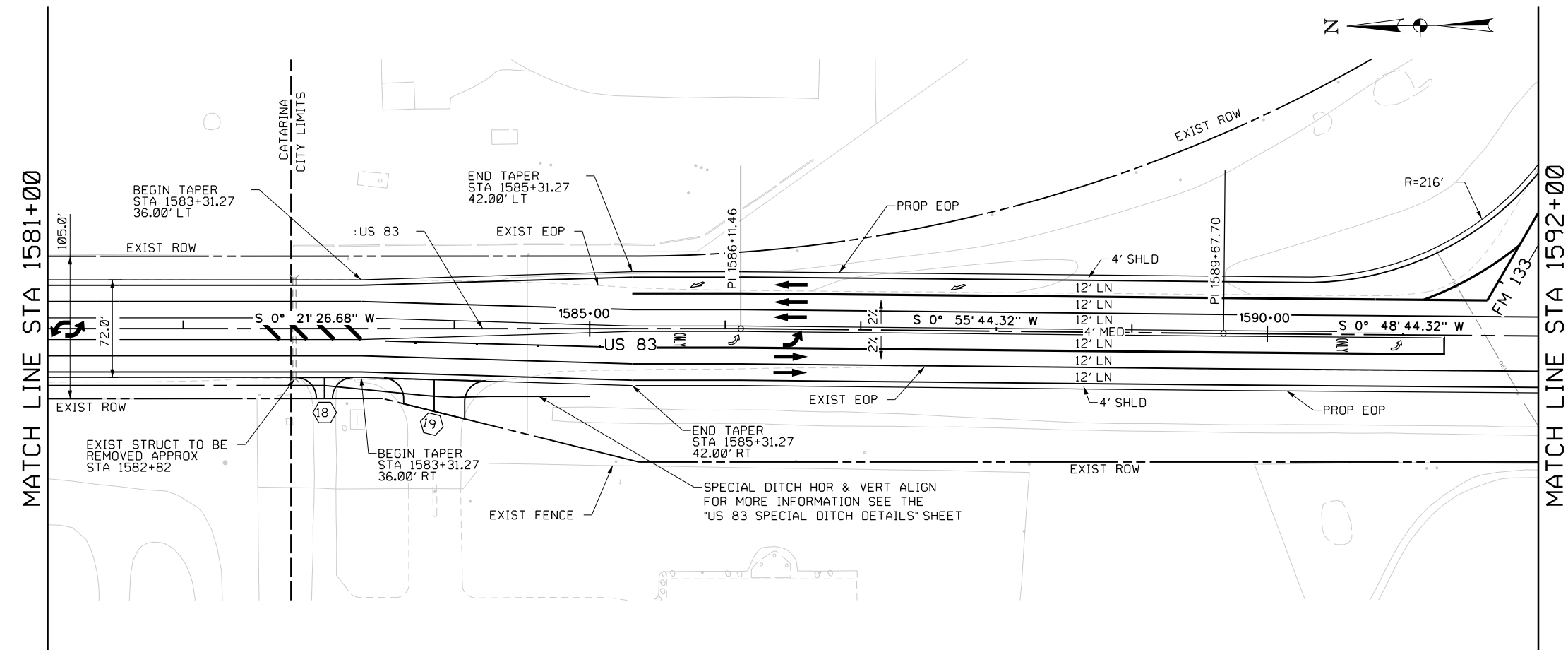
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation; all rights reserved.			
<b>US 83                      ROADWAY                      PLAN AND PROFILE                      STA 1570+00 TO STA 1581+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	114	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

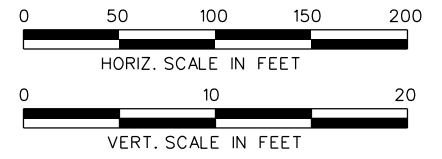
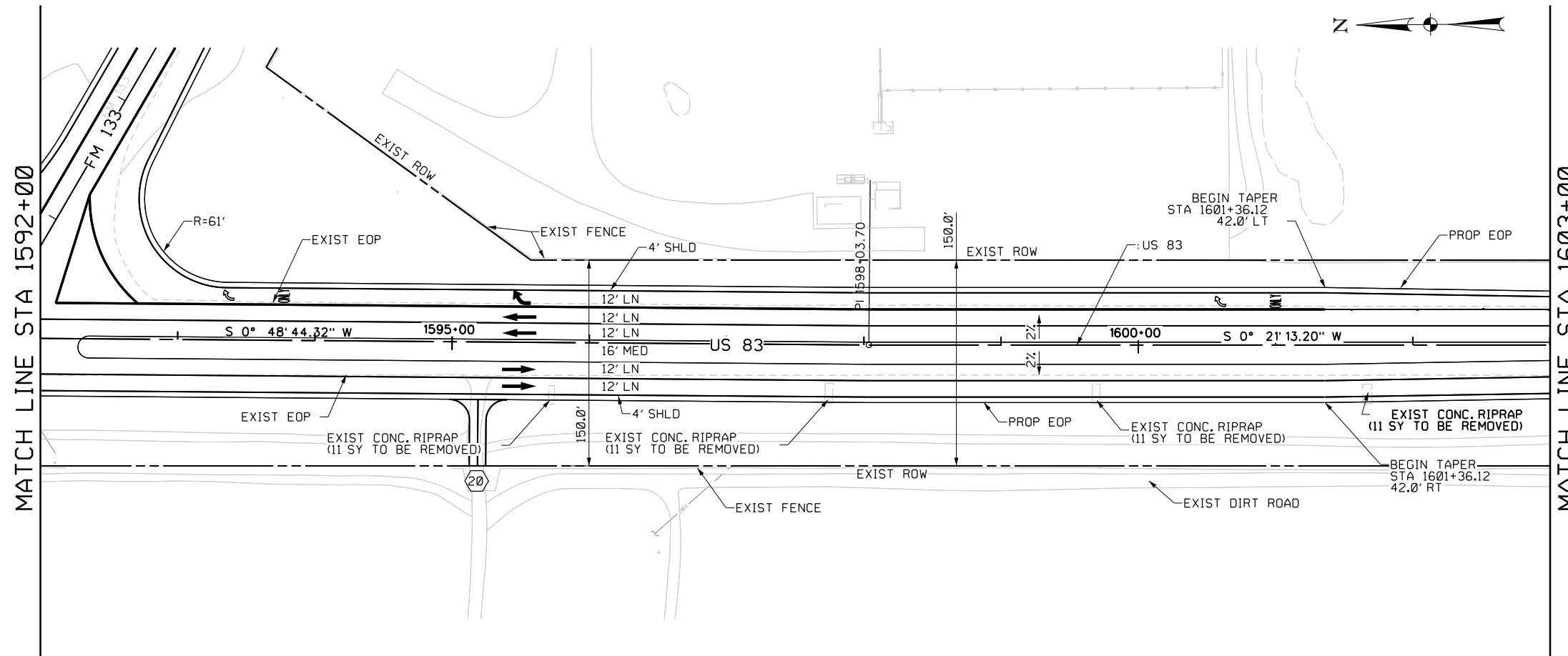
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EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	⊗
ALIGNMENT CURVE NAME	┌ CURVE-NO ┐



SHEET 8 OF 55

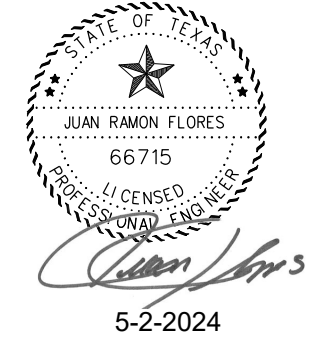
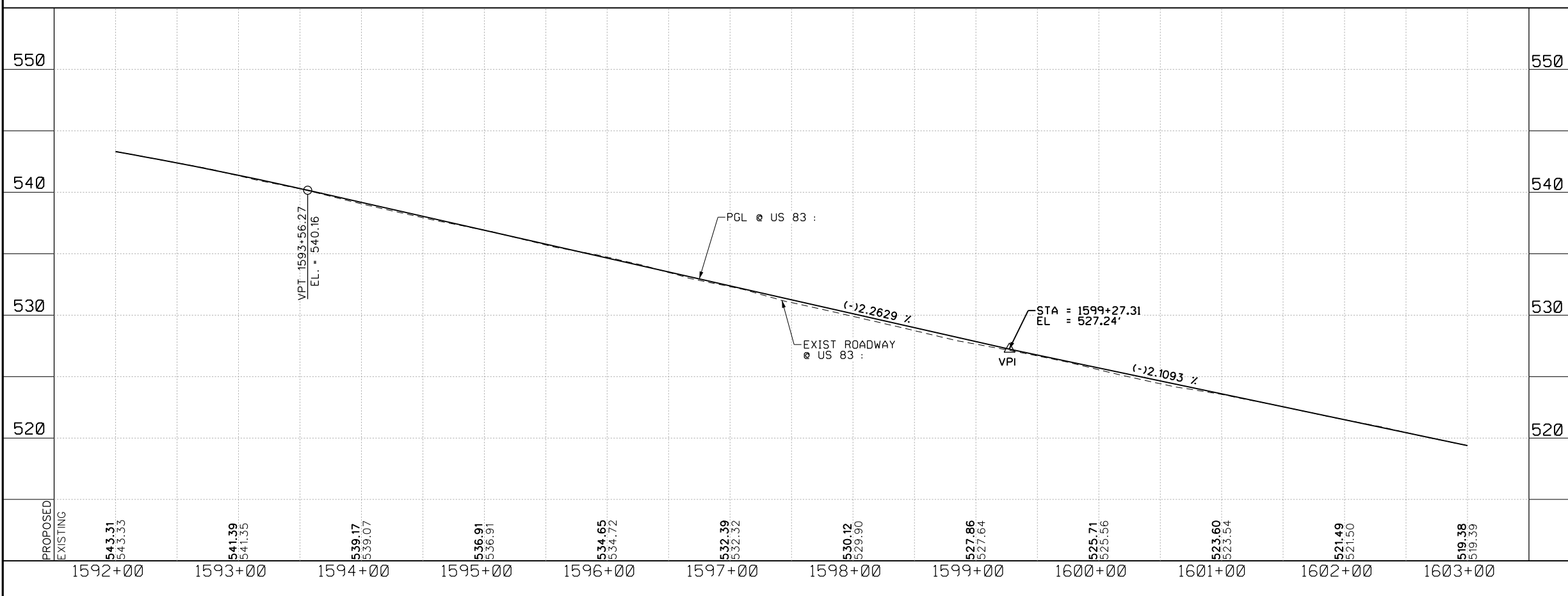
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83                      ROADWAY                      PLAN AND PROFILE                      STA 1581+00 TO STA 1592+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	115	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

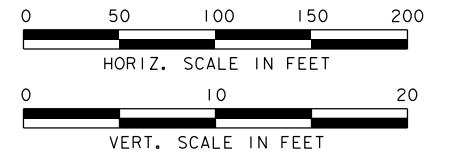
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DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	XX
ALIGNMENT CURVE NAME	CURVE-NO



5-2-2024

SHEET 9 OF 55

REVISIONS			
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83                      ROADWAY                      PLAN AND PROFILE                      STA 1592+00 TO STA 1603+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	116	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



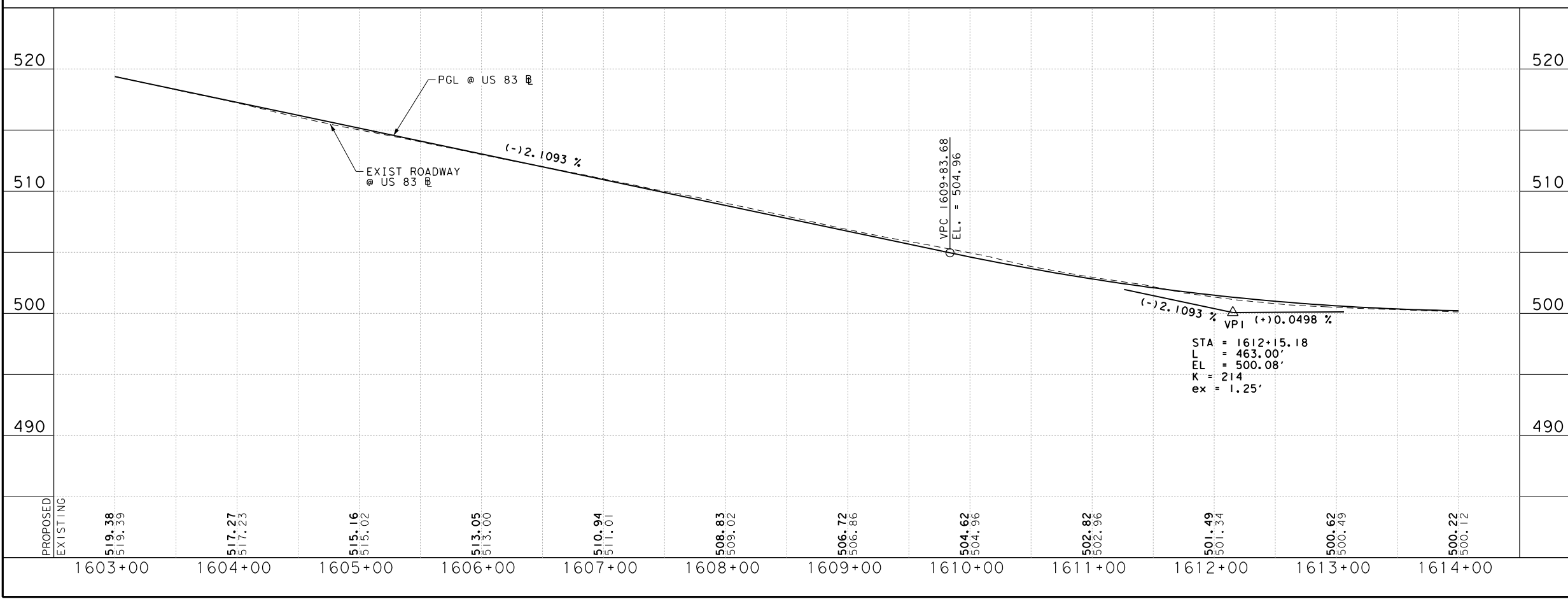
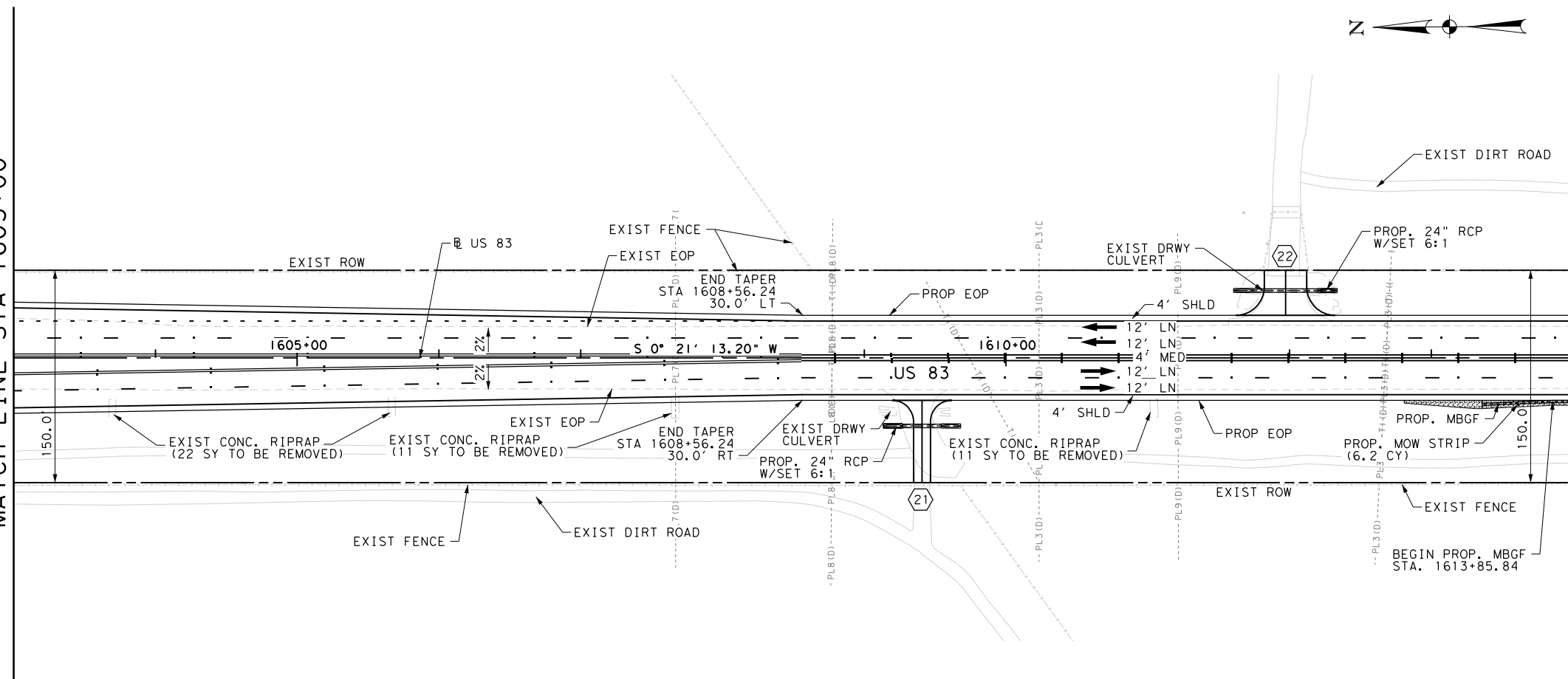
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO

MATCH LINE STA 1603+00

MATCH LINE STA 1614+00

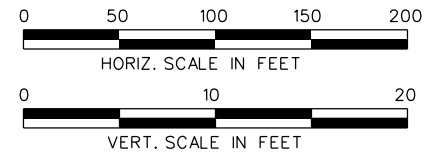


*Juan Flores*

5-2-2024

SHEET 10 OF 55

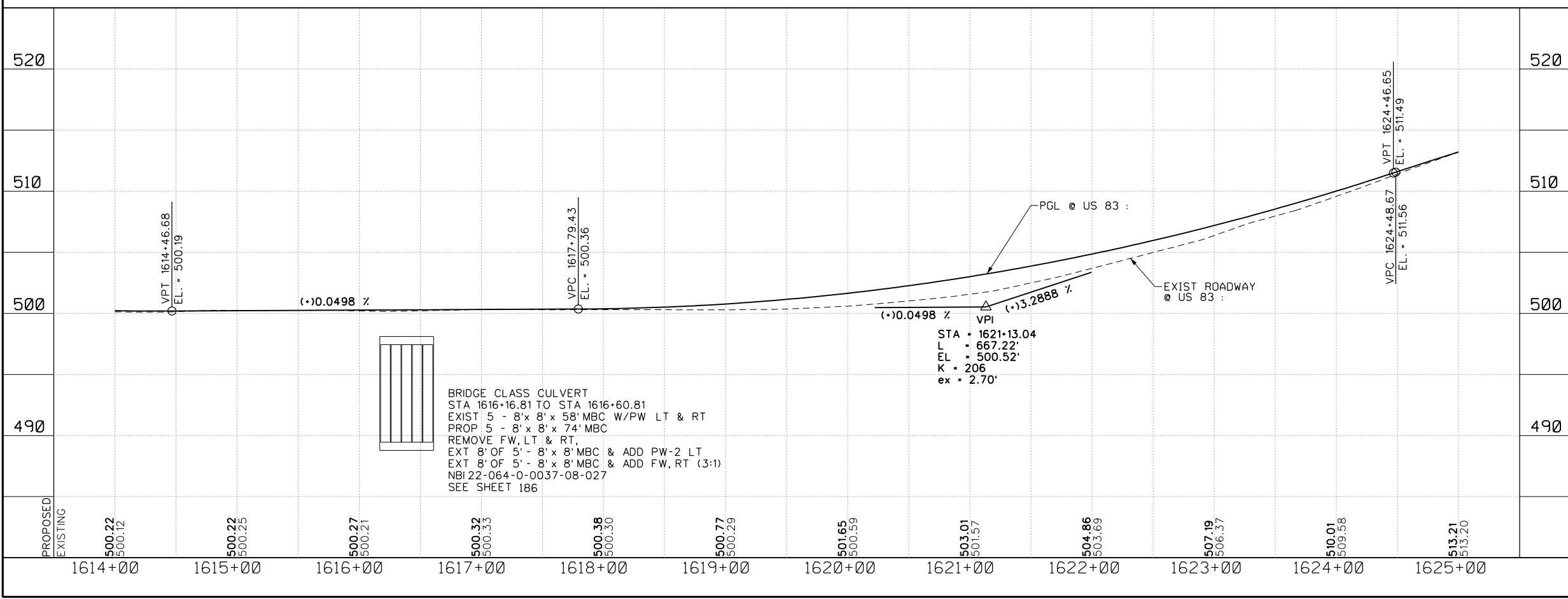
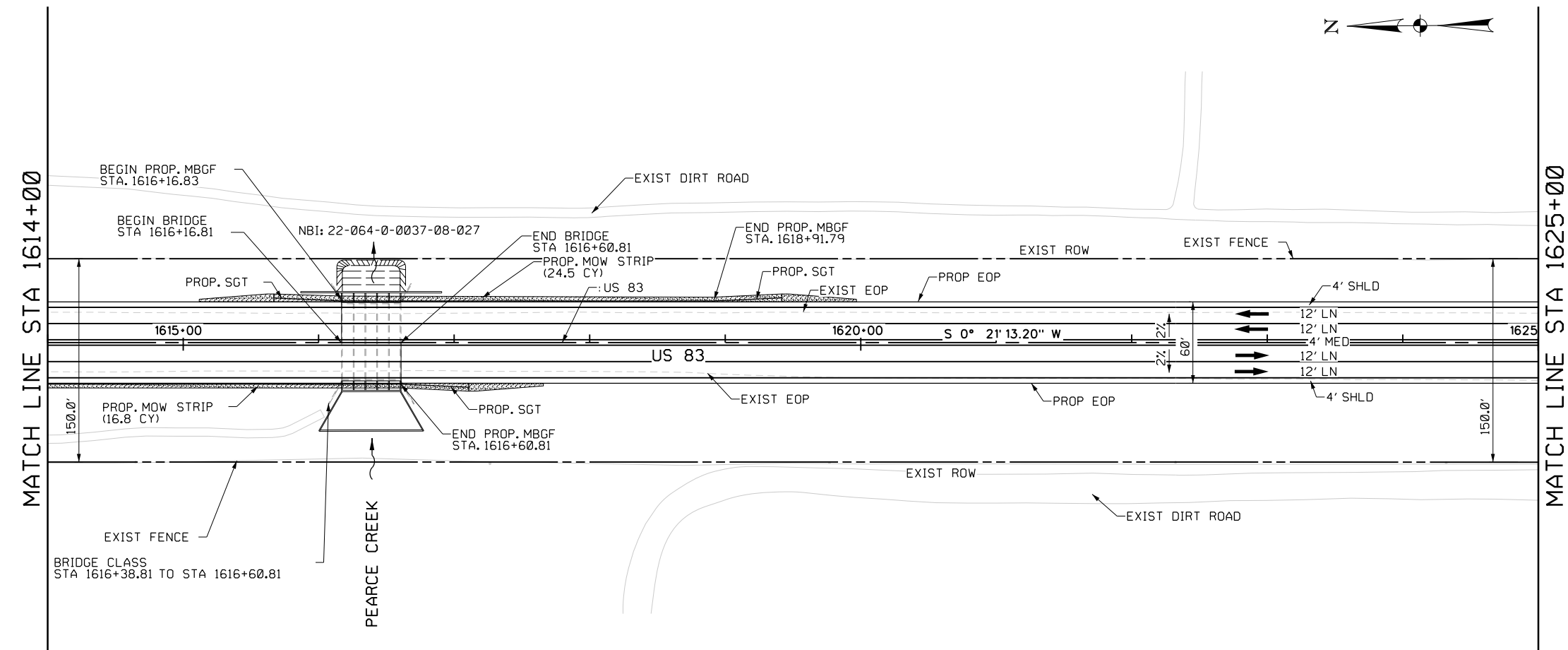
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1603+00 TO STA 1614+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	117	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



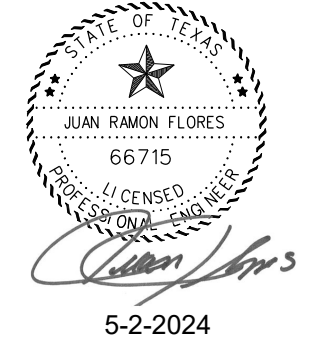
**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	⊗
ALIGNMENT CURVE NAME	CURVE-NO

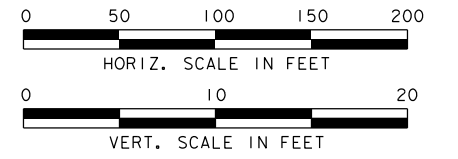


BRIDGE CLASS CULVERT  
 STA 1616+16.81 TO STA 1616+60.81  
 EXIST 5 - 8' x 8' x 58' MBC W/PW LT & RT  
 PROP 5 - 8' x 8' x 74' MBC  
 REMOVE FW, LT & RT.  
 EXT 8' OF 5' - 8' x 8' MBC & ADD PW-2 LT  
 EXT 8' OF 5' - 8' x 8' MBC & ADD FW, RT (3:1)  
 NBI 22-064-0-0037-08-027  
 SEE SHEET 186



SHEET 11 OF 55

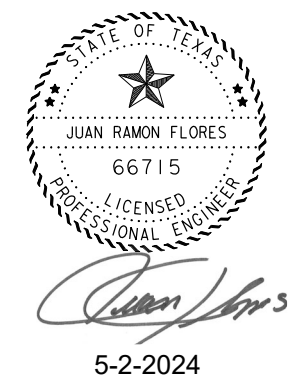
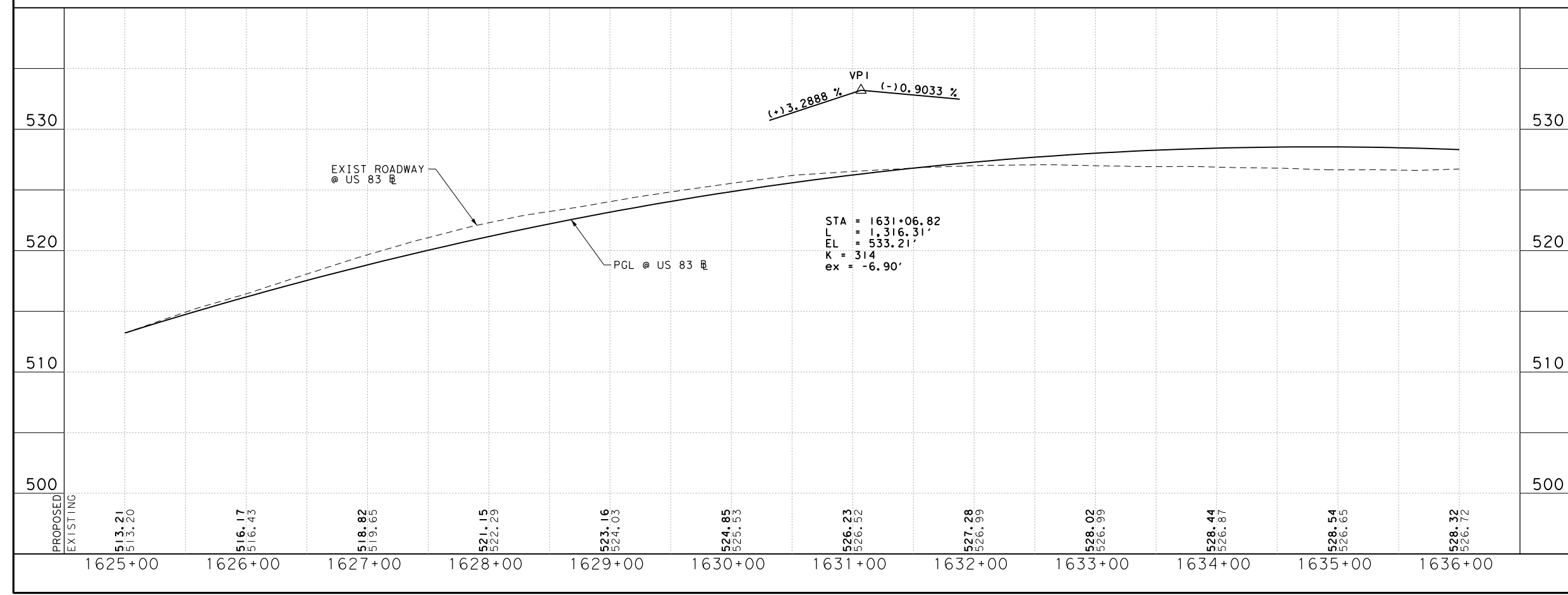
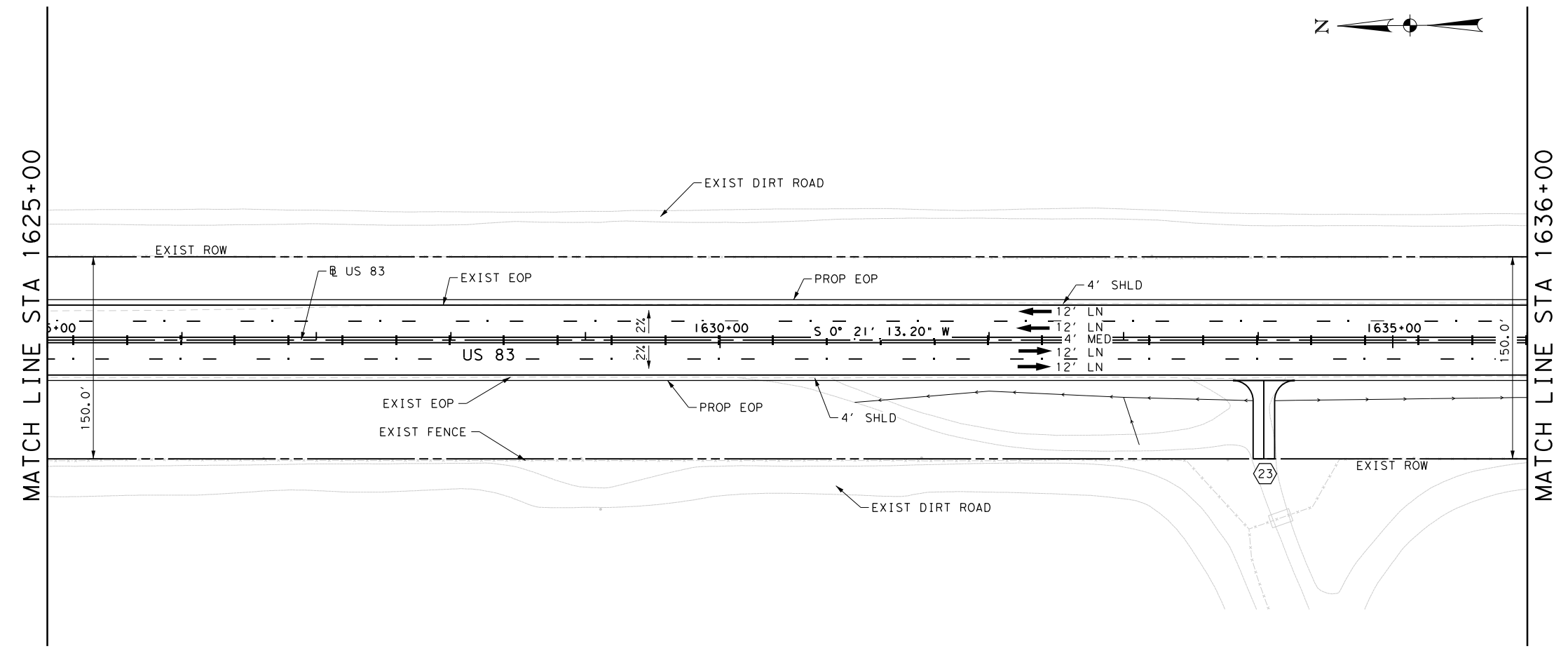
NO.	REVISIONS	BY	DATE
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Texas Department of Transportation ©2024 by Texas Department of Transportation; all rights reserved.			
<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1614+00 TO STA 1625+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	118	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

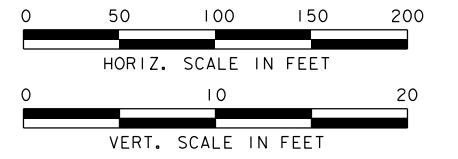
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EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



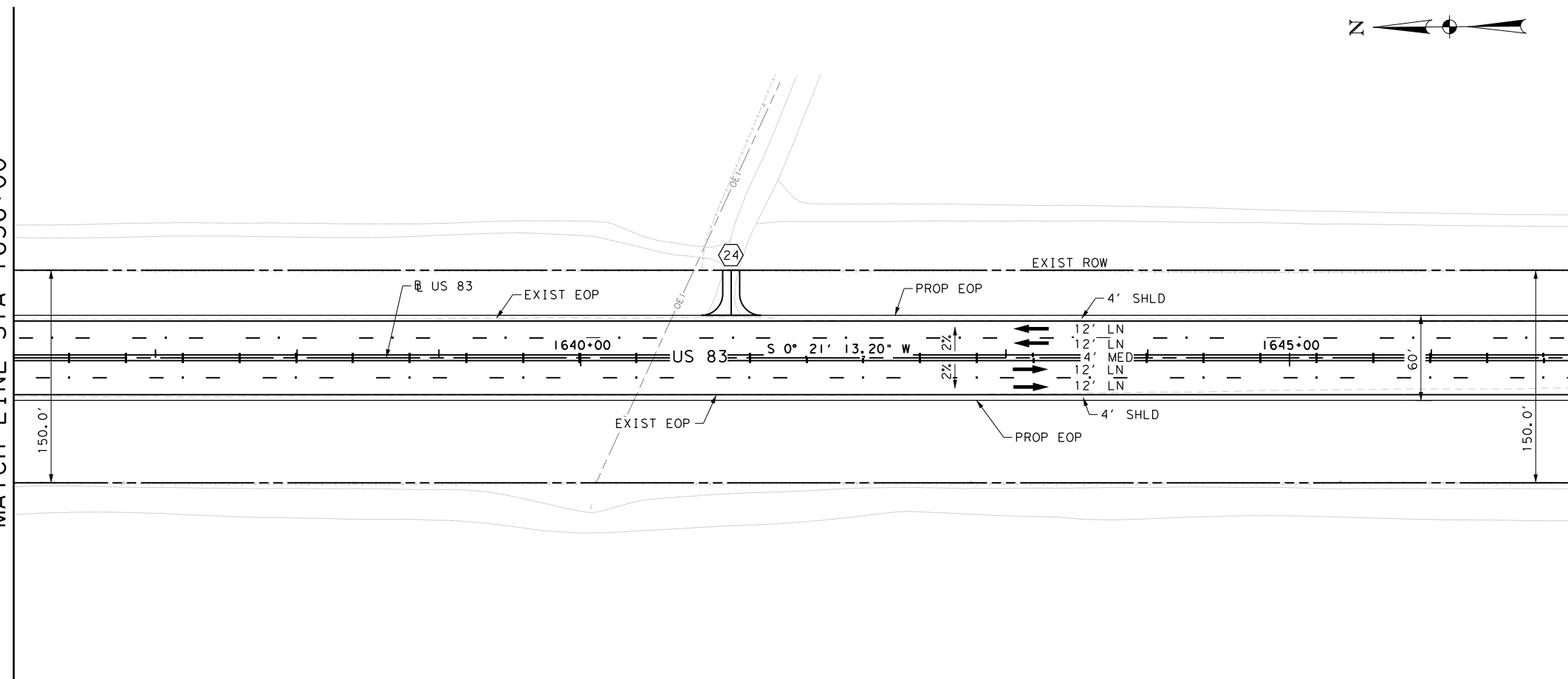
SHEET 12 OF 55

NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1625+00 TO STA 1636+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	119	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



MATCH LINE STA 1636+00

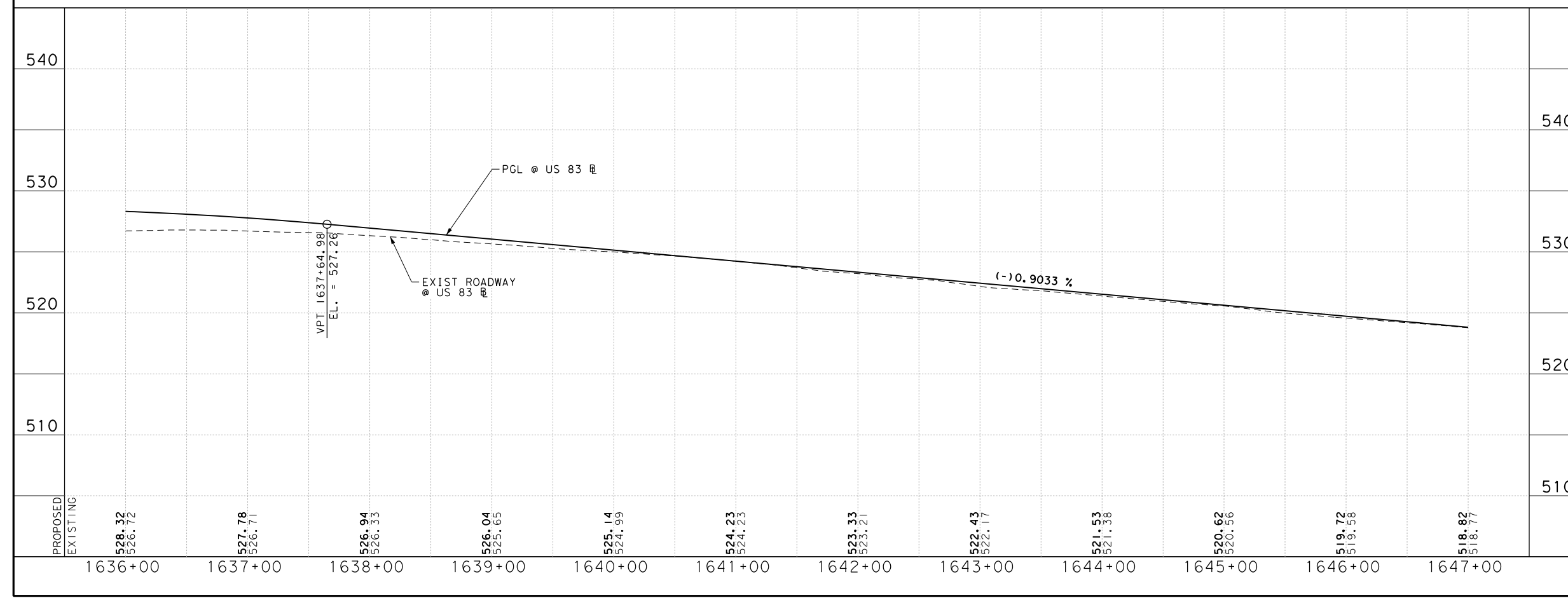
MATCH LINE STA 1647+00



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

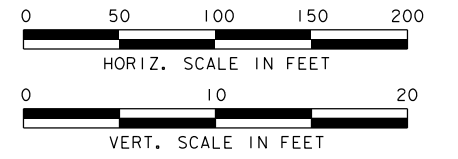
EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



*Juan Flores*  
5-2-2024

SHEET 13 OF 55

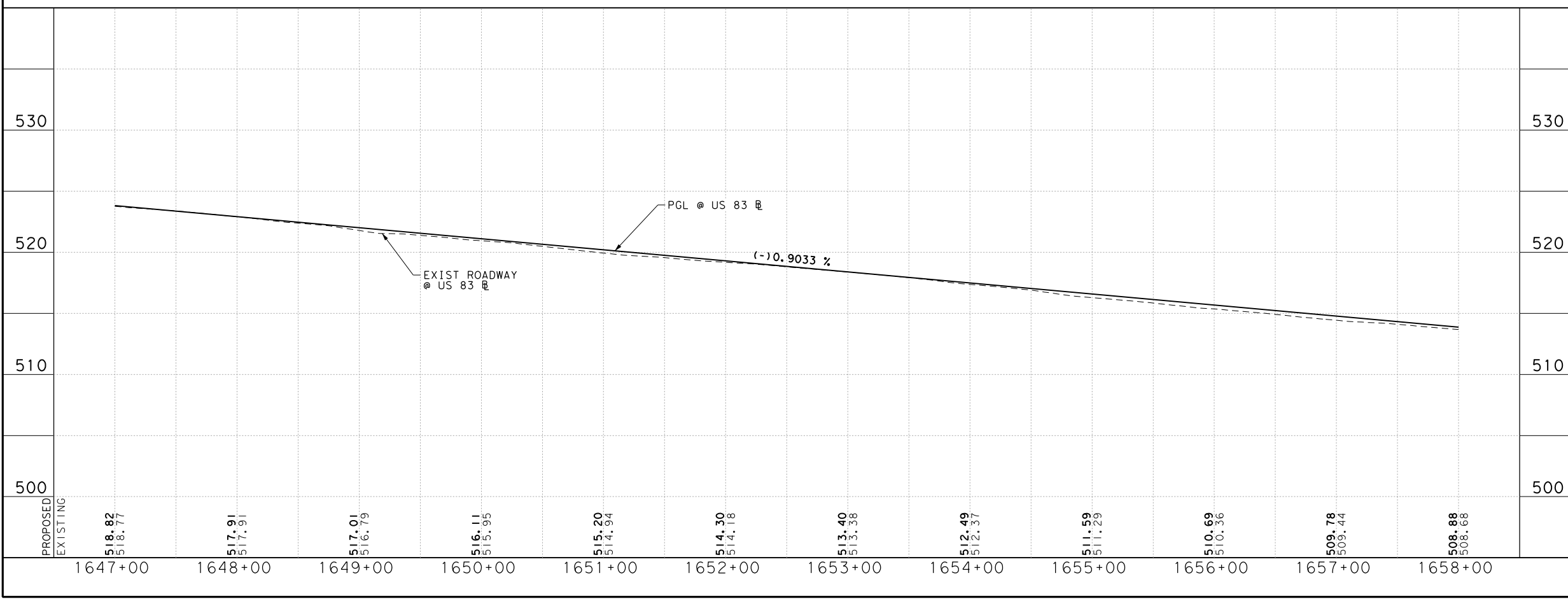
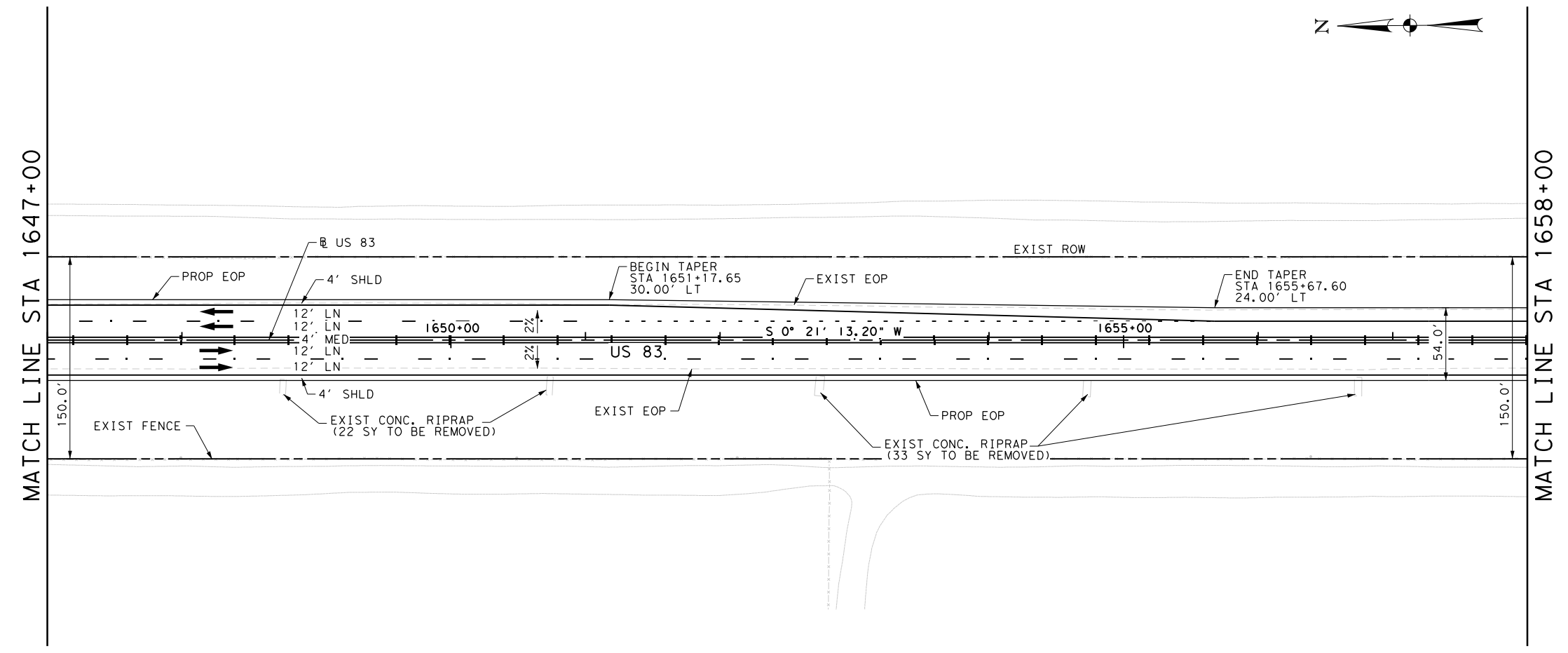
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY PLAN AND PROFILE STA 1636+00 TO STA 1647+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		120
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

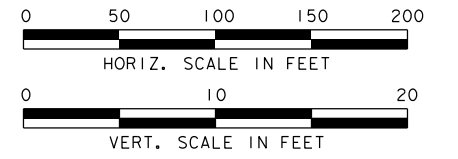
- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



SHEET 14 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1647+00 TO STA 1658+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		121
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

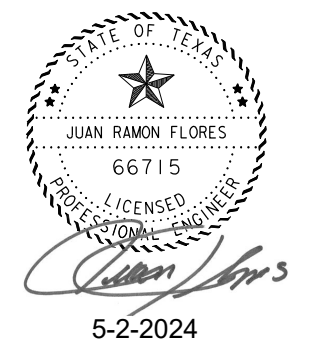
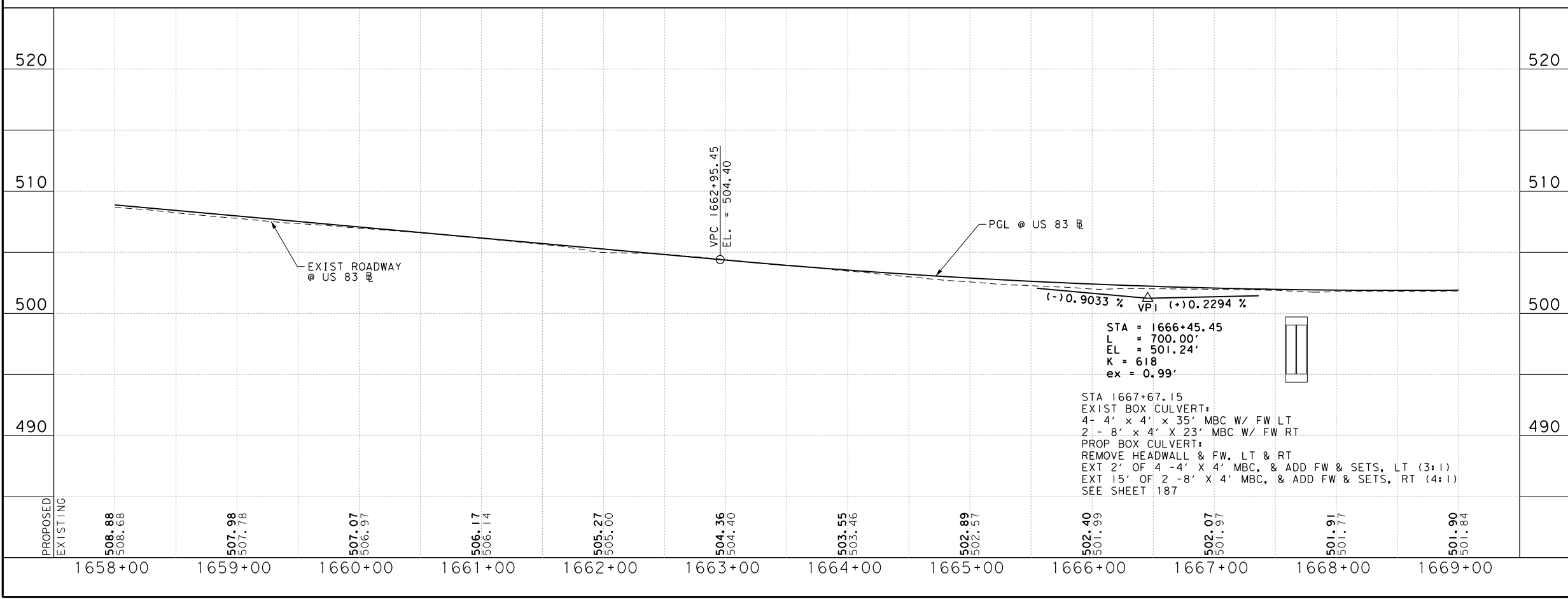
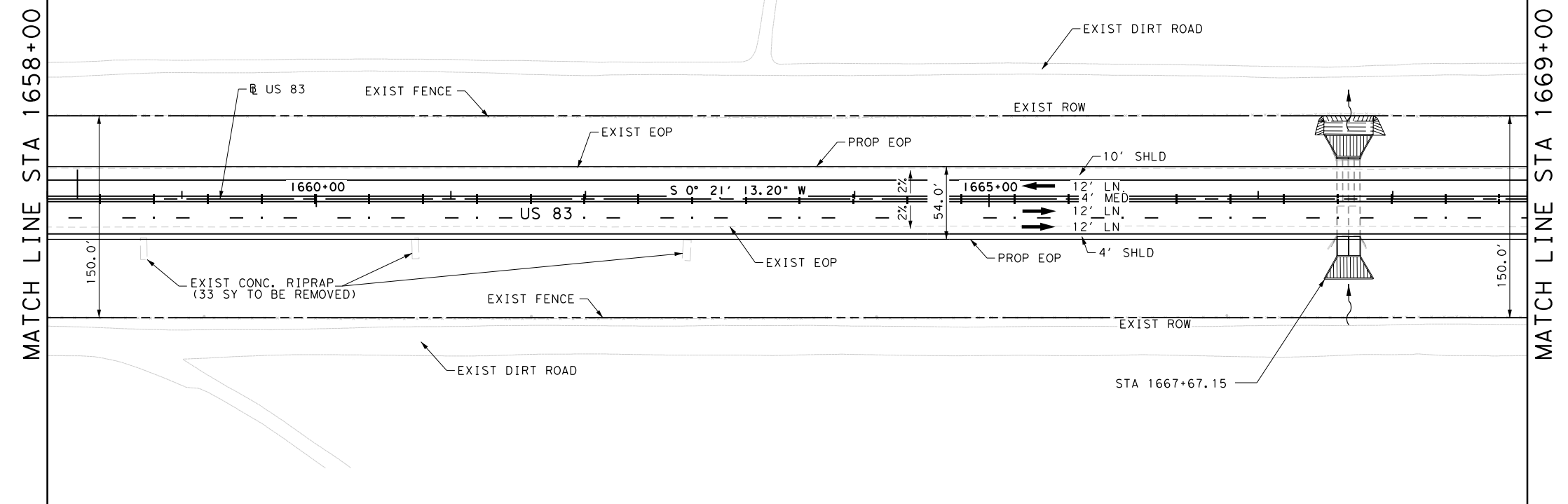




- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 15 OF 55

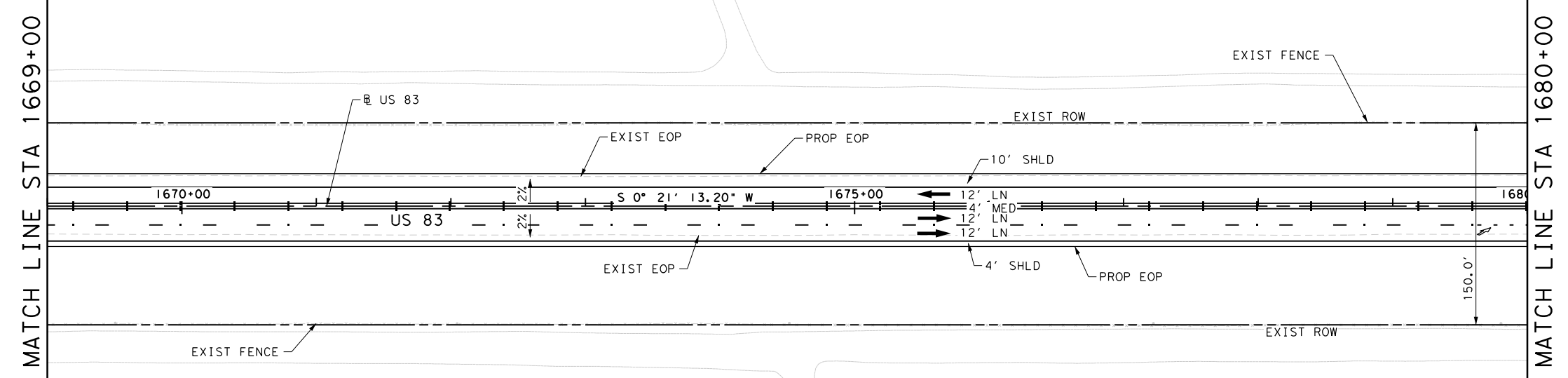
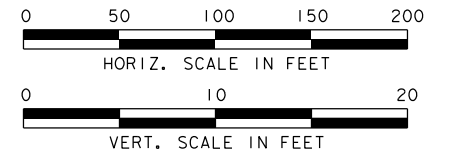
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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**US 83  
ROADWAY  
PLAN AND PROFILE  
STA 1658+00 TO STA 1669+00**

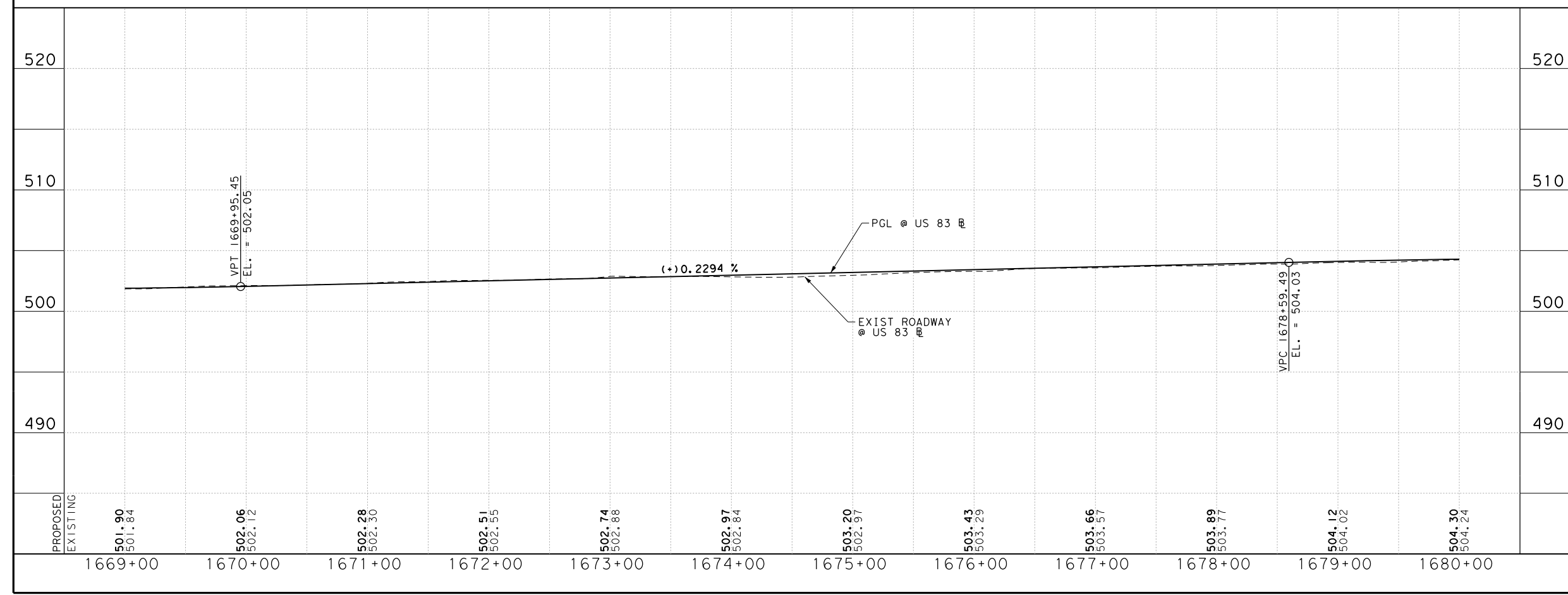
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42	SHEET NO. 122
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT
CONTROL 0037	SECTION 08	JOB 042, ETC.
		HIGHWAY NO. US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

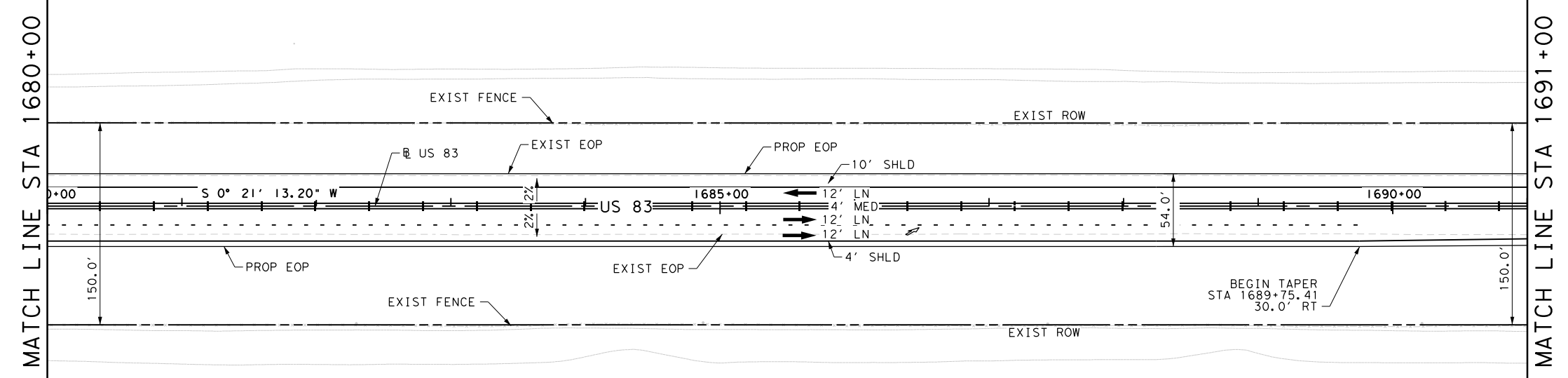
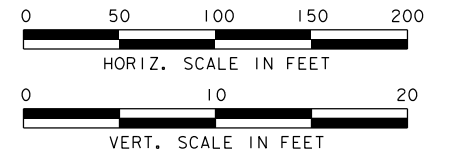
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EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	[CURVE-NO]



SHEET 16 OF 55

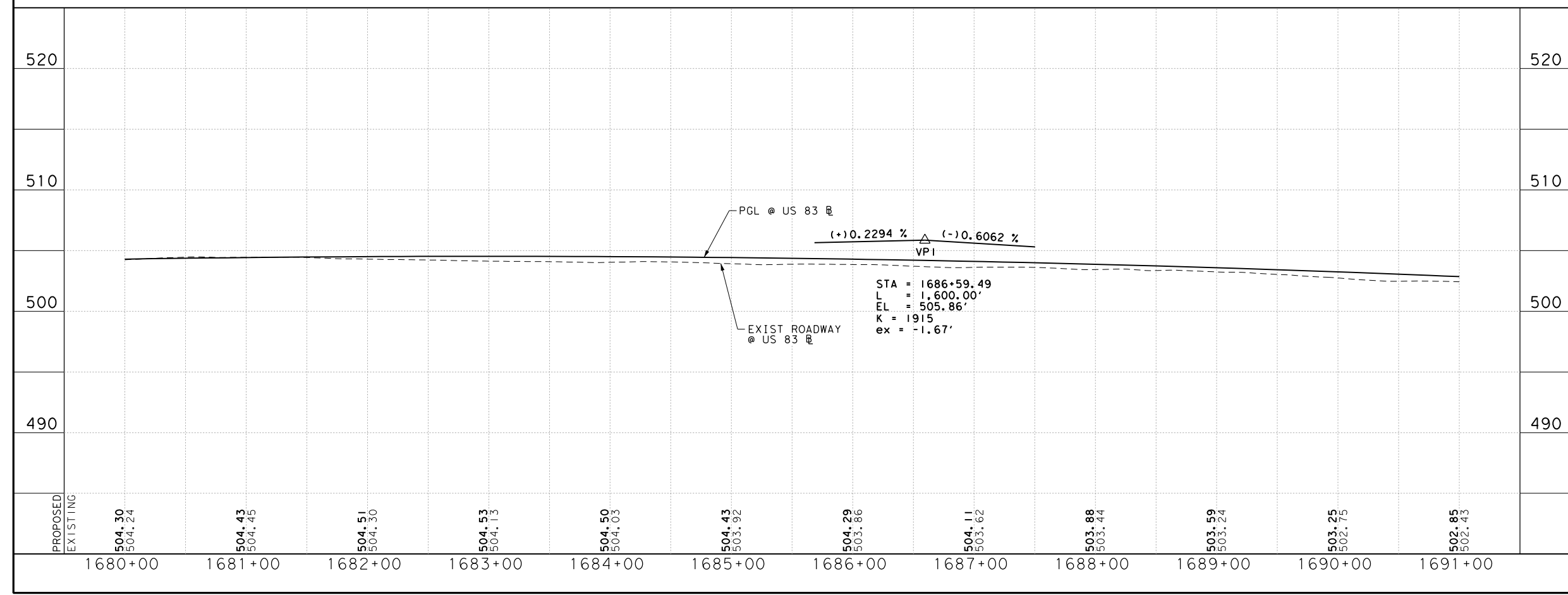
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1669+00 TO STA 1680+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	123	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

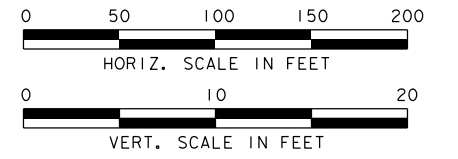
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EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 17 OF 55

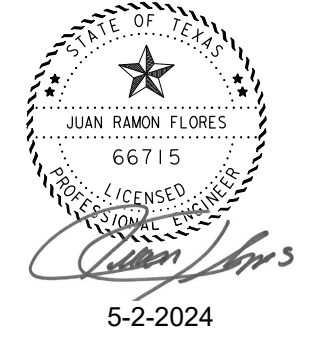
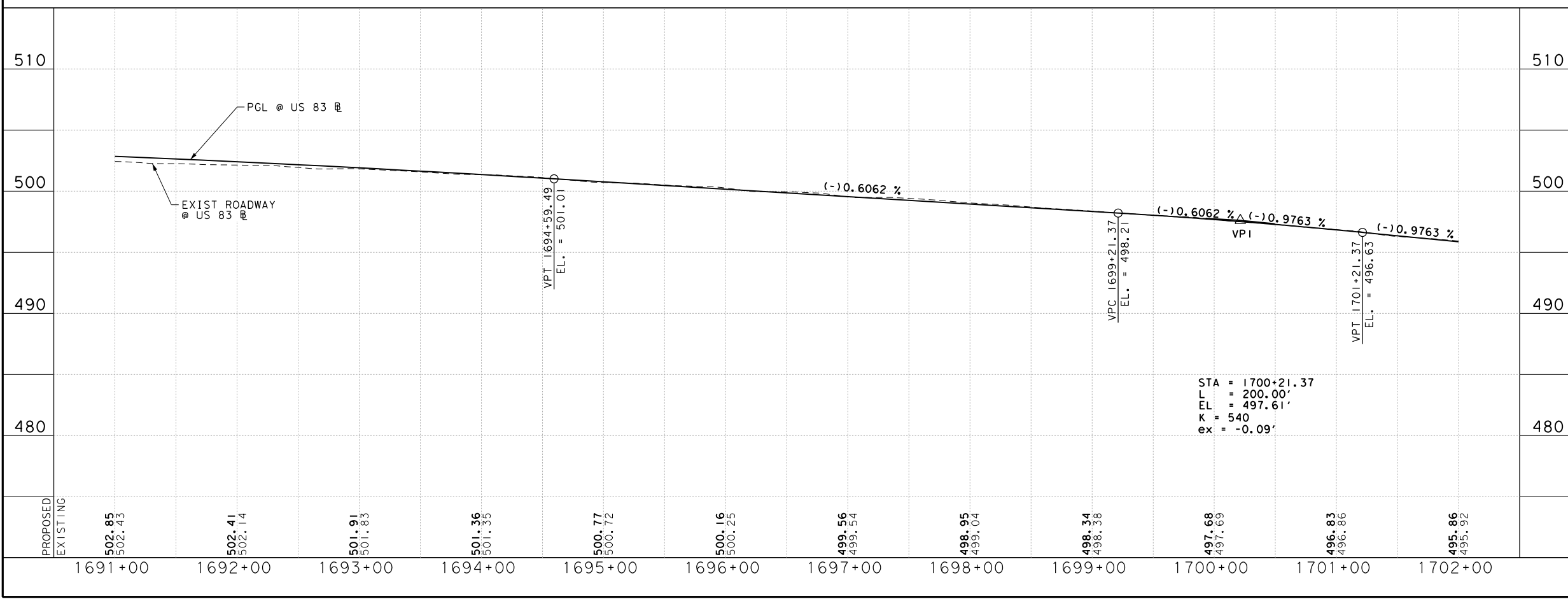
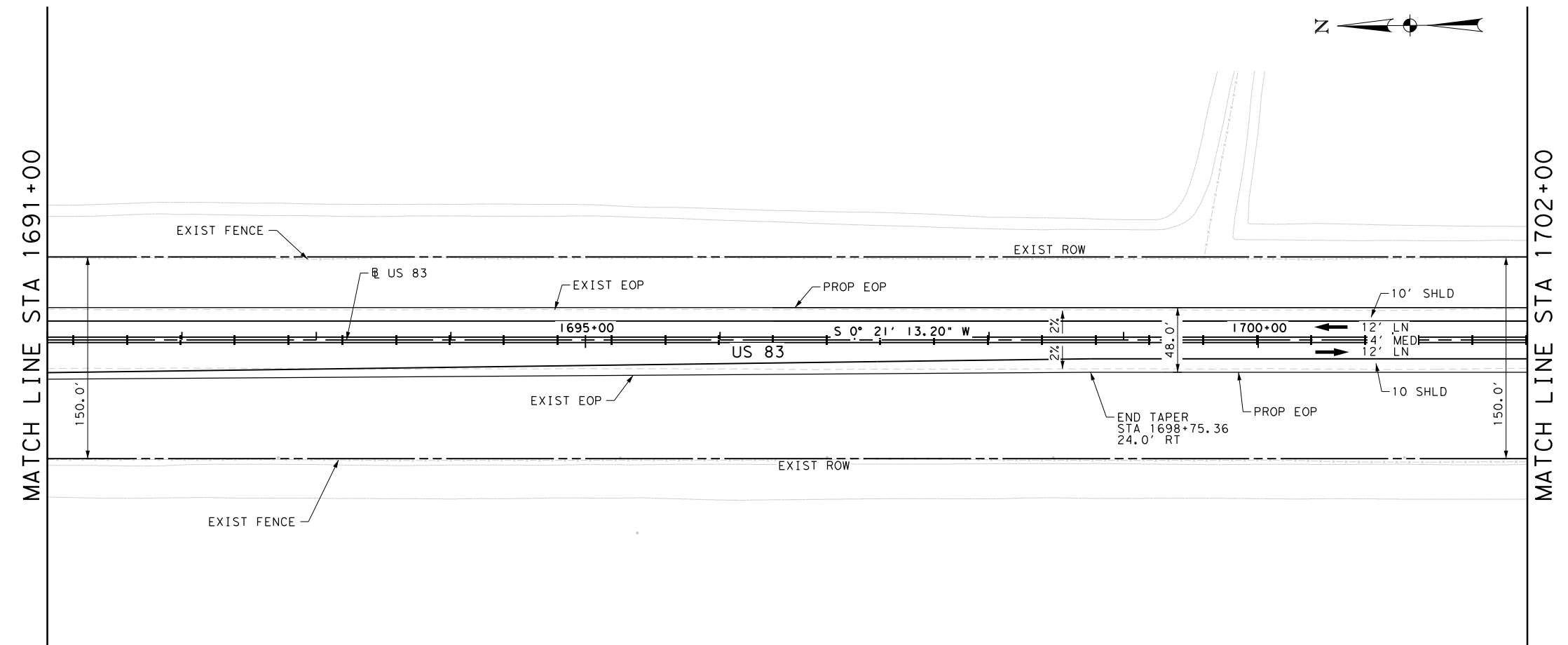
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1680+00 TO STA 1691+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	124	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

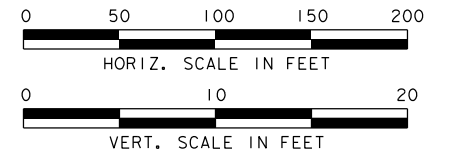
**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 18 OF 55

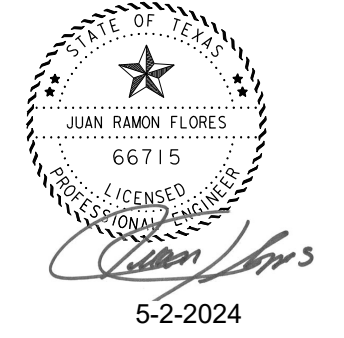
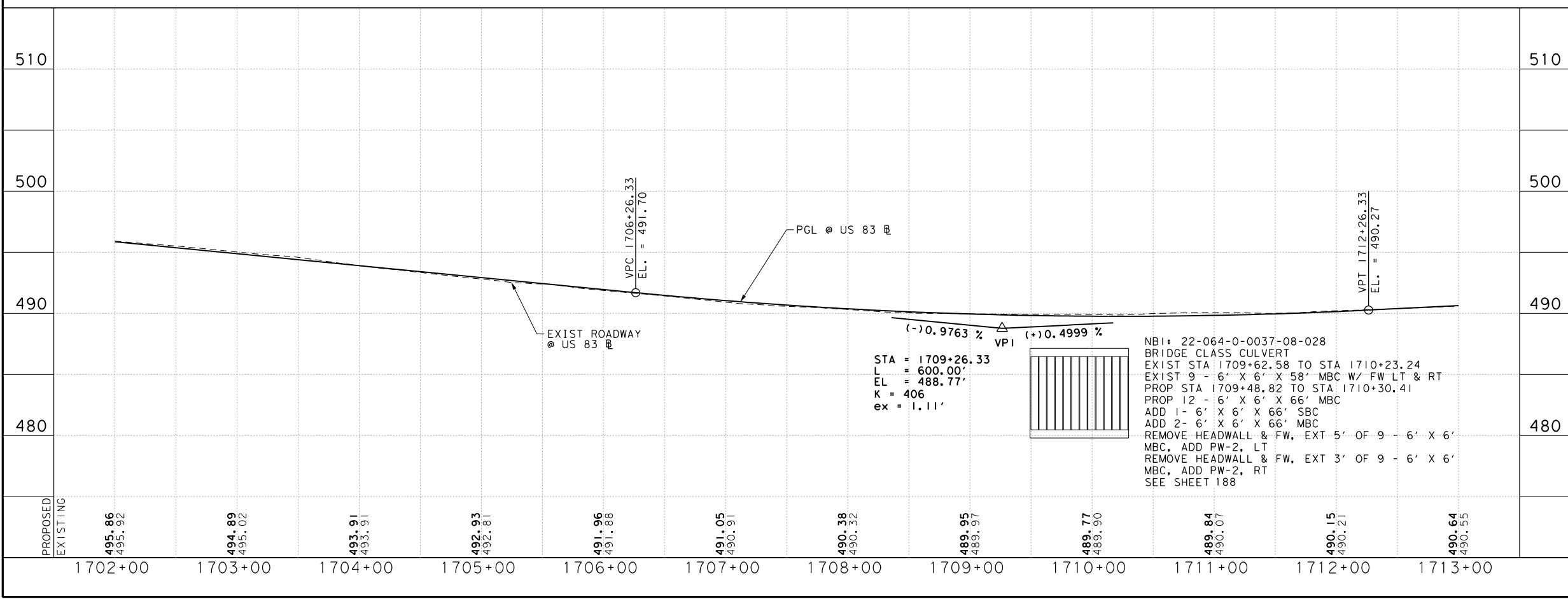
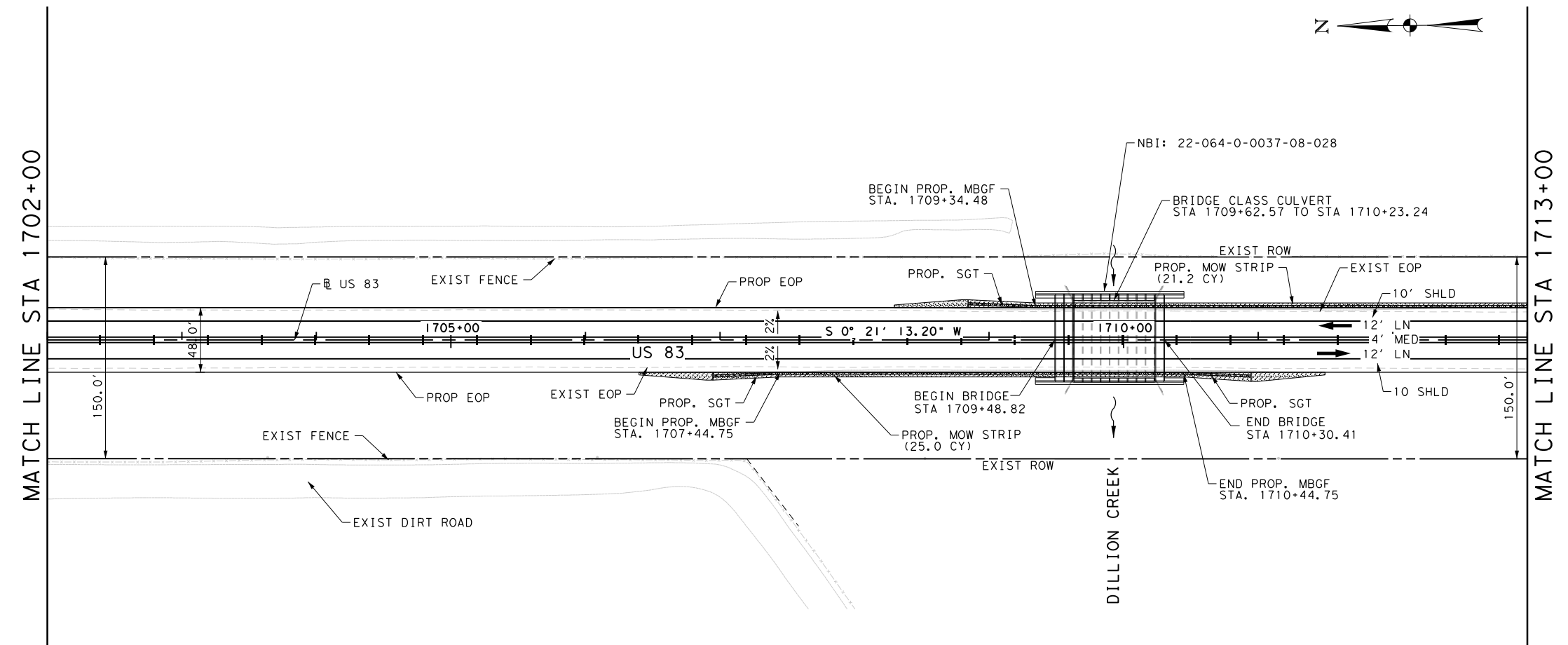
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1691+00 TO STA 1702+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	125	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

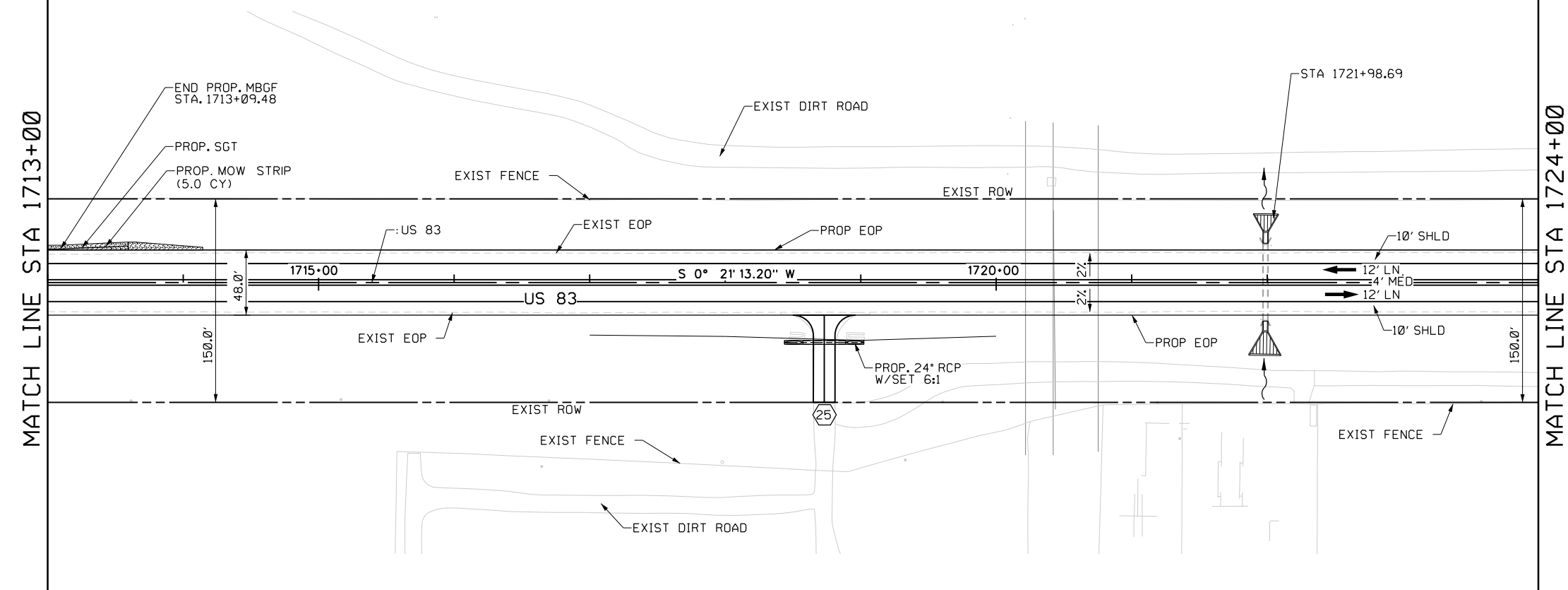
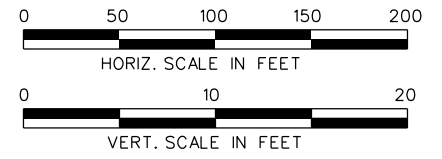
**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 19 OF 55

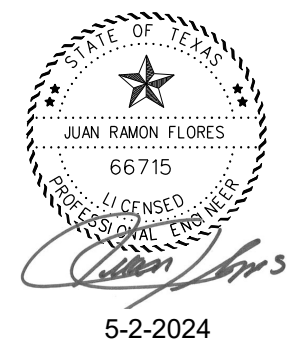
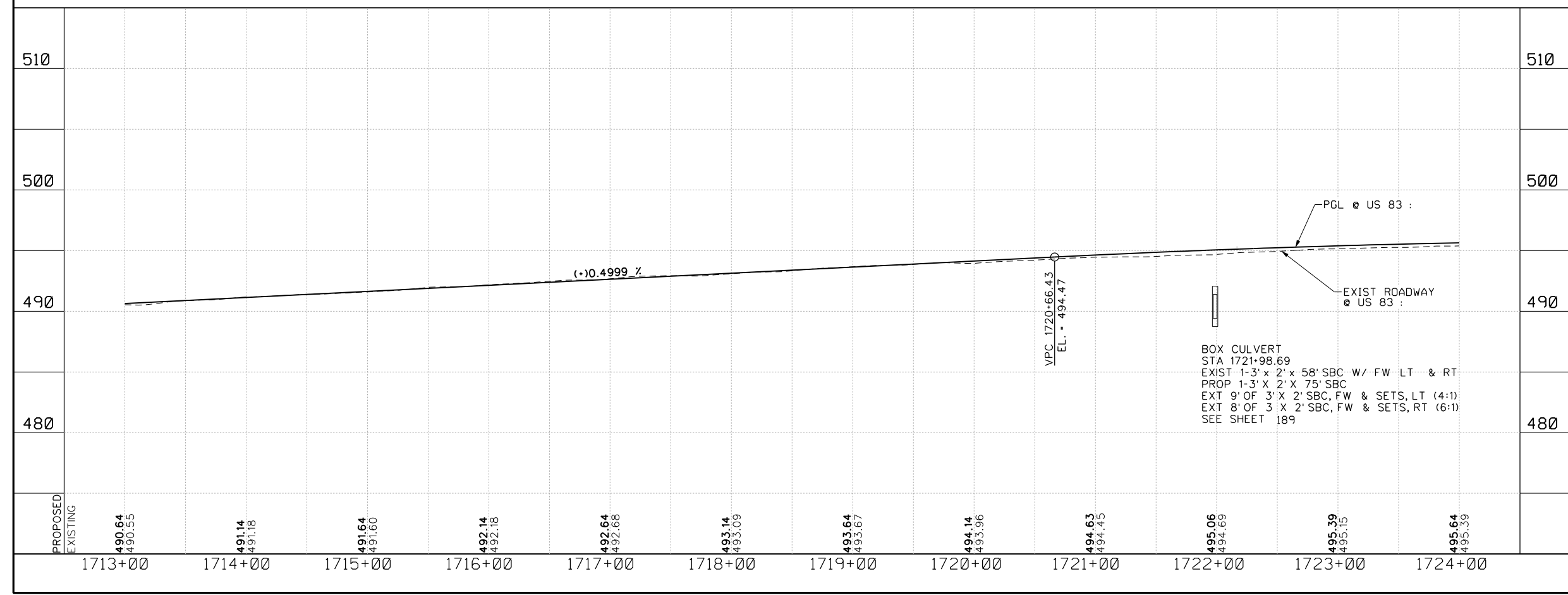
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1702+00 TO STA 1713+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		126
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	
DIRECTION OF FLOW	
DIRECTION OF TRAFFIC	
DRIVEWAY NUMBER	
ALIGNMENT CURVE NAME	



SHEET 20 OF 55

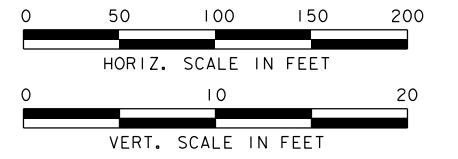
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-9900  
 FIRM REGISTRATION No. F-10098

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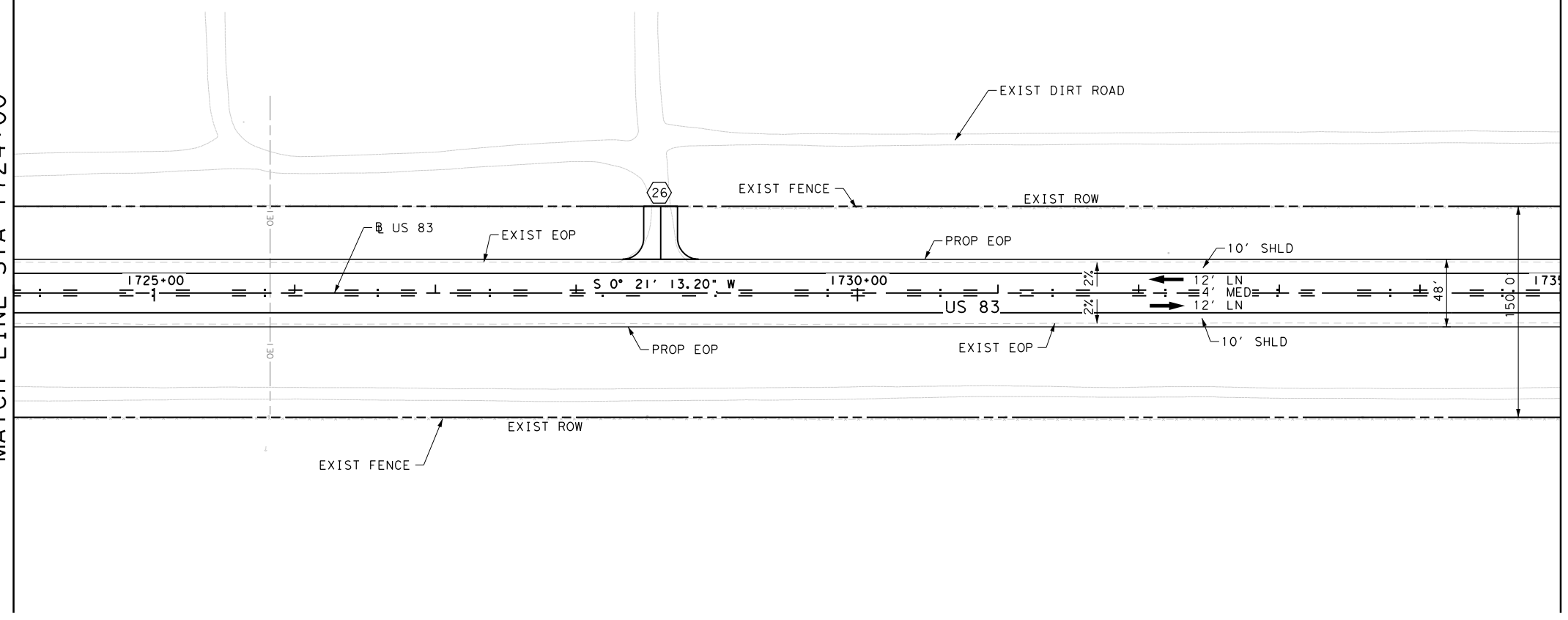
**US 83  
 ROADWAY  
 PLAN AND PROFILE  
 STA 1713+00 TO STA 1724+00**

FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42	SHEET NO. 127
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT
CONTROL 0037	SECTION 08	JOB 042, ETC.
		HIGHWAY NO. US 83



MATCH LINE STA 1724+00

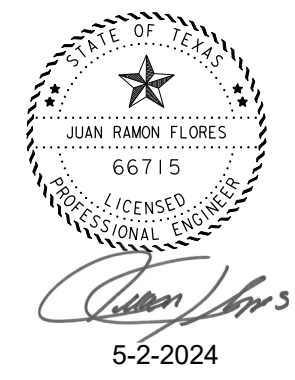
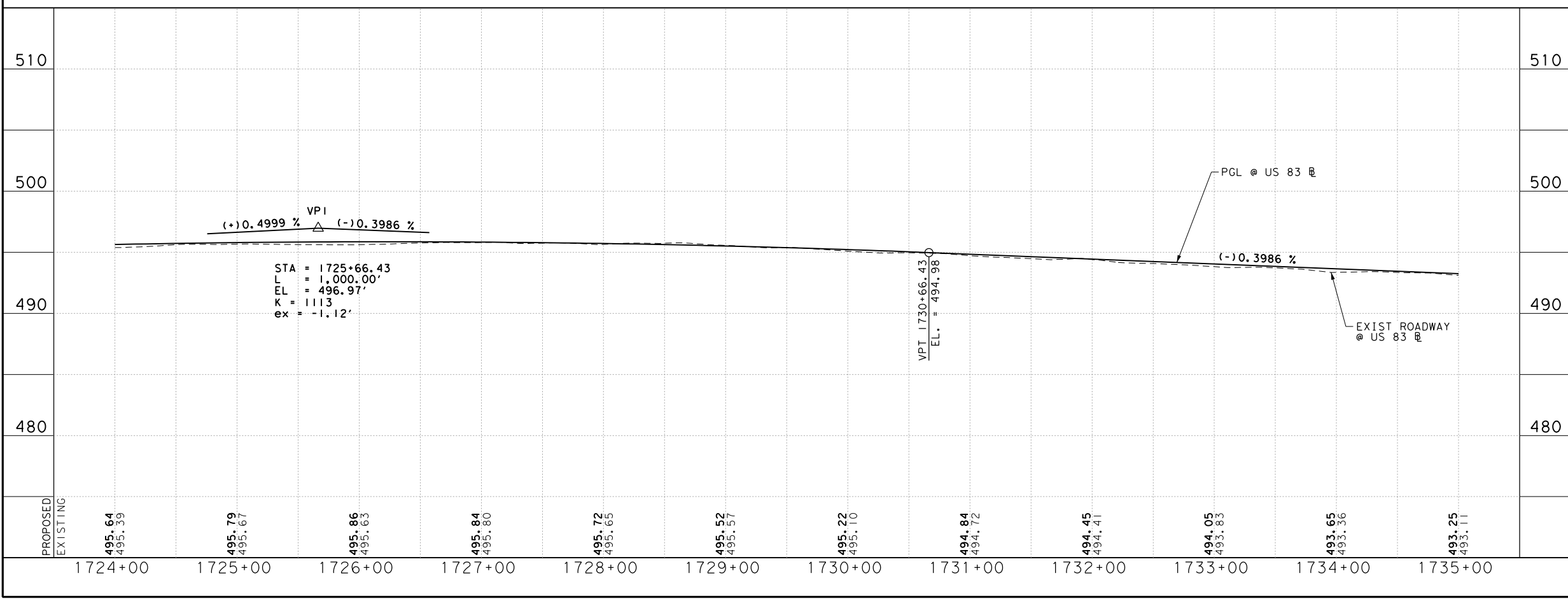
MATCH LINE STA 1735+00



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

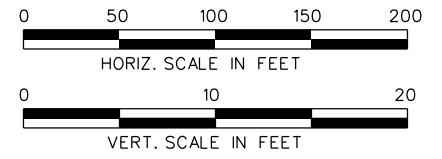
**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 21 OF 55

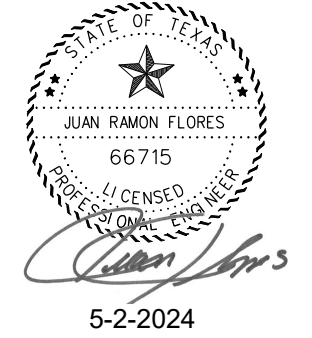
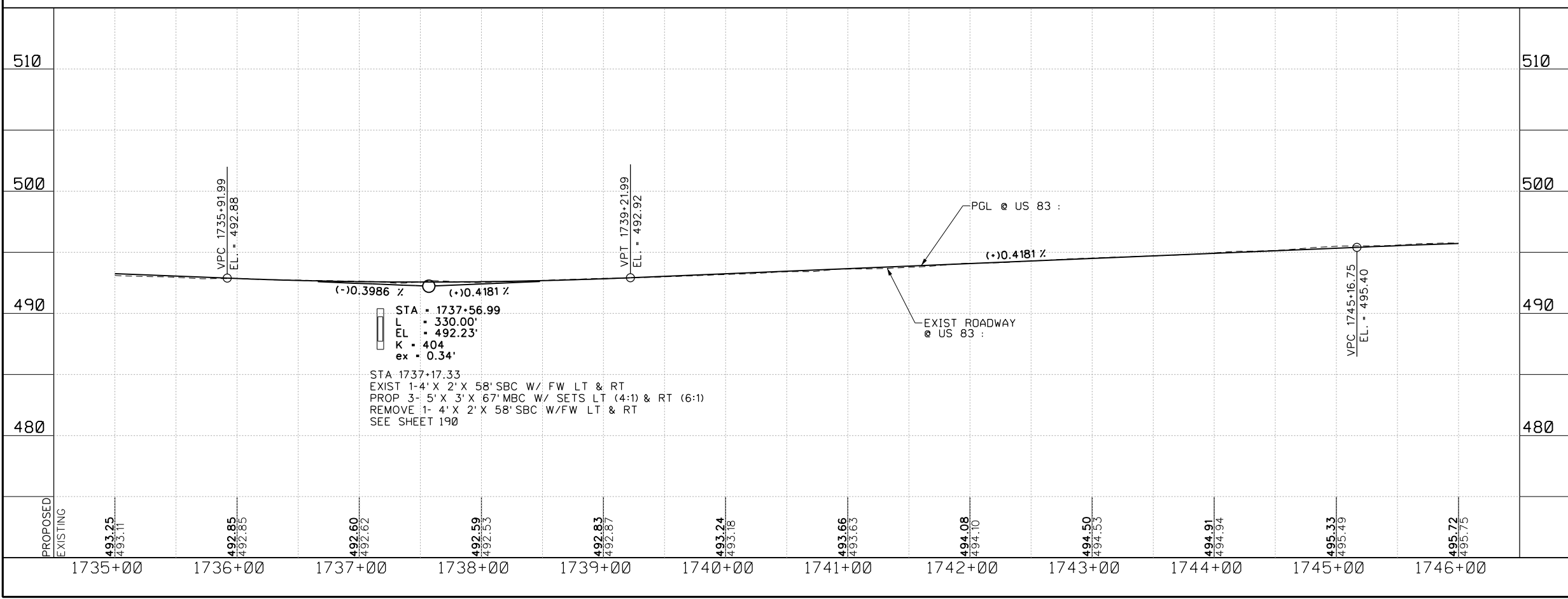
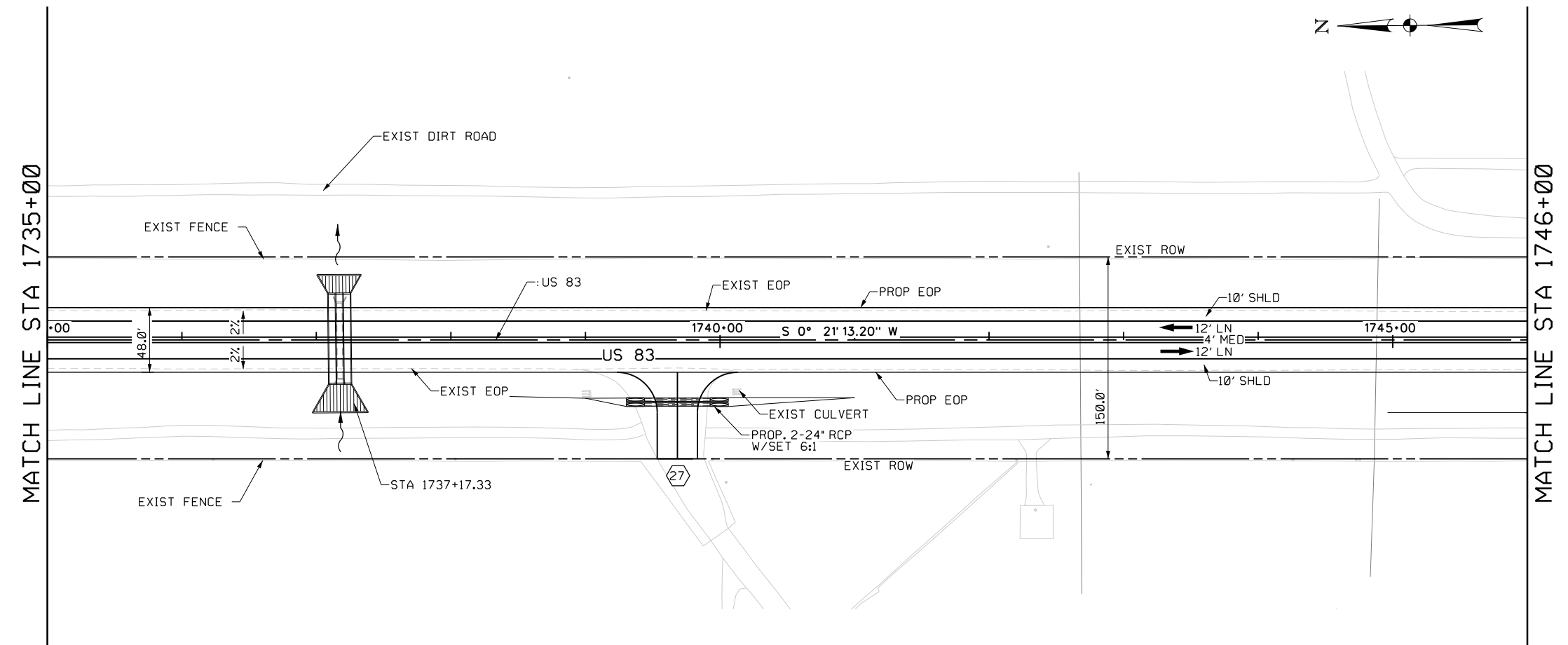
NO.	REVISIONS	BY	DATE
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Texas Department of Transportation ©2020 by Texas Department of Transportation, all rights reserved.			
<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1724+00 TO STA 1735+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	128	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

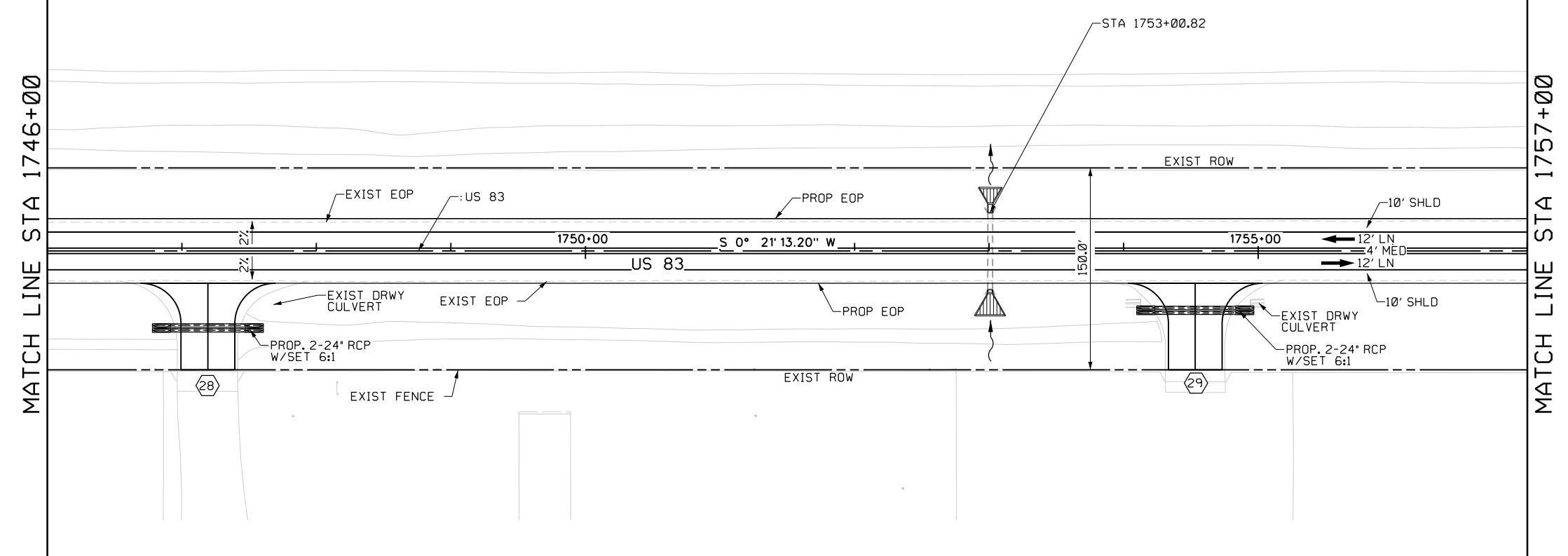
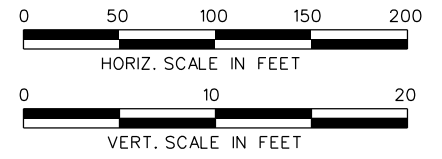
EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	XX
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 22 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1735+00 TO STA 1746+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	129	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

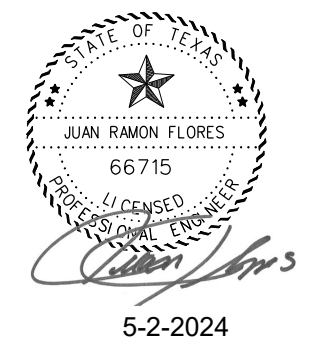
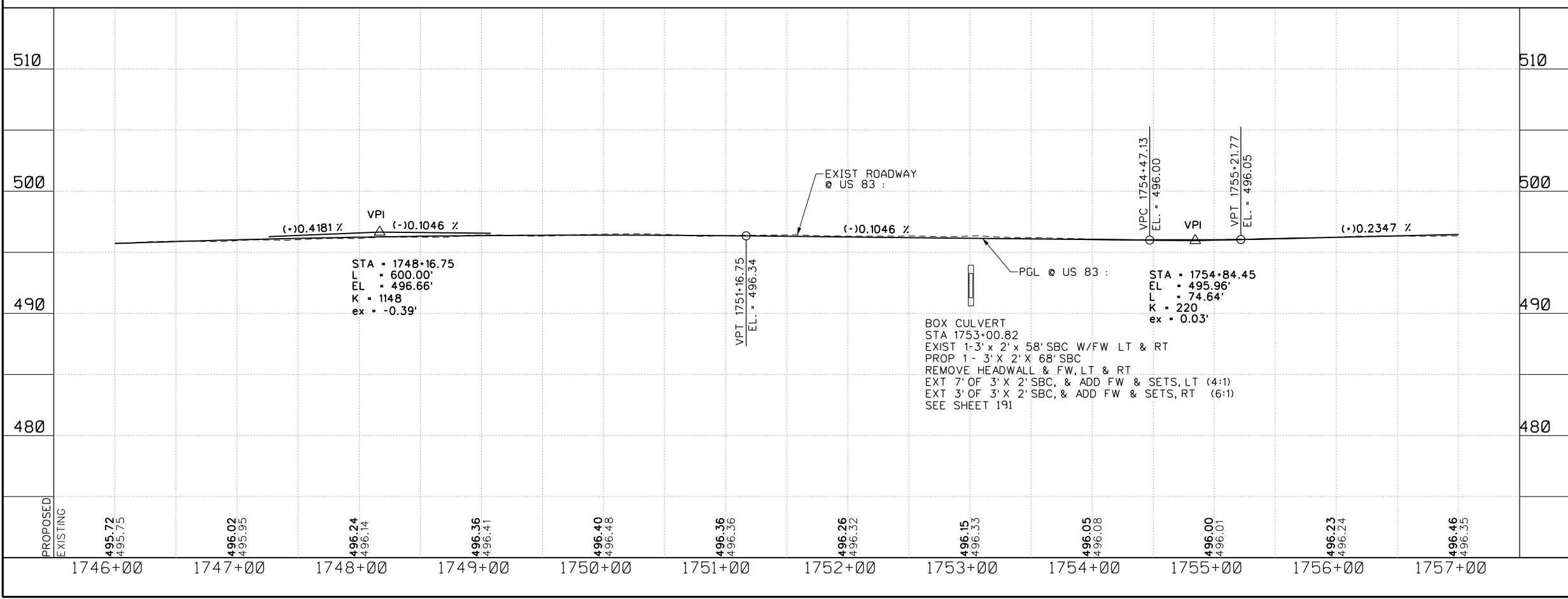




**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	XX
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 23 OF 55

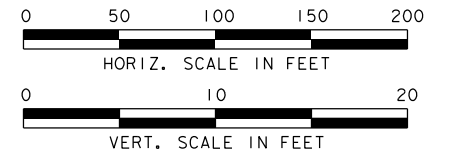
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-9900  
 FIRM REGISTRATION No. F-10098

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**US 83  
 ROADWAY  
 PLAN AND PROFILE  
 STA 1746+00 TO STA 1757+00**

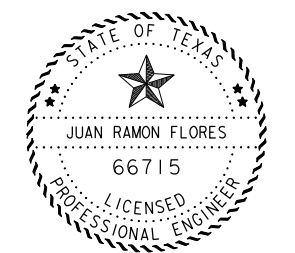
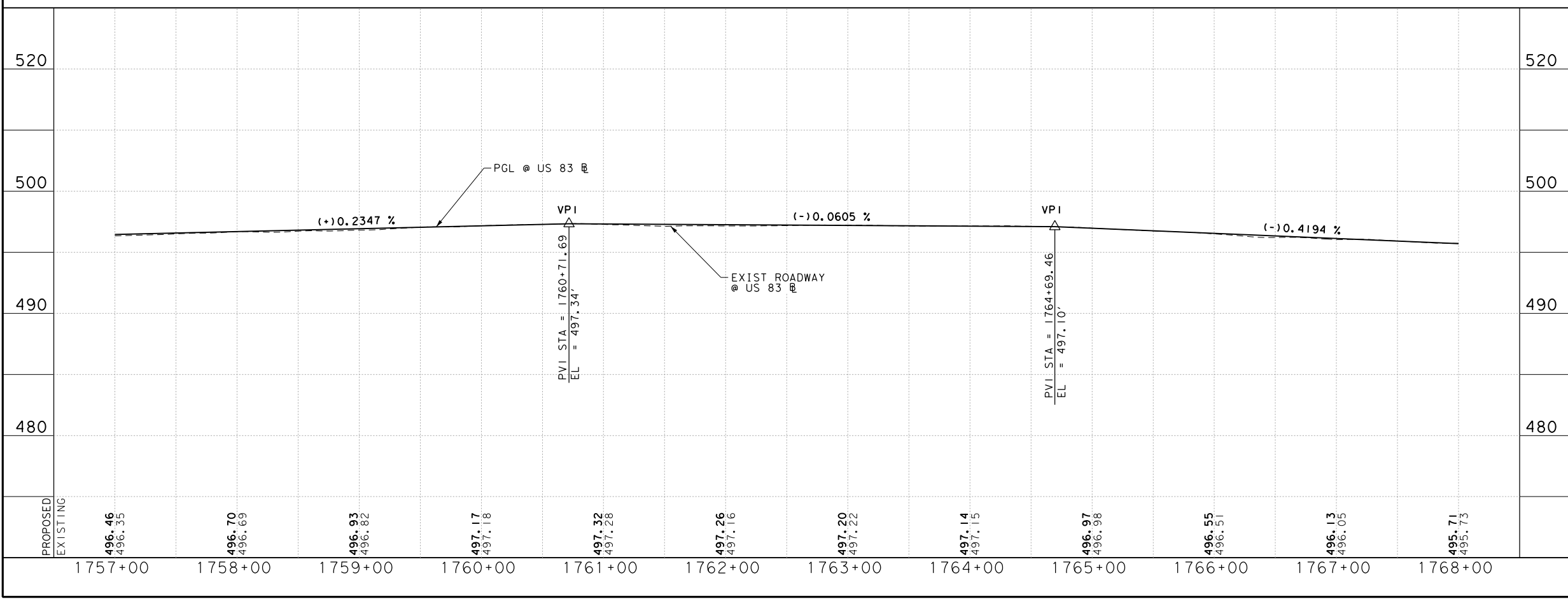
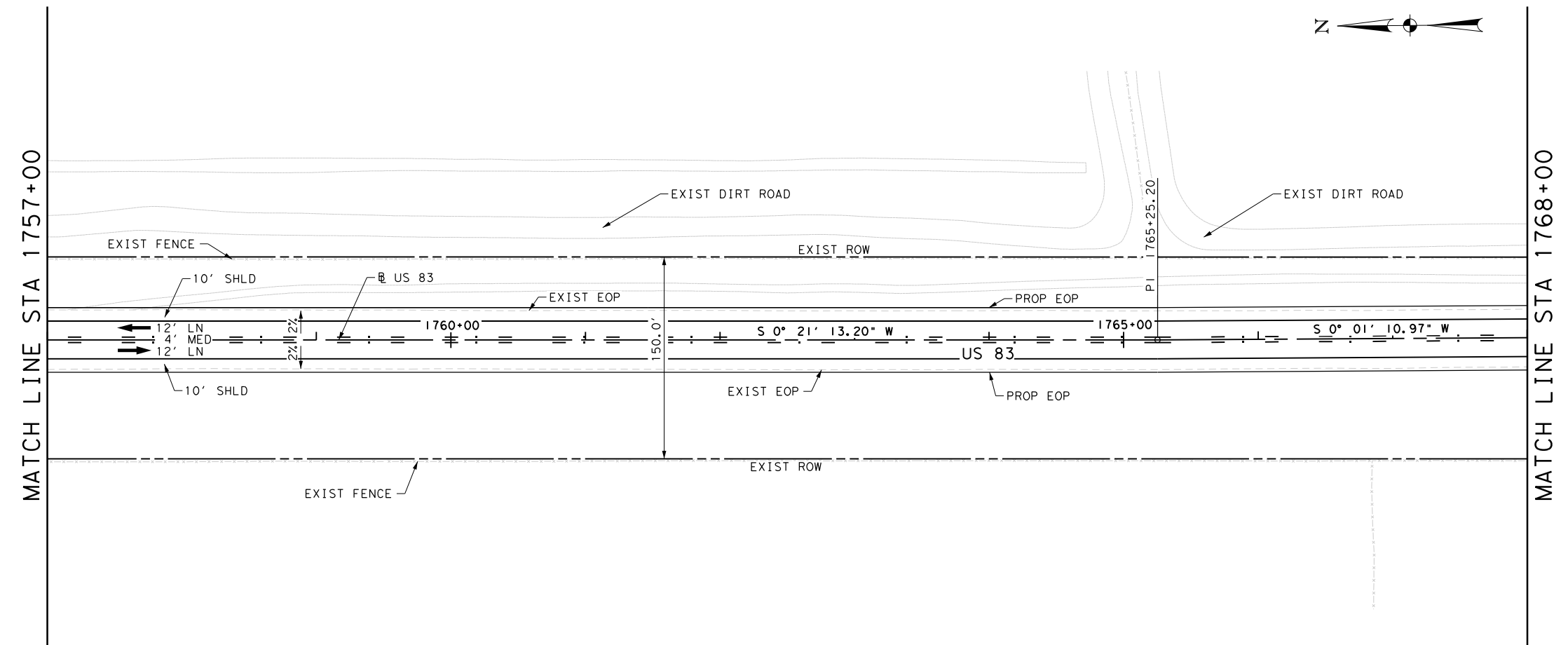
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42	SHEET NO. 130
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT
CONTROL 0037	SECTION 08	JOB 042, ETC.
		HIGHWAY NO. US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

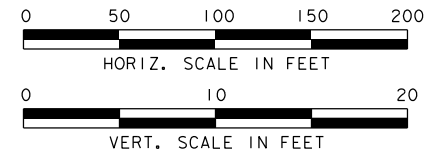
- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



*Juan Flores*  
6-22-2020

SHEET 24 OF 55

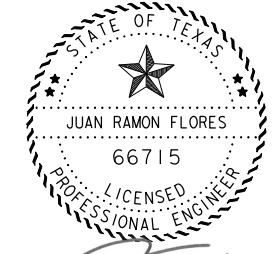
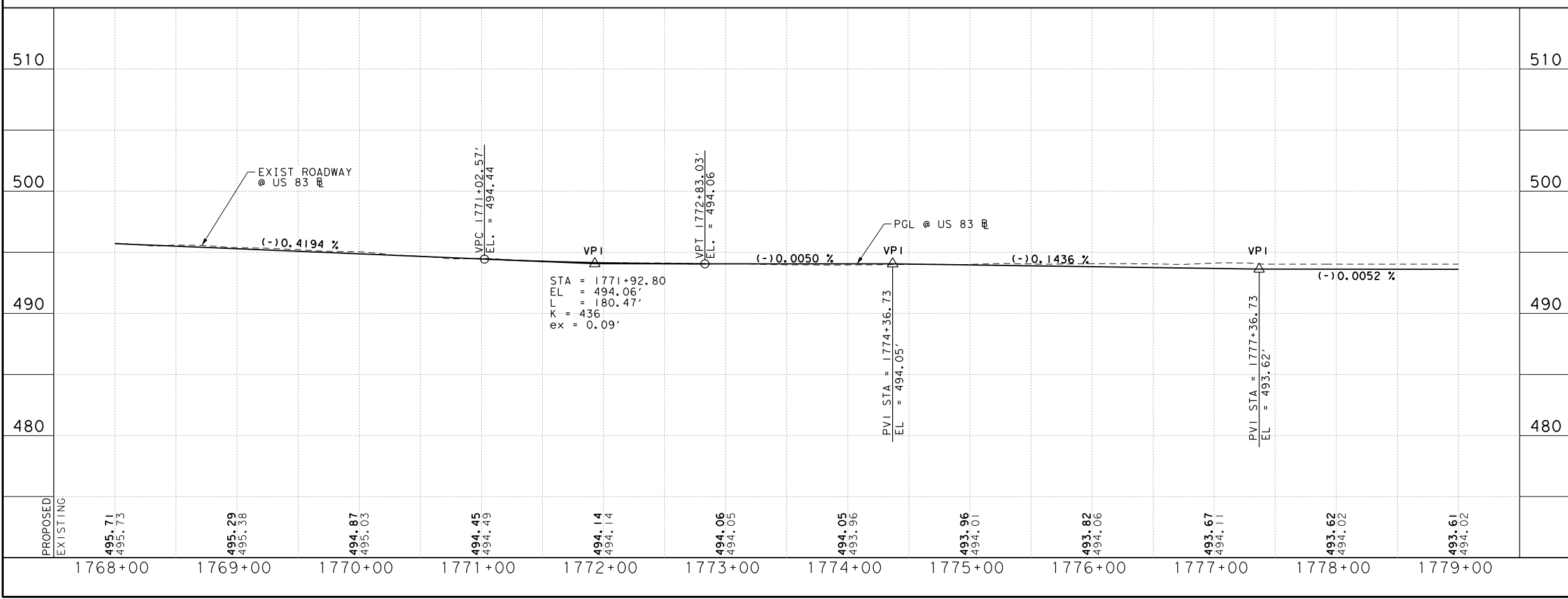
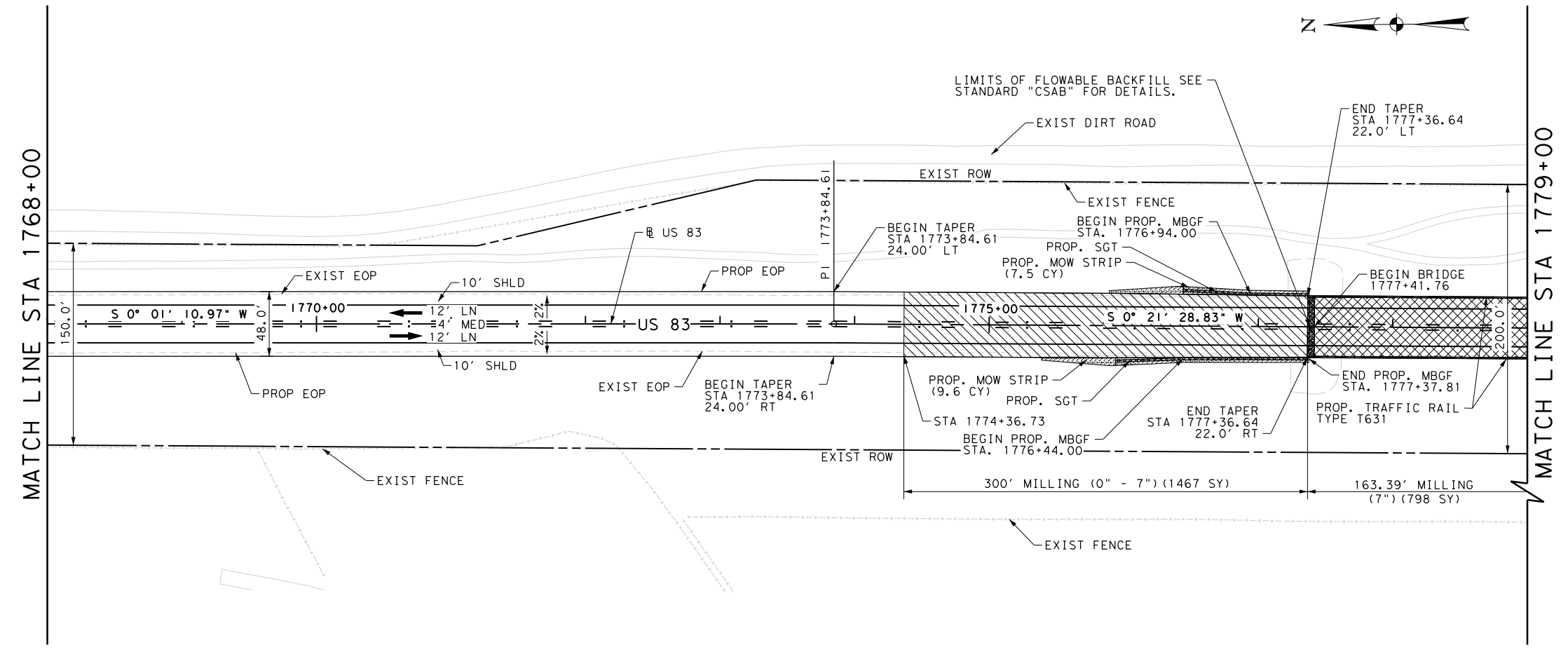
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1757+00 TO STA 1768+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		131
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

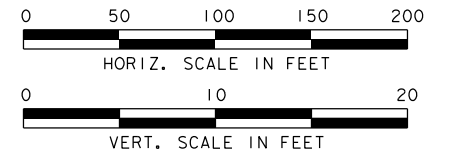
- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME
- MILLING (0" - 7")
- MILLING (7")



*Juan Flores* 6-22-2020

SHEET 25 OF 55

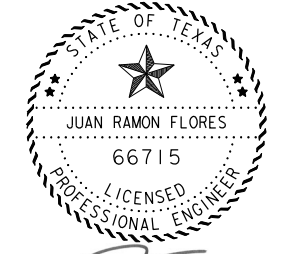
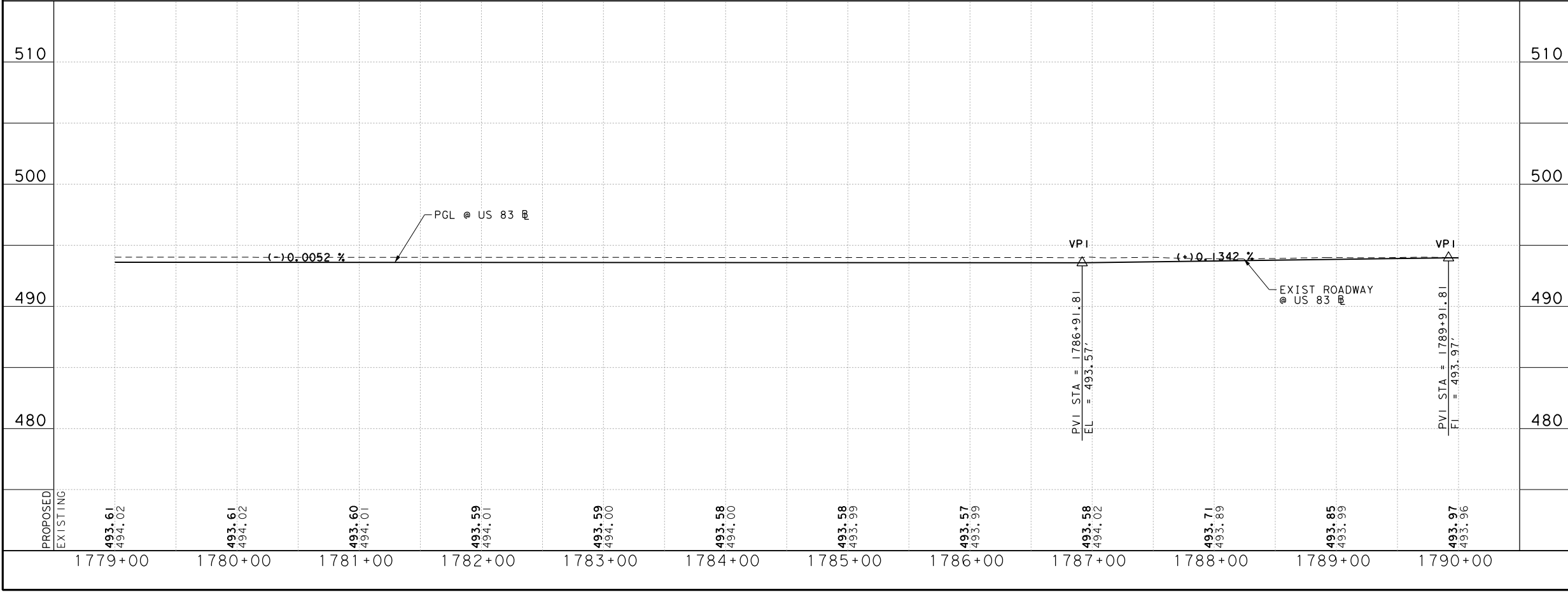
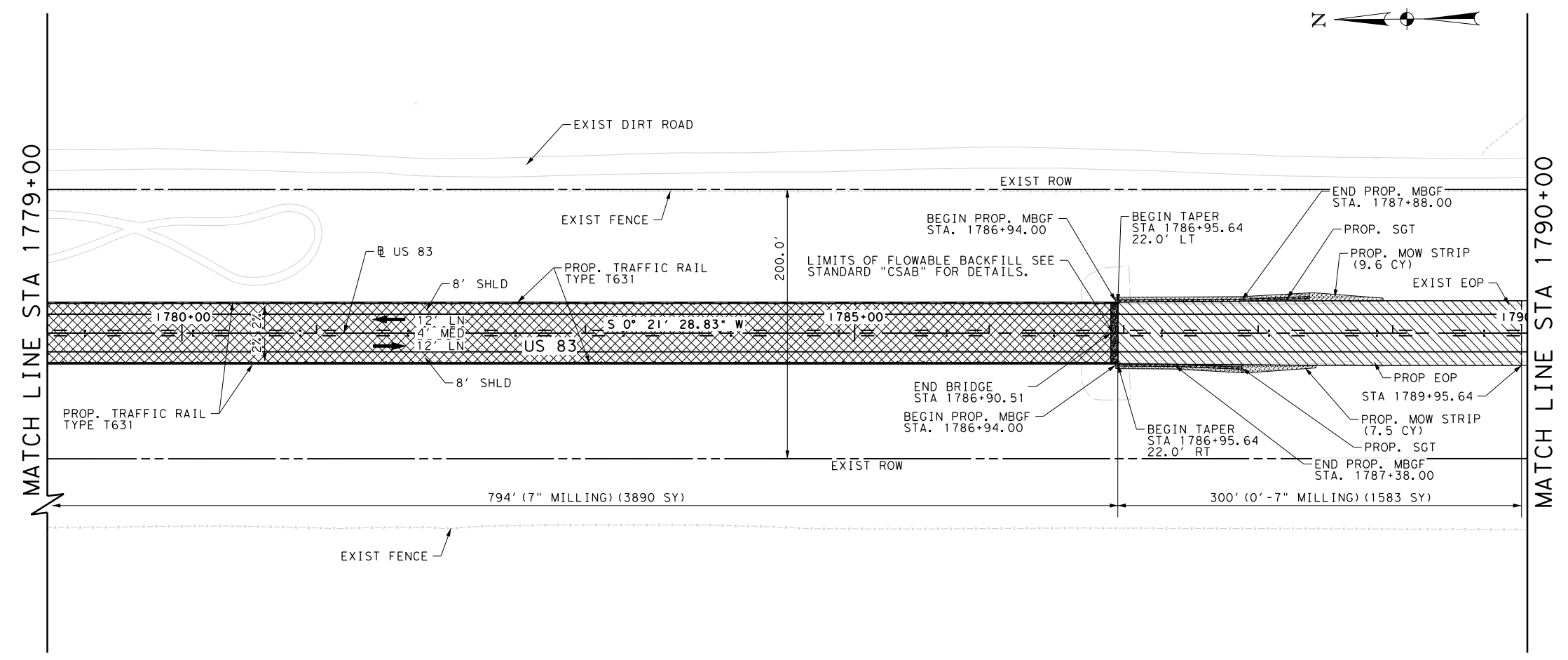
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1768+00 TO STA 1779+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		132
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

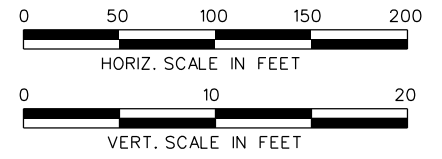
- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME
- MILLING (0" - 7")
- MILLING (7")



*Juan Flores* 56-22-2020

SHEET 26 OF 55

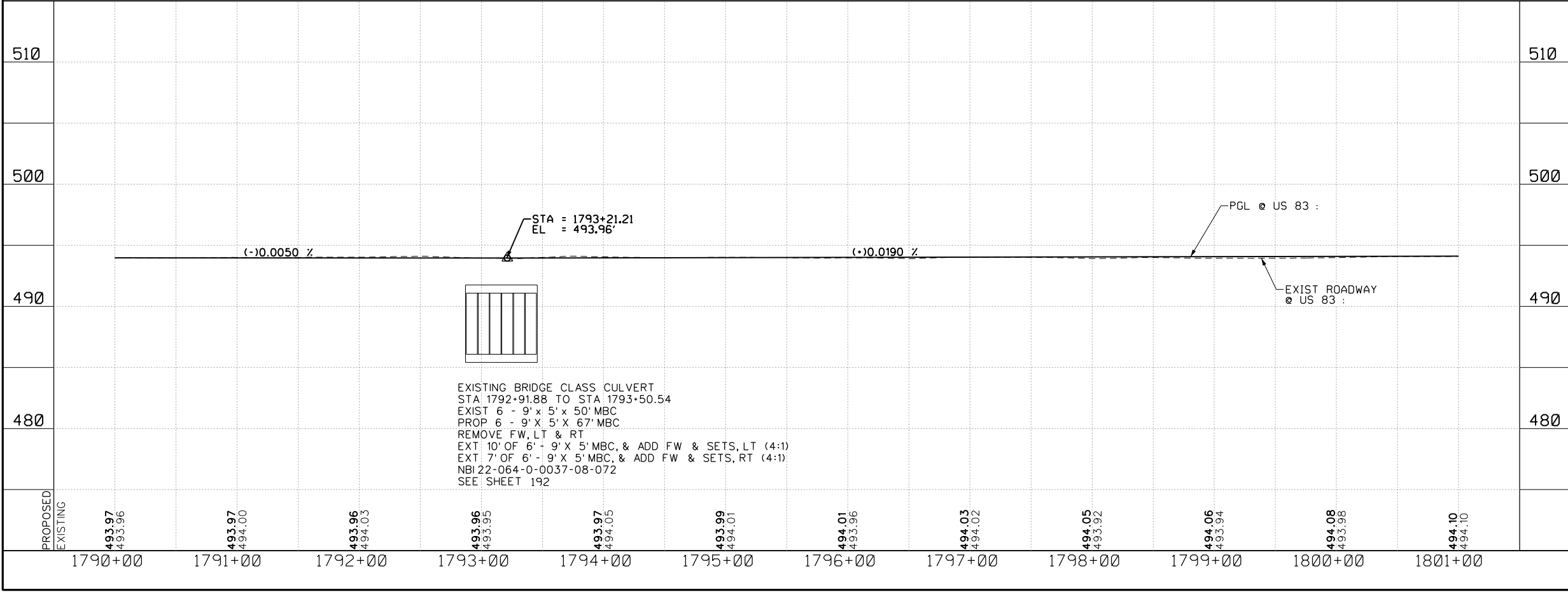
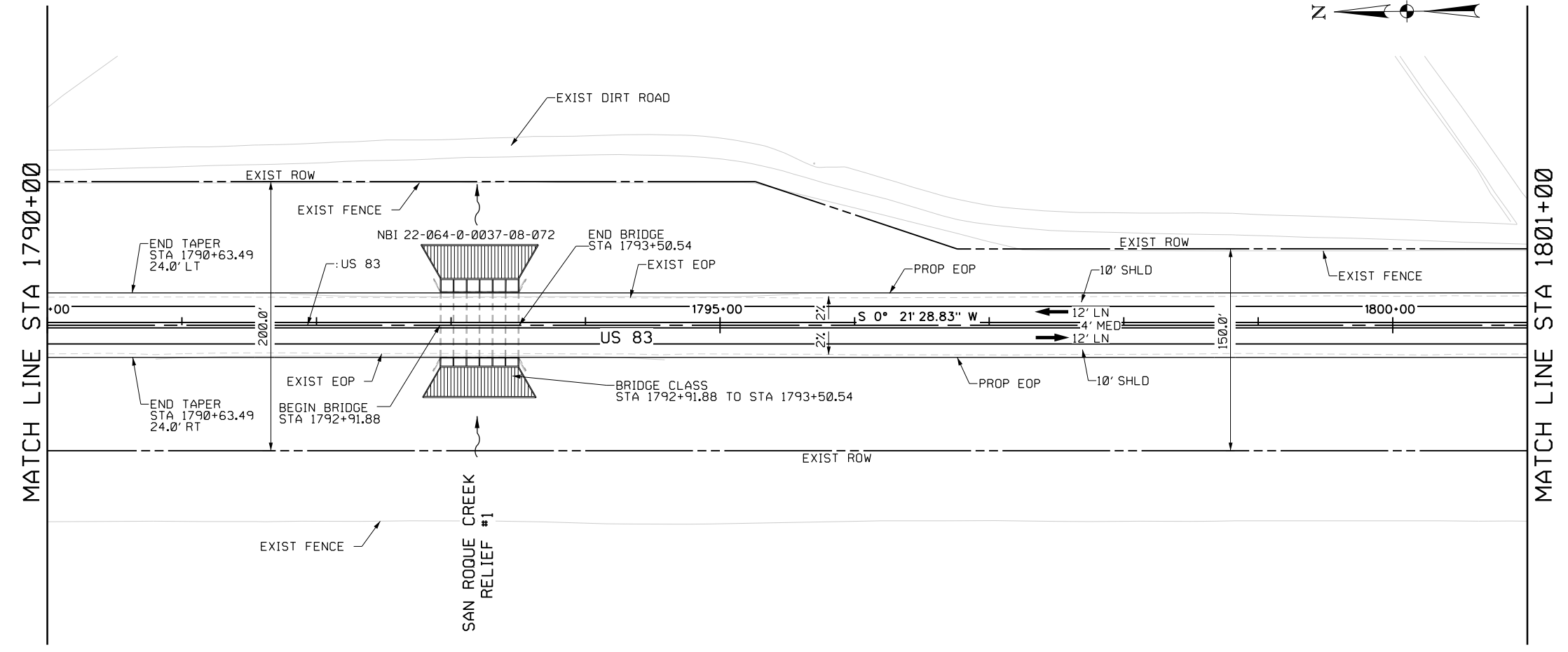
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1779+00 TO STA 1790+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		133
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



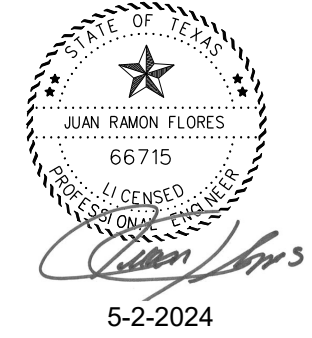
**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO

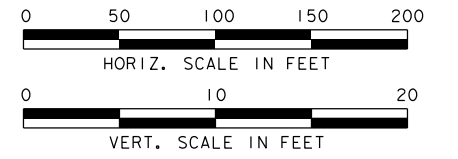


EXISTING BRIDGE CLASS CULVERT  
 STA 1792+91.88 TO STA 1793+50.54  
 EXIST 6 - 9' x 5' x 50' MBC  
 PROP 6 - 9' x 5' x 67' MBC  
 REMOVE FW, LT & RT  
 EXT 10' OF 6' - 9' x 5' MBC, & ADD FW & SETS, LT (4:1)  
 EXT 7' OF 6' - 9' x 5' MBC, & ADD FW & SETS, RT (4:1)  
 NBI 22-064-0-0037-08-072  
 SEE SHEET 192



SHEET 27 OF 55

NO.	REVISIONS	BY	DATE
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<b>US 83                  ROADWAY                  PLAN AND PROFILE                  STA 1790+00 TO STA 1801+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	134	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



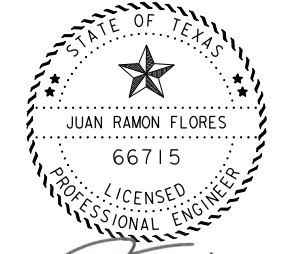
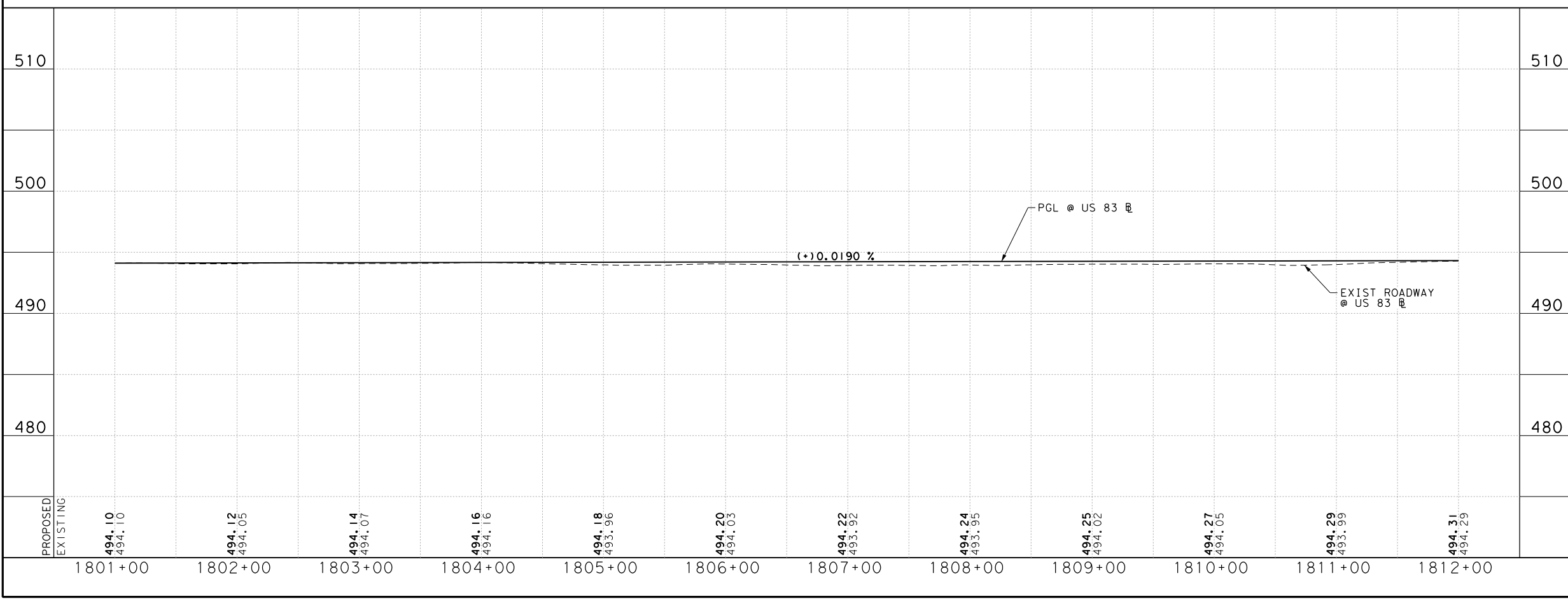
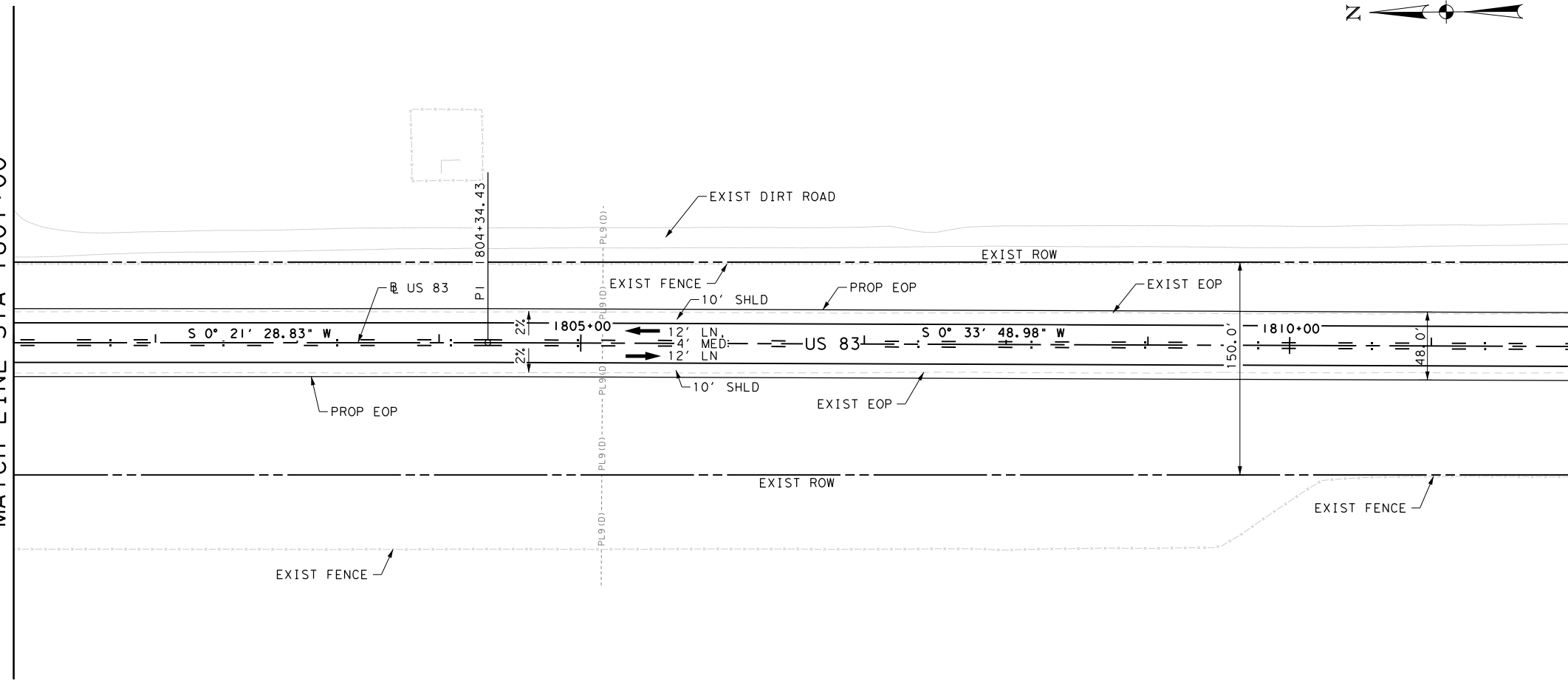
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME

MATCH LINE STA 1801+00

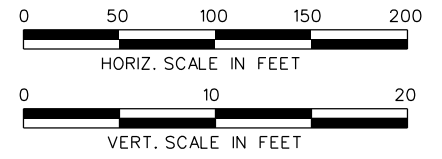
MATCH LINE STA 1812+00



*Juan Flores* 6-22-2020

SHEET 28 OF 55

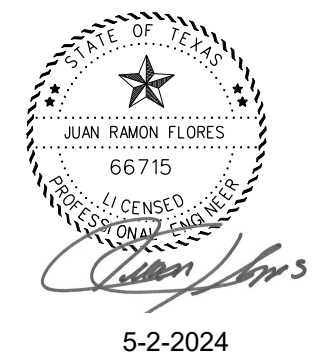
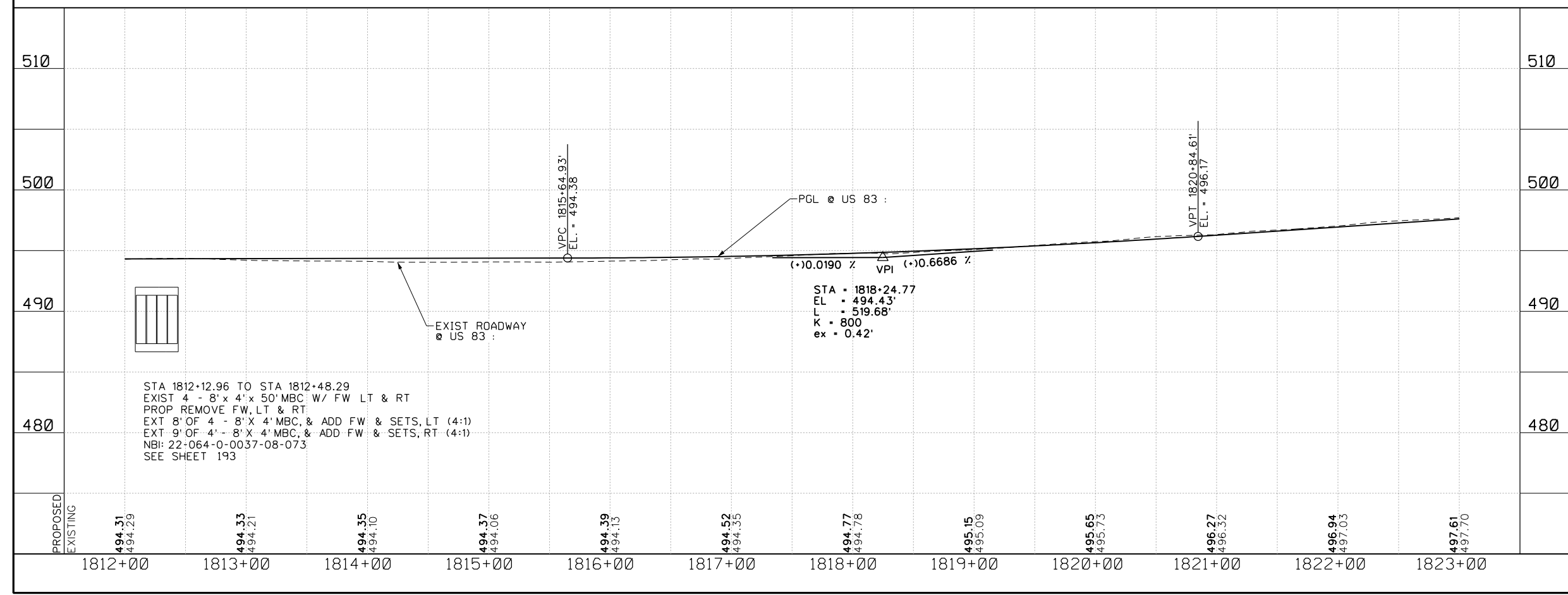
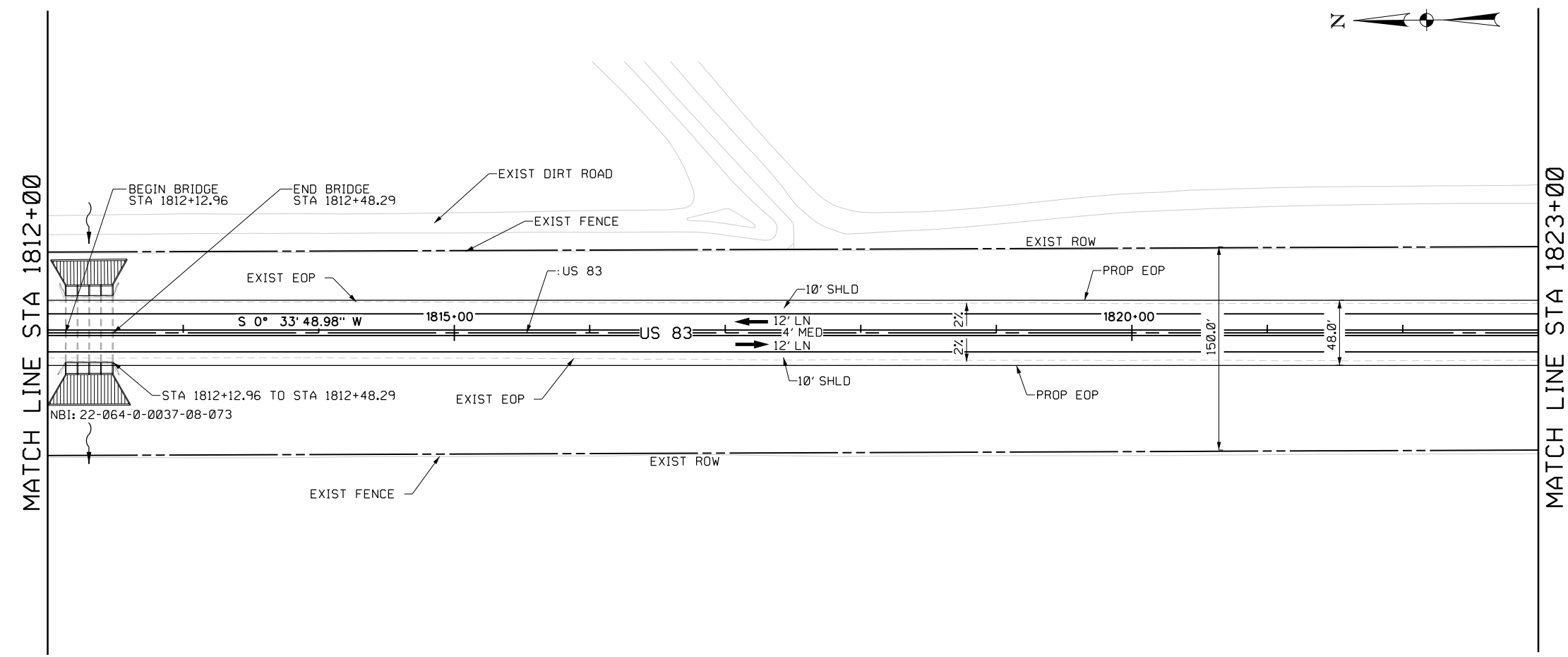
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1801+00 TO STA 1812+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		135
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

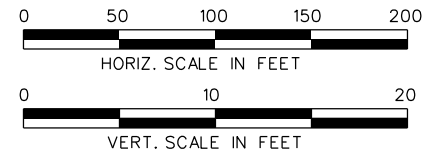
EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	⊗
ALIGNMENT CURVE NAME	⊠ CURVE-NO



5-2-2024

SHEET 29 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83                      ROADWAY                      PLAN AND PROFILE                      STA 1812+00 TO STA 1823+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		136
STATE	DISTRICT	COUNTY	136
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



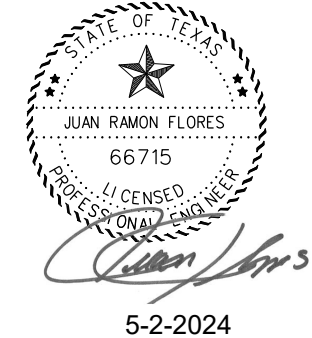
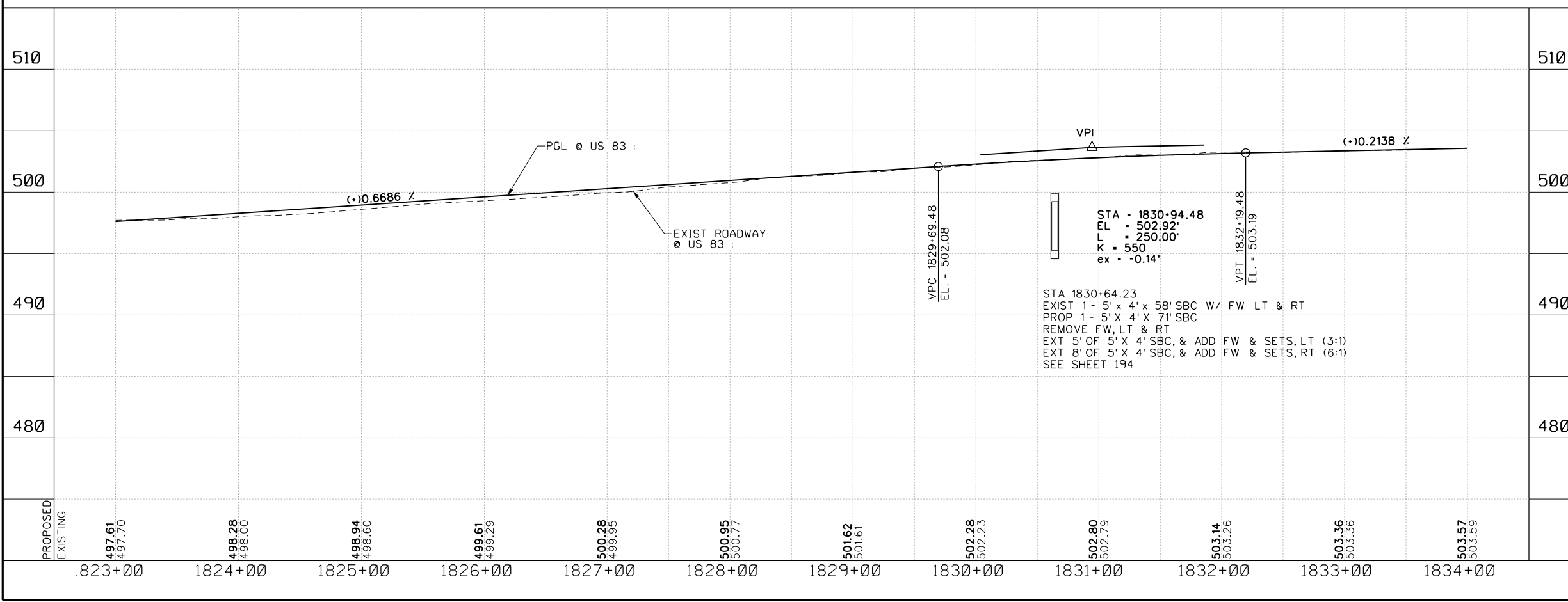
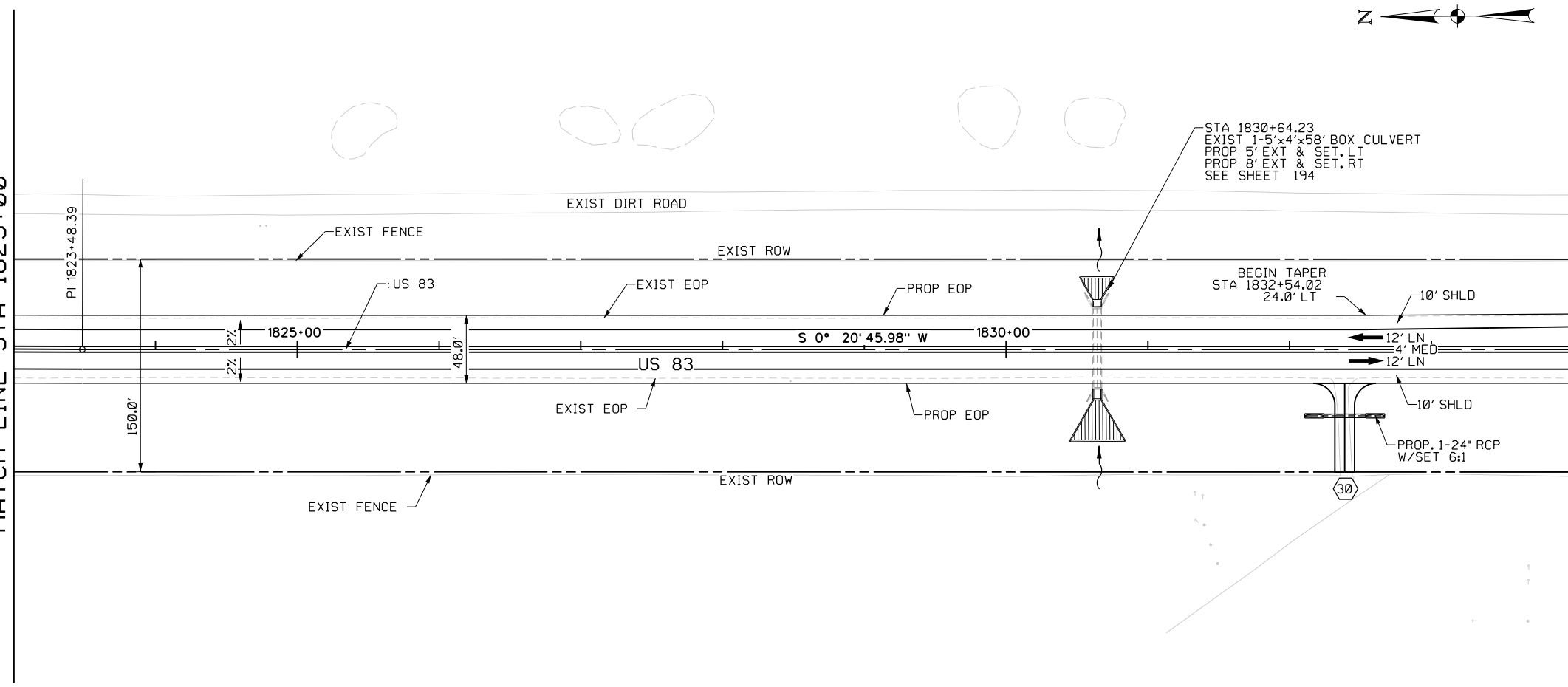
**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	⊗
ALIGNMENT CURVE NAME	⊠ CURVE-NO

MATCH LINE STA 1823+00

MATCH LINE STA 1834+00



SHEET 30 OF 55

NO.	REVISIONS	BY	DATE

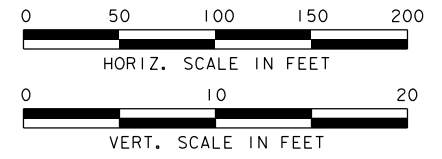
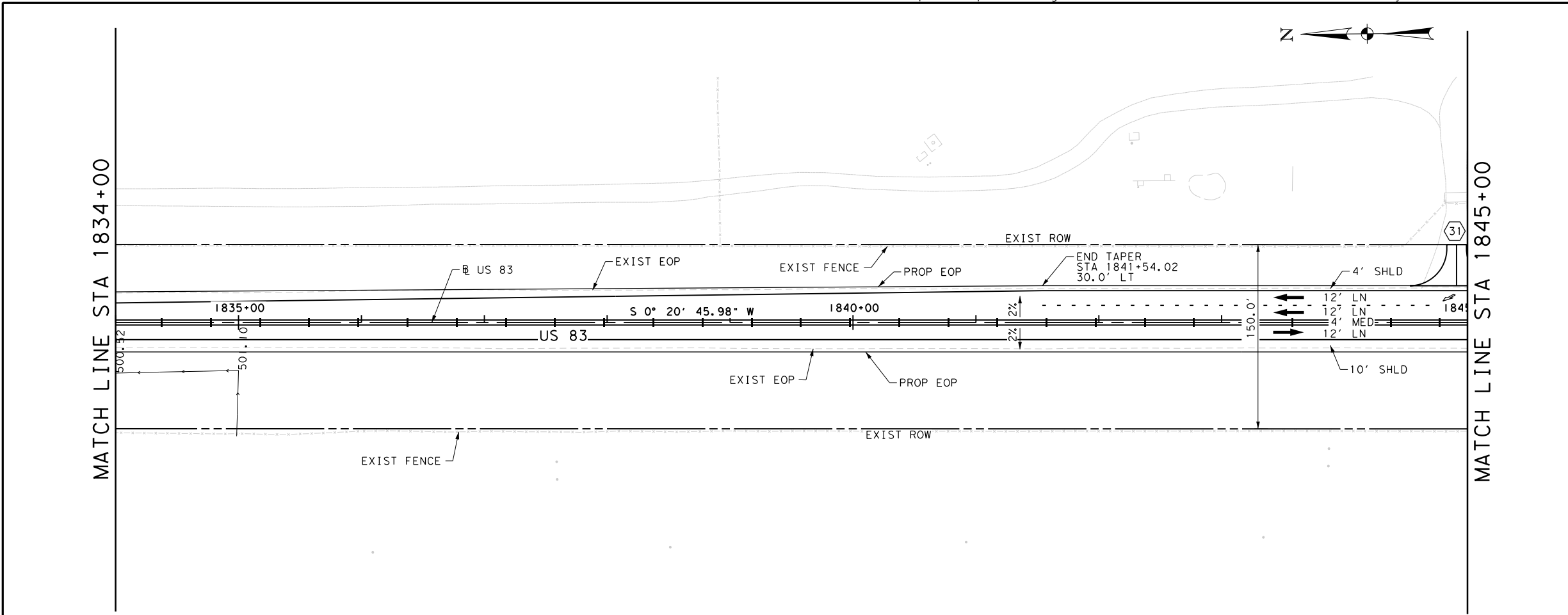
**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83  
 ROADWAY  
 PLAN AND PROFILE  
 STA 1823+00 TO STA 1834+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	137	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

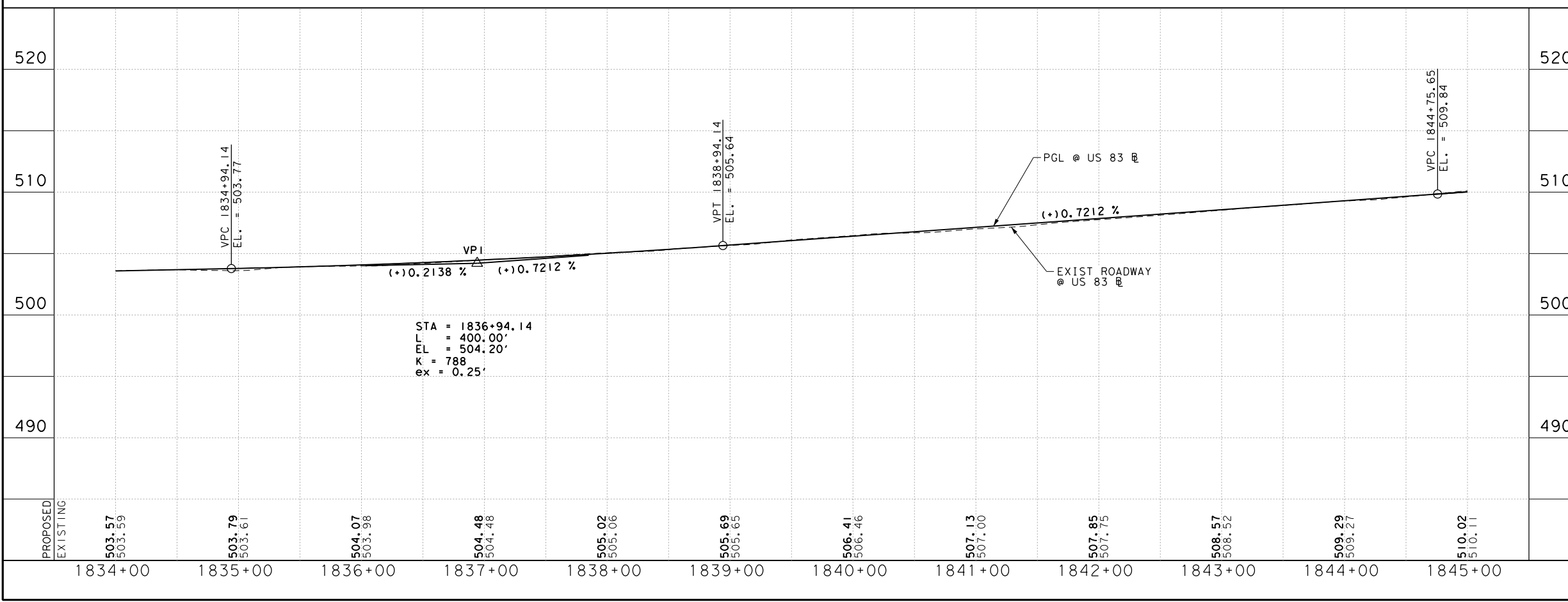




- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

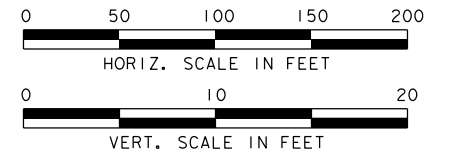
**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 31 OF 55

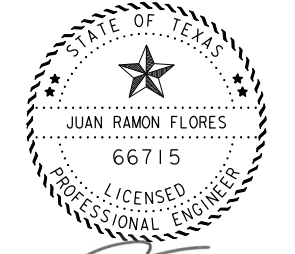
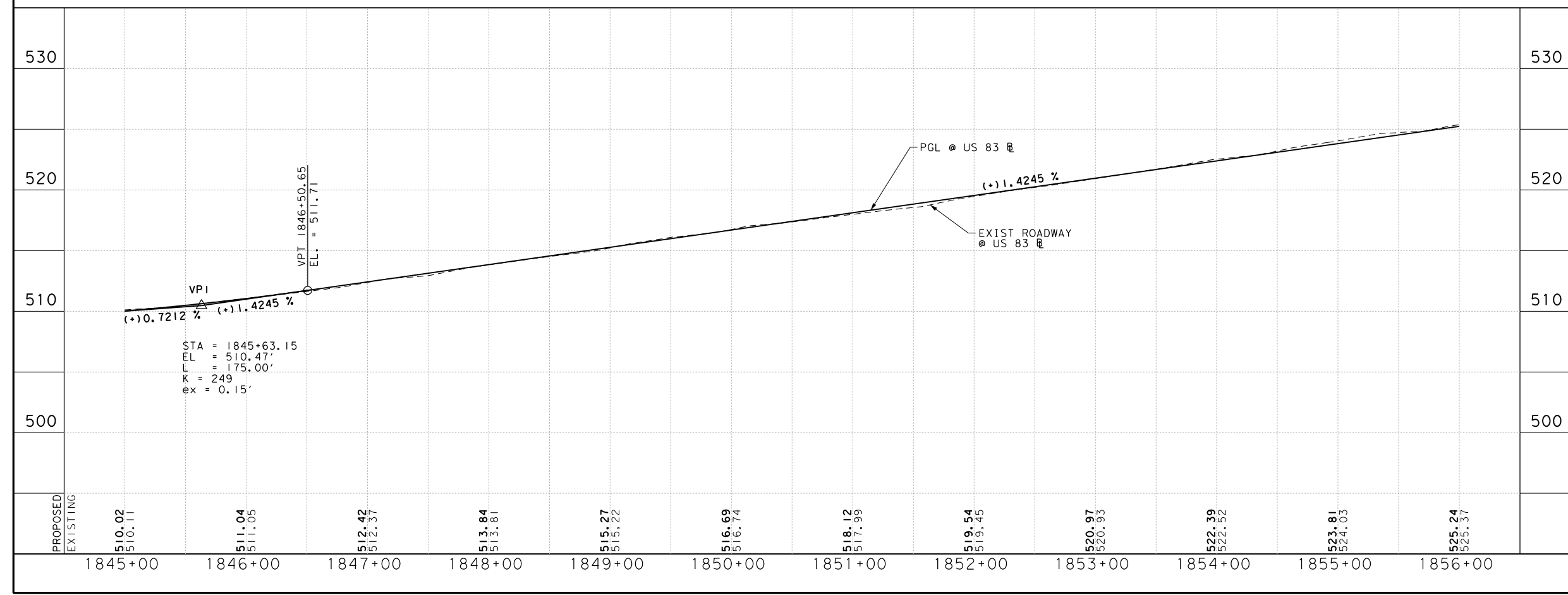
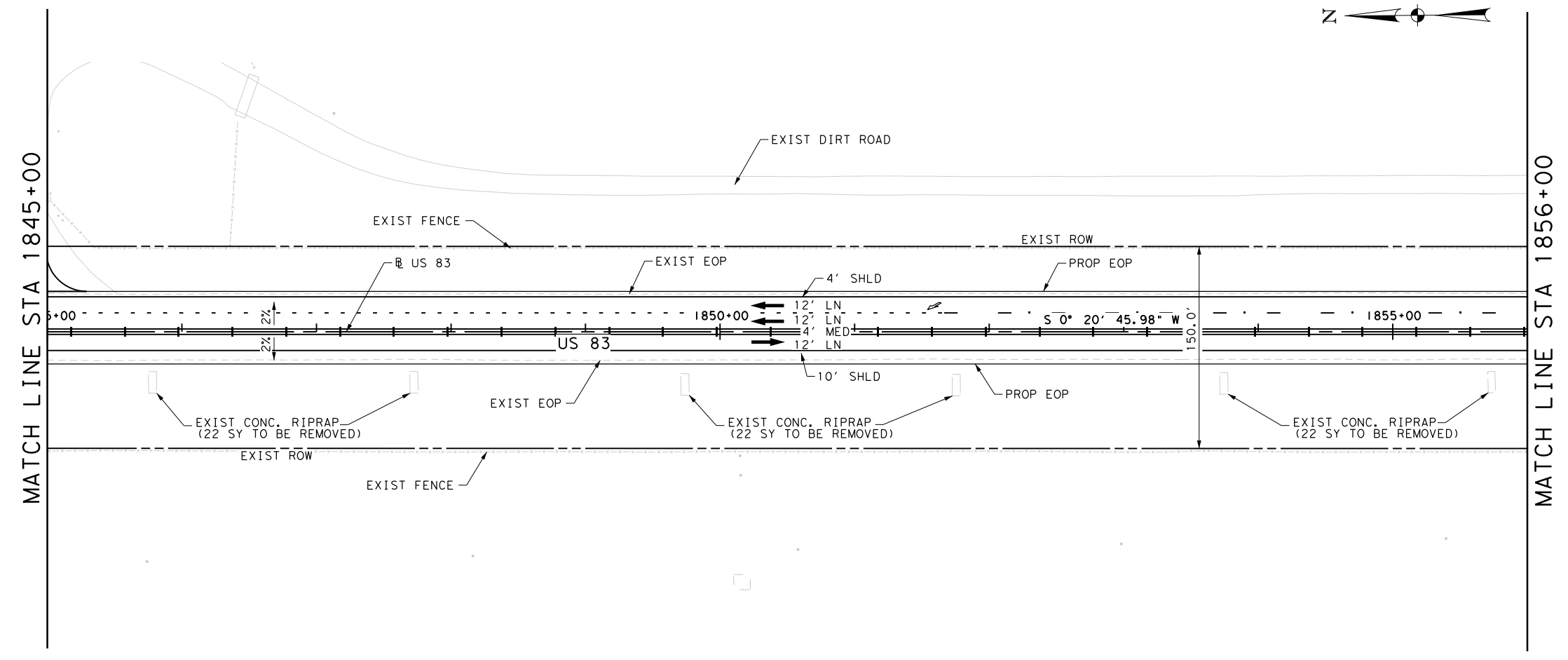
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation, all rights reserved.			
<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1834+00 TO STA 1845+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	138	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

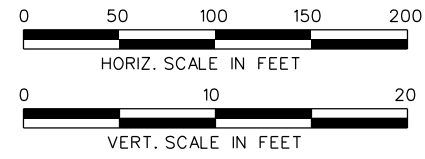
- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



*Juan Flores* 06-22-2020

SHEET 32 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1845+00 TO STA 1856+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		139
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



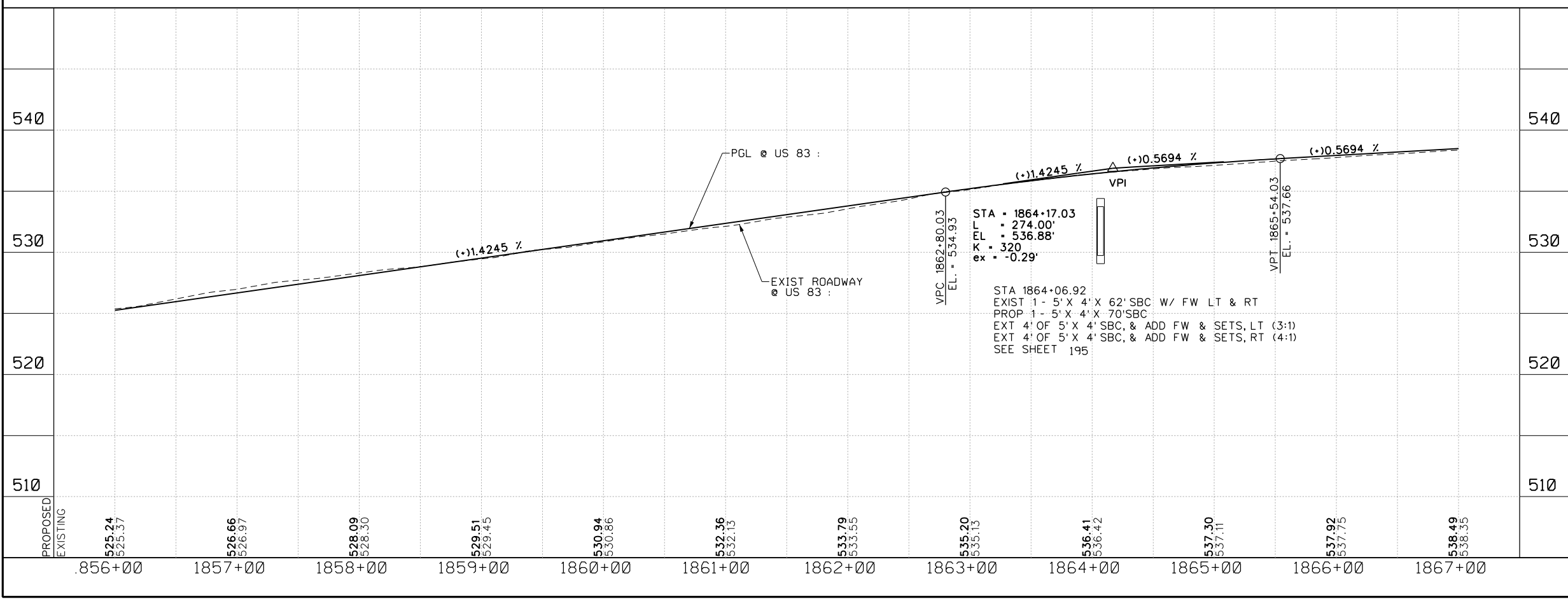
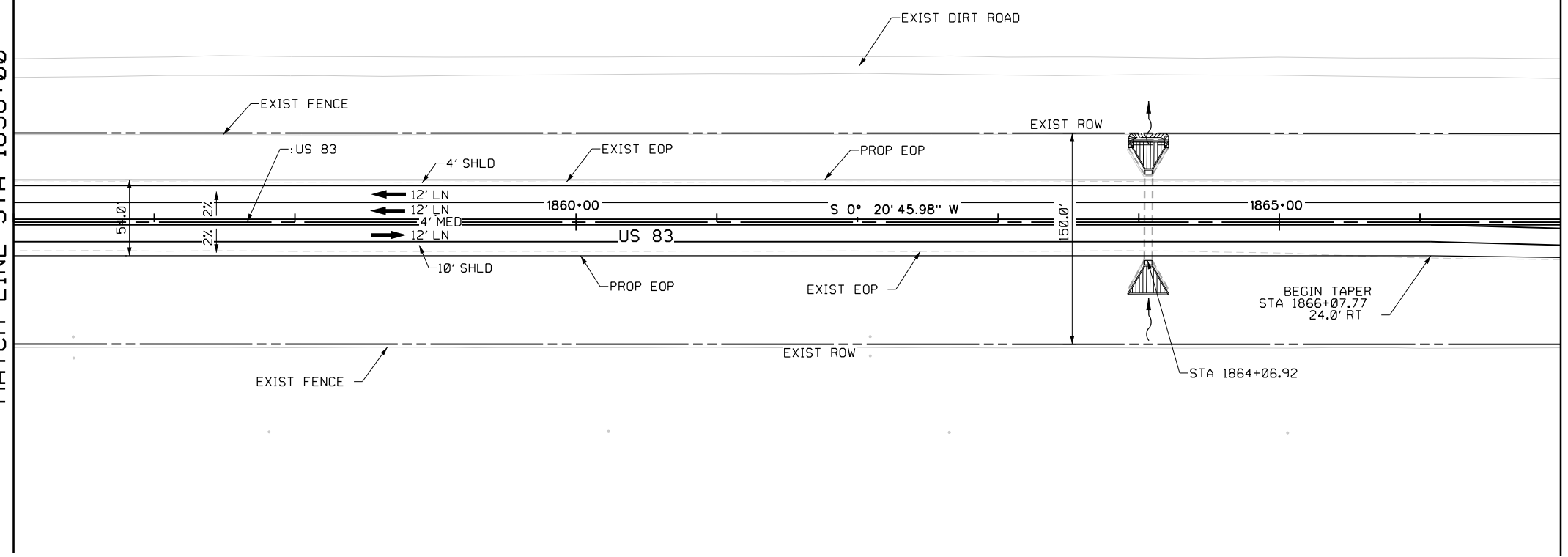
**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	
DIRECTION OF FLOW	
DIRECTION OF TRAFFIC	
DRIVEWAY NUMBER	
ALIGNMENT CURVE NAME	

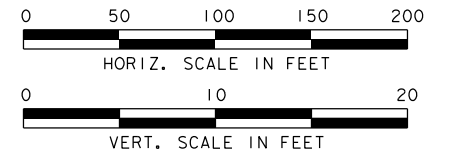
MATCH LINE STA 1856+00

MATCH LINE STA 1867+00



SHEET 33 OF 55

NO. REVISIONS BY DATE			
<b>A7&amp;B</b> ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
<b>Texas Department of Transportation</b> ©2024 by Texas Department of Transportation; all rights reserved			
<b>US 83 ROADWAY PLAN AND PROFILE STA 1856+00 TO STA 1867+00</b>			
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42		SHEET NO. 140
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT	HIGHWAY NO. US 83
CONTROL 0037	SECTION 08	JOB 042, ETC.	



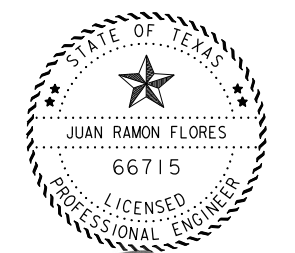
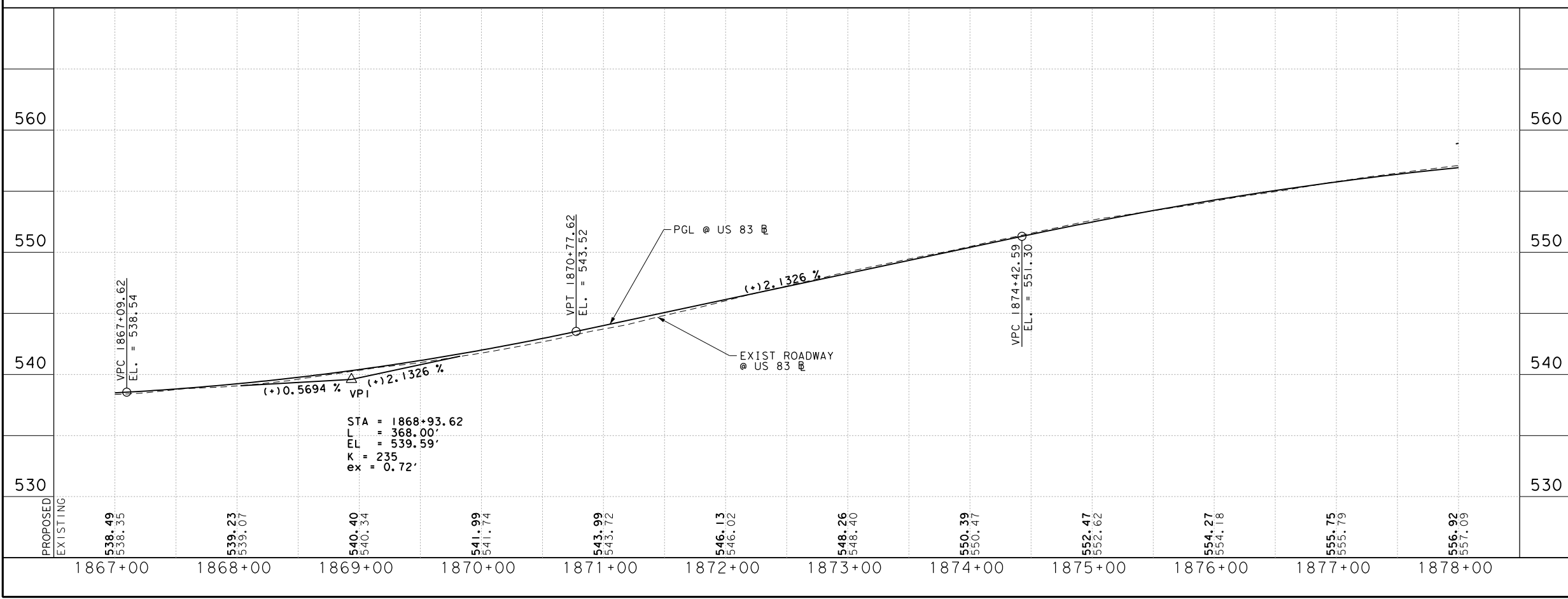
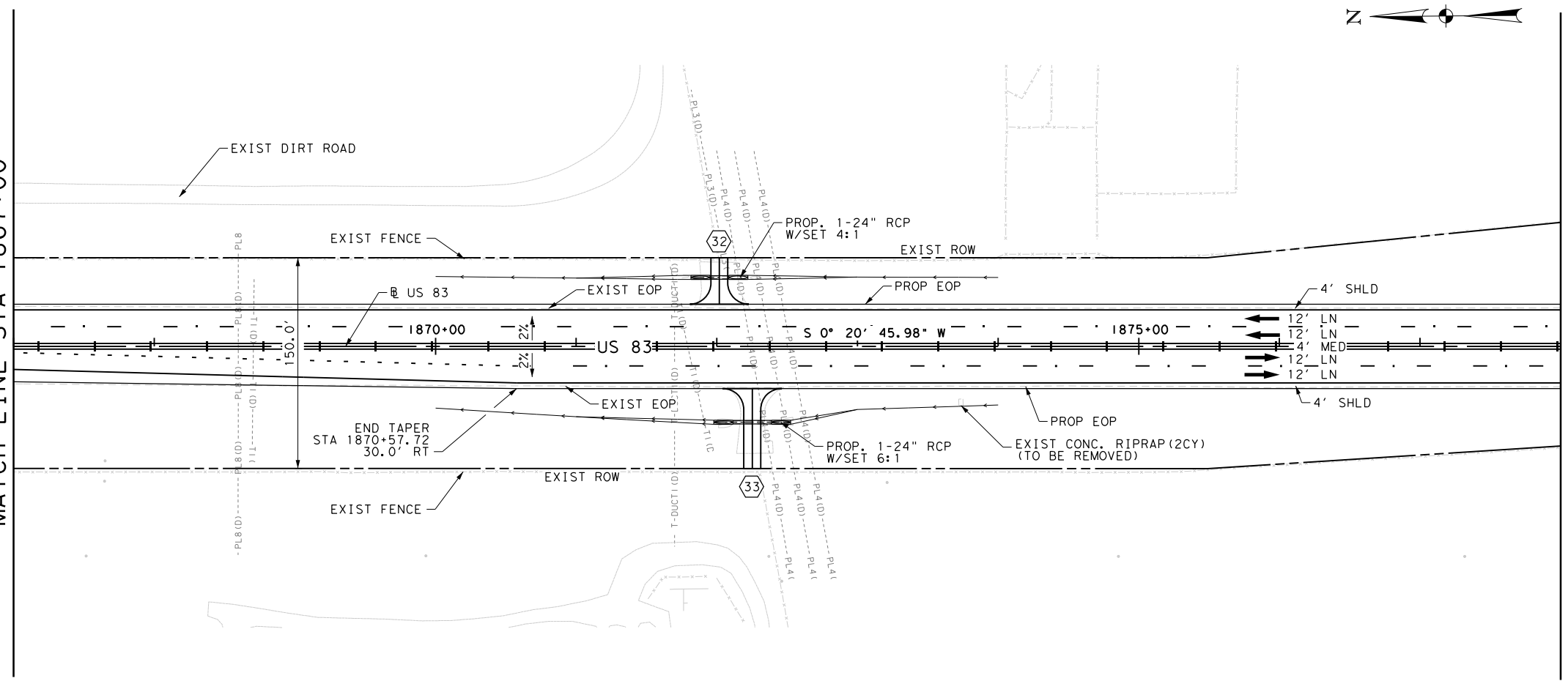
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME

MATCH LINE STA 1867+00

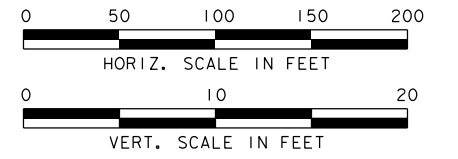
MATCH LINE STA 1878+00



*Juan Flores* 5-6-22-2020

SHEET 34 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1867+00 TO STA 1878+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		141
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



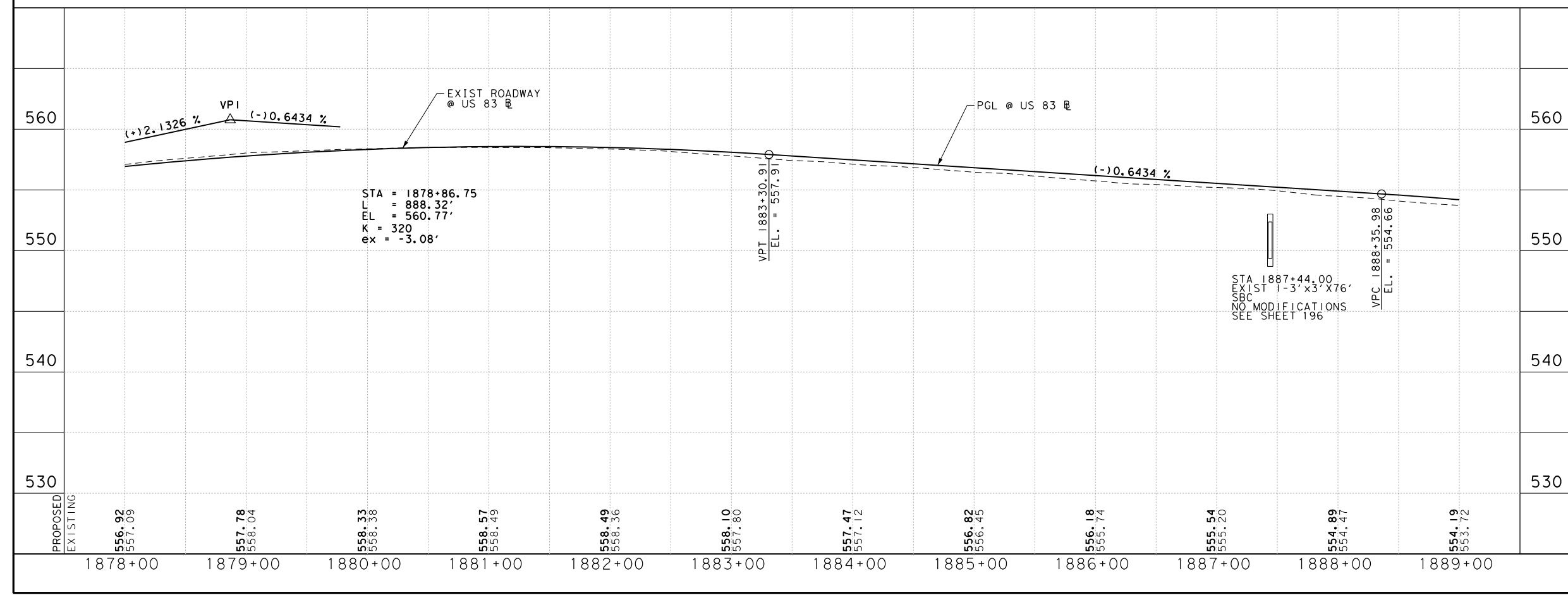
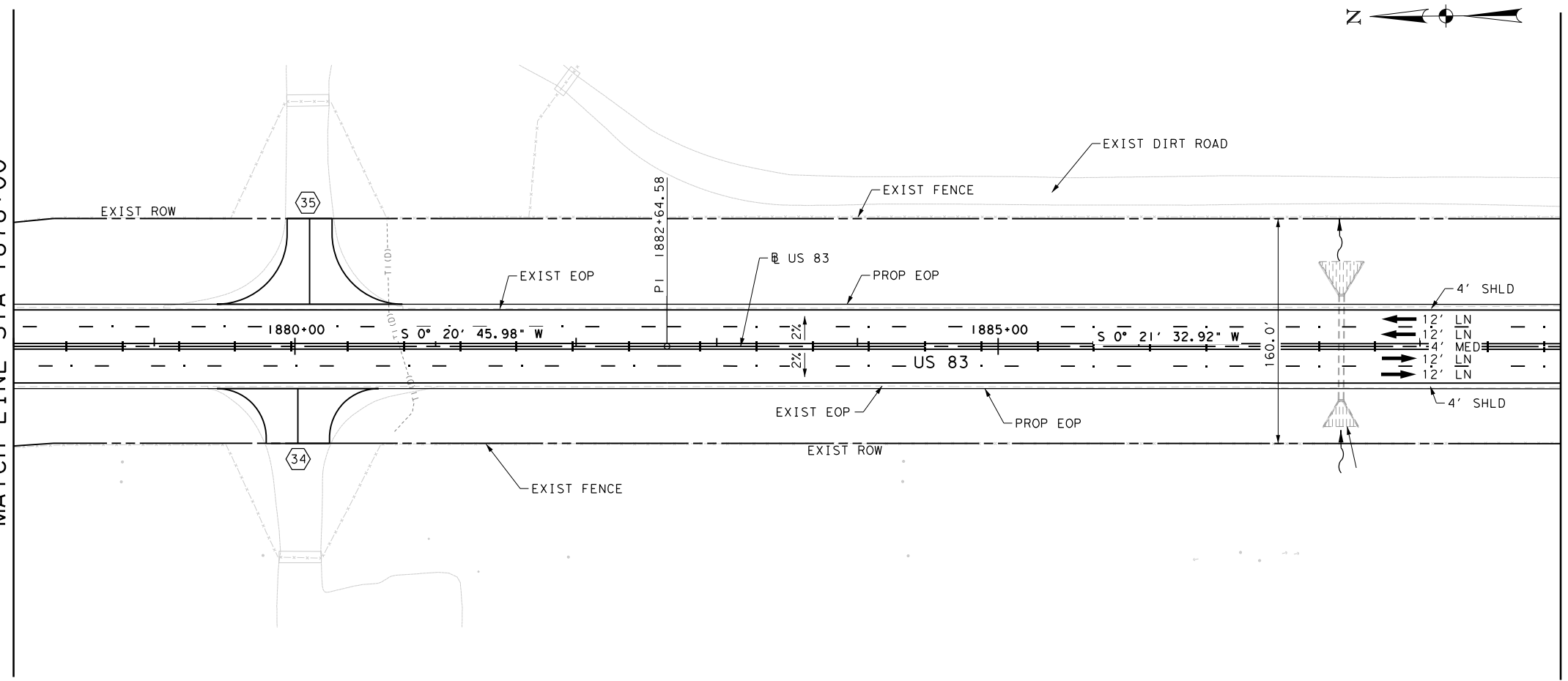
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO

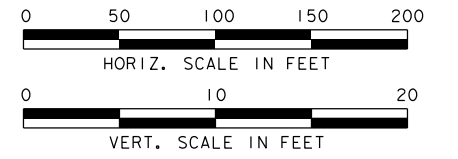
MATCH LINE STA 1878+00

MATCH LINE STA 1889+00



SHEET 35 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1878+00 TO STA 1889+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		142
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



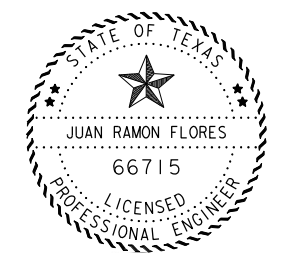
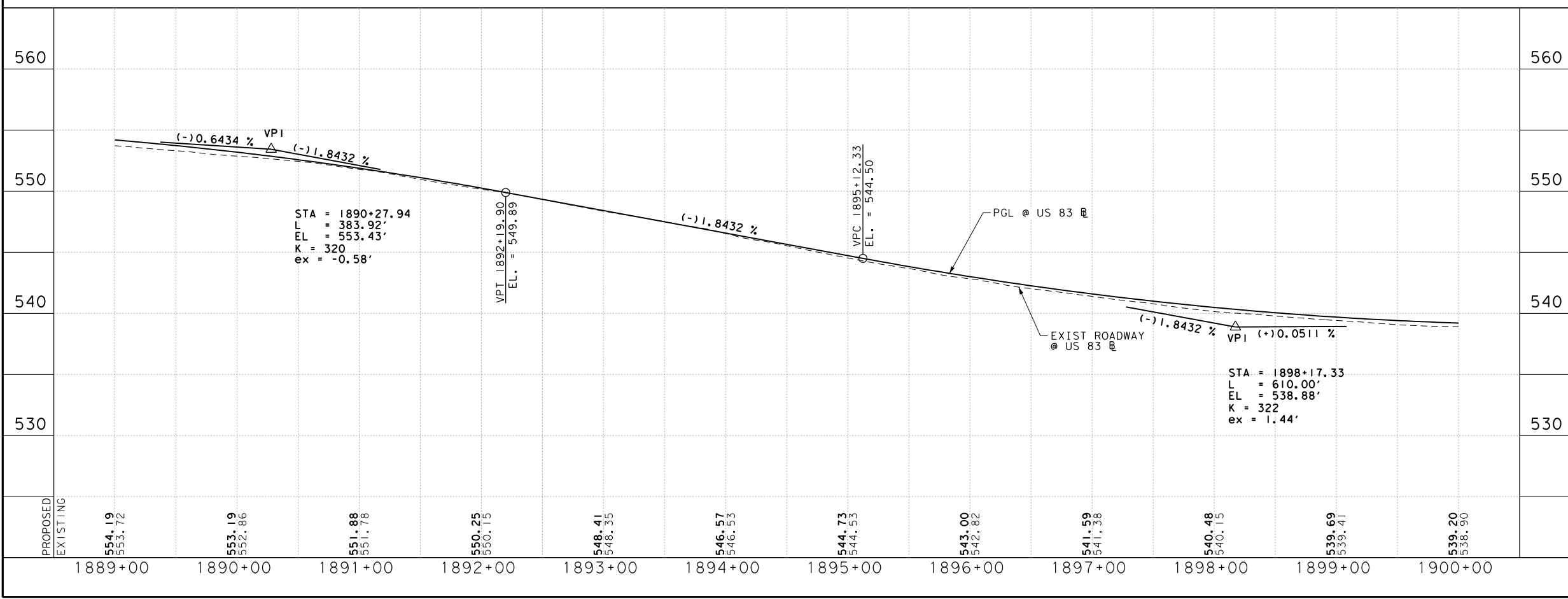
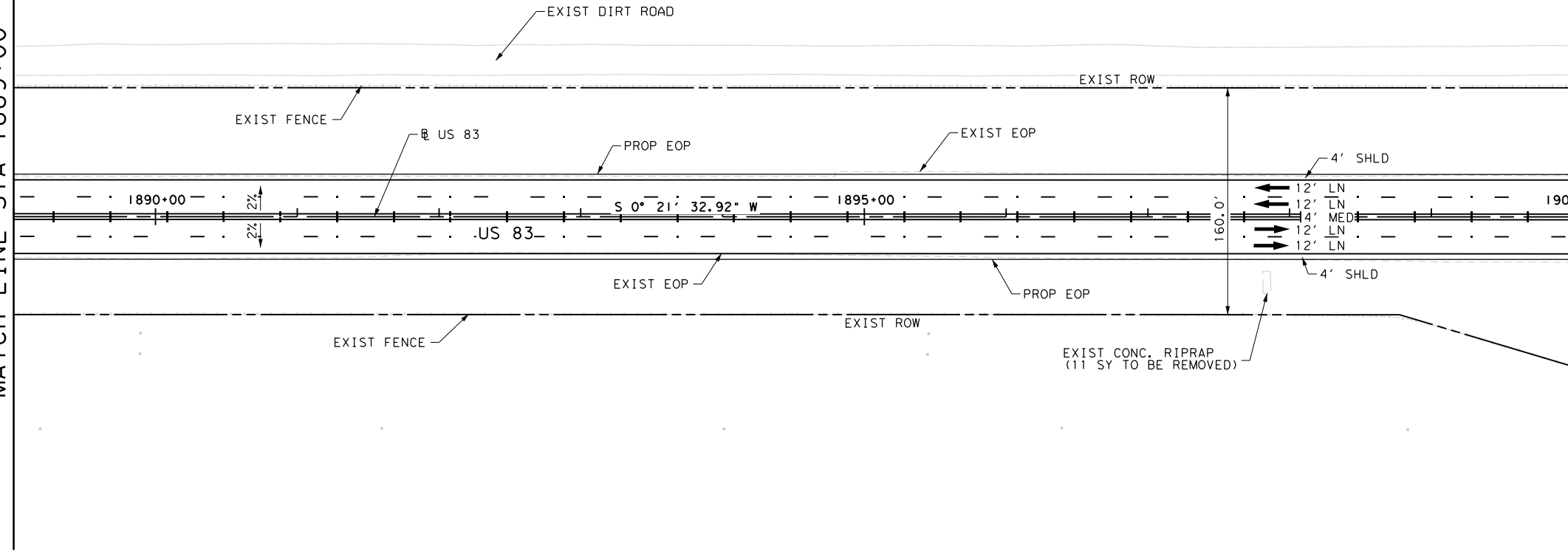
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME

MATCH LINE STA 1889+00

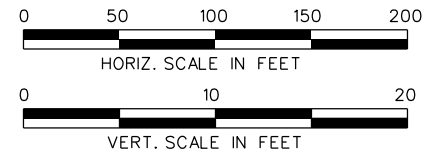
MATCH LINE STA 1900+00



*Juan Flores* 6-22-2020

SHEET 36 OF 55

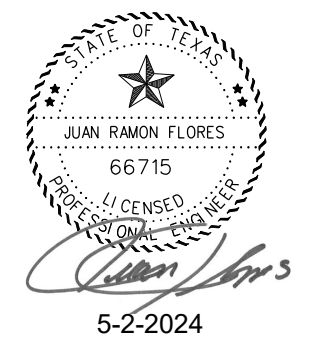
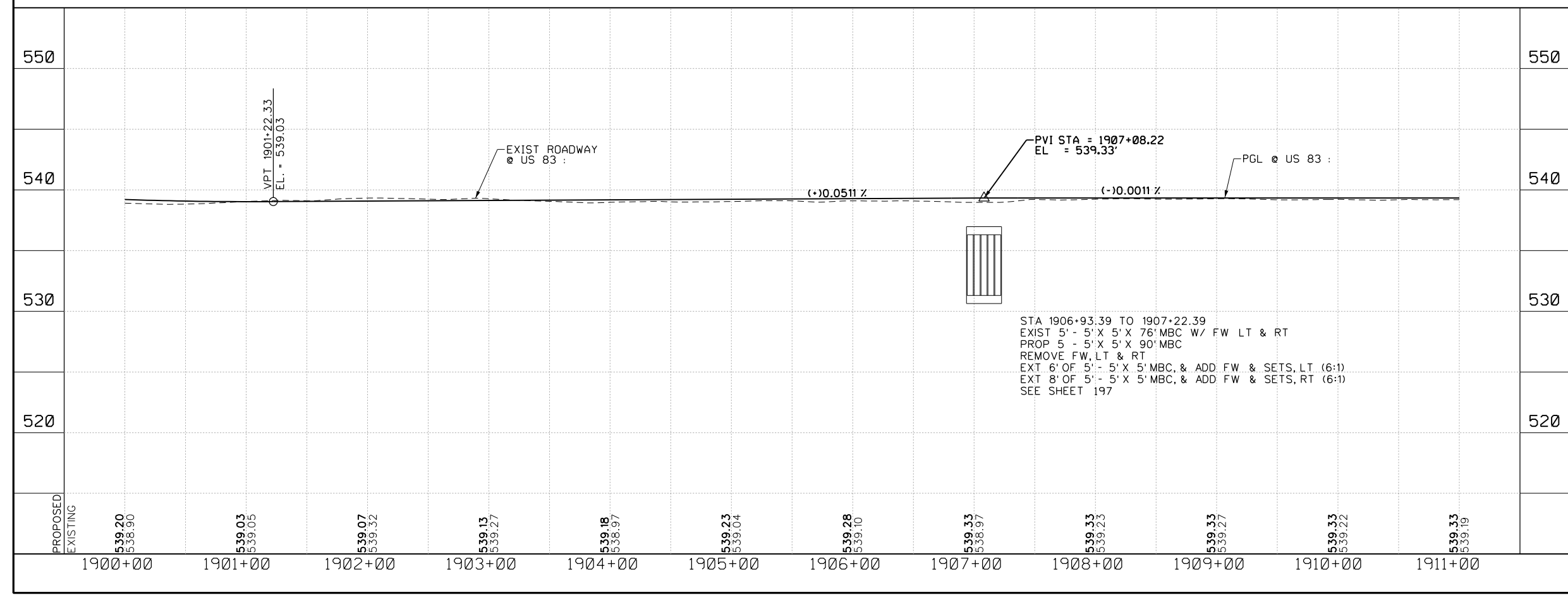
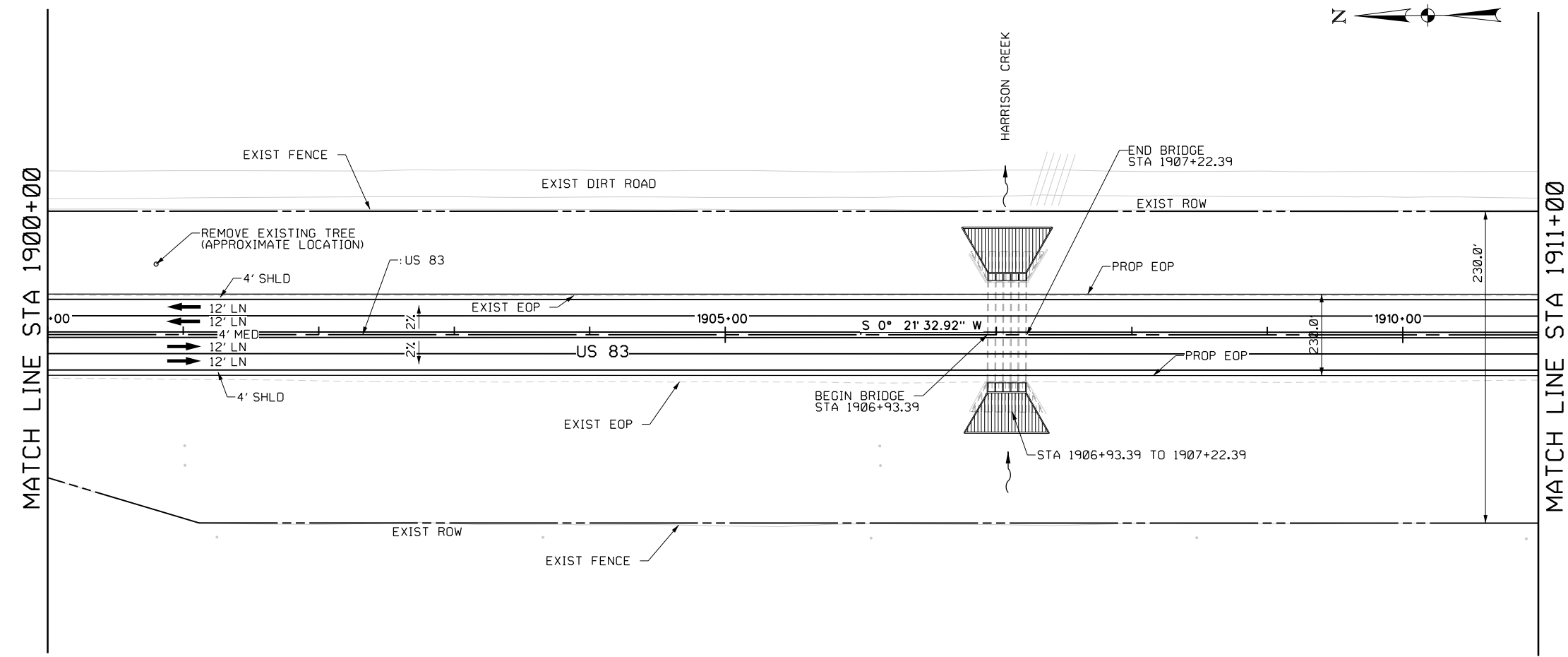
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY PLAN AND PROFILE STA 1889+00 TO STA 1900+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	143	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	
DIRECTION OF FLOW	
DIRECTION OF TRAFFIC	
DRIVEWAY NUMBER	
ALIGNMENT CURVE NAME	



SHEET 37 OF 55

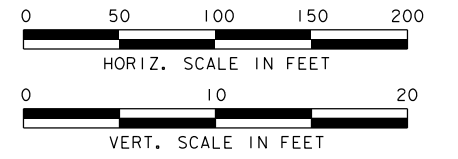
NO.	REVISIONS	BY	DATE

**ARREDONDO, ZEPEDA & BRUNZ, LLC**  
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 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83 ROADWAY PLAN AND PROFILE STA 1900+00 TO STA 1911+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	144	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



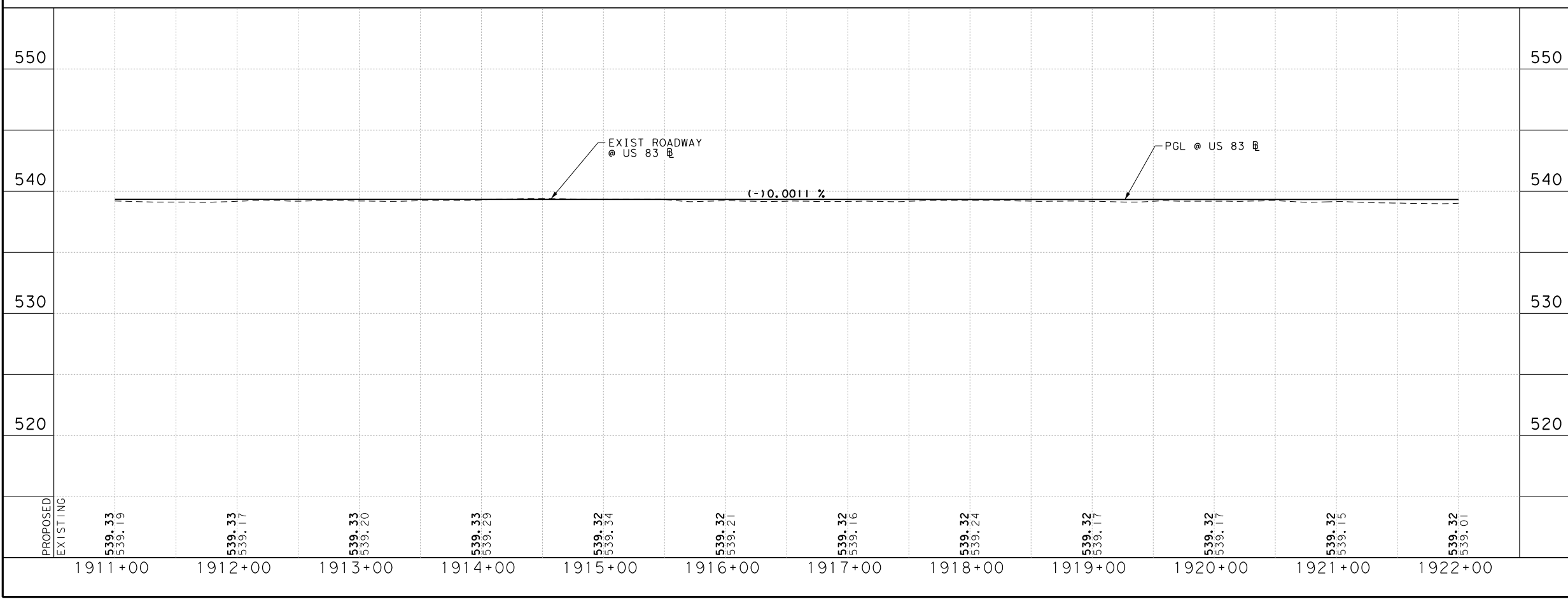
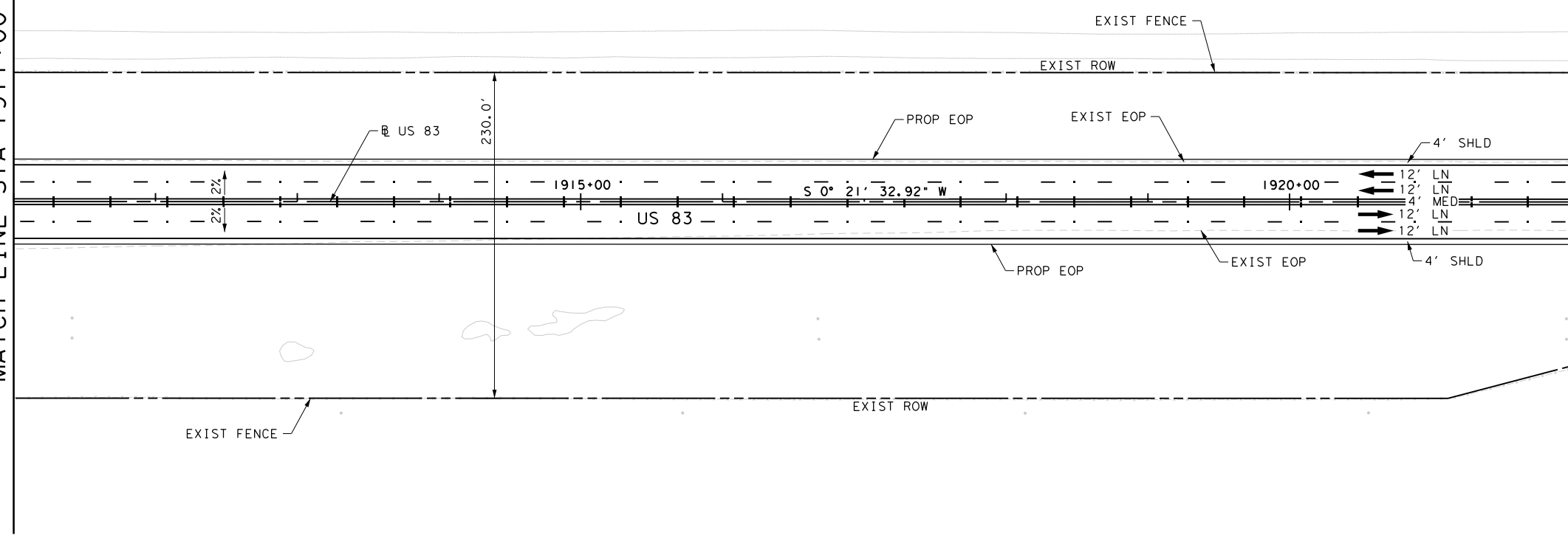
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO

MATCH LINE STA 1911+00

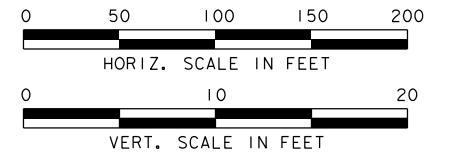
MATCH LINE STA 1922+00



SHEET 38 OF 55

NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1911+00 TO STA 1922+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		145
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

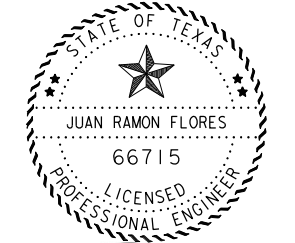
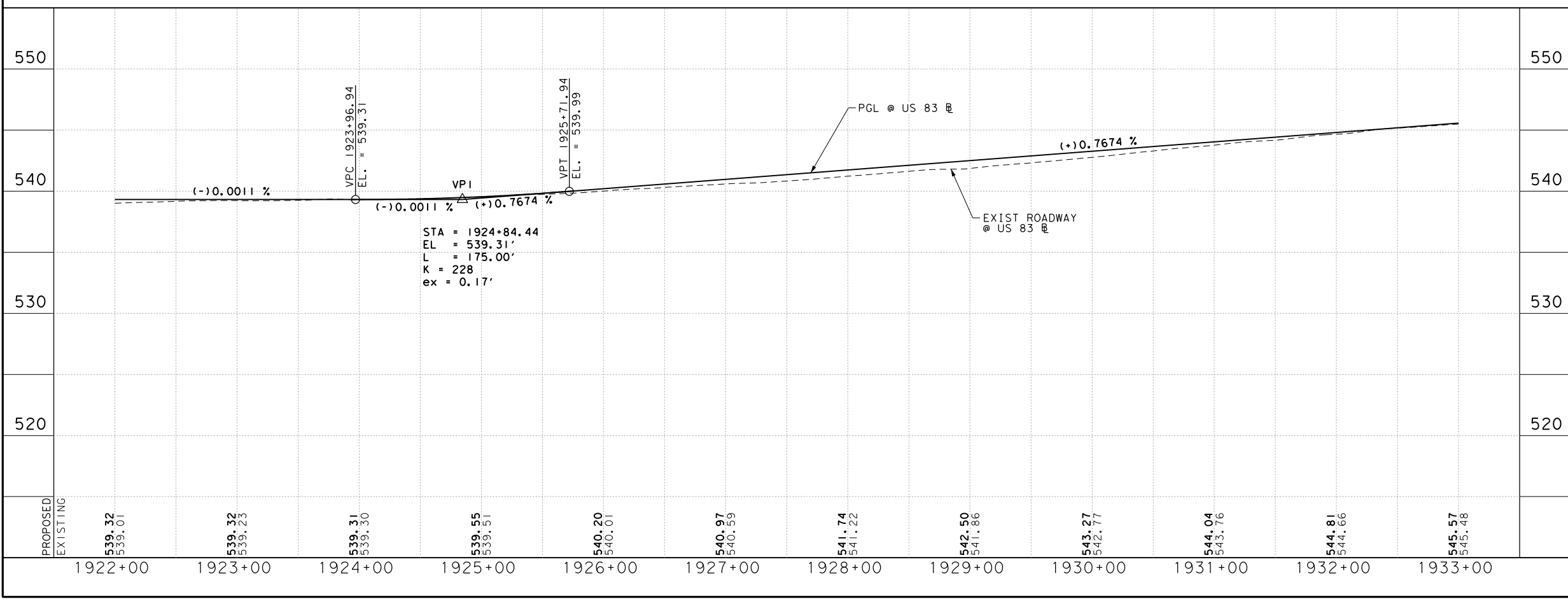
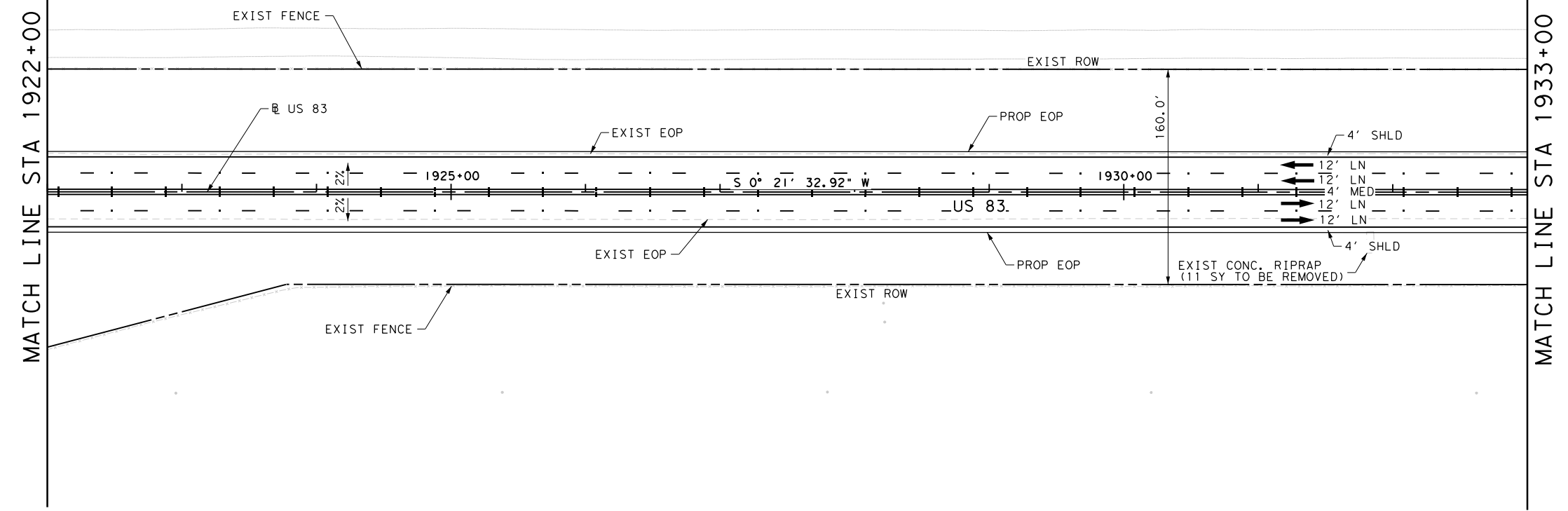




- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

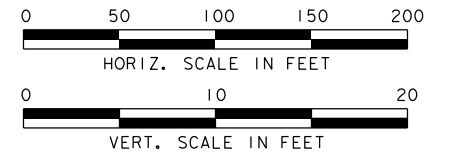
- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



*Juan Flores* 6-22-2020

SHEET 39 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY PLAN AND PROFILE STA 1922+00 TO STA 1933+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		146
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



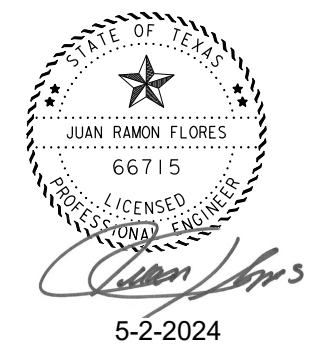
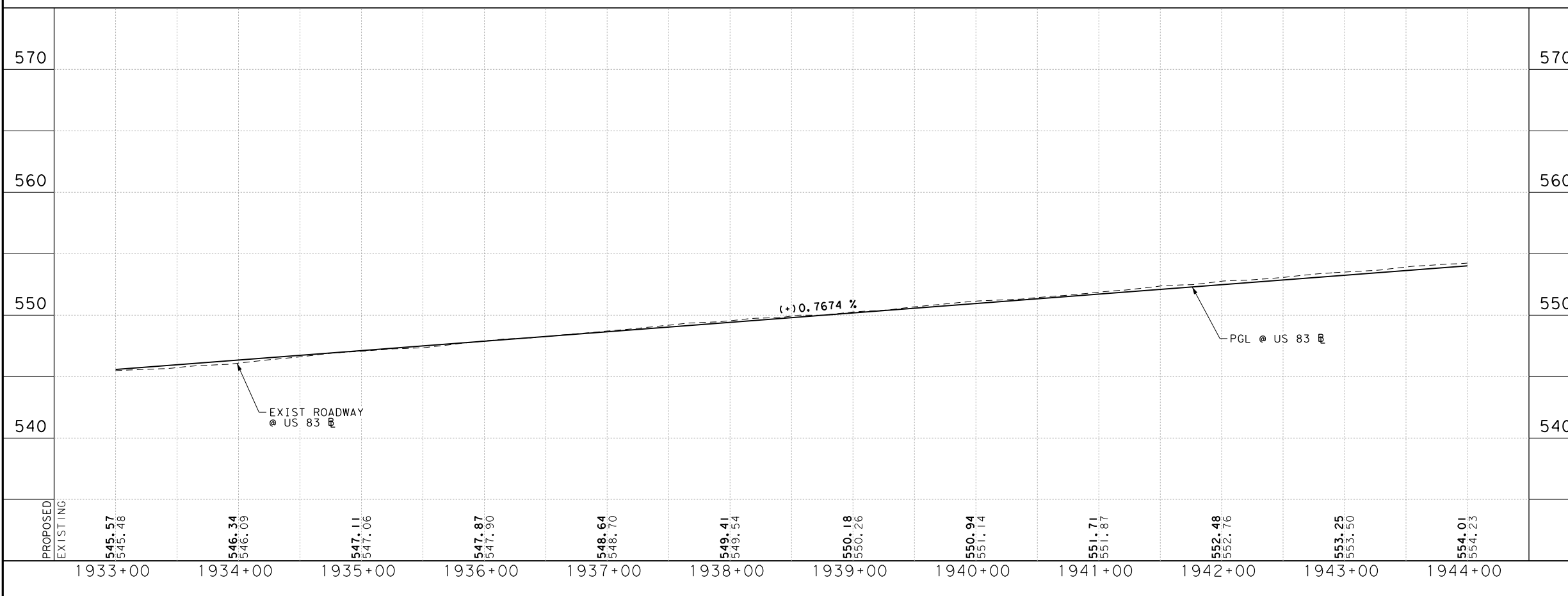
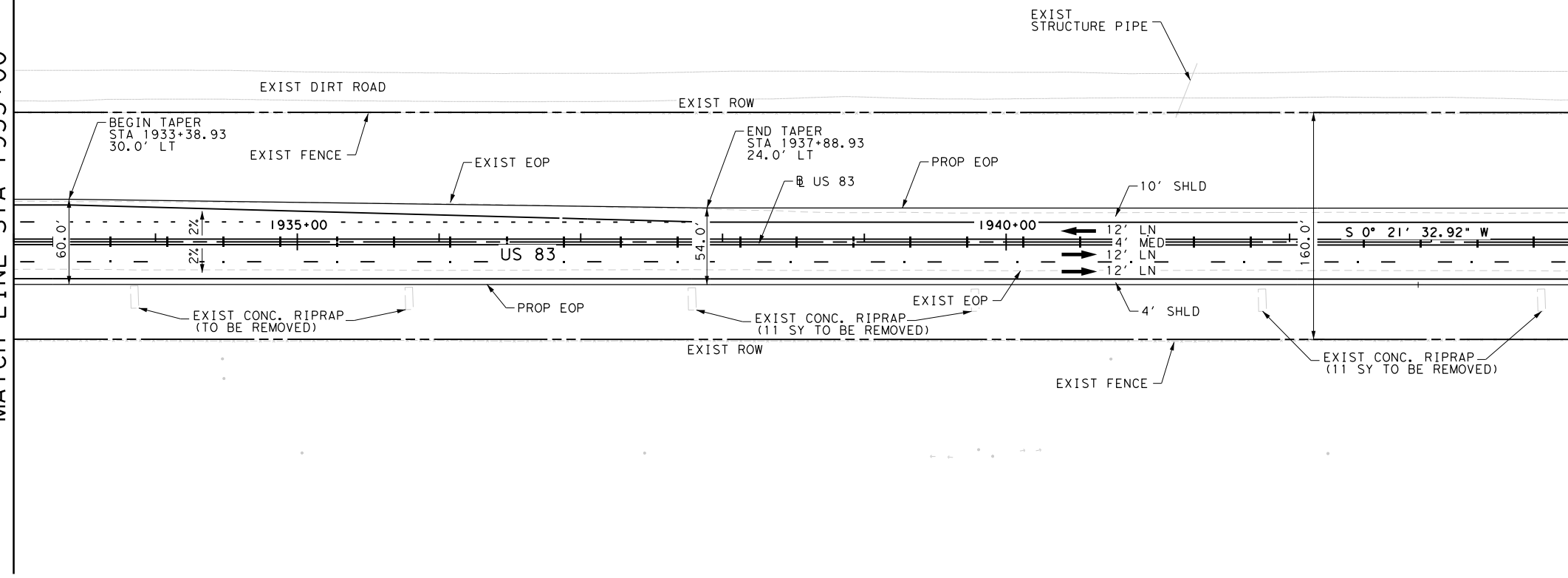
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME

MATCH LINE STA 1933+00

MATCH LINE STA 1944+00



SHEET 40 OF 55

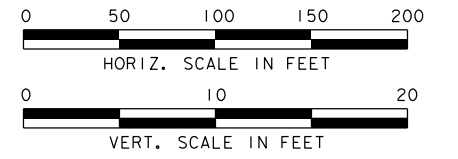
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

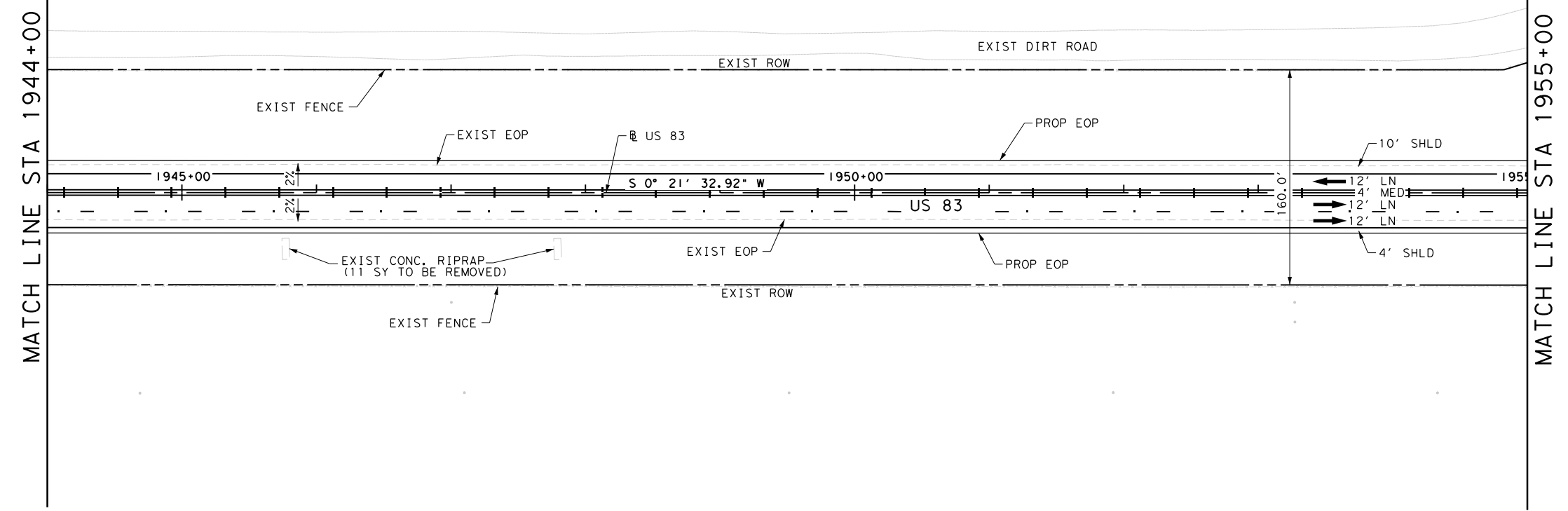
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**US 83 ROADWAY PLAN AND PROFILE STA 1933+00 TO STA 1944+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	147	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

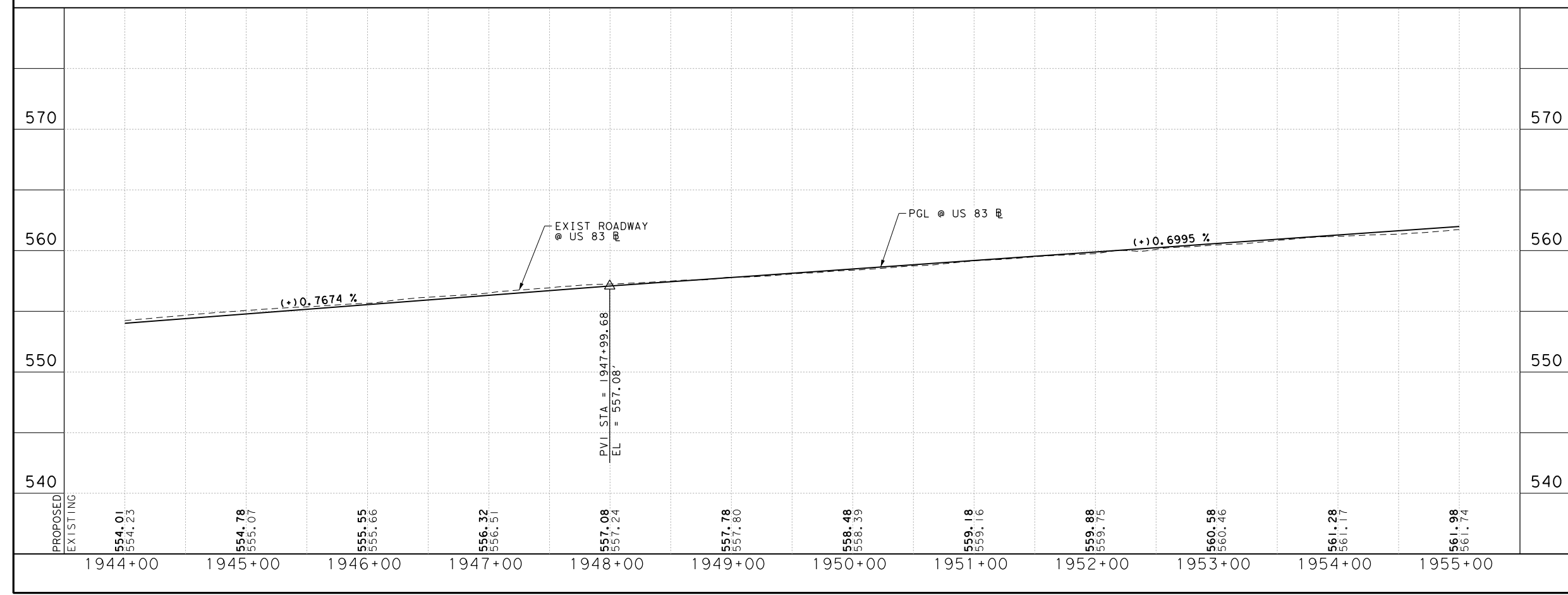


- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.



**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



5-2-2024

SHEET 41 OF 55

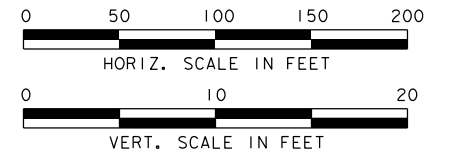
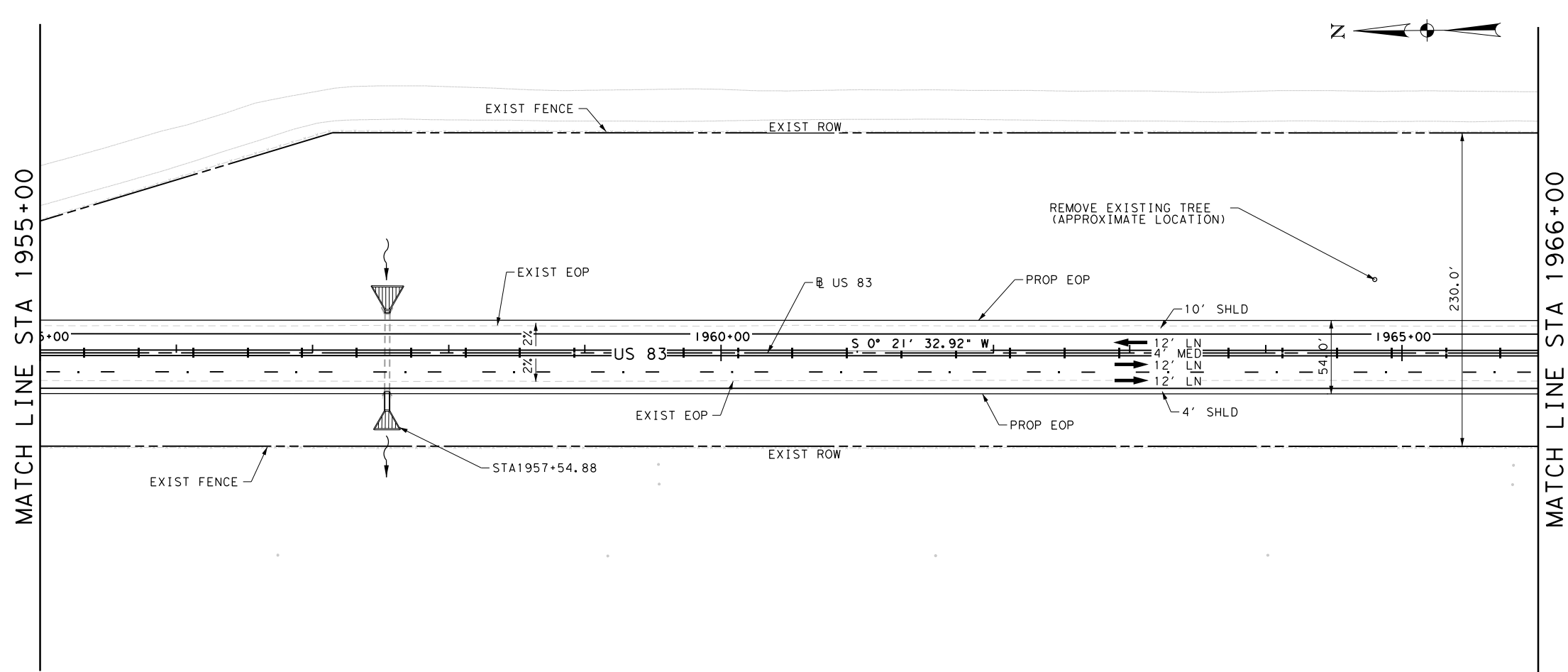
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83 ROADWAY  
 PLAN AND PROFILE  
 STA 1944+00 TO STA 1955+00**

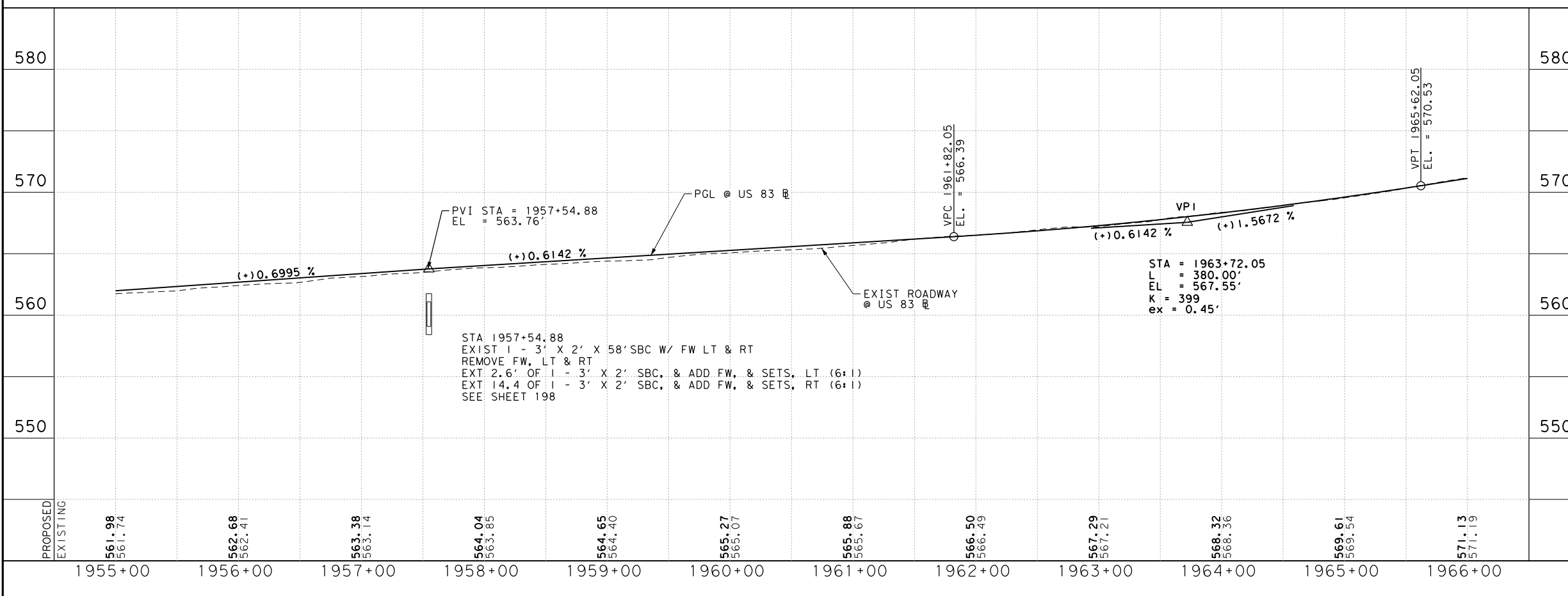
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42	SHEET NO. 148
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT
CONTROL 0037	SECTION 08	JOB 042, ETC.
		HIGHWAY NO. US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	[CURVE-NO]



5-2-2024

SHEET 42 OF 55

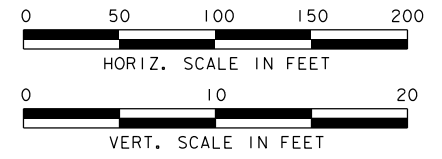
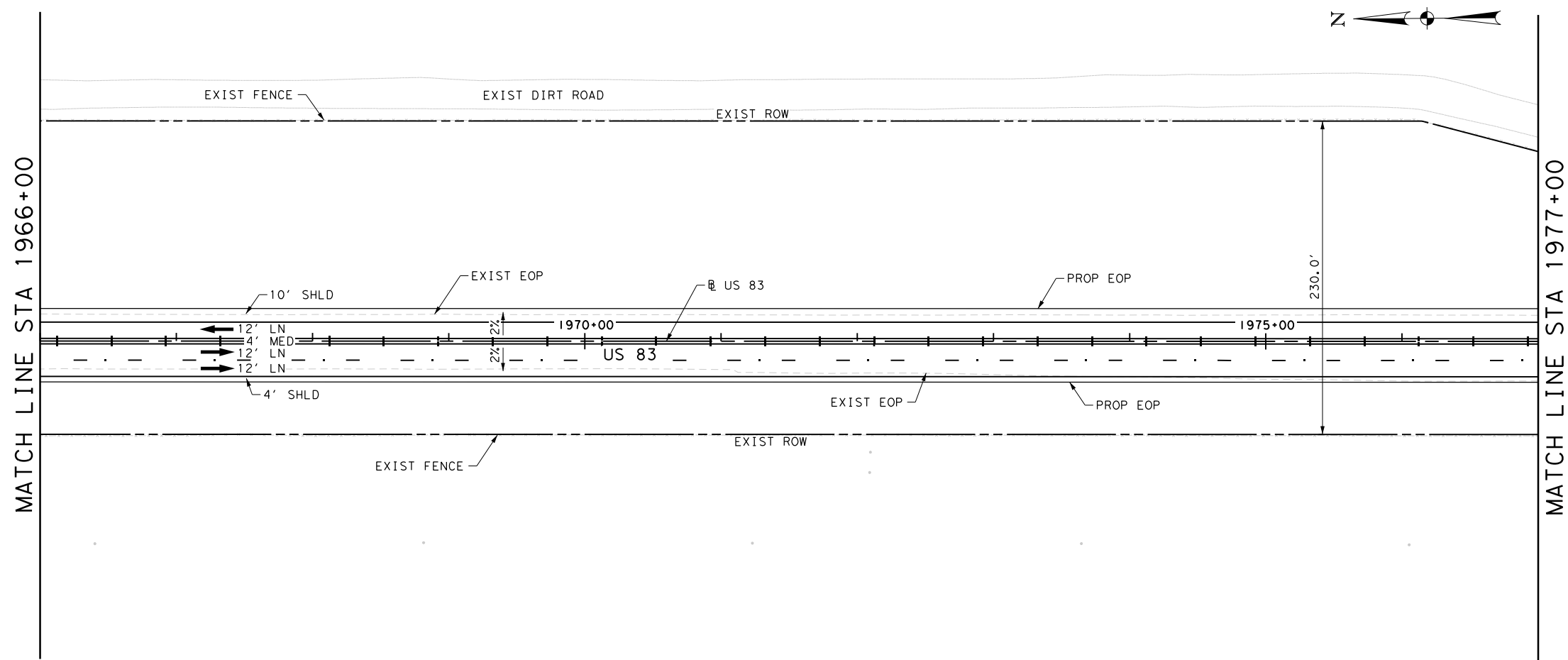
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83  
 ROADWAY  
 PLAN AND PROFILE  
 STA 1955+00 TO STA 1966+00**

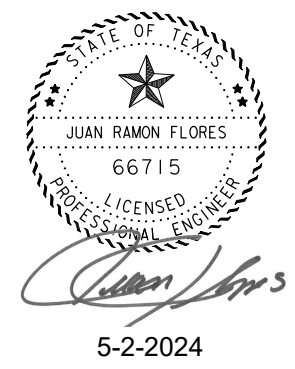
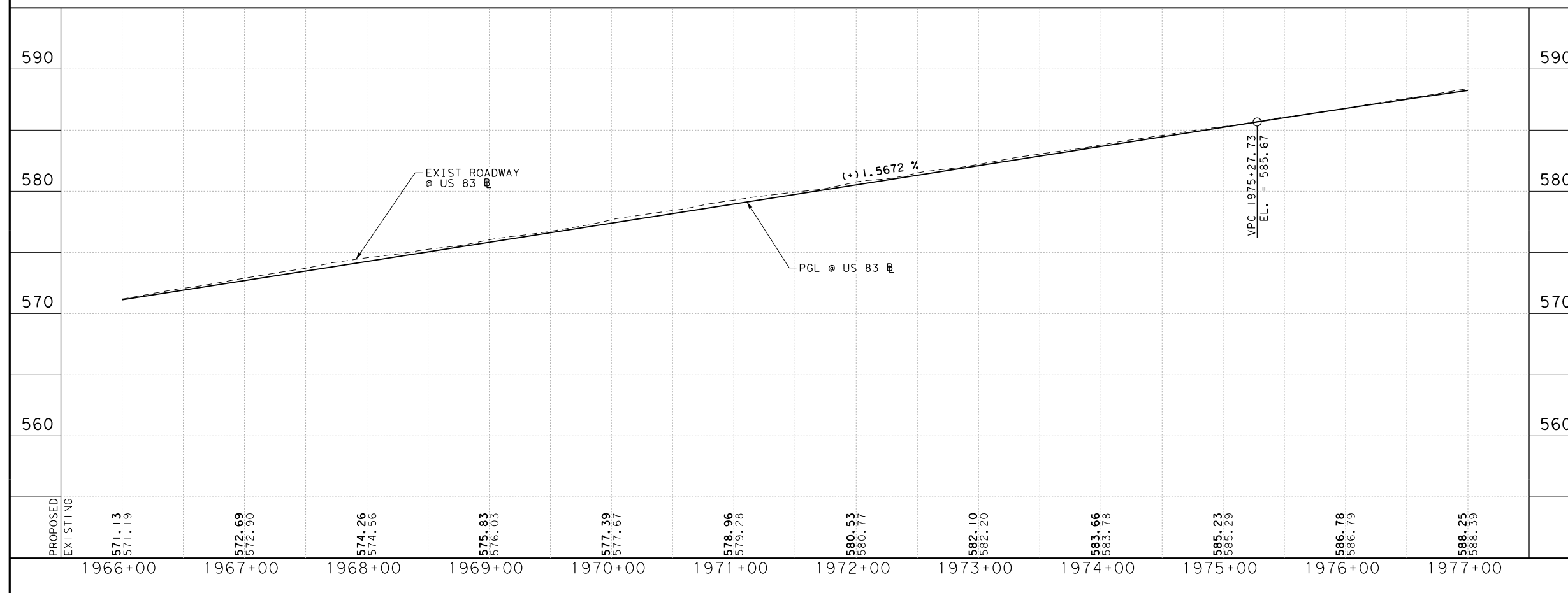
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	149
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 43 OF 55

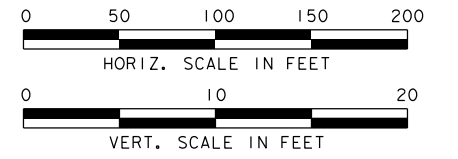
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83  
 ROADWAY  
 PLAN AND PROFILE  
 STA 1966+00 TO STA 1977+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	150	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



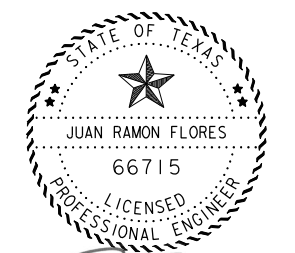
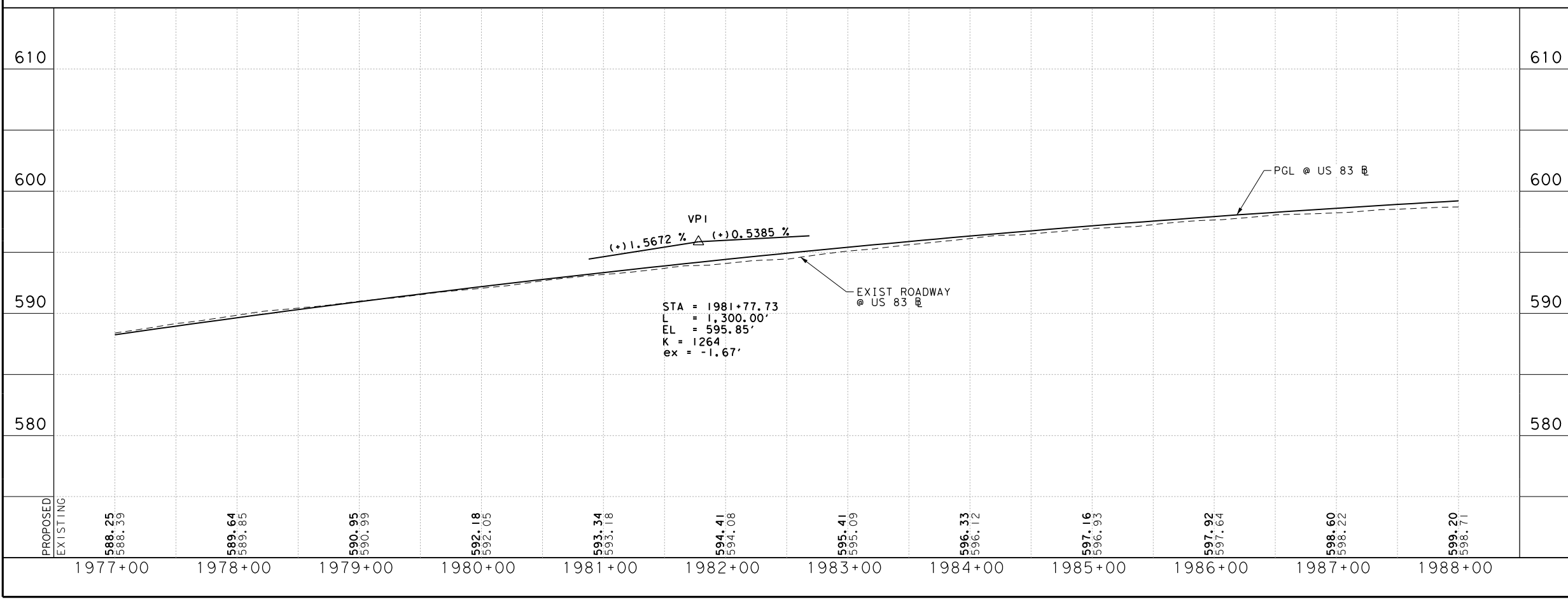
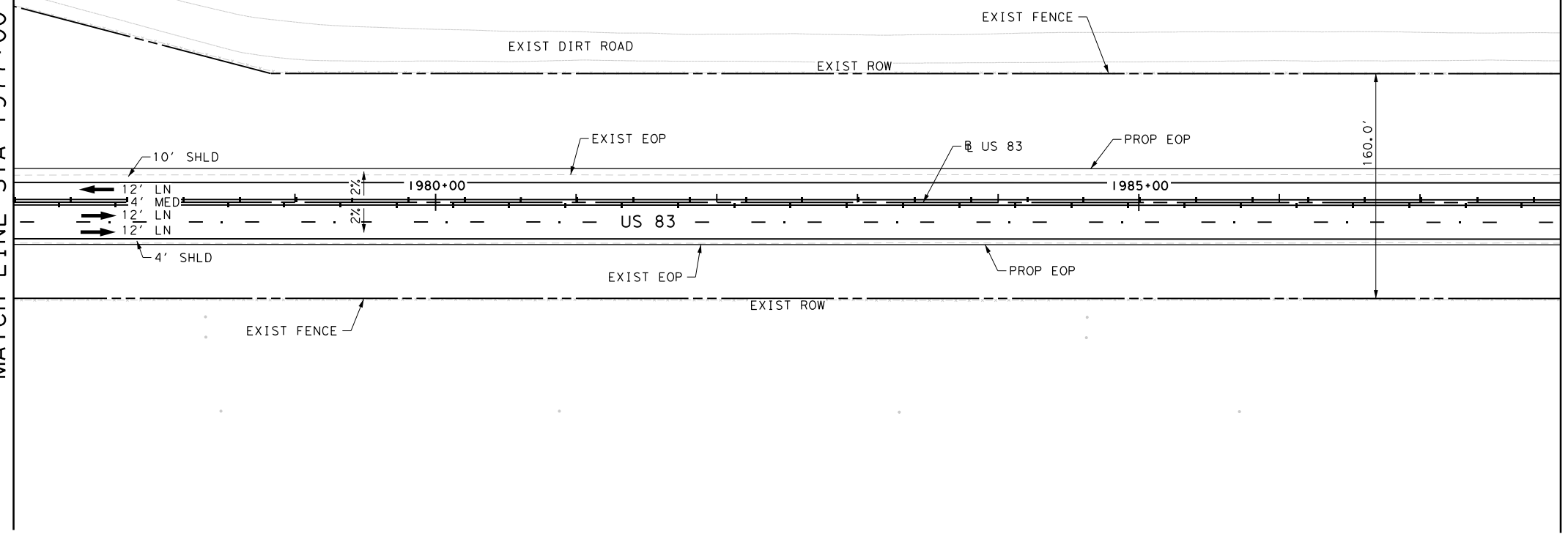
- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME

MATCH LINE STA 1977+00

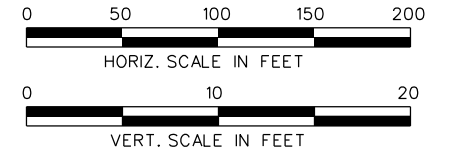
MATCH LINE STA 1988+00



*Juan Flores* 6-22-2020

SHEET 44 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation, all rights reserved			
<b>US 83 ROADWAY PLAN AND PROFILE STA 1977+00 TO STA 1988+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		151
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

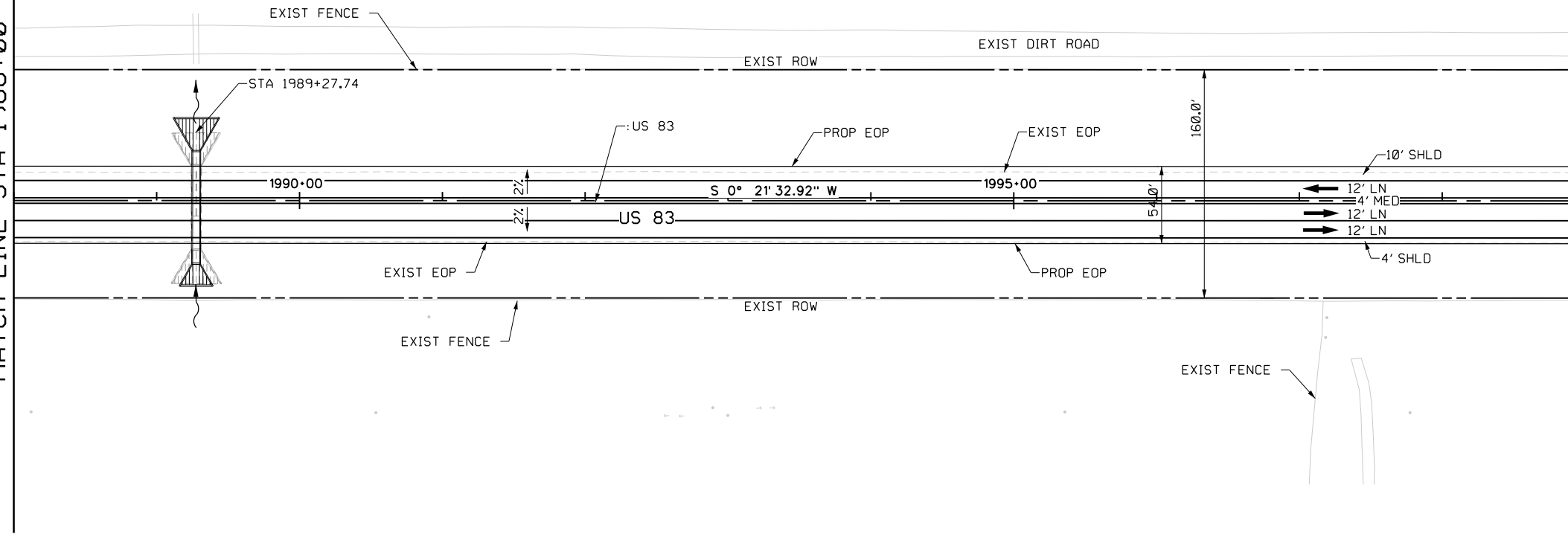


- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

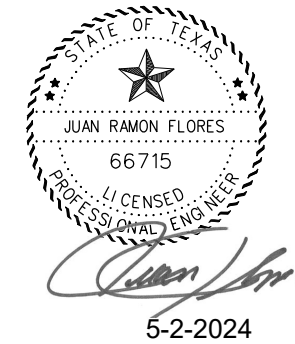
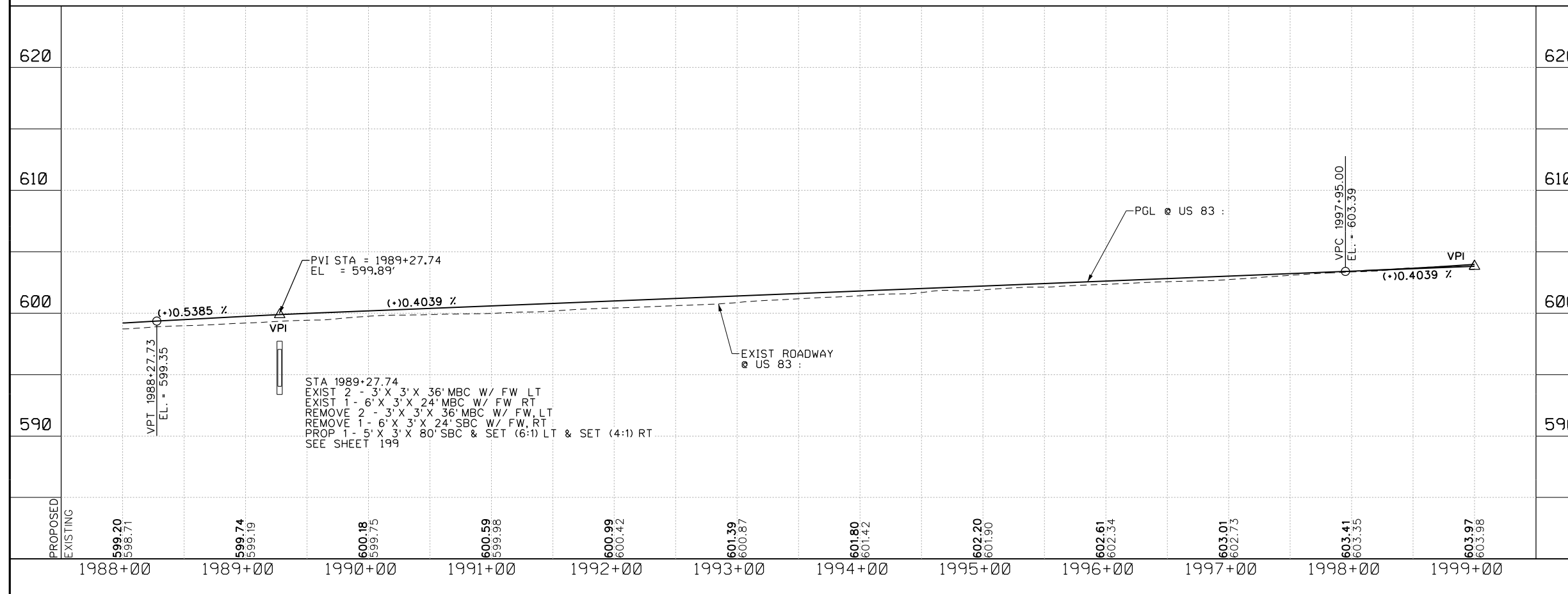
**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME

MATCH LINE STA 1988+00

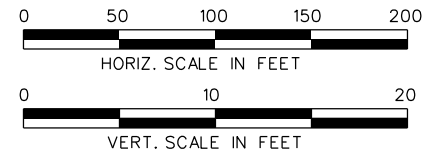


MATCH LINE STA 1999+00



SHEET 45 OF 55

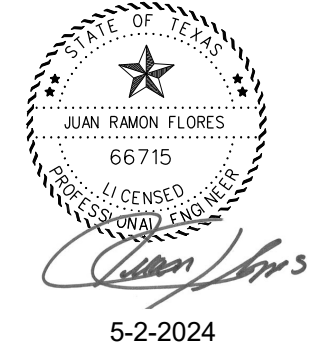
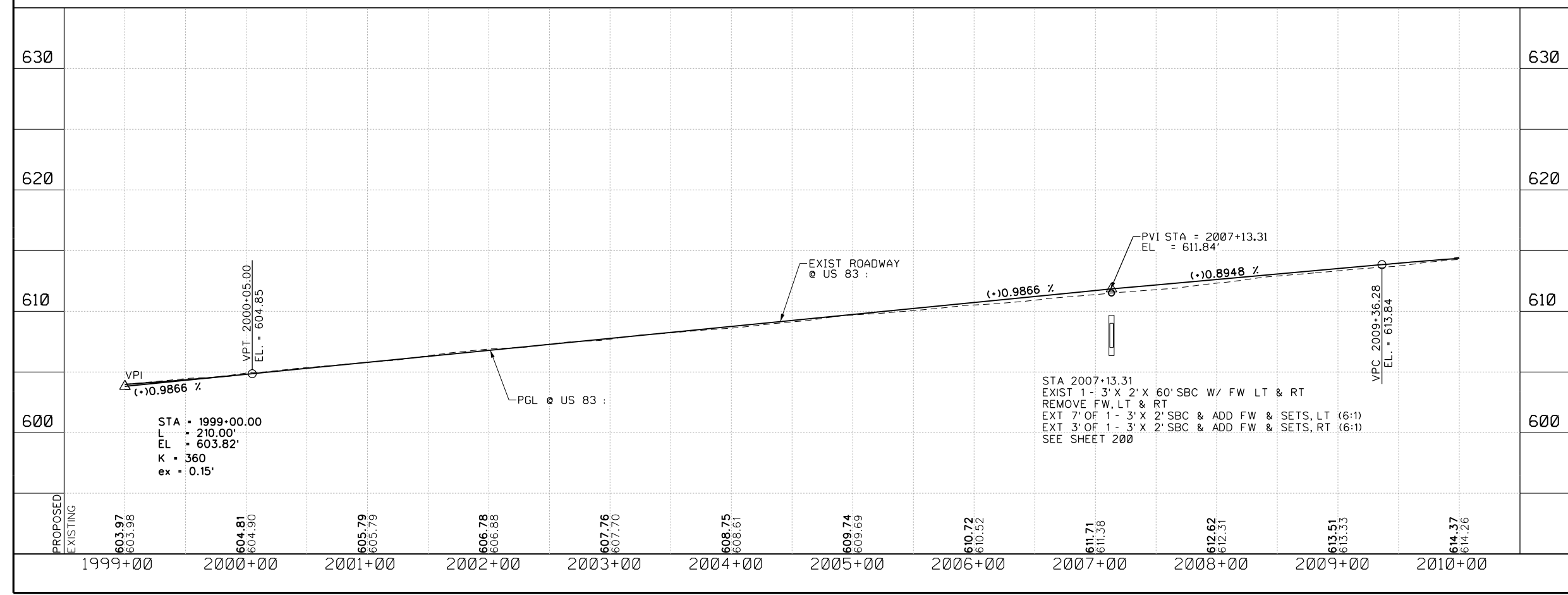
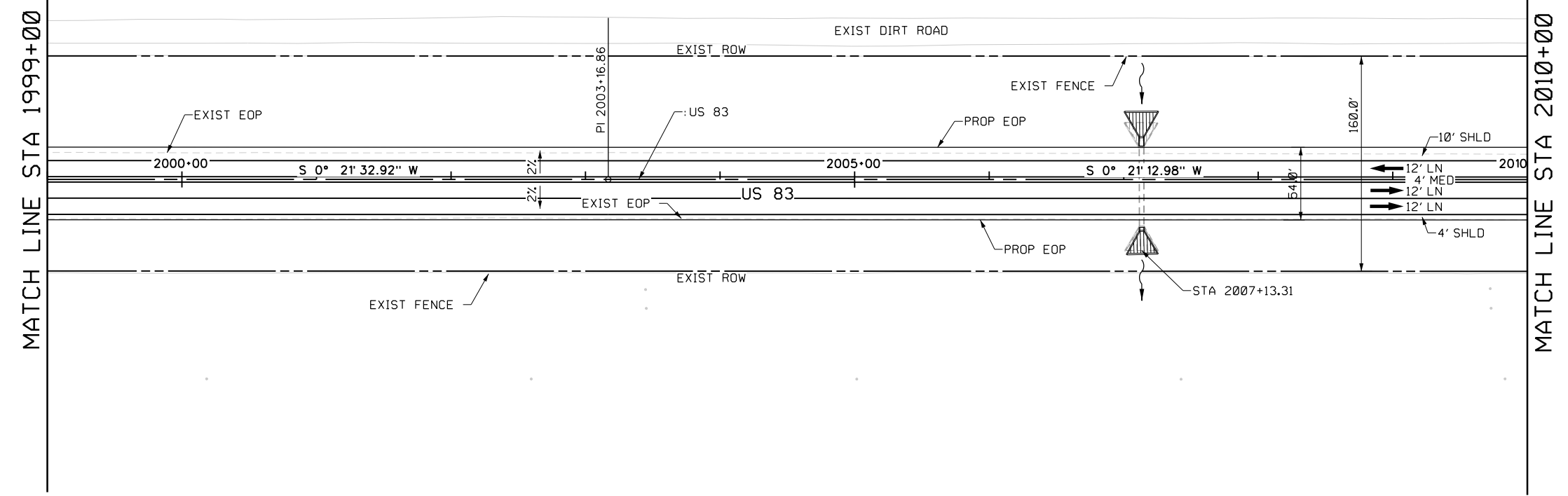
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
Texas Department of Transportation ©2024 by Texas Department of Transportation; all rights reserved.			
US 83 ROADWAY PLAN AND PROFILE STA 1988+00 TO STA 1999+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		152
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

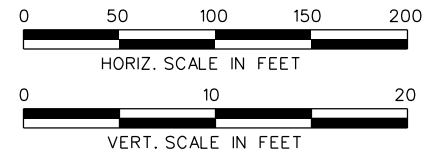
- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



SHEET 46 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 1999+00 TO STA 2010+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		153
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83





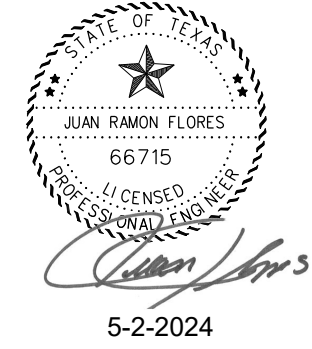
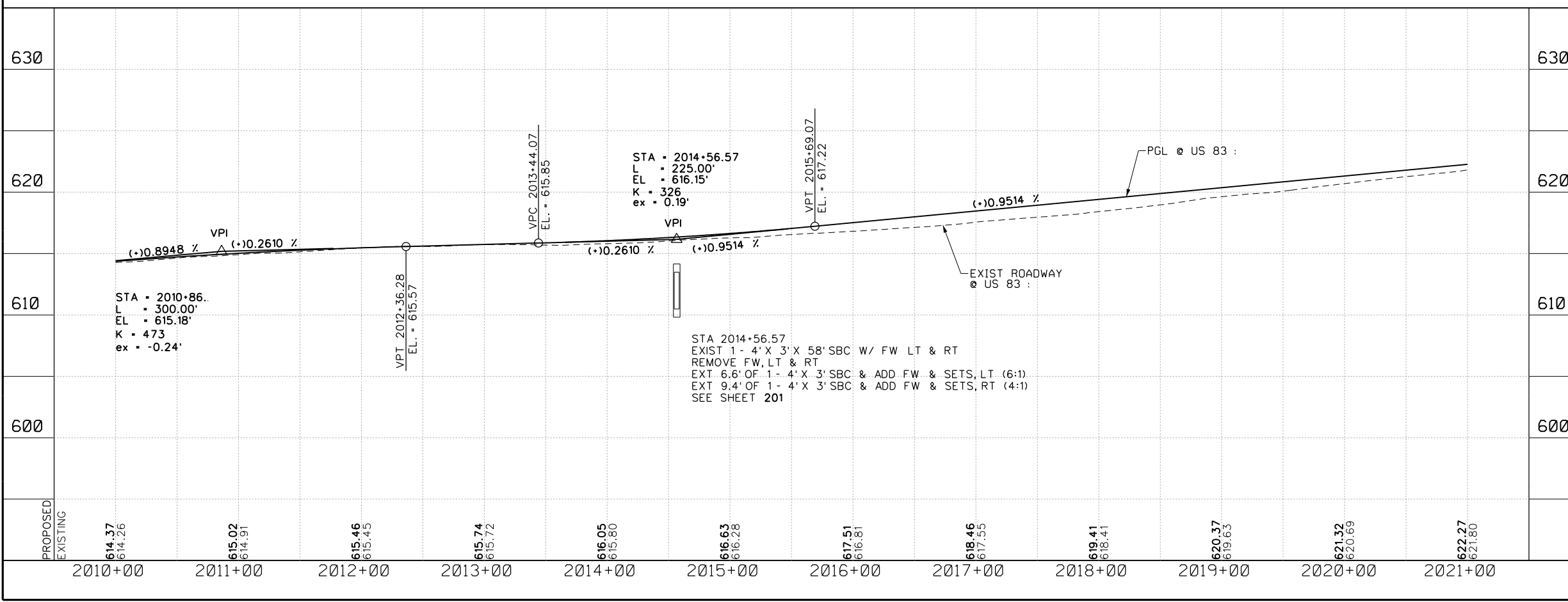
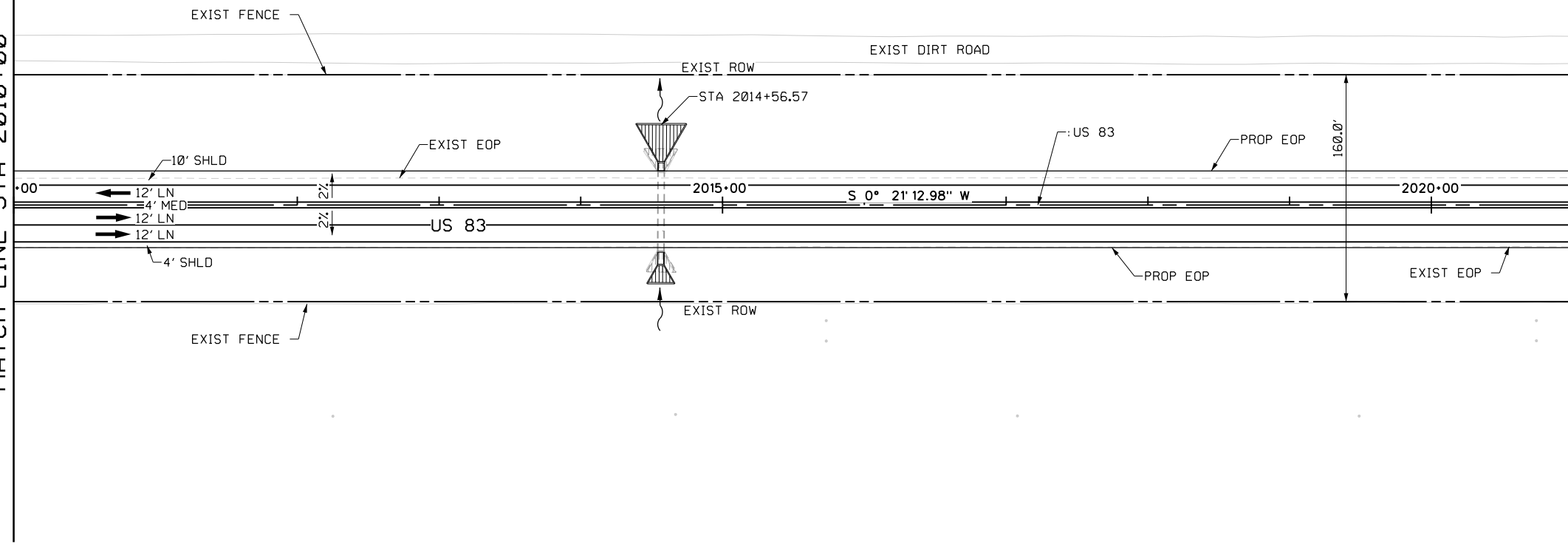
**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	
DIRECTION OF FLOW	
DIRECTION OF TRAFFIC	
DRIVEWAY NUMBER	
ALIGNMENT CURVE NAME	

MATCH LINE STA 2010+00

MATCH LINE STA 2021+00



SHEET 47 OF 55

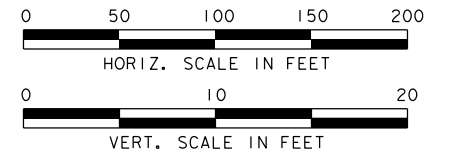
NO.	REVISIONS	BY	DATE

**ARREDONDO, ZEPEDA & BRUNZ, LLC**  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
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**US 83  
 ROADWAY  
 PLAN AND PROFILE  
 STA 2010+00 TO STA 2021+00**

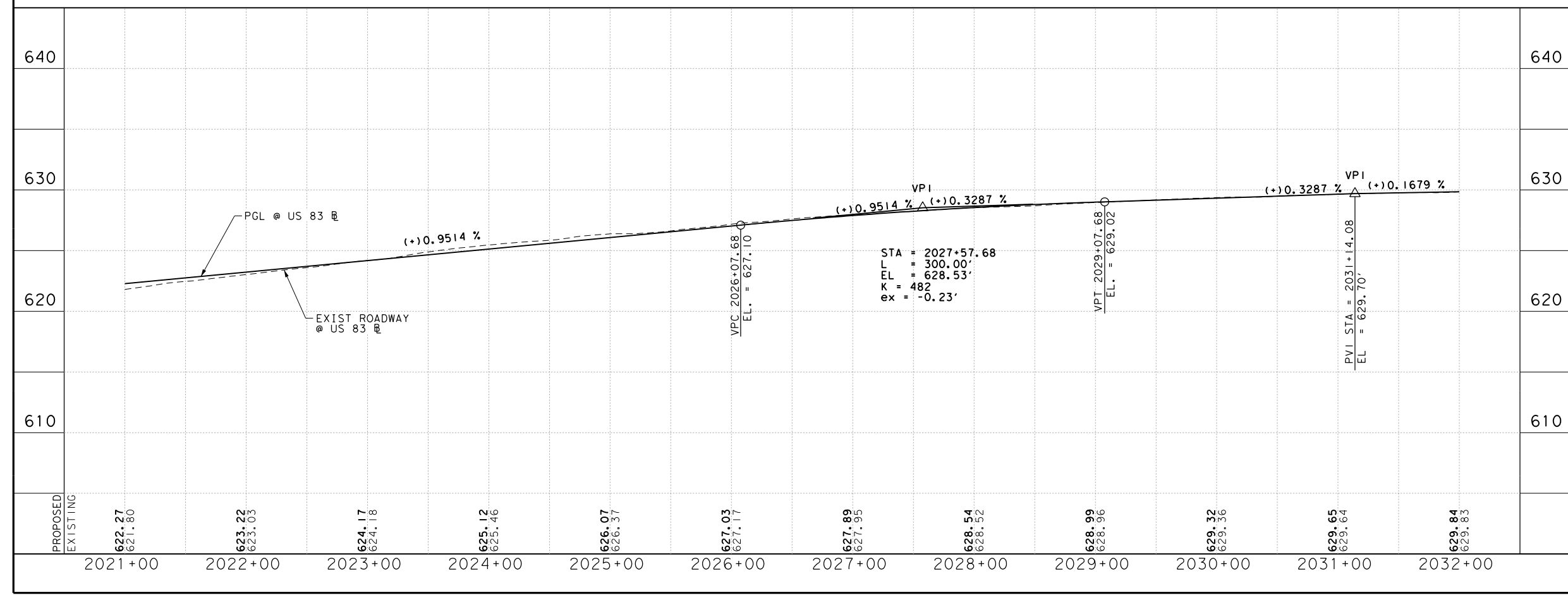
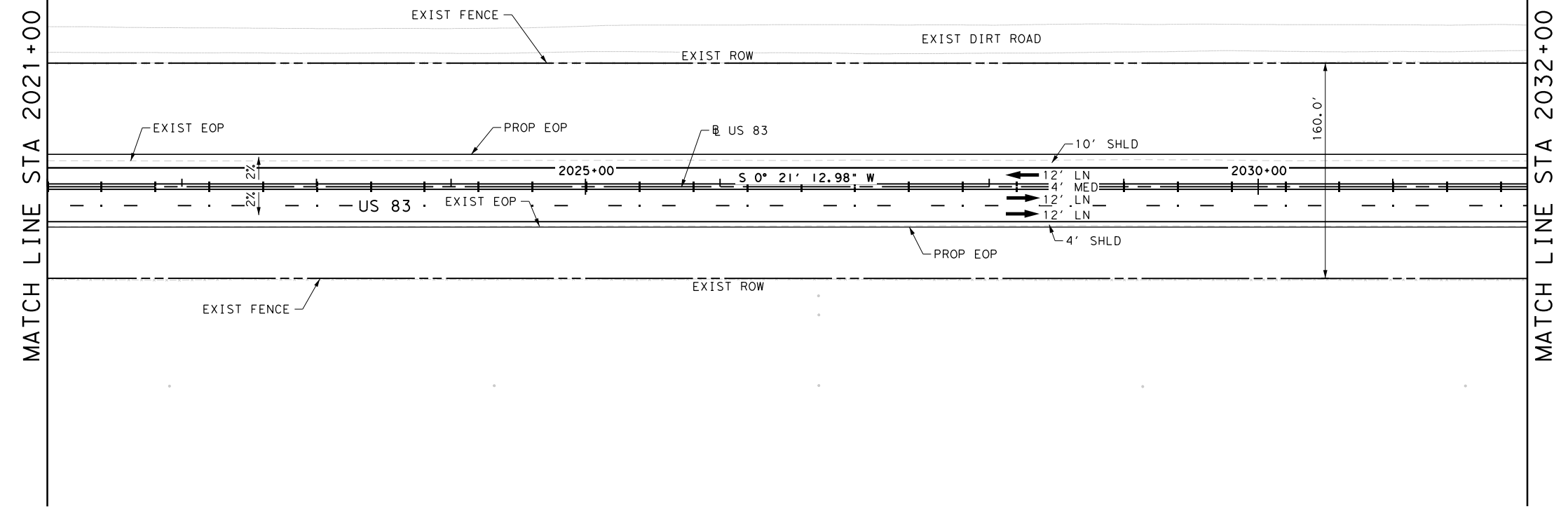
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	154	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO



SHEET 48 OF 55

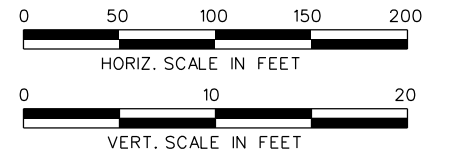
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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**US 83  
ROADWAY  
PLAN AND PROFILE  
STA 2021+00 TO STA 2032+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	155
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



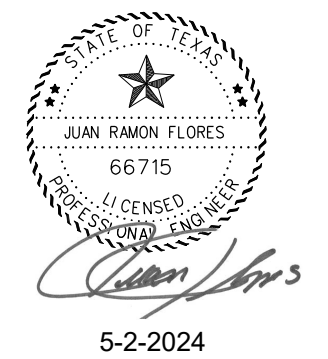
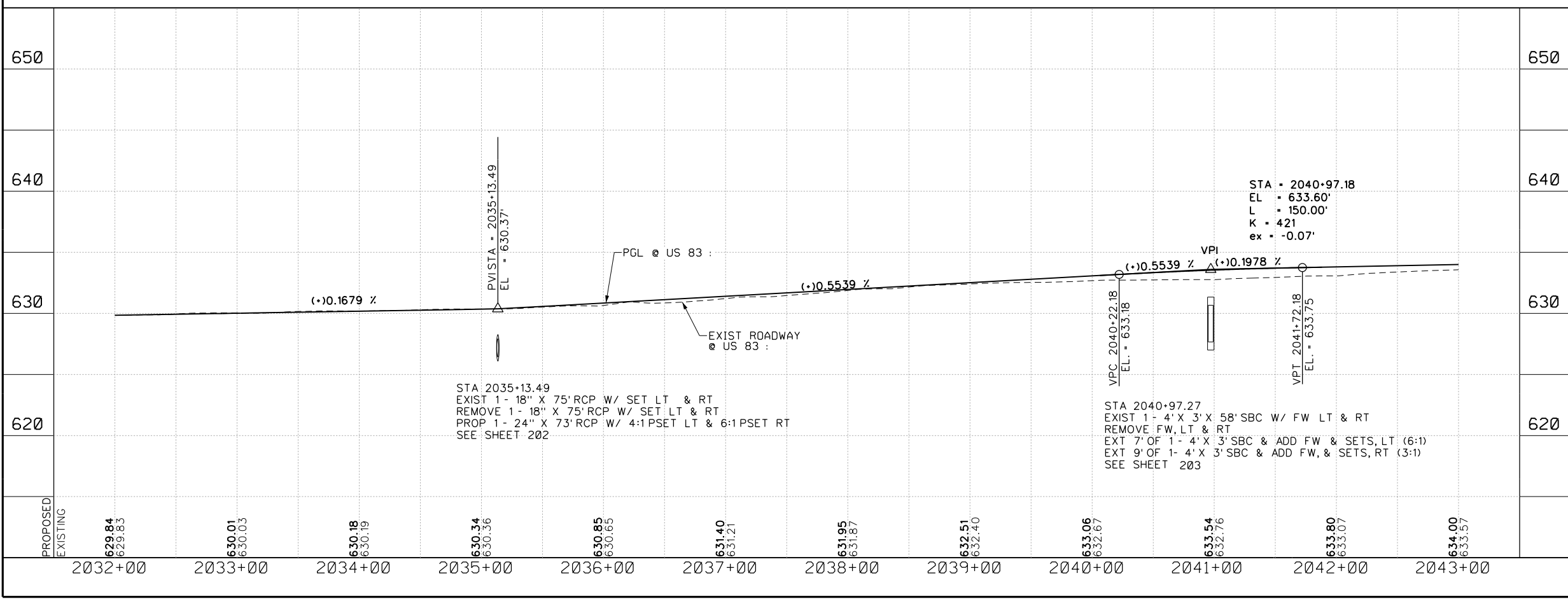
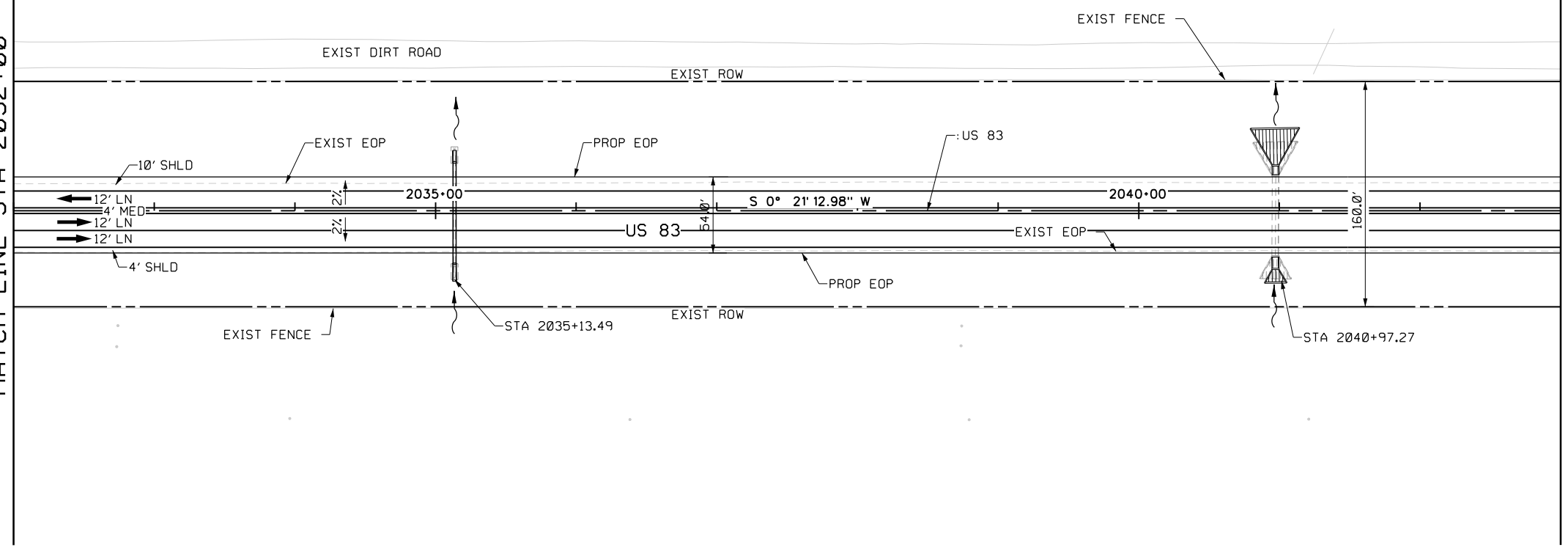
**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

EXIST ROW	
DIRECTION OF FLOW	
DIRECTION OF TRAFFIC	
DRIVEWAY NUMBER	
ALIGNMENT CURVE NAME	

MATCH LINE STA 2032+00

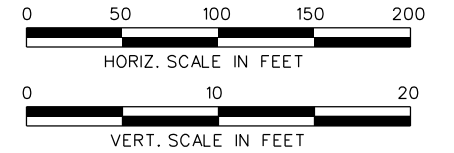
MATCH LINE STA 2043+00



5-2-2024

SHEET 49 OF 55

NO.		REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098				
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<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 2032+00 TO STA 2043+00</b>				
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.	
6	C 37-8-42		156	
STATE	DISTRICT	COUNTY		HIGHWAY NO.
TEXAS	LRD	DIMMIT		
CONTROL	SECTION	JOB	HIGHWAY NO.	
0037	08	042, ETC.	US 83	

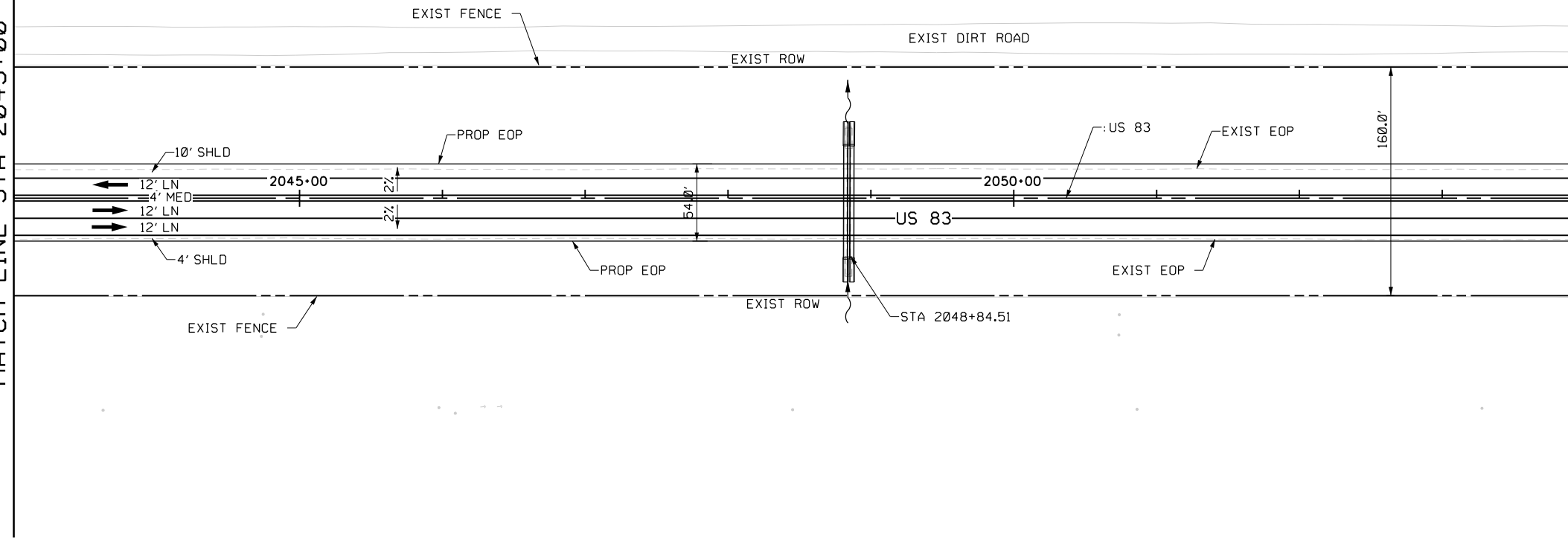


- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

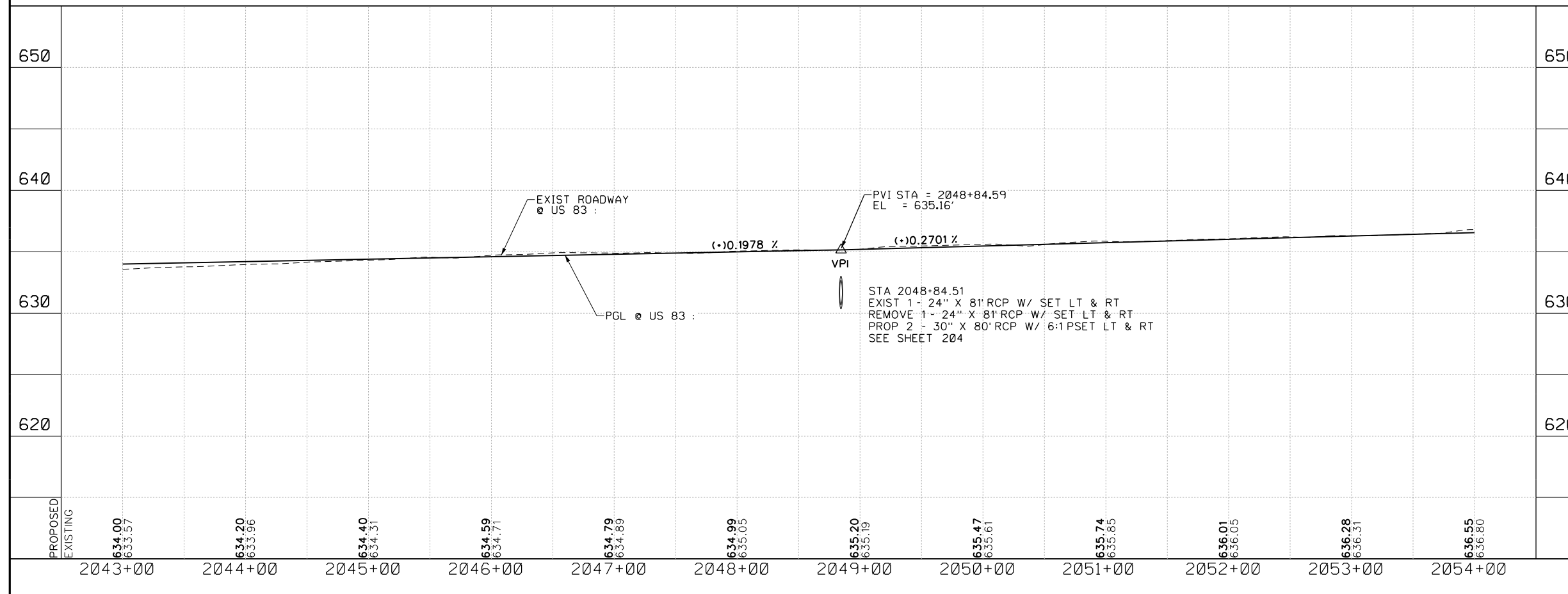
**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME

MATCH LINE STA 2043+00

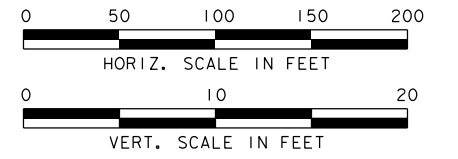


MATCH LINE STA 2054+00



SHEET 50 OF 55

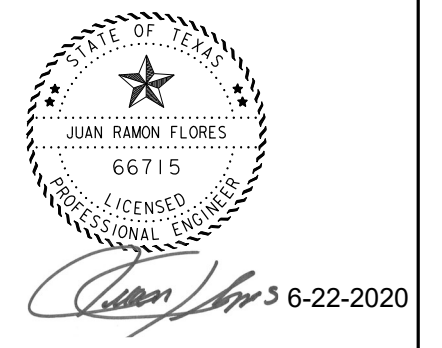
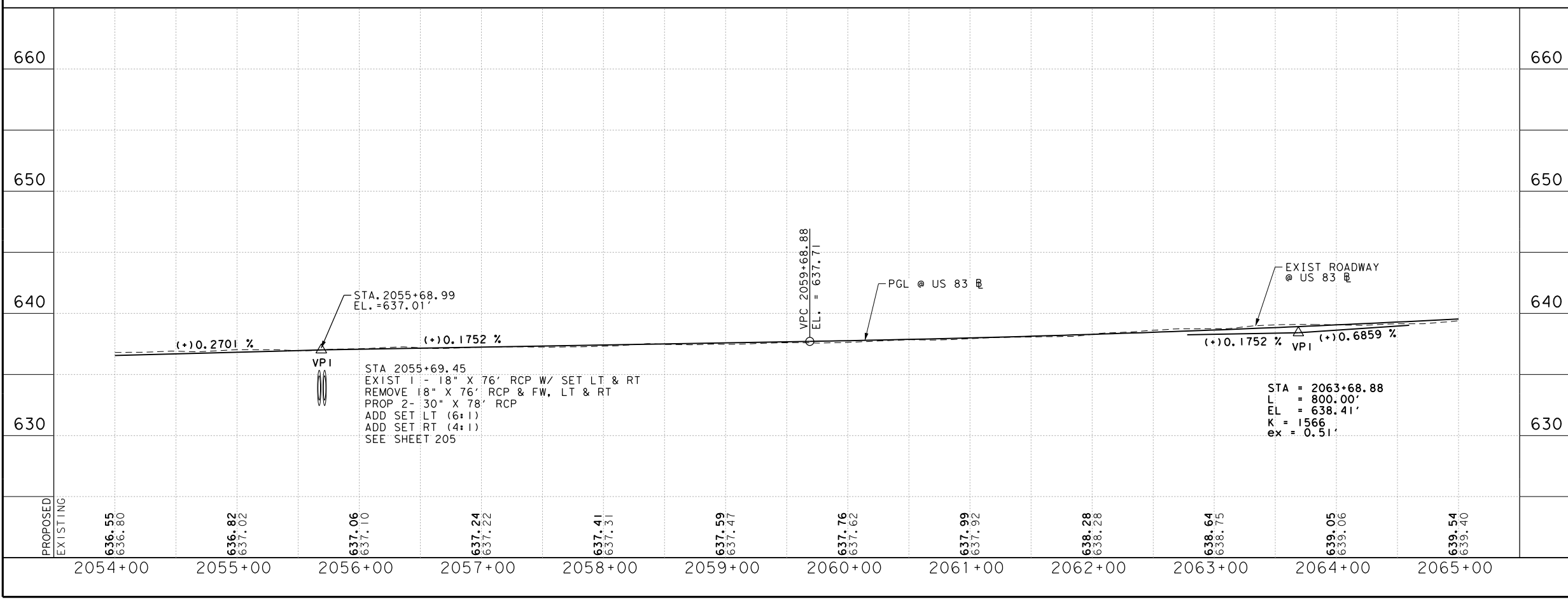
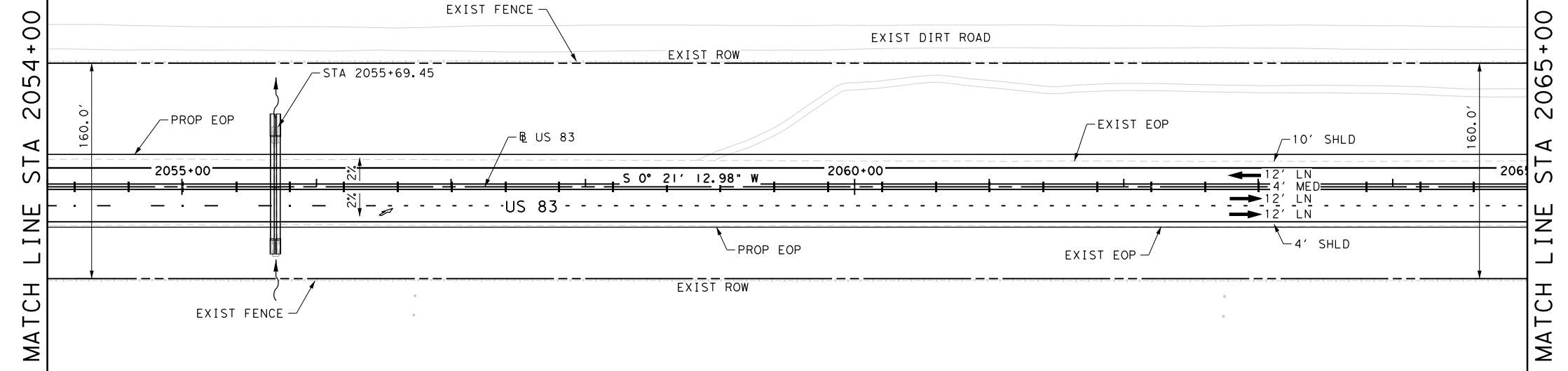
REVISIONS			
NO.	REVISIONS	BY	DATE
630	ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098		
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<b>US 83</b> <b>ROADWAY</b> <b>PLAN AND PROFILE</b> <b>STA 2043+00 TO STA 2054+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	157	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



SHEET 51 OF 55

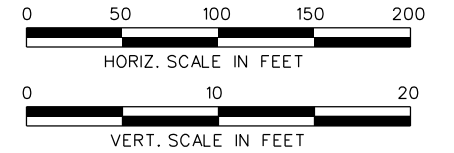
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83  
 ROADWAY  
 PLAN AND PROFILE  
 STA 2054+00 TO STA 2065+00**

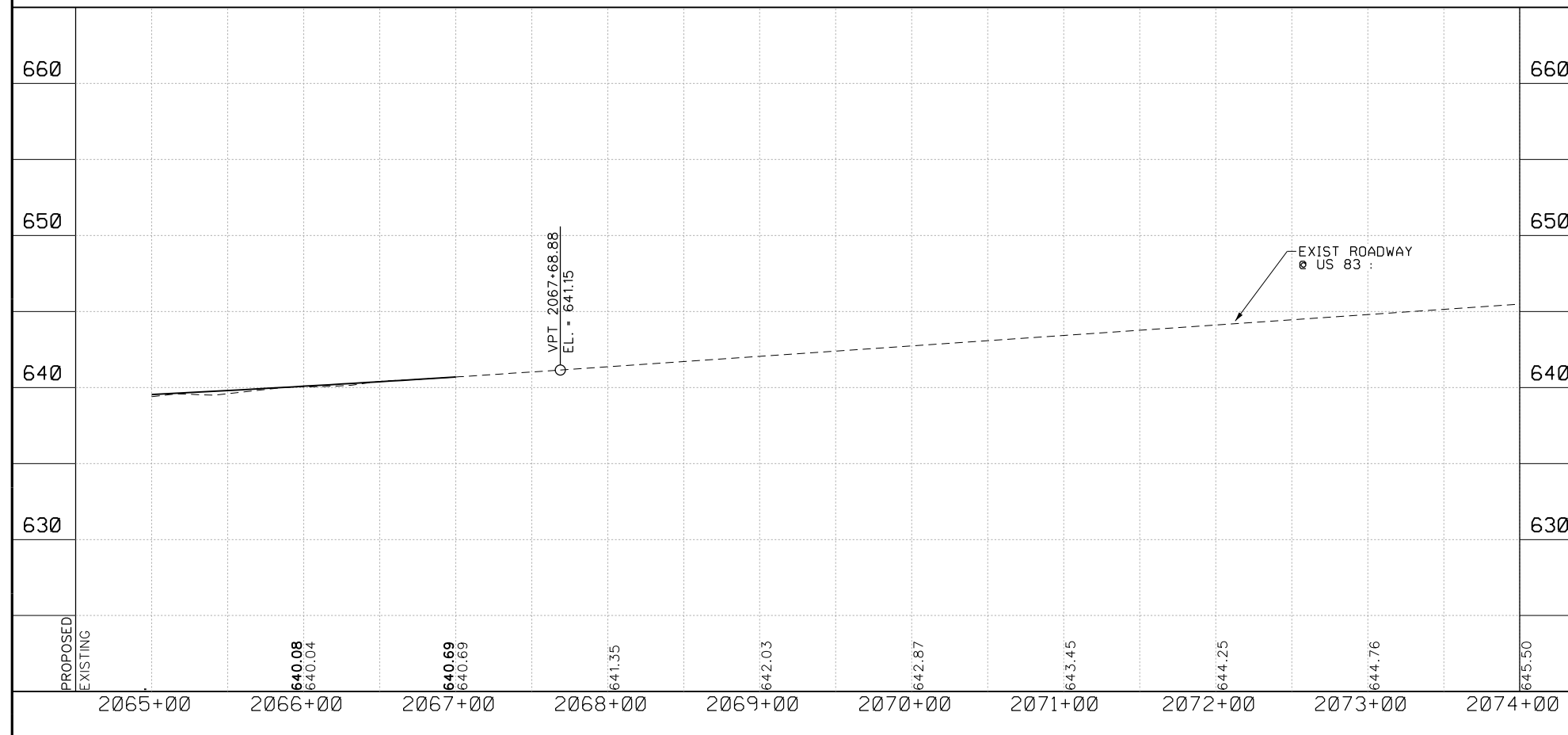
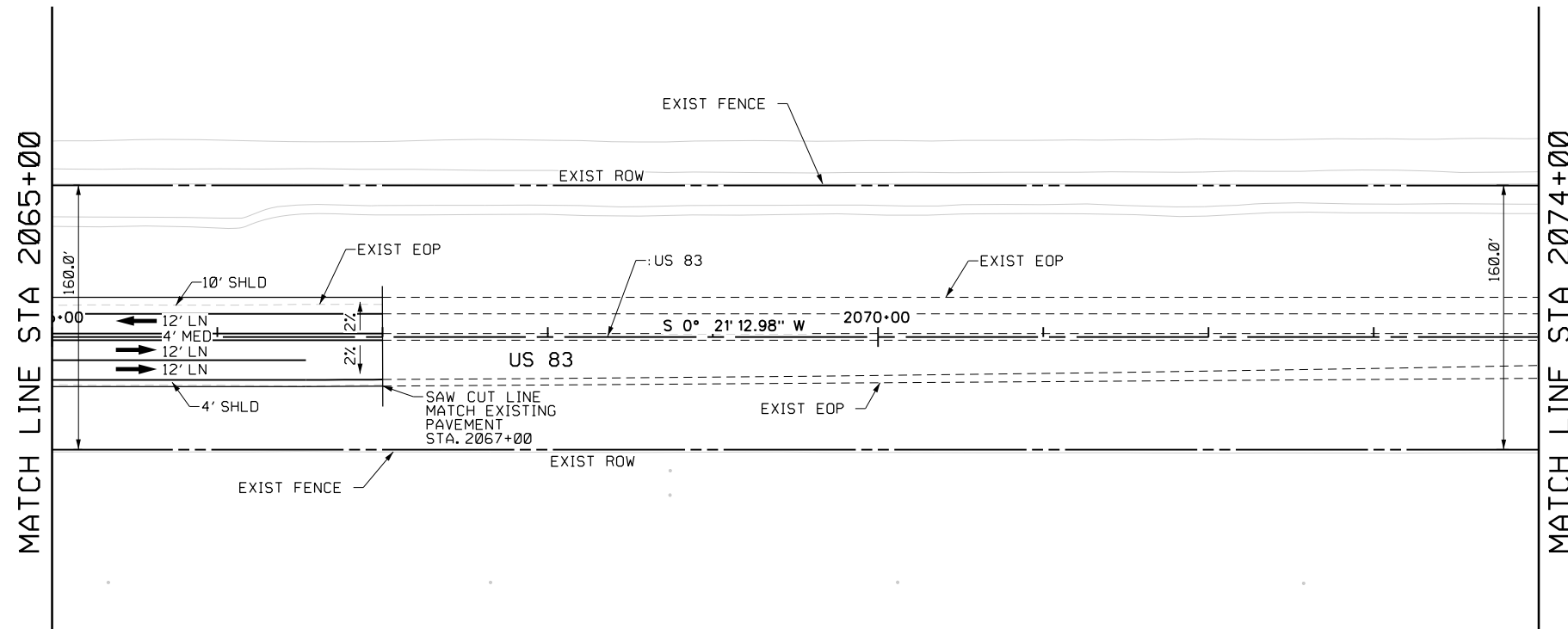
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	158
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

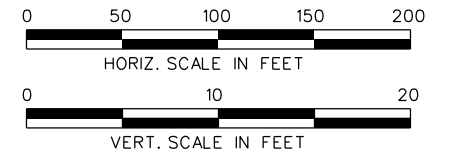
**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



SHEET 52 OF 55

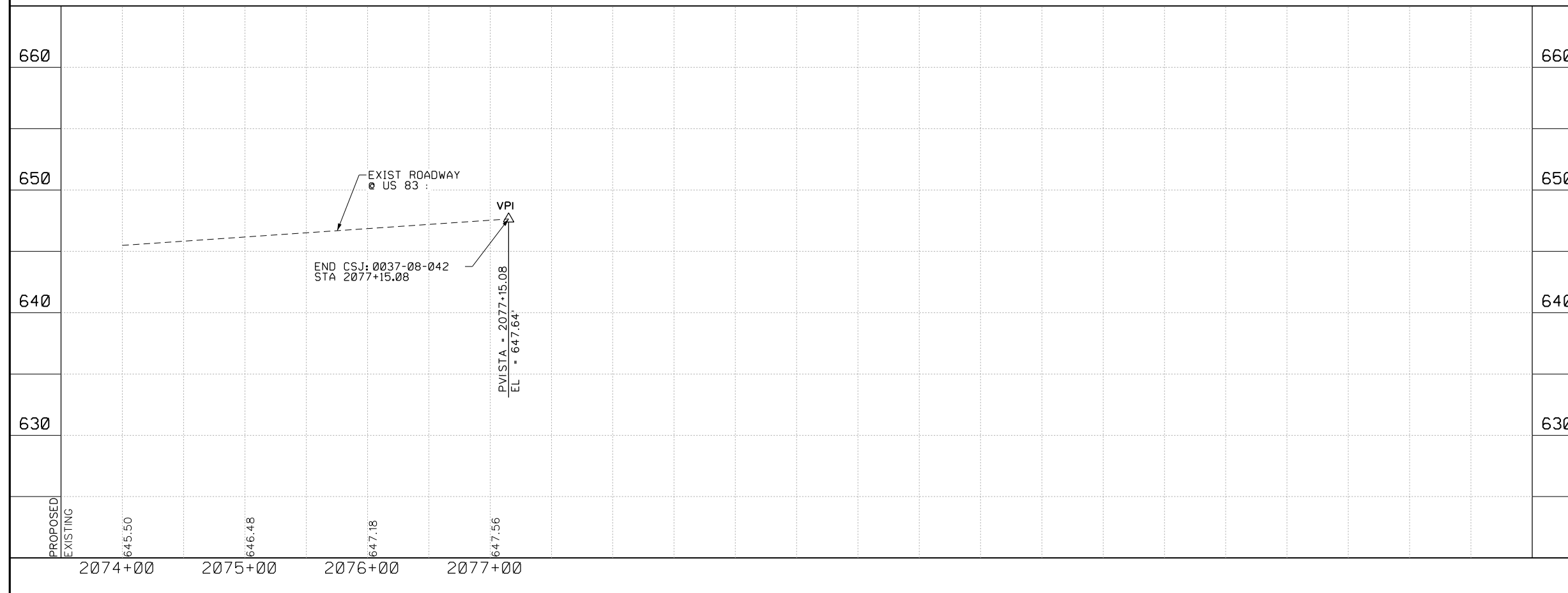
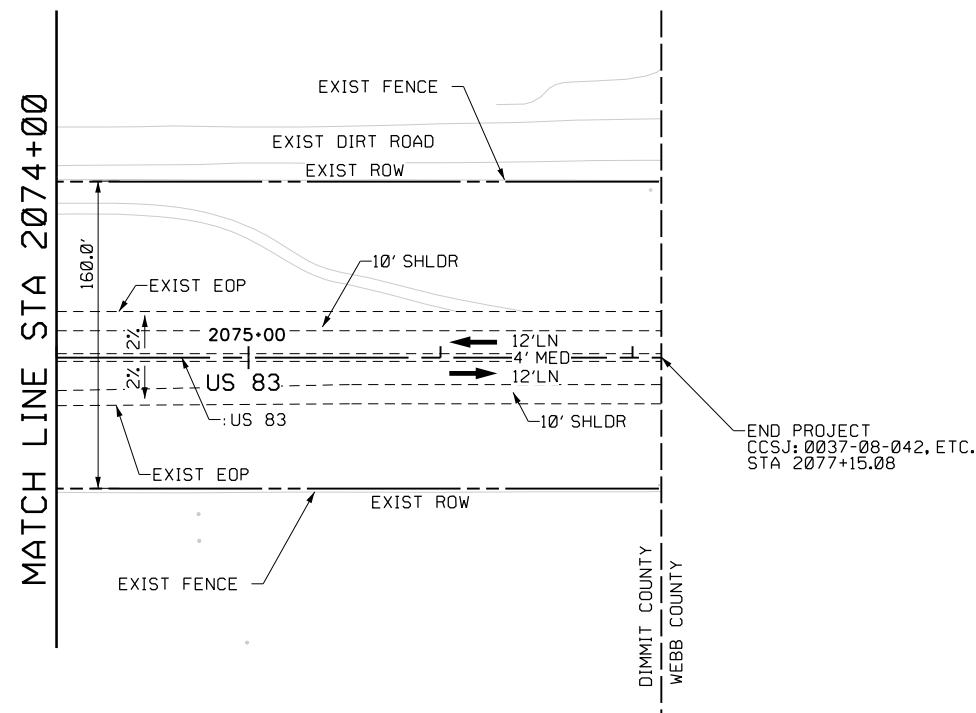
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY PLAN AND PROFILE STA 2065+00 TO STA 2074+00</b>			
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42		SHEET NO. 159
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT	HIGHWAY NO. US 83
CONTROL 0037	SECTION 08	JOB 042, ETC.	



- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

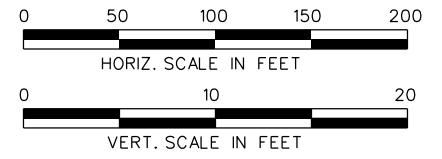
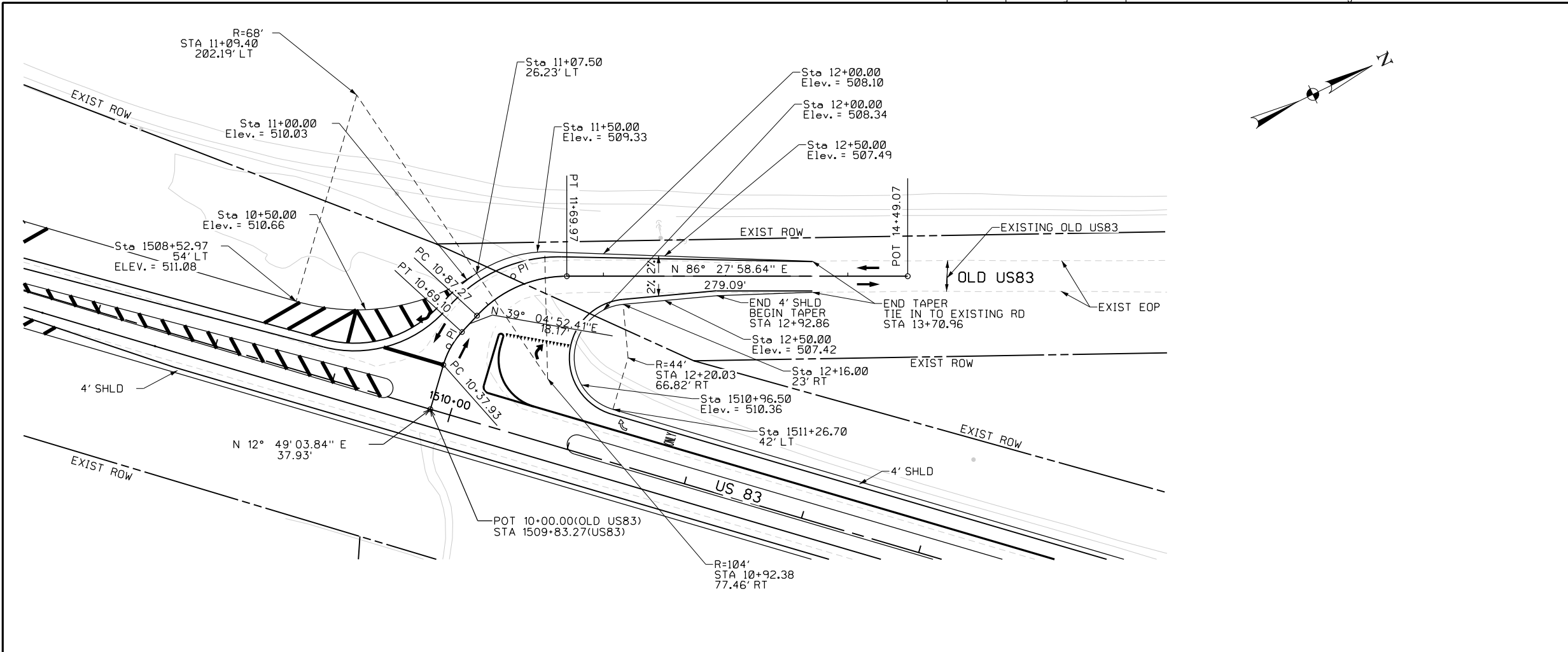
**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



SHEET 53 OF 55

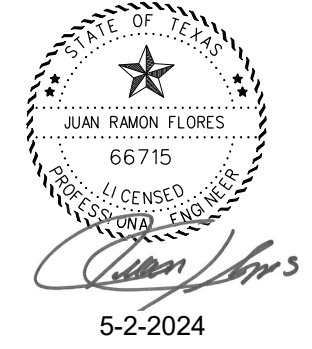
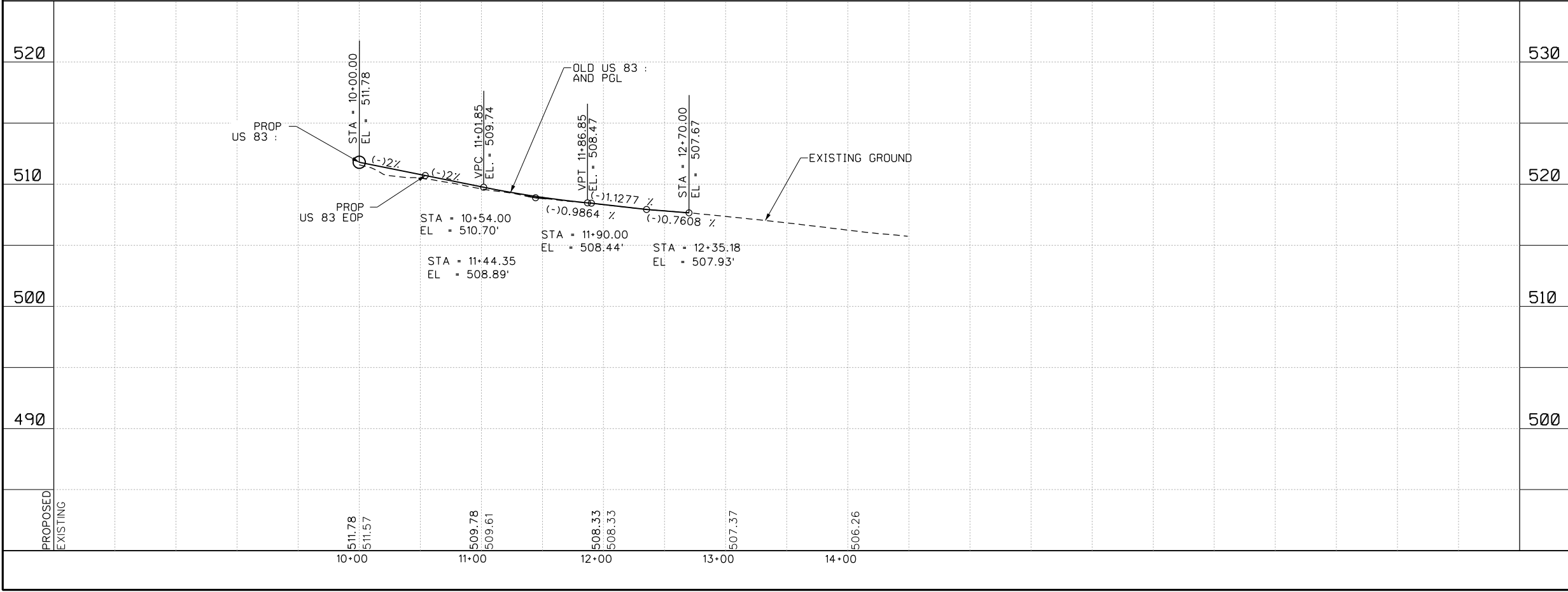
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 ROADWAY PLAN AND PROFILE STA 2074+00 TO STA 2077+15</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		160
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.  
 2. FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

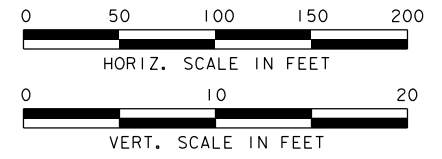
EXIST ROW	---
DIRECTION OF FLOW	~>
DIRECTION OF TRAFFIC	→
DRIVEWAY NUMBER	(XX)
ALIGNMENT CURVE NAME	CURVE-NO
24" SOLID WHITE	=====
24" SOLID YELLOW	=====



SHEET 54 OF 55

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation; all rights reserved.			
OLD US 83 ROADWAY PLAN AND PROFILE STA 10+00.00 TO 15+19.64			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	161	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

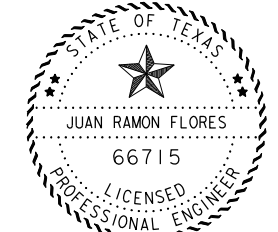
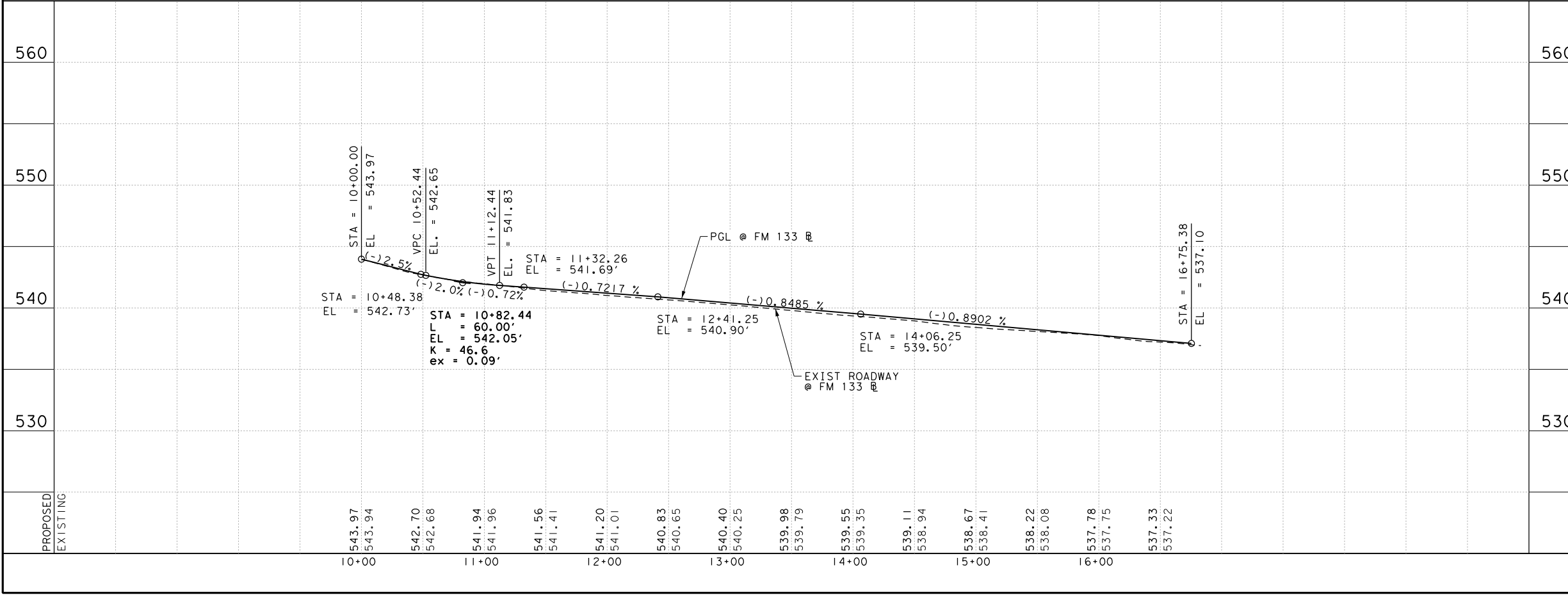
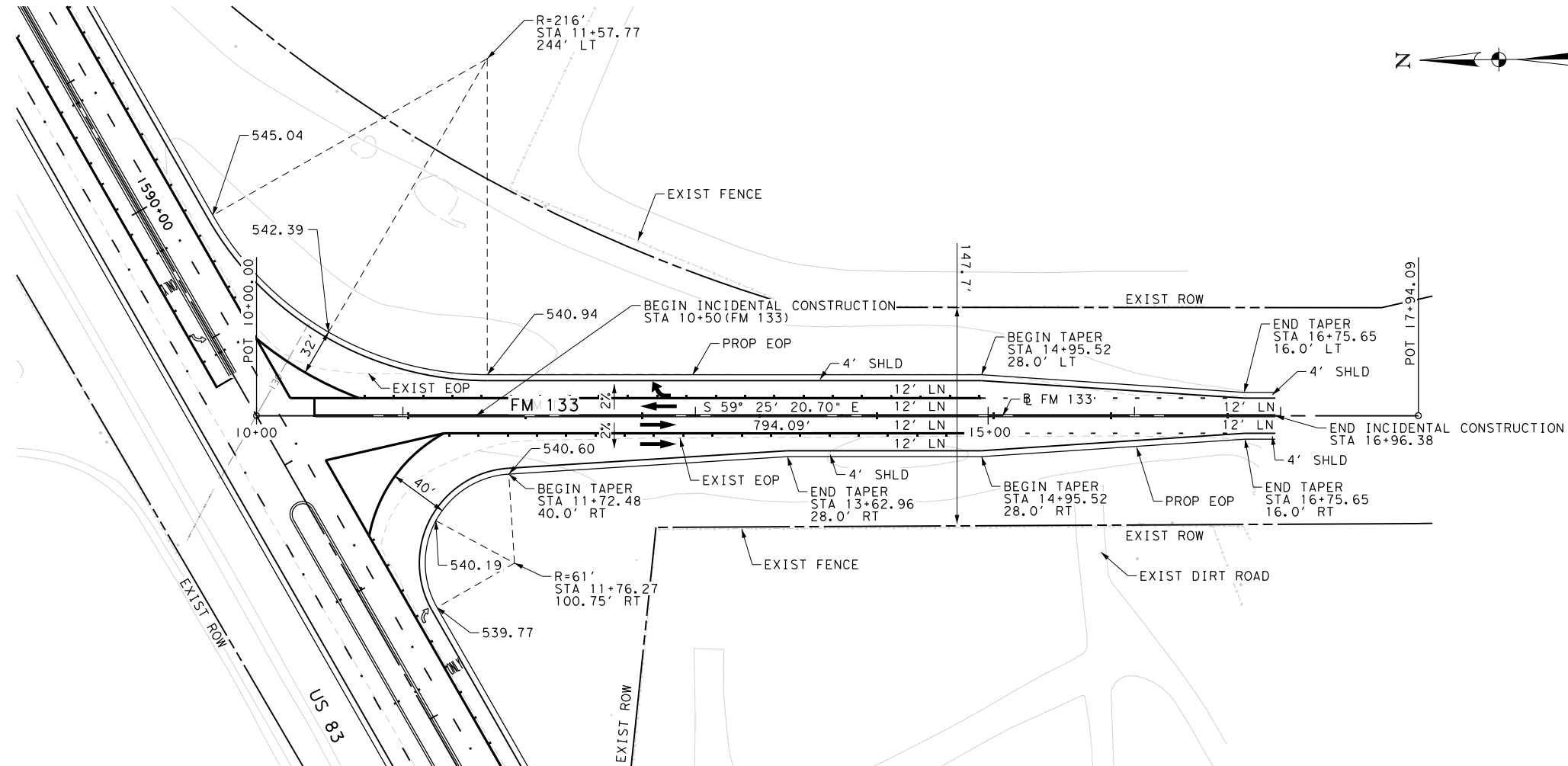




- NOTE:**
- FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.
  - FOR EXISTING UTILITIES, SEE UTILITY LAYOUT SHEETS.

**LEGEND**

- EXIST ROW
- DIRECTION OF FLOW
- DIRECTION OF TRAFFIC
- DRIVEWAY NUMBER
- ALIGNMENT CURVE NAME



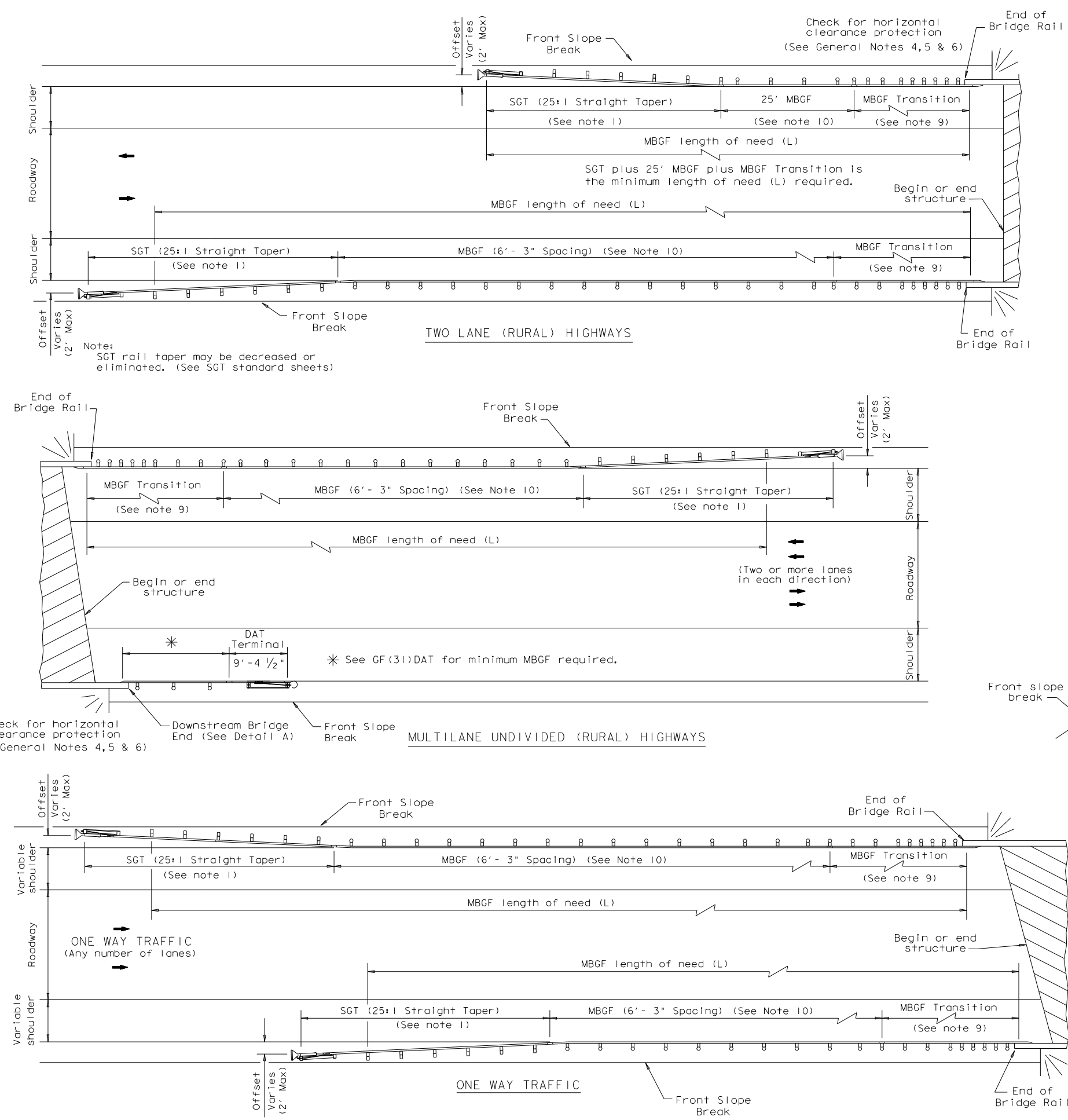
*Juan Flores* 6-22-2020

SHEET 55 OF 55

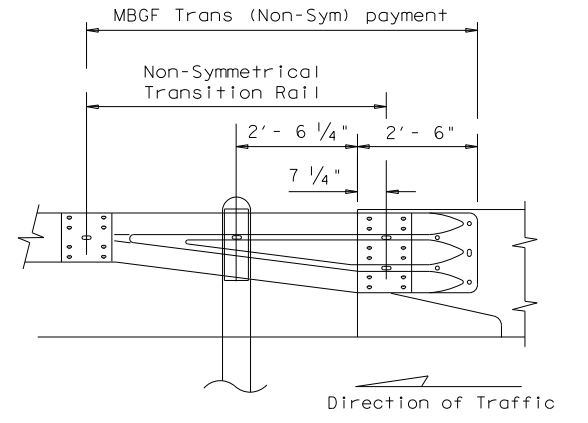
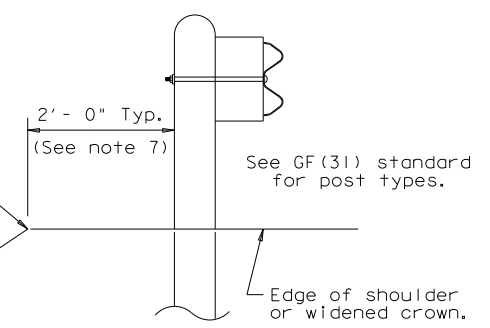
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation, all rights reserved			
<b>FM 133 ROADWAY PLAN AND PROFILE STA 10+00 TO STA 16+75.38</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C-37-8-42		162
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

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DATE: 6/22/2020 9:44:36 AM  
 FILE: pw:\azb-engrs.com\PWAZBPR001\Documents\TxDOT\217017.002\042\4 - Design\Plan Set\3. RoadwayStandards\Roadway\BED-14.dgn



- ### GENERAL NOTES
- For more detail: See GF(31), SGT( )31, GF(31)TR, and GF(31)TL2 standard sheets.
  - Quantities of metal beam guard fence (MBGF) at individual bridge ends are as shown in the plans.
  - Use average daily traffic (ADT) for the current year to determine MBGF length of need in accordance with the Roadway Design Manual unless otherwise specified. Where significant traffic volume growth is anticipated on low volume (0-750 ADT) highways, use length determinations for the higher volume category.
  - MBGF may not be required to shield departure end of bridge unless other obstacles within the horizontal clearance limits or opposing traffic indicate a MBGF consideration.
  - Downstream anchor terminals (DAT) are only for downstream end anchorage use, outside the horizontal clearance area of opposing traffic.
  - Direct connection of MBGF to concrete rails are only for downstream rail connections outside the horizontal clearance area of opposing traffic. (This requires a minimum of three standard line posts plus the DAT terminal, See Detail A)
  - The crown shall be widened to accommodate MBGF. Typically the "front slope" break should be 2'-0" from the back of the MBGF post. This applies to new construction on new alignment or where existing roadway cross section is to be widened to increase roadway width. This does not apply to rehabilitation work where existing roadway crown width is to be retained (See Typical Cross Section at MBGF).
  - For restrictive bridge widths: The MBGF should be properly transitioned from the existing bridge rail to the adjoining MBGF (See MBGF Transition Standards). Metal beam guard fence at these bridge location(s) shall be flared at the rate of 25:1 or flatter, and be of the length necessary to locate the terminal end at the 2 ft. "maximum" offset from the shoulder edge in the approach direction.
  - Transition length and post spacing will vary depending on the transition type. Transition type will be shown elsewhere in the plans.
  - A minimum 25' length of MBGF will be required.



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



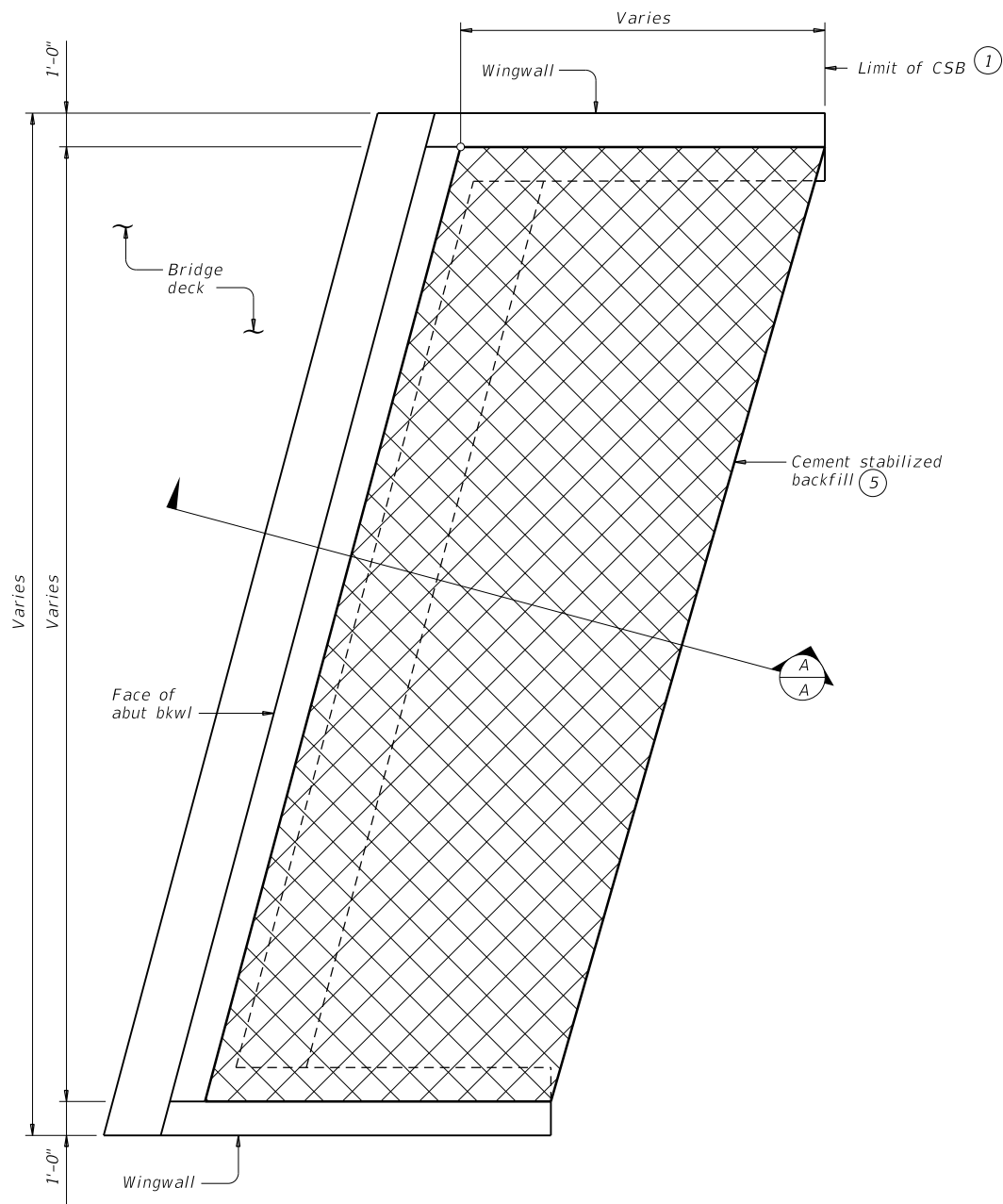
## BRIDGE END DETAILS (METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)

**BED-14**

FILE: bed14.dgn	DN: TxDOT	CK: AM	DW: BD/VP	CK: CGL
© TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY		SHEET NO.
	LRD	DIMMIT		163

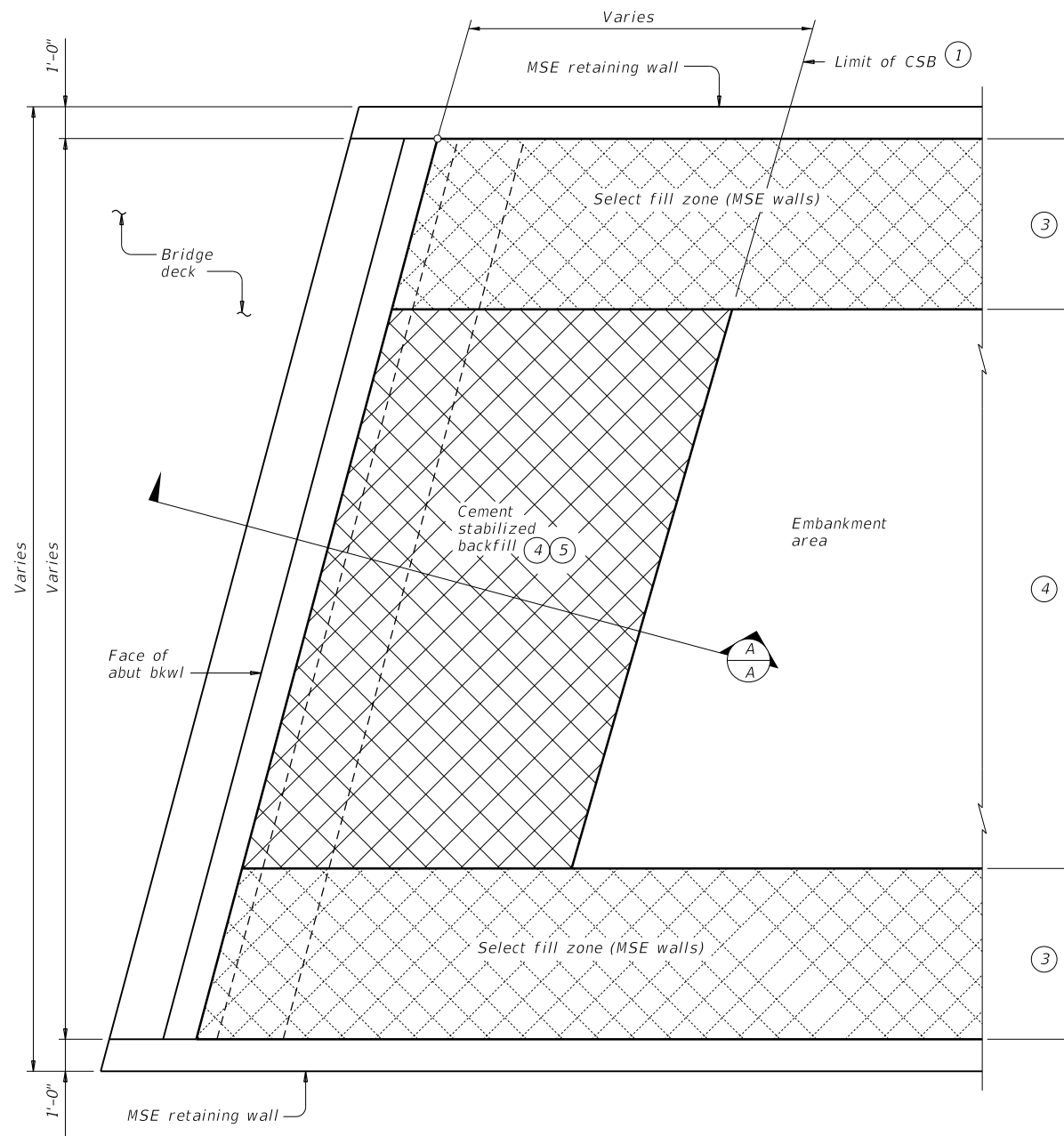
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DATE: 4/5/2024 10:11:32 AM  
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**OPTION 1 ~ PLAN WITH WINGWALLS**

Cast-in-place retaining walls similar.



**OPTION 1 ~ PLAN WITH MSE RETAINING WALLS**

- ① Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.
- ② Bench backfill as shown with 12" (approximate) bench depths.
- ③ Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.
- ④ When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.
- ⑤ If shown in the plans, flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:
  - a) If flowable backfill is to be placed over MSE backfill, then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
  - b) Place flowable fill in lifts not exceeding 2 feet in height. Place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).

**GENERAL NOTES:**

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

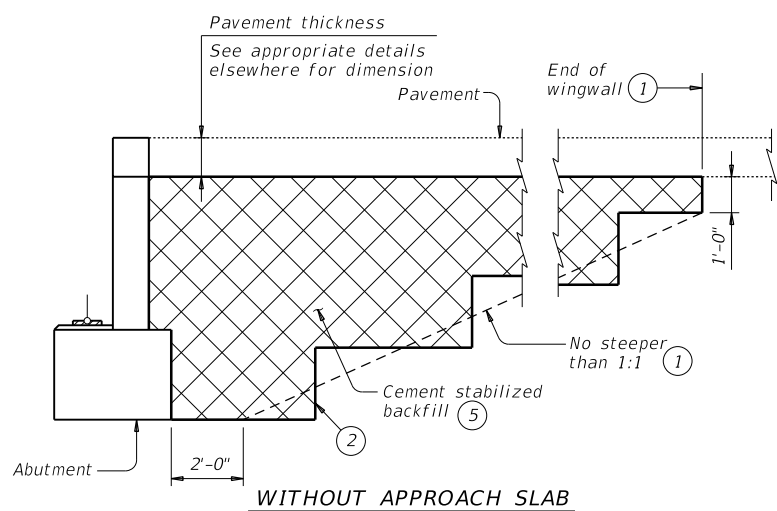
Construct abutment backfill in accordance with Item 400, "Excavation and Backfill for Structures".

Provide Cement Stabilized Backfill (CSB) meeting the requirements of Item 400, "Excavation and Backfill for Structures", to the limits shown at bridge abutments.

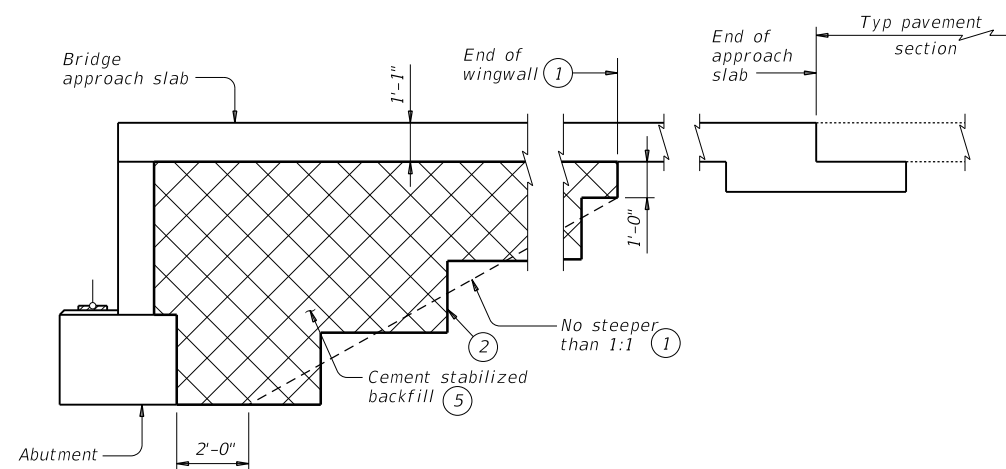
If required elsewhere in the plans, provide Flowable Backfill meeting the requirements of Item 401, "Flowable Backfill", to the limits shown at bridge abutments.

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

These details do not apply when Concrete Block retaining walls are used in lieu of wingwalls.



**WITHOUT APPROACH SLAB**



**WITH APPROACH SLAB**  
 (Showing BAS-C, BAS-A similar.)

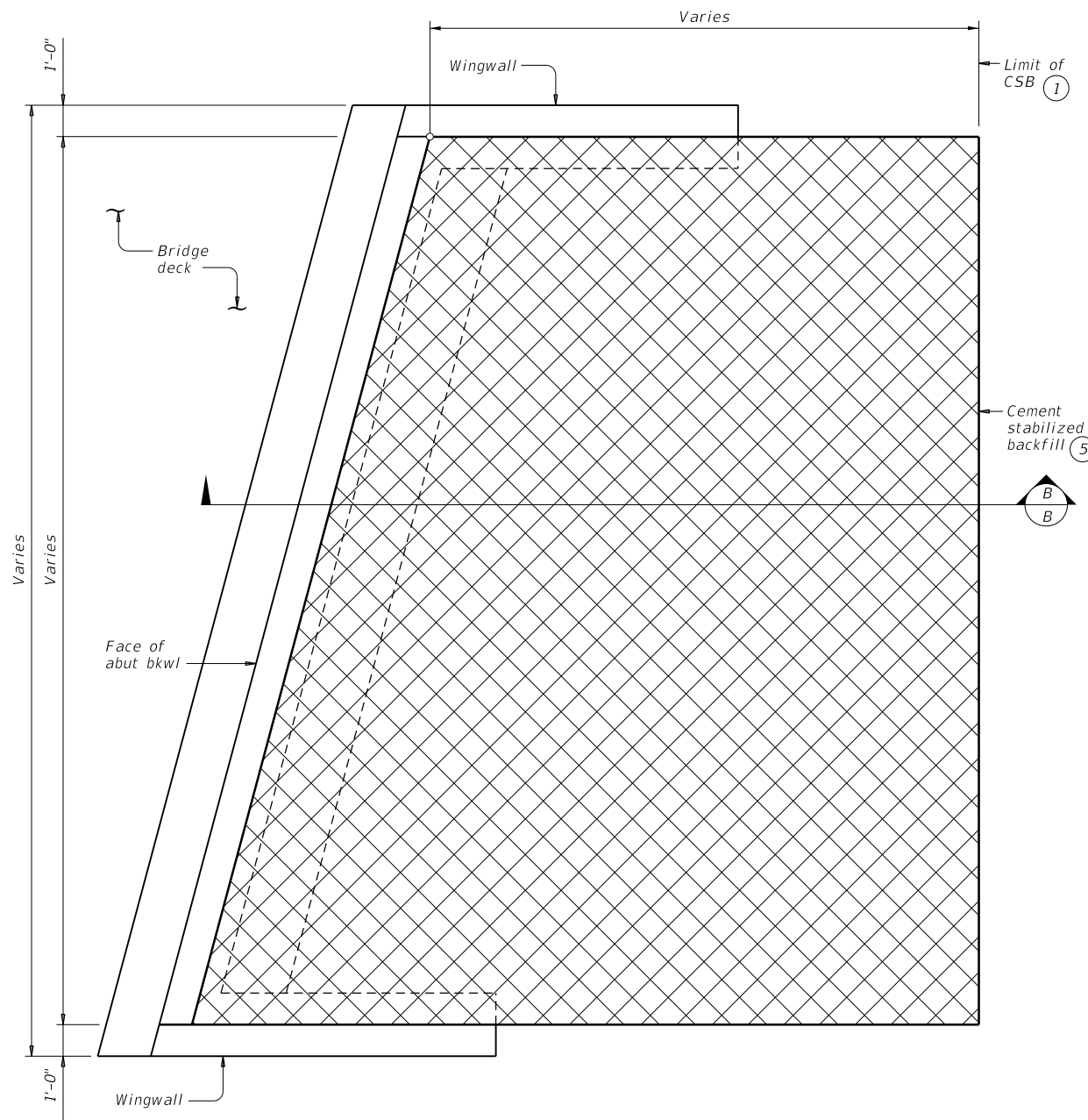
**SECTION A-A**

SHEET 1 OF 2

		<b>Bridge Division Standard</b>	
<b>CEMENT STABILIZED ABUTMENT BACKFILL BRIDGE ABUTMENT</b>			
<b>CSAB</b>			
FILE: csabste1-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT	April 2019	CONV	SECT
REVISIONS	0037	08	042, ETC.
02-20: Added Option 2.			US 83
03-23: Updated General Notes.			
DIST	COUNTY	SHEET NO.	
LRD	DIMMIT	164	

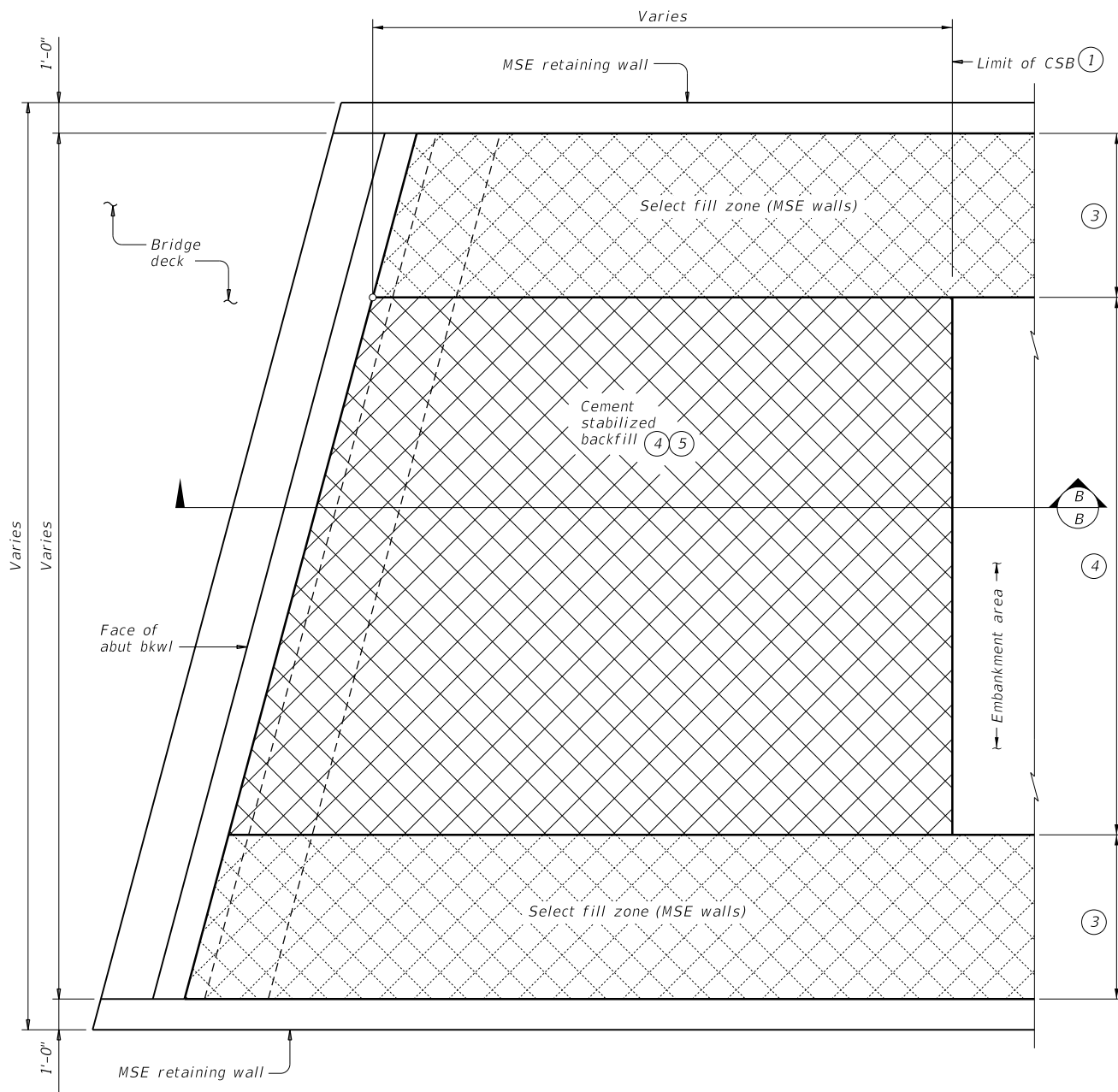
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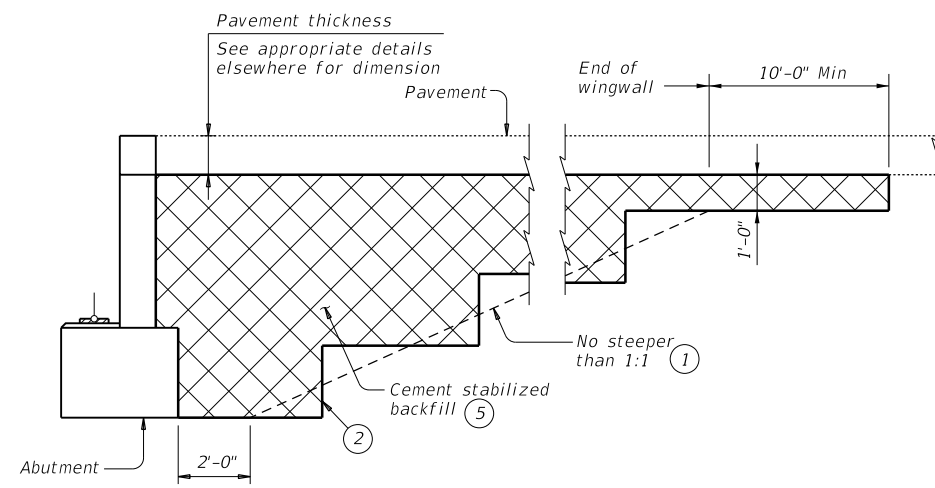
**OPTION 2 ~ PLAN WITH WINGWALLS**

Cast-in-place retaining walls similar.

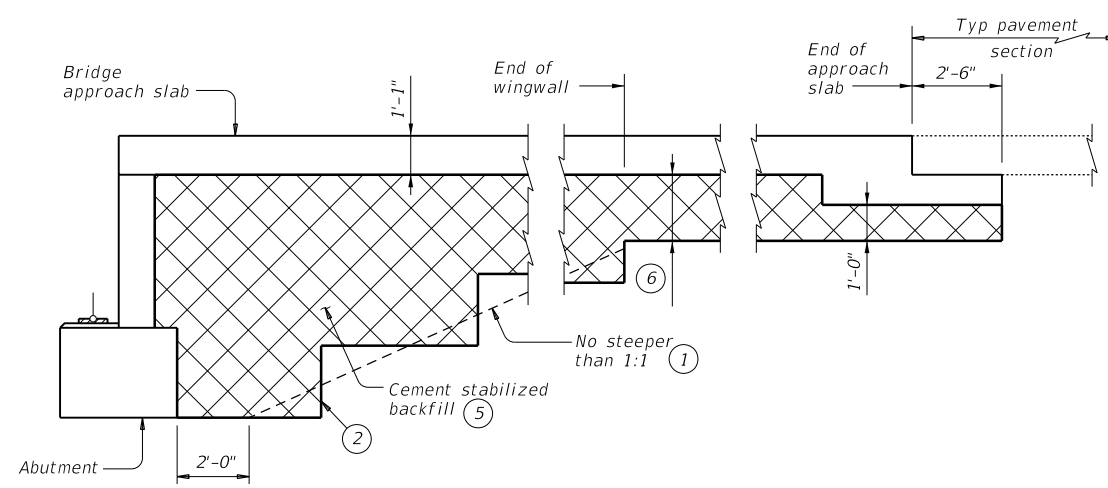


**OPTION 2 ~ PLAN WITH MSE RETAINING WALLS**

- ① Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.
- ② Bench backfill as shown with 12" (approximate) bench depths.
- ③ Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.
- ④ When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.
- ⑤ If shown in the plans, flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:
  - a). If flowable backfill is to be placed over MSE backfill, then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
  - b). Place flowable fill in lifts not exceeding 2 feet in height. Place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).
- ⑥ 1'-0" for BAS-A  
1'-10" for BAS-C



**WITHOUT APPROACH SLAB**



**SECTION B-B**

**WITH APPROACH SLAB**  
(Showing BAS-C, BAS-A similar.)

SHEET 2 OF 2

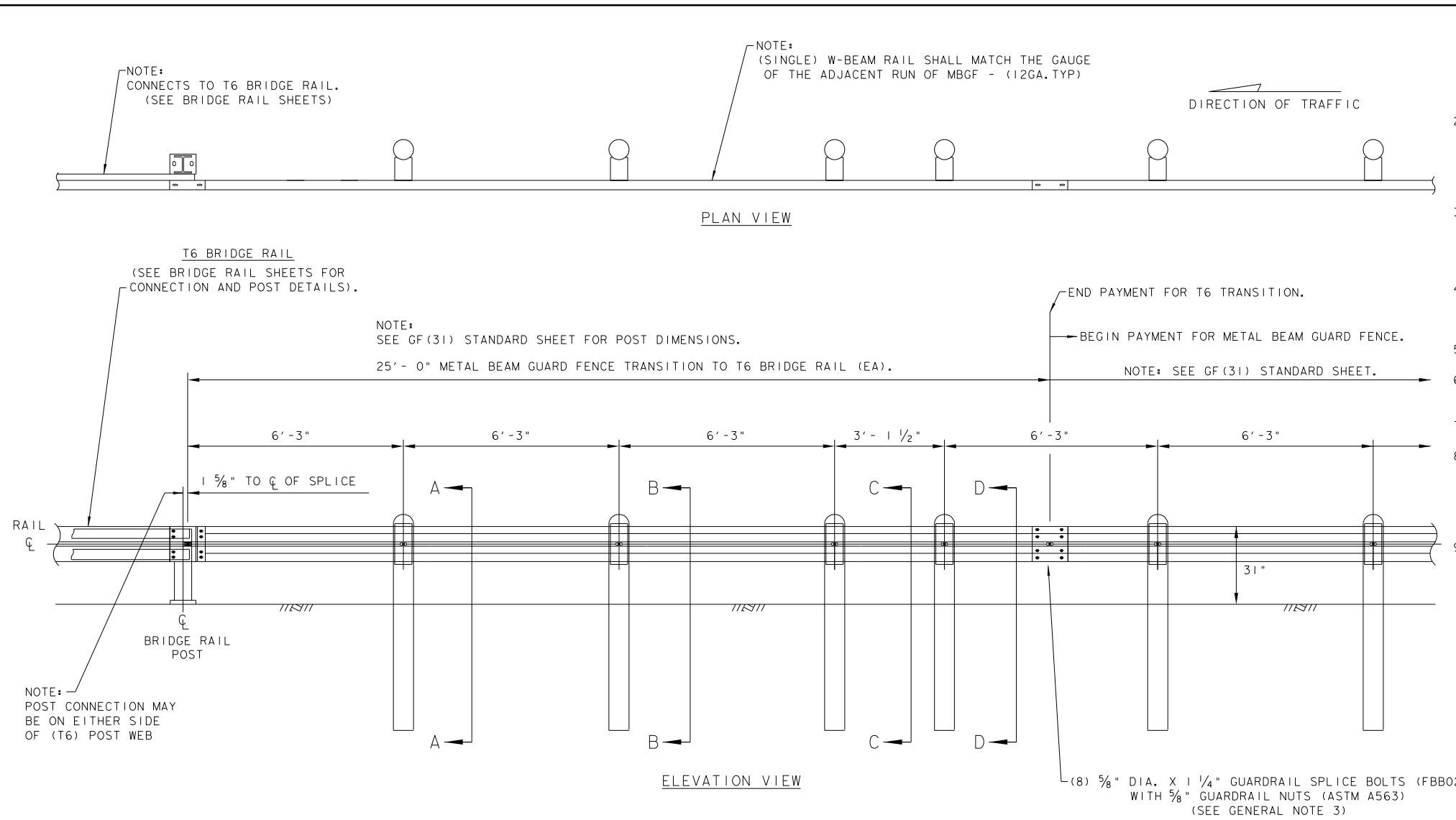


**CEMENT STABILIZED  
 ABUTMENT BACKFILL  
 BRIDGE ABUTMENT**

**CSAB**

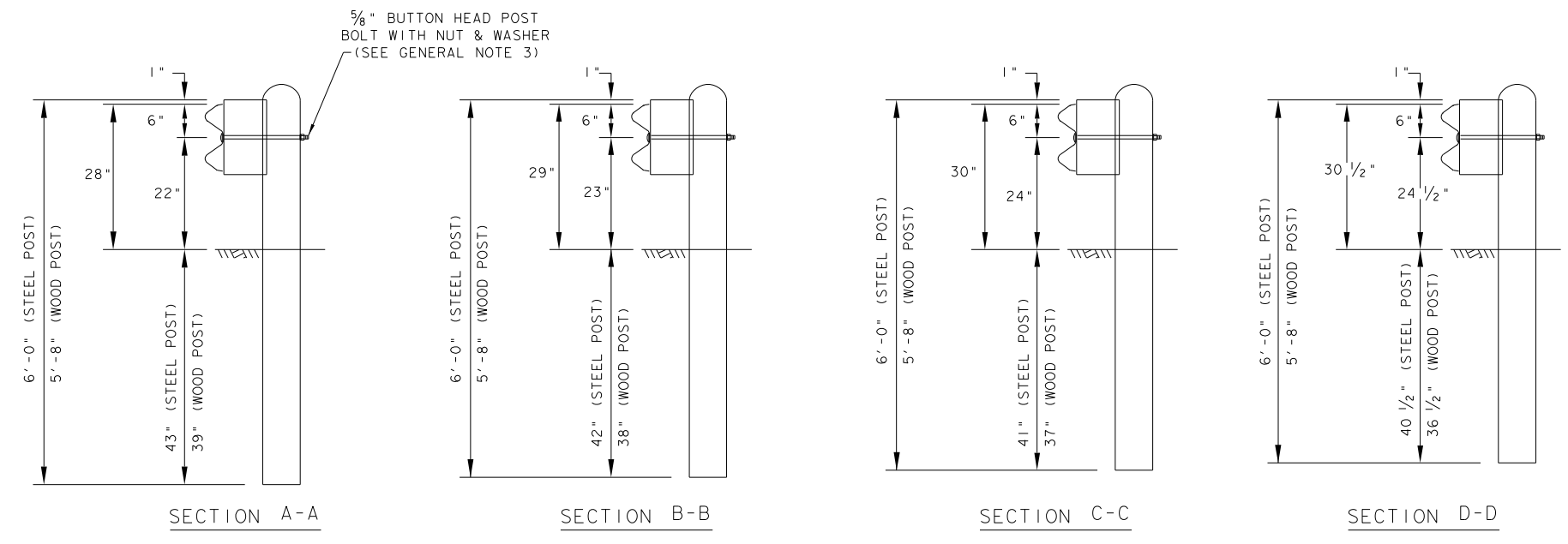
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©TxDOT April 2019	CONTRACT	SECTION	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
02-20: Added Option 2. 03-23: Updated General Notes.	DIST	COUNTY	SHEET NO.	
	LRD	DIMMIT	164-A	

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 DATE: 6/22/2020  
 FILE: pw:\azb\pw1.\azb-engr.com:PWAZBP001\Documents\Txdot\217017.002\042\4 - Design\Plan Set\3. Roadway\Standards(Roadway)\GF (31) T6-19.dgn



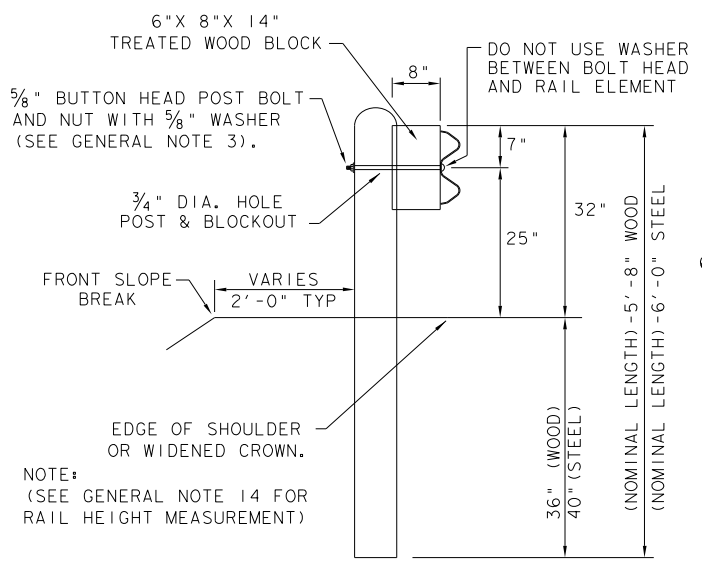
- GENERAL NOTES**
1. THE TYPE OF POST (ROUND WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
  2. RAIL ELEMENT SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'-0", OR 12'-6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE TRANSITION SECTIONS OF GUARDRAIL.
  3. BUTTON HEAD "POST" BOLTS (ASTM A307 GR.A) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND 5/8" ROUND WASHER (ASTM F436) AND NOT MORE THAN 1" BEYOND IT. BUTTON HEAD "SPLICE" BOLTS (ASTM A307) ARE 5/8" X 1-1/4" WITH 5/8" NUTS (ASTM A563).
  4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM REQUIRING CONSTRUCTION OF THE TRANSITION.
  5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
  6. WHERE SOLID ROCK IS ENCOUNTERED. CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
  7. POSTS SHALL NOT BE SET IN CONCRETE.
  8. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
  9. REFER TO STANDARD GF (31) & APPLICABLE BRIDGE RAILING STANDARD FOR ADDITIONAL DETAILS.

\* "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



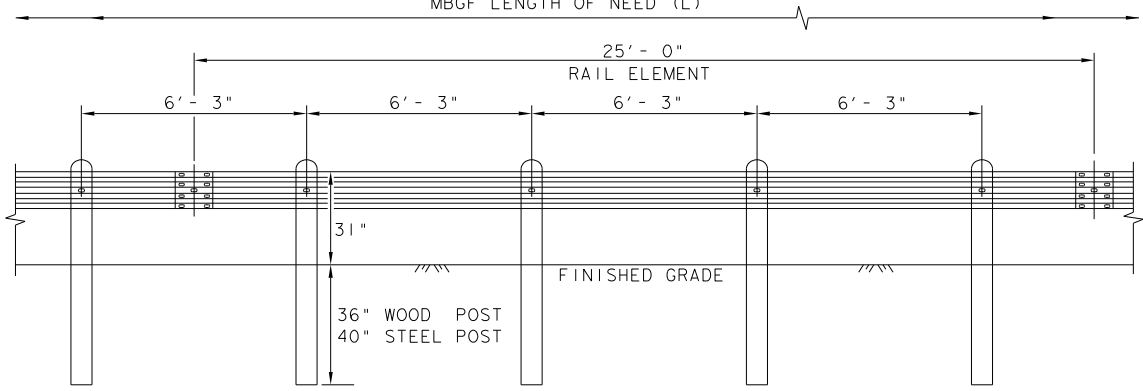
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© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY		SHEET NO.
	LRD	DIMMIT		165

DATE: 6/22/2020  
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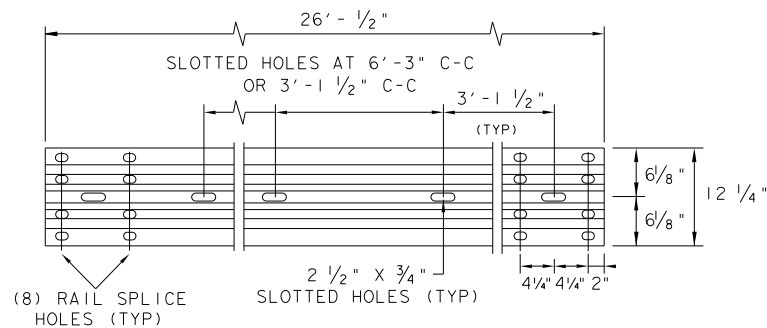
TYPICAL POST PLACEMENT

NOTE: \*\* "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



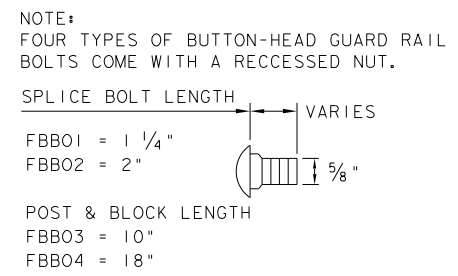
ELEVATION MID-SPAN RAIL SPLICE

SHOWING A 25' - 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



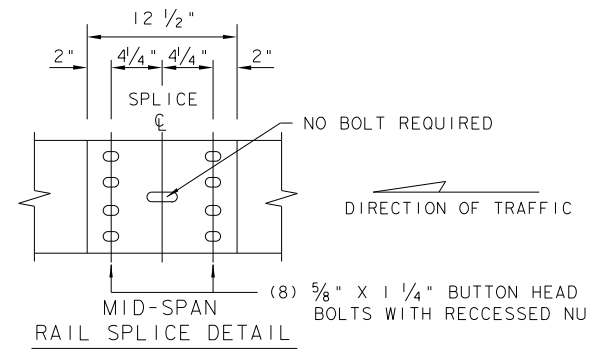
ELEVATION 25' - 0" (NOM.) W-BEAM SECTION

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES. SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



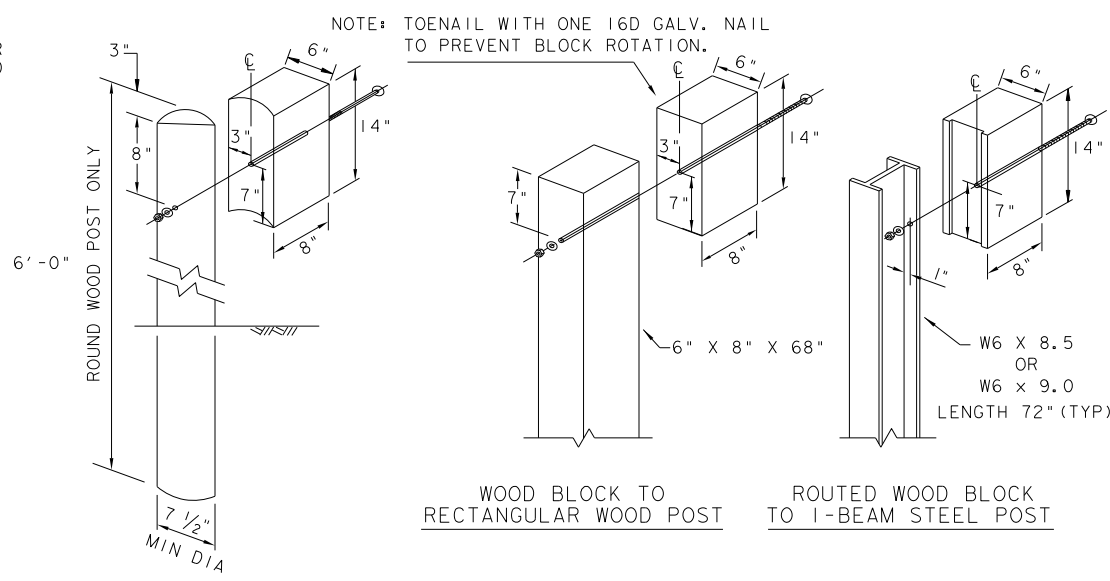
BUTTON HEAD BOLT

NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



MID-SPAN RAIL SPLICE DETAIL

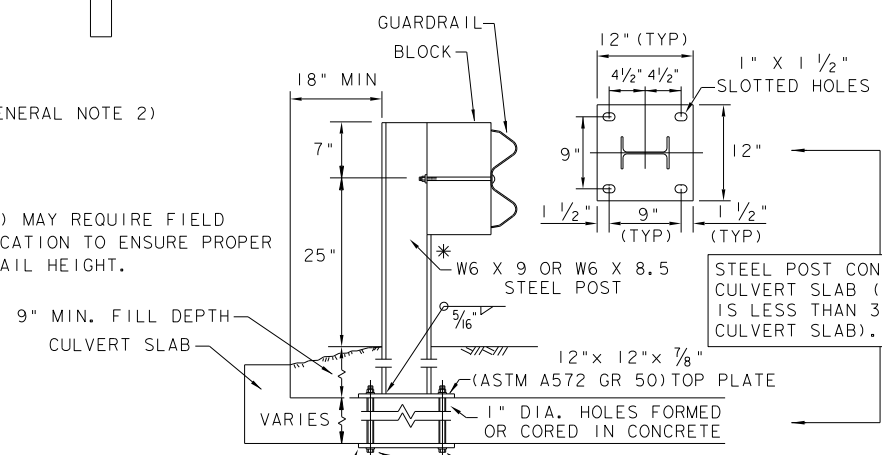
NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.



WOOD BLOCK TO ROUND WOOD POST  
ROUTED WOOD BLOCK TO I-BEAM STEEL POST

- GENERAL NOTES**
1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
  2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25' - 0", OR 12' - 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
  3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC160) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
  4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
  5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
  6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
  7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
  8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
  9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
  10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
  11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
  12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TxDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
  13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
  14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

\* POST(S) MAY REQUIRE FIELD MODIFICATION TO ENSURE PROPER GUARDRAIL HEIGHT.



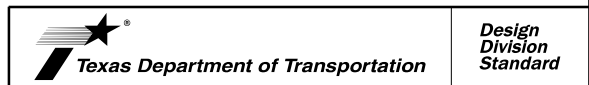
LOW FILL CULVERT POST

12" x 12" x 7/8" (ASTM A36) STEEL BOTTOM PLATE WITH 1" DIA. HOLES REQUIRED WITH BOLT-THROUGH INSTALLATION.

NOTE: TWO INSTALLATION OPTIONS.

1. **BOLT-THROUGH OPTION:** REQUIRES A 6" MIN. SLAB THICKNESS. 7/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS. NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.
2. **EPOXY ANCHOR OPTION:** THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE 7/8" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS 1/4" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

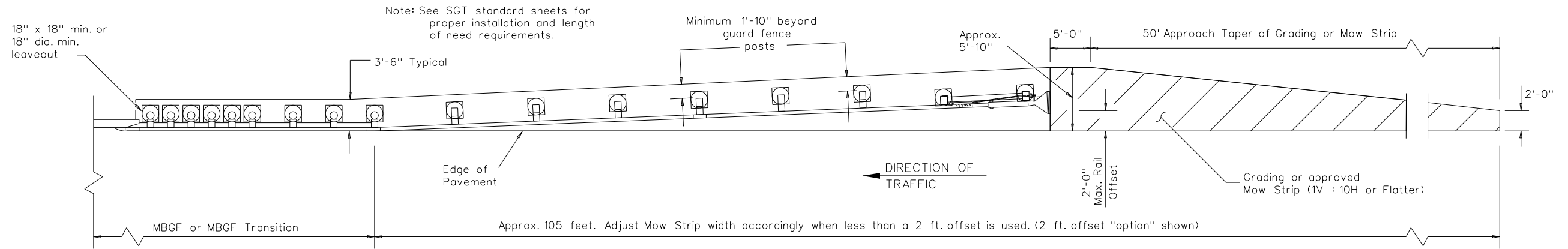


METAL BEAM GUARD FENCE  
 TL-3 MASH COMPLIANT  
 GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
© TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
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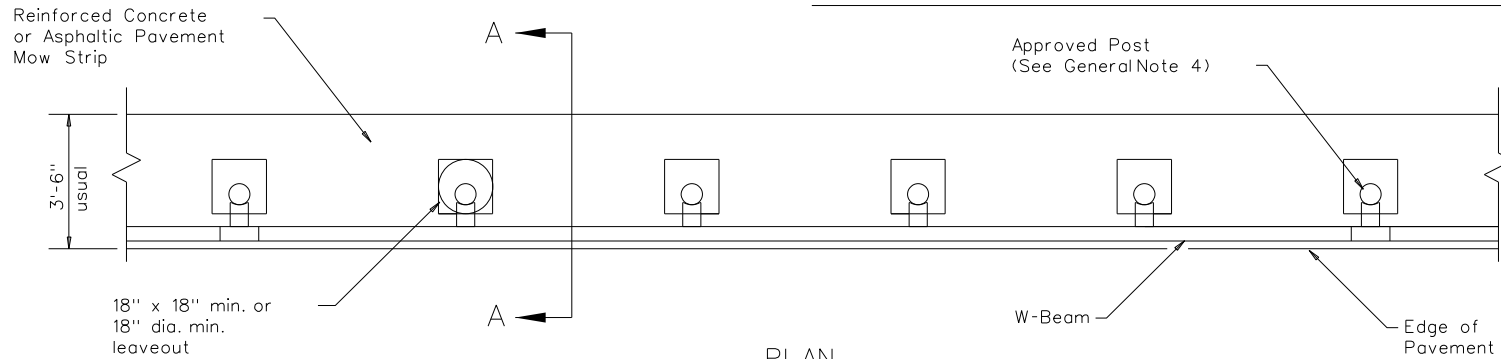
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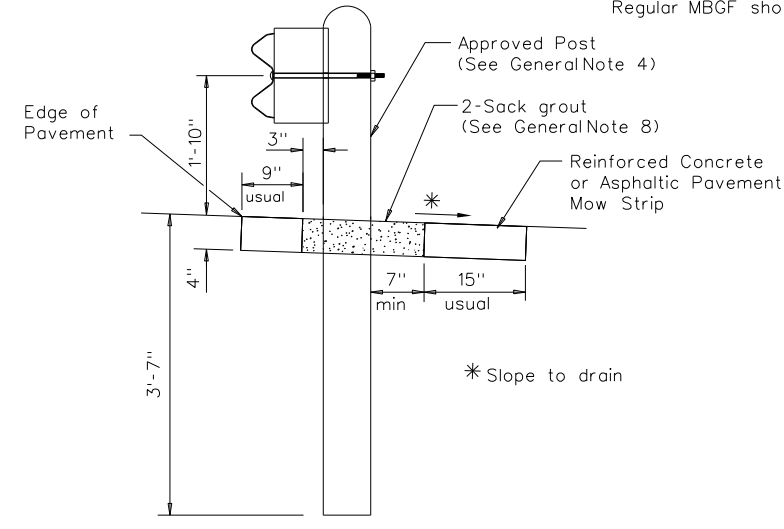
GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS

Note: Site Condition(s)  
 Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.  
 Approach grading or mow strip may be decreased or eliminated. As directed by the Engineer.



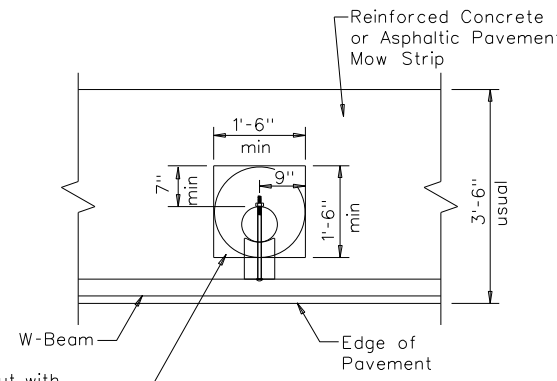
PLAN

Regular MBGF shown with Mow Strip



SECTION A-A

Typical



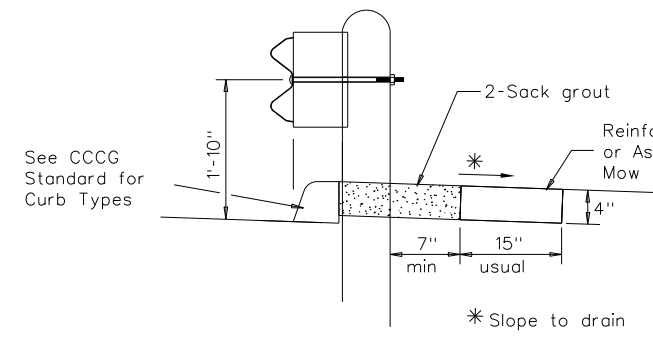
MOW STRIP DETAIL

Reinforced Concrete or Asphaltic Pavement Mow Strip with 18" x 18" or 18" dia. minimum leaveout.

Fill leaveout with 2-Sack grout. (See General Note 8)

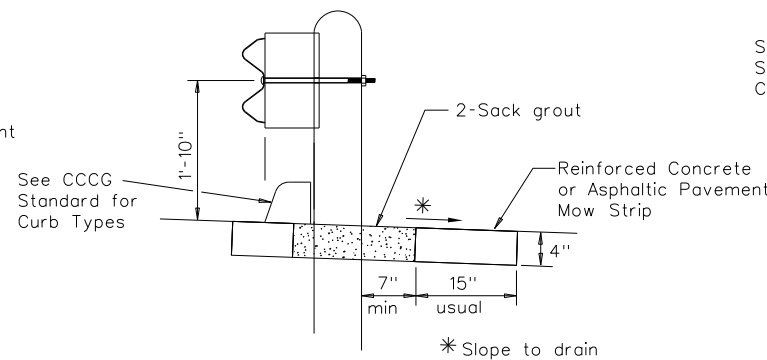
GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments (See SGT standards for proper SGT installation).
2. Mow strips shall be asphaltic pavement or reinforced concrete (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item of work. Asphaltic pavement shall meet the requirements of the item, and be placed in accordance with the pertinent bid item as shown on the plans. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leaveout behind the post shall be a minimum of 7".
4. The type of approved post will be shown elsewhere in the plans. See the applicable standard sheets for additional details and information.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Depth of mow strip will be 4".
7. The limits of payment for asphaltic pavement or reinforced concrete will include leaveouts for posts.
8. The leave-outs shall be filled with no more than a 2-sack grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 28-day compressive strength of approximately 120 psi or less. Provide grout of a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of rip rap mow strip.



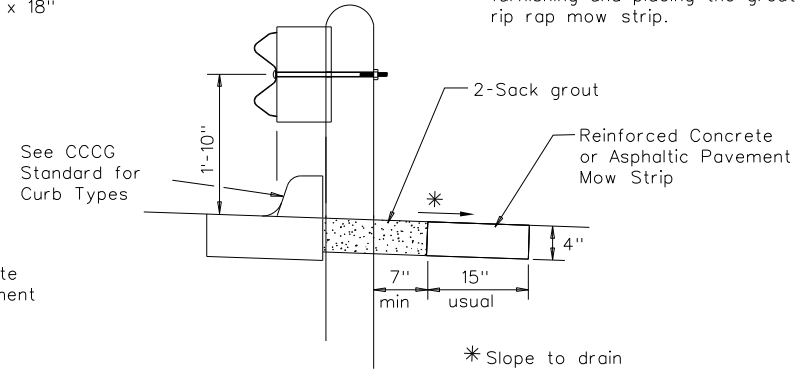
CURB OPTION (1)

This option will increase the post embedment through out the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

ONLY FOR USE IN MAINTENANCE REPAIRS.

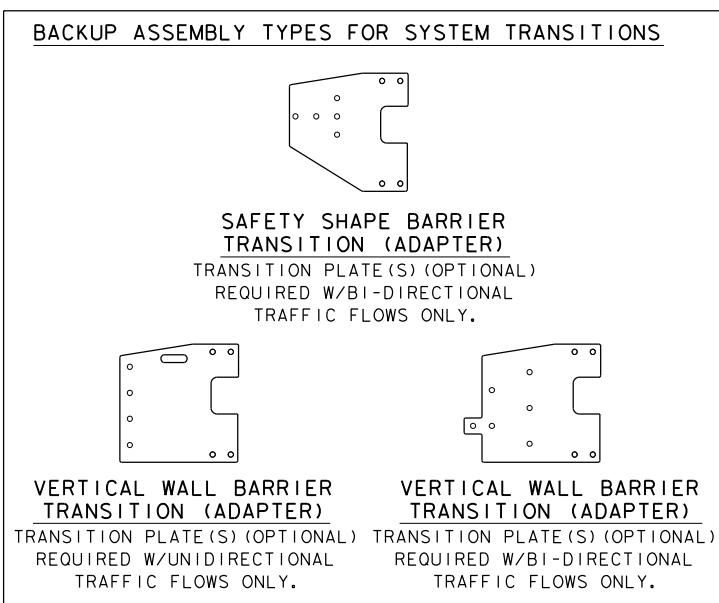
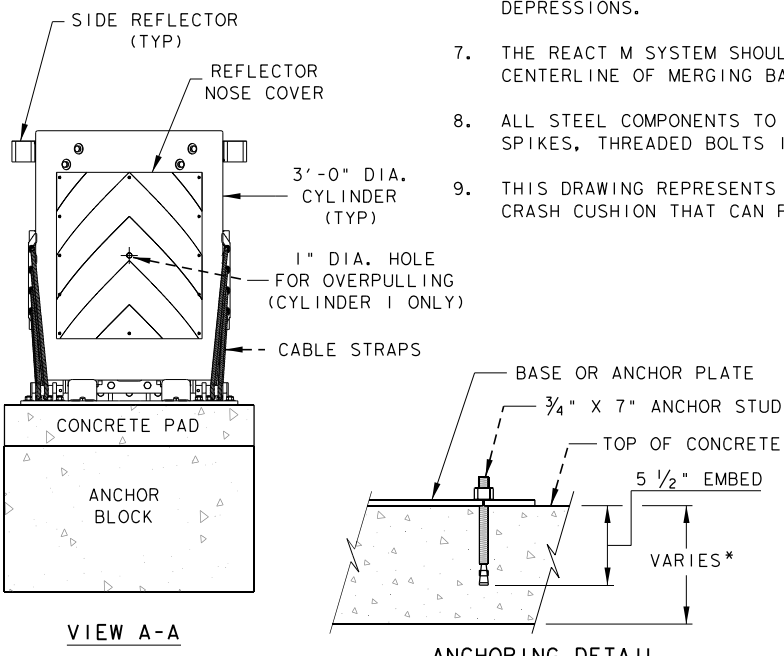
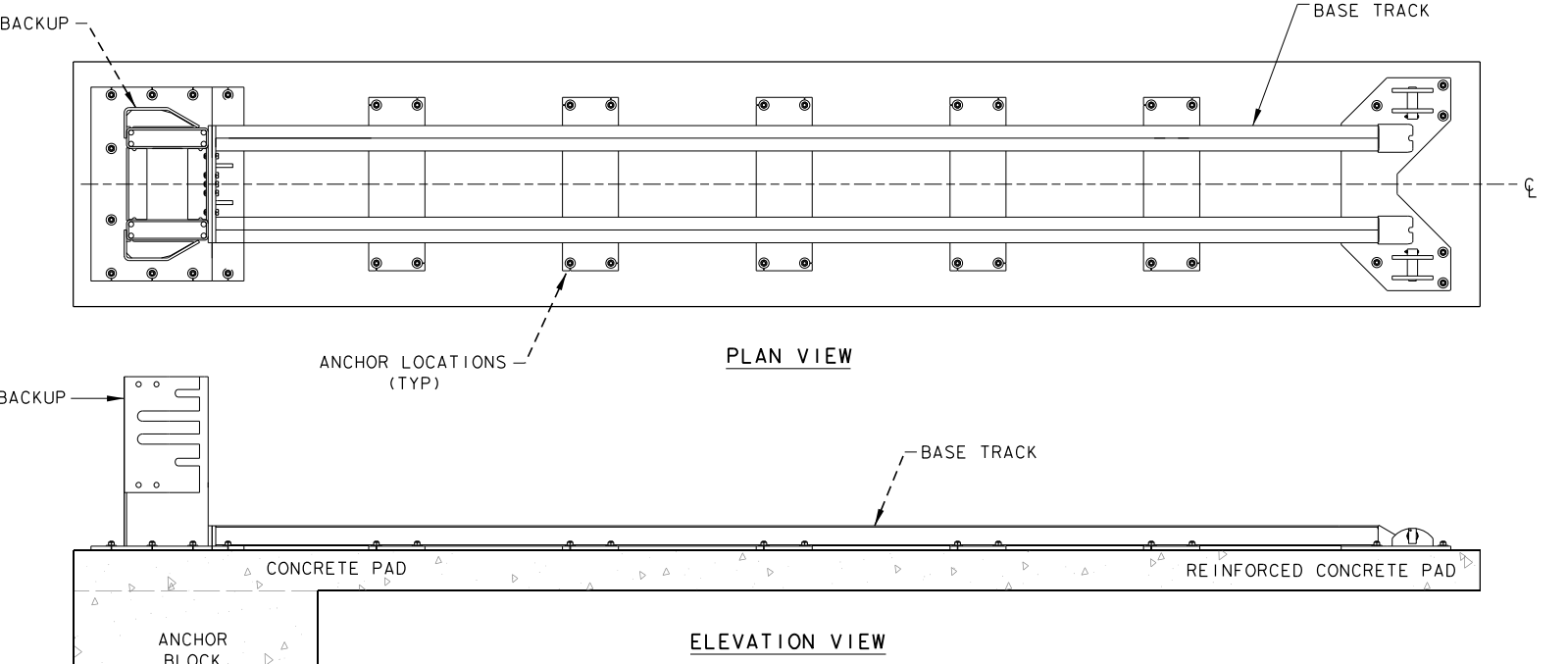
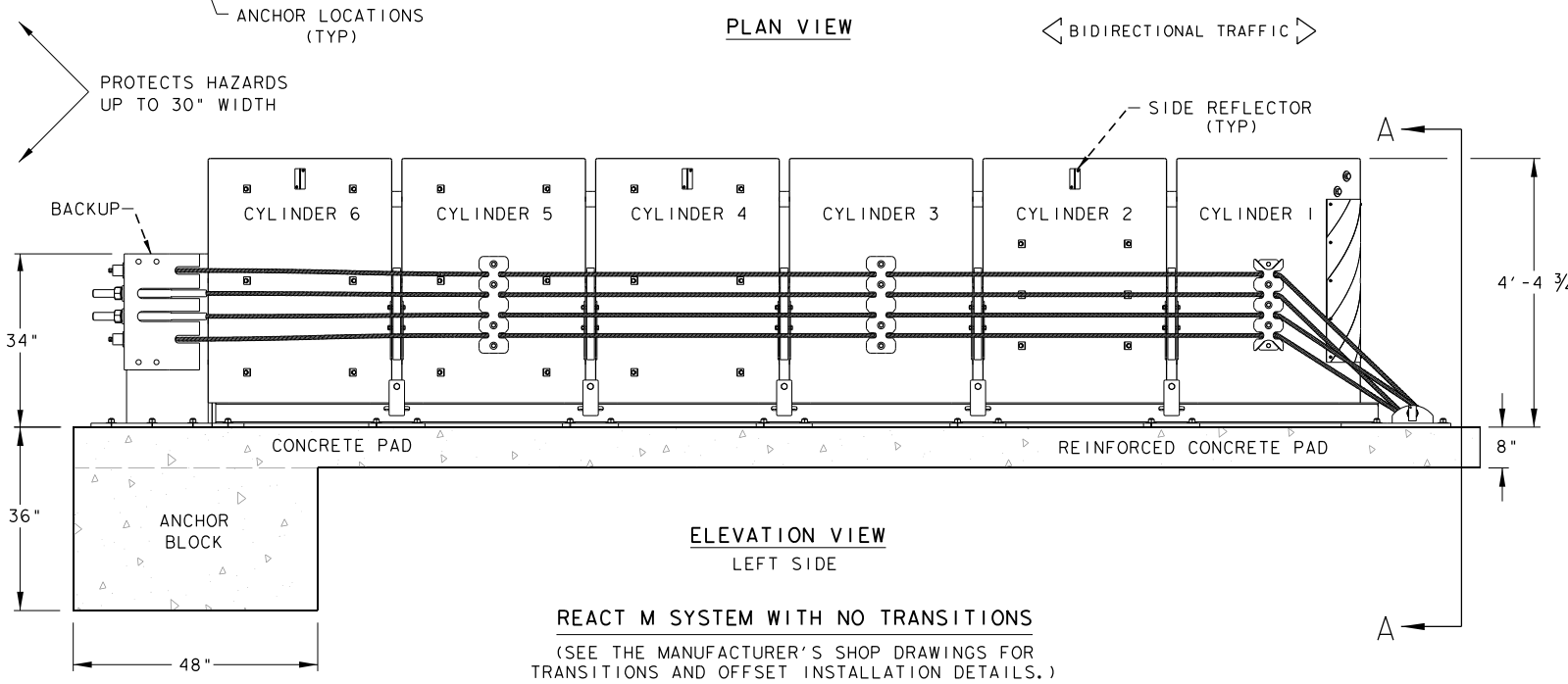
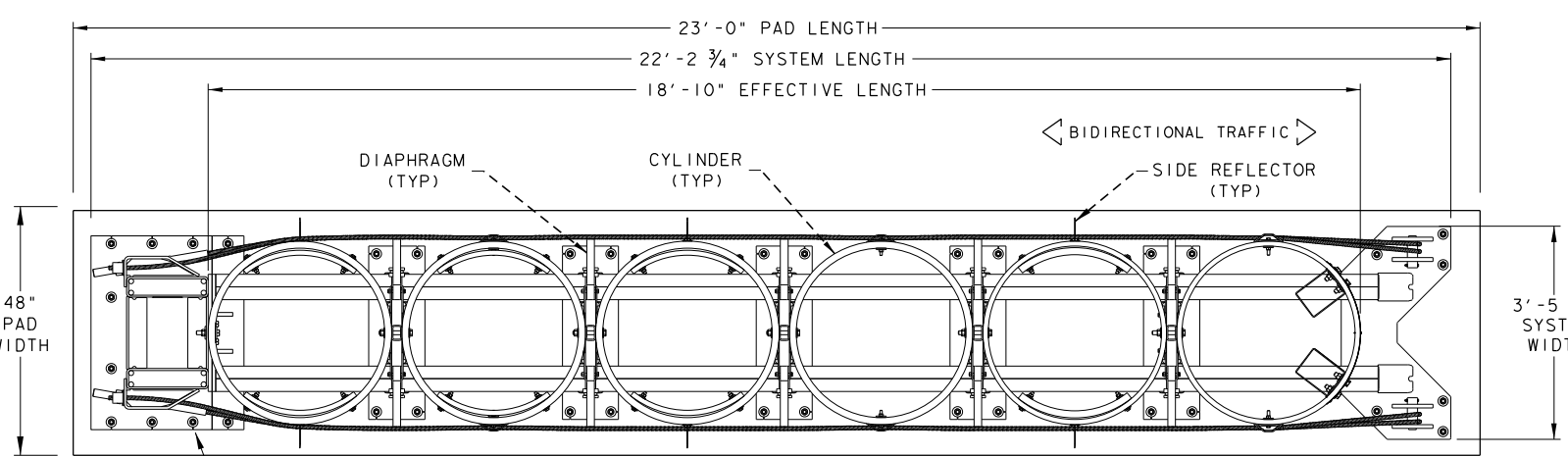


METAL BEAM GUARD FENCE (MOW STRIP)  
 MBGF(MS)-19

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 FILE: \\azb-pw-bentley.com:azb-pw-01\Documents\Collaboration Projects\TxDOT\217017.002\042\4 - Design\Plan Set\3. Roadway\Standards (Roadway)\168-REACT (M) -21.dgn



NOTES:  
 CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR THE CORRECT BACKUP ASSEMBLY AND TRANSITION PANELS OR SIDE PANELS USED FOR STANDARD AND BI-DIRECTIONAL INSTALLATIONS. AT DIVIDED-HIGHWAY MEDIANS OR UNDIVIDED ROADWAYS WHERE THE SYSTEM IS EXPOSED TO IMPACTS FROM ONE OR TWO DIFFERENT DIRECTIONS OF TRAFFIC FLOW.

**GENERAL NOTES**

- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY - ENERGY ABSORPTION AT 1(888)323-6374 OR WEBSITE: www.trinityhighway.com.
- THE NOSE OF THE REACT M SHALL BE CLAD WITH A PLASTIC WRAP WITH STANDARD DELINEATION ADHERED TO THE WRAP AND SHALL HAVE A SERIES OF SIDE MARKER REFLECTORS ON BOTH SIDES OF THE UNIT. SEE SITE PLAN VIEWS FOR MARKER AND PLASTIC WRAP COLOR ORIENTATION.
- FOR BI-DIRECTIONAL TRAFFIC, APPROPRIATE TRANSITION DETAILS WILL BE AS SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS.
- DETAILS OF COMPONENTS FOR THE REACT M, BACKUPS AND REINFORCING DETAILS WILL BE SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS FURNISHED TO THE ENGINEER.
- IF THE CROSS-SLOPE VARIES MORE THAN 2% OVER THE LENGTH OF THE SYSTEM, THE CONCRETE PAD WILL REQUIRE LEVELING. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
- THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
- THE REACT M SYSTEM SHOULD BE APPROXIMATELY PARALLEL WITH THE BARRIER OR CENTERLINE OF MERGING BARRIERS.
- ALL STEEL COMPONENTS TO BE HOT DIPPED GALVANIZED EXCEPT STAKES, DRIVE SPIKES, THREADED BOLTS IN BACKUP UNIT, AND WEDGE FITTINGS ON CABLES.
- THIS DRAWING REPRESENTS THE REACT M TL-3 SYSTEM, RE-DIRECTIVE, NON-GATING CRASH CUSHION THAT CAN PROTECT HAZARDS UP TO 30-INCHES IN WIDTH.

**DESIGN DATA TABLE FOR REACT M**

TEST NUMBER	TEST LEVEL	OVERALL LENGTH	TRANSITION LENGTH	SYSTEM WIDTH
3-30 To 3-36	TL-3	22'-2 3/4"	-	3'-5 3/4"
3-37A	TL-3	22'-2 3/4"	9'-10 3/4"	3'-5 3/4"
3-38	TL-3	22'-2 3/4"	-	3'-5 3/4"

**ANCHOR SYSTEM TYPE**

APPROVED ADHESIVE, 7" STUDS, 5.5" EMBEDMENT

**FOUNDATION TYPES**

MINIMUM 8" REINFORCED PORTLAND CEMENT CONCRETE PAD (REQUIRED REINFORCING STEEL FOR CONCRETE PAD SHALL BE SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS.)

MINIMUM 8" NON-REINFORCED PORTLAND CEMENT CONCRETE ROADWAY MEASURING AT LEAST 12' WIDE BY 50' LONG)

MINIMUM 7" CONCRETE DECK STRUCTURE, OR MINIMUM 6" REINFORCED CONCRETE ROADWAY

NOTE:  
 THIS STANDARD IS A BASIC REPRESENTATION OF THE REACT M SYSTEM AND IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

**Texas Department of Transportation** Design Division Standard

**TRINITY HIGHWAY ENERGY ABSORPTION CRASH CUSHION REACT M (NARROW) (MASH TL-3) REACT (M) -21**

FILE: reactm21.dgn	DN: TxDOT	CK: KM	DW: SS	CK: CL
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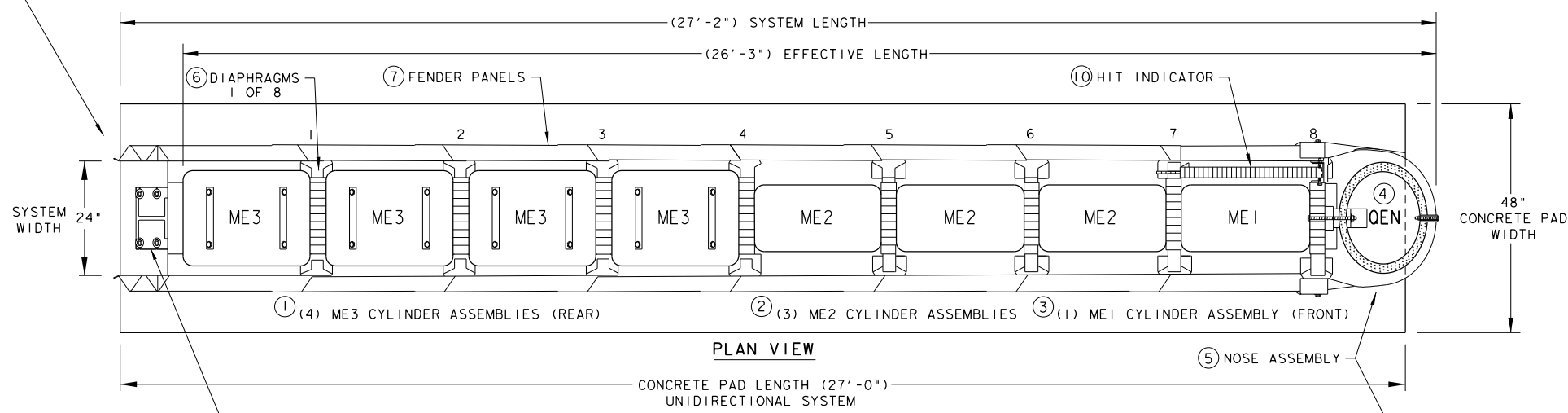
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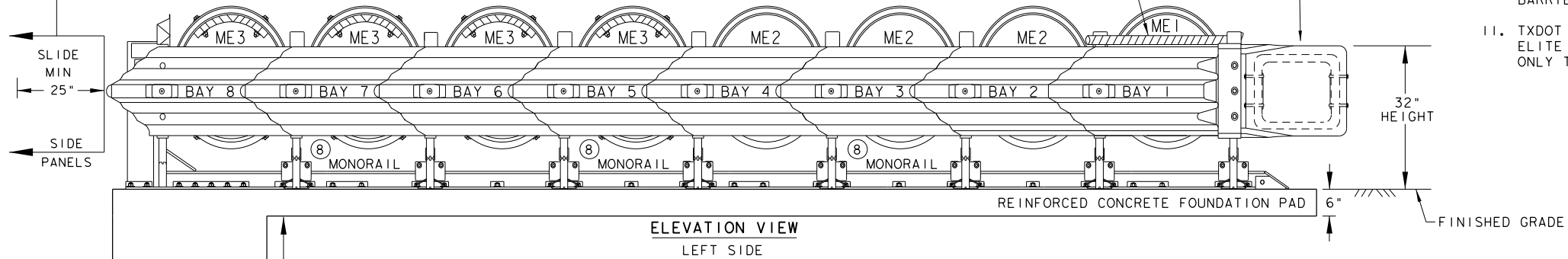
NOTE:  
A TRANSITION MAY BE REQUIRED TO INSTALL THE QUADGUARD ELITE M10 TO THE OBJECT BEING SHIELDED.

**QUADGUARD ELITE M10 24" WIDE (8 BAY) SYSTEM**



KEY	KEY
① ME3 CYLINDER ASSEMBLIES	⑥ DIAPHRAGMS
② ME2 CYLINDER ASSEMBLIES	⑦ FENDER PANELS
③ ME1 CYLINDER ASSEMBLY	⑧ MONORAILS
④ QEN CYLINDER	⑨ TYPE OF BACKUP
⑤ NOSE BELT ASSEMBLY	⑩ HIT INDICATOR

NOTE:  
PROVISION SHALL BE MADE FOR REAR FENDER SIDE PANELS TO SLIDE REARWARD UPON IMPACT, 25" MIN.



NOTES:  
CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR CONCRETE PAD AND ANCHOR BLOCK INSTALLATION REQUIREMENTS.

A MANUFACTURER'S DRAWING PACKAGE UNIQUE AND SPECIFIC FOR THE QUADGUARD ELITE M10 FIELD INSTALLATION AND INFORMATION REGARDING THE TYPE OF BACKUP ASSEMBLY REQUIRED FOR THE TRANSITION WILL BE PROVIDED BY THE MANUFACTURER TO THE ENGINEER AND INSTALLER.

6" REINFORCED CONCRETE PAD REQUIRES THE INSTALLATION OF AN ANCHOR BLOCK AS SHOWN ON THE MANUFACTURER'S DRAWING PACKAGE.

8" NON-REINFORCED CONCRETE PAD MAY NOT REQUIRE AN ANCHOR BLOCK, IF THE PAD IS INSTALLED AGAINST AN IMMOVABLE CONCRETE BACKUP.

CONCRETE PAD AND ANCHOR BLOCK COMBINATIONS SHALL BE CONFIRMED WITH THE MANUFACTURER BASED UPON SITE SPECIFIC DATA (SSD).

NOTE:  
THE QUADGUARD ELITE M10 8-BAY, 24" WIDE - NARROW SYSTEM TESTED TO MASH TEST LEVEL 3.

TL-3 MODEL #	QM10024E	CYLINDER TYPES IN BAYS			
BAYS	8	TYPE-ME3	TYPE-ME2	TYPE-ME1	TYPE-QEN
DIAPHRAGMS	8	4	3	1	1
WIDTH	24"	REAR	FRONT		NOSE

**BACKUP ASSEMBLY TYPES FOR SYSTEM TRANSITIONS**

SEE GENERAL NOTE 10 FOR CLEARANCE LIMITATIONS

⑨ TENSION STRUT BACKUP

⑨ CONCRETE BACKUP

SYSTEM TRANSITIONS TYPES	
1	QUAD-BEAM TO CONCRETE SAFETY BARRIER
2	QUAD-BEAM TO CONCRETE BRIDGE RAIL
3	QUAD-BEAM TO CONCRETE END SHOE
4	QUAD-BEAM TO THRIE-BEAM RAIL
5	QUAD-BEAM TO W-BEAM RAIL

NOTE:  
TRANSITION ASSEMBLIES FOR THE QUADGUARD ELITE M10 TO THRIE-BEAM OR W-BEAM FENCE REQUIRES 1-BEAM POSTS:  
ALL POSTS W6X8.5/9 1-BEAMS (78" LONG).

NOTES:  
CONTACT THE MANUFACTURER WITH SITE SPECIFIC DATA (SSD) FOR THE CORRECT BACKUP ASSEMBLY AND TRANSITION PANELS OR SIDE PANELS USED FOR STANDARD AND BI-DIRECTIONAL INSTALLATIONS. AT DIVIDED-HIGHWAY MEDIANS OR UNDIVIDED ROADWAYS WHERE THE SYSTEM IS EXPOSED TO IMPACTS FROM ONE OR TWO DIFFERENT DIRECTIONS OF TRAFFIC FLOW.

NOTE:  
THIS STANDARD IS A BASIC REPRESENTATION OF THE QUADGUARD ELITE M10 SYSTEM AND IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

**GENERAL NOTES**

- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY - ENERGY ABSORPTION INC. AT 1(888)323-6374.
- SEE THE RECENT QUADGUARD ELITE M10 PRODUCT DESCRIPTION ASSEMBLY MANUAL FOR IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS AND THE DRAWING PACKAGE FOR THE NARROW 24" SYSTEM BEFORE INSTALLING THE QUADGUARD ELITE M10 AT ANY GIVEN LOCATION.
- FOR BI-DIRECTIONAL TRAFFIC: THE LOCATION AND OR WIDTH OF THE QUADGUARD ELITE M10 IS RESTRICTED. AS BI-DIRECTIONAL TRAFFIC APPROACHES THE REAR OF THE QUADGUARD ELITE M10, THE QUADGUARD ELITE M10 SHOULD NOT EXTEND FURTHER INTO THE TRAFFIC-SIDE OF THE BARRIER THAN THE OBSTACLE. ANY TRANSITION INSTALLED MUST EITHER BE TANGENT TO BOTH QUADGUARD ELITE M10 AND OBSTACLE OR MUST ANGLE TOWARD FIELD SIDE OF THE BARRIER.
- SYSTEM TRANSITION: APPROPRIATE TRANSITION PANELS OR SIDE PANELS WILL BE REQUIRED FOR PROPER IMPACT PERFORMANCE. THE CORRECT PANEL(S) TO USE WILL DEPEND ON THE DIRECTION OF TRAFFIC FLOW AND WHAT TYPE OF BARRIER OR ROAD FEATURE THE QUADGUARD ELITE M10 SYSTEM IS SHIELDING. SEE THE QUADGUARD ELITE M10 PRODUCT DESCRIPTION & ASSEMBLY MANUAL FOR FURTHER DETAILS.
- COMPONENTS FOR THE QUADGUARD ELITE (M10) BACKUP AND REINFORCING DETAILS ARE SHOWN ON THE QUADGUARD ELITE M10 PRODUCT DESCRIPTION & ASSEMBLY MANUAL.
- CONCRETE PAD SHALL BE 6" MIN. REINFORCED 28MPa [4,000 PSI] (P.C.) OR 8" MIN. NON-REINFORCED 28MPa [4,000 PSI] CONCRETE ROADWAY MEASURING AT LEAST 12'-0" WIDE BY 50'-0" LONG. ANCHOR BLOCK IS NOT REQUIRED WHEN USING 8" CONCRETE PAD INSTALLED AGAINST AN IMMOVABLE STRUCTURE, E.G. CONCRETE WALL.
- IF THE CROSS-SLOPE VARIES MORE THAN 2% OVER THE LENGTH OF THE SYSTEM, THE CONCRETE PAD WILL REQUIRE LEVELING. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
- THE INSTALLATION AREA SHOULD BE FREE OF CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
- THE QUADGUARD ELITE M10 SYSTEM SHOULD BE INSTALLED APPROXIMATELY PARALLEL WITH THE BARRIER.
- FOR THE TENSION STRUT BACKUP THE DISTANCE BETWEEN THE BACK OF BACKUP AND THE BARRIER WALL SHOULD NOT EXCEED 7" IN ANY CASE.
- TxDOT HAS ONLY APPROVED THE 24" WIDE QUADGUARD ELITE M10 SYSTEM. THE QUADGUARD ELITE M10 PRODUCT DESCRIPTION AND ASSEMBLY MANUAL INCLUDES SYSTEM WIDTH OF 24". ONLY THE 24" SYSTEM IS ALLOWED TO BE INSTALLED ON TEXAS ROADWAYS.

FOUNDATION & ANCHORING REQUIREMENTS	
FOUNDATION TYPES: A, B, C, & D	
FOUNDATION TYPE: A	REINFORCED CONCRETE PAD OR ROADWAY
FOUNDATION:	6" MINIMUM DEPTH (P.C.C.)
ANCHORAGE:	7" STUDS EMBEDDED 5 1/2" - APPROVED ADHESIVE
FOUNDATION TYPE: B	ASPHALT OVER P.C.C.
FOUNDATION:	3" MIN. (A.C.) OVER 3" MIN. (P.C.C.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 1/2" - APPROVED ADHESIVE
FOUNDATION TYPE: C	ASPHALT OVER SUBBASE
FOUNDATION:	6" MIN. (A.C.) OVER 6" MIN. (C.S.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 1/2" - APPROVED ADHESIVE
FOUNDATION TYPE: D	ASPHALT ONLY
FOUNDATION:	8" MIN. (A.C.)
ANCHORAGE:	18" THREADED ROD EMBEDDED 16 1/2" - APPROVED ADHESIVE

KEY:  
ASPHALT CONCRETE (A.C.)  
COMPACTED SUBBASE (C.S.)  
PORTLAND CEMENT CONCRETE (P.C.C.)

NOTE: SEE TRINITY'S PRODUCT DESCRIPTION ASSEMBLY MANUAL FOR THE APPROVED ADHESIVE.

IF THE UNIT IS ANCHORED TO ASPHALTIC CONCRETE, IT SHOULD BE RELOCATED TO FRESH, UNDISTURBED ASPHALT AND RE-ANCHORED AFTER EACH IMPACT TO ENSURE ADEQUATE FUTURE PERFORMANCE.

TENSION STRUT BACKUP MAY BE USED IN CONSTRUCTION ZONES ON ASPHALT CONCRETE (A.C.) FOR TEMPORARY USE ONLY.

**Texas Department of Transportation**

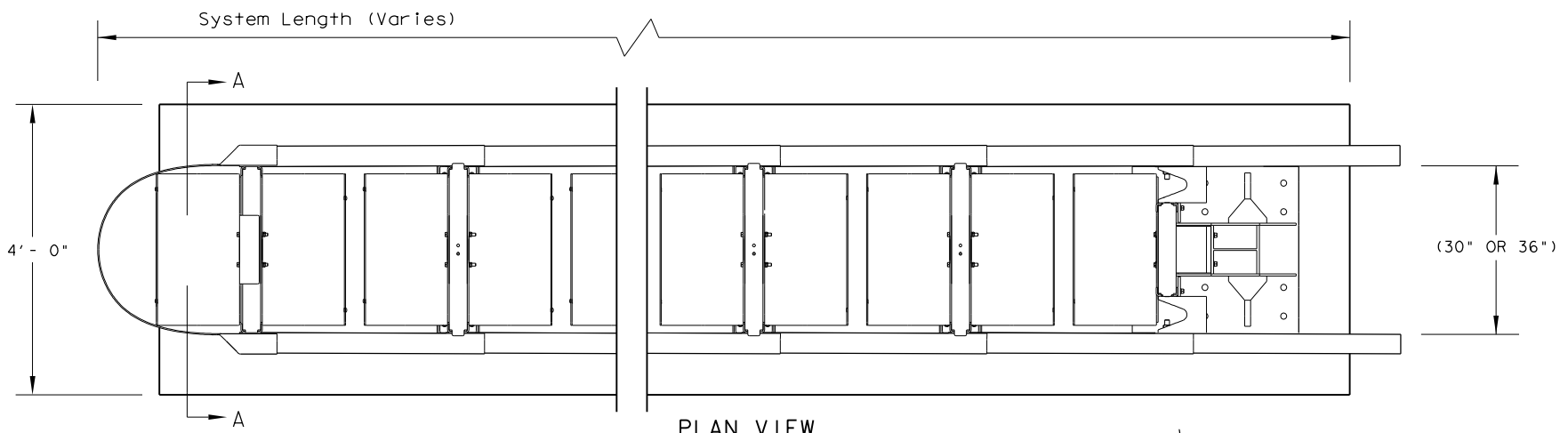
**Design Division Standard**

**TRINITY HIGHWAY**  
**ENERGY ABSORPTION**  
**QUADGUARD ELITE M10**  
**(MASH TL-3)**  
**QGELITE (M10) (N)-20**

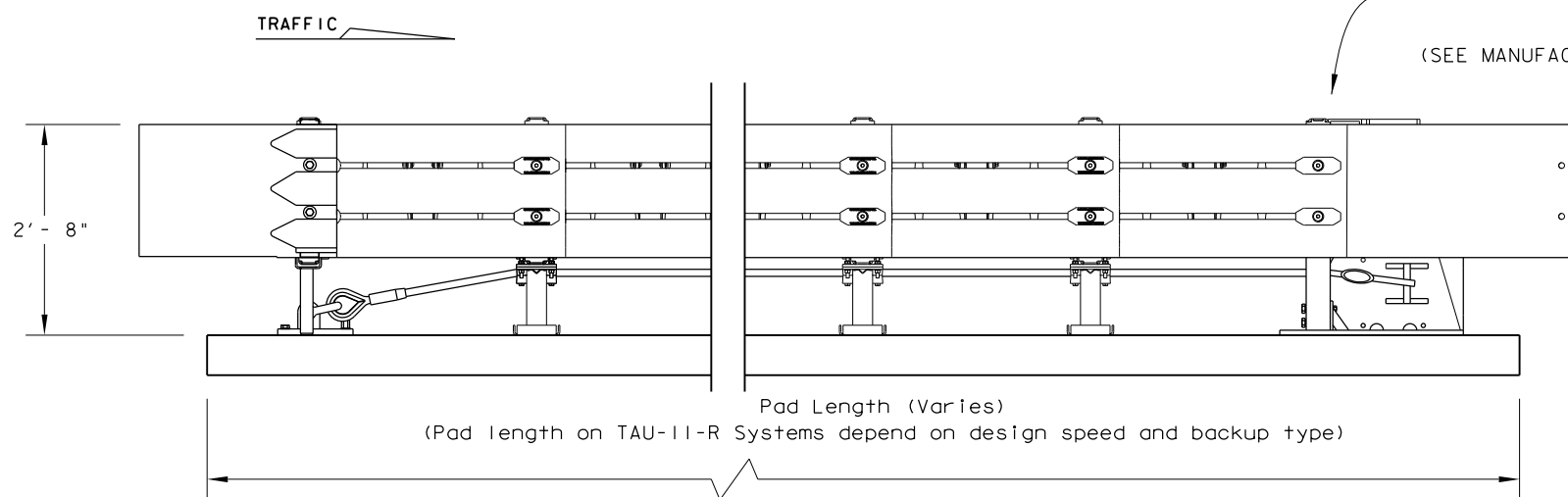
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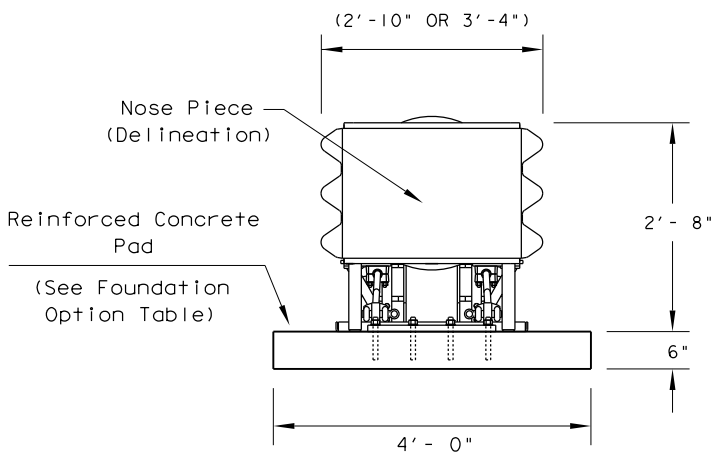


PLAN VIEW



ELEVATION VIEW

Attachments and transitions to various barrier shapes, barrier railings and bi-directional traffic flows are available.  
 (SEE MANUFACTURER'S PRODUCT MANUAL)



SECTION A-A

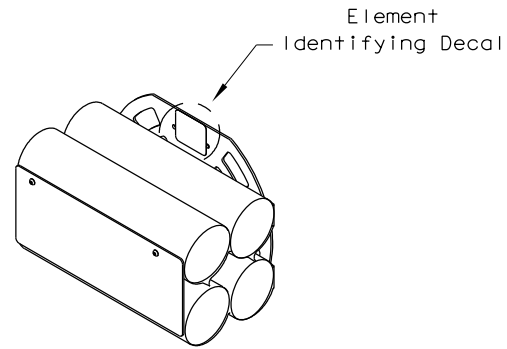
Nose Piece delineation orientation, is shown elsewhere on the plans.

TRANSITION OPTIONS
Vertical Wall
Concrete Traffic Barriers
W-Beam Guardrail
Thrie Beam Guardrail

For bi-directional transition panel and end shoe details. (See manufacturer's product manual.)

FOUNDATION OPTIONS
6" Reinforced Concrete
8" Unreinforced Concrete
Asphalt over Concrete with Minimum 6" Embedment in Concrete
6" Asphalt over 6" Compact Subbase
8" Minimum Asphalt

For steel placement in concrete foundations. (See manufacturer's product manual)



ENERGY ABSORBING ELEMENTS (EAE)

BACKUP SUPPORT OPTIONS
Compact (Stand Alone)
Flush Mount
PCB (Concrete Barrier)

TAU-II-R (NARROW) SYSTEM LENGTHS			
BACKSTOP	TL-2	TL-3	70 mph
PCB	13'-7"	27'-10"	30'-7"
Flush Mount	14'-0"	28'-3"	31'-0"
Compact	15'-3"	29'-6"	32'-3"

Backup and Transition types are shown elsewhere on the plans, (i.e. Attenuator location details or in the general notes).

Note: System lengths are ± 2"

GENERAL NOTES

- For specific information regarding installation and technical guidance of the system, contact: Lindsay Transportation Solutions - Barrier Systems, Inc. at (707) 374-6800. 180 River Road, Rio Vista, CA 94571
- For bi-directional traffic, appropriate transition panels will be required.
- Additional details for the backup support option, transition options and foundation option will be shown on the manufacturer's shop drawings furnished to the Engineer.
- Concrete shall be class "S" with a minimum compressive strength of 4,000 psi.
- Maximum permissible cross-slope is 8%.
- The installation area should be free from curbs, elevated objects, or depressions.
- The TAU-II-R system should be approximately parallel with the barrier or center of merging barriers.
- Refer to Universal TAU-II-R configuration chart for specific systems configuration number and location of each type of energy absorbing element.
- 30-inch (30") model shown, also available in 36-inch (36") configuration.

BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
B030704	1	Front Support
B030703	TBD	Mid Support
TBD	1	Backstop Assembly (See Table)
TBD	1	Front Cable Anchor
TBD	1	Nose Assembly
B010202	TBD	Sliding Panel
B010659	2	End Panel
K001003	1	Slider Assembly Kit
BSI-1202006-KT	TBD	TAU-II-R Slider Kit
BSI-1107131-KT	TBD	TAU-II-R EAE Mounting Hw Kit
BSI-1012069-00	TBD	Energy Absorbing Element, Type 1
BSI-1012070-00	TBD	Energy Absorbing Element, Type 2
BSI-1012071-00	TBD	Energy Absorbing Element, Type 3
BSI-1110009-00	TBD	Energy Absorbing Element, Type 3N
TBD	TBD	Cable Assembly
K001004	TBD	Cable Guide Kit
K001005	2	Front Support Leg Kit
B010651	4	Pipe Panel Mount
TBD	1	Anchoring Package

(TBD) = To Be Determined, depending on Backup Type and System Length.

(See manufacturer's product manual for details)

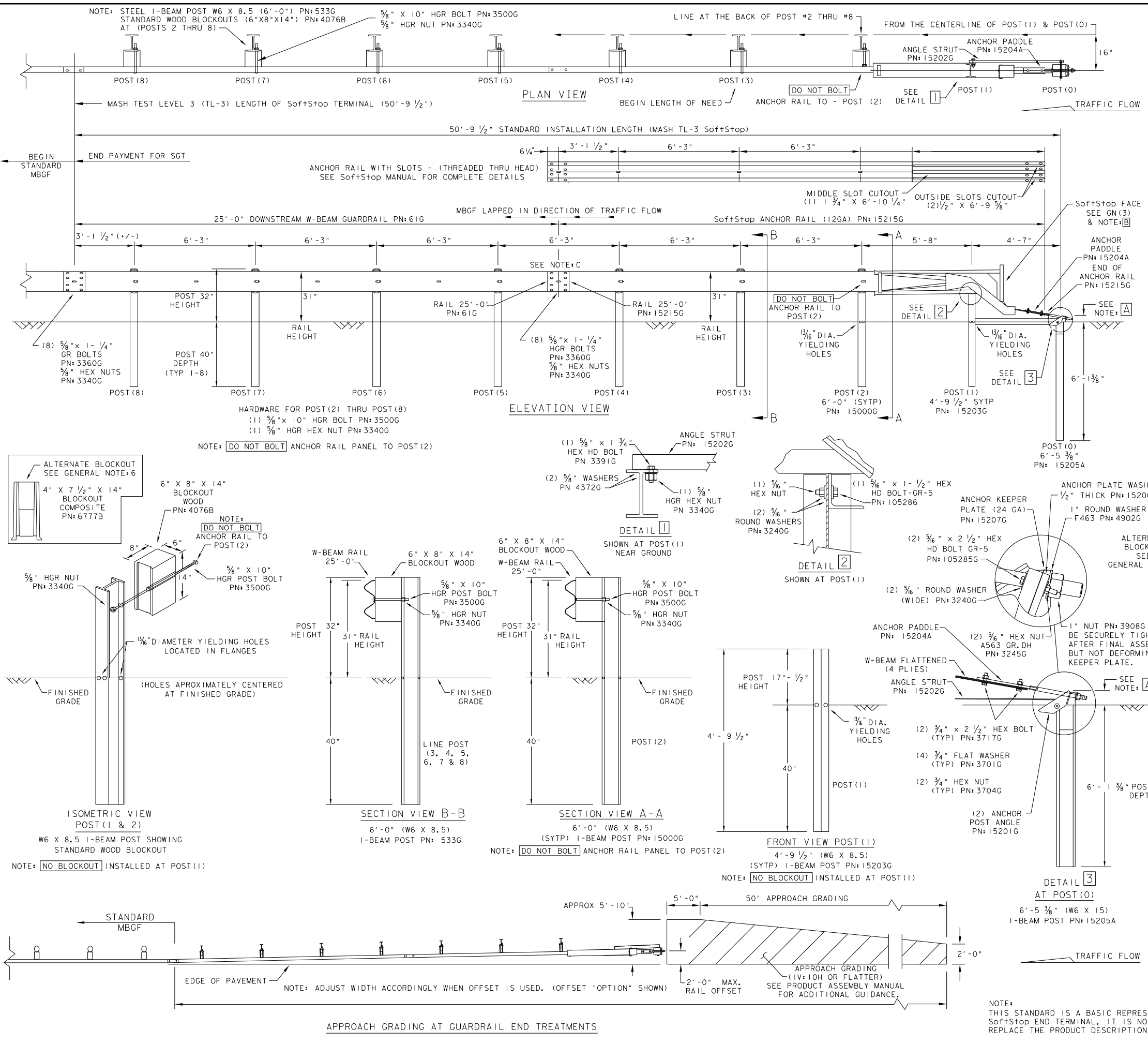


LTS-BARRIER SYSTEMS  
CRASH CUSHION  
(R-NARROW)  
TAU-II-R(N)-16

FILE: tauir16.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL
©TxDOT: January 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
REVISED 06.2013 (VP)	DIST	COUNTY	SHEET NO.	
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- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY AT (888) 323-6374, 2525 N. STEMMONS FREEWAY, DALLAS, TX 75207
  - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE SoftStop END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL. PN: 620237B
  - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
  - A COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
  - IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL AND REFER TO THE LATEST ROADWAY MBBF STANDARD FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - IT IS ACCEPTABLE TO INSTALL THE SoftStop IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT.
  - DO NOT ATTACH THE SoftStop SYSTEM DIRECTLY TO A RIGID BARRIER.
  - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop SYSTEM BE CURVED.
  - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCRoaching ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.

**NOTE: A** THE INSTALLATION HEIGHT OF FULLY ASSEMBLED ANCHOR POST WILL VARY FROM 3'-3/4" MIN. TO 4" MAX. ABOVE FINISHED GRADE.

**NOTE: B** PART PN: 5852B RIGHT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING) PART PN: 5851B LEFT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING)

**NOTE: C** W-BEAM SPLICE LOCATED BETWEEN LINE POST (4) AND LINE POST (5) GUARDRAIL PANEL 25'-0" PN: 61G ANCHOR RAIL 25'-0" PN: 15215G LAP GUARDRAIL IN DIRECTION OF TRAFFIC FLOW.

PART	QTY	MAIN SYSTEM COMPONENTS
620237B	1	PRODUCT DESCRIPTION ASSEMBLY MANUAL (LATEST REV.)
15208A	1	SoftStop HEAD (SEE MANUAL FOR RIGHT-LEFT APPROACH)
15215G	1	SoftStop ANCHOR RAIL (12GA) WITH CUTOUT SLOTS
61G	1	SoftStop DOWNSTREAM W-BEAM RAIL (12GA) (25'-0")
15205A	1	POST #0 - ANCHOR POST (6'-5 3/8")
15203G	1	POST #1 - (SYTP) (4'-9 1/2")
15000G	1	POST #2 - (SYTP) (6'-0")
533G	6	POST #3 THRU #8 - I-BEAM (W6 X 8.5) (6'-0")
4076B	7	BLOCKOUT - WOOD (ROUTED) (6" x 8" x 14")
6777B	7	BLOCKOUT - COMPOSITE (4" x 7 1/2" x 14")
15204A	1	ANCHOR PADDLE
15207G	1	ANCHOR KEEPER PLATE (24 GA)
15206G	1	ANCHOR PLATE WASHER (1/2" THICK)
15201G	2	ANCHOR POST ANGLE (10" LONG)
15202G	1	ANGLE STRUT
<b>HARDWARE</b>		
4902G	1	1" ROUND WASHER F436
3908G	1	1" HEAVY HEX NUT A563 GR. DH
3717G	2	3/4" x 2 1/2" HEX BOLT A325
3701G	4	3/4" ROUND WASHER F436
3704G	2	3/4" HEAVY HEX NUT A563 GR. DH
3360G	16	5/8" x 1 1/4" W-BEAM RAIL SPLICE BOLTS HGR
3340G	25	5/8" W-BEAM RAIL SPLICE NUTS HGR
3500G	7	5/8" x 10" HGR POST BOLT A307
3391G	1	5/8" x 1 3/4" HEX HD BOLT A325
4489G	1	5/8" x 9" HEX HD BOLT A325
4372G	4	5/8" WASHER F436
105285G	2	5/8" x 2 1/2" HEX HD BOLT GR-5
105286G	1	5/8" x 1 1/2" HEX HD BOLT GR-5
3240G	6	5/8" ROUND WASHER (WIDE)
3245G	3	5/8" HEX NUT A563 GR. DH
5852B	1	HIGH INTENSITY REFLECTIVE SHEETING - SEE NOTE: B

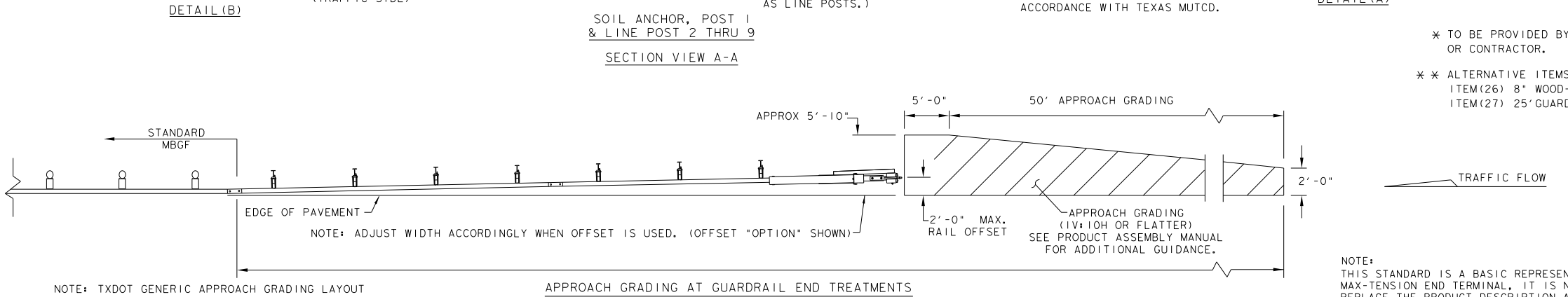
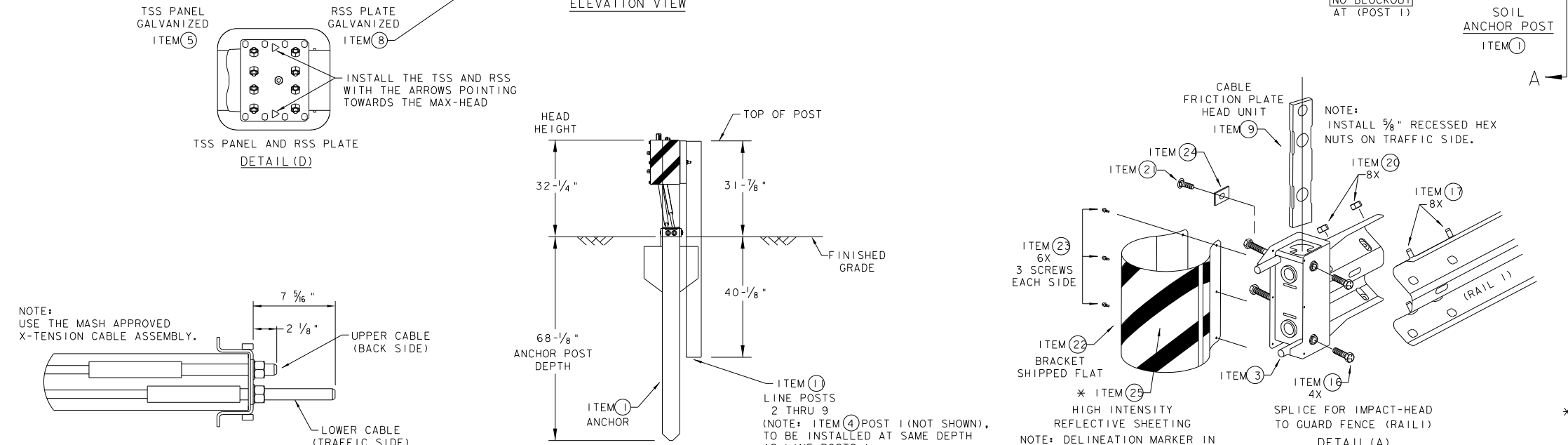
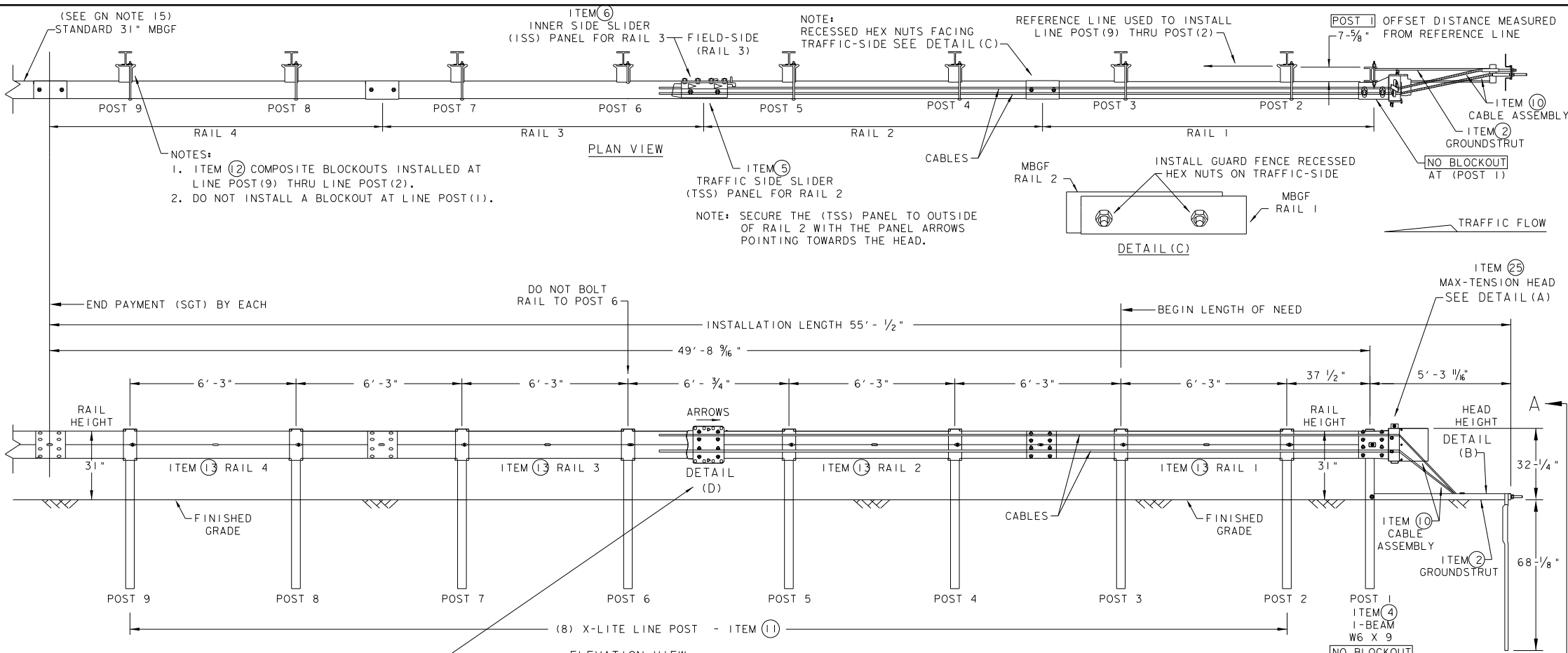
**Design Division Standard**

**TRINITY HIGHWAY  
 SOFTSTOP END TERMINAL  
 MASH - TL-3  
 SGT(10S)31-16**

FILE: sgt10s3116	DN: TxDOT	CK: KM	DN: VP	CK: MB/VP
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY		SHEET NO.
	LRD	DIMMIT		169

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE SoftStop END TERMINAL. IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

DATE: 6/22/2020  
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- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
  - FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE MAX-TENSION INSTALLATION INSTRUCTION MANUAL, P/N MANMAX REV D (ECN 3516).
  - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
  - SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
  - COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
  - REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
  - IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
  - MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
  - IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  - THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
  - A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

ITEM#	PART NUMBER	DESCRIPTION	QTY
1	BS1-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BS1-1610061-00	GROUND STRUT - GALVANIZED	1
3	BS1-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BS1-1610063-00	W6x9 I-BEAM POST 6FT. -GALVANIZED	1
5	BS1-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BS1-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BS1-1610066-00	TOOTH - GEOMET	1
8	BS1-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BS1-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BS1-1012078-00	X-LITE LINE POST - GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BS1-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BS1-1102027-00	X-LITE SQUARE WASHER	1
15	BS1-2001886	5/8" X 7" THREAD BOLT HH (GR.5) GEOMET	1
16	BS1-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5) GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2) MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2) MGAL	59
21	BS1-2001888	5/8" X 2" ALL THREAD BOLT (GR.5) GEOMET	1
22	BS1-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BS1-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWRO3	1
25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
27	BS1-4004431	25' W-BEAM GUARDRAIL PANEL, 8-SPACE, 12GA.	2
28	MANMAX Rev-D	MAX-TENSION INSTALLATION INSTRUCTIONS	1

\* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.  
 \*\* ALTERNATIVE ITEMS NOT SHOWN.  
 ITEM (26) 8" WOOD-BLOCKOUTS  
 ITEM (27) 25' GUARD FENCE PANELS

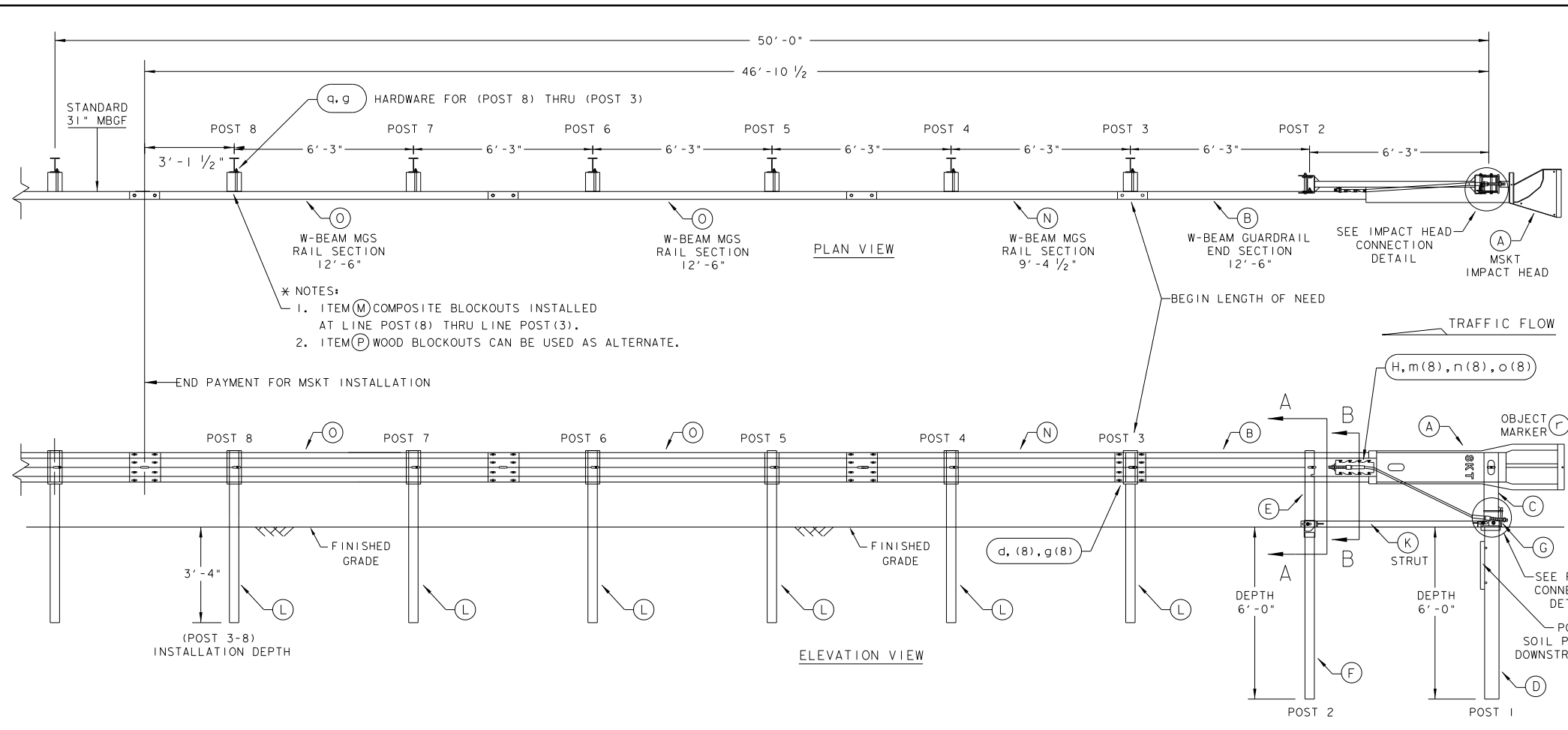
**Design Division Standard**

**MAX-TENSION END TERMINAL  
 MASH - TL-3  
 SGT (11S) 31-18**

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DIST	COUNTY		SHEET NO.	
LRD	DIMMIT		170	

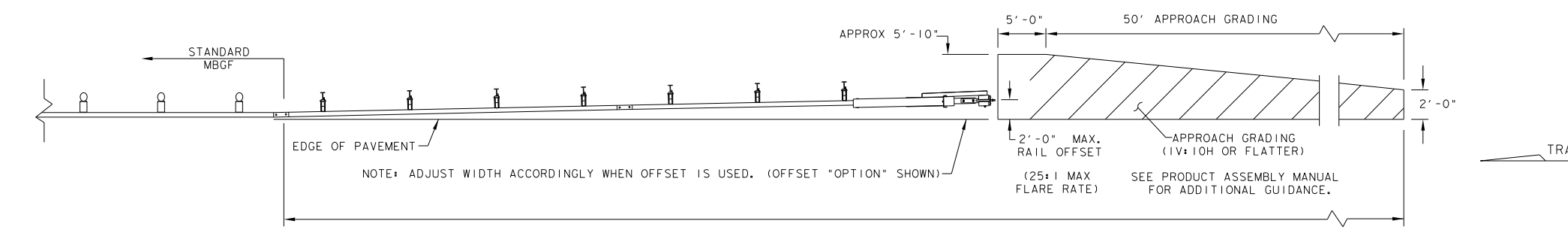
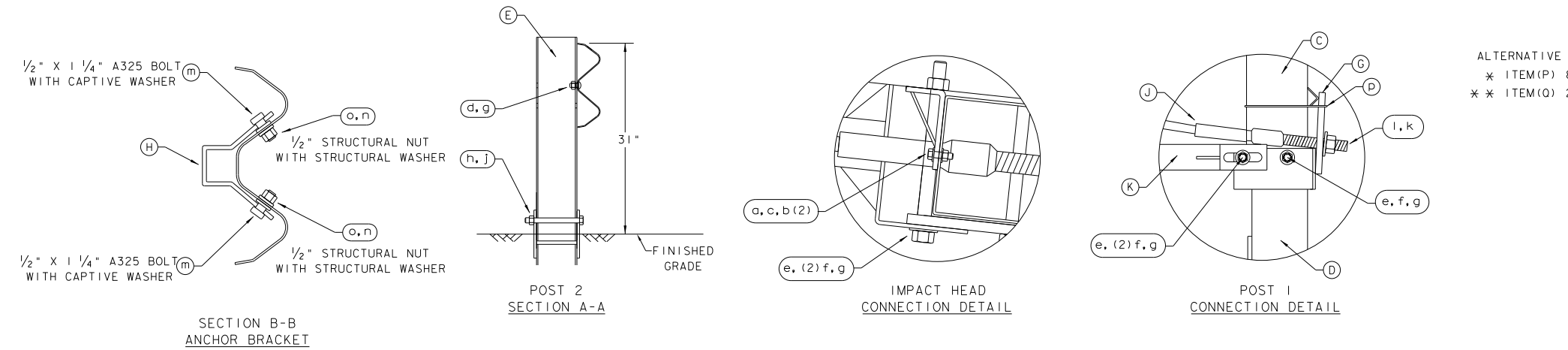
NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL. IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

DATE: 6/22/2020  
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- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
  - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE: MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION-062717).
  - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
  - SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
  - A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
  - IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBSGF STANDARD FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - SYSTEM MUST BE ATTACHED TO STANDARD 31" MBSGF.
  - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
  - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
  - THE SYSTEM IS SHOWN WITH TWO 12'-6" MBSGF PANELS, ONE 25'-0" MBSGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
  - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6X9 OR W6X8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
SMALL HARDWARE			
a	2	5/8" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	5/16" WASHER	W0516
c	2	5/16" HEX NUT	N0516
d	25	5/8" Dia. x 1 1/4" SPLICE BOLT (POST 2)	B580122
e	2	5/8" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	5/8" WASHER	W050
g	33	5/8" Dia. H.G.R NUT	N050
h	1	3/4" Dia. x 8 1/2" HEX BOLT (GRD A449)	B340854A
j	1	3/4" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2" x 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	1/2" STRUCTURAL NUTS	N012A
o	8	1 1/16" O.D. x 3/16" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151



NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

**Texas Department of Transportation**

**Design Division Standard**

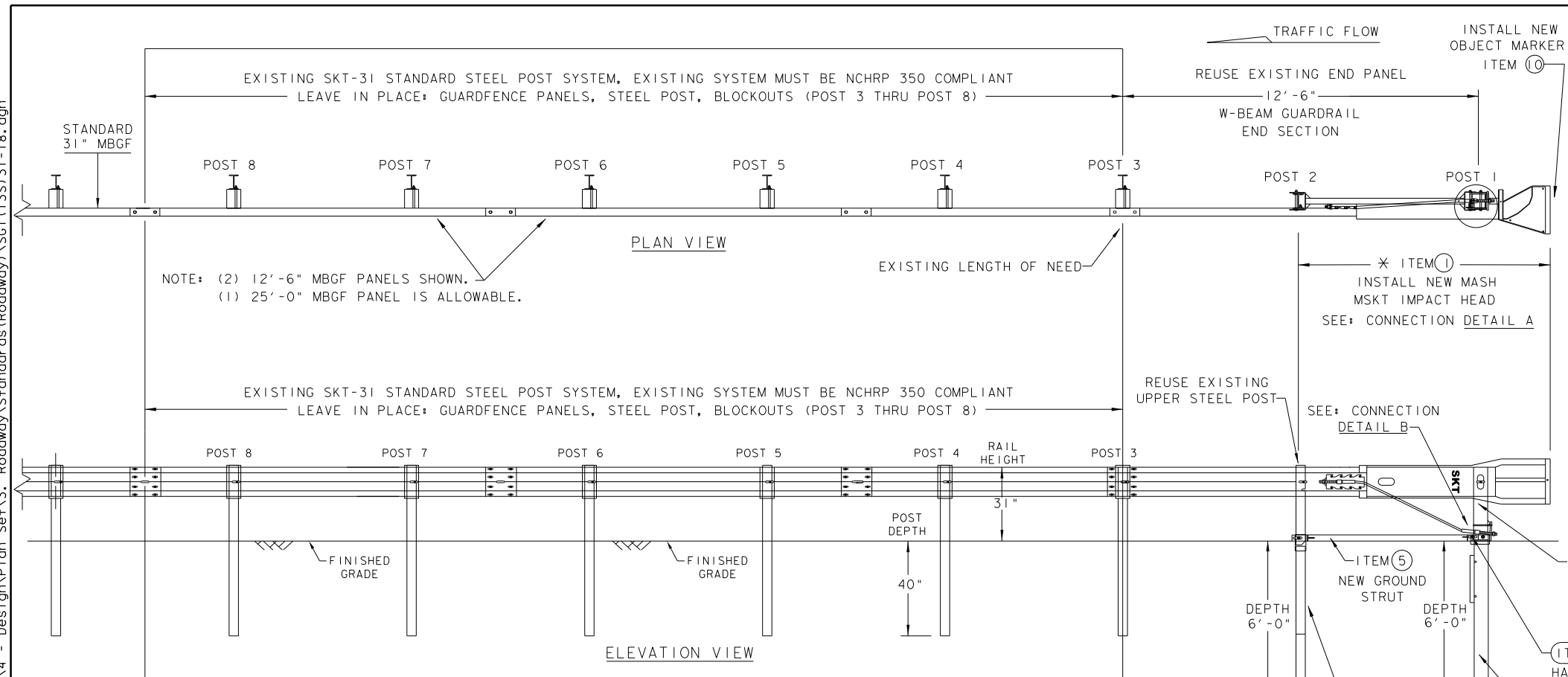
SINGLE GUARDRAIL TERMINAL  
MSKT-MASH-TL-3

SGT (12S) 31-18

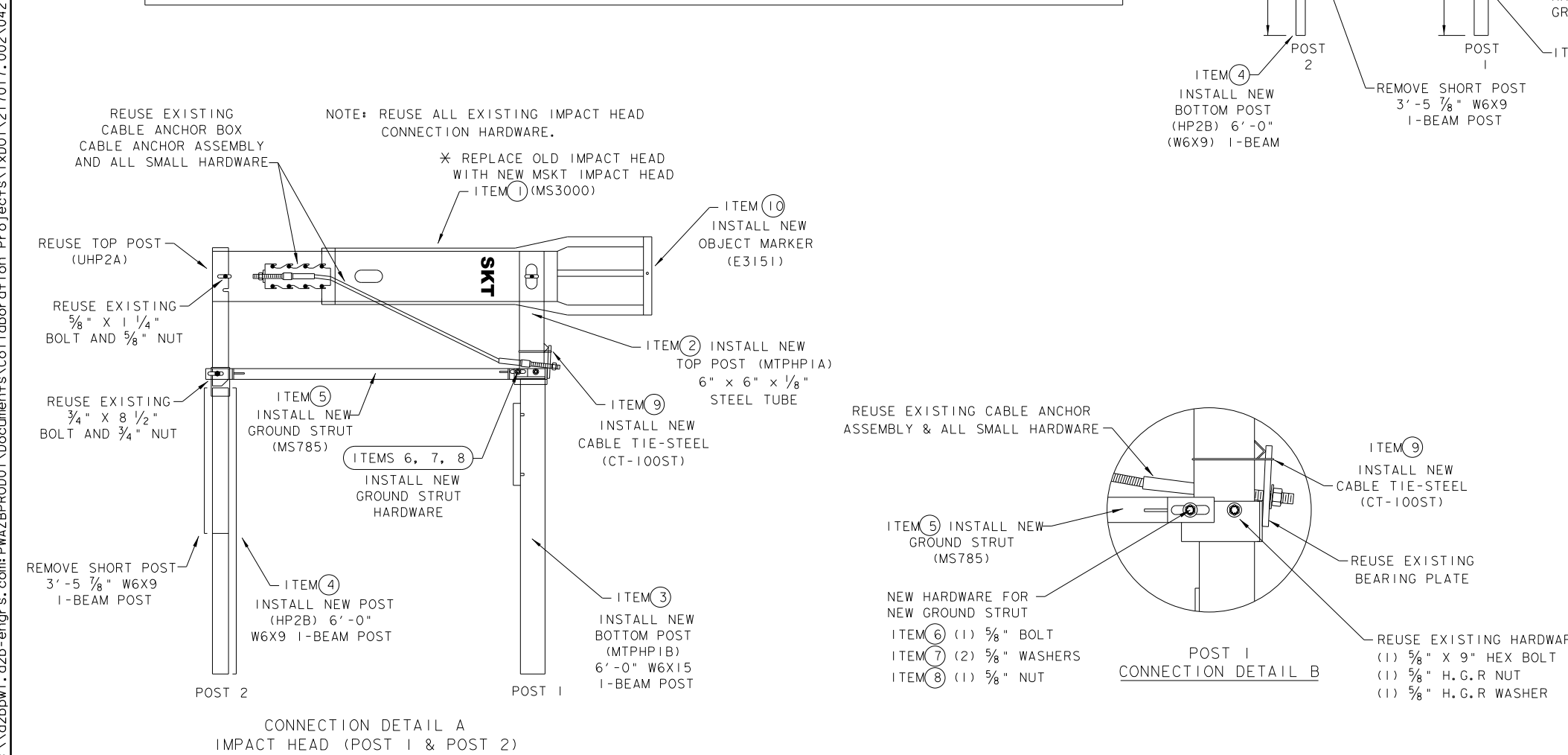
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DIST: LRD	COUNTY: DIMMIT	SHEET NO. 171		

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- ### GENERAL NOTES
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
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  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
  - IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - THE EXISTING SKT 31" STANDARD STEEL POST SYSTEM MUST BE THOROUGHLY INSPECTED, AND DETERMINED TO BE INTACT, AND FREE OF ANY DAMAGE OR DEFECTS BEFORE RETROFITTING. THIS INSPECTION INCLUDES COMPLETING THE MSKT RETROFIT INSPECTION CHECKLIST FOR THE EXISTING SKT 31" STEEL POST NCHRP 350 SYSTEM. ALL EXISTING, AND REUSABLE PARTS MUST BE FREE OF ANY DAMAGE FOR A MASH COMPLIANT RETROFIT.
  - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
  - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCRANCHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
  - SPECIAL DRIVING CAP TO BE USED WHEN DRIVING (LOWER POSTS 1 & 2) TO PREVENT DAMAGE TO THE WELDED PLATES.

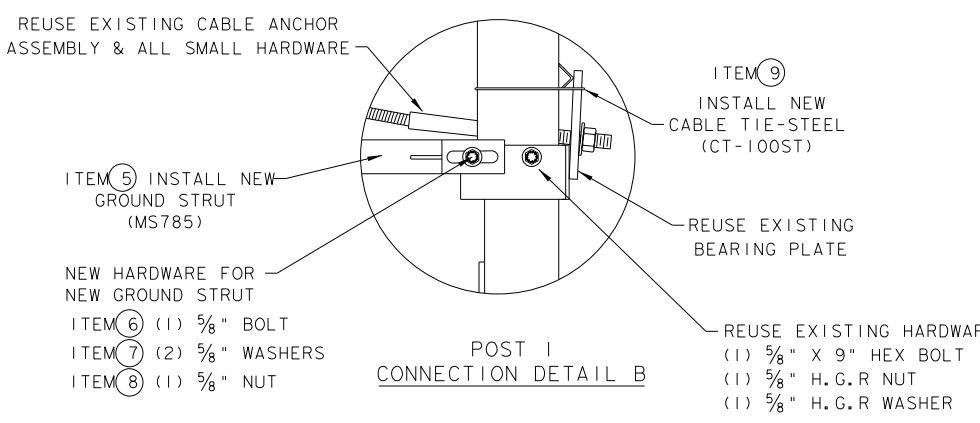


- ITEM 10 INSTALL NEW OBJECT MARKER (E3151)
- ITEM 11 INSTALL NEW MASH MSKT IMPACT HEAD SEE: CONNECTION DETAIL A
- REUSE EXISTING UPPER STEEL POST SEE: CONNECTION DETAIL B
- ITEM 5 NEW GROUND STRUT
- ITEM 2 INSTALL NEW TOP POST (6" X 6" X 1/8") STEEL TUBE (MTPHP1A)
- ITEMS 6, 7, 8 HARDWARE FOR GROUND STRUT
- ITEM 3 INSTALL NEW BOTTOM POST (MTPHP1B) 6'-0" (W6X15) I-BEAM
- ITEM 4 INSTALL NEW BOTTOM POST (HP2B) 6'-0" (W6X9) I-BEAM
- REMOVE SHORT POST 3'-5 7/8" W6X9 I-BEAM POST

ITEMS	QTY	MAIN SYSTEM COMPONENTS	PART NUMBERS
*	1	MSKT IMPACT HEAD	MS3000
	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
	1	GROUND STRUT	MS785
	1	5/8" X 9" HEX BOLT (GRD A449)	B580904A
	2	5/8" WASHERS	W050
	1	5/8" H.G.R NUT	N050
	1	CABLE TIE-STEEL	CT-100ST
*	1	OBJECT MARKER 18" X 18"	E3151

COMPONENTS REQUIRED TO RETROFIT: EXISTING 31" STEEL POST (NCHRP 350) SKT GUARDRAIL TERMINAL WITH THE NEW 31" (MASH COMPLIANT) MSKT IMPACT HEAD.

\* IF THE EXISTING NCHRP 350 (31" STEEL POST SKT) ALREADY HAS THE MSKT IMPACT HEAD THERE IS NO NEED TO REPLACE THE IMPACT HEAD OR OBJECT MARKER AS LONG AS IT IS NOT DAMAGED.



NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE EXISTING SKT END TERMINAL RETROFITTED TO THE MSKT MASH COMPLIANT TERMINAL. IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

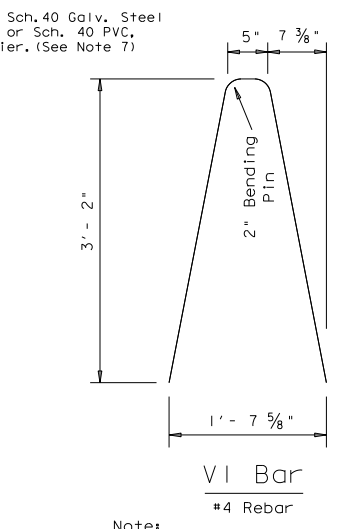
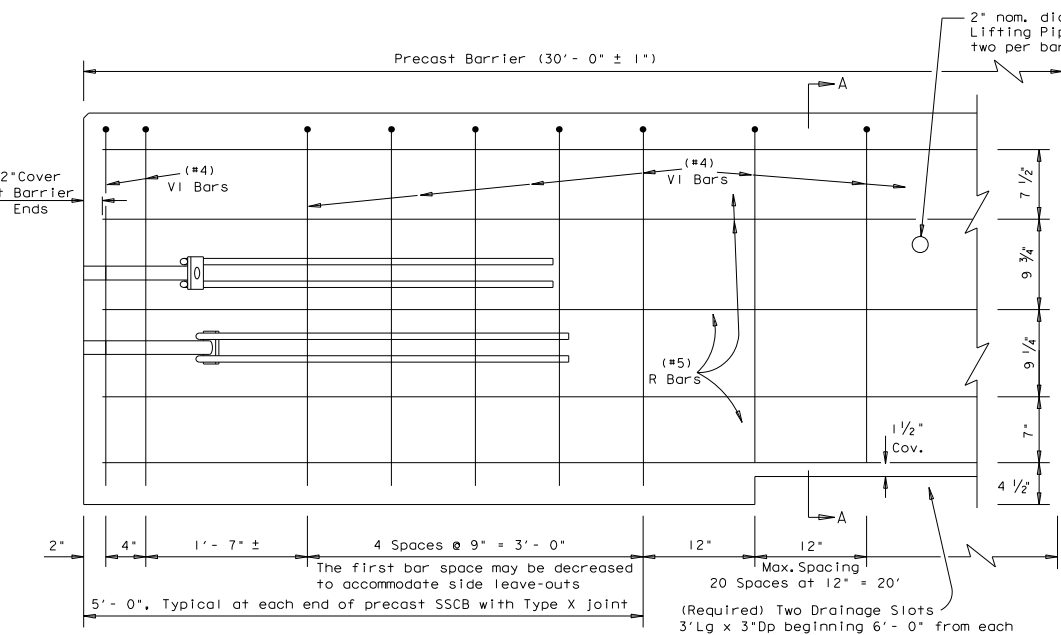
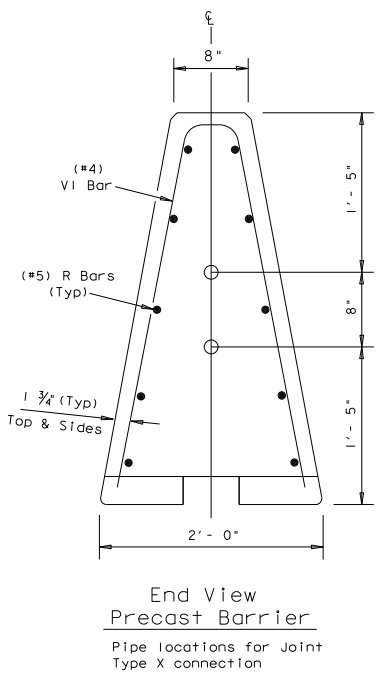
**Design Division Standard**

## RETROFIT STANDARD SKT 31" STEEL POST SYSTEM TO MASH MSKT SGT(13S)31-18

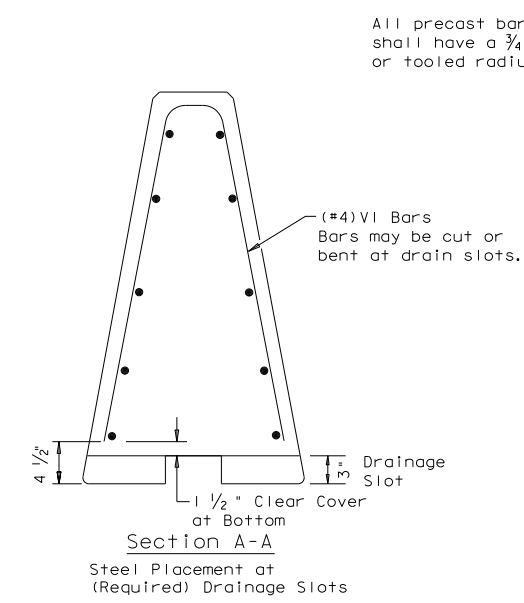
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	DIST	COUNTY	SHEET NO.	
	LRD	DIMMIT	172	

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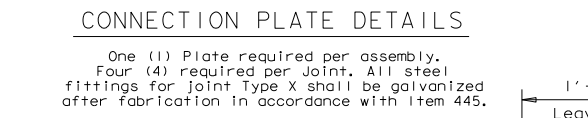
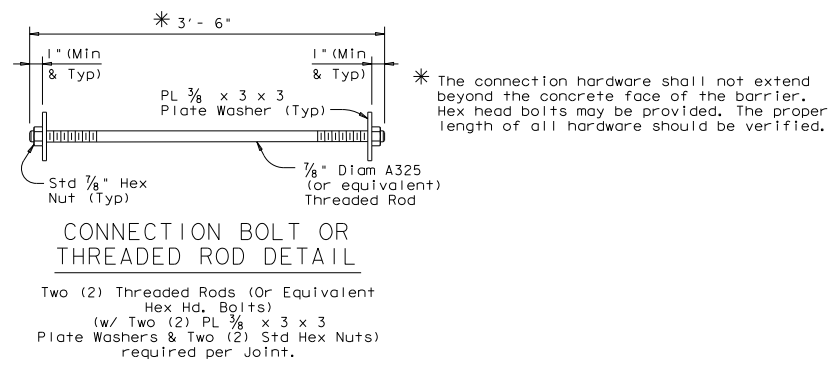
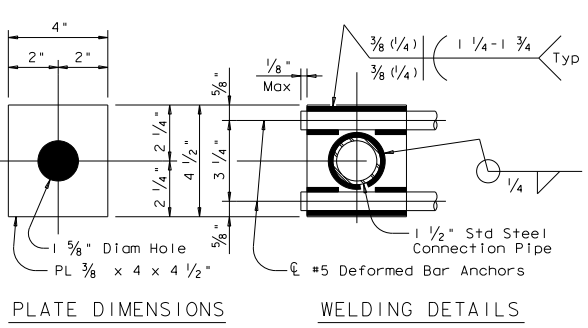
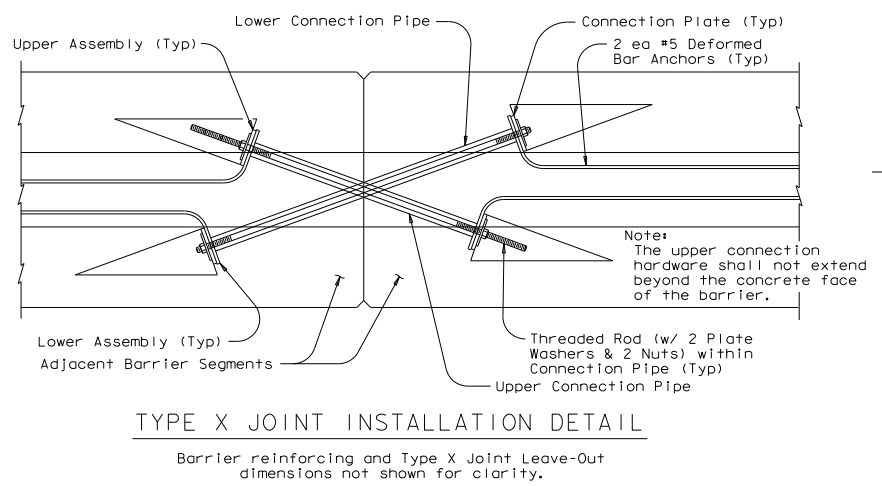
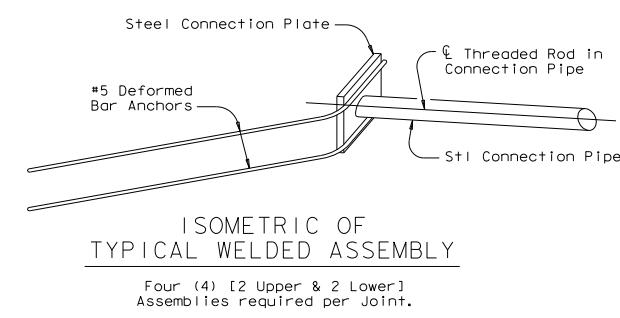
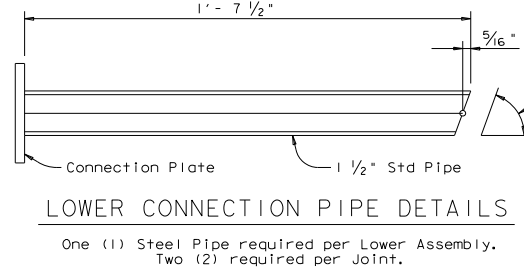
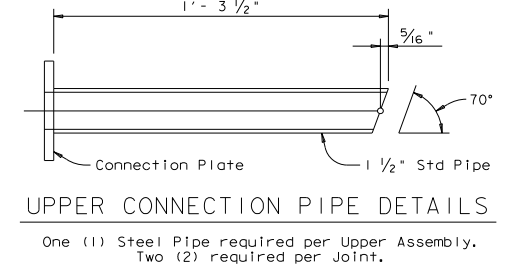
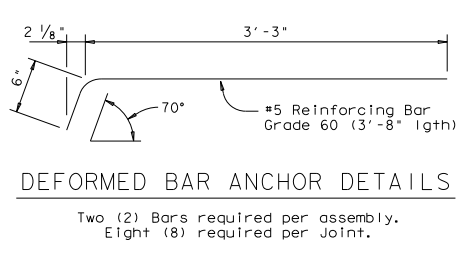
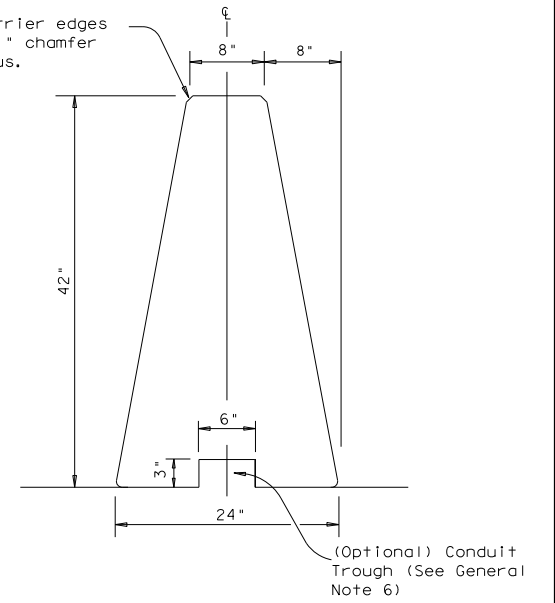
DATE: 6/22/2020  
 FILE: pw:\azb\engr.com:PWAZBPROD01\Documents\Collaboration Projects\TxDOT\217017.002\042\4 - Design\Plan Set\3. Roadway\Standards(Roadway)\SSCB(2)-10.dgn



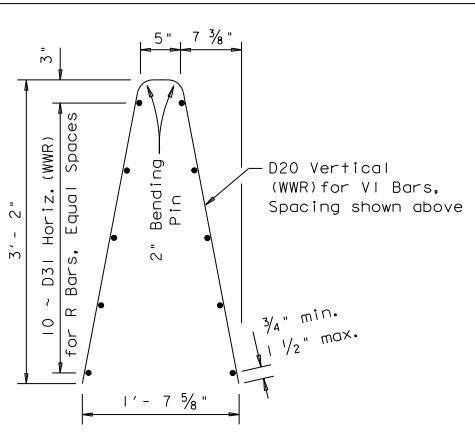
Note:  
 VI Bars above the drainage slots may be bent to accommodate 1 1/2" clear cover as directed by the Engineer.



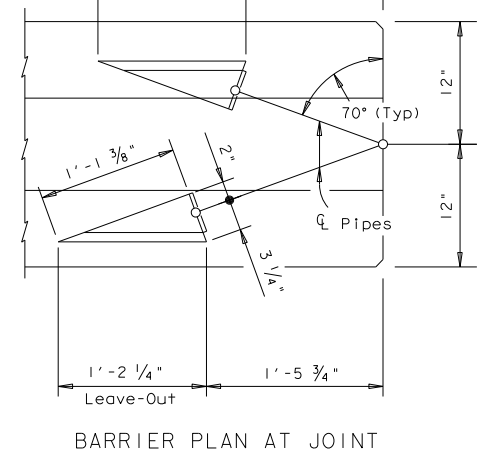
All precast barrier edges shall have a 3/4" chamfer or tooled radius.



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



- WWR) General Notes**
1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
  2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
  3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
  4. 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".



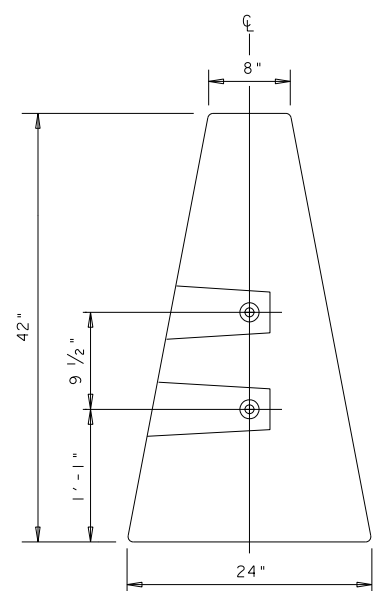
- General Notes**
1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
  2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
  3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
  4. All precast barrier edges shall have a 3/4" chamfer or a tooled radius.
  5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
  6. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.
  7. 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.
  8. 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.
  9. All steel assemblies shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."

SHEET 1 OF 2

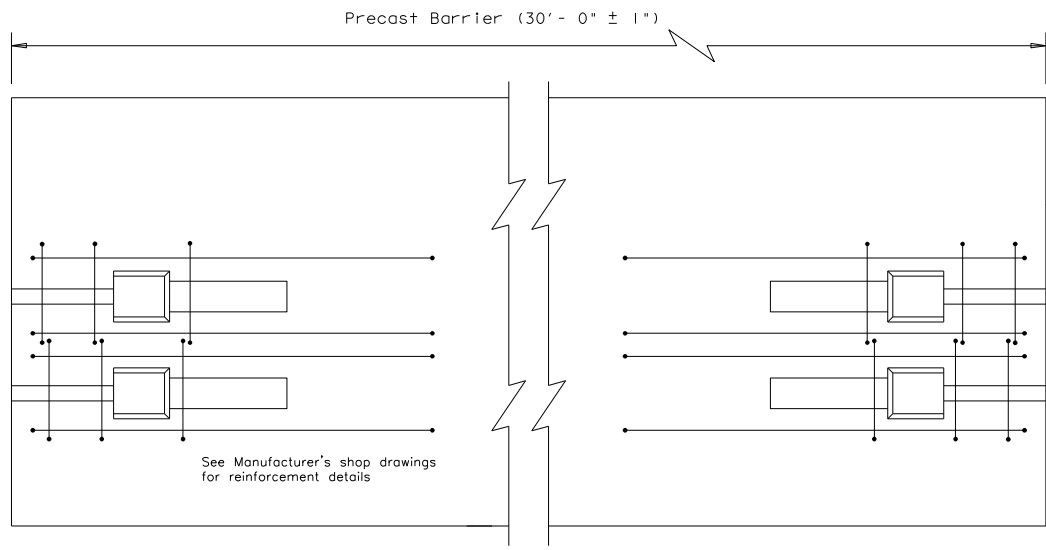
		<b>Design Division Standard</b>		
				<b>SINGLE SLOPE CONCRETE BARRIER</b> PRECAST BARRIER (TYPE I) SSCB(2)-10
FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: BD	CK:
©TxDOT December 2010	CONT SECT	JOB	HIGHWAY	
REVISIONS	0037 08	042, ETC.	US 83	
	DIST	COUNTY	SHEET NO.	
	LRD	DIMMIT	173	

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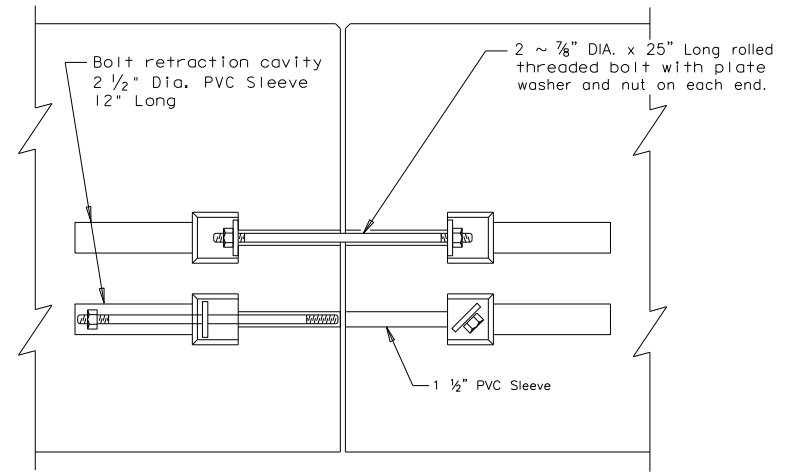
DATE: 6/22/2020  
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END VIEW  
 "QUICK-BOLT" POCKET LOCATIONS

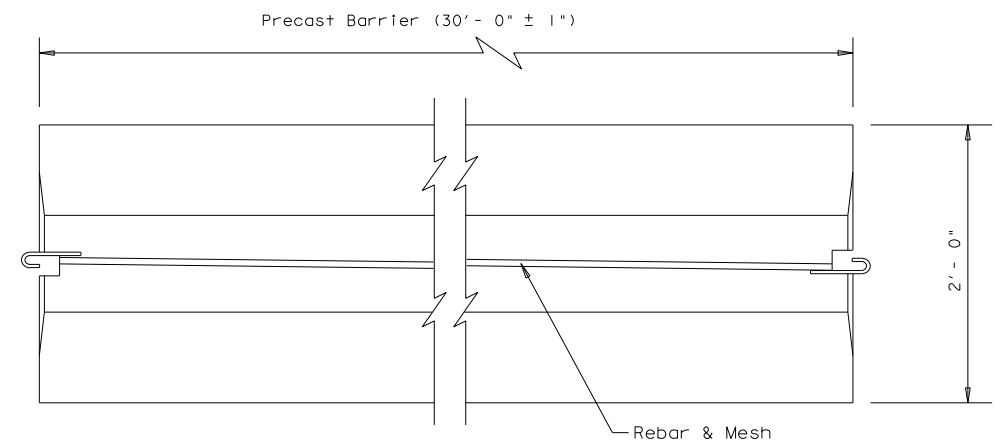


ELEVATION VIEW  
 "QUICK-BOLT" (SSCB)  
 See Manufacturer's shop drawing for additional details

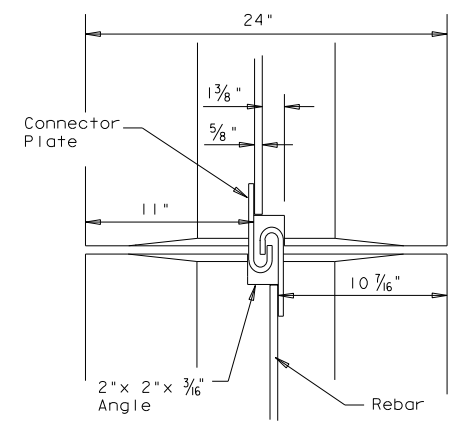


ELEVATION VIEW SHOWING JOINT CONNECTION  
 "QUICK-BOLT"

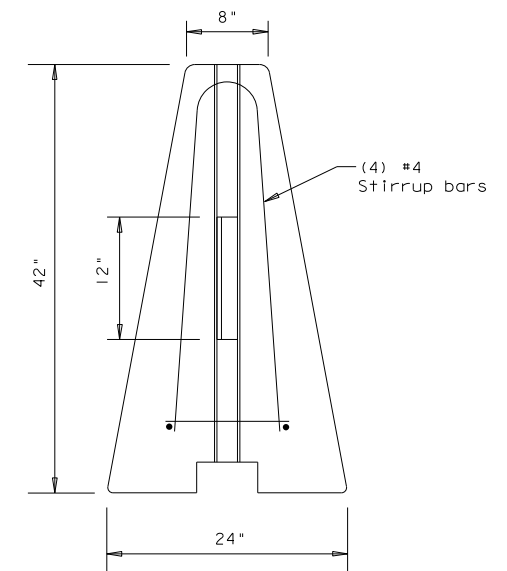
Joint Connection (Type Q)



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



VIEW FROM ABOVE  
 J-J HOOK CONNECTION



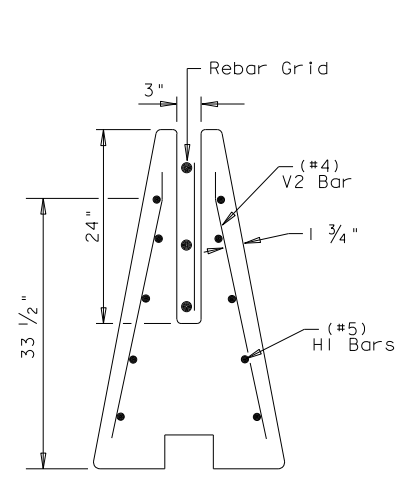
END VIEW

Proprietary Joint Connections (SSCB)

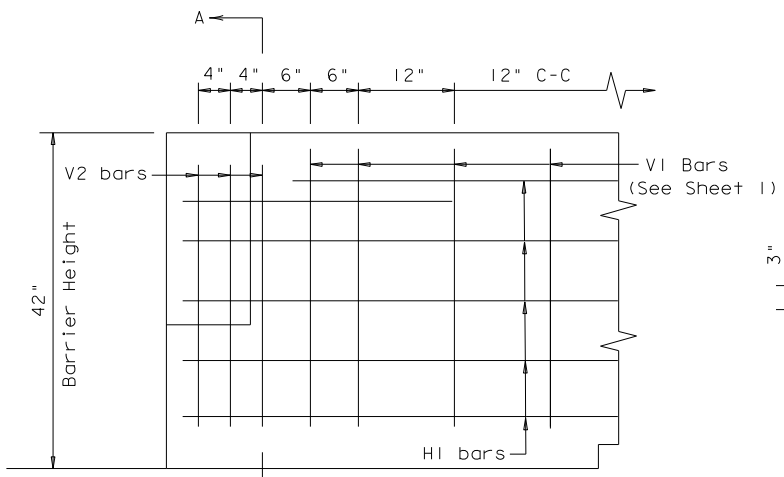
Two proprietary joint connections are acceptable as alternates to the (Type Q) connection shown, here on. These joint connections types are:

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

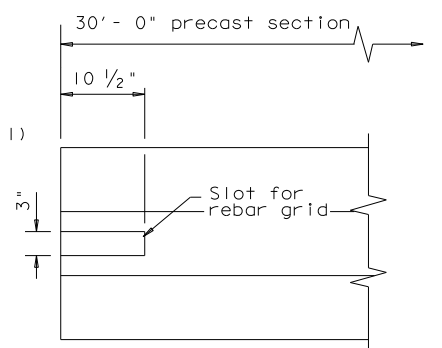
If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.



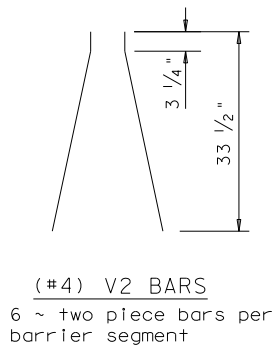
SECTION A-A  
 Showing (Type R)  
 Rebar Grid



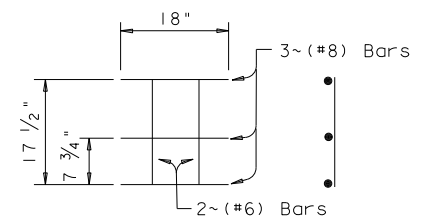
ELEVATION  
 VI Bars (See Sheet 1)



TOP VIEW  
 JOINT CONNECTION  
 Typical at both ends of barrier segment



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



WELDED REBAR GRID

Joint Connection (Type R)



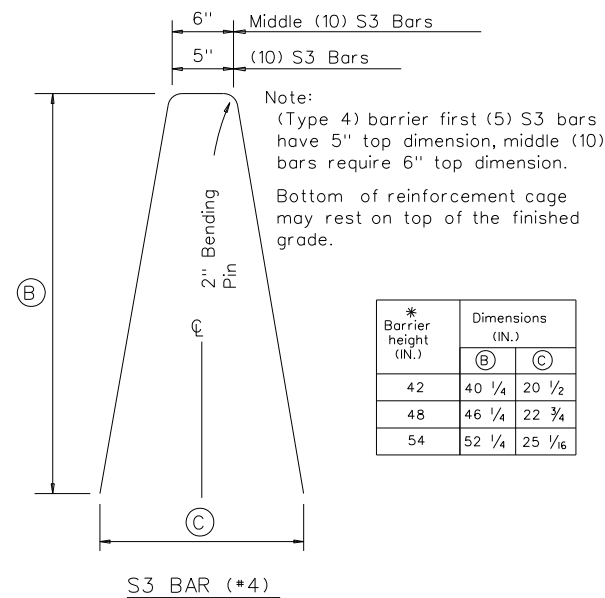
SINGLE SLOPE CONCRETE BARRIER  
 PRECAST BARRIER (TYPE I)  
 SSCB(2)-10

FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY	SHEET NO.	
	LRD	DIMMIT	174	



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DATE: 6/23/2020  
 FILE: pw:\azb\pw\azb-engrs.com\FWAZBPRD001\Documents\TxDOT\217017.002\042\4 - Design\Plan Set\3. Roadway\Standard\Roadway\SSCB(4)-19.dgn



Note:  
 (Type 4) barrier first (5) S3 bars have 5" top dimension, middle (10) bars require 6" top dimension.  
 Bottom of reinforcement cage may rest on top of the finished grade.

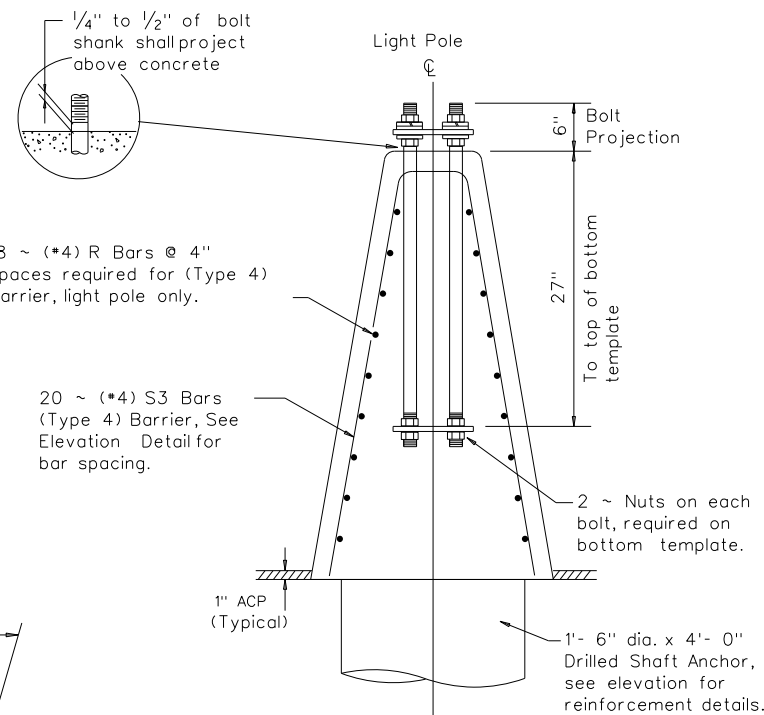
* Barrier height (IN.)	Dimensions (IN.)	
	B	C
42	40 1/4	20 1/2
48	46 1/4	22 3/4
54	52 1/4	25 1/6

Schedule of reinforcement for each 10 foot cast-in-place section at light poles (excluding anchorage)

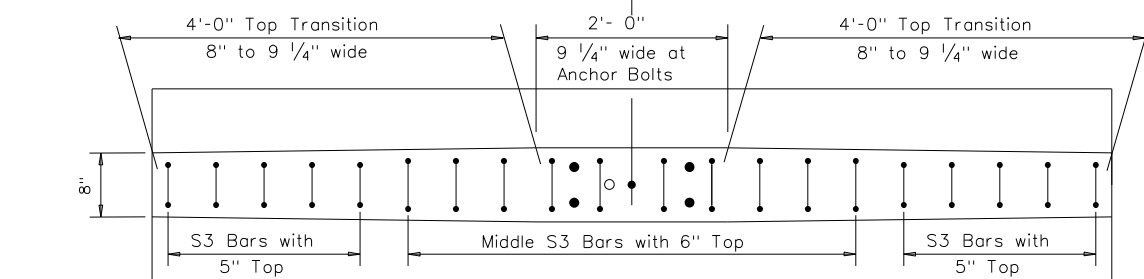
BAR	SIZE	QUANTITY
S3	#4	20
R	#4	18

Welded Wire Reinforcement (WWR): IS NOT APPROVED FOR USE WITH (TYPE 4) BARRIER.

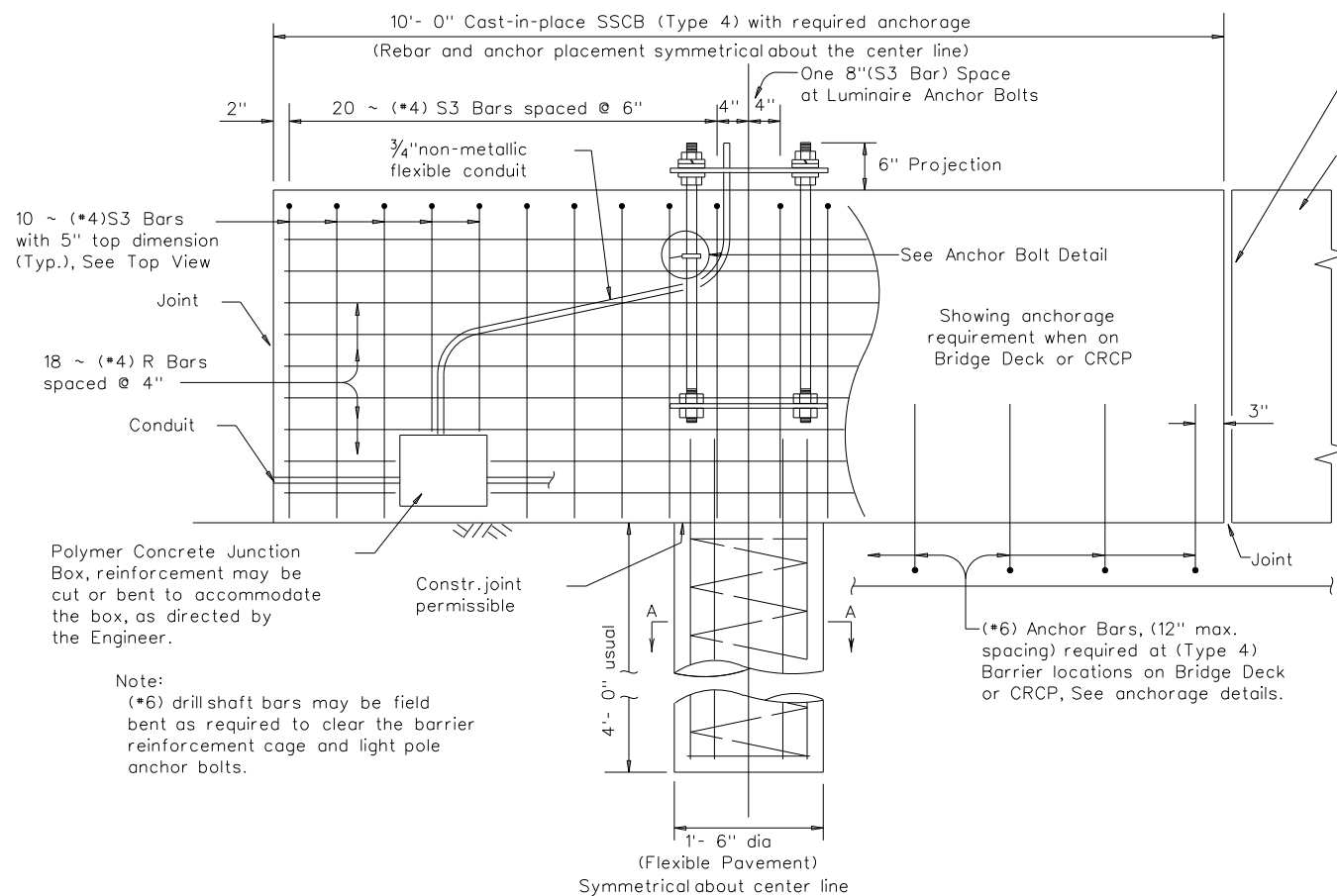
\*(SSCB)(42") (Type 4) Barrier height may be increased to 48" or 54". This would increase the barrier and reinforcement dimensions accordingly.



(ROADWAY) SECTION AT LIGHT POLE  
 Symmetrical about center line

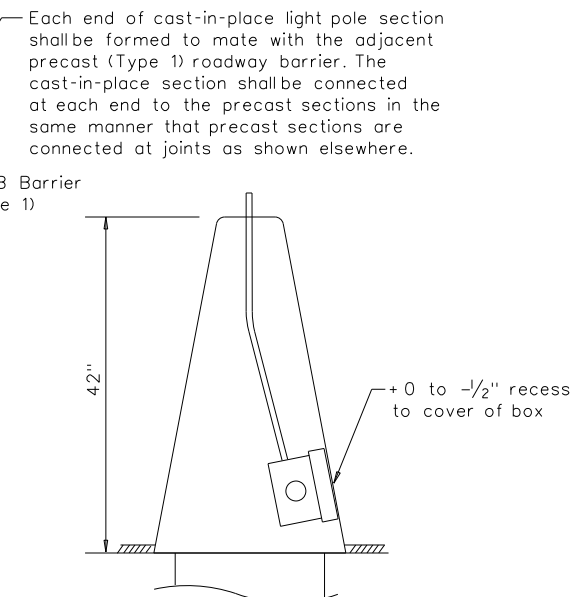


BARRIER (TYPE 4)  
 TOP VIEW  
 Showing S3 Bars and top dimension.

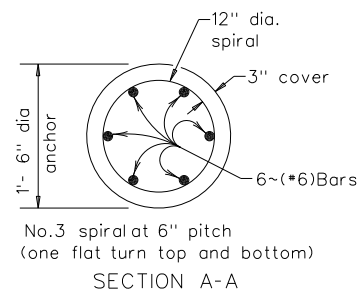


ELEVATION SHOWING THE REQUIRED REINFORCEMENT AND ANCHORAGE FOR (TYPE 4) BARRIER

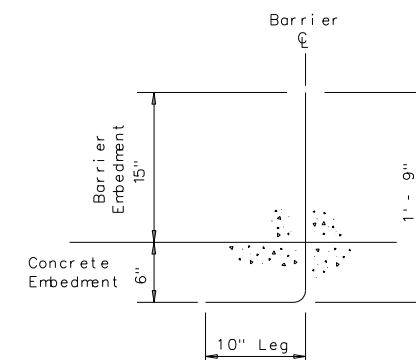
The "Drilled Shaft Anchor" is the required anchorage for (Type 4) barrier on roadways with Flexible Pavement.  
 The #6 Anchor Bars (Shown) is the required anchorage for (Type 4) barrier on Bridge Decks and CRCP.



SECTION SHOWING JUNCTION BOX CONCRETE SAFETY BARRIER (TYPE 4)



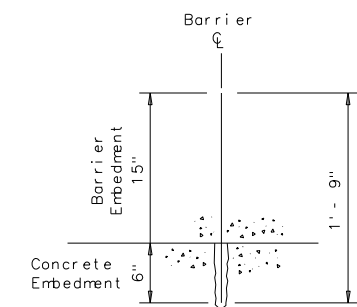
SECTION A-A



STANDARD "CONCRETE" ANCHORAGE

(#6) Bar  
 Concrete Pavement / Bridge Deck Anchorage:  
 Cast-in-Place or Slip-Formed Barrier

Standard Anchorage Note:  
 10" leg may be oriented 90 degrees in any direction about the barrier centerline.

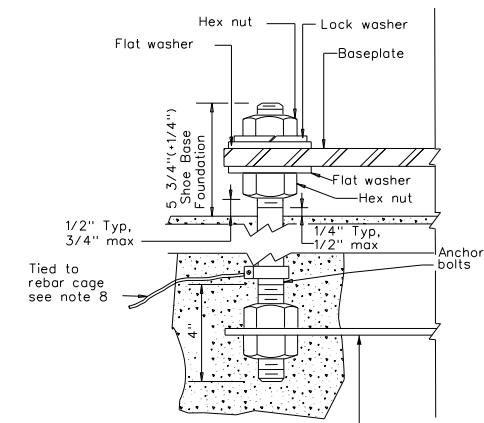


"OPTIONAL" EPOXY ANCHORAGE

(#6) Bar  
 Type III, Class C Epoxy

Concrete Pavement / Bridge Deck Anchorage:  
 Cast-in-Place or Slip-Formed Barrier

Epoxy Note:  
 If epoxy coated anchor bars are required, the lower 6" of the bars must not be epoxy coated. Follow the manufacturer's directions for installing the epoxied anchor bars.



ANCHOR BOLT DETAIL

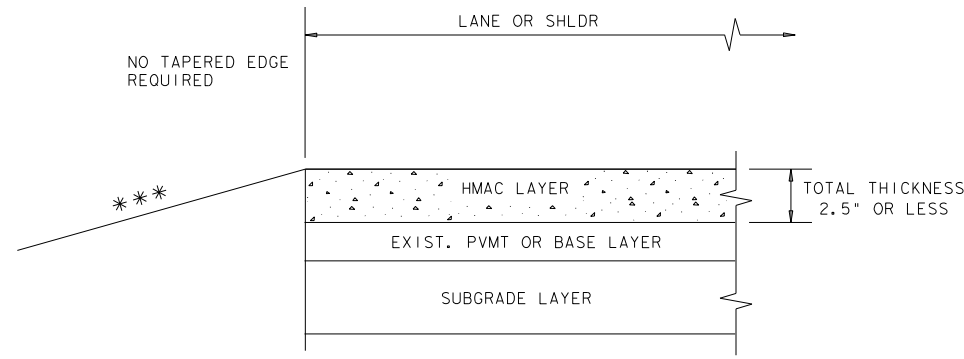
GENERAL NOTES

- All concrete shall be Class C.
- Anchor bolts, junction box, non-metallic flexible conduit, and bonding to steel shall not be paid for directly, but will be considered subsidiary to the various bid items.
- For proper installation and material requirements for the anchor bolts and light pole, see Traffic Engineering RIP standard sheets.
- Junction boxes shall be polymer concrete, and shall be mounted flush (+0, - 1/2") with concrete surface. For details and material requirements on barrier junction box, see DMS-11030.
- Install 12 AWG stranded conductors from load side of fused breakaway connector to luminaire. Fused breakaway connectors shall be installed as required on Traffic Engineering RID Sheets. Typically fused breakaway connectors are installed in the barrier junction box adjacent to each light pole. If fused breakaway connectors are installed in the pole's handhole, increase the size of the 3/4" flexible non-metallic conduit according to the NEC as needed to accommodate the branch circuit conductors.
- Anchor bolts and their assemblies shall be in accordance with Item 449, "Anchor Bolts" High-Strength Steel or Alloy Steel. Galvanization requirements for anchor bolts are shown on RIP sheets.
- The required anchorage for Type 4 barrier (drill shaft, standard or optional concrete anchorage) shall not be paid for directly, but is subsidiary to Item 514, "Permanent Concrete Traffic Barrier."
- Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.

		<b>Design Division Standard</b>	
<b>SINGLE SLOPE CONCRETE BARRIER</b> CAST-IN-PLACE (TYPE 4) AT LIGHT POLE TL-4 MASH COMPLIANT <b>SSCB(4)-19</b>			
FILE: sscb419.dgn	DN: TxDOT	CK: KM	DW: BD
© TxDOT December 2010	CONT: 0037	SECT: 08	JOB: 042, ETC.
REVISIONS			HIGHWAY: US 83
	DIST: LRD	COUNTY: DIMMIT	SHEET NO.: 175

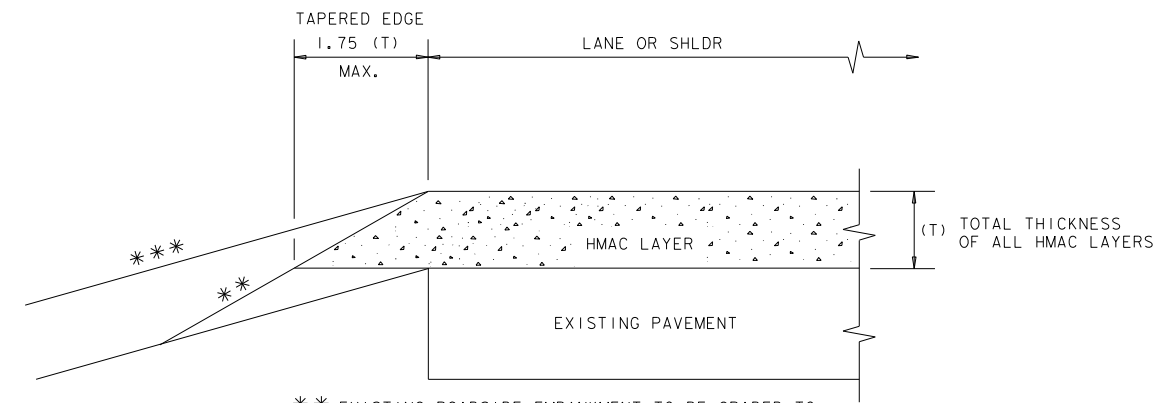
DISCLAIMER:  
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DATE: 6/22/2020  
 FILE: pw:\azb\pw1\azb-engr.s.com:PWAZBPR001\Documents\TxDOT\217017.002\042\4 - Design\Plan Set\3. Roadway\Standards\Roadway\TE (HMAC) - 11.dgn



\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

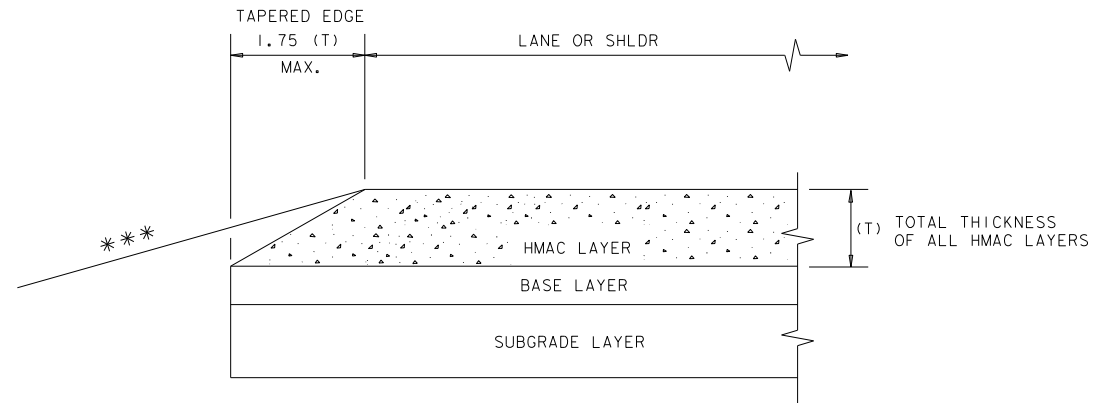
CONDITION - 1  
 THIN HMAC SURFACES OR HMAC OVERLAY  
 WITH THICKNESS OF 2.5" OR LESS



\*\* EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

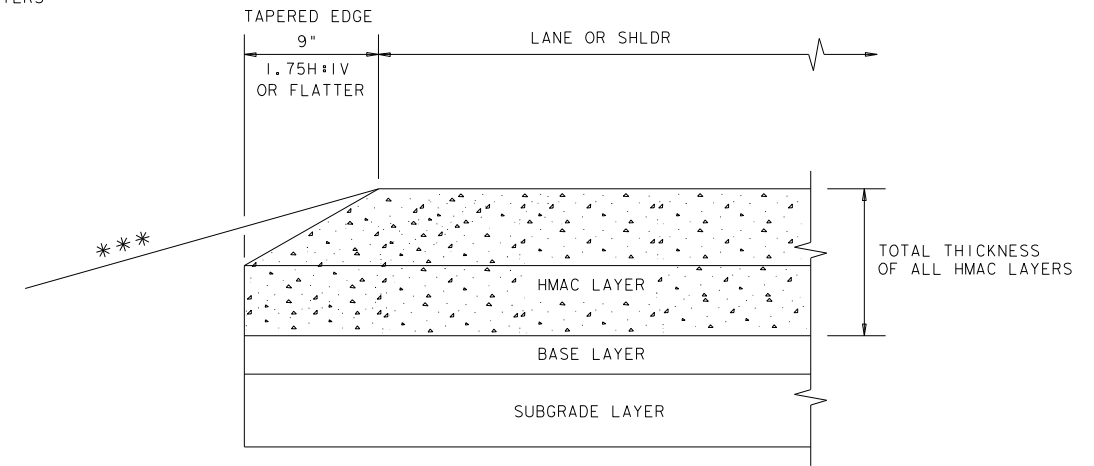
\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2  
 OVERLAY OF EXISTING PAVEMENT  
 HMAC THICKNESS 2.5" TO 5"



\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3  
 NEW OR RECONSTRUCTED PAVEMENT  
 HMAC THICKNESS 2.5" TO 5"



\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

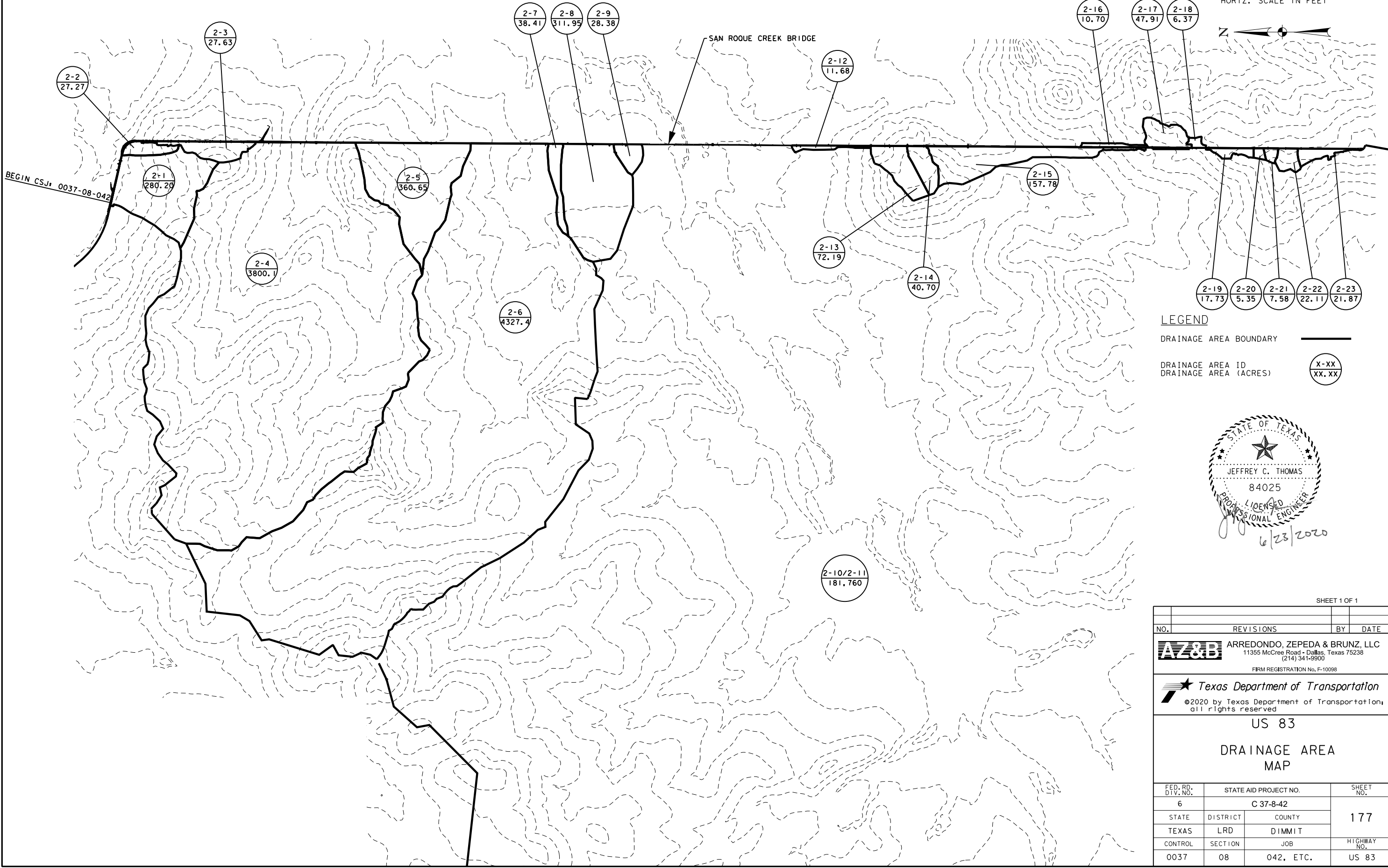
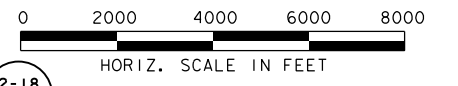
CONDITION - 4  
 NEW OR RECONSTRUCTED PAVEMENT  
 HMAC THICKNESS 5" OR GREATER

GENERAL NOTES

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

(NOT TO SCALE)

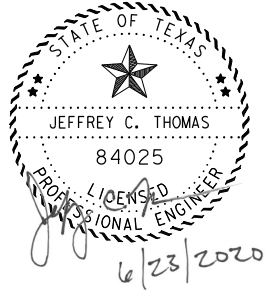
					<b>Design Division Standard</b>
<p>TAPERED EDGE DETAILS          HMAC PAVEMENT          TE (HMAC) - 11</p>					
FILE:	tehmac11.dgn	DN:	TxDOT	CK:	RL
© TxDOT	January 2011	CON:	0037	SECT:	08
REVISIONS		JOB:	042, ETC.		HIGHWAY:
		DIST:	COUNTY		SHEET NO.
		LRD:	DIMMIT		176



**LEGEND**

DRAINAGE AREA BOUNDARY

DRAINAGE AREA ID  
DRAINAGE AREA (ACRES)



SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>DRAINAGE AREA</b> <b>MAP</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		177
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

### Hydrologic Summary (TR-20 Method, HEC-HMS)

DA I.D.	STATION	EXISTING CULVERT SIZE	PROPOSED CULVERT SIZE	DESIGN FREQUENCY	COMP. CN	A (acres)	PEAK TIME (hr)	10-YEAR		100-YEAR		Notes
								VOL (in)	Q <sub>10</sub> (cfs)	VOL (in)	Q <sub>100</sub> (cfs)	
2-1	1523+61.56	2- 6 x 5 x 62	3- 6 x 5 x 103	10-YR	69	280.20	12.83	2.45	330.7	4.36	515.7	10-YR design storm, as approved by TxDOT

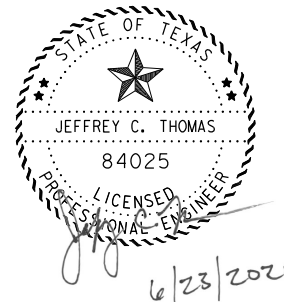
DA I.D.	STATION	EXISTING CULVERT SIZE	PROPOSED CULVERT SIZE	DESIGN FREQUENCY	COMP. CN	A (acres)	PEAK TIME (hr)	25-YEAR		100-YEAR		Notes
								VOL (in)	Q <sub>25</sub> (cfs)	VOL (in)	Q <sub>100</sub> (cfs)	
2-4	1616+38.81	5- 8 x 8 x 58	5- 8 x 8 x 74	25-YR	74	3800.10	13.75	3.28	3244.4	5.01	5099.2	
2-5	1667+67.15	2- 4 x 4 x 35 2- 8 x 4 x 23	2- 4 x 4 x 37 2- 8 x 4 x 38	25-YR	71	360.65	14.75	3.08	390.4	4.73	590.5	
2-6	1709+92.91	9- 6 x 6 x 58	12- 6 x 6 x 66	25-YR	76	4327.40	14.33	3.35	4181.3	5.11	6452.9	
2-8	1737+17.33	1- 4 x 2 x 58	3- 5 x 3 x 67	25-YR	73	311.95	13.33	3.23	299.9	4.92	469.7	
2-10	1793+21.21	6- 9 x 5 x 50	6- 9 x 5 x 67	25-YR	72	181,760.00	24.27	4.17	46,591.0	6.03	67,767.0	San Roque Relief #1 San Roque Creek total flow shown
2-11	1812+30.63	4- 8 x 4 x 50	4- 8 x 4 x 67	25-YR	72	181,760.00	24.27	4.17	46,591.0	6.03	67,767.0	San Roque Relief #2 San Roque Creek total flow shown

### Hydrologic Summary (Rational Method)

DA I.D.	STATION	EXISTING CULVERT SIZE	PROPOSED CULVERT SIZE	DESIGN FREQUENCY	C	A (acres)	T <sub>c</sub> (min)	10-YEAR		100-YEAR		Notes
								I <sub>10</sub> (in/hr)	Q <sub>10</sub> (cfs)	I <sub>100</sub> (in/hr)	Q <sub>100</sub> (cfs)	
2-2	1529+95.52	1- 6 x 3 x 111	1- 6 x 3 x 130	10-YR	0.39	27.27	16.30	6.68	71.04	10.89	115.82	10-YR design storm, as approved by TxDOT

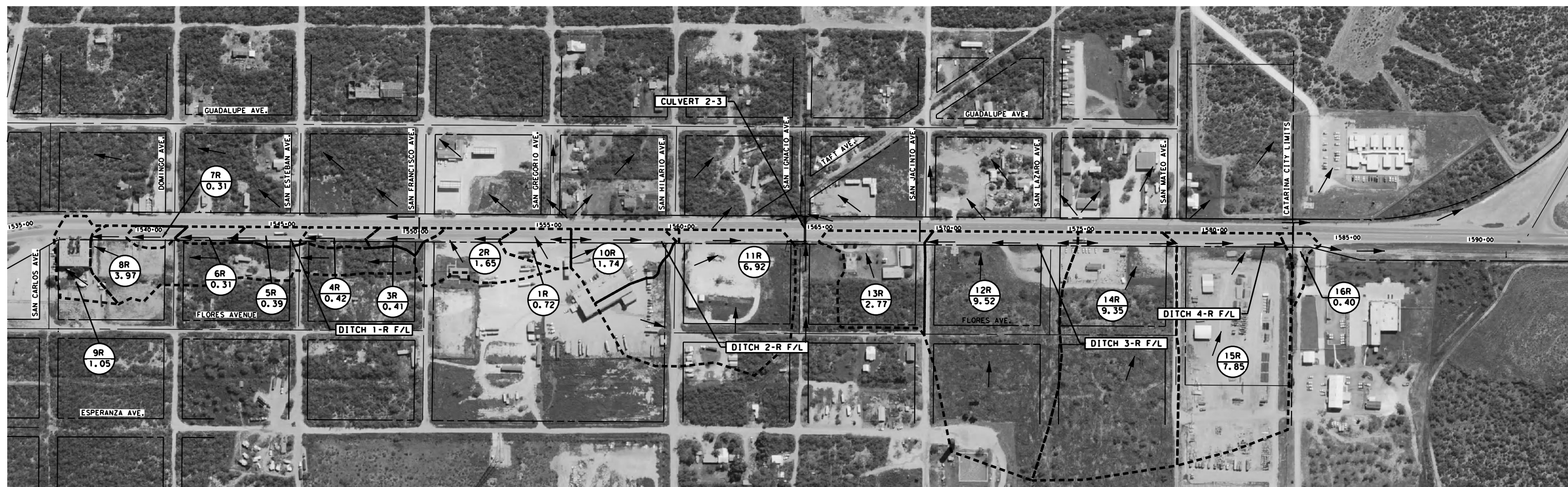
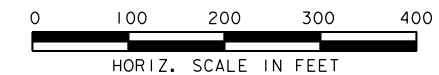
  

DA I.D.	STATION	EXISTING CULVERT SIZE	PROPOSED CULVERT SIZE	DESIGN FREQUENCY	C	A (acres)	T <sub>c</sub> (min)	25-YEAR		100-YEAR		Notes
								I <sub>25</sub> (in/hr)	Q <sub>25</sub> (cfs)	I <sub>100</sub> (in/hr)	Q <sub>100</sub> (cfs)	
2-3	1564+48.86	1- 5 x 2 x 77	1- 5 x 2 x 103	25-YR	0.40	27.63	30.30	5.82	64.32	8.01	88.53	
2-7	1721+98.69	1- 3 x 2 x 58	1- 3 x 2 x 75	25-YR	0.46	38.41	124.90	2.17	38.34	3.06	54.07	
2-9	1753+00.82	1- 3 x 2 x 58	1- 3 x 2 x 68	25-YR	0.36	28.38	54.90	3.97	40.56	5.56	56.81	
2-12	1830+64.23	1- 5 x 4 x 58	1- 5 x 4 x 71	25-YR	0.36	11.68	24.90	6.52	27.42	8.91	37.46	
2-13	1864+06.92	1- 5 x 4 x 62	1- 5 x 4 x 70	25-YR	0.38	72.19	64.00	3.57	97.93	5.00	137.16	
2-14	1887+44.00	1- 3 x 3 x 76	1- 3 x 3 x 76	25-YR	0.38	40.70	57.20	3.86	59.70	5.40	83.52	No modifications
2-15	1907+08.22	5- 5 x 5 x 76	5- 5 x 5 x 90	25-YR	0.38	157.78	64.20	3.56	213.44	4.99	299.18	
2-16	1957+54.88	1- 3 x 2 x 58	1- 3 x 2 x 75	25-YR	0.38	10.70	36.70	5.18	21.06	7.17	29.15	
2-17	1989+27.74	2- 3 x 3 x 36 1- 6 x 3 x 24	1- 5 x 3 x 80	25-YR	0.38	47.91	38.20	5.05	91.94	7.00	127.44	
2-18	2007+13.31	1- 3 x 2 x 60	1- 3 x 2 x 70	25-YR	0.38	6.37	14.80	8.45	20.45	11.33	27.43	
2-19	2014+56.57	1- 4 x 3 x 58	1- 4 x 3 x 74	25-YR	0.38	17.73	29.30	5.94	40.02	8.17	55.04	
2-20	2035+13.49	1- 18" x 75	1- 24" x 73'	25-YR	0.38	5.35	15.00	8.40	17.08	11.27	22.91	
2-21	2040+97.27	1- 4 x 3 x 58	1- 4 x 3 x 74	25-YR	0.38	7.58	12.60	9.05	26.07	12.06	34.74	
2-22	2048+84.51	1- 24" x 81	2- 30" x 80	25-YR	0.38	22.11	19.90	7.34	61.67	9.95	83.60	
2-23	2055+69.45	1- 18" x 76	2- 30" x 78	25-YR	0.38	21.87	39.10	4.98	41.39	6.90	57.34	



SHEET 1 OF 1

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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US 83 DRAINAGE AREA CALCULATIONS			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	178	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



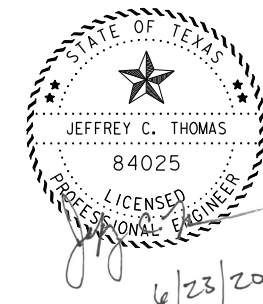
CATARINA PROPOSED WEST DITCH HYDROLOGIC CALCULATIONS						5-YEAR			100-YEAR			
STATION	DESCRIPTION	DESIGN FREQUENCY	DA I.D.	C (acres)	T <sub>c</sub> (min)	P <sub>d</sub> (in)	I <sub>5</sub> (in/hr)	Q <sub>5</sub> (cfs)	P <sub>d</sub> (in)	I <sub>100</sub> (in/hr)	Q <sub>100</sub> (cfs)	
<b>DITCH 1-R</b>												
1553+00	BAR DITCH	5-YR	1R	0.70	0.72	10.00	1.05	6.30	3.18	2.10	12.58	6.34
1550+35.97	SAN FRANCISCO AVE. DRIVEWAY	5-YR	2R	0.34	1.65	15.00	1.20	4.80	2.69	2.27	9.08	5.09
1548+00	BAR DITCH	5-YR	3R	0.56	0.41	10.00	1.05	6.30	1.45	2.10	12.58	2.89
1545+53.39	SAN ESTEBAN AVE. DRIVEWAY	5-YR	4R	0.56	0.42	10.00	1.05	6.30	1.48	2.10	12.58	2.96
1543+00	BAR DITCH	5-YR	5R	0.60	0.39	10.00	1.05	6.30	1.47	2.10	12.58	2.94
1540+83.22	SAN DOMINGO AVE. DRIVEWAY	5-YR	6R	0.60	0.31	10.00	1.05	6.30	1.17			
1539+00	BAR DITCH	5-YR	7R	0.60	0.31	10.00	1.05	6.30	1.17	2.10	12.58	2.34
1537+50	BAR DITCH, (HOTEL FRONTAGE)	5-YR	8R	0.23	3.97	20.00	1.35	4.05	3.70	2.44	7.33	6.69
1536+09.50	SAN CARLOS AVE. DRIVEWAY	5-YR	9R	0.53	1.05	10.00	1.05	6.30	3.51	2.10	12.58	7.00
<b>DITCH 2-R</b>												
1559+65.02	SAN HILARIO AVE. DRIVEWAY	5-YR	10R	0.70	1.74	10.00	1.05	6.30	7.67	2.10	12.58	15.32
1564+00	BAR DITCH	5-YR	11R	0.31	6.92	20.00	1.35	4.05	8.69	2.44	7.33	15.72
<b>DITCH 3-R</b>												
1568+98.31	SAN JACINTO AVE. DRIVEWAY	5-YR	12R	0.25	9.52	25.00	1.50	3.60	8.57	2.62	6.28	14.95
1565+00	BAR DITCH	5-YR	13R	0.25	2.77	15.00	1.20	4.80	3.32	2.27	9.08	6.29
<b>DITCH 4-R</b>												
1578+45.46	SAN MATEO AVE. DRIVEWAY	5-YR	14R	0.25	9.35	25.00	1.50	3.60	8.42	2.62	6.28	14.68
1582+50	BAR DITCH	5-YR	15R	0.25	7.85	20.00	1.35	4.05	7.95	2.44	7.33	14.39
1583+85.22	PRIVATE DRIVEWAY	5-YR	16R	0.35	0.40	10.00	1.05	6.30	0.88	2.10	12.58	1.76

**LEGEND:**

- AREA ID ACRES
- FLOW DIRECTION
- DA BOUNDARY

**NOTES:**

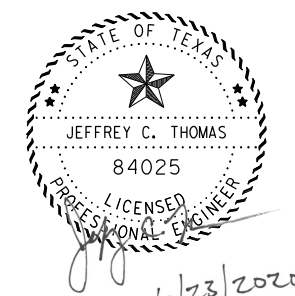
1. REFERENCES INCLUDE: TXDOT HYDRAULIC DESIGN MANUAL, SEPTEMBER 2019, DIMMIT COUNTY TNRS NED 2011, AND AERIAL TOPOGRAPHY WITH THIS PROJECT.
2. PROPOSED DITCH DESIGN STORM IS 5-YR.



SHEET 1 OF 2

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>CATARINA WEST DITCH</b> <b>DRAINAGE AREA MAP &amp;</b> <b>HYDROLOGIC CALCULATIONS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	179	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

Channel I.D.	Analysis Point (STA)	5-Year Flow Rate Q5 (cfs)	Side Slope 1 SS (_H:1V)	Side Slope 2 SS (_H:1V)	Manning's Coefficient n	Channel Slope S (ft./ft.)	$Q*n/1.49*S^{1/2}$	$A*R^{2/3}$	Flow Depth d (feet)	Ditch Depth d <sub>actual</sub> (feet)	Flow Area A (sq. ft.)	Wetted Perimeter Pw (feet)	Hydraulic Radius R (feet)	Top Width W <sub>t</sub> (feet)	Velocity V (fps)	Description	Notes
1-R	1553+00	3.18	6	4	0.030	0.0284	0.379	0.379	0.45	1.56	1.03	4.64	0.22	4.54	3.07	BAR DITCH	
	1550+35.97	5.87	17.24	31.25	0.013	0.0264	0.315	0.315	0.23	0.25	1.32	11.33	0.12	11.32	4.44	SAN FRANCISCO AVE. DRIVEWAY	
	1548+00	7.31	6	4	0.030	0.0184	1.086	1.086	0.67	2.61	2.27	6.88	0.33	6.74	3.22	BAR DITCH	
	1545+53.39	8.80	25.64	16.95	0.013	0.0176	0.578	0.579	0.31	0.60	2.02	13.12	0.15	13.11	4.36	SAN ESTEBAN AVE. DRIVEWAY	
	1543+00	10.27	7.7	4	0.030	0.0308	1.178	1.178	0.65	0.86	2.51	7.78	0.32	7.66	4.10	BAR DITCH	
	1540+83.22	11.44	20	20	0.013	0.0280	0.597	0.597	0.32	0.33	2.03	12.76	0.16	12.75	5.63	SAN DOMINGO AVE. DRIVEWAY	
	1539+00	12.61	8.2	4	0.013	0.0233	0.721	0.721	0.54	0.73	1.75	6.64	0.26	6.54	7.20	BAR DITCH	
	1537+50	16.31	7.7	2.9	0.013	0.0224	0.951	0.951	0.63	1.03	2.09	6.80	0.31	6.65	7.81	BAR DITCH (HOTEL FRONTAGE)	
	1536+10.37	19.82	25	18.18	0.013	0.0189	1.258	1.258	0.41	0.87	3.62	17.71	0.20	17.69	5.47	SAN CARLOS AVE. DRIVEWAY	
2-R	1559+65.02	7.67	12.5	12.5	0.013	0.0266	0.410	0.410	0.22	0.29	1.43	9.29	0.15	9.23	5.37	SAN HILARIO AVE. DRIVEWAY	Trapezoidal cross-section, Bottom Width=3.7'
	1564+00	16.36	10	3.5	0.030	0.0035	5.568	5.568	1.11	1.87	8.32	15.20	0.55	14.99	1.97	BAR DITCH	
3-R	1568+98.31	8.57	50	12.5	0.013	0.0059	0.973	0.973	0.32	0.90	3.28	20.26	0.16	20.24	2.61	SAN JACINTO AVE. DRIVEWAY	
	1565+00	11.89	6.7	4	0.030	0.0106	2.326	2.326	0.87	1.60	4.09	9.53	0.43	9.35	2.91	BAR DITCH	
4-R	1578+45.46	8.42	52.63	12.66	0.013	0.0039	1.183	1.183	0.34	0.75	3.84	22.40	0.17	22.38	2.19	SAN MATEO AVE. DRIVEWAY	
	1582+50	16.36	12.78	15.85	0.013	0.0041	2.230	2.230	0.59	0.63	5.03	17.01	0.30	16.96	3.26	BAR DITCH	
	1583+85.22	17.25	20	20	0.013	0.0156	1.205	1.205	0.41	0.56	3.44	16.61	0.21	16.59	5.01	PRIVATE DRIVEWAY	



**US 83: Catarina West Ditch Storm Sewer Calculations**

Line No	Station Up	Station Down	Length (ft)	Total Flow (cfs)	Pipe Capacity (cfs)	Average Velocity (ft/s)	Line (Conc. Elliptical)			Invert Elev (ft)	Invert Elev (ft)	HGL Elev (ft)	HGL Elev (ft)	Surface Elev (ft)
							Rise (in)	Span (in)	Slope (%)					
2-R	US 83 C/L STA 1563+83.55, 42' RT.	Culvert 2-3	61.88	28.25	21.77	10.67	19	30	0.99	546.77	546.16	547.88	547.74	549.77

NOTES:

- PROPOSED DITCH DESIGN STORM IS THE 5-YR EVENT.
- REFER TO THE FOLLOWING SHEETS FOR ADDITIONAL INFORMATION:
  - DRAINAGE AREA MAP
  - SPECIAL DITCH SCHEDULE
  - DRIVEWAY DETAILS SHEET
  - SUMMARY OF DRIVEWAYS
  - PROPOSED TYPICAL ROADWAY/DITCH SECTIONS
  - PROPOSED CROSS-SECTIONS

**US 83: Catarina West Ditch Inlet Calculations**

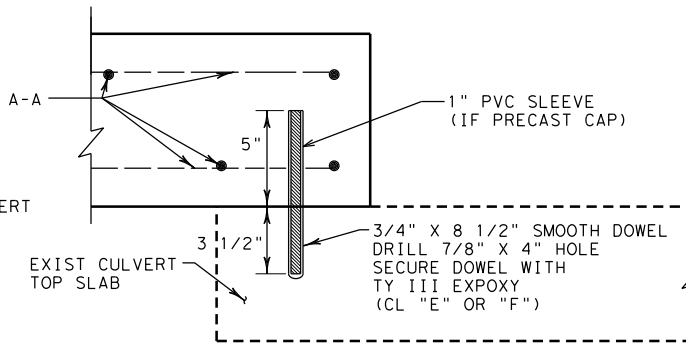
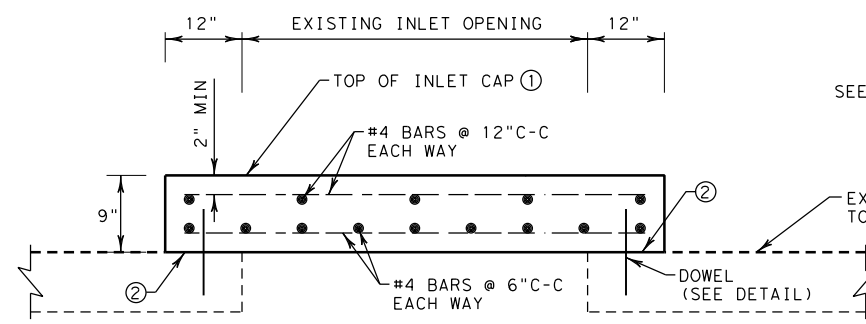
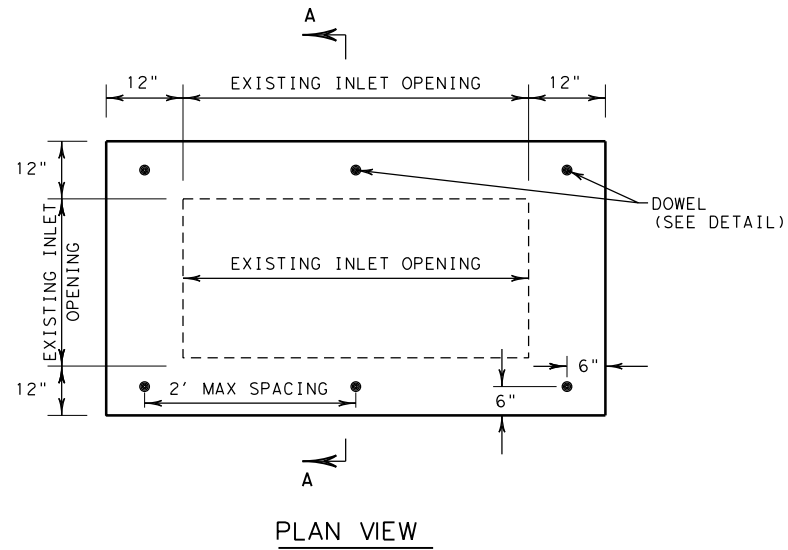
Line No	Inlet Id	Inlet Type	Q Catchment (cfs)	Q - Captured (cfs)	Q = Bypassed (cfs)	Spread Gutter (ft)	Spread Inlet (ft)	Depth Gutter (ft)	Depth Inlet (ft)
2-R	US 83 C/L STA 1563+83.55, 42' RT.	PAZD, 4' x 4'	28.25	28.25	SAG	4.22	4.22	0.70	0.70

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 CATARINA WEST DITCH HYDRAULIC CALCULATIONS</b>			
FED. RD. DIV. NO. 6	STATE AID PROJECT NO. C 37-8-42		SHEET NO. 180
STATE TEXAS	DISTRICT LRD	COUNTY DIMMIT	HIGHWAY NO. US 83
CONTROL 0037	SECTION 08	JOB 042, ETC.	



**GENERAL NOTES**

1. USE CLASS "C" CONCRETE FOR CAST-IN-PLACE CAPS.
2. USE GRADE 60 STEEL FOR ALL REINFORCING.
3. INLET CAP SHALL BE CAST-IN-PLACE.  
PERMANENT METAL DECK FORMS (PMDF) SHALL BE USED.  
THE METHOD OF SUPPORTING PMDF TO BE APPROVED IN WRITING.



MIN 4 EA  
PLACED AT CORNERS OF INLET OPENING  
AND AT 2' +/- C-C AROUND OPENING

① MINIMUM 1' BELOW FINISHED GRADE OR SUBGRADE, UNLESS OTHERWISE APPROVED.

② CUT EXISTING STEEL FLUSH WITH CONCRETE & LEVEL WITH GROUT.

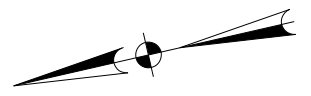
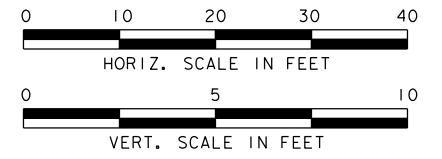


SHEET 1 OF 1

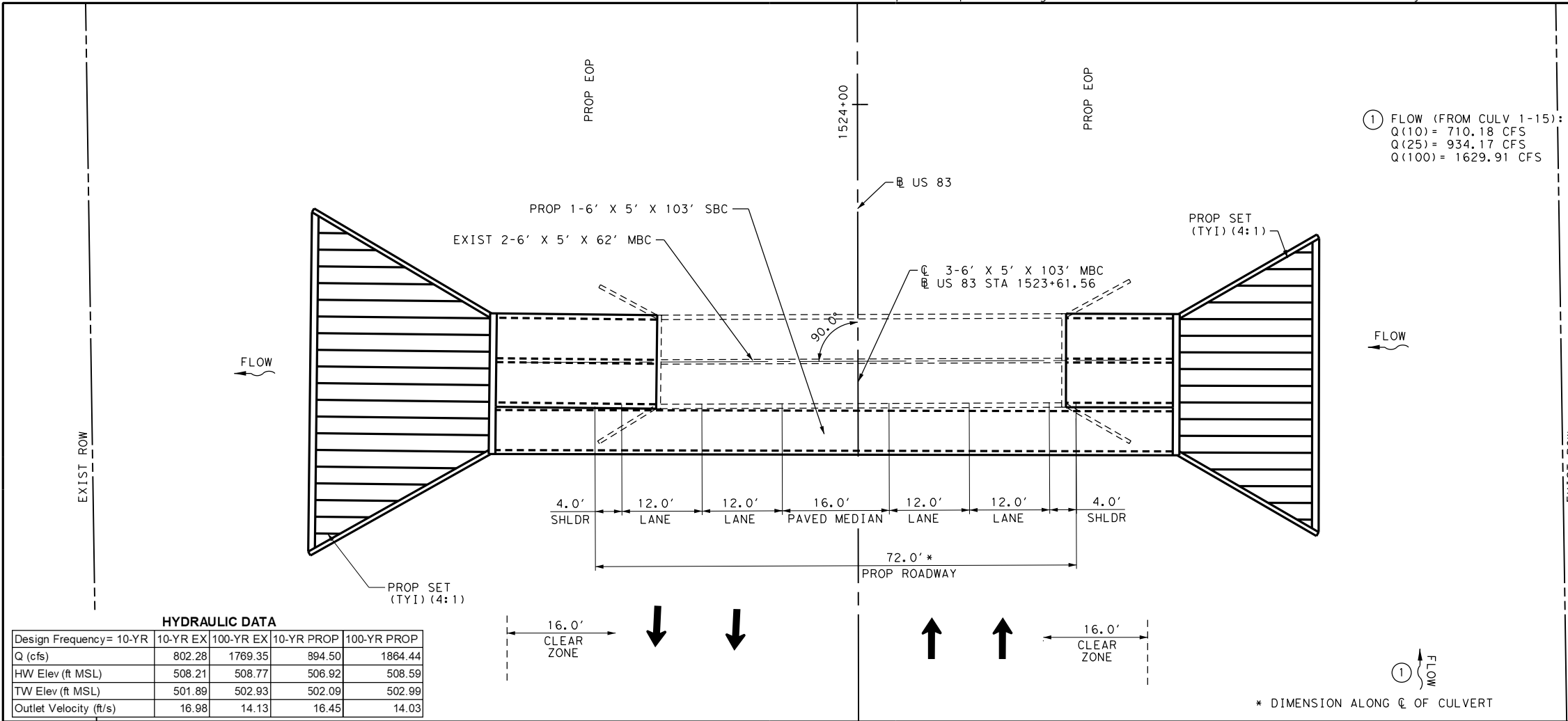
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b>  <b>INLET CAP DETAILS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		182
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

**INLET CAP DETAILS**  
N.T.S.





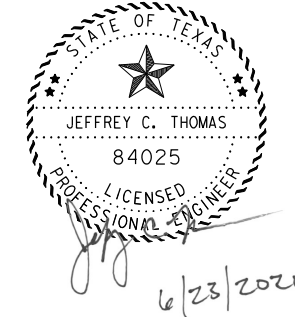
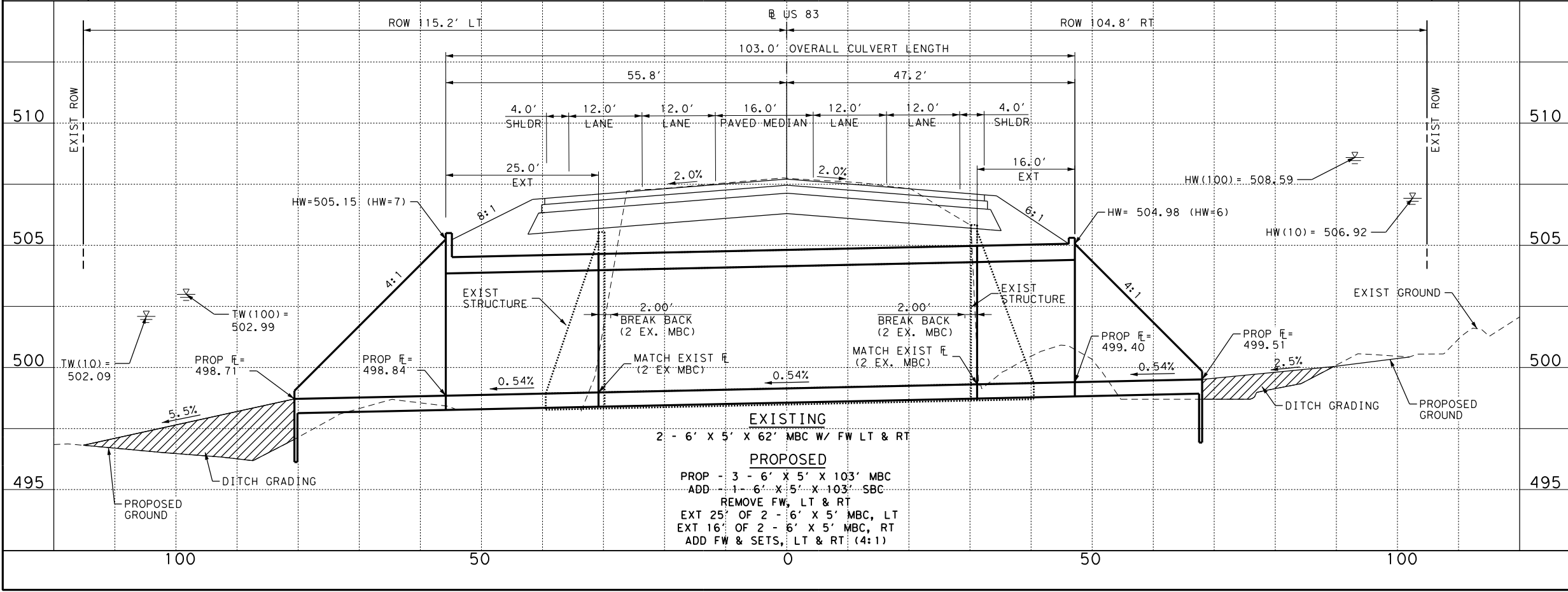
① FLOW (FROM CULV 1-15):  
 Q(10) = 710.18 CFS  
 Q(25) = 934.17 CFS  
 Q(100) = 1629.91 CFS



- NOTES:
1. HYDRAULIC ANALYSIS: HEC-RAS 5.0.6 AND HEC-HMS 4.2.1
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  3. CULVERTS 2-1 AND 2-2 FUNCTION AS MULTIPLE OPENING STRUCTURES. FLOW IS DIVIDED BY HEC-RAS BETWEEN THE TWO CROSS-DRAINAGE STRUCTURES.
  4. CULVERTS 2-1 AND 2-2 RECEIVE OVERFLOW FROM CULVERT 1-15 (STA 1501+92.00).

**HYDRAULIC DATA**

Design Frequency= 10-YR	10-YR EX	100-YR EX	10-YR PROP	100-YR PROP
Q (cfs)	802.28	1769.35	894.50	1864.44
HW Elev (ft MSL)	508.21	508.77	506.92	508.59
TW Elev (ft MSL)	501.89	502.93	502.09	502.99
Outlet Velocity (ft/s)	16.98	14.13	16.45	14.03



DA-2-1 SHEET 1 OF 23

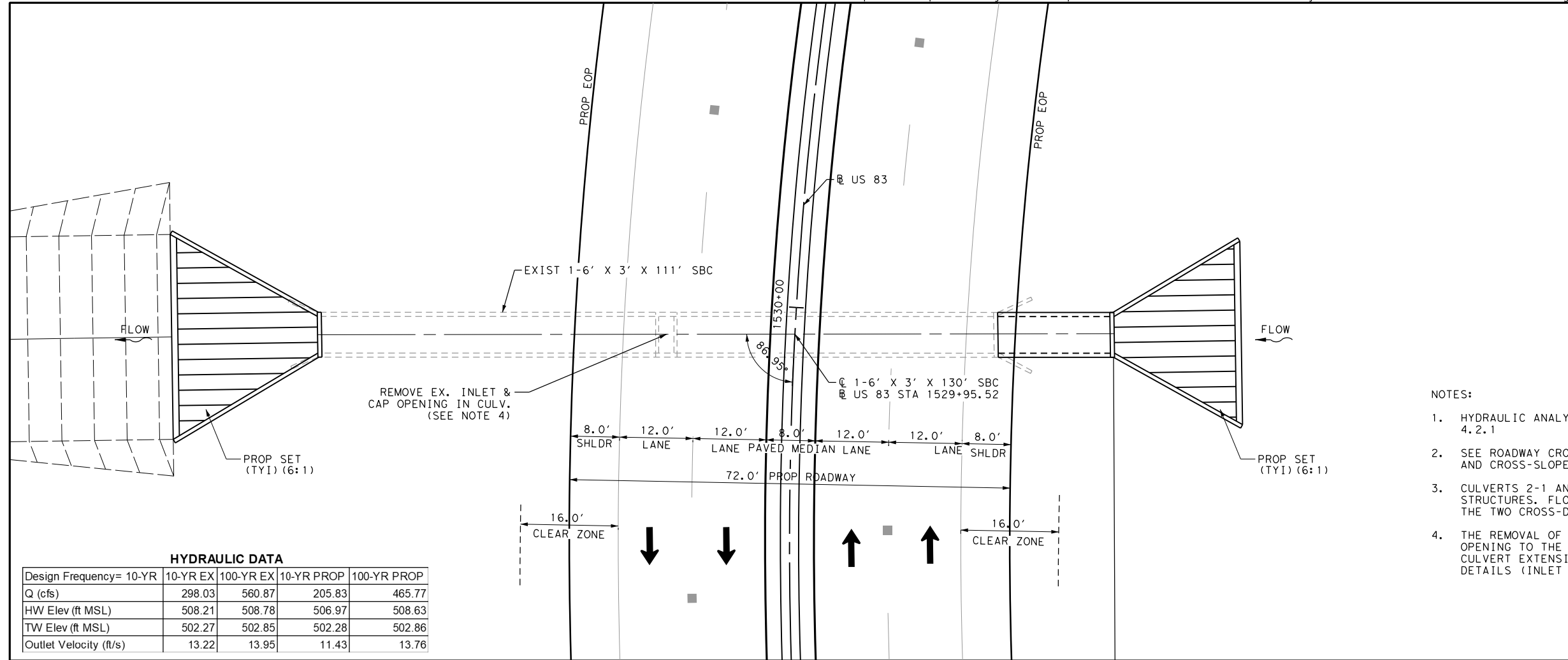
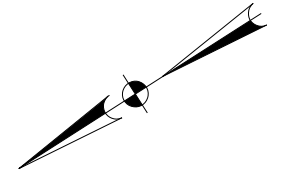
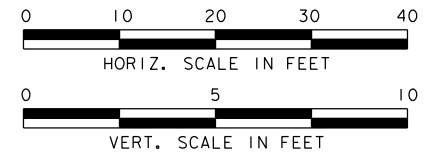
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83**  
**CULVERT LAYOUT**  
**STA. 1523+61.56**

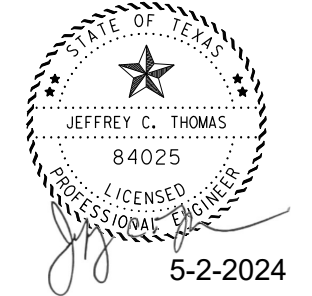
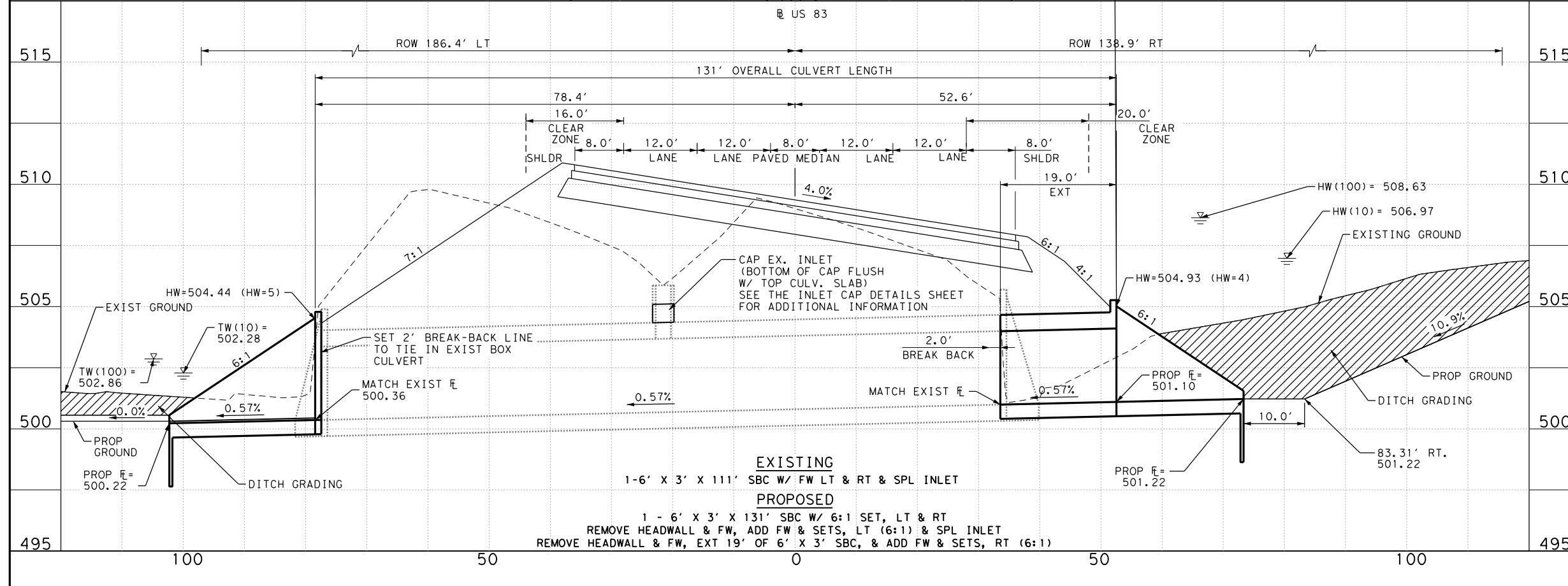
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	183
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



- NOTES:**
1. HYDRAULIC ANALYSIS: HEC-RAS 5.0.6 AND HEC-HMS 4.2.1
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  3. CULVERTS 2-1 AND 2-2 FUNCTION AS MULTIPLE OPENING STRUCTURES. FLOW IS DIVIDED BY HEC-RAS BETWEEN THE TWO CROSS-DRAINAGE STRUCTURES.
  4. THE REMOVAL OF THE EXISTING GRATE INLET & CAPPING OF OPENING TO THE CULVERT WILL BE SUBSIDIARY TO THE CULVERT EXTENSION WORK. SEE INLET ADJUSTMENT AND CAP DETAILS (INLET OPENING: 2.5' W x 6' L, WALL THICKNESS= 6").

**HYDRAULIC DATA**

Design Frequency= 10-YR	10-YR EX	100-YR EX	10-YR PROP	100-YR PROP
Q (cfs)	298.03	560.87	205.83	465.77
HW Elev (ft MSL)	508.21	508.78	506.97	508.63
TW Elev (ft MSL)	502.27	502.85	502.28	502.86
Outlet Velocity (ft/s)	13.22	13.95	11.43	13.76



DA-2-2 SHEET 2 OF 23

NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

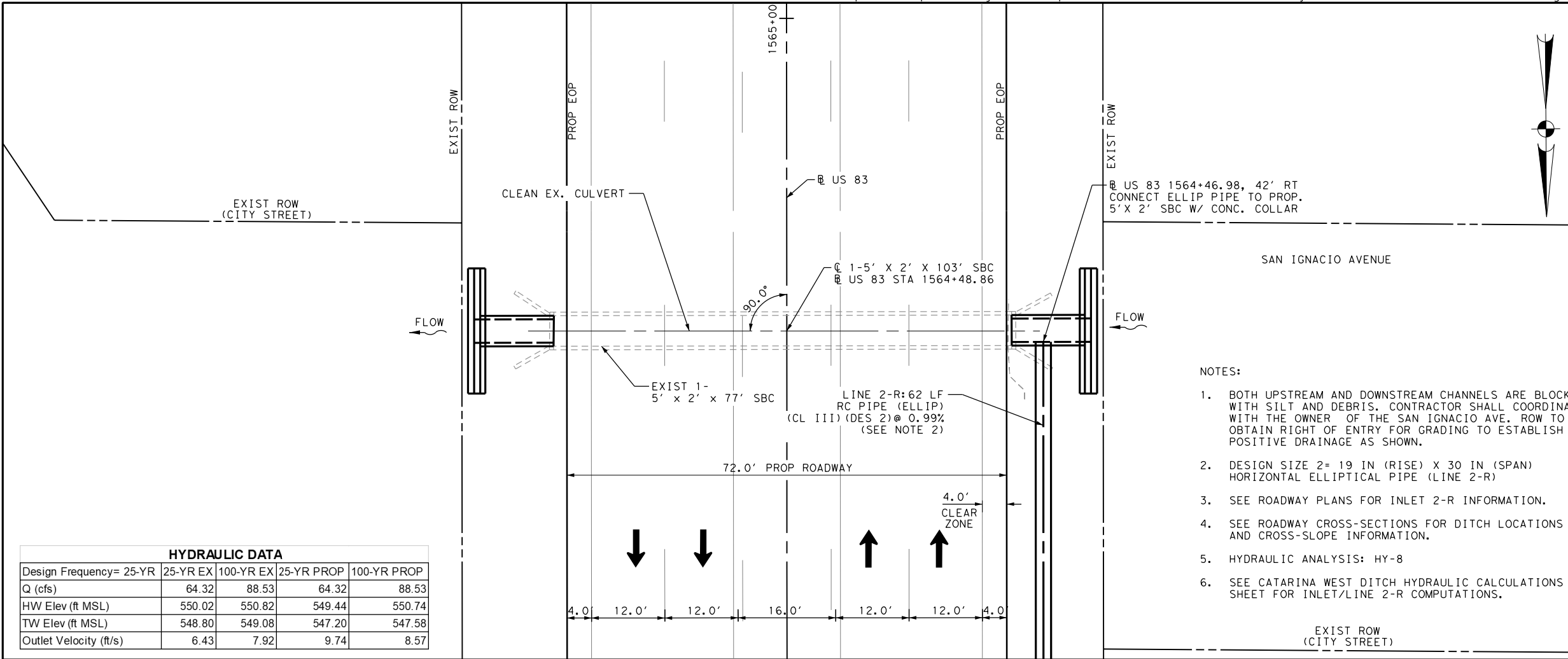
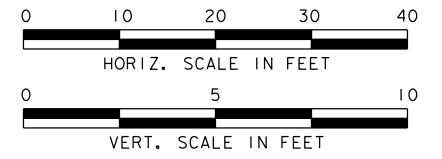
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**US 83  
CULVERT LAYOUT  
STA. 1529+95.52**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	184
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83

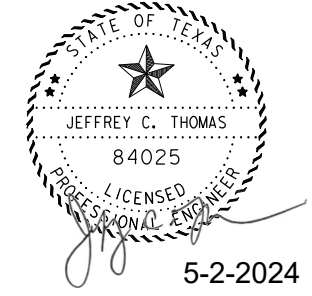
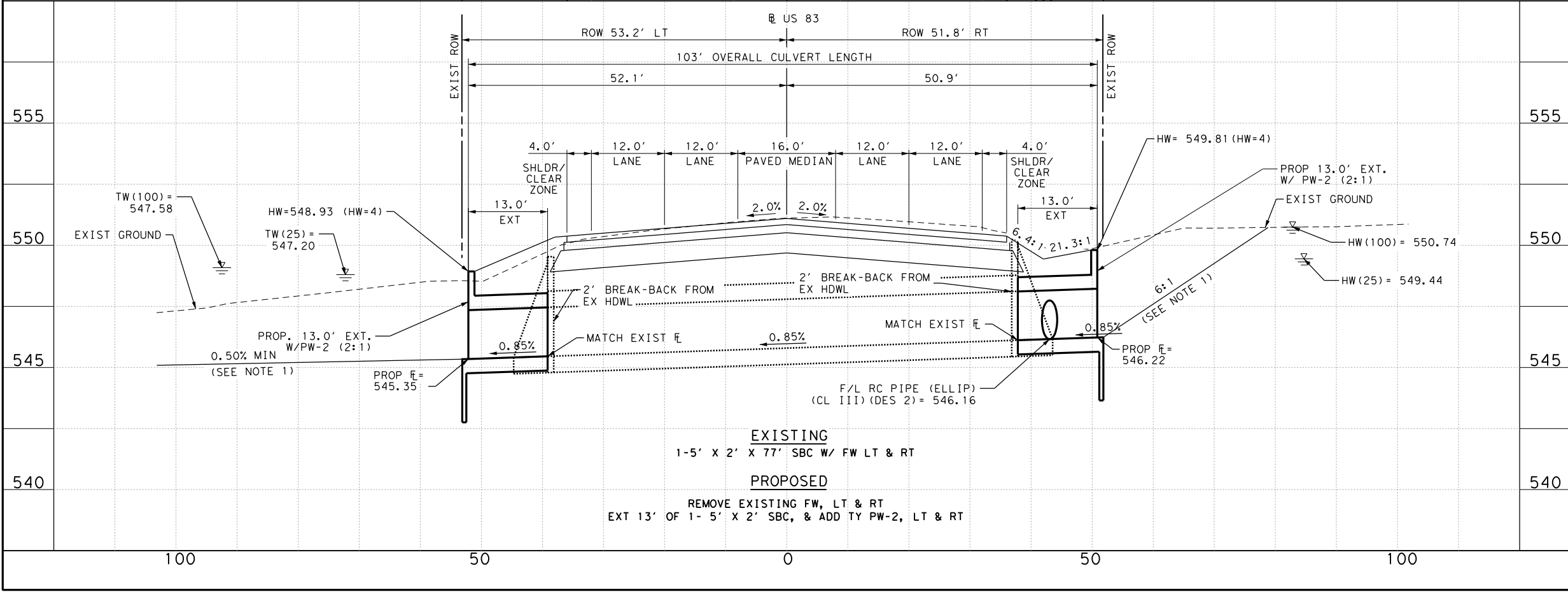
**EXISTING**  
1-6' X 3' X 111' SBC W/ FW LT & RT & SPL INLET

**PROPOSED**  
1 - 6' X 3' X 131' SBC W/ 6:1 SET, LT & RT  
REMOVE HEADWALL & FW, ADD FW & SETS, LT (6:1) & SPL INLET  
REMOVE HEADWALL & FW, EXT 19' OF 6' X 3' SBC, & ADD FW & SETS, RT (6:1)



- NOTES:
- BOTH UPSTREAM AND DOWNSTREAM CHANNELS ARE BLOCKED WITH SILT AND DEBRIS. CONTRACTOR SHALL COORDINATE WITH THE OWNER OF THE SAN IGNACIO AVE. ROW TO OBTAIN RIGHT OF ENTRY FOR GRADING TO ESTABLISH POSITIVE DRAINAGE AS SHOWN.
  - DESIGN SIZE 2= 19 IN (RISE) X 30 IN (SPAN) HORIZONTAL ELLIPTICAL PIPE (LINE 2-R)
  - SEE ROADWAY PLANS FOR INLET 2-R INFORMATION.
  - SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  - HYDRAULIC ANALYSIS: HY-8
  - SEE CATARINA WEST DITCH HYDRAULIC CALCULATIONS SHEET FOR INLET/LINE 2-R COMPUTATIONS.

HYDRAULIC DATA				
Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	64.32	88.53	64.32	88.53
HW Elev (ft MSL)	550.02	550.82	549.44	550.74
TW Elev (ft MSL)	548.80	549.08	547.20	547.58
Outlet Velocity (ft/s)	6.43	7.92	9.74	8.57



DA-2-3 SHEET 3 OF 23

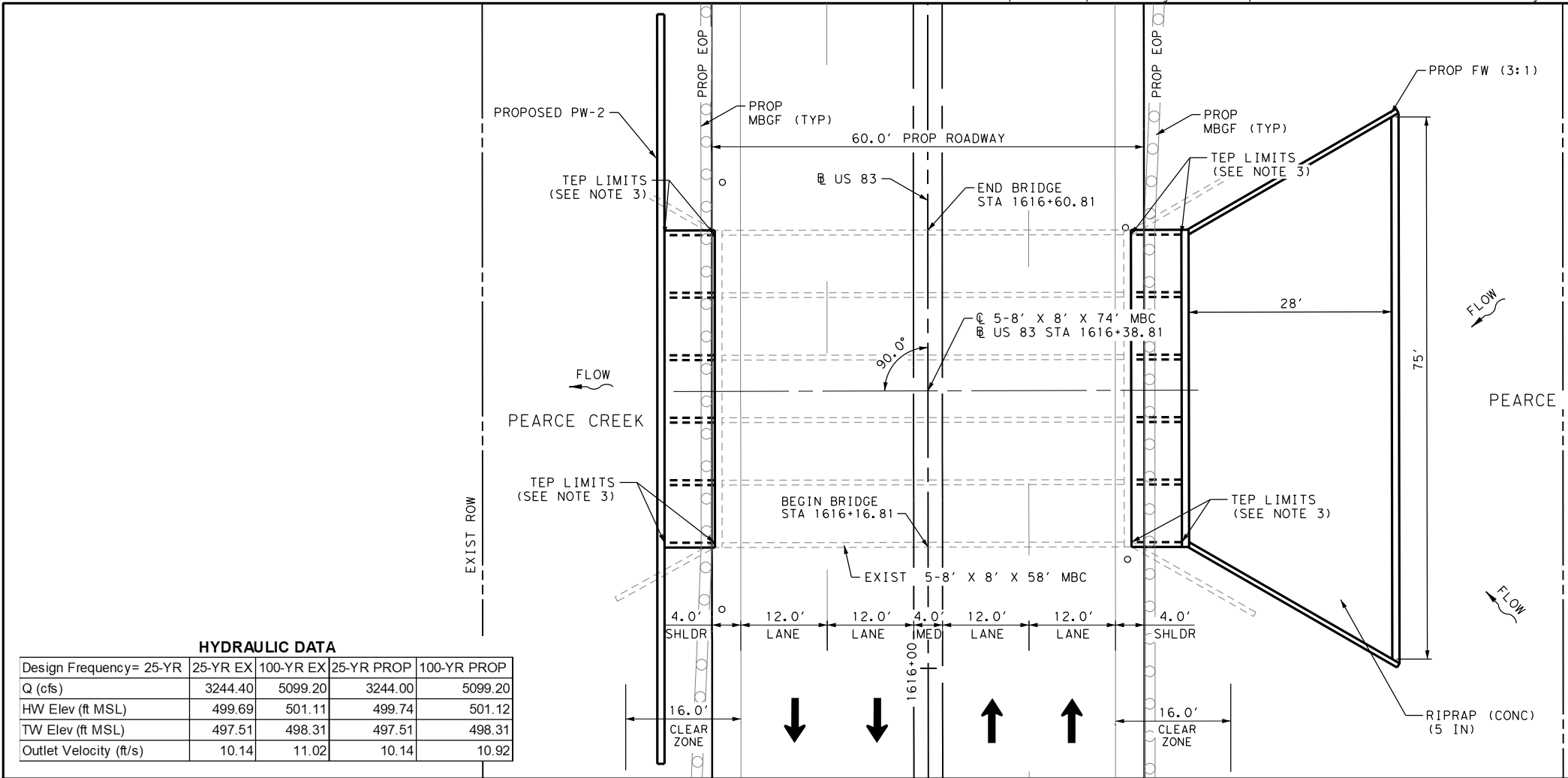
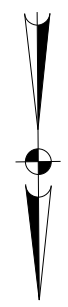
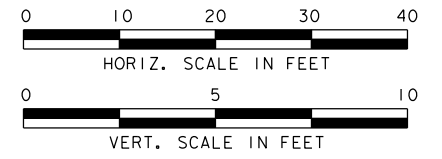
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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US 83  
CULVERT LAYOUT  
STA. 1564+48.86

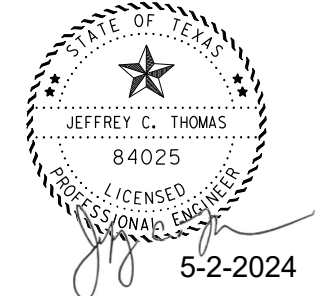
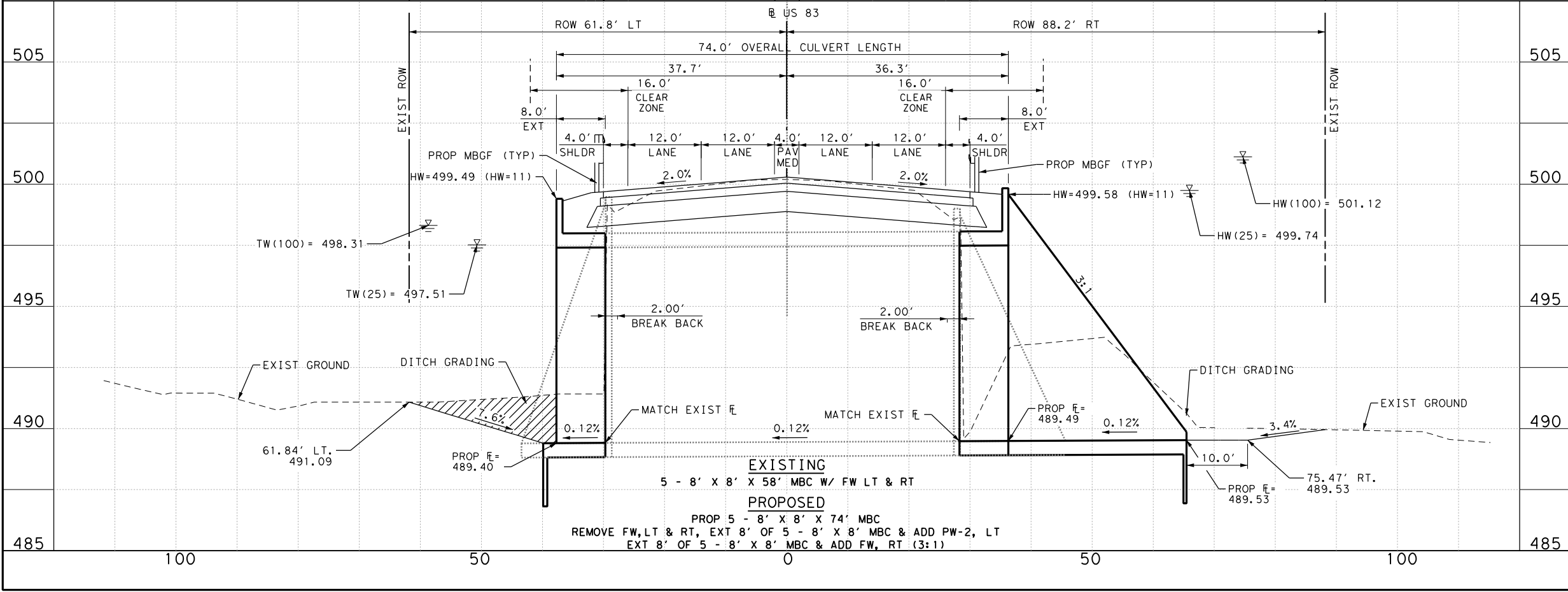
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	185
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83



- NOTES:
1. HYDRAULIC ANALYSIS: HEC-RAS 5.0.6 AND HEC-HMS 4.2.1
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  3. TRENCH EXCAVATION PROTECTION (TEP) TO BE PROVIDED ALONG OUTSIDE EDGES OF PROP. CULVERT EXTENSIONS AS SHOWN.

**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	3244.40	5099.20	3244.00	5099.20
HW Elev (ft MSL)	499.69	501.11	499.74	501.12
TW Elev (ft MSL)	497.51	498.31	497.51	498.31
Outlet Velocity (ft/s)	10.14	11.02	10.14	10.92



DA-2-4 SHEET 4 OF 23

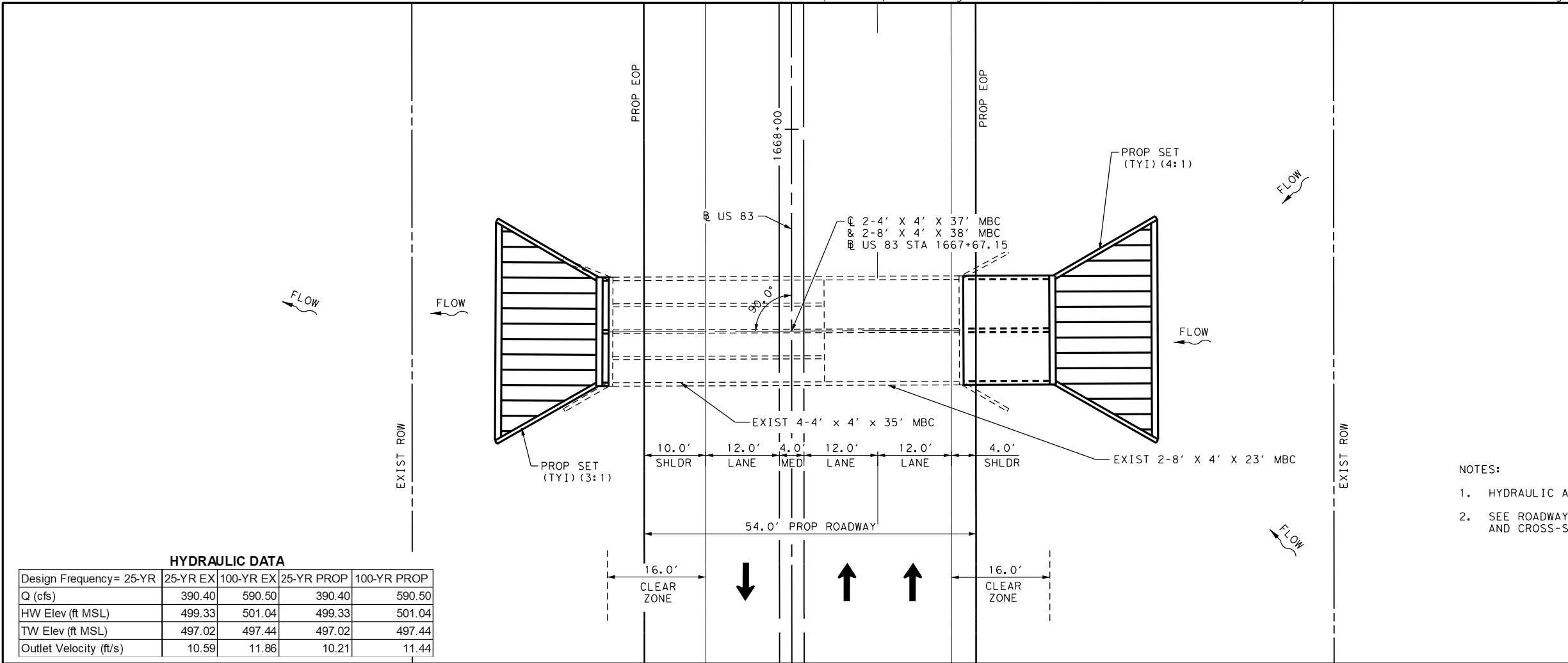
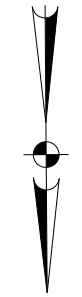
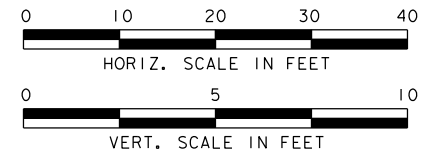
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
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FIRM REGISTRATION No. F-10098

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**US 83**  
**BRIDGE LAYOUT**  
**PEARCE CREEK**  
**STA. 1616+38.81**  
NBI: 22-064-0-0037-08-027

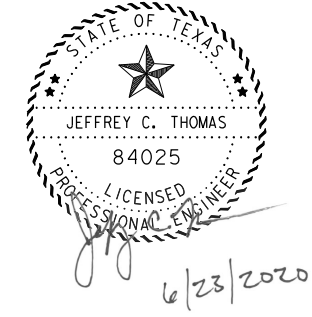
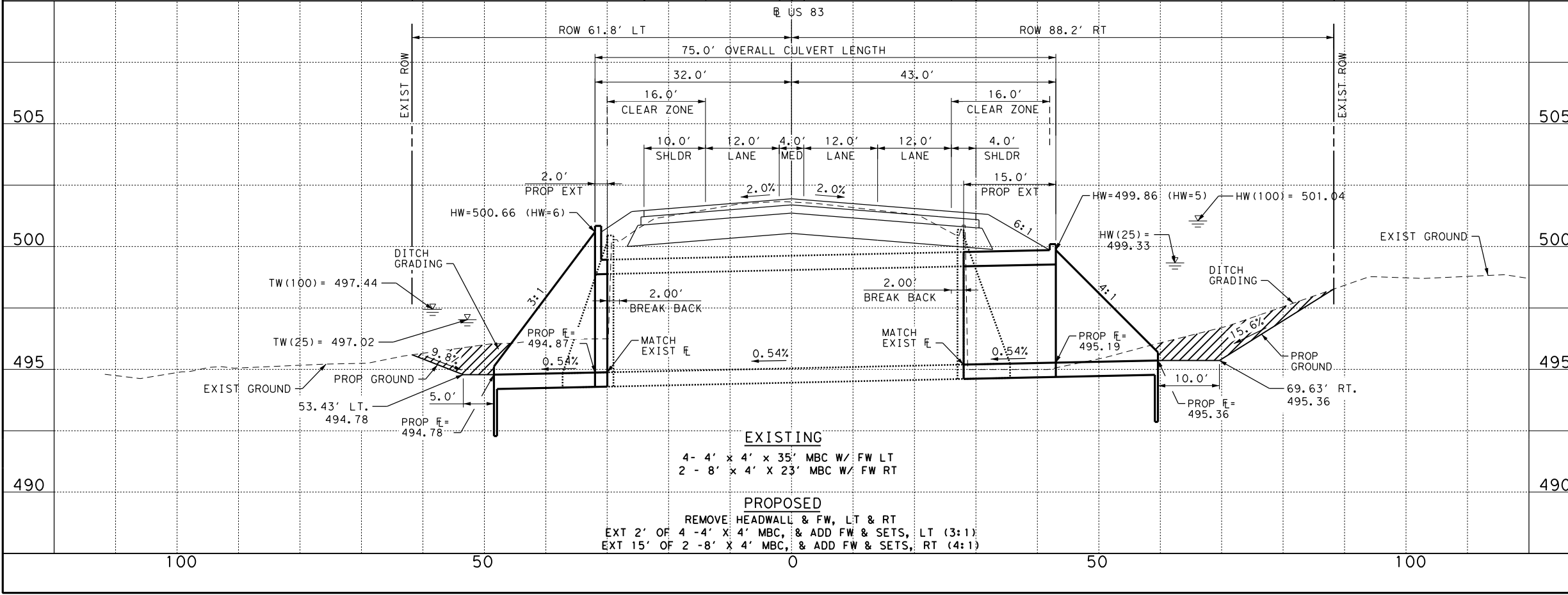
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6	C 37-8-42	186
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83



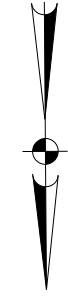
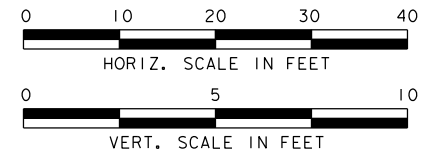
- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND HEC-HMS 4.2.1
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.

**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	390.40	590.50	390.40	590.50
HW Elev (ft MSL)	499.33	501.04	499.33	501.04
TW Elev (ft MSL)	497.02	497.44	497.02	497.44
Outlet Velocity (ft/s)	10.59	11.86	10.21	11.44

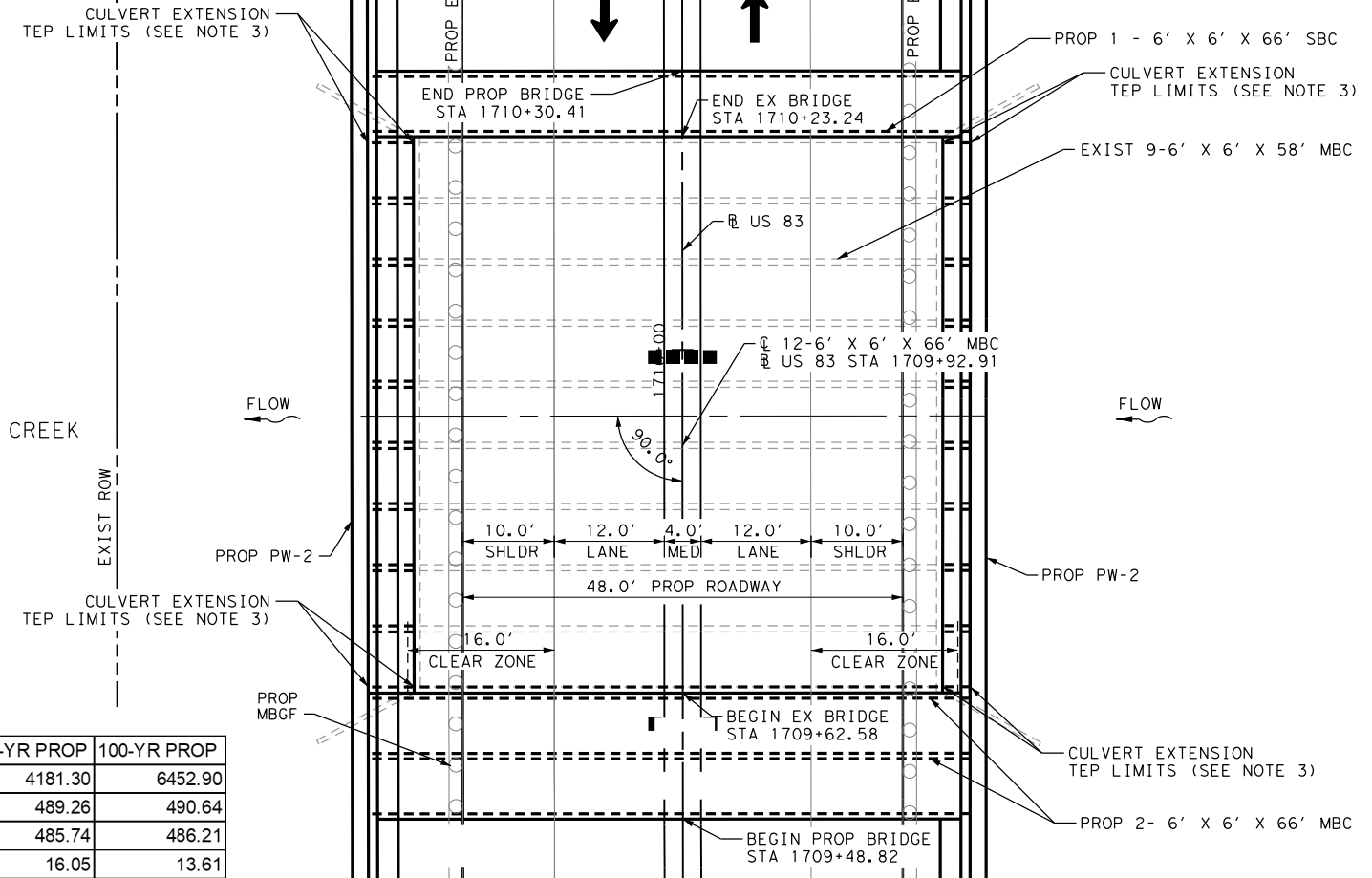


DA-2-5		SHEET 5 OF 23	
NO.	REVISIONS	BY	DATE
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US 83 CULVERT LAYOUT STA. 1667+67.15			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	187	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

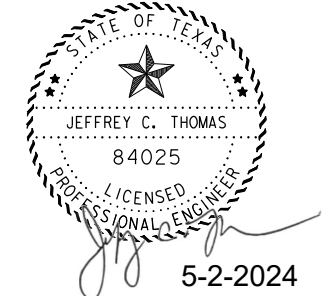
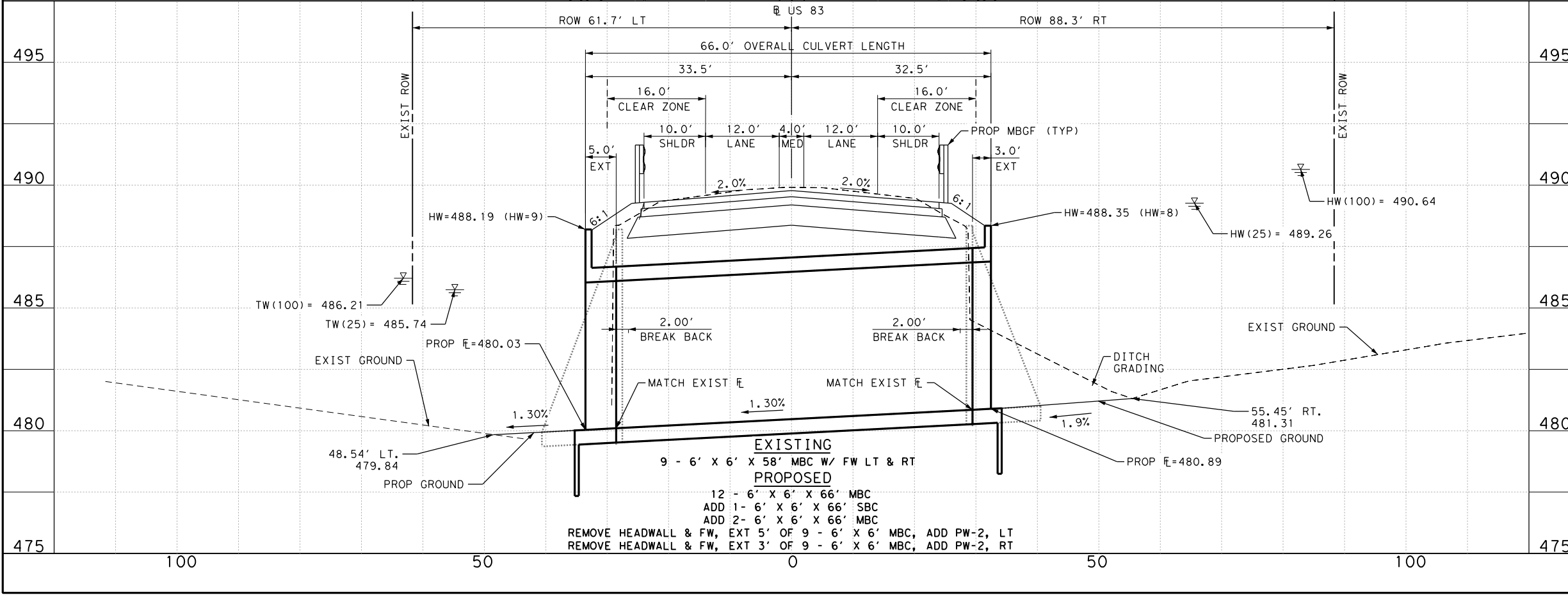


**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	4181.30	6452.90	4181.30	6452.90
HW Elev (ft MSL)	490.57	491.21	489.26	490.64
TW Elev (ft MSL)	485.75	486.24	485.74	486.21
Outlet Velocity (ft/s)	18.73	14.55	16.05	13.61



- NOTES:**
- HYDRAULIC ANALYSIS: HEC-RAS 5.0.6 AND HEC-HMS 4.2.1
  - SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  - TRENCH EXCAVATION PROTECTION SHALL BE PLACED FOR ENTIRE LENGTHS OF PROPOSED SBC AND MBC. IT SHALL ALSO BE PLACED AT CORNERS OF CULVERT BOX EXTENSIONS AS SHOWN.



DA-2-6 SHEET 6 OF 23

NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

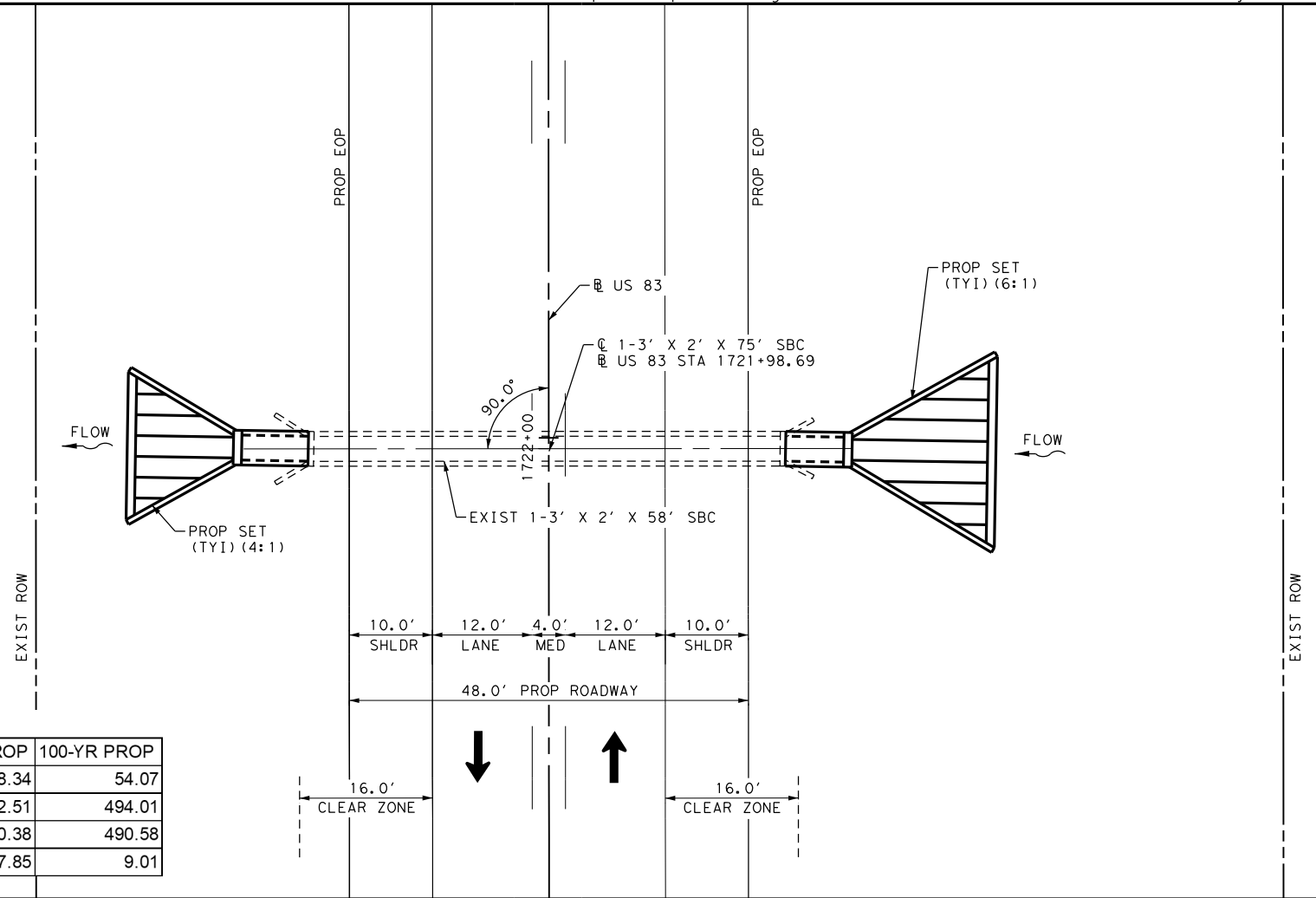
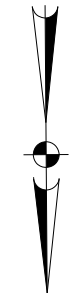
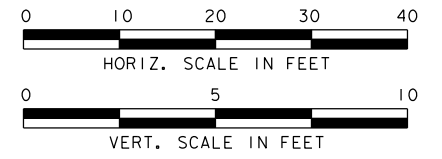
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**US 83  
BRIDGE LAYOUT  
DILLION CREEK  
STA. 1709+92.91  
NBI: 22-064-0-0037-08-028**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	188

STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	US 83

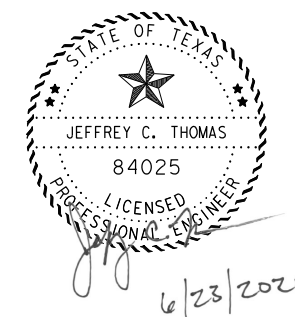
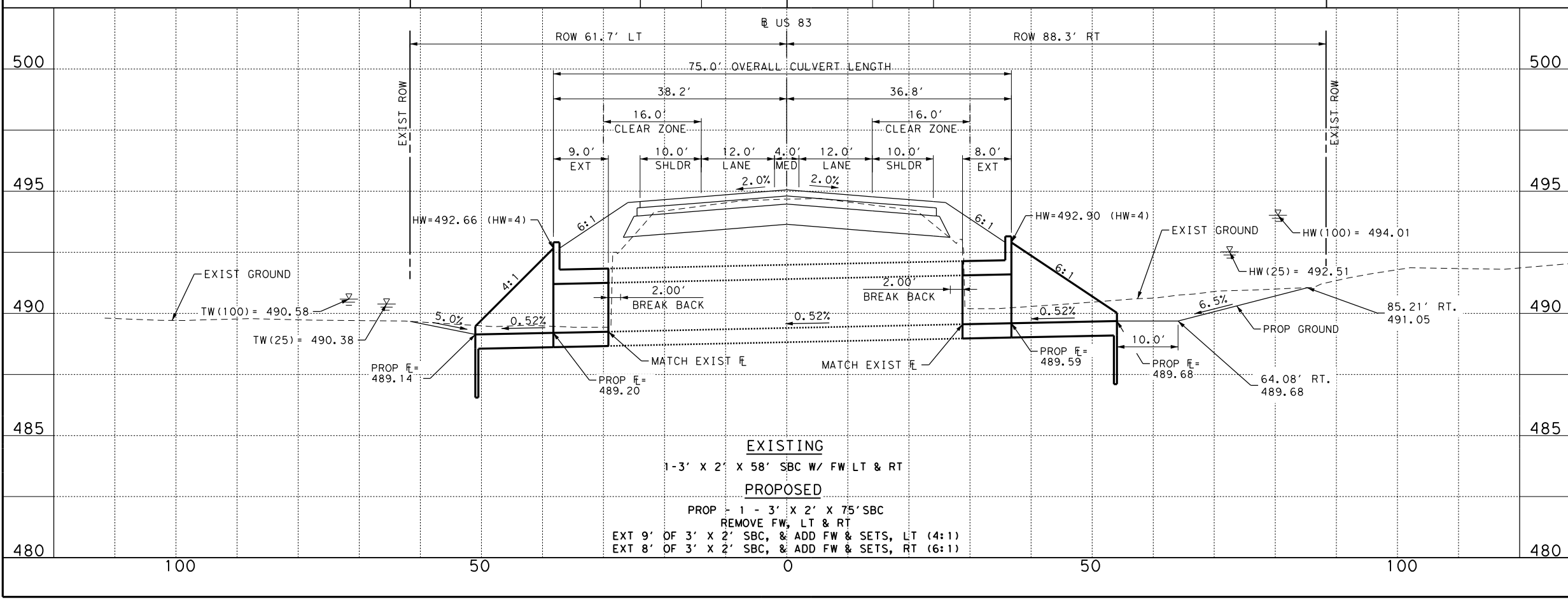
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.

**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	38.34	54.07	38.34	54.07
HW Elev (ft MSL)	492.44	492.44	492.51	494.01
TW Elev (ft MSL)	490.38	490.58	490.38	490.58
Outlet Velocity (ft/s)	7.76	9.01	7.85	9.01



DA-2-7 SHEET 7 OF 23

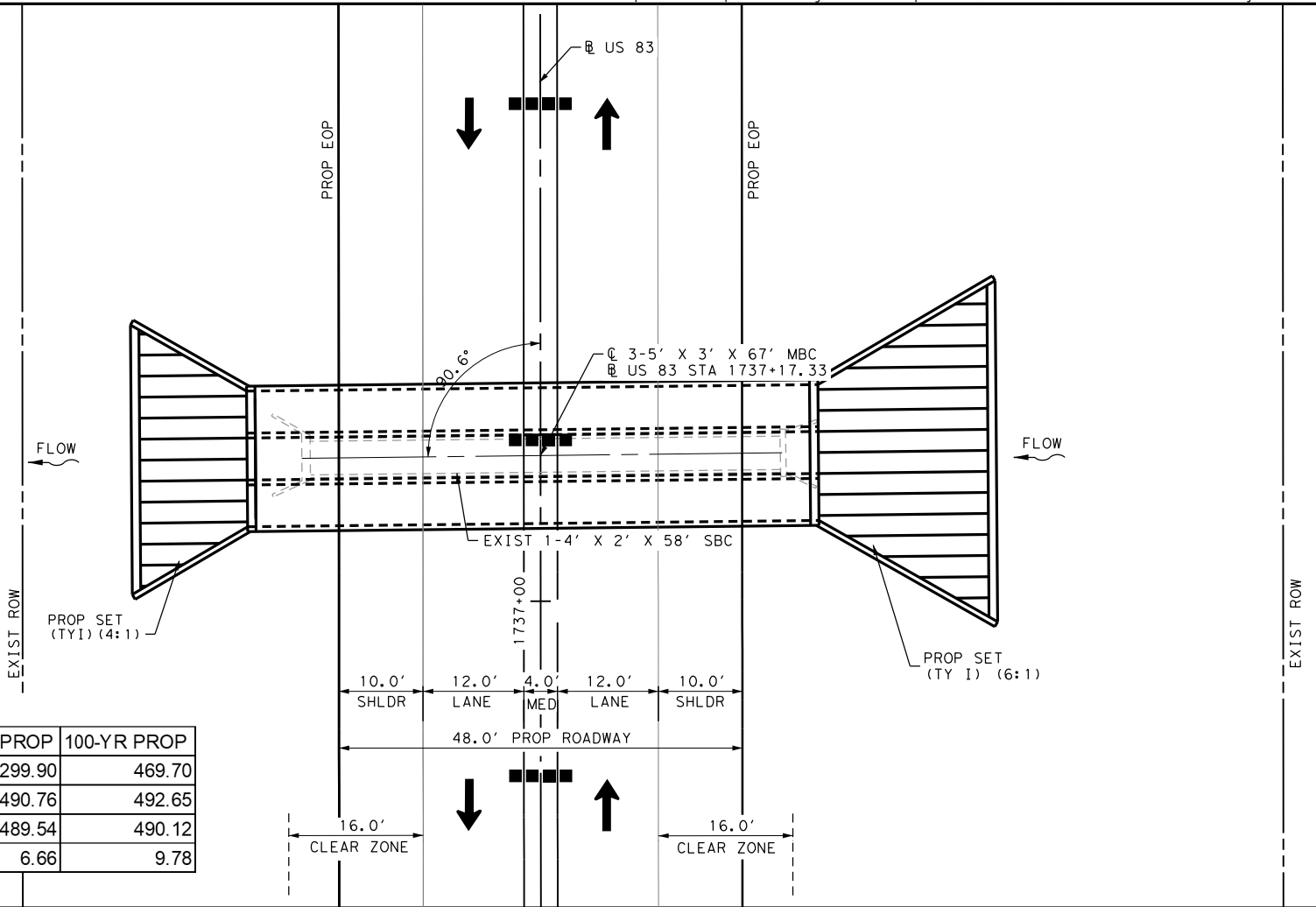
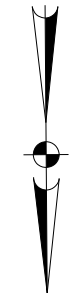
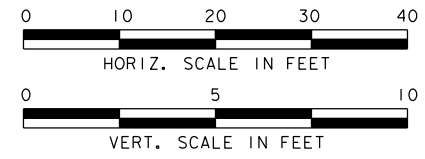
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
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**US 83  
 CULVERT LAYOUT  
 STA. 1721+98.69**

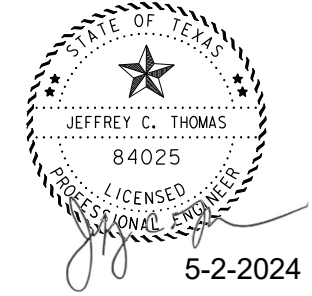
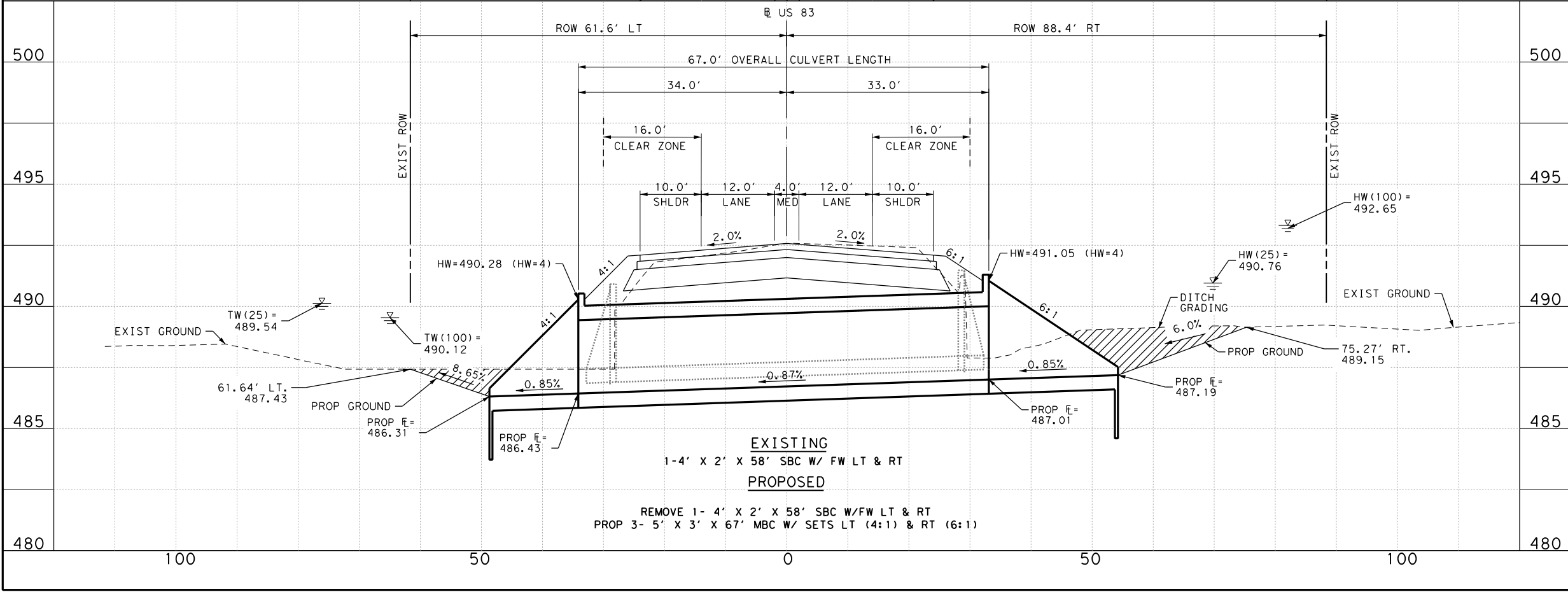
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6	C 37-8-42	189	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	299.90	469.70	299.90	469.70
HW Elev (ft MSL)	492.97	493.15	490.76	492.65
TW Elev (ft MSL)	489.90	490.54	489.54	490.12
Outlet Velocity (ft/s)	9.25	9.48	6.66	9.78

- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND HEC-HMS 4.2.1
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



DA-2-8 SHEET 8 OF 23

NO.	REVISIONS	BY	DATE

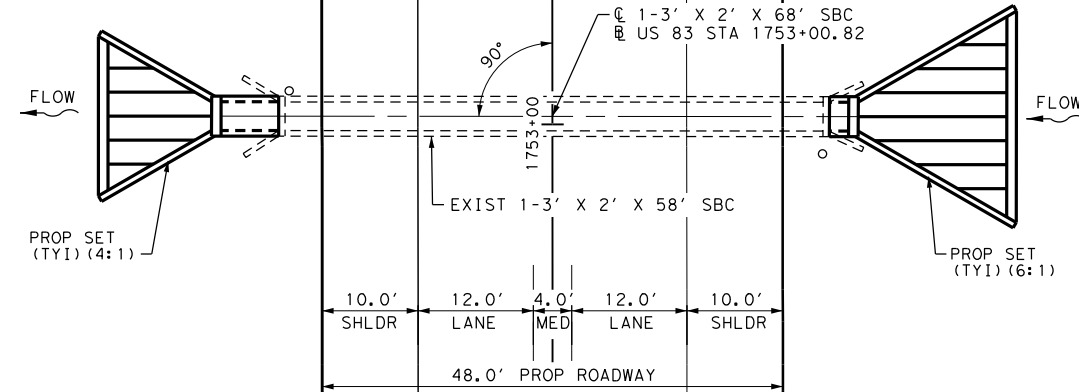
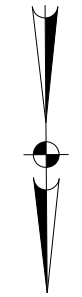
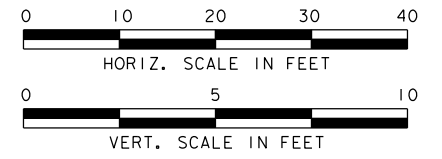
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**US 83**  
**CULVERT LAYOUT**  
**STA. 1737+17.33**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	190
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83

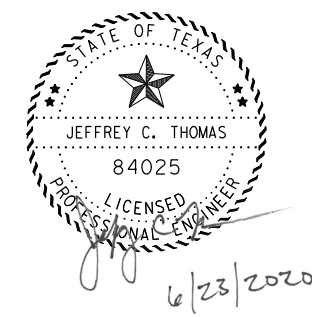
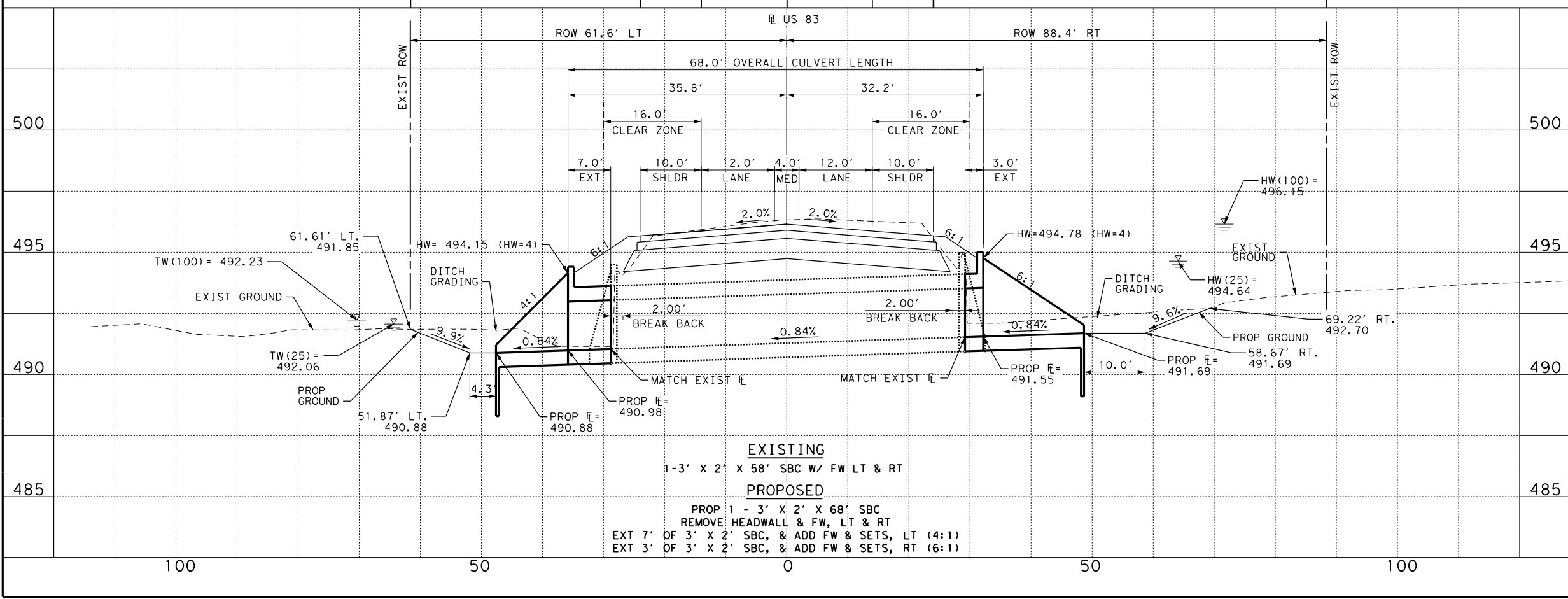




**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	40.56	56.81	40.56	56.81
HW Elev (ft MSL)	494.61	496.07	494.64	496.15
TW Elev (ft MSL)	492.06	492.23	492.06	492.23
Outlet Velocity (ft/s)	8.95	9.33	9.04	9.29

- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



DA-2-9 SHEET 9 OF 23

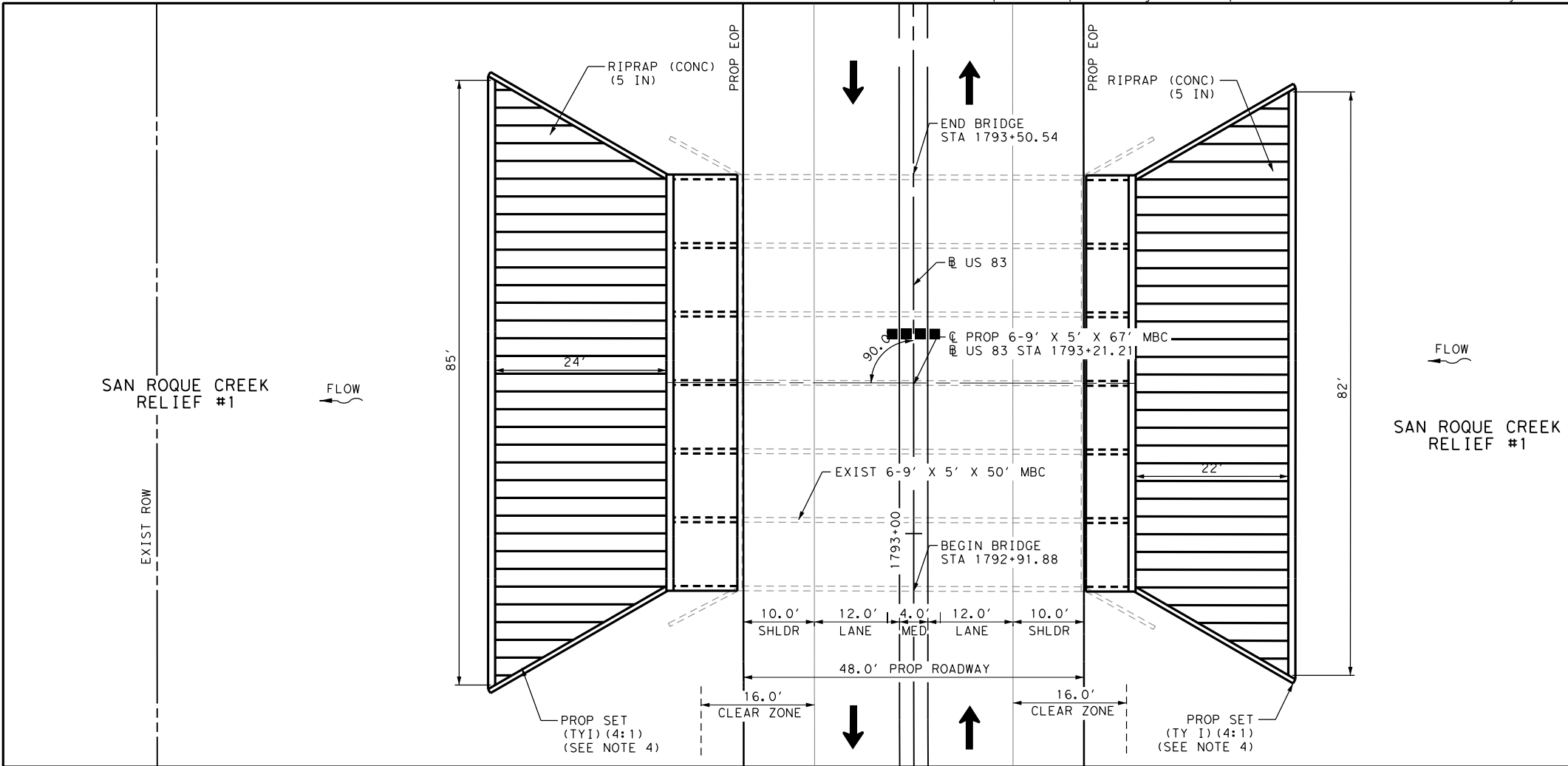
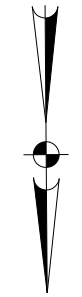
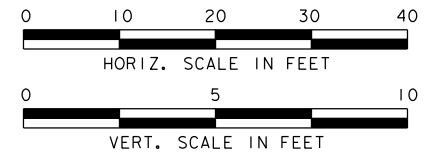
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
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**US 83**  
**CULVERT LAYOUT**  
**STA. 1753+00.82**

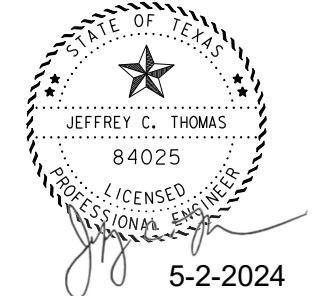
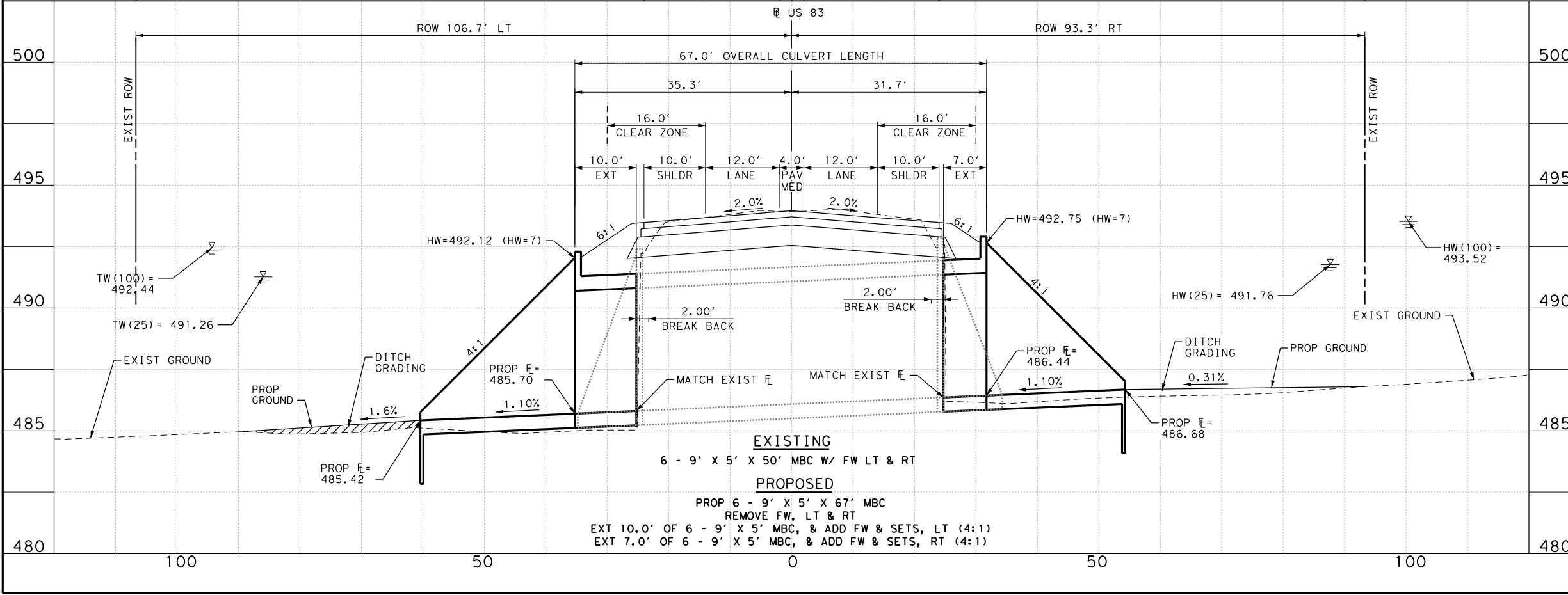
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STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	1296.00	1905.64	1276.17	1845.93
HW Elev (ft MSL)	491.77	493.57	491.76	493.52
TW Elev (ft MSL)	491.26	492.44	491.26	492.44
Outlet Velocity (ft/s)	4.80	7.06	4.73	6.84

- NOTES:
- HYDRAULIC ANALYSIS: HEC-RAS 5.0.6 AND HEC-HMS 4.2.1
  - SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  - CULVERT 2-10, CULVERT 2-11 AND THE SAN ROQUE CREEK BRIDGE FUNCTION AS MULTIPLE OPENING STRUCTURES. FLOW IS DIVIDED BY HEC-RAS BETWEEN THE THREE CROSS-DRAINAGE STRUCTURES.
  - SEE STD. SETB-FW-0 FOR PROPOSED SET DETAILS.



DA-2-10 SHEET 10 OF 23

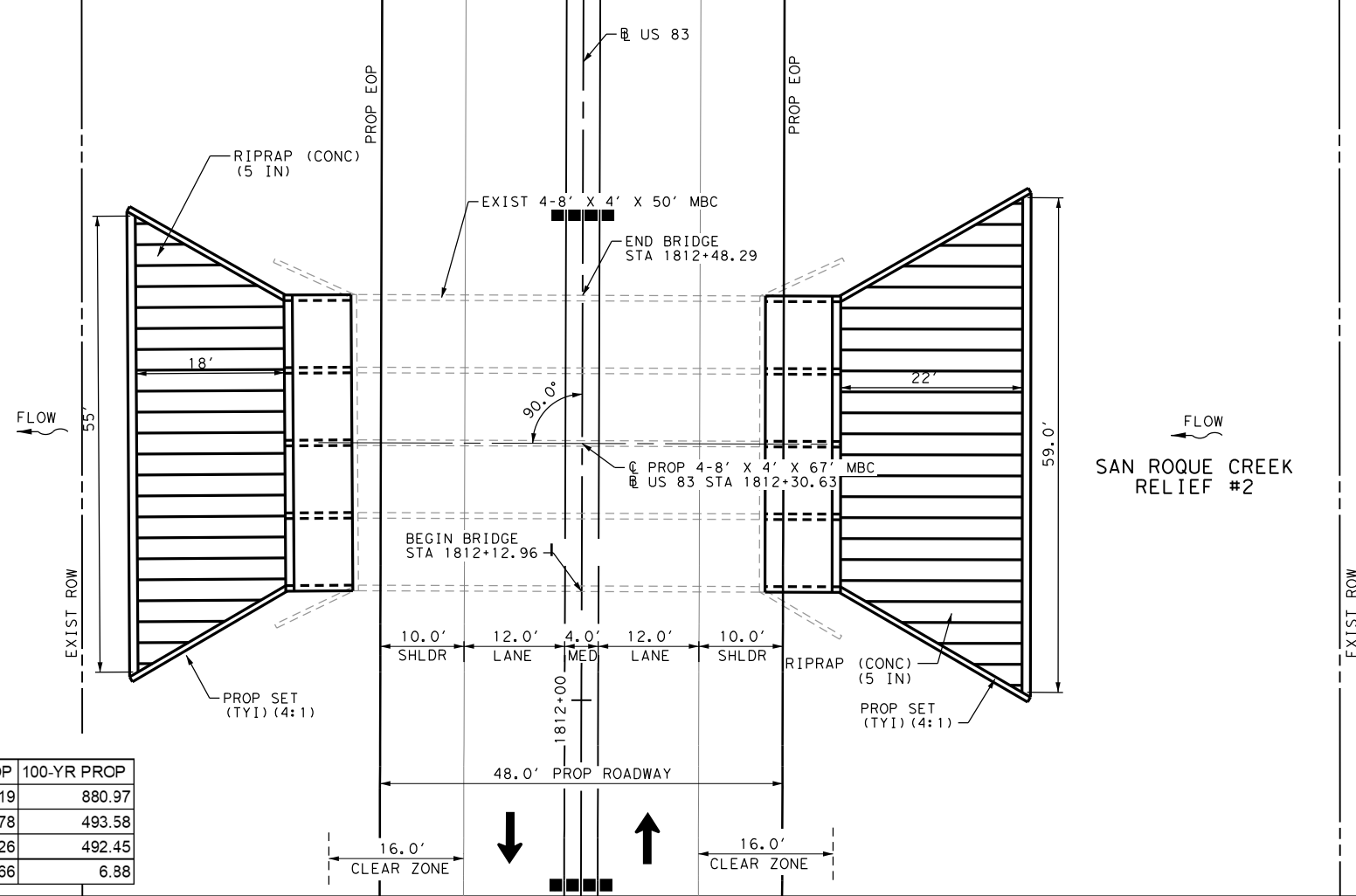
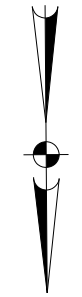
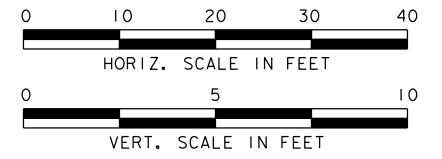
NO.	REVISIONS	BY	DATE

ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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US 83  
BRIDGE LAYOUT  
SAN ROQUE CREEK, RELIEF #1  
STA. 1793+21.21  
NBI: 22-064-0-0037-08-072

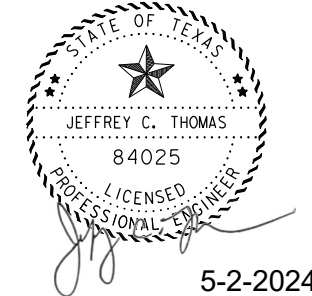
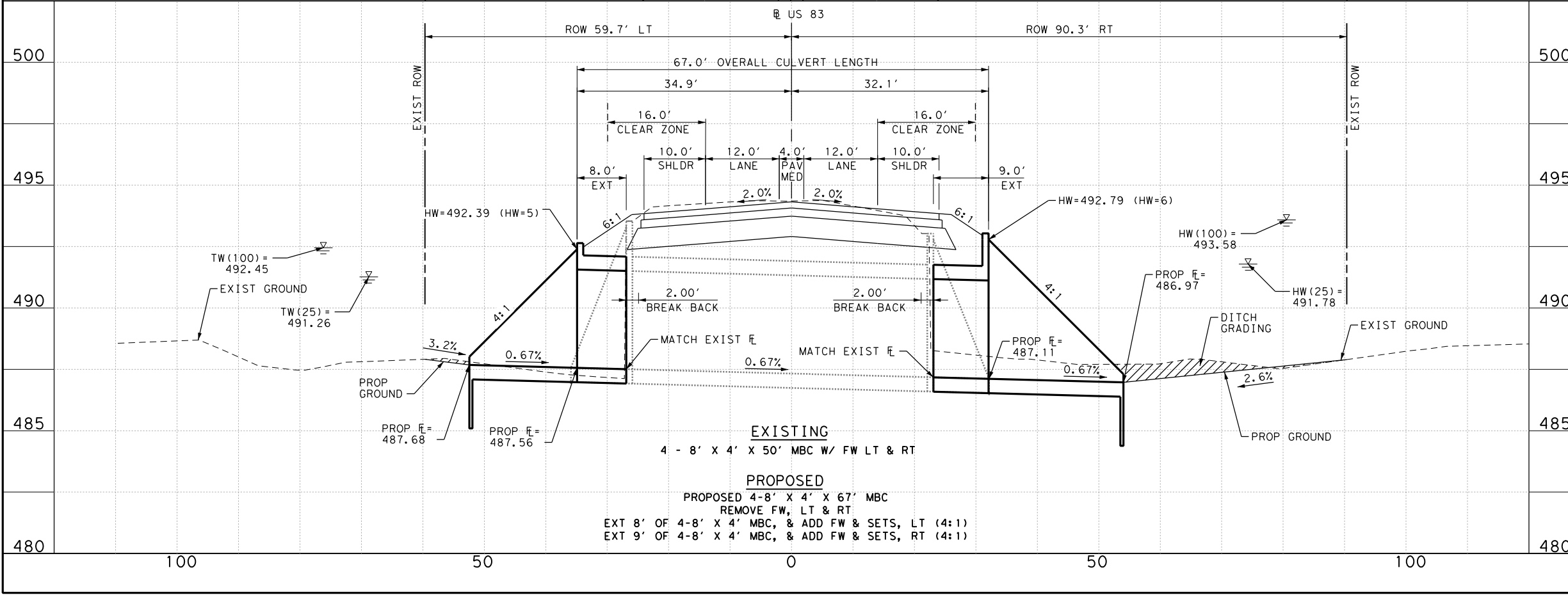
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6	C 37-8-42	192
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83



- NOTES:
1. THE EXISTING CULVERT 2-11 WAS CONSTRUCTED WITH A NEGATIVE SLOPE. THIS WAS CONFIRMED BY TOPOGRAPHIC SURVEY AND TxDOT AS-BUILTS. HEC-RAS INDICATES ADEQUATE HYDRAULIC FUNCTION. FLOW DIRECTION SHOWN IS FOR THE SAN ROQUE CREEK FLOODPLAIN.
  2. HYDRAULIC ANALYSIS: HEC-RAS 5.0.6 AND HEC-HMS 4.2.1
  3. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  4. CULVERT 2-10, CULVERT 2-11 AND THE SAN ROQUE CREEK BRIDGE FUNCTION AS MULTIPLE OPENING STRUCTURES. FLOW IS DIVIDED BY HEC-RAS BETWEEN THE THREE CROSS-DRAINAGE STRUCTURES.

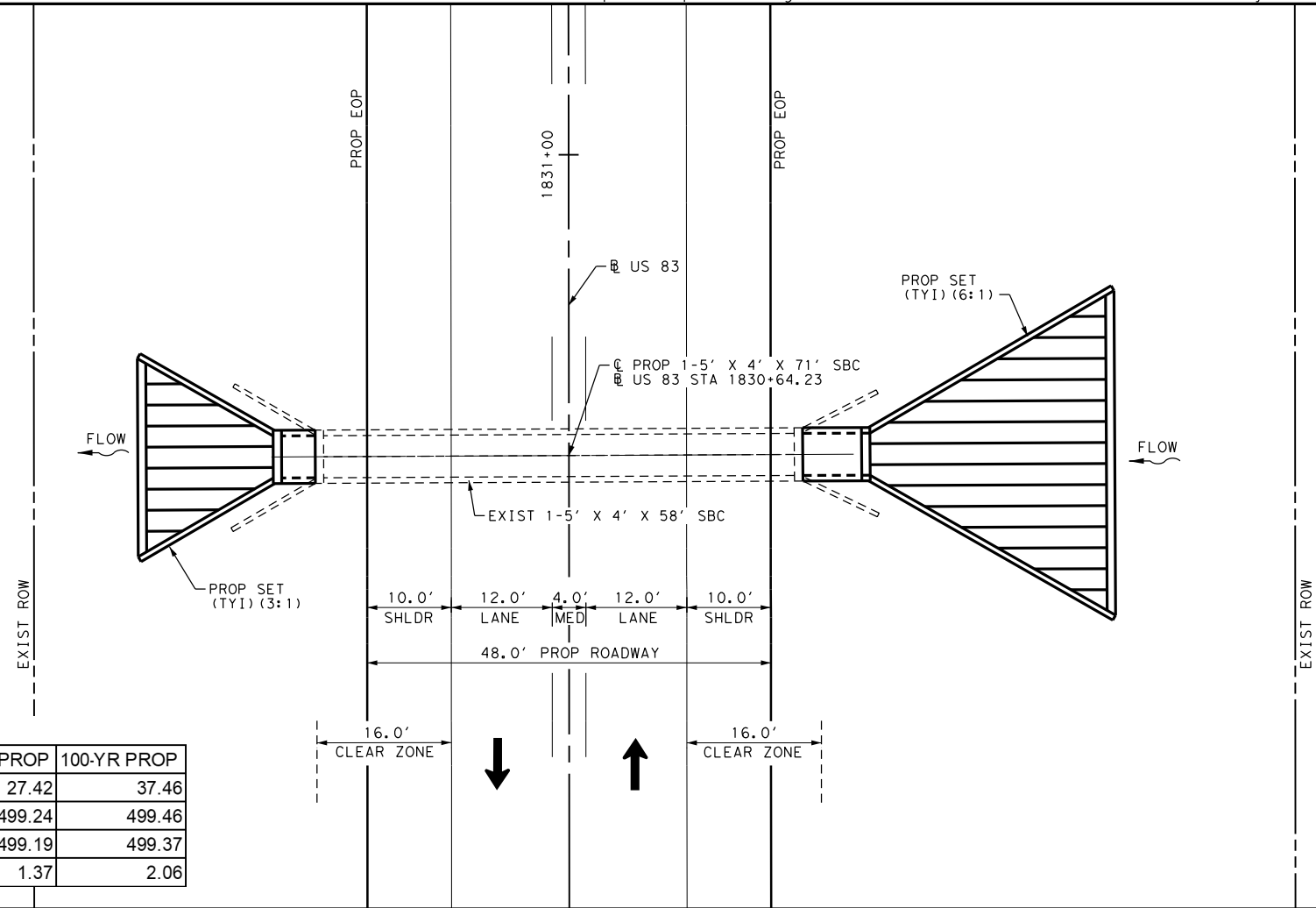
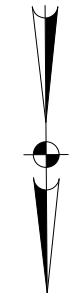
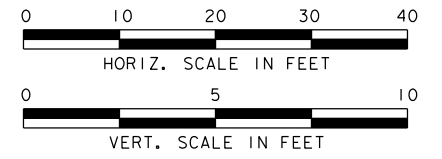
**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	601.03	890.06	596.19	880.97
HW Elev (ft MSL)	491.78	493.58	491.78	493.58
TW Elev (ft MSL)	491.26	492.45	491.26	492.45
Outlet Velocity (ft/s)	4.70	6.95	4.66	6.88



5-2-2024

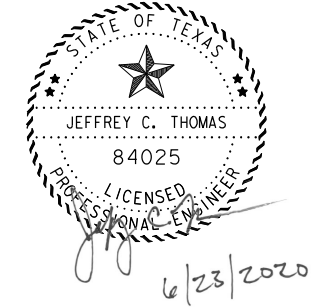
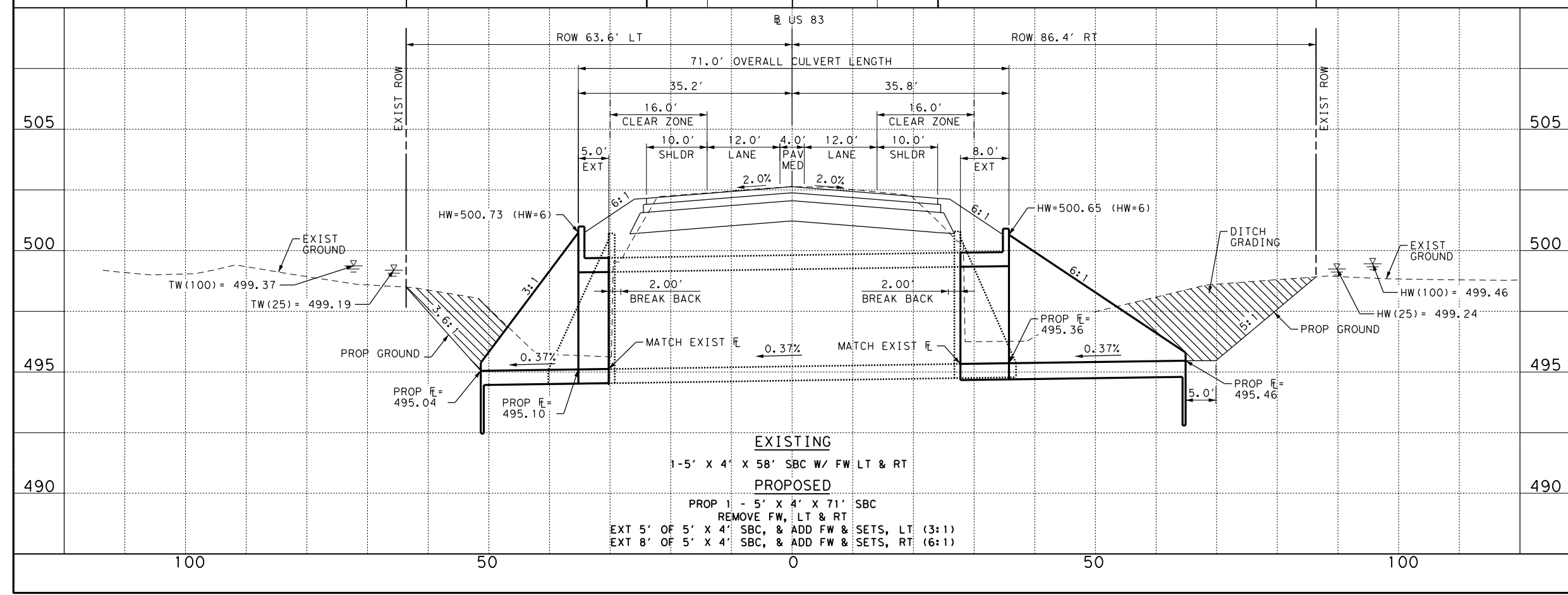
DA-2-11		SHEET 11 OF 23	
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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US 83 BRIDGE LAYOUT SAN ROQUE CREEK, RELIEF #2 STA. 1812+30.63 NBI: 22-064-0-0037-08-073			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	193	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.

**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	27.42	37.46	27.42	37.46
HW Elev (ft MSL)	499.23	499.46	499.24	499.46
TW Elev (ft MSL)	499.19	499.37	499.19	499.37
Outlet Velocity (ft/s)	1.37	2.06	1.37	2.06



DA-2-12 SHEET 12 OF 23

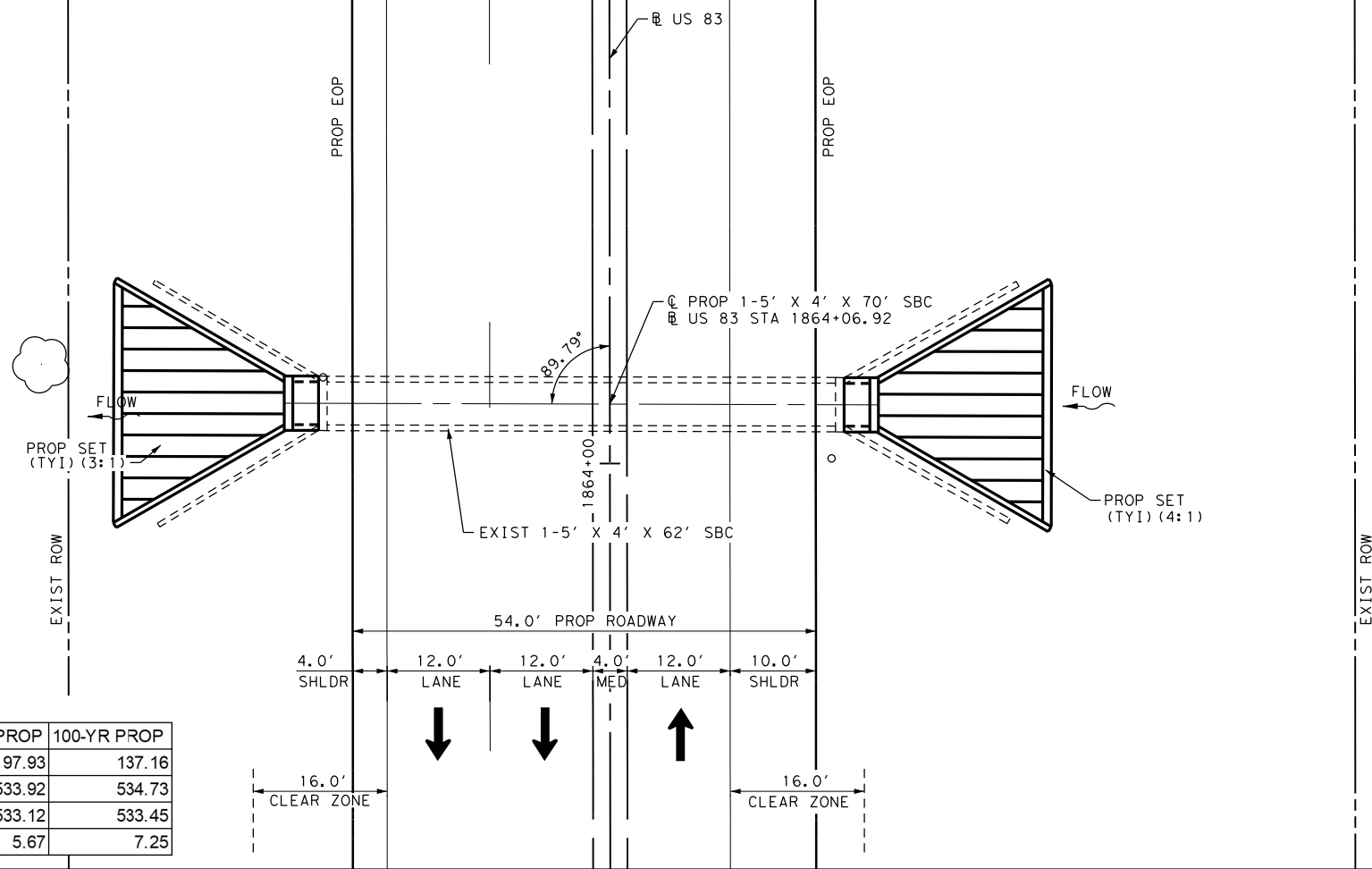
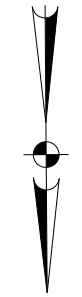
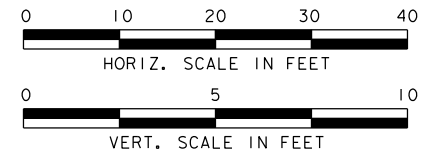
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
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**US 83**  
**CULVERT LAYOUT**  
**STA. 1830+64.23**

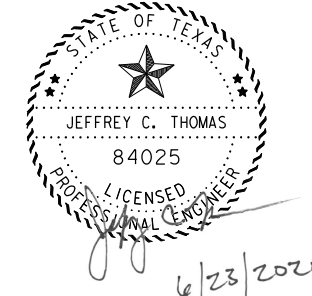
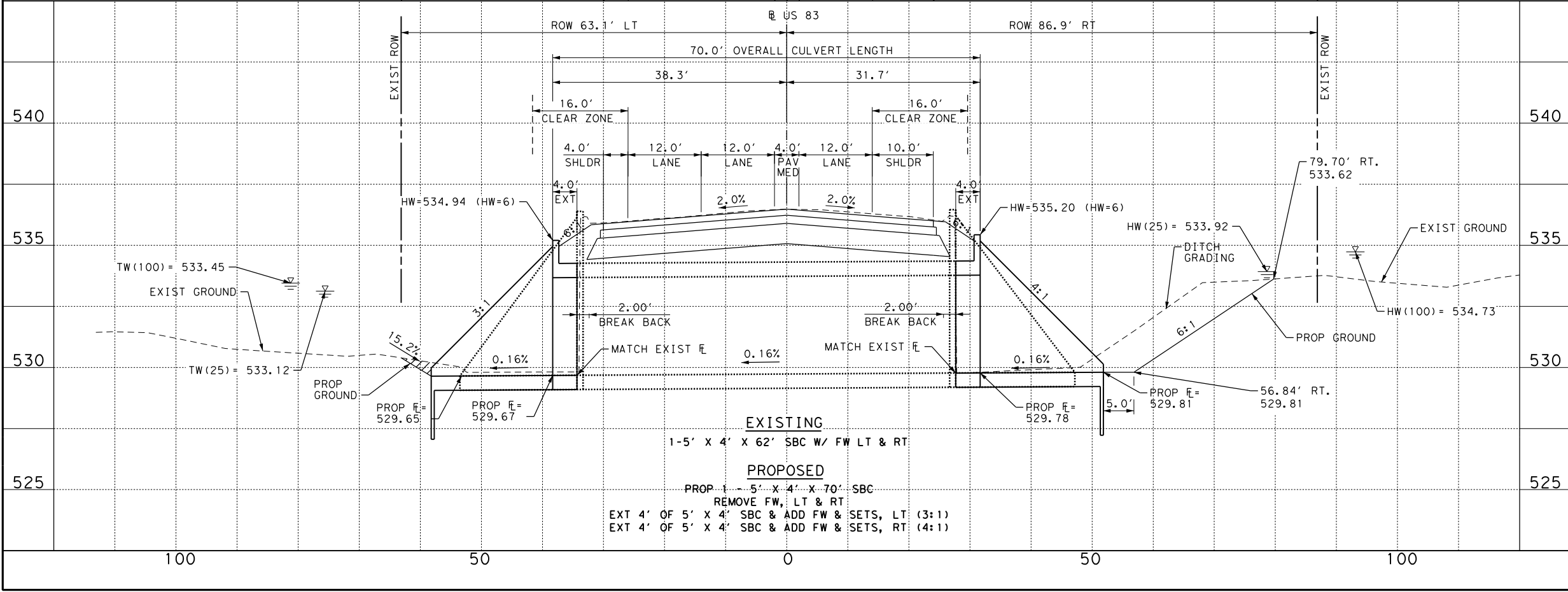
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6	C 37-8-42	194
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83



**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	97.93	137.16	97.93	137.16
HW Elev (ft MSL)	533.91	534.71	533.92	534.73
TW Elev (ft MSL)	533.12	533.45	533.12	533.45
Outlet Velocity (ft/s)	5.69	7.27	5.67	7.25

- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



DA-2-13 SHEET 13 OF 23

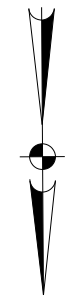
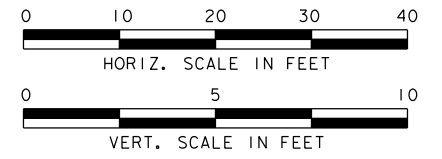
NO.	REVISIONS	BY	DATE

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**US 83  
CULVERT LAYOUT  
STA. 1864+06.92**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	195	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



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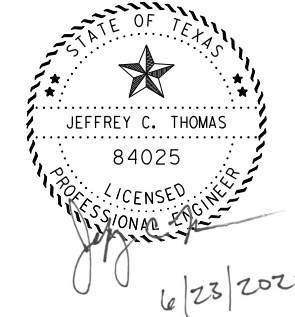
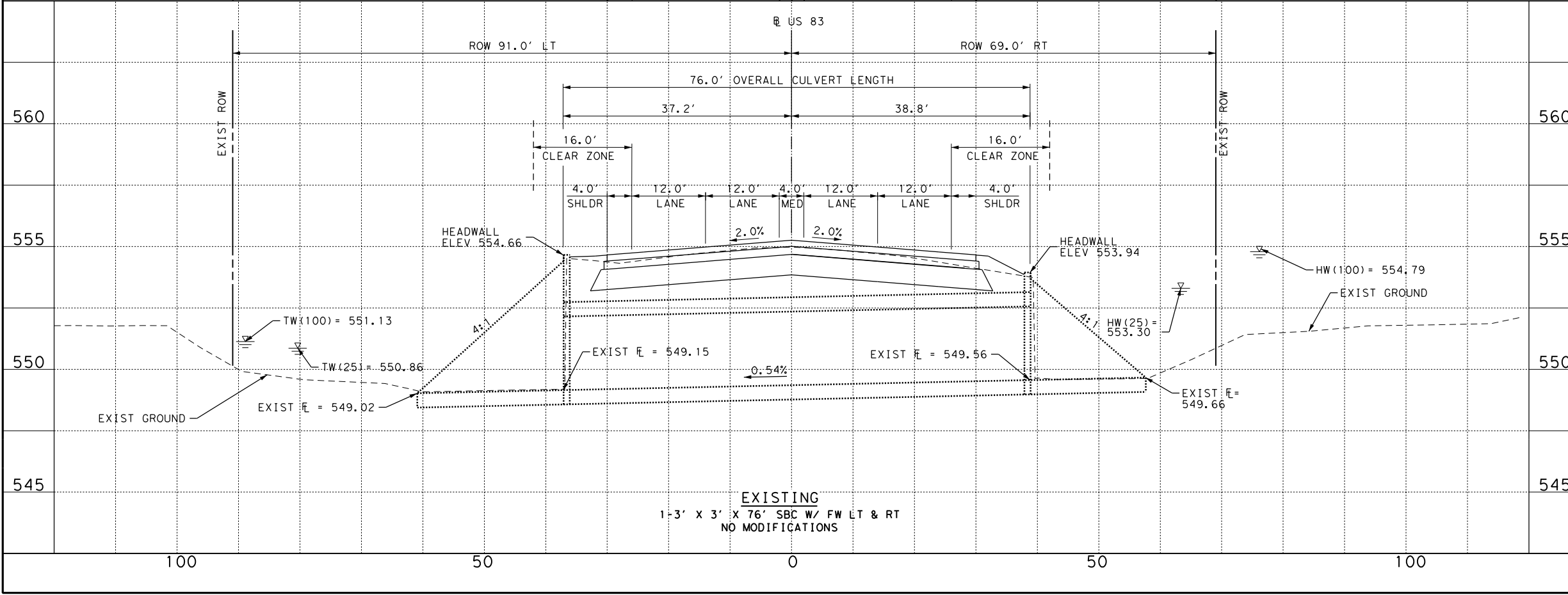
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**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	59.70	83.52	N/A	N/A
HW Elev (ft MSL)	553.30	554.79	N/A	N/A
TW Elev (ft MSL)	550.86	551.13	N/A	N/A
Outlet Velocity (ft/s)	8.79	9.61	N/A	N/A

**NOTES:**

1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



DA-2-14 SHEET 14 OF 23

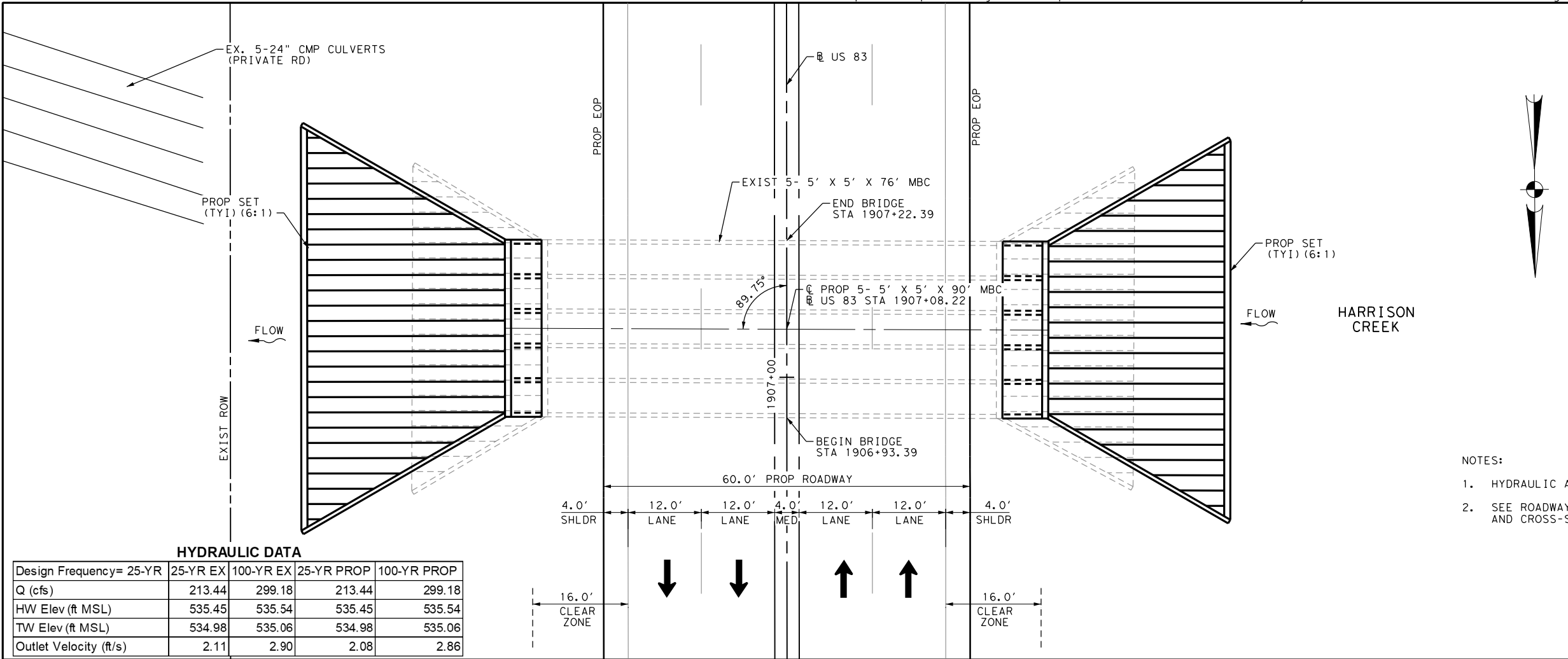
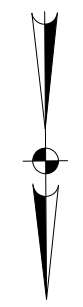
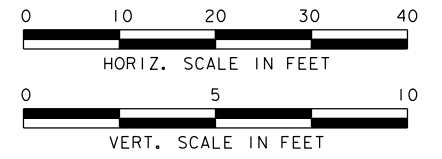
NO.	REVISIONS	BY	DATE

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**US 83  
 CULVERT LAYOUT  
 STA. 1887+44.00**

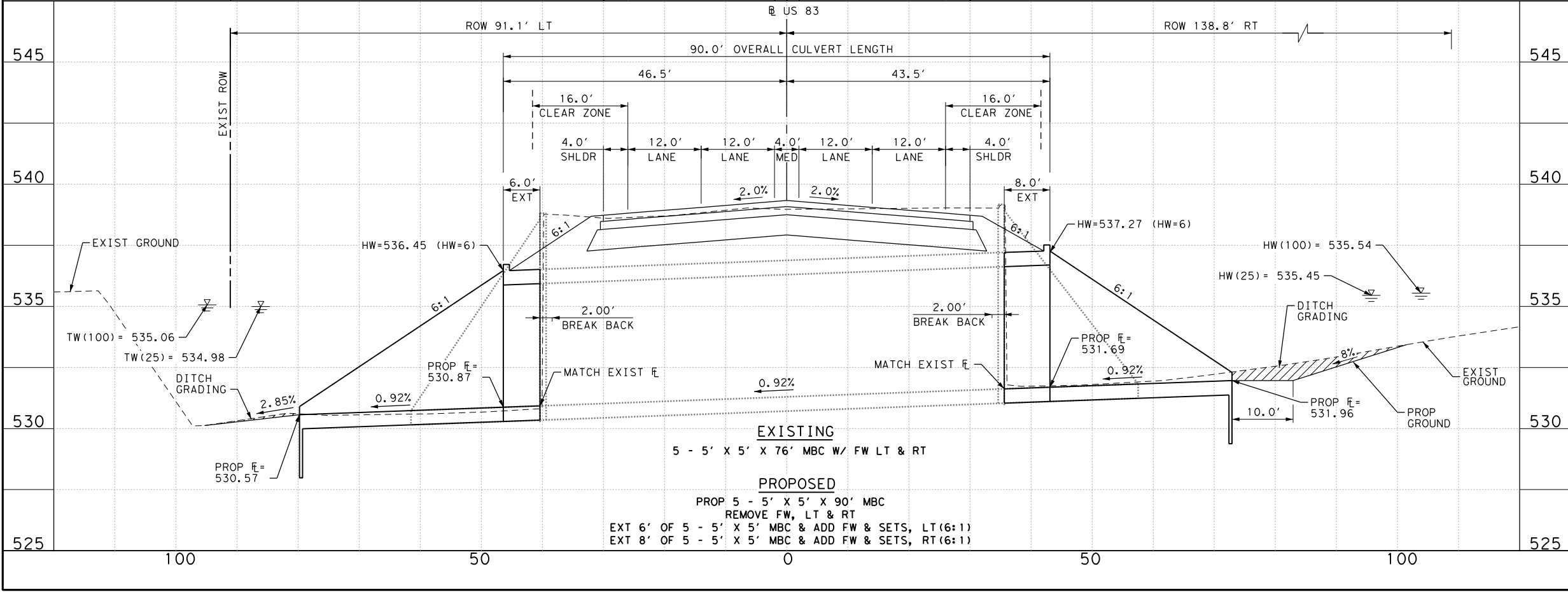
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6	C 37-8-42	196	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	213.44	299.18	213.44	299.18
HW Elev (ft MSL)	535.45	535.54	535.45	535.54
TW Elev (ft MSL)	534.98	535.06	534.98	535.06
Outlet Velocity (ft/s)	2.11	2.90	2.08	2.86

- NOTES:**
1. HYDRAULIC ANALYSIS: HEC-RAS 5.0.6 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



DA-2-15 SHEET 15 OF 23

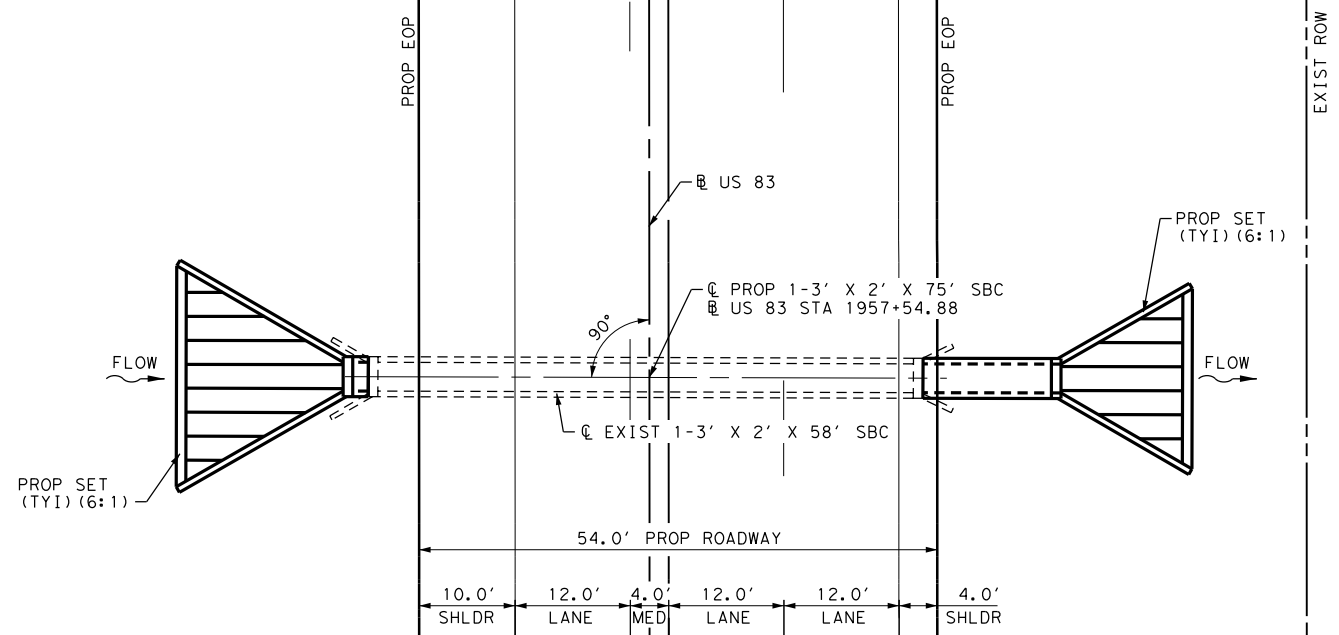
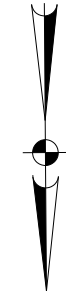
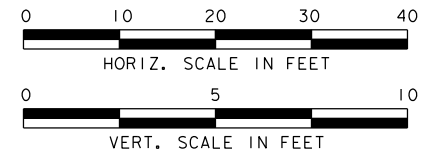
NO.	REVISIONS	BY	DATE

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**US 83  
BRIDGE LAYOUT  
HARRISON CREEK  
STA. 1907+08.22  
NBI: 22-064-0-0037-08-127**

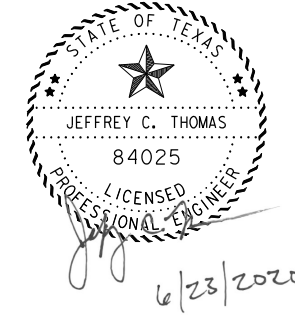
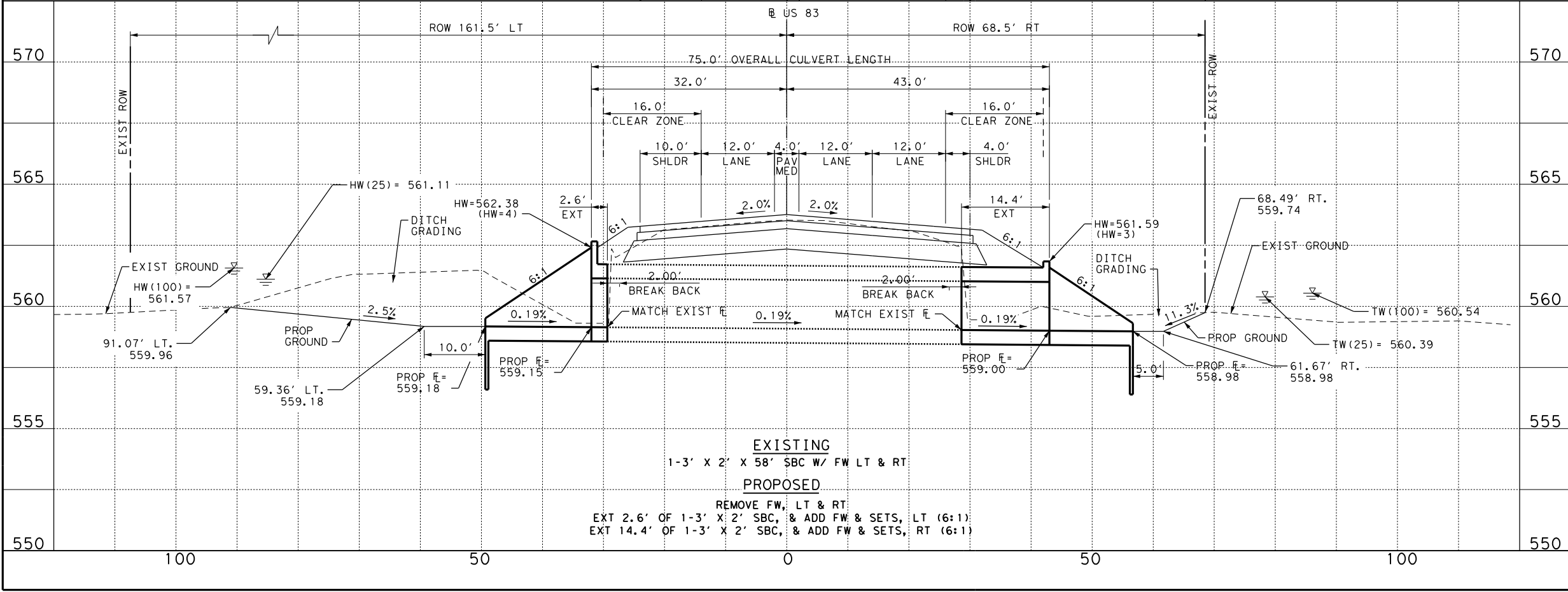
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6	C 37-8-42	197
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	21.06	29.15	21.06	29.15
HW Elev (ft MSL)	561.10	561.56	561.11	561.57
TW Elev (ft MSL)	560.39	560.54	560.39	560.54
Outlet Velocity (ft/s)	5.16	6.45	5.05	6.33

- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



DA-2-16 SHEET 16 OF 23

NO.	REVISIONS	BY	DATE

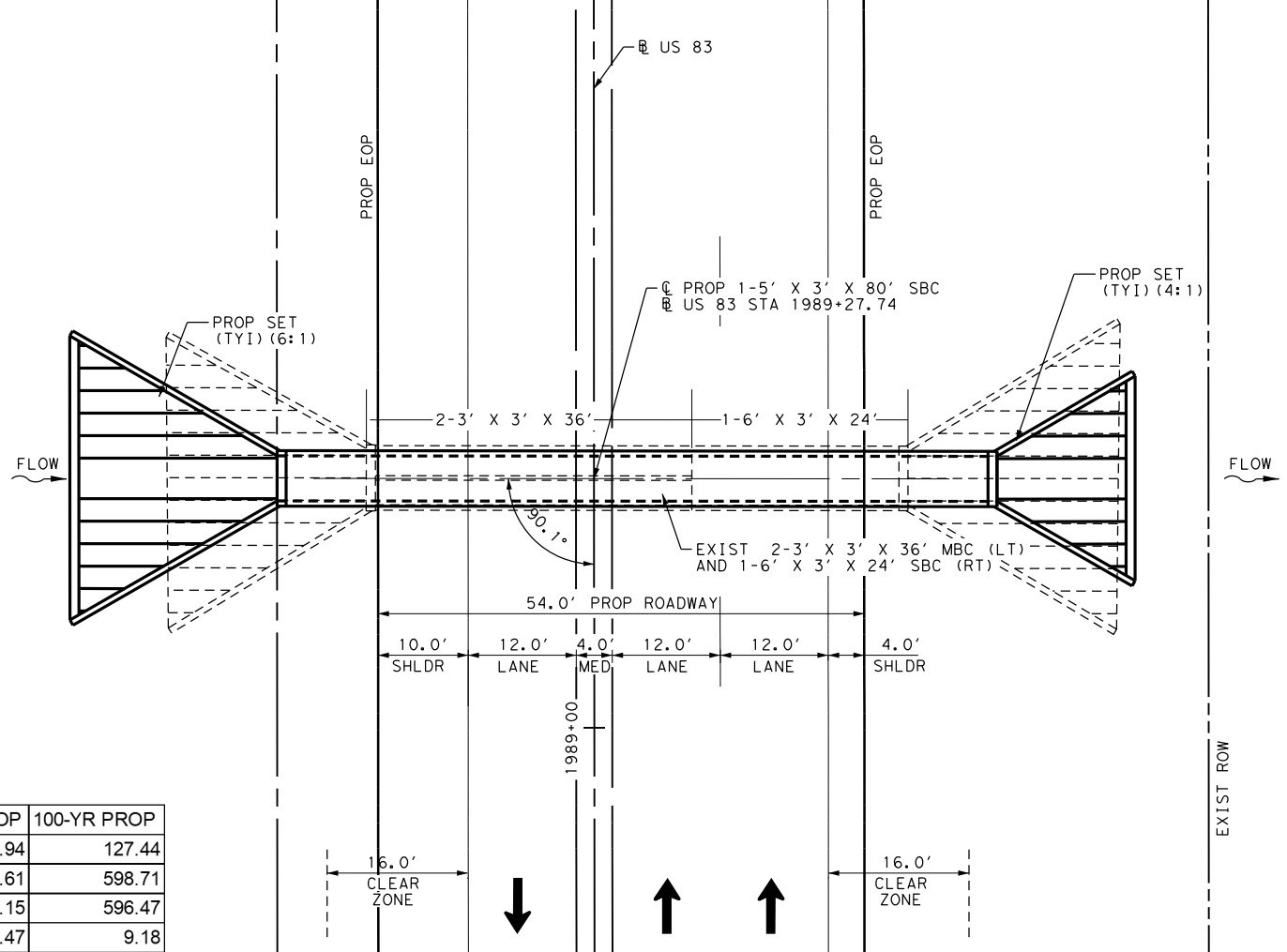
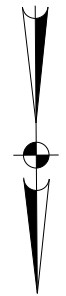
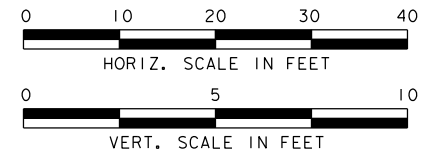
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**US 83  
CULVERT LAYOUT  
STA. 1957+54.88**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	198
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83



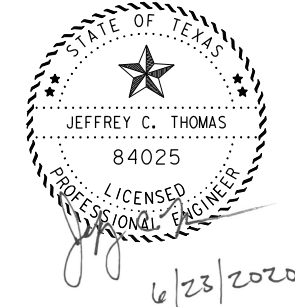
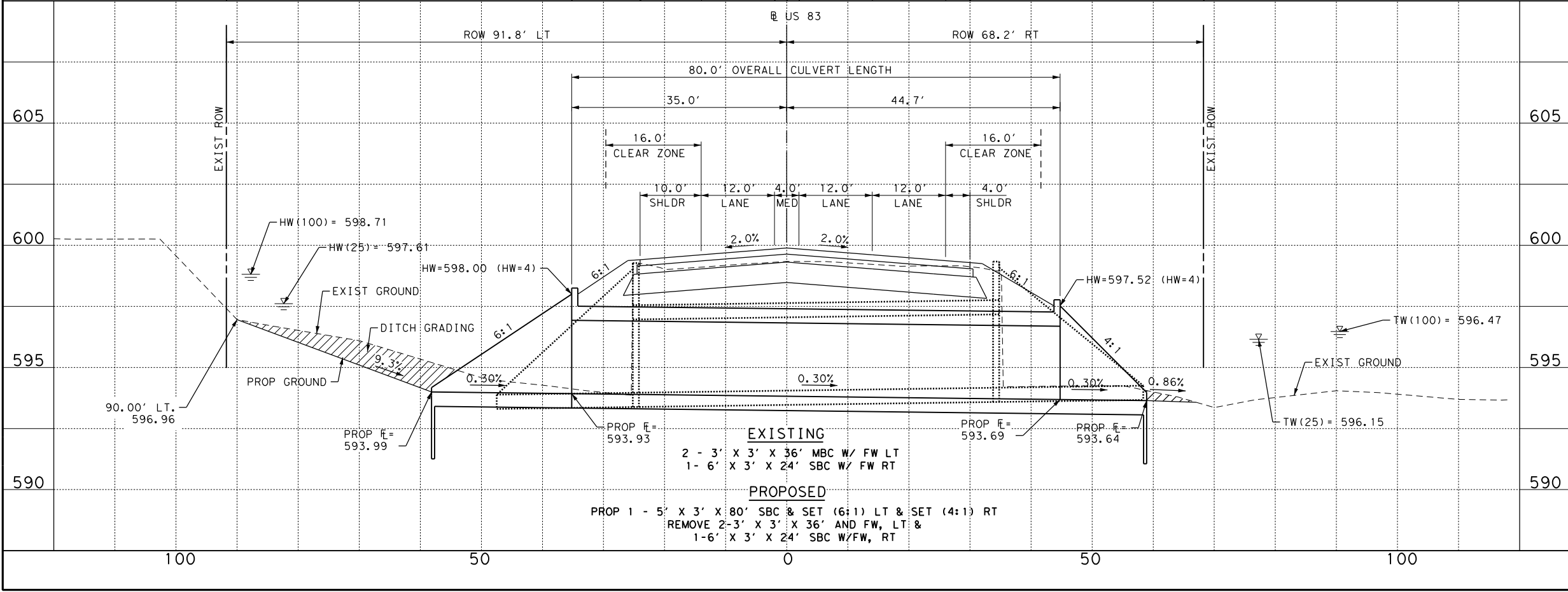


**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	91.94	127.44	91.94	127.44
HW Elev (ft MSL)	599.66	599.90	597.61	598.71
TW Elev (ft MSL)	596.15	596.47	596.15	596.47
Outlet Velocity (ft/s)	9.83	10.04	7.47	9.18

**NOTES:**

1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
3. EXISTING CULVERT WAS INSTALLED WITH A NEGATIVE SLOPE. FLOW DIRECTION INDICATED MATCHES STREAM, FLOODPLAIN, AND PROPOSED SBC SLOPE.



DA-2-17 SHEET 17 OF 23

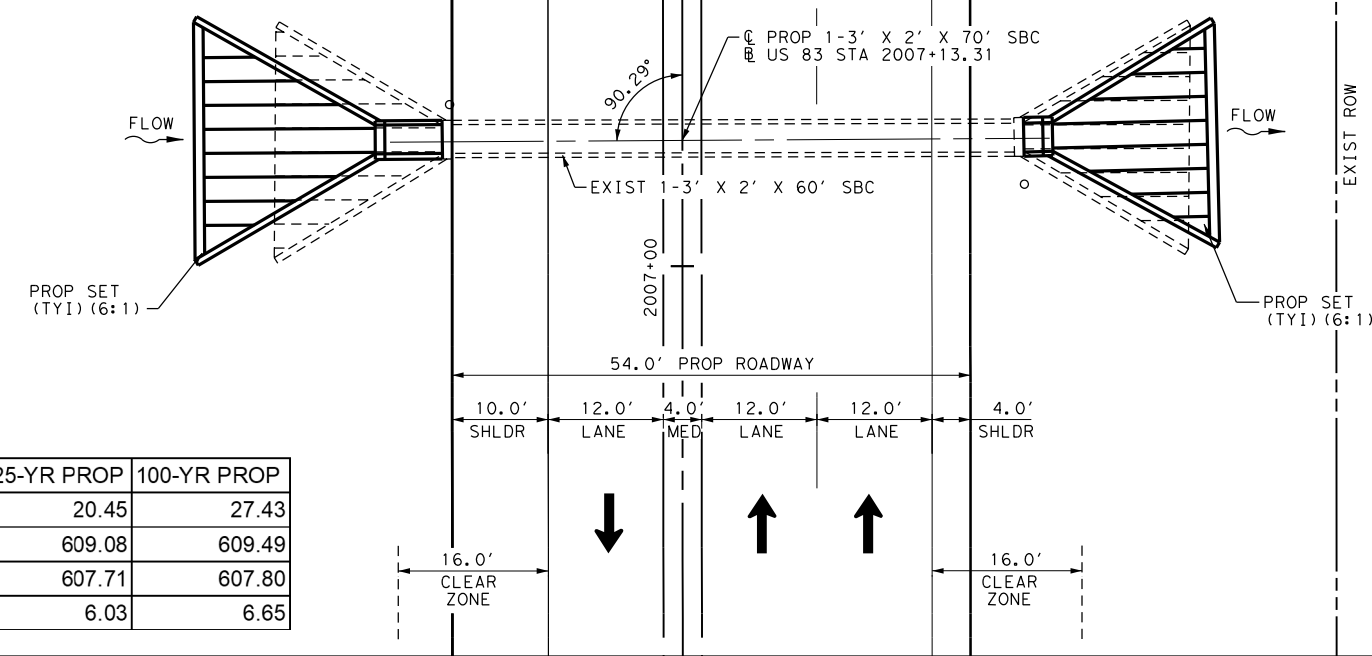
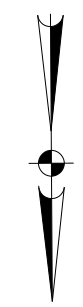
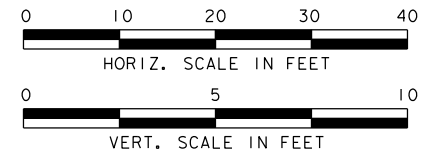
NO.	REVISIONS	BY	DATE

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**US 83  
CULVERT LAYOUT  
STA. 1989+27.74**

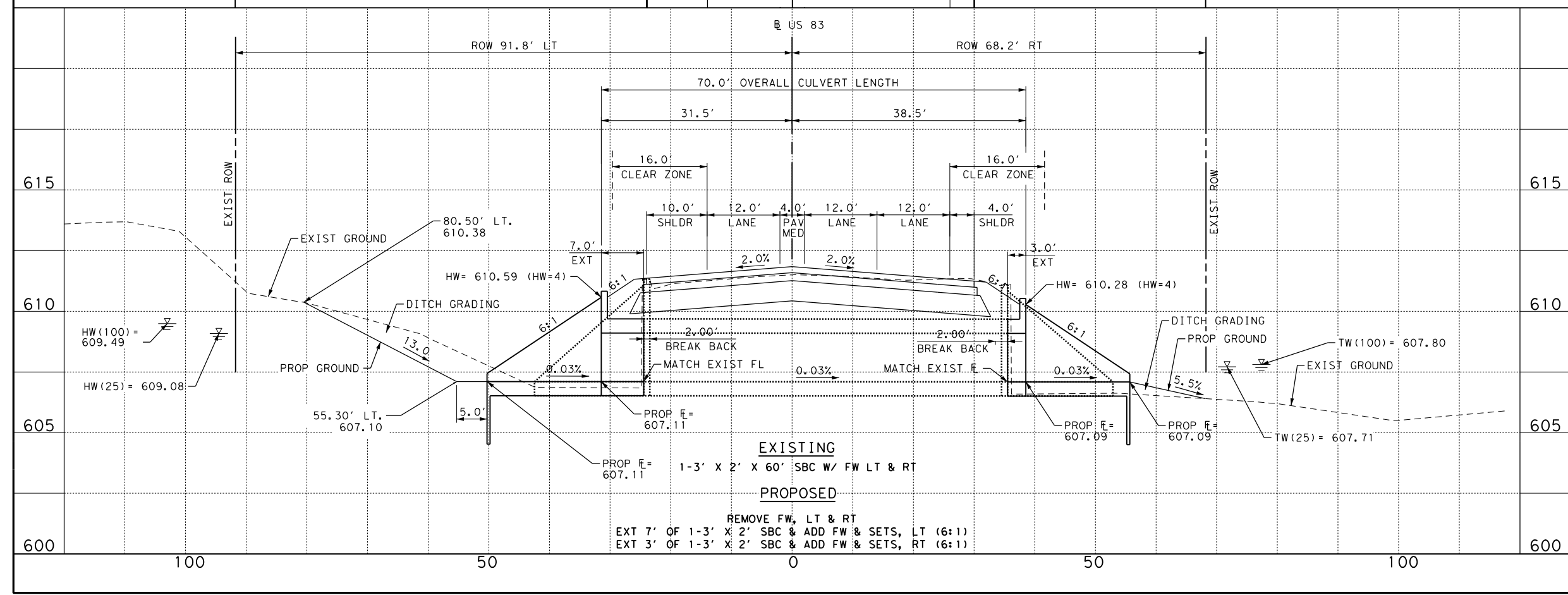
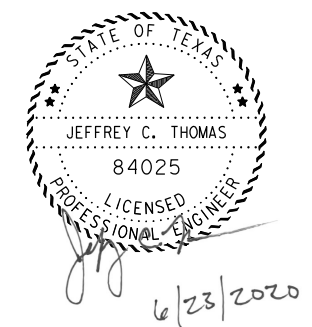
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6	C 37-8-42	199
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		US 83



- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.

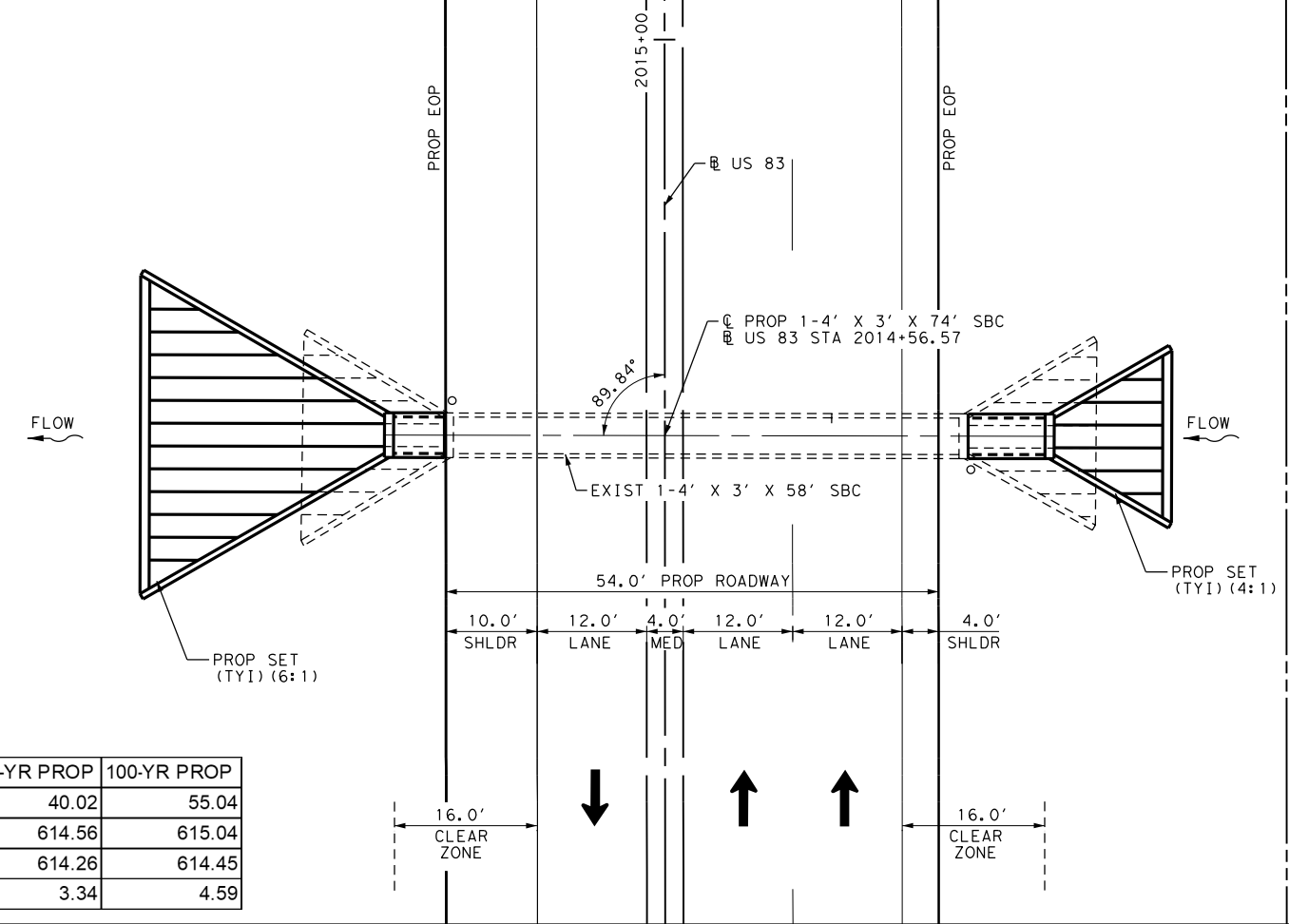
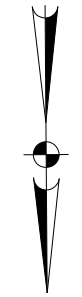
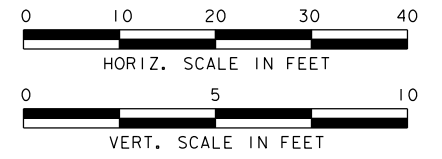
**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	20.45	27.43	20.45	27.43
HW Elev (ft MSL)	609.06	609.47	609.08	609.49
TW Elev (ft MSL)	607.71	607.80	607.71	607.80
Outlet Velocity (ft/s)	6.03	6.65	6.03	6.65



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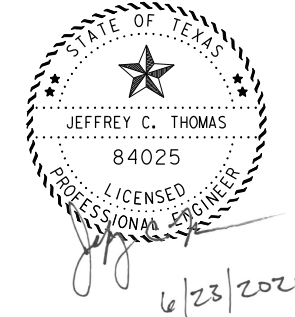
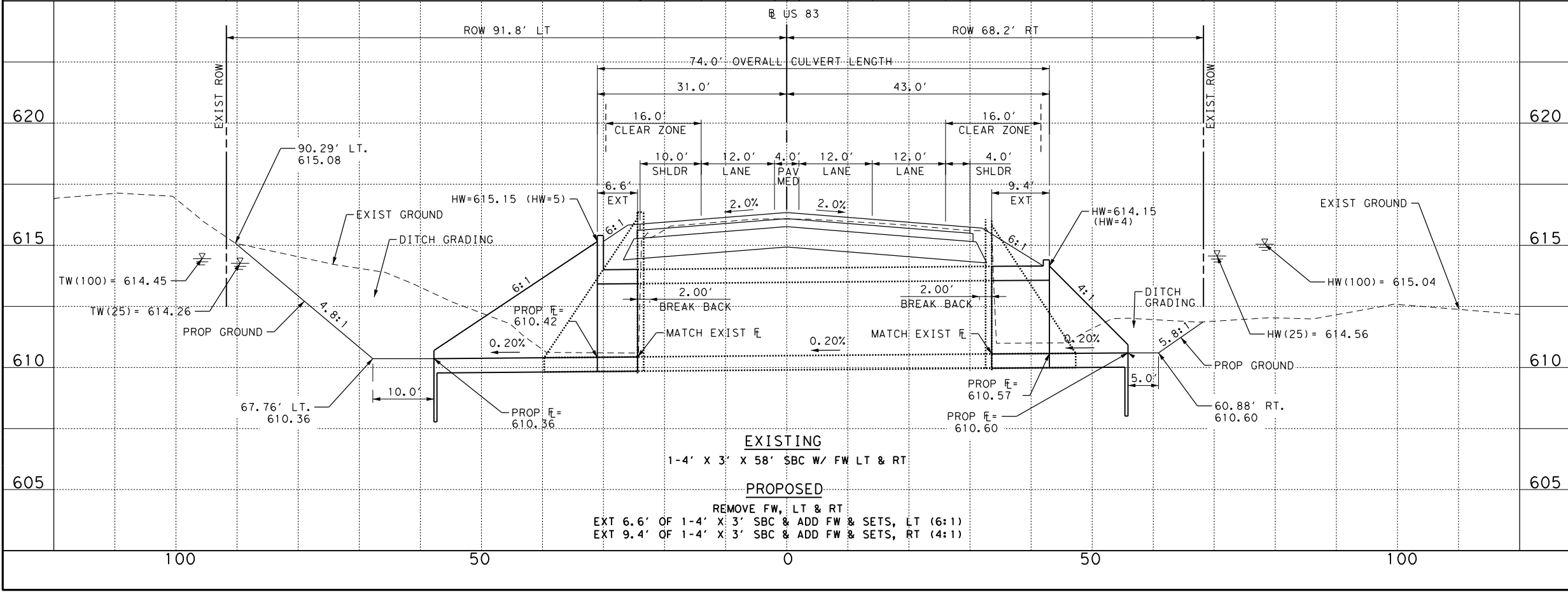
NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>CULVERT LAYOUT</b> <b>STA. 2007+13.31</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		200
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	40.02	55.04	40.02	55.04
HW Elev (ft MSL)	614.55	615.01	614.56	615.04
TW Elev (ft MSL)	614.26	614.45	614.26	614.45
Outlet Velocity (ft/s)	3.34	4.59	3.34	4.59

- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



DA-2-19 SHEET 19 OF 23

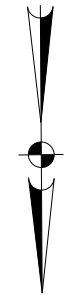
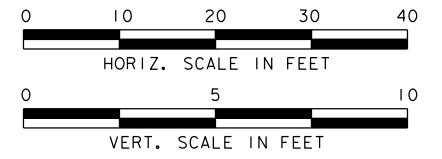
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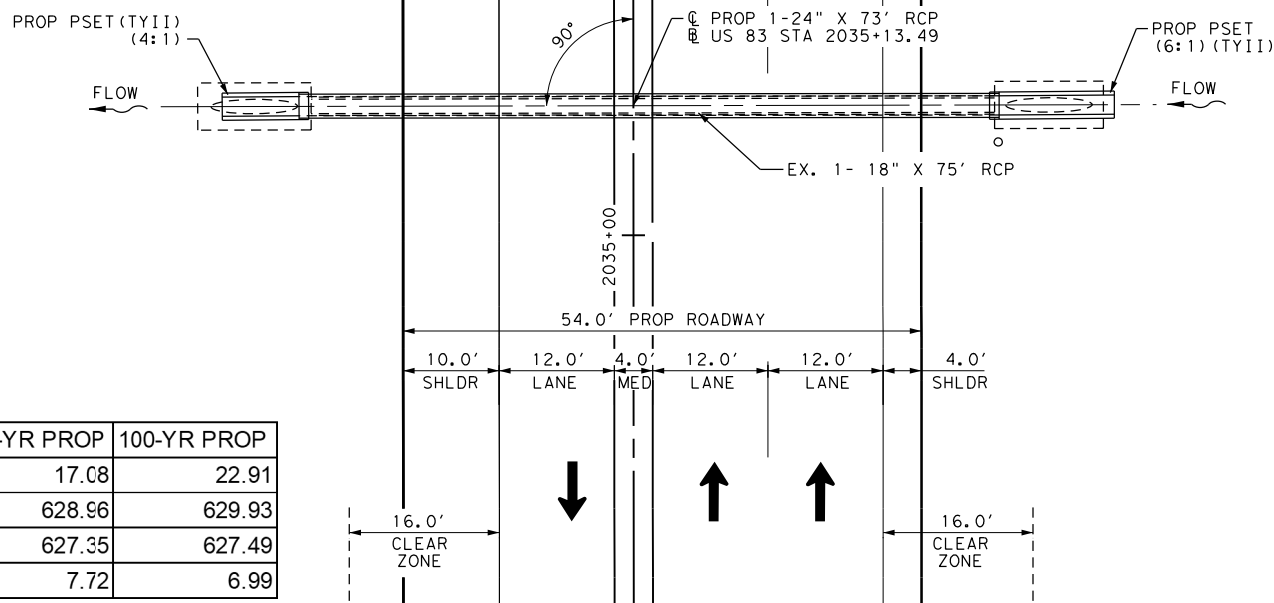
**US 83  
CULVERT LAYOUT  
STA. 2014+56.57**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	201	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



EXIST ROW

EXIST ROW

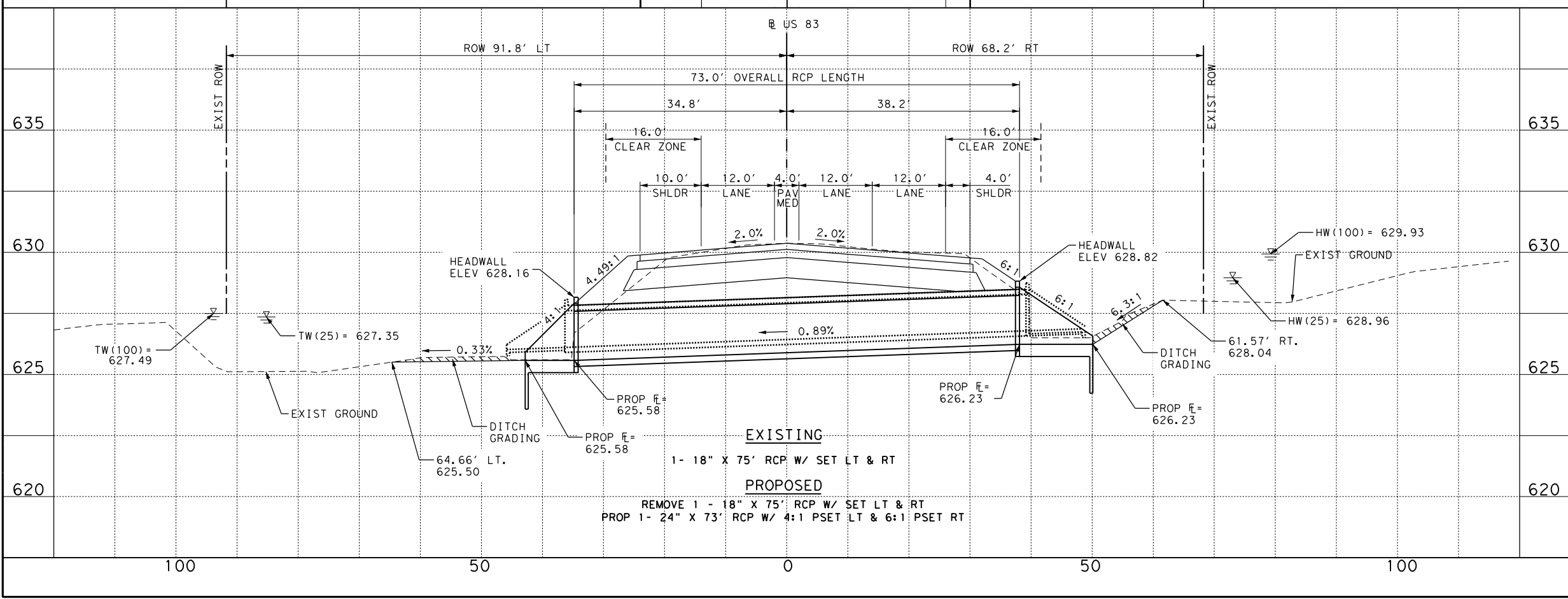
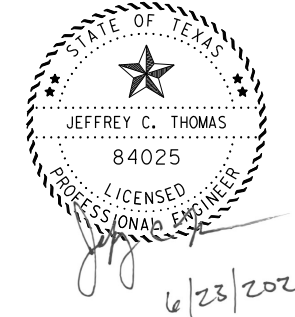


**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	17.08	22.91	17.08	22.91
HW Elev (ft MSL)	629.85	629.93	628.96	629.93
TW Elev (ft MSL)	627.35	627.49	627.35	627.49
Outlet Velocity (ft/s)	7.09	6.89	7.72	6.99

**NOTES:**

1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
3. ALL TYPE II SET'S SHALL BE PRECAST. RIPRAP APRONS WILL NOT BE REQUIRED.



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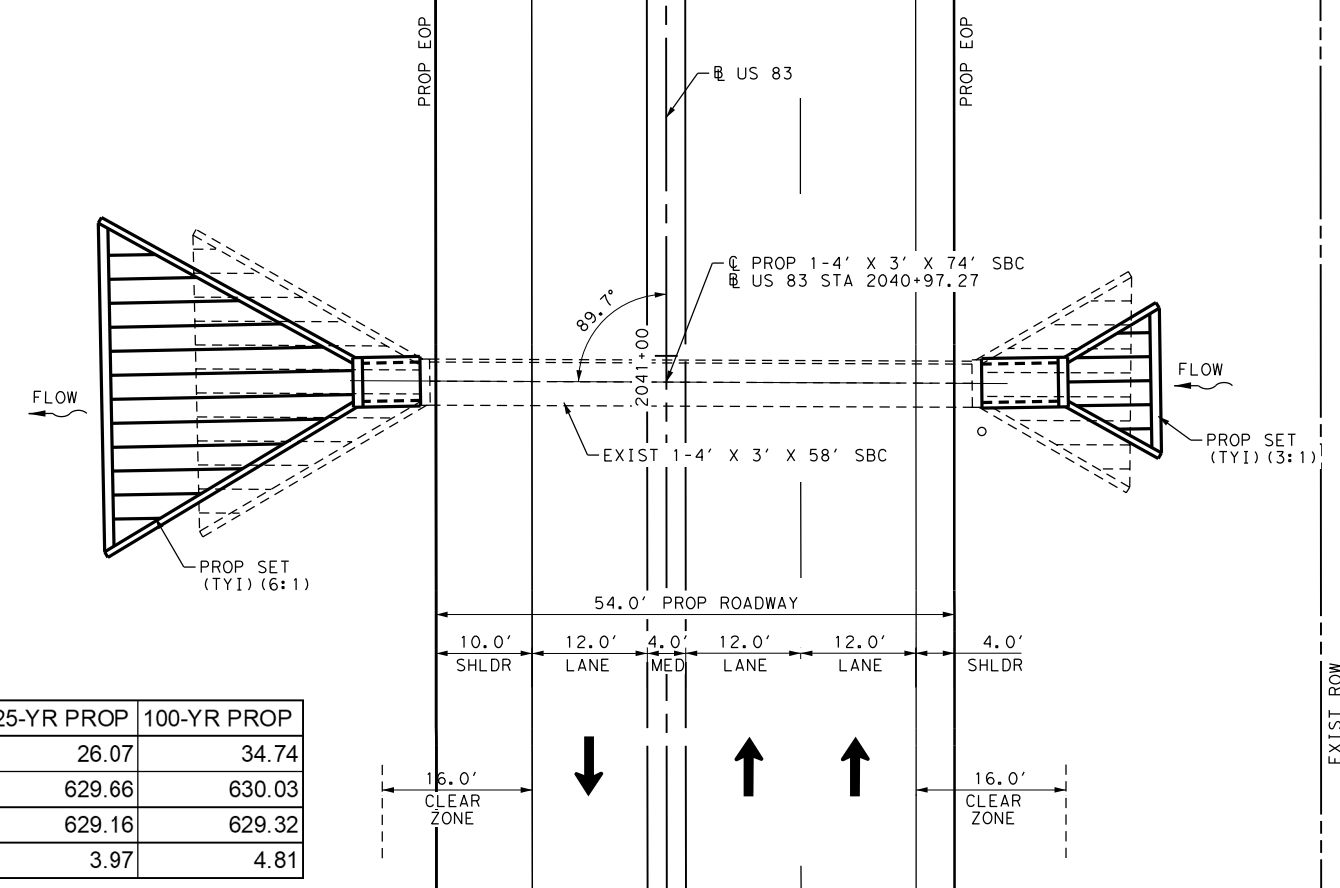
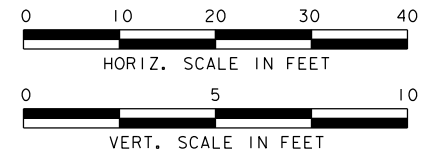
NO.	REVISIONS	BY	DATE

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**US 83  
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 STA. 2035+13.49**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	202
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83

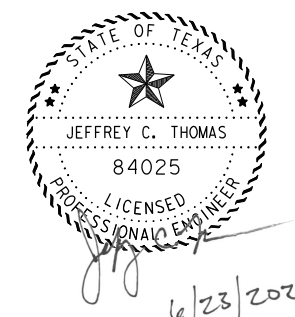
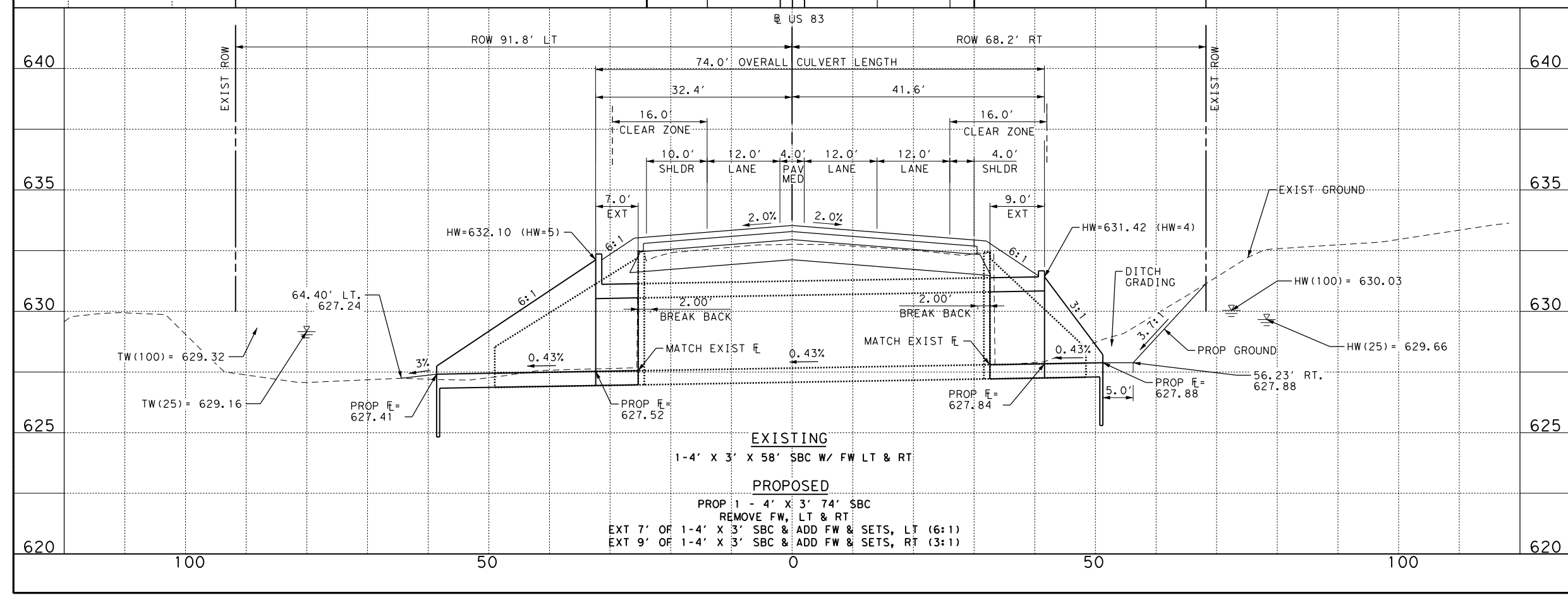


**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	26.07	34.74	26.07	34.74
HW Elev (ft MSL)	629.66	630.03	629.66	630.03
TW Elev (ft MSL)	629.16	629.32	629.16	629.32
Outlet Velocity (ft/s)	4.05	4.89	3.97	4.81

**NOTES:**

1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.



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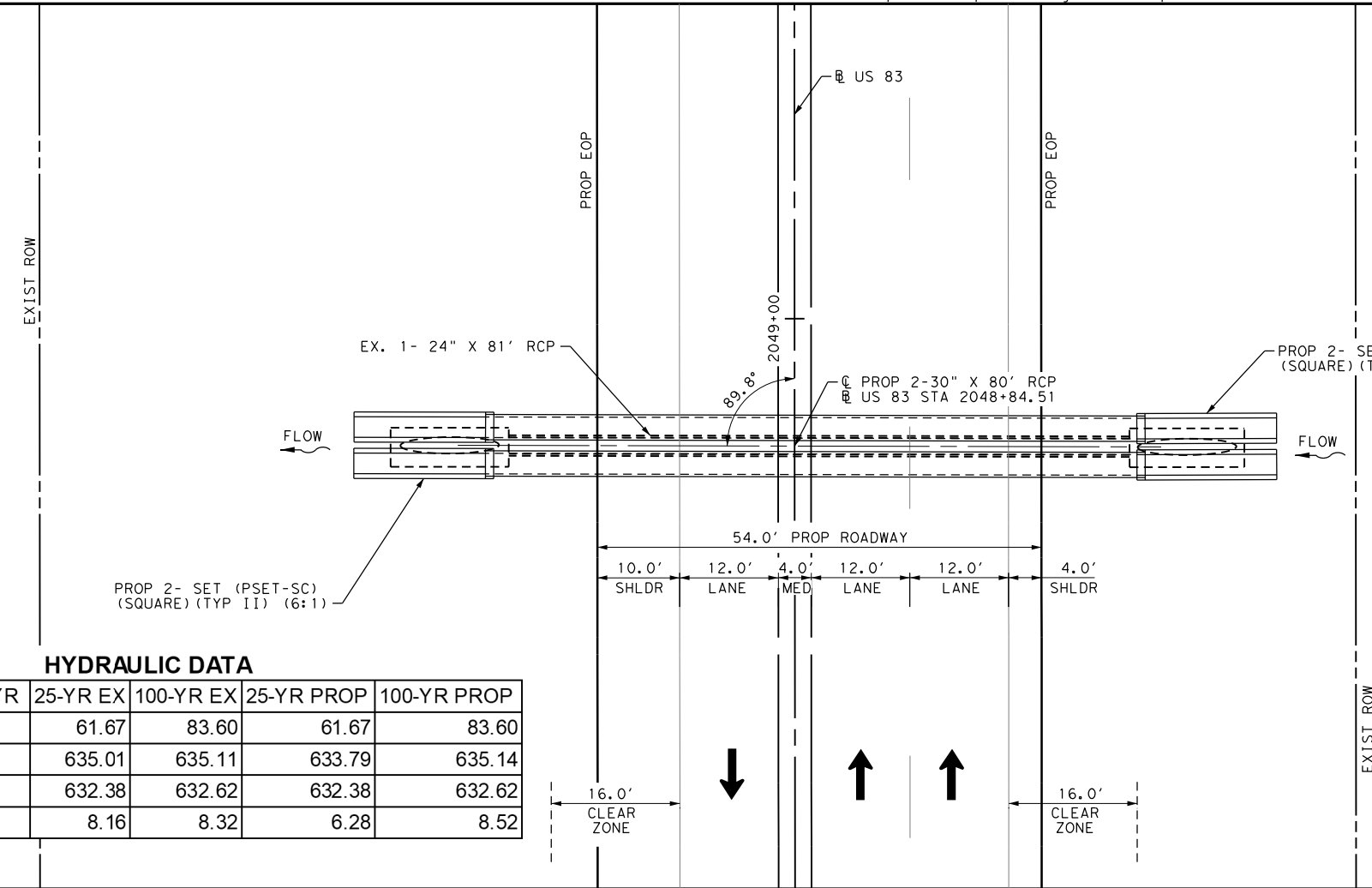
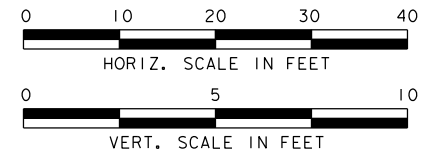
NO.	REVISIONS	BY	DATE

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**US 83  
CULVERT LAYOUT  
STA. 2040+97.27**

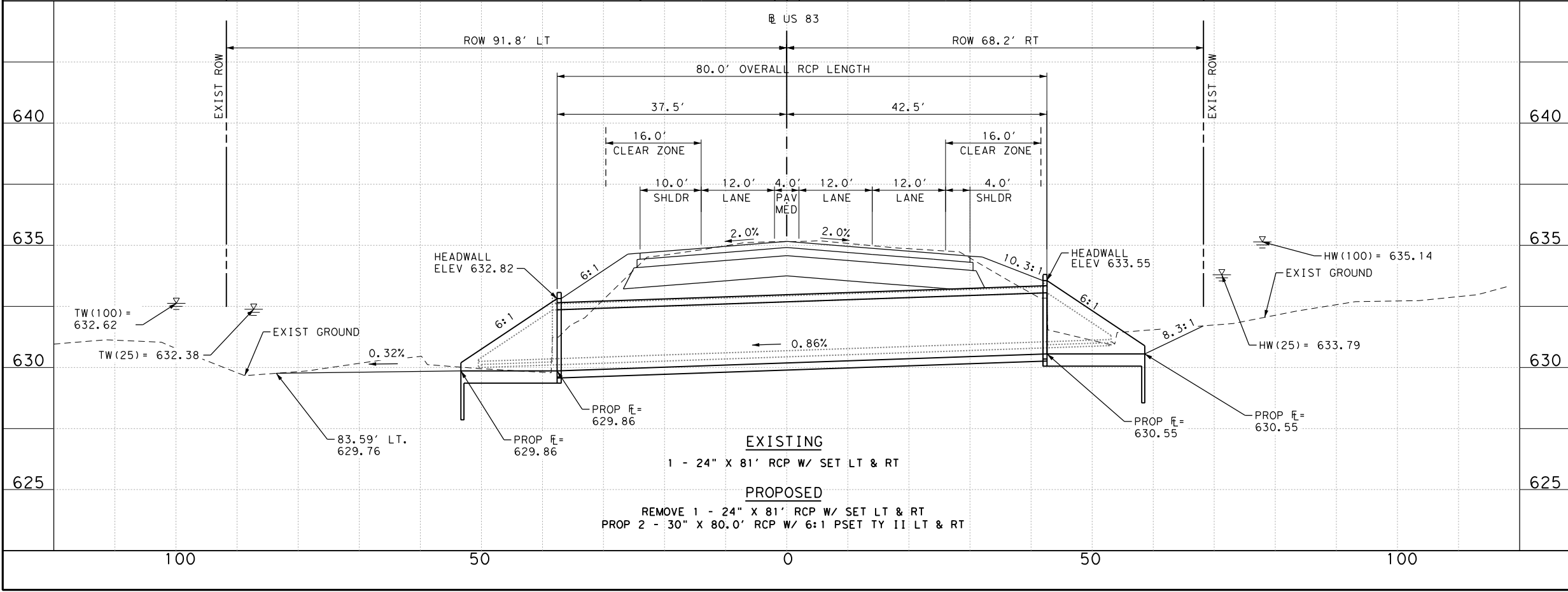
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6	C 37-8-42	203
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83



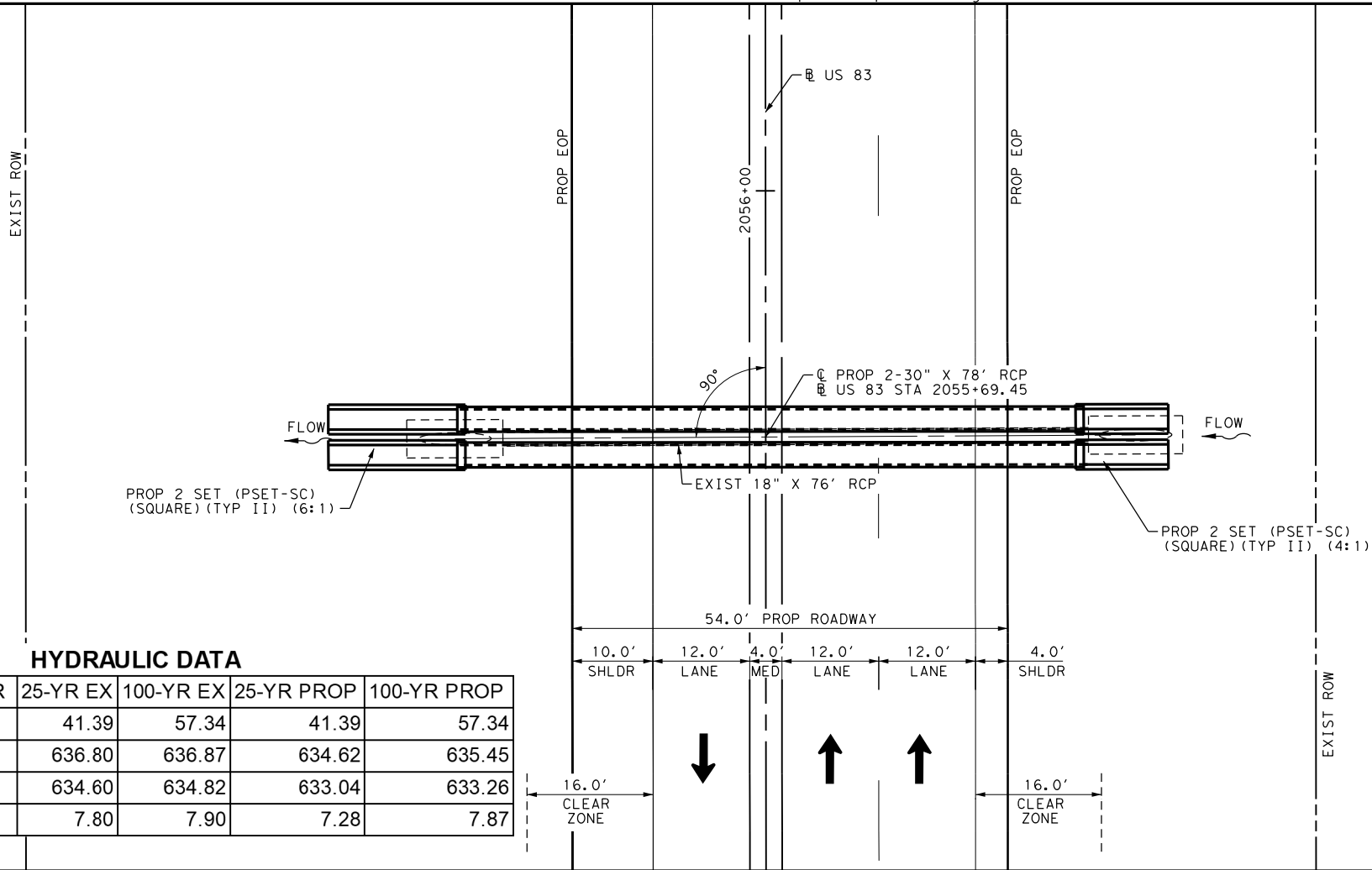
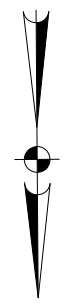
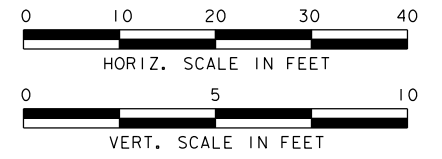
**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	61.67	83.60	61.67	83.60
HW Elev (ft MSL)	635.01	635.11	633.79	635.14
TW Elev (ft MSL)	632.38	632.62	632.38	632.62
Outlet Velocity (ft/s)	8.16	8.32	6.28	8.52

- NOTES:
1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
  2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
  3. ALL TYPE II SET'S SHALL BE PRECAST. RIPRAP APRONS WILL NOT BE REQUIRED.



DA-2-22		SHEET 22 OF 23	
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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US 83 CULVERT LAYOUT STA. 2048+84.51			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		204
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

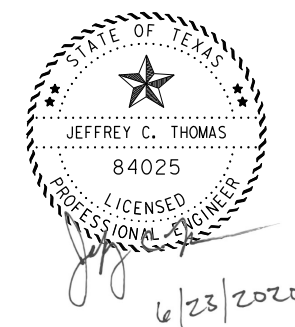
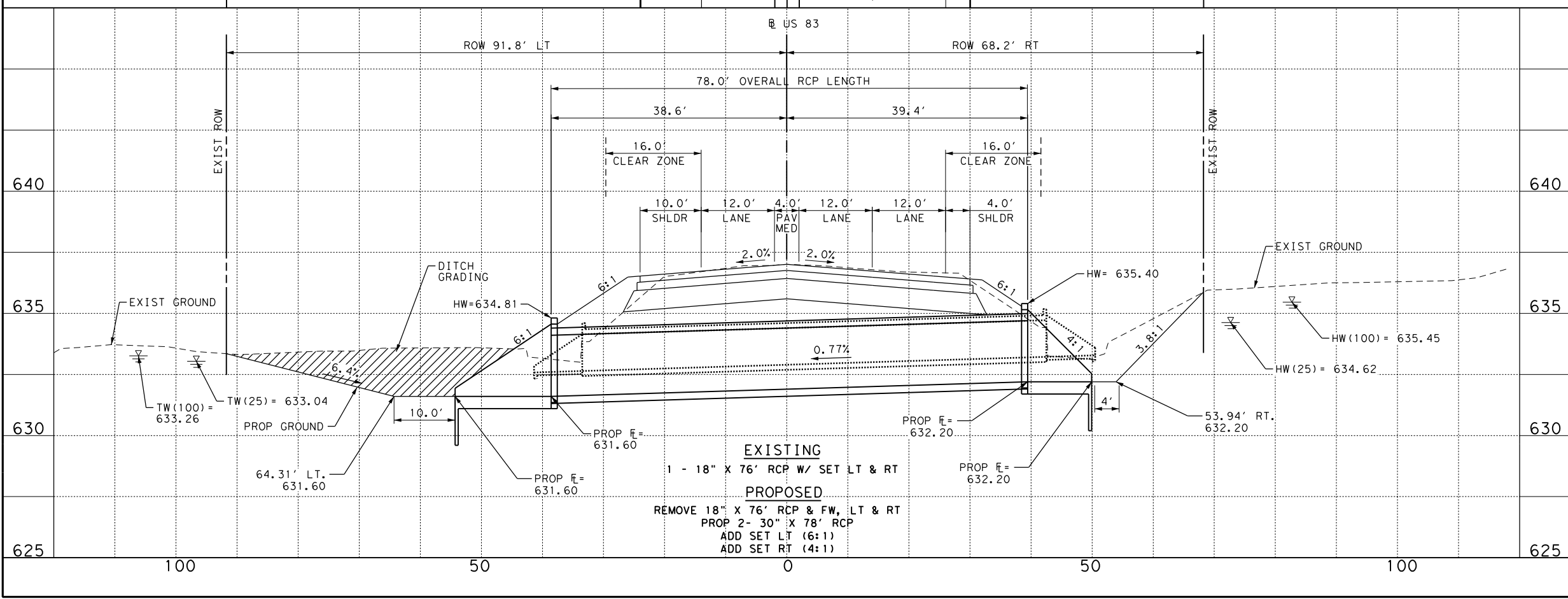


**HYDRAULIC DATA**

Design Frequency= 25-YR	25-YR EX	100-YR EX	25-YR PROP	100-YR PROP
Q (cfs)	41.39	57.34	41.39	57.34
HW Elev (ft MSL)	636.80	636.87	634.62	635.45
TW Elev (ft MSL)	634.60	634.82	633.04	633.26
Outlet Velocity (ft/s)	7.80	7.90	7.28	7.87

**NOTES:**

1. HYDRAULIC ANALYSIS: HY-8 AND RATIONAL METHOD
2. SEE ROADWAY CROSS-SECTIONS FOR DITCH LOCATIONS AND CROSS-SLOPE INFORMATION.
3. ALL TYPE II SET'S SHALL BE PRECAST. RIPRAP APRONS WILL NOT BE REQUIRED.



DA-2-23 SHEET 23 OF 23

NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
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**US 83  
 CULVERT LAYOUT  
 STA. 2055+69.45**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	205
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83





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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 (1) Height of Wingwall (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (CY) (2)	Class "C" Conc (Wingwall) (CY) (3)	Total Wingwall Area (SF)
Sta 2014+57 (Lt)	1 ~ 4' x 3'	2.3'	SCC-3&4	SETB-FW-0	0°	6:1	7"	7"	1.402'	4.729'	26.375'	15.228'	30.455'	N/A	34.455'	6.4	0.3	12.8	N/A
Sta 2014+57 (Rt)	1 ~ 4' x 3'	2.3'	SCC-3&4	SETB-FW-0	0°	4:1	7"	7"	0.250'	3.583'	13.000'	7.506'	15.011'	N/A	19.011'	1.7	0.0	5.6	N/A
Sta 2040+97 (Lt)	1 ~ 4' x 3'	2.3'	SCC-3&4	SETB-FW-0	0°	6:1	7"	7"	1.255'	4.583'	25.500'	14.722'	29.445'	N/A	33.445'	6.0	0.2	12.4	N/A
Sta 2040+97 (Rt)	1 ~ 4' x 3'	2.3'	SCC-3&4	SETB-FW-0	0°	3:1	7"	7"	0.250'	3.583'	9.750'	5.629'	11.258'	N/A	15.258'	1.0	0.0	4.2	N/A

**NOTES:**

Skew = 0° on SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standard sheets;  
30° maximum for safety end treatment

SL:1 = Horizontal : 1 Vertical

- Side slope at culvert for flared or straight wingwalls.
- Channel slope for parallel wingwalls.
- Slope must be 3:1 or flatter for safety end treatments.

T = Box culvert top slab thickness. Dimension can be found on the applicable box culvert standard sheet.

U = Box culvert wall thickness. Dimension can be found on the applicable box culvert standard sheet.

C = Curb height

See applicable wing or end treatment standard sheets for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.

Hw = Height of wingwall

A = Distance from face of curb to end of wingwall (not applicable to parallel or straight wingwalls)

B = Offset of end of wingwall (not applicable to parallel or straight wingwalls)

Lw = Length of longest wingwall.

Ltw = Length of culvert toewall (not applicable when using riprap apron)

Atw = Length of anchor toewall (applicable to safety end treatment only)

Total Wingwall Area = Wingwall area in sq. ft. for two wingwalls (one structure end) if Lt or Rt.  
Area for four wingwalls (two structure ends) if Both.

① Round the wall heights shown to the nearest foot for bidding purposes.

② Concrete volume shown is for box culvert curb only. For curbs using the Box Culvert Rail Mounting Details (RAC) standard sheet quantities shown must be increased by a factor of 2.25. If Class S concrete is required for the top slab of the culvert, also provide Class S concrete for the curb. Curb concrete is considered part of the Box Culvert for payment.

③ Concrete volume shown is total of wings, footings, culvert toewall (if any), anchor toewalls (if any) and wingwall toewalls. Riprap aprons, culverts, and curb quantities are not included.

④ Regardless of the type of culvert shown on this sheet, the Contractor has the option of furnishing cast-in-place or precast culverts unless otherwise shown elsewhere on the plans. If the Contractor elects to provide culverts of a different type than those shown on this sheet, it is the Contractor's responsibility to make the necessary adjustments to the dimensions and quantities shown.

**SPECIAL NOTE:**

This sheet is a supplement to the box culvert standards. It is to be filled out by the culvert specifier and provides dimensions for the construction of the box culvert wingwalls and safety end treatments.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.



Bridge Division Standard

**BOX CULVERT SUPPLEMENT WINGS AND END TREATMENTS**

BCS

FILE: bcsstd1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT 08	SECT 08	JOB 042, ETC.	HIGHWAY US 83
REVISIONS				
	DIST LRD	COUNTY DIMMIT	SHEET NO. 207	

**TABLE OF DIMENSIONS AND REINFORCING STEEL**  
(Wings for one structure end)

Maximum Wingwall Height Hw	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing length (2-wings)	
	W	X	Y	Z	Bars J1		Bars J2			
					Size	Spa	Size	Spa		
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

**TABLE OF WINGWALL REINFORCING**  
(2-wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

**TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES**

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

**WING DIMENSION FORMULAS:**

(All values are in feet.)

$Hw = H + T + C - 0.250'$   
 $A = (Hw - 0.333') (SL)$   
 $B = (A) \text{ tangent } (30^\circ)$   
 $Lw = (A) \div \text{cosine } (30^\circ)$

For cast-in-place culverts:  
 $Ltw = (N) (S) + (N + 1) (U)$

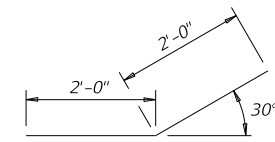
For precast culverts:  
 $Ltw = (N) (2U + S) + (N - 1) (0.5')$

Total wingwall area (two wings ~ SF) =  $(Hw + 0.333') (Lw)$

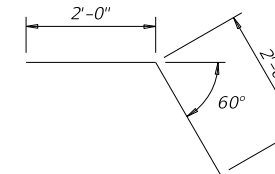
Hw = Height of wingwall  
 SL:1 = Side slope ratio (horizontal:1 vertical)  
 Lw = Length of wingwall  
 Ltw = Culvert toewall length  
 N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.

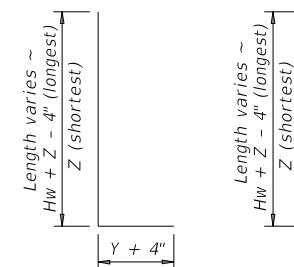
- ① Extend Bars P 3'-0" minimum into bottom slab of box culvert.
- ② Adjust as necessary to maintain 1 #2" clear cover and 4" minimum between bars.
- ③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.
- ④ Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
- ⑤ When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6' wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
- ⑥ At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
- ⑦ 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.
- ⑧ 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.



BARS D

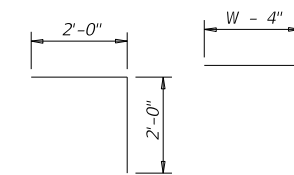


BARS R



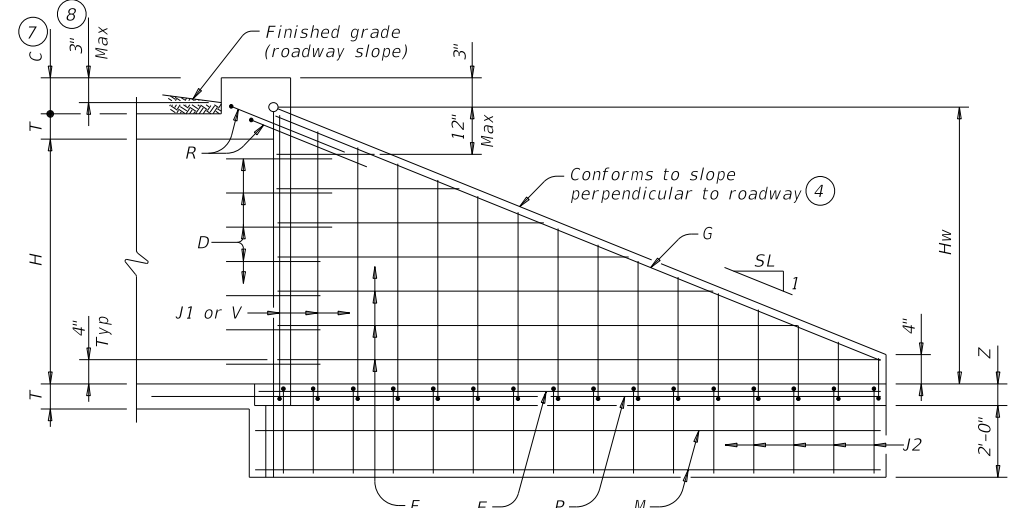
BARS J1

BARS V



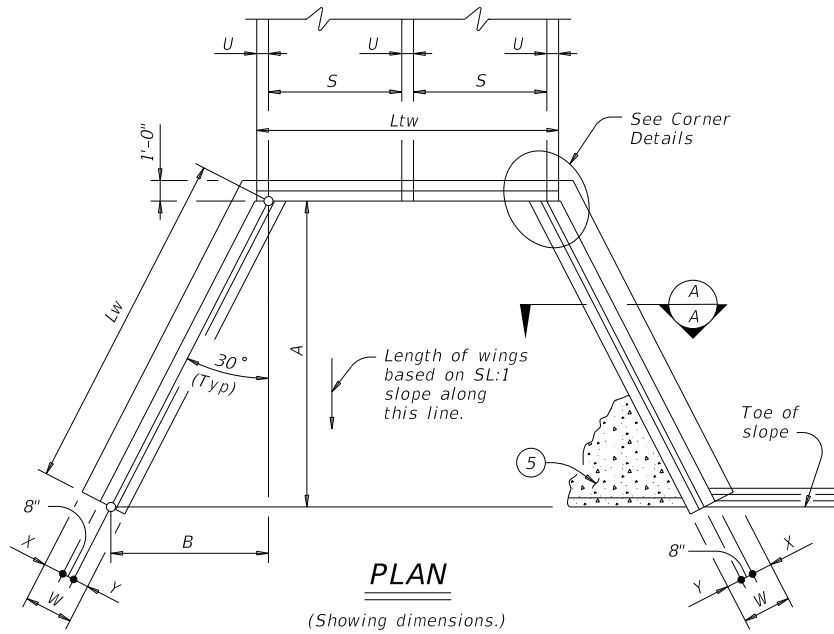
BARS L

BARS J2



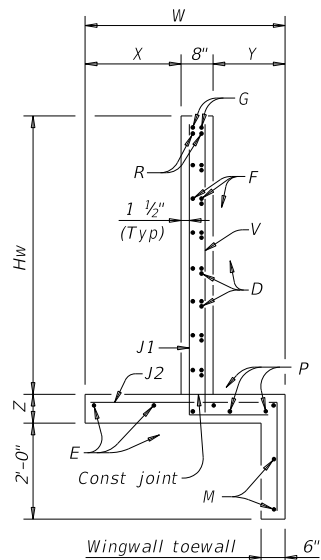
**INSIDE ELEVATION**

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

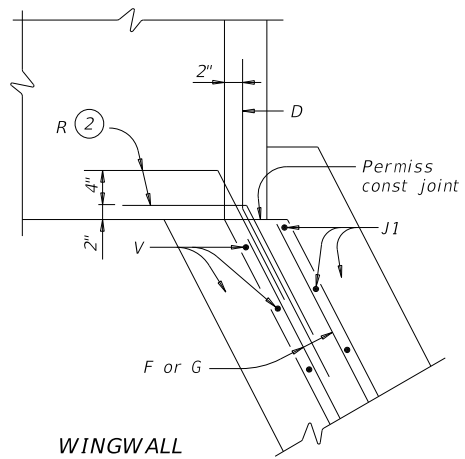


**PLAN**

(Showing dimensions.)



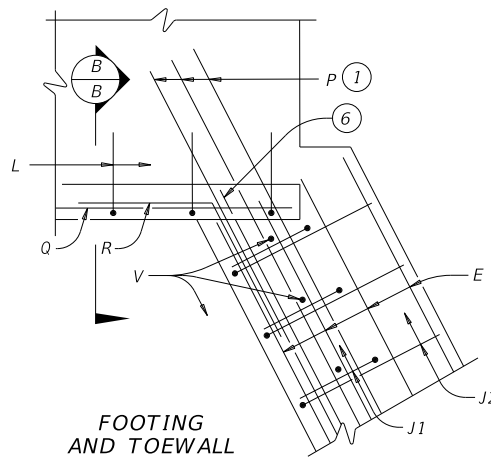
**SECTION A-A**



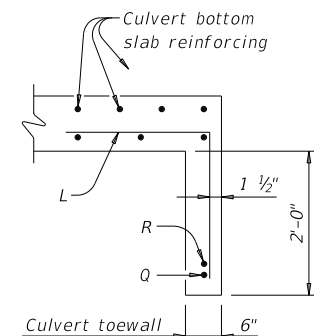
**WINGWALL**

**CORNER DETAILS**

(Culvert and culvert toewall reinforcing not shown for clarity.)



**FOOTING AND TOEWALL**



**SECTION B-B**

**MATERIAL NOTES:**

Provide Class C concrete (f'c=3,600 psi).  
 Provide Grade 60 reinforcing steel.  
 Provide galvanized reinforcing steel if required elsewhere in the plans.  
 In riprap concrete synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

**GENERAL NOTES:**

Designed according to AASHTO LFRD Bridge Design Specifications.  
 When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.  
 See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.  
 The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

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



**CONCRETE WINGWALLS WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS**

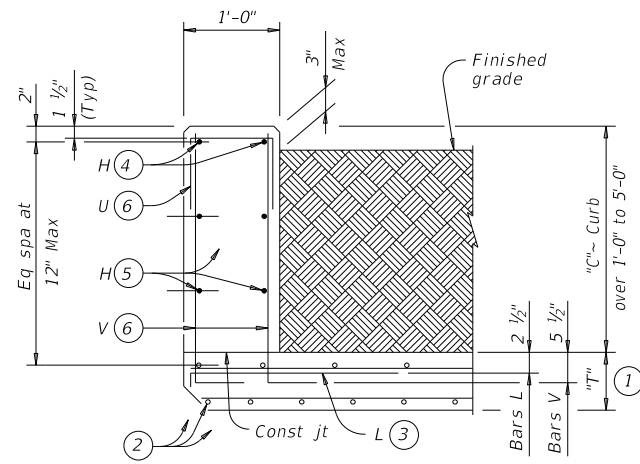
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DIST: LRD	COUNTY: DIMMIT	SHEET NO: 208		

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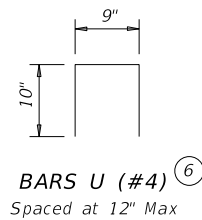
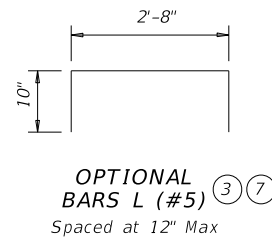
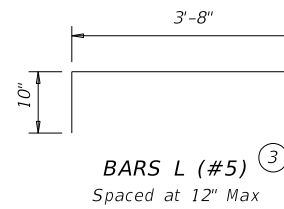
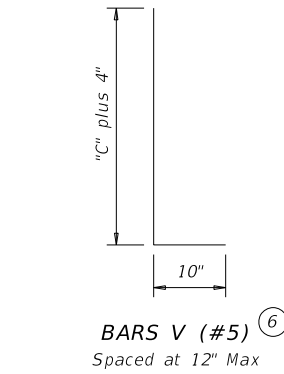
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**TYPICAL SECTION**

Used for curbs over 1'-0" to 5'-0"



- ① "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.
- ② Adjust normal culvert slab bars as necessary to clear obstructions.
- ③ Place bars L as shown. Tilt hook as necessary to maintain cover.
- ④ Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
- ⑤ Additional bars H(#4) as required to maintain 12" Max spacing.
- ⑥ Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
- ⑦ Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
- ⑧ Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES <sup>⑧</sup>		
Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

**CONSTRUCTION NOTES:**  
 Adjust reinforcing steel as necessary to provide 1 1/4" cover.  
 For vehicle safety, top of the curb must not project more than 3" above the finished grade.

**MATERIAL NOTES:**  
 Provide Grade 60 reinforcing steel.  
 Provide galvanized reinforcing steel if required elsewhere in the plans.  
 Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs.  
 Provide bar laps, where required, as follows:  
 • Uncoated or galvanized ~ #4 = 1'-8" Min

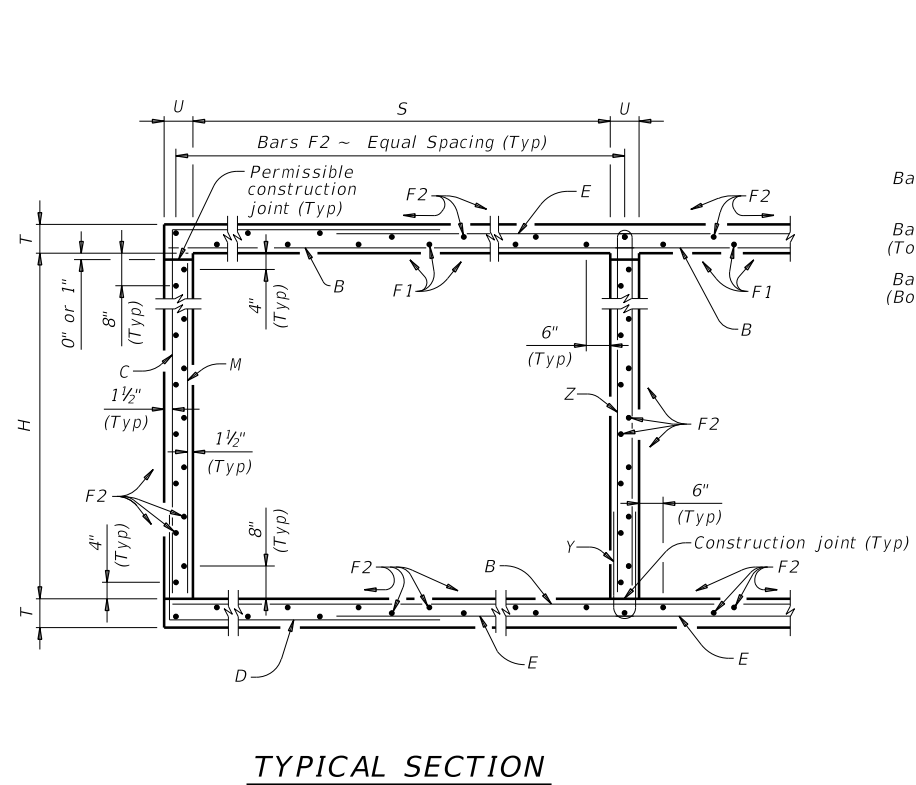
**GENERAL NOTES:**  
 Designed according to AASHTO LRFD Bridge Design Specifications.  
 These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.  
 This Curb is considered as part of the Box Culvert for payment.

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

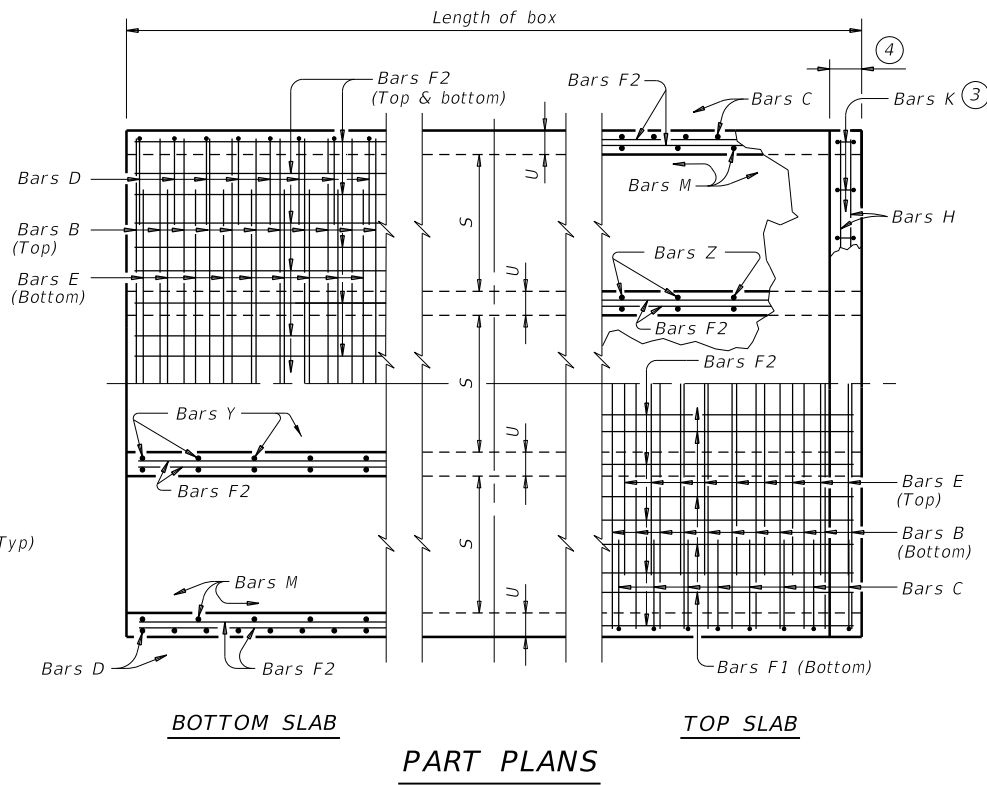
		<b>Bridge Division Standard</b>	
<b>EXTENDED CURB DETAILS</b> FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL			
<b>ECD</b>			
FILE: ecdside1-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT
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REVISIONS	0037	08	042, ETC.
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LRD	DIMMIT		209

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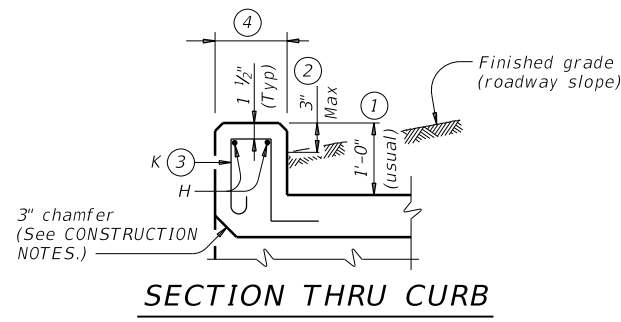
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**TYPICAL SECTION**

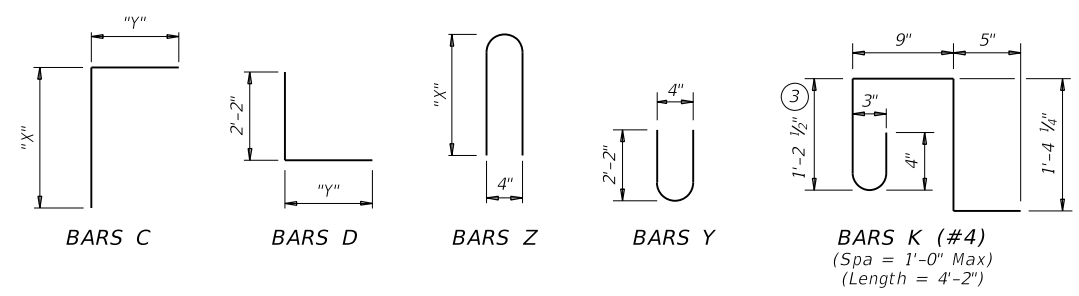


**BOTTOM SLAB**      **TOP SLAB**  
**PART PLANS**



**SECTION THRU CURB**

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
2'-0"	2'-6 1/2"	3'-0"
3'-0"	3'-6 1/2"	3'-0"
4'-0"	4'-0 1/2"	3'-0"



- 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

**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.

Use this standard only when lengthening existing multiple box culverts.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation  
 Bridge Division Standard

**MULTIPLE BOX CULVERTS CAST-IN-PLACE**  
**4'-0" SPAN**  
**0' TO 23' FILL**  
**FOR LENGTHENING ONLY**  
**MC-4-23**

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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DISCLAIMER:  
 The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or the use of the standard in any project.

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)	Reinf (Lb)
2	4'-0"	2'-0"	8"	7"	108	#5	9"	9'-6"	1,070	162	#4	6"	5'-8"	613	5'-4"	577	108	#5	9"	7'-4"	826	6	18"	39'-9"	159	36	18"	39'-9"	956	108	9"	2'-0"	144	54	9"	4'-7"	165	5'-3"	189	9'-6"	25	22	61	0.611	117.5	0.7	86	25.2	4,785
3	4'-0"	2'-0"	8"	7"	108	#5	9"	14'-1"	1,586	162	#4	6"	5'-8"	613	5'-4"	577	108	#5	9"	11'-11"	1,342	9	18"	39'-9"	239	51	18"	39'-9"	1,354	108	9"	2'-0"	144	108	9"	4'-7"	331	5'-3"	379	14'-1"	38	32	89	0.881	164.1	1.1	127	36.3	6,692
4	4'-0"	2'-0"	8"	7"	108	#5	9"	18'-8"	2,103	162	#4	6"	5'-8"	613	5'-4"	577	108	#5	9"	16'-6"	1,859	12	18"	39'-9"	319	66	18"	39'-9"	1,752	108	9"	2'-0"	144	162	9"	4'-7"	496	5'-3"	568	18'-8"	50	40	111	1.150	210.8	1.4	161	47.4	8,592
5	4'-0"	2'-0"	8"	7"	108	#5	9"	23'-3"	2,619	162	#4	6"	5'-8"	613	5'-4"	577	108	#5	9"	21'-1"	2,375	15	18"	39'-9"	398	81	18"	39'-9"	2,151	108	9"	2'-0"	144	216	9"	4'-7"	661	5'-3"	758	23'-3"	62	50	139	1.420	257.4	1.7	201	58.5	10,497
6	4'-0"	2'-0"	8"	7"	108	#5	9"	27'-10"	3,135	162	#4	6"	5'-8"	613	5'-4"	577	108	#5	9"	25'-8"	2,891	18	18"	39'-9"	478	96	18"	39'-9"	2,549	108	9"	2'-0"	144	270	9"	4'-7"	827	5'-3"	947	27'-10"	74	58	161	1.689	304.0	2.1	235	69.6	12,396
2	4'-0"	3'-0"	8"	7"	108	#5	9"	9'-6"	1,070	162	#4	6"	6'-8"	721	5'-4"	577	108	#5	9"	7'-4"	826	6	18"	39'-9"	159	42	18"	39'-9"	1,115	108	9"	3'-0"	216	54	9"	4'-7"	165	7'-3"	262	9'-6"	25	22	61	0.676	127.8	0.7	86	27.8	5,197
3	4'-0"	3'-0"	8"	7"	108	#5	9"	14'-1"	1,586	162	#4	6"	6'-8"	721	5'-4"	577	108	#5	9"	11'-11"	1,342	9	18"	39'-9"	239	59	18"	39'-9"	1,567	108	9"	3'-0"	216	108	9"	4'-7"	331	7'-3"	523	14'-1"	38	32	89	0.967	177.6	1.1	127	39.7	7,229
4	4'-0"	3'-0"	8"	7"	108	#5	9"	18'-8"	2,103	162	#4	6"	6'-8"	721	5'-4"	577	108	#5	9"	16'-6"	1,859	12	18"	39'-9"	319	76	18"	39'-9"	2,018	108	9"	3'-0"	216	162	9"	4'-7"	496	7'-3"	785	18'-8"	50	40	111	1.258	227.4	1.4	161	51.7	9,255
5	4'-0"	3'-0"	8"	7"	108	#5	9"	23'-3"	2,619	162	#4	6"	6'-8"	721	5'-4"	577	108	#5	9"	21'-1"	2,375	15	18"	39'-9"	398	93	18"	39'-9"	2,469	108	9"	3'-0"	216	216	9"	4'-7"	661	7'-3"	1,046	23'-3"	62	50	139	1.549	277.1	1.7	201	63.7	11,283
6	4'-0"	3'-0"	8"	7"	108	#5	9"	27'-10"	3,135	162	#4	6"	6'-8"	721	5'-4"	577	108	#5	9"	25'-8"	2,891	18	18"	39'-9"	478	110	18"	39'-9"	2,921	108	9"	3'-0"	216	270	9"	4'-7"	827	7'-3"	1,308	27'-10"	74	58	161	1.841	326.9	2.1	235	75.7	13,309
2	4'-0"	4'-0"	8"	7"	108	#5	9"	9'-6"	1,070	162	#4	6"	7'-8"	830	5'-4"	577	108	#5	9"	7'-4"	826	6	18"	39'-9"	159	42	18"	39'-9"	1,115	108	9"	4'-0"	289	54	9"	4'-7"	165	9'-3"	334	9'-6"	25	22	61	0.741	134.1	0.7	86	30.4	5,451
3	4'-0"	4'-0"	8"	7"	108	#5	9"	14'-1"	1,586	162	#4	6"	7'-8"	830	5'-4"	577	108	#5	9"	11'-11"	1,342	9	18"	39'-9"	239	59	18"	39'-9"	1,567	108	9"	4'-0"	289	108	9"	4'-7"	331	9'-3"	667	14'-1"	38	32	89	1.053	185.7	1.1	127	43.2	7,555
4	4'-0"	4'-0"	8"	7"	108	#5	9"	18'-8"	2,103	162	#4	6"	7'-8"	830	5'-4"	577	108	#5	9"	16'-6"	1,859	12	18"	39'-9"	319	76	18"	39'-9"	2,018	108	9"	4'-0"	289	162	9"	4'-7"	496	9'-3"	1,001	18'-8"	50	40	111	1.366	237.3	1.4	161	56.0	9,653
5	4'-0"	4'-0"	8"	7"	108	#5	9"	23'-3"	2,619	162	#4	6"	7'-8"	830	5'-4"	577	108	#5	9"	21'-1"	2,375	15	18"	39'-9"	398	93	18"	39'-9"	2,469	108	9"	4'-0"	289	216	9"	4'-7"	661	9'-3"	1,335	23'-3"	62	50	139	1.679	288.8	1.7	201	68.9	11,754
6	4'-0"	4'-0"	8"	7"	108	#5	9"	27'-10"	3,135	162	#4	6"	7'-8"	830	5'-4"	577	108	#5	9"	25'-8"	2,891	18	18"	39'-9"	478	110	18"	39'-9"	2,921	108	9"	4'-0"	289	270	9"	4'-7"	827	9'-3"	1,668	27'-10"	74	58	161	1.992	340.4	2.1	235	81.8	13,851

Use this standard only when lengthening existing multiple box culverts.

HL93 LOADING SHEET 2 OF 2



**Texas Department of Transportation**

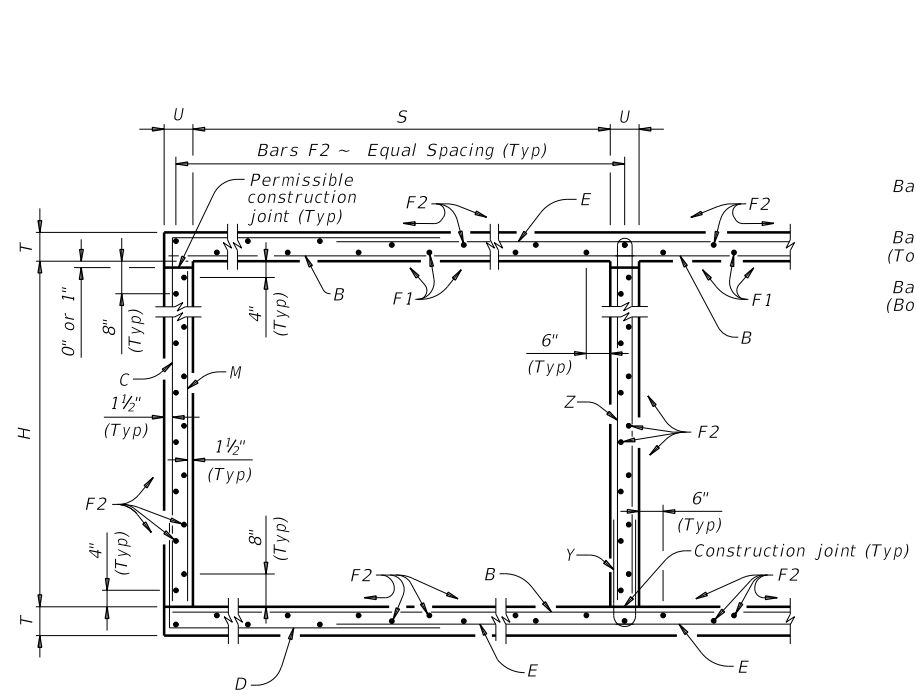
**MULTIPLE BOX CULVERTS  
 CAST-IN-PLACE  
 4'-0" SPAN  
 0' TO 23' FILL  
 FOR LENGTHENING ONLY  
 MC-4-23**

*Bridge Division Standard*

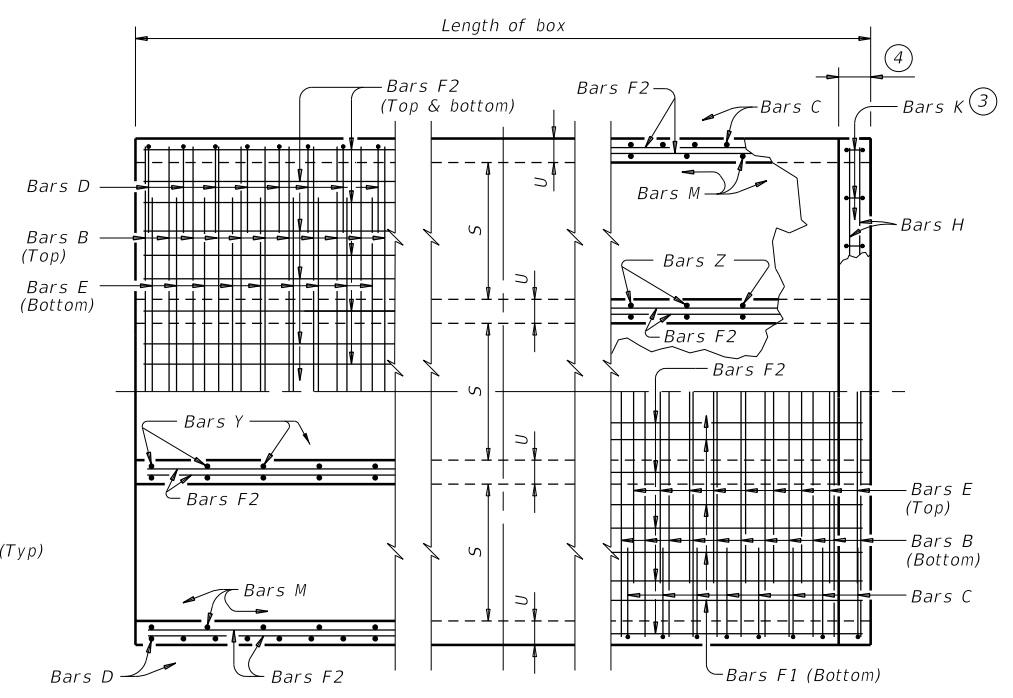
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		DIST	COUNTY	SHEET NO.
		LRD	DIMMIT	211

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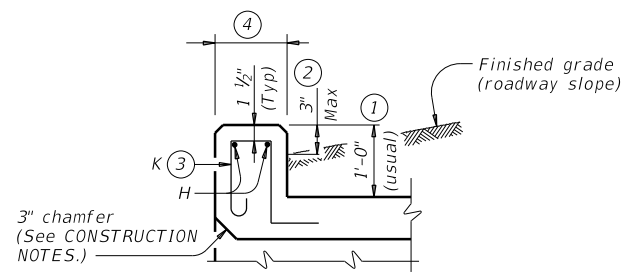


**TYPICAL SECTION**



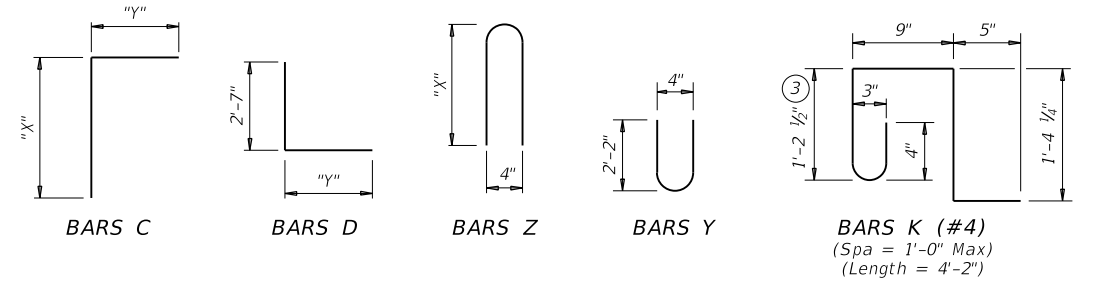
**BOTTOM SLAB**      **TOP SLAB**

**PART PLANS**



**SECTION THRU CURB**

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
2'-0"	2'-6 1/2"	3'-8 1/2"
3'-0"	3'-6 1/2"	3'-8 1/2"
4'-0"	4'-6 1/2"	3'-8 1/2"
5'-0"	5'-6 1/2"	3'-8 1/2"



- 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

**Texas Department of Transportation**      Bridge Division Standard

**MULTIPLE BOX CULVERTS CAST-IN-PLACE**  
 5'-0" SPAN  
 0' TO 20' FILL

**MC-5-20**

FILE: mc520ste-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY	SHEET NO.	
	LRD	DIMMIT	212	

BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

QUANTITIES

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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	Bars Y		Bars Z		Length	Wt	No.	Wt	Conc (CY)	Ref (Lb)	Conc (CY)	Ref (Lb)	Conc (CY)	Ref (Lb)		
													Length	Wt	Length	Wt																		Length	Wt	Length	Wt												
2	5'-0"	2'-0"	8"	7"	108	#5	9"	11'-6"	1,295	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	38	18"	39'-9"	1,009	108	9"	2'-0"	144	54	9"	4'-7"	165	5'-3"	189	11'-6"	31	26	72	0.710	135.2	0.9	103	29.3	5,510
3	5'-0"	2'-0"	8"	7"	108	#5	9"	17'-1"	1,924	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	54	18"	39'-9"	1,434	108	9"	2'-0"	144	108	9"	4'-7"	331	5'-3"	379	17'-1"	46	38	106	1.029	188.8	1.3	152	42.4	7,705
4	5'-0"	2'-0"	8"	7"	108	#5	9"	22'-8"	2,553	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	70	18"	39'-9"	1,859	108	9"	2'-0"	144	162	9"	4'-7"	496	5'-3"	568	22'-8"	61	48	134	1.348	242.4	1.7	195	55.6	9,891
5	5'-0"	2'-0"	8"	7"	108	#5	9"	28'-3"	3,182	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	86	18"	39'-9"	2,284	108	9"	2'-0"	144	216	9"	4'-7"	661	5'-3"	758	28'-3"	75	60	167	1.667	296.0	2.1	242	68.8	12,082
6	5'-0"	2'-0"	8"	7"	108	#5	9"	33'-10"	3,811	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	102	18"	39'-9"	2,708	108	9"	2'-0"	144	270	9"	4'-7"	827	5'-3"	947	33'-10"	90	70	195	1.986	349.6	2.5	285	82.0	14,268
2	5'-0"	3'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	44	18"	39'-9"	1,168	108	9"	3'-0"	216	54	9"	4'-7"	165	7'-3"	262	11'-6"	31	26	72	0.775	159.9	0.9	103	31.9	6,497
3	5'-0"	3'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	3'-0"	216	108	9"	4'-7"	331	7'-3"	523	17'-1"	46	38	106	1.115	223.5	1.3	152	45.9	9,093
4	5'-0"	3'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	80	18"	39'-9"	2,124	108	9"	3'-0"	216	162	9"	4'-7"	496	7'-3"	785	22'-8"	61	48	134	1.456	287.2	1.7	195	59.9	11,682
5	5'-0"	3'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	98	18"	39'-9"	2,602	108	9"	3'-0"	216	216	9"	4'-7"	661	7'-3"	1,046	28'-3"	75	60	167	1.796	350.8	2.1	242	73.9	14,274
6	5'-0"	3'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	116	18"	39'-9"	3,080	108	9"	3'-0"	216	270	9"	4'-7"	827	7'-3"	1,308	33'-10"	90	70	195	2.137	414.5	2.5	285	88.0	16,863
2	5'-0"	4'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	44	18"	39'-9"	1,168	108	9"	4'-0"	289	54	9"	4'-7"	165	9'-3"	334	11'-6"	31	26	72	0.840	166.3	0.9	103	34.5	6,754
3	5'-0"	4'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	4'-0"	289	108	9"	4'-7"	331	9'-3"	667	17'-1"	46	38	106	1.202	231.8	1.3	152	49.4	9,422
4	5'-0"	4'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	80	18"	39'-9"	2,124	108	9"	4'-0"	289	162	9"	4'-7"	496	9'-3"	1,001	22'-8"	61	48	134	1.564	297.2	1.7	195	64.3	12,083
5	5'-0"	4'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	98	18"	39'-9"	2,602	108	9"	4'-0"	289	216	9"	4'-7"	661	9'-3"	1,335	28'-3"	75	60	167	1.926	362.7	2.1	242	79.1	14,748
6	5'-0"	4'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	116	18"	39'-9"	3,080	108	9"	4'-0"	289	270	9"	4'-7"	827	9'-3"	1,668	33'-10"	90	70	195	2.288	428.1	2.5	285	94.0	17,408
2	5'-0"	5'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	50	18"	39'-9"	1,328	108	9"	5'-0"	361	54	9"	4'-7"	165	11'-3"	406	11'-6"	31	26	72	0.904	176.7	0.9	103	37.0	7,171
3	5'-0"	5'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	70	18"	39'-9"	1,859	108	9"	5'-0"	361	108	9"	4'-7"	331	11'-3"	812	17'-1"	46	38	106	1.288	245.3	1.3	152	52.8	9,965
4	5'-0"	5'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	19'-10"	2,234	16	18"	39'-9"	425	90	18"	39'-9"	2,390	108	9"	5'-0"	361	162	9"	4'-7"	496	11'-3"	1,217	22'-8"	61	48	134	1.672	313.9	1.7	195	68.6	12,750
5	5'-0"	5'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	110	18"	39'-9"	2,921	108	9"	5'-0"	361	216	9"	4'-7"	661	11'-3"	1,623	28'-3"	75	60	167	2.056	382.5	2.1	242	84.3	15,540
6	5'-0"	5'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	130	18"	39'-9"	3,452	108	9"	5'-0"	361	270	9"	4'-7"	827	11'-3"	2,029	33'-10"	90	70	195	2.439	451.0	2.5	285	100.1	18,326



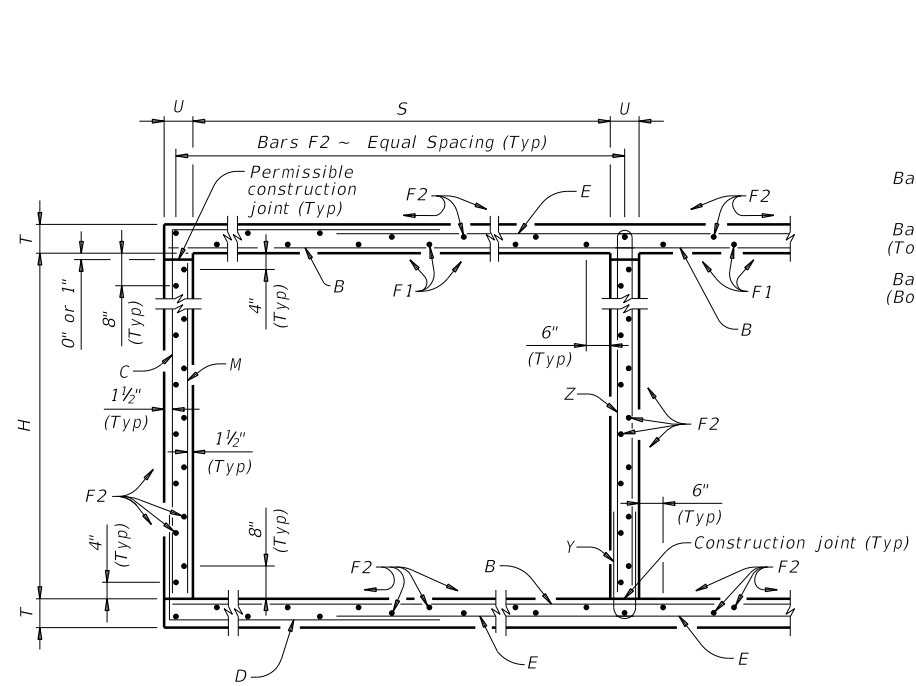
**MULTIPLE BOX CULVERTS  
CAST-IN-PLACE  
5'-0" SPAN  
0' TO 20' FILL**

**MC-5-20**

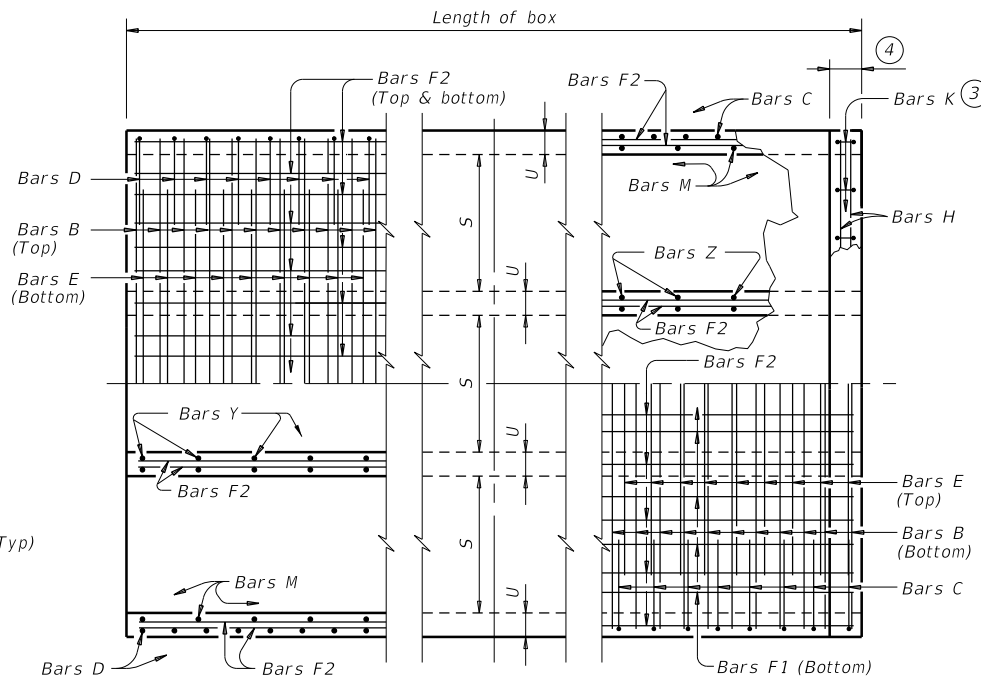
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	LRD	DIMMIT		213

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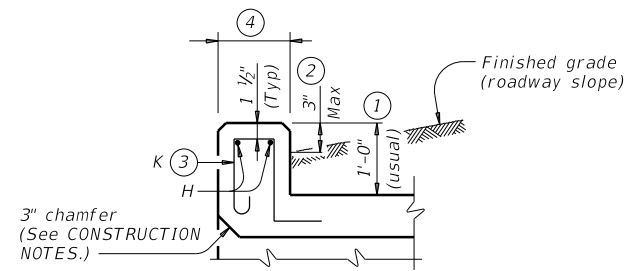
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**TYPICAL SECTION**



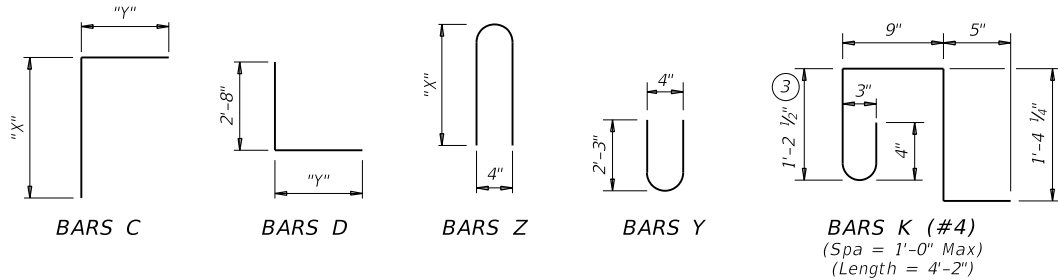
**BOTTOM SLAB** **PART PLANS** **TOP SLAB**



**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"



- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
  - For structures without bridge rail, construct curbs no more than 3" above finished grade.
  - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR  
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.  
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

**CONSTRUCTION NOTES:**  
 Do not use permanent forms.  
 Chamfer the bottom edge of the top slab 3" at the entrance.  
 Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, 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

**Texas Department of Transportation**  
 Bridge Division Standard

**MULTIPLE BOX CULVERTS  
 CAST-IN-PLACE  
 6'-0" SPAN  
 0' TO 16' FILL**

**MC-6-16**

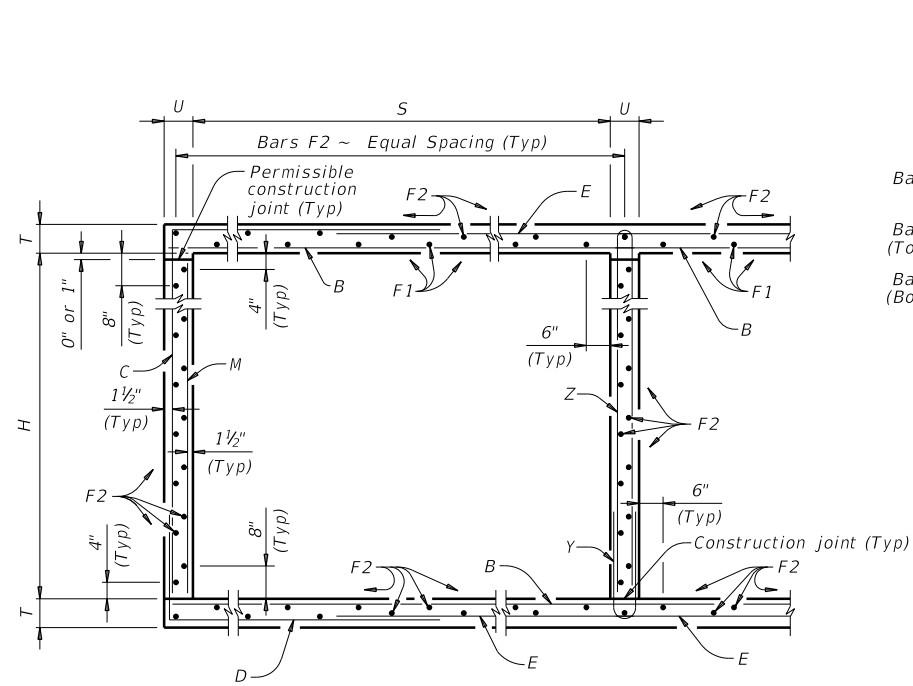
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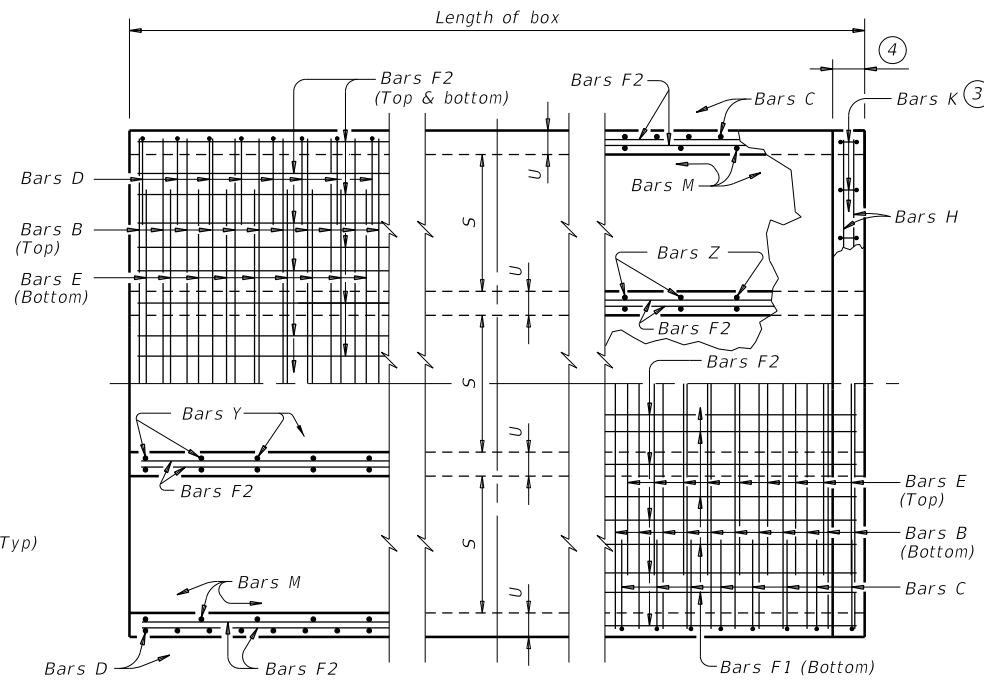
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NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																																			QUANTITIES									
					Bars B					Bars C & D						Bars E			Bars F1 ~ #4			Bars F2 ~ #4			Bars M ~ #4			Bars Y & Z ~ #4				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)
													Length	Wt	Length	Wt																				Length	Wt	Length	Wt										
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	277	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
2	6'-0"	5'-0"	9"	7"	108	#6	9"	13'-6"	2,190	108	#5	9"	9'-8"	1,089	6'-9"	760	108	#6	9"	10'-2"	1,649	10	18"	39'-9"	266	56	18"	39'-9"	1,487	108	9"	5'-0"	361	54	9"	4'-9"	171	11'-5"	412	13'-6"	36	30	84	1.088	209.6	1.0	120	44.5	8,505
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

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TYPICAL SECTION



BOTTOM SLAB  
PART PLANS  
TOP SLAB

- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
  - For structures without bridge rail, construct curbs no more than 3" above finished grade.
  - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR  
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.  
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

**CONSTRUCTION NOTES:**  
 Do not use permanent forms.  
 Chamfer the bottom edge of the top slab 3" at the entrance.  
 Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, 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:  

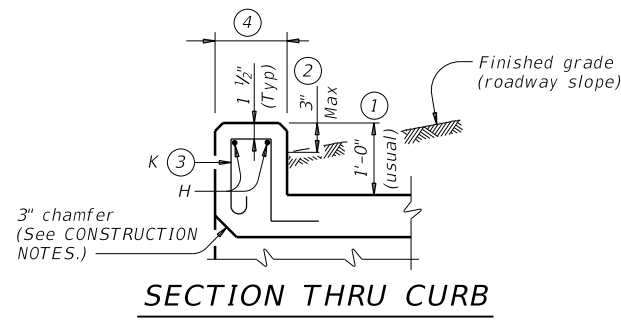
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

 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.

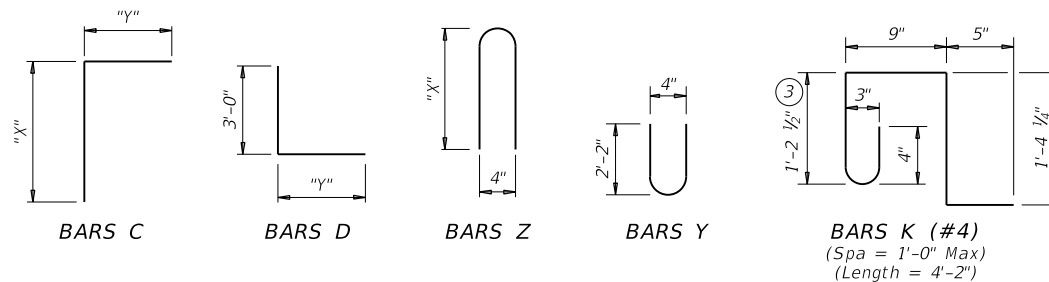
Cover dimensions are clear dimensions, unless noted otherwise.  
 Reinforcing bar dimensions shown are out-to-out of bar.



SECTION THRU CURB

TABLE OF BAR DIMENSIONS

H	"X"	"Y"
3'-0"	3'-6 1/2"	5'-1"
4'-0"	4'-6 1/2"	5'-1"
5'-0"	5'-6 1/2"	5'-1"
6'-0"	6'-6 1/2"	5'-1"
7'-0"	7'-6 1/2"	5'-1"
8'-0"	8'-6 1/2"	5'-1"



MULTIPLE BOX CULVERTS  
 CAST-IN-PLACE  
 8'-0" SPAN  
 0' TO 13' FILL

MC-8-13

FILE: mc813ste-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY	SHEET NO.	
	LRD	DIMMIT	216	

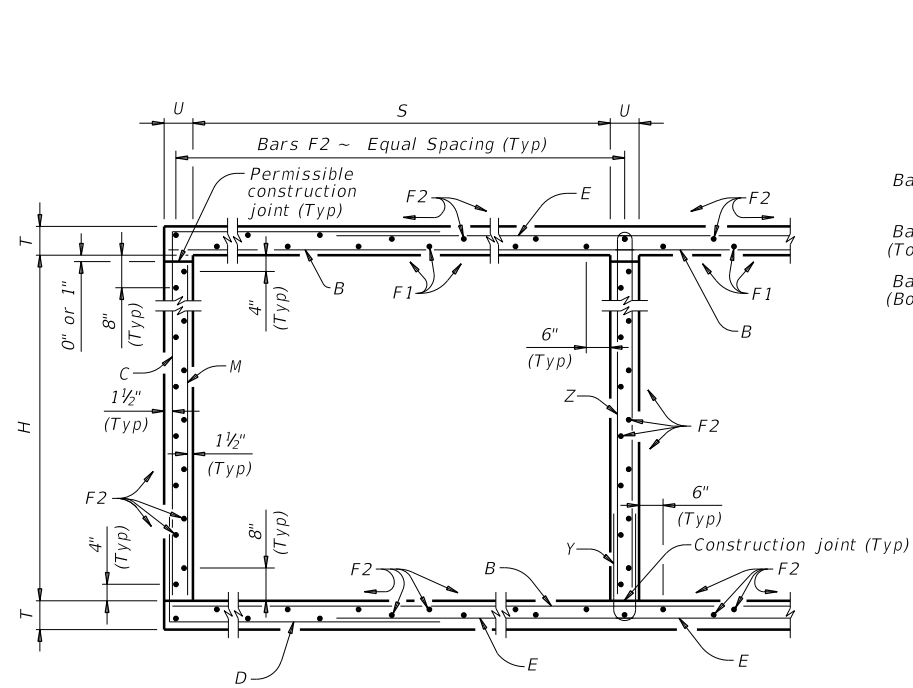
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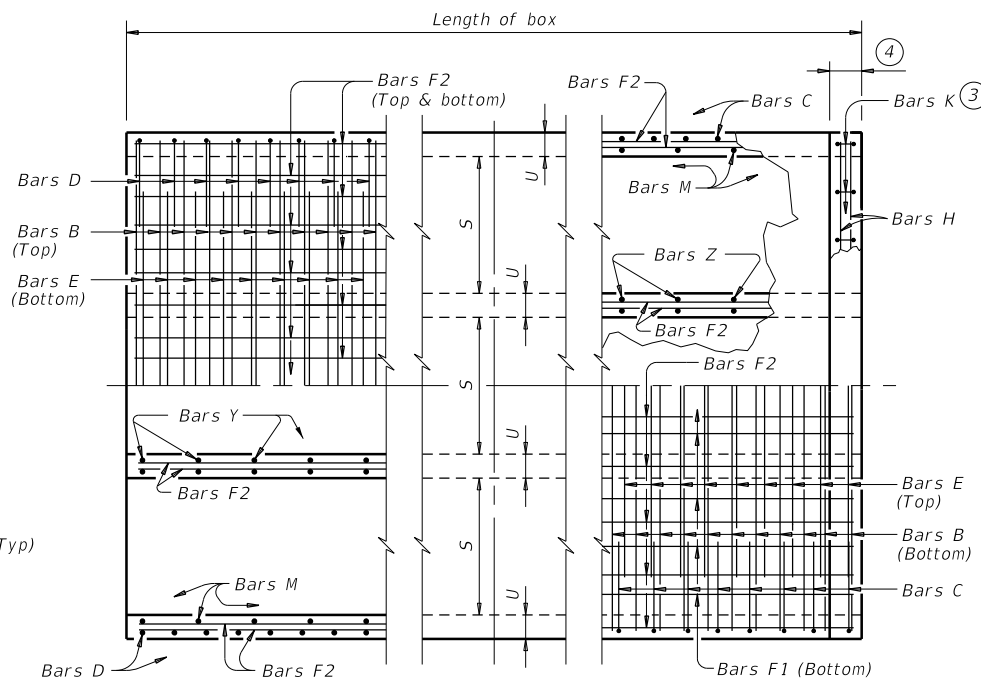
NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																										QUANTITIES																		
					Bars B				Bars C & D				Bars E				Bars F1 ~ #4			Bars F2 ~ #4			Bars M ~ #4			Bars Y & Z ~ #4				Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total											
	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)
													Length	Wt	Length	Wt																				Length	Wt	Length	Wt										
2	8'-0"	3'-0"	8"	7"	162	#6	6"	17'-6"	4,258	108	#6	9"	8'-8"	1,406	8'-2"	1,325	162	#6	6"	12'-9"	3,102	12	18"	39'-9"	319	56	18"	39'-9"	1,487	108	9"	3'-0"	216	54	9"	4'-7"	165	7'-3"	262	17'-6"	47	38	106	1.071	313.5	1.3	153	44.2	12,693
3	8'-0"	3'-0"	8"	7"	162	#6	6"	26'-1"	6,347	108	#6	9"	8'-8"	1,406	8'-2"	1,325	162	#6	6"	21'-4"	5,191	18	18"	39'-9"	478	80	18"	39'-9"	2,124	108	9"	3'-0"	216	108	9"	4'-7"	331	7'-3"	523	26'-1"	70	56	156	1.560	448.5	1.9	226	64.3	18,167
4	8'-0"	3'-0"	8"	7"	162	#6	6"	34'-8"	8,435	108	#6	9"	8'-8"	1,406	8'-2"	1,325	162	#6	6"	29'-11"	7,279	24	18"	39'-9"	637	104	18"	39'-9"	2,762	108	9"	3'-0"	216	162	9"	4'-7"	496	7'-3"	785	34'-8"	93	72	200	2.048	583.5	2.6	293	84.5	23,634
5	8'-0"	3'-0"	8"	7"	162	#6	6"	43'-3"	10,524	108	#6	9"	8'-8"	1,406	8'-2"	1,325	162	#6	6"	38'-6"	9,368	30	18"	39'-9"	797	128	18"	39'-9"	3,399	108	9"	3'-0"	216	216	9"	4'-7"	661	7'-3"	1,046	43'-3"	116	90	251	2.537	718.6	3.2	367	104.7	29,109
6	8'-0"	3'-0"	8"	7"	162	#6	6"	51'-10"	12,612	108	#6	9"	8'-8"	1,406	8'-2"	1,325	162	#6	6"	47'-1"	11,457	36	18"	39'-9"	956	152	18"	39'-9"	4,036	108	9"	3'-0"	216	270	9"	4'-7"	827	7'-3"	1,308	51'-10"	138	106	295	3.026	853.6	3.8	433	124.9	34,576
2	8'-0"	4'-0"	8"	7"	162	#6	6"	17'-6"	4,258	108	#6	9"	9'-8"	1,568	8'-2"	1,325	162	#6	6"	12'-9"	3,102	12	18"	39'-9"	319	56	18"	39'-9"	1,487	108	9"	4'-0"	289	54	9"	4'-7"	165	9'-3"	334	17'-6"	47	38	106	1.136	321.2	1.3	153	46.8	13,000
3	8'-0"	4'-0"	8"	7"	162	#6	6"	26'-1"	6,347	108	#6	9"	9'-8"	1,568	8'-2"	1,325	162	#6	6"	21'-4"	5,191	18	18"	39'-9"	478	80	18"	39'-9"	2,124	108	9"	4'-0"	289	108	9"	4'-7"	331	9'-3"	667	26'-1"	70	56	156	1.646	458.0	1.9	226	67.8	18,546
4	8'-0"	4'-0"	8"	7"	162	#6	6"	34'-8"	8,435	108	#6	9"	9'-8"	1,568	8'-2"	1,325	162	#6	6"	29'-11"	7,279	24	18"	39'-9"	637	104	18"	39'-9"	2,762	108	9"	4'-0"	289	162	9"	4'-7"	496	9'-3"	1,001	34'-8"	93	72	200	2.156	594.8	2.6	293	88.8	24,085
5	8'-0"	4'-0"	8"	7"	162	#6	6"	43'-3"	10,524	108	#6	9"	9'-8"	1,568	8'-2"	1,325	162	#6	6"	38'-6"	9,368	30	18"	39'-9"	797	128	18"	39'-9"	3,399	108	9"	4'-0"	289	216	9"	4'-7"	661	9'-3"	1,335	43'-3"	116	90	251	2.667	731.7	3.2	367	109.9	29,633
6	8'-0"	4'-0"	8"	7"	162	#6	6"	51'-10"	12,612	108	#6	9"	9'-8"	1,568	8'-2"	1,325	162	#6	6"	47'-1"	11,457	36	18"	39'-9"	956	152	18"	39'-9"	4,036	108	9"	4'-0"	289	270	9"	4'-7"	827	9'-3"	1,668	51'-10"	138	106	295	3.177	868.5	3.8	433	130.9	35,171
2	8'-0"	5'-0"	8"	7"	162	#6	6"	17'-6"	4,258	108	#6	9"	10'-8"	1,730	8'-2"	1,325	162	#6	6"	12'-9"	3,102	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	5'-0"	361	54	9"	4'-7"	165	11'-3"	406	17'-6"	47	38	106	1.201	332.8	1.3	153	49.4	13,465
3	8'-0"	5'-0"	8"	7"	162	#6	6"	26'-1"	6,347	108	#6	9"	10'-8"	1,730	8'-2"	1,325	162	#6	6"	21'-4"	5,191	18	18"	39'-9"	478	88	18"	39'-9"	2,337	108	9"	5'-0"	361	108	9"	4'-7"	331	11'-3"	812	26'-1"	70	56	156	1.733	472.8	1.9	226	71.3	19,138
4	8'-0"	5'-0"	8"	7"	162	#6	6"	34'-8"	8,435	108	#6	9"	10'-8"	1,730	8'-2"	1,325	162	#6	6"	29'-11"	7,279	24	18"	39'-9"	637	114	18"	39'-9"	3,027	108	9"	5'-0"	361	162	9"	4'-7"	496	11'-3"	1,217	34'-8"	93	72	200	2.264	612.7	2.6	293	93.1	24,800
5	8'-0"	5'-0"	8"	7"	162	#6	6"	43'-3"	10,524	108	#6	9"	10'-8"	1,730	8'-2"	1,325	162	#6	6"	38'-6"	9,368	30	18"	39'-9"	797	140	18"	39'-9"	3,717	108	9"	5'-0"	361	216	9"	4'-7"	661	11'-3"	1,623	43'-3"	116	90	251	2.796	752.7	3.2	367	115.1	30,473
6	8'-0"	5'-0"	8"	7"	162	#6	6"	51'-10"	12,612	108	#6	9"	10'-8"	1,730	8'-2"	1,325	162	#6	6"	47'-1"	11,457	36	18"	39'-9"	956	166	18"	39'-9"	4,408	108	9"	5'-0"	361	270	9"	4'-7"	827	11'-3"	2,029	51'-10"	138	106	295	3.328	892.6	3.8	433	137.0	36,138
2	8'-0"	6'-0"	8"	7"	162	#6	6"	17'-6"	4,258	108	#6	9"	11'-8"	1,893	8'-2"	1,325	162	#6	6"	12'-9"	3,102	12	18"	39'-9"	319	68	18"	39'-9"	1,806	108	9"	6'-0"	433	54	9"	4'-7"	165	13'-3"	478	17'-6"	47	38	106	1.265	344.5	1.3	153	51.9	13,932
3	8'-0"	6'-0"	8"	7"	162	#6	6"	26'-1"	6,347	108	#6	9"	11'-8"	1,893	8'-2"	1,325	162	#6	6"	21'-4"	5,191	18	18"	39'-9"	478	96	18"	39'-9"	2,549	108	9"	6'-0"	433	108	9"	4'-7"	331	13'-3"	956	26'-1"	70	56	156	1.819	487.6	1.9	226	74.7	19,729
4	8'-0"	6'-0"	8"	7"	162	#6	6"	34'-8"	8,435	108	#6	9"	11'-8"	1,893	8'-2"	1,325	162	#6	6"	29'-11"	7,279	24	18"	39'-9"	637	124	18"	39'-9"	3,293	108	9"	6'-0"	433	162	9"	4'-7"	496	13'-3"	1,434	34'-8"	93	72	200	2.372	630.6	2.6	293	97.5	25,518
5	8'-0"	6'-0"	8"	7"	162	#6	6"	43'-3"	10,524	108	#6	9"	11'-8"	1,893	8'-2"	1,325	162	#6	6"	38'-6"	9,368	30	18"	39'-9"	797	152	18"	39'-9"	4,036	108	9"	6'-0"	433	216	9"	4'-7"	661	13'-3"	1,912	43'-3"	116	90	251	2.926	773.7	3.2	367	120.3	31,316
6	8'-0"	6'-0"	8"	7"	162	#6	6"	51'-10"	12,612	108	#6	9"	11'-8"	1,893	8'-2"	1,325	162	#6	6"	47'-1"	11,457	36	18"	39'-9"	956	180	18"	39'-9"	4,780	108	9"	6'-0"	433	270	9"	4'-7"	827	13'-3"	2,390	51'-10"	138	106	295	3.479	916.8	3.8	433	143.0	37,106
2	8'-0"	7'-0"	8"	7"	162	#6	6"	17'-6"	4,258	108	#6	9"	12'-8"	2,055	8'-2"	1,325	162	#6	6"	12'-9"	3,102	12	18"	39'-9"	319	68	18"	39'-9"	1,806	108	9"	7'-0"	505	54	9"	4'-7"	165	15'-3"	550	17'-6"	47	38	106	1.330	352.1	1.3	153	54.5	14,238
3	8'-0"	7'-0"	8"	7"	162	#6	6"	26'-1"	6,347	108	#6	9"	12'-8"	2,055	8'-2"	1,325	162	#6	6"	21'-4"	5,191	18	18"	39'-9"	478	96	18"	39'-9"	2,549	108	9"	7'-0"	505	108	9"	4'-7"	331	15'-3"	1,100	26'-1"	70	56	156	1.905	497.0	1.9	226	78.1	20,107
4	8'-0"	7'-0"	8"	7"	162	#6	6"	34'-8"	8,435	108	#6	9"	12'-8"	2,055	8'-2"	1,325	162	#6	6"	29'-11"	7,279	24	18"	39'-9"	637	124	18"	39'-9"	3,293	108	9"	7'-0"	505	162	9"	4'-7"	496	15'-3"	1,650	34'-8"	93	72	200	2.480	641.9	2.6	293	101.8	25,968
5	8'-0"	7'-0"	8"	7"	162	#6	6"	43'-3"	10,524	108	#6	9"	12'-8"	2,055	8'-2"	1,325	162	#6	6"	38'-6"	9,368	30	18"	39'-9"	797	152	18"	39'-9"	4,036	108	9"	7'-0"	505	216	9"	4'-7"	661	15'-3"	2,200	43'-3"	116	90	251	3.056	786.8	3.2	367	125.5	31,838
6	8'-0"	7'-0"	8"	7"	162	#6	6"	51'-10"	12,612	108	#6	9"	12'-8"	2,055	8'-2"	1,325	162	#6	6"	47'-1"	11,457	36	18"	39'-9"	956	180	18"	39'-9"	4,780	108	9"	7'-0"	505	270	9"	4'-7"	827	15'-3"	2,750										

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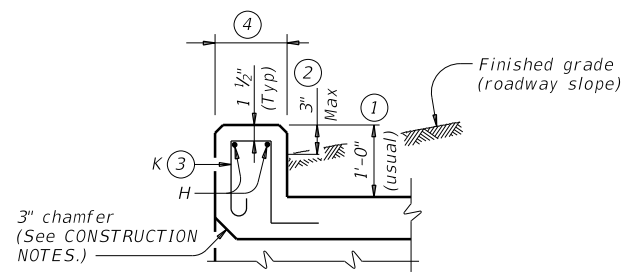
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TYPICAL SECTION

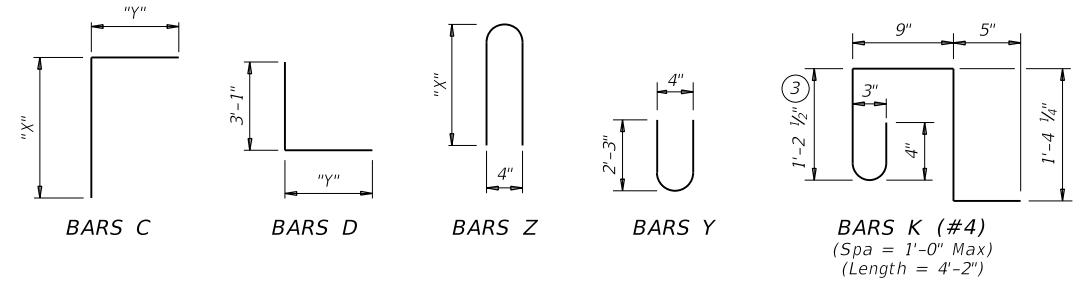


BOTTOM SLAB  
 PART PLANS  
 TOP SLAB



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
4'-0"	4'-7 1/2"	5'-5"
5'-0"	5'-7 1/2"	5'-5"
6'-0"	6'-7 1/2"	5'-5"
7'-0"	7'-7 1/2"	5'-5"
8'-0"	8'-7 1/2"	5'-5"
9'-0"	9'-7 1/2"	5'-5"



- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
  - For structures without bridge rail, construct curbs no more than 3" above finished grade.
  - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR  
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.  
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

**CONSTRUCTION NOTES:**  
 Do not use permanent forms.  
 Chamfer the bottom edge of the top slab 3" at the entrance.  
 Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, 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

Texas Department of Transportation  
 Bridge Division Standard

**MULTIPLE BOX CULVERTS  
 CAST-IN-PLACE  
 9'-0" SPAN  
 0' TO 10' FILL**

**MC-9-10**


FILE: mc910ste-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
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REVISIONS	0037	08	042, ETC.	US 83
	DIST	COUNTY	SHEET NO.	
	LRD	DIMITT	218	

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NUMBER OF SPANS

SECTION DIMENSIONS	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																														QUANTITIES										
	S H T U				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				
					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	Bars Y		Bars Z		Length	Wt	No.	Wt	Conc (CY)	Ref (Lb)

HL93 LOADING SHEET 2 OF 2



**Bridge Division Standard**

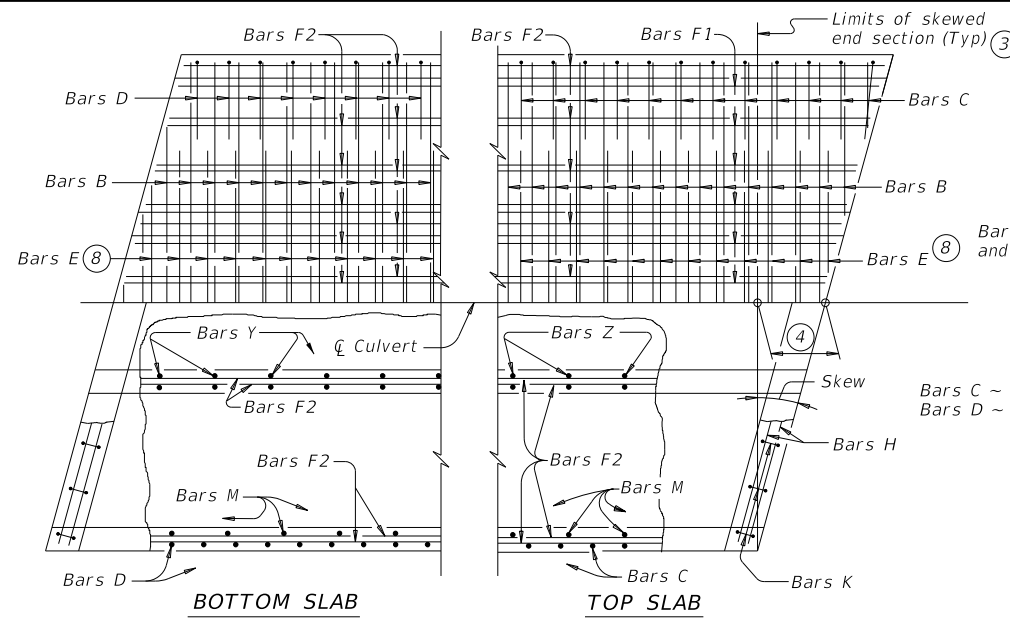
**MULTIPLE BOX CULVERTS  
CAST-IN-PLACE  
9'-0" SPAN  
0' TO 10' FILL**

**MC-9-10**

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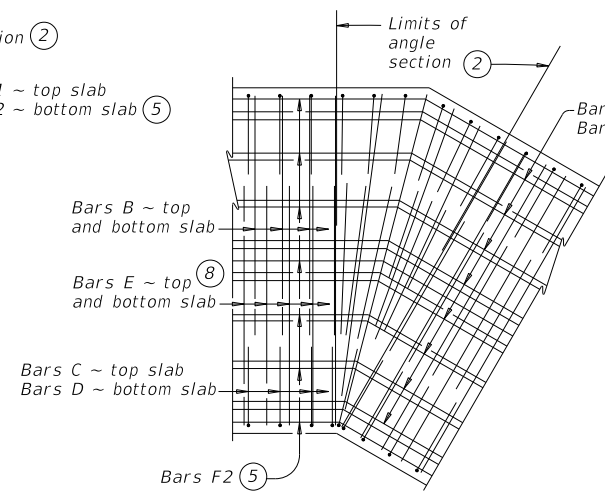
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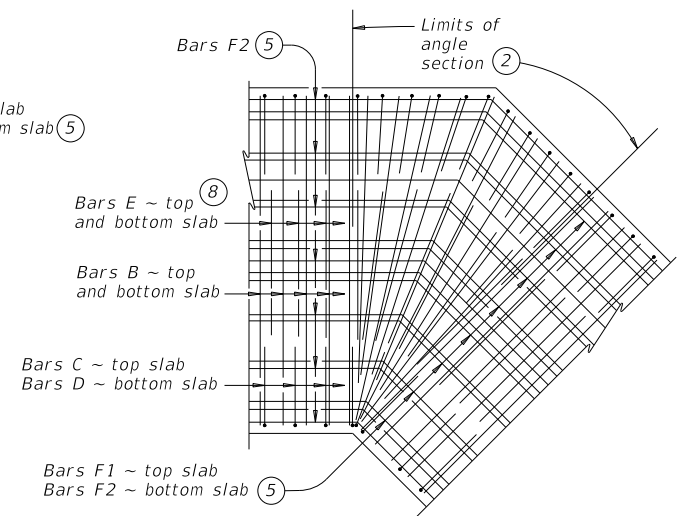


PLAN OF SKEWED ENDS ~ FROM 0° TO 15°

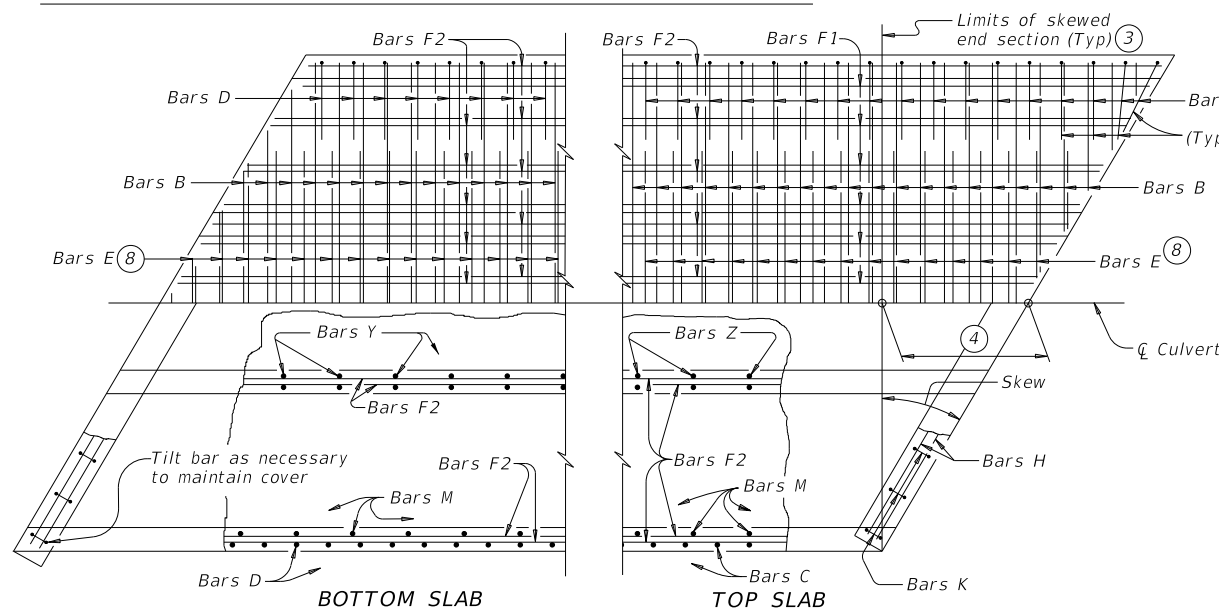
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



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<sub>ba</sub>, 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.

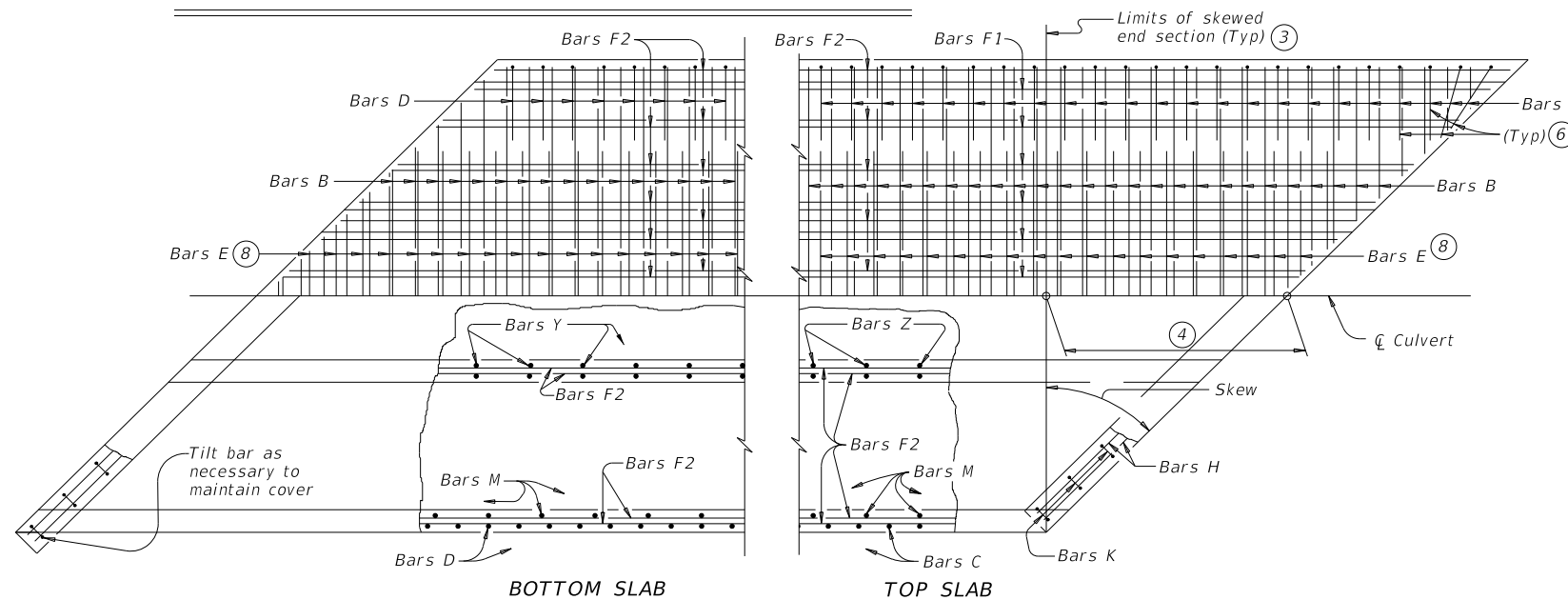
**MATERIAL NOTES:**

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 S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

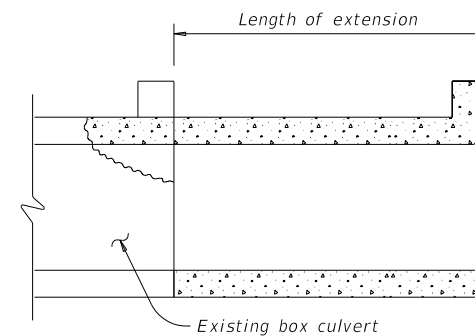
**GENERAL NOTES:**

Designed according to AASHTO LRFD Bridge Design Specifications.  
 Refer to 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°



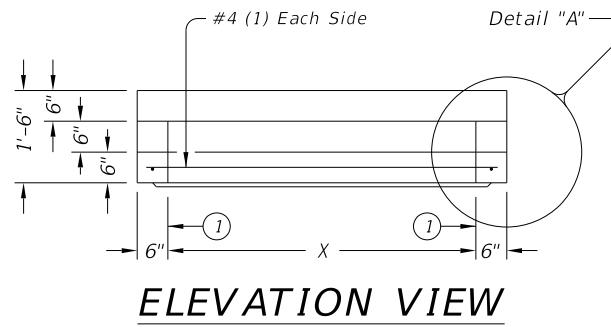
LENGTHENING DETAIL

HL93 LOADING

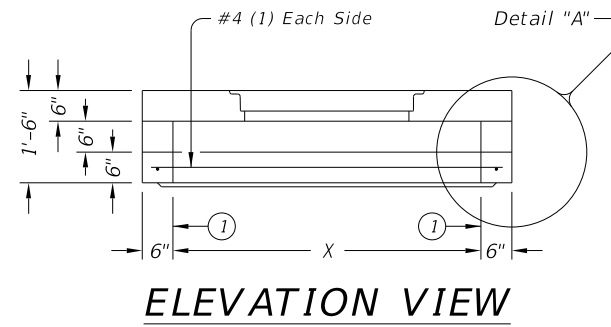
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<b>MULTIPLE BOX CULVERTS          CAST-IN-PLACE          MISCELLANEOUS DETAILS</b>			
<b>MC-MD</b>			
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REVISIONS	US 83		
LRD	COUNTY: DIMMIT	SHEET NO.: 220	

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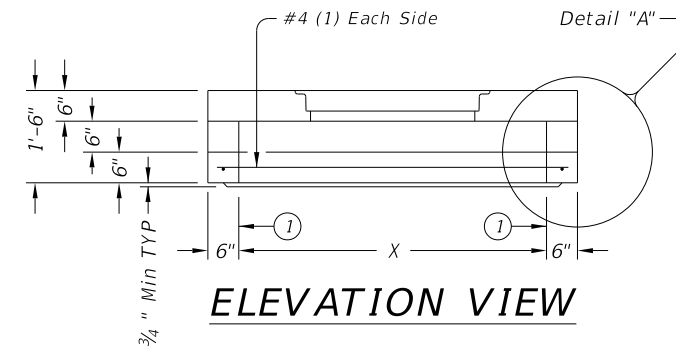
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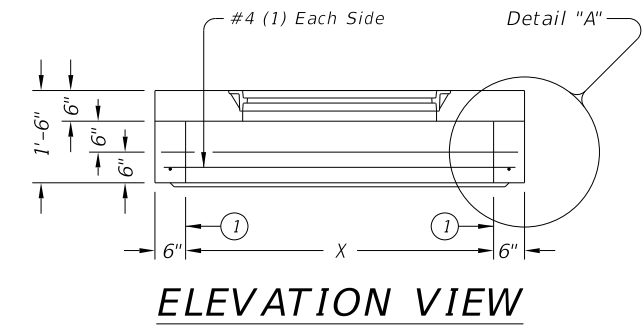
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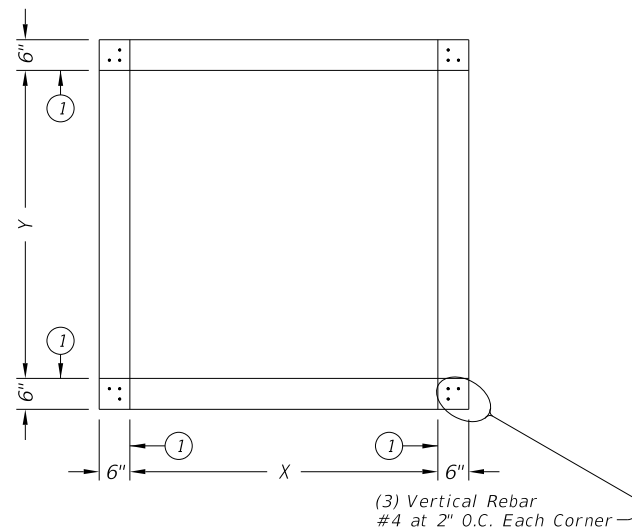
**ELEVATION VIEW**



**ELEVATION VIEW**



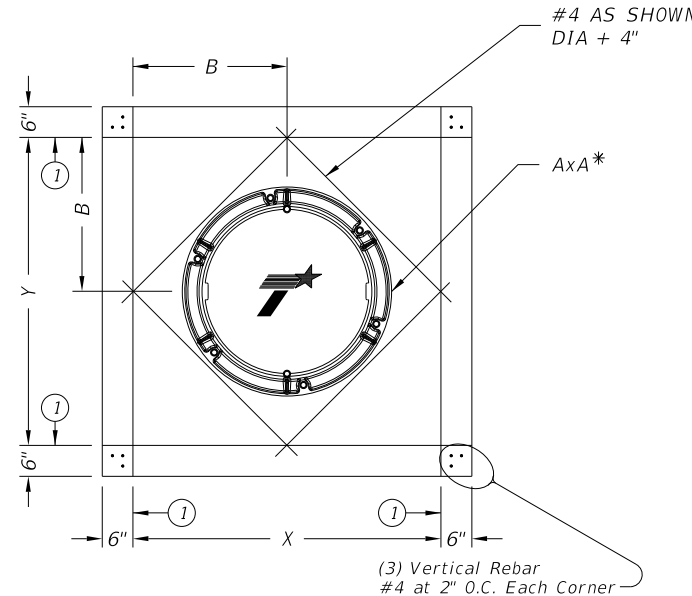
**ELEVATION VIEW**



**PLAN VIEW**

NO OPENINGS

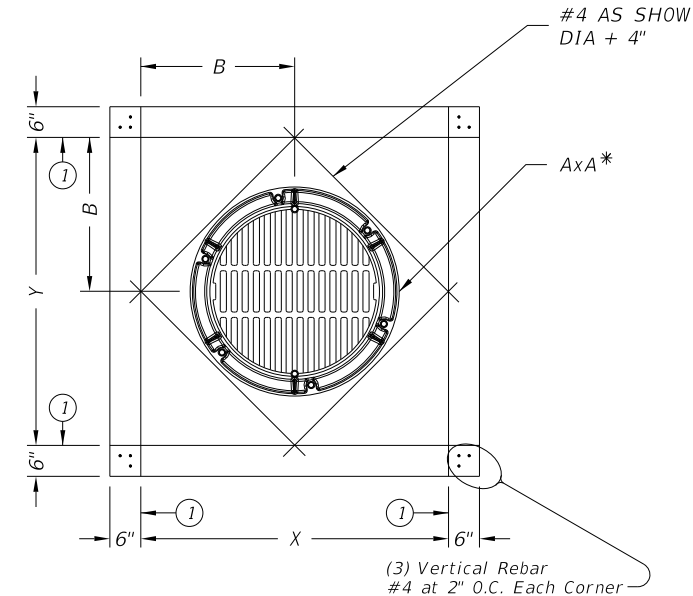
**STYLE 'SL'**



**PLAN VIEW**

32" DIA CAST-IN RING & COVER

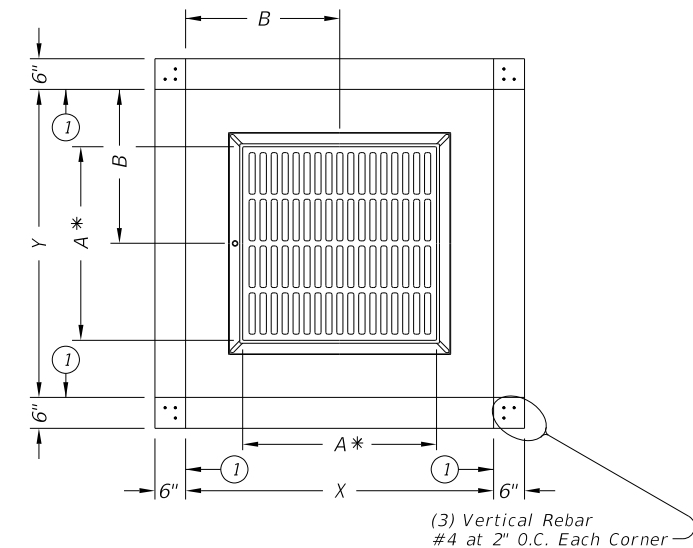
**STYLE 'RC'**



**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.

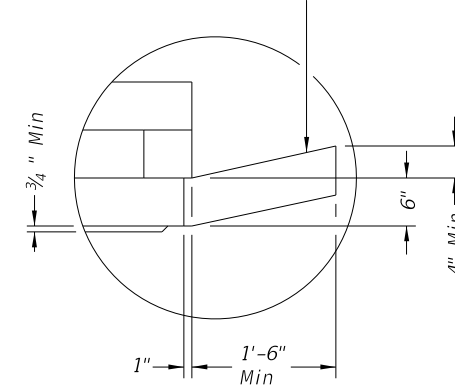
**INSTALLATION NOTES:**

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 <sup>2</sup> /ft	0.37 in <sup>2</sup> /ft
RC,RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in <sup>2</sup> /ft	0.37 in <sup>2</sup> /ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in <sup>2</sup> /ft	0.37 in <sup>2</sup> /ft
SL	4'x4'	n/a	n/a	0.34 in <sup>2</sup> /ft	0.34 in <sup>2</sup> /ft
RC,RG	4'x4'	32" Dia	2'x2'	0.34 in <sup>2</sup> /ft	0.34 in <sup>2</sup> /ft
FG	4'x4'	3'x3'	2'x2'	0.34 in <sup>2</sup> /ft	0.34 in <sup>2</sup> /ft
FG	4'x4'	4'x4'	2'x2'	0.34 in <sup>2</sup> /ft	0.34 in <sup>2</sup> /ft
SL	5'x5'	n/a	n/a	0.43 in <sup>2</sup> /ft	0.43 in <sup>2</sup> /ft
RC,RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in <sup>2</sup> /ft	0.68 in <sup>2</sup> /ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in <sup>2</sup> /ft	0.43 in <sup>2</sup> /ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in <sup>2</sup> /ft	0.43 in <sup>2</sup> /ft

\* Nominal frame/grate or ring/cover size.

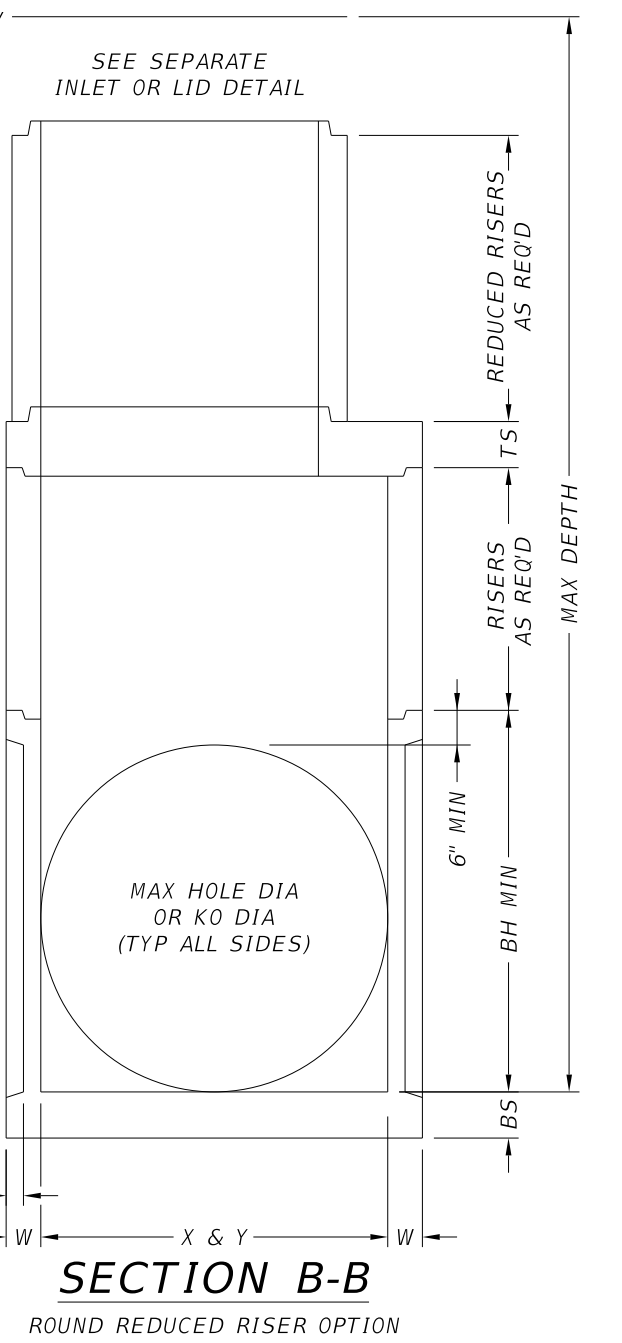
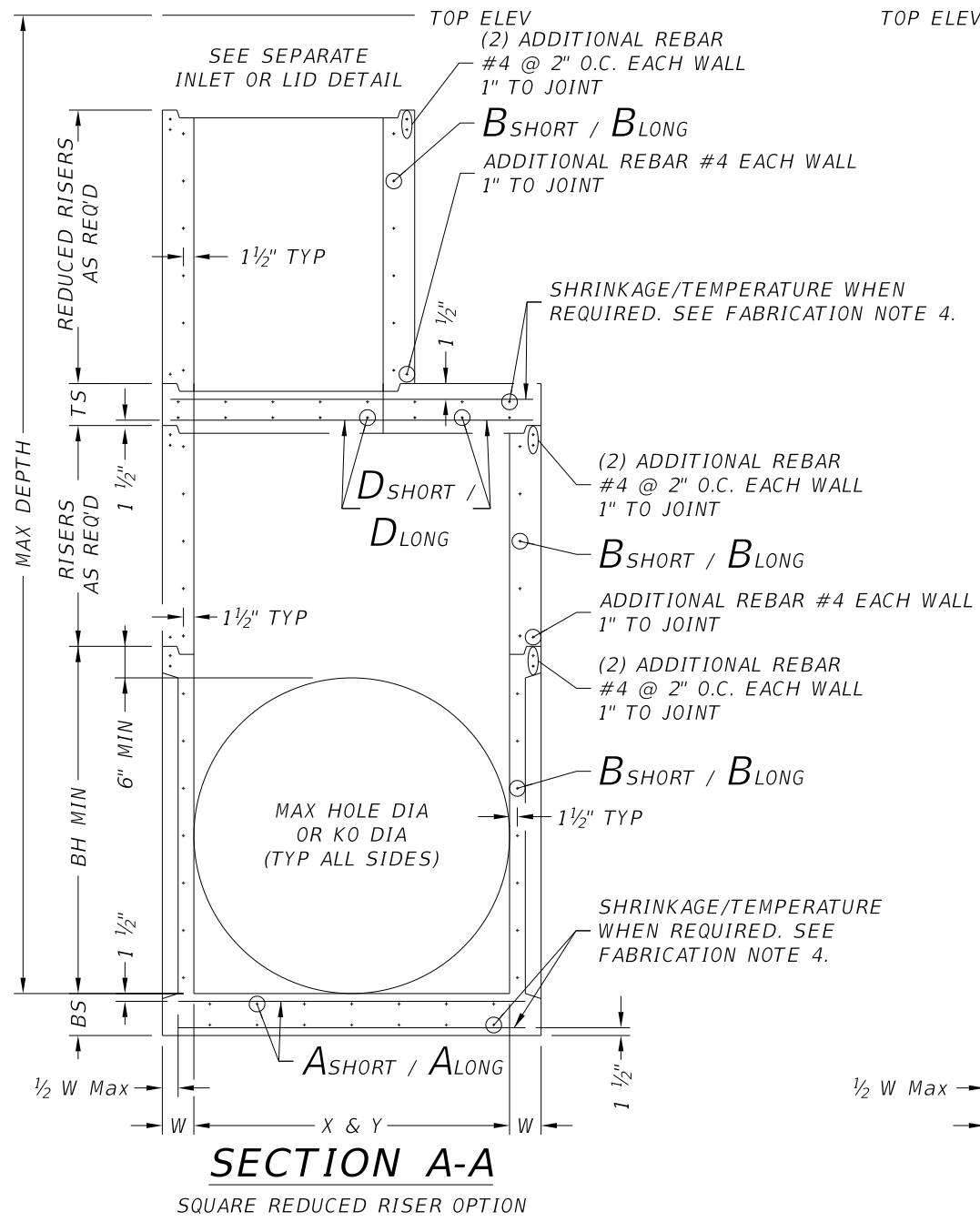
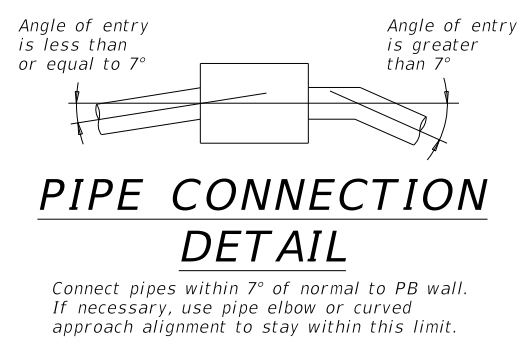
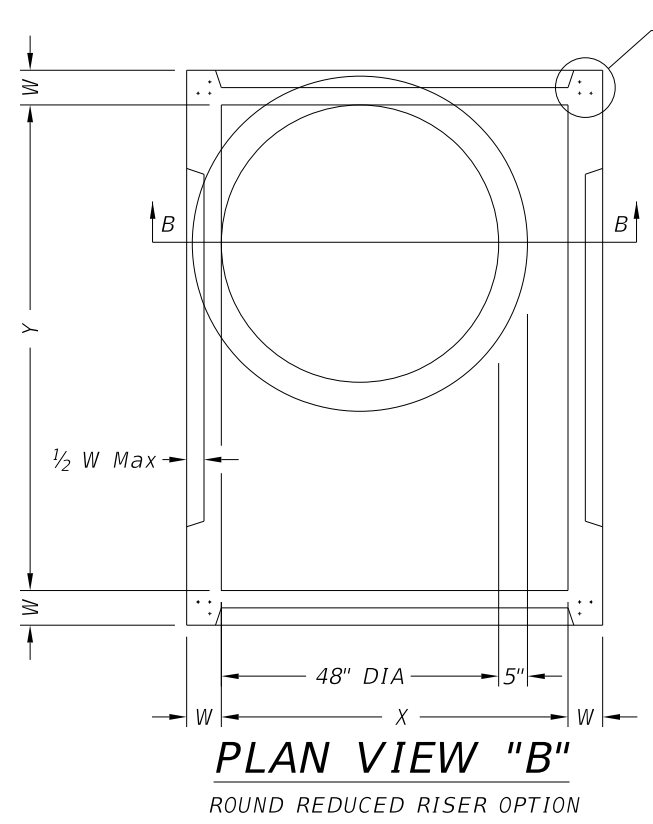
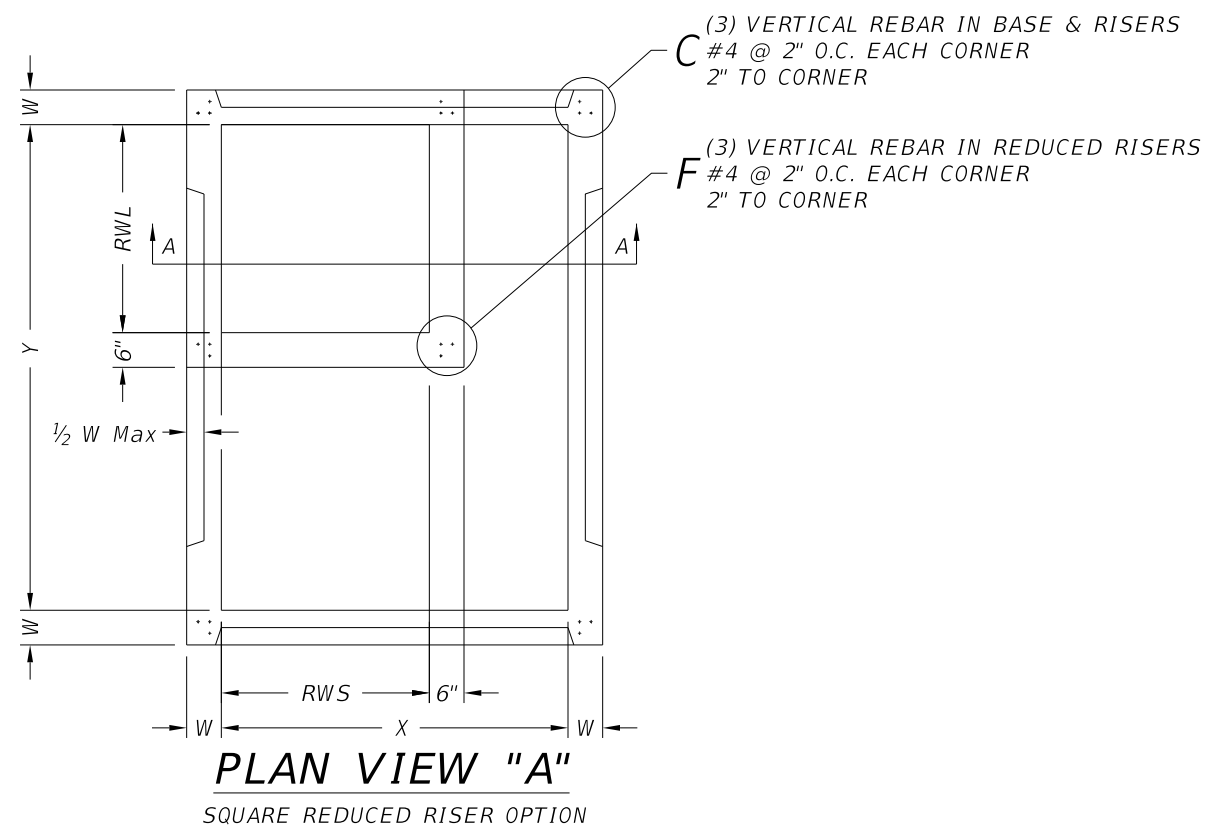
**Texas Department of Transportation** Bridge Division Standard

## PRECAST AREA ZONE DRAIN

### PAZD

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REVISIONS	0037	08	042, ETC.	US 83
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	LRD	DIMMIT	221	

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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 in<sup>2</sup>/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.

		<b>Bridge Division Standard</b>	
<b>PRECAST BASE</b>			
<b>PB</b>			
FILE: prest01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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Project: 10020023-1, Job: 0020023, Sheet: 042, Rev: 08

Precast Junction Box (PJB) and Precast Base (PB)

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 Rein't Area	Long Span Rein't Area	Thickness	Short Span Rein't Area	Long Span Rein't Area	Thickness	Reduced Riser Size	Short Span Rein't Area	Long Span Rein't Area	Thickness	Short Span Rein't Area	Long Span Rein't Area	Thickness	Short Span Rein't Area	Long Span Rein't Area	Thickness	Reduced Riser Size	Short Span Rein't Area	Long Span Rein't Area	Thickness			
X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA	
ft.	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	ft. **	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	ft. **	in <sup>2</sup> /ft	in <sup>2</sup> /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	
5x5	0.36	0.36	6	0.34	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:

- Maximum spacing of reinforcement is 8".
- 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:

- Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
- 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.
- 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



Bridge Division Standard

# DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

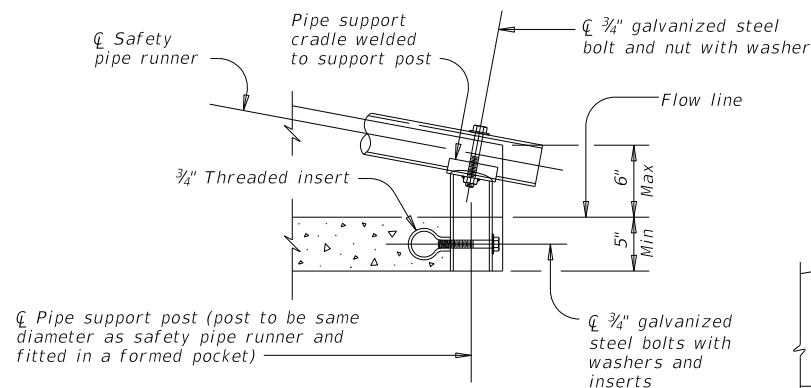
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REVISIONS: LRD	COUNTY: DIMMIT	SHEET NO.:	223	

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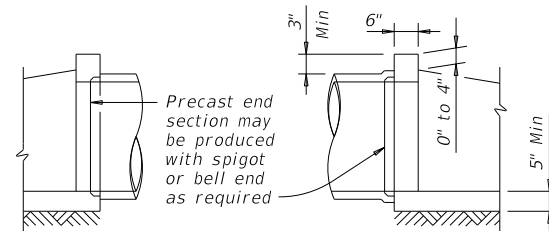
### REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

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"	N/A	52.50"	3:1	11' - 1"	= 0°	Yes	≥ 0°	Yes	
					4:1					14' - 5"
					6:1					21' - 2"



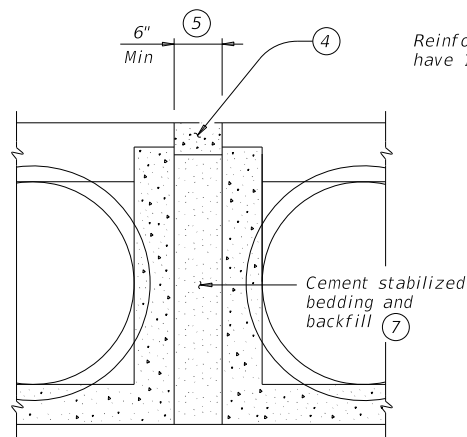
#### END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

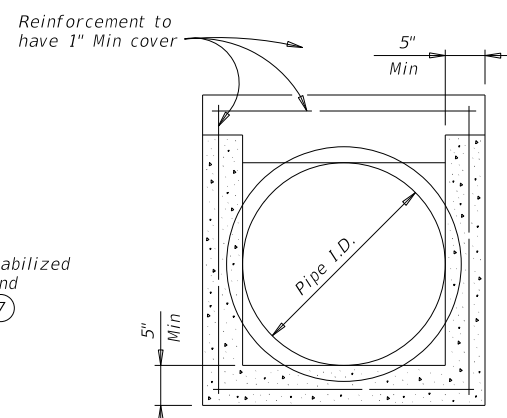


#### OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment)

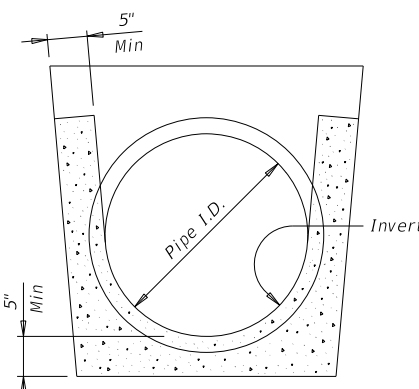


#### MULTIPLE PIPE INSTALLATION



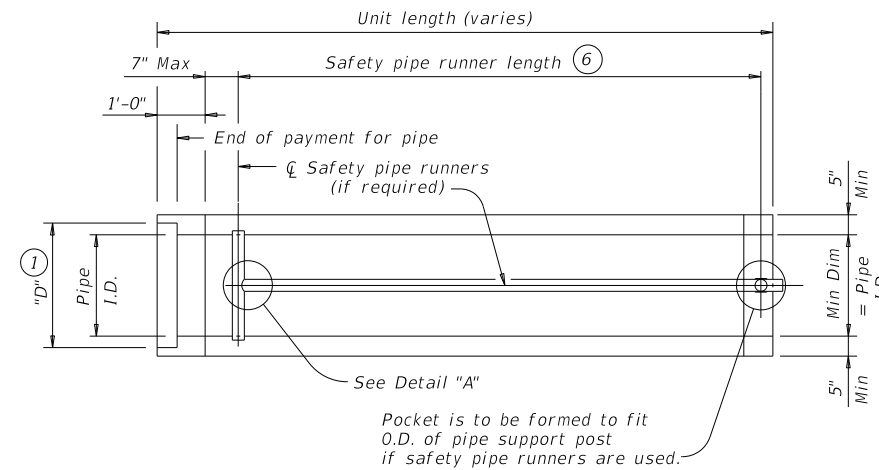
#### OPTION WITH SQUARE BOTTOM

#### SECTION A-A



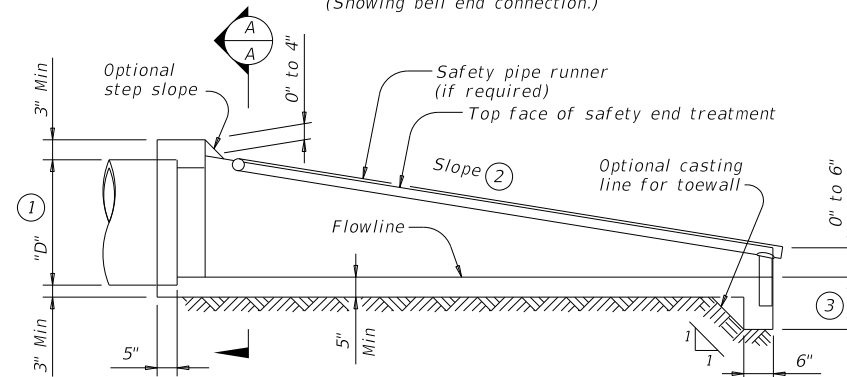
#### OPTION WITH INVERT BOTTOM

#### SECTION A-A



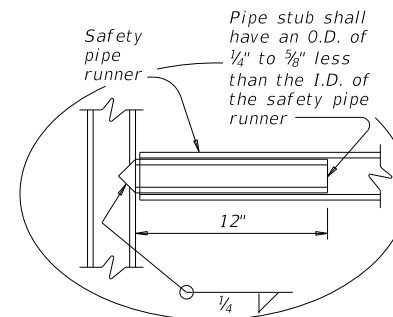
#### PLAN

(Showing bell end connection.)



#### LONGITUDINAL ELEVATION

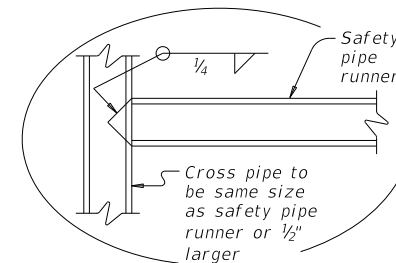
(Showing bell end connection.)



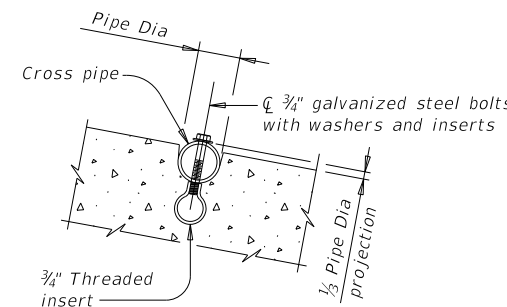
#### OPTION A

#### DETAIL A

(If required)



#### OPTION B



#### INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)

### 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"

- 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 plans. Slope of 3:1 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.
- Measured along slope.
- 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:
- 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).
  - 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 PBGC standard for grouted connections with TP and precast safety end treatment.

**Bridge Division Standard**

## PRECAST SAFETY END TREATMENT TYPE II ~ CROSS DRAINAGE

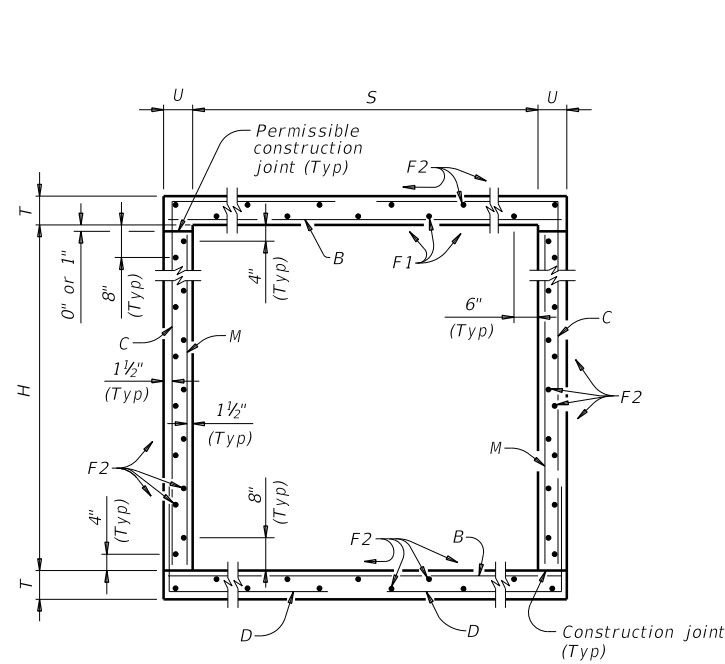
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	LRD	DIMMIT		224

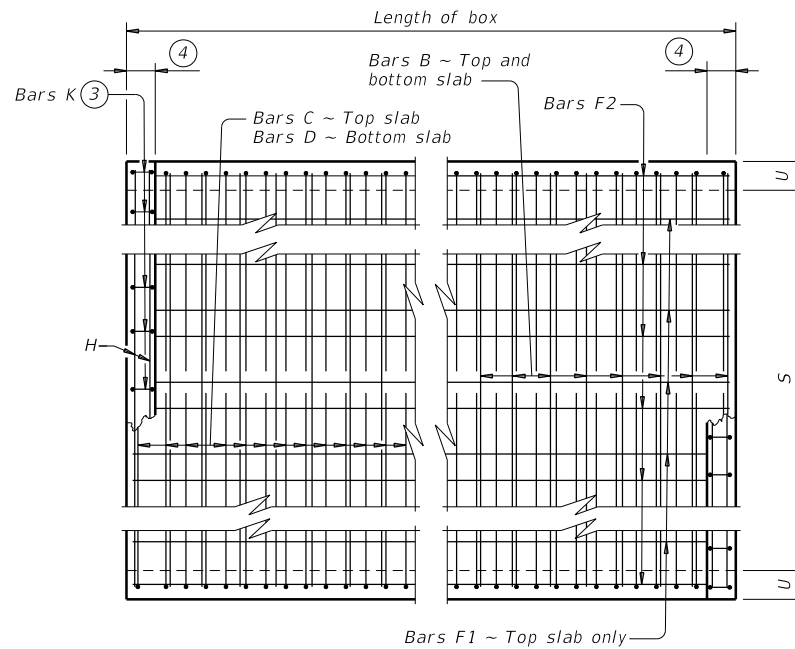


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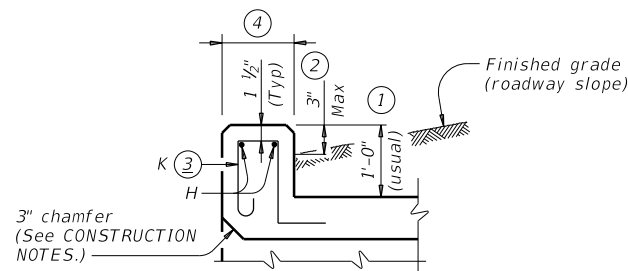
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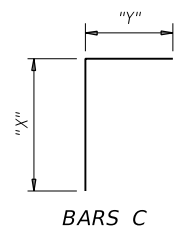
**TYPICAL SECTION**



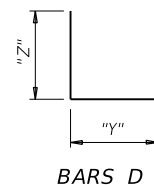
**PLAN OF REINF STEEL**



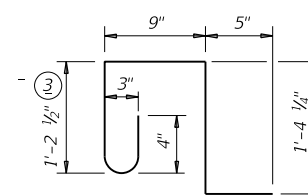
**SECTION THRU CURB**



BARS C



BARS D



BARS K (#4)  
 (Spa = 1'-0" Max)  
 (Length = 4'-2")

- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
  - For structures without bridge rail, construct curbs no more than 3" above finished grade.
  - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.  
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.  
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

**CONSTRUCTION NOTES:**

- Do not use permanent forms.
- Chamfer the bottom edge of the top slab 3" at the entrance.
- Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

**MATERIAL NOTES:**

- Provide Grade 60 reinforcing steel.
- Provide galvanized reinforcing steel if required elsewhere in the plans.
- Provide Class C concrete ( $f'c = 3,600$  psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete ( $f'c = 4,000$  psi) for top slabs of:
  - culverts with overlay,
  - culverts with 1-to-2 course surface treatment, or
  - culverts with the top slab as the final riding surface.
- Provide bar laps, where required, as follows:
  - Uncoated or galvanized ~ #4 = 1'-8" Min
  - Uncoated or galvanized ~ #5 = 2'-1" Min

**GENERAL NOTES:**

- Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
- See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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

HL93 LOADING SHEET 1 OF 2



**SINGLE BOX CULVERTS  
 CAST-IN-PLACE  
 0' TO 30' FILL**

**SCC-3 & 4**

FILE: ssc34ste-21	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
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REVISIONS	0037	08	042, ETC.	US 83
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	LRD	DIMMIT		226

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SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																								QUANTITIES														
					Bars B					Bars C					Bars D					Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total					
					S	H	T	U	No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)
3' - 0"	2' - 0"	8"	7"	30'	108	#5	9"	3' - 11"	441	108	#4	9"	5' - 4"	385	2' - 6"	2' - 10"	108	#4	9"	5' - 1"	367	2' - 10"	2' - 3"	108	9"	2' - 0"	144	3	39' - 9"	80	19	39' - 9"	505	3' - 11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3' - 0"	3' - 0"	8"	7"	30'	108	#5	9"	3' - 11"	441	108	#4	9"	6' - 4"	457	3' - 6"	2' - 10"	108	#4	9"	5' - 1"	367	2' - 10"	2' - 3"	108	9"	3' - 0"	216	3	39' - 9"	80	23	39' - 9"	611	3' - 11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4' - 0"	2' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	5' - 8"	613	2' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	2' - 0"	144	3	39' - 9"	80	21	39' - 9"	558	4' - 11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4' - 0"	3' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	6' - 8"	721	3' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	3' - 0"	216	3	39' - 9"	80	25	39' - 9"	664	4' - 11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4' - 0"	4' - 0"	8"	7"	30'	108	#5	9"	4' - 11"	554	162	#4	6"	7' - 8"	830	4' - 6"	3' - 2"	162	#4	6"	5' - 5"	586	3' - 2"	2' - 3"	108	9"	4' - 0"	289	3	39' - 9"	80	25	39' - 9"	664	4' - 11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

(5) For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.



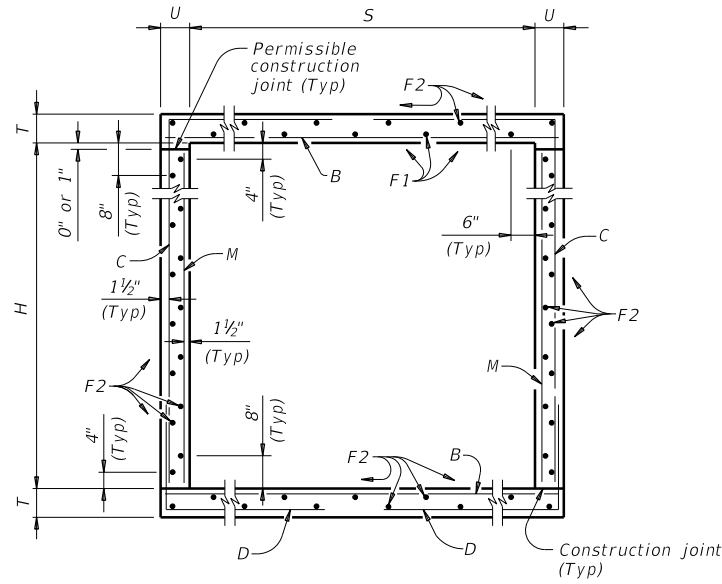
**SINGLE BOX CULVERTS  
CAST-IN-PLACE  
0' TO 30' FILL**

**SCC-3 & 4**

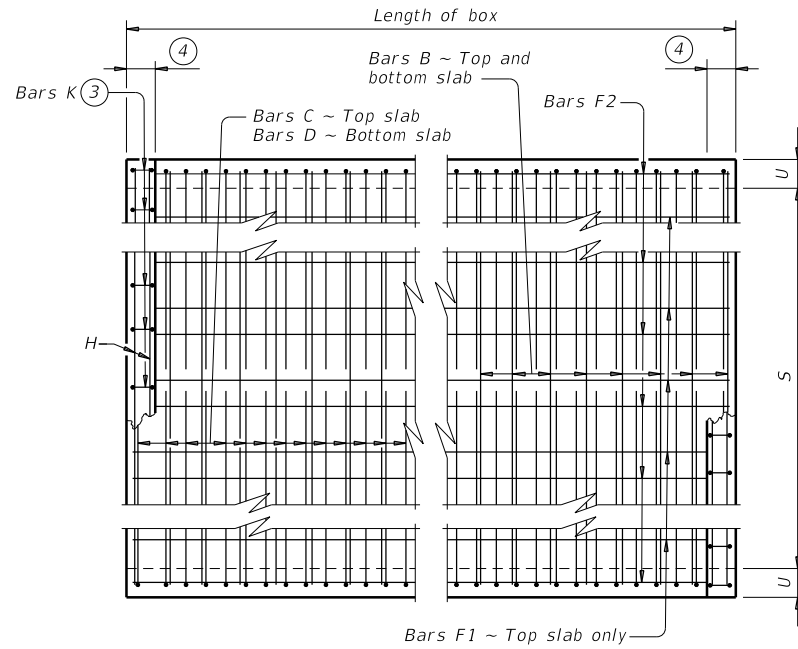
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© TXDOT February 2020	CONT	SECT	JOB	HIGHWAY
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04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	LRD	DIMMIT		227

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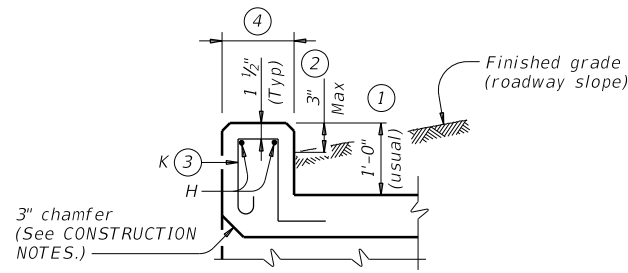
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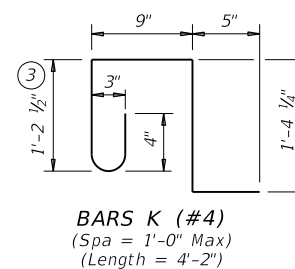
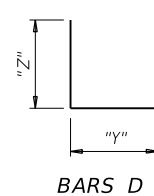
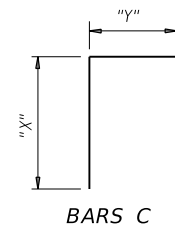
**TYPICAL SECTION**



**PLAN OF REINF STEEL**



**SECTION THRU CURB**



- ① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- ② For vehicle safety, the following requirements must be met:
  - For structures without bridge rail, construct curbs no more than 3" above finished grade.
  - For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
- ③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
- ④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.  
 Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.  
 If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

**CONSTRUCTION NOTES:**

Do not use permanent forms.  
 Chamfer the bottom edge of the top slab 3" at the entrance.  
 Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

**MATERIAL NOTES:**

- Provide Grade 60 reinforcing steel.
- Provide galvanized reinforcing steel if required elsewhere in the plans.
- Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
  - culverts with overlay,
  - culverts with 1-to-2 course surface treatment, or
  - culverts with the top slab as the final riding surface.
- Provide bar laps, where required, as follows:
  - Uncoated or galvanized ~ #4 = 1'-8" Min
  - Uncoated or galvanized ~ #5 = 2'-1" Min
  - Uncoated or galvanized ~ #6 = 2'-6" Min

**GENERAL NOTES:**

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.  
 See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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



**SINGLE BOX CULVERTS  
 CAST-IN-PLACE  
 0' TO 30' FILL**

**SCC-5 & 6**

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SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																											QUANTITIES											
					Bars B					Bars C					Bars D					Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total					
					S	H	T	U	No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)
5'-0"	2'-0"	8"	7"	26'	108	#6	9"	5'-11"	960	108	#5	9"	6'-4"	713	2'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	2'-0"	144	4	39'-9"	106	22	39'-9"	584	5'-11"	16	14	39	0.391	80.8	0.5	55	16.1	3,285
5'-0"	2'-0"	9"	7"	30'	108	#6	9"	5'-11"	960	108	#5	9"	6'-5"	723	2'-8"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	2'-0"	144	4	39'-9"	106	22	39'-9"	584	5'-11"	16	14	39	0.429	81.2	0.5	55	17.6	3,304
5'-0"	3'-0"	8"	7"	26'	108	#6	9"	5'-11"	960	108	#5	9"	7'-4"	826	3'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	3'-0"	216	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.434	88.0	0.5	55	17.8	3,576
5'-0"	3'-0"	9"	7"	30'	108	#6	9"	5'-11"	960	108	#5	9"	7'-5"	835	3'-8"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	3'-0"	216	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.472	88.5	0.5	55	19.3	3,594
5'-0"	4'-0"	8"	7"	26'	108	#6	9"	5'-11"	960	108	#5	9"	8'-4"	939	4'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	4'-0"	289	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.477	92.7	0.5	55	19.5	3,762
5'-0"	4'-0"	9"	7"	30'	108	#6	9"	5'-11"	960	108	#5	9"	8'-5"	948	4'-8"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	4'-0"	289	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.515	93.1	0.5	55	21.1	3,780
5'-0"	5'-0"	8"	7"	26'	108	#6	9"	5'-11"	960	108	#5	9"	9'-4"	1,051	5'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	5'-0"	361	4	39'-9"	106	30	39'-9"	797	5'-11"	16	14	39	0.521	100.0	0.5	55	21.3	4,053
5'-0"	5'-0"	9"	7"	30'	108	#6	9"	5'-11"	960	108	#5	9"	9'-5"	1,061	5'-8"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	5'-0"	361	4	39'-9"	106	30	39'-9"	797	5'-11"	16	14	39	0.559	100.4	0.5	55	22.8	4,072
6'-0"	2'-0"	8"	7"	20'	108	#6	9"	6'-11"	1,122	108	#5	9"	6'-8"	751	2'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	2'-0"	144	5	39'-9"	133	25	39'-9"	664	6'-11"	18	16	45	0.440	89.4	0.5	63	18.1	3,637
6'-0"	2'-0"	9"	7"	26'	108	#6	9"	6'-11"	1,122	162	#5	6"	6'-9"	1,141	2'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	2'-0"	144	5	39'-9"	133	25	39'-9"	664	6'-11"	18	16	45	0.485	109.0	0.5	63	19.9	4,422
6'-0"	2'-0"	10"	8"	30'	108	#6	9"	7'-1"	1,149	162	#5	6"	6'-11"	1,169	2'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	2'-0"	110	5	39'-9"	133	25	39'-9"	664	7'-1"	19	18	50	0.551	110.2	0.5	69	22.6	4,477
6'-0"	3'-0"	8"	7"	20'	108	#6	9"	6'-11"	1,122	108	#5	9"	7'-8"	864	3'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	3'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.484	96.6	0.5	63	19.9	3,928
6'-0"	3'-0"	9"	7"	26'	108	#6	9"	6'-11"	1,122	162	#5	6"	7'-9"	1,309	3'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	3'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.528	117.6	0.5	63	21.6	4,768
6'-0"	3'-0"	10"	8"	30'	108	#6	9"	7'-1"	1,149	162	#5	6"	7'-11"	1,338	3'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	3'-0"	164	5	39'-9"	133	29	39'-9"	770	7'-1"	19	18	50	0.601	118.4	0.5	69	24.6	4,806
6'-0"	4'-0"	8"	7"	20'	108	#6	9"	6'-11"	1,122	108	#5	9"	8'-8"	976	4'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	4'-0"	289	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.527	101.3	0.5	63	21.6	4,113
6'-0"	4'-0"	9"	7"	26'	108	#6	9"	6'-11"	1,122	162	#5	6"	8'-9"	1,478	4'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	4'-0"	289	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.571	123.7	0.5	63	23.4	5,010
6'-0"	4'-0"	10"	8"	30'	108	#6	9"	7'-1"	1,149	162	#5	6"	8'-11"	1,507	4'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	4'-0"	219	5	39'-9"	133	29	39'-9"	770	7'-1"	19	18	50	0.650	124.0	0.5	69	26.5	5,030
6'-0"	5'-0"	8"	7"	20'	108	#6	9"	6'-11"	1,122	108	#5	9"	9'-8"	1,089	5'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	5'-0"	361	5	39'-9"	133	33	39'-9"	876	6'-11"	18	16	45	0.570	108.5	0.5	63	23.3	4,404
6'-0"	5'-0"	9"	7"	26'	108	#6	9"	6'-11"	1,122	162	#5	6"	9'-9"	1,647	5'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	5'-0"	361	5	39'-9"	133	33	39'-9"	876	6'-11"	18	16	45	0.614	132.4	0.5	63	25.1	5,357
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6'-0"	6'-0"	8"	7"	20'	108	#6	9"	6'-11"	1,122	108	#5	9"	10'-8"	1,202	6'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	6'-0"	433	5	39'-9"	133	37	39'-9"	982	6'-11"	18	16	45	0.613	115.8	0.5	63	25.0	4,695
6'-0"	6'-0"	9"	7"	26'	108	#6	9"	6'-11"	1,122	162	#5	6"	10'-9"	1,816	6'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	6'-0"	433	5	39'-9"	133	37	39'-9"	982	6'-11"	18	16	45	0.657	141.0	0.5	63	26.8	5,704
6'-0"	6'-0"	10"	8"	30'	108	#6	9"	7'-1"	1,149	162	#5	6"	10'-11"	1,845	6'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	6'-0"	329	5	39'-9"	133	37	39'-9"	982	7'-1"	19	18	50	0.749	140.5	0.5	69	30.5	5,690

⑤ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

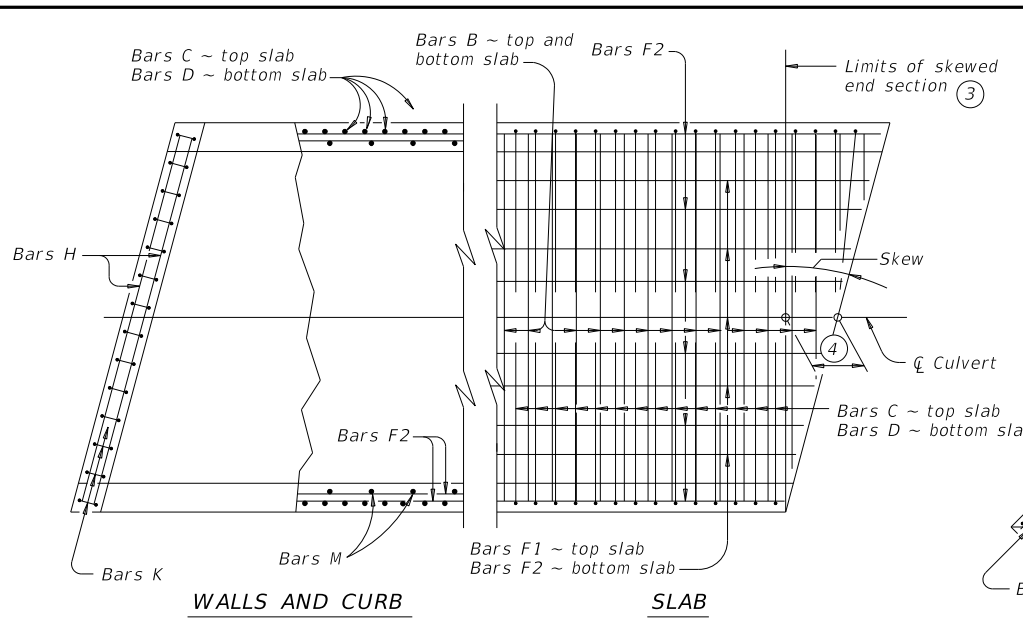


### SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

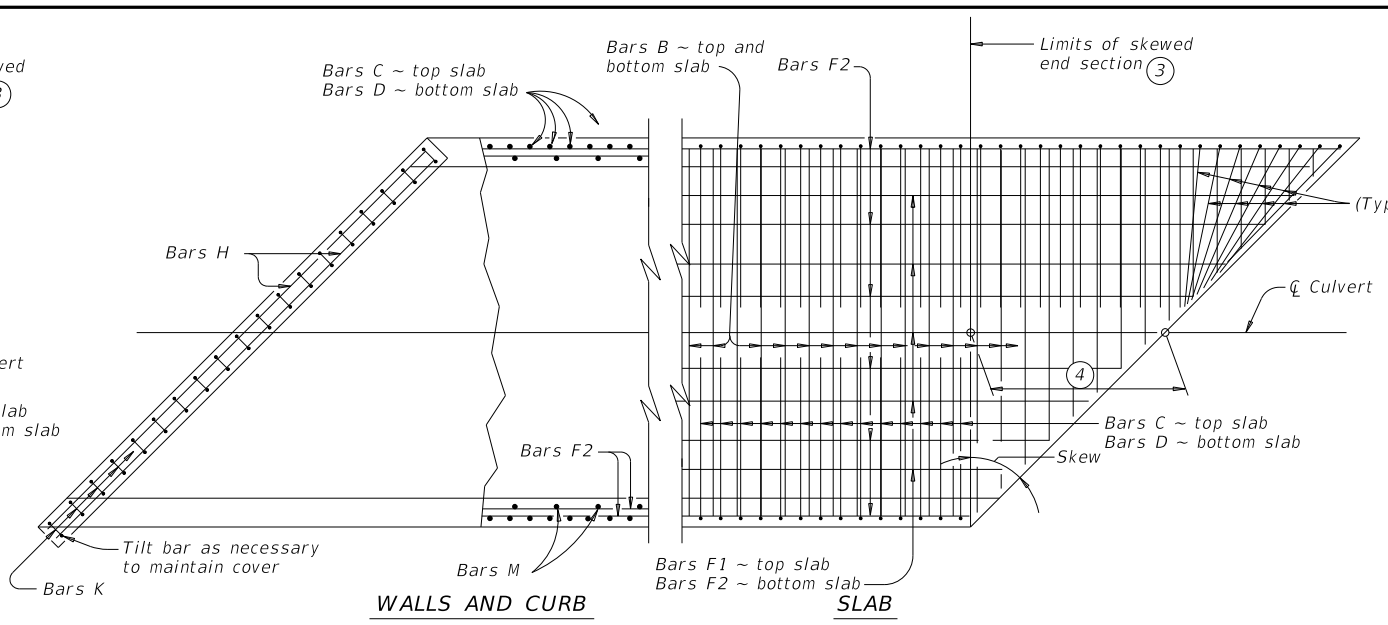
**SCC-5 & 6**

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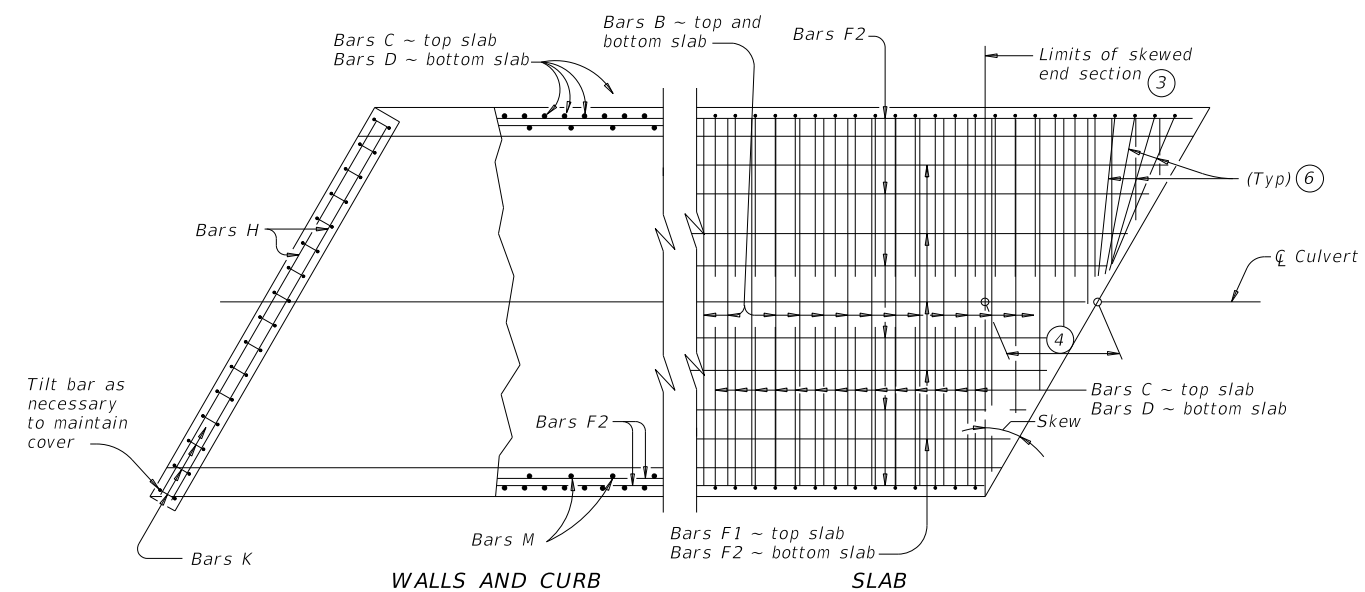
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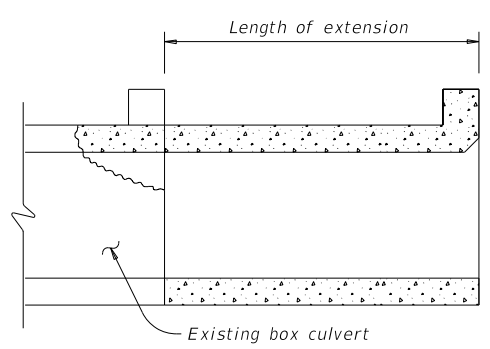
PLAN OF SKEWED ENDS ~ FROM 0° TO 15°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



LENGTHENING DETAIL

① For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.  
 For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, N<sub>ba</sub>, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.  
 Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

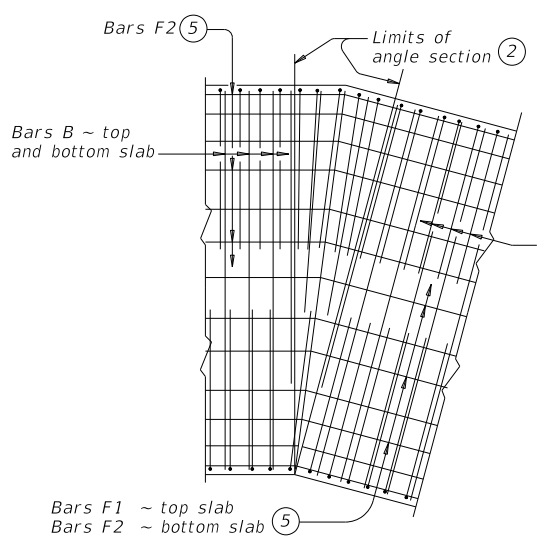
- ② When the spacing between Bars B becomes less than half of the normal spacing, cut bars to avoid conflict.
- ③ The length of Bars B vary in the skewed end sections.
- ④  $[One\ half\ of\ overall\ width] \times [tangent\ of\ the\ skew\ angle]$
- ⑤ Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.
- ⑥ When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.
- ⑦ At the Contractor's option, for skews of 15° or less, place Bars B, C, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast-In-Place (SCC) standards sheets to accommodate the skew.

**CONSTRUCTION NOTES:**  
 Do not use permanent forms.  
 When required, lap Bars H 1'-8" for uncoated or galvanized bars.  
 Provide a minimum of 1 1/2" clear cover.

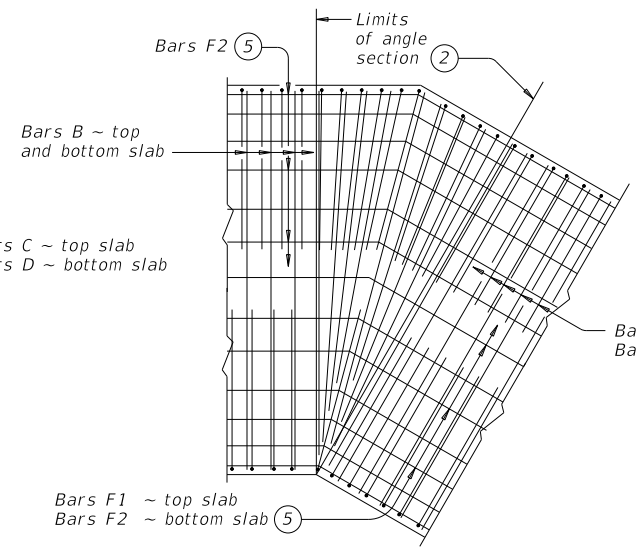
**MATERIAL NOTES:**  
 Provide Grade 60 reinforcing steel.  
 Provide galvanized reinforcing steel, if required elsewhere in the plans.  
 Provide Class C concrete (f'c = 3,600 psi) with these exceptions:  
 provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

**GENERAL NOTES:**  
 Designed according to AASHTO LRFD Bridge Design Specifications.  
 Refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for details of straight sections of culvert.  
 For skewed sections and angle sections, refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.  
 For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast-In-Place (SCC) standard sheets by the cosine of the skew angle.

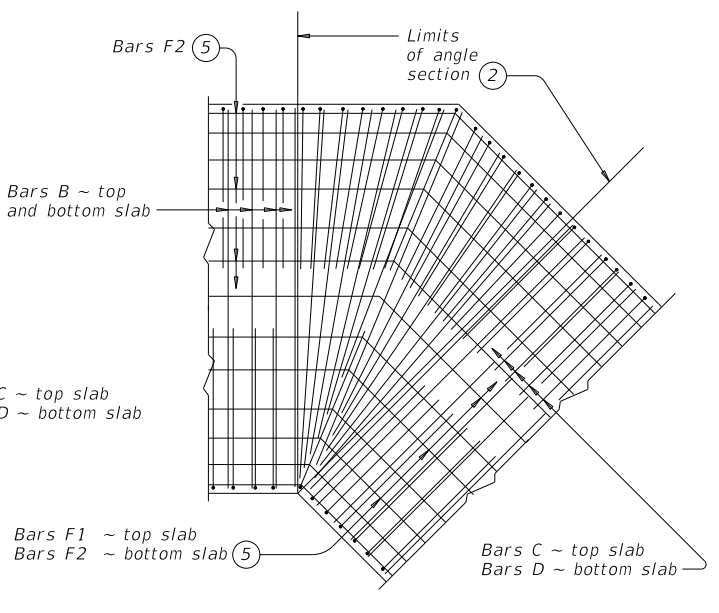
Cover dimensions are clear dimensions, unless noted otherwise.



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

HL93 LOADING

		<b>Bridge Division Standard</b>	
<b>SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS</b>			
<b>SCC-MD</b>			
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REVISIONS	0037	08	042, ETC.
DIST: LRD	COUNTY: DIMMIT	SHEET NO: 230	



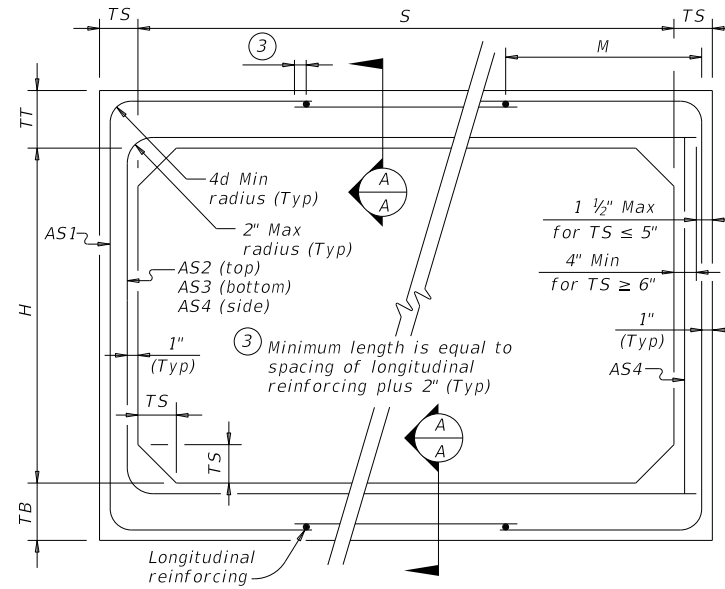
DATE: 6/23/2020 1:04:01 PM  
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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or the accuracy of the information provided.

**BOX DATA**

SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) <sup>②</sup>							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	0.17	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	0.17	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	0.17	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	0.17	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	

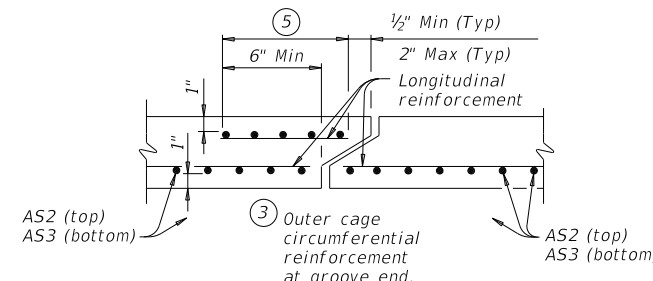
① For box length = 8'-0"

② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



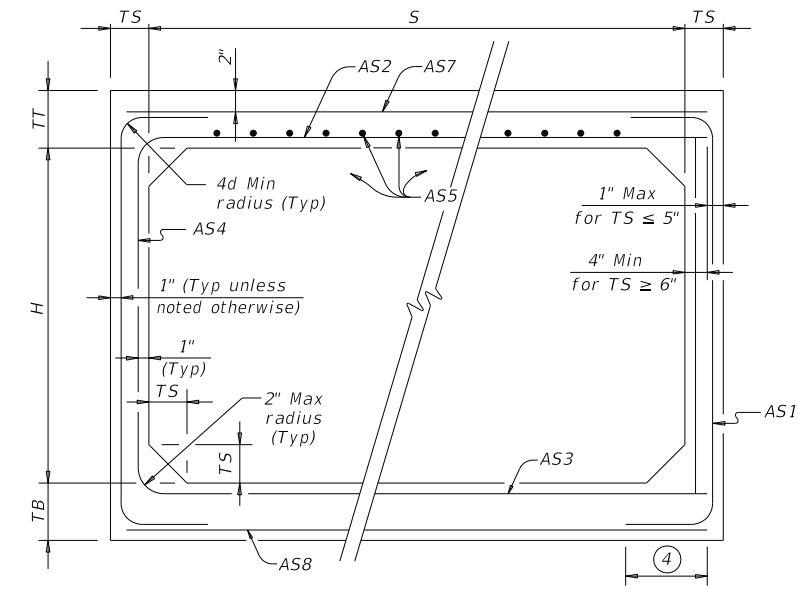
CORNER OPTION "A" CORNER OPTION "B"

**FILL HEIGHT 2 FT AND GREATER**



**SECTION A-A**

(Showing top and bottom slab joint reinforcement.)



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)

**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**

				<b>Bridge Division Standard</b>	
<b>SINGLE BOX CULVERTS PRECAST 5'-0" SPAN</b>					
<b>SCP-5</b>					
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REVISIONS		0037	08	042, ETC.	US 83
		DIST	COUNTY		SHEET NO.
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 TITLE: SAFETY END TREATMENT WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE  
 AUTHOR: J. Lopez  
 CHECKER: J. Lopez  
 DATE: 6/23/2020  
 DESIGNER: J. Lopez  
 CHECKER: J. Lopez  
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 TITLE: SAFETY END TREATMENT WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE  
 AUTHOR: J. Lopez  
 CHECKER: J. Lopez  
 DATE: 6/23/2020  
 DESIGNER: J. Lopez  
 CHECKER: J. Lopez

**TABLE OF DIMENSIONS AND REINFORCING STEEL**  
(Wings for One Structure End)

Maximum Wingwall Height Hw (9)	Dimensions				Variable Reinforcing				Estimated Quantities per ft of wing length (Two-Wings) (3)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)
					Size	Spa	Size	Spa		
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721

**TABLE OF WING WALL REINFORCING (Two-Wings)**

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

**TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES**

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)		2.45	
Conc (CY/Ft)		0.037	

**TABLE OF ESTIMATED ANCHOR TOEWALL QUANTITIES**

Bar	Size	No.	Spa
K	#4	~	1'-0"
N	#5	6	~
OL	#4	6	~
Reinf (Lb/Ft)		9.82	
Conc (CY/Ft)		0.074	

- Extend Bars P 3'-0" Min into bottom slab of box culvert.
- Adjust to fit as necessary to maintain 1 1/2" clear cover and 4" Min between bars.
- Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.
- Recommended values of slope are: 3:1, 4:1, and 6:1. Provide 3:1 or flatter slope.
- When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, extend construction joints or grooved joints, oriented in the direction of flow, across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B is not required.
- At Contractor's option, end the culvert toewall flush with wingwall toewall. Adjust reinforcing as needed.
- 3" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to the Extend Curb Details (ECD) standard sheet.
- For vehicle safety, reduce curb heights, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.
- See Table of Maximum Wing Heights for various slopes. Height is limited based on a 33'-6" maximum safety pipe runner length.

**TABLE OF MAXIMUM WING HEIGHTS (9)**

Side Slope	Hw Max
3:1	11'-5"
4:1	8'-10"
6:1	6'-1"

**WING DIMENSION CALCULATIONS:**

$$\begin{aligned}
 Hw &= H + T + C - 0.250' \text{ (9)} \\
 A &= (Hw - 0.333') (SL) \\
 B &= (A) (\tan 30^\circ) \\
 Lw &= (A) / \cos 30^\circ
 \end{aligned}$$

For cast-in-place culverts:

$$Ltw = (N) (S) + (N + 1) (U)$$

For precast culverts:

$$Ltw = (N) (2U + S) + (N - 1) (0.500')$$

$$Lc = (Ltw) - (2U)$$

$$Atw = (Lc) + (2B)$$

Total Wingwall Area (two wings ~ SF) = (Hw + 0.333') (Lw)

$$\begin{aligned}
 Hw &= \text{Height of wingwall (feet)} \\
 Atw &= \text{Anchor toewall length (feet)} \\
 Lw &= \text{Length of wingwall (feet)} \\
 N &= \text{Number of culvert barrels} \\
 SL:1 &= \text{Side slope ratio (horizontal : 1 vertical)} \\
 Ltw &= \text{Culvert toewall length (feet)} \\
 Lc &= \text{Culvert curb between wings (feet)}
 \end{aligned}$$

See applicable box culvert standard for H, S, T, and U values. See Table of Maximum Wall Heights for limits on Hw.

**MATERIAL NOTES:**

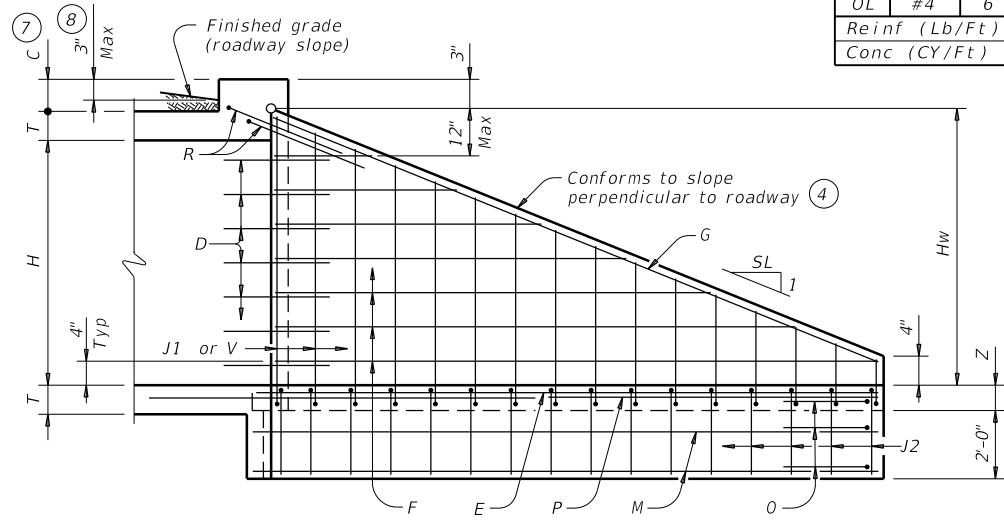
Provide Grade 60 reinforcing steel. Provide galvanized reinforcing steel if required elsewhere in the plans. Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise. Provide Class "C" concrete ( $f'c = 3,600$  psi). Adjust reinforcing as necessary to provide a minimum clear cover of 1 1/2". Provide pipe runners and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52. Provide ASTM A307 bolts and nuts. Provide ASTM A36 steel plates. Galvanize all steel components, except reinforcing unless required elsewhere in the plans, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the Item 445, "Galvanizing". For optional adhesive anchors, install adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing adhesive, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Provide anchorage rods that are clean and free of grease, oil, or any other foreign material. Demonstrate hole cleaning method to the Engineer for approval and continue the approved process for all anchorage locations. Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

**GENERAL NOTES:**

Designed according to AASHTO LFRD Bridge Design Specifications. The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners. Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981. When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer. All bolts, nuts, washers, brackets, angles, and pipe runners are considered parts of the safety end treatment for payment. The quantities for pipe runners, reinforcing steel, and concrete, resulting from the formulas given herein are for Contractor's information only. See the Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

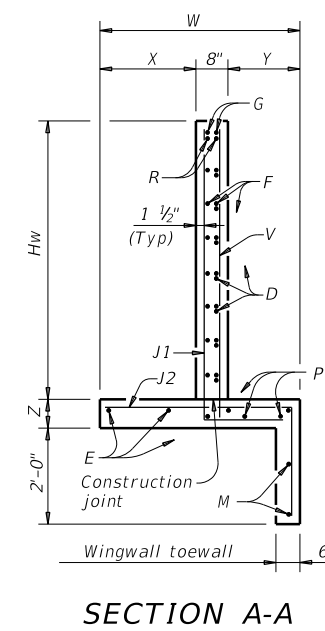
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

SHEET 1 OF 3

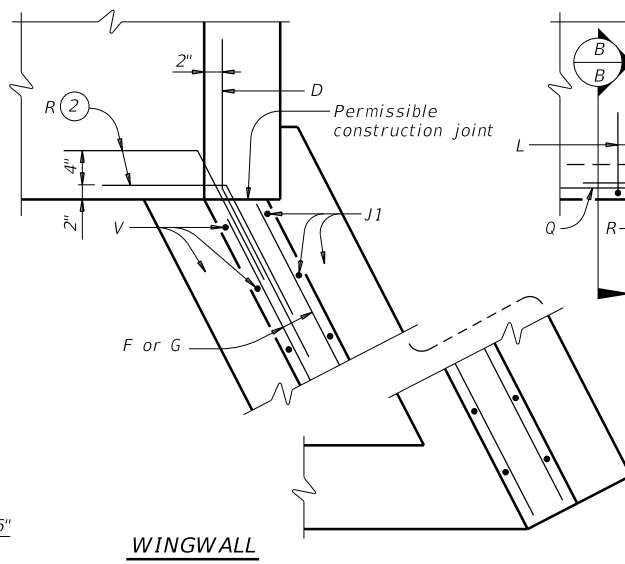


**INSIDE ELEVATION OF WINGWALL**

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



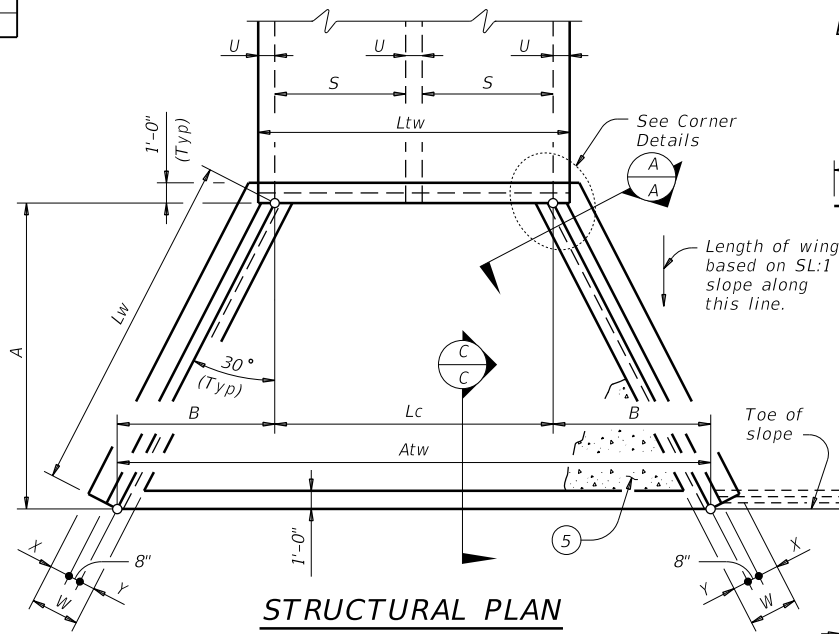
**SECTION A-A**



**CORNER DETAILS**

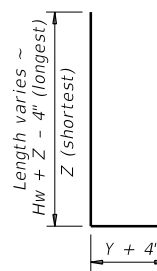
(Culvert and culvert toewall reinforcing not shown for clarity.)

**FOOTING AND TOEWALL**

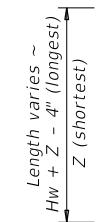


**STRUCTURAL PLAN**

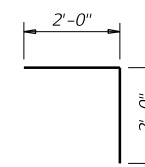
(Showing dimensions.)



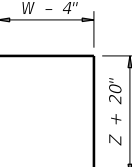
**BARS J1**



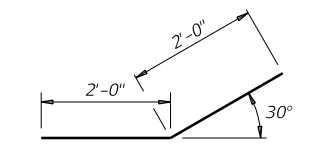
**BARS V**



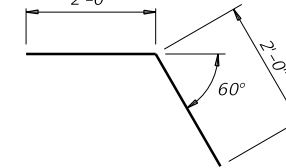
**BARS L**



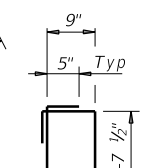
**BARS J2**



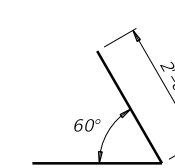
**BARS D**



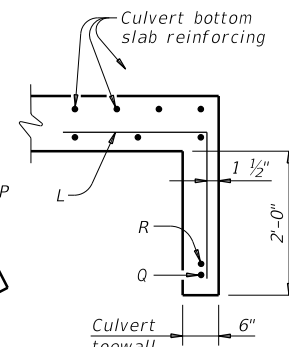
**BARS R**



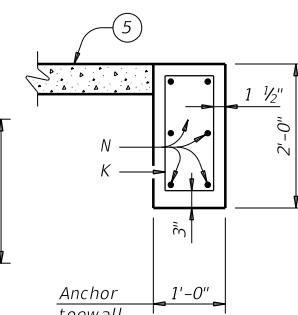
**BARS K**  
(Length = 5'-5")



**BARS OL**



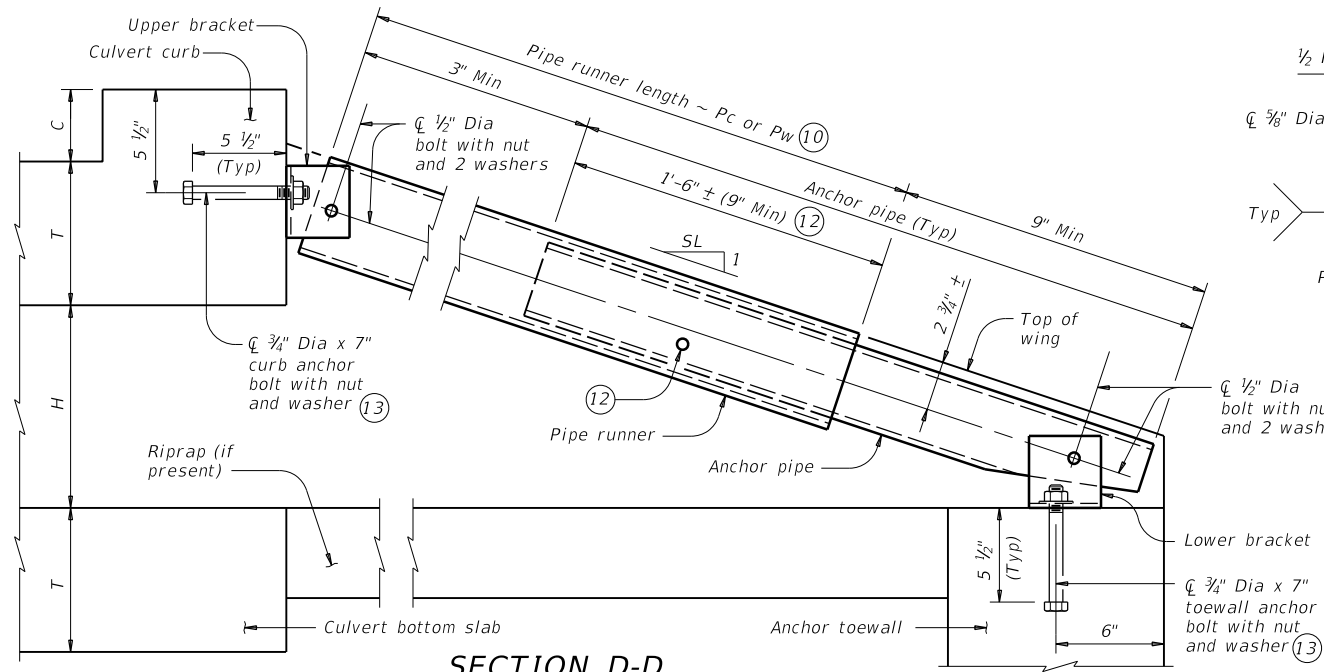
**SECTION B-B (5)**



**SECTION C-C**

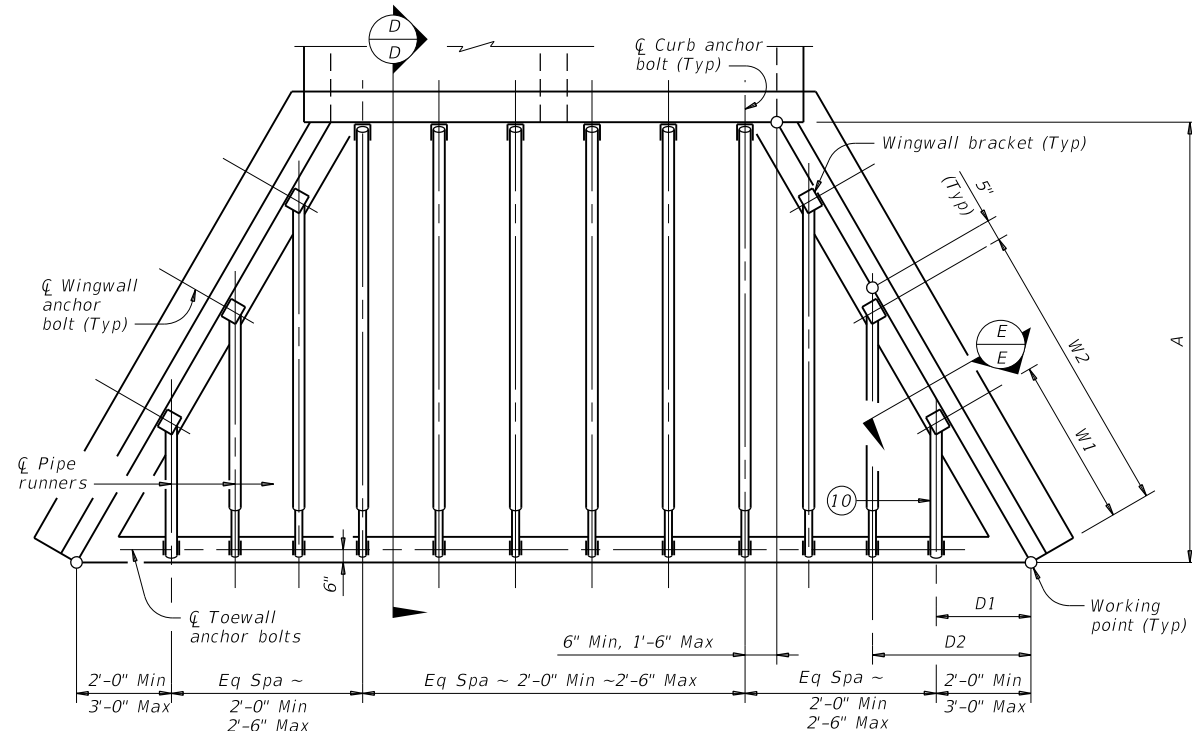
<b>Texas Department of Transportation</b>			<b>Bridge Division Standard</b>	
<b>SAFETY END TREATMENT WITH FLARED WINGS</b>				
<b>FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE</b>				
<b>SETB-FW-0</b>				
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	DIST: LRD	COUNTY: DIMMIT	SHEET NO: 232	

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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units.

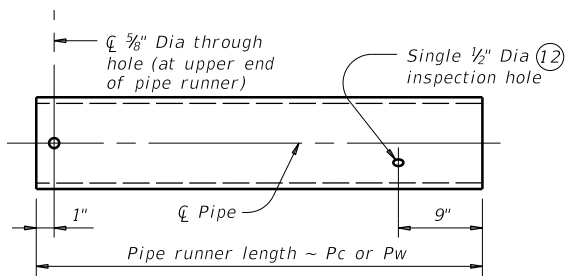


**SECTION D-D**

(Showing curb pipe runner. Except for upper bracket, wingwall pipe runners are similar.)

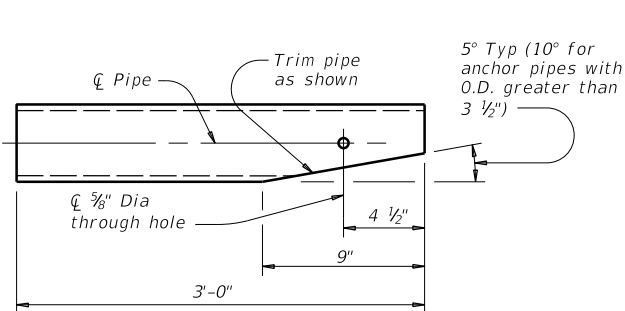


**PIPE RUNNER PLAN**

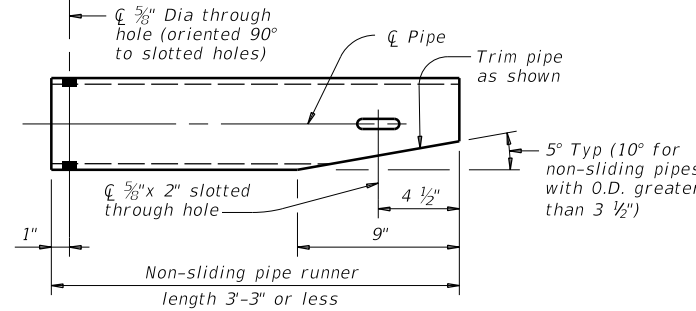


Note: Pipe diameter required for curb pipe runner is also used for wingwall pipe runner.

**PIPE RUNNER DETAILS**

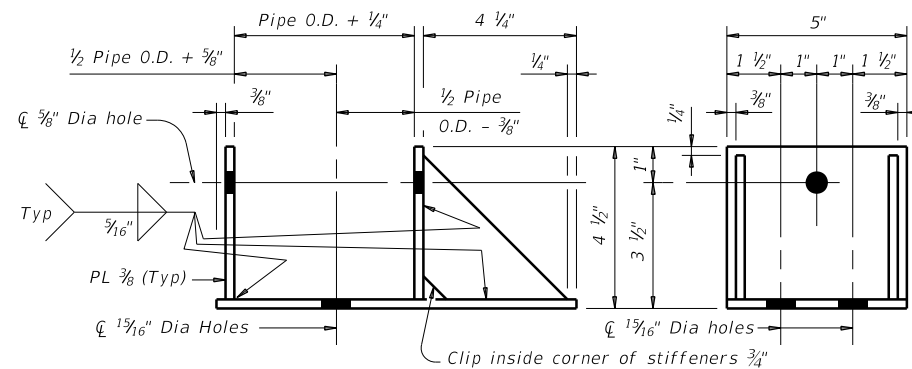


**ANCHOR PIPE DETAILS**



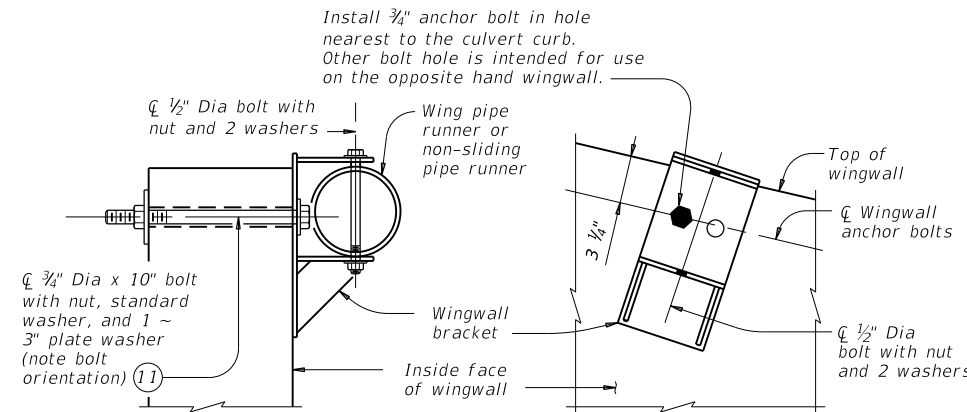
Note: Pipe size is the same as required for curb pipe runner. Adjust the corresponding lower bracket accordingly.

**NON-SLIDING PIPE RUNNER DETAILS**



**ELEVATION**

**SIDE VIEW**



**SECTION E-E**

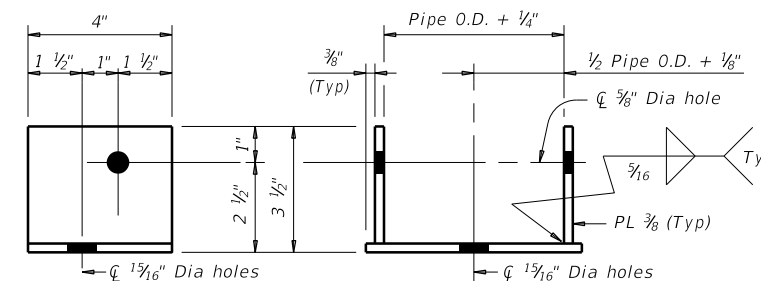
(Showing installed bracket.)

**ELEVATION**

(Showing installed bracket normal to wall. Pipe not shown for clarity.)

Note: Match wingwall bracket to the upper curb bracket size.

**WINGWALL BRACKET DETAILS**



**SIDE VIEW**

**ELEVATION**

Note: Match upper and lower brackets, except for the brackets used with non-sliding pipe runners, to the required pipe diameters as shown in the table.

**UPPER AND LOWER BRACKET DETAILS**

**MAXIMUM PIPE RUNNER LENGTHS AND REQUIRED PIPE RUNNER SIZES**

Maximum Pipe Runner Length (Pc or Pw)	Required Pipe Runner Size			Required Anchor Pipe Size		
	Pipe Size	Pipe O.D.	Pipe I.D.	Pipe Size	Pipe O.D.	Pipe I.D.
9'-4"	3" STD	3.500"	3.068"	2" STD	2.375"	2.067"
19'-0"	4" STD	4.500"	4.026"	3" STD	3.500"	3.068"
33'-6"	5" STD	5.563"	5.047"	4" STD	4.500"	4.026"

- 10 If pipe runner length (Pw) is 1'-9" or less replace the normal pipe runner and anchor pipe with a single non-sliding pipe runner. See Non-Sliding Pipe Runner Details for additional information.
- 11 At Contractor's option, 7/8" diameter hole may be formed or cored drilled. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes.
- 12 After installation of pipe runner, use the 1/2" inspection hole to ensure that the lap of the anchor pipe with the pipe runner is adequate.
- 13 At Contractor's option, an adhesive anchor may be used. Provide 3/4" Dia adhesive anchors that meet the requirements of ASTM A307 Gr A fully threaded rods. Embed threaded rods into curb, wingwalls, and toewall using a Type III, Class C, D, E, or F anchor adhesive. Minimum embedment depth is 5 1/2". Provide anchor adhesive able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use.

**PIPE RUNNER DIMENSION CALCULATIONS:**

$$\begin{aligned}
 Wn &= (2.000)(Dn) - (0.416') \\
 Pwn &= (Dn)(K2) - (2.063') \\
 Pw1 \text{ Non-Sliding Pipe Runner (If required)} &= (D1)(K2) - (0.563') \\
 Pc &= (A)(K1) - (1.688')
 \end{aligned}$$

$Wn$  = Distance from working point to centerline anchor bolt measured along bottom inside face of wing (feet)  
 $Dn$  = Distance from working point to centerline pipe runner measured along outside face of anchor toewall (feet)  
 $Pw$  = Wingwall pipe runner length (feet)  
 $Pc$  = Curb pipe runner length (feet)  
 $K$  = Constant values for use in formulas  
 Slope SL:1     $K1$      $K2$   
 3:1 ~ 1.054 ~ 1.826  
 4:1 ~ 1.031 ~ 1.785  
 6:1 ~ 1.014 ~ 1.756  
 $n$  = Wing pipe runner number

**Texas Department of Transportation**

**Bridge Division Standard**

**SAFETY END TREATMENT WITH FLARED WINGS**

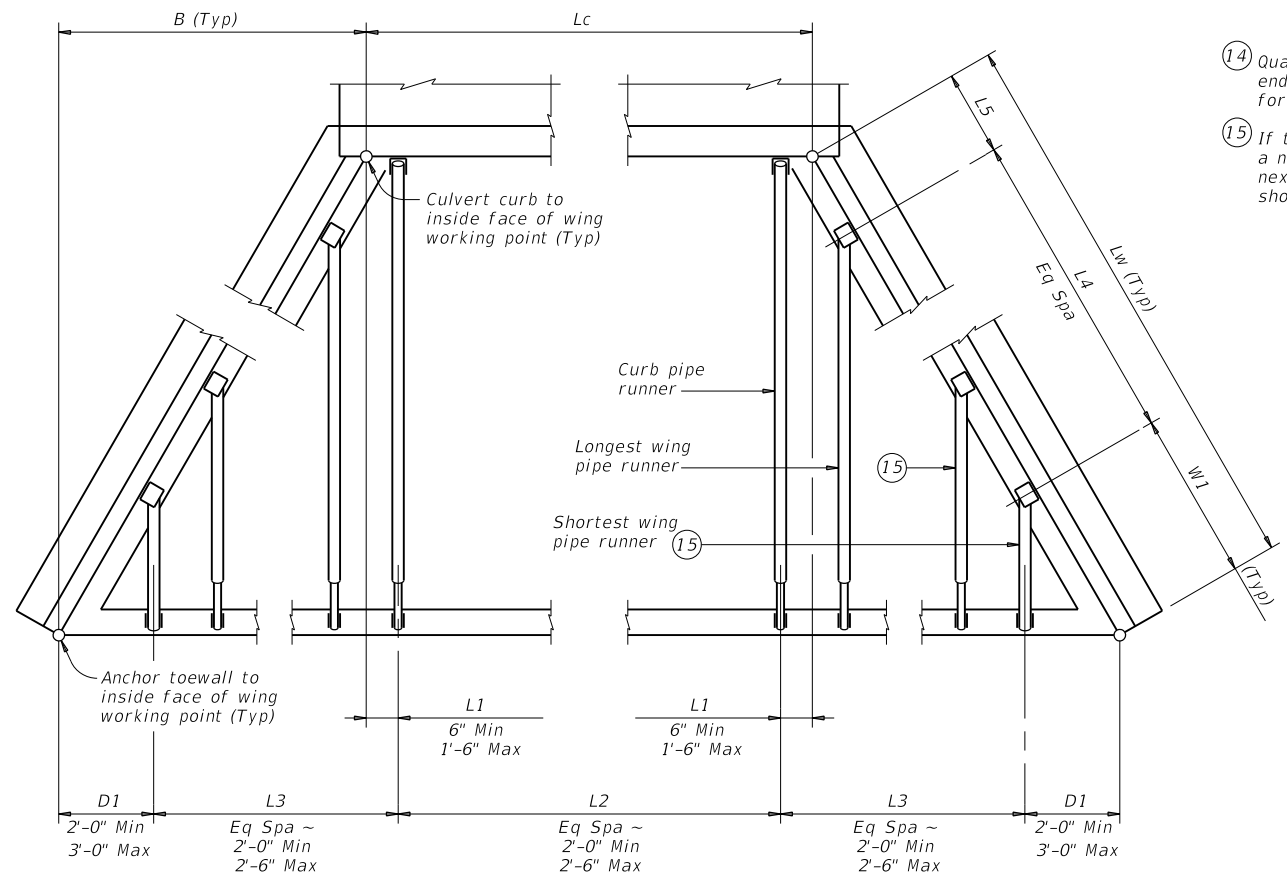
**FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE**

**SETB-FW-0**

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Culvert Station and/or Creek name followed by applicable end (Lt, Rt or Both) ⑬	Lc (Ft)	L1 (Ft)	L2			D1 (Ft)	L3			W1 (Ft)	L4			L5 (Ft)	Curb Pipe Runner (Pc)		Longest Wing Pipe Runner (Pw) (Ft)	Shortest Wing Pipe Runner (Pw) (Ft)	Non-Sliding Wing Pipe Runner (if applicable) (Ft)	Curb, Wing, and/or Non-Sliding Pipe Runners		3'-0" Anchor Pipe	
			No. Spa	Spa at (Ft)	Overall Length (Ft)		No. Spa	Spa at (Ft)	Overall Length (Ft)		No. Spa	Spa at (Ft)	Overall Length (Ft)		No.	Length (Ft)				Size (3", 4" or 5")	Total Length ⑭ (Ft)	Size (2", 3" or 4")	Total Length ⑭ (Ft)
Sta 1523+62 (Lt)	19.167'	0.500'	8	2.271'	18.167'	3.000'	5	2.262'	11.308'	5.583'	4	4.523'	18.093'	3.940'	9	22.979'	19.438'	3.292'	N/A	5"	320.458'	4"	57.000'
Sta 1523+62 (Rt)	19.167'	0.500'	8	2.271'	18.167'	3.000'	4	2.406'	9.624'	5.583'	3	4.812'	14.437'	4.229'	9	19.958'	16.167'	3.292'	N/A	5"	257.458'	4"	51.000'
Sta 1529+96 (Lt)	6.000'	0.500'	2	2.500'	5.000'	3.000'	5	2.098'	10.490'	5.583'	4	4.196'	16.785'	3.613'	3	21.125'	17.938'	3.208'	N/A	5"	169.104'	4"	39.000'
Sta 1529+96 (Rt)	6.000'	0.500'	2	2.500'	5.000'	3.000'	4	2.406'	9.624'	5.583'	3	4.812'	14.437'	4.229'	3	19.604'	15.875'	3.208'	N/A	5"	135.146'	4"	33.000'
Sta 1667+67 (Lt)	16.583'	0.500'	7	2.226'	15.583'	3.000'	3	2.318'	6.954'	5.583'	2	4.636'	9.272'	4.053'	8	15.563'	11.875'	3.417'	N/A	4"	170.375'	3"	42.000'
Sta 1667+67 (Rt)	16.583'	1.000'	6	2.431'	14.583'	3.000'	4	2.002'	8.007'	5.583'	3	4.004'	12.011'	2.420'	7	16.188'	14.021'	3.292'	N/A	4"	182.563'	3"	45.000'
Sta 1721+99 (Lt)	3.000'	0.500'	1	2.000'	2.000'	3.000'	2	2.358'	4.717'	5.583'	1	4.717'	4.717'	4.134'	2	11.208'	7.500'	3.292'	N/A	4"	44.000'	3"	18.000'
Sta 1721+99 (Rt)	3.000'	1.500'	0	0.000'	0.000'	3.000'	4	2.205'	8.820'	5.583'	3	4.410'	13.230'	1.827'	1	16.438'	14.813'	3.208'	N/A	4"	88.521'	3"	27.000'
Sta 1737+17 (Lt)	16.167'	1.000'	6	2.361'	14.167'	3.000'	3	2.028'	6.083'	5.583'	2	4.055'	8.111'	2.472'	7	12.750'	10.521'	3.292'	N/A	4"	130.688'	3"	39.000'
Sta 1737+17 (Rt)	16.167'	0.500'	7	2.167'	15.167'	3.000'	5	2.069'	10.346'	5.583'	4	4.138'	16.554'	3.555'	8	20.875'	17.729'	3.208'	N/A	5"	271.688'	4"	54.000'
Sta 1753+01 (Lt)	3.000'	0.500'	1	2.000'	2.000'	3.000'	2	2.022'	4.043'	5.583'	1	4.043'	4.043'	3.460'	2	10.000'	6.896'	3.292'	N/A	4"	40.375'	3"	18.000'
Sta 1753+01 (Rt)	3.000'	1.500'	0	0.000'	0.000'	3.000'	4	2.133'	8.531'	5.583'	3	4.266'	12.797'	1.682'	1	15.938'	14.438'	3.208'	N/A	4"	86.521'	3"	27.000'
Sta 1793+21 (Lt)	56.917'	0.500'	23	2.431'	55.917'	3.000'	5	2.310'	11.549'	5.583'	4	4.620'	18.478'	4.036'	24	23.396'	19.792'	3.292'	N/A	5"	676.917'	4"	102.000'
Sta 1793+21 (Rt)	56.917'	0.500'	23	2.431'	55.917'	3.000'	5	2.262'	11.308'	5.583'	4	4.523'	18.093'	3.940'	24	22.979'	19.438'	3.292'	N/A	5"	665.146'	4"	102.000'
Sta 1812+31 (Lt)	33.750'	0.500'	14	2.339'	32.750'	3.000'	4	2.021'	8.085'	5.583'	3	4.042'	12.127'	3.459'	15	17.208'	14.125'	3.292'	N/A	4"	327.792'	3"	69.000'
Sta 1812+31 (Rt)	33.750'	0.500'	14	2.339'	32.750'	3.000'	5	2.002'	10.009'	5.583'	4	4.004'	16.015'	3.420'	15	20.646'	17.583'	3.292'	N/A	5"	414.063'	4"	75.000'
Sta 1830+64 (Lt)	5.000'	0.500'	2	2.000'	4.000'	3.000'	3	2.222'	6.665'	5.583'	2	4.444'	8.887'	3.860'	3	15.042'	11.521'	3.417'	N/A	4"	89.938'	3"	27.000'
Sta 1830+64 (Rt)	5.000'	0.500'	2	2.000'	4.000'	3.000'	6	2.446'	14.676'	5.583'	5	4.892'	24.460'	4.309'	3	28.479'	24.688'	3.208'	N/A	5"	252.813'	4"	45.000'
Sta 1864+07 (Lt)	5.000'	0.500'	2	2.000'	4.000'	3.000'	3	2.017'	6.052'	5.583'	2	4.035'	8.069'	3.451'	3	13.917'	10.792'	3.417'	N/A	4"	84.375'	3"	27.000'
Sta 1864+07 (Rt)	5.000'	0.500'	2	2.000'	4.000'	3.000'	4	2.310'	9.239'	5.583'	3	4.620'	13.859'	4.036'	3	19.271'	15.667'	3.292'	N/A	5"	133.646'	4"	33.000'
Sta 1907+08 (Lt)	27.333'	0.500'	11	2.394'	26.333'	3.000'	7	2.241'	15.687'	5.583'	6	4.482'	26.891'	3.899'	12	30.250'	26.813'	3.208'	N/A	5"	573.146'	4"	78.000'
Sta 1907+08 (Rt)	27.333'	0.500'	11	2.394'	26.333'	3.000'	7	2.241'	15.687'	5.583'	6	4.482'	26.891'	3.899'	12	30.250'	26.813'	3.208'	N/A	5"	573.146'	4"	78.000'
Sta 1957+55 (Lt)	3.000'	1.500'	0	0.000'	0.000'	3.000'	4	2.169'	8.676'	5.583'	3	4.338'	13.014'	1.755'	1	16.188'	14.625'	3.208'	N/A	4"	87.521'	3"	27.000'
Sta 1957+55 (Rt)	3.000'	1.500'	0	0.000'	0.000'	3.000'	3	2.098'	6.294'	5.583'	2	4.196'	8.392'	1.613'	1	12.000'	10.583'	3.208'	N/A	4"	53.375'	3"	21.000'
Sta 1989+28 (Lt)	5.000'	0.500'	2	2.000'	4.000'	3.000'	5	2.084'	10.418'	5.583'	4	4.167'	16.669'	3.584'	3	21.000'	17.833'	3.208'	N/A	5"	168.208'	4"	39.000'
Sta 1989+28 (Rt)	5.000'	1.500'	1	2.000'	2.000'	3.000'	3	2.194'	6.583'	5.583'	2	4.389'	8.777'	1.805'	2	12.750'	11.125'	3.292'	N/A	4"	68.750'	3"	24.000'
Sta 2007+13 (Lt)	3.000'	0.500'	1	2.000'	2.000'	3.000'	4	2.099'	8.397'	5.583'	3	4.199'	12.596'	3.615'	2	17.458'	14.271'	3.208'	N/A	4"	104.833'	3"	30.000'
Sta 2007+13 (Rt)	3.000'	0.500'	1	2.000'	2.000'	3.000'	3	2.462'	7.387'	5.583'	2	4.925'	9.849'	4.341'	2	15.667'	11.854'	3.208'	N/A	4"	76.521'	3"	24.000'



PIPE RUNNER LAYOUT

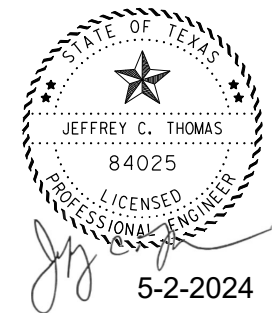
- ⑭ Quantities shown are for one structure end if Lt or Rt. Quantities shown are for two structure ends if Both.
- ⑮ If the outermost wing pipe runner is a non-sliding pipe runner, consider the next outermost wing pipe runner as the shortest.

**SPECIAL NOTE:**

This tabular sheet is to be filled out by the culvert specifier and provides information for the construction details and quantities of pipe runners.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

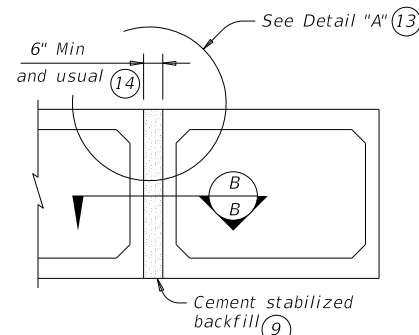
Note that the tabular quantities are given for estimating purposes only. It is likely that these quantities will change due to field conditions. Therefore, all dimensions must be verified by the Contractor in the field prior to fabrication of the safety end treatment components.



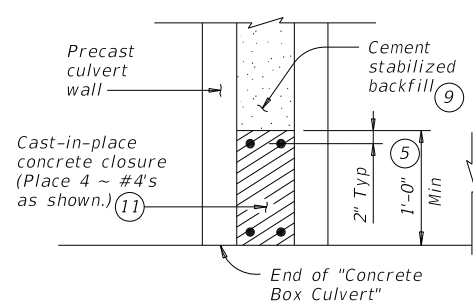
Texas Department of Transportation				Bridge Division Standard	
<b>SAFETY END TREATMENT WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS TYPE I ~ CROSS DRAINAGE</b>					
<b>SETB-FW-0</b>					
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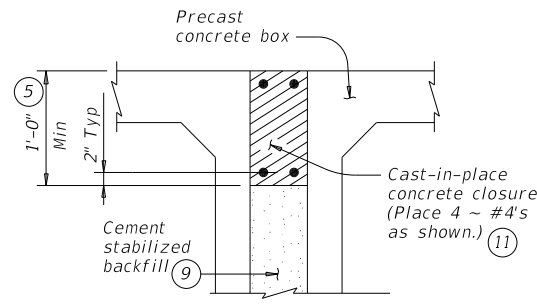
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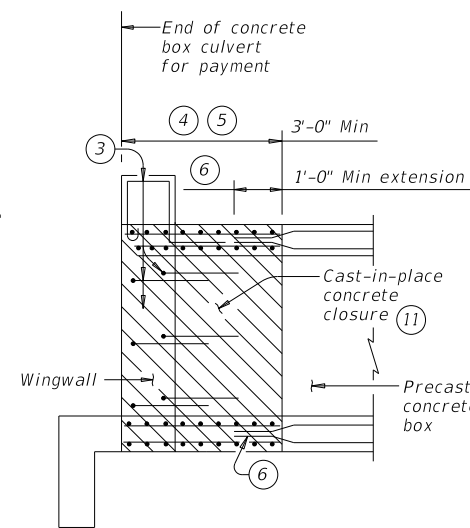
**MULTIPLE UNIT PLACEMENT**



**SECTION B-B**

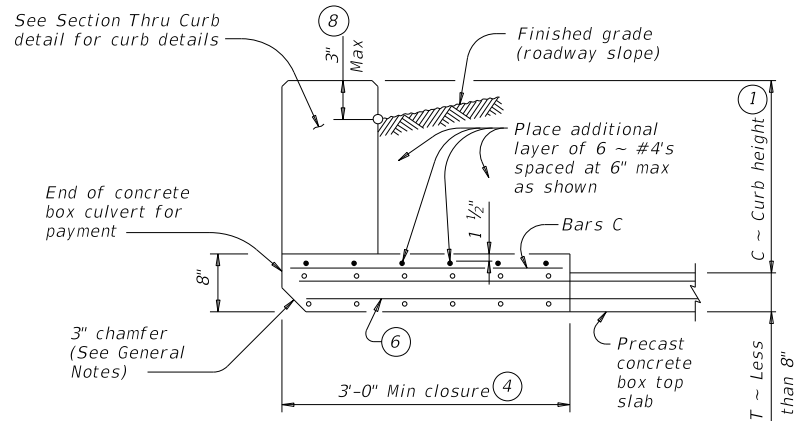


**DETAIL "A"**

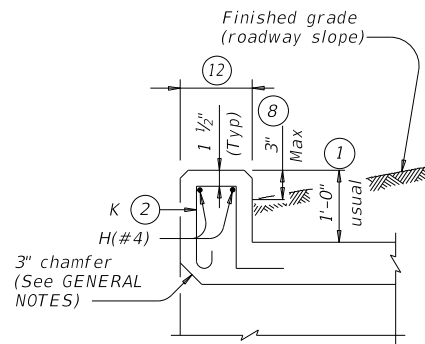


**WINGWALL CONNECTION**

(Also applies to safety end treatment.)

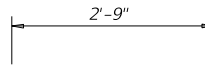


**SECTION THRU TOP SLABS LESS THAN 8"**

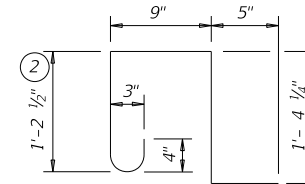


**SECTION THRU CURB**

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.

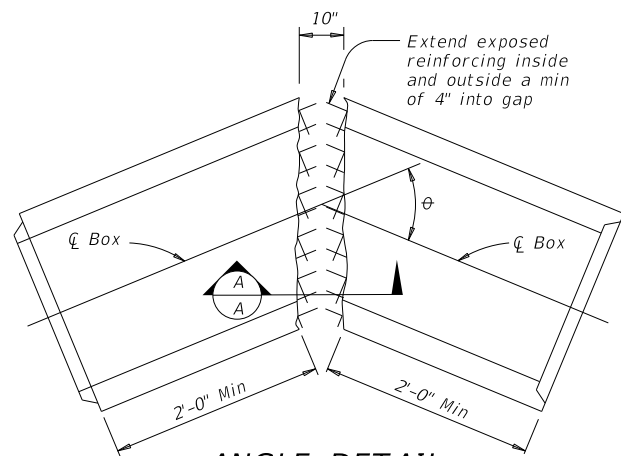
**MATERIAL NOTES:**

- Provide Grade 60 reinforcing steel.
- Provide ASTM A1064 welded wire reinforcement.
- Provide Class C concrete (f<sub>c</sub> = 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.

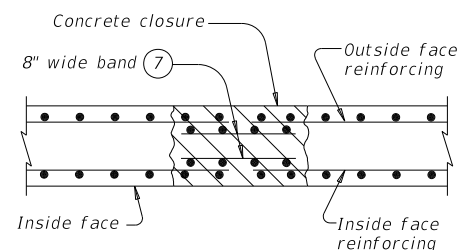
**GENERAL NOTES:**

- 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.

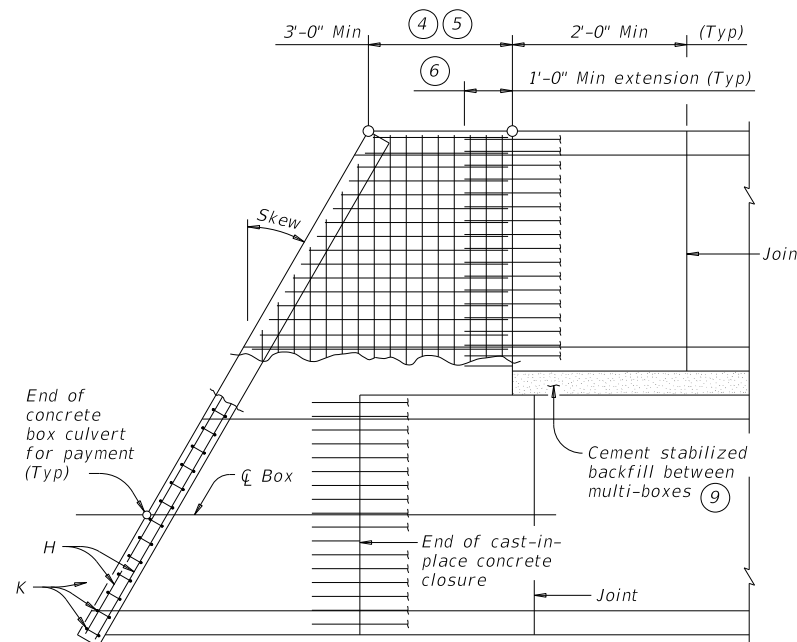
Cover dimensions are clear dimensions, unless noted otherwise.  
Reinforcing bars dimensions are out-to-out of bars.



**ANGLE DETAIL**



**SECTION A-A**



**PLAN OF SKEWED ENDS**

(Showing multi-box placement.)

HL93 LOADING

		<b>Bridge Division Standard</b>	
<b>BOX CULVERTS PRECAST MISCELLANEOUS DETAILS</b>			
<b>SCP-MD</b>			
FILE: scpmdsts-20.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT
©TxDOT February 2020	CONTRACT	SECTION	JOB
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	DIST	COUNTY	SHEET NO.
	LRD	DIMMIT	235

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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 length (2-wings) (3)	
	W	X	Y	Z	Bars J1		Bars J2		Reinf (Lb/Ft)	Conc (CY/Ft)
					Size	Spa	Size	Spa		
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

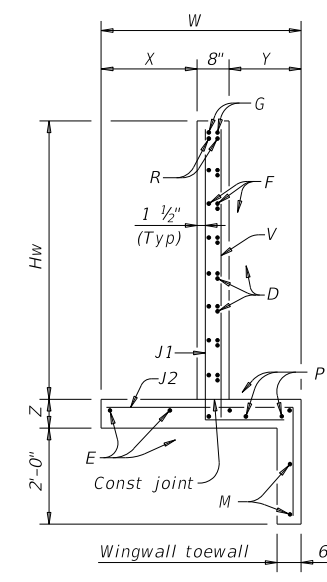
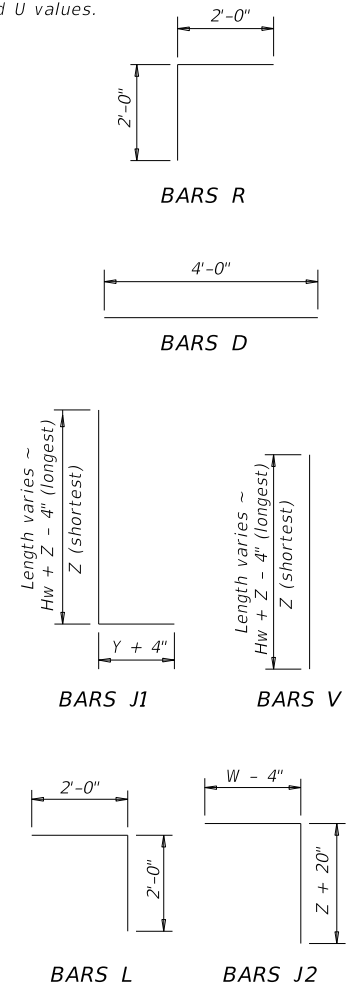
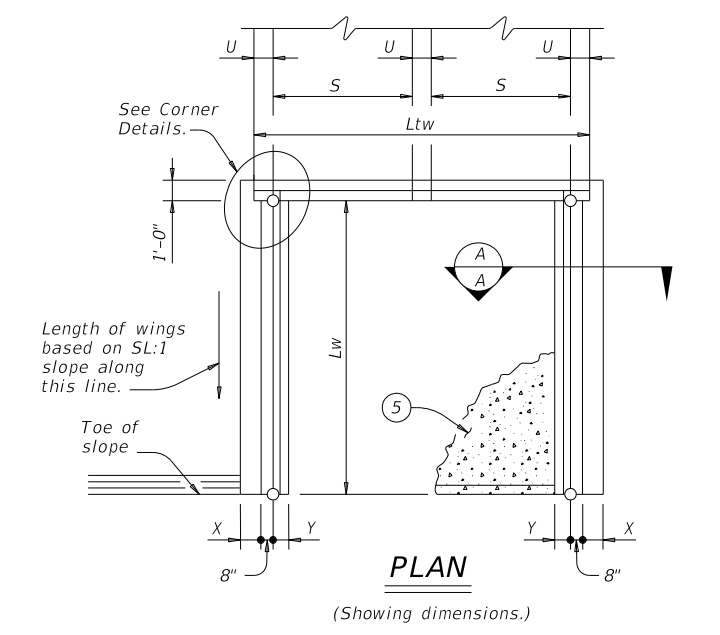
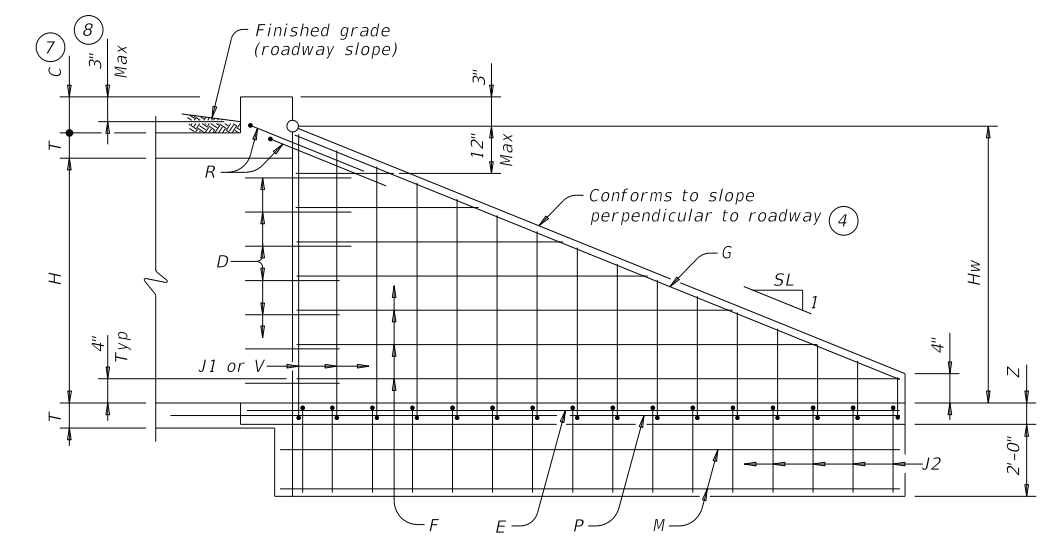
TABLE OF WINGWALL REINFORCING (2-wings)			
Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES			
Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

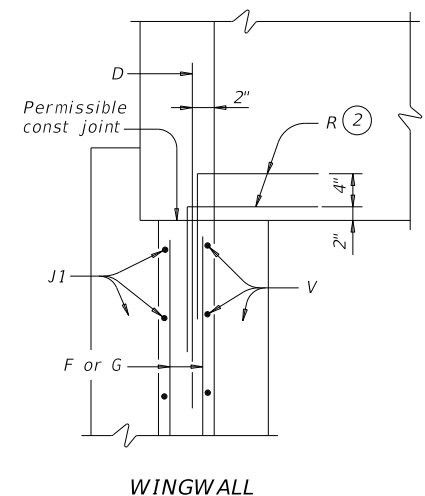
**WING DIMENSION FORMULAS:**  
(All values are in feet.)  
 $Hw = H + T + C - 0.250'$   
 $A = (Hw - 0.333') (SL)$   
 $B = (A) \tan(30^\circ)$   
 $Lw = (A) \div \cos(30^\circ)$   
For cast-in-place culverts:  
 $Ltw = (N) (S) + (N + 1) (U)$   
For precast culverts:  
 $Ltw = (N) (2U + S) + (N - 1) (0.5')$   
Total Wingwall Area (two wings ~ SF) =  $(Hw + 0.333') (Lw)$

Hw = Height of wingwall  
SL:1 = Side slope ratio (horizontal:1 vertical)  
Lw = Length of wingwall  
Ltw = Culvert toewall length  
N = Number of culvert spans

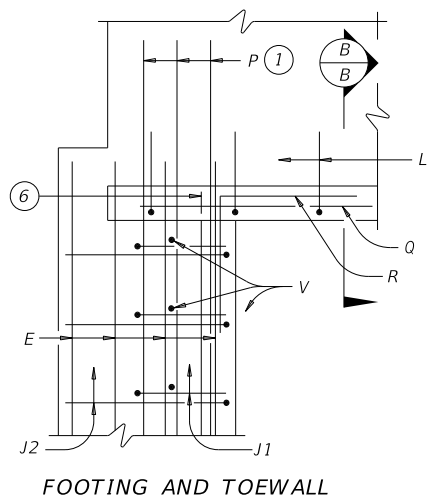
See applicable box culvert standard sheet for H, S, T, and U values.



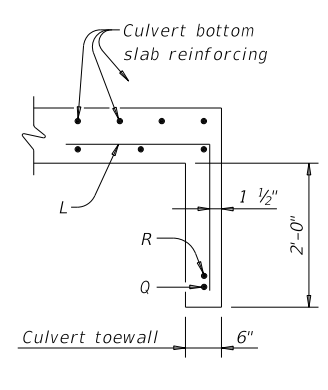
**INSIDE ELEVATION**  
(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



**WINGWALL CORNER DETAILS**



**FOOTING AND TOEWALL**



**SECTION B-B**

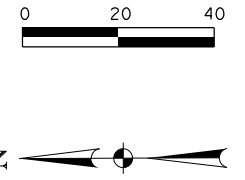
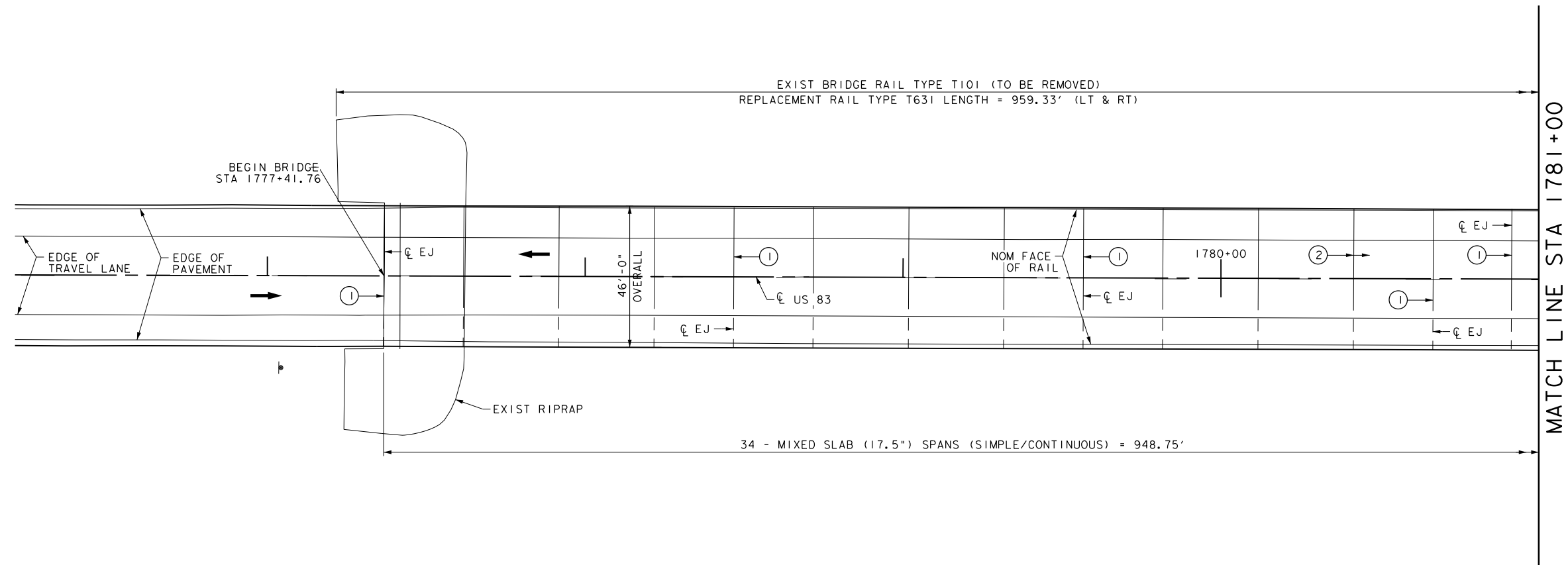
- Extend Bars P 3'-0" minimum into bottom slab of box culvert.
- Adjust as necessary to maintain 1 1/2" clear cover and 4" minimum between bars.
- Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.
- Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
- When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
- At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
- 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
- For vehicle safety, the following requirements must be met:
  - For structures without bridge rail, construct curbs no more than 3" above finished grade.
  - For structures with bridge rail, construct curbs flush with finished grade.Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

**MATERIAL NOTES:**  
Provide Class C concrete (f'c=3,600 psi).  
Provide Grade 60 reinforcing steel.  
Provide galvanized reinforcing steel if required elsewhere in the plans.  
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

**GENERAL NOTES:**  
Designed according to AASHTO LRFD Bridge Design Specifications.  
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.  
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.  
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

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

Texas Department of Transportation		Bridge Division Standard	
<b>CONCRETE WINGWALLS WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS</b>			
<b>SW-O</b>			
FILE:	sw-0std-20.dgn	DN: GAF	CK: CAT
TXDOT	REVISIONS	SECT	JOB
0037	08	042, ETC.	US 83
		COUNTY	SHEET NO.
LRD		DIMITT	236



- GENERAL NOTES:**
1. REFERENCE CSJ: 0037-08-24 AND 0037-08-014 FOR AS-BUILT PLANS.
  2. FOR RAIL REPLACEMENT, REFER TO TRAFFIC RAIL TYPE T631 STANDARD FOR DETAILS AND RAIL PAYMENT LIMITS.
  3. CONTRACTOR SHALL FIELD-VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION.
  4. REFER TO "REPAIR PROCEDURE AND DETAILS" FOR REPAIR METHODOLOGY.
  5. REFER TO RELEVANT BRIDGE INSPECTION NOTES FOR ADDITIONAL COMMENTS ON DEFECTS.

**PLAN**

EXIST NBI: 22-064-0-0037-08-029

**REHABILITATION NOTES:**

DECK:

- ① REPLACE EXPANSION JOINTS WITH TYPE A JOINT OR EQUIVALENT. REFER TO "REPAIR PROCEDURES AND DETAILS" FOR DETAILS NOT SHOWN.

SUBSTRUCTURE:

- ② REPAIR SPALLS IN CAPS USING MINOR SPALL REPAIR PER TXDOT CONCRETE REPAIR MANUAL.

CHANNEL:

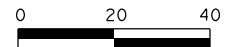
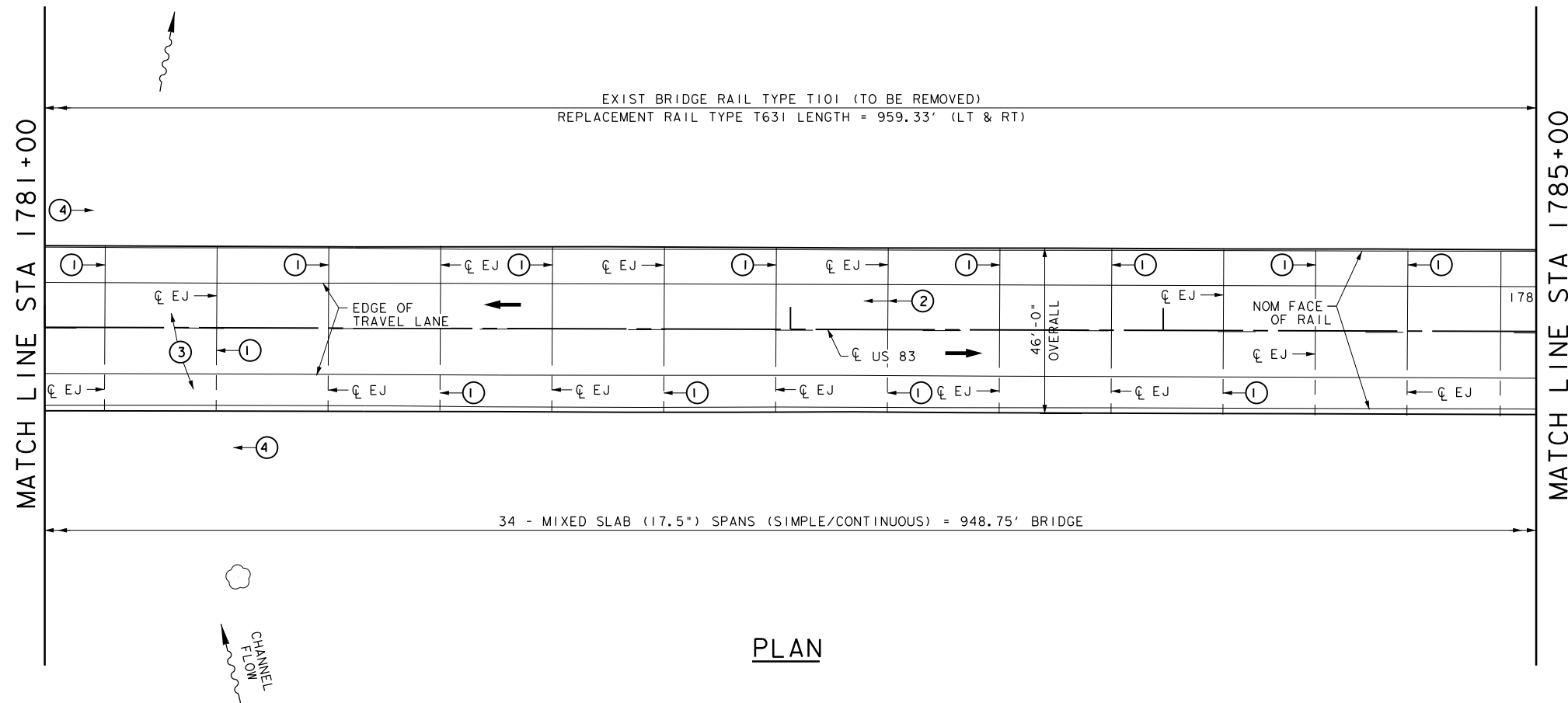
- ③ REMOVE DEBRIS FROM CHANNEL.
- ④ ADDRESS MINOR EROSION OF CHANNEL BANKS.

WSP USA Inc TBPE #F-2263



SHEET 1 OF 3

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<b>US 83</b> <b>SAN ROQUE BRIDGE</b> <b>RAIL REPLACEMENT</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		237
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



NOTE:  
1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.

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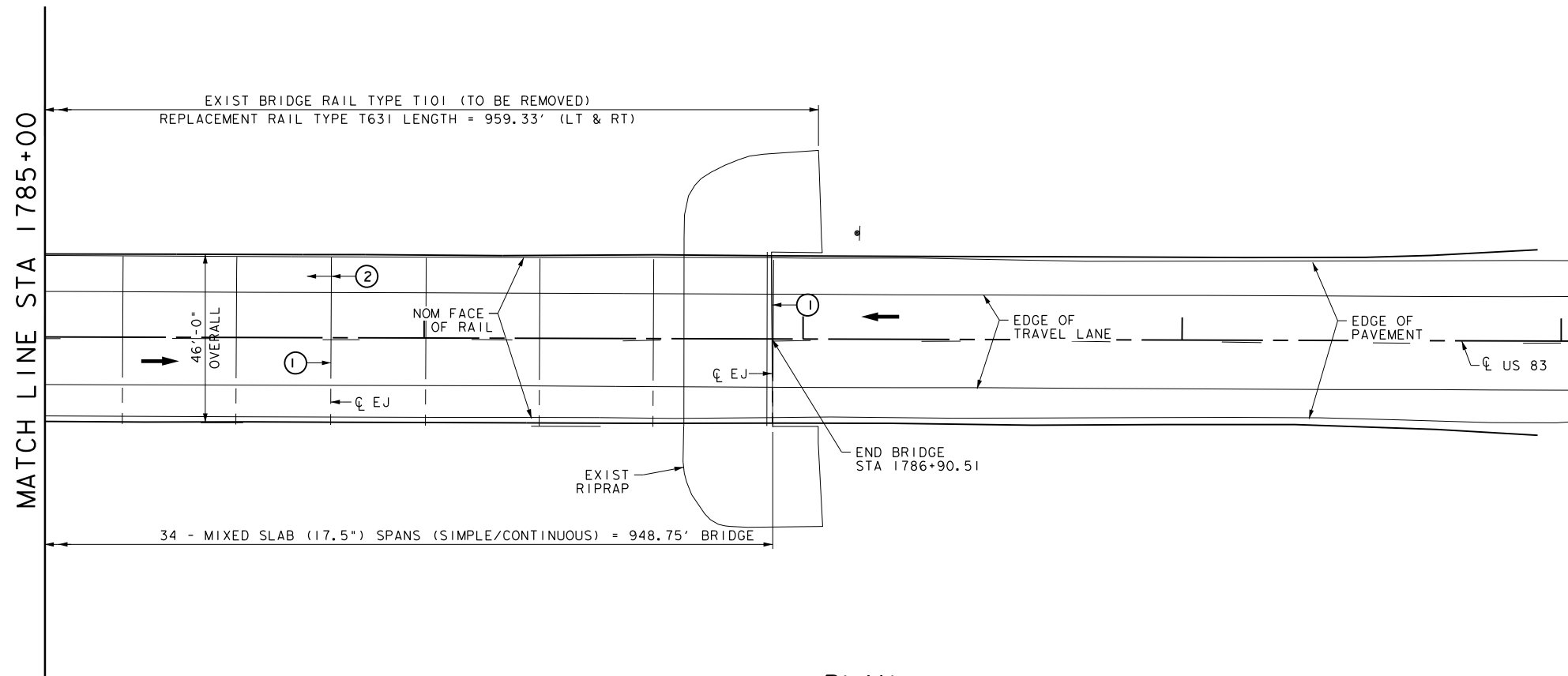
TBPE #F-2263



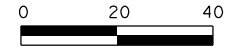
SHEET 2 OF 3

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US 83 SAN ROQUE BRIDGE RAIL REPLACEMENT			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		238
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US83





PLAN



NOTE:



1. FOR HORIZONTAL ALIGNMENT INFORMATION, SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.

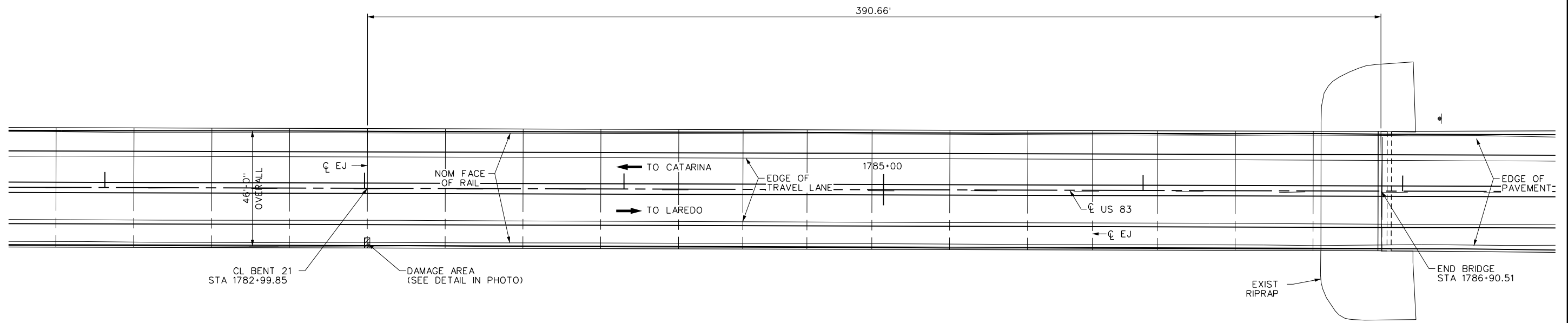
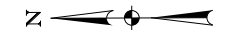
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SHEET 3 OF 3

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US 83 SAN ROQUE CREEK BRIDGE RAIL REPLACEMENT AND REHABILITATION			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		239
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US83



**PLAN**

**NOTE:**  
 1. FOR HORIZONTAL ALIGNMENT INFORMATION,  
 SEE THE HORIZONTAL ALIGNMENT DATA SHEETS.



PHOTO 1  
 Description FAILED PATCH (SPALL) ON BENT CAP 21 AT WEST END LOOKING SOUTH

**COLUMN 21 SPALL**

ITEM	DESCRIPTION	UNIT	QUANTITY
786-6001	CARBON FIBER REINF POLYMER PROTECTION	SF	12

JERRY M. CONNER  
 83895  
 LICENSED PROFESSIONAL ENGINEER  
 Jerry M. Conner PE  
 04-19-2024

SHEET 1 OF 1

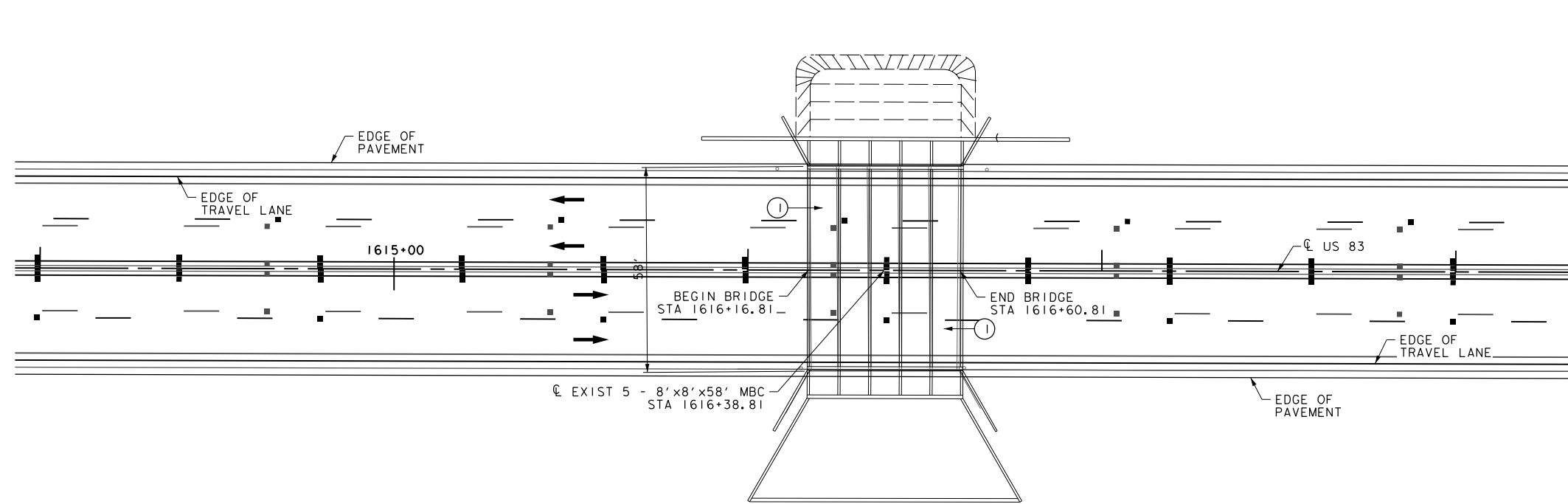
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83  
 SAN ROQUE CREEK BRIDGE  
 COLUMN 21 REPAIR**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	239-A	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**PLAN**

**GENERAL NOTES:**

1. REFERENCE CSJ: 0037-08-014 AND 0037-08-001 FOR AS-BUILT PLANS.
2. CONTRACTOR SHALL FIELD-VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION.
3. REFER TO "REPAIR PROCEDURE AND DETAILS" FOR REPAIR METHODOLOGY.
4. REFER TO RELEVANT BRIDGE INSPECTION NOTES FOR ADDITIONAL COMMENTS ON DEFECTS.

EXIST NBI: 22-064-0-0037-08-027

**REHABILITATION NOTES:**

- ① REPAIR HONEYCOMBING IN BOTTOM OF TOP SLAB IN ACCORDANCE WITH ITEM 429 OF TxDOT STANDARD SPECIFICATIONS AND MINOR SPALL REPAIR OF TxDOT CONCRETE REPAIR MANUAL.

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TBPE #F-2263



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US 83  BRIDGE REHABILITATION CULVERT STA 1616+39			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		240
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

**A1** PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH HOT-POURED RUBBER SEAL:

- 1) VERIFY ACTUAL JOINT CONDITION AND BRIDGE CONFIGURATION PRIOR TO BEGINNING WORK AND USE OF PROPOSED DETAIL.
- 2) OBTAIN APPROVAL FOR ALL TOOLS, EQUIPMENT, MATERIALS AND TECHNIQUES PROPOSED FOR USE TO PREPARE THE JOINT.
- 3) SAWCUT THROUGH THE ASPHALT AT THE CENTERLINE OF JOINT. MAKE MULTIPLE SAWCUTS TO CREATE A 1/2" JOINT OPENING OR MATCH THE EXISTING OPENING.
- 4) CLEAN EXISTING JOINT OPENING (FULL DEPTH) OF ALL DEBRIS, INCLUDING BITUMINOUS MATERIALS, DIRT, GREASE AND ALL OTHER DELETERIOUS MATERIALS IN ACCORDANCE WITH ITEM 438, "CLEANING AND SEALING JOINTS."
- 5) OBTAIN APPROVAL OF CLEANED JOINT PRIOR TO PROCEEDING WITH JOINT SEALING OPERATION.
- 6) PLACE BACKER ROD INTO JOINT OPENING 1" BELOW THE TOP OF CONCRETE. FOR CLASS 3 HOT-POURED RUBBER SEAL, PROVIDE BACKER ROD COMPATIBLE WITH THE HOT-POURED RUBBER SEALANT AND RATED FOR A MINIMUM OF 400°F. PROVIDE CLASS 3 SEALANT IN ACCORDANCE WITH DMS-6310, "JOINT SEALANTS AND FILLERS" FOR JOINTS IN ASPHALT OVERLAY. THE BACKER ROD SHALL BE 25% LARGER THAN THE JOINT OPENING.
- 7) PREPARE SURFACES WHERE SEALANT IS TO BE PLACED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. SEAL THE JOINT OPENING WITH A CLASS 3, "HOT-POURED RUBBER." SEAL FLUSH TO THE TOP OF THE ASPHALTIC CONCRETE PAVEMENT. EXTEND SEALANT TO EDGE OF DECK AS INDICATED.

**A2** PROCEDURE FOR REPAIRING MINOR SPALLS AND HONEYCOMBING:

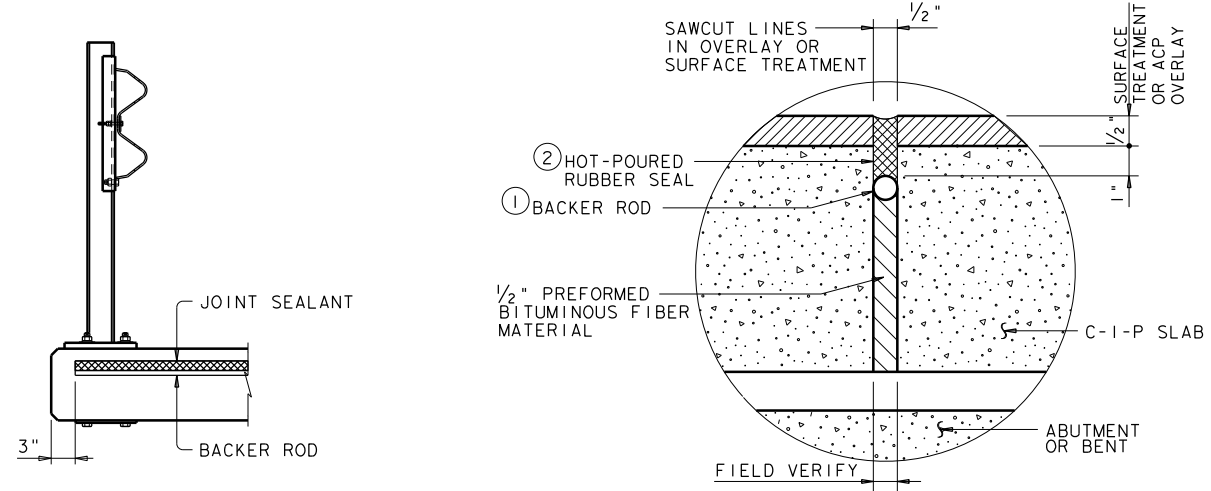
- 1) OBTAIN APPROVAL FOR ALL TOOLS, EQUIPMENT, MATERIALS AND TECHNIQUES PROPOSED FOR USE TO PATCH SPALL. USE HAND TOOLS OR 15 LB (MAX.) HAMMER.
- 2) PREPARE AREA OF CAP BY SQUARING EDGES OF PERIMETER, AND REMOVING LOOSE AND DELAMINATED CONCRETE. IN AREAS WHERE REINFORCING STEEL IS EXPOSED REMOVE CONCRETE TO A MINIMUM OF 1" BEHIND STEEL. EXERCISE CARE NOT TO DAMAGE REINFORCING.
- 3) USE PRESSURE WASHING OR OTHER APPROVED METHOD TO THOROUGHLY CLEAN AREA OF ALL LOOSE MATERIAL, LAITANCE, DIRT, AND FOREIGN MATTER.
- 4) USE AN APPROVED TYPE VIII EPOXY MORTAR FOR REPAIR. FOLLOW MANUFACTURER'S INSTRUCTIONS.
- 5) REPAIRS SHALL BE EXECUTED IN ACCORDANCE WITH ITEM 429, "CONCRETE STRUCTURE REPAIR".

**A3** PROCEDURE FOR REPLACING DAMAGED RIPRAP:

- 1) SAWCUT FRACTURED RIPRAP, TAKING CARE NOT TO DAMAGE EXISTING REINFORCING, THEN BREAKOUT CONCRETE. EXTEND AND THOROUGHLY CLEAN EXISTING REINFORCING.
- 2) PREPARE BASE, USING COMPACTED GRAVEL OR CRUSHED STONE.
- 3) USE #3 BARS PLACED AT 18" ON-CENTER, OR 6 X 6 - D3 X D3. REINFORCING STEEL SHALL BE GRADE 60, AND WWR SHALL CONFIRM TO ASTM A1064.
- 4) PLACE CLASS B CONCRETE (F'c = 2000 PSI), TAKING CARE TO MATCH GRADES OF EXISTING RIPRAP. RIPRAP SHALL BE RR8.
- 5) REFER TO CRR STANDARD FOR RELATED INFORMATION, INCLUDING SPLICING OF REINFORCEMENT.
- 6) REPAIRS SHALL BE EXECUTED IN ACCORDANCE WITH ITEM 432, "RIPRAP".

**A4** PROCEDURE FOR ADDRESSING LOCAL SCOUR AT BENT, AND MINOR EROSION OF CHANNEL BANKS:

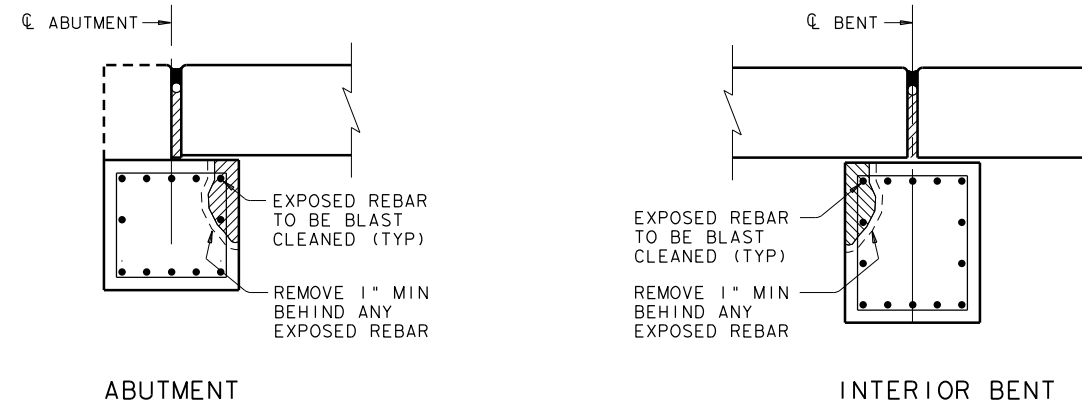
- 1) EXCAVATE THE BANK, OR AROUND COLUMN, IN THE AREAS OF MINOR EROSION. REMOVE ALL LOOSE OR OTHERWISE UNSUITABLE MATERIALS. CAREFULLY BACKFILL ALL DEPRESSIONS TO GRADE WITH SUITABLE MATERIALS FROM ADJACENT REQUIRED EXCAVATION OR ANOTHER APPROVED SOURCE, AND COMPACT THE BACKFILL TO A DENSITY AT LEAST EQUAL TO THE ADJACENT FOUNDATION. REMOVE ANY BURIED DEBRIS PROTRUDING FROM THE FOUNDATION THAT WILL IMPEDE THE PROPER INSTALLATION AND FINAL APPEARANCE OF THE GABION MATTRESS, AND CAREFULLY BACKFILL AND COMPACT VOIDS AS SPECIFIED ABOVE. HAVE THE ENGINEER INSPECT THE PREPARED FOUNDATION SURFACE IMMEDIATELY BEFORE GABION PLACEMENT.
- 2) PROVIDE HIGH STRENGTH FILTER FABRIC CONFORMING TO TxDOT DMS-6203 (TYPE 2), UNIFORMLY ON PREPARED FOUNDATION. REFERENCE ITEM 459 OF TxDOT SPECIFICATION.
- 3) INSTALL GABION MATTRESS PER ITEM 459, "GABION AND GABION MATTRESS".



JOINT SEALANT TERMINATION DETAIL

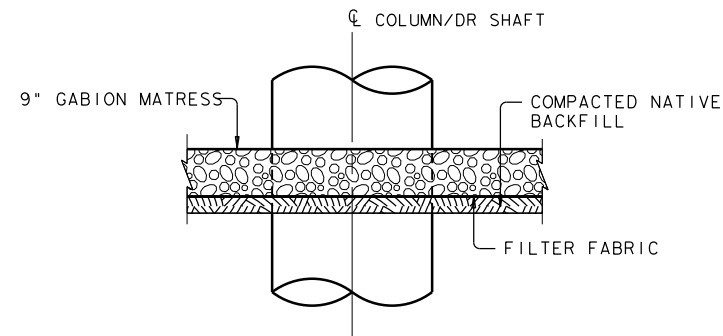
JOINT DETAIL

**A1** JOINT REPLACEMENT



- 1) BACKER ROD MUST BE 25% LARGER THAN JOINT OPENING AND MUST BE COMPATIBLE WITH THE SEALANT.
- 2) USE CLASS 3 HOT-POURED RUBBER SEAL. PREPARE JOINT AND SEAL IN ACCORDANCE WITH ITEM 438 "CLEANING AND SEALING JOINTS AND CRACKS."

**A2** SPALL REPAIR



**A4** COLUMN EROSION

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US 83 REPAIR PROCEDURES AND DETAILS			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	241	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US83

PSN 0037-08-027

ITEM DESCRIPTION CODE	429 6007
BID ITEM DESC	CONC STR REPAIR (VERTICAL & OVERHEAD)
BRIDGE CLASS CULVERT STA 1616+38.81	SF
1 - TOP SLAB	20
TOTAL	20

PSN 0037-08-029

ITEM DESCRIPTION CODE	429 6002	451 6019	785 6002
BID ITEM DESC	CONC STR REPAIR (EPOXY MORTAR)	RETROFIT RAIL (TY T631)	BRIDGE JOINT REPAIR (POLYMER)
BRIDGE ELEMENT	SF	LF	LF
1 - DECK SPANS		1918.7	966
2 - ABUTMENT	4		
3 - BENTS	49.5		
4 - CHANNEL			
TOTAL	53.5	1918.7	966

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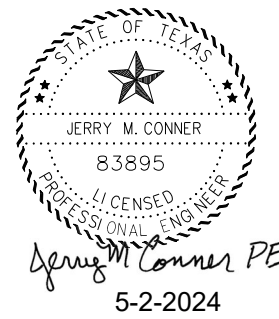
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US 83  BRIDGE QUANTITIES			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		242
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US83

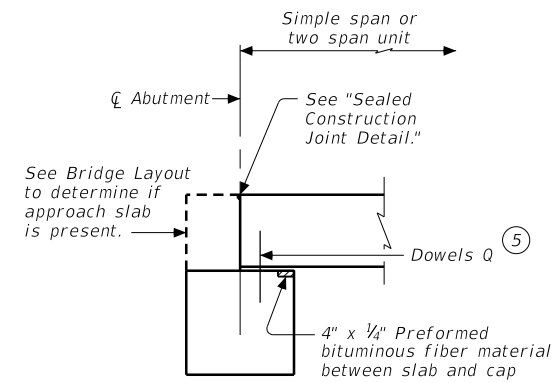
PSN 0037-08-029

ITEM DESCRIPTION CODE	786 6007
BRIDGE	CARBON FIBER REINF POLYMER PROTECTION
BENT *21 (STA 1782+99.85)	SF 12
TOTAL	12

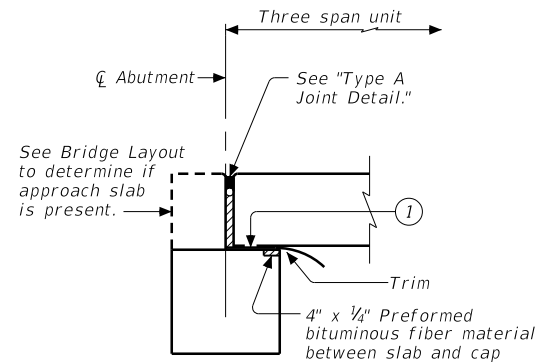


NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>BRIDGE QUANTITIES</b> <b>(BENT *21 REPAIR)</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		242-A
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TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

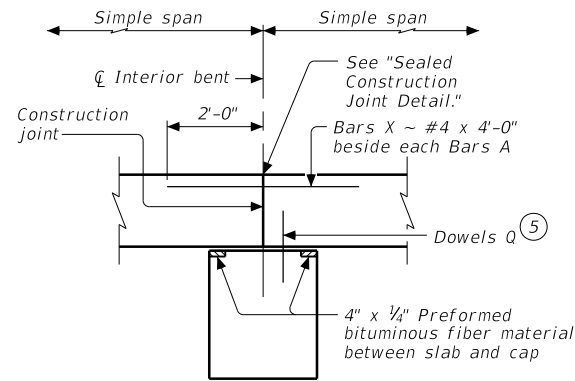
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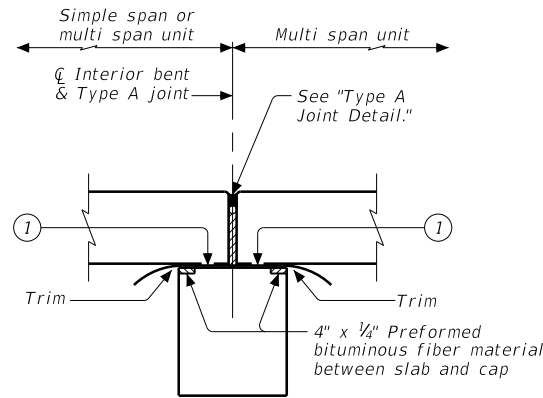
**FIXED ABUTMENT**



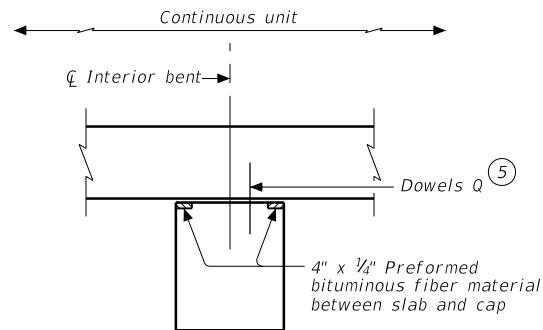
**EXPANSION ABUTMENT** ⑨



**FIXED INTERIOR BENT WITH SIMPLE SPANS** ⑧

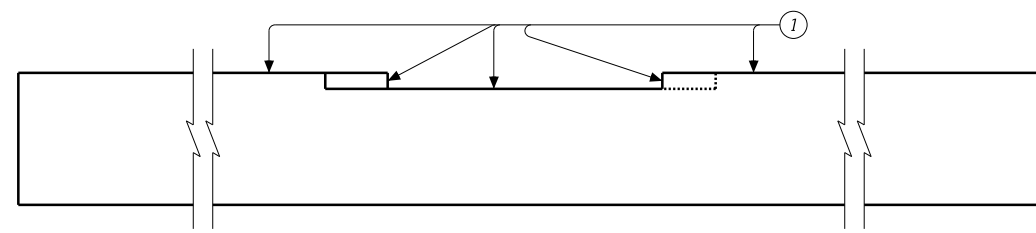


**EXPANSION INTERIOR BENT** ⑨

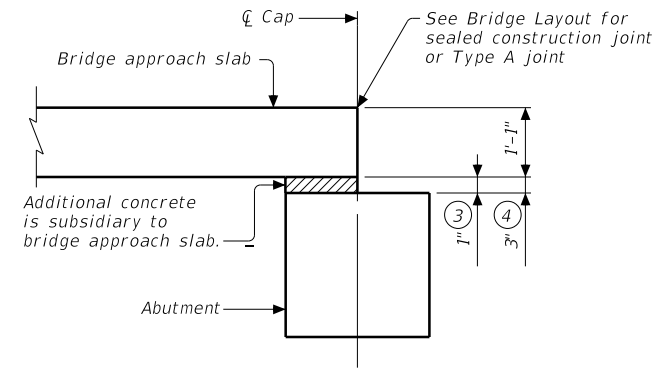


**FIXED INTERIOR BENT WITH CONTINUOUS UNIT**

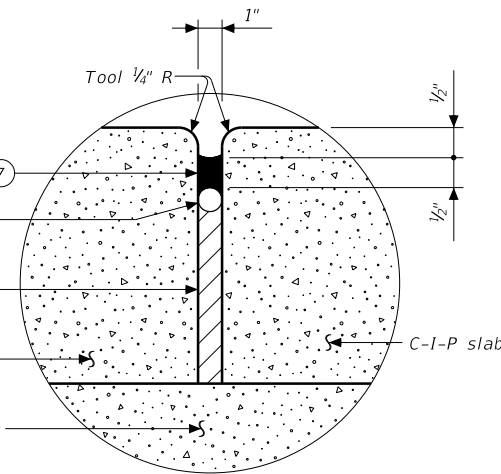
**ELEVATION AT FIXED OR EXPANSION BENTS** ⑩



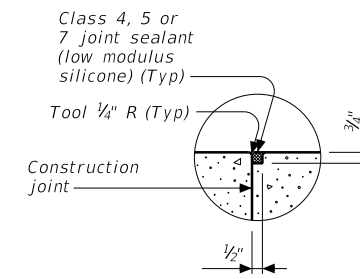
**ELEVATION OF CAP**  
(Showing skewed conditions, non-skewed is similar.)



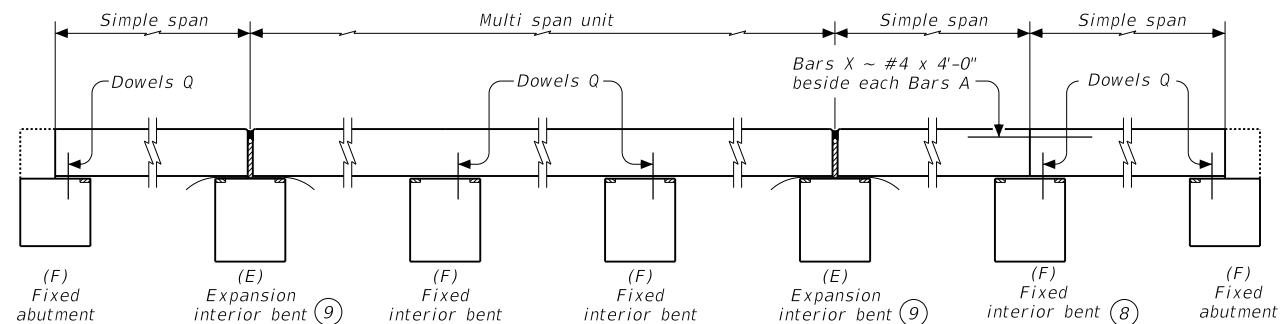
**MODIFIED BRIDGE APPROACH SLAB** ②



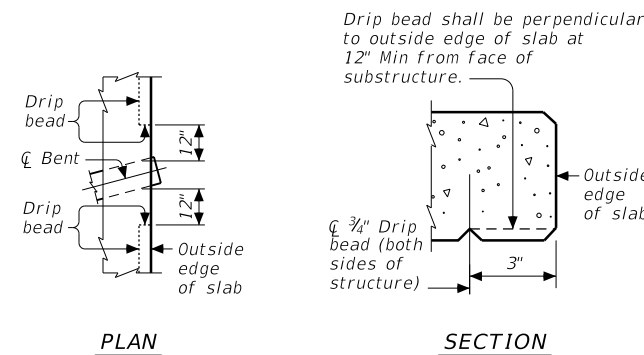
**TYPE A JOINT DETAIL** ⑩



**SEALED CONSTRUCTION JOINT DETAIL**



**EXAMPLE OF FIXED AND EXPANSION BENTS** ⑩  
Showing C-I-P slab span with a 16" slab thickness.



**DRIP BEAD DETAILS**

**ADJUSTMENT IN REINFORCING STEEL QUANTITIES**

Rdwy Width	Fixed Condition ⑧		Expansion Condition ⑨	
	Add Bars X	Deduct Dowel Q	Add Bars X	Deduct Dowel Q
Ft	No.	Weight	No.	Weight
24	30	+80	5	-11
28	34	+91	5	-11
30	36	+96	5	-11
38	44	+118	5	-11
44	50	+134	5	-11

Note: The above quantities are for the fixed or expansion condition over one bent and are for information only.

- ① Smooth trowel finish. Oil top of cap with 60 grade oil and apply heavy coat of powdered graphite. Press down one layer of 30# roofing felt.
- ② See Bridge Layout to determine if approach slab is present.
- ③ Use with 14" slab thickness.
- ④ Use with 16" slab thickness.
- ⑤ See Abutment or Bent details for location of Dowels Q.
- ⑥ 1 1/4" backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
- ⑦ Class 7 silicone sealant that conforms to DMS 6310. Install when ambient temperature is between 55°F and 85°F and rising. Engineer to determine allowable hours for sealant application.
- ⑧ Bars X required only when 2 simple spans are used together over a fixed interior bent. The use of 3 consecutive simple spans are not recommended nor supported by this standard.
- ⑨ Omit Dowels Q from expansion bents.
- ⑩ Recommended location of Type A joints are at the ends of 3 span units, ends of 2 span units supported by an interior bent, and no farther than 2 simple spans from an abutment.

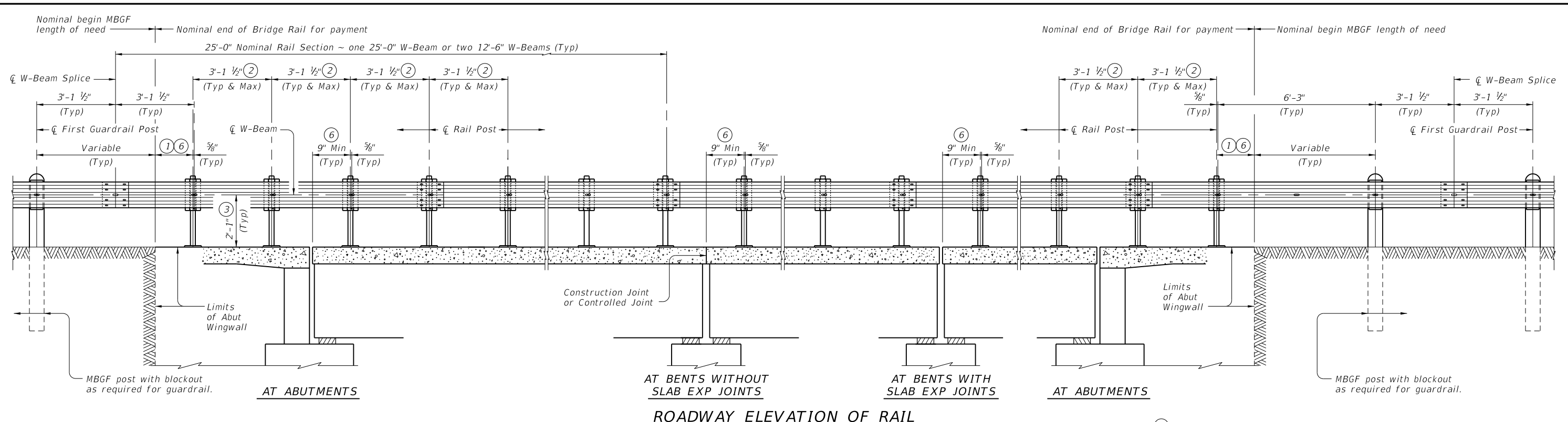
**GENERAL NOTES:**

Designed according to AASHTO LRFD Bridge Specifications. Seal slab construction joints at bent locations with Class 4, 5, or 7 joint sealant (low modulus silicone.) See "Sealed Construction Joint Detail."  
See Bridge Layout for joint type and location. Provide sealed construction joints or Type A joints.  
Payment for Type A joints will be as per item 454, "Bridge Expansion Joints."  
Sealed construction joints are subsidiary to the span. This standard does not support the use of transition bents.

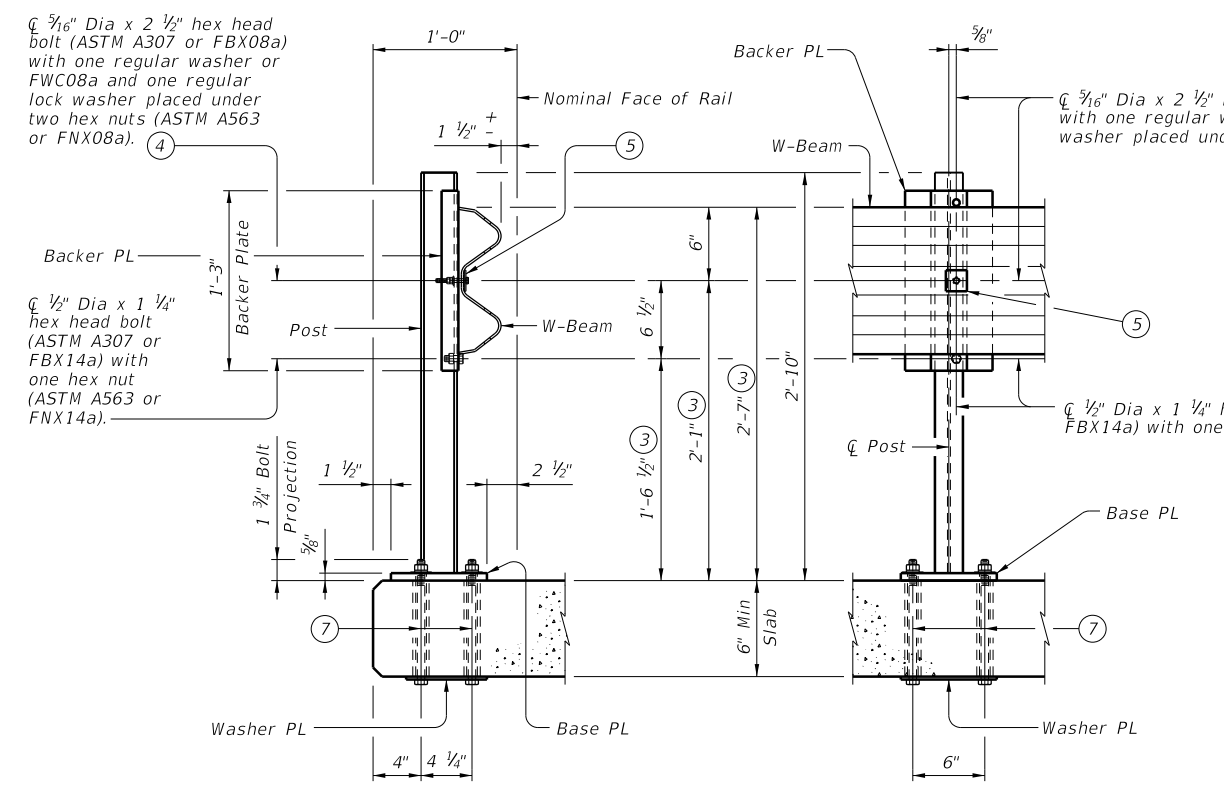
HL93 LOADING

				<b>Bridge Division Standard</b>	
<b>MISC DETAILS FOR C-I-P CONC SLAB SPANS</b>					
<b>CS-MD</b>					
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		DIST	COUNTY		SHEET NO.
		LRD	DIMMIT		243

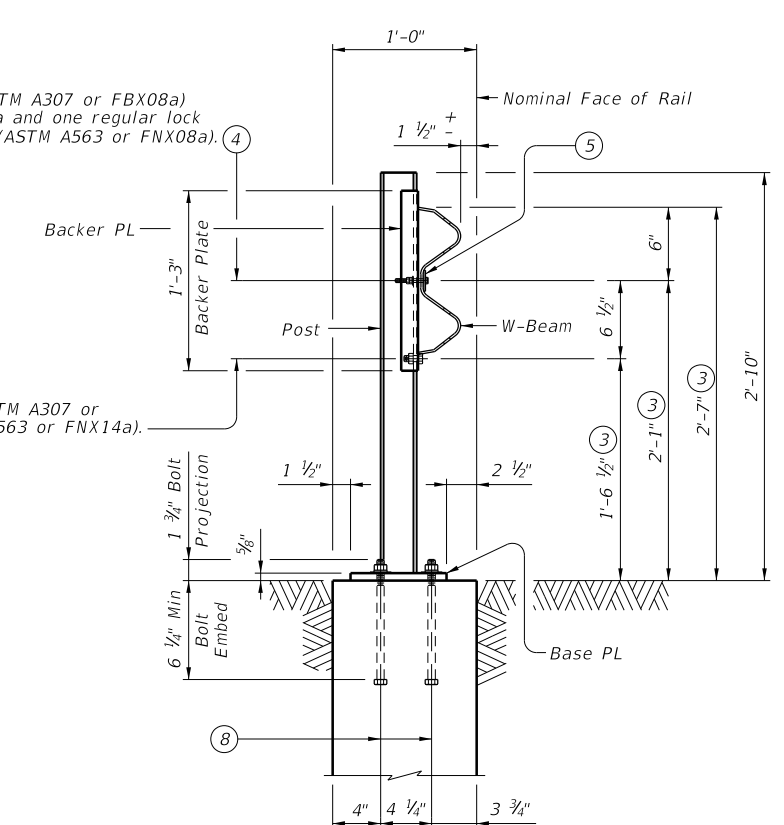
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**ROADWAY ELEVATION OF RAIL**  
Showing without overlay.



**RAIL SECTION TRAFFIC SIDE RAIL VIEW**  
**RAIL DETAILS ON BRIDGE SLAB**  
Showing without overlay.



**RAIL SECTION ON ABUTMENT WINGWALL**  
Showing without overlay.

- ① 9" Min, 5'-9" Max
- ② Maintain 3'-1 1/2" Rail Post spacing wherever possible for use with nominal 25'-0" or 12'-6" W-Beam sections. Symmetry of post spacing on both sides and along the structure is not necessary.
- ③ Increase 2" for structures with overlay.
- ④ Tighten the first hex nut by hand until the top and bottom edges of the W-Beam engage the Backer Plate (Backer Plate should be snug against the post). Then tighten hex nut one revolution with wrench and secure with the second hex nut.
- ⑤ PL 1/8" x 1 3/4" x 1 3/4" with 3/8" Dia Hole centered in PL (ASTM A36). Square Guardrail Washer (FWR01).
- ⑥ The post nearest to a slab joint or end of structure may be shifted up to 9" in order to satisfy the minimum offset dimension. Drill a new 3/4" Dia hole in the centerline of W-beam for shifted post. Paint hole with two coats of zinc-rich paint conforming to the Item "Galvanizing". All other posts must remain on the typical spacing.
- ⑦ CL 7/8" Dia formed holes for CL 5/8" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). One additional heavy hex nut must be furnished and tack welded for each threaded rod. See "Cast-In-Place & Formed Hole Anchor Bolt Options".
- ⑧ CL 5/8" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). One additional heavy hex nut must be furnished and tack welded for each threaded rod. See "Cast-In-Place & Formed Hole Anchor Bolt Options".

SHEET 1 OF 2

Texas Department of Transportation Bridge Division Standard

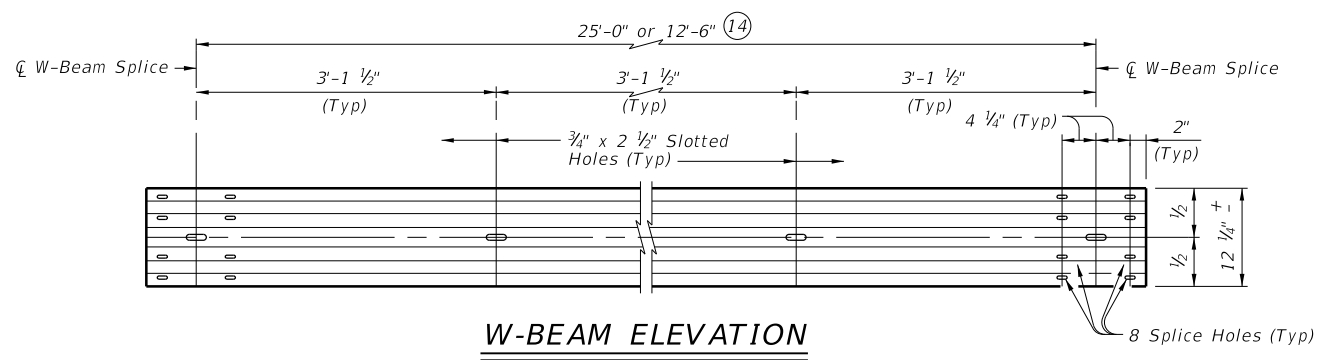
**TRAFFIC RAIL**

**TYPE T631**

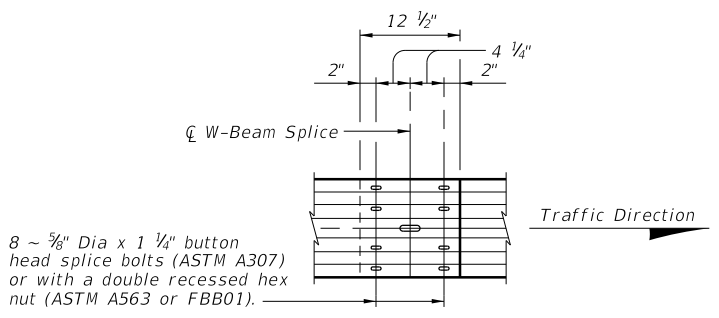
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07/2020: Allowing 9'-4 1/2" or 6'-3" W-Beam sections	DIST	COUNTY	SHEET NO.	
03/2023: MBGF Notes.	LRD	DIMMIT		244



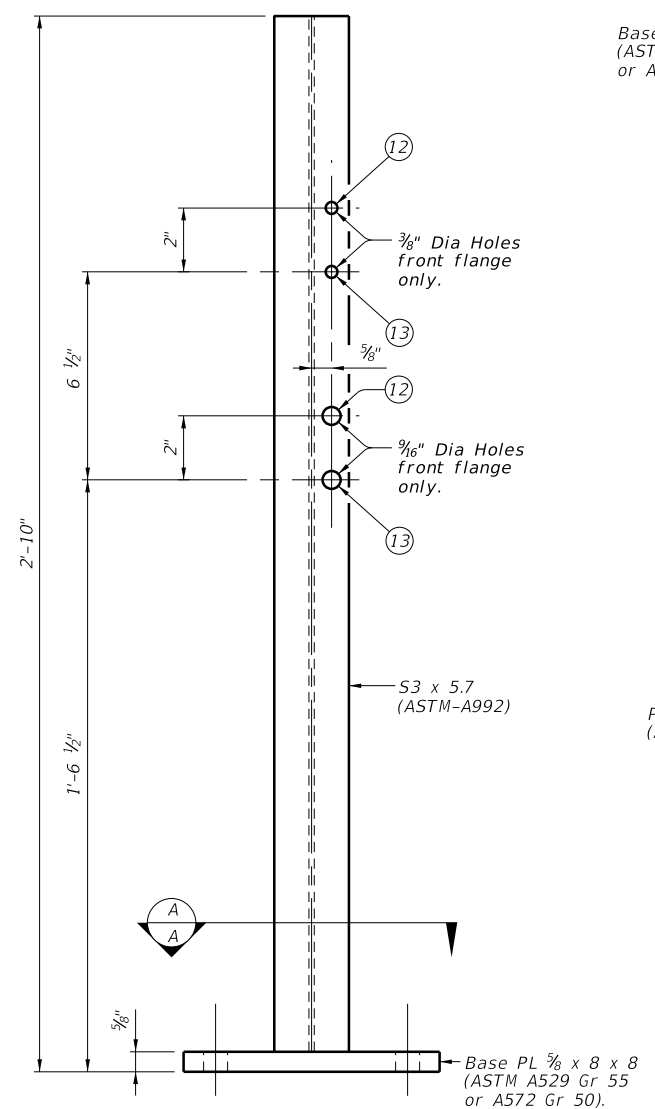
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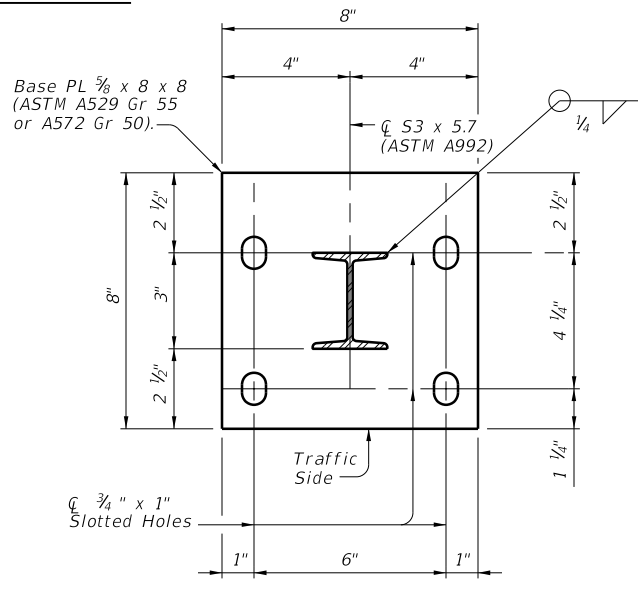
**W-BEAM ELEVATION**



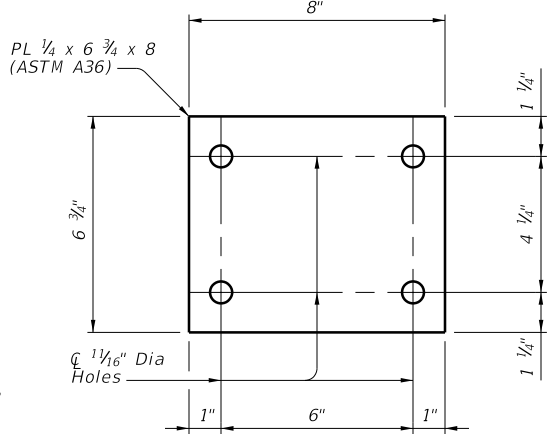
**W-BEAM SPLICE ELEVATION**



**POST ELEVATION**

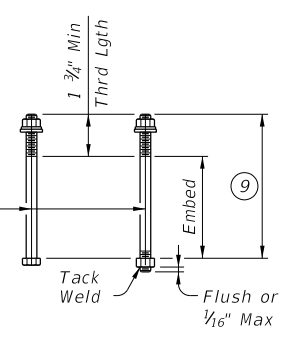


**SECTION A-A**



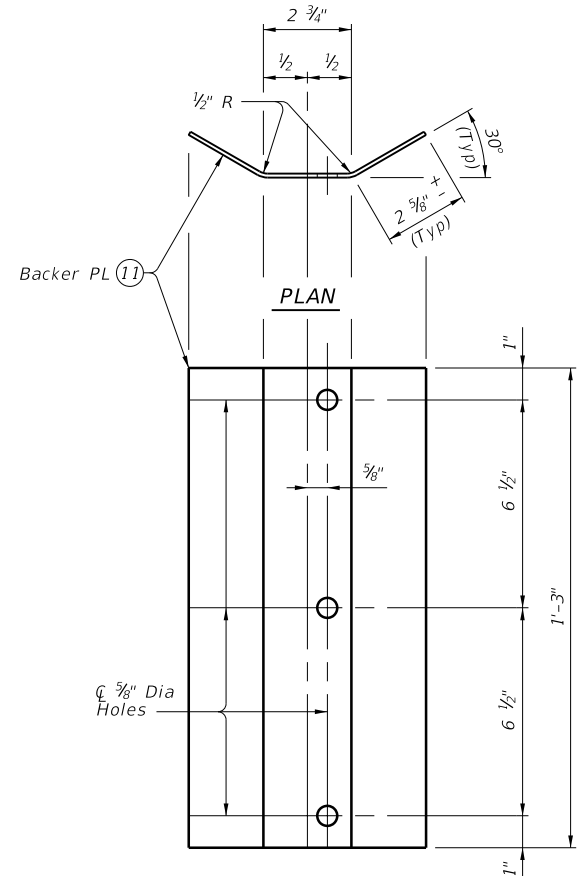
**WASHER PLATE DETAIL**

$\frac{3}{8}$ " Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ATSM A193 Gr B7 or F1554 Gr 105) with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). One additional heavy hex nut must be furnished and tack welded for each threaded rod.



**CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS (10)**

- (9) See "Rail Details On Bridge Slab" and/or "Rail Section On Abutment Wingwall".
- (10) See "Material Notes" for anchor bolt information.
- (11) Backer PL  $\frac{1}{4}$ " x 8 x 1'-3" (ASTM A1011 CS or SS Gr 33, or A1008 CS or SS Gr 33 (11 Gage acceptable)).
- (12) Used for structures with overlay.
- (13) Used for structures without overlay.
- (14) At the nominal end of the bridge rail for payment, one 9'-4 1/2" or 6'-3" W-beam section is permitted in order to achieve the required W-Beam splice location on the MBGF.



**BACKER PLATE**

**MBGF AND END TREATMENT NOTES:**  
 This traffic railing must be anchored by metal beam guard fence (MBGF) and guard fence end treatments. Determine MBGF length of need in accordance with the Roadway Design Manual, unless otherwise specified. The minimum MBGF length of need required for anchoring the railing is 25' of MBGF plus the appropriate end treatment installed tangent to the primary roadway.

**CONSTRUCTION NOTES:**  
 Face of rail post must be plumb unless otherwise approved by the Engineer. Post must be perpendicular to adjacent roadway grade. Use epoxy mortar under post base plates if gaps larger than 1/16" exist.  
 Fully anchored guardrail must be attached to each end of rail. A metal beam guard fence transition is not used with this rail.  
 At the Contractor's option anchor bolts may be an adhesive anchor system. See "Material Notes".

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.  
 It is recommended to show a Rail Layout with rail posts and W-beam splices. Fabricator must submit erection drawings to the Engineer for approval.  
 Round or chamfer exposed edges of rail post and backer plate to approximately 1/16" by grinding.  
 Shop drawings are not required for this rail.

**MATERIAL NOTES:**  
 Galvanize all steel components.  
 Anchor bolts for base plate must be 3/8" Dia ASTM F3125 Gr A325 or A449 bolts (or ASTM A193 Gr B7 or F1554 Gr 105 threaded rods with one tack welded heavy hex nut each) with one hardened steel washer (ASTM F436) and one regular lock washer placed under each heavy hex nut. Nuts must conform to ASTM A563 requirements.

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

W-beam must meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'-0" or 12'-6" (Nominal) lengths and a single rail element of 9'-4 1/2" or 6'-3" (Nominal) length. W-Beam must have slotted holes at 3'-1 1/2".  
 Some part numbers from the "Task Force 13" Guide to Standardized Highway Barrier Hardware have been furnished for quick reference.

**GENERAL NOTES:**  
 This railing has been successfully evaluated by full-scale crash test to meet MASH TL-3 criteria. This railing can be used for speeds of 50 mph and greater.  
 This rail is designed to deflect approximately 4' to 4'-6" as it contains and redirects the errant vehicle. This rail may not be installed on top of or behind curbs that project above finished grade, on bridges with expansion joints providing more than 5" movement, on retaining walls, or on grade separations and interchanges.  
 Repairs to impact-damaged post and base plate unit are not permitted. Replace all impact-damaged posts with a new post and base plate unit.  
 Average weight of railing with no overlay: 20 plf total.

SHEET 2 OF 2

		<b>Bridge Division Standard</b>	
<h2>TRAFFIC RAIL</h2>			
<h3>TYPE T631</h3>			
FILE: r1std038-19	DN: TXDOT	CK: AES	DW: JTR
REVISIONS	CONTRACT	SECTION	JOB
0037	08	042, ETC.	US 83
07/2020: Allowing 9'-4 1/2" or 6'-3" W-Beam sections	DIST	COUNTY	SHEET NO.
03/2023: MBGF Notes	LRD	DIMMIT	245

**GENERAL NOTES:**

THE CONTRACTOR IS REQUIRED TO NOTIFY TEXAS 811 TO ENSURE ALL UTILITY LINES ARE MARKED PRIOR TO THE START OF CONSTRUCTION. MARKING MUST REMAIN VISIBLE DURING THE PROJECT. IF DAMAGED, CALL 811 TO REQUEST A RE-MARK.

CONTRACTOR SHALL ADHERE TO THE UTILITIES CODE TITLE 5, CHAPTER 251, UNDERGROUND FACILITY DAMAGE PREVENTED AND SAFETY ACT, AND TEXAS ADMINISTRATIVE CODE (TAC) TITLE 16, PART 1, CHAPTER 18, UNDERGROUND PIPELINE DAMAGE PREVENTION.

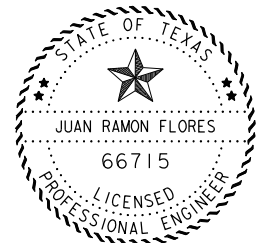
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UTILITY INFORMATION LABELED AS QUALITY LEVEL D IS DERIVED FROM FURNISHED RECORDS AND/OR VERBAL RECOLLECTIONS. SUCH INFORMATION MAY NOT BE ACCURATE OR RELIABLE. WITH THE UNRELIABLE SOURCES, EXPRESSLY DISCLAIMS RESPONSIBILITY FOR THE ACCURACY OR RELIABILITY OF UTILITY INFORMATION DEPICTED ACCORDING TO RECORDS PROVIDED BY OTHERS.

**SUBSURFACE UTILITY ENGINEERING (SUE)**



**FHWA QUALITY LEVELS**

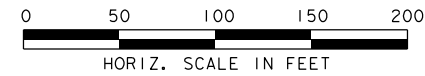
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- LEVEL C - INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D. THIS INFORMATION, IT IS NOT UNUSUAL TO FIND THAT MANY UNDERGROUND UTILITIES HAVE BEEN EITHER OMITTED OR ERRONEOUSLY PLOTTED.
- LEVEL B - INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. THE INFORMATION OBTAINED IN THIS MANNER IS SURVEYED TO PROJECT CONTROL.
- LEVEL A - PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. THIS INFORMATION PROVIDES PRECISE PLAN AND PROFILE MAPPING OF UNDERGROUND UTILITIES, AND PROVIDE THE TYPE, SIZE, CONDITION, MATERIAL, AND OTHER CHARACTERISTIC OF UNDERGROUND FEATURES.



*Juan Flores* 6-22-2020

SHEET 1 OF 1

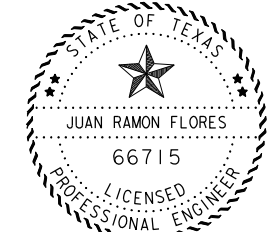
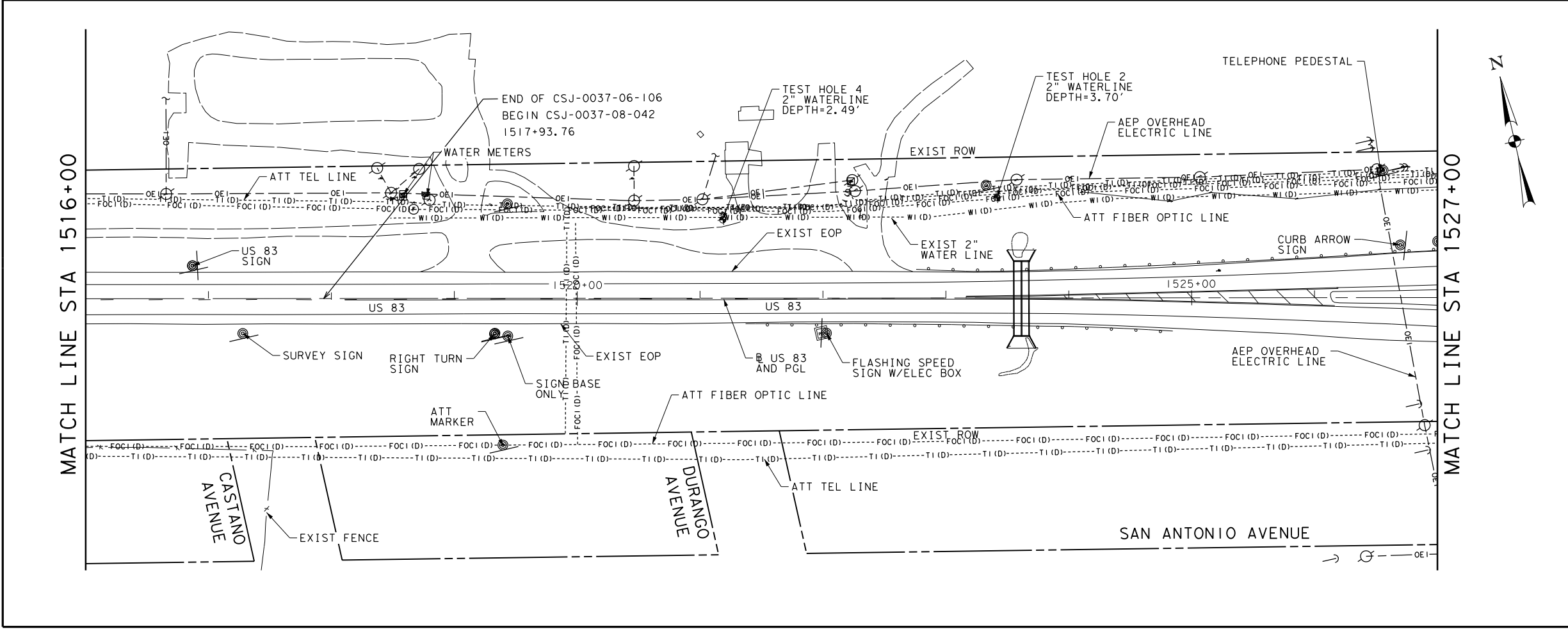
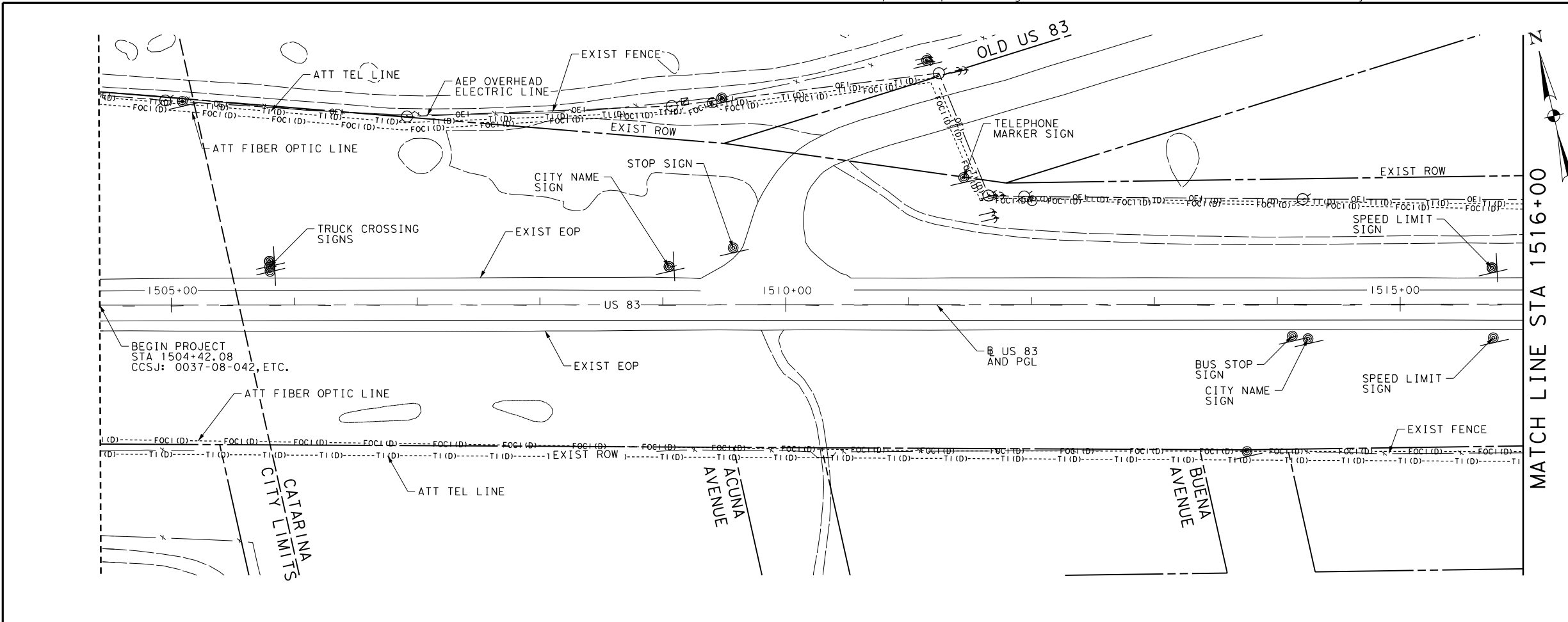
NO.	REVISIONS	BY	DATE
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 UTILITY GENERAL NOTES</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		246
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



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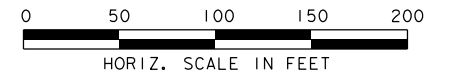
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- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX
- [T] TRAF SIG PWR BOX
- [P] POWER POLE
- [L] LIGHT POLE
- [TP] TELE PEDESTAL
- [TH] TELE HAND HOLE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE
- [H] HYDRANT
- [V] WATER VALVE
- [WM] WATER METER
- [GV] GAS VENT
- [TSP] TRAFFIC SIGNAL POLE
- [GW] GUY WIRE



*Juan Flores* 6-22-2020

SHEET 1 OF 26

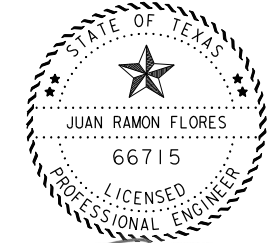
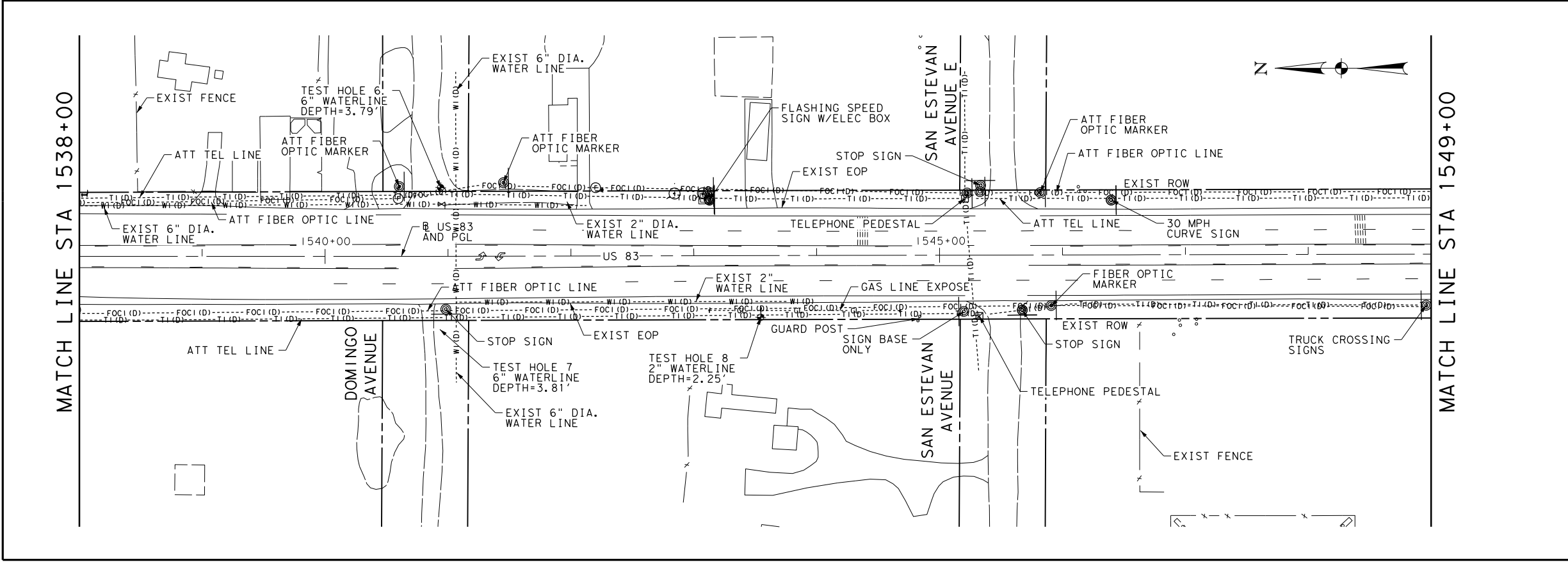
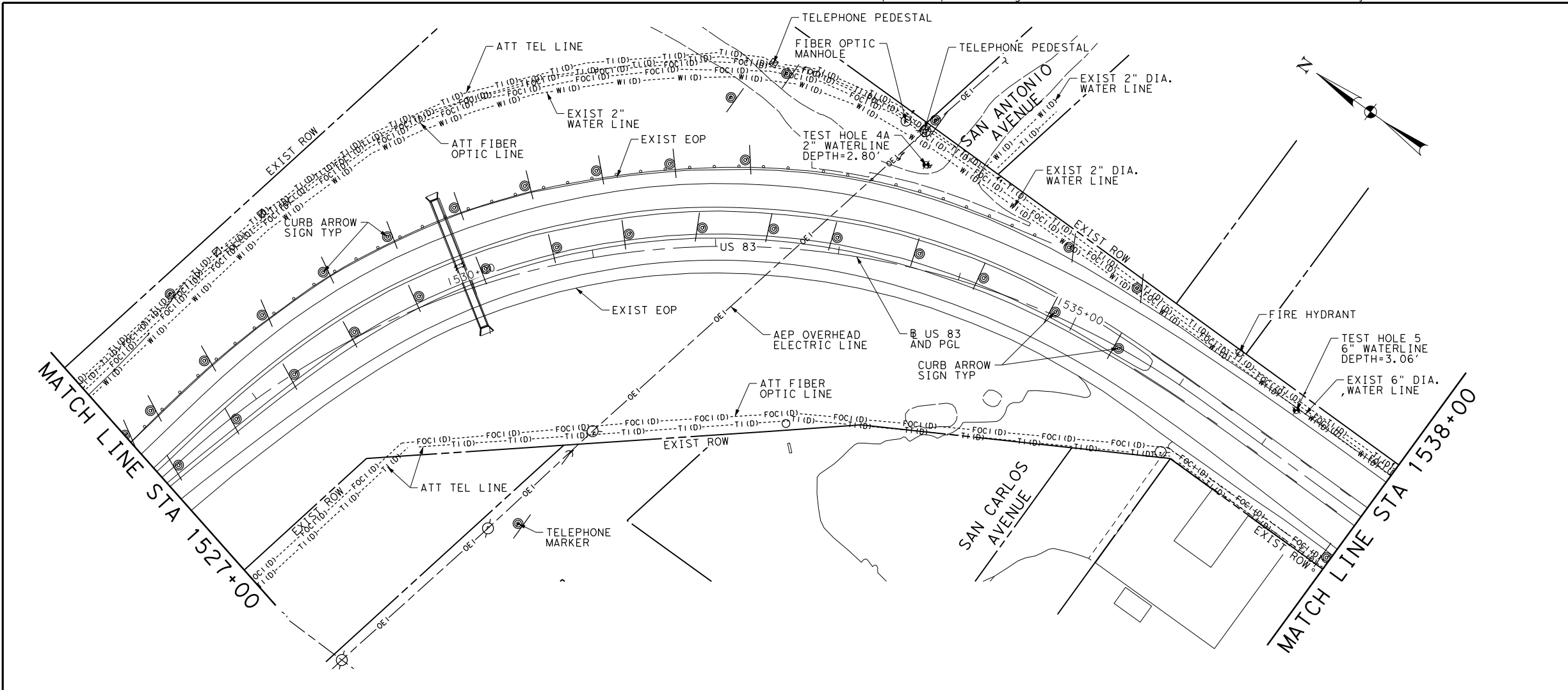
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1504+30.33 TO</b> <b>STA 1527+00</b>			
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CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



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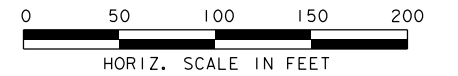
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  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX
  - [T] TRAF SIG PWR BOX
  - [P] POWER POLE
  - [L] LIGHT POLE
  - [TP] TELE PEDESTAL
  - [HH] TELE HAND HOLE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE
  - [H] HYDRANT
  - [V] WATER VALVE
  - [WM] WATER METER
  - [GV] GAS VENT
  - [TS] TRAFFIC SIGNAL POLE
  - [GW] GUY WIRE



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SHEET 2 OF 26

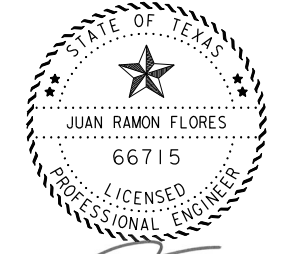
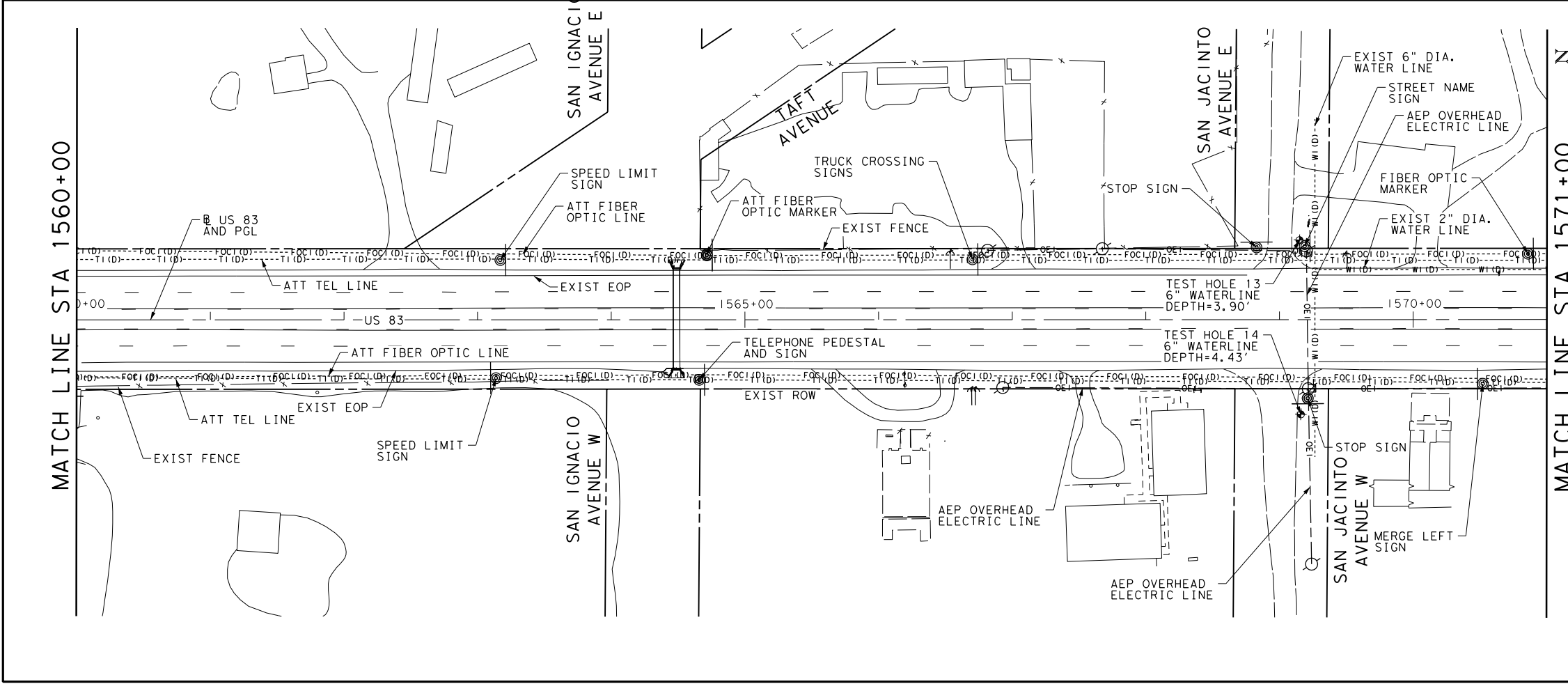
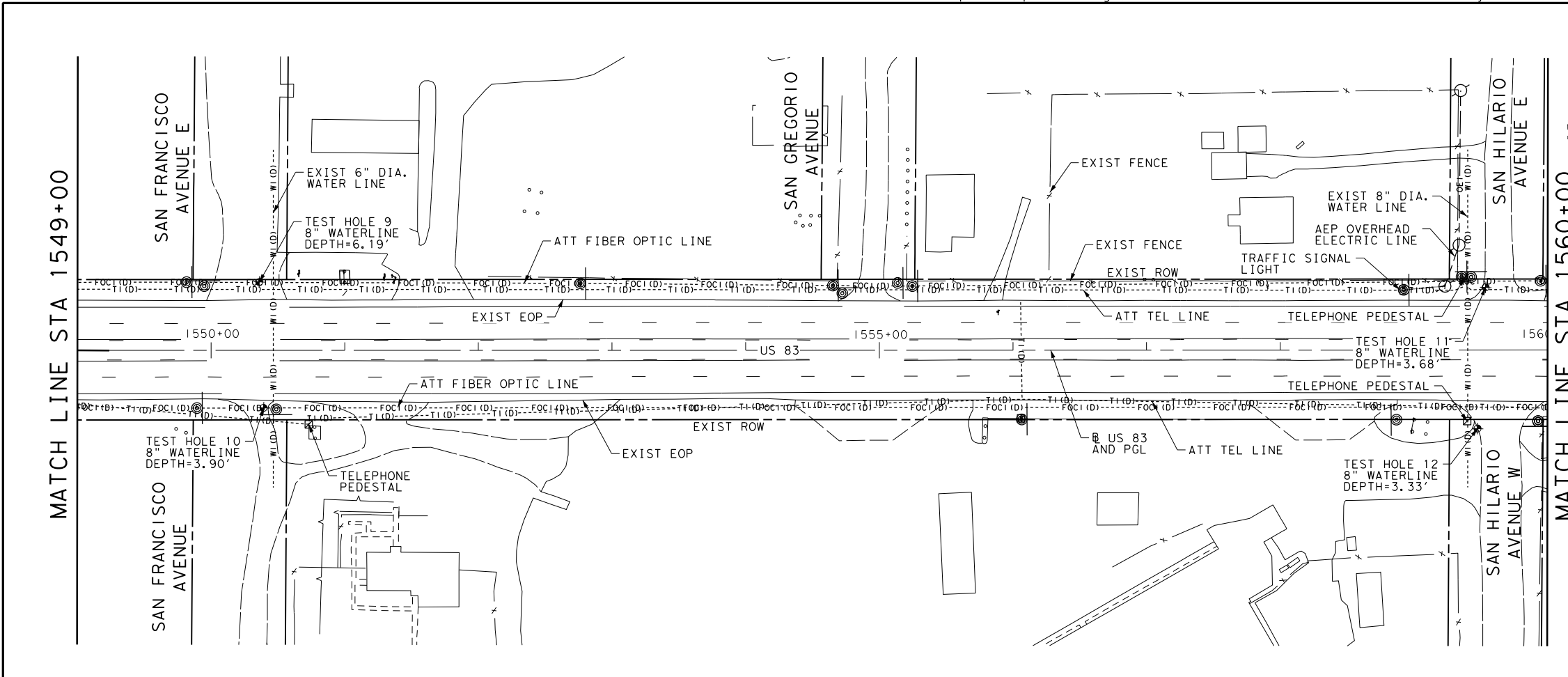
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation, all rights reserved			
<b>US 83 EXISTING UTILITIES STA 1527+00 TO STA 1549+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	248	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

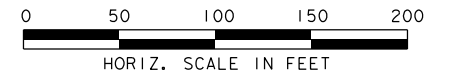
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- TELEPHONE ----- TI (D) ----- ATT
- OVERHEAD ----- OE1 ----- AEP TEXAS
- ELECTRIC ----- OE1/FOCI ----- AEP TEXAS/ATT
- OH ELECTRIC/ FIBER OPTIC ----- OE2 ----- TRANSMISSION
- OVERHEAD ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX
- [TRAF SIG] TRAF SIG PWR BOX
- [P] POWER POLE
- [LP] LIGHT POLE
- [TP] TELE PEDESTAL
- [TH] TELE HAND HOLE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE
- [H] HYDRANT
- [X] WATER VALVE
- [WM] WATER METER
- [GV] GAS VENT
- [TS] TRAFFIC SIGNAL POLE
- [GW] GUY WIRE



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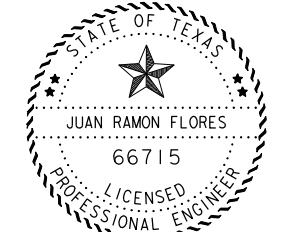
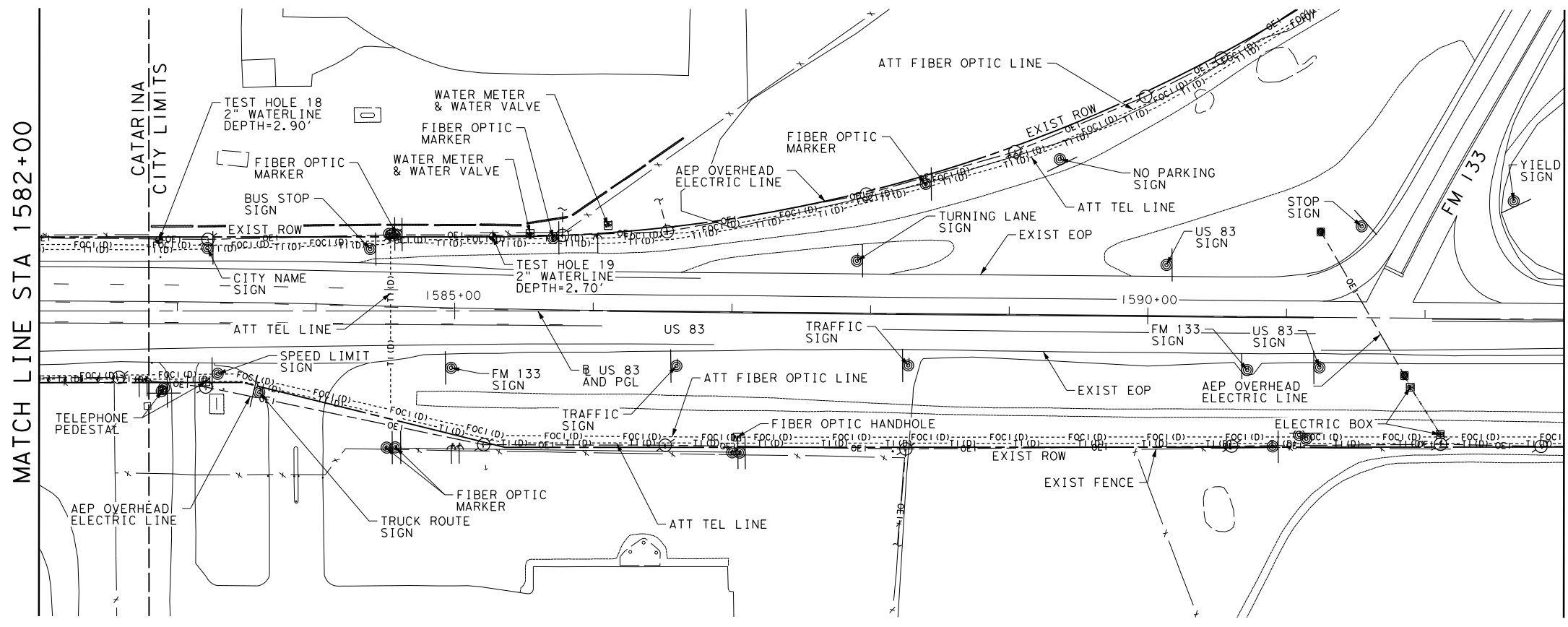
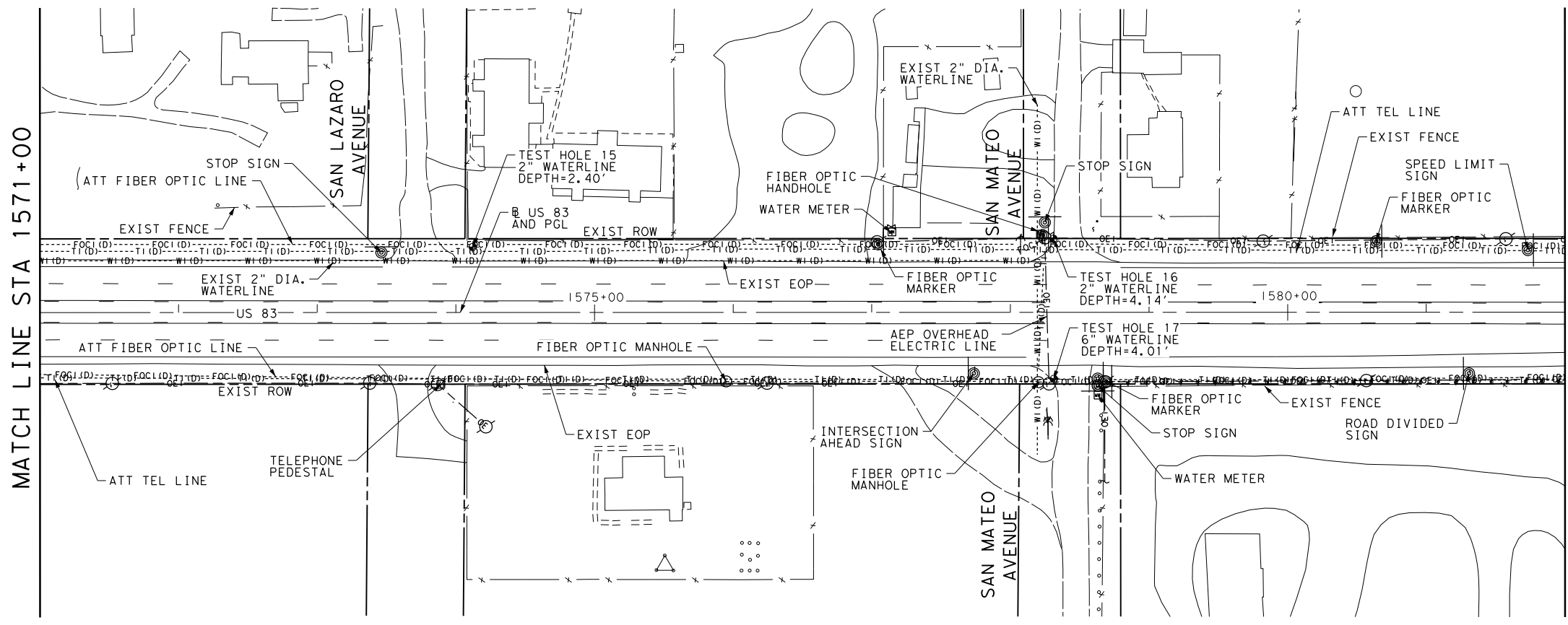
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation; all rights reserved.			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1549+00 TO</b> <b>STA 1571+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	249	
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

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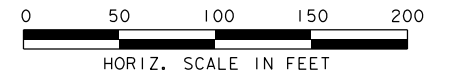
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- TELEPHONE .....T1(D)..... ATT
- OVERHEAD .....OE1..... AEP TEXAS
- ELECTRIC
- OH ELECTRIC/.....OE1/FOC1..... AEP TEXAS/ATT
- FIBER OPTIC
- OVERHEAD .....OE2..... TRANSMISSION
- ELECTRIC
- PIPELINE .....PL1(D)..... HARVEST
- PIPELINE .....PL2(D)..... WILLIAMS
- PIPELINE .....PL3(D)..... ENTERPRISE PRODUCTS
- PIPELINE .....PL4(D)..... CATARINA
- PIPELINE .....PL5(D)..... ANADARKP
- PIPELINE .....PL6(D)..... CHESAPEAKE
- PIPELINE .....PL7(D)..... PLAINS SOUTH
- PIPELINE .....PL8(D)..... CARNERO
- PIPELINE .....PL9(D)..... ENERGY TRANSFER
- PIPELINE .....PL10(D)..... EAGLE FORD
- WATERLINE .....W1(D)..... CATARINA
- WATERLINE .....W2(D)..... ASHERTON
- [E] ELEC POWER BOX
- [P] TRAF SIG PWR BOX
- [O] POWER POLE
- [L] LIGHT POLE
- [T] TELE PEDESTAL
- [H] TELE HAND HOLE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE
- [H] HYDRANT
- [X] WATER VALVE
- [WM] WATER METER
- [GV] GAS VENT
- [C] TRAFFIC SIGNAL POLE
- [G] GUY WIRE



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SHEET 4 OF 26

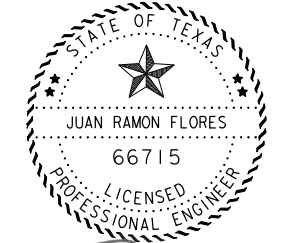
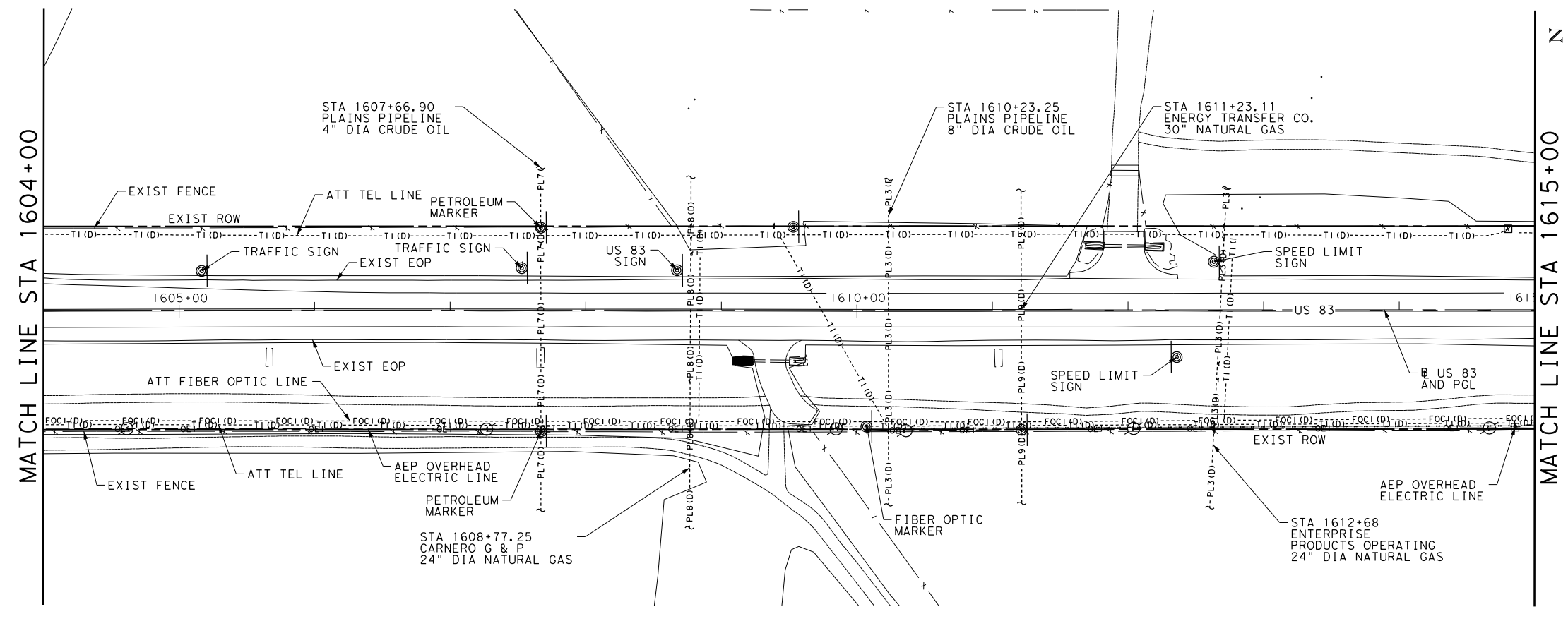
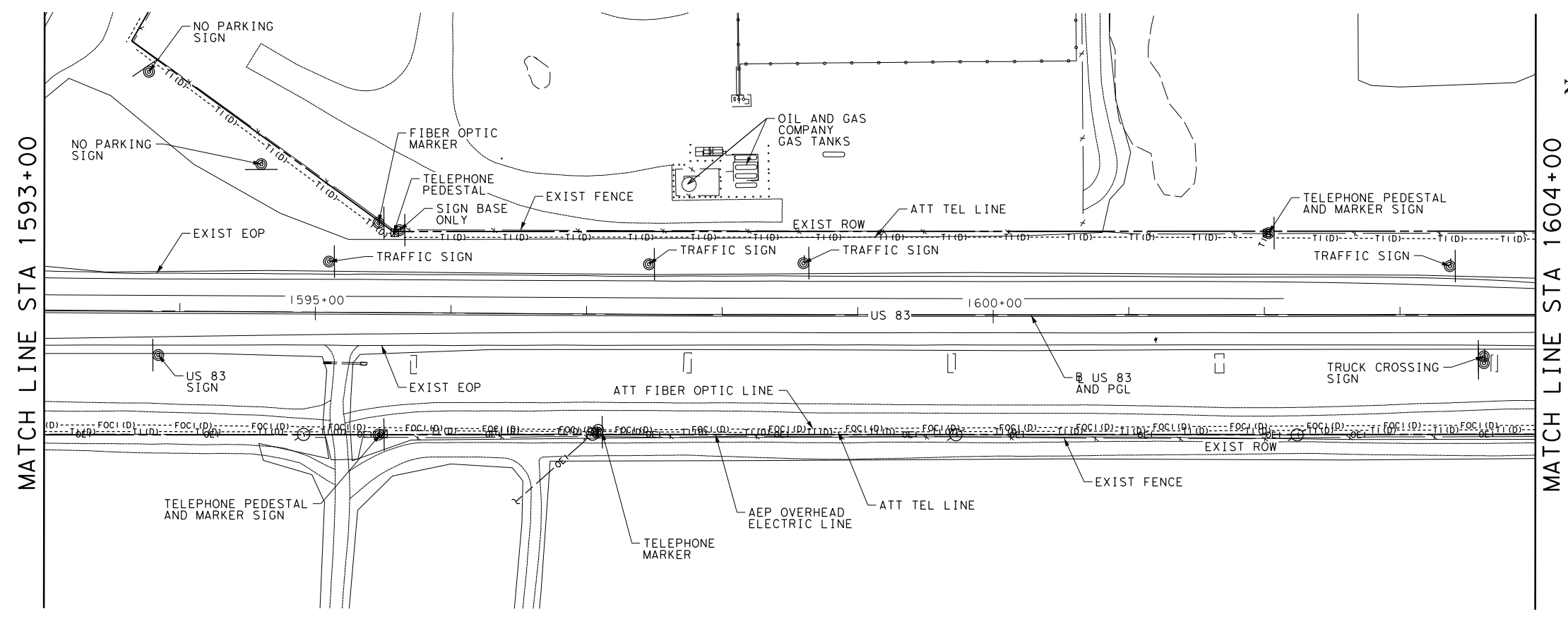
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation; all rights reserved			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1571+00 TO</b> <b>STA 1593+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	250	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

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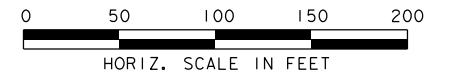
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  - TELEPHONE -----TI (D)----- ATT
  - OVERHEAD -----OE1----- AEP TEXAS
  - ELECTRIC
  - OH ELECTRIC/ -----OE1/FOCI ----- AEP TEXAS/ATT
  - FIBER OPTIC
  - OVERHEAD -----OE2----- TRANSMISSION
  - ELECTRIC
  - PIPELINE -----PL1 (D)----- HARVEST
  - PIPELINE -----PL2 (D)----- WILLIAMS
  - PIPELINE -----PL3 (D)----- ENTERPRISE PRODUCTS
  - PIPELINE -----PL4 (D)----- CATARINA
  - PIPELINE -----PL5 (D)----- ANADARKP
  - PIPELINE -----PL6 (D)----- CHESAPEAKE
  - PIPELINE -----PL7 (D)----- PLAINS SOUTH
  - PIPELINE -----PL8 (D)----- CARNERO
  - PIPELINE -----PL9 (D)----- ENERGY TRANSFER
  - PIPELINE -----PL10 (D)----- EAGLE FORD
  - WATERLINE -----W1 (D)----- CATARINA
  - WATERLINE -----W2 (D)----- ASHERTON
- 
- [E] ELEC POWER BOX      [O] HYDRANT
  - [S] TRAF SIG PWR BOX    [X] WATER VALVE
  - [P] POWER POLE          [WM] WATER METER
  - [L] LIGHT POLE          [GV] GAS VENT
  - [TP] TELE PEDESTAL      [C] TRAFFIC SIGNAL POLE
  - [HH] TELE HAND HOLE    [G] GUY WIRE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE



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NO.	REVISIONS	BY	DATE
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<b>US 83 EXISTING UTILITIES STA 1593+00 TO STA 1615+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	251	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

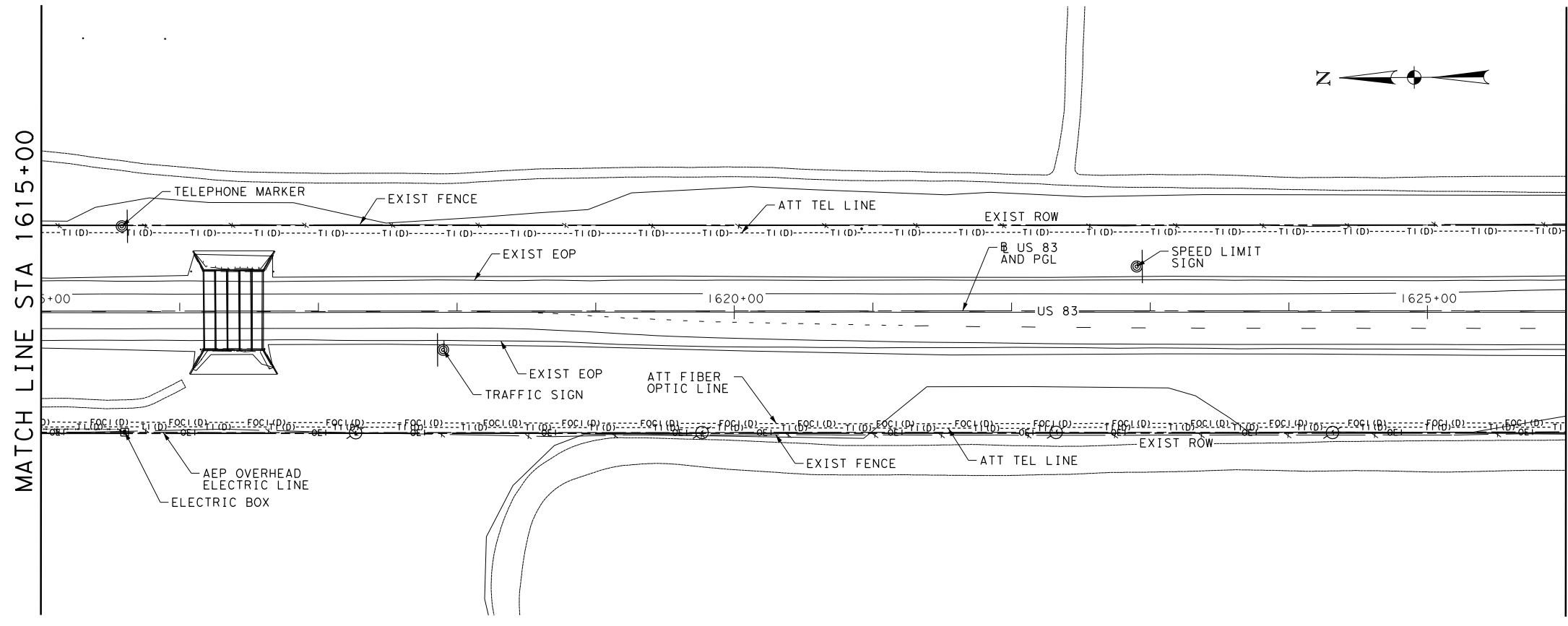
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  - TELEPHONE -----TI (D)----- ATT
  - OVERHEAD -----OE1----- AEP TEXAS
  - ELECTRIC
  - OH ELECTRIC/ -----OE1/FOCI ----- AEP TEXAS/ATT
  - FIBER OPTIC
  - OVERHEAD -----OE2----- TRANSMISSION
  - ELECTRIC
  - PIPELINE -----PL1 (D)----- HARVEST
  - PIPELINE -----PL2 (D)----- WILLIAMS
  - PIPELINE -----PL3 (D)----- ENTERPRISE PRODUCTS
  - PIPELINE -----PL4 (D)----- CATARINA
  - PIPELINE -----PL5 (D)----- ANADARKP
  - PIPELINE -----PL6 (D)----- CHESAPEAKE
  - PIPELINE -----PL7 (D)----- PLAINS SOUTH
  - PIPELINE -----PL8 (D)----- CARNERO
  - PIPELINE -----PL9 (D)----- ENERGY TRANSFER
  - PIPELINE -----PL10 (D)----- EAGLE FORD
  - WATERLINE -----W1 (D)----- CATARINA
  - WATERLINE -----W2 (D)----- ASHERTON
- 
- [E] ELEC POWER BOX      [H] HYDRANT
  - [ ] TRAF SIG PWR BOX    [X] WATER VALVE
  - [O] POWER POLE          [WM] WATER METER
  - [L] LIGHT POLE          [GV] GAS VENT
  - [ ] TELE PEDESTAL      [ ] TRAFFIC SIGNAL POLE
  - [ ] TELE HAND HOLE      [ ] GUY WIRE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE



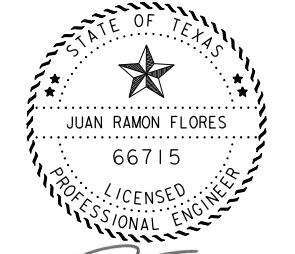
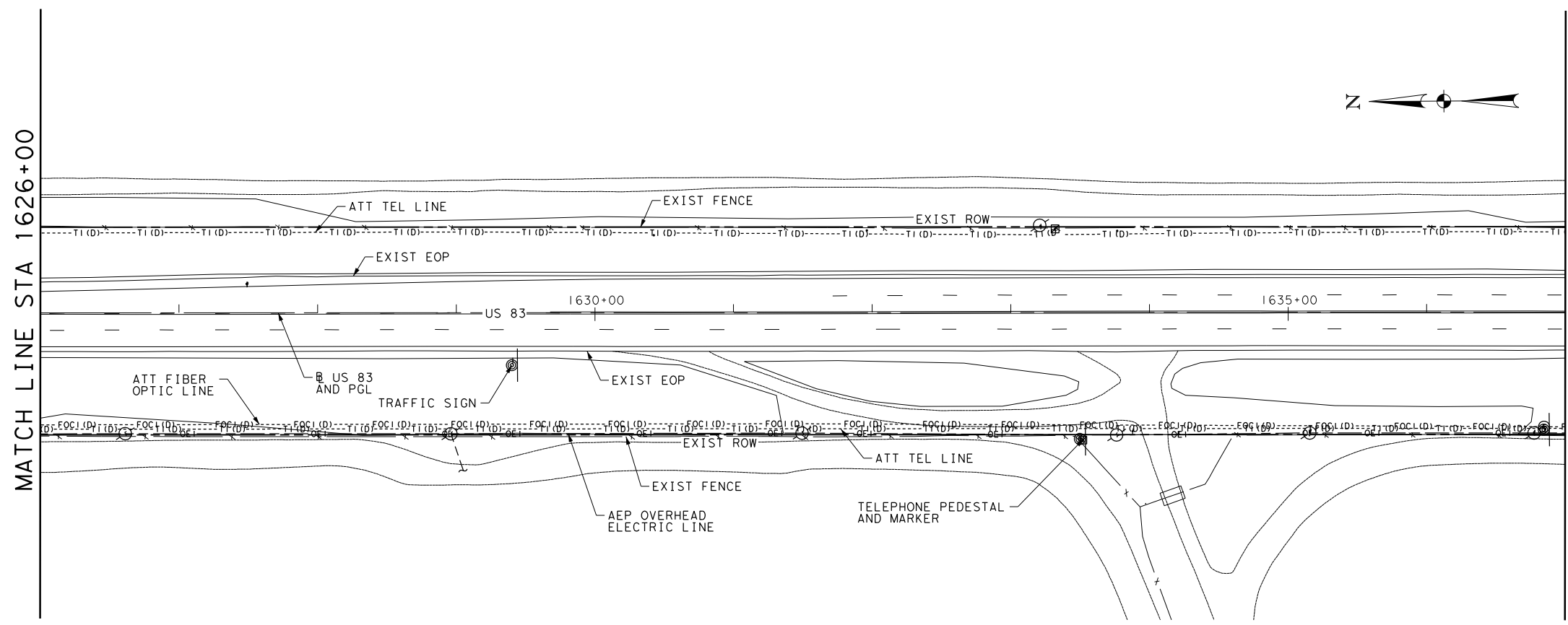
MATCH LINE STA 1615+00

MATCH LINE STA 1626+00



MATCH LINE STA 1626+00

MATCH LINE STA 1637+00

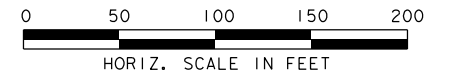


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SHEET 6 OF 26

NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 <small>FIRM REGISTRATION No. F-10098</small>			
<b>Texas Department of Transportation</b> <small>©2020 by Texas Department of Transportation; all rights reserved</small>			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1615+00 TO</b> <b>STA 1637+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	252	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

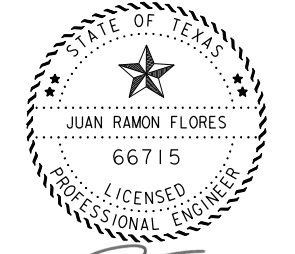
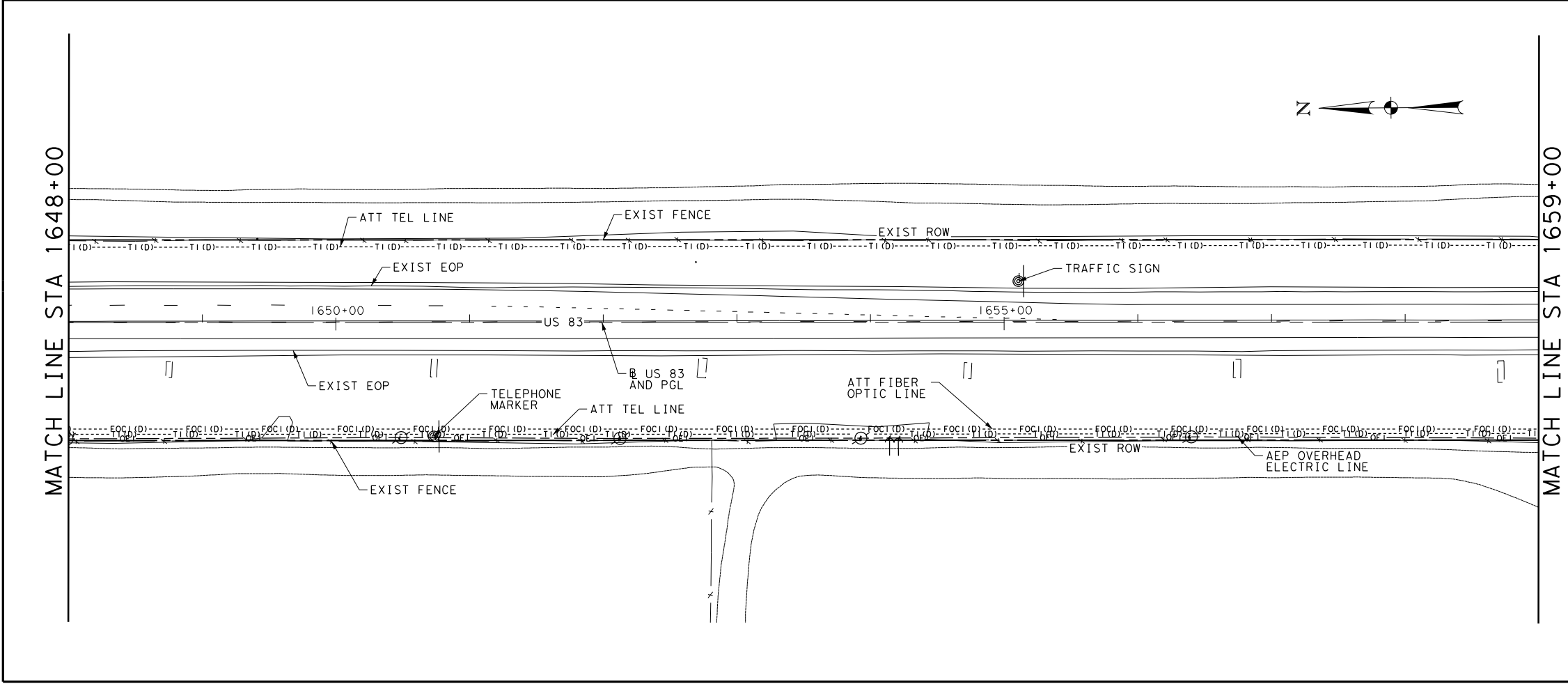
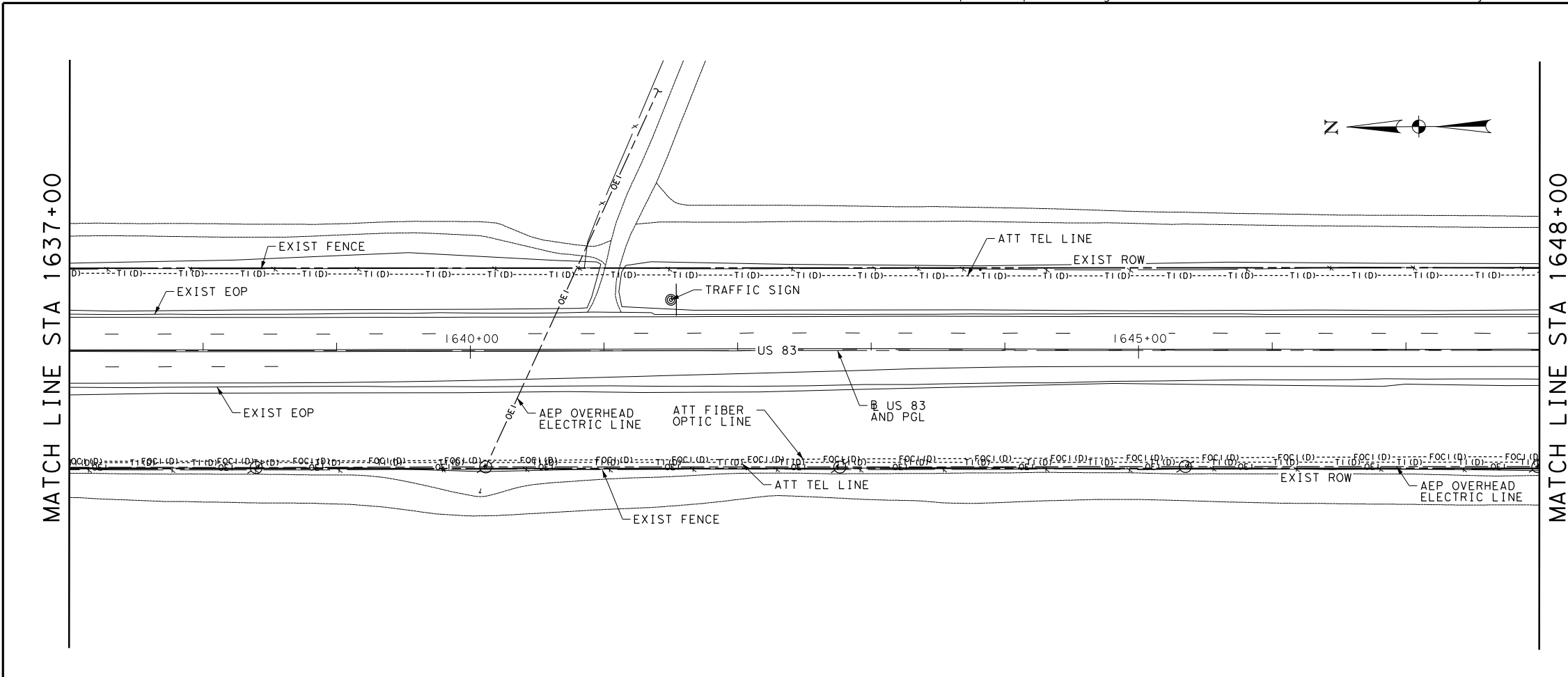




**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

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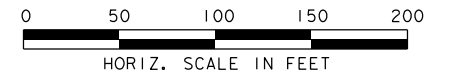
- FIBER OPTIC ----- FOC1 (D) ----- ATT
  - TELEPHONE ----- T1 (D) ----- ATT
  - OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
  - OH ELECTRIC/ FIBER OPTIC ----- OE1/FOC1 ----- AEP TEXAS/ATT
  - FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
  - ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX
  - [T] TRAF SIG PWR BOX
  - [P] POWER POLE
  - [L] LIGHT POLE
  - [H] TELE PEDESTAL
  - [HH] TELE HAND HOLE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE
  - [O] HYDRANT
  - [X] WATER VALVE
  - [WM] WATER METER
  - [GV] GAS VENT
  - [C] TRAFFIC SIGNAL POLE
  - [G] GUY WIRE



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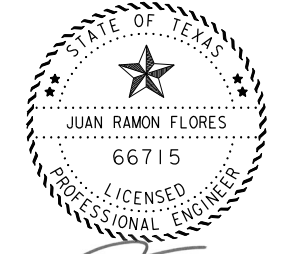
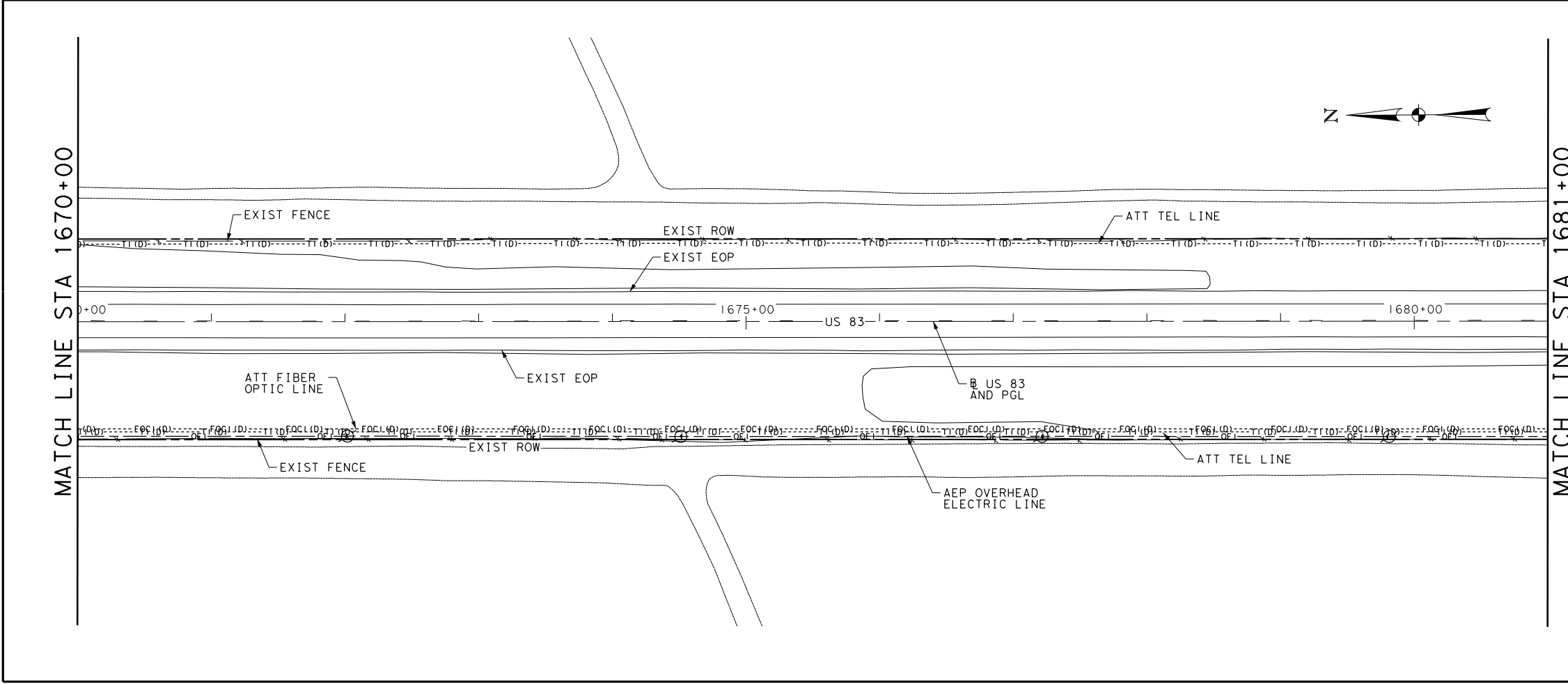
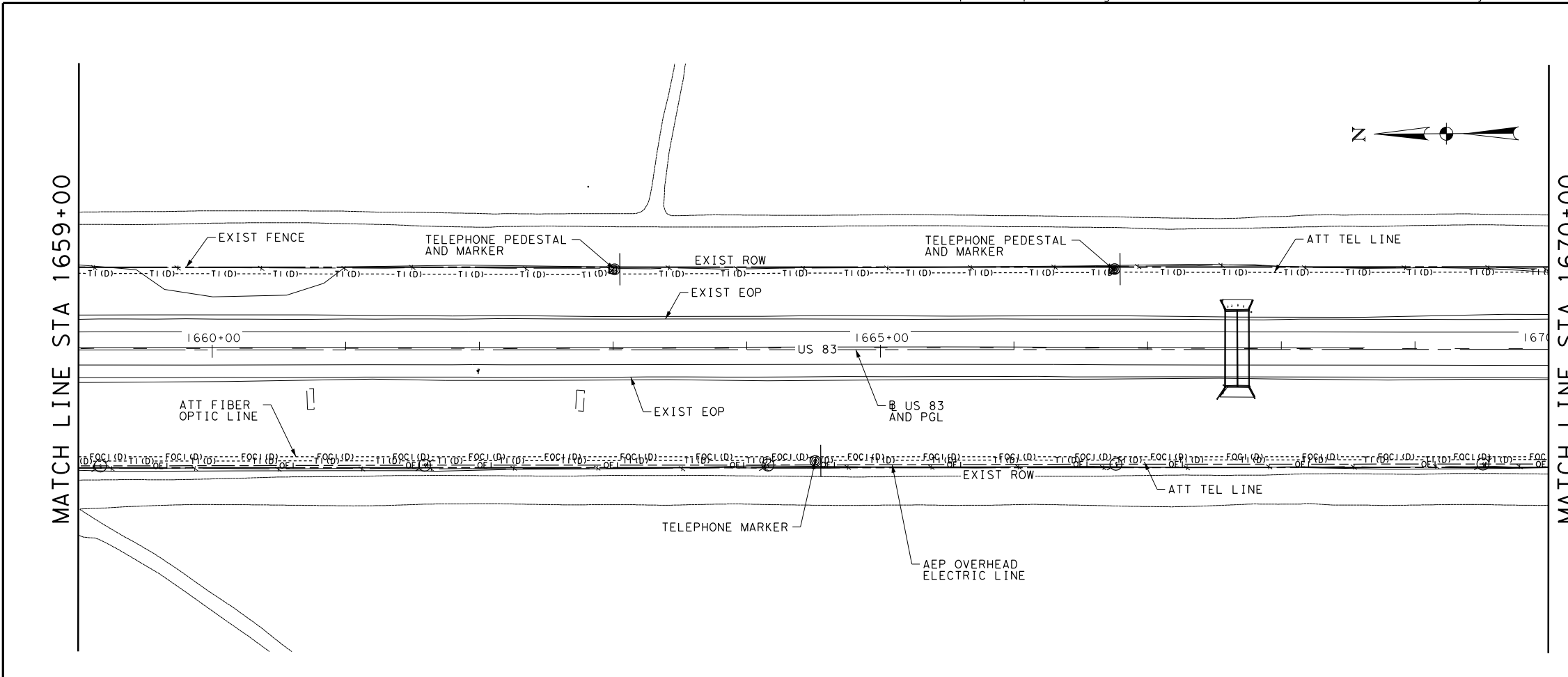
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 EXISTING UTILITIES STA 1637+00 TO STA 1659+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		253
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

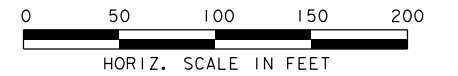
- FIBER OPTIC ----- FOC1 (D) ----- ATT
  - TELEPHONE ----- T1 (D) ----- ATT
  - OVERHEAD ----- OE1 ----- AEP TEXAS ELECTRIC
  - OH ELECTRIC/ ----- OE1/FOC1 ----- AEP TEXAS/ATT
  - FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
  - ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX      ○ HYDRANT
  - [ ] TRAF SIG PWR BOX      ⊗ WATER VALVE
  - POWER POLE      [WM] WATER METER
  - [ ] LIGHT POLE      [GV] GAS VENT
  - [ ] TELE PEDESTAL      ⊙ TRAFFIC SIGNAL POLE
  - [ ] TELE HAND HOLE      → GUY WIRE
  - F/O MANHOLE
  - [FH] F/O HANDHOLE



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NO.	REVISIONS	BY	DATE
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<b>US 83 EXISTING UTILITIES STA 1659+00 TO STA 1681+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		254
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

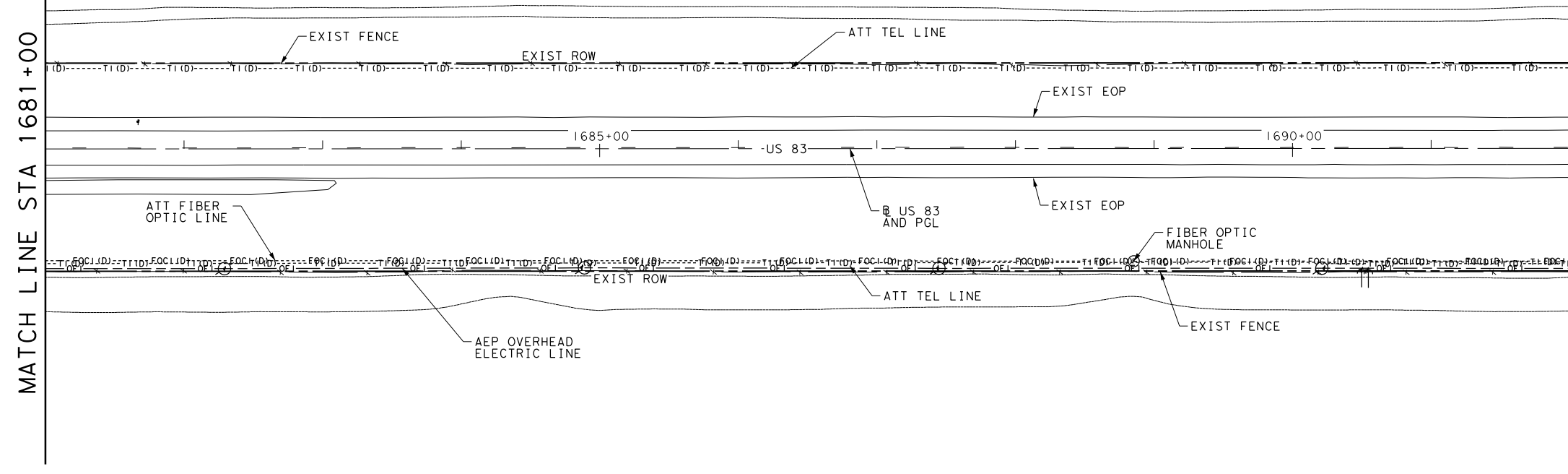
**LEGEND**

- FIBER OPTIC -----FOC1(D)----- ATT
  - TELEPHONE -----TI(D)----- ATT
  - OVERHEAD ELECTRIC -----OE1----- AEP TEXAS
  - OH ELECTRIC/ FIBER OPTIC OVERHEAD -----OE2----- TRANSMISSION
  - ELECTRIC PIPELINE -----PL1(D)----- HARVEST
  - PIPELINE -----PL2(D)----- WILLIAMS
  - PIPELINE -----PL3(D)----- ENTERPRISE PRODUCTS
  - PIPELINE -----PL4(D)----- CATARINA
  - PIPELINE -----PL5(D)----- ANADARKP
  - PIPELINE -----PL6(D)----- CHESAPEAKE
  - PIPELINE -----PL7(D)----- PLAINS SOUTH
  - PIPELINE -----PL8(D)----- CARNERO
  - PIPELINE -----PL9(D)----- ENERGY TRANSFER
  - PIPELINE -----PL10(D)----- EAGLE FORD
  - WATERLINE -----W1(D)----- CATARINA
  - WATERLINE -----W2(D)----- ASHERTON
- 
- [E] ELEC POWER BOX      [H] HYDRANT
  - [ ] TRAF SIG PWR BOX    [X] WATER VALVE
  - [ ] POWER POLE          [WM] WATER METER
  - [ ] LIGHT POLE          [GV] GAS VENT
  - [ ] TELE PEDESTAL      [ ] TRAFFIC SIGNAL POLE
  - [ ] TELE HAND HOLE     [ ] GUY WIRE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE



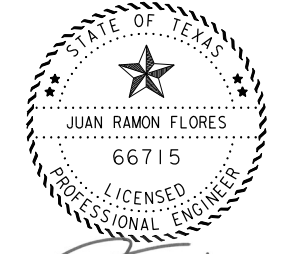
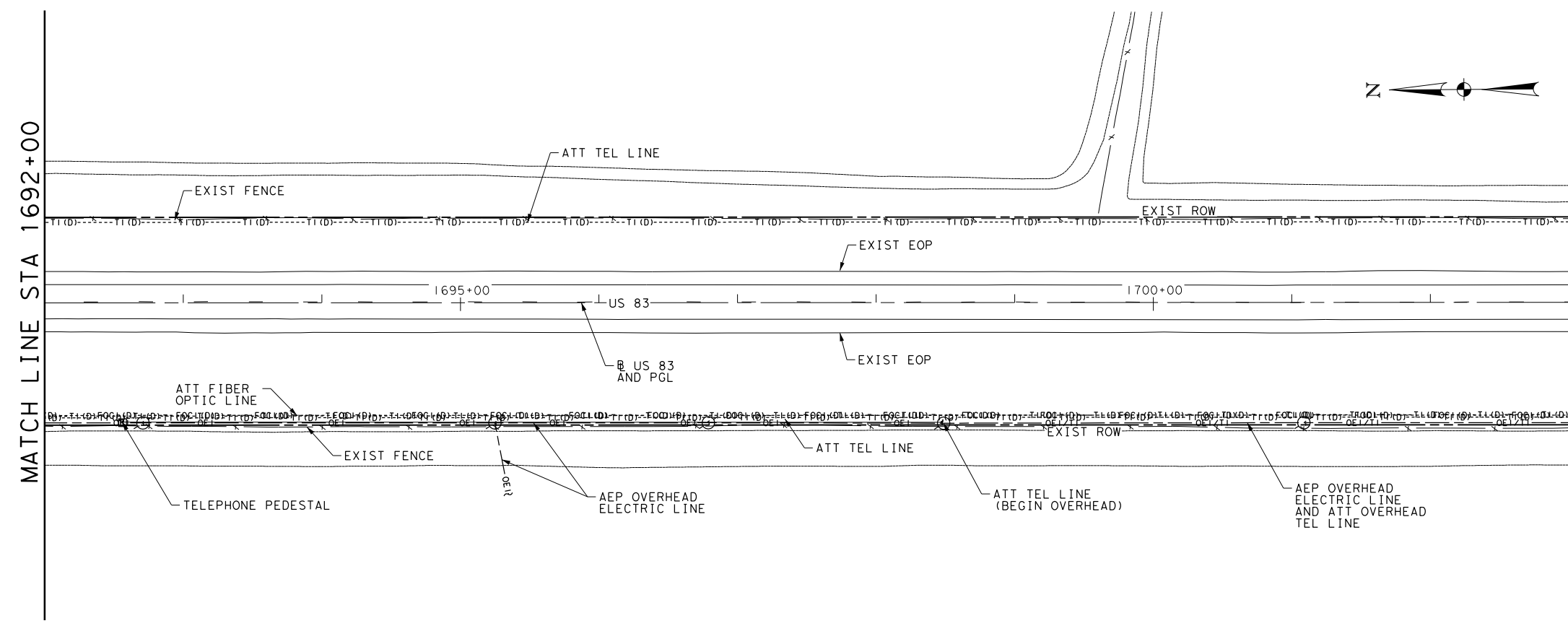
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MATCH LINE STA 1692+00



MATCH LINE STA 1692+00

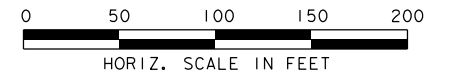
MATCH LINE STA 1703+00



*Juan Flores* 6-22-2020

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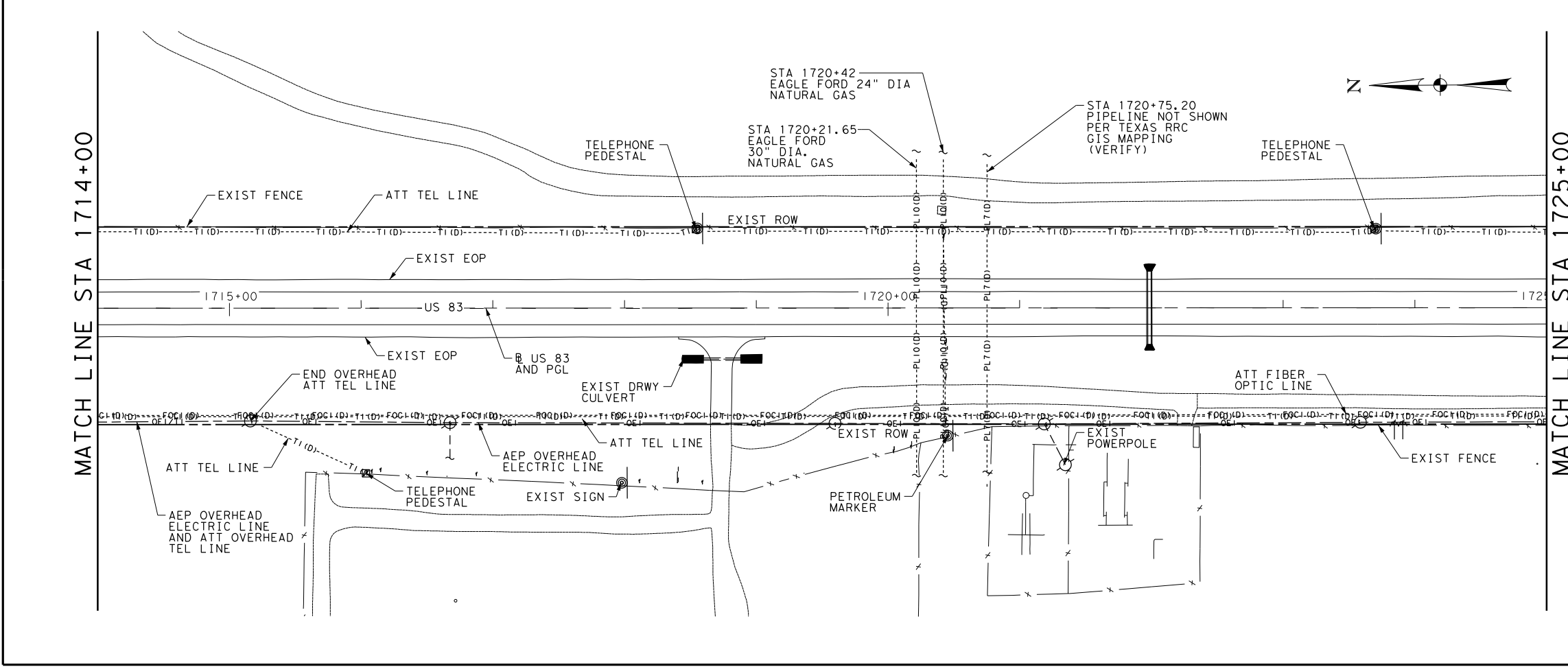
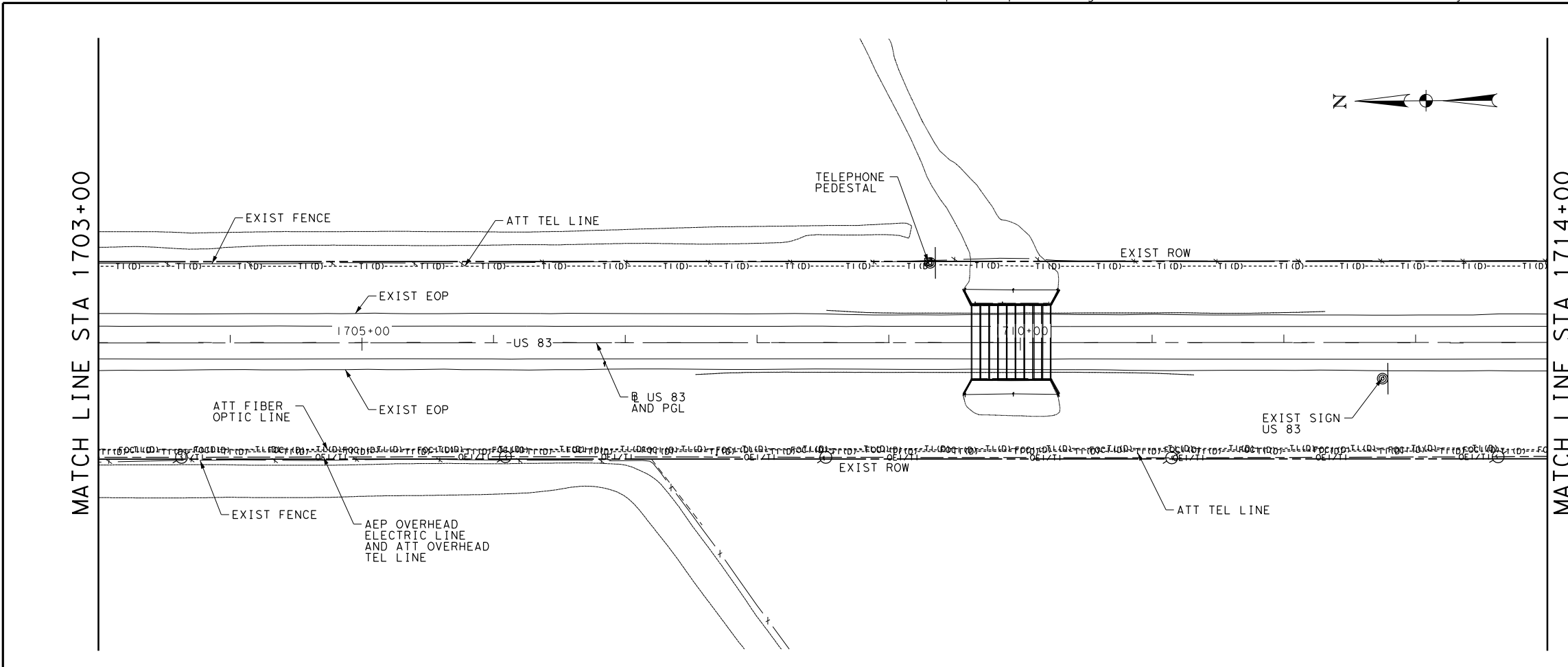
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 <small>FIRM REGISTRATION No. F-10098</small>			
<b>Texas Department of Transportation</b> <small>©2020 by Texas Department of Transportation; all rights reserved</small>			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1681+00 TO</b> <b>STA 1703+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		255
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

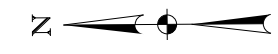
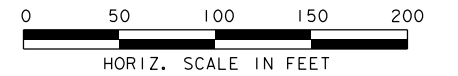
**LEGEND**

- FIBER OPTIC ----- FOC1 (D) ----- ATT
  - TELEPHONE ----- T1 (D) ----- ATT
  - OVERHEAD ----- OE1 ----- AEP TEXAS
  - ELECTRIC ----- OE1/FOC1 ----- AEP TEXAS/ATT
  - OH ELECTRIC/FIBER OPTIC ----- OE2 ----- TRANSMISSION
  - ELECTRIC ----- PL1 (D) ----- HARVEST
  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX
  - [T] TRAF SIG PWR BOX
  - [P] POWER POLE
  - [L] LIGHT POLE
  - [TP] TELE PEDESTAL
  - [HH] TELE HAND HOLE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE
  - [H] HYDRANT
  - [X] WATER VALVE
  - [WM] WATER METER
  - [GV] GAS VENT
  - [TS] TRAFFIC SIGNAL POLE
  - [G] GUY WIRE



SHEET 10 OF 26

NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1703+00 TO</b> <b>STA 1725+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	256	
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	US 83
0037	08	042, ETC.	



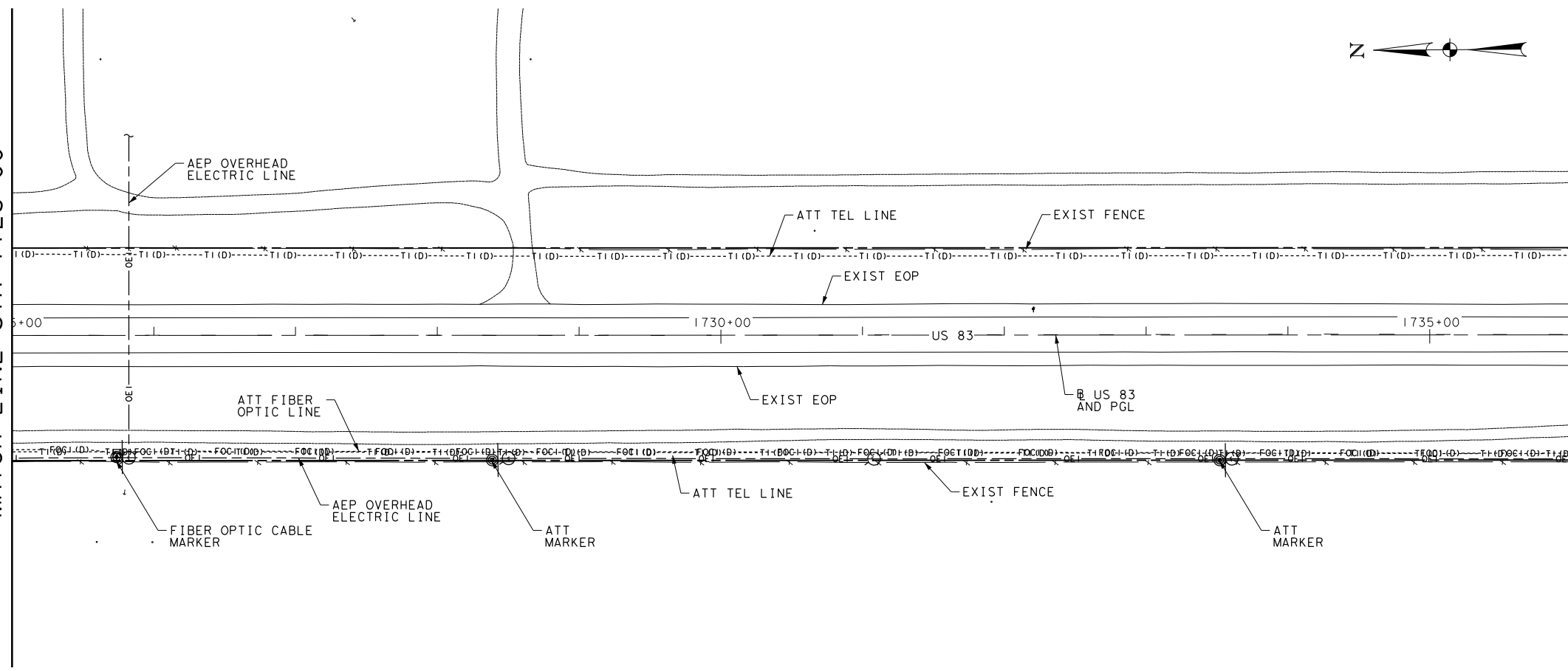
**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC ----- FOC1 (D) ----- ATT
  - TELEPHONE ----- T1 (D) ----- ATT
  - OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
  - OH ELECTRIC/FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
  - ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX      [H] HYDRANT
  - [T] TRAF SIG PWR BOX    [W] WATER VALVE
  - [P] POWER POLE          [WM] WATER METER
  - [L] LIGHT POLE          [GV] GAS VENT
  - [TP] TELE PEDESTAL      [C] TRAFFIC SIGNAL POLE
  - [HH] TELE HAND HOLE    [GW] GUY WIRE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE

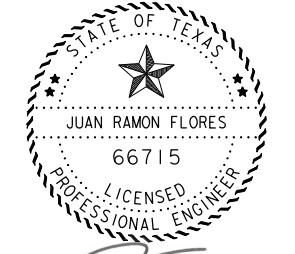
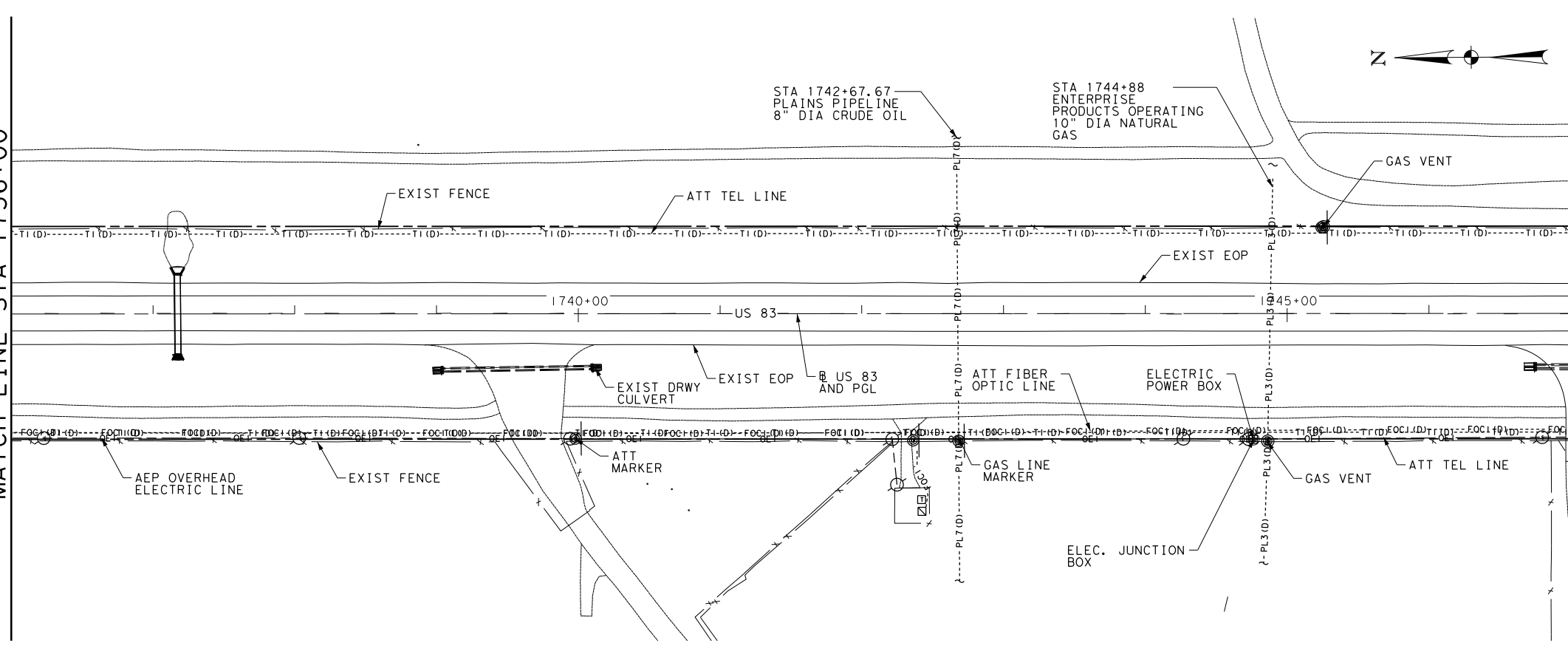
MATCH LINE STA 1725+00

MATCH LINE STA 1736+00



MATCH LINE STA 1736+00

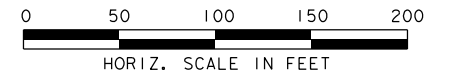
MATCH LINE STA 1747+00



*Juan Flores* 6-22-2020

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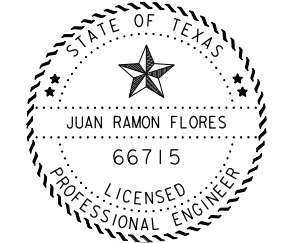
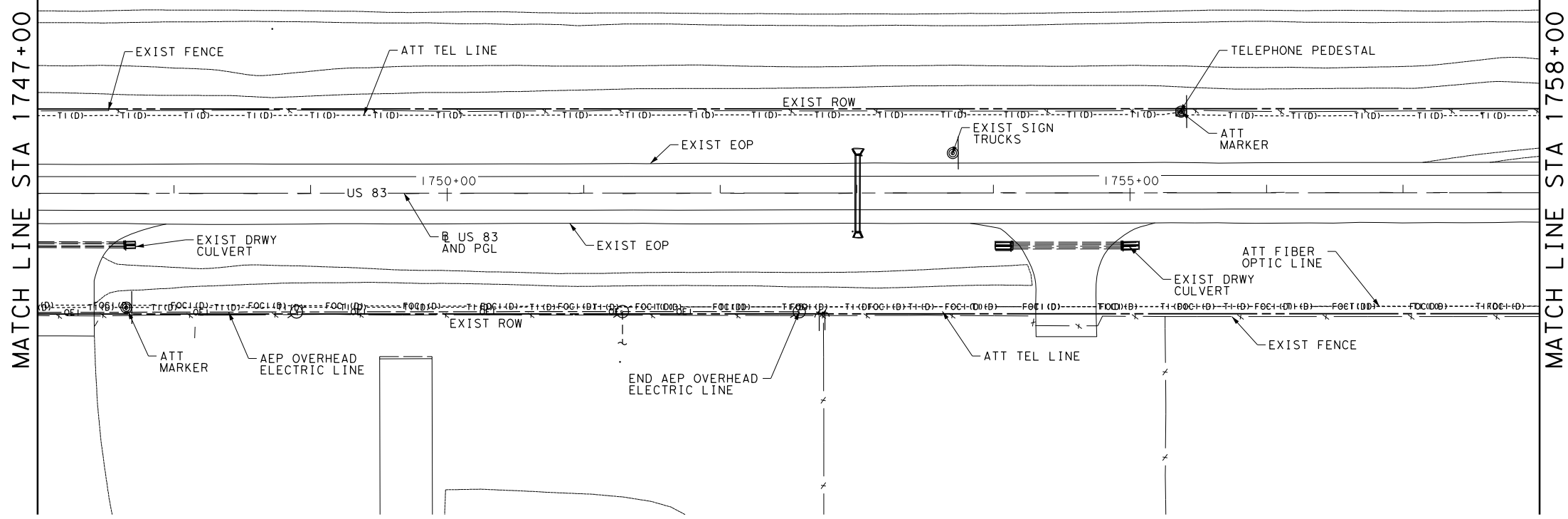
NO.		REVISIONS	BY	DATE
		<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098		
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<b>US 83 EXISTING UTILITIES STA 1725+00 TO STA 1747+00</b>				
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.	
6	C 37-8-42		257	
STATE	DISTRICT	COUNTY		HIGHWAY NO.
TEXAS	LRD	DIMMIT		
CONTROL	SECTION	JOB	NO.	
0037	08	042, ETC.	US 83	



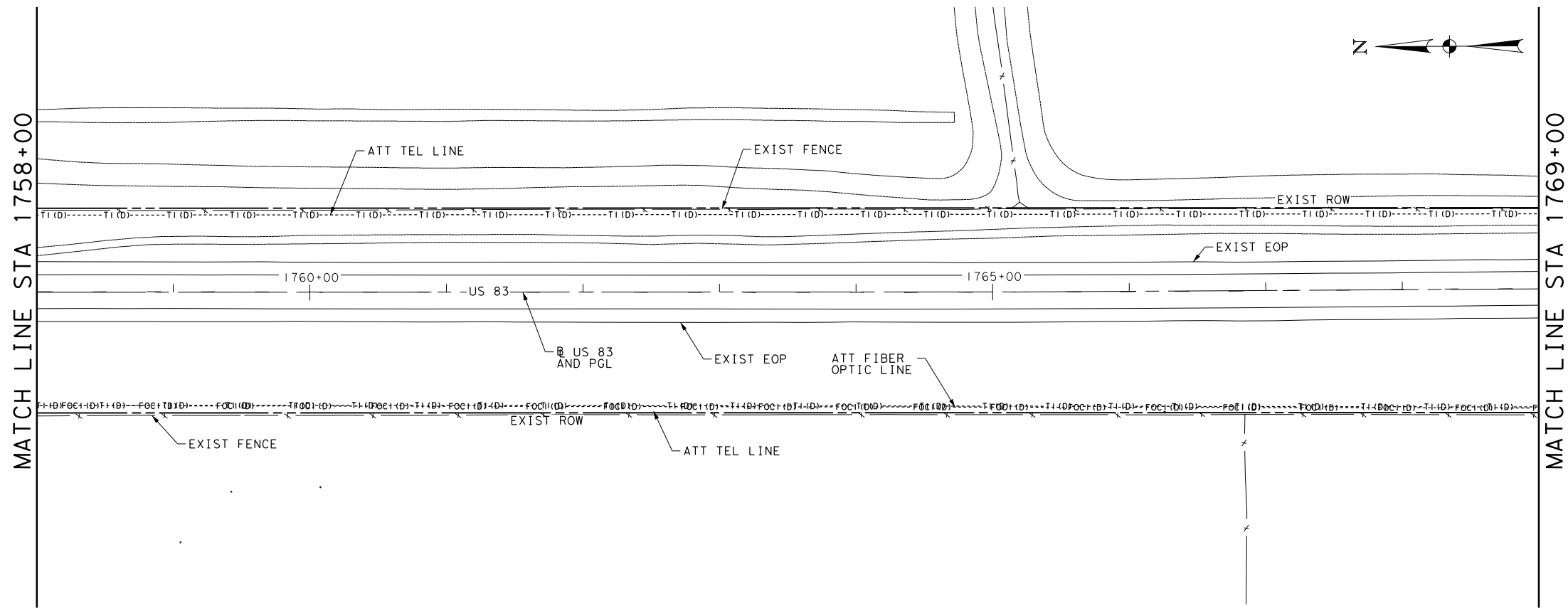
**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC ----- FOC1 (D) ----- ATT
- TELEPHONE ----- T1 (D) ----- ATT
- OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
- OH ELECTRIC/ FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
- ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX      [H] HYDRANT
- [ ] TRAF SIG PWR BOX      [X] WATER VALVE
- [O] POWER POLE      [WM] WATER METER
- [L] LIGHT POLE      [GV] GAS VENT
- [TP] TELE PEDESTAL      [TS] TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE      [GW] GUY WIRE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE

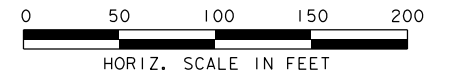


*Juan Flores* 6-22-2020



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NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 EXISTING UTILITIES STA 1747+00 TO STA 1769+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		258
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



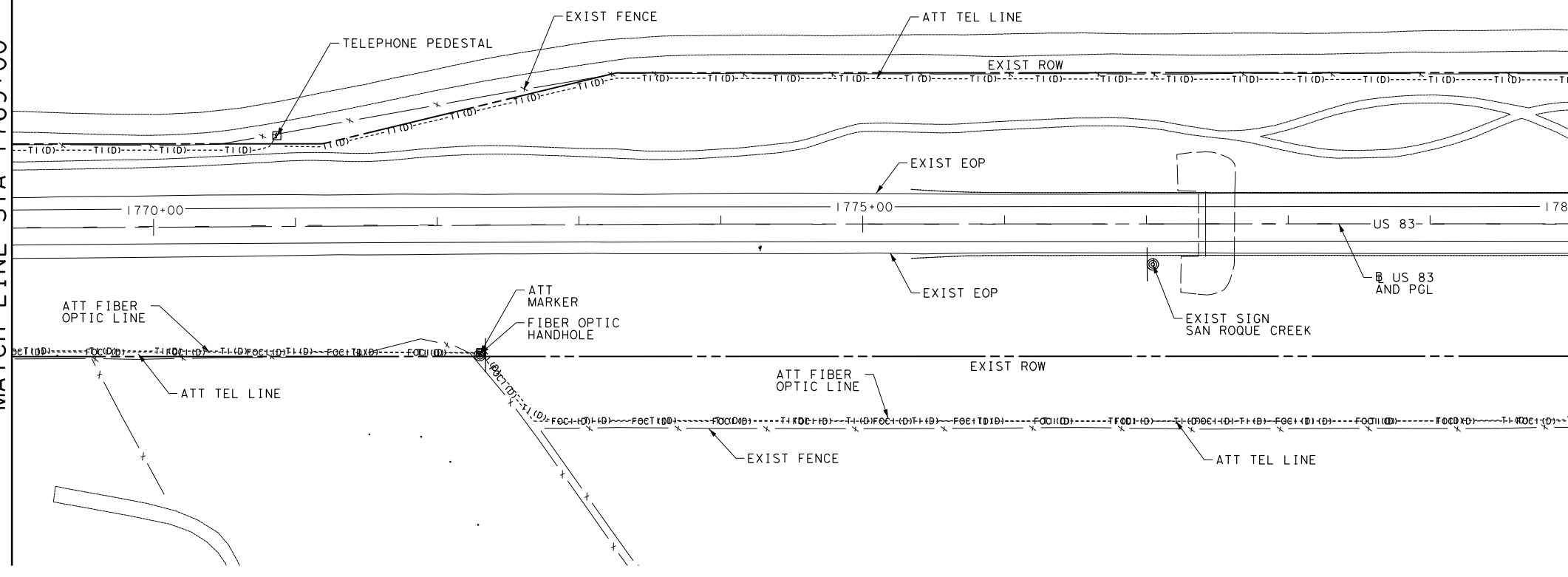
**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC ----- FOC1 (D) ----- ATT
- TELEPHONE ----- T1 (D) ----- ATT
- OVERHEAD ----- OE1 ----- AEP TEXAS ELECTRIC
- OH ELECTRIC/ ----- OE1/FOC1 ----- AEP TEXAS/ATT
- FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
- ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX
- [ ] TRAF SIG PWR BOX
- [O] POWER POLE
- [L] LIGHT POLE
- [TP] TELE PEDESTAL
- [HH] TELE HAND HOLE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE
- [H] HYDRANT
- [X] WATER VALVE
- [WM] WATER METER
- [GV] GAS VENT
- [C] TRAFFIC SIGNAL POLE
- [>] GUY WIRE

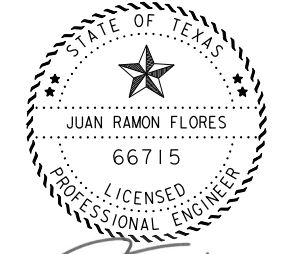
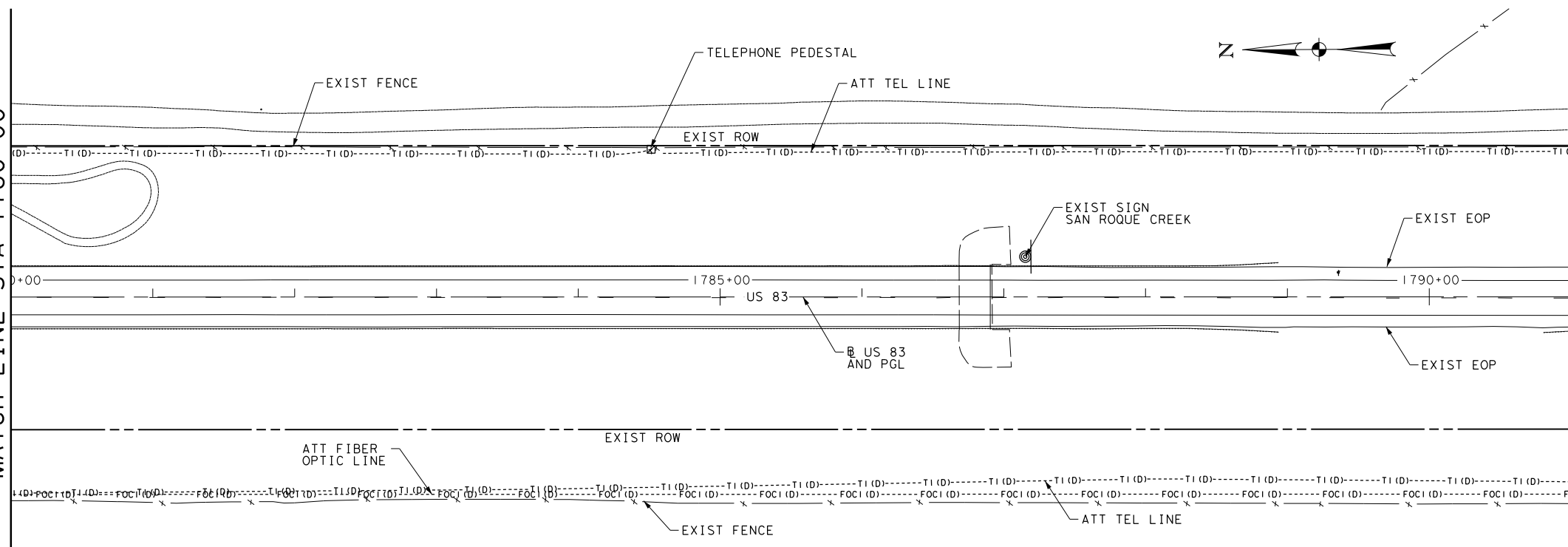
MATCH LINE STA 1769+00

MATCH LINE STA 1780+00



MATCH LINE STA 1780+00

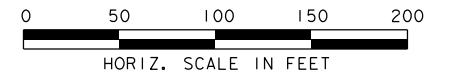
MATCH LINE STA 1791+00



*Juan Flores* 6-22-2020

SHEET 13 OF 26

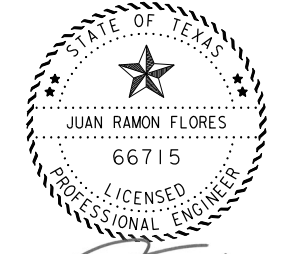
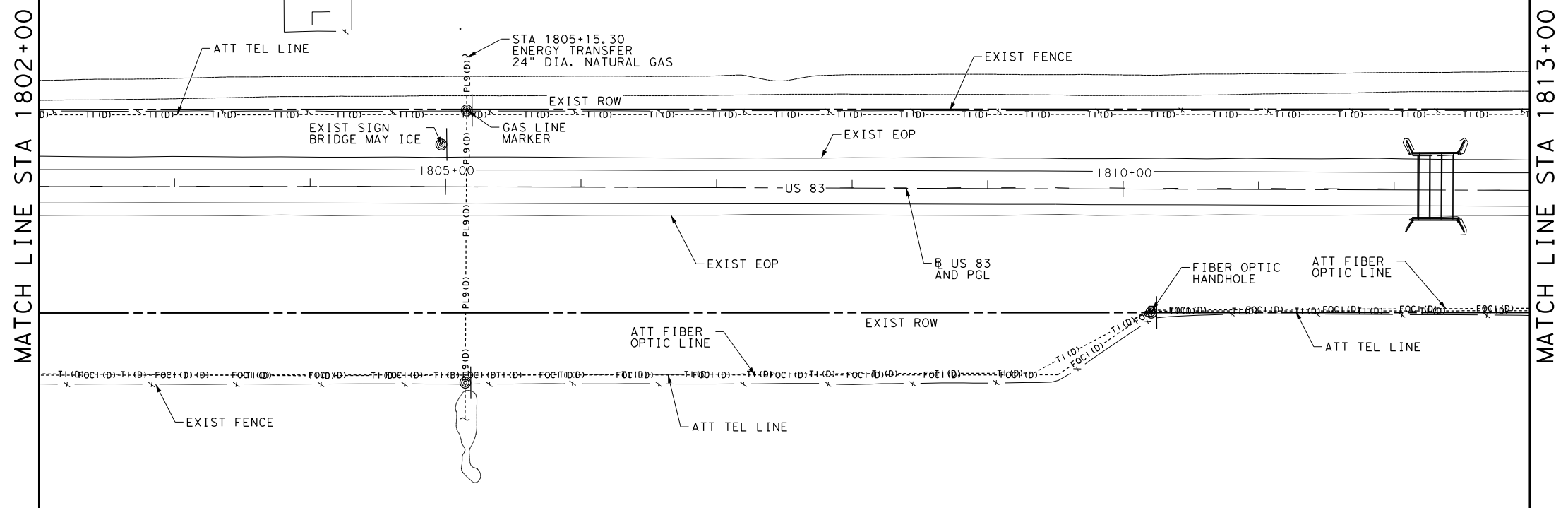
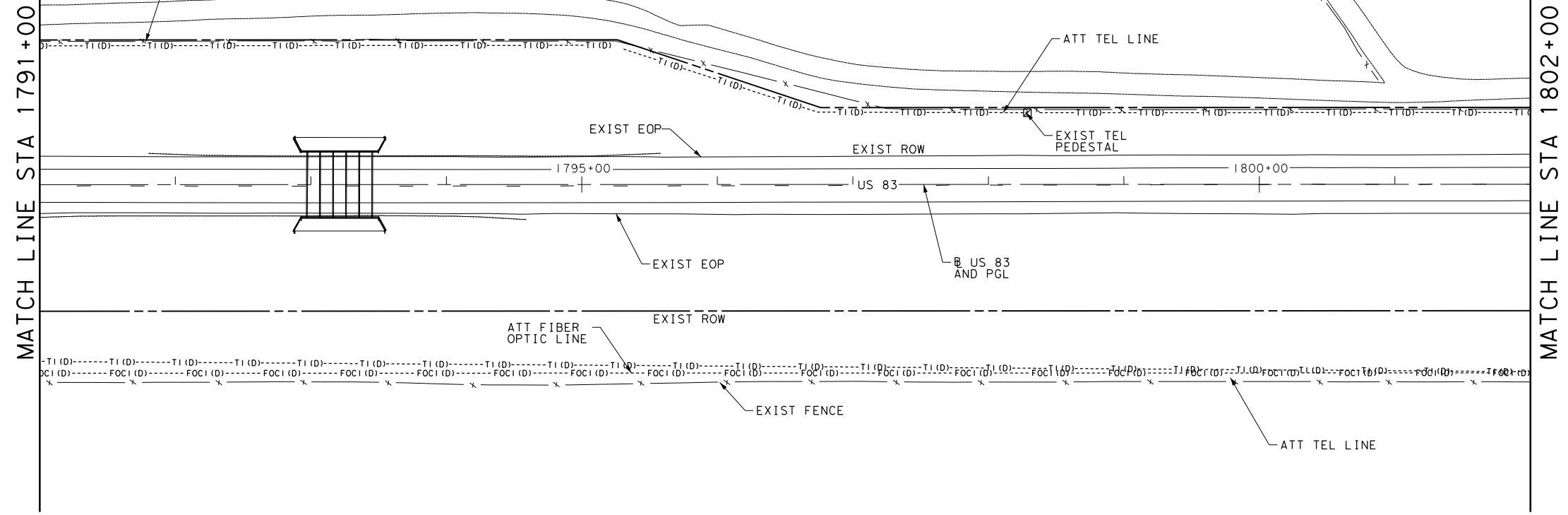
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 <small>FIRM REGISTRATION No. F-10098</small>			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1769+00 TO</b> <b>STA 1791+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	259	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC ----- FOC1 (D) ----- ATT
- TELEPHONE ----- T1 (D) ----- ATT
- OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
- OH ELECTRIC/FIBER OPTIC OVERHEAD ----- OE1/FOC1 ----- AEP TEXAS/ATT
- FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
- ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX      [H] HYDRANT
- [T] TRAF SIG PWR BOX      [X] WATER VALVE
- [P] POWER POLE      [WM] WATER METER
- [L] LIGHT POLE      [GV] GAS VENT
- [TP] TELE PEDESTAL      [C] TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE      [GW] GUY WIRE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE



*Juan Flores* 6-22-2020

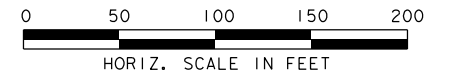
SHEET 14 OF 26

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			

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<b>US 83</b> <b>EXISTING UTILITIES</b> STA 1791+00 TO STA 1813+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		260
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	US 83
0037	08	042, ETC.	





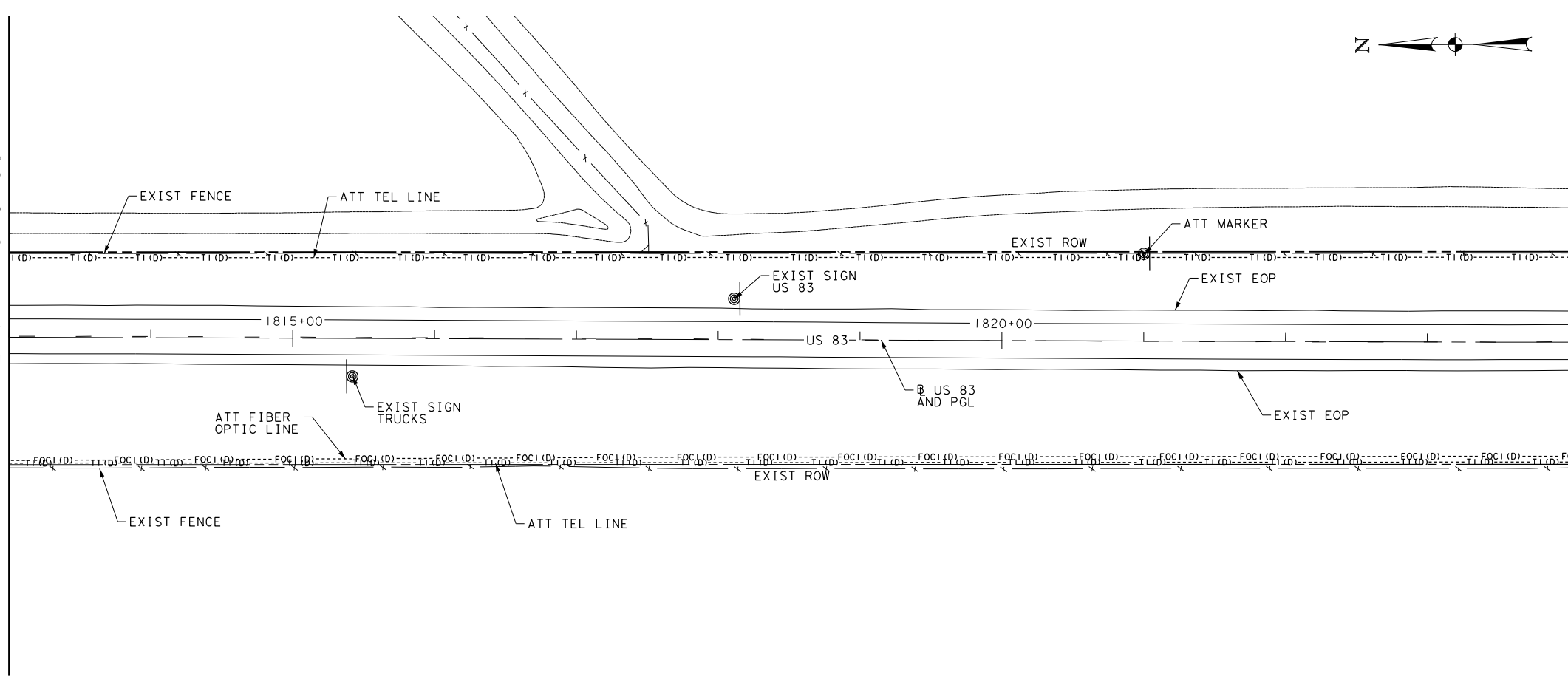
**NOTE:**  
 UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC -----FOC1 (D)----- ATT
- TELEPHONE -----T1 (D)----- ATT
- OVERHEAD ELECTRIC -----OE1----- AEP TEXAS
- OH ELECTRIC/ FIBER OPTIC OVERHEAD -----OE2----- TRANSMISSION
- ELECTRIC PIPELINE -----PL1 (D)----- HARVEST
- PIPELINE -----PL2 (D)----- WILLIAMS
- PIPELINE -----PL3 (D)----- ENTERPRISE PRODUCTS
- PIPELINE -----PL4 (D)----- CATARINA
- PIPELINE -----PL5 (D)----- ANADARKP
- PIPELINE -----PL6 (D)----- CHESAPEAKE
- PIPELINE -----PL7 (D)----- PLAINS SOUTH
- PIPELINE -----PL8 (D)----- CARNERO
- PIPELINE -----PL9 (D)----- ENERGY TRANSFER
- PIPELINE -----PL10 (D)----- EAGLE FORD
- WATERLINE -----W1 (D)----- CATARINA
- WATERLINE -----W2 (D)----- ASHERTON
- [E] ELEC POWER BOX      [H] HYDRANT
- [ ] TRAF SIG PWR BOX      [X] WATER VALVE
- [O] POWER POLE      [WM] WATER METER
- [L] LIGHT POLE      [GV] GAS VENT
- [ ] TELE PEDESTAL      [ ] TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE      [ ] GUY WIRE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE

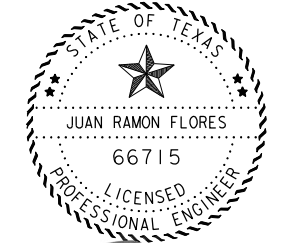
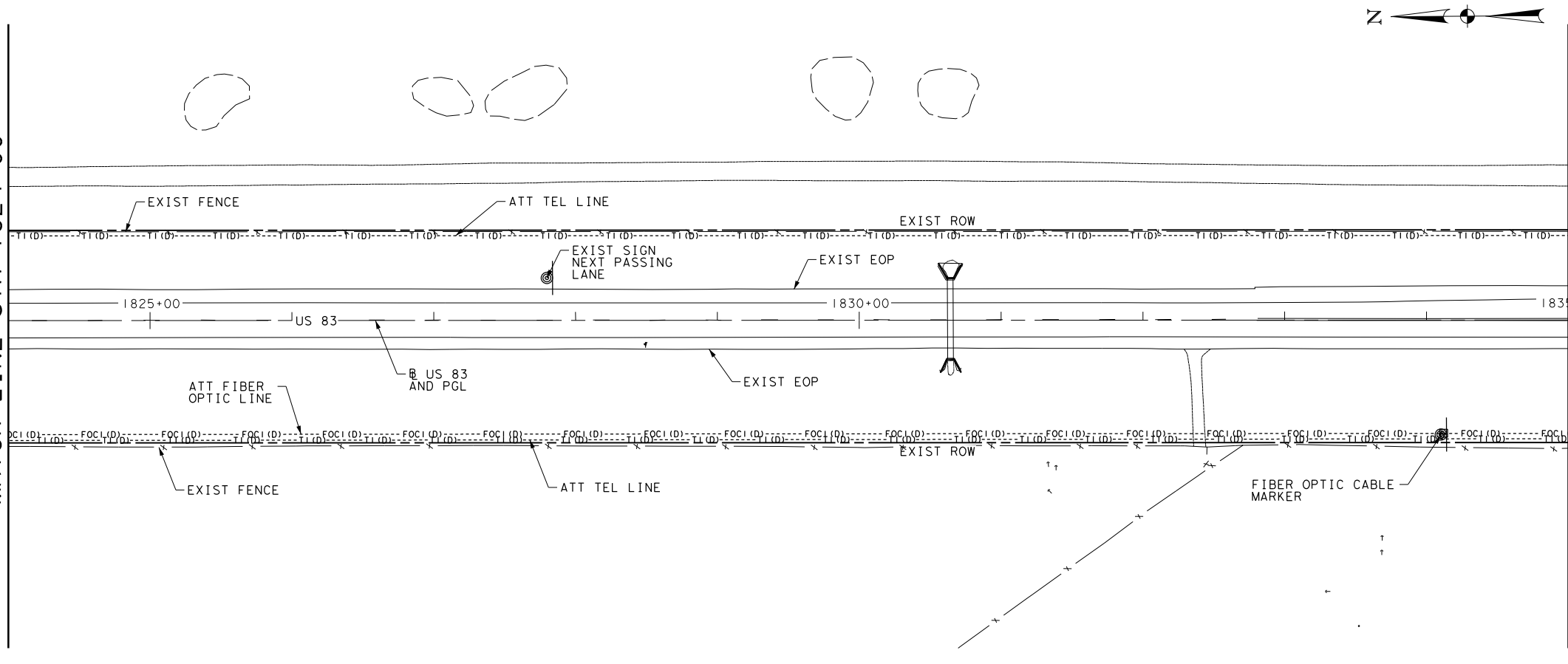
MATCH LINE STA 1813+00

MATCH LINE STA 1824+00



MATCH LINE STA 1824+00

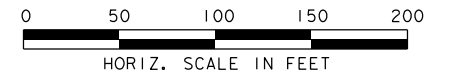
MATCH LINE STA 1835+00



*Juan Flores* 6-22-2020

SHEET 15 OF 26

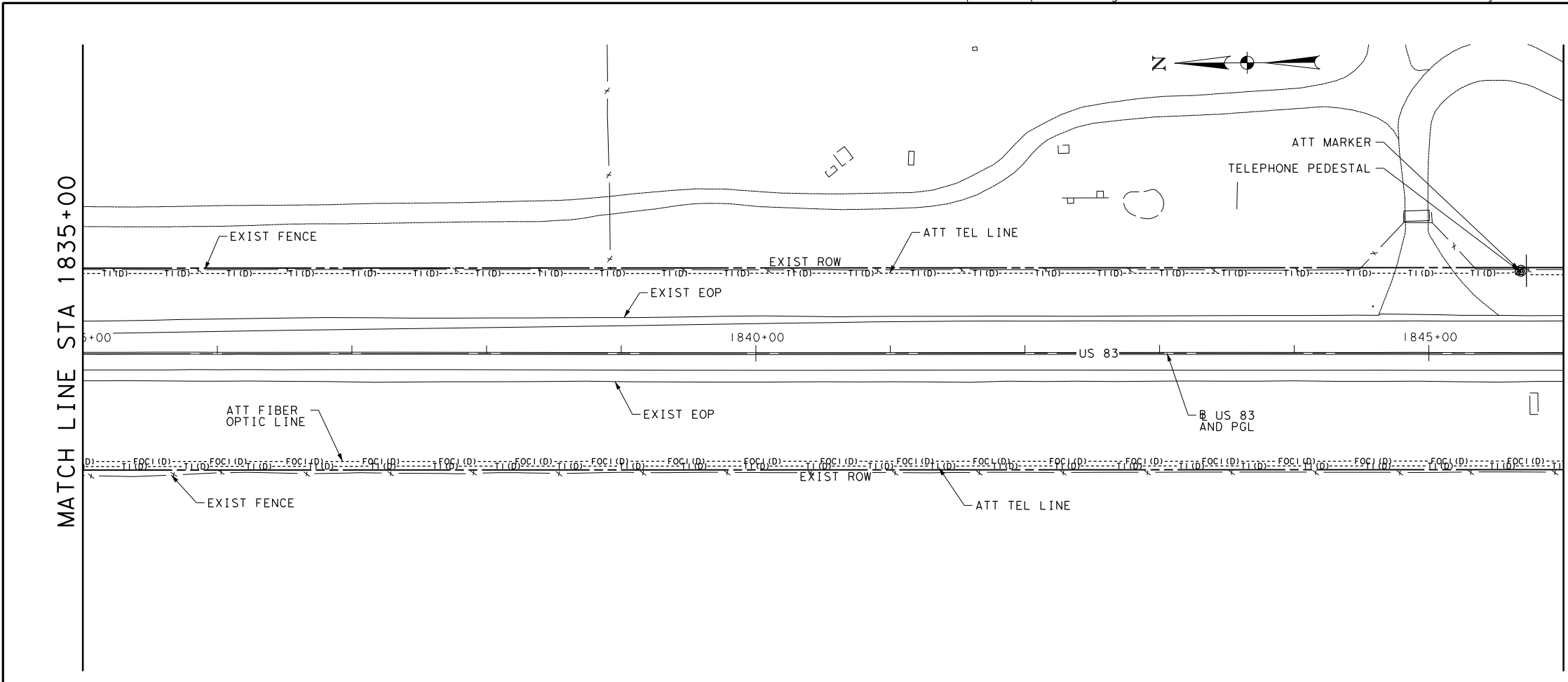
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 <small>FIRM REGISTRATION No. F-10098</small>			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1813+00 TO</b> <b>STA 1835+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	261	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

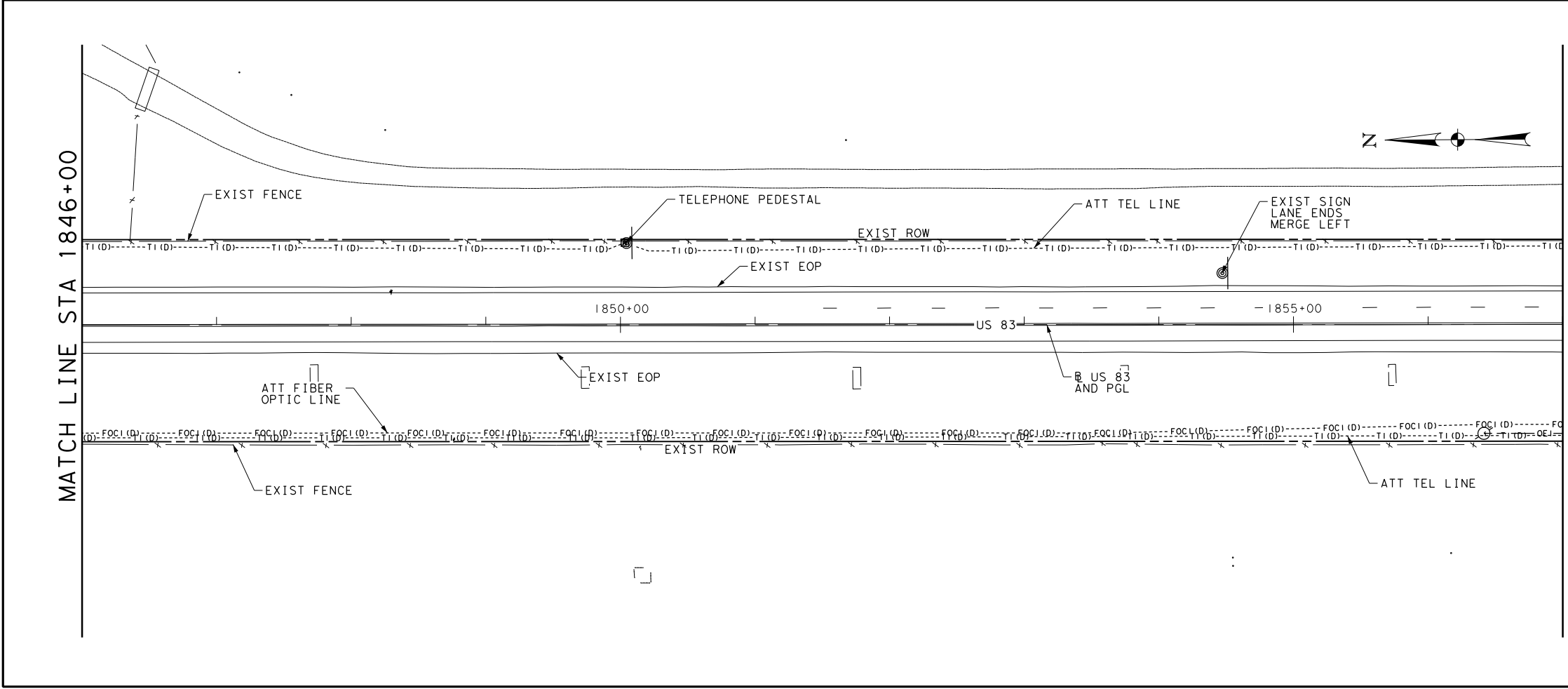
**LEGEND**

- FIBER OPTIC -----FOC1(D)----- ATT
- TELEPHONE -----T1(D)----- ATT
- OVERHEAD -----OE1----- AEP TEXAS ELECTRIC
- OH ELECTRIC/ -----OE1/FOC1----- AEP TEXAS/ATT
- FIBER OPTIC OVERHEAD -----OE2----- TRANSMISSION
- ELECTRIC PIPELINE -----PL1(D)----- HARVEST
- PIPELINE -----PL2(D)----- WILLIAMS
- PIPELINE -----PL3(D)----- ENTERPRISE PRODUCTS
- PIPELINE -----PL4(D)----- CATARINA
- PIPELINE -----PL5(D)----- ANADARKP
- PIPELINE -----PL6(D)----- CHESAPEAKE
- PIPELINE -----PL7(D)----- PLAINS SOUTH
- PIPELINE -----PL8(D)----- CARNERO
- PIPELINE -----PL9(D)----- ENERGY TRANSFER
- PIPELINE -----PL10(D)----- EAGLE FORD
- WATERLINE -----W1(D)----- CATARINA
- WATERLINE -----W2(D)----- ASHERTON
- [E] ELEC POWER BOX      ○ HYDRANT
- [ ] TRAF SIG PWR BOX      ⊗ WATER VALVE
- POWER POLE      [WM] WATER METER
- [ ] LIGHT POLE      [GV] GAS VENT
- [ ] TELE PEDESTAL      ⊙ TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE      → GUY WIRE
- ⊙ F/O MANHOLE
- [FH] F/O HANDHOLE



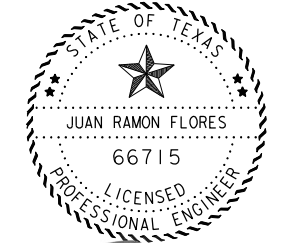
MATCH LINE STA 1846+00

MATCH LINE STA 1835+00



MATCH LINE STA 1857+00

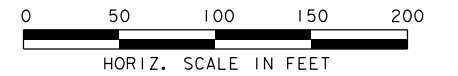
MATCH LINE STA 1846+00



*Juan Flores* 36-22-2020

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NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1835+00 TO</b> <b>STA 1857+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		262
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



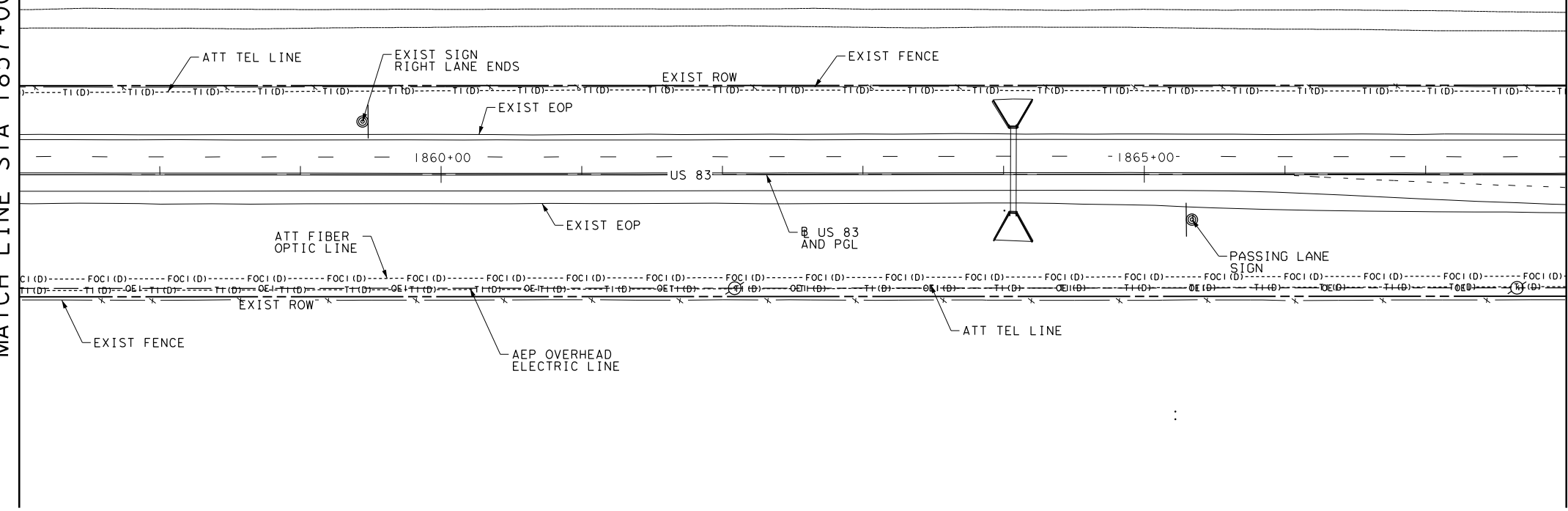
**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC ----- FOCI (D) ----- ATT
  - TELEPHONE ----- TI (D) ----- ATT
  - OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
  - OH ELECTRIC/ FIBER OPTIC ----- OE1/FOCI ----- AEP TEXAS/ATT
  - OVERHEAD ELECTRIC ----- OE2 ----- TRANSMISSION
  - PIPELINE ----- PL1 (D) ----- HARVEST
  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX      [H] HYDRANT
  - [ ] TRAF SIG PWR BOX    [X] WATER VALVE
  - [O] POWER POLE        [WM] WATER METER
  - [L] LIGHT POLE        [GV] GAS VENT
  - [Z] TELE PEDESTAL     [TSP] TRAFFIC SIGNAL POLE
  - [HH] TELE HAND HOLE    [GW] GUY WIRE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE

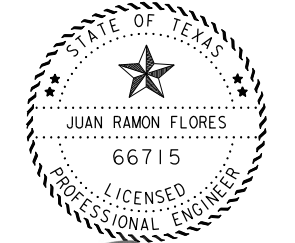
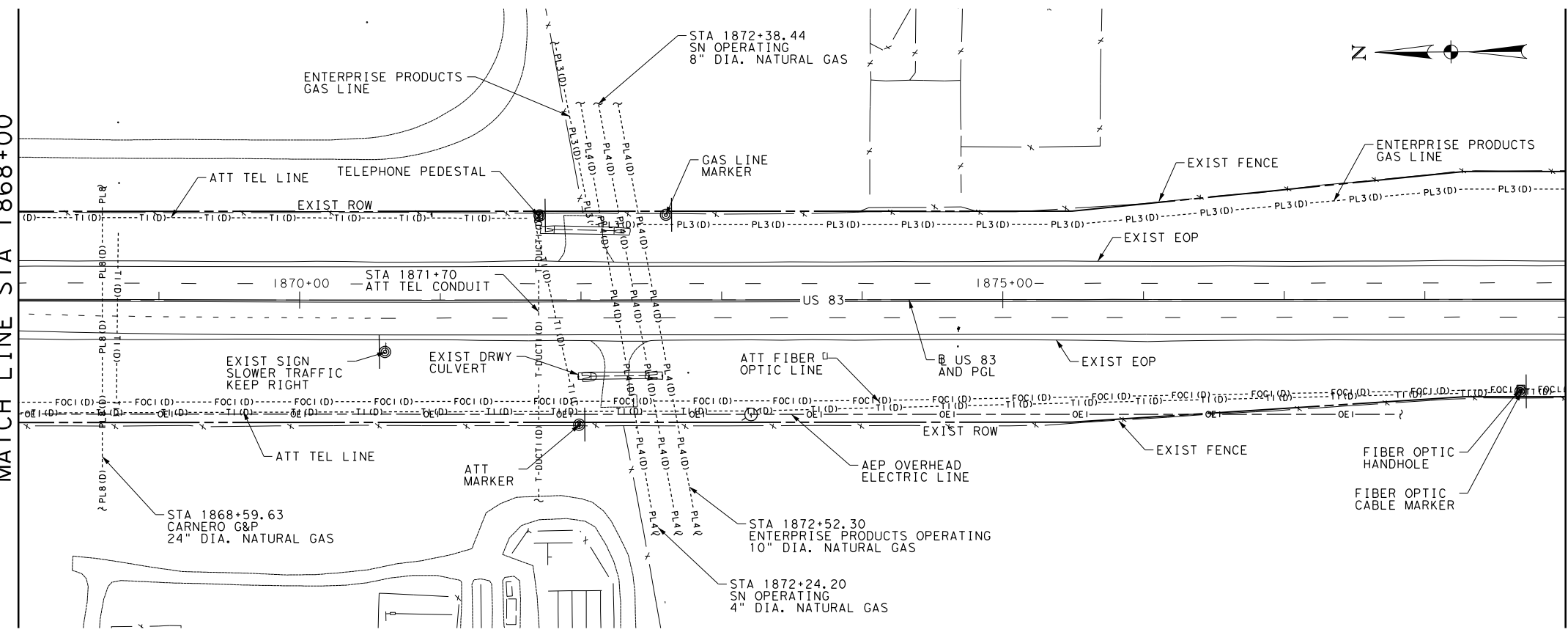
MATCH LINE STA 1857+00

MATCH LINE STA 1868+00



MATCH LINE STA 1868+00

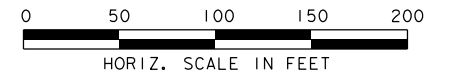
MATCH LINE STA 1879+00



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SHEET 17 OF 26

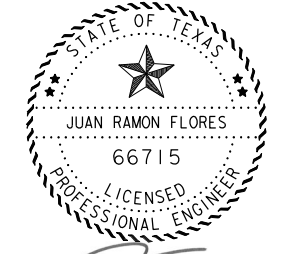
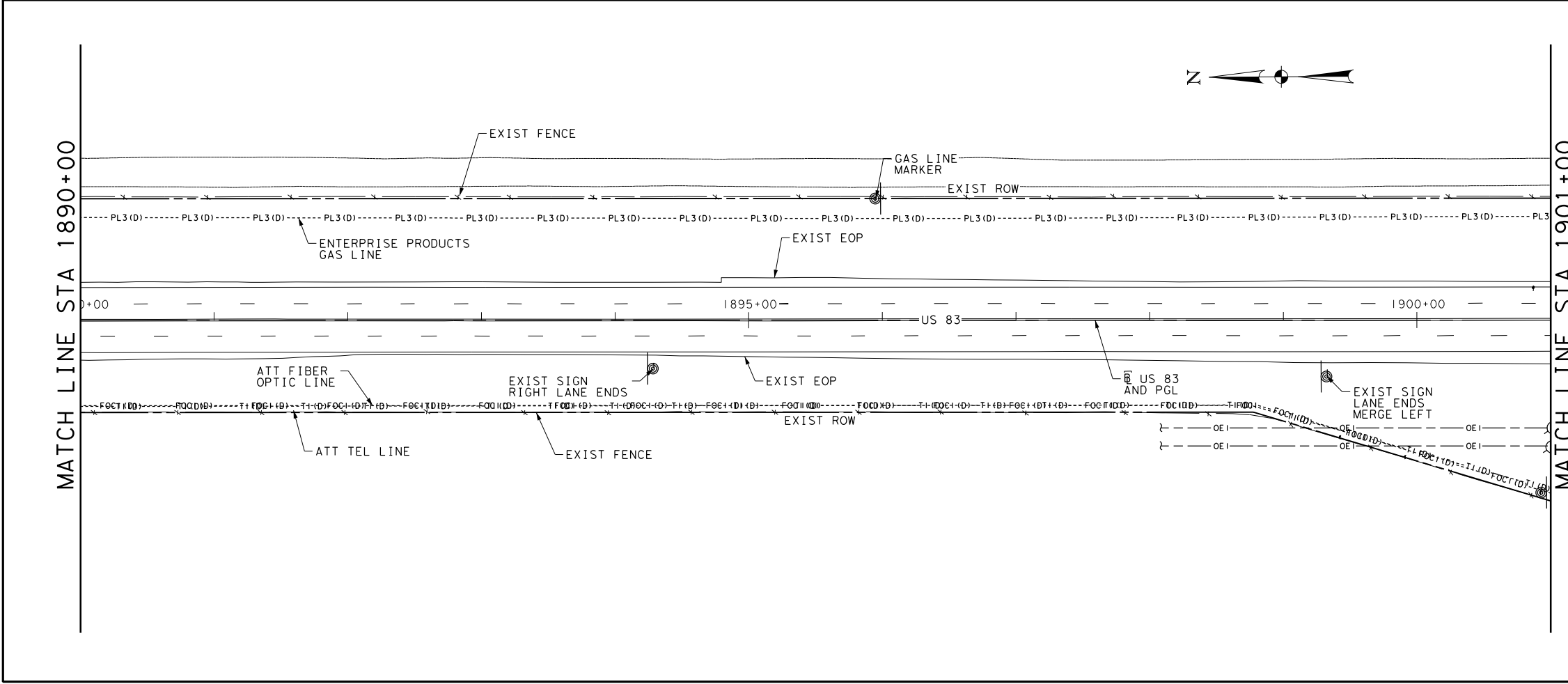
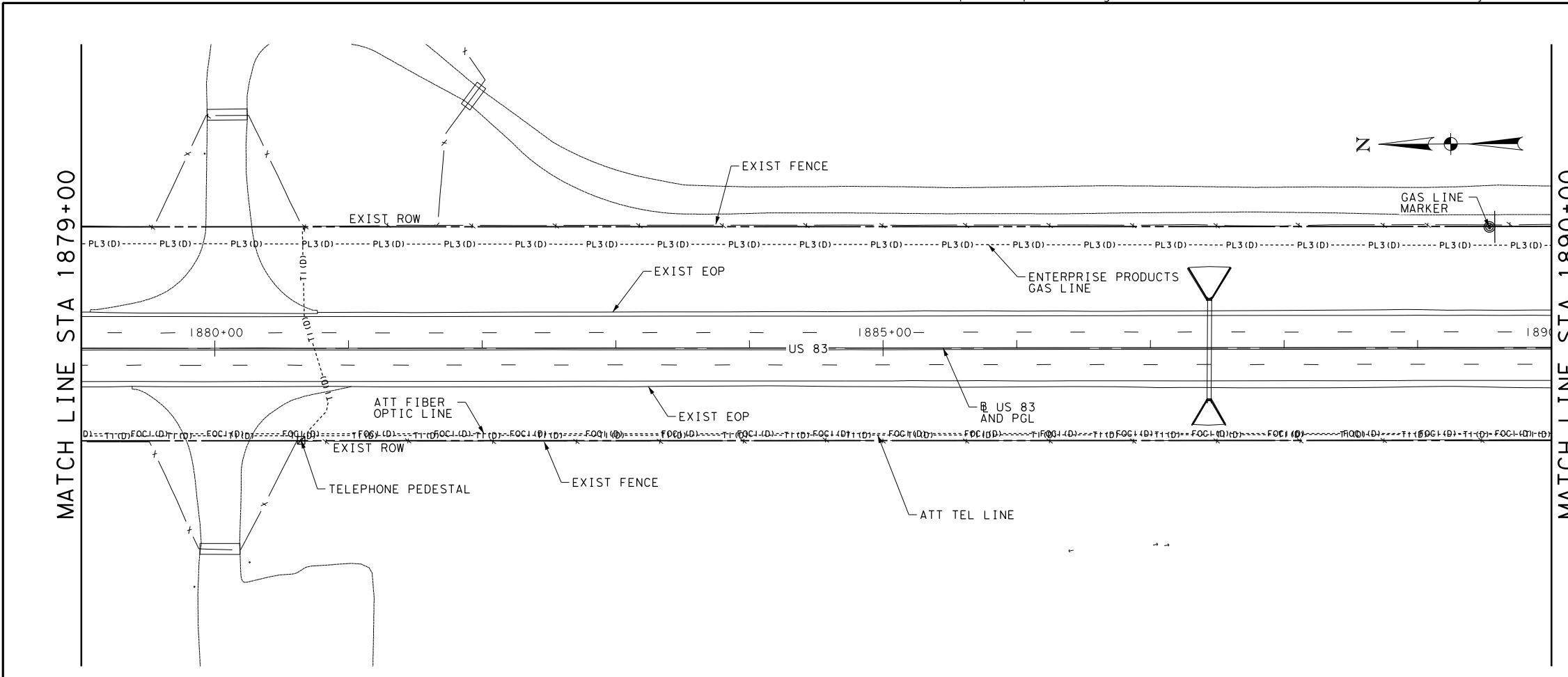
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation; all rights reserved			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1857+00 TO</b> <b>STA 1879+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	263	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

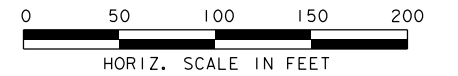
- FIBER OPTIC -----FOC1 (D)----- ATT
- TELEPHONE -----T1 (D)----- ATT
- OVERHEAD ELECTRIC -----OE1----- AEP TEXAS
- OH ELECTRIC/ FIBER OPTIC OVERHEAD -----OE2----- TRANSMISSION
- ELECTRIC PIPELINE -----PL1 (D)----- HARVEST
- PIPELINE -----PL2 (D)----- WILLIAMS
- PIPELINE -----PL3 (D)----- ENTERPRISE PRODUCTS
- PIPELINE -----PL4 (D)----- CATARINA
- PIPELINE -----PL5 (D)----- ANADARKP
- PIPELINE -----PL6 (D)----- CHESAPEAKE
- PIPELINE -----PL7 (D)----- PLAINS SOUTH
- PIPELINE -----PL8 (D)----- CARNERO
- PIPELINE -----PL9 (D)----- ENERGY TRANSFER
- PIPELINE -----PL10 (D)----- EAGLE FORD
- WATERLINE -----W1 (D)----- CATARINA
- WATERLINE -----W2 (D)----- ASHERTON
- [E] ELEC POWER BOX      [H] HYDRANT
- [T] TRAF SIG PWR BOX    [X] WATER VALVE
- [P] POWER POLE          [WM] WATER METER
- [L] LIGHT POLE          [GV] GAS VENT
- [TP] TELE PEDESTAL     [TS] TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE    [GW] GUY WIRE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE



*Juan Flores*  
06-22-2020

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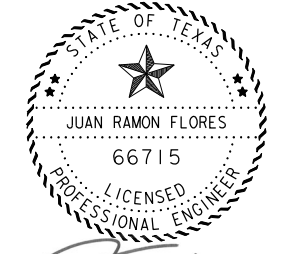
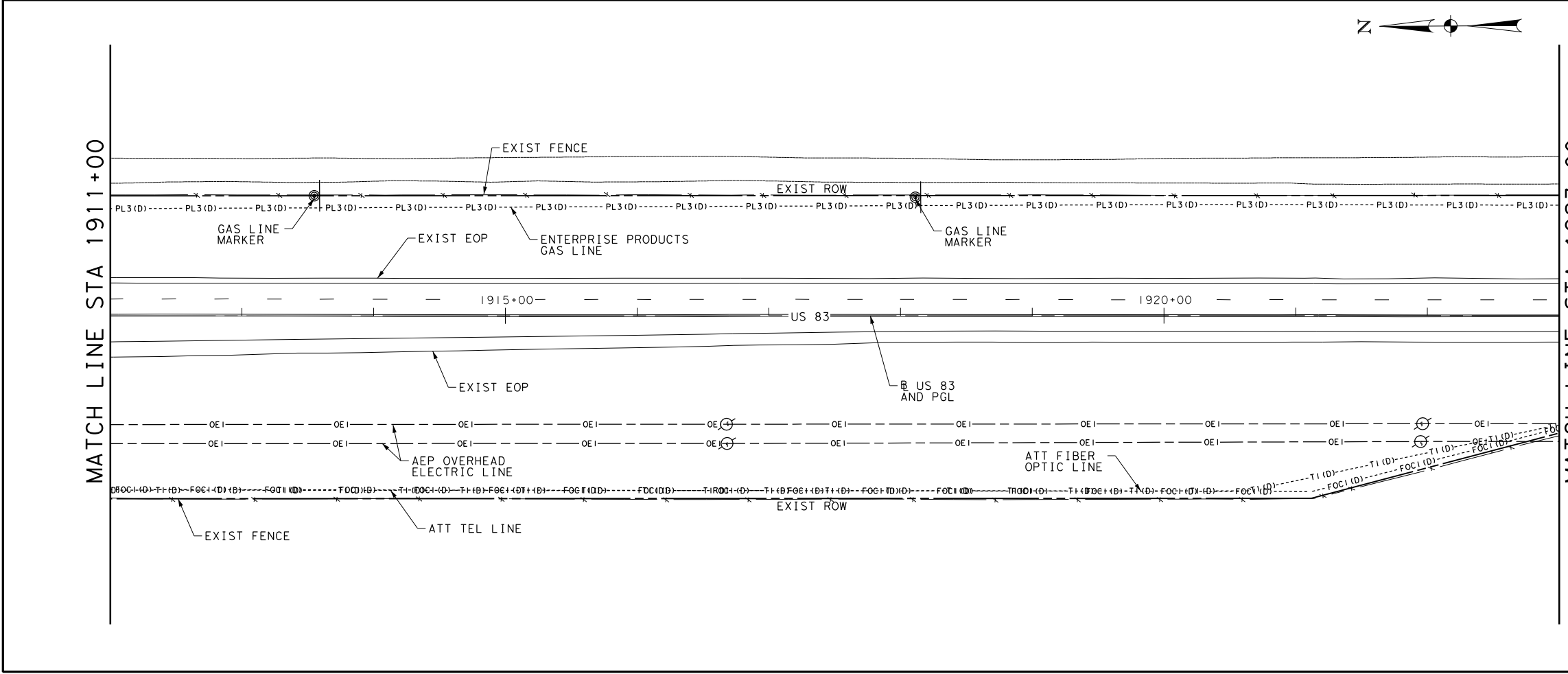
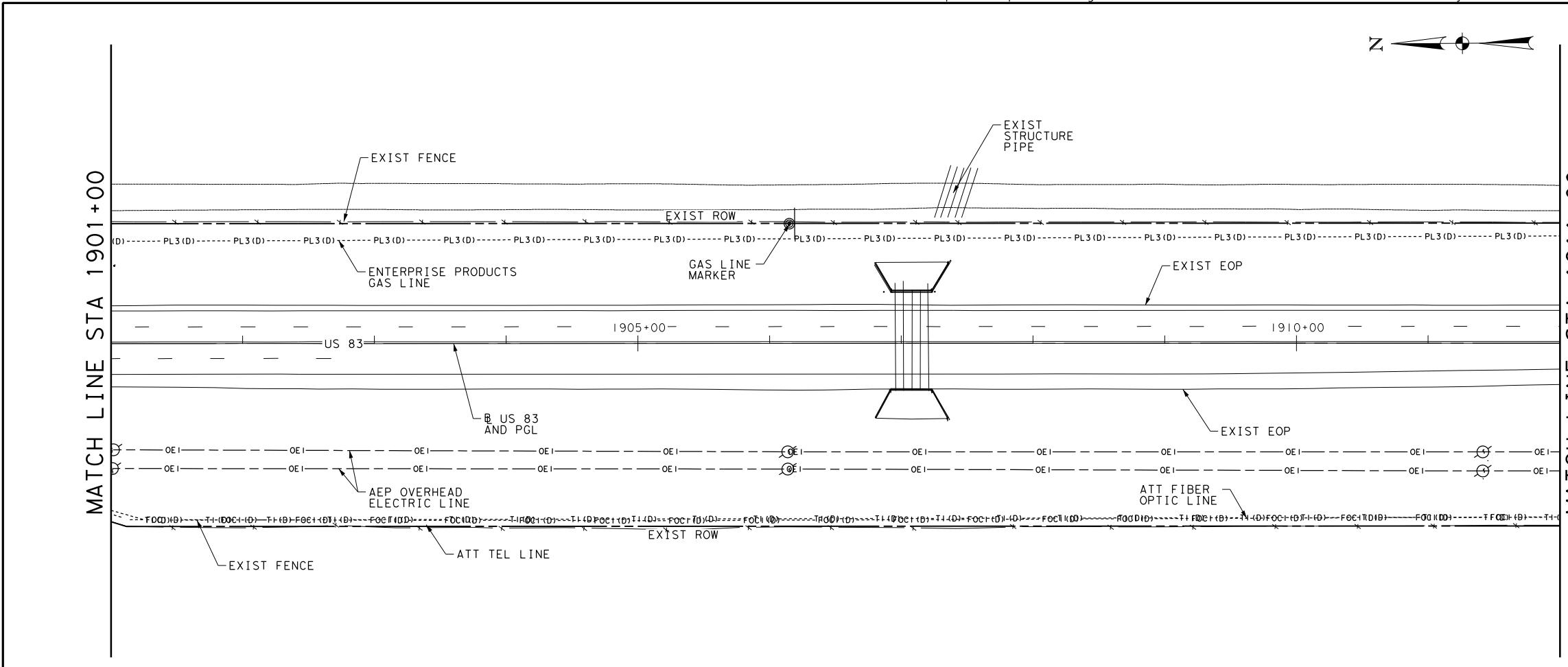
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2020 by Texas Department of Transportation; all rights reserved			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1879+00 TO</b> <b>STA 1901+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		264
STATE	DISTRICT	COUNTY	264
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

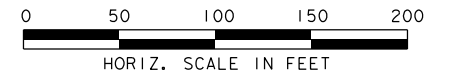
- FIBER OPTIC ----- FOC1 (D) ----- ATT
  - TELEPHONE ----- T1 (D) ----- ATT
  - OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
  - OH ELECTRIC/ FIBER OPTIC ----- OE1/FOC1 ----- AEP TEXAS/ATT
  - OVERHEAD ELECTRIC ----- OE2 ----- TRANSMISSION
  - PIPELINE ----- PL1 (D) ----- HARVEST
  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX
  - [T] TRAF SIG PWR BOX
  - [P] POWER POLE
  - [L] LIGHT POLE
  - [TP] TELE PEDESTAL
  - [HH] TELE HAND HOLE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE
  - [H] HYDRANT
  - [V] WATER VALVE
  - [WM] WATER METER
  - [GV] GAS VENT
  - [TS] TRAFFIC SIGNAL POLE
  - [GW] GUY WIRE



*Juan Flores* 6-22-2020

SHEET 19 OF 26

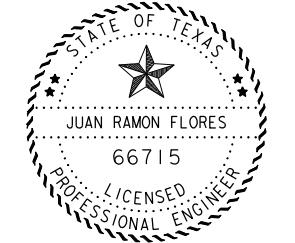
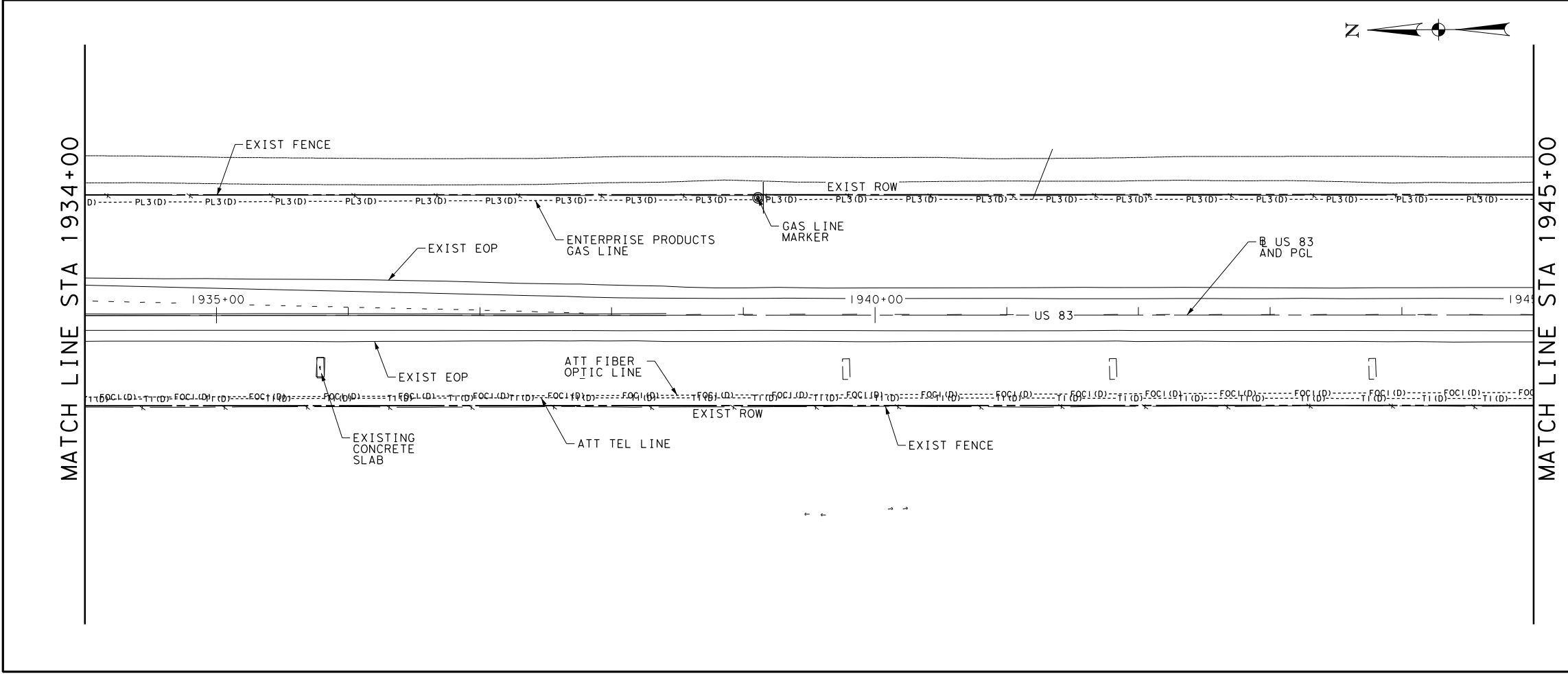
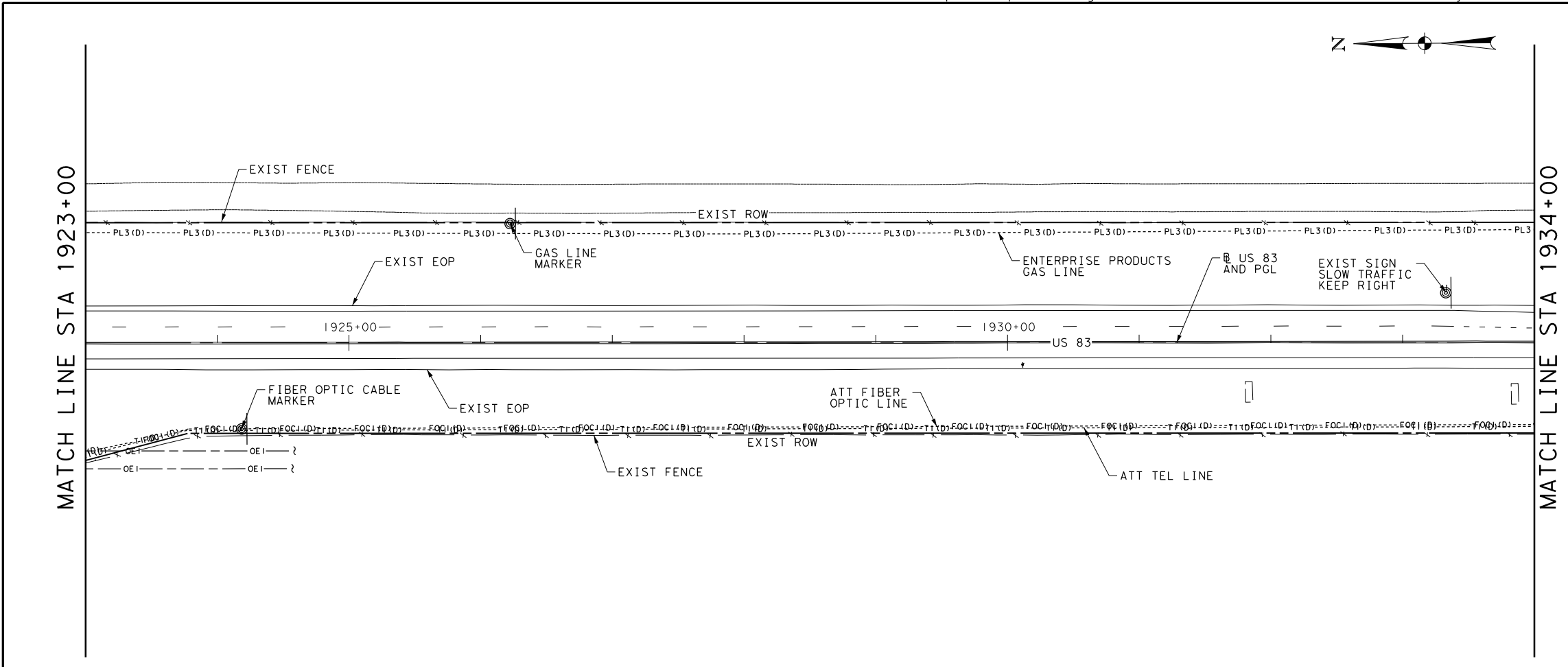
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
Texas Department of Transportation ©2020 by Texas Department of Transportation; all rights reserved.			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1901+00 TO</b> <b>STA 1923+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		265
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	US 83
0037	08	042, ETC.	



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

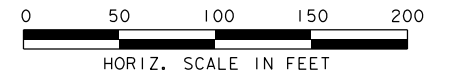
- FIBER OPTIC ----- FOCI (D) ----- ATT
- TELEPHONE ----- T1 (D) ----- ATT
- OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
- OH ELECTRIC/ FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
- PIPELINE ----- PL1 (D) ----- HARVEST
- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX      (O) HYDRANT
- [ ] TRAF SIG PWR BOX      [X] WATER VALVE
- (P) POWER POLE      [WM] WATER METER
- [L] LIGHT POLE      (GV) GAS VENT
- [ ] TELE PEDESTAL      (TSP) TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE      (GW) GUY WIRE
- (F) F/O MANHOLE
- [FH] F/O HANDHOLE



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NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1923+00 TO</b> <b>STA 1945+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		266
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



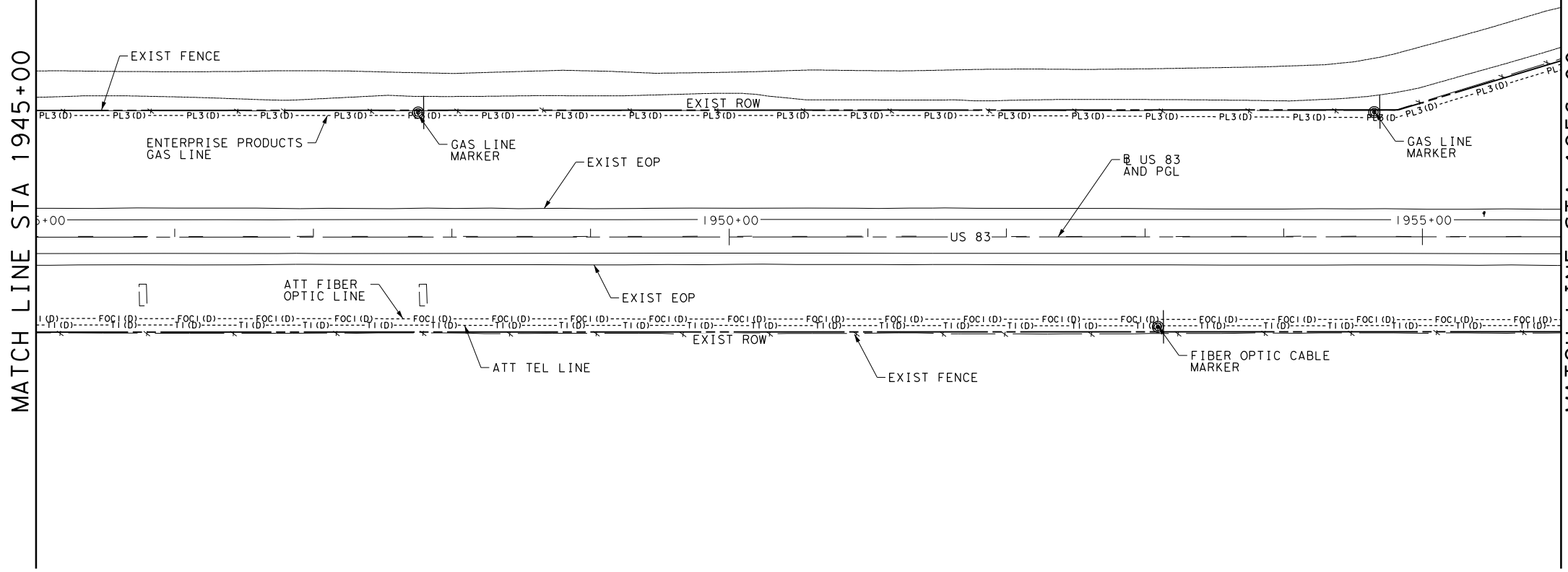
**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC ----- FOC1 (D) ----- ATT
  - TELEPHONE ----- T1 (D) ----- ATT
  - OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
  - OH ELECTRIC/FIBER OPTIC OVERHEAD ----- OE1/FOC1 ----- AEP TEXAS/ATT
  - FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
  - ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
  - PIPELINE ----- PL2 (D) ----- WILLIAMS
  - PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
  - PIPELINE ----- PL4 (D) ----- CATARINA
  - PIPELINE ----- PL5 (D) ----- ANADARKP
  - PIPELINE ----- PL6 (D) ----- CHESAPEAKE
  - PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
  - PIPELINE ----- PL8 (D) ----- CARNERO
  - PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
  - PIPELINE ----- PL10 (D) ----- EAGLE FORD
  - WATERLINE ----- W1 (D) ----- CATARINA
  - WATERLINE ----- W2 (D) ----- ASHERTON
- 
- [E] ELEC POWER BOX      ○ HYDRANT
  - [ ] TRAF SIG PWR BOX      ⊗ WATER VALVE
  - POWER POLE      [WM] WATER METER
  - [ ] LIGHT POLE      [GV] GAS VENT
  - [ ] TELE PEDESTAL      ⊙ TRAFFIC SIGNAL POLE
  - [HH] TELE HAND HOLE      → GUY WIRE
  - ⊙ F/O MANHOLE
  - [FH] F/O HANDHOLE

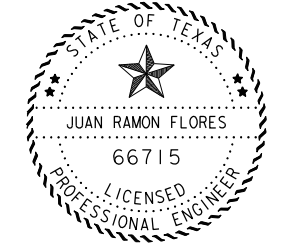
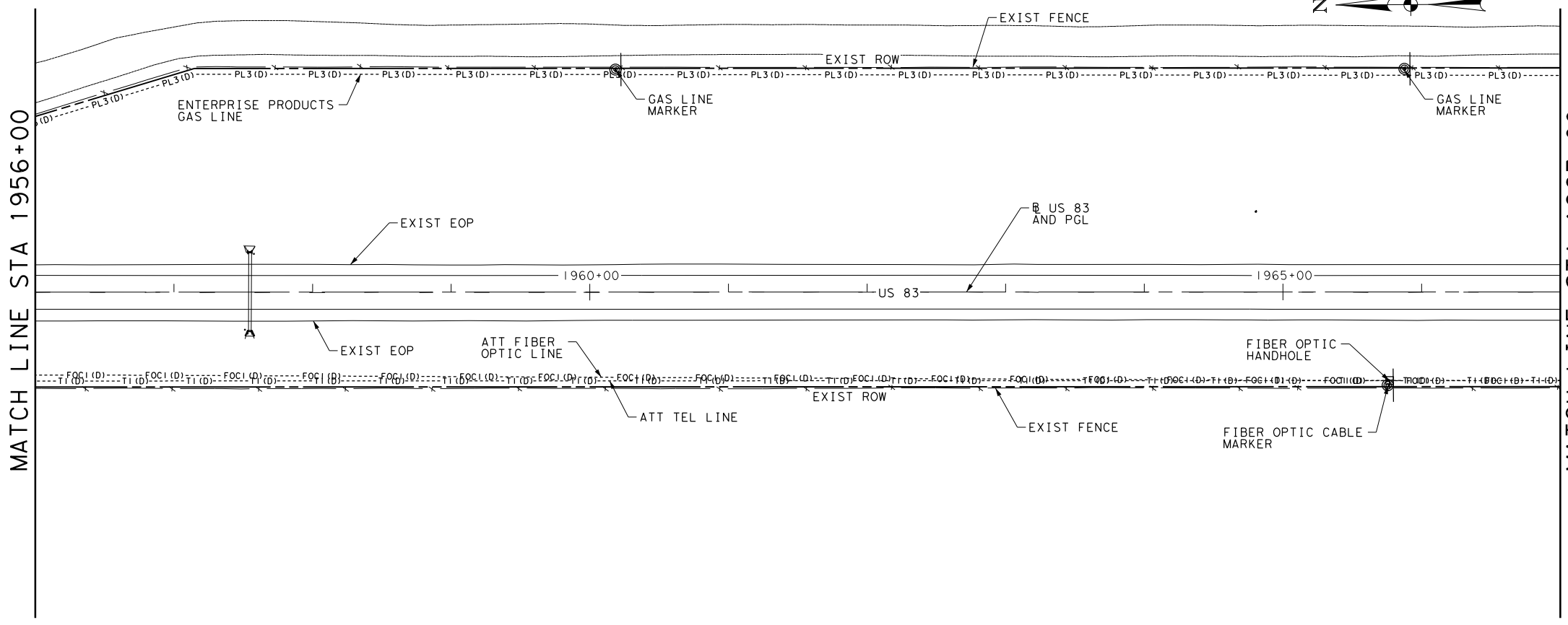
MATCH LINE STA 1945+00

MATCH LINE STA 1956+00



MATCH LINE STA 1956+00

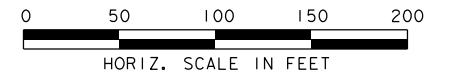
MATCH LINE STA 1967+00



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SHEET 21 OF 26

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1945+00 TO</b> <b>STA 1967+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	267	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



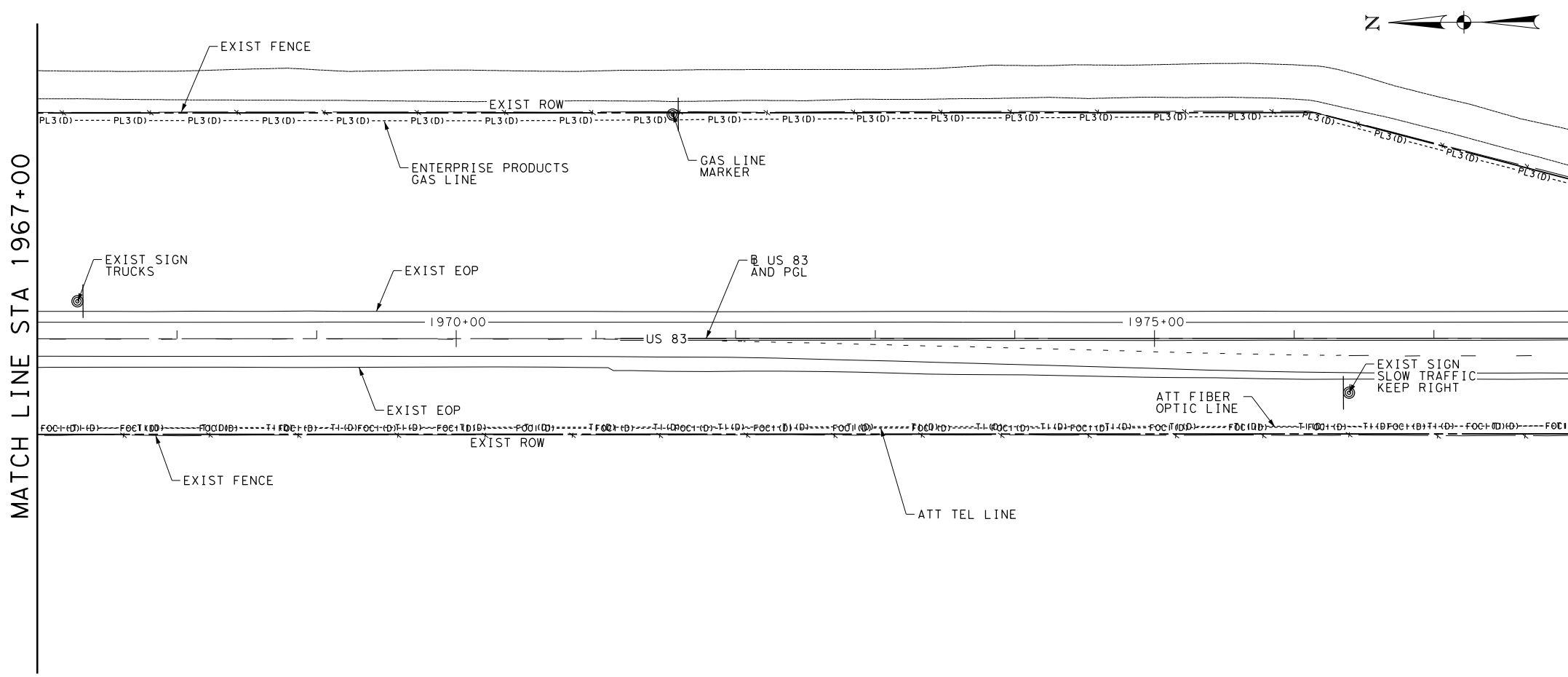
**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC -----FOC1 (D)----- ATT
  - TELEPHONE -----TI (D)----- ATT
  - OVERHEAD -----OE1----- AEP TEXAS
  - ELECTRIC -----OE1/FOC1----- AEP TEXAS/ATT
  - FIBER OPTIC OVERHEAD -----OE2----- TRANSMISSION
  - ELECTRIC PIPELINE -----PL1 (D)----- HARVEST
  - PIPELINE -----PL2 (D)----- WILLIAMS
  - PIPELINE -----PL3 (D)----- ENTERPRISE PRODUCTS
  - PIPELINE -----PL4 (D)----- CATARINA
  - PIPELINE -----PL5 (D)----- ANADARKP
  - PIPELINE -----PL6 (D)----- CHESAPEAKE
  - PIPELINE -----PL7 (D)----- PLAINS SOUTH
  - PIPELINE -----PL8 (D)----- CARNERO
  - PIPELINE -----PL9 (D)----- ENERGY TRANSFER
  - PIPELINE -----PL10 (D)----- EAGLE FORD
  - WATERLINE -----W1 (D)----- CATARINA
  - WATERLINE -----W2 (D)----- ASHERTON
- 
- [E] ELEC POWER BOX
  - [T] TRAF SIG PWR BOX
  - [P] POWER POLE
  - [L] LIGHT POLE
  - [H] TELE PEDESTAL
  - [HH] TELE HAND HOLE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE
  - [H] HYDRANT
  - [X] WATER VALVE
  - [WM] WATER METER
  - [GV] GAS VENT
  - [C] TRAFFIC SIGNAL POLE
  - [>] GUY WIRE

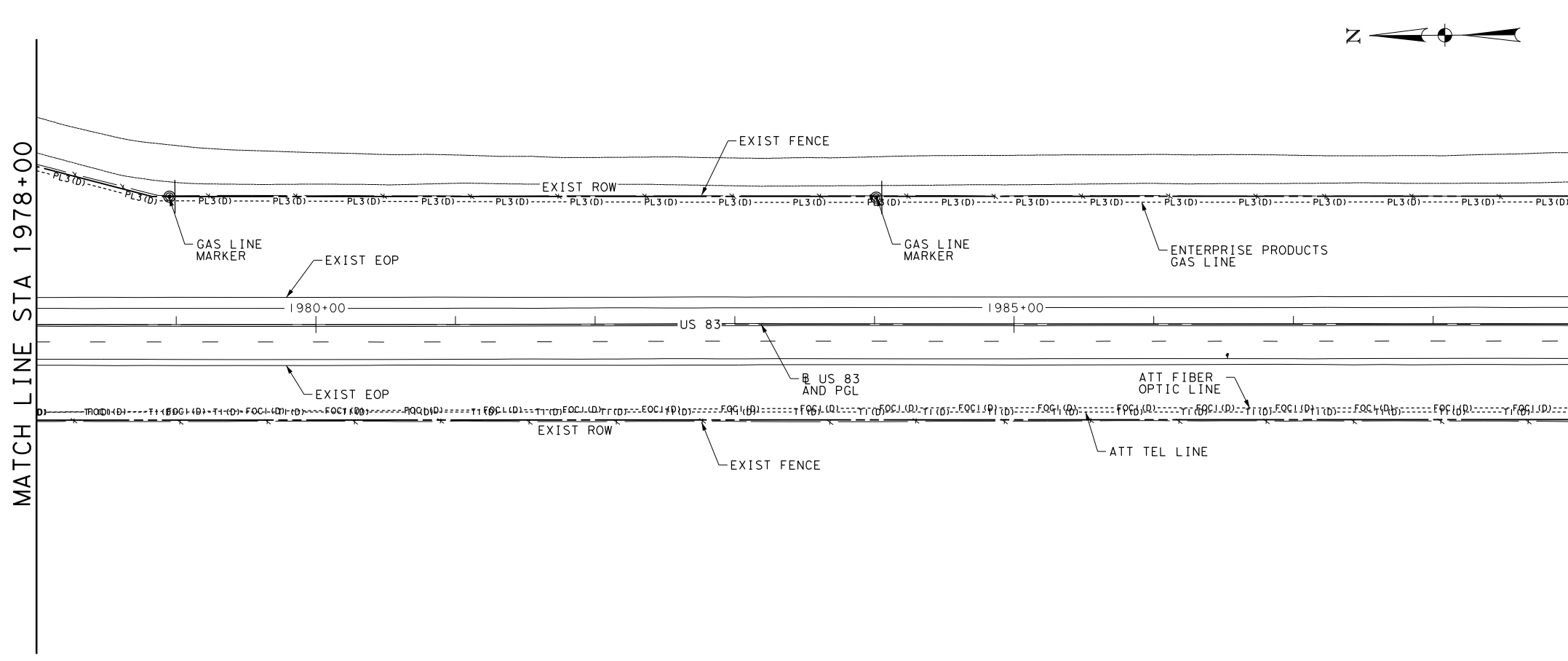
MATCH LINE STA 1967+00

MATCH LINE STA 1978+00



MATCH LINE STA 1978+00

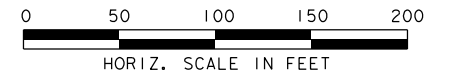
MATCH LINE STA 1989+00



SHEET 22 OF 26

NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 <small>FIRM REGISTRATION No. F-10098</small>			
<b>Texas Department of Transportation</b> <small>©2020 by Texas Department of Transportation; all rights reserved</small>			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 1967+00 TO</b> <b>STA 1989+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	268	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

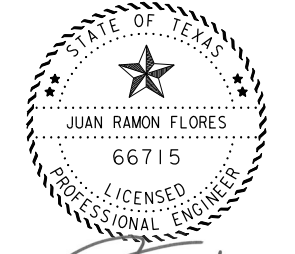
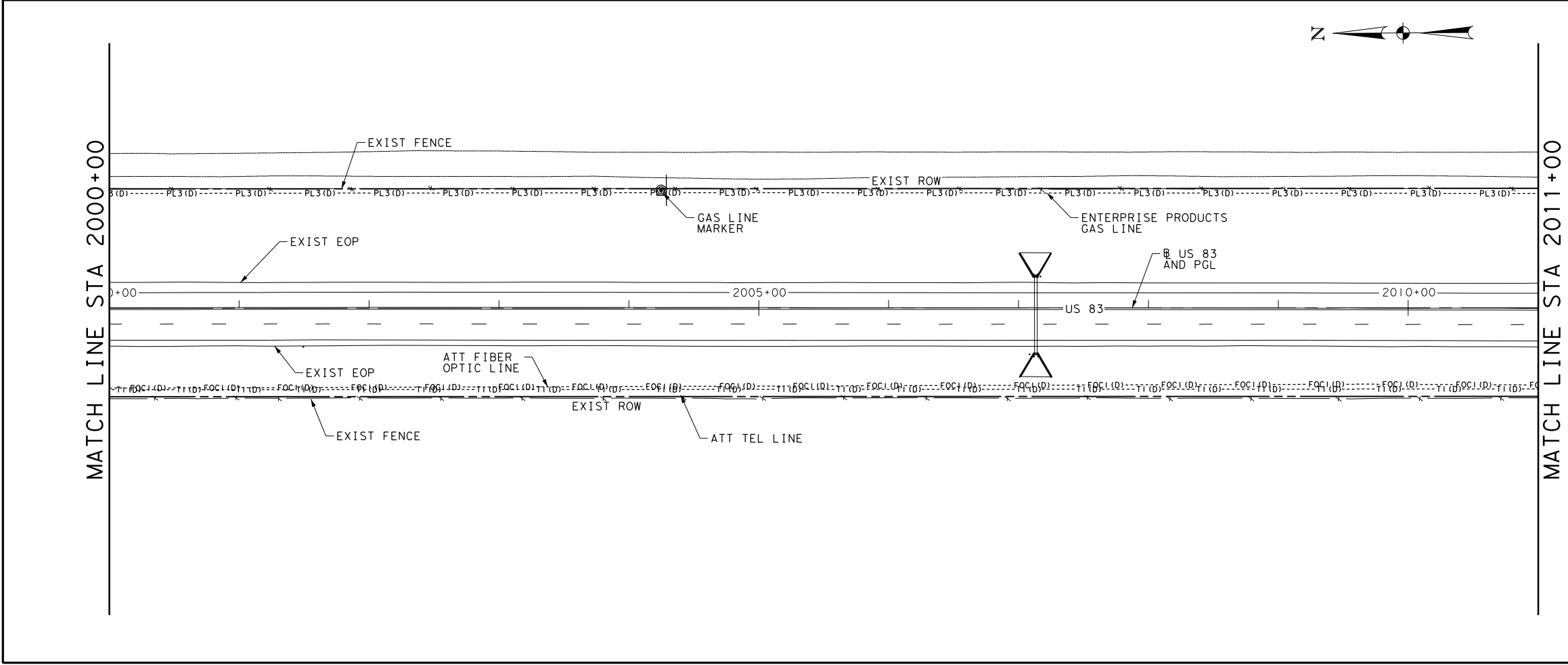
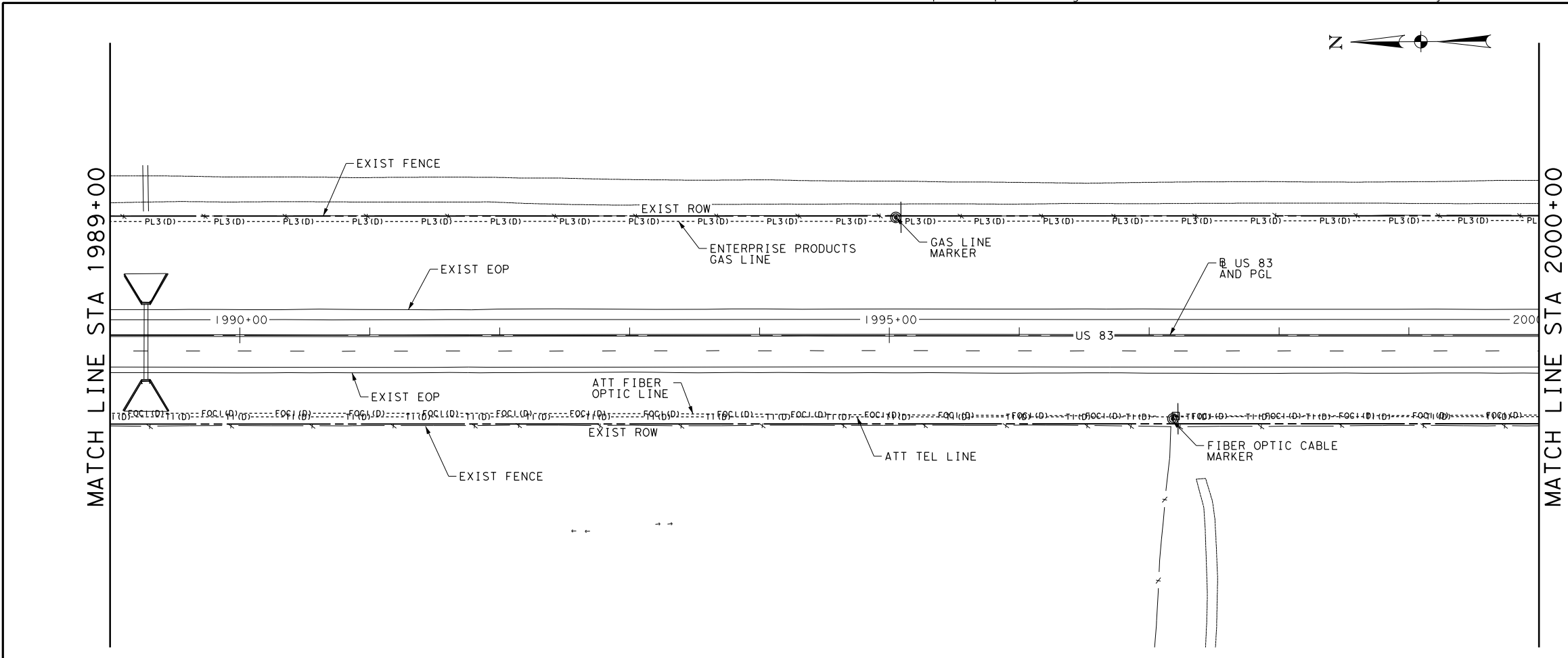




**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

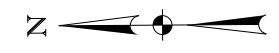
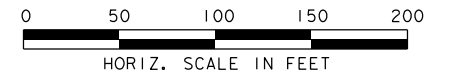
- FIBER OPTIC ----- FOCI (D) ----- ATT
- TELEPHONE ----- T1 (D) ----- ATT
- OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
- OH ELECTRIC/FIBER OPTIC ----- OE1/FOCI ----- AEP TEXAS/ATT
- FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
- ELECTRIC PIPELINE ----- PL1 (D) ----- HARVEST
- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX      [H] HYDRANT
- [T] TRAF SIG PWR BOX    [W] WATER VALVE
- [P] POWER POLE          [WM] WATER METER
- [L] LIGHT POLE          [GV] GAS VENT
- [TP] TELE PEDESTAL      [C] TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE    [GW] GUY WIRE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE



*Juan Flores* 6-22-2020

SHEET 23 OF 26

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83 EXISTING UTILITIES STA 1989+00 TO STA 2011+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		269
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



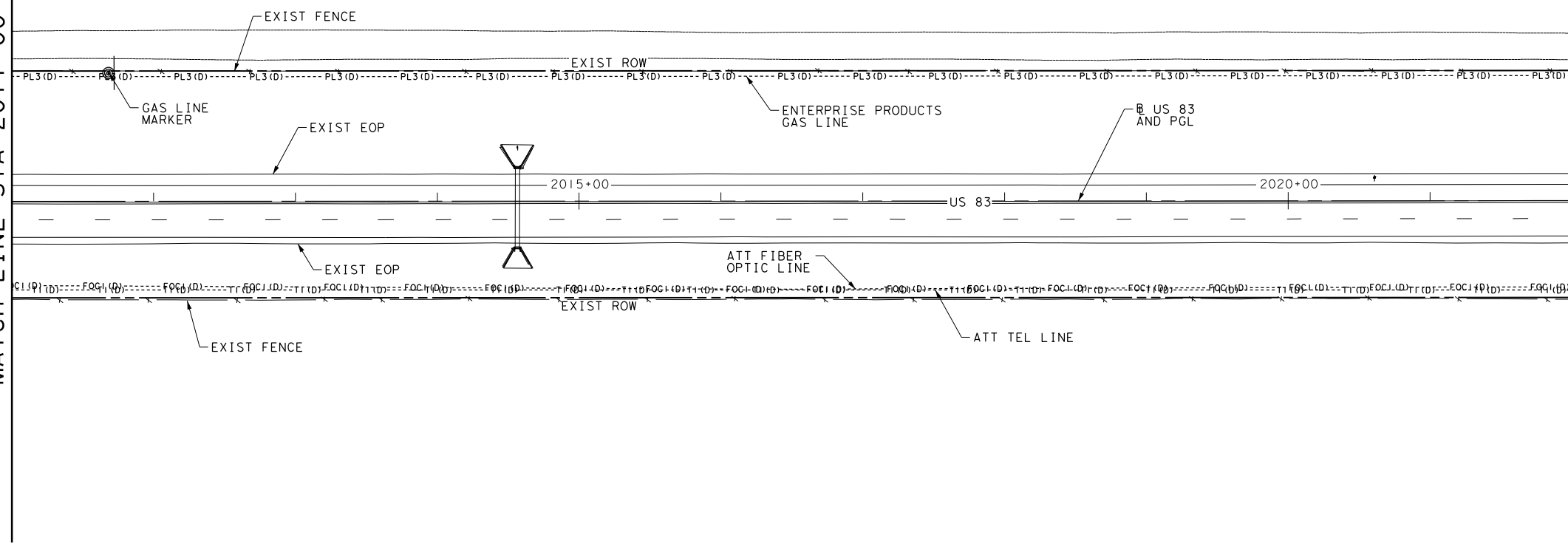
**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC -----FOC1 (D)----- ATT
- TELEPHONE -----T1 (D)----- ATT
- OVERHEAD ELECTRIC -----OE1----- AEP TEXAS
- OH ELECTRIC/ FIBER OPTIC -----OE1/FOC1----- AEP TEXAS/ATT
- FIBER OPTIC OVERHEAD -----OE2----- TRANSMISSION
- ELECTRIC PIPELINE -----PL1 (D)----- HARVEST
- PIPELINE -----PL2 (D)----- WILLIAMS
- PIPELINE -----PL3 (D)----- ENTERPRISE PRODUCTS
- PIPELINE -----PL4 (D)----- CATARINA
- PIPELINE -----PL5 (D)----- ANADARKP
- PIPELINE -----PL6 (D)----- CHESAPEAKE
- PIPELINE -----PL7 (D)----- PLAINS SOUTH
- PIPELINE -----PL8 (D)----- CARNERO
- PIPELINE -----PL9 (D)----- ENERGY TRANSFER
- PIPELINE -----PL10 (D)----- EAGLE FORD
- WATERLINE -----W1 (D)----- CATARINA
- WATERLINE -----W2 (D)----- ASHERTON
- [E] ELEC POWER BOX      [H] HYDRANT
- [ ] TRAF SIG PWR BOX      [X] WATER VALVE
- [ ] POWER POLE      [WM] WATER METER
- [ ] LIGHT POLE      [GV] GAS VENT
- [ ] TELE PEDESTAL      [ ] TRAFFIC SIGNAL POLE
- [HH] TELE HAND HOLE      [ ] GUY WIRE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE

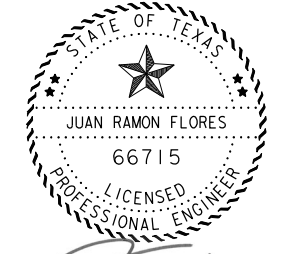
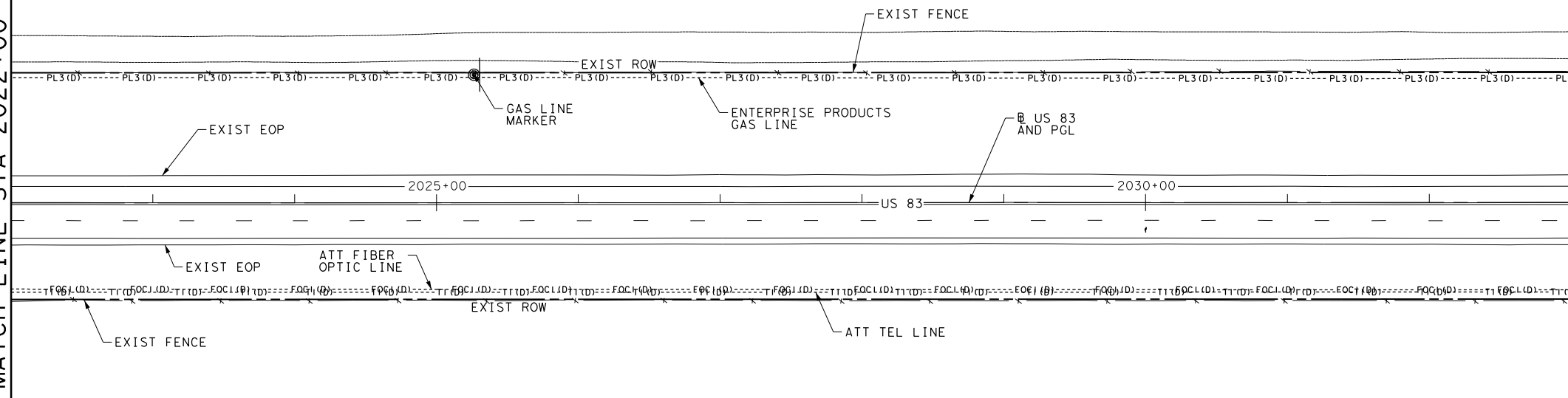
MATCH LINE STA 2011+00

MATCH LINE STA 2022+00



MATCH LINE STA 2022+00

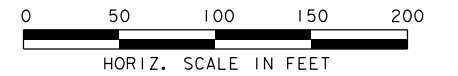
MATCH LINE STA 2033+00



*Juan Flores* 6-22-2020

SHEET 24 OF 26

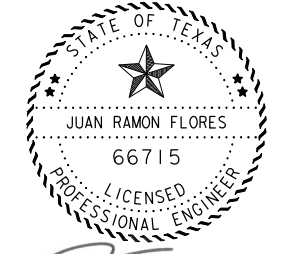
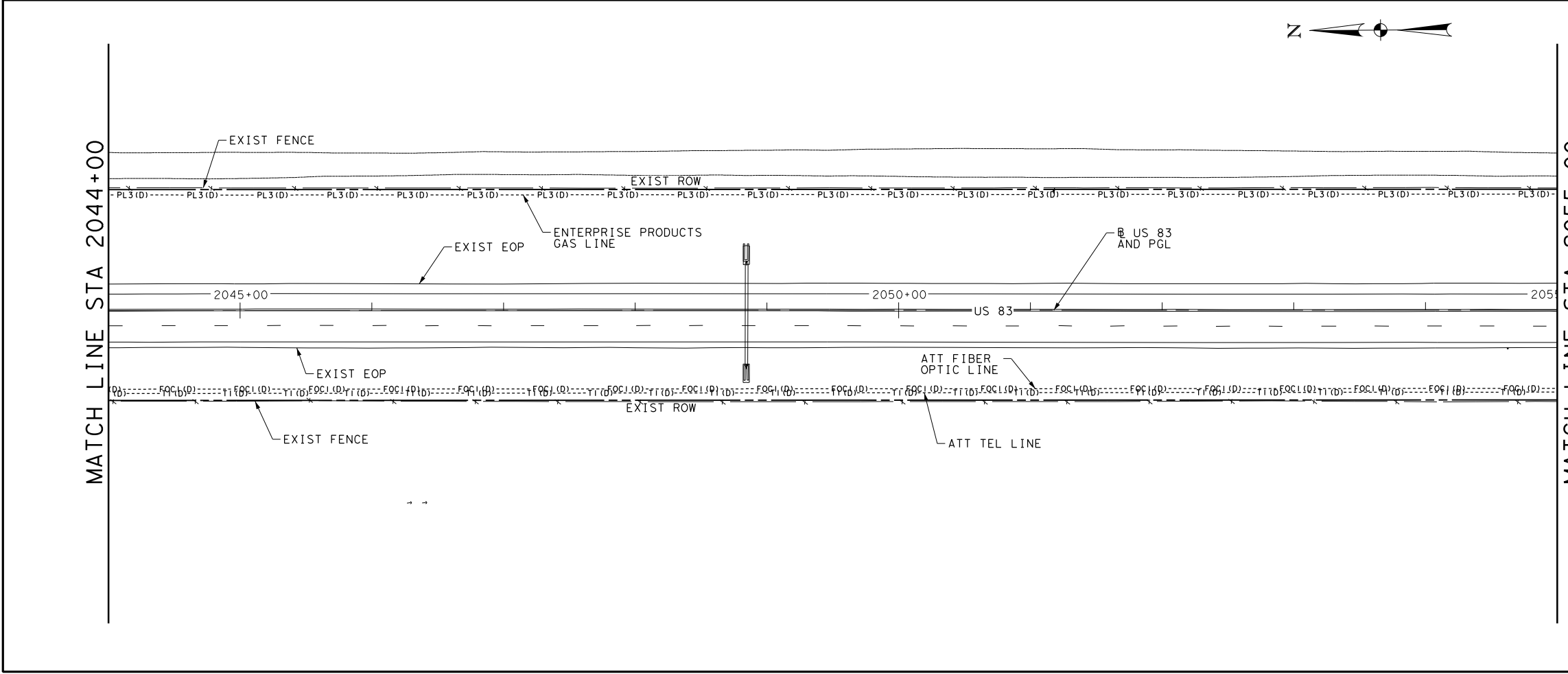
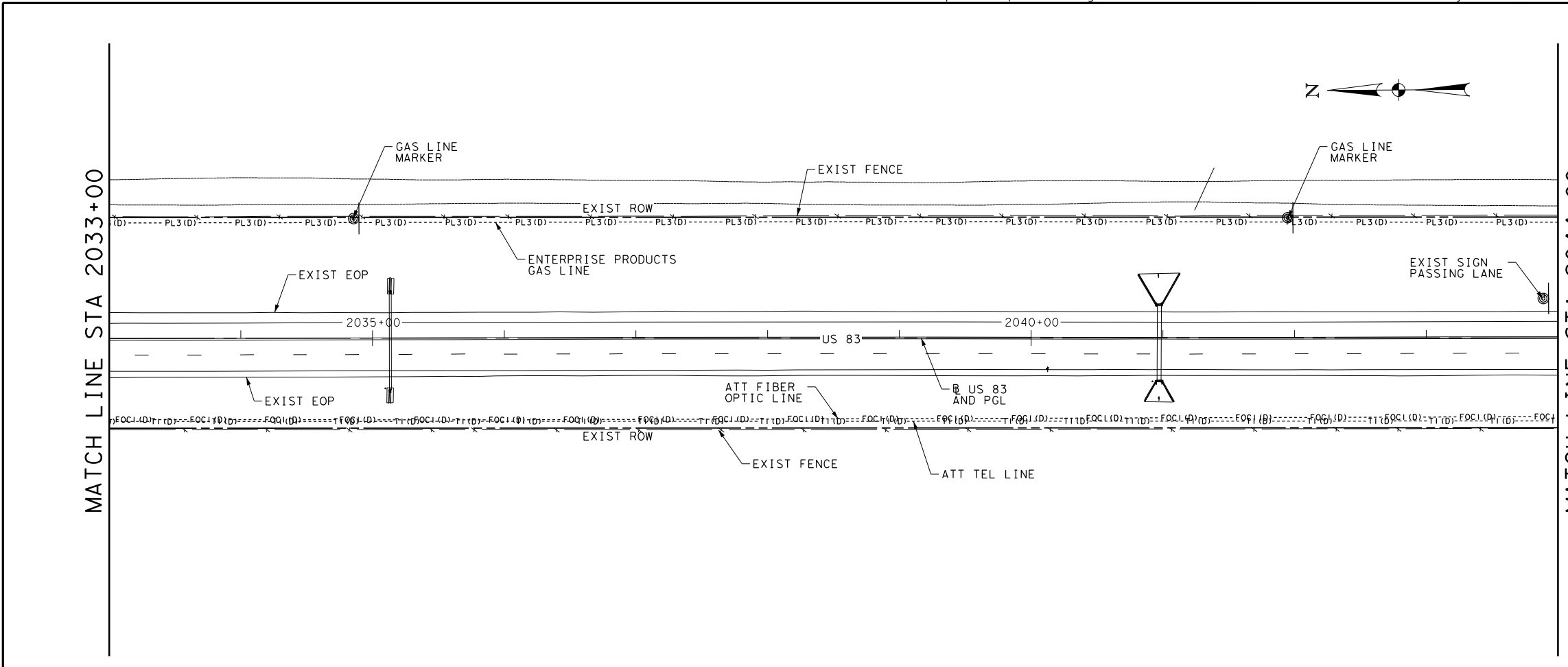
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 <small>FIRM REGISTRATION No. F-10098</small>			
<b>Texas Department of Transportation</b> <small>©2020 by Texas Department of Transportation; all rights reserved</small>			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 2011+00 TO</b> <b>STA 2033+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	270	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**NOTE:**  
UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

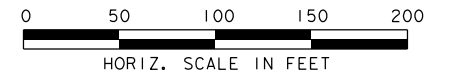
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  - TELEPHONE -----TI (D)----- ATT
  - OVERHEAD ELECTRIC -----OE1----- AEP TEXAS
  - OH ELECTRIC/ FIBER OPTIC -----OE1/FOCI----- AEP TEXAS/ATT
  - OVERHEAD ELECTRIC -----OE2----- TRANSMISSION
  - PIPELINE -----PL1 (D)----- HARVEST
  - PIPELINE -----PL2 (D)----- WILLIAMS
  - PIPELINE -----PL3 (D)----- ENTERPRISE PRODUCTS
  - PIPELINE -----PL4 (D)----- CATARINA
  - PIPELINE -----PL5 (D)----- ANADARKP
  - PIPELINE -----PL6 (D)----- CHESAPEAKE
  - PIPELINE -----PL7 (D)----- PLAINS SOUTH
  - PIPELINE -----PL8 (D)----- CARNERO
  - PIPELINE -----PL9 (D)----- ENERGY TRANSFER
  - PIPELINE -----PL10 (D)----- EAGLE FORD
  - WATERLINE -----W1 (D)----- CATARINA
  - WATERLINE -----W2 (D)----- ASHERTON
- 
- [E] ELEC POWER BOX      [O] HYDRANT
  - [□] TRAF SIG PWR BOX    [X] WATER VALVE
  - [○] POWER POLE          [WM] WATER METER
  - [⊙] LIGHT POLE          [GV] GAS VENT
  - [▣] TELE PEDESTAL        [⊙] TRAFFIC SIGNAL POLE
  - [HH] TELE HAND HOLE    [→] GUY WIRE
  - [F] F/O MANHOLE
  - [FH] F/O HANDHOLE



*Juan Flores* 6-22-2020

SHEET 25 OF 26

NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> <small>11355 McCree Road - Dallas, Texas 75238 (214) 341-8900</small> <small>FIRM REGISTRATION No. F-10098</small>			
<b>Texas Department of Transportation</b> <small>©2020 by Texas Department of Transportation, all rights reserved</small>			
<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 2033+00 TO</b> <b>STA 2055+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	271	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



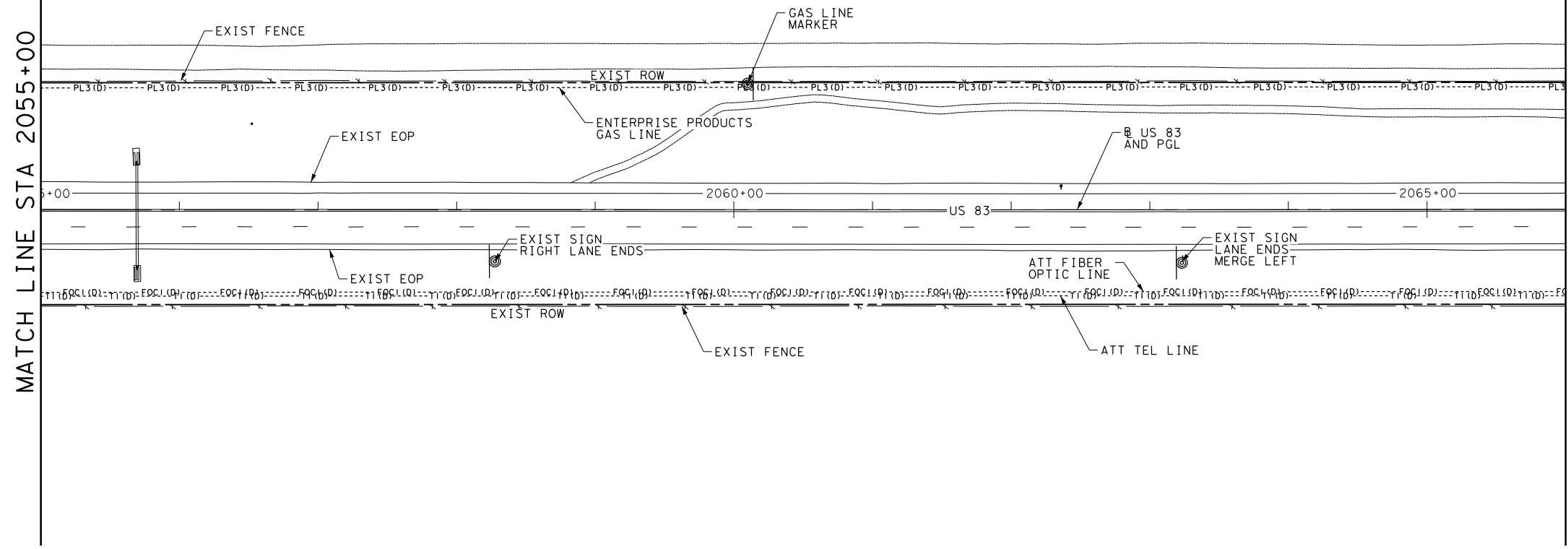
**NOTE:**  
 UTILITY TEST HOLE INFORMATION SHOWN IN THESE SHEETS ARE BASED ON THE AVAILABLE SUE DATA PROVIDED BY KCI TECHNOLOGIES DATED OCTOBER 25, 2019.

**LEGEND**

- FIBER OPTIC ----- FOC1 (D) ----- ATT
- TELEPHONE ----- T1 (D) ----- ATT
- OVERHEAD ELECTRIC ----- OE1 ----- AEP TEXAS
- OH ELECTRIC/FIBER OPTIC OVERHEAD ----- OE2 ----- TRANSMISSION
- PIPELINE ----- PL1 (D) ----- HARVEST
- PIPELINE ----- PL2 (D) ----- WILLIAMS
- PIPELINE ----- PL3 (D) ----- ENTERPRISE PRODUCTS
- PIPELINE ----- PL4 (D) ----- CATARINA
- PIPELINE ----- PL5 (D) ----- ANADARKP
- PIPELINE ----- PL6 (D) ----- CHESAPEAKE
- PIPELINE ----- PL7 (D) ----- PLAINS SOUTH
- PIPELINE ----- PL8 (D) ----- CARNERO
- PIPELINE ----- PL9 (D) ----- ENERGY TRANSFER
- PIPELINE ----- PL10 (D) ----- EAGLE FORD
- WATERLINE ----- W1 (D) ----- CATARINA
- WATERLINE ----- W2 (D) ----- ASHERTON
- [E] ELEC POWER BOX      [H] HYDRANT
- [ ] TRAF SIG PWR BOX      [X] WATER VALVE
- [O] POWER POLE      [WM] WATER METER
- [L] LIGHT POLE      [GV] GAS VENT
- [ ] TELE PEDESTAL      [ ] TRAFFIC SIGNAL POLE
- [ ] TELE HAND HOLE      [ ] GUY WIRE
- [F] F/O MANHOLE
- [FH] F/O HANDHOLE

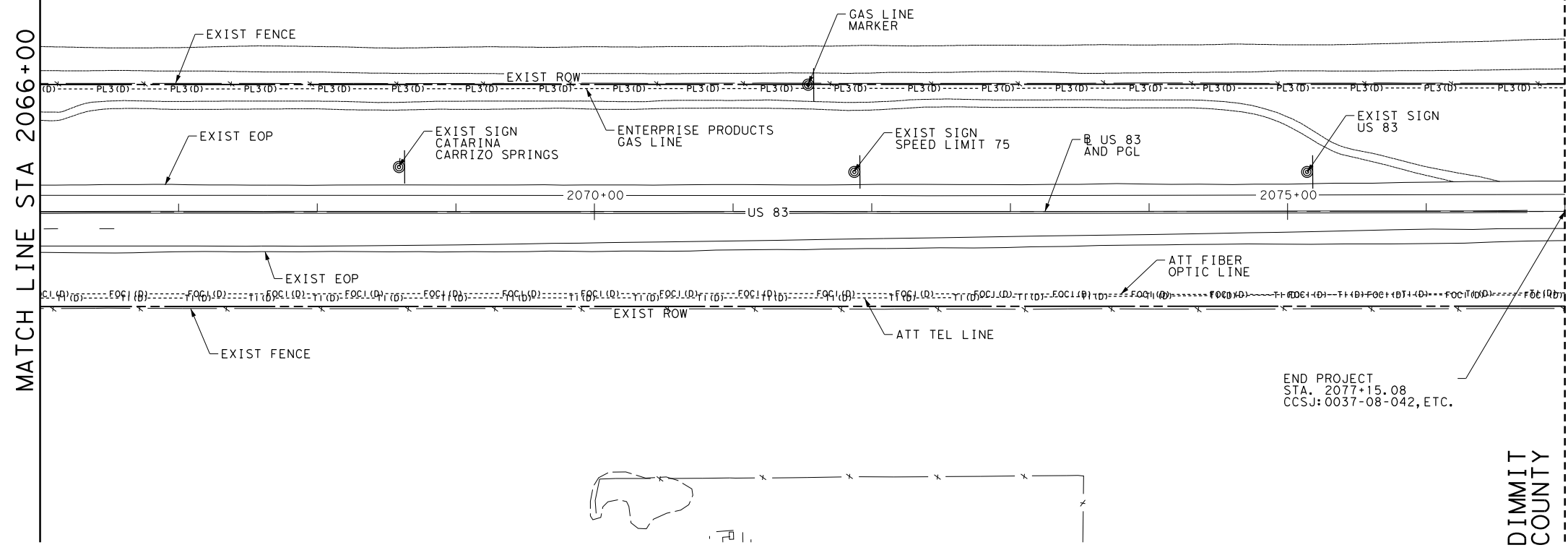
MATCH LINE STA 2055+00

MATCH LINE STA 2066+00

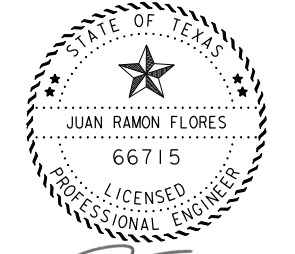


MATCH LINE STA 2066+00

END PROJECT STA 2077+15.08



DIMMIT COUNTY  
 WEBB COUNTY



*Juan Flores* 6-22-2020

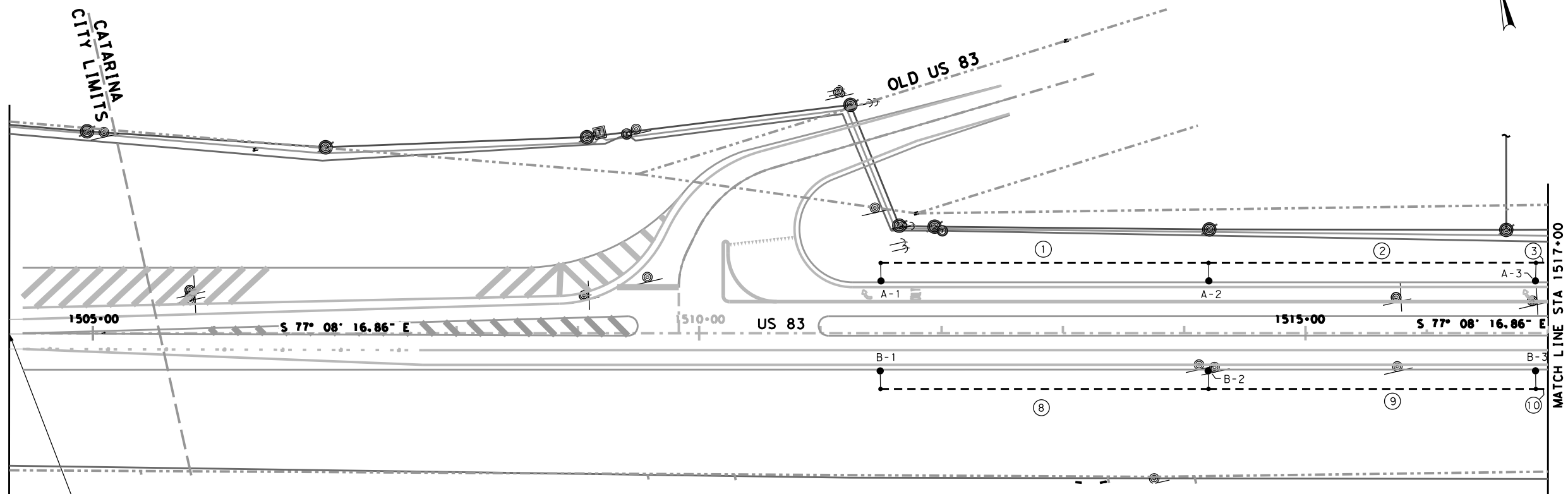
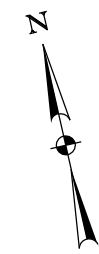
SHEET 26 OF 26

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>EXISTING UTILITIES</b> <b>STA 2055+00 TO</b> <b>STA 2077+15.08</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	272	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

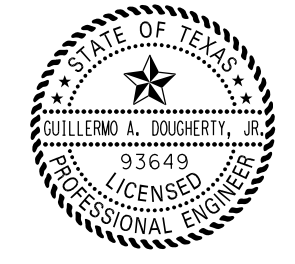
NOTES:

1. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE.
2. ALL FOUNDATIONS FOR LUMINAIRES SHALL BE 8 FEET IN LENGTH FOR 50 FT POLES AND 6 FEET IN LENGTH FOR 40 FT POLES. INSTALL CONCRETE RIPRAP AS SHOWN ON STANDARD SHEET RID(2)-20 INCLUDED IN THE PLANS.
3. INSTALL RED 3", 4-MIL POLYETHYLENE UNDERGROUND WARNING TAPE THAT CONTINUOUSLY STATES "CAUTION BURIED ELECTRICAL LINE BELOW" AT 10 INCHES ABOVE TRENCHED CONDUIT.

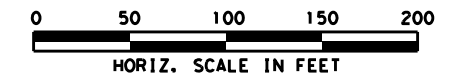
4. AGGREGATE FILL ON GROUND BOXES SHALL CONSIST OF 3/4-INCH UP TO 2-INCH COARSE AGGREGATE.
5. CONTRACTOR SHOULD NOTIFY THE ENGINEER AND ALLOW FOR THEIR INSPECTION AND APPROVAL OF ANY DRILLED SHAFT FOUNDATIONS OR OTHER CONCRETE PLACEMENT FORMS PRIOR TO POURING CONCRETE.
6. ALL CONDUITS INSTALLED UNDER DRIVEWAYS AND CULVERTS SHALL BE PLACED PRIOR TO START OF ROADWAY WIDENING.



BEGIN PROJECT  
CSJ: 0037-08-042, ETC.  
BEGIN CSJ: 0037-06-106  
STA 1504+42.08



*Guillermo A. Dougherty, Jr.*  
4-29-2024



LEGEND

- ⊕ PROP. CONDUIT/CONDUCTOR RUN
- ⊙ EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA) 50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA) 50T-8-8(400W EQ) LED
- PROP. GROUND BOX TY A
- ⬢ PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- ==== PROP. PVC CONDUIT (BORE)
- ⚡ EXIST. TRANSFORMER

CONDUCTOR/CONDUIT RUN	①	②	③	⑧	⑨	⑩
	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)
1/C #8 BARE	1 275	1 275	1 15	1 275	1 275	1 15
1/C #8 XHHW	2 275	2 275	2 15	2 275	2 275	2 15
2" SCHD 40 PVC CONDUIT	1 270	1 270	1 10	1 270	1 270	1 10
3" SCHD 80 PVC CONDUIT						
2" SCHD 80 PVC CONDUIT (BORE)						
RUN LENGTH (LF)	270	270	10	270	270	10

\* ELECTRICAL SERVICE PROVIDER TO PROVIDE AND INSTALL CABLING FROM TRANSFORMER TO ELECTRICAL SERVICE.

SHEET SUMMARY				
ITEM NO.	DES. CODE	DESCRIPTION	UNIT	QTY
0416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	48
0432	6006	RIPRAP (CONC) (CL B)	CY	2.1
0610	6286	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	6
0610	6287	INS RD IL (TY SA) 50T-8-8(400W EQ) LED	EA	
0618	6023	CONDUIT (PVC) (SCH 40) (2")	LF	1100
0618	6047	CONDUIT (PVC) (SCH 80) (2") (BORE)	LF	
0620	6007	ELEC CONDUCTOR (NO. 8) BARE	LF	1130
0620	6008	ELEC CONDUCTOR (NO. 8) INSULATED	LF	2260
0624	6002	GROUND BOX TY A (122311)W/APRON	EA	
0628	6045	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	EA	

POLE AND EQUIPMENT INFORMATION			
POLE	DESCRIPTION	STATION	*OFFSET
A-1	PROPOSED STEEL POLE W/ LUMINAIRE	1511+50	20 FT
A-2	PROPOSED STEEL POLE W/ LUMINAIRE	1514+20	20 FT
A-3	PROPOSED STEEL POLE W/ LUMINAIRE	1516+90	20 FT
B-1	PROPOSED STEEL POLE W/ LUMINAIRE	1511+50	20 FT
B-2	PROPOSED STEEL POLE W/ LUMINAIRE	1514+20	20 FT
B-3	PROPOSED STEEL POLE W/ LUMINAIRE	1516+90	20 FT

\*-OFFSETS FROM EDGE OF TRAVEL WAY

REVISIONS

NO.	REVISIONS	BY	DATE

STATE OF TEXAS  
GUILLERMO A. DOUGHERTY, JR.  
93649  
LICENSED PROFESSIONAL ENGINEER

ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-9900  
FIRM REGISTRATION No. F-10098

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**US 83  
PROPOSED  
CONTINUOUS LIGHTING**

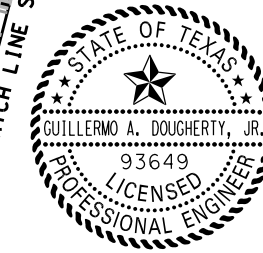
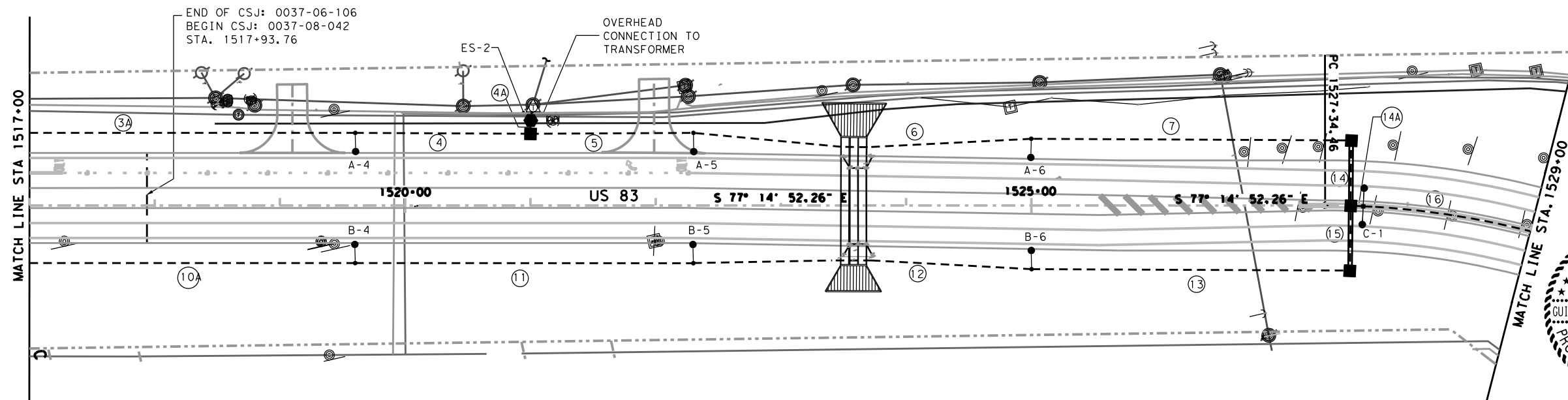
SHEET 1 OF 8

FED. RD. DIV. NO. <b>6</b>	STATE AID PROJECT NO. <b>C 37-8-42</b>	SHEET NO. <b>273</b>
STATE <b>TEXAS</b>	DISTRICT <b>LRD</b>	COUNTY <b>DIMMIT</b>
CONTROL <b>0037</b>	SECTION <b>08</b>	JOB <b>042, ETC.</b>
		HIGHWAY NO. <b>US 83</b>

NOTES:

1. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE.
2. ALL FOUNDATIONS FOR LUMINAIRES SHALL BE 8 FEET IN LENGTH FOR 50 FT POLES AND 6 FEET IN LENGTH FOR 40 FT POLES. INSTALL CONCRETE RIPRAP AS SHOWN ON STANDARD SHEET RID(2)-20 INCLUDED IN THE PLANS.
3. INSTALL RED 3", 4-MIL POLYETHYLENE UNDERGROUND WARNING TAPE THAT CONTINUOUSLY STATES "CAUTION BURIED ELECTRICAL LINE BELOW" AT 10 INCHES ABOVE TRENCHED CONDUIT.

4. AGGREGATE FILL ON GROUND BOXES SHALL CONSIST OF 3/4-INCH UP TO 2-INCH COARSE AGGREGATE.
5. CONTRACTOR SHOULD NOTIFY THE ENGINEER AND ALLOW FOR THEIR INSPECTION AND APPROVAL OF ANY DRILLED SHAFT FOUNDATIONS OR OTHER CONCRETE PLACEMENT FORMS PRIOR TO POURING CONCRETE.
6. ALL CONDUITS INSTALLED UNDER DRIVEWAYS AND CULVERTS SHALL BE PLACED PRIOR TO START OF ROADWAY WIDENING.



*Guillermo A. Dougherty, Jr.*  
4-29-2024

CONDUCTOR/CONDUIT RUN	3A	4	4A	5	6	7	10A	11	12	13	14	14A	15	16
1/C #8 BARE	1 265	1 145	1 15	1 135	1 275	1 260	1 265	1 275	1 275	1 260	1 60	1 15	1 60	1 140
1/C #8 XHHW	2 265	2 145	6 15	6 135	6 275	4 260	2 265	2 275	2 275	2 260	4 60	2 15	2 60	2 140
2" SCHD 40 PVC CONDUIT	1 260	1 140	1 10	1 130	1 270	1 255	1 260	1 270	1 270	1 255		1 10		1 135
3" SCHD 80 PVC CONDUIT														
2" SCHD 80 PVC CONDUIT (BORE)											1 55		1 55	
RUN LENGTH (LF)	260	140	10	130	270	255	260	270	270	255	55	10	55	135

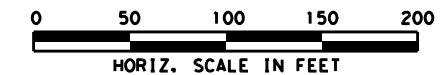
\* ELECTRICAL SERVICE PROVIDER TO PROVIDE AND INSTALL CABLING FROM TRANSFORMER TO ELECTRICAL SERVICE.

POLE	DESCRIPTION	STATION	*OFFSET
ES-2	PROPOSED ELECTRICAL SERVICE #2	1521+00	30 FT
A-4	PROPOSED STEEL POLE W/ LUMINAIRE	1519+60	20 FT
A-5	PROPOSED STEEL POLE W/ LUMINAIRE	1522+30	20 FT
A-6	PROPOSED STEEL POLE W/ LUMINAIRE	1525+00	20 FT
B-4	PROPOSED STEEL POLE W/ LUMINAIRE	1519+60	20 FT
B-5	PROPOSED STEEL POLE W/ LUMINAIRE	1522+30	20 FT
B-6	PROPOSED STEEL POLE W/ LUMINAIRE	1525+00	20 FT
C-1	PROPOSED STEEL POLE W/ LUMINAIRE	1527+65	CTR MEDIAN

\*-OFFSETS FROM EDGE OF TRAVEL WAY

SHEET SUMMARY (CSJ-0037-06-106)				
ITEM NO.	DES. CODE	DESCRIPTION	UNIT	QTY
0416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	
0432	6006	RIPRAP (CONC) (CL B)	CY	
0610	6286	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	
0610	6287	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	
0618	6023	CONDUIT (PVC) (SCH 40) (2")	LF	190
0618	6047	CONDUIT (PVC) (SCH 80) (2") (BORE)	LF	
0620	6007	ELEC CONDUCTOR (NO.8) BARE	LF	200
0620	6008	ELEC CONDUCTOR (NO.8) INSULATED	LF	400
0624	6002	GROUND BOX TY A (122311)W/APRON	EA	
0628	6045	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	EA	

SHEET SUMMARY (CSJ-0037-08-042)				
ITEM NO.	DES. CODE	DESCRIPTION	UNIT	QTY
0416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	56
0432	6006	RIPRAP (CONC) (CL B)	CY	2.45
0610	6286	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	6
0610	6287	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	1
0618	6023	CONDUIT (PVC) (SCH 40) (2")	LF	2075
0618	6047	CONDUIT (PVC) (SCH 80) (2") (BORE)	LF	110
0620	6007	ELEC CONDUCTOR (NO.8) BARE	LF	2245
0620	6008	ELEC CONDUCTOR (NO.8) INSULATED	LF	6830
0624	6002	GROUND BOX TY A (122311)W/APRON	EA	4
0628	6045	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	EA	1



LEGEND

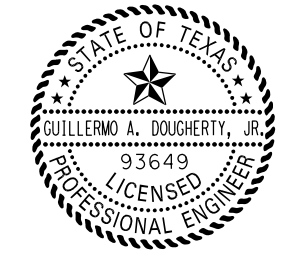
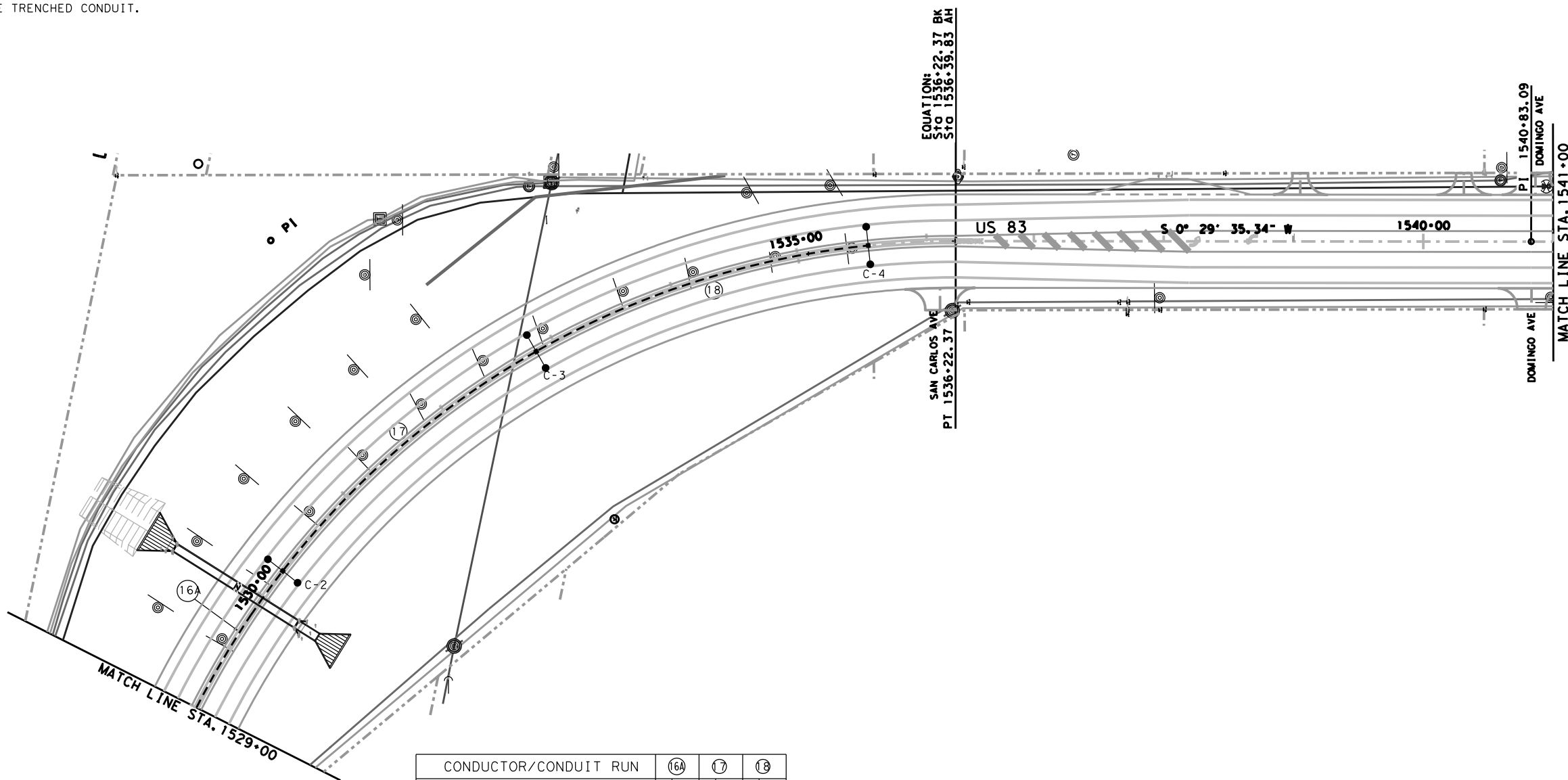
- ⊕ PROP. CONDUIT/CONDUCTOR RUN
- ⊙ EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA)50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA)50T-8(400W EQ) LED
- PROP. GROUND BOX TY A
- ⬢ PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- ==== PROP. PVC CONDUIT (BORE)
- ⚡ EXIST. TRANSFORMER

NO.	REVISIONS	BY	DATE
 TBPE Firm No. F-18636			
 ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCreary Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 PROPOSED CONTINUOUS LIGHTING</b>			
SHEET 2 OF 8			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	273-A	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

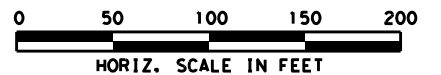
NOTES:

1. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE.
2. ALL FOUNDATIONS FOR LUMINAIRES SHALL BE 8 FEET IN LENGTH FOR 50 FT POLES AND 6 FEET IN LENGTH FOR 40 FT POLES. INSTALL CONCRETE RIPRAP AS SHOWN ON STANDARD SHEET RID(2)-20 INCLUDED IN THE PLANS.
3. INSTALL RED 3", 4-MIL POLYETHYLENE UNDERGROUND WARNING TAPE THAT CONTINUOUSLY STATES "CAUTION BURIED ELECTRICAL LINE BELOW" AT 10 INCHES ABOVE TRENCHED CONDUIT.

4. AGGREGATE FILL ON GROUND BOXES SHALL CONSIST OF 3/4-INCH UP TO 2-INCH COARSE AGGREGATE.
5. CONTRACTOR SHOULD NOTIFY THE ENGINEER AND ALLOW FOR THEIR INSPECTION AND APPROVAL OF ANY DRILLED SHAFT FOUNDATIONS OR OTHER CONCRETE PLACEMENT FORMS PRIOR TO POURING CONCRETE.
6. ALL CONDUITS INSTALLED UNDER DRIVEWAYS AND CULVERTS SHALL BE PLACED PRIOR TO START OF ROADWAY WIDENING.



*Guillermo A. Dougherty, Jr.*  
4-29-2024



LEGEND

- ⊕ PROP. CONDUIT/CONDUCTOR RUN
- ⊙ EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA) 50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA) 50T-8-8(400W EQ) LED
- PROP. GROUND BOX TY A
- ⬢ PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- ==== PROP. PVC CONDUIT (BORE)
- ⚡ EXIST. TRANSFORMER

CONDUCTOR/CONDUIT RUN	(16A)	(17)	(18)
	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)
1/C #8 BARE	1 130	1 265	1 275
1/C #8 XHHW	2 130	2 265	2 275
2" SCHD 40 PVC CONDUIT	1 125	1 260	1 270
3" SCHD 80 PVC CONDUIT			
2" SCHD 80 PVC CONDUIT (BORE)			
RUN LENGTH (LF)	125	260	270

\* ELECTRICAL SERVICE PROVIDER TO PROVIDE AND INSTALL CABLING FROM TRANSFORMER TO ELECTRICAL SERVICE.

SHEET SUMMARY				
ITEM NO.	DES. CODE	DESCRIPTION	UNIT	QTY
0416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	24
0432	6006	RIPRAP (CONC) (CL B)	CY	1.05
0610	6286	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	
0610	6287	INS RD IL (TY SA) 50T-8-8(400W EQ) LED	EA	3
0618	6023	CONDUIT (PVC) (SCH 40) (2")	LF	655
0618	6047	CONDUIT (PVC) (SCH 80) (2") (BORE)	LF	
0620	6007	ELEC CONDUCTOR (NO. 8) BARE	LF	670
0620	6008	ELEC CONDUCTOR (NO. 8) INSULATED	LF	1340
0624	6002	GROUND BOX TY A (122311)W/APRON	EA	
0628	6045	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	EA	

POLE AND EQUIPMENT INFORMATION			
POLE	DESCRIPTION	STATION	*OFFSET
C-2	PROPOSED STEEL POLE W/ LUMINAIRE	1530+25	CTR MEDIAN
C-3	PROPOSED STEEL POLE W/ LUMINAIRE	1532+85	CTR MEDIAN
C-4	PROPOSED STEEL POLE W/ LUMINAIRE	1535+55	CTR MEDIAN

\*-OFFSETS FROM EDGE OF TRAVEL WAY

NO.	REVISIONS	BY	DATE

**DOUGHERTY**  
Engineering Group, PLLC  
TBPE Firm No. F-18636

**AZ&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-9900  
FIRM REGISTRATION No. F-10098

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**US 83  
PROPOSED  
CONTINUOUS LIGHTING**

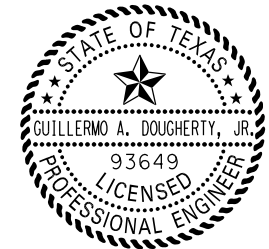
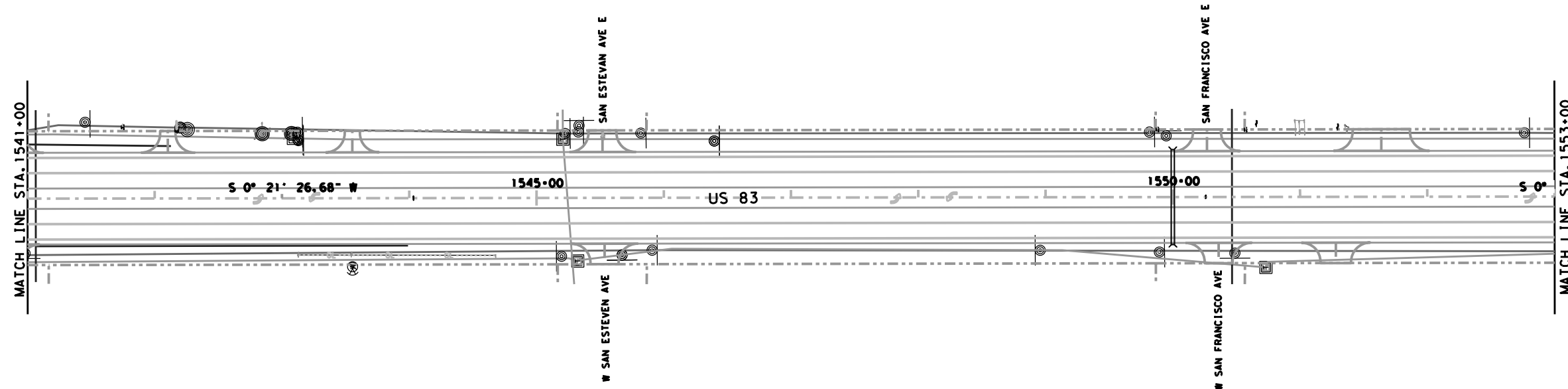
SHEET 3 OF 8

FED. RD. DIV. NO. <b>6</b>	STATE AID PROJECT NO. <b>C 37-8-42</b>	SHEET NO. <b>273-B</b>
STATE <b>TEXAS</b>	DISTRICT <b>LRD</b>	COUNTY <b>DIMMIT</b>
CONTROL <b>0037</b>	SECTION <b>08</b>	JOB <b>042, ETC.</b>
		HIGHWAY NO. <b>US 83</b>

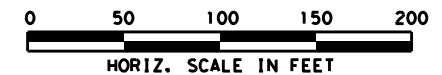
NOTES:

1. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE.
2. ALL FOUNDATIONS FOR LUMINAIRES SHALL BE 8 FEET IN LENGTH FOR 50 FT POLES AND 6 FEET IN LENGTH FOR 40 FT POLES. INSTALL CONCRETE RIPRAP AS SHOWN ON STANDARD SHEET RID(2)-20 INCLUDED IN THE PLANS.
3. INSTALL RED 3", 4-MIL POLYETHYLENE UNDERGROUND WARNING TAPE THAT CONTINUOUSLY STATES "CAUTION BURIED ELECTRICAL LINE BELOW" AT 10 INCHES ABOVE TRENCHED CONDUIT.

4. AGGREGATE FILL ON GROUND BOXES SHALL CONSIST OF 3/4-INCH UP TO 2-INCH COARSE AGGREGATE.
5. CONTRACTOR SHOULD NOTIFY THE ENGINEER AND ALLOW FOR THEIR INSPECTION AND APPROVAL OF ANY DRILLED SHAFT FOUNDATIONS OR OTHER CONCRETE PLACEMENT FORMS PRIOR TO POURING CONCRETE.
6. ALL CONDUITS INSTALLED UNDER DRIVEWAYS AND CULVERTS SHALL BE PLACED PRIOR TO START OF ROADWAY WIDENING.



*Guillermo A. Dougherty, Jr.*  
4-29-2024



NO WORK THIS SHEET,  
FOR CONTINUITY ONLY.

LEGEND

- PROP. CONDUIT/CONDUCTOR RUN
- EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA)50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA)50T-8-8(400W EQ) LED
- PROP. GROUND BOX TY A
- PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- PROP. PVC CONDUIT (BORE)
- EXIST. TRANSFORMER

NO.	REVISIONS	BY	DATE

**DOUGHERTY**  
Engineering Group, PLLC  
TBPE Firm No. F-18636

**ARREDONDO, ZEPEDA & BRUNZ, LLC**  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-9900  
FIRM REGISTRATION No. F-10098

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**US 83  
PROPOSED  
CONTINUOUS LIGHTING**

SHEET 4 OF 8

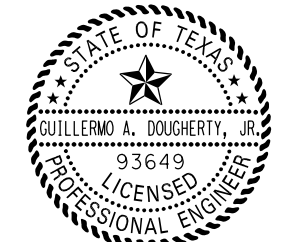
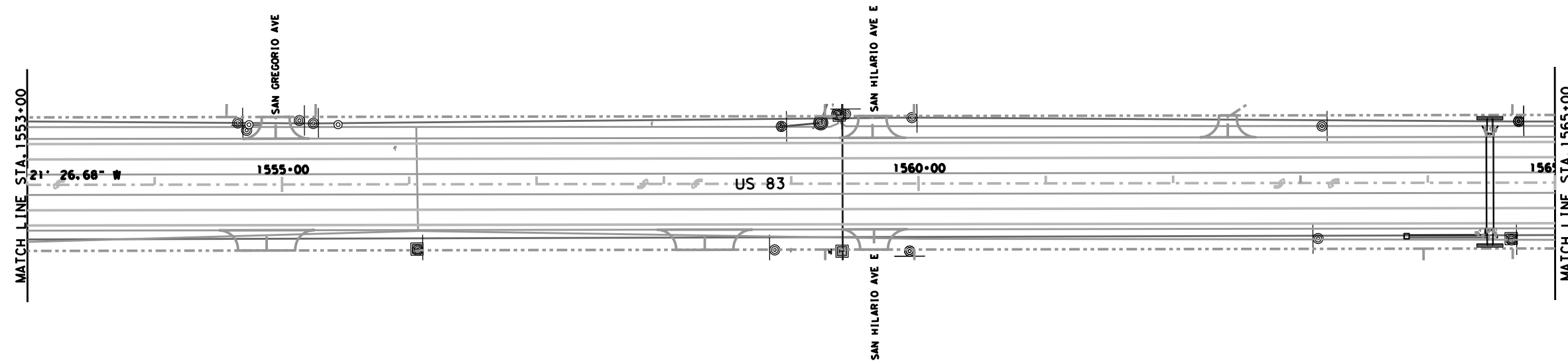
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		273-C
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMIT	
CONTROL	SECTION	JOB	US 83
0037	08	042, ETC.	



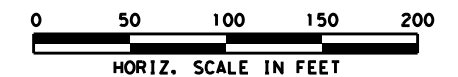
NOTES:

1. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE.
2. ALL FOUNDATIONS FOR LUMINAIRES SHALL BE 8 FEET IN LENGTH FOR 50 FT POLES AND 6 FEET IN LENGTH FOR 40 FT POLES. INSTALL CONCRETE RIPRAP AS SHOWN ON STANDARD SHEET RID(2)-20 INCLUDED IN THE PLANS.
3. INSTALL RED 3", 4-MIL POLYETHYLENE UNDERGROUND WARNING TAPE THAT CONTINUOUSLY STATES "CAUTION BURIED ELECTRICAL LINE BELOW" AT 10 INCHES ABOVE TRENCHED CONDUIT.

4. AGGREGATE FILL ON GROUND BOXES SHALL CONSIST OF 3/4-INCH UP TO 2-INCH COARSE AGGREGATE.
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6. ALL CONDUITS INSTALLED UNDER DRIVEWAYS AND CULVERTS SHALL BE PLACED PRIOR TO START OF ROADWAY WIDENING.



*Guillermo A. Dougherty, Jr.*  
4-29-2024



NO WORK THIS SHEET,  
FOR CONTINUITY ONLY.

LEGEND

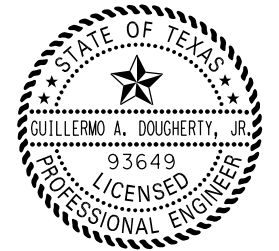
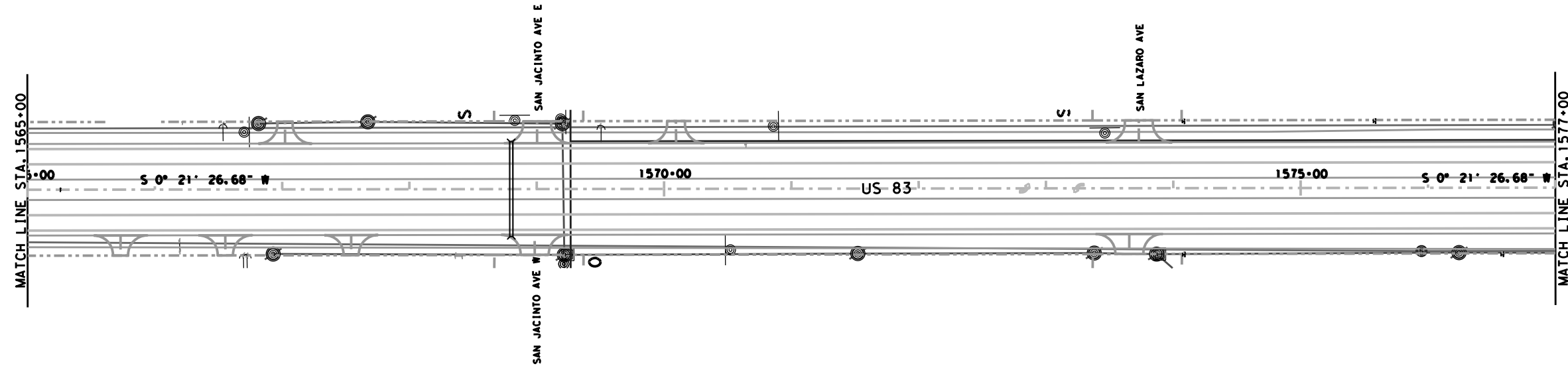
- PROP. CONDUIT/CONDUCTOR RUN
- EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA)50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA)50T-8-8(400W EQ) LED
- PROP. GROUND BOX TY A
- PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- PROP. PVC CONDUIT (BORE)
- EXIST. TRANSFORMER

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83 PROPOSED CONTINUOUS LIGHTING</b>			
SHEET 5 OF 8			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		
STATE	DISTRICT	COUNTY	273-D
TEXAS	LRD	DIMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

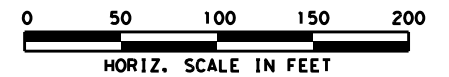
NOTES:

1. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE.
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*Guillermo A. Dougherty, Jr.*  
4-29-2024



NO WORK THIS SHEET,  
FOR CONTINUITY ONLY.

LEGEND

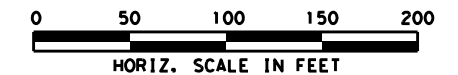
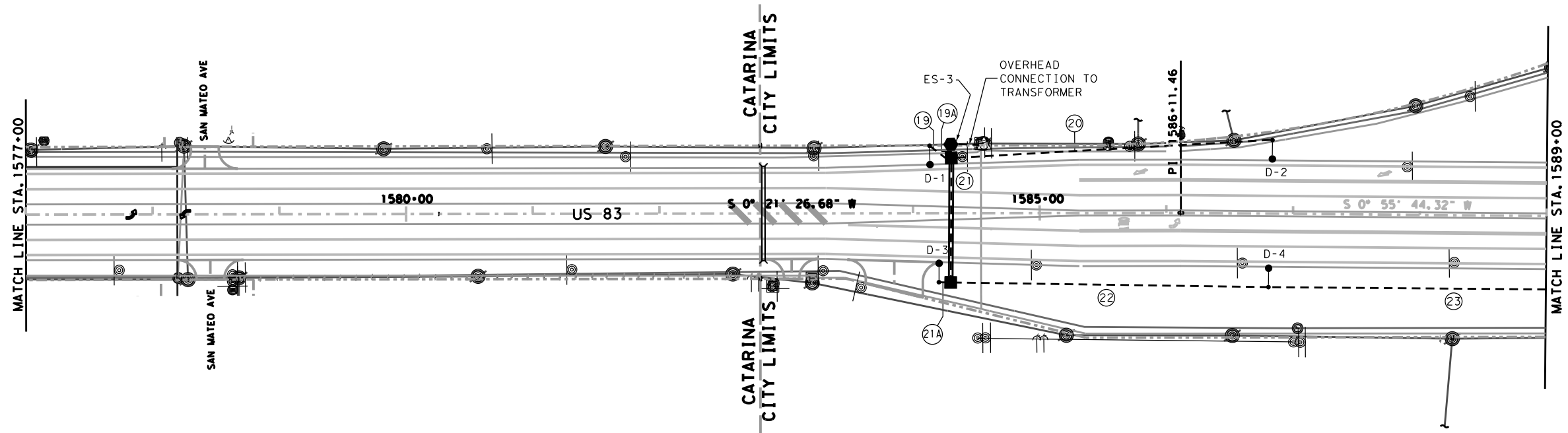
- PROP. CONDUIT/CONDUCTOR RUN
- EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA)50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA)50T-8-8(400W EQ) LED
- PROP. GROUND BOX TY A
- PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- PROP. PVC CONDUIT (BORE)
- EXIST. TRANSFORMER

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 <small>FIRM REGISTRATION No. F-10098</small>			
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<b>US 83 PROPOSED CONTINUOUS LIGHTING</b>			
SHEET 6 OF 8			
FED. RD. DIV. NO. <b>6</b>	STATE AID PROJECT NO. <b>C 37-8-42</b>	SHEET NO. <b>273-E</b>	
STATE <b>TEXAS</b>	DISTRICT <b>LRD</b>	COUNTY <b>DIMMIT</b>	HIGHWAY NO. <b>US 83</b>
CONTROL <b>0037</b>	SECTION <b>08</b>	JOB <b>042, ETC.</b>	

NOTES:

1. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE.
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6. ALL CONDUITS INSTALLED UNDER DRIVEWAYS AND CULVERTS SHALL BE PLACED PRIOR TO START OF ROADWAY WIDENING.



LEGEND

- ⊕ PROP. CONDUIT/CONDUCTOR RUN
- ⊙ EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA) 50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA) 50T-8-8(400W EQ) LED
- PROP. GROUND BOX TY A
- ⬢ PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- ==== PROP. PVC CONDUIT (BORE)
- ⚡ EXIST. TRANSFORMER

CONDUCTOR/CONDUIT RUN	19	19A	20	21	21A	22	23
	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)	LENGTH (LF)
1/C #8 BARE	1 25	1 15	1 260	1 105	1 15	1 255	1 225
1/C #8 XHHW	2 25	2 15	2 260	2 105	2 15	2 255	2 225
2" SCHD 40 PVC CONDUIT	1 20	1 10	1 255		1 10	1 250	1 220
3" SCHD 80 PVC CONDUIT				1 100			
2" SCHD 80 PVC CONDUIT (BORE)							
RUN LENGTH (LF)	20	10	255	100	10	250	220

\* ELECTRICAL SERVICE PROVIDER TO PROVIDE AND INSTALL CABLING FROM TRANSFORMER TO ELECTRICAL SERVICE.

SHEET SUMMARY				
ITEM NO.	DES. CODE	DESCRIPTION	UNIT	QTY
0416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	32
0432	6006	RIPRAP (CONC) (CL B)	CY	1.4
0610	6286	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	4
0610	6287	INS RD IL (TY SA) 50T-8-8(400W EQ) LED	EA	
0618	6023	CONDUIT (PVC) (SCH 40) (2")	LF	765
0618	6047	CONDUIT (PVC) (SCH 80) (2") (BORE)	LF	100
0620	6007	ELEC CONDUCTOR (NO. 8) BARE	LF	900
0620	6008	ELEC CONDUCTOR (NO. 8) INSULATED	LF	1800
0624	6002	GROUND BOX TY A (122311)W/APRON	EA	2
0628	6045	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	EA	1

POLE AND EQUIPMENT INFORMATION			
POLE	DESCRIPTION	STATION	*OFFSET
ES-3	PROPOSED ELECTRICAL SERVICE #3	1584+30	19 FT
D-1	PROPOSED STEEL POLE W/ LUMINAIRE	1584+13	19 FT
D-2	PROPOSED STEEL POLE W/ LUMINAIRE	1586+83	20 FT
D-3	PROPOSED STEEL POLE W/ LUMINAIRE	1584+21	20 FT
D-4	PROPOSED STEEL POLE W/ LUMINAIRE	1586+81	20 FT

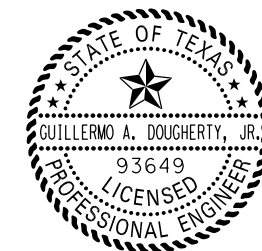
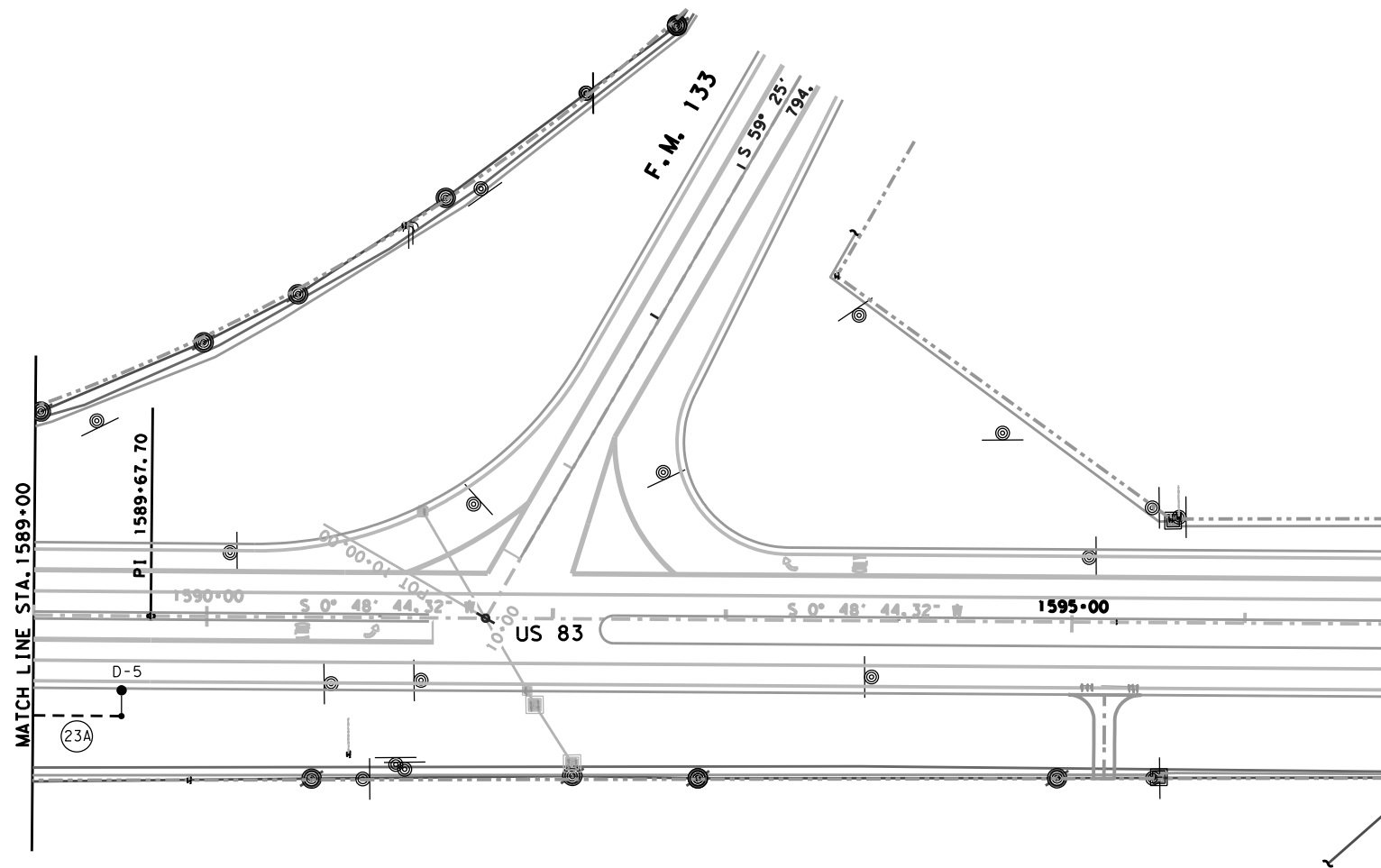
\*-OFFSETS FROM EDGE OF TRAVEL WAY

NO.	REVISIONS	BY	DATE
<b>US 83 PROPOSED CONTINUOUS LIGHTING</b>			
SHEET 7 OF 8			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	273-F	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

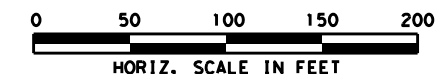
NOTES:

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*Guillermo A. Dougherty, Jr.*  
4-29-2024



LEGEND

- ⊕ PROP. CONDUIT/CONDUCTOR RUN
- ⊙ EXIST. TIMBER POLE
- PROP. RD IL AM (TY SA) 50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA) 50T-8-8(400W EQ) LED
- PROP. GROUND BOX TY A
- ⬢ PROP. ELECTRICAL SERVICE
- PROP. PVC CONDUIT
- ==== PROP. PVC CONDUIT (BORE)
- ⚡ EXIST. TRANSFORMER

CONDUCTOR/CONDUIT RUN		(23A)
		LENGTH (LF)
1/C #8 BARE		1 55
1/C #8 XHHW		2 55
2" SCHD 40 PVC CONDUIT		1 50
3" SCHD 80 PVC CONDUIT		
2" SCHD 80 PVC CONDUIT (BORE)		
RUN LENGTH (LF)		50

\* ELECTRICAL SERVICE PROVIDER TO PROVIDE AND INSTALL CABLING FROM TRANSFORMER TO ELECTRICAL SERVICE.

SHEET SUMMARY				
ITEM NO.	DES. CODE	DESCRIPTION	UNIT	QTY
0416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	8
0432	6006	RIPRAP (CONC) (CL B)	CY	0.35
0610	6286	INS RD IL (TY SA) 50T-8(400W EQ) LED	EA	1
0610	6287	INS RD IL (TY SA) 50T-8-8(400W EQ) LED	EA	
0618	6023	CONDUIT (PVC) (SCH 40) (2")	LF	50
0618	6047	CONDUIT (PVC) (SCH 80) (2") (BORE)	LF	
0620	6007	ELEC CONDUCTOR (NO. 8) BARE	LF	55
0620	6008	ELEC CONDUCTOR (NO. 8) INSULATED	LF	110
0624	6002	GROUND BOX TY A (122311)W/APRON	EA	
0628	6045	ELC SRV TY A 240/480 060 (NS)SS(E)SP(O)	EA	

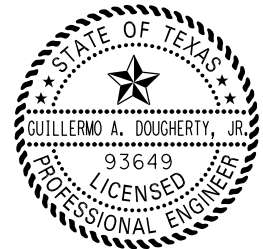
POLE AND EQUIPMENT INFORMATION

POLE	DESCRIPTION	STATION	*OFFSET
D-5	PROPOSED STEEL POLE W/ LUMINAIRE	1589+51	20 FT




\*-OFFSETS FROM EDGE OF TRAVEL WAY

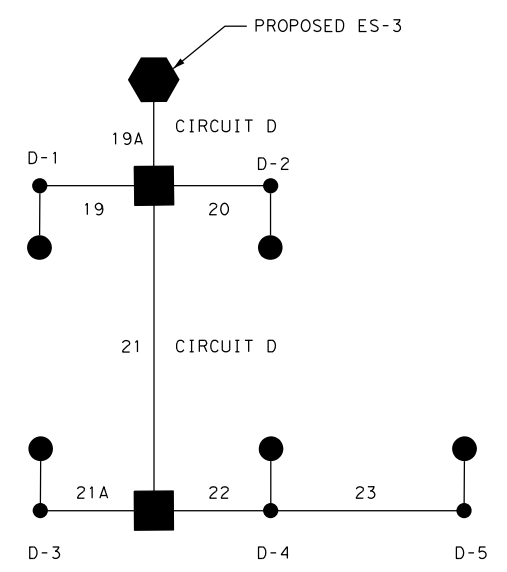
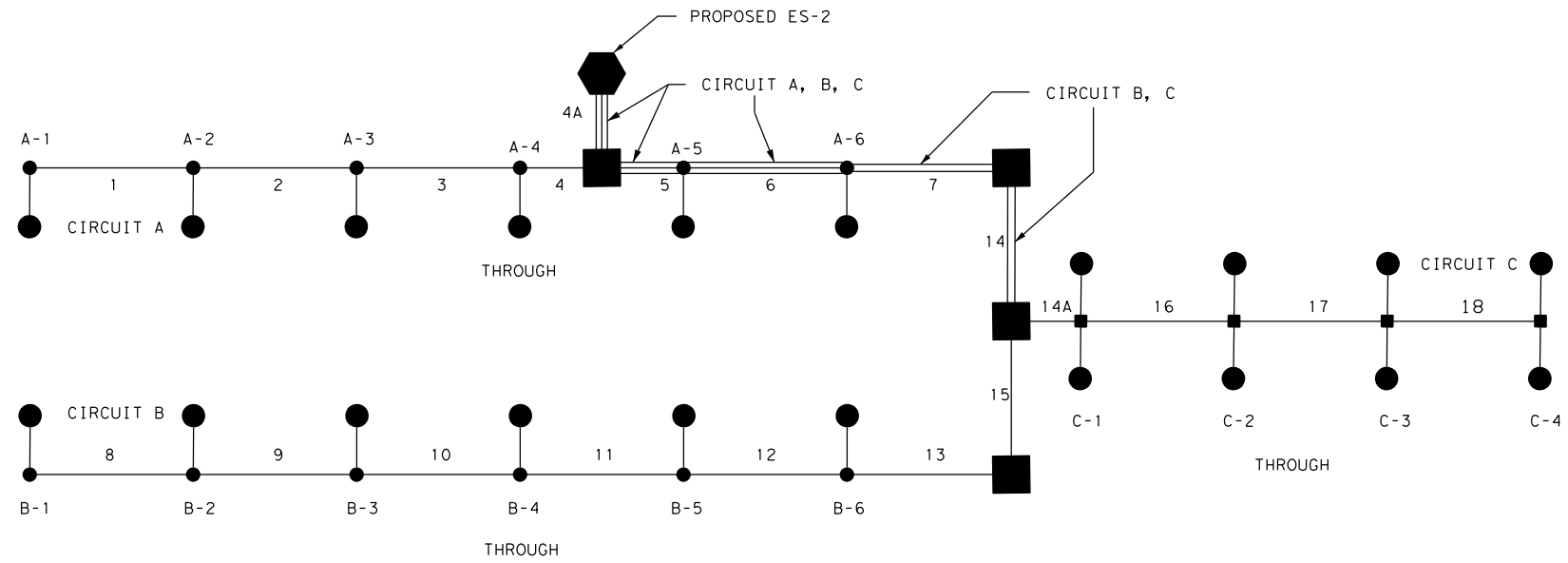
NO.	REVISIONS	BY	DATE
<p><b>US 83</b> <b>PROPOSED</b> <b>CONTINUOUS LIGHTING</b></p>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	273-G	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

ELECTRICAL SERVICE DATA												
ELEC. POLE NO.	SHEET NO.	SERVICE POLE DESCRIPTION (SEE ED (4) & (5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN	TWO-POLE CONTACTOR AMPS	PANELBD/LOAD CENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
						CKT. BKR. POLE/AMP						
2	2 OF 8	ELC SRV TY A	1 1/4"	3/#6	N/A	2P/60A	60	N/A	A	2P/20A	3.12	5.0
									B	2P/20A	3.12	
									C	2P/20A	4.16	
3	7 OF 8	ELC SRV TY A	1 1/4"	3/#6	N/A	2P/60A	60	N/A	D	2P/20A	2.6	1.2



*Guillermo A. Dougherty, Jr.*  
4-29-2024

NO.	REVISIONS	BY	DATE
 TBPE Firm No. F-18636			
 <b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>ELECTRICAL SERVICE DATA SHEET</b> SHEET 1 OF 1			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	273-H	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



N. T. S.

LEGEND

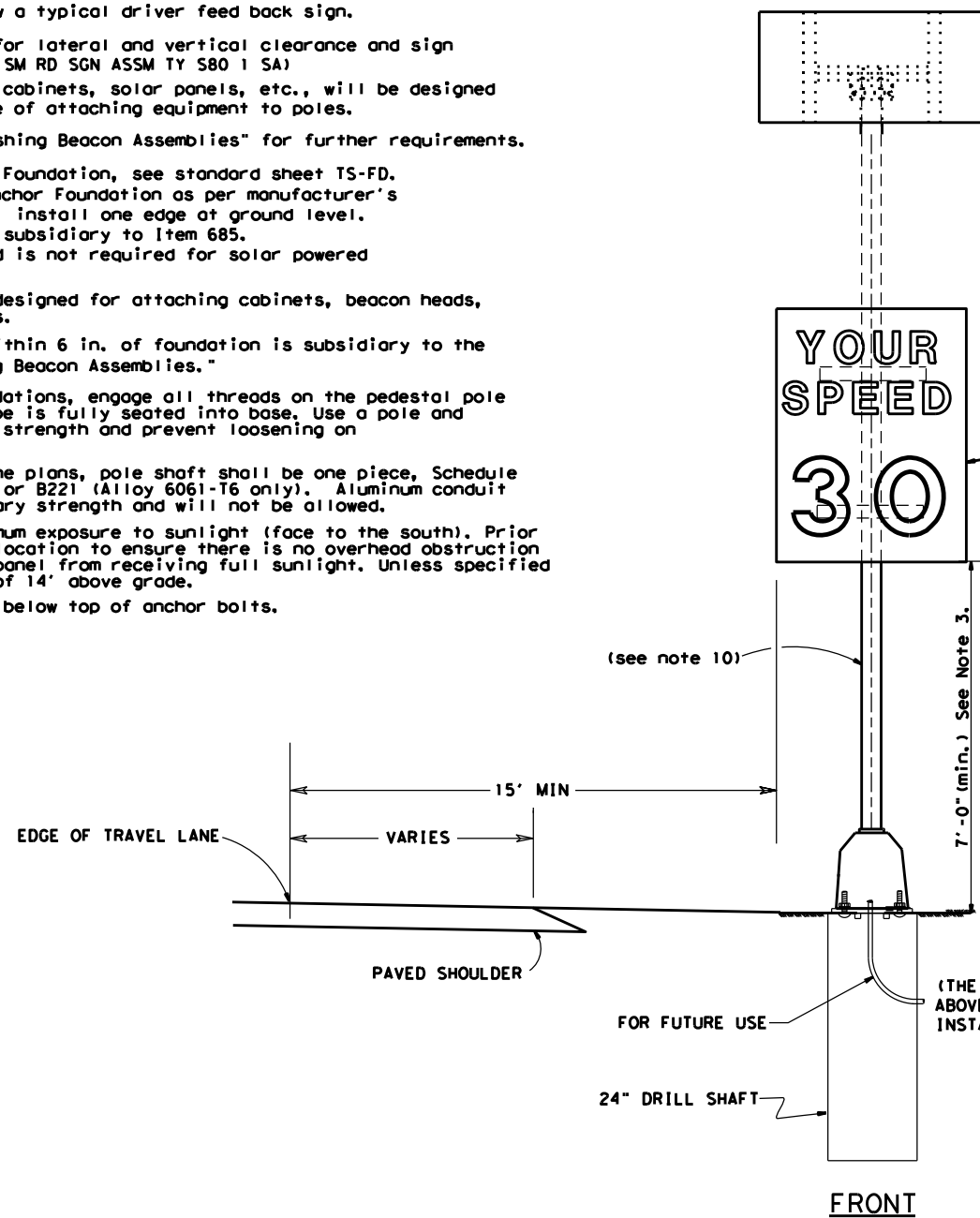
- PROP. RD IL AM (TY SA)50T-8(400W EQ) LED
- PROP. RD IL AM (TY SA)50T-8(400W EQ) LED
- PROP. GROUND BOX
- PROP. ELECTRICAL SERVICE
- PROP. CIRCUIT RUN



NO.	REVISIONS	BY	DATE
 DOUGHERTY Engineering Group, PLLC <small>TXPE Firm No. F-18636</small>			
 ARREDONDO, ZEPEDA & BRUNZ, LLC <small>11355 McCree Road - Dallas, Texas 75238            (214) 341-9900            FIRM REGISTRATION No. F-10098</small>			
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<b>US 83</b> <b>ILLUMINATION</b> <b>CIRCUIT DIAGRAMS</b>			
SHEET 1 OF 1			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	273-1	
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	

**GENERAL NOTES;**

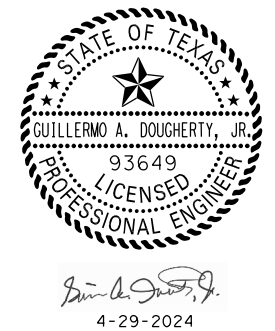
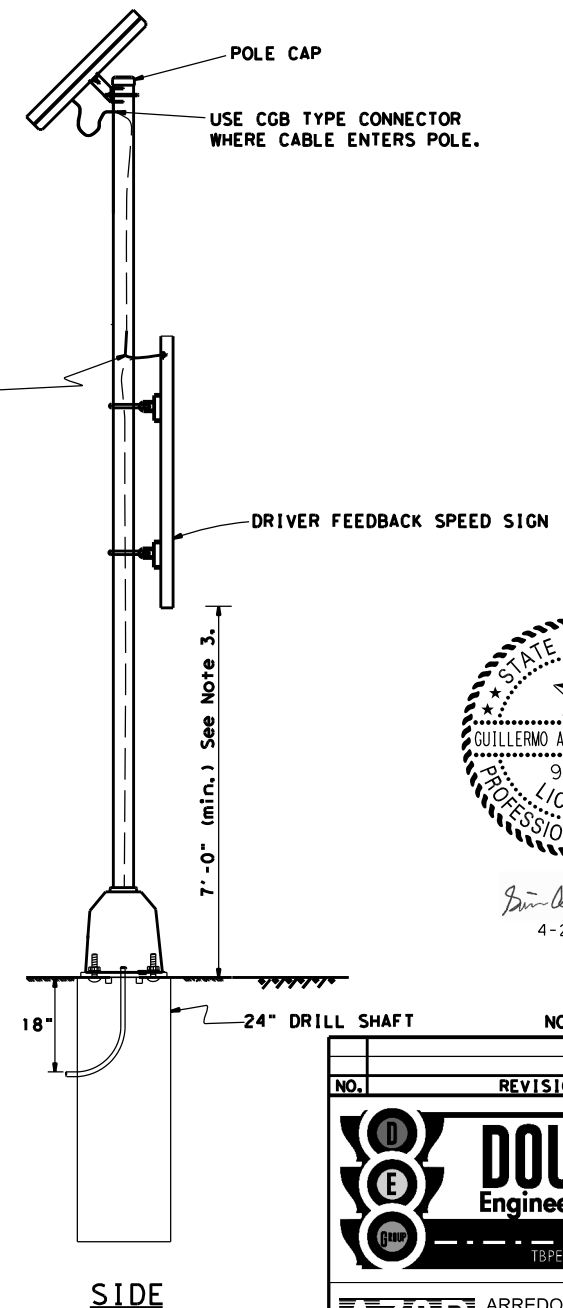
1. The Driver Feedback Speed Sign Assembly is designed for small signs where electrical power is needed with a breakway sign pole.
2. Details depicted herein show a typical driver feed back sign.
3. See TMUTCD & SMD (GEN)-08, for lateral and vertical clearance and sign mounting details. (Refer to SM RD SGN ASSM TY S80 1 SA)
4. Materials used for mounting cabinets, solar panels, etc., will be designed specifically for the purpose of attaching equipment to poles.
5. See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
6. Require a 24" Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
7. Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
8. Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
9. Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. Use a pole and base collar assembly to add strength and prevent loosening on connection.
10. Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
11. Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
12. Ensure height of conduit is below top of anchor bolts.



ORIENT PANEL FOR OPTIMUM EXPOSURE TO SUNLIGHT (FACE TO THE SOUTH. PRIOR TO INSTALLATION THE LOCATION SHOULD BE CHECKED TO ENSURE THERE IS NO OVERHEAD OBSTRUCTION THAT WOULD BLOCK THE SOLAR PANEL FROM RECEIVING FULL SUNLIGHT. UNLESS SPECIFIED ELSEWHERE, MOUNT A MINIMUM OF 14' ABOVE GRADE.

DRILL POLE FOR WIRE ENTRY USE BUSHING OR RUBBER GROMMET TO PROTECT CONDUCTORS.

DRIVER FEEDBACK SPEED SIGN FURNISHED AND INSTALLED BY CONTRACTOR (MIN 30" X 36")



NOT TO SCALE

NO.	REVISIONS	BY	DATE

**DOUGHERTY**  
Engineering Group, PLLC  
TSP Firm No. F-18636

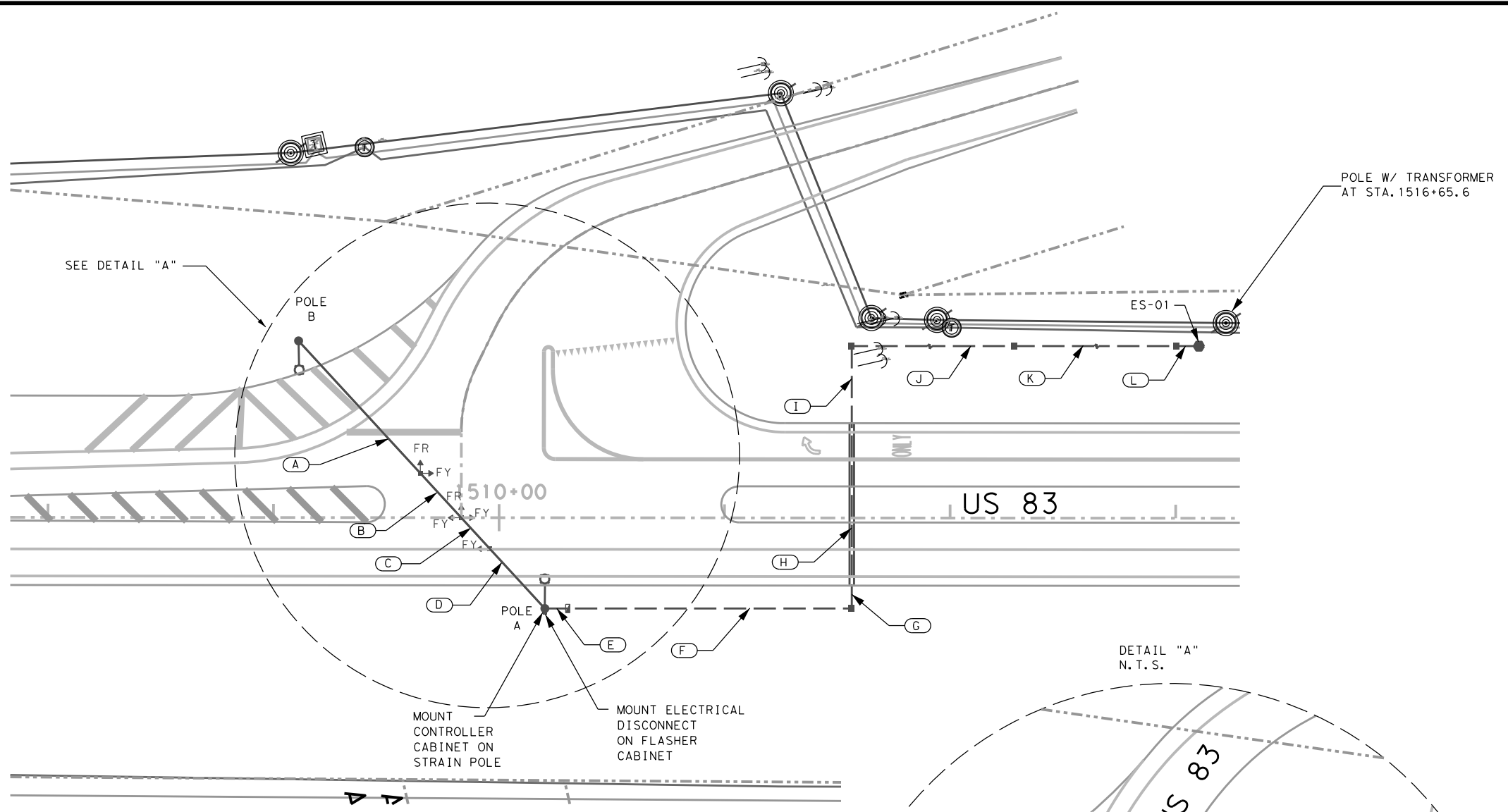
**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-9900  
FIRM REGISTRATION No. F-10098

Texas Department of Transportation  
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**US 83**  
**DRIVER FEEDBACK**  
**SPEED SIGN DETAIL**  
**CSJ: 0037-08-042**

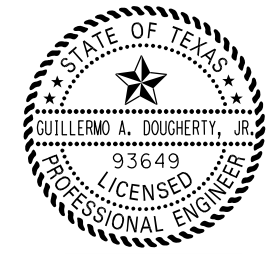
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6	C 37-8-42	274	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

INTERIM REVIEW ONLY  
DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.  
Engineer: GUILLERMO A. DOUGHERTY, JR.  
P.E. Serial No.: 93649  
Date: 4/29/2024

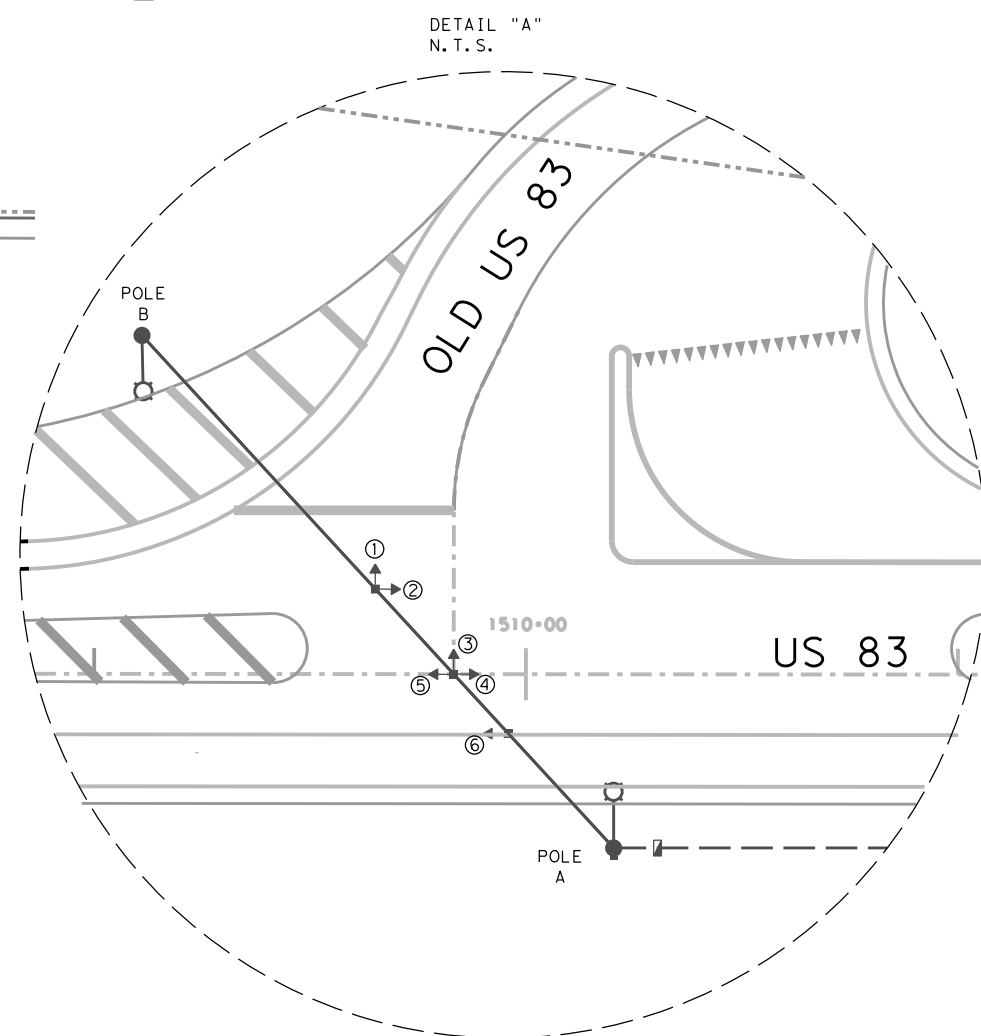
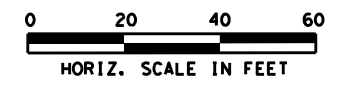


**LEGEND**

- PROPOSED ELECTRICAL SERVICE
- PROPOSED LUMINAITE ARM
- PROPOSED POLE MOUNTED CONT. CAB
- ◄ PROPOSED SIGNAL HEAD
- PROPOSED GROUND BOX TY A
- ▣ PROPOSED GROUND BOX TY C
- PROPOSED STRAIN POLE
- PROPOSED STRAND WIRE
- - PROPOSED CONDUIT
- (X) RUN DESIGNATION
- ⊗ SIGNAL HEAD SCHEDULE



*Guillermo A. Dougherty, Jr.*  
4-29-2024

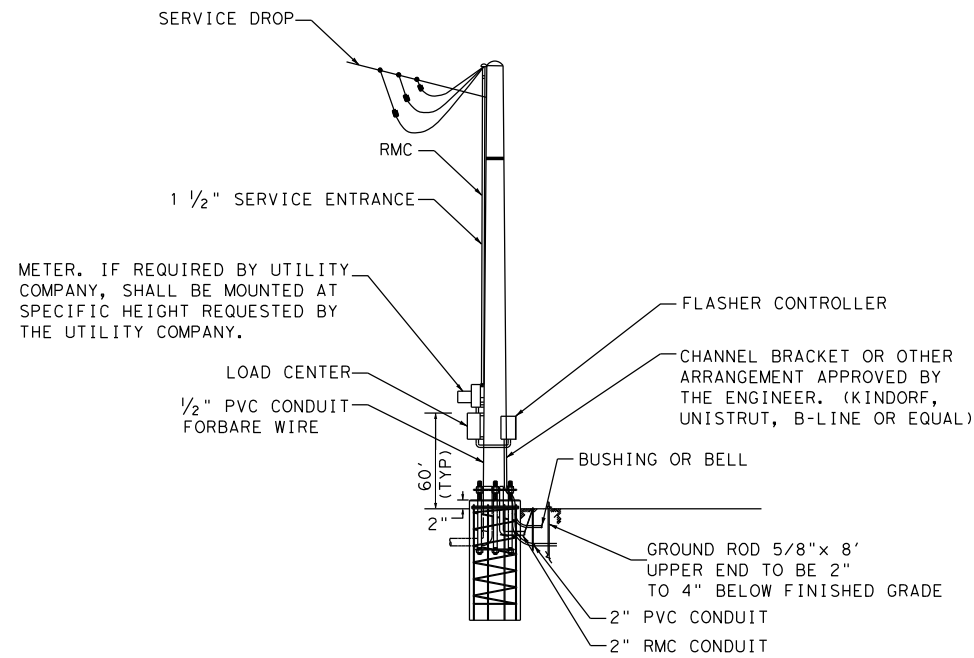


**NOTES:**

1. ALL SIGNAL CABLE MUST BE 3C/#12 AWG (IMSA APPROVED). ELECTRICAL SERVICE CABLE SHALL BE #6 AWG, AND LUMINAIRE CABLE SHALL BE 3/C#12 (TRAY CABLE) (XHHW).
2. THE LOCATION FOR THE STEEL STRAIN POLES, CONDUIT RUNS, AND ELECTRICAL SERVICE ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE LAREDO DISTRICT TRANSPORTATION OPERATIONS SECTION.
3. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE TO ALL UTILITIES.
4. FINISH AND INSTALL SIGNAL HEADS, LEDS, SIGNAL CABLE, CONDUITS, SPAN WIRE, STEEL STRAIN POLES, LUMINAIRE HEADS AND HEADS, AND POLE MOUNTED FLASHER CONTROLLER ASSEMBLY.
5. LUMINAIRE ARMS WILL BE PERPENDICULAR TO THE CENTERLINE OF US 83.

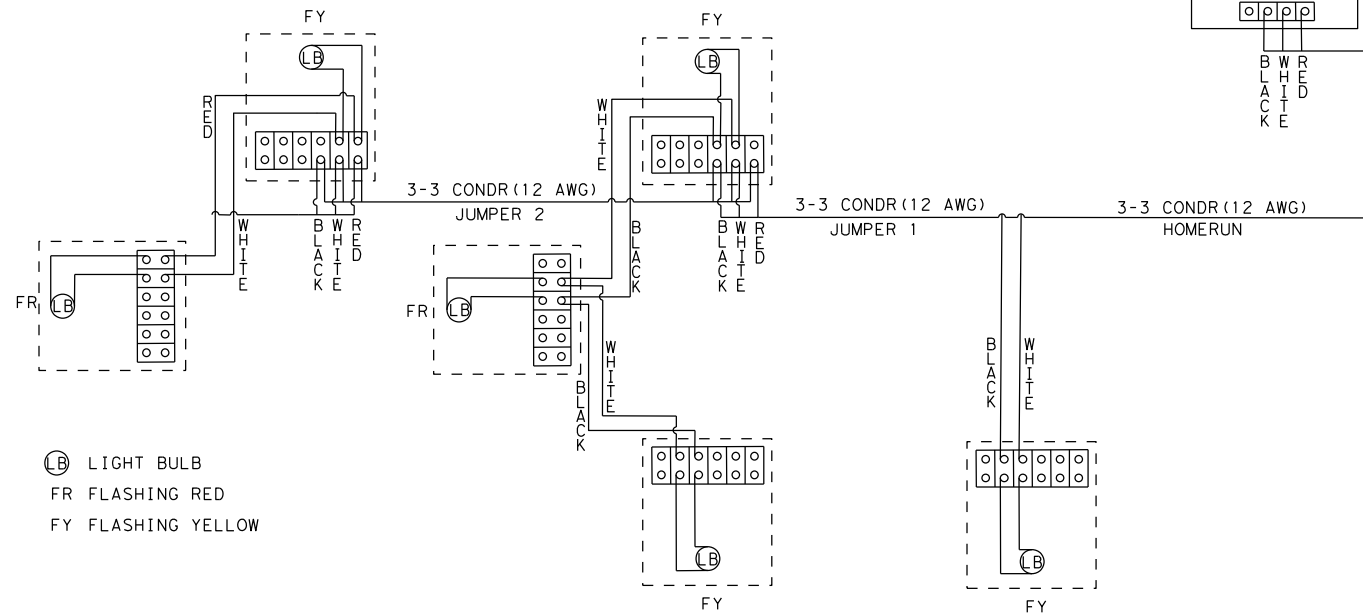
NO.	REVISIONS	BY	DATE
 TYPE Firm No. F-18636			
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCreary Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>FLASHING BEACON</b> <b>US 83 AT OLD US 83</b> <b>CSJ: 0037-06-106</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	275	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



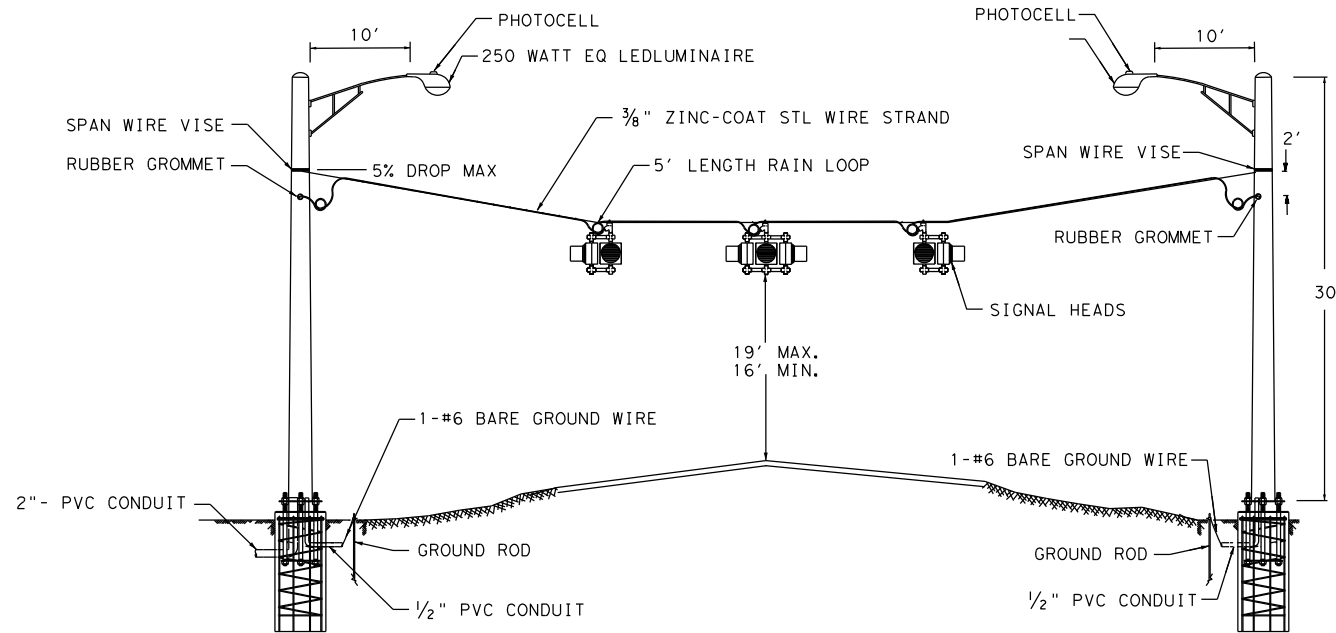


**ELECTRICAL SERVICE**

**WIRING DIAGRAM**



LB LIGHT BULB  
FR FLASHING RED  
FY FLASHING YELLOW



SEE STANDARD TS-FD 12 FOR FOUNDATION DETAIL

**TYPICAL FLASHING BEACON INSTALLATION**

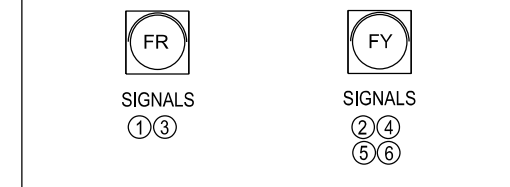
SEE STANDARD TS-FD 12 FOR FOUNDATION DETAIL

**ESTIMATE OF QUANTITIES**

Item No.	Desc. Code	Item Description	Unit	Est Quantity
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	26.4
618	6023	COND (PVC) (SCH 40) (2")	LF	665
618	6047	COND (PVC) (SCH 80) (2") (BORE)	LF	75
620	6009	ELEC CONDR (NO.6) BARE	LF	740
620	6010	ELEC CONDR (NO.6) INSULATED	LF	20
621	6002	TRAY CABLE (3 CONDR) (12 AWG)	LF	2250
624	6002	GROUND BOX TY A (122311)W/APRON	EA	4
624	6008	GROUND BOX TY C (162911)W/APRON	EA	1
625	6003	ZINC-COAT STL WIRE STRAND (3/8")	LF	185
628	6298	ELC SRV TY T 120 / 240 000 (NS) GS (L) SP (O)	EA	1
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1
	*	FLASHER CRONTROLLER ASSEMBLY	EA	1
	*	ELECTRICAL DISCONNECT	EA	1
	*	GROUND ROD (5/8 X 10")	EA	2
	*	LUMINAIRE (250 WATT EQ LED)	EA	2
	*	PHOTO CELL	EA	2
682	6003	VEH SIG SEC (12")LED(YEL)	EA	4
682	6005	VEH SIG SEC (12")LED(RED)	EA	2
684	6008	TRF SIG CBL (TY A)(12 AWG)(3 CONDR)	LF	340
686	6008	INS TRF SIG PL AM (S)STR(TY B)LUM	EA	2

\* SUBSIDIARY TO BID ITEM 680

**SIGNAL HEAD SCHEDULE**



**TRAFFIC SIGNAL POLES**

POLE NO.	SIGNAL POLE DESIGNATION	MAST ARM DESIGN	FOUNDATION TYPE/DEPTH
1	SPL 30 B-80	N/A	36-A/13.2'
2	SPL 30 B-80	N/A	36-A/13.2'

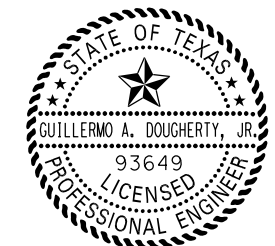
**ELECTRICAL SCHEDULE (FOR CONTRACTOR INFORMATION ONLY)**

ITEM	QTY.	DESCRIPTION	RUN NUMBER														
			A	B	C	D	E	F	G	H	I	J	K	L			
ELECTRICAL SERVICE CABLE	*20	1/C-#6 INSULATED															
	*740	1/C-#6 BARE						3	3	3	3	3	3	3	3	3	3
LUMINAIRE CABLE	*2250	*TRAY CABLE (3COND)(12AWG)	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
SIGNAL CABLE	*340	*TRAF SIG CBL(TYA)(3COND)(12AWG)		1	3	3											
CONDUIT	665	COND (PVC) (SCHD 40) (2") (TRENCH)						1	1	1			1	1	1	1	1
	75	COND (PVC) (SCHD 40) (2") (BORE)										1					

\* QUANTITIES INCLUDE CABLE IN CABINET AND POLE HEIGHTS

**ELECTRICAL SERVICE DATA**

SERVICE POLE NO.	SHEET NO.	SERVICE POLE DESCRIPTION (SEE ED(4) & (5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT		TWO-POLE CONTACTOR AMPS	PANEL BD./LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT,BKR POLE/AMP	BRANCH CIRCUIT AMPS	KVA LOAD
						SWITCH AMP/FUSE	CKT.BKR POLE/AMP						
1		TY T (120/240) 000 (NS) GS (L) SP(O)	1 1/2"	3/#6 AWG	N/A	N/A	N/A	N/A	70	FLASHING BEACON SAFETY LIGHTING	1P/20 1P/20	10 6	1.9



4-29-2024

NOT TO SCALE

NO.	REVISIONS	BY	DATE

**DOUGHERTY Engineering Group, PLLC**  
TYPE Firm No. F-18636

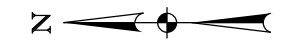
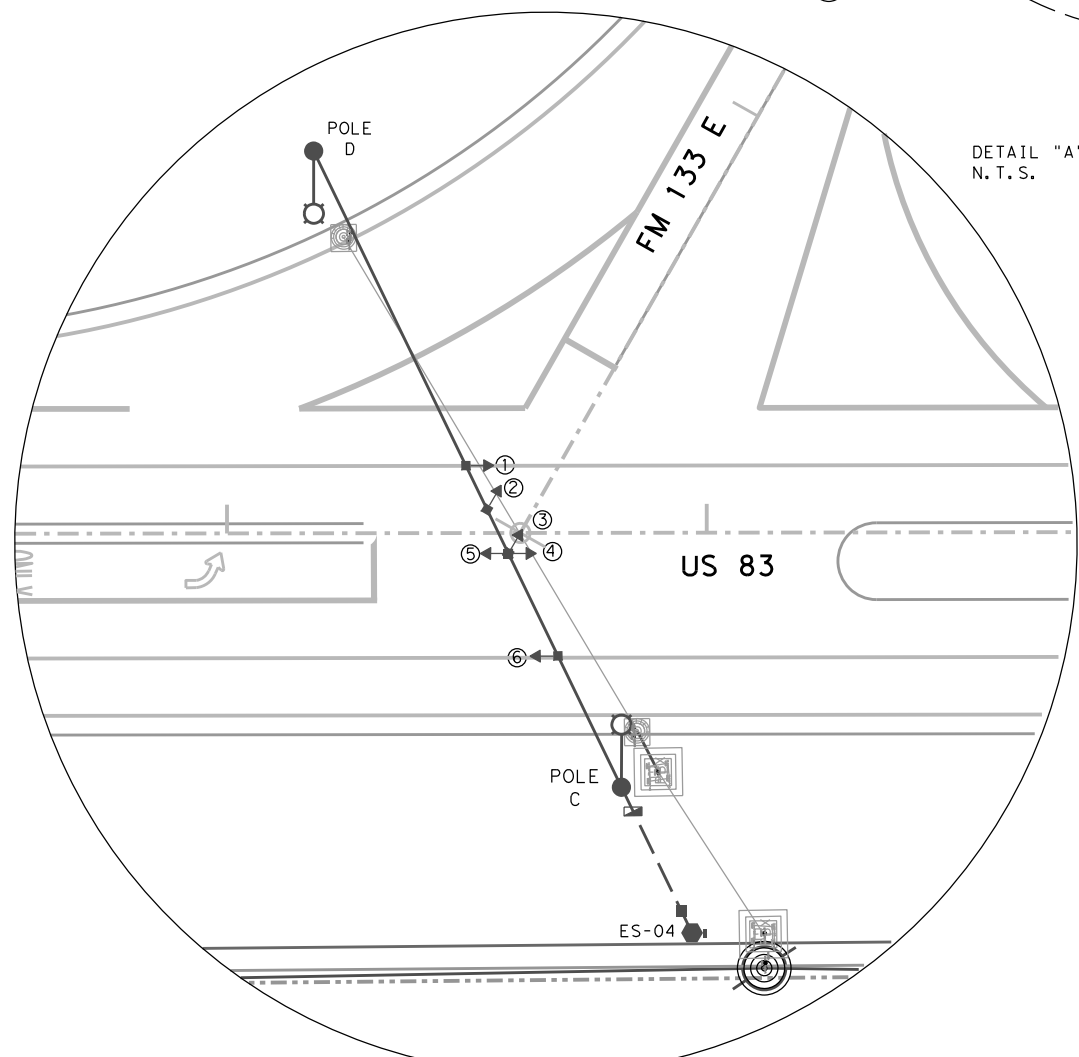
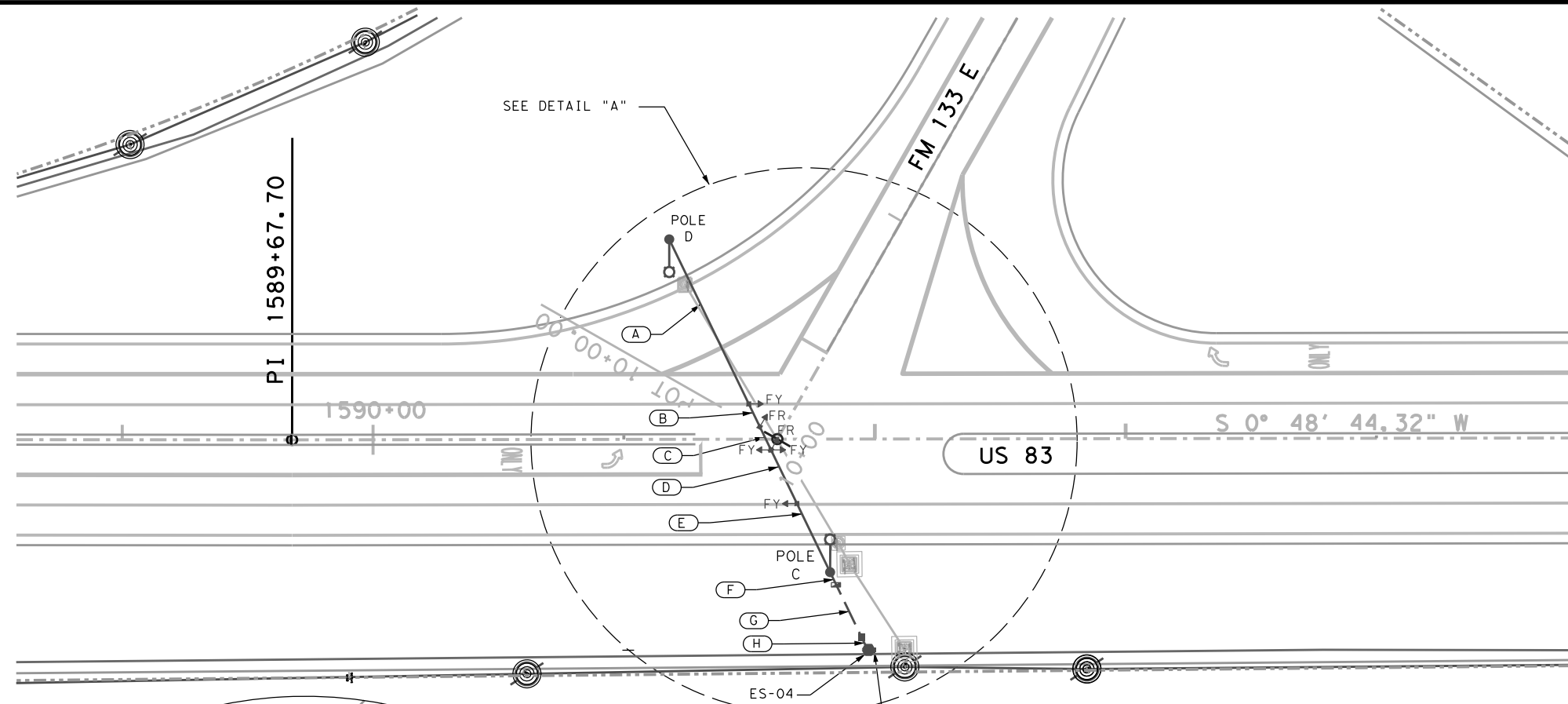
**A7&B ARREDONDO, ZEPEDA & BRUNZ, LLC**  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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**FLASHING BEACON**  
US 83 AT OLD US 83  
CJS: 0037-06-106

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	276
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83

SHEET 2 OF 2



**LEGEND**

- PROPOSED ELECTRICAL SERVICE
- PROPOSED LUMINAITE ARM
- PROPOSED POLE MOUNTED CONT. CAB
- ↑ PROPOSED SIGNAL HEAD
- PROPOSED GROUND BOX TY A
- PROPOSED GROUND BOX TY C
- PROPOSED STRAIN POLE
- PROPOSED STRAND WIRE
- - PROPOSED CONDUIT
- (X) RUN DESIGNATION
- ⊗ SIGNAL HEAD SCHEDULE



*Guillermo A. Dougherty, Jr.*  
4-29-2024



NO.	REVISIONS	BY	DATE

**DOUGHERTY**  
Engineering Group, PLLC  
T&E Firm No. F-18636

**ARREDONDO, ZEPEDA & BRUNZ, LLC**  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-9900  
FIRM REGISTRATION No. F-10098

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**FLASHING BEACON**  
**US 83 AT FM 133**  
**CSJ: 0037-08-042**

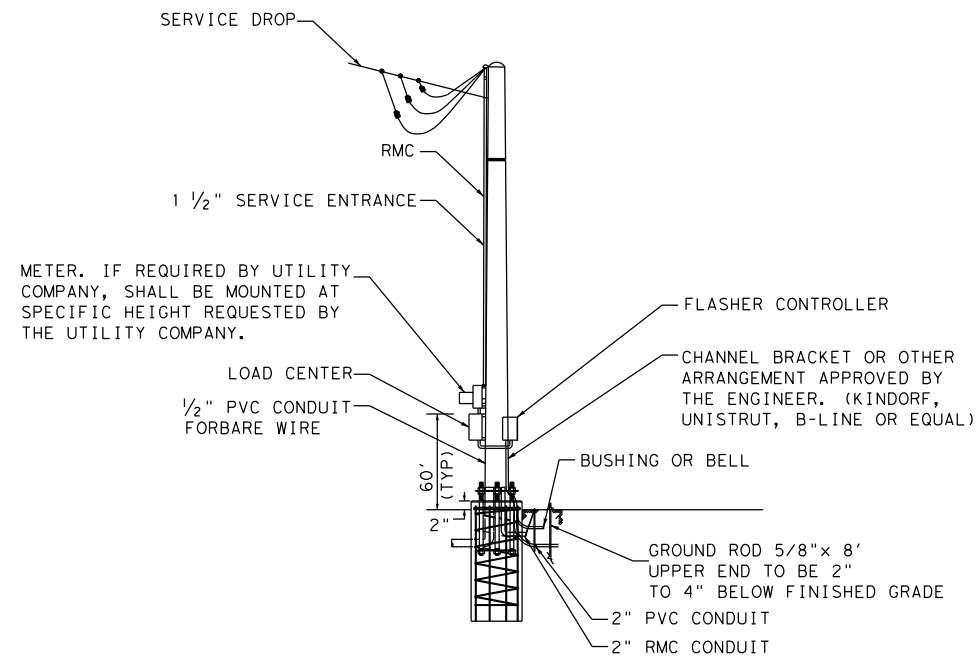
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6	C 37-8-42	277	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

**NOTES:**

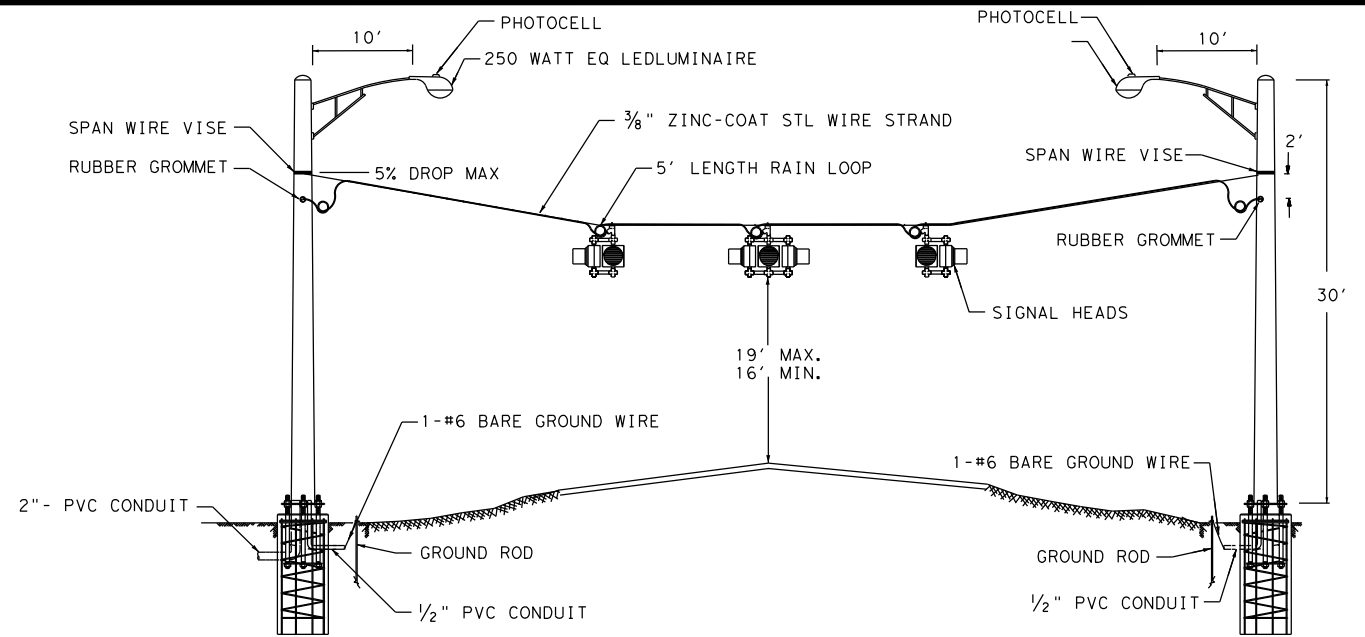
1. ALL SIGNAL CABLE MUST BE 3C/#12 AWG (IMSA APPROVED). ELECTRICAL SERVICE CABLE SHALL BE #6 AWG, AND LUMINAIRE CABLE SHALL BE 3/C#12 (TRAY CABLE) (XHHW).
2. THE LOCATION FOR THE STEEL STRAIN POLES, CONDUIT RUNS, AND ELECTRICAL SERVICE ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE LAREDO DISTRICT TRANSPORTATION OPERATIONS SECTION.
3. VERIFY WITH ALL UTILITY COMPANIES THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR DRILLING TO AVOID CONFLICT OR DAMAGE TO ALL UTILITIES.
4. FINISH AND INSTALL SIGNAL HEADS, LEDS, SIGNAL CABLE, CONDUITS, SPAN WIRE, STEEL STRAIN POLES, LUMINAIRE HEADS AND HEADS, AND POLE MOUNTED FLASHER CONTROLLER ASSEMBLY.
5. LUMINAIRE ARMS WILL BE PERPENDICULAR TO THE CENTERLINE OF US 83.

**NOTE:**

1. EXISTING FLASHING BEACON SHALL BE REMOVED.

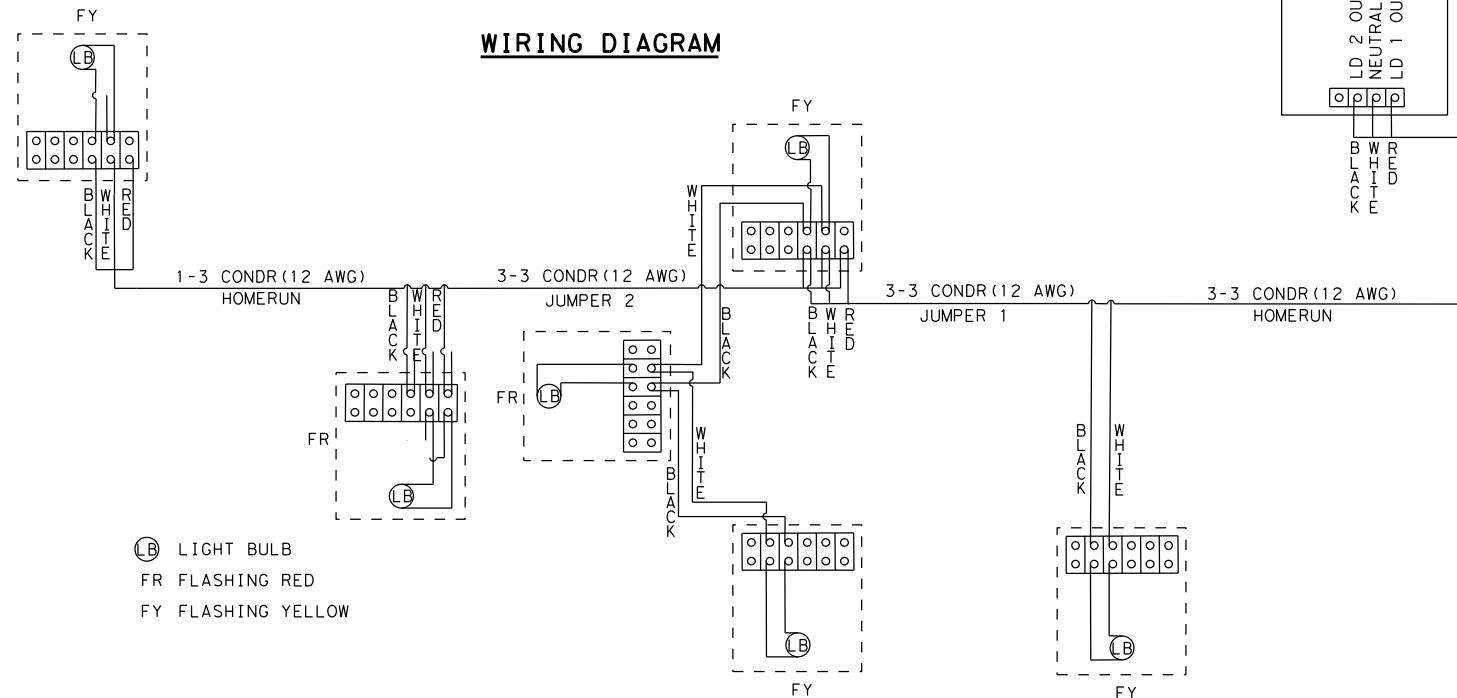


**ELECTRICAL SERVICE**



SEE STANDARD TS-FD 12 FOR FOUNDATION DETAIL

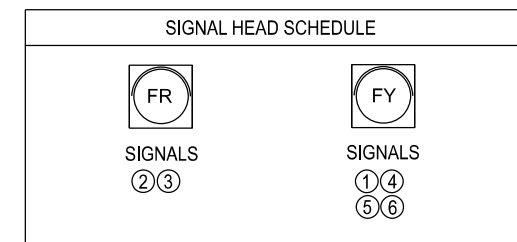
**TYPICAL FLASHING BEACON INSTALLATION**



LB LIGHT BULB  
FR FLASHING RED  
FY FLASHING YELLOW

ESTIMATE OF QUANTITIES				
Item No.	Desc. Code	Item Description	Unit	Est Quantity
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	26.4
618	6023	CONDT (PVC) (SCH 40) (2")	LF	30
620	6009	ELEC CONDUCTOR (NO.6) BARE	LF	40
620	6010	ELEC CONDR (NO.6) INSULATED	LF	20
621	6002	TRAY CABLE (3 COND) (12 AWG)	LF	450
624	6002	GROUND BOX TY A (122311)W/APRON	EA	1
624	6008	GROUND BOX TY C (162911)W/APRON	EA	1
625	6003	ZINC-COAT STL WIRE STRAND (3/8")	LF	165
628	6298	ELC SRV TY T 120 / 240 000 (NS) GS (L) SP (O)	EA	1
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1
*		FLASHER CRONTRROLLER ASSEMBLY	EA	1
*		GROUND ROD (5/8 X 10")	EA	2
*		LUMINAIRE (250 WATT EQ LED)	EA	2
*		PHOTO CELL	EA	2
682	6003	VEH SIG SEC (12")LED(YEL)	EA	4
682	6005	VEH SIG SEC (12")LED(RED)	EA	2
684	6008	TRF SIG CBL (TY A)(12 AWG)(3 COND)	LF	340
686	6008	INS TRF SIG PL AM (S)STR(TY B) LUM	EA	2
690	6100	REMOVAL TRAFFIC SIGNAL	EA	1

\* SUBSIDIARY TO BID ITEM 680

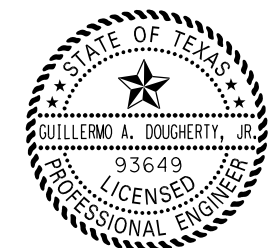


TRAFFIC SIGNAL POLES			
POLE NO.	SIGNAL POLE DESIGNATION	MAST ARM DESIGN	FOUNDATION TYPE/DEPTH
1	SPL 30 B-80	N/A	36-A/13.2'
2	SPL 30 B-80	N/A	36-A/13.2'

ELECTRICAL SCHEDULE (FOR CONTRACTOR INFORMATION ONLY)										
ITEM	QTY. (LF)	DESCRIPTION	RUN NUMBER					H		
			A	B	C	D	E		F	G
ELECTRICAL SERVICE CABLE	*20	1/C-#6 INSULATED								
	*40	1/C-#6 BARE								
LUMINARE CABLE	*450	*TRAY CABLE (3COND)(12AWG)	1	1	1	1	1	2	2	2
SIGNAL CABLE	*340	*TRAF SIG CBL(TYA)(3COND)(12AWG)		1	3	3	3	3	3	3
CONDUIT	30	CONDT (PVC) (SCHD 40) (2") (TRENCH)						1	1	1

\* QUANTITIES INCLUDE CABLE IN CABINET AND POLE HEIGHTS

ELECTRICAL SERVICE DATA											
SERVICE POLE NO.	SHEET NO.	SERVICE POLE DESCRIPTION (SEE ED(4) & (5)-14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT		TWO-POLE CONTACTOR AMPS	PANEL BD./LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	KVA LOAD
						SWITCH AMP/FUSE	CKT.BKR POLE/AMP				
4		TY T (120/240) 000 (NS) GS (L) SP(O)	1 1/2"	3/#6 AWG	N/A	N/A	N/A	N/A	70	FLASHING BEACON SAFETY LIGHTING	1.9



4-29-2024

NOT TO SCALE

NO.	REVISIONS	BY	DATE

**DOUGHERTY Engineering Group, PLLC**  
T&PE Firm No. F-18636

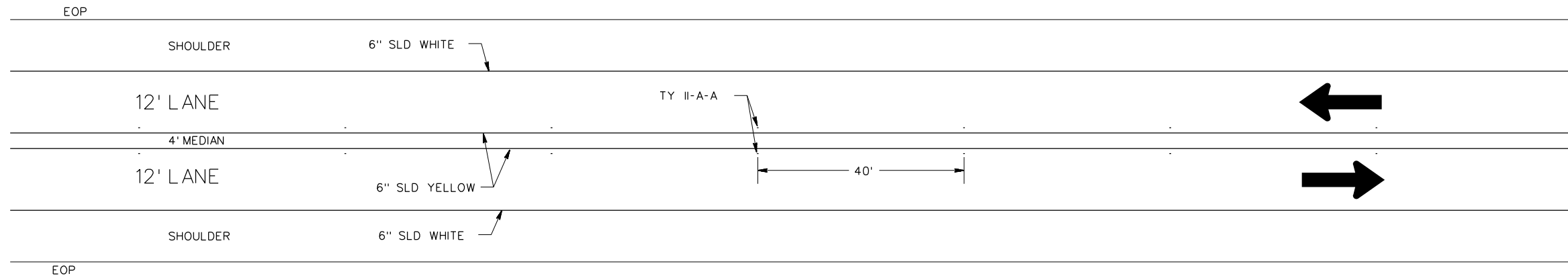
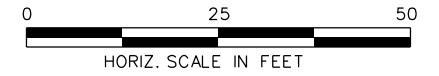
**ARREDONDO, ZEPEDA & BRUNZ, LLC**  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-9900  
FIRM REGISTRATION No. F-10098

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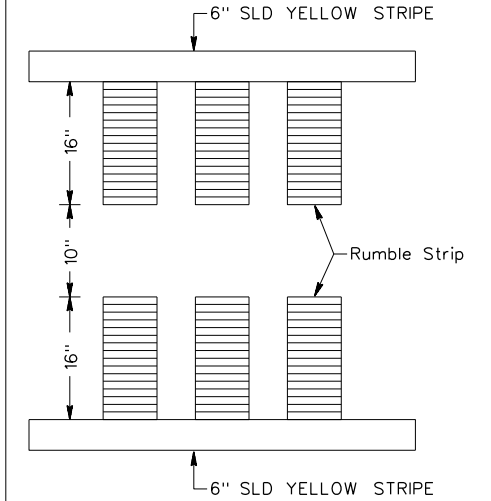
**FLASHING BEACON**  
US 83 AT FM 133  
CSJ: 0037-08-042

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.
6	C 37-8-42	278
STATE	DISTRICT	COUNTY
TEXAS	LRD	DIMMIT
CONTROL	SECTION	JOB
0037	08	042, ETC.
		HIGHWAY NO.
		US 83

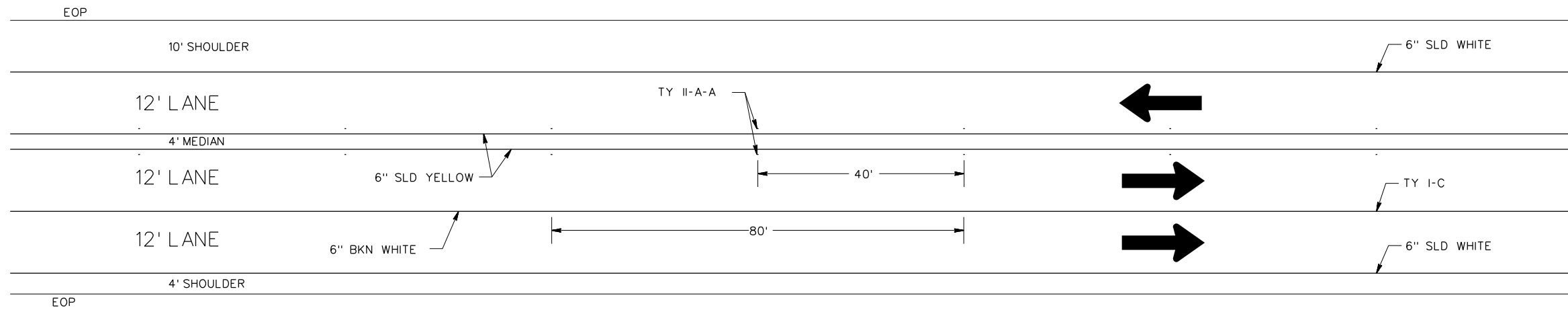
SHEET 2 OF 2



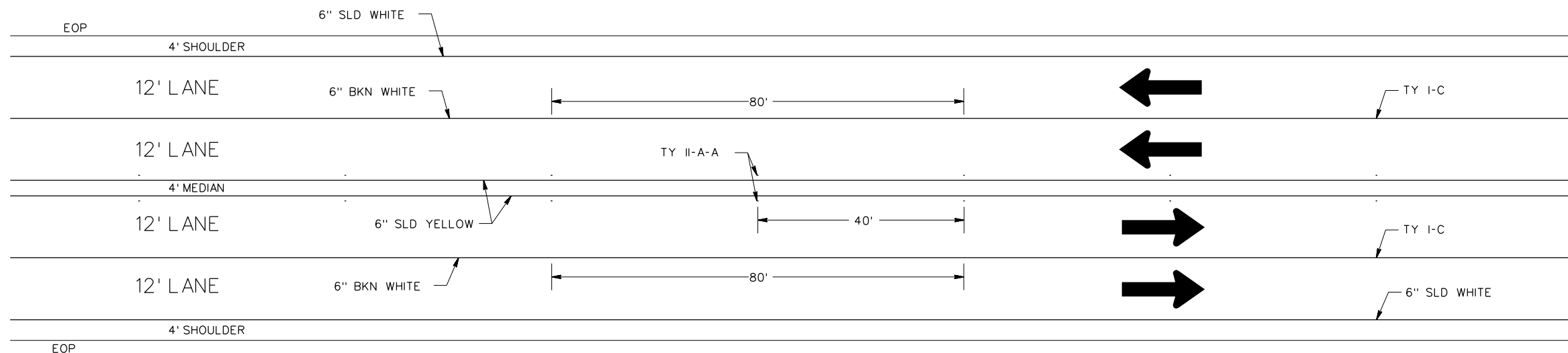
TYPICAL STRIPING FOR TWO LANE ROAD



PROFILE VIEW  
4 FT CENTERLINE  
MEDIAN



TYPICAL STRIPING FOR PASSING LANE ONE DIRECTION ONLY, MIRROR RT. SIDE



TYPICAL STRIPING FOR PASSING ZONE BOTH DIRECTIONS



SHEET 1 OF 1

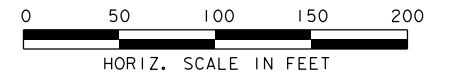
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCreedy Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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**US 83**  
**STRIPING DETAIL**  
**FOR TWO LANE ROADWAY**  
**WITH A 4' MEDIAN**

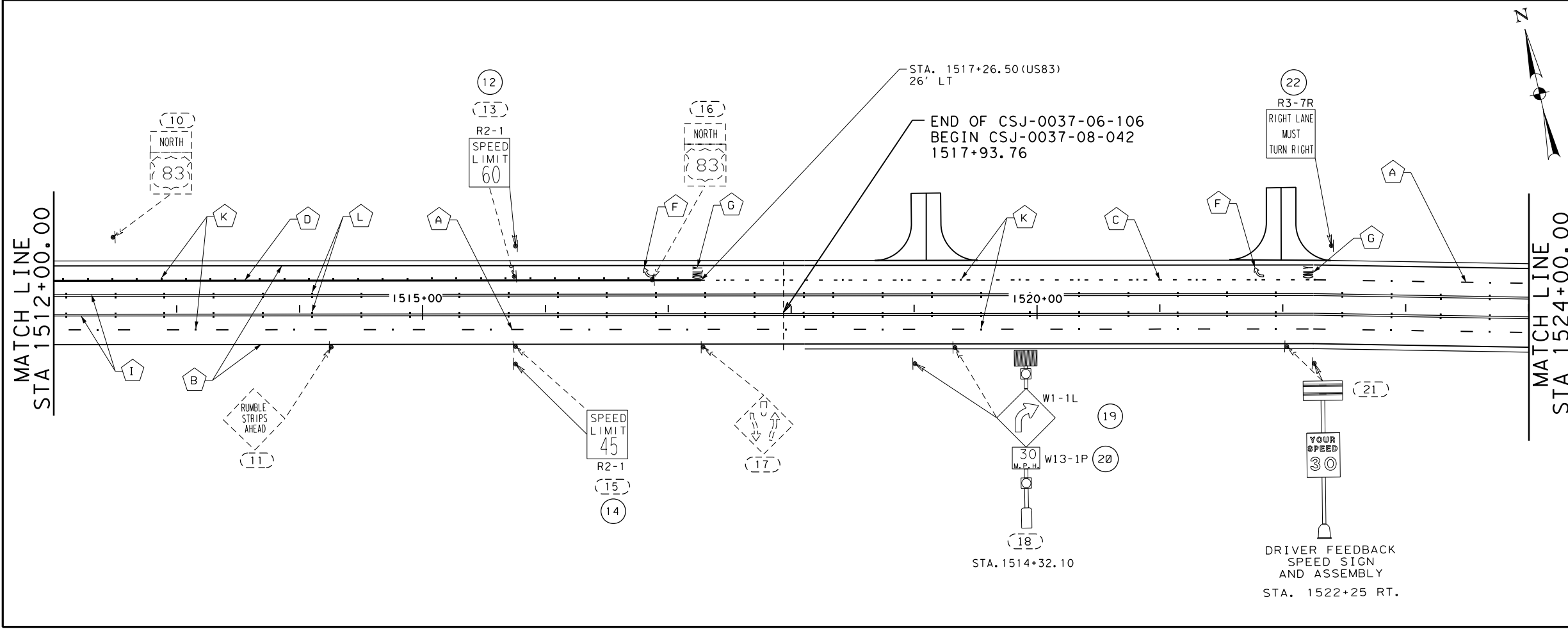
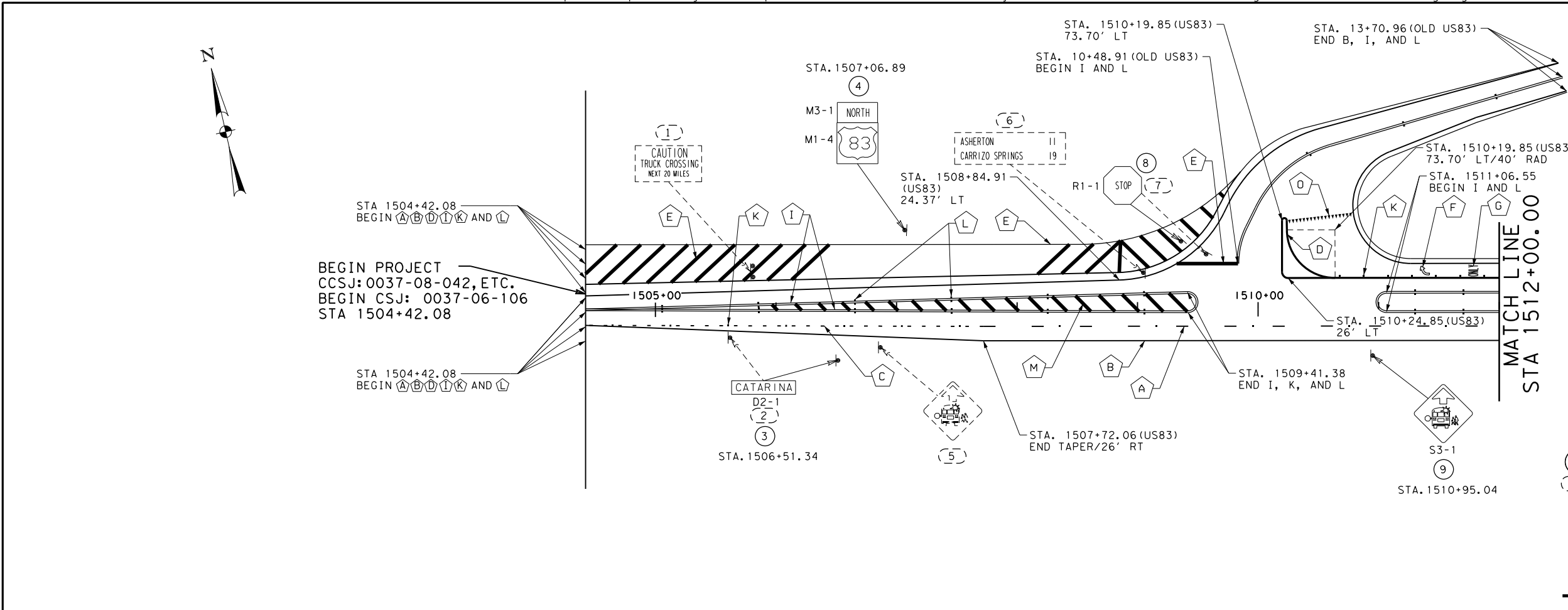
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6	C 37-8-42		279
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

(A)	W 6" BRK	(O)	YIELD LINES
(B)	W 6" SOLID		
(C)	W 6" DOT		
(D)	W 8" SOLID		
(E)	W 24" SOLID		
(F)	W ARROW		
(G)	W WORD		
(H)	Y 6" BRK		
(I)	Y 6" SOLID		
(J)	Y 12" SOLID		
(K)	TY I-C		
(L)	TY II-A-A		
(M)	Y 24" SOLID		
(N)	W DBL ARROW		

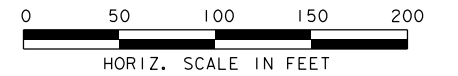
- (○) -PROPOSED SMALL SIGN
- (---○) -EXISTING SMALL SIGN TO BE REMOVED
- (|) -OBJECT MARKER (OM-2X) (WC) (GND)
- (|) -PROPOSED SIGN POST
- (---) -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- (---) -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- (→) -DIRECTION OF TRAFFIC



STATE OF TEXAS  
 JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
*Juan Flores*  
 5-2-2024

SHEET 1 OF 24

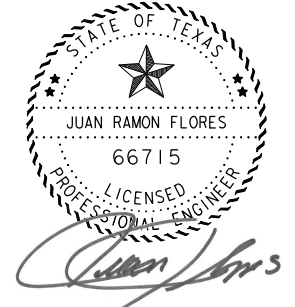
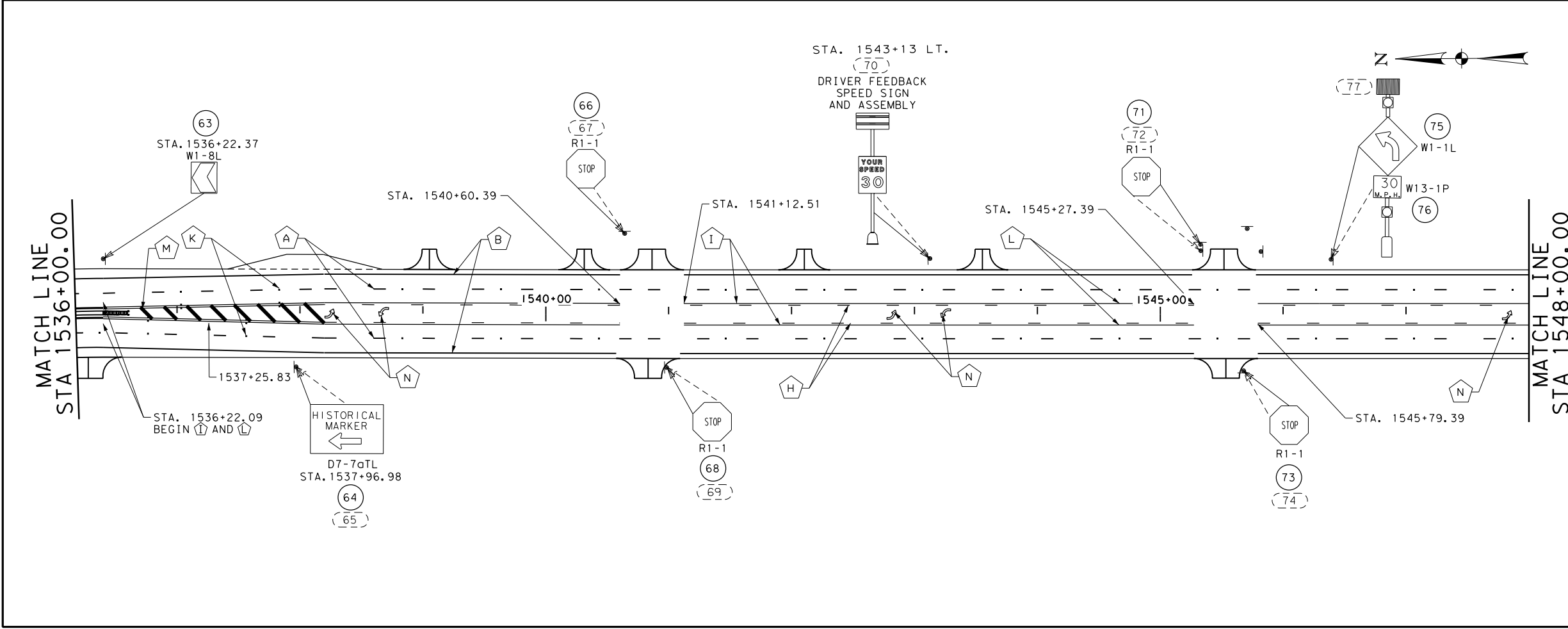
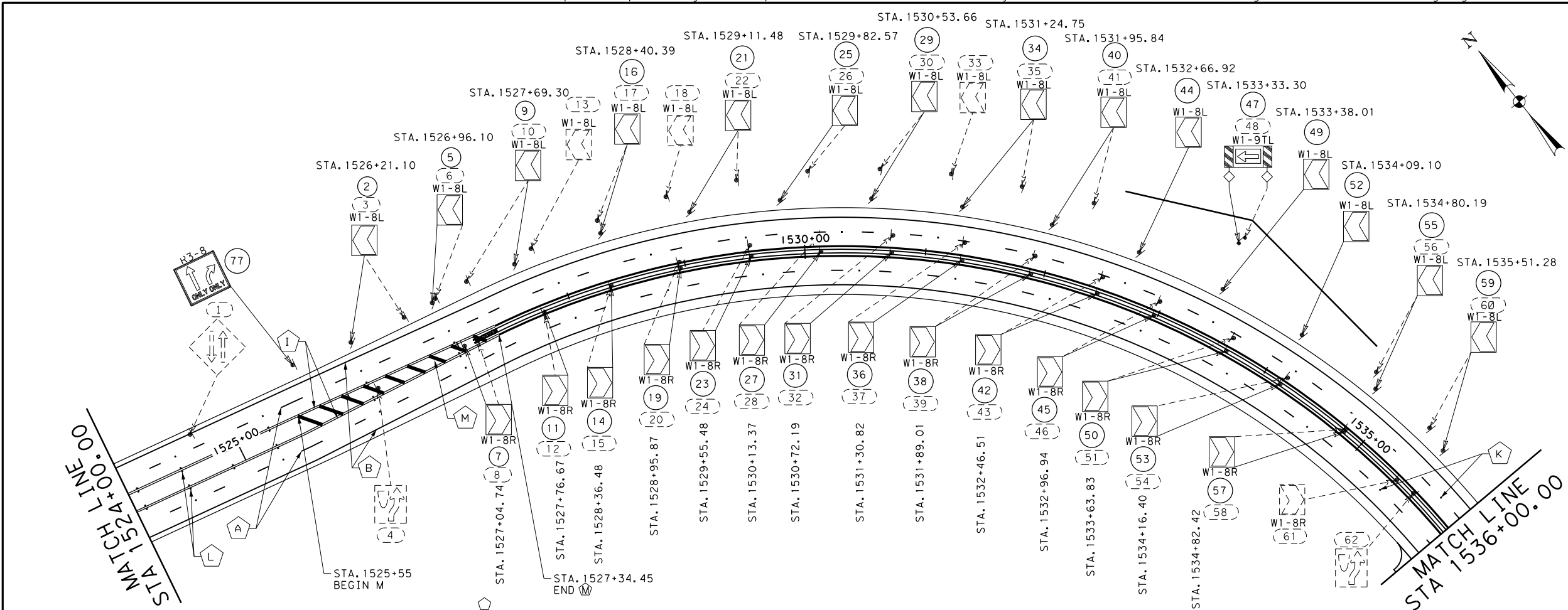
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
Texas Department of Transportation ©2024 by Texas Department of Transportation, all rights reserved.			
US 83 SIGNING AND PAVEMENT MARKINGS STA 1504+40 TO STA 1524+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	280	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

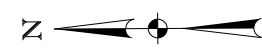
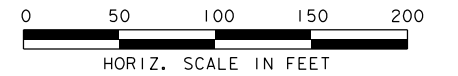
- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- † -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊗ -DELINATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊛ -DELINATOR (D-SW) (SZ2) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC



5-2-2024

SHEET 2 OF 24

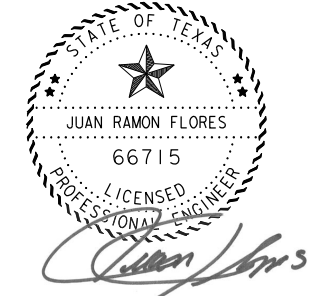
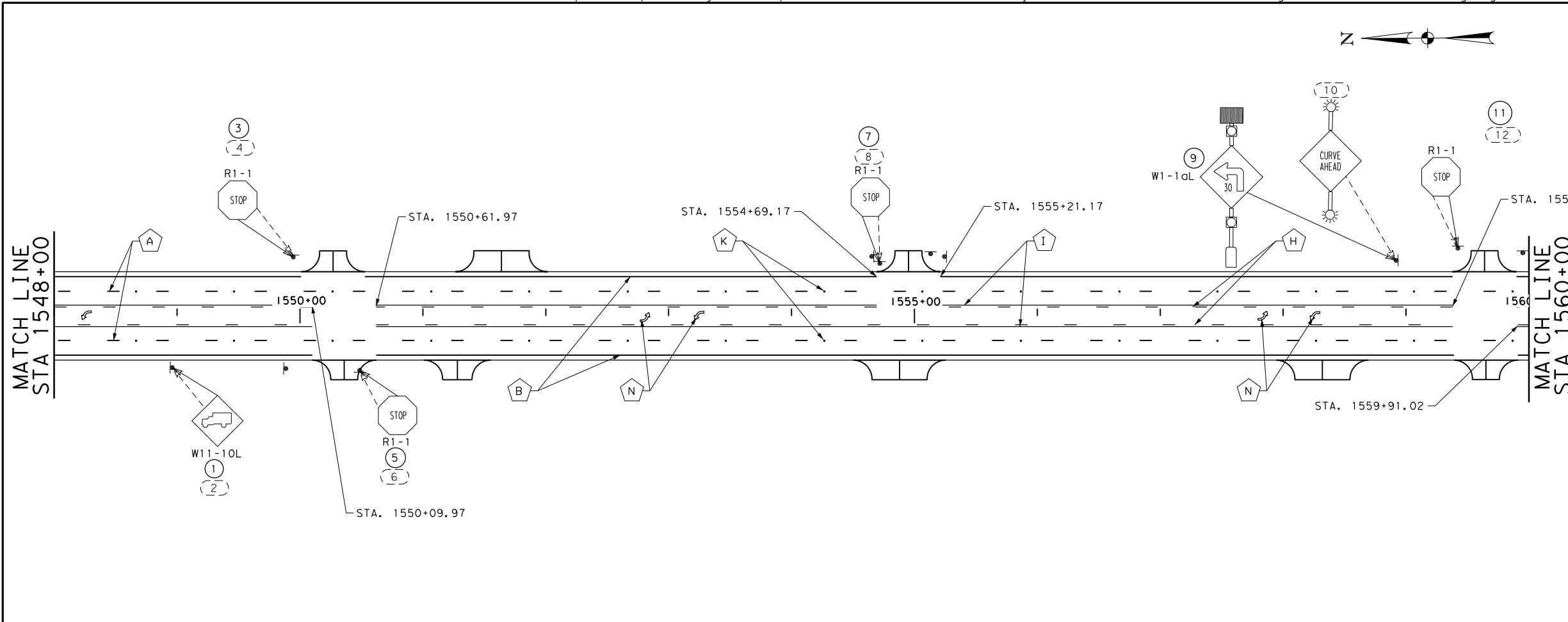
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SIGNING AND</b> <b>PAVEMENT MARKINGS</b> <b>STA 1524+00 TO STA 1548+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	281	
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



LEGEND

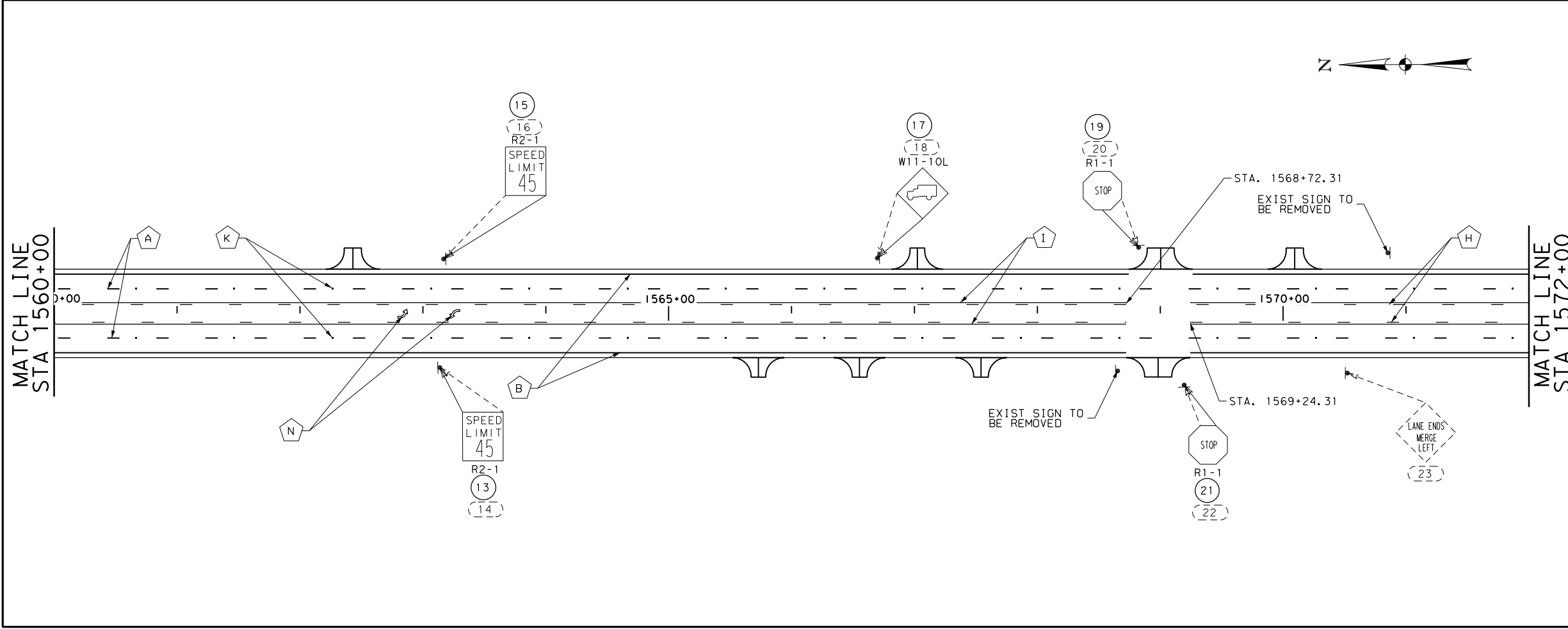
A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- † -OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- ⊞ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ★ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC

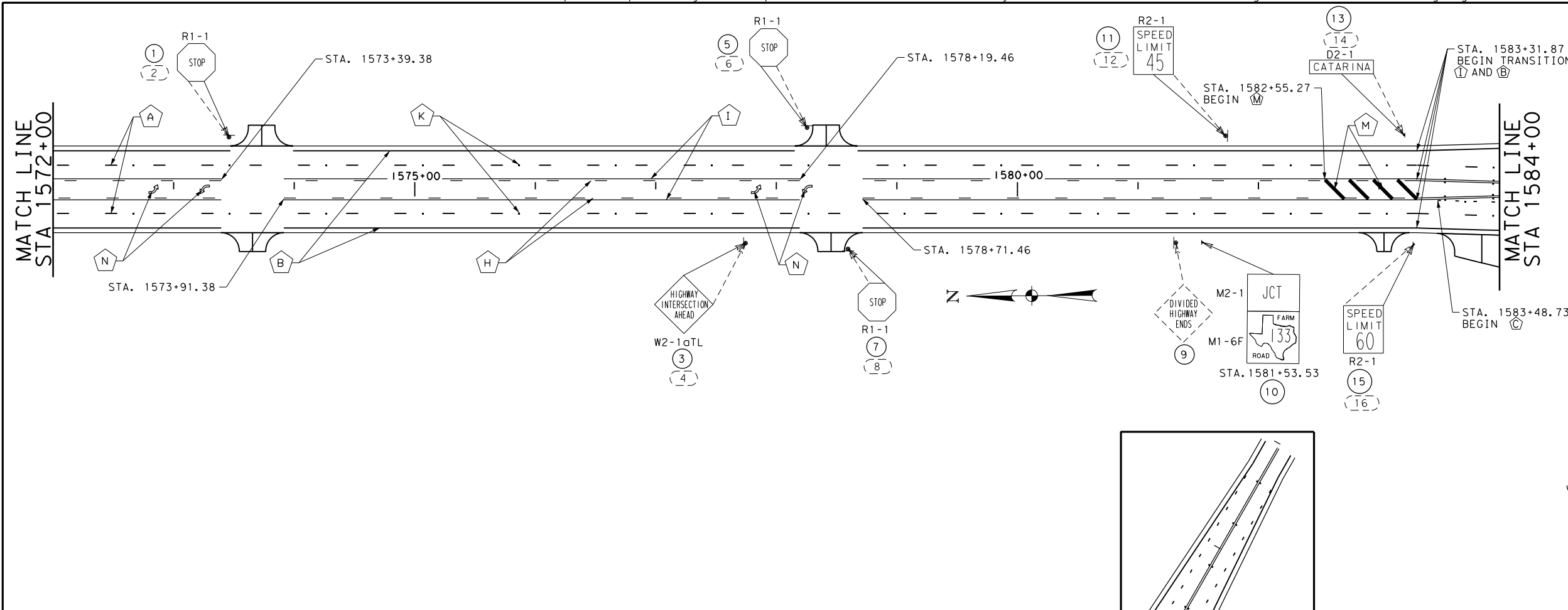


5-2-2024

SHEET 3 OF 24



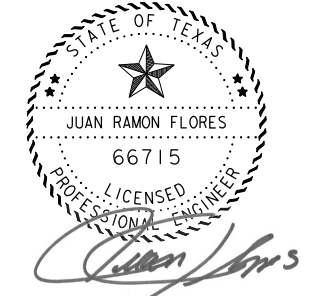
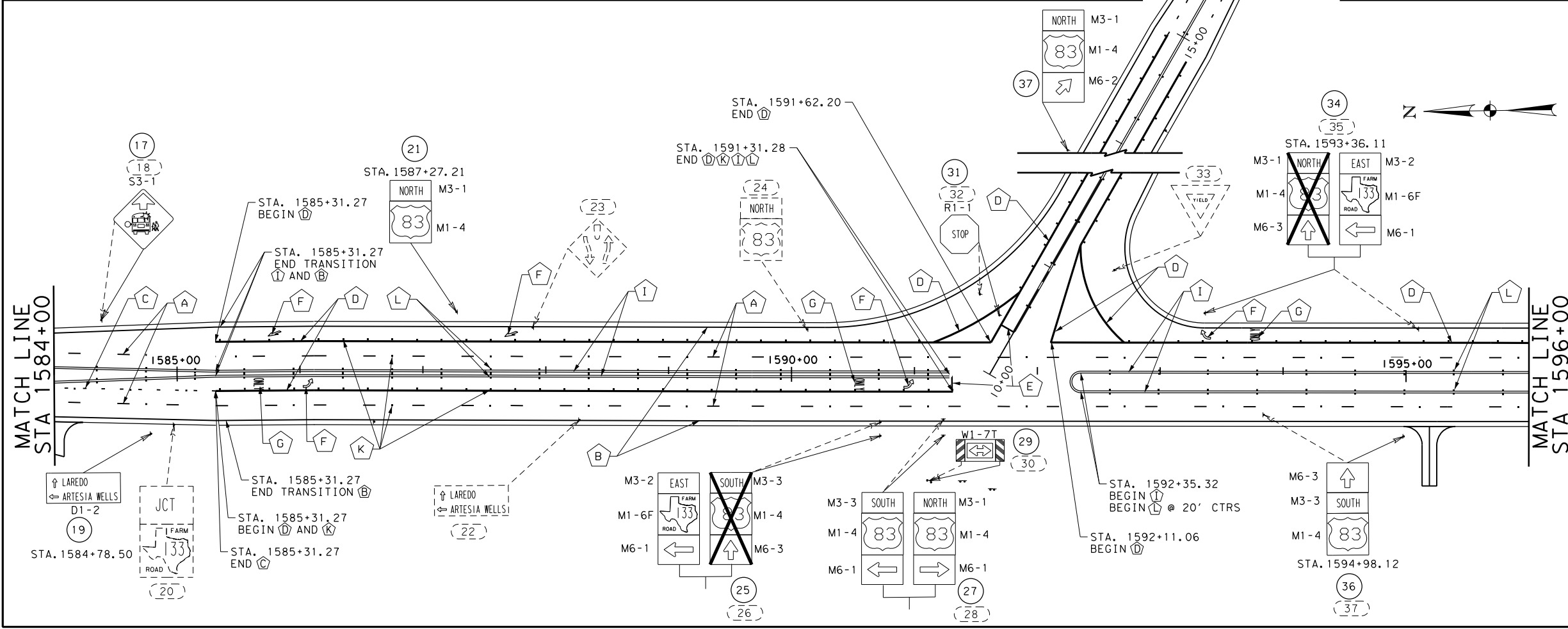
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SIGNING AND</b> <b>PAVEMENT MARKINGS</b> <b>STA 1548+00 TO STA 1572+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	282	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



**LEGEND**

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- ⊘ -DEL INEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊙ -DEL INEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC

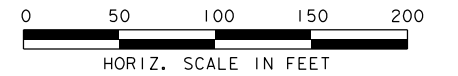


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SHEET 4 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SIGNING AND</b> <b>PAVEMENT MARKINGS</b> <b>STA 1572+00 TO STA 1596+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	283	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

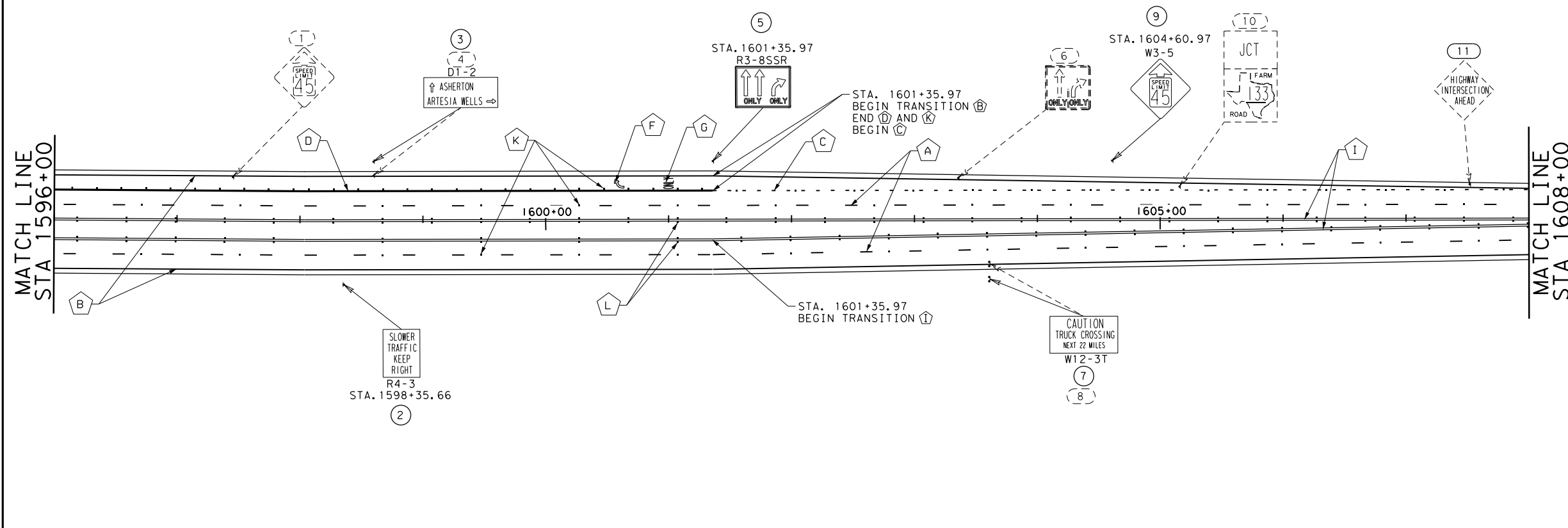




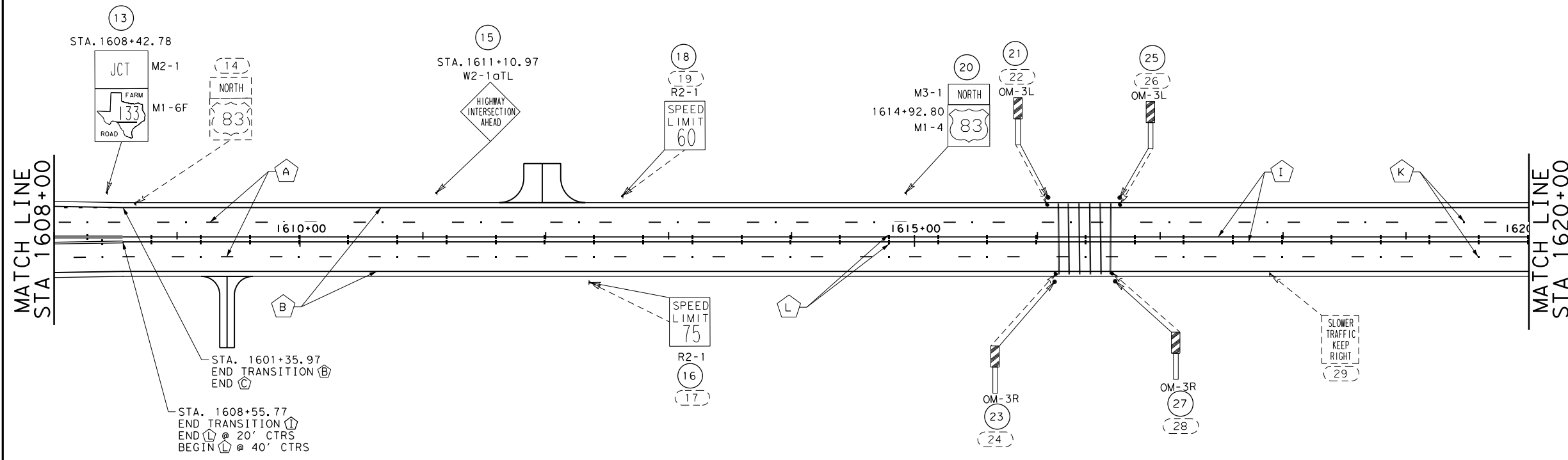
LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊘ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊙ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC

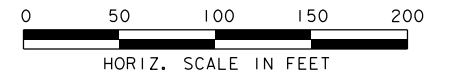


STATE OF TEXAS  
 JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
 5-2-2024



SHEET 5 OF 24

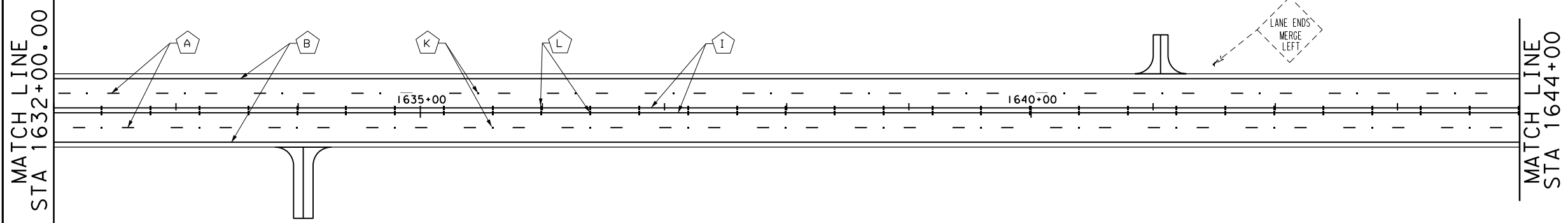
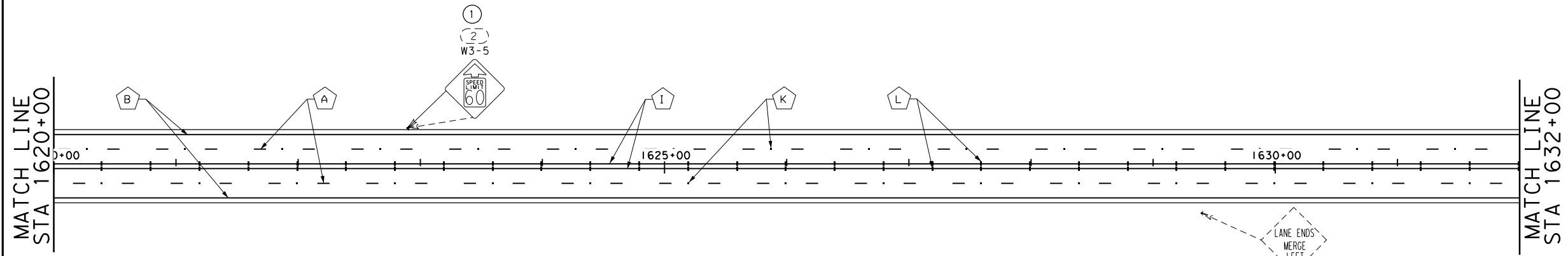
NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SIGNING AND</b> <b>PAVEMENT MARKINGS</b> <b>STA 1596+00 TO STA 1620+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	284	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

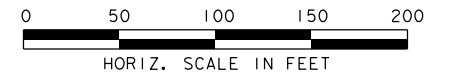
- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ⊞ -OBJECT MARKER (OM-2X) (WC) (GND)
- ⊞ -PROPOSED SIGN POST
- ⊞ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊞ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC



5-2-2024

SHEET 6 OF 24

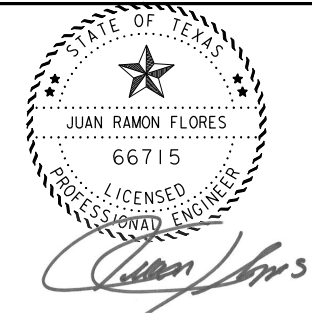
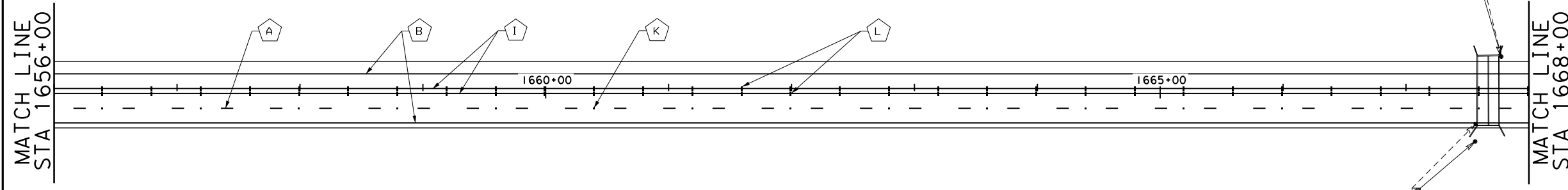
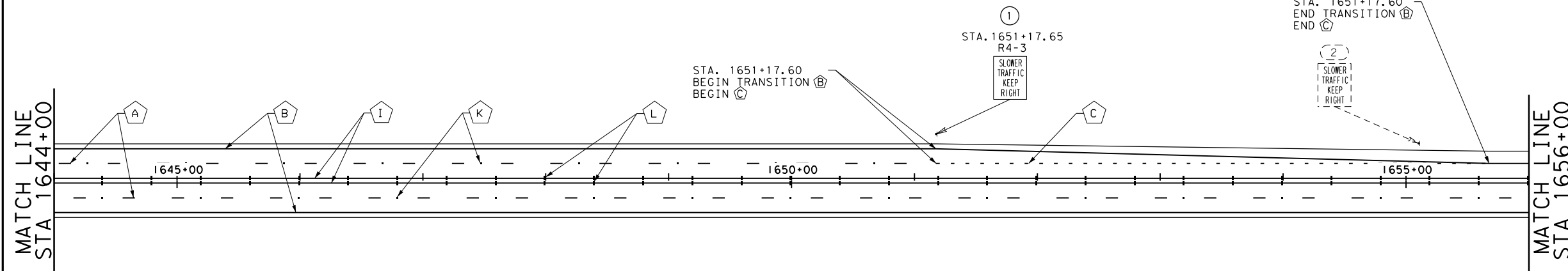
NO.	REVISIONS	BY	DATE
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<b>US 83 SIGNING AND PAVEMENT MARKINGS STA 1620+00 TO STA 1644+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		285
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

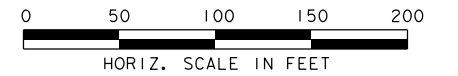
- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- ⊗ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊙ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC



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SHEET 7 OF 24

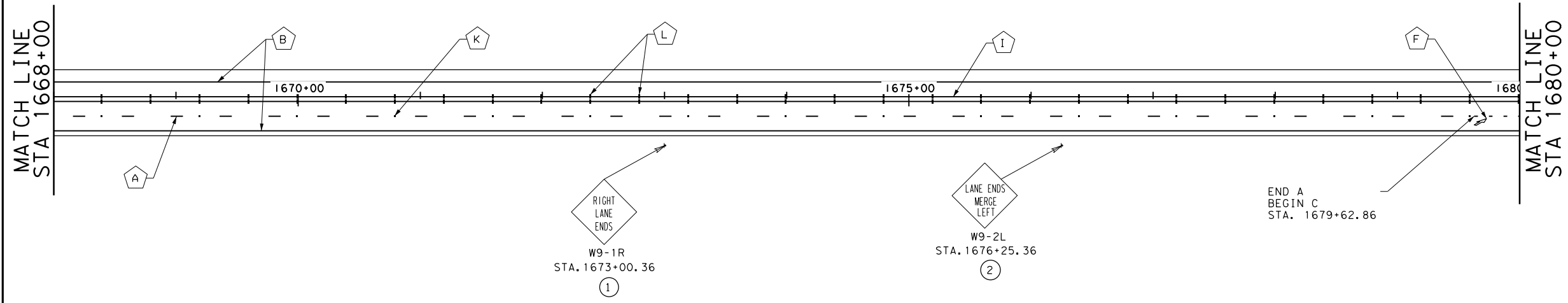
NO.		REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098				
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1644+00 TO STA 1668+00				
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.	
6	C 37-8-42		286	
STATE	DISTRICT	COUNTY		
TEXAS	LRD	DIMMIT		
CONTROL	SECTION	JOB	HIGHWAY NO.	
0037	08	042, ETC.	US 83	



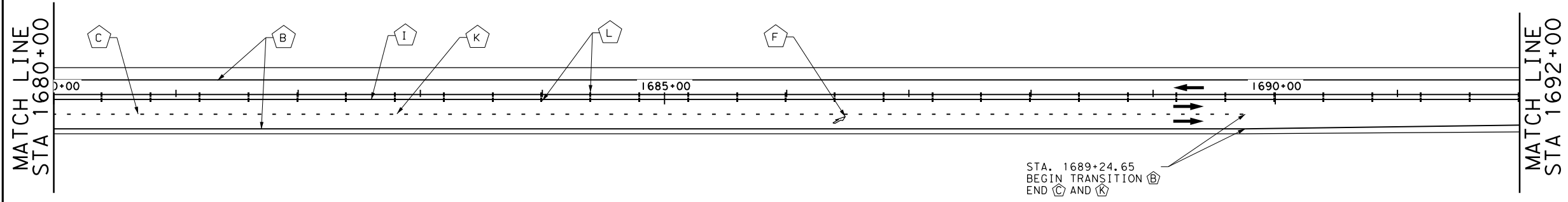
LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ⊥ -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊞ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊞ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC



STATE OF TEXAS  
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66715  
LICENSED PROFESSIONAL ENGINEER  
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SHEET 8 OF 24

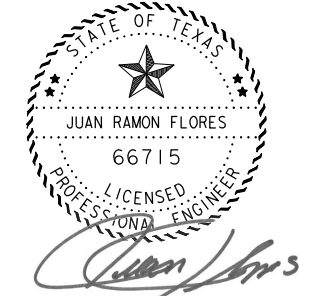
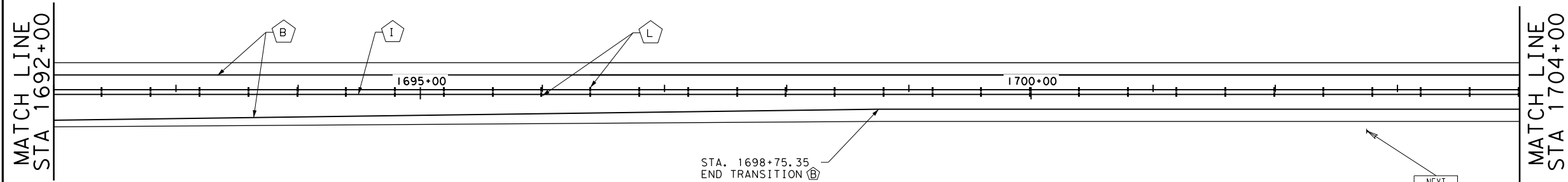
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1688+00 TO STA 1692+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	287	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



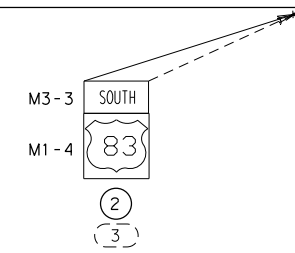
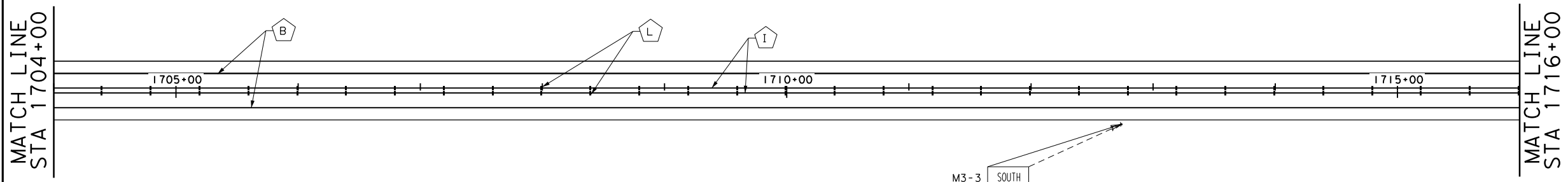
LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- † -OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- ⊞ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊞ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC

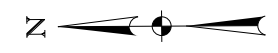
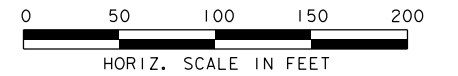


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SHEET 9 OF 24

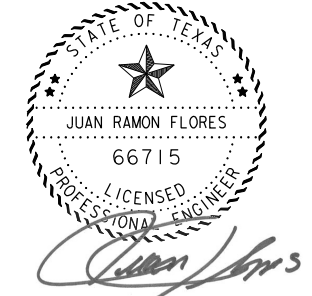
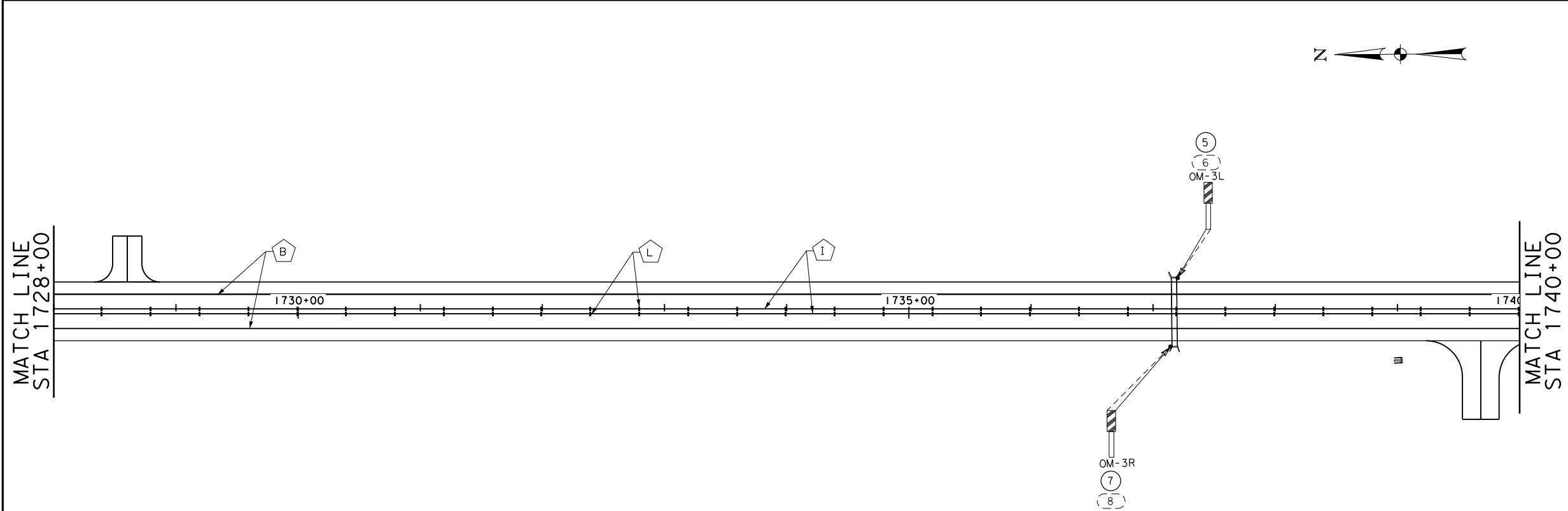
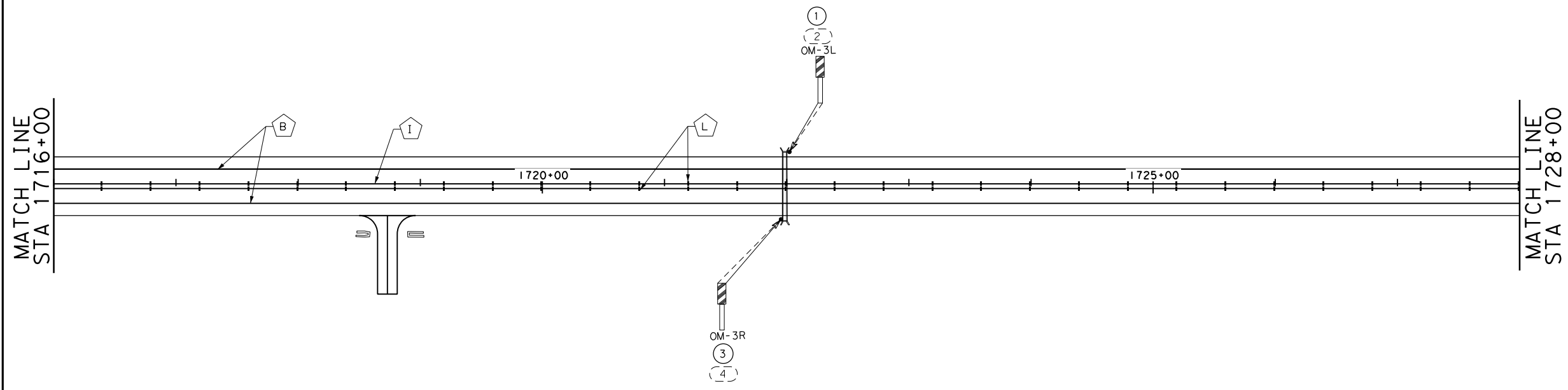
NO.	REVISIONS	BY	DATE
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1692+00 TO STA 1716+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		288
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER(OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊞ -DELINEATOR(D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊞ -DELINEATOR(D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC



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SHEET 10 OF 24

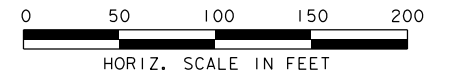
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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US 83  
 SIGNING AND  
 PAVEMENT MARKINGS  
 STA 1716+00 TO STA 1740+00

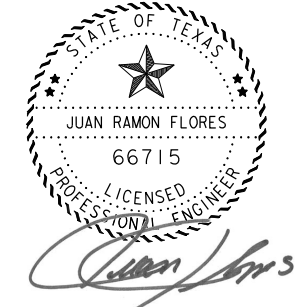
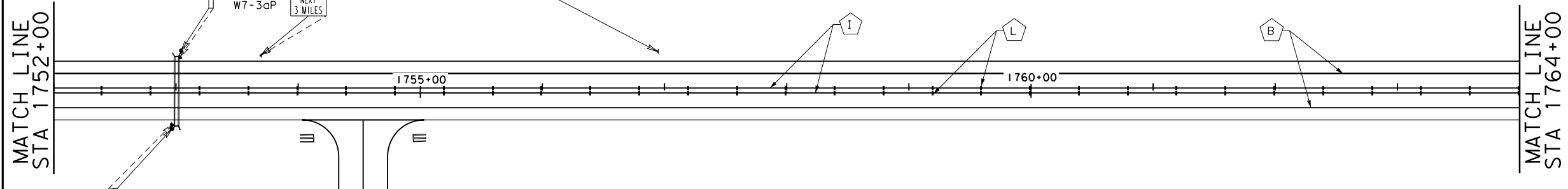
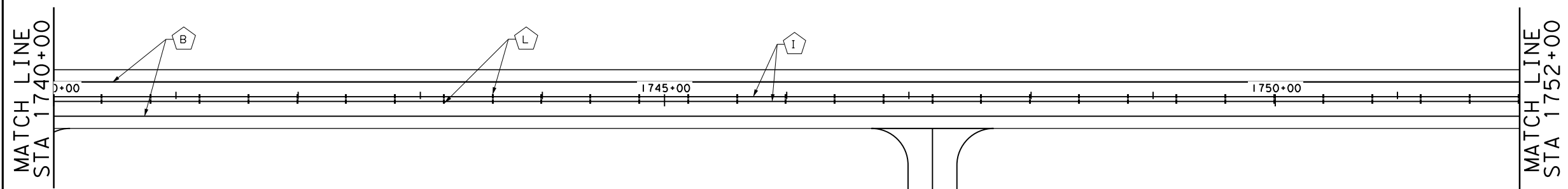
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	289	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

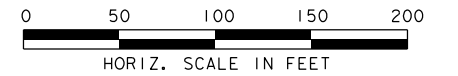
- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ≡ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⬢ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC



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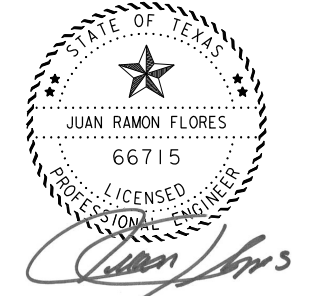
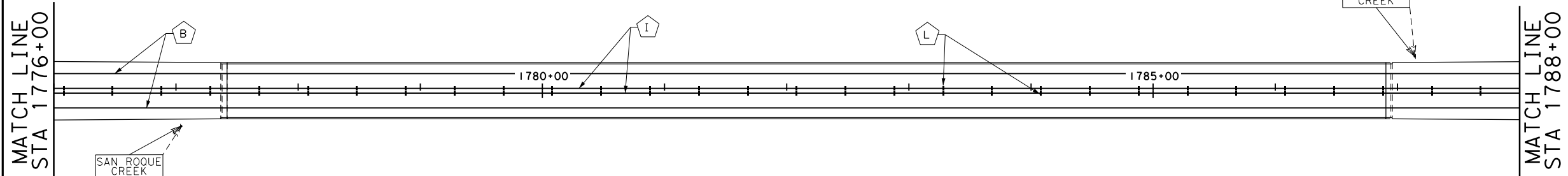
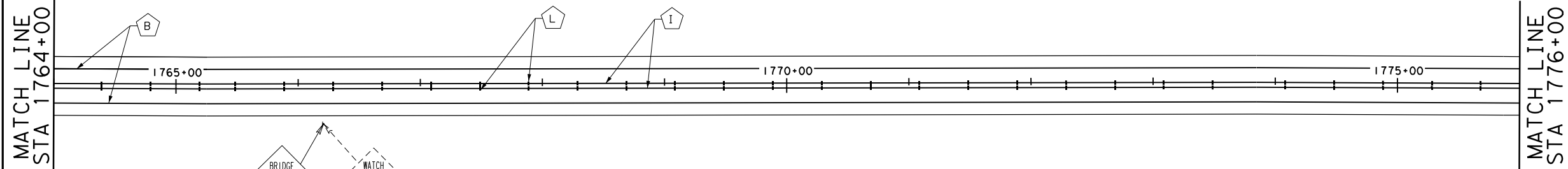
NO. REVISIONS BY DATE			
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation, all rights reserved.			
US 83 SIGNING AND PAVEMENT MARKINGS STA 1740+00 TO STA 1764+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		290
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ! -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊞ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊞ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC

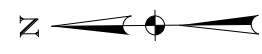
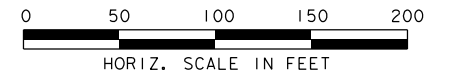


5-2-2024

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NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SIGNING AND PAVEMENT MARKINGS</b> <b>STA 1764+00 TO STA 1788+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		291
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

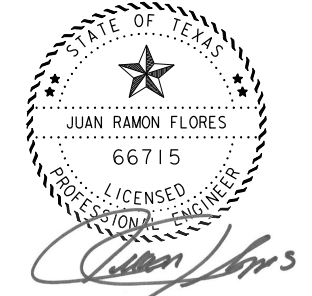
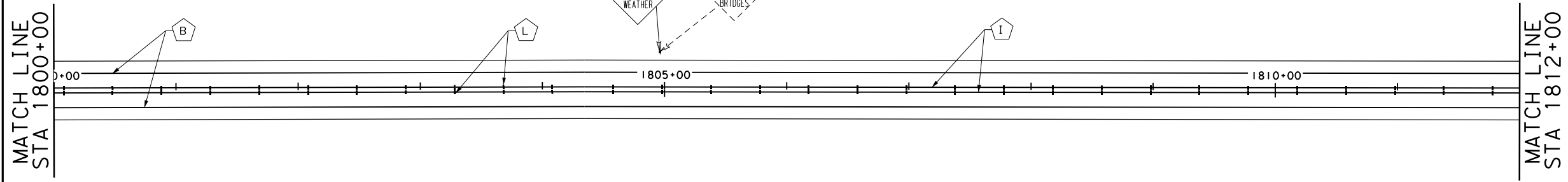
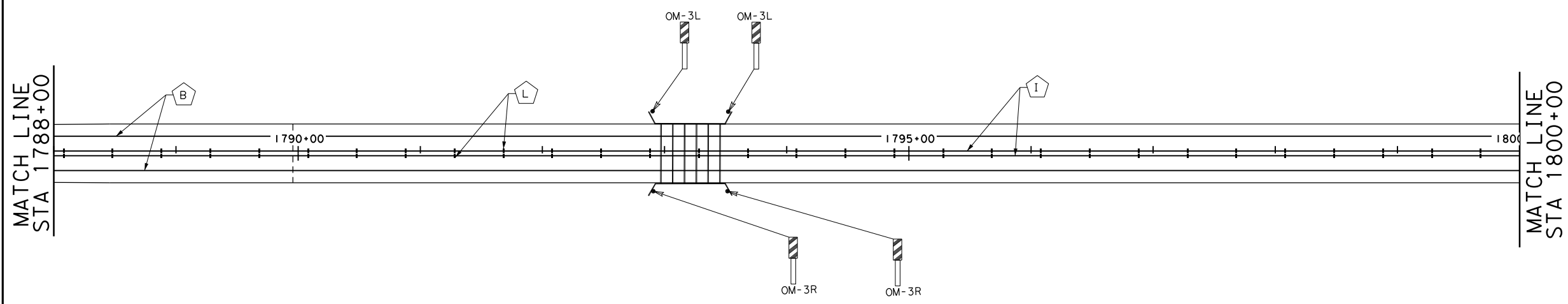




LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊘ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊙ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC



5-2-2024

SHEET 13 OF 24

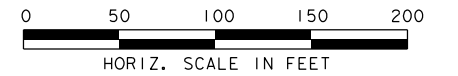
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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US 83  
 SIGNING AND  
 PAVEMENT MARKINGS  
 STA 1788+00 TO STA 1812+00

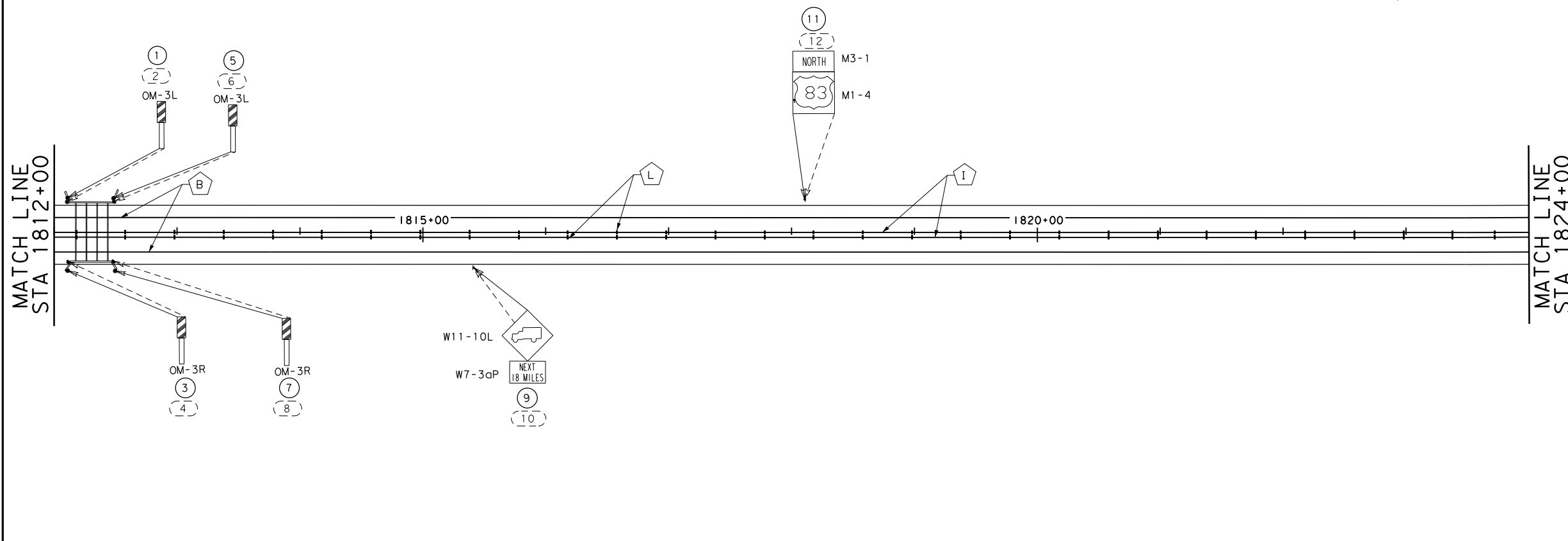
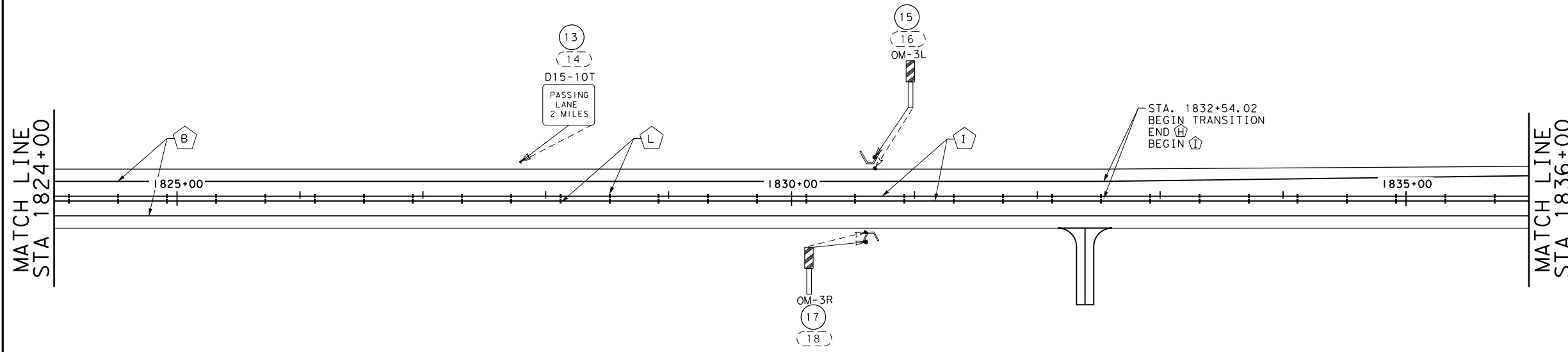
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		292
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



LEGEND

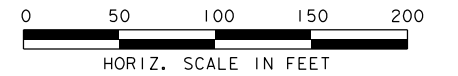
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B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- PROPOSED SMALL SIGN
- EXISTING SMALL SIGN TO BE REMOVED
- OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- DIRECTION OF TRAFFIC

SHEET 14 OF 24

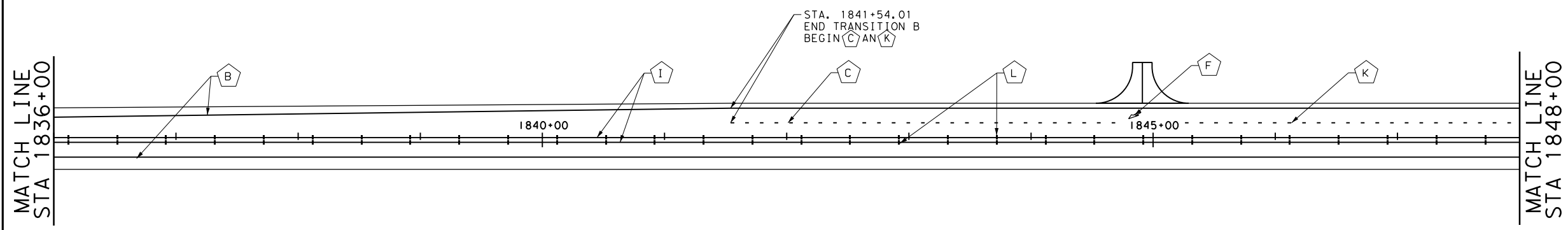
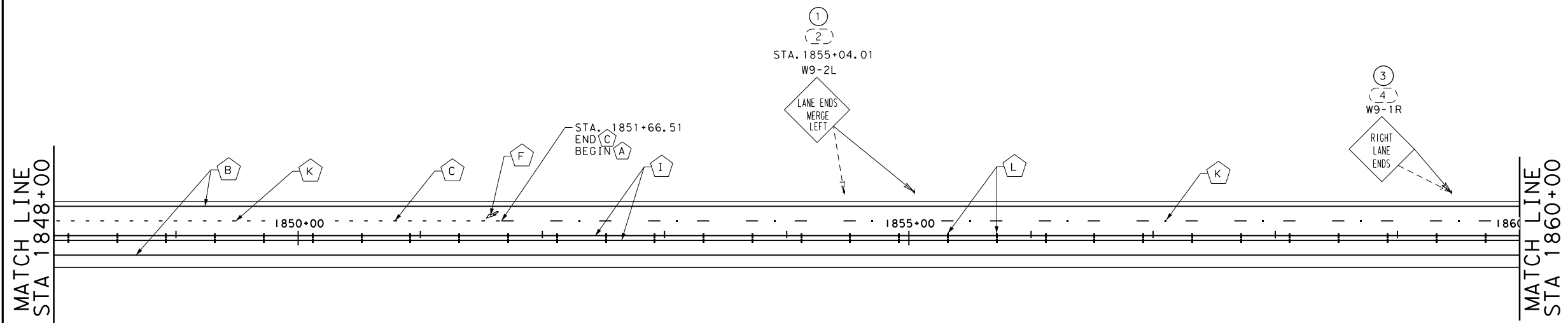
NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SIGNING AND PAVEMENT MARKINGS</b> <b>STA 1812+00 TO STA 1836+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	293	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

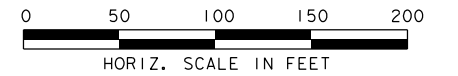
A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- PROPOSED SMALL SIGN
- EXISTING SMALL SIGN TO BE REMOVED
- OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- DIRECTION OF TRAFFIC

SHEET 15 OF 24

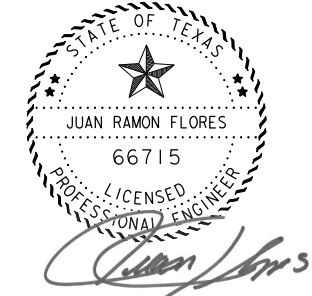
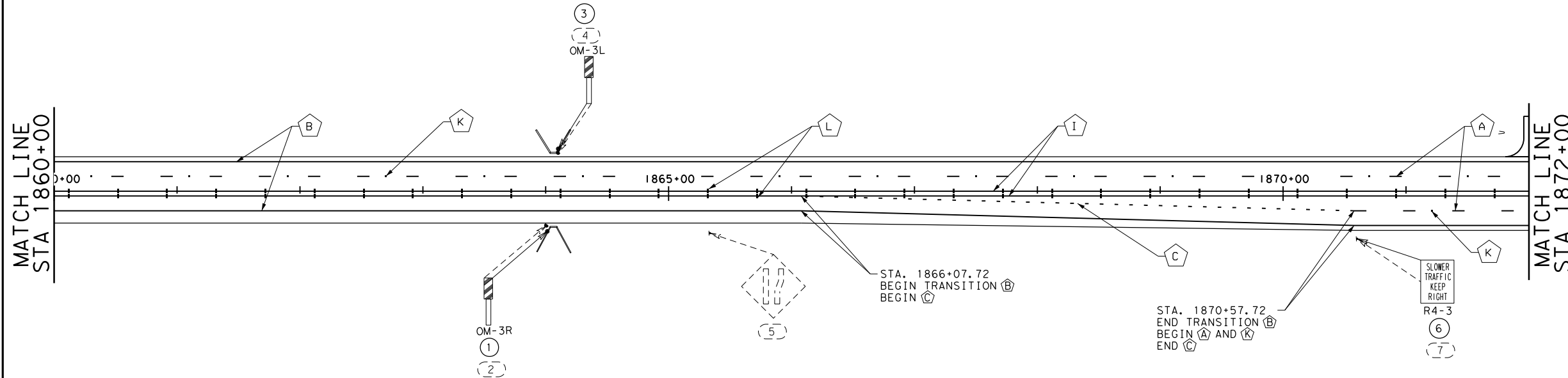
SHEET 15 OF 24			
NO.	REVISIONS	BY	DATE
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1836+00 TO STA 1860+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	294	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

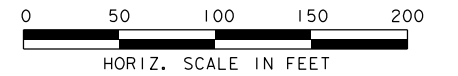
- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- ⊕ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊕ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC



5-2-2024

SHEET 16 OF 24

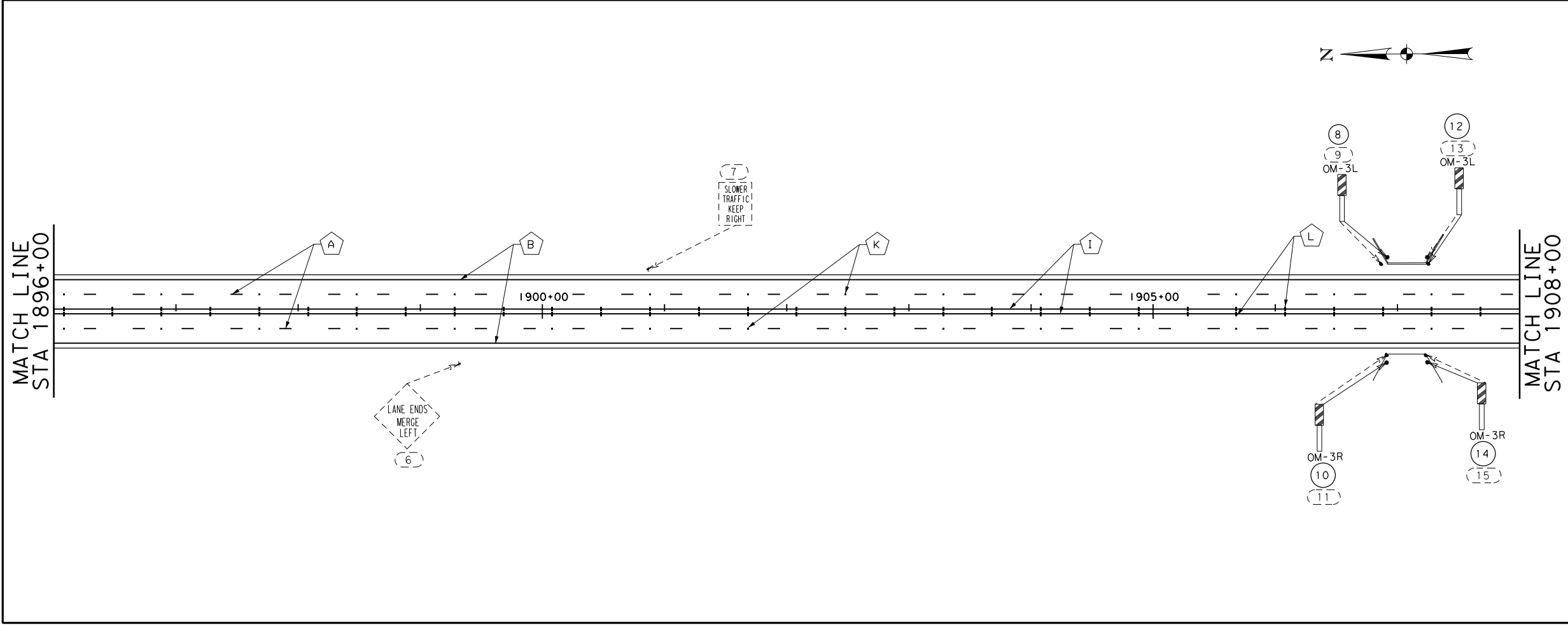
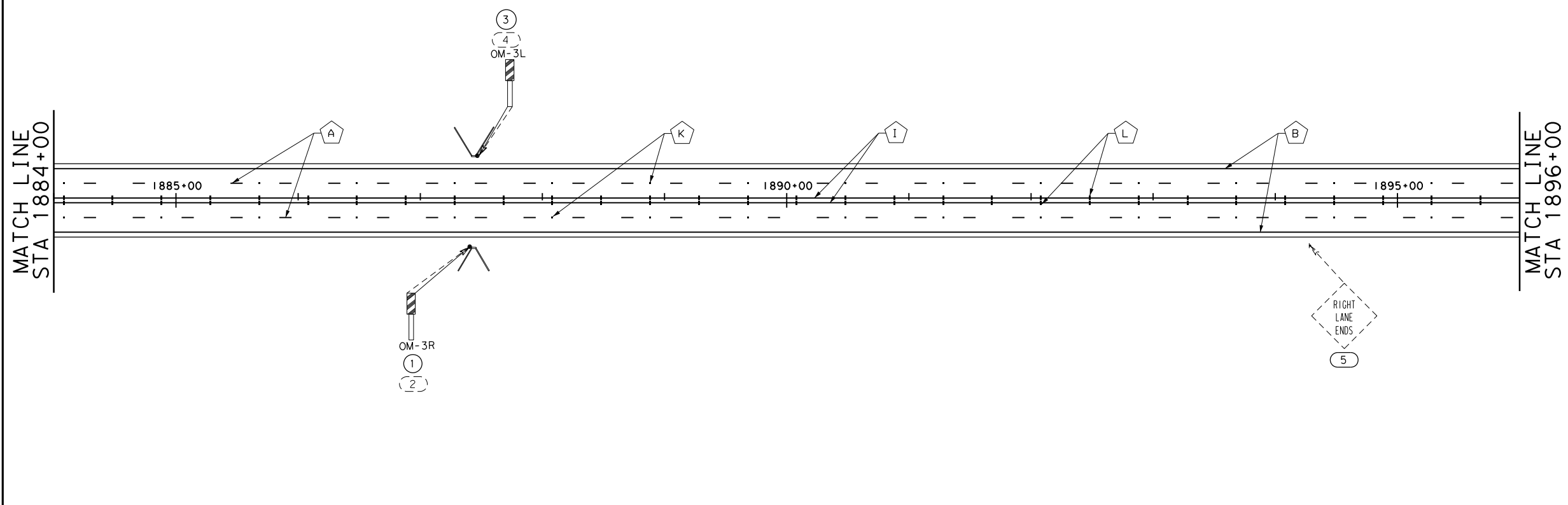
NO.	REVISIONS	BY	DATE
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<b>US 83 SIGNING AND PAVEMENT MARKINGS STA 1860+00 TO STA 1884+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		295
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

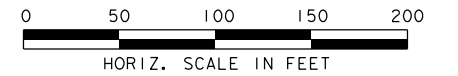
- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ⊥ -OBJECT MARKER (OM-2X) (WC) (GND)
- ⊥ -PROPOSED SIGN POST
- ⊥ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊥ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC



STATE OF TEXAS  
 JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
 5-2-2024

SHEET 17 OF 24

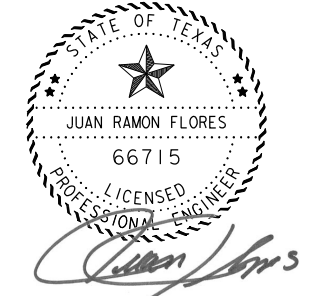
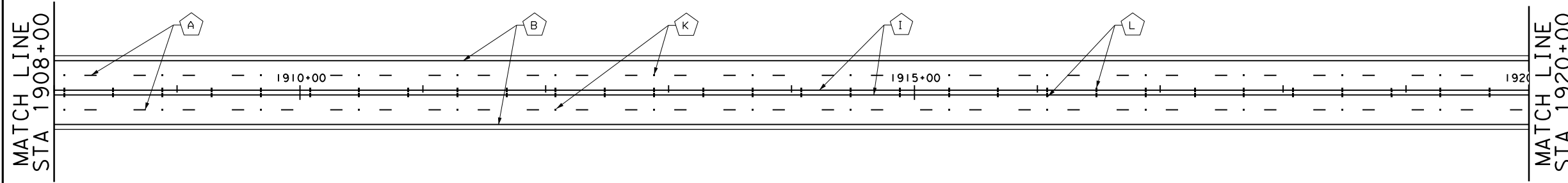
NO.	REVISIONS	BY	DATE
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1884+00 TO STA 1908+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		296
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



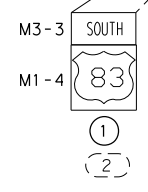
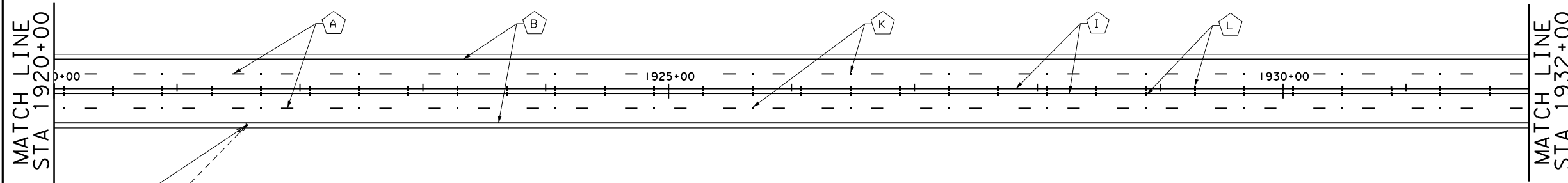
LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊞ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊞ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC

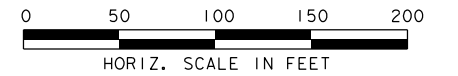


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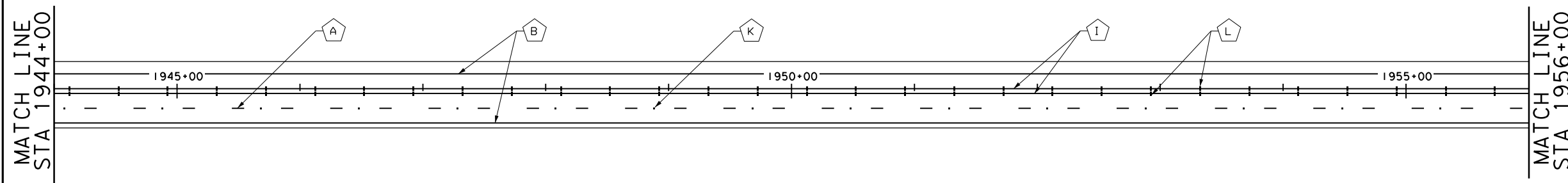
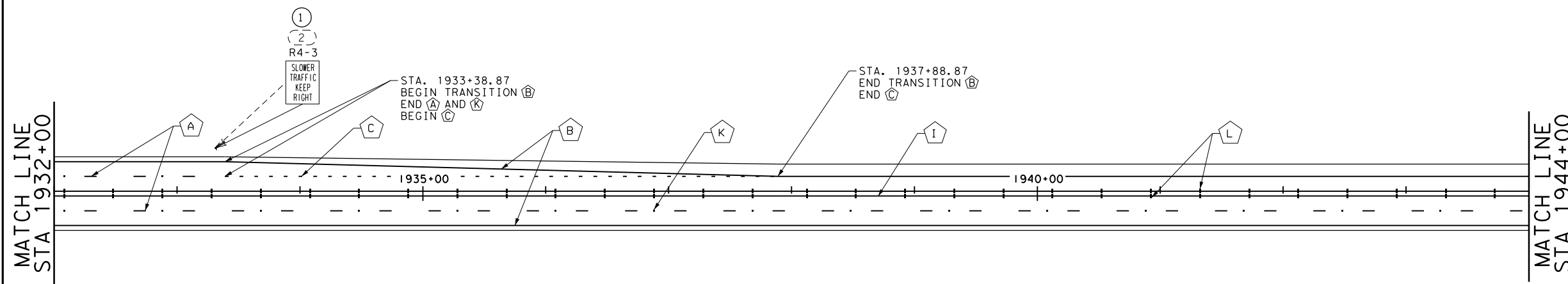
NO. REVISIONS BY DATE			
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1908+00 TO STA 1932+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		297
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

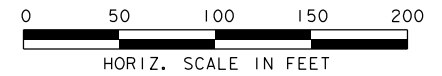
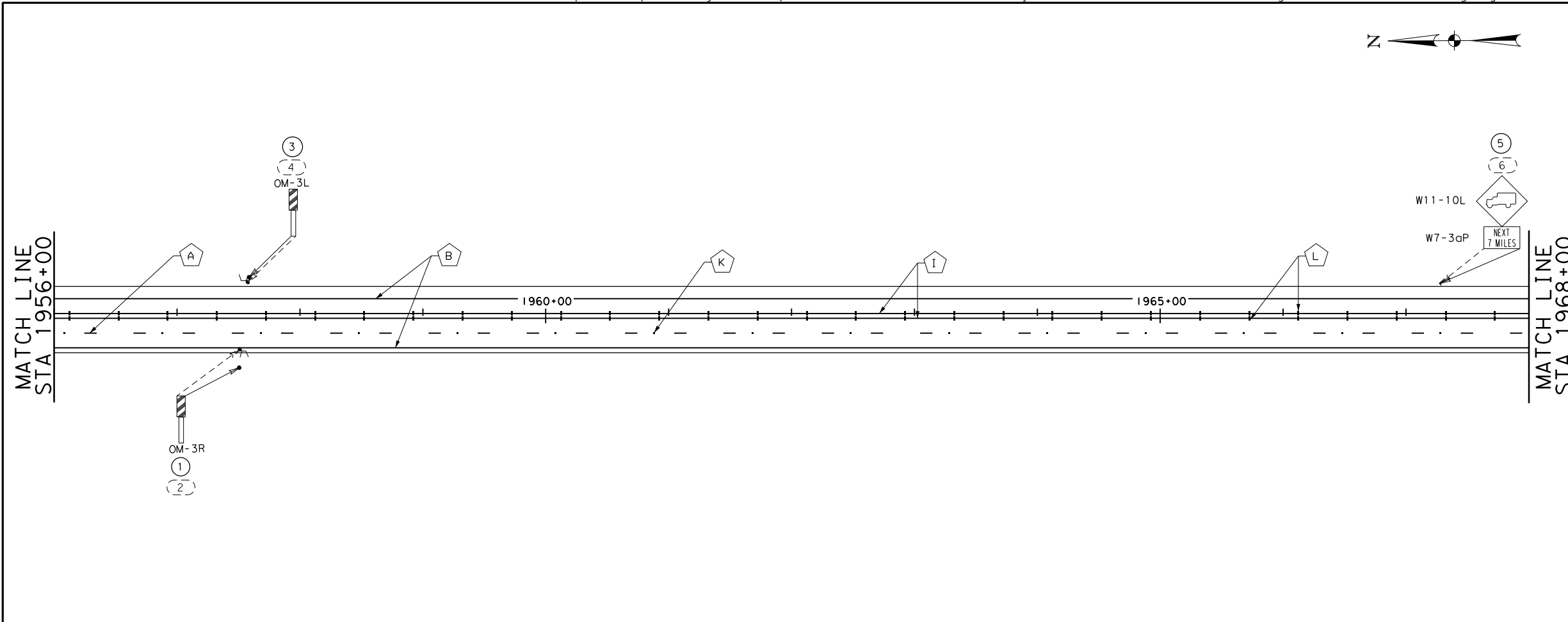
- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- † -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊘ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊙ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC



JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
*Juan Flores*  
 5-2-2024

SHEET 19 OF 24

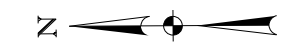
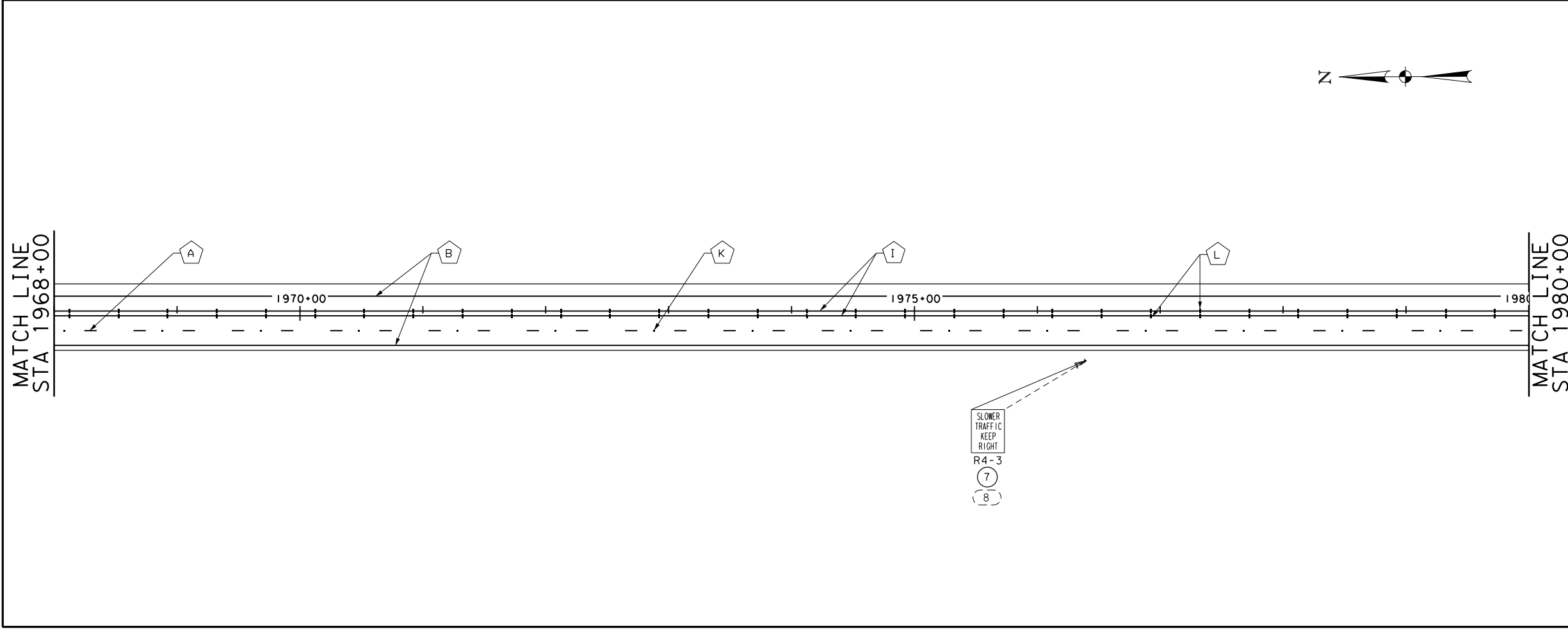
NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1932+00 TO STA 1956+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	298	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- ▬ -OBJECT MARKER (OM-2X) (WC) (GND)
- ⊥ -PROPOSED SIGN POST
- ⊥ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊥ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC

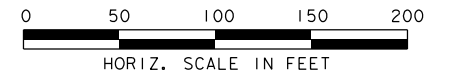


JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
*Juan Flores*  
 5-2-2024

SHEET 20 OF 24

NO.	REVISIONS	BY	DATE
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1956+00 TO STA 1980+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	299	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

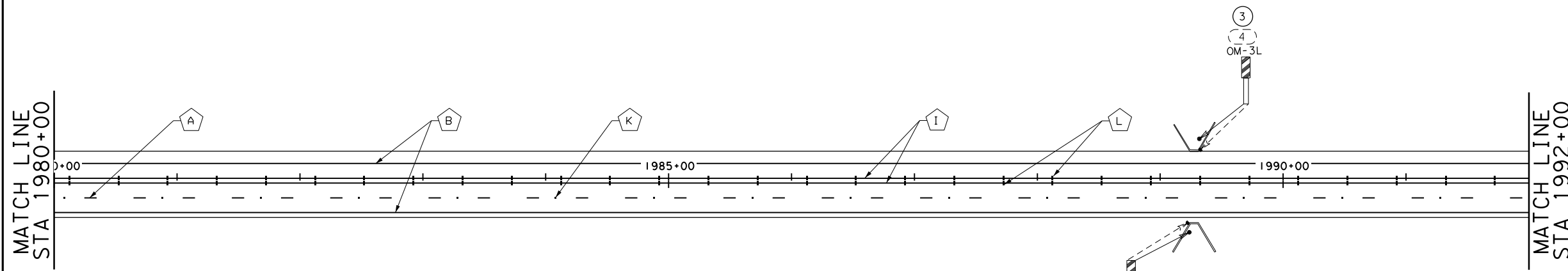




LEGEND

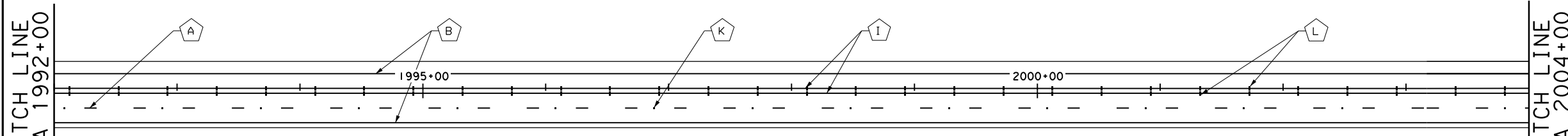
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B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- † -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊘ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊙ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- -DIRECTION OF TRAFFIC



MATCH LINE  
STA 1980+00

MATCH LINE  
STA 1992+00

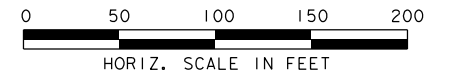



MATCH LINE  
STA 1992+00

MATCH LINE  
STA 2004+00

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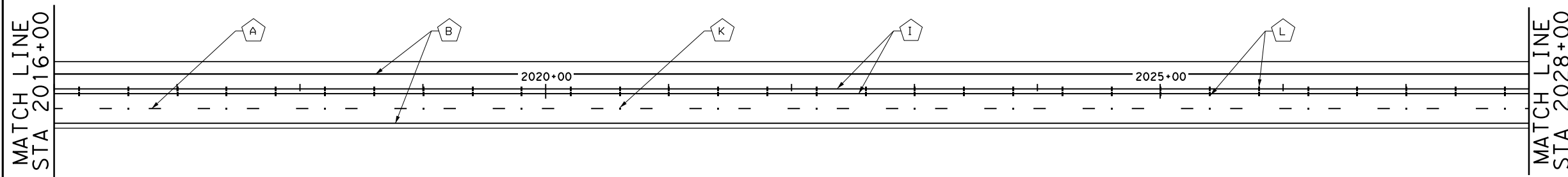
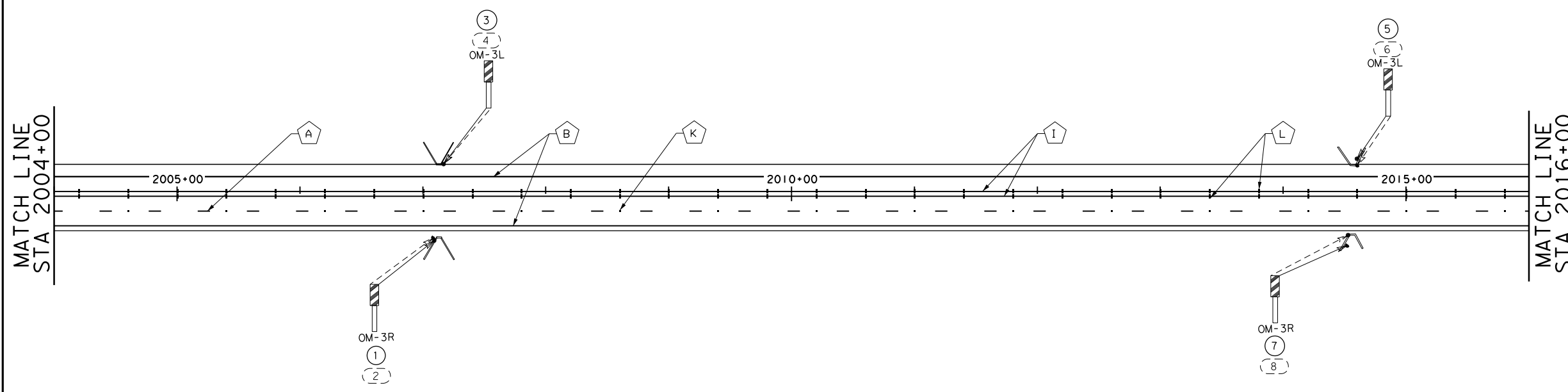
NO.	REVISIONS	BY	DATE
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US 83 SIGNING AND PAVEMENT MARKINGS STA 1980+00 TO STA 2004+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	300	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

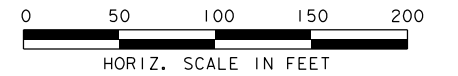
- PROPOSED SMALL SIGN
- EXISTING SMALL SIGN TO BE REMOVED
- OBJECT MARKER (OM-2X) (WC) (GND)
- PROPOSED SIGN POST
- DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- DIRECTION OF TRAFFIC



5-2-2024

SHEET 22 OF 24

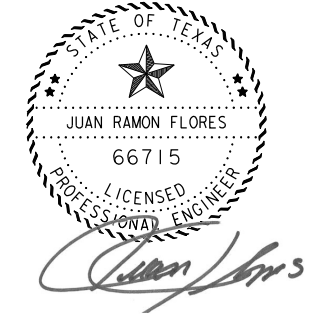
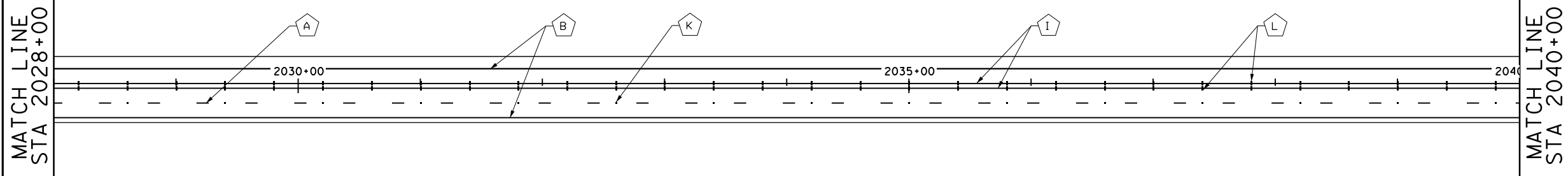
NO. REVISIONS BY DATE			
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
Texas Department of Transportation ©2024 by Texas Department of Transportation, all rights reserved			
US 83 SIGNING AND PAVEMENT MARKINGS STA 2004+00 TO STA 2028+00			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		301
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



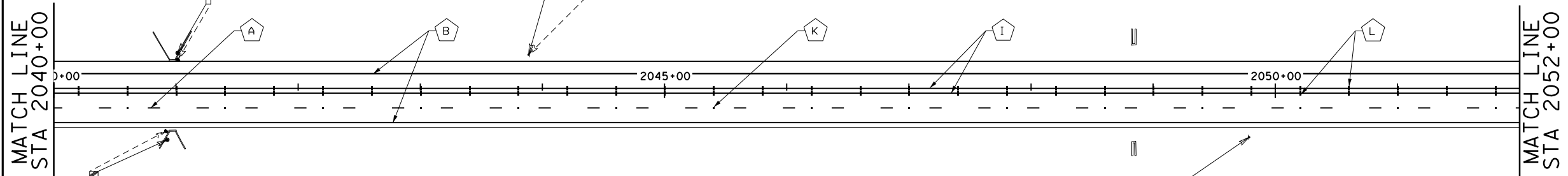
LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- - - - - EXISTING SMALL SIGN TO BE REMOVED
- ↑ -OBJECT MARKER (OM-2X) (WC) (GND)
- - - - - PROPOSED SIGN POST
- ⊞ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊞ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC



5-2-2024



SHEET 23 OF 24

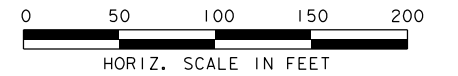
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

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**US 83  
SIGNING AND  
PAVEMENT MARKINGS  
STA 2028+00 TO STA 2052+00**

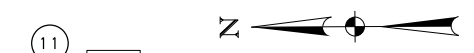
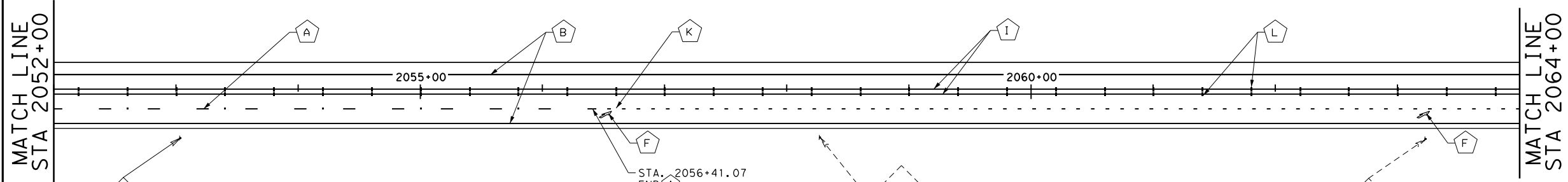
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6	C 37-8-42	302	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



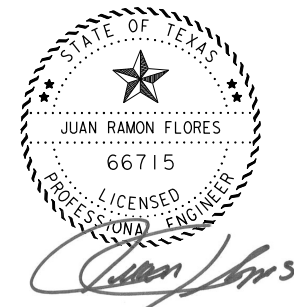
LEGEND

A	W 6" BRK
B	W 6" SOLID
C	W 6" DOT
D	W 8" SOLID
E	W 24" SOLID
F	W ARROW
G	W WORD
H	Y 6" BRK
I	Y 6" SOLID
J	Y 12" SOLID
K	TY I-C
L	TY II-A-A
M	Y 24" SOLID
N	W DBL ARROW

- -PROPOSED SMALL SIGN
- ⊖ -EXISTING SMALL SIGN TO BE REMOVED
- † -OBJECT MARKER (OM-2X) (WC) (GND)
- -PROPOSED SIGN POST
- ⊘ -DELINEATOR (D-SW) (SZ1) (BRF) (GF2) (B1)
- ⊙ -DELINEATOR (D-SW) (SZ) (BRF) (CTB) (B1)
- ➔ -DIRECTION OF TRAFFIC



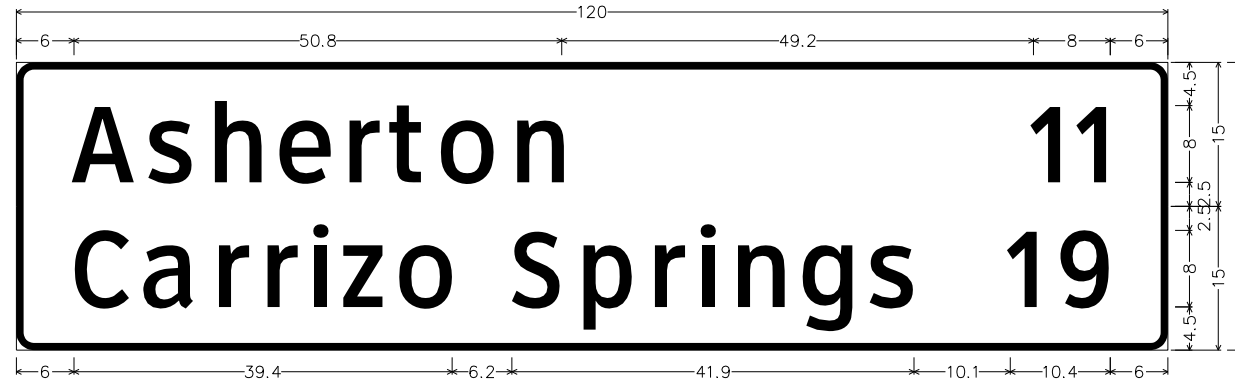
SHEET 24 OF 24



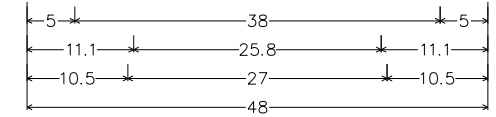
NO.	REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-9900 FIRM REGISTRATION No. F-10098			
©2024 by Texas Department of Transportation, all rights reserved.			
<b>US 83</b> <b>SIGNING AND</b> <b>PAVEMENT MARKINGS</b> <b>STA 2052+00 TO STA 2077+15</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	303	
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	US 83
0037	08	042, ETC.	



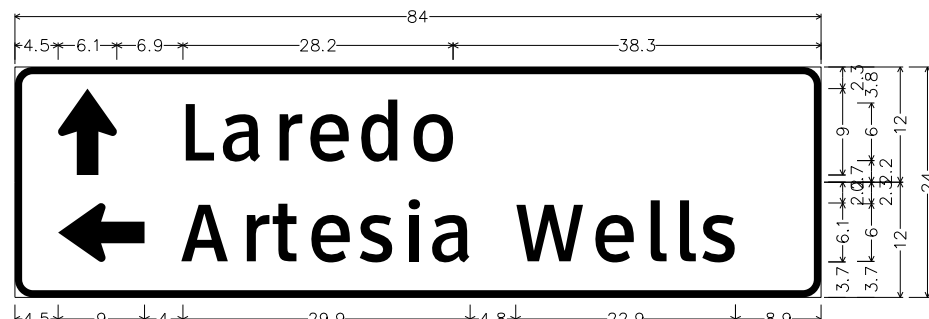
Identifier : I-2cT 6in?;  
1.5" Radius, 0.5" Border, White on Green;  
[Catarina] ClearviewHwy-3-W;



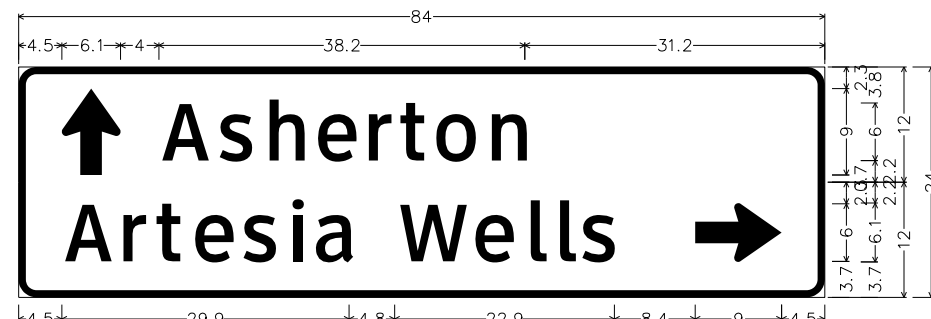
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1.9" Radius, 0.8" Border, White on Green;  
[Asherton] ClearviewHwy-3-W; [11] ClearviewHwy-3-W;  
1.9" Radius, 0.8" Border, White on Green;  
[Carrizo Springs] ClearviewHwy-3-W; [19] ClearviewHwy-3-W;



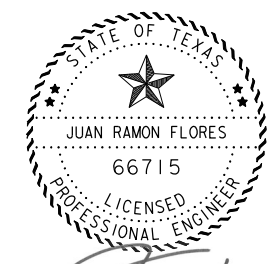
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Standard Arrow Custom 27.0" X 8.1" 180;



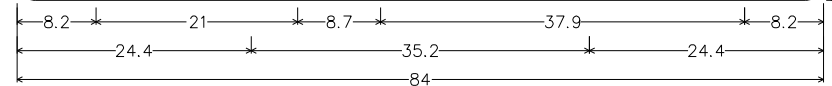
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1.9" Radius, 0.8" Border, White on Green;  
Standard Arrow Custom 9.0" X 6.1" 90; [Laredo] ClearviewHwy-3-W;  
1.9" Radius, 0.8" Border, White on Green;  
Standard Arrow Custom 9.0" X 6.1" 180; [Artesia Wells] ClearviewHwy-3-W;



Identifier : D1-2 6in UP-RT;  
1.9" Radius, 0.8" Border, White on Green;  
Standard Arrow Custom 9.0" X 6.1" 90; [Asherton] ClearviewHwy-3-W;  
1.9" Radius, 0.8" Border, White on Green;  
[Artesia Wells] ClearviewHwy-3-W; Standard Arrow Custom 9.0" X 6.1" 0;



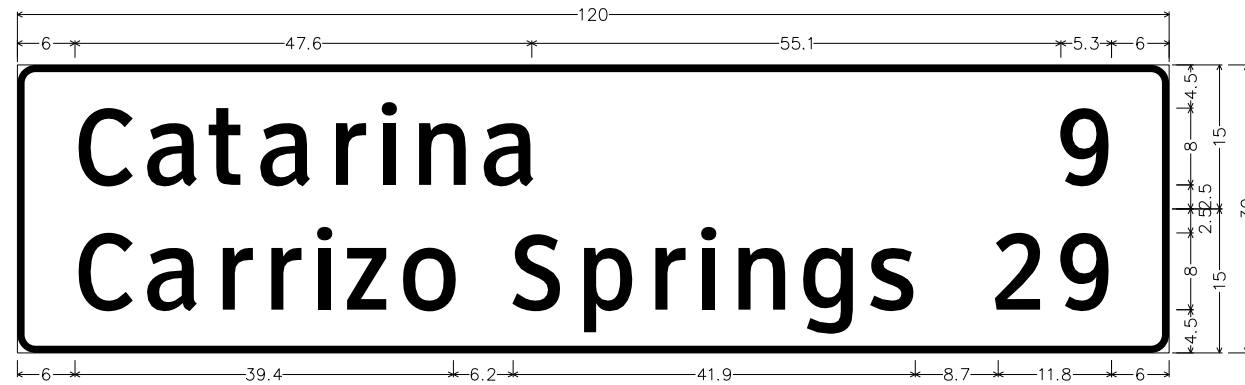
*Juan Flores* 6-22-2020



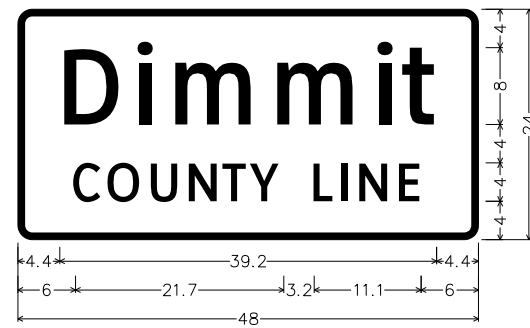
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[San Roque] ClearviewHwy-5-W-R; [Creek] ClearviewHwy-5-W-R;

PROPOSED  
EXISTING

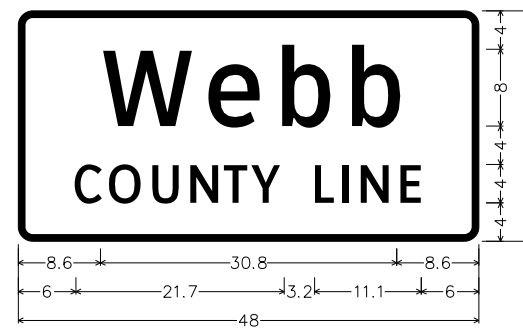
NO.		REVISIONS		BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098					
©2020 by Texas Department of Transportation, all rights reserved.					
US 83 SIGN DETAILS					
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.		
6	C 37-8-42		304		
STATE	DISTRICT	COUNTY			
TEXAS	LRD	DIMMIT			
CONTROL	SECTION	JOB	HIGHWAY NO.		
0037	08	042, ETC.	US 83		



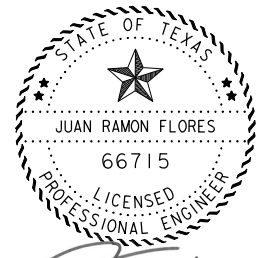
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 1.9" Radius, 0.8" Border, White on Green;  
 [Catarina] ClearviewHwy-3-W; [9] ClearviewHwy-3-W;  
 1.9" Radius, 0.8" Border, White on Green;  
 [Carrizo Springs] ClearviewHwy-3-W; [29] ClearviewHwy-3-W;



Identifier : 1-2dT 8in?;  
 1.5" Radius, 0.8" Border, White on Green;  
 [Dimmit] ClearviewHwy-3-W;  
 [COUNTY LINE] ClearviewHwy-3-W;



Identifier : 1-2dT 8in?;  
 1.5" Radius, 0.8" Border, White on Green;  
 [Webb] ClearviewHwy-3-W;  
 [COUNTY LINE] ClearviewHwy-3-W;

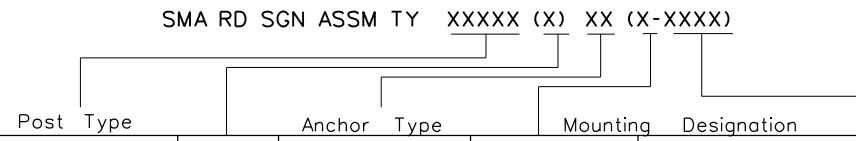


*Juan Flores* 6-22-2020

SHEET 2 OF 2

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SIGN DETAILS</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		305
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

# SUMMARY OF SMALL SIGNS



BRIDGE MOUNT  
CLEARANCE  
SIGNS

(See Note 2)

PLAN SHEET NO.	SIGN NO.	SIGN DESIGNATION	SIGN CONTENT	SIGN DIMENSIONS (See above Note)	ALUMINUM TYPE A	ALUMINUM TYPE C	FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sched 80	Posts (1 or 2)	Anchor Type UA = Univer-Conc UB = Univer-Bolt SA = Slip-Conc SB = Slip-Bolt WS = Wedge Steel WP = Wedge Plastic	Mounting Designation P = Prefab. "Plain" T = Prefab. "T" U = Prefab. "U"	1EXT or 2EXT = * of Ext. BM = Extruded Beam WC = 1.12 * /ft Wing Chan. EXAL = Extruded Alum. Signs	TY N - Type N TY S - Type S
PM01	3	D2-1(CAT)	CATARINA	42 x 12	X			10BWG	1	SA	P	
	4	M3-1 M1-4(83)	NORTH <AUXILIARY SIGN> <US HIGHWAY ROUTE SHIELD> (83)	24 x 12 24 x 24	X			10BWG	1	SA	P	
	8	R1-1	STOP	36 x 36	X			10BWG	1	SA	P	
	9	S3-1	<SYMBOL - SCHOOL BUS STOP AHEAD>	36 x 36	X			10BWG	1	SA	P	
	12	R2-1(60)	SPEED LIMIT (60)	30 x 36	X			10BWG	1	SA	P	
	14	R2-1(45)	SPEED LIMIT (45)	30 x 36	X			10BWG	1	SA	P	
	19	W1-1R	SYMBOL - HORIZ ALN TURN RIGHT	36 x 36	X							
	20	W13-1P	(30) MPH <ADVISORY SPEED PLAQUE>	18 x 18	X							
	21	R3-7R	RIGHT LANE MUST TURN RIGHT	36 x 36	X			10BWG	1	SA	P	
PM02	2	W1-8L	<CHEVRON LEFT>	18 x 24	X			10BWG	1	SA	P	
	5	W1-8L	<CHEVRON LEFT>	18 x 24	X			10BWG	1	SA	P	
	7	W1-8R	<CHEVRON RIGHT>	18 x 24	X			10BWG	1	SA	P	
	9	W1-8L	<CHEVRON LEFT>	18 x 24	X			10BWG	1	SA	P	
	11	W1-8R	<CHEVRON RIGHT>	18 x 24	X			10BWG	1	SA	P	
	14	W1-8R	<CHEVRON RIGHT>	18 x 24	X			10BWG	1	SA	P	
	16	W1-8L	<CHEVRON LEFT>	18 x 24	X			10BWG	1	SA	P	
	19	W1-8R	<CHEVRON RIGHT>	18 x 24	X			10BWG	1	SA	P	
	21	W1-8L	<CHEVRON LEFT>	18 x 24	X			10BWG	1	SA	P	
	23	W1-8R	<CHEVRON RIGHT>	18 x 24	X			10BWG	1	SA	P	
	25	W1-8L	<CHEVRON LEFT>	18 x 24	X			10BWG	1	SA	P	

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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).

SHEET 1 OF 7

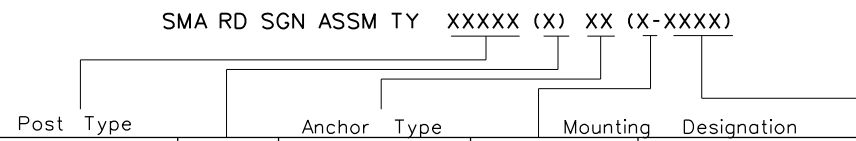


## SUMMARY OF SMALL SIGNS

### SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
4-16	DIST	COUNTY	SHEET NO.	
8-16	LRD	DIMMIT	306	

# SUMMARY OF SMALL SIGNS



BRIDGE MOUNT CLEARANCE SIGNS  
(See Note 2)

PLAN SHEET NO.	SIGN NO.	SIGN DESIGNATION	SIGN CONTENT	SIGN DIMENSIONS (See above Note)	ALUMINUM TYPE A	ALUMINUM TYPE C	FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sched 80	Posts (1 or 2)	Anchor Type UA = Univer-Conc UB = Univer-Bolt SA = Slip-Conc SB = Slip-Bolt WS = Wedge Steel WP = Wedge Pistic	Mounting Designation P = Prefab. "Plain" T = Prefab. "T" U = Prefab. "U"	TEXT or 2EXT = * of Ext. BM = Extruded Beam WC = 1.12 * /ft Wing Chan. EXAL = Extruded Alum. Signs	TY N - Type N TY S - Type S
PM02	27	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	29	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	31	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	34	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	36	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	38	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	40	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	42	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	44	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	45	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	47	W1-9TL	<LARGE ARROW LEFT w/ CHEVRONS>	96 x 36	X		10BWG	2	SA	P		
	49	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	50	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	52	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	53	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	55	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	57	W1-8R	<CHEVRON RIGHT>	18 x 24	X		10BWG	1	SA	P		
	59	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	63	W1-8L	<CHEVRON LEFT>	18 x 24	X		10BWG	1	SA	P		
	64	D7-7aTL	HISTORICAL MARKER <ARROW LEFT>	48 x 48	X		10BWG	1	SA	T		
	66	R1-1	STOP	36 x 36	X		10BWG	1	SA	P		
	68	R1-1	STOP	36 x 36	X		10BWG	1	SA	P		
	71	R1-1	STOP	36 x 36	X		10BWG	1	SA	P		
	73	R1-1	STOP	36 x 36	X		10BWG	1	SA	P		
	75	W1-1L	SYMBOL - HORIZ ALN TURN LEFT	36 x 36	X							
	76	W13-1P	(30) MPH <ADVISORY SPEED PLAQUE>	18 x 18	X							
	77	R3-8	<2 LANE ASSIGNMENTS - ARROWS>	36 x 30	X		10BWG	1	SA	P		

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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).

SHEET 2 OF 7



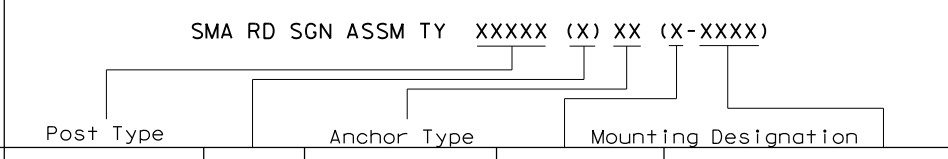
## SUMMARY OF SMALL SIGNS

### SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
4-16	DIST	COUNTY	SHEET NO.	
8-16	LRD	DIMMIT	307	



# SUMMARY OF SMALL SIGNS



BRIDGE MOUNT CLEARANCE SIGNS  
(See Note 2)

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

PLAN SHEET NO.	SIGN NO.	SIGN DESIGNATION	SIGN CONTENT	SIGN DIMENSIONS (See above Note)	ALUMINUM TYPE A	ALUMINUM TYPE G	FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sched 80	Posts (1 or 2)	Anchor Type UA = Univer-Conc UB = Univer-Bolt SA = Slip-Conc SB = Slip-Bolt WS = Wedge Steel WP = Wedge Plastic	Mounting Designation P = Prefab. "Plain" T = Prefab. "T" U = Prefab. "U"	TEXT or 2EXT = # of Ext. BM = Extruded Beam WC = 1.12 #/ft Wing Chan. EXAL = Extruded Alum. Signs	TY N = Type N TY S = Type S	
PM03	1	W11-10L	SYMBOL - BE ALERT FOR TRUCKS ENTERING LT	36 x 36	X		10BWG	1	SA	P			
	3	R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
	5	R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
	7	R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
	9	W1-1aL	SYMBOL - HORIZ ALN TURN LEFT w/ (30)	36 x 36	X								
	11	R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
	13	R2-1(45)	SPEED LIMIT (45)	30 x 36	X		10BWG	1	SA	P			
	15	R2-1(45)	SPEED LIMIT (45)	30 x 36	X		10BWG	1	SA	P			
	17	W11-10L	SYMBOL - BE ALERT FOR TRUCKS ENTERING LT	36 x 36	X		10BWG	1	SA	P			
	19	R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
	21	R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
	PM04	1	R1-1	STOP	36 x 36	X		10BWG	1	SA	P		
		3	W2-1aTL	HIGHWAY INTERSECTION AHEAD	48 x 48	X		10BWG	1	SA	T		
5		R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
7		R1-1	STOP	36 x 36	X		10BWG	1	SA	P			
10		M2-1	JCT <AUXILIARY SIGN>	21 x 15	X		10BWG	1	SA	P			
		M1-6F(133)	<FM SHIELD> FARM ROAD (133)	24 x 24	X								
11		R2-1(45)	SPEED LIMIT (45)	30 x 36	X		10BWG	1	SA	P			
13		D2-1(CAT)	CATARINA	42 x 12	X		10BWG	1	SA	P			
15		R2-1(60)	SPEED LIMIT (60)	30 x 36	X		10BWG	1	SA	P			
17		S3-1	<SYMBOL - SCHOOL BUS STOP AHEAD>	36 x 36	X		10BWG	1	SA	P			
19	1-2(LAR-ART-WELL)	LAREDO<ARROW-VERTICAL> ARTISIA WELLS<ARROW-LEFT>	84 x 24	X		10BWG	1	SA	T				
21	M3-1	NORTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	P				
	M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X									

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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SHEET 3 OF 7

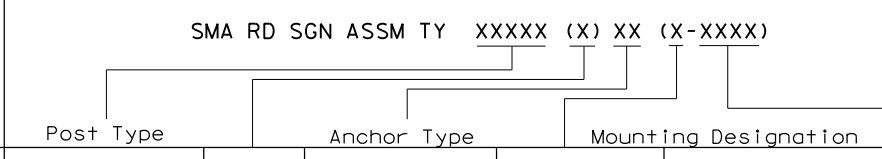


## SUMMARY OF SMALL SIGNS

### SOSS

FILE#	sums16.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
©	TxDOT	REV#	0037	SECT	08	JOB	042, ETC.	HIGHWAY	US 83
4-16		DIST		COUNTY		SHEET NO.			
8-16		LRD		DIMIT					308

# SUMMARY OF SMALL SIGNS



BRIDGE MOUNT CLEARANCE SIGNS  
(See Note 2)

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PM04	25	M3-2	EAST <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	U			
		M1-6F(133)	<FM SHIELD> FARM ROAD (133)	24 x 24	X								
		M6-1	<ARROW - HORIZ STRGHT> <AUXILIARY SIGN>	21 x 15	X								
		M3-3	SOUTH <AUXILIARY SIGN>	24 x 12	X								
		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X								
		M6-3	<ARROW - VERTICAL STRGHT> <AUX SIGN>	21 x 15	X								
		27	M3-3	SOUTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	U		
			M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X							
			M6-1	<ARROW - HORIZ STRGHT> <AUXILIARY SIGN>	21 x 15	X							
			M3-1	NORTH <AUXILIARY SIGN>	24 x 12	X							
			M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X							
			M6-1	<ARROW - HORIZ STRGHT> <AUXILIARY SIGN>	21 x 15	X							
		29	W1-7T	<BI-DIRECTIONAL LRG ARR W/ CHEVRONS>	96 x 36	X		S80	1	SA	U	BM	
		31	R1-1	STOP	36 x 36	X		10BWG	1	SA	P		
		34	M3-1	NORTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	U		
		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X								
		M6-3	<ARROW - VERTICAL STRGHT> <AUX SIGN>	21 x 15	X								
		M3-2	EAST <AUXILIARY SIGN>	24 x 12	X								
		M1-6F(133)	<FM SHIELD> FARM ROAD (133)	24 x 24	X								
		M6-1	<ARROW - HORIZ STRGHT> <AUXILIARY SIGN>	21 x 15	X								
	36	M6-3	<ARROW - VERTICAL STRGHT> <AUX SIGN>	21 x 15	X		10BWG	1	SA	P			
		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X								
PM05	2	R4-3	SLOWER TRAFFIC KEEP RIGHT	24 x 30	X		10BWG	1	SA	P			
	3	D1-2(ASH-ART)	ARSHERTON<ARROW-VERTICAL> ARTISIA WELLS<ARROW-RIGHT>	84 x 24	X		10BWG	1	SA	P			
	5	R3-8SSR	<TWO STRAIGHT VERTICAL ARROWS> ONLY<RIGHT ARROW>ONLY	48 x 30	X		10BWG	1	SA	T			
	7	W12-3T(22)	CAUTION<TRUCK CROSSING>NEXT 22 MILES	156 x 36	X		S80	2	SA	P			
	9	W3-5(45)	<SYMBOL - REDUCED SPEED AHD> (45)	36 x 30	X		10BWG	1	SA	P			

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SHEET 4 OF 7

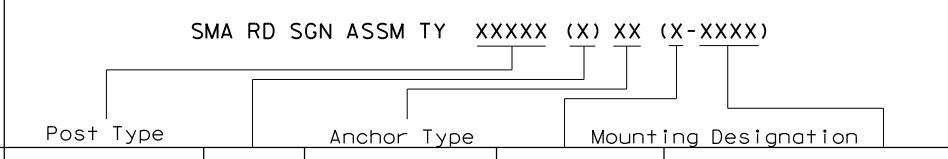


## SUMMARY OF SMALL SIGNS

### SOSS

FILE#	slums16.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
©	TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY			
REVISIONS			0037	08	042, ETC.	US 83			
4-16			DIST	COUNTY	SHEET NO.				
8-16			LRD	DIMITT	309				

# SUMMARY OF SMALL SIGNS



BRIDGE MOUNT CLEARANCE SIGNS  
(See Note 2)

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PM05	13	M2-1	JCT <AUXILIARY SIGN>	21 x 15	X		10BWG	1	SA	P		
		M1-6F(133)	<FM SHIELD> FARM ROAD (133)	24 x 24								
	15	W2-1aTL	HIGHWAY INTERSECTION AHEAD	48 x 48	X		10BWG	1	SA	T		
	16	R2-1(75)	SPEED LIMIT (75)	24 x 48	X		10BWG	1	SA	P		
	18	R2-1(60)	SPEED LIMIT (60)	30 x 36	X		10BWG	1	SA	P		
	20	M3-1	NORTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	P		
PM06		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X							
	1	W3-5	<SYMBOL - REDUCED SPEED AHD> (60)	36 x 36	X		10BWG	1	SA	P		
	PM07	1	R4-3	SLOWER TRAFFIC KEEP RIGHT	24 x 30	X		10BWG	1	SA	P	
	PM08	1	W9-1R	RIGHT LANE ENDS	36 x 36	X		10BWG	1	SA	P	
		2	W9-2L	LANE ENDS MERGE LEFT	36 x 36	X		10BWG	1	SA	P	
	PM09	1	D15-11T	NEXT PASSING LANE 3 MILES	54 x 48	X		S80	1	SA	T	
2		M3-3	SOUTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	P		
		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24								
PM11	5	W11-10L	SYMBOL - BE ALERT FOR TRUCKS ENTERING LT	36 x 36	X		10BWG	1	SA	P		
		W7-3aP	NEXT 3 MILES	24 x 18								
	7	D15-11T(2M)	NEXT PASSING LANE 2 MILES	54 x 48	X		S80	1	SA	T		
PM12	1	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	36 x 36	X		10BWG	1	SA	P		
	3	I-3(SR)	SAN ROQUE CREEK	84 x 30	X		S80	1	SA	T		
	5	I-3(SR)	SAN ROQUE CREEK	84 x 30	X		S80	1	SA	T		
PM13	1	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	36 x 36	X		10BWG	1	SA	P		
PM14	9	W11-10L	BOL - BE ALERT FOR TRUCKS ENTERIN	36 x 36	X		10BWG	1	SA	P		
		W7-3aP(18)	NEXT PASSING LANE (18) MILES	24 x 18	X							
PM15	11	M3-1	NORTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	P		
		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X							
	13	D15-11T(2M)	NEXT PASSING LANE 2 MILES	54 x 48	X		S80	1	SA	T		
PM15	1	W9-2L	LANE ENDS MERGE LEFT	36 x 36	X		10BWG	1	SA	P		
	3	W9-1R	RIGHT LANE ENDS	36 x 36	X		10BWG	1	SA	P		
PM16	6	R4-3	SLOWER TRAFFIC KEEP RIGHT	24 x 30	X		10BWG	1	SA	P		

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SHEET 5 OF 7

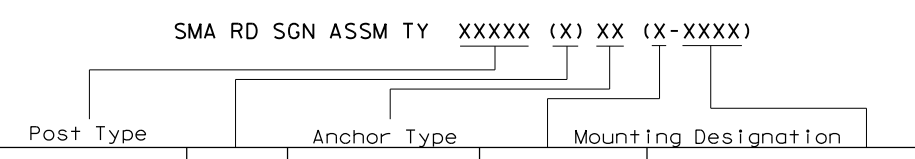


## SUMMARY OF SMALL SIGNS

### SOSS

FILE#	slums16.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0037	08	042, ETC.	US 83				
4-16		DIST	COUNTY	SHEET NO.					
8-16		LRD	DIMITT	310					

# SUMMARY OF SMALL SIGNS



BRIDGE MOUNT CLEARANCE SIGNS  
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PM18	1	M3-3	SOUTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	P		
		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24	X							
PM19	1	R4-3	SLOWER TRAFFIC KEEP RIGHT	24 x 30	X		10BWG	1	SA	P		
PM20	5	W11-10L	SYMBOL - BE ALERT FOR TRUCKS ENTERING LT	36 x 36	X		10BWG	1	SA	P		
		W7-3aP(7)	NEXT (7) MILES <PLAQUE>	24X18	X							
	7	R4-3	SLOWER TRAFFIC KEEP RIGHT	24 x 30	X		10BWG	1	SA	P		
PM23	5	D15-10TP	PASSING LANE (2) MILES	54 x 42	X		S80	1	SA	T		
		W9-1R	RIGHT LANE ENDS	36 x 36	X		10BWG	1	SA	P		
PM24	1	W9-2L	LANE ENDS MERGE LEFT	36 x 36	X		10BWG	1	SA	P		
		D2-2(CAT-CAR)	CATARINA 9 CARRIZO SPRINGS 29	120 x 30	X		10BWG	2	SA	P		
	7	R2-1(75)	SPEED LIMIT (75)	24 x 48	X		10BWG	1	SA	P		
	9	M3-1	NORTH <AUXILIARY SIGN>	24 x 12	X		10BWG	1	SA	P		
		M1-4(83)	<US HIGHWAY ROUTE SHIELD> (83)	24 x 24								
	11	1-2dT(DIM)	<DIMMIT> COUNTY LINE	48 x 24	X		10BWG	1	SA	T		
	13	1-2dT(WEBB)	<WEBB> COUNTY LINE	48 x 24	X		10BWG	1	SA	T		

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SHEET 6 OF 7



## SUMMARY OF SMALL SIGNS

### SOSS

FILE#	slums16.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0037	08	042, ETC.	US 83				
4-16		DIST	COUNTY		SHEET NO.				
8-16		LRD	DIMMIT		311				

DATE: 6/22/2020 9:54:41 AM  
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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 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.

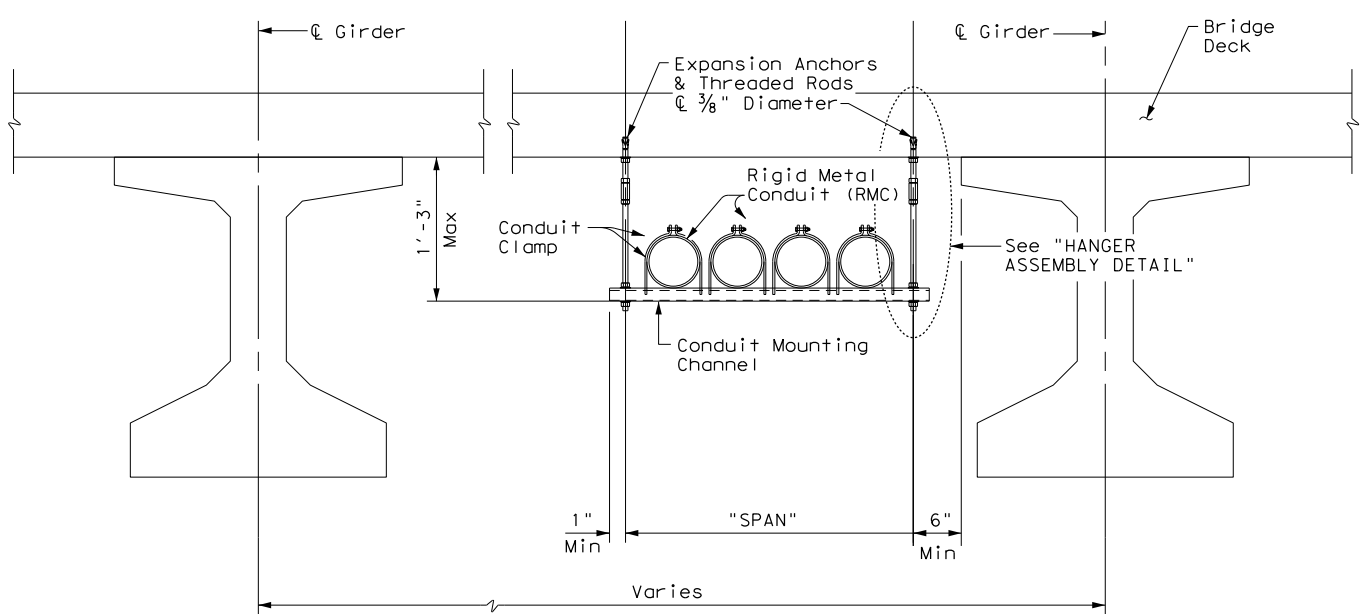
- Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC 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.

 <b>Texas Department of Transportation</b>		<b>Traffic Operations Division Standard</b>	
<h1>ELECTRICAL DETAILS CONDUITS &amp; NOTES</h1>			
<h2>ED(1)-14</h2>			
FILE#	ed1-14.dgn	DN#	CK#
©TxDOT	October 2014	CON#	SECT#
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		US 83	
		DIST	COUNTY
		LRD	DIMMIT
		SHEET NO.	
		312	

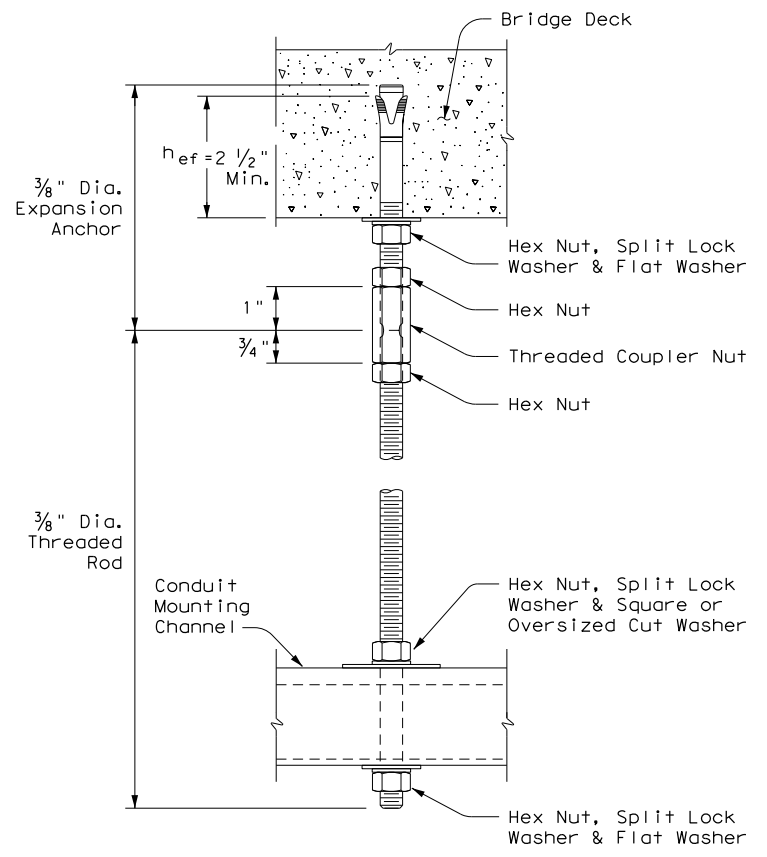
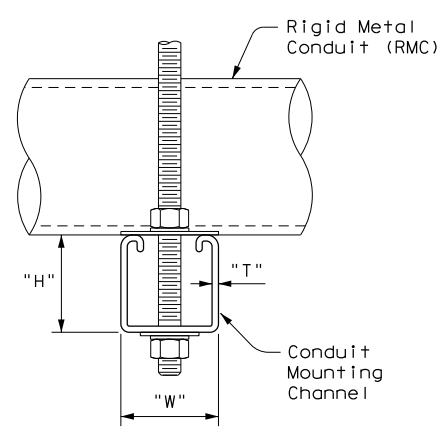
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CONDUIT HANGING DETAIL

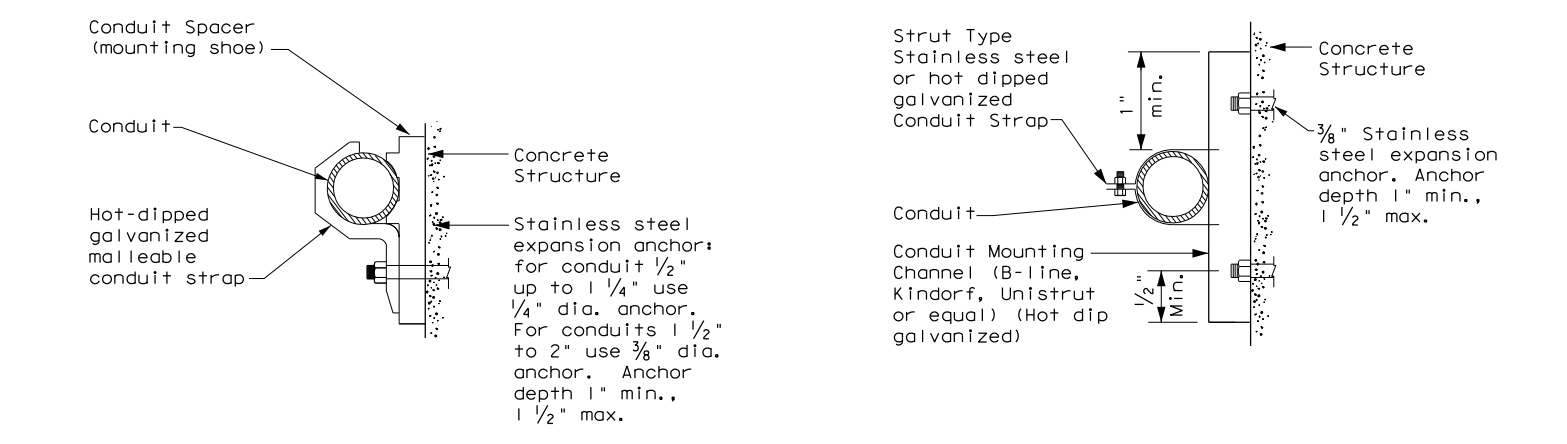
CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.



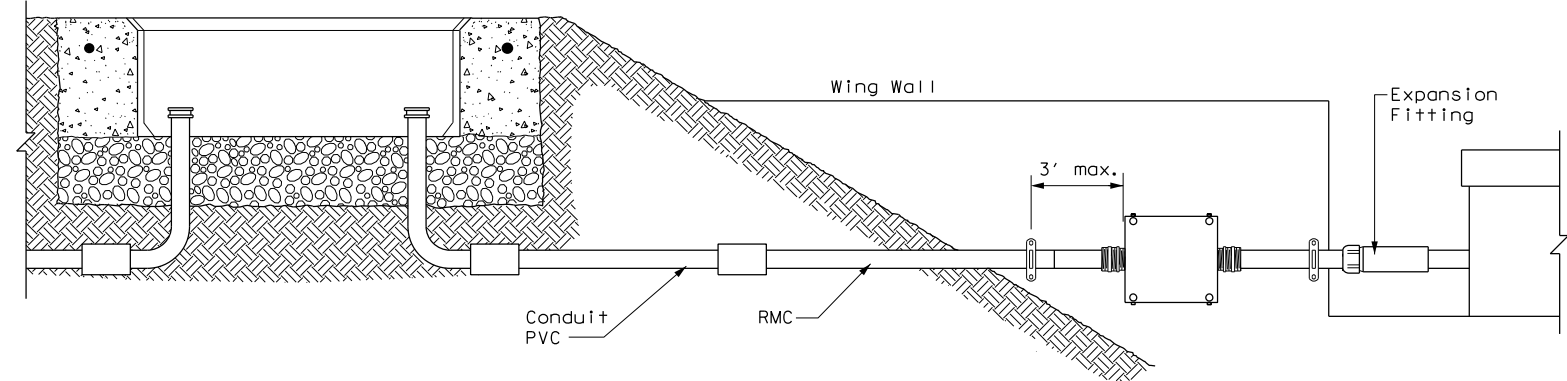
HANGER ASSEMBLY DETAIL

ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT



CONDUIT MOUNTING OPTIONS

Attachment to concrete surfaces  
See ED(1)B.2



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.
2. Unless otherwise approved by the Engineer, do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.
3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.
4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.
5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h<sub>ef</sub>), as shown. Increase (h<sub>ef</sub>) as needed to ensure sufficient thread length for proper torqueing and tightening of anchors.
6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h<sub>ef</sub>). No lateral loads shall be introduced after conduit installation.

				<b>Traffic Operations Division Standard</b>	
<h2>ELECTRICAL DETAILS</h2> <h2>CONDUIT SUPPORTS</h2> <h3>ED(2) - 14</h3>					
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© TxDOT	October 2014	CONT:	0037	SECT:	08
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DIST:	LRD	COUNTY:	DIMMIT		SHEET NO. 313

DATE: 6/22/2020 9:54:48 AM  
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# ELECTRICAL CONDUCTORS

## A. MATERIAL INFORMATION

- 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.
- 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.
- 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.
- 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

- 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.
- 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.
- 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.
- Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
- 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.
- Support conductors in illumination poles with a J-hook at the top of the pole.
- 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.
- Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
- Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
- 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.
- 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.

- 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

- Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
- 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.
- Use listed wire nuts with factory applied sealant for temporary wiring where approved.
- 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.
- Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

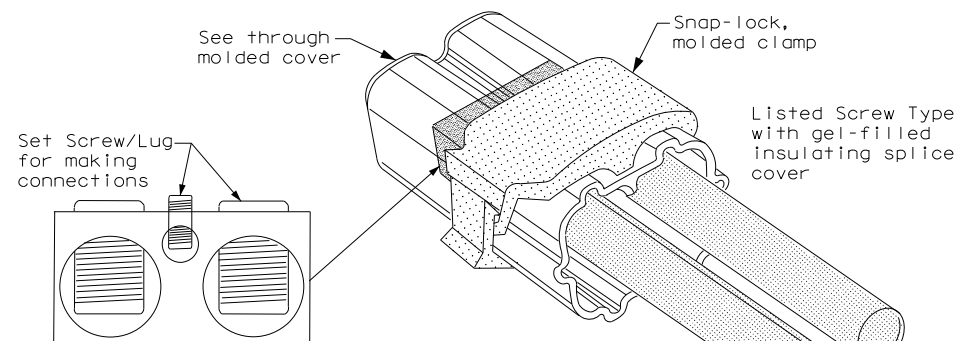
## GROUND RODS & GROUNDING ELECTRODES

### A. MATERIAL INFORMATION

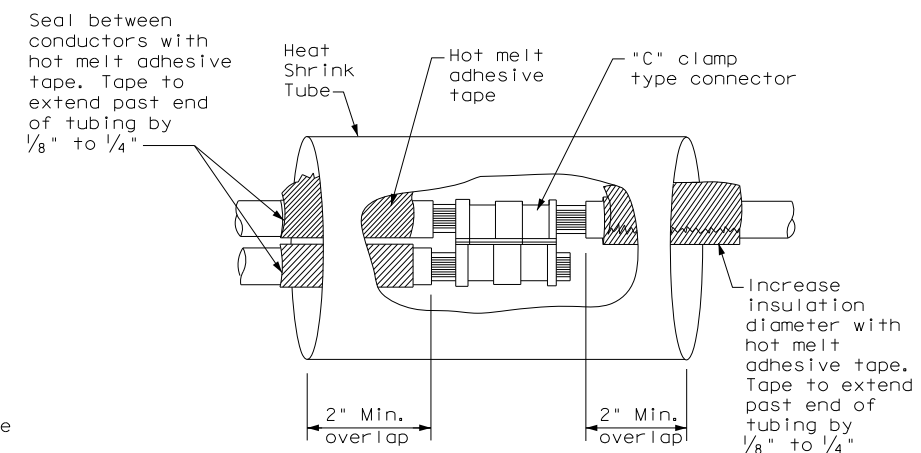
- Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

### B. CONSTRUCTION METHODS

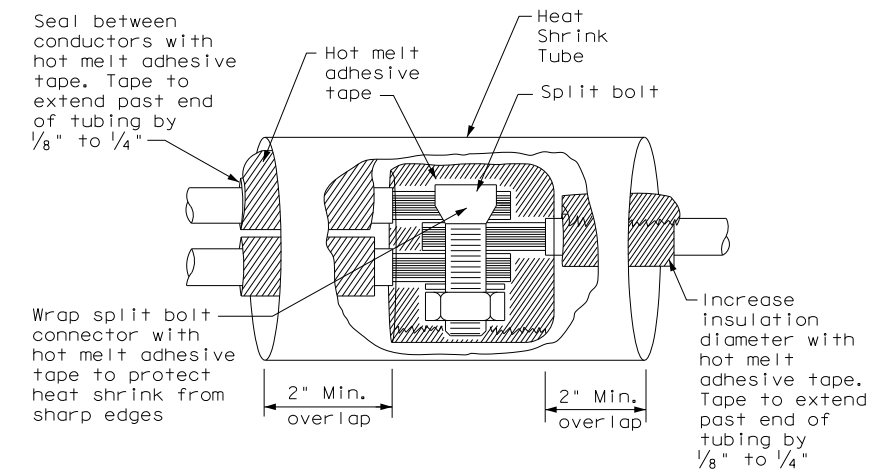
- Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
- Do not place ground rods in the same drilled hole as a timber pole.
- Install ground rods so the imprinted part number is at the upper end of the rod.
- Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
- 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.
- 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.
- Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 3  
Listed Screw Type



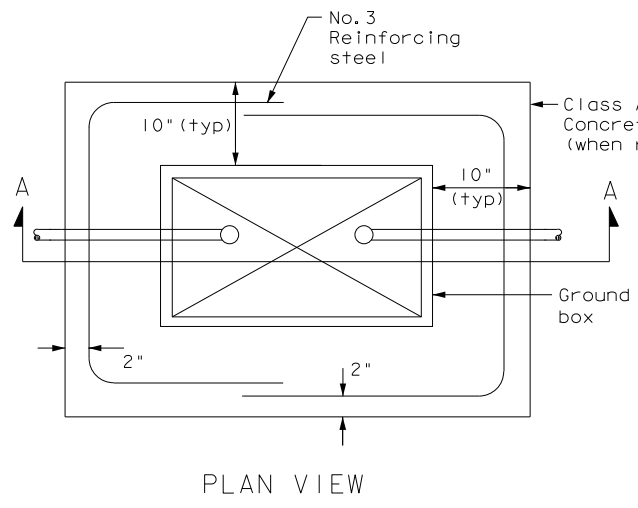
SPLICE OPTION 1  
Compression Type



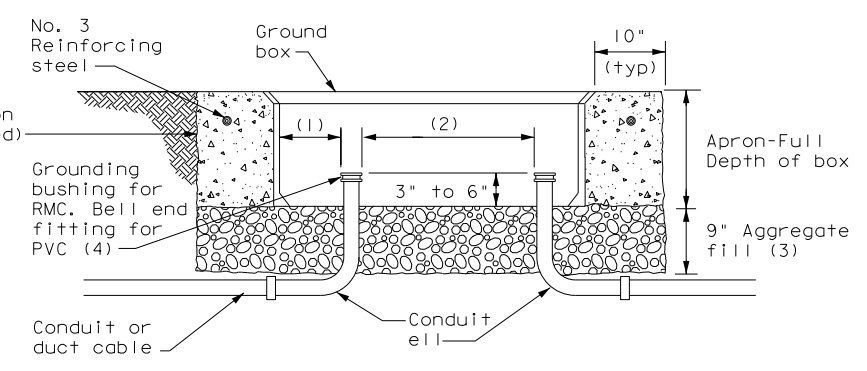
SPLICE OPTION 2  
Split Bolt Type

		<b>Traffic Operations Division Standard</b>	
<h2>ELECTRICAL DETAILS CONDUCTORS</h2>			
<h3>ED(3)-14</h3>			
FILE#	ed3-14.dgn	DN#	TxDOT
© TxDOT	October 2014	CK#	TxDOT
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		CON#	0037
		SECT#	08
		JOB#	042, ETC.
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PLAN VIEW



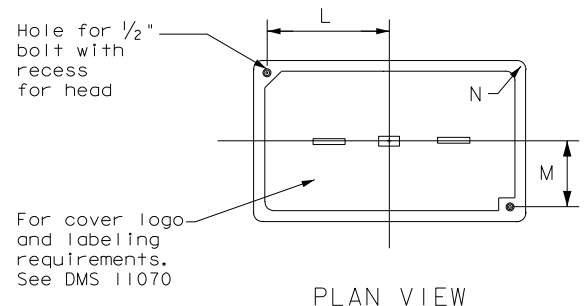
SECTION A - A

APRON FOR GROUND BOX

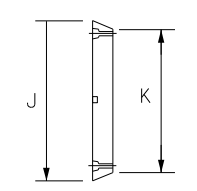
- (1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.
- (2) Maintain sufficient space between conduits to allow for proper installation of bushing.
- (3) Place 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

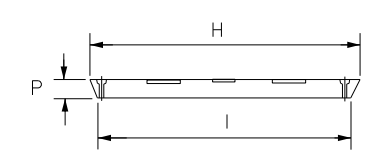
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."
2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.
3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.
4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown 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.

				<b>Traffic Operations Division Standard</b>	
<h2>ELECTRICAL DETAILS</h2> <h3>GROUND BOXES</h3> <h4>ED(4) - 14</h4>					
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## 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 photoceII or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.
- Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.
- Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

## MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

- Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.
- When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

## PHOTOELECTRIC CONTROL

- Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

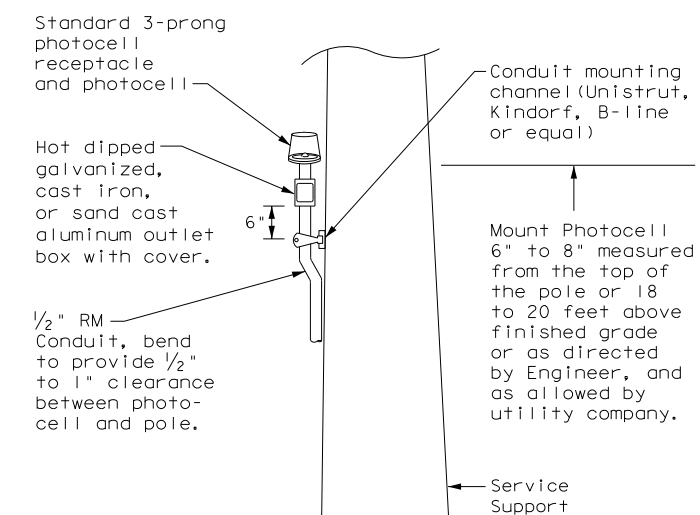
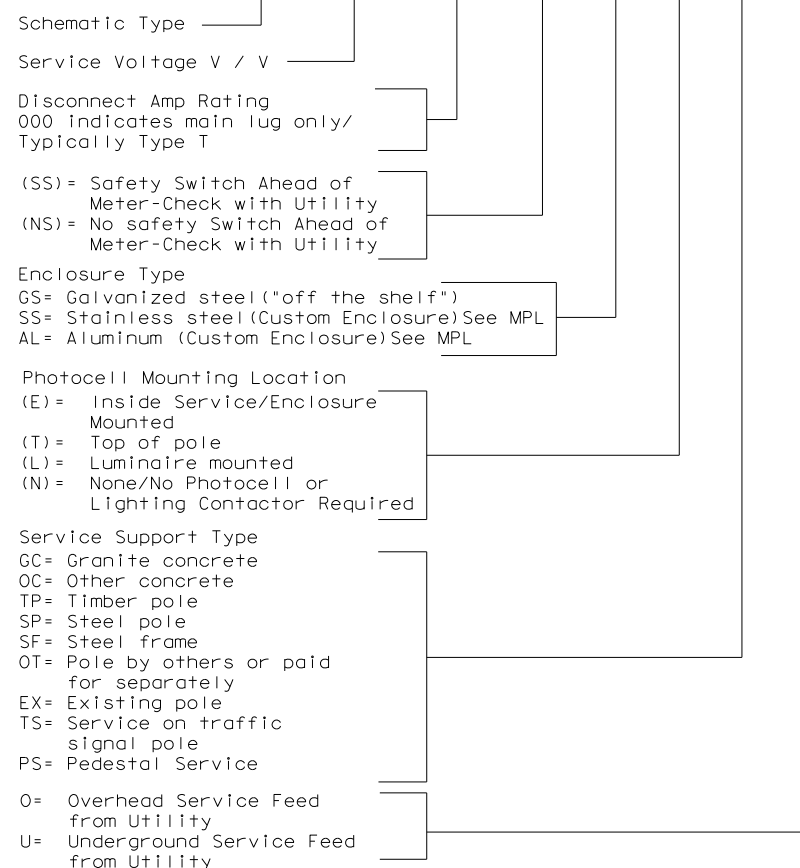
* ELECTRICAL SERVICE DATA												
Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit *xSize	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 1/4"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 1/4"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

\* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

\*\* Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

## EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

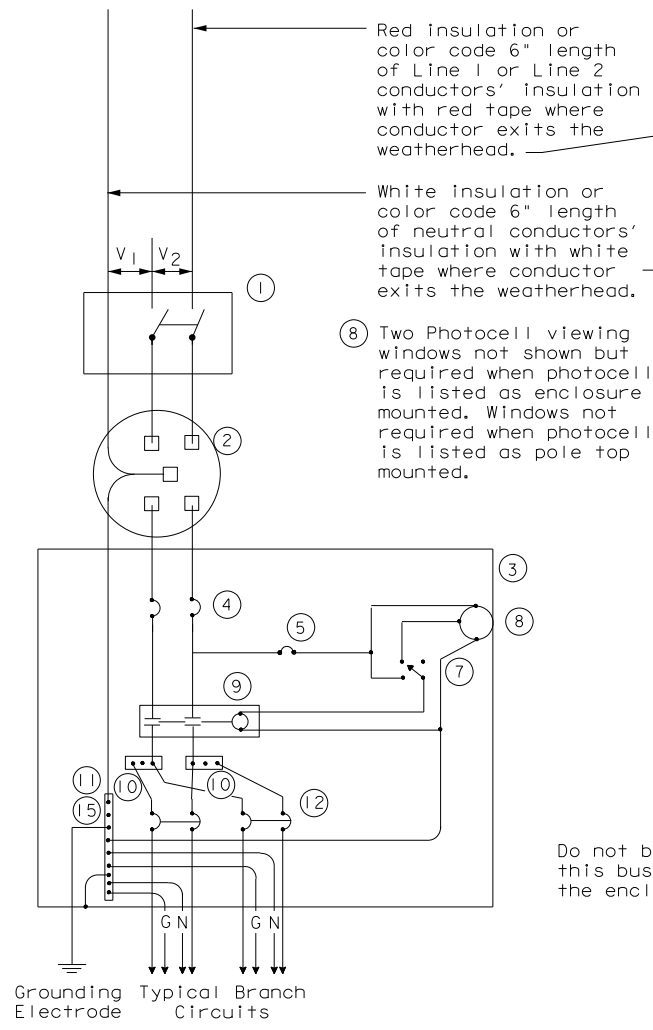


## TOP MOUNTED PHOTOCELL

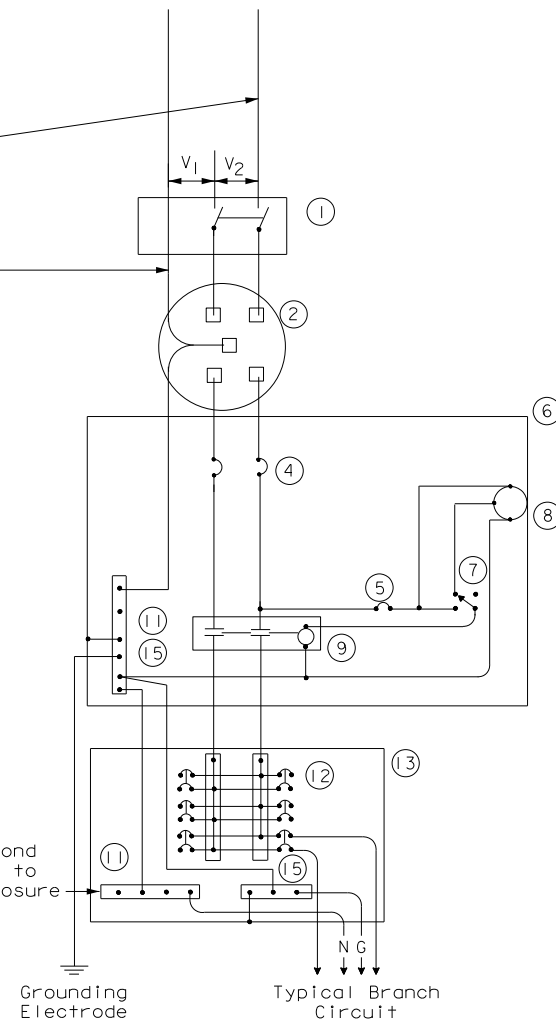
Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

<h1>ELECTRICAL DETAILS SERVICE NOTES &amp; DATA</h1>			
<h2>ED(5) - 14</h2>			
FILE#	ed5-14.dgn	DN#	TxDOT
©TxDOT	October 2014	CK#	TxDOT
REVISIONS		DW#	TxDOT
CON#	SECT	JOB	HIGHWAY
0037	08	042, ETC.	US 83
DIST	COUNTY		SHEET NO.
LRD	DIMMIT		316

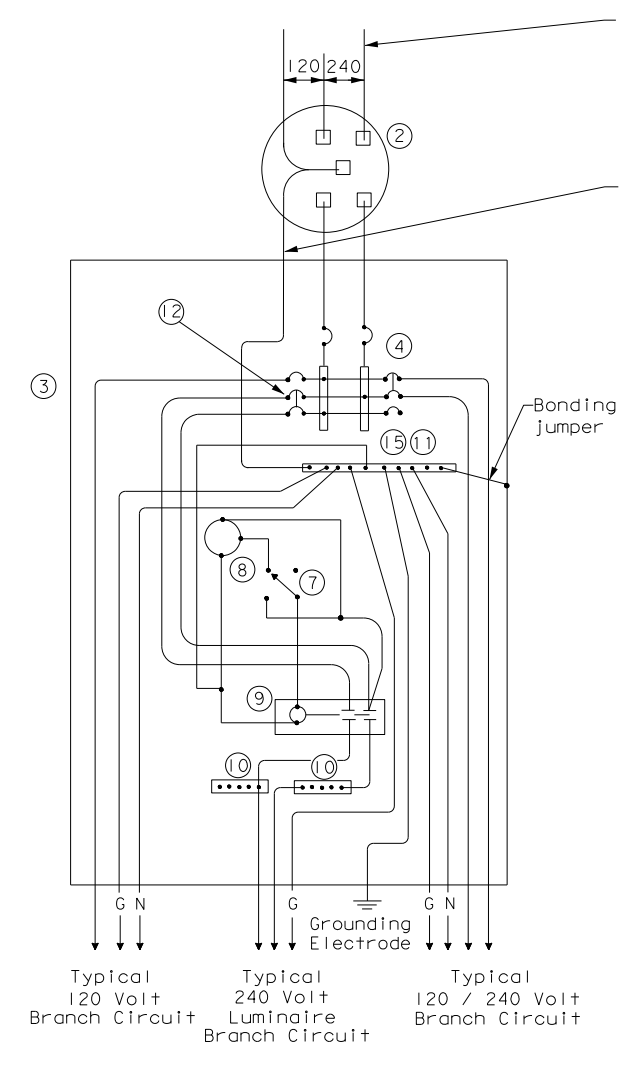
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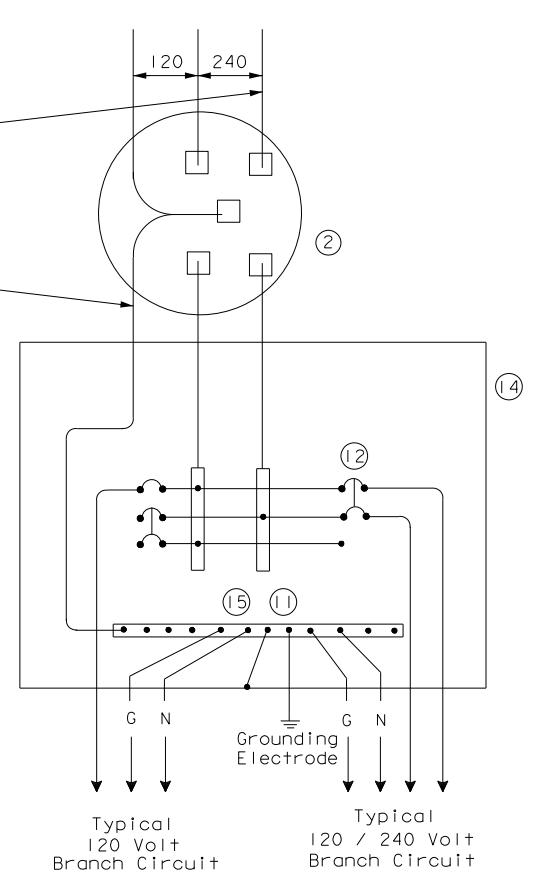
**SCHEMATIC TYPE A**  
THREE WIRE



**SCHEMATIC TYPE C**  
THREE WIRE



**SCHEMATIC TYPE D - CUSTOM**  
120/240 VOLTS - THREE WIRE



**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.

WIRING LEGEND	
—	Power Wiring
- - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

				<b>Traffic Operations Division Standard</b>	
<b>ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES</b>					
<b>ED(6) - 14</b>					
FILE#	ed6-14.dgn	DN#	TxDOT	CK#	TxDOT
©	TxDOT	October 2014	CON#	SECT	JOB
REVISIONS			0037	08	042, ETC.
			DIST	COUNTY	SHEET NO.
			LRD	DIMMIT	317

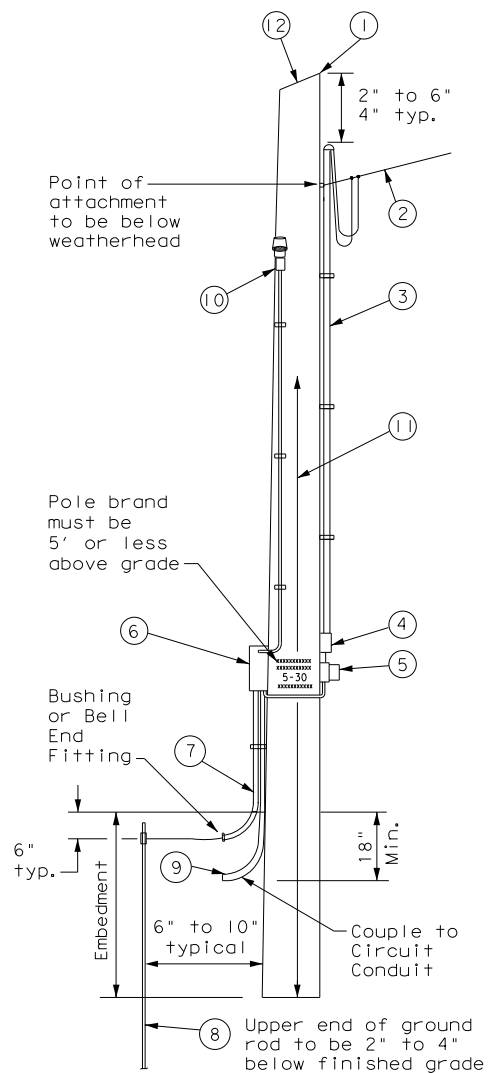


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### TIMBER POLE (TP) SERVICE SUPPORT NOTES

- 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.
- 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.
- 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.
- Gain pole as required to provide flat surface for each channel. Gain timber pole to  $\frac{3}{8}$  in. max. depth and  $1\frac{1}{8}$  in. max. height. Gain pole in a neat and workmanlike manner.
- Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to  $3\frac{3}{4}$  in. maximum depth, and  $1\frac{1}{2}$  in. to  $1\frac{5}{8}$  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,  $\frac{1}{4}$  in. minimum diameter by  $1\frac{1}{2}$  in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
- When excess length must be trimmed from poles, trim from the top end only.

- Class 5 pole, height as required
- Service drop from utility company (attached below weatherhead)
- Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)
- Safety switch (when required)
- Meter (when required)
- Service enclosure
- 6 AWG bare grounding electrode conductor in  $\frac{1}{2}$  in. PVC to ground rod - extend  $\frac{1}{2}$  in. PVC 6 in. underground.
- $\frac{5}{8}$  in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.
- RMC same size as branch circuit conduit.
- See pole-top mounted photocell detail on ED(5).
- 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.
- When required by utility, cut top of pole at an angle to enhance rain run off.

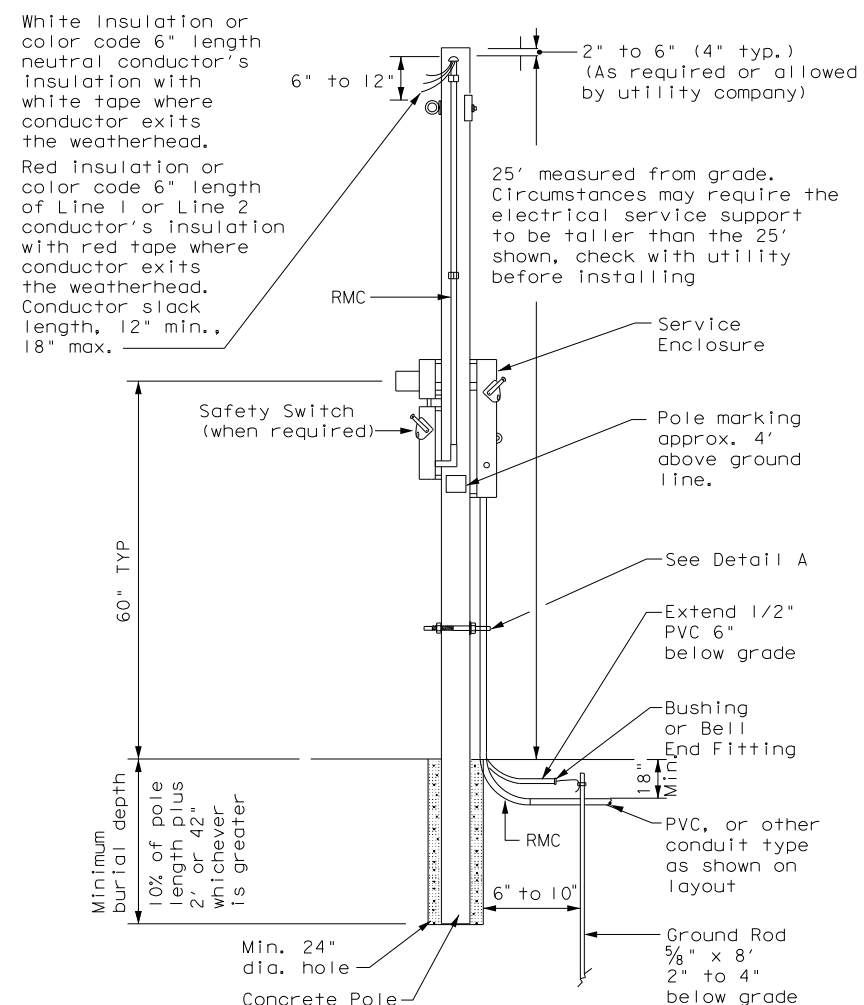


SERVICE SUPPORT TYPE TP (O)

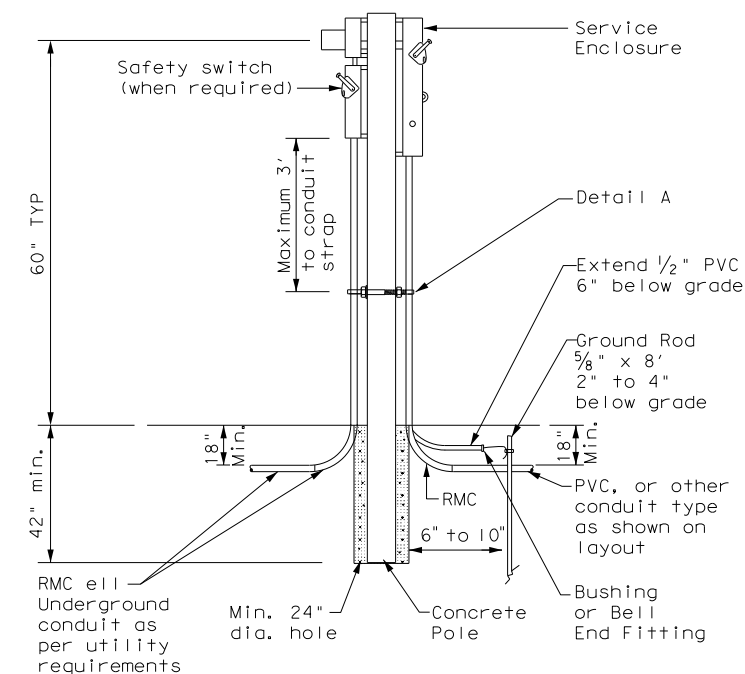
### GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

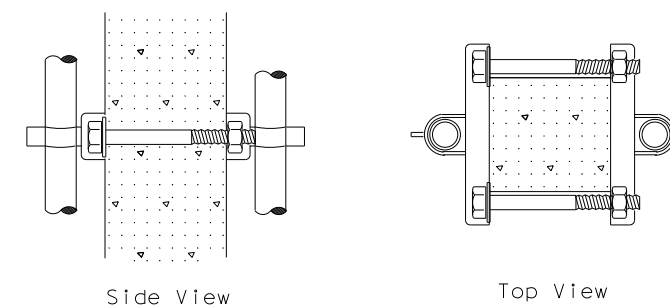
- Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
- Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
- Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above 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.
- Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
- Ensure all installation details of services are in accordance with utility company specifications.
- 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.
- Furnish and install galvanized or stainless steel channel strut  $1\frac{1}{2}$  in. or  $1\frac{5}{8}$  in. wide by 1 in. up to  $3\frac{3}{4}$  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.
- 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.

		<b>Traffic Operations Division Standard</b>	
<b>ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, &amp; TP</b>			
<b>ED(10)-14</b>			
FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
©TxDOT October 2014	CONT: 0037	SECT: 08	JOB: 042, ETC.
REVISIONS			HIGHWAY: US 83
	DIST: LRD	COUNTY: DIMMIT	SHEET NO.: 319



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POST TYPE AND SUPPORT FOUNDATION DETAILS			
WING CHANNEL (WC)	FLEXIBLE POSTS (YFLX, WFLX)		WEDGE ANCHOR SYSTEMS
GND	GND	SRF	WAS      WAP
	EMBEDDED	SURFACE MOUNT	STEEL      PLASTIC
<b>NOTES</b> 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.	<b>NOTES</b> 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.		<b>NOTE</b> 1. Install per manufacturer's recommendations.

TYPE OF BARRIER MOUNTS	
GUARD FENCE ATTACHMENT	
GF 1	GF 2

CONCRETE TRAFFIC BARRIER (CTB)

GENERAL NOTES
1. Place delineators on a section of roadway at a consistent distance from the edge of pavement. 2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction. 3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible. 4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation. 5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface. 6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS
<b>NOTE</b> 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)

CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN
<b>NOTE</b> 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.

DELINEATORS AND TYPE 2 OBJECT MARKERS
See general notes 1, 2 and 3.

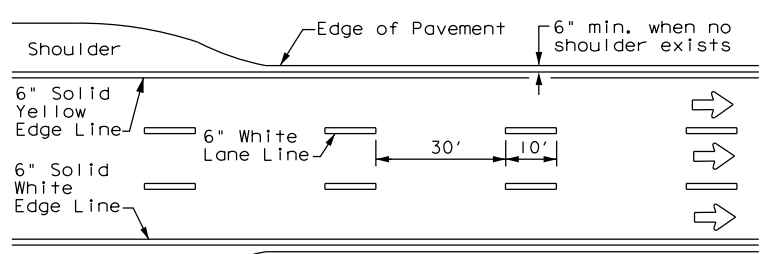
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<b>DELINEATOR &amp; OBJECT MARKER INSTALLATION</b>			
<b>D &amp; OM(2)-20</b>			
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© TXDOT August 2004	CONT	SECT	JOB
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4-10 7-20	LRD	DIMMIT	SHEET NO. 321



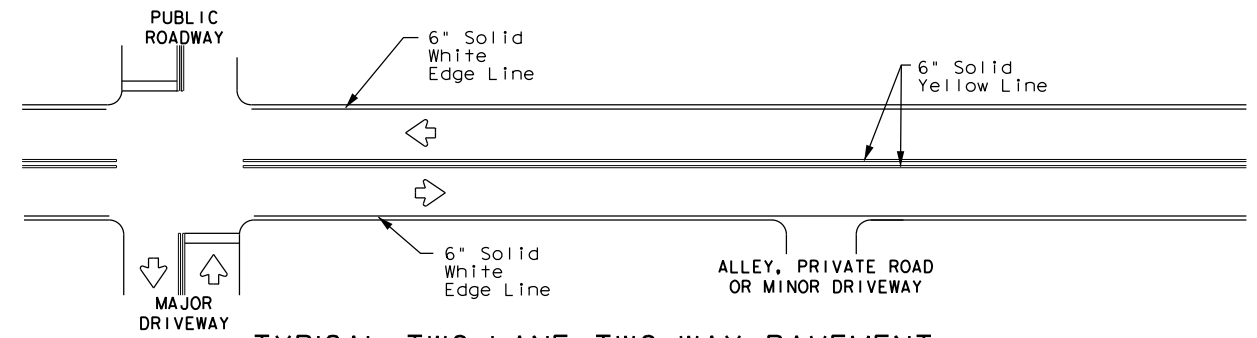




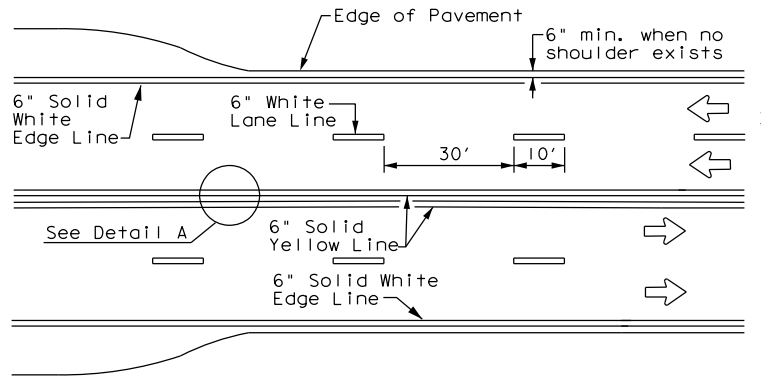
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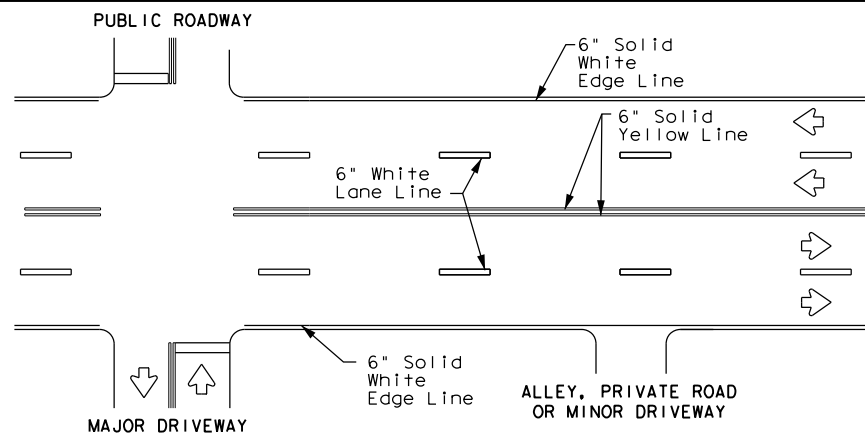
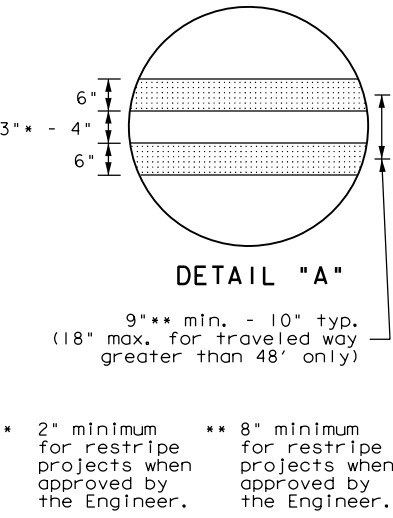
**EDGE LINE AND LANE LINES  
ONE-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



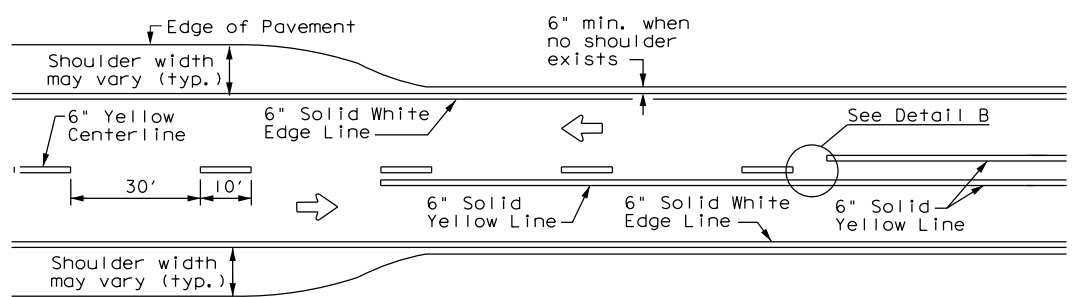
**TYPICAL TWO-LANE, TWO-WAY PAVEMENT  
MARKINGS THROUGH INTERSECTIONS**



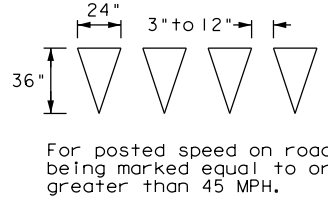
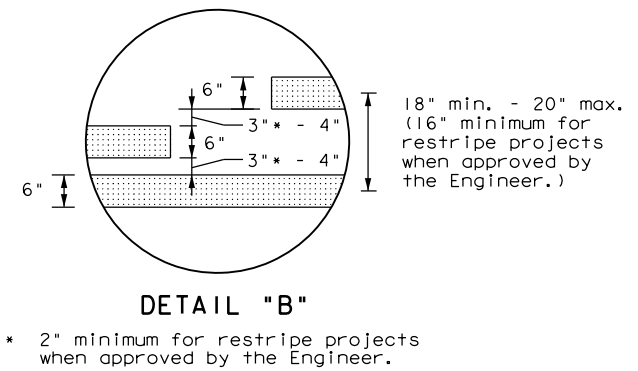
**CENTERLINE AND LANE LINES  
FOUR LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



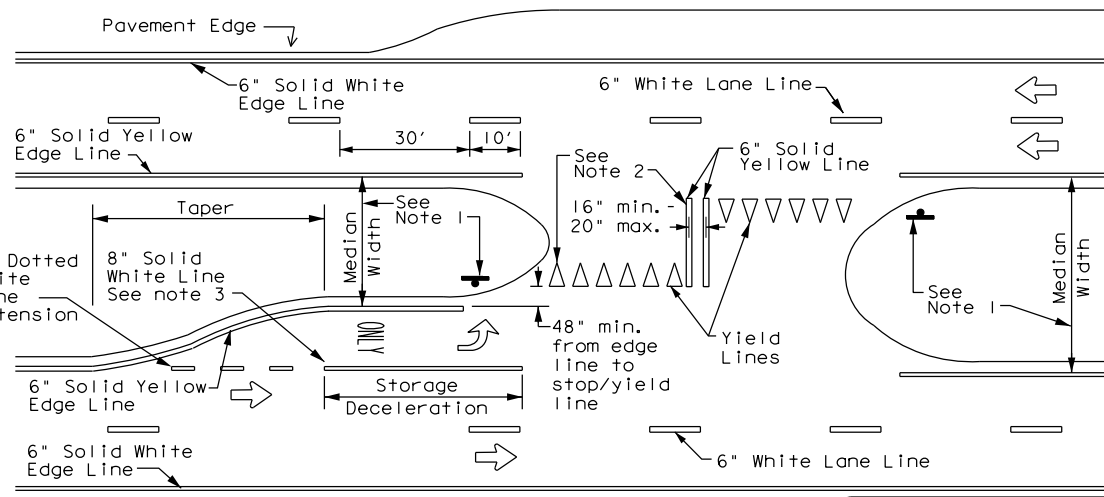
**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT  
MARKINGS THROUGH INTERSECTIONS**



**TWO LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



**YIELD LINES**



**FOUR LANE DIVIDED ROADWAY CROSSOVERS**

**NOTES**

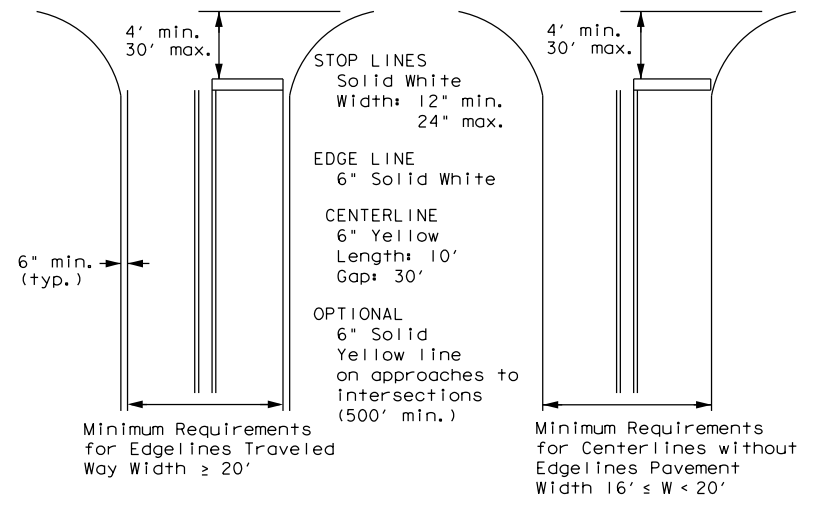
- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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.



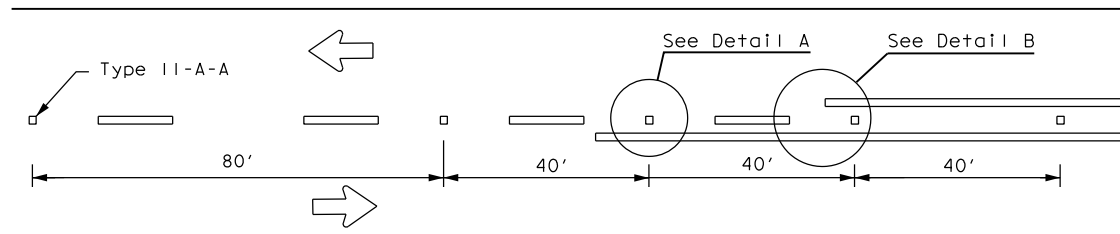
**TYPICAL STANDARD  
PAVEMENT MARKINGS**

**PM(1)-22**

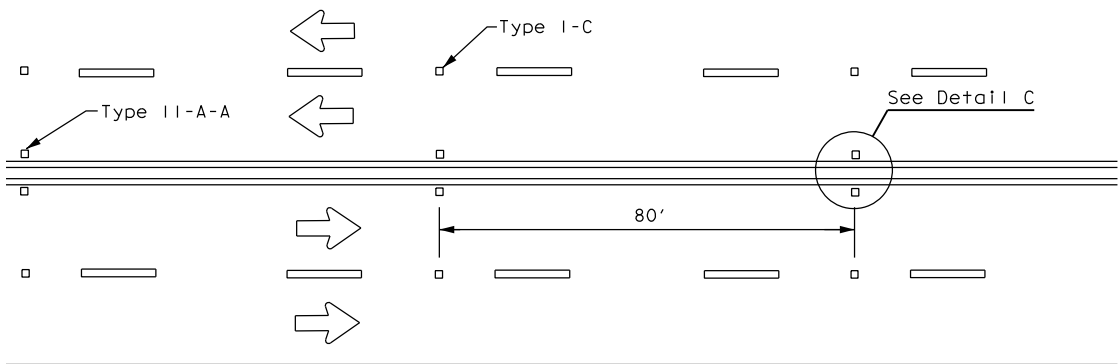
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© TXDOT	REVISIONS	CONT	SECT	JOB	HIGHWAY
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8-95	3-03 12-22	DIST	COUNTY		SHEET NO.
5-00	2-12	LRD	DIMITT		324

# REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

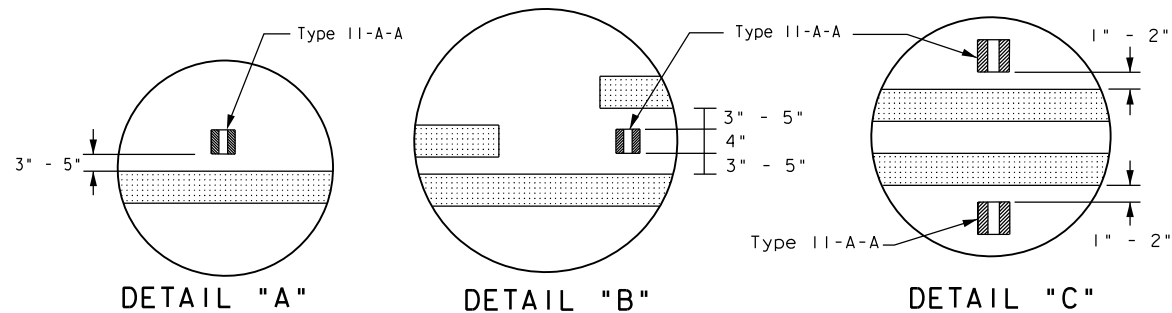
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CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



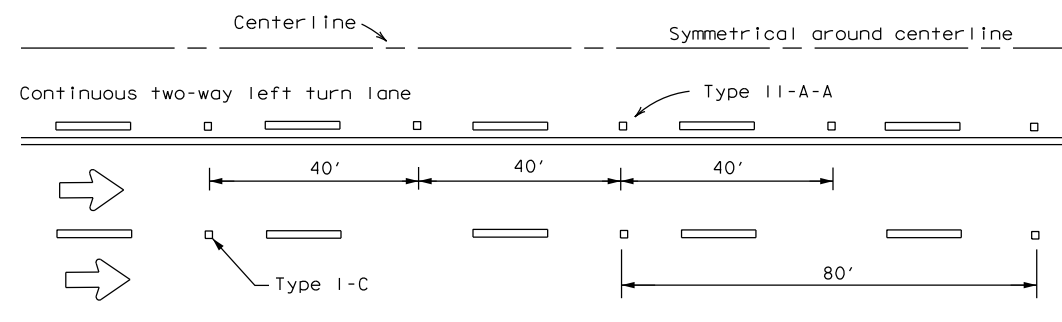
CENTERLINE & LANE LINES  
FOR FOUR LANE TWO-WAY ROADWAYS



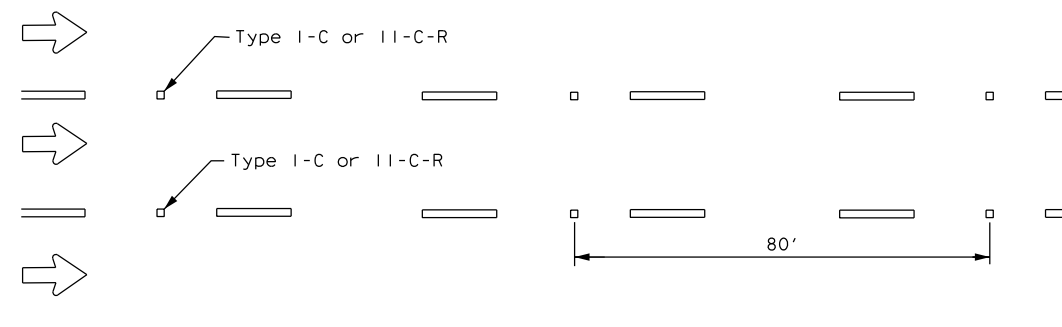
DETAIL "A"

DETAIL "B"

DETAIL "C"

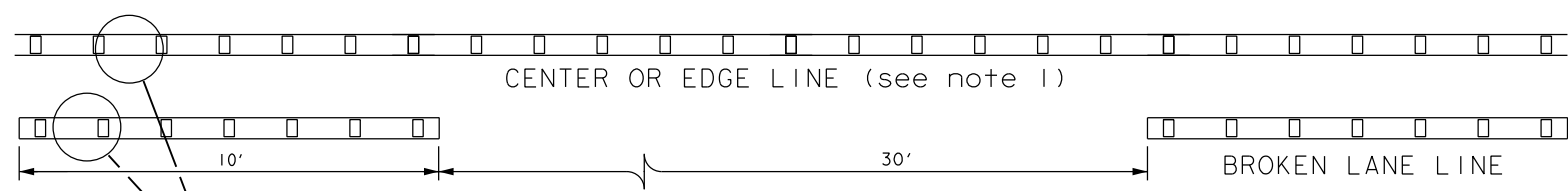


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



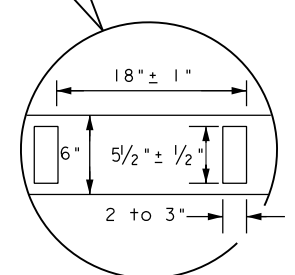
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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)

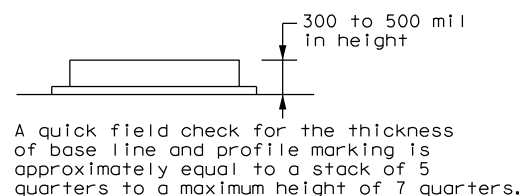
BROKEN LANE LINE



REFLECTORIZED PROFILE  
PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

6" EDGE LINE, 6" CENTERLINE  
OR 6" LANE LINE



A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

**NOTES**

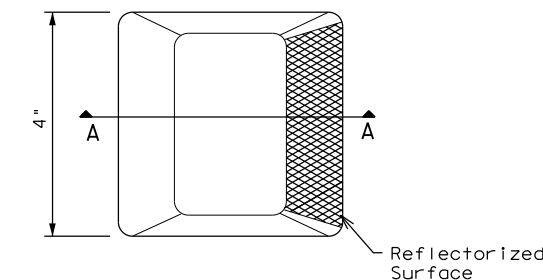
- Edge lines should typically be 6" wide and the materials shall be specified in the plans.
- Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

**GENERAL NOTES**

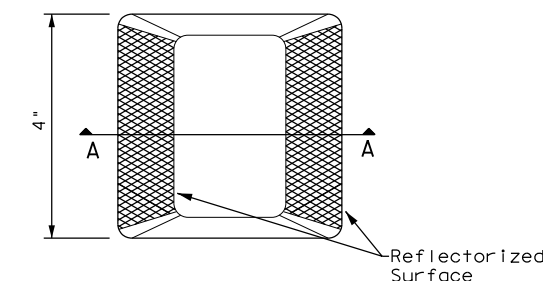
- All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
- On concrete pavements, the raised pavement markers should be placed to one side of the longitudinal joints.
- Use raised pavement marker Type I-C with undivided roadways, flush medians, 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

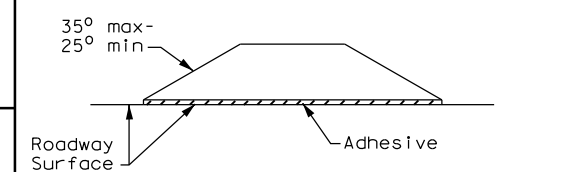
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

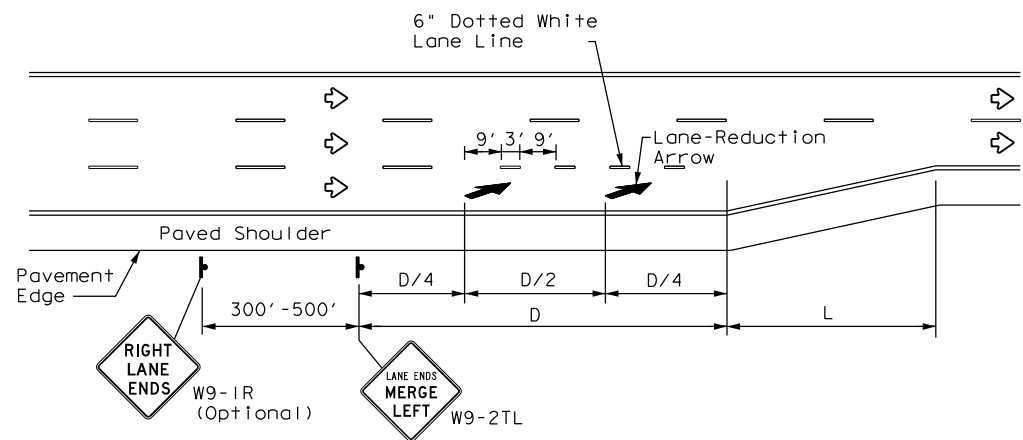
RAISED PAVEMENT MARKERS



POSITION GUIDANCE USING  
RAISED MARKERS  
REFLECTORIZED PROFILE  
MARKINGS  
PM(2) - 22

FILE: pm2-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
4-77 8-00 6-20	DIST	COUNTY	SHEET NO.	
4-92 2-10 12-22	LRD	DIMMIT	325	
5-00 2-12				

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LANE REDUCTION

NOTES

- Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
- On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
- Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
- For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

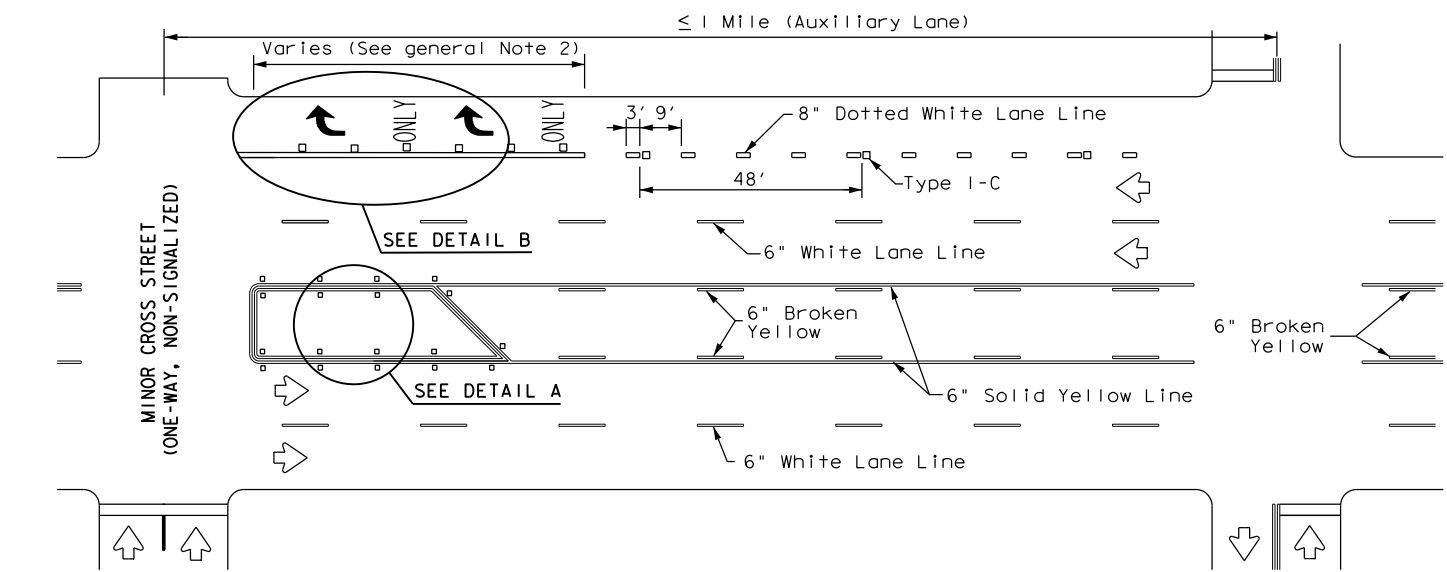
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	L=WS
45 MPH	775	
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

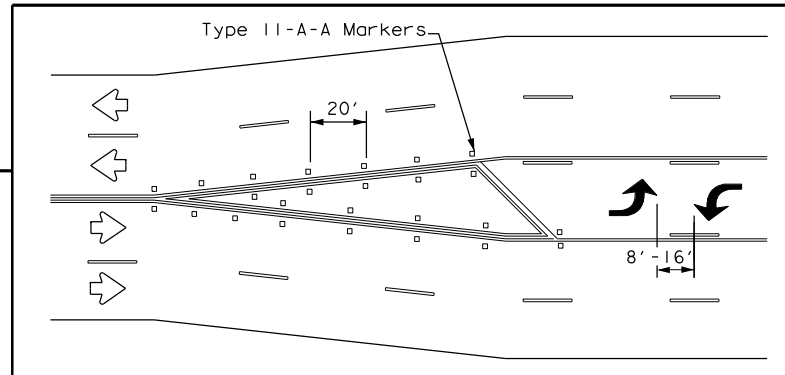
- Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
- When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
- Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

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

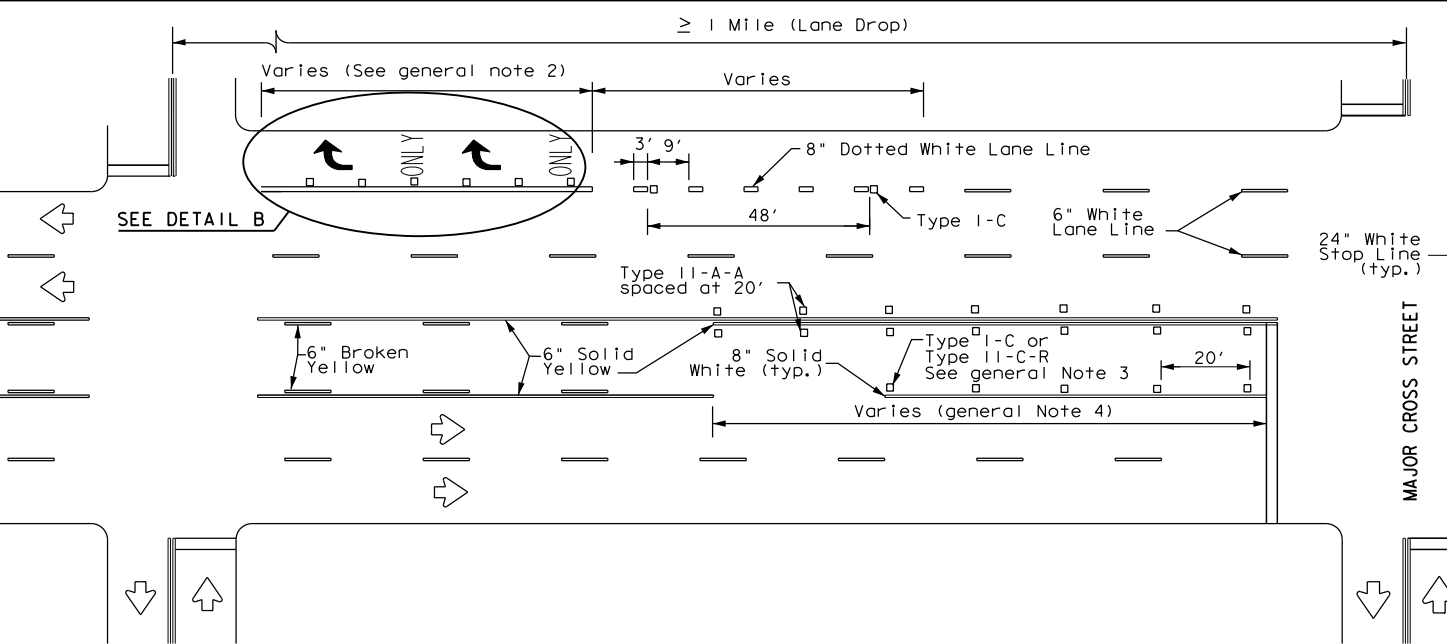
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



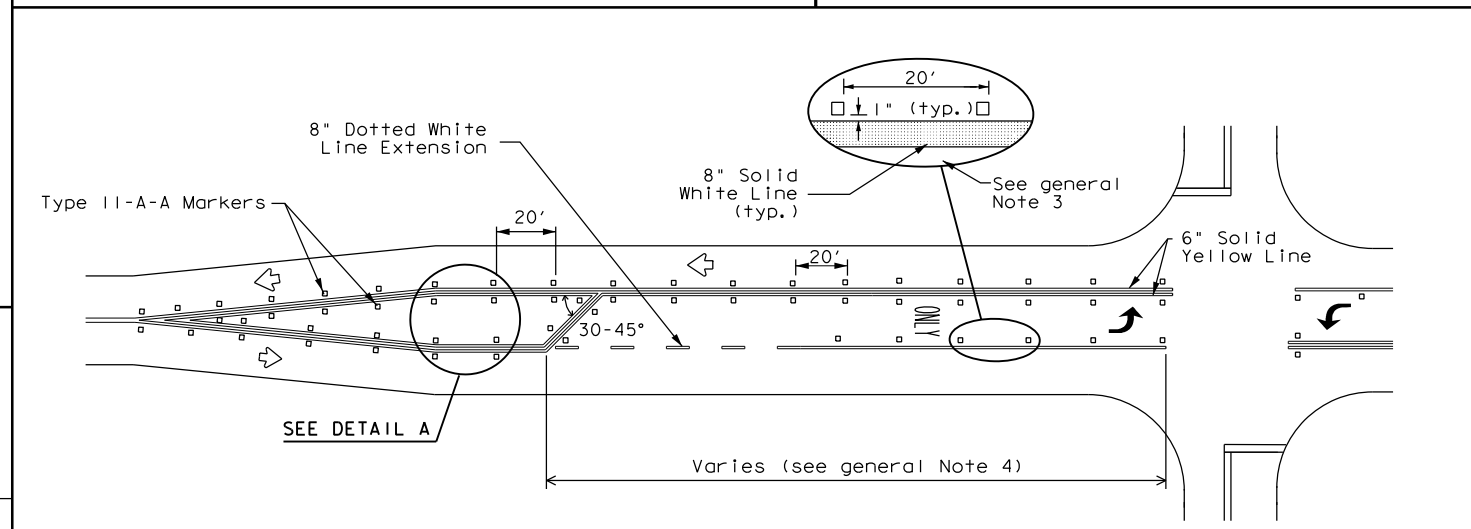
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



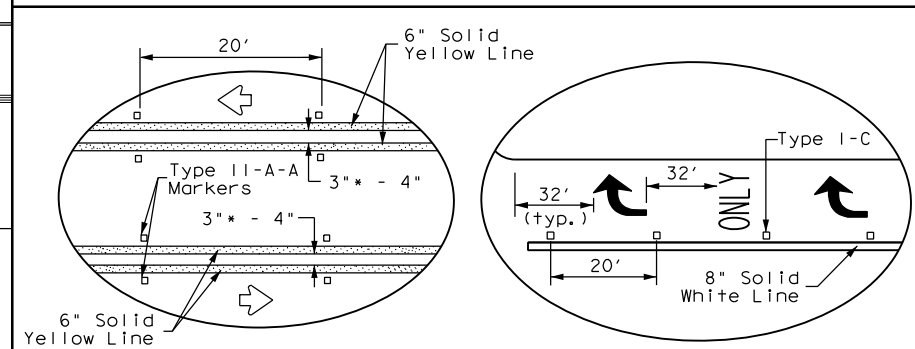
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A

DETAIL B

\* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

## TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

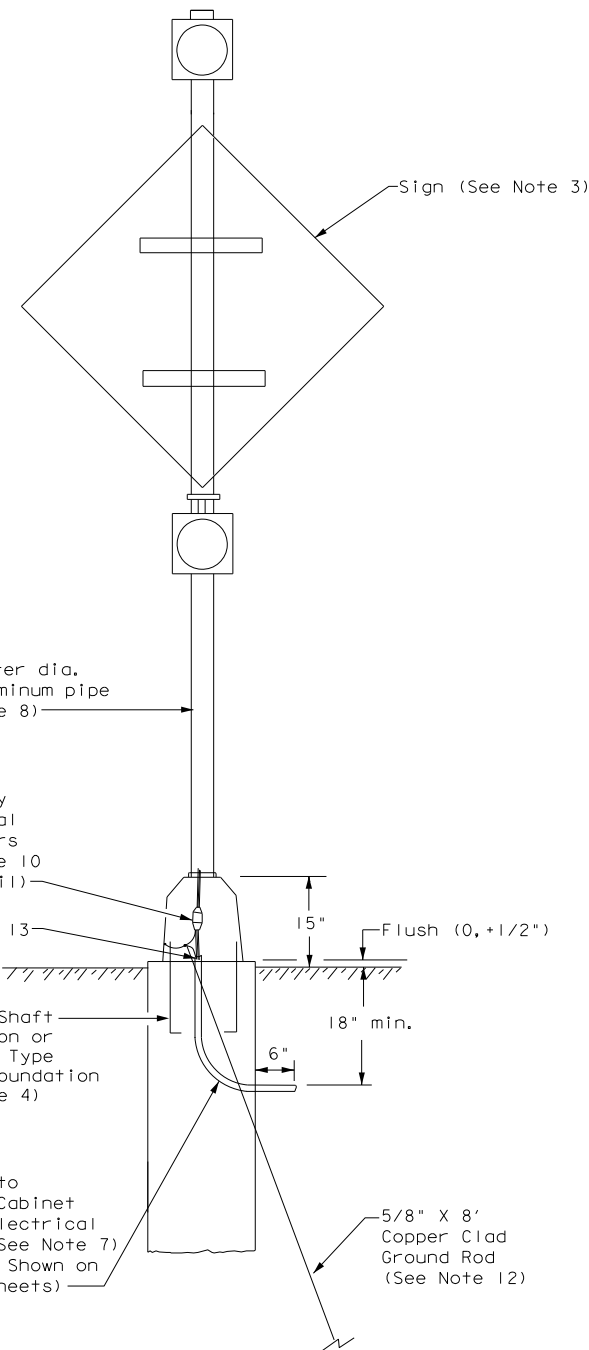
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5-00 2-10 12-22	DIST	COUNTY		SHEET NO.
8-00 2-12	LRD	DIMMIT		326

22C

DATE: 6/22/2020 9:55:31 AM  
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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to any other format or for any errors or omissions.

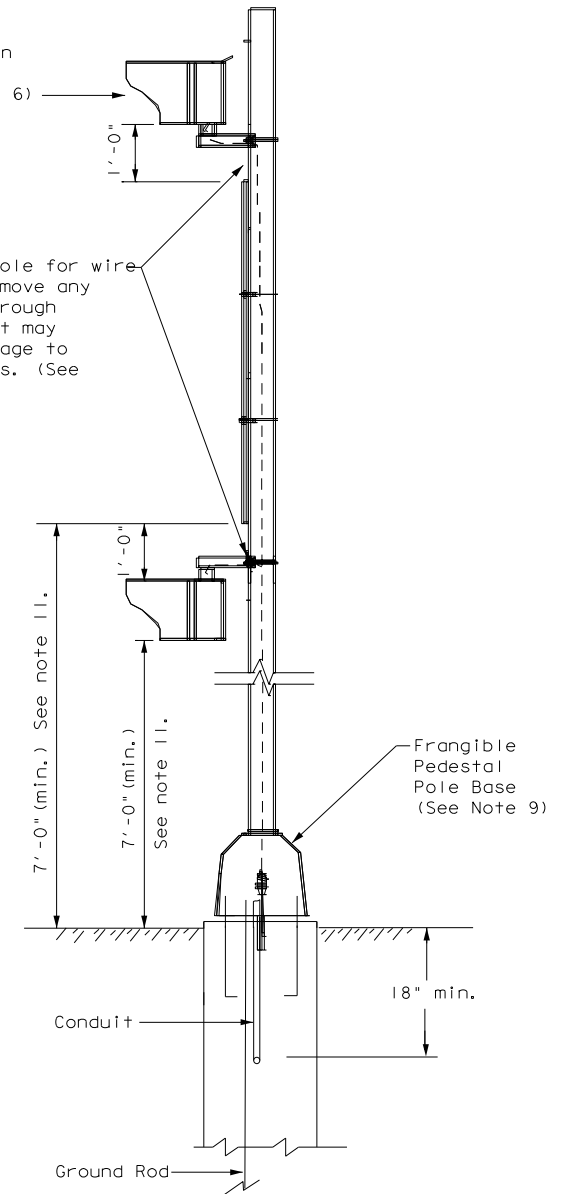
**GENERAL NOTES:**

- Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
- See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
- See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
- Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
- When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
- Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
- Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
- Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening of connection.
- Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug. For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
- Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
- Make connections to ground rods according to NEC. Ground rod clamps shall be listed for their intended purpose.
- Ensure height of conduit and ground rod is below top of anchor bolts.



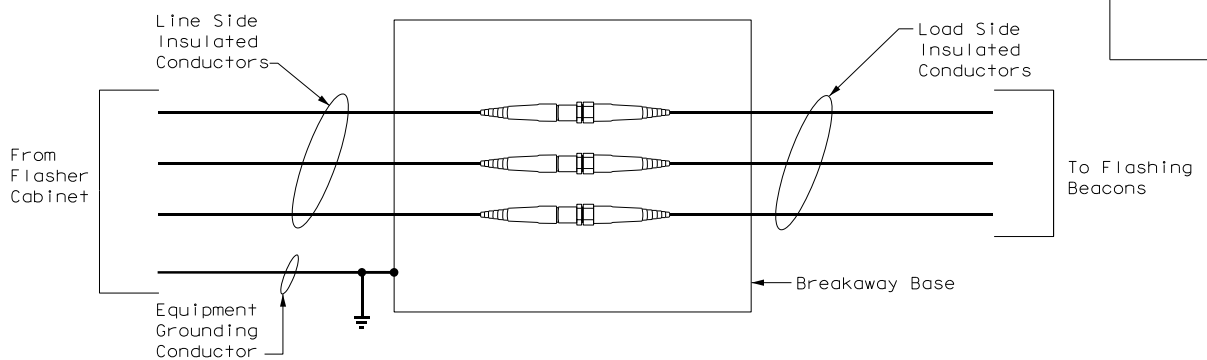
12" Beacon w/ Visor (See Note 6)

Drilled pole for wire entry, remove any burrs or rough edges that may cause damage to conductors. (See Note 6)

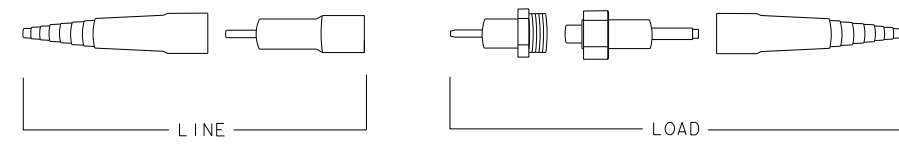


FRONT

SIDE



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS  
EXPLODED VIEW

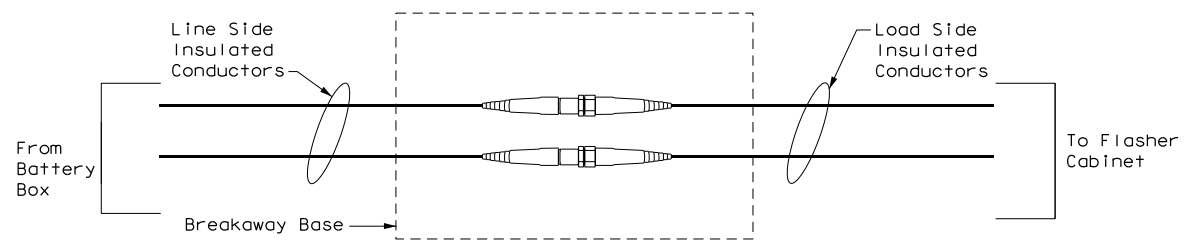
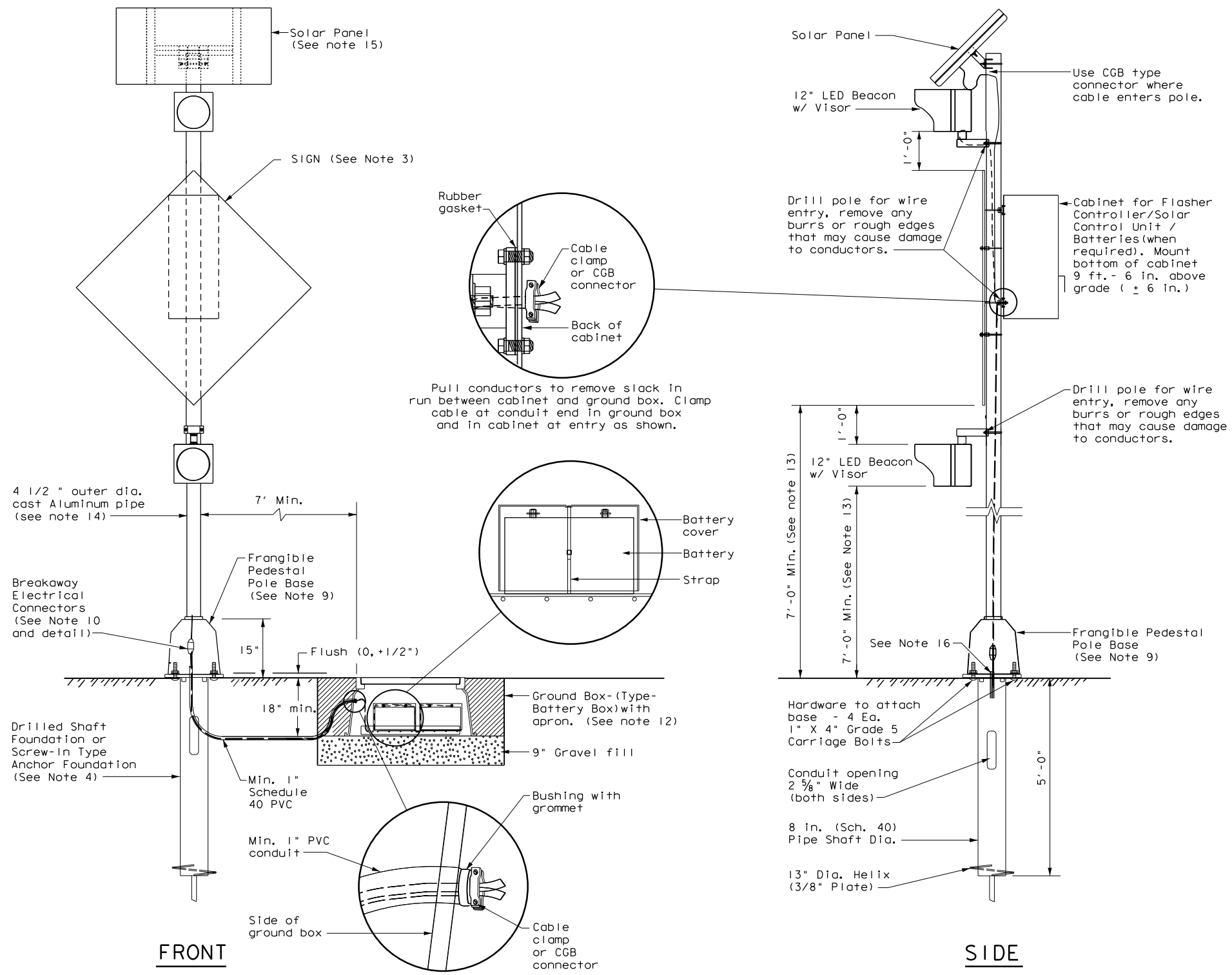
		<b>Texas Department of Transportation</b>		<b>Traffic Operations Division Standard</b>	
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<h3>RFBA-13</h3>					
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© TxDOT January 1992	CONT: 0037	SECT: 08	JOB: 042, ETC.	HIGHWAY: US 83	
REVISIONS 5-93 12-04 10-93 3-13 4-98			DIST: LRD	COUNTY: DIMMIT	SHEET NO.: 327
74					

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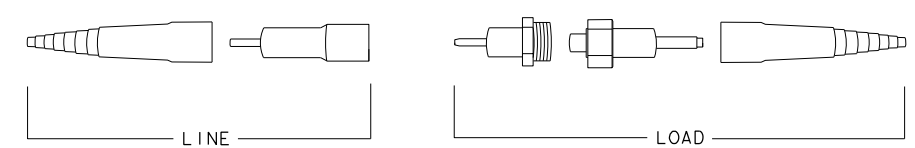
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**GENERAL NOTES:**

- Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
- See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
- See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
- Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
- When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
- Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
- Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
- Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
- Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug. For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
- Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturer's recommendations. Provide the number of batteries as required by the manufacturer.
- See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
- Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
- Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
- Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
- Ensure height of conduit is below top of anchor bolts.



**NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS**



**NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS  
EXPLODED VIEW**

**SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS**  
**SPRFBA (1) - 13**

FILE: spb1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
12-04	DIST	COUNTY	SHEET NO.	
3-13	LRD	DIMMIT	328	

# ROADWAY ILLUMINATION ASSEMBLY NOTES

DATE: 4/5/2024 2:51:38 PM  
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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of drawings from other formats to this format.

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.
2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.
4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.
5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.
  - a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.
  - b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25' above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 6th Edition (2013) of the AASHTO Design Specifications. For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25' above the surrounding terrain, provide poles meeting the following requirements:
    - i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).
    - ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.
6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.
7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.
8. Install T-Base with following procedure:
  - a. Anchor Bolt Tightening.
    - i. Coat the threads of the anchor bolts with electrically conductive lubricant.
    - ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the T-base is 1/8" before nuts are tightened.
    - iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.
    - iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.
    - v. Check top of T-base for level. If not level then foundation must be leveled.
  - b. Top Bolt Procedure
    - i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

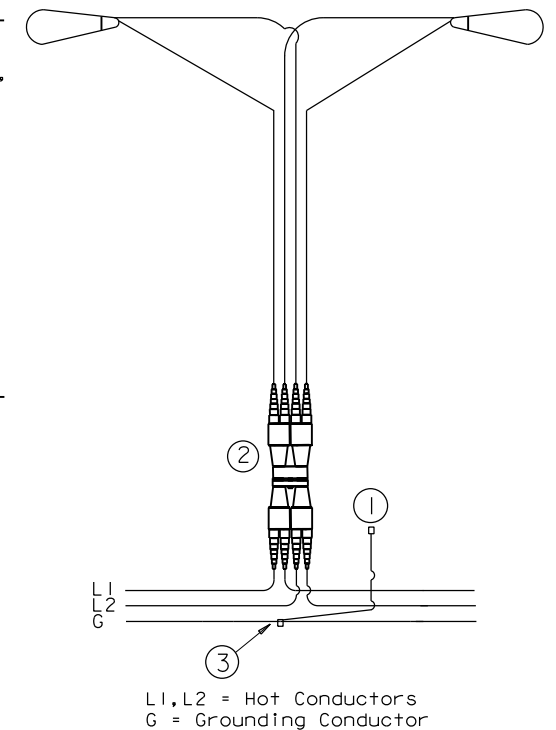
- ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."
  - iii. Tighten each nut to 150 ft-lb. using a torque wrench.
- c. Level and Plumb
- i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.
9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).
  10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.
  11. Mount luminaires on arms level as shown by the luminaire level indicator.
  12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

## Wiring Diagram Notes:

- ① Use 1/2 in. -13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.
- ② Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.
- ③ Split Bolt or other connector.

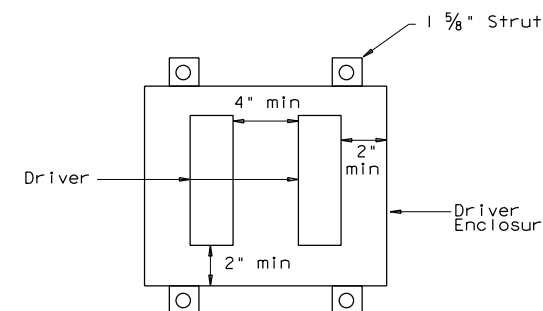
## Decorative LED Lighting Notes:

1. LED Drivers in Remote Outdoor enclosures (for drivers that do not include an enclosure as part of a factory assembly):
  - a. Provide NEMA 3R outdoor enclosure or as approved.
  - b. Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.
  - c. Install drivers with at least 2 inches of space from enclosure walls.
  - d. For multiple drivers in an enclosure, provide at least 4 inches side to side and 1 inch end to end from other drivers or electronic equipment
  - e. For drivers mounted on back wall of enclosure, mount enclosure on 1 5/8" strut or other standoff to dissipate heat, or mount driver to side of the enclosure or to the metal cover.
  - f. Provide remote drivers with a maximum of 100 watts
  - g. Provide drivers with documentation of 100,000 hr lifetime at Tcase of 65C or higher.



## TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

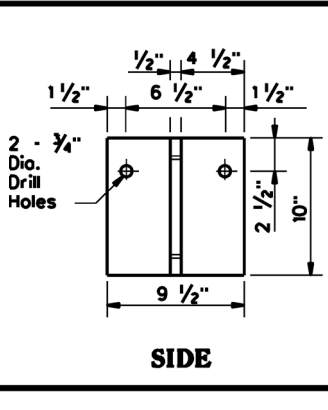
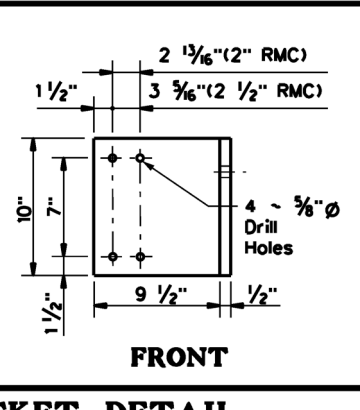
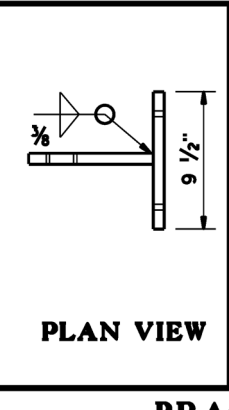
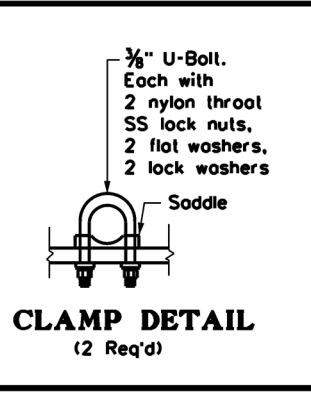
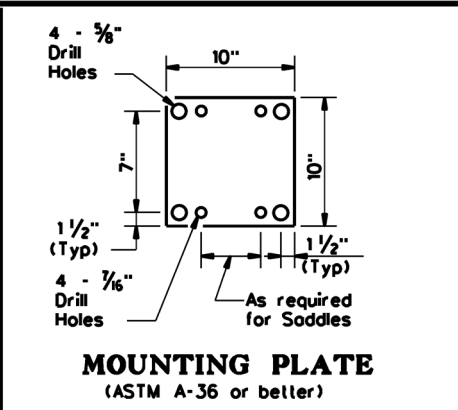
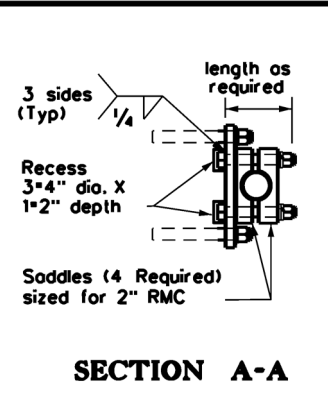


Driver Spacing In Remote Enclosure

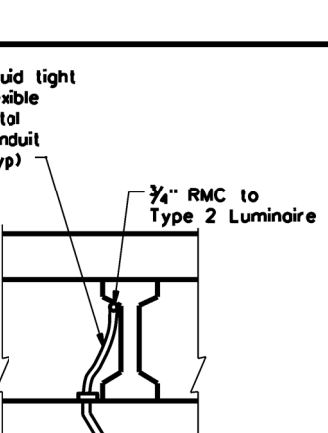
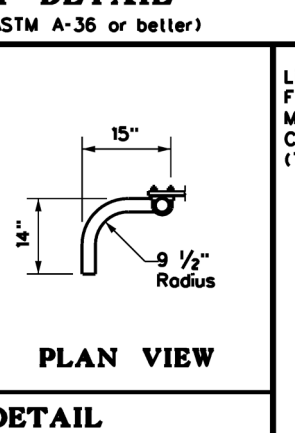
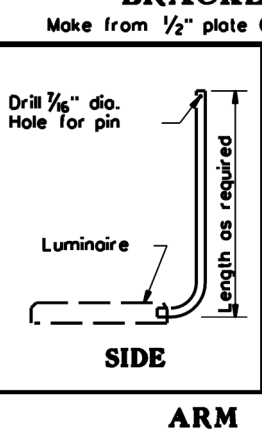
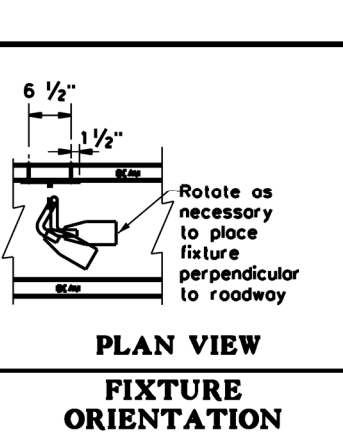
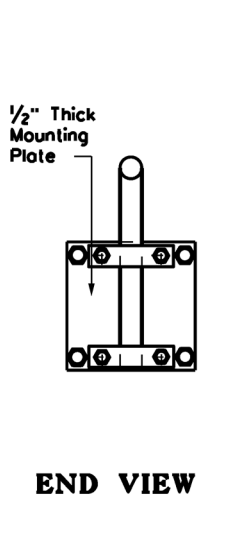
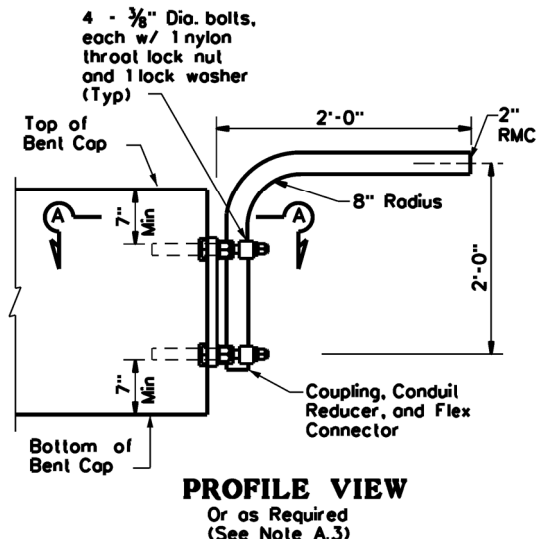
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12-20		LRD	DIMMIT		329
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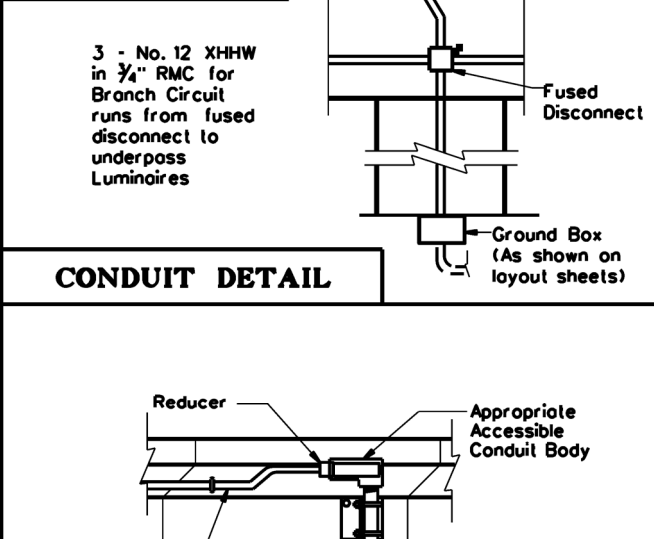
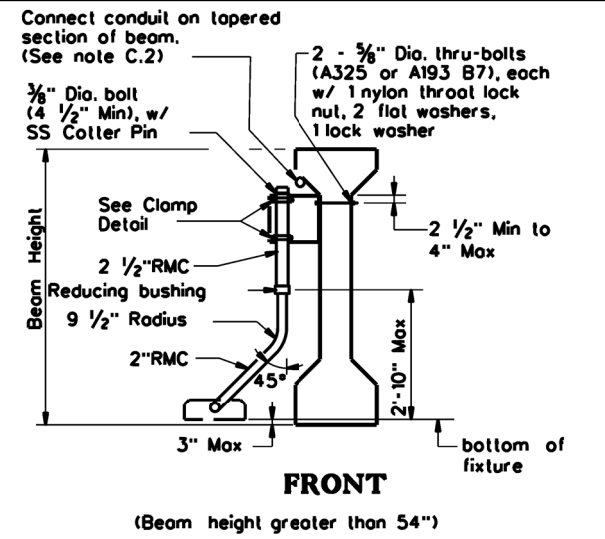
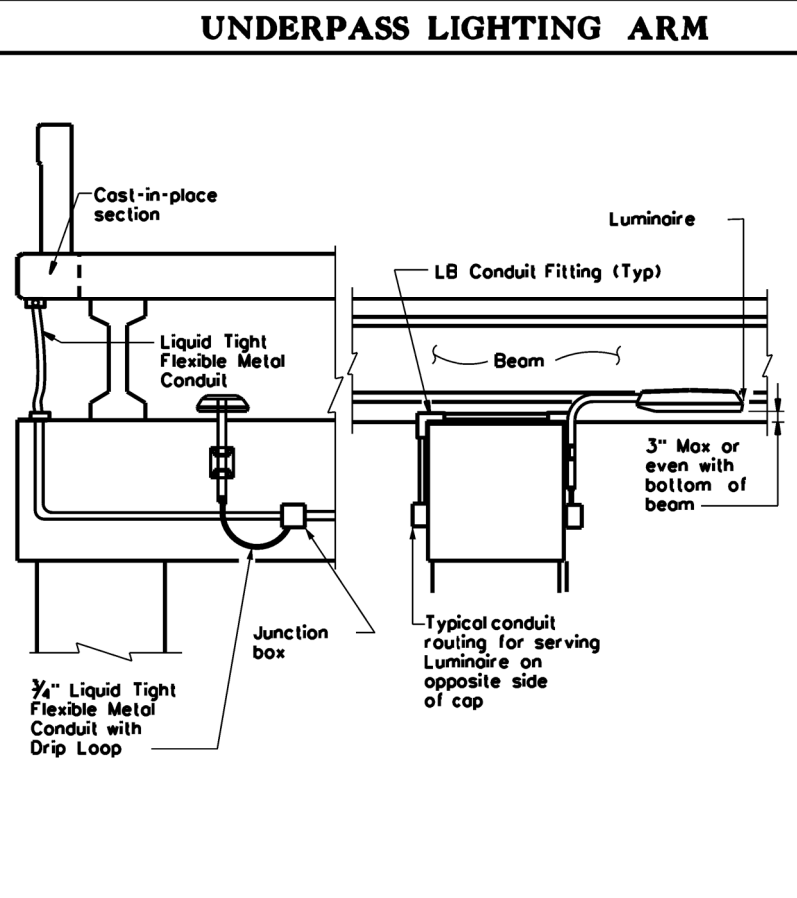
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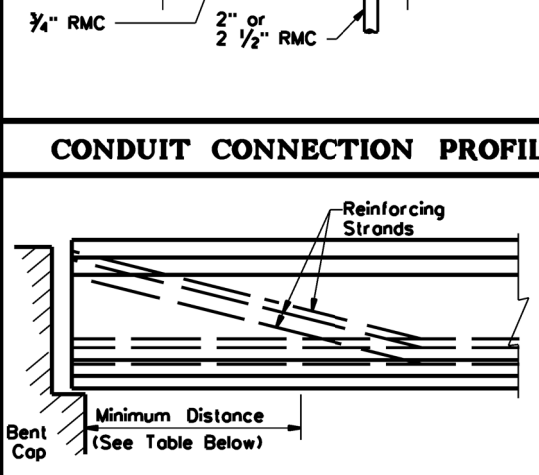
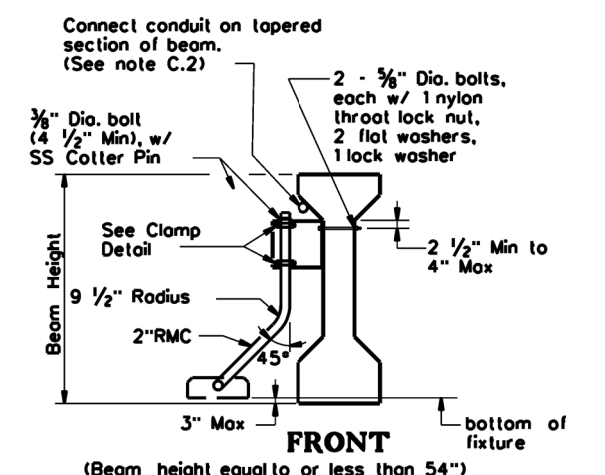
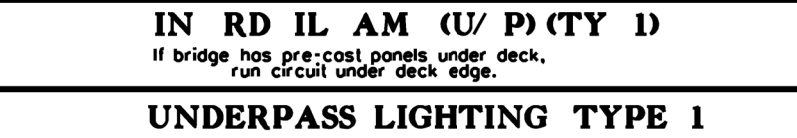
- GENERAL NOTES:**
- A. ALL 150 watt HPS and 150 watt equivalent LED Luminaires
- Luminaire locations, conduit and conductor sizes and routing are typical and diagrammatic only. See project layout sheets for specific details.
  - Conduit will be paid for under Item 618, "Conduit" and conductors will be paid for under Item 620, "Electrical Conductors," unless otherwise shown on the plans.
  - Adjust conduit in saddles to place fixture height and orientation as required. See fixture orientation detail and plans. Where practicable, place luminaires so the bottom of luminaire is above the bottom of the beam, maximum of 3 in. (See detail UNDERPASS LIGHTING ARM TYPE 2)
  - Except as noted, galvanize all structural steel and exposed bolts, nuts, and washers in accordance with Item 445 "Galvanizing".
  - Fabrication of brackets and support arms will not be paid for directly but is subsidiary to Item 610, "Roadway Illumination Assemblies."
  - Install a heavy duty NEMA 3R fused disconnect or breaker enclosure rated at 30 amps and 480 volts to switch underpass luminaires as shown on plans, with at least one per bridge circuit. Install 20 amp time-delay fuses or inverse-time circuit breakers. Mount disconnect or breaker enclosure 10 ft. (min) above grade on columns or bent caps as approved by the Department. Modify disconnect to allow padlocking in the "ON" and "OFF" positions. Padlocks and disconnect switches or circuit breakers for underpass fixtures will not be paid for directly but are subsidiary to the various bid items of the contract.
  - Conduit on columns, caps, and slab is shown surface mounted. For new columns and caps, embed PVC conduit in concrete. Bond and ground metal junction boxes and conduit.



- B. TYPE 1
- Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) for Type 1 arm shaft.
  - Use 3/8 in. stainless steel bolt or stud non-epoxy type expansion anchors for concrete for Type 1 mounting. Except as noted, provide an allowable 2650 lbs minimum pull-out force (after consideration of adjustment factors for edge distance and bolt spacing) for each anchor. Install each anchor to the embedment depth recommended by the manufacturer.
  - Attach conduit to plate with 4 saddles, four - 3/8 in. diameter bolts, nylon throat lock nuts, and lock washers.



- C. TYPE 2
- Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) or provide a combination of 2 1/2 in. (2.875" O.D., 0.193" wall) and 2 in. (2.375" O.D., 0.146" wall) rigid metal conduits with a reducing bushing as beam height stipulated for Type 2 arm shaft. Field cutting and threading will be permitted. Paint cut and threaded areas with zinc rich paint after conduit is connected to adjacent fitting.
  - Connecting conduit may be strapped to tapered section only of precast beams as shown. Anchor as approved by the Engineer. Maximum anchor depth is 1 in.
  - Indiscriminate drilling into precast concrete beams may result in reduced beam strength. Use drilling location and method as directed by the Engineer. See Location of Underpass Lighting Mounting Bracket detail. The locations shown in the table are such that reinforcing strands will not be damaged.



**TABLE 5**

**LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET TABLE**

SPAN LENGTH	MINIMUM DISTANCE
< 50'	10'-0"
50'- 70'	15'-0"
70'- 90'	20'-0"
> 90'	25'-0"



**ROADWAY ILLUMINATION DETAILS (UNDERPASS LIGHT FIXTURES)**

**RID(3)-20**

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LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET

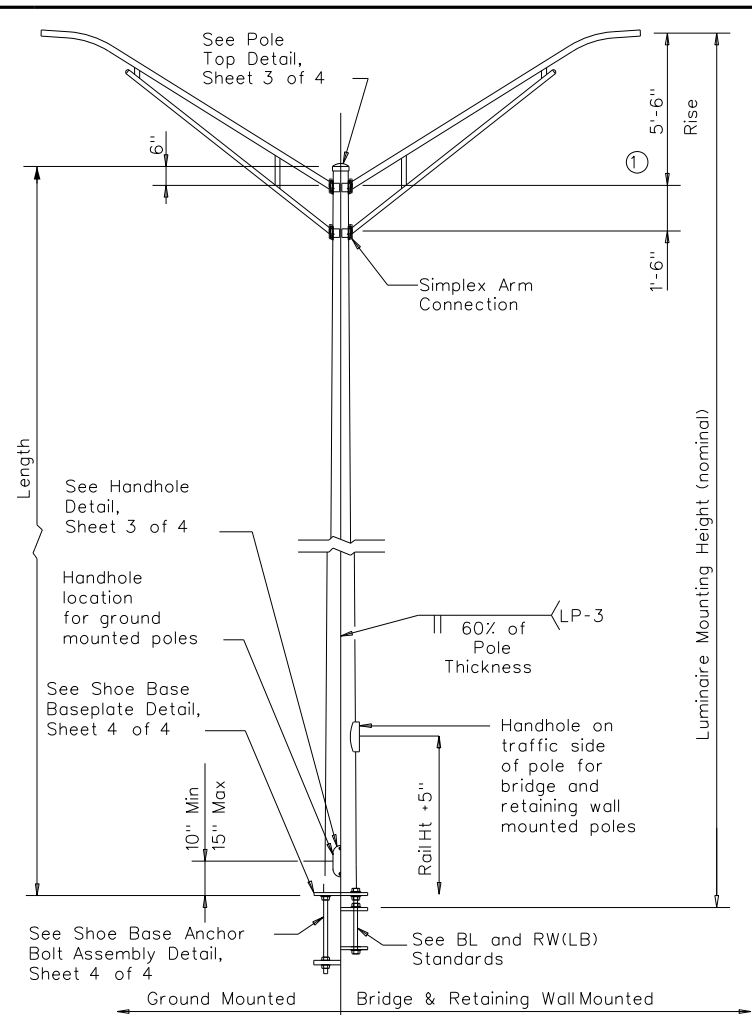
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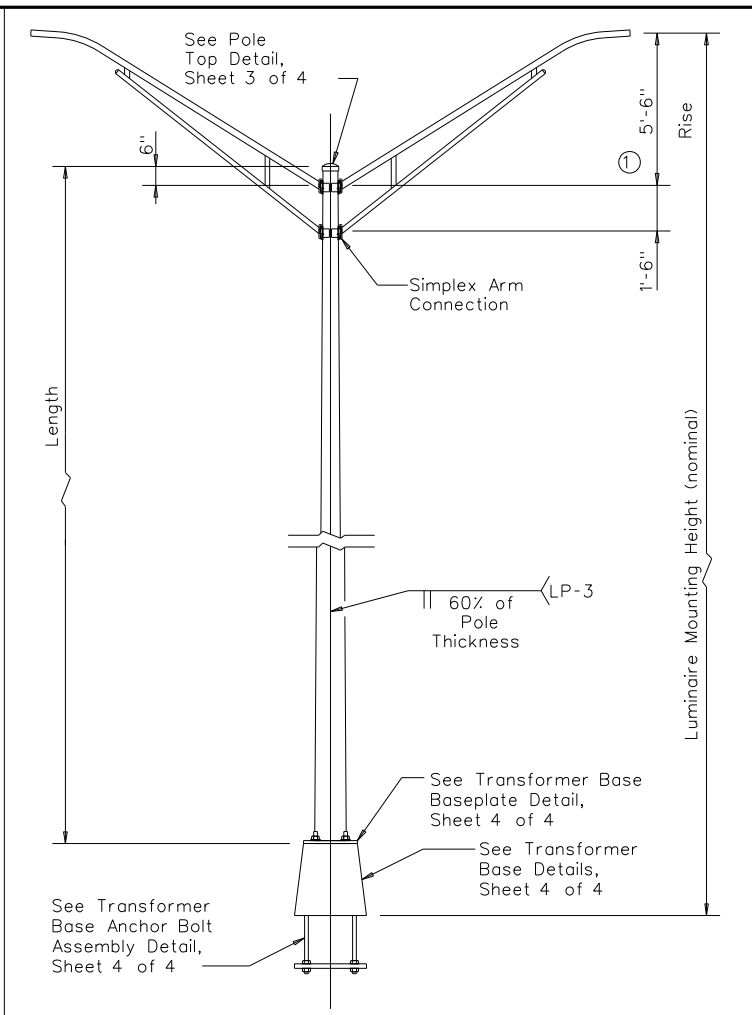
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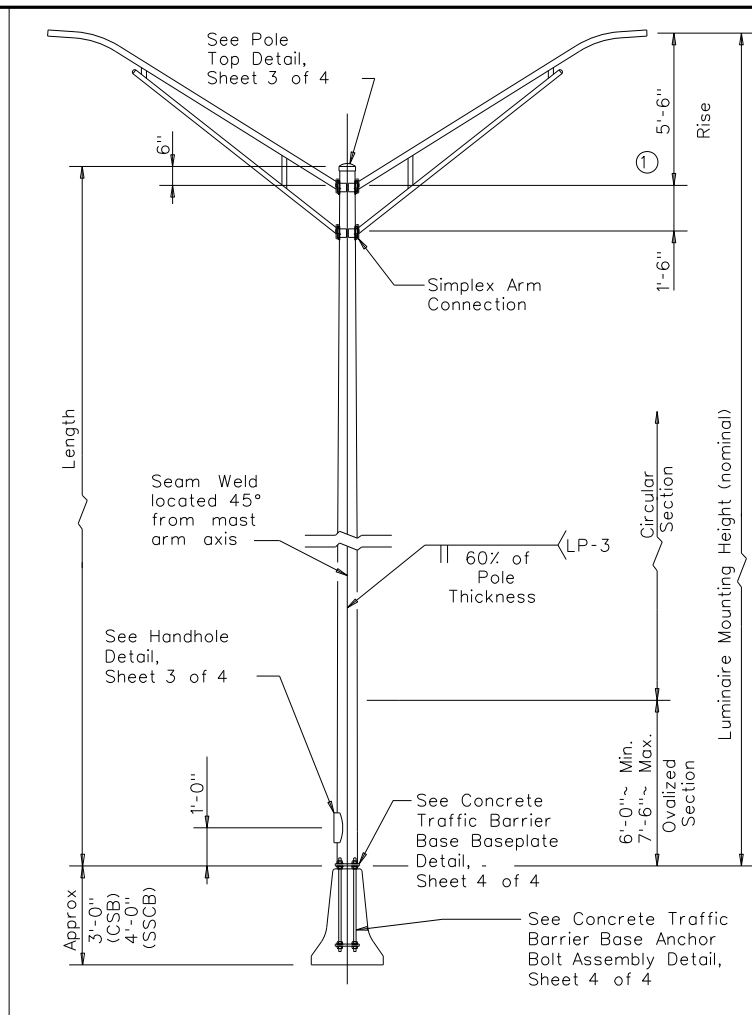
**SHOE BASE POLE**

SHOE BASE POLE					
Luminaire Mounting Height (Nominal)(ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



**TRANSFORMER BASE POLE**

TRANSFORMER BASE POLE					
Luminaire Mounting Height (Nominal)(ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



**CONCRETE TRAFFIC BARRIER BASE POLE**

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal)(ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About LC of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

**GENERAL NOTES:**

- Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
- Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
- Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
- For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
- Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
- Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
- Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
- Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
- Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
- All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
- The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
- Pole length is based on a 5'-6" luminaire arm rise, 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
- Erect transformer base poles in accordance with sheet RID(1).

**MATERIAL DATA**

COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr A, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 or A1008 HSLAS Gr 50 Cl 2	
Base Plate and Handhole Frame	A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts	F1554 Gr 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A563 A194 Gr 2H, or Gr DH	
Flat Washers	F436	

**NOTES:**

- 2'-6" rise for 4 ft. luminaire arms.
- Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.
- A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

**POLE ASSEMBLY FABRICATION TOLERANCES TABLE**

DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

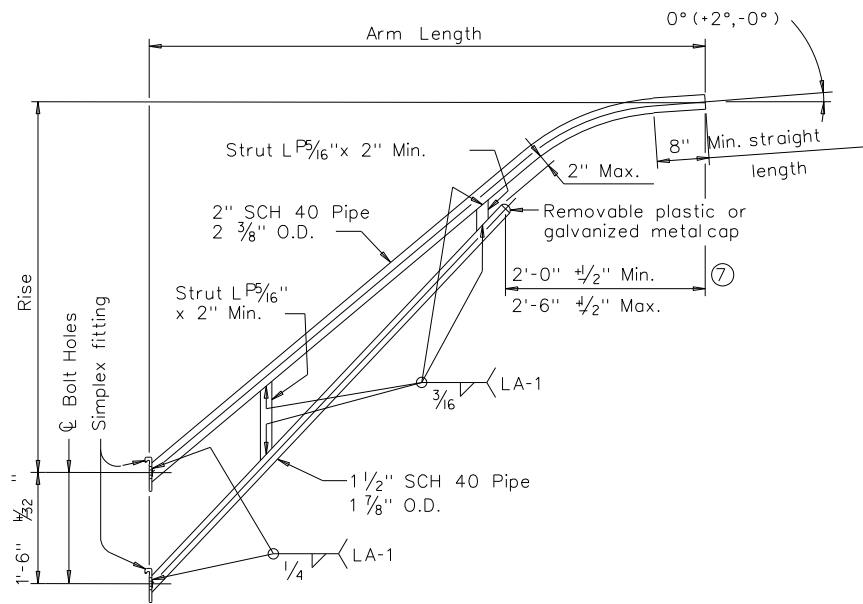


**ROADWAY ILLUMINATION POLES RIP(2)-19**

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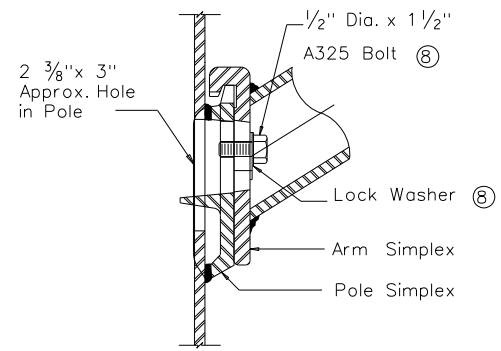
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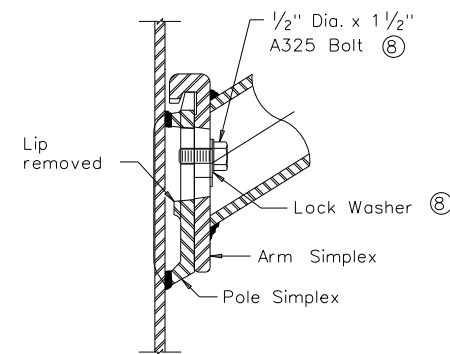
**LUMINAIRE ARM**

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

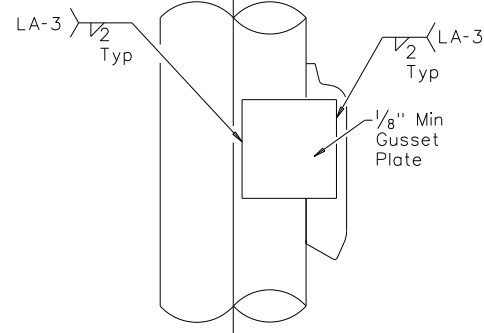
ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"



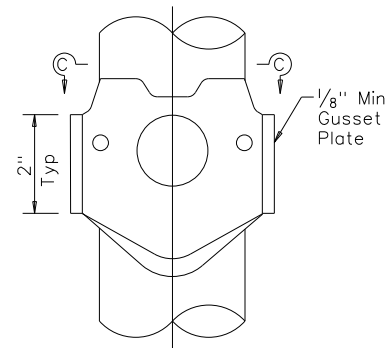
**UPPER SIMPLEX FITTING**  
(Gusset not shown for clarity)



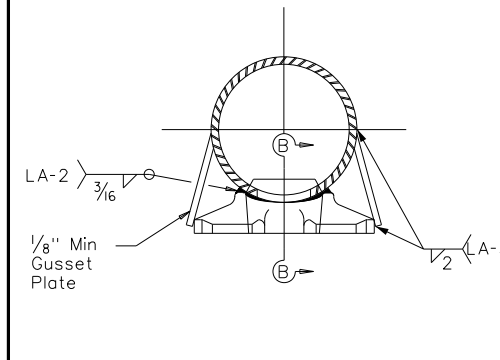
**LOWER SIMPLEX FITTING**  
(Gusset not shown for clarity)



**SIDE**

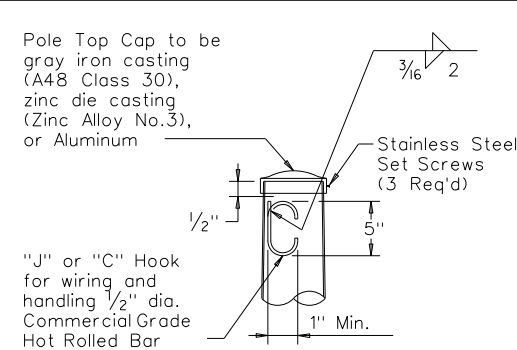


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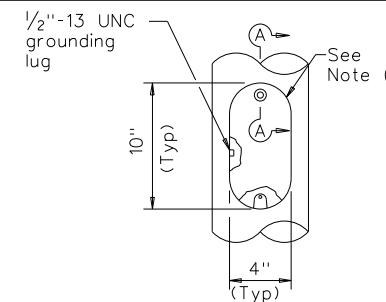


**SECTION C-C**

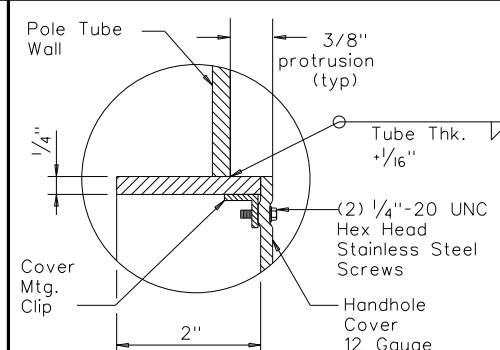
**SIMPLEX ATTACHMENT DETAIL**



**POLE TOP**



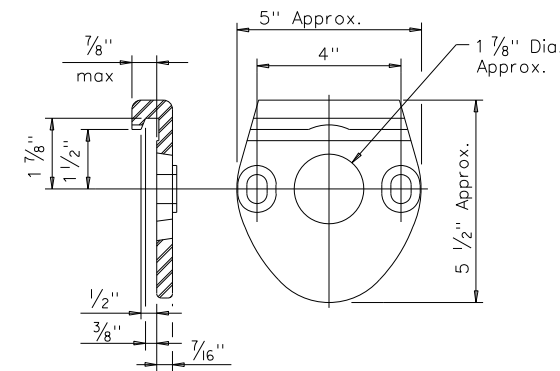
**ELEVATION**



**SECTION A-A**

**HANDHOLE**

**POLE SIMPLEX DETAIL 9**



**ARM SIMPLEX DETAIL 9**

**NOTES:**

- ④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.
- ⑤ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.
- ⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.
- ⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.
- ⑧ Each pole simplex fitting shall be supplied with 2 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.
- ⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.
- ⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

**MATERIALS**

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 10215, A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 6, A1011 HSLAS-F Gr 50 6
Arm Struts and Gusset Plates	ASTM A36, A572 Gr 50 or A588
Misc.	ASTM designations as noted

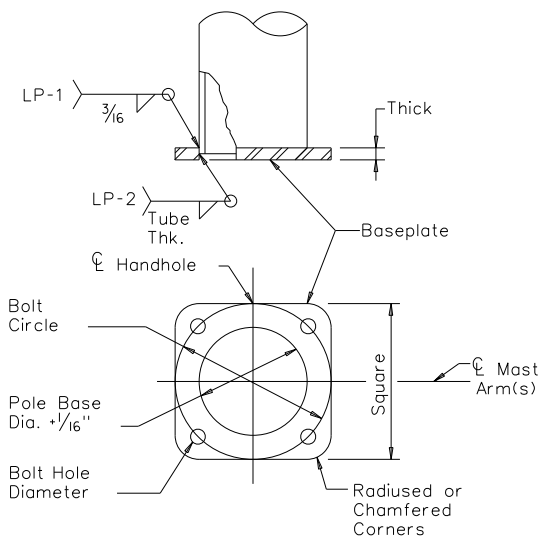
SHEET 3 OF 4



**ROADWAY ILLUMINATION POLES**  
**RIP(3)-19**

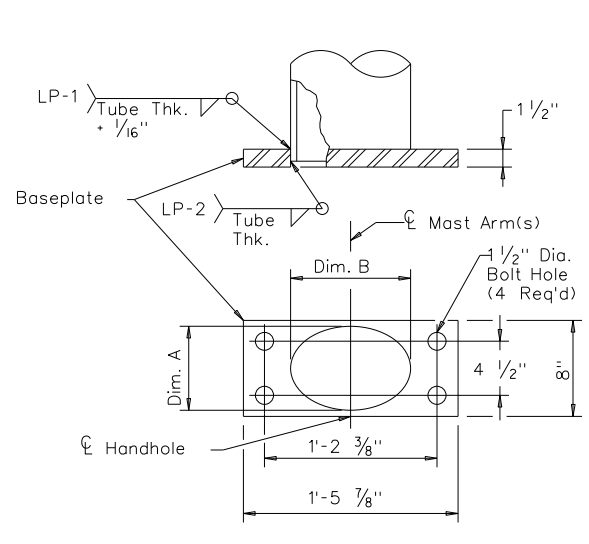
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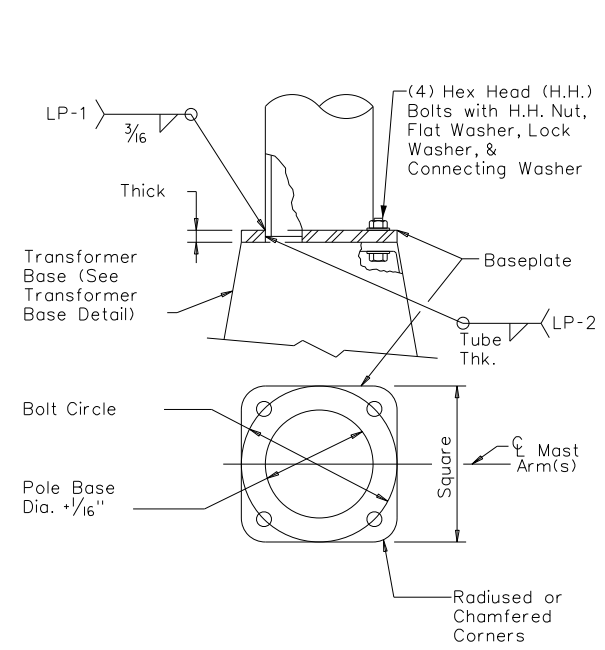
**SHOE BASE BASEPLATE**

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20'- 39'	13"	13"	1 1/4"	1 1/4"
40'	15"	15"	1 1/4"	1 1/2"
50'	15"	15"	1 1/2"	1 1/2"



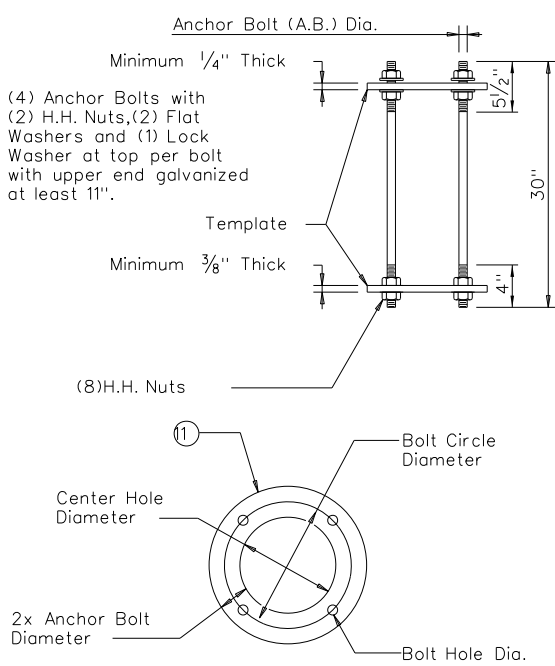
**CONCRETE TRAFFIC BARRIER BASE BASEPLATE**

CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA. (2)	DIM. A	DIM. B
28'- 38'	9"	7" ± 1/4"	10" ± 1/4"
48'	10 1/2"	7" ± 1/4"	13" ± 1/4"



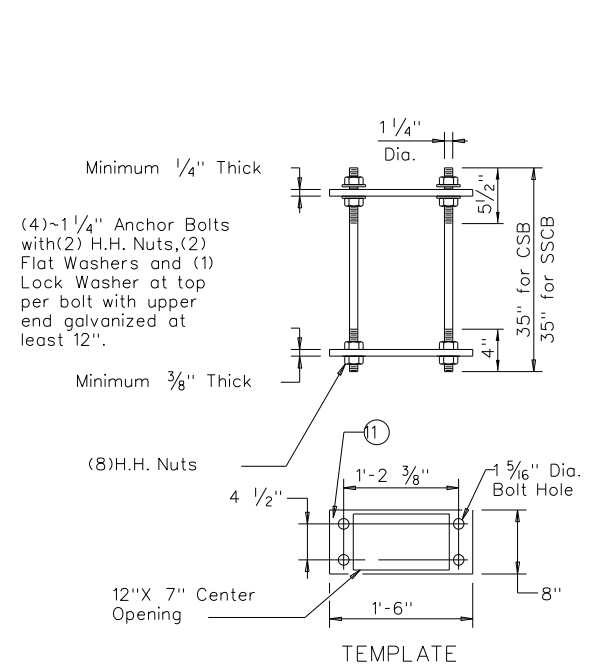
**TRANSFORMER BASE BASEPLATE**

TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFORMER BASE TYPE
20'- 39'	13"	13"	1 1/4"	1"	1 1/4"	A
40'	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50'	15"	15"	1 1/2"	1 1/4"	1 1/2"	B



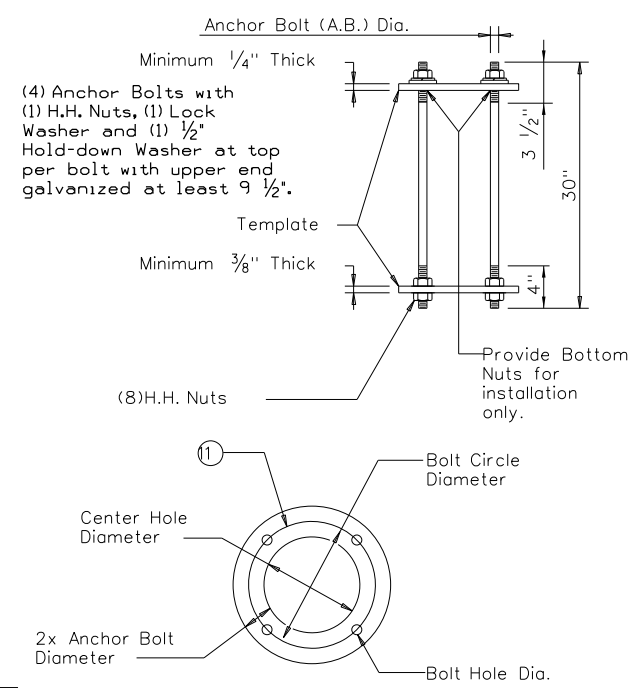
**SHOE BASE ANCHOR BOLT ASSEMBLY**

SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20'-39'	1"	13"	11"	1 1/16"
40'-50'	1 1/4"	15"	12 1/2"	1 5/16"



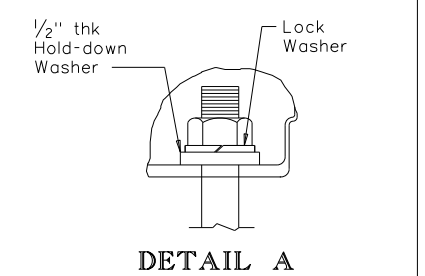
**CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY**

CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20'- 39'	1"	14"	12"	1 1/16"
40'- 50'	1 1/4"	17 1/4"	14 3/4"	1 5/16"

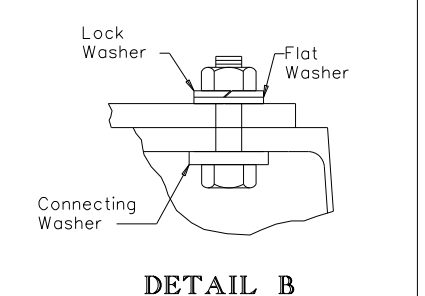


**TRANSFORMER BASE ANCHOR BOLT ASSEMBLY**

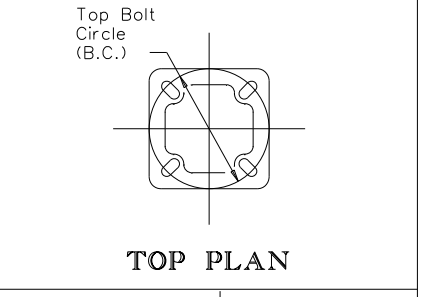
TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



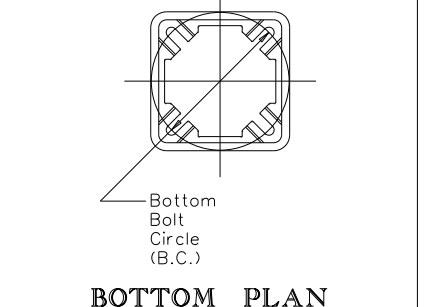
**DETAIL A**



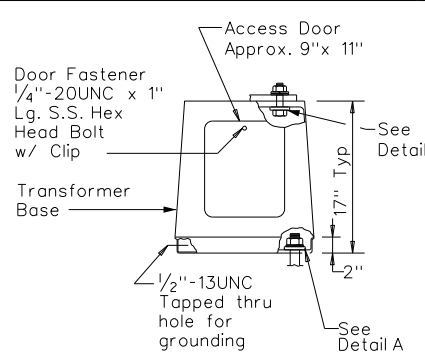
**DETAIL B**



**TOP PLAN**



**BOTTOM PLAN**



**ELEVATION**

**TRANSFORMER BASE DETAILS**

**GENERAL NOTES:**

- For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
- All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
- Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
- Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
- Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

**NOTES:**

- Anchor Bolt Templates do not need to be galvanized.
- Pole diameter before ovalized.

ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"



**ROADWAY ILLUMINATION POLES  
RIP(4)-19**

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© TXDOT January 2007	CONT	SECT	JOB	HIGHWAY
7-17	0037	08	042, ETC.	US 83
12-19	DIST	COUNTY	SHEET NO.	
	LRD	DIMITT	334	

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## SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

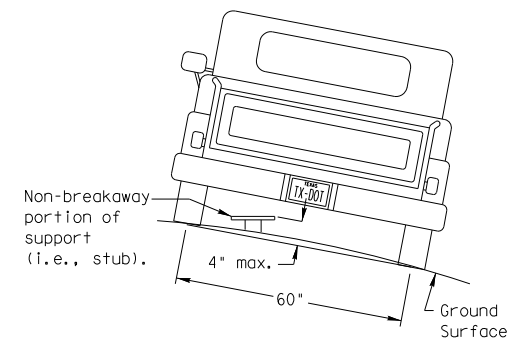
SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

Post Type \_\_\_\_\_  
 FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))  
 TWT = Thin-Walled Tubing (see SMD(TWT))  
 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))  
 S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2) \_\_\_\_\_  
 Anchor Type \_\_\_\_\_  
 UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))  
 UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))  
 WS = Wedge Anchor Steel - (see SMD(TWT))  
 WP = Wedge Anchor Plastic (see SMD(TWT))  
 SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))  
 SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation  
 P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))  
 T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))  
 U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))  
 IF REQUIRED  
 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))  
 BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))  
 WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))  
 EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

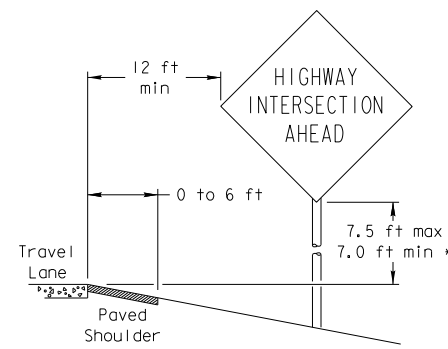
## REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-degree chord (i.e., typical space between wheel paths).

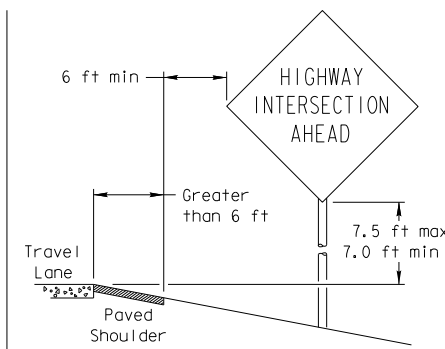
## SIGN LOCATION

### PAVED SHOULDERS



LESS THAN 6 FT. WIDE

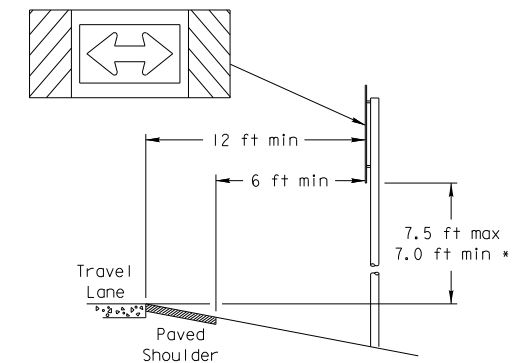
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

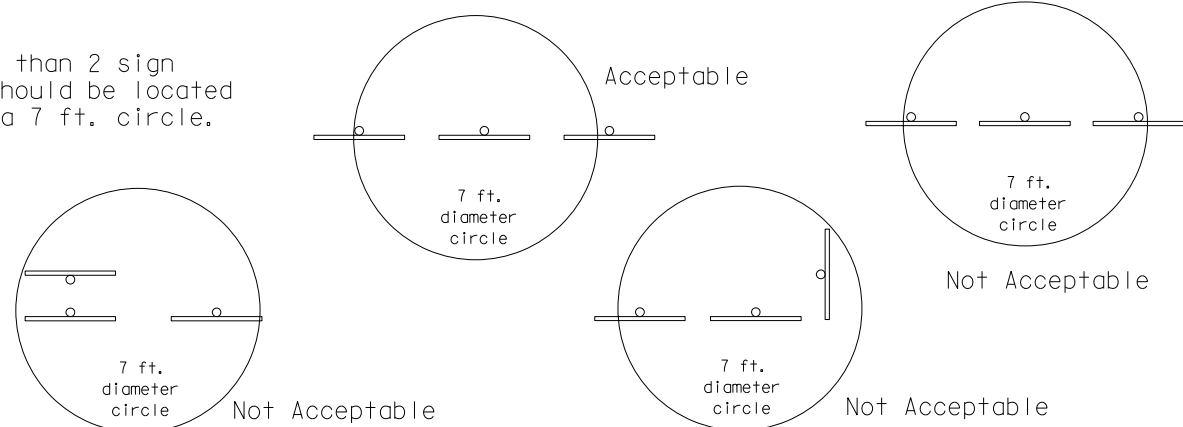
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

### T-INTERSECTION

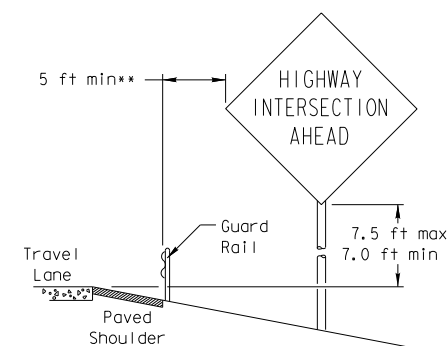


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

No more than 2 sign posts should be located within a 7 ft. circle.

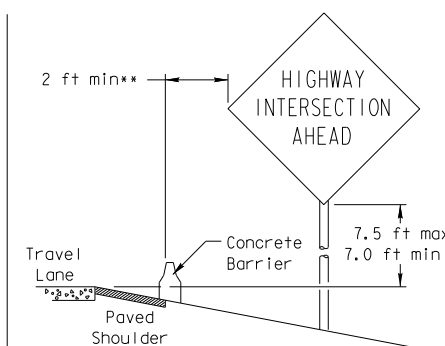


### BEHIND BARRIER



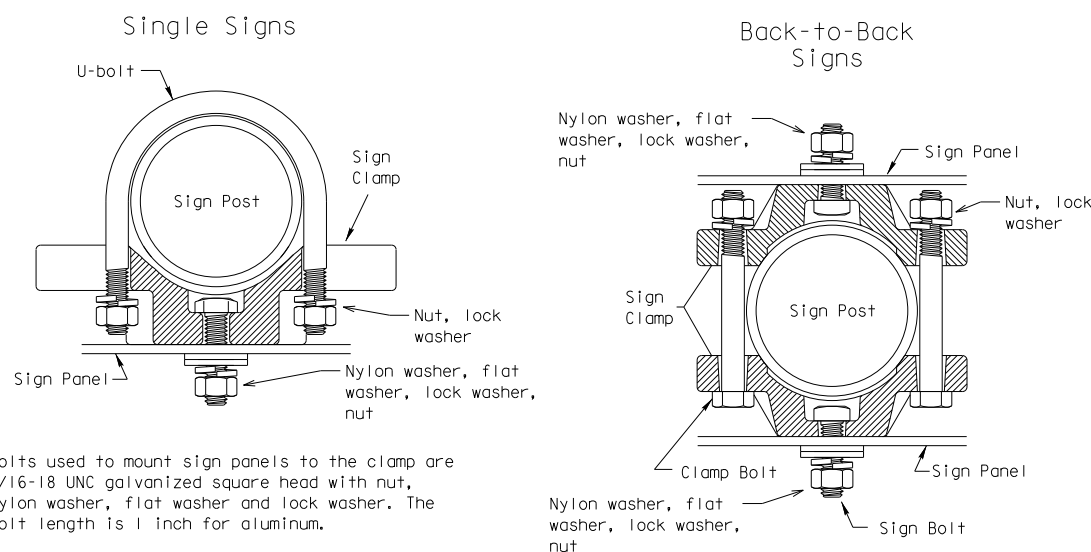
BEHIND GUARDRAIL

\*\*Sign clearance based on distance required for proper guard rail or concrete barrier performance.



BEHIND CONCRETE BARRIER

## TYPICAL SIGN ATTACHMENT DETAIL



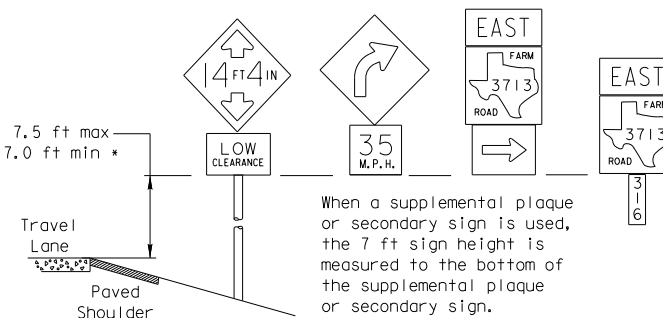
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

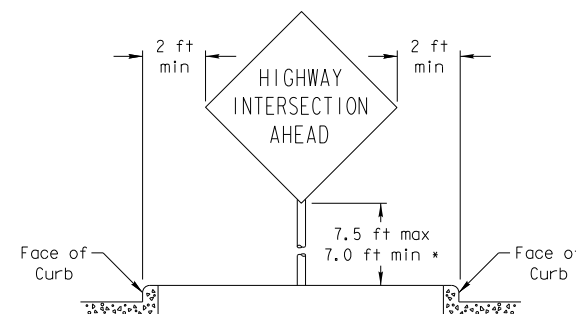
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

### SIGNS WITH PLAQUES

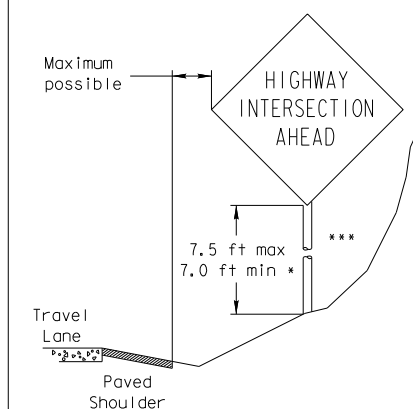


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

### CURB & GUTTER OR RAISED ISLAND



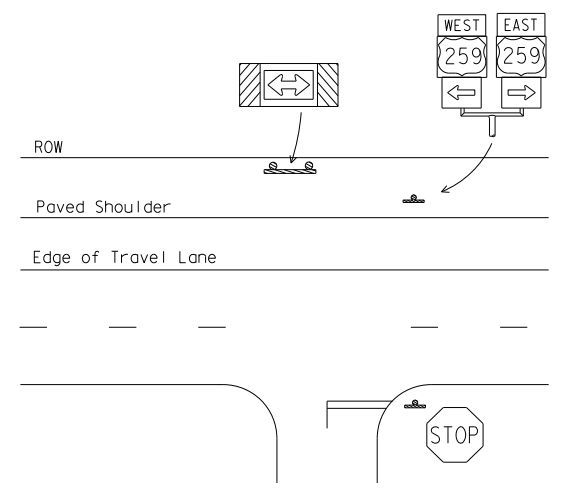
### RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



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

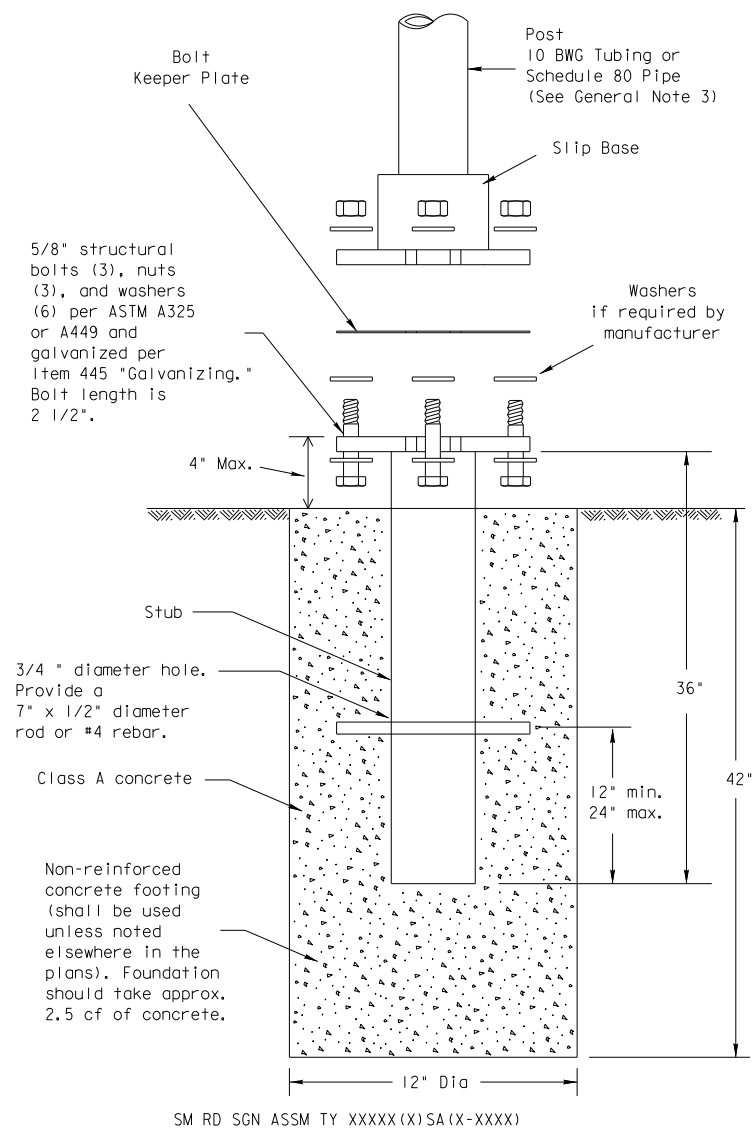
SMD(GEN)-08

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## 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](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

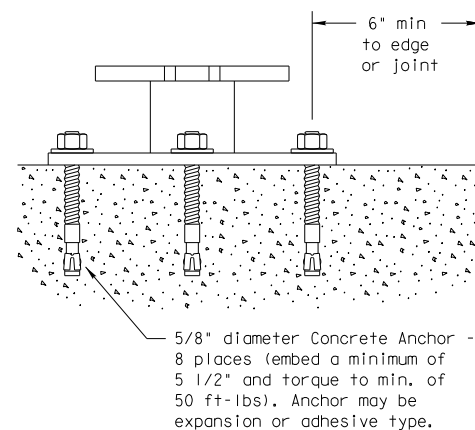
#### Foundation

- 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



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, Adhesives." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxyes and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

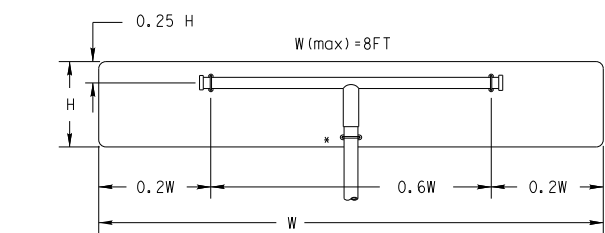
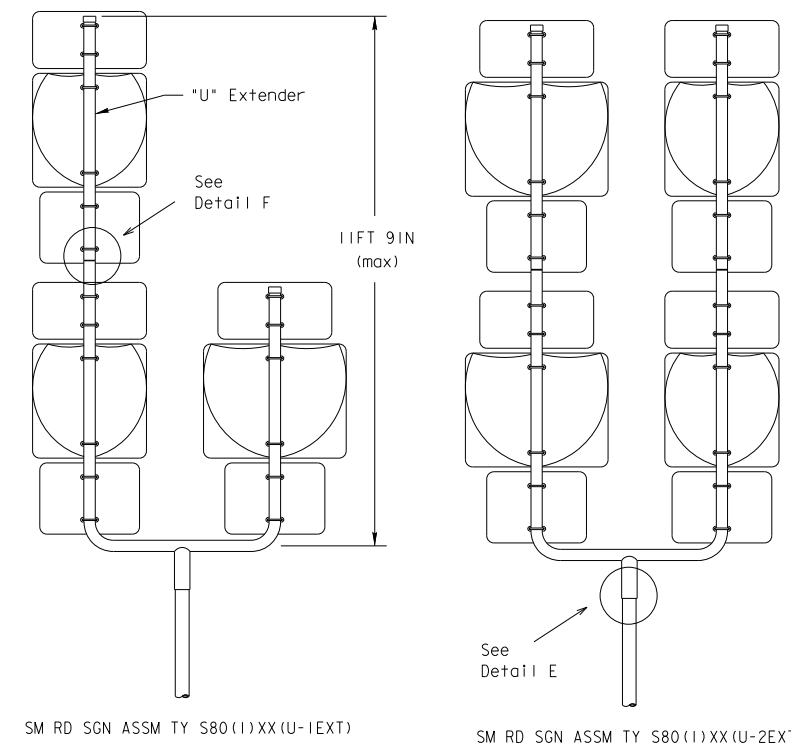
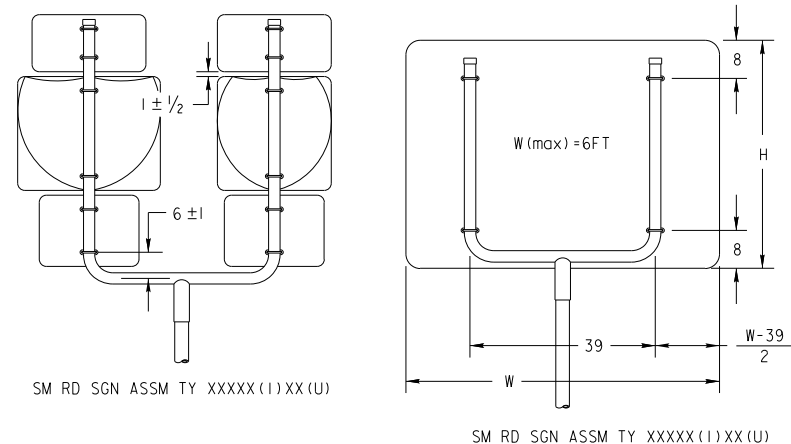
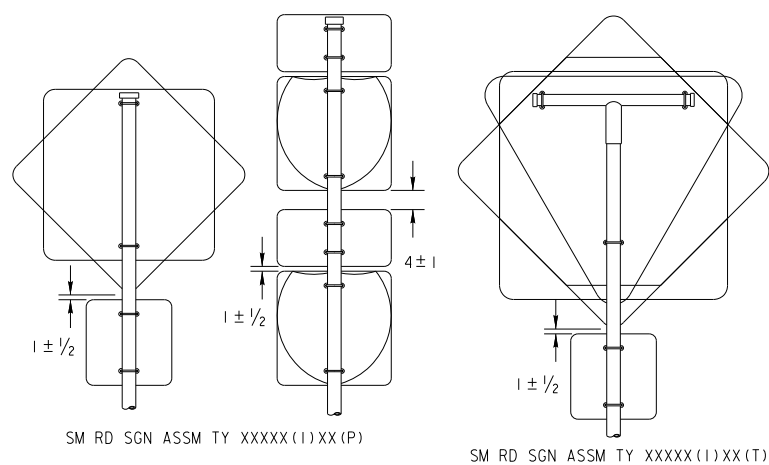


## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-1)-08

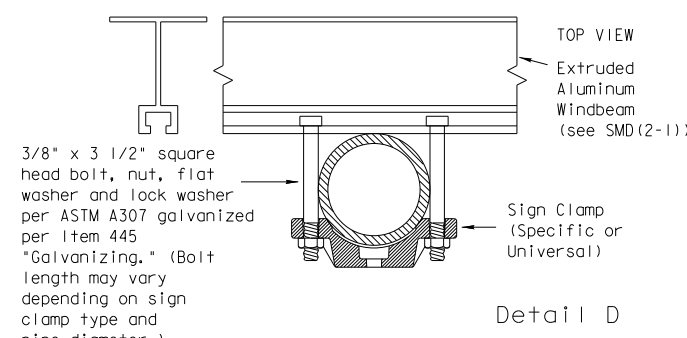
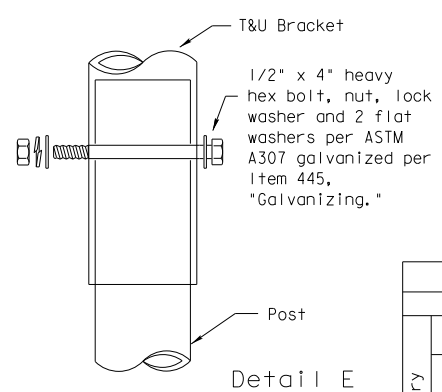
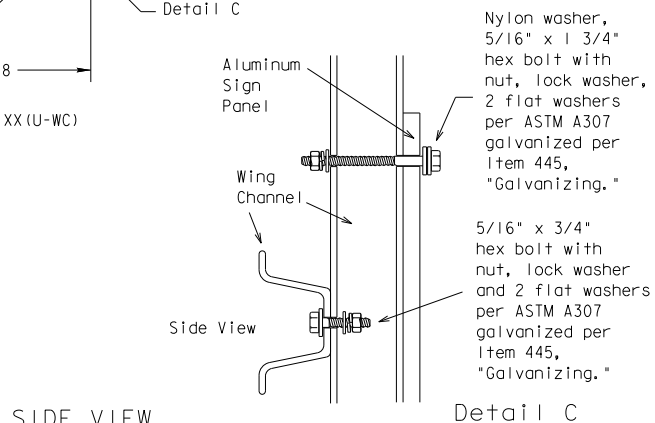
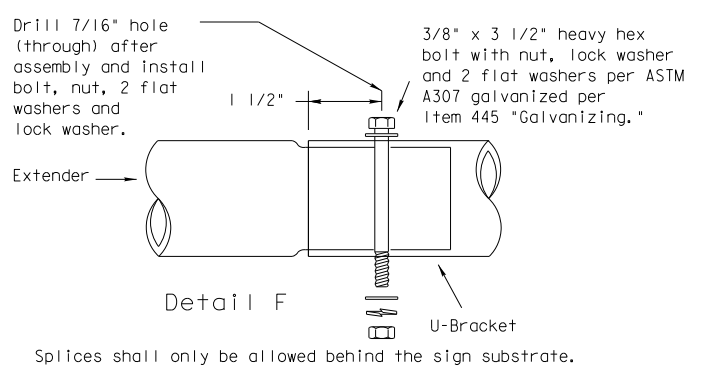
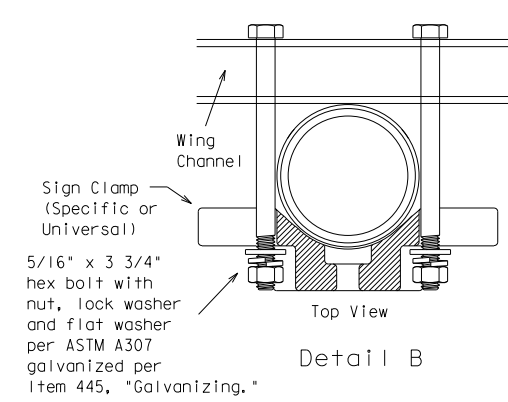
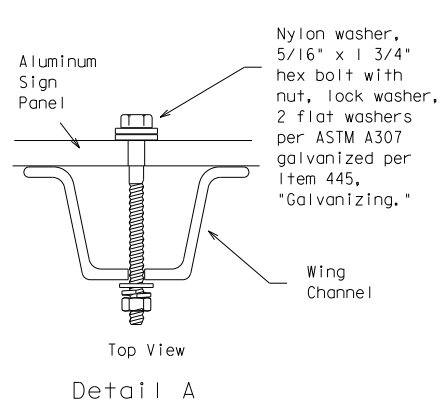
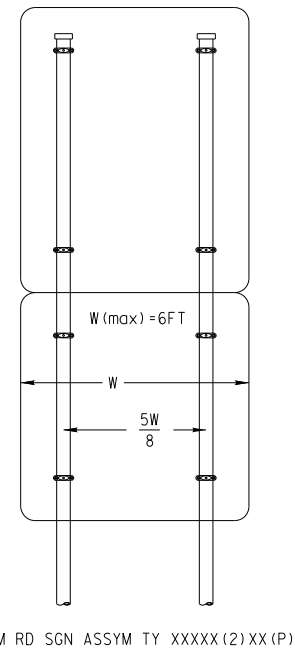
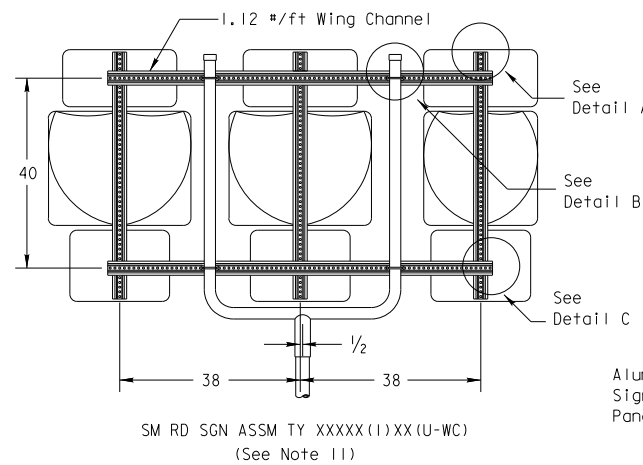
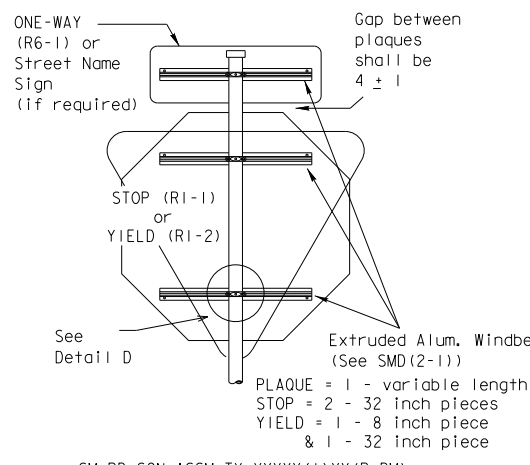
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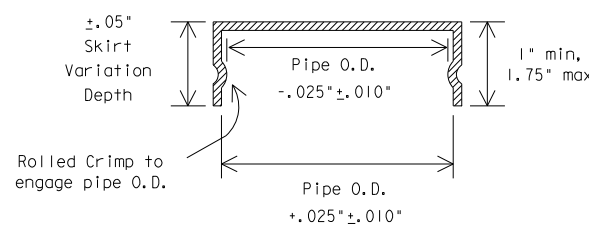
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All dimensions are in english unless detailed otherwise.



FRICION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG       | 1          | 16 SF          |
| 10 BWG       | 2          | 32 SF          |
| Sch 80       | 1          | 32 SF          |
| Sch 80       | 2          | 64 SF          |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

		REQUIRED SUPPORT	
		SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (RI-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)	
	60-inch YIELD sign (RI-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 (SI-1)	TY 10BWG(1)XX(T)	
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)	
	Large Arrow sign (WI-6 & WI-7)	TY 10BWG(1)XX(T)	

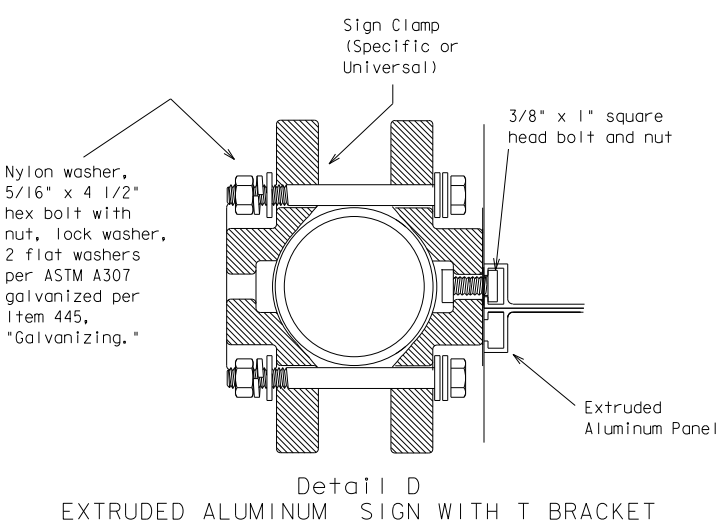
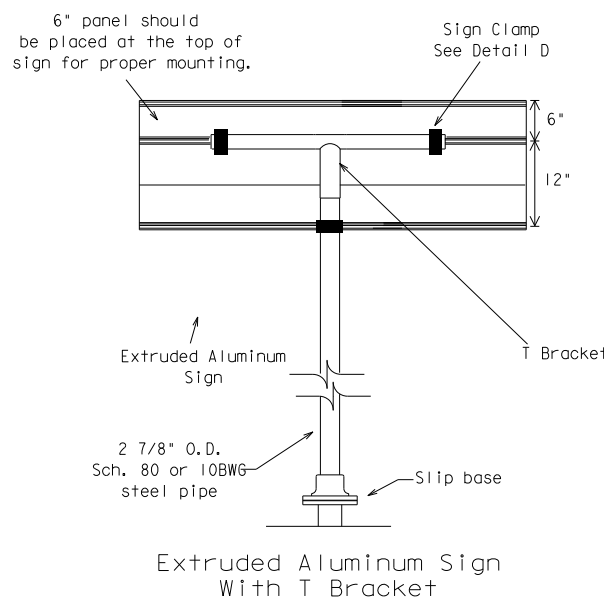
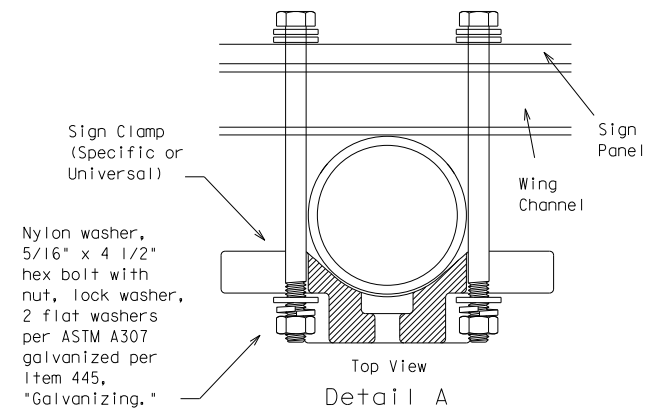
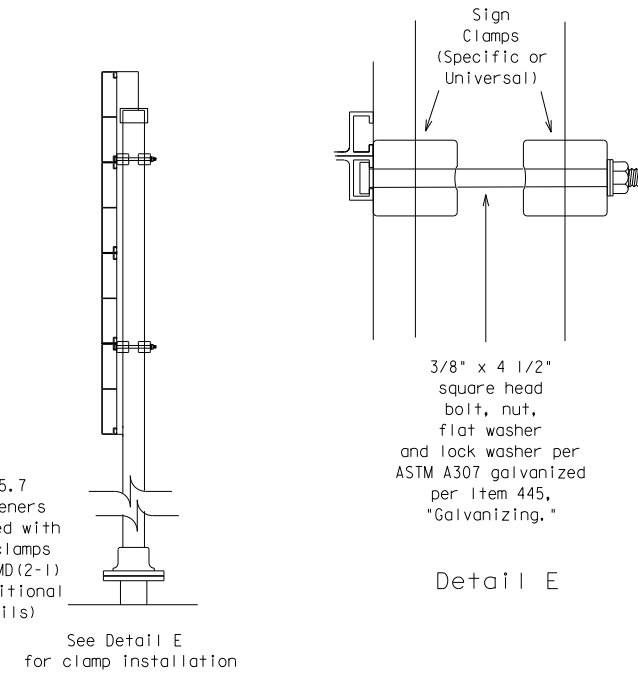
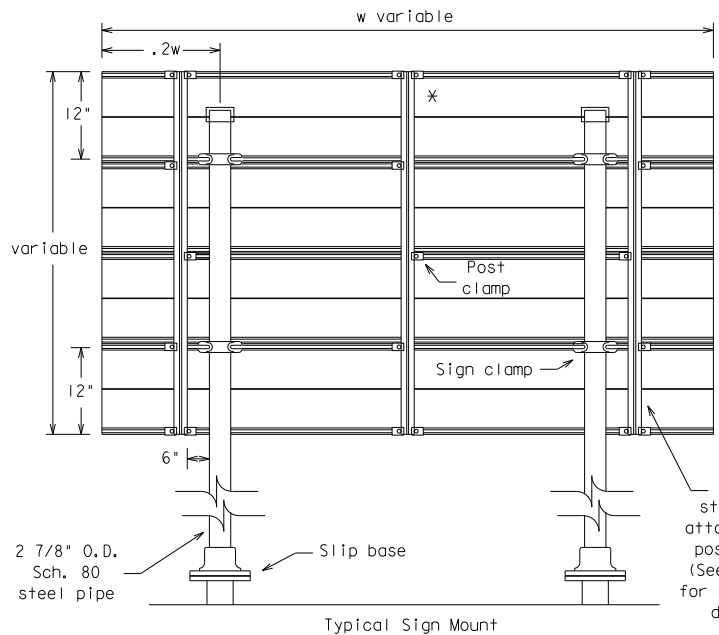
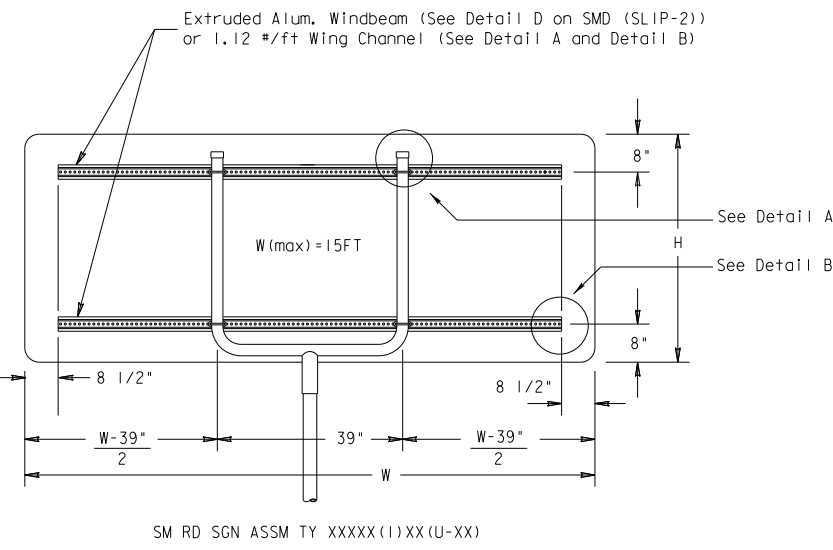
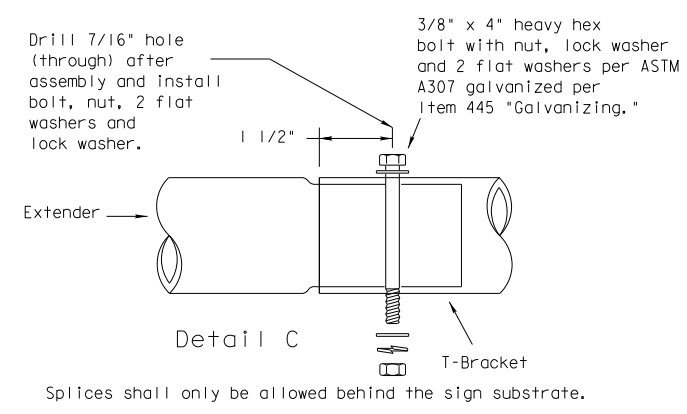
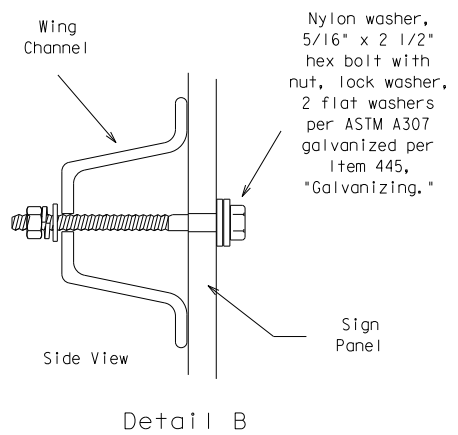
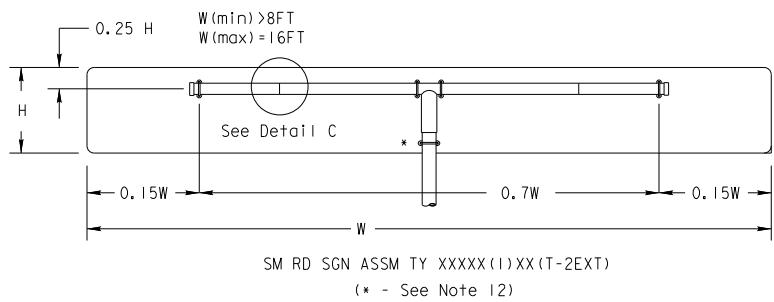


SIGN MOUNTING DETAILS  
 SMALL ROADSIDE SIGNS  
 TRIANGULAR SLIPBASE SYSTEM  
 SMD(SLIP-2)-08

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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)
Warning	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS  
TRIANGULAR SLIPBASE SYSTEM  
SMD(SLIP-3)-08

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		LRD	DIMMIT		338

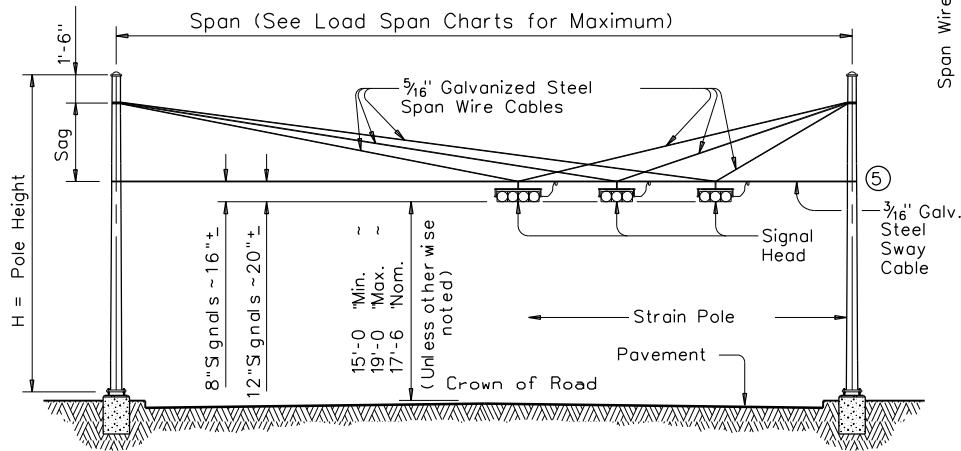


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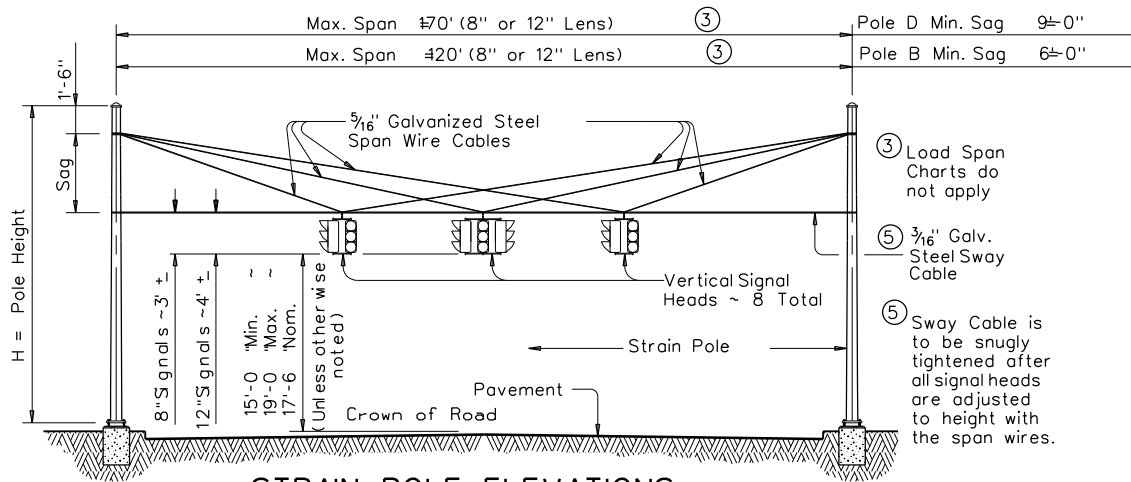
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STRAIN POLE DESCRIPTION	Pole Type	Founda-tion Type	Maximum Permissible Span Wire Load (lbs.)
26' Pole	A	36-A	5200
30' Pole	B	36-A	4600
30' Pole with Lum.	B	36-A	4400
30' Pole with 20' Mast Arm	C	36-B	5600
30' Pole with 24' Mast Arm	C	36-B	5500
30' Pole with 28' Mast Arm	C	36-B	5300
30' Pole with 32' Mast Arm	C	36-B	5100
30' Pole with 36' Mast Arm	C	36-B	4900
30' Pole with 20' Mast Arm & Lum.	C	36-B	5300
30' Pole with 24' Mast Arm & Lum.	C	36-B	5200
30' Pole with 28' Mast Arm & Lum.	C	36-B	5000
30' Pole with 32' Mast Arm & Lum.	C	36-B	4800
30' Pole with 36' Mast Arm & Lum.	C	36-B	4500
34' Pole	D	36-B	5600
34' Pole with Lum.	D	36-B	5400

② Numbers on Load Span Charts indicate the number of signal heads on the span. The total span wire design load is based on one 5-section head and one or more additional 3-section head(s). Design wind pressures on cables are assumed as 1.0 lb/ft. Weight of span wire cables (one per signal head) is assumed as 0.65 lb/ft which includes an allowance for conductor cables and miscellaneous hardware. The effect of the sway cable on load distribution is ignored as it is assumed to break at design wind conditions. When a pole supports 2 spans, the span wire design loads for both spans should be added vectorially to determine the design load for that pole.

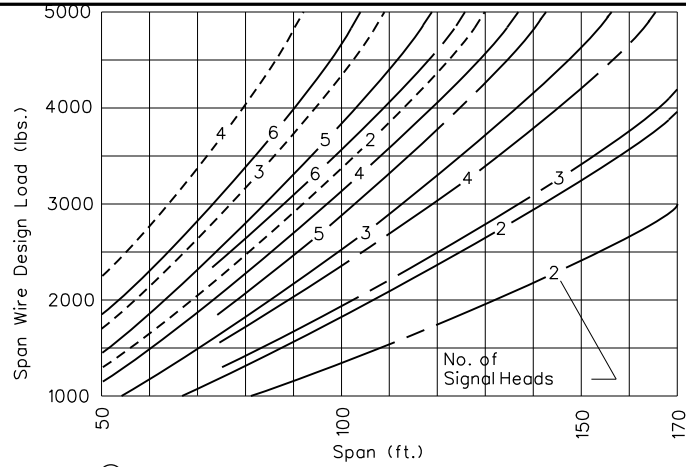


**STRAIN POLE ELEVATIONS  
 HORIZONTAL SIGNALS**

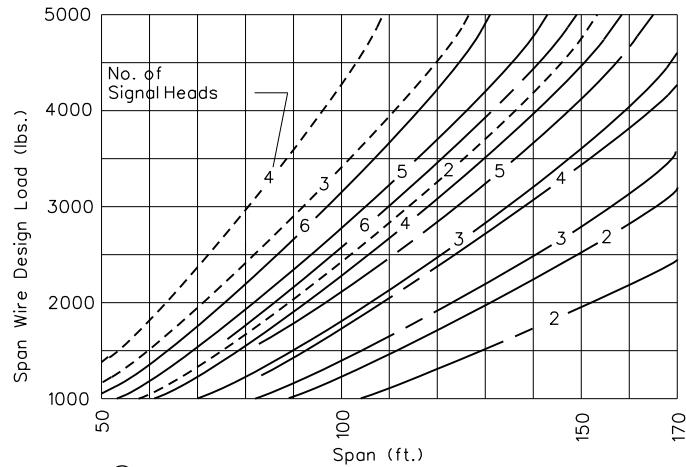


**STRAIN POLE ELEVATIONS  
 VERTICAL SIGNALS**

(Most arms are not used with vertical signals)



② **SIGNALS WITH 12-INCH LENS**



② **SIGNALS WITH 8-INCH LENS**

Signal Head Type	Wt. Per Head	Wind Area
5-Section, 12" Lens	125 lbs	9.6 sq. ft.
5-Section, 8" Lens	70 lbs	4.8 sq. ft.
3-Section, 12" Lens	75 lbs	5.64 sq. ft.
3-Section, 8" Lens	45 lbs	3.0 sq. ft.

◆ Effective projected design wind area (actual area times drag coefficient)

- Sag = 4'-6" (26' or 30' Pole)
- Sag = 8'-0" (30' or 34' Pole)
- Sag = 11'-6" (34' Pole)

Pole Type	ROUND POLES				POLYGONAL POLES			
	D <sub>B</sub>	D <sub>T</sub>	(4)thk	H	D <sub>B</sub>	D <sub>T</sub>	(4)thk	H
A	12.5	8.9	.239	26	13.0	9.0	.239	26
B	13.5	9.3	.239	30	14.0	9.0	.239	30
C	15.5	11.3	.239	30	16.0	11.0	.239	30
D	15.5	10.7	.239	34	16.0	11.0	.239	34

D<sub>B</sub> = Pole Base O.D. D<sub>T</sub> = Pole Top O.D. H = Pole Height

④ Thickness shown are minimum, thicker materials may be used.

**SHIPPING PARTS LIST**

Poles (Without Traffic Signal Arm)						
Pole Type	Strain poles with Luminaire			Strain poles without Luminaire		
	Description	Designation	Quantity	Description	Designation	Quantity
A	Ship each pole with the following hardware attached: handhole at base, pole cap, 2 clamp-on simplex and 1 pipe plug.			Ship each pole with the following hardware attached: handhole at base, pole cap and 1 pipe plug.		
B	30' Strain Pole	SPL 30 B-80		30' Strain Pole	SP 30 B-80	
D	34' Strain Pole	SPL 34 D-80		34' Strain Pole	SP 34 D-80	

Poles (With Traffic Signal Arm)						
Pole Type	Strain poles with Luminaire			Strain poles without Luminaire		
	Description	Designation	Quantity	Description	Designation	Quantity
	Ship each pole with the following hardware attached: handhole at base, pole cap, clamp-on simplex and 3 pipe plugs.			Ship each pole with the following hardware attached: handhole at base, pole cap and 3 pipe plugs.		
C	30' SPw/TS Arm	SPL 30 C-80		30' SPw/TS Arm	SP 30 C-80	

Traffic Signal Arms (For Type C poles)						
Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	Description	Quantity	Description	Quantity	Description	Quantity
ft.	Ship each Type I Arm with the following hardware attached: 2 CGB Connectors, 1 clamp with bolts and washers		Ship each Type II Arm with the following hardware attached: 1 Bracket Assembly, 3 CGB Connectors and 1 clamp with bolts and washers		Ship each Type III Arm with the following hardware attached: 2 Bracket Assemblies, 4 CGB Connectors and 1 clamp with bolts and washers	
20	20 I-80					
24	24 I-80		24 II-80			
28	28 I-80		28 II-80		32 III-80	
32			32 II-80			
36			36 II-80		36 III-80	

Anchor Bolt Assemblies (1 per pole)			
Anchor Bolt Diameter	Anchor Bolt Length	Quantity	
1 3/4"	3'-10"	Templates may be removed for shipment.	
2"	4'-3"		

Luminaire Arms	
Nominal Arm Length	Quantity
8' Arm	

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".

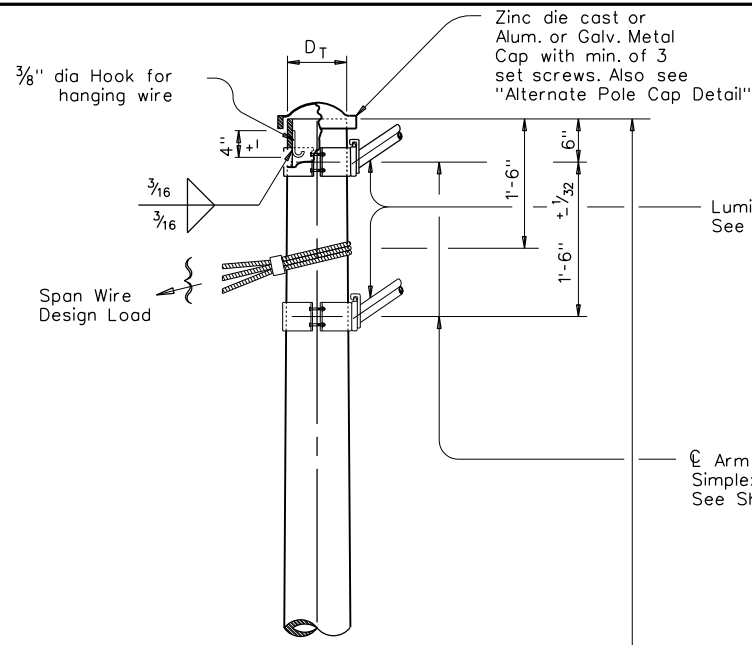
① See Sheet "DMA-80"

Texas Department of Transportation  
 Traffic Operations Division  
**TRAFFIC SIGNAL  
 SUPPORT STRUCTURES  
 STRAIN POLE ASSEMBLIES**  
 (80 MPH WIND ZONE)  
**SP-80(1)-12**

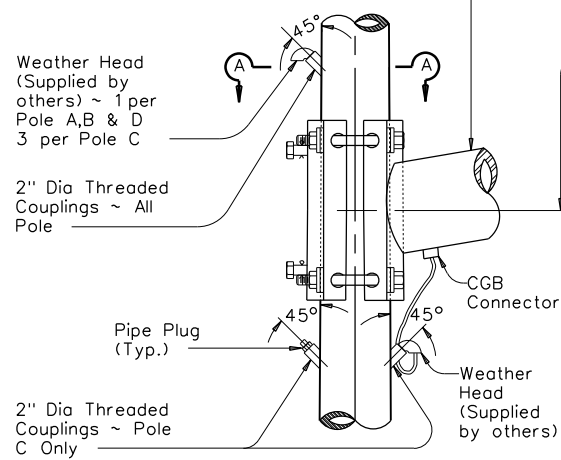
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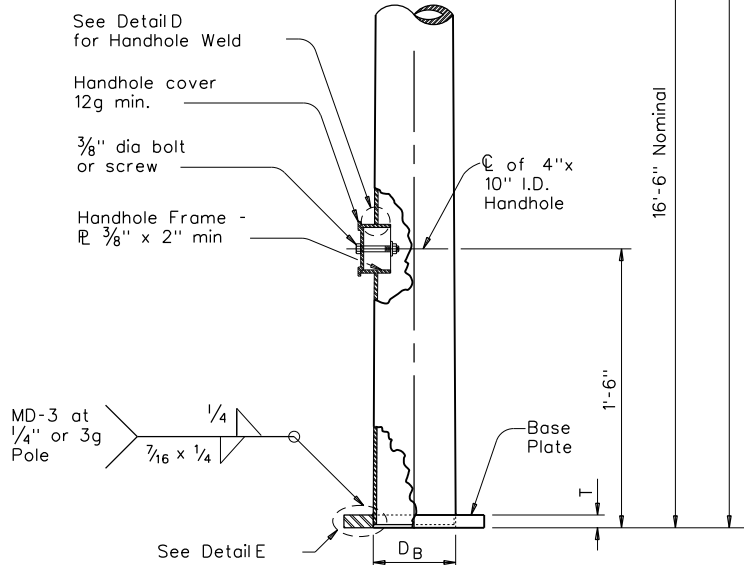
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DETAIL A

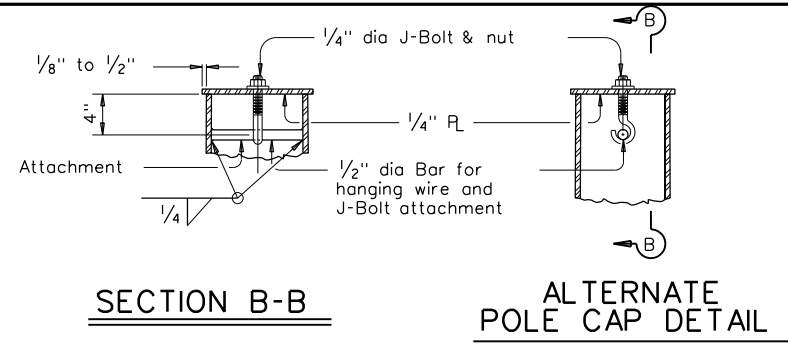


DETAIL B



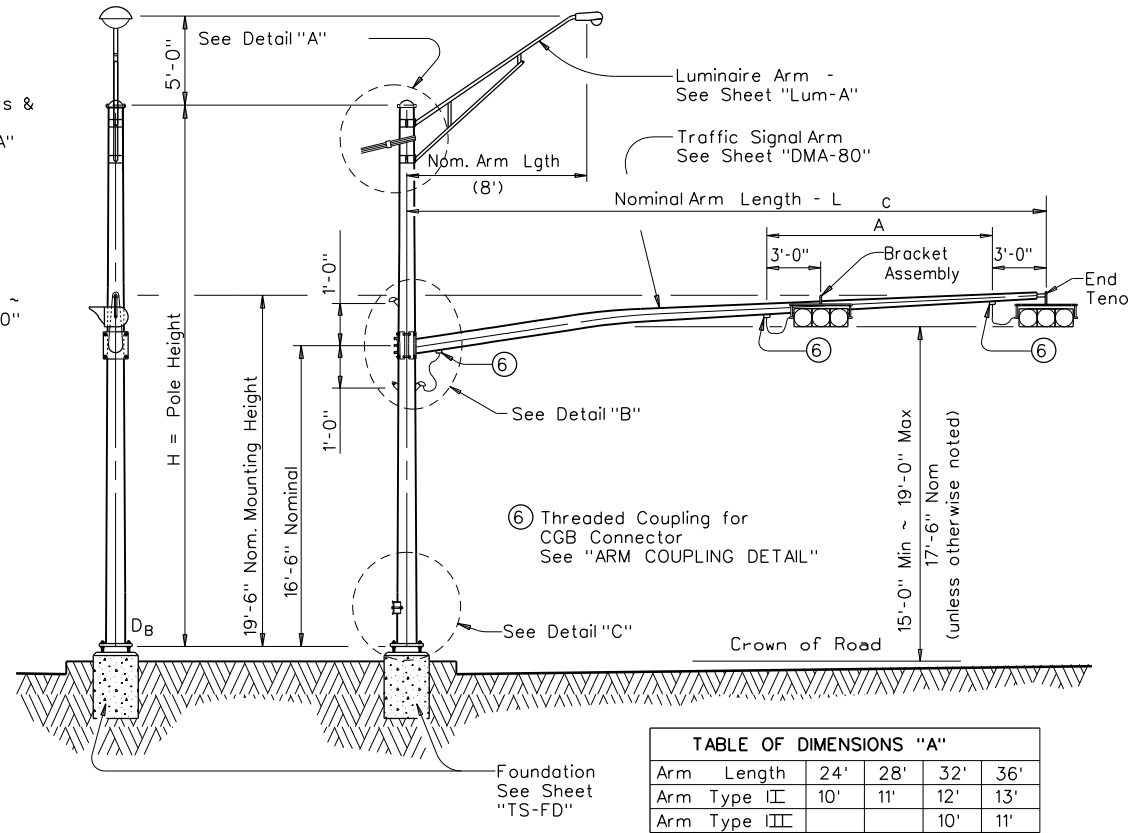
DETAIL C

POLE ELEVATION



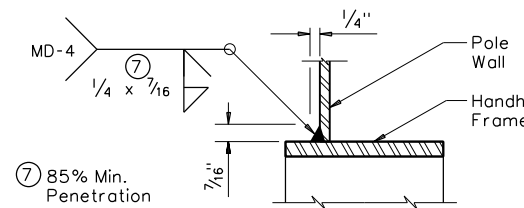
SECTION B-B

ALTERNATE POLE CAP DETAIL

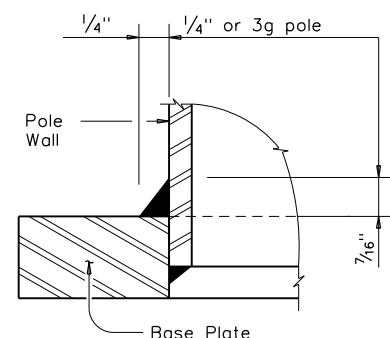


STRUCTURE ASSEMBLY

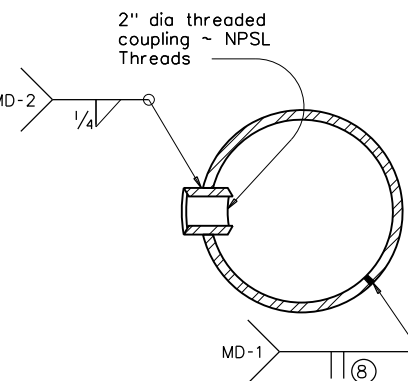
Arm Length	24'	28'	32'	36'
Arm Type I	10'	11'	12'	13'
Arm Type II			10'	11'



DETAIL D

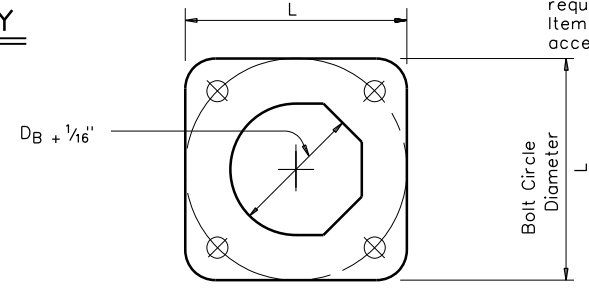


DETAIL E

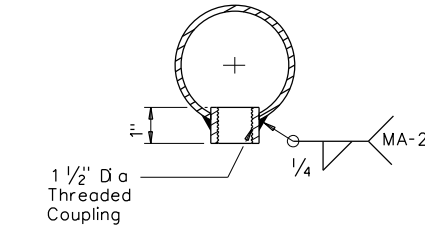


SECTION A-A

(8) 60% Min. penetration, except 100% penetration within 6" of circumferential base welds.



BASE PLATE PLAN



ARM COUPLING DETAIL

MATERIALS

Round Shafts or Polygonal Shafts (9)	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 (10)
Plates (9)	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 except where noted
Pin Bolts	ASTM A325
Pipe (9)	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Steel Cable	ASTM A475, 7 Wire Utilities Grade
Misc. Hardware	Galvanized steel or stainless steel or as noted

(9) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

(10) ASTM A1011 SS Gr.50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. The maximum permissible span wire design loads tabulated are calculated at a stress load of 1.4 times the basic allowable stress. A simultaneous wind on the pole, mast arm, and luminaire is also included.

See standard sheet "DMA-80" for details of clamp-on traffic signal arms, sheet "MA-C" for traffic signal arm connection details, sheet "LUM-A" for luminaire arm and connection details, and sheet "TS-FD" for anchor bolt and foundation details.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Foundation Type	Anchor Bolt Diameter	Bolt Hole Diameter	Bolt Circle Diameter	Base PL Dim. L x T
36-A	1 3/4"	2"	19"	19" x 1 3/4"
36-B	2"	2 1/4"	21"	21" x 2"

Texas Department of Transportation  
 Traffic Operations Division  
**TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES**  
 (80 MPH WIND ZONE)  
**SP-80(2)-12**

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			LRD	DIMMIT	US 83
					SHEET NO.
					340

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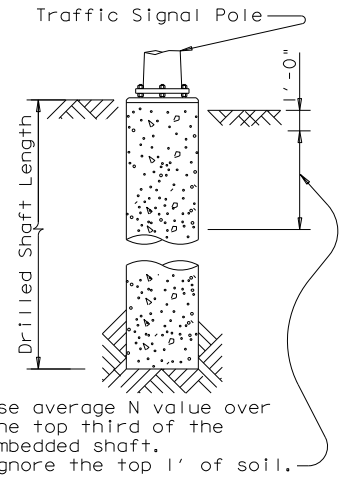
FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)			FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION	
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft		SHEAR Kips
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	3/4"	36	12 3/4"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 1/2"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 3/4"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 1/4"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

**NOTES:**

- Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
- Foundation Design Loads are the allowable moments and shears at the base of the structure.
- Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
- Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.
- If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
- Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE (3)									
LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (6) (FEET)					
				24-A	30-A	36-A	36-B	42-A	
US83 & FM 133									
P1	15	36-B	1				14		
P2	15	36-B	1				14		
US83 & OLD 83									
P1	15	36-B	1				14		
P2	15	36-B	1				14		
TOTAL DRILLED SHAFT LENGTHS							56		

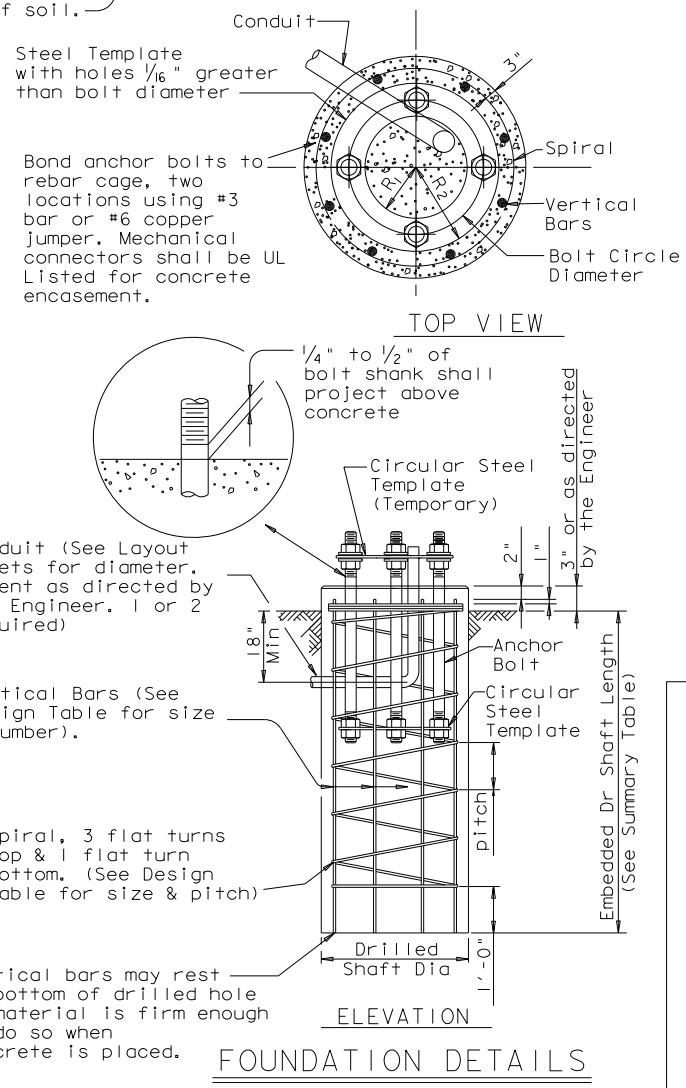
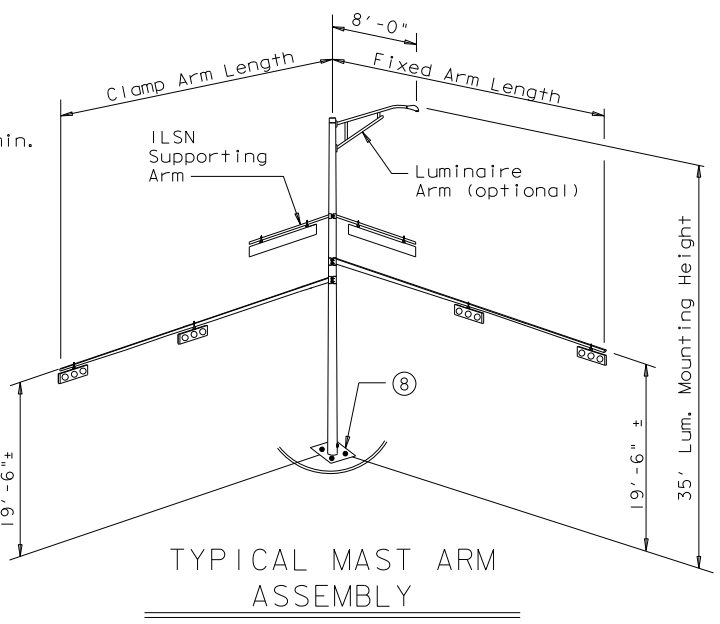
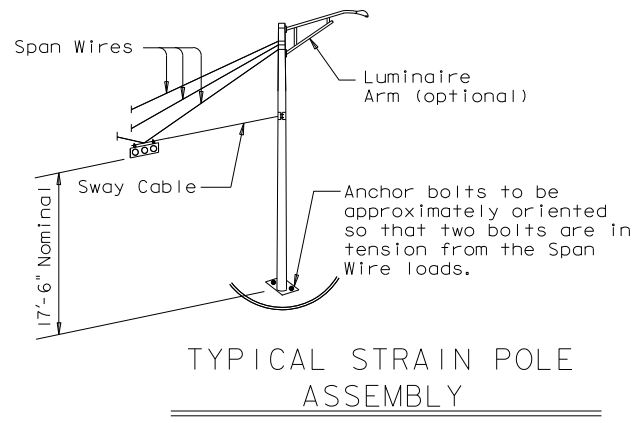
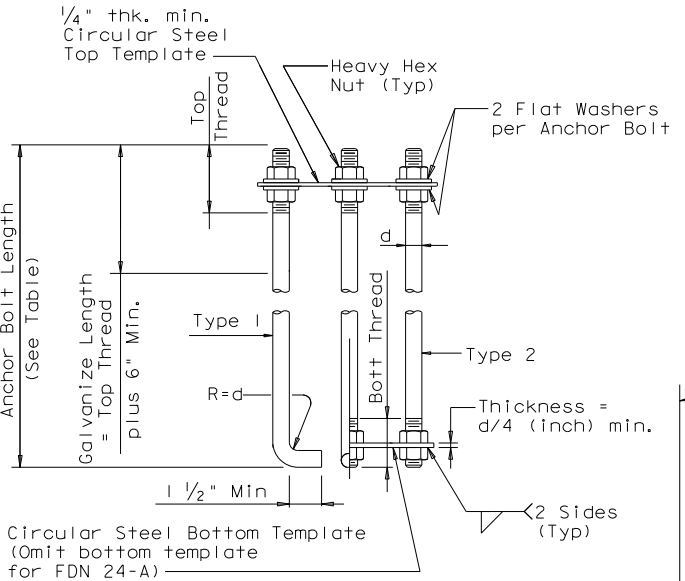
FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)					
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
28' X 28'					
32' X 28'					
36' X 36'					
40' X 36'					
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 24'			
		32' X 24'		32' X 32'	
		36' X 36'			
		40' X 24'	40' X 36'		
			44' X 36'		



ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'-4"	6"	4"	17"	10"	7"
1 3/4"	3'-10"	7"	4 1/2"	19"	11 1/4"	7 3/4"
2"	4'-3"	8"	5"	21"	12 1/2"	8 1/2"
2 1/4"	4'-9"	9"	5 1/2"	23"	13 3/4"	9 1/4"

(7) Min dimensions given, longer bolts are acceptable.

- EXAMPLE:**
- For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
  - For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



**GENERAL NOTES:**

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".



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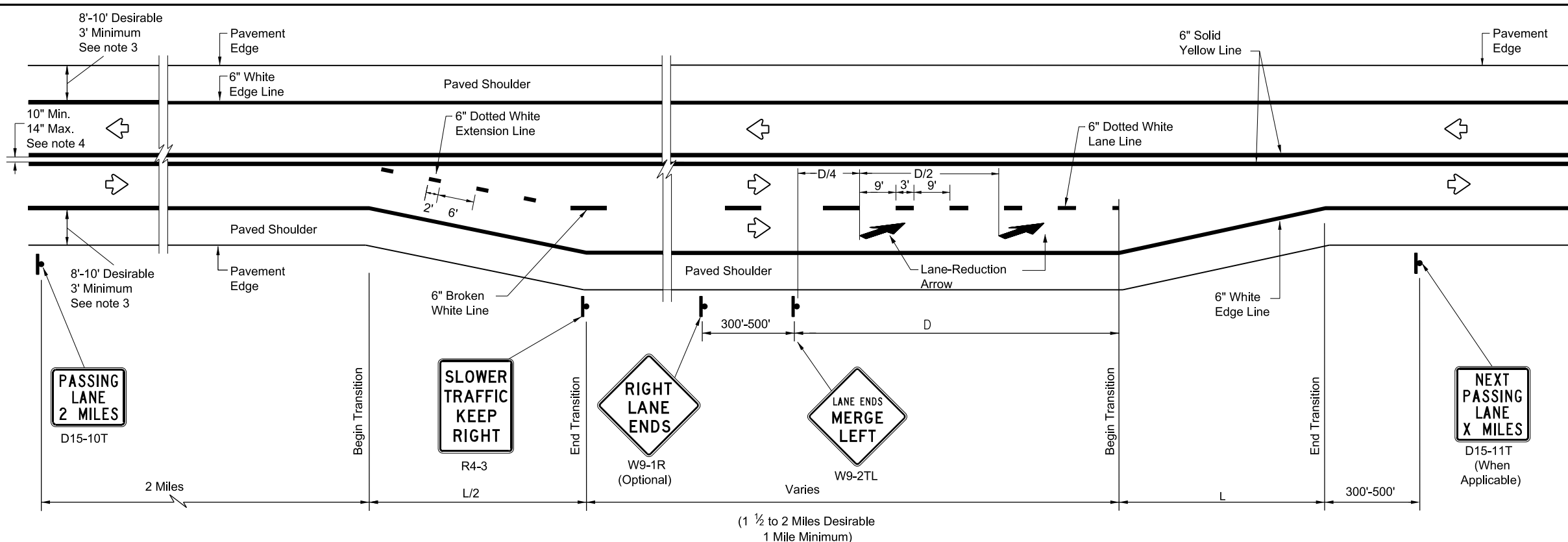
TRAFFIC SIGNAL  
POLE FOUNDATION

TS-FD-12

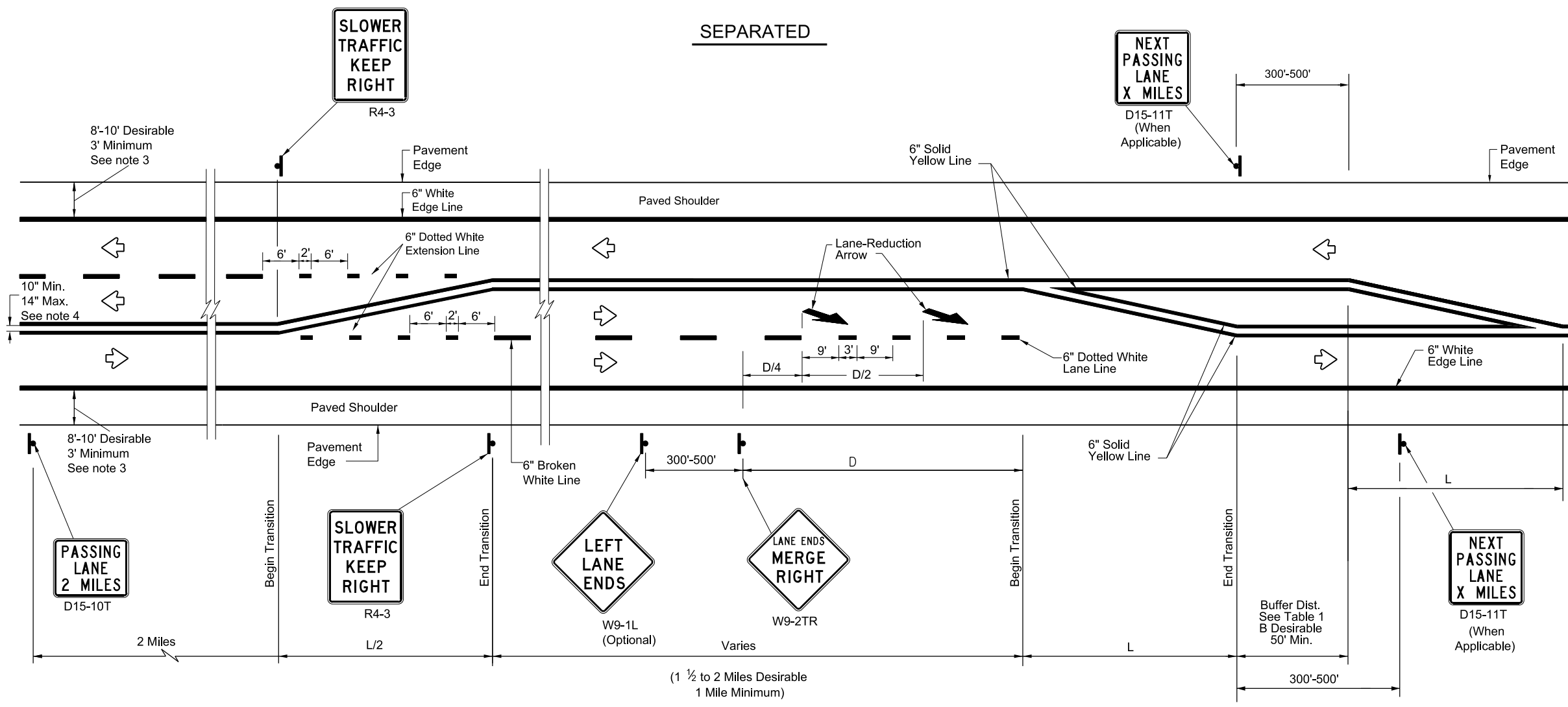
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**SEPARATED**



**ALTERNATING**

LEGEND	
	Sign
	Traffic Flow

TYPICAL TAPER LENGTH (L)	
Formula *	L = WS

\* Transition length should be rounded up to nearest 5 foot increment.

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

**EXAMPLE**  
 A 12 foot lane is added on a 70 mph roadway.  
 The length of the transition should be:  
 L=12x70=840 ft

**TABLE 1  
 ADVANCE WARNING SIGN  
 DISTANCE (D)  
 AND BUFFER DISTANCE (B)**

Posted Speed	D (FT)	B (FT)
40	670	305
45	775	360
50	885	425
55	990	495
60	1100	570
65	1200	645
70	1250	730
75	1350	820

**GENERAL NOTES**

- For minimum and desirable design details, see the Roadway Design Manual, Chapter 4, Section 6, Super 2 Highways.
- For Raised Pavement Markers (RPM) details, see Pavement Markings Standard sheet, PM(2) - Centerline for All Two Lane Two-Way Roadways. Note that RPMs are not recommended on the 6" dotted white extension lines.
- For rumble strip options available for the designed shoulder width, see Rumble Strip Standard sheet RS(2).
- For pavement marking details, see Pavement Marking Standard sheet PM(1).



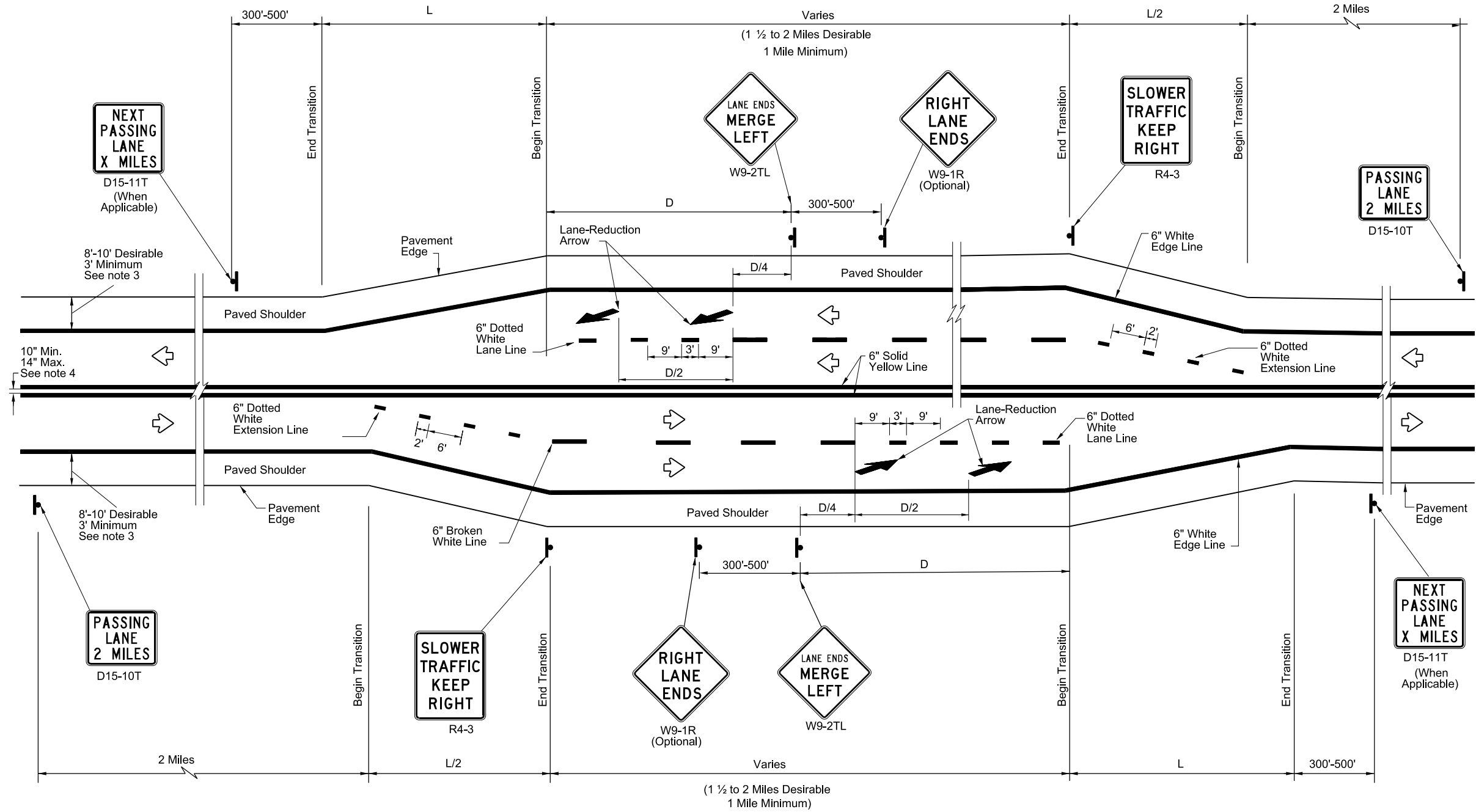
**TEXAS SUPER 2  
 PASSING LANES**

**TS2(PL-1)-23**

FILE: ts2-1-23.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
5-10 3-18	DIST	COUNTY	SHEET NO.	
2-12 2-23	LRD	DIMITT	342	
3-12				

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DATE: 4/5/2024  
 FILE: pwc\azb-pw\beniley.com\azb-pw-01\Documents\Collaboration Projects\TxDOT\217017.002\0424 - Design\Plan\TS2(PL-2)-23.dwg



**SIDE BY SIDE PASSING LANES**

LEGEND	
	Sign
	Traffic Flow

TYPICAL TAPER LENGTH (L)	
Formula *	$L = WS$

\* Transition length should be rounded up to nearest 5 foot increment.  
 L=Length of Transition (FT)  
 W=Width of Offset (FT)  
 S=Posted Speed (MPH)

EXAMPLE  
 A 12 foot lane is added on a 70 mph roadway.  
 The length of the transition should be:  
 $L=12 \times 70=840$  ft

TABLE 1 ADVANCE WARNING SIGN DISTANCE (D)	
Posted Speed	D (FT)
40	670
45	775
50	885
55	990
60	1100
65	1200
70	1250
75	1350

**GENERAL NOTES**

- For minimum and desirable design details, see the Roadway Design Manual, Chapter 4, Section 6, Super 2 Highways.
- For Raised Pavement Markers (RPM) details, see Pavement Markings Standard sheet, PM(2) - Centerline for All Two Lane Two-Way Roadways. Note that RPMs are not recommended on the 6" dotted white extension lines.
- For rumble strip options available for the designed shoulder width, see Rumble Strip Standard sheet RS(2).
- For pavement marking details, see Pavement Marking Standard sheet PM(1).



**TEXAS SUPER 2  
PASSING LANES**

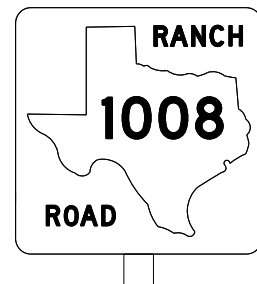
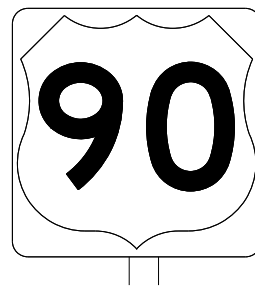
**TS2(PL-2)-23**

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©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
5-10 3-18	DIST	COUNTY		SHEET NO.
2-12 2-23	LRD	DIMMIT		343
3-12				

DATE: 6/22/2020 9:56:54 AM  
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## REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

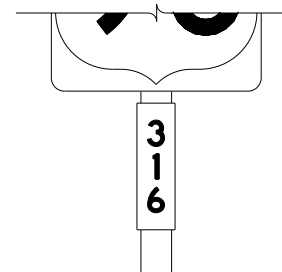
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



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.

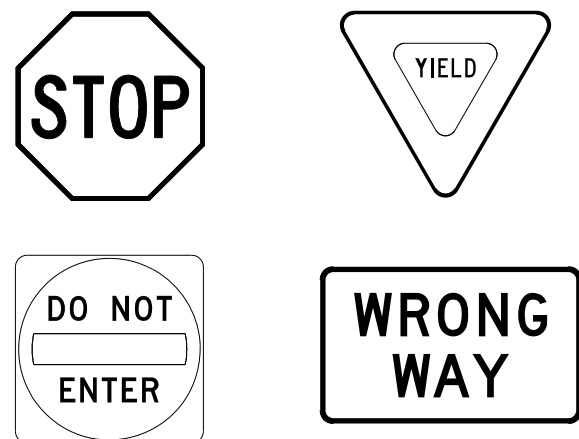
<http://www.txdot.gov/>

<span style="font-size: small; vertical-align: middle;">Texas Department of Transportation</span>				<b>Traffic Operations Division Standard</b>	
<h2 style="margin: 0;">TYPICAL SIGN REQUIREMENTS</h2> <h3 style="margin: 0;">TSR(3) - 13</h3>					
FILE:	tsr3-13.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		0037	08	042, ETC.	US 83
12-03	7-13	DIST	COUNTY		SHEET NO.
9-08	LRD	DIMMIT		344	3

DATE: 6/22/2020 9:56:58 AM  
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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

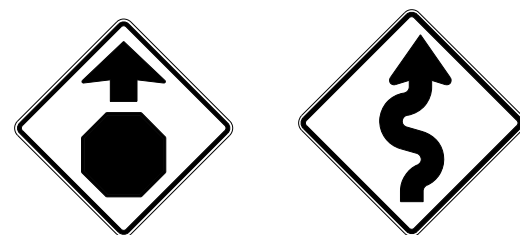
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



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 <sub>FL</sub> OR C <sub>FL</sub> 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 <sub>FL</sub> OR C <sub>FL</sub> SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

### GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>



## TYPICAL SIGN REQUIREMENTS

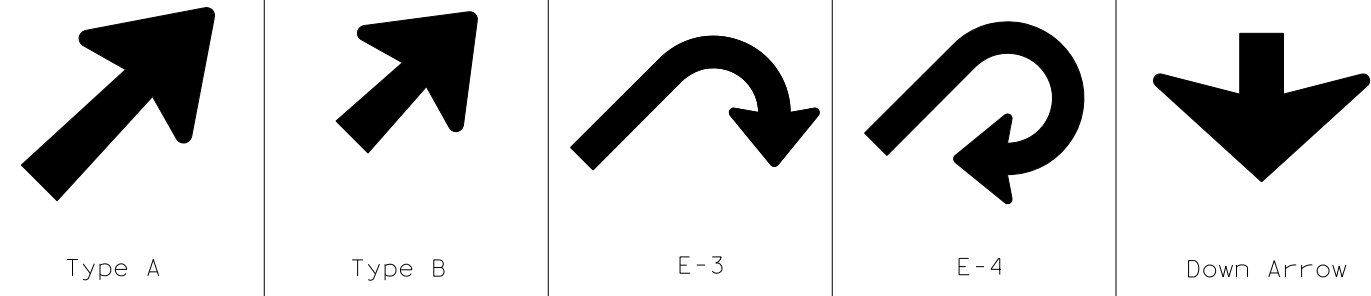
TSR(4) - 13

FILE#	tsr4-13.dgn	DN#	TxDOT	CK#	TxDOT	DW#	TxDOT	CK#	TxDOT
© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0037	08	042, ETC.	US 83				
12-03	7-13	DIST	COUNTY	SHEET NO.					
9-08		LRD	DIMMIT	345					

DATE: 6/22/2020 9:57:01 AM  
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## ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



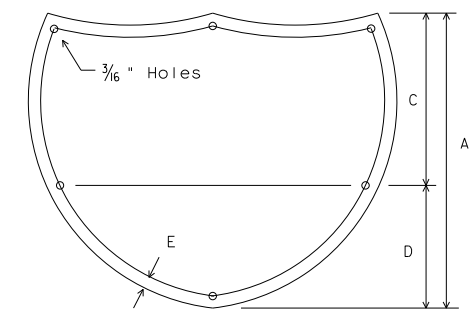
TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

**NOTE**  
 Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

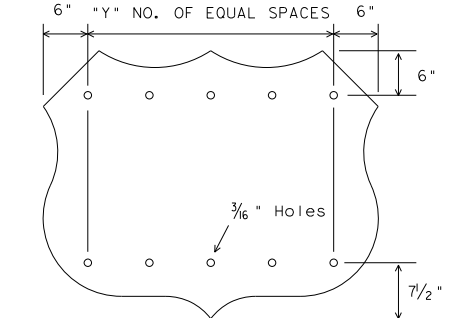
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:  
<http://www.txdot.gov/>

## SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



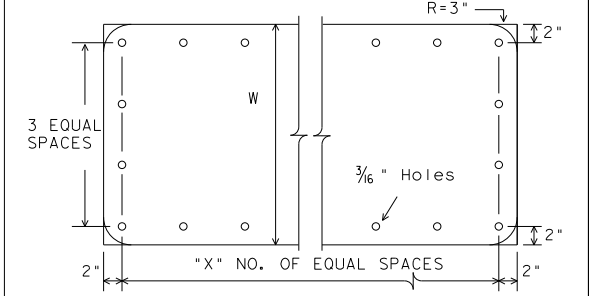
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



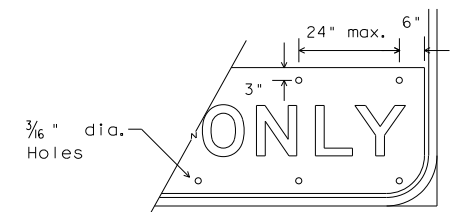
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



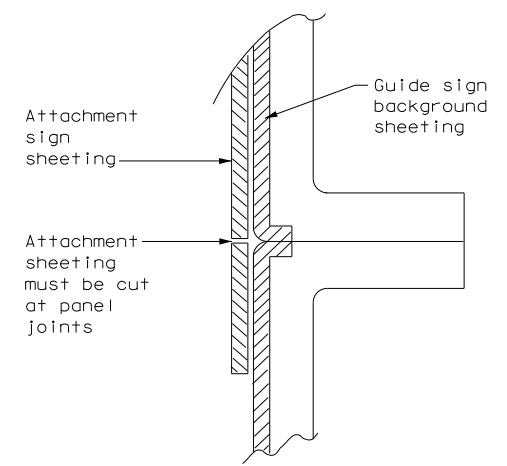
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5



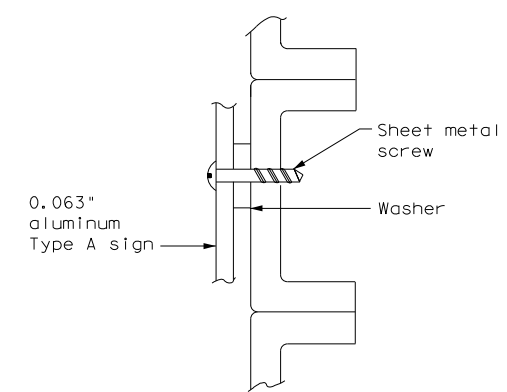
EXIT ONLY PANEL

## MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)

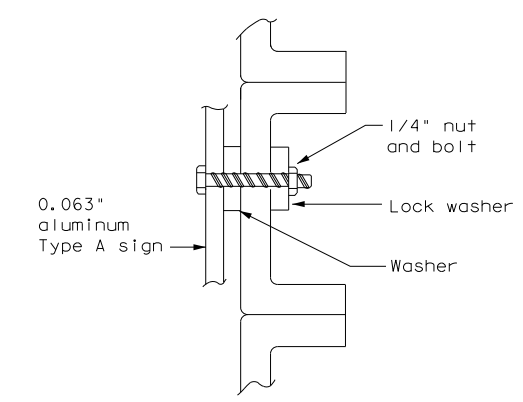


DIRECT APPLIED ATTACHMENT

**NOTE:**  
 1. Sheeting for legend, symbols, and borders must be cut at panel joints.  
 2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



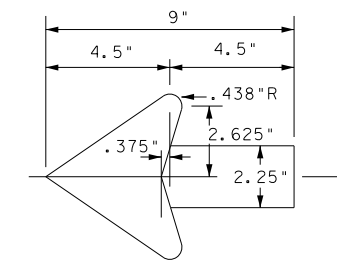
SCREW ATTACHMENT



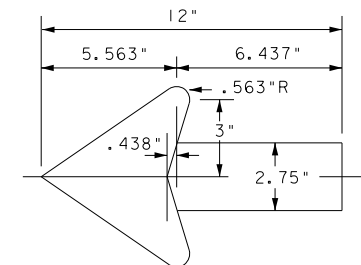
NUT/BOLT ATTACHMENT

**NOTE:**  
 Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

## ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



## TYPICAL SIGN REQUIREMENTS

### TSR (5) - 13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0037	08	042, ETC.	US 83
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	LRD	DIMMIT	346	





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DATE: FILE:

**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.

- 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. STA \* 1523+61 Unnamed Branch of San Roque Creek
2. STA \* 1616+38 Pearce Creek Branch of San Roque Creek
3. STA \* 1667+67 Unnamed Branch of San Roque Creek
4. STA \* 1709+91 Dillion Creek Branch of San Roque Creek
5. STA \* 1721+99 Unnamed Branch of San Roque Creek
6. STA \* 1737+17 Unnamed Branch of San Roque Creek
7. STA \* 1793+21 San Roque Creek Relief #1 Branch of San Roque Creek
8. STA \* 1812+31 San Roque Creek Relief #2 Branch of San Roque Creek
9. STA \* 1887+44 Unnamed Branch of San Roque Creek
10. STA \* 1907+08 Harrison Creek Branch of San Roque Creek

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:**

<b>Erosion</b>	<b>Sedimentation</b>	<b>Post-Construction TSS</b>
<input checked="" type="checkbox"/> Temporary Vegetation	<input checked="" type="checkbox"/> Silt Fence	<input checked="" type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input checked="" 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. Texas Tortoise
2. Texas Horned Lizard
3. Reticulated Collared Lizard
4. Texas Indigo Snake

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	SWSP: 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 labeling 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

Action No.

- 1.
- 2.
- 3.

PREPARED BY: JUAN R. FLORES P.E.

DATE: \_\_\_\_\_

 <b>Texas Department of Transportation</b>		<b>Design Division Standard</b>		
<b>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS</b>  <b>EPIC</b>				
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
© TxDOT: February 2015		CONT	SECT	HIGHWAY
12-12-2011 (DS) REVISIONS		0037	08	042, ETC.
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.		LRD	DIMITT	348

**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

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):**  
**0037-08-042, ETC.**

**1.2 PROJECT LIMITS:**

From: **1.741 MILES SOUTH OF FM 2688**

To: **WEBB/DIMMIT CO LINE(SURVEYED MONUMENT)**

**1.3 PROJECT COORDINATES:**

BEGIN: (Lat) **28.3551704**, (Long) **-99.6226440**

END: (Lat) **28.2033143**, (Long) **-99.6142672**

**1.4 TOTAL PROJECT AREA (Acres): 196.7**

**1.5 TOTAL AREA TO BE DISTURBED (Acres): 64.2**

**1.6 NATURE OF CONSTRUCTION ACTIVITY:**

**CONSTRUCTION OF REHABILITATION OF AN EXISTING ROAD CONSISTING OF GRADING, BASE, STRUCTURES SURFACING, SIGNING AND PAV. MARKING**

**1.7 MAJOR SOIL TYPES:**

Soil Type	Description
NATIVE GRASS AND WEED	HEAVILY COVERED

**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
- Cement Treat Existing Base Material
- 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
SAN ROQUE CREEK	NUECES RIVER

\* 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

NO.	REVISIONS	BY	DATE
 ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
 Texas Department of Transportation			
US 83 <b>STORMWATER POLLUTION PREVENTION PLAN (SWP3)</b> Sheet 1 of 2			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		349
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

**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:**

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


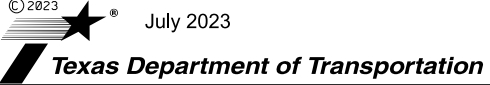
**2.9 INSPECTIONS:**

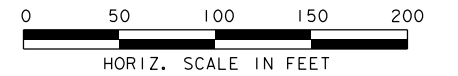
All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

**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.

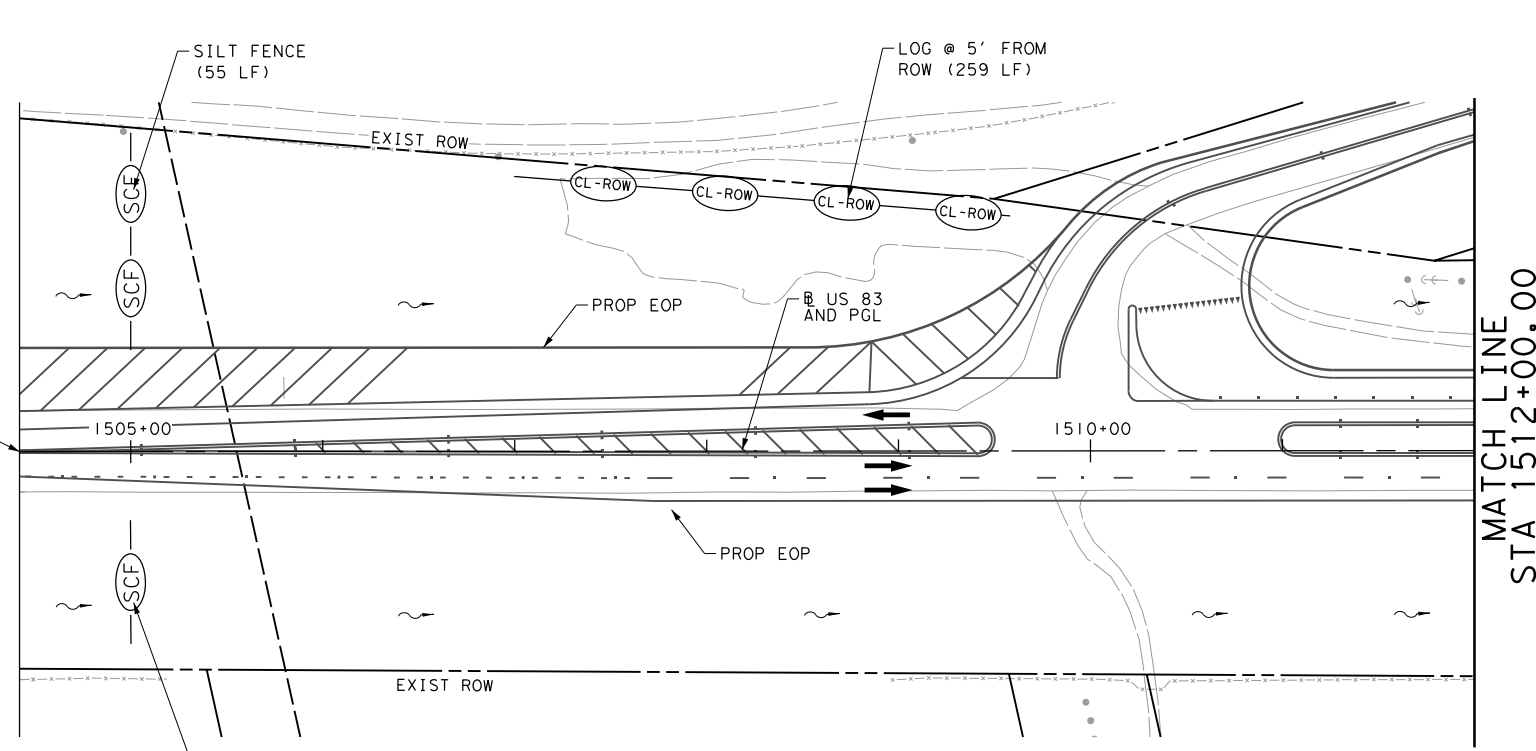
NO.	REVISIONS	BY	DATE
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US 83 <b>STORMWATER POLLUTION PREVENTION PLAN (SWP3)</b> Sheet 2 of 2			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		349-A
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



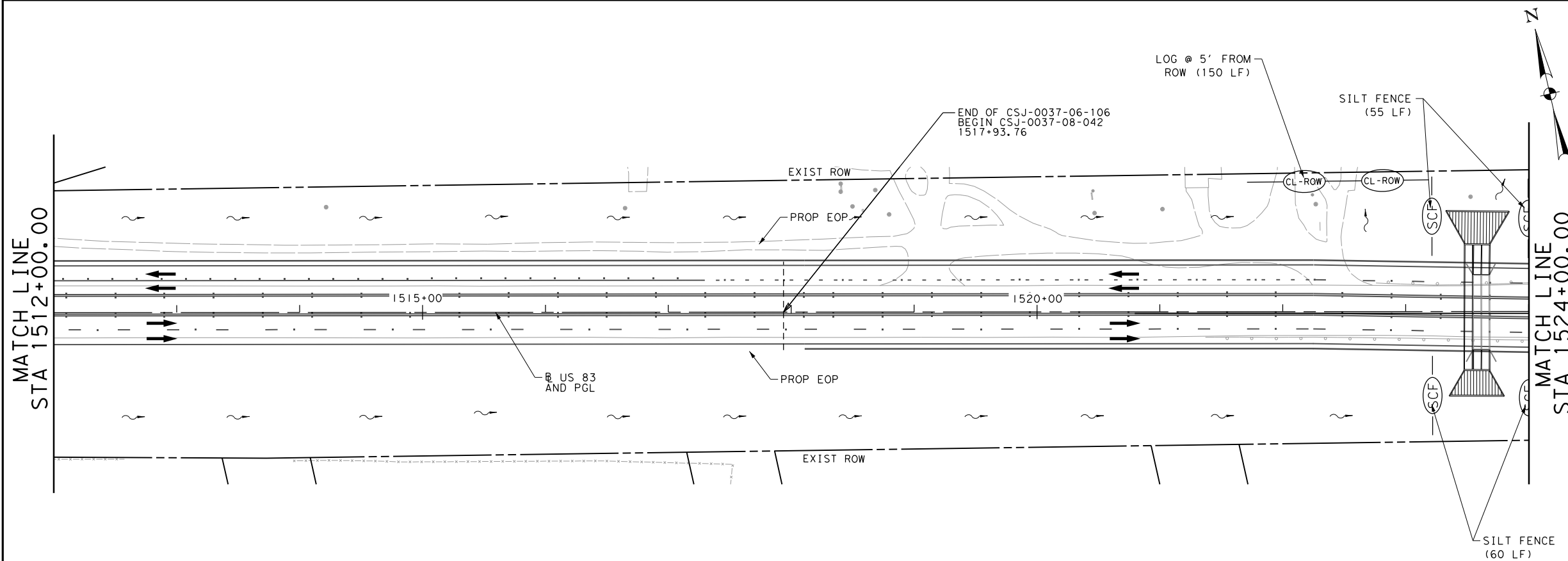
- LEGEND:
- (SCF)— SILT FENCE
  - (CL-ROW)— EROSION CONTROL LOG EDGE OF ROW
  - (D)— DIKE
  - - - - - EXIST ROW

Begin Project  
Sta: 1504+42.08  
CCSJ: 0037-08-042, ETC.

NOTES:  
SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.  
LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.  
SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

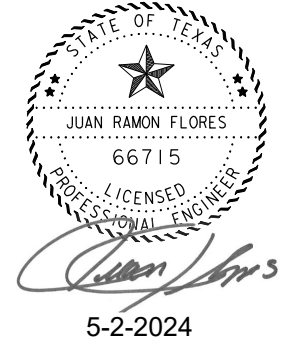


MATCH LINE  
STA 1512+00.00



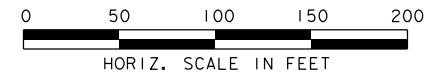
MATCH LINE  
STA 1512+00.00

MATCH LINE  
STA 1524+00.00

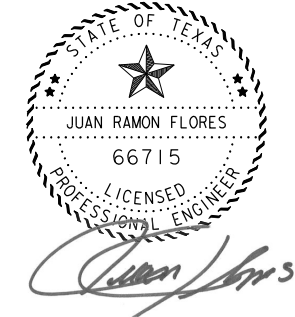
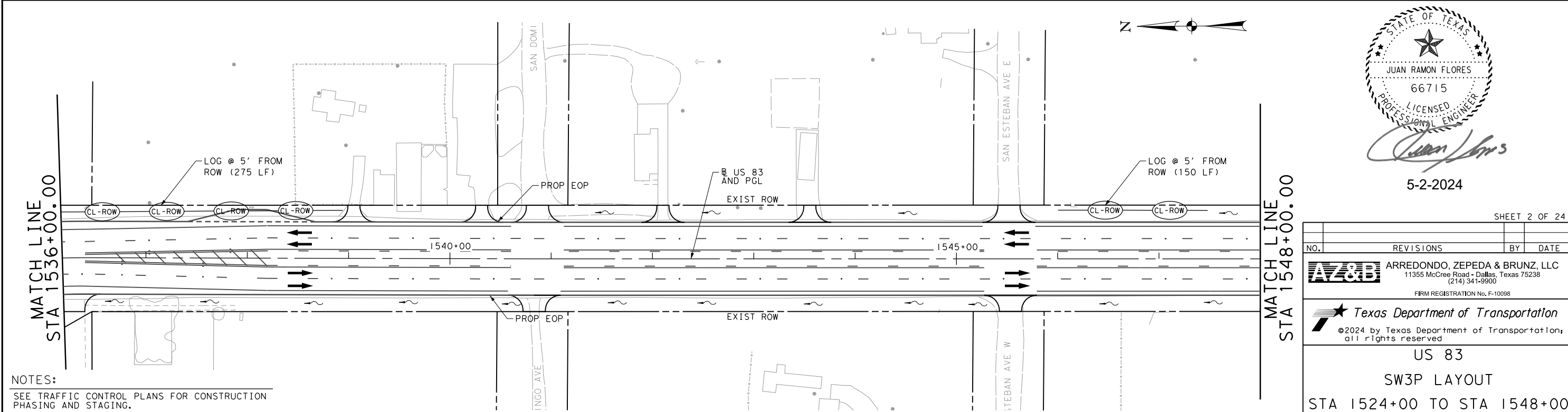
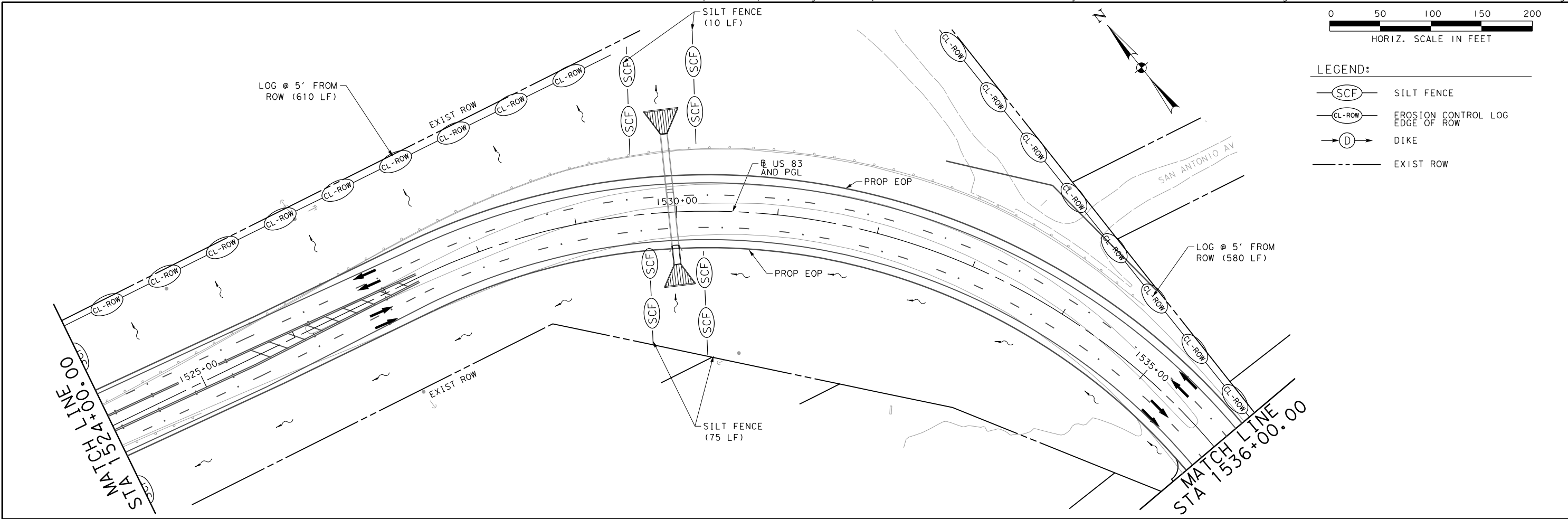


SHEET 1 OF 24

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1504+42.08 TO</b> <b>STA 1524+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		350
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:**
- (SCF)— SILT FENCE
  - (CL-ROW)— EROSION CONTROL LOG EDGE OF ROW
  - (D)— DIKE
  - - - - EXIST ROW



5-2-2024

SHEET 2 OF 24

NO.	REVISIONS	BY	DATE

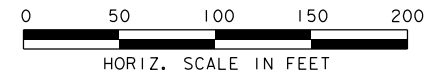
**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
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 FIRM REGISTRATION No. F-10098

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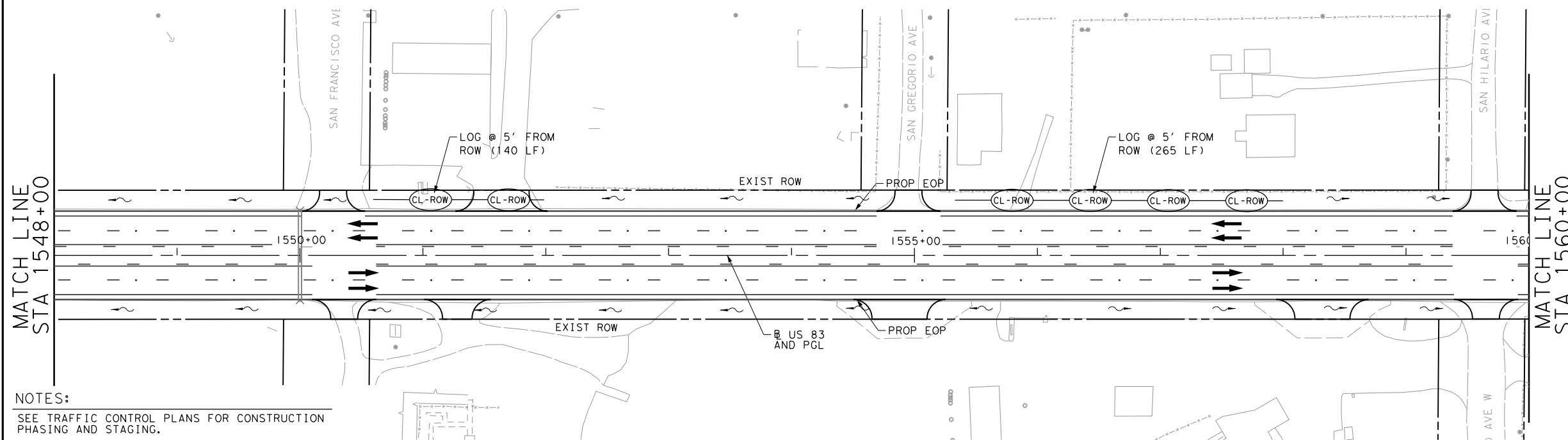
**US 83**  
**SW3P LAYOUT**  
**STA 1524+00 TO STA 1548+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	351	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

**NOTES:**  
 SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.  
 LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.  
 SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG
  - DIKE
  - EXIST ROW

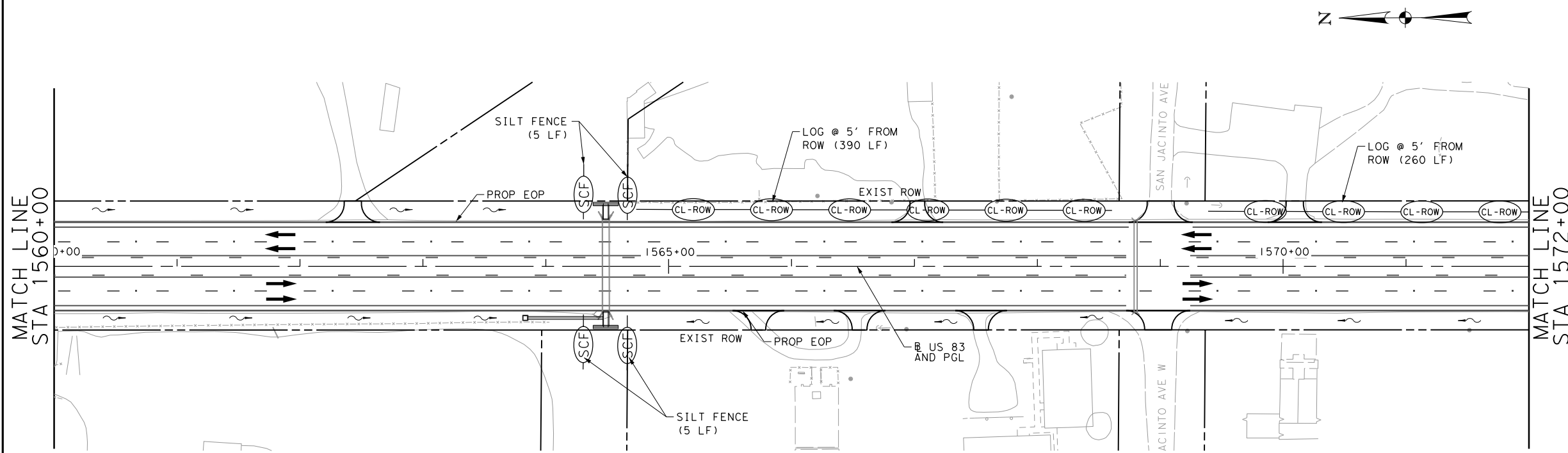
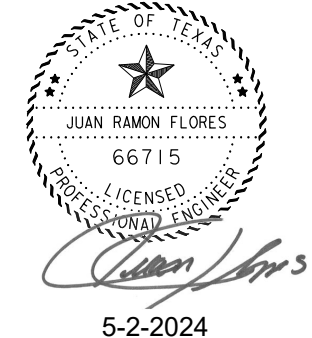


**NOTES:**

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

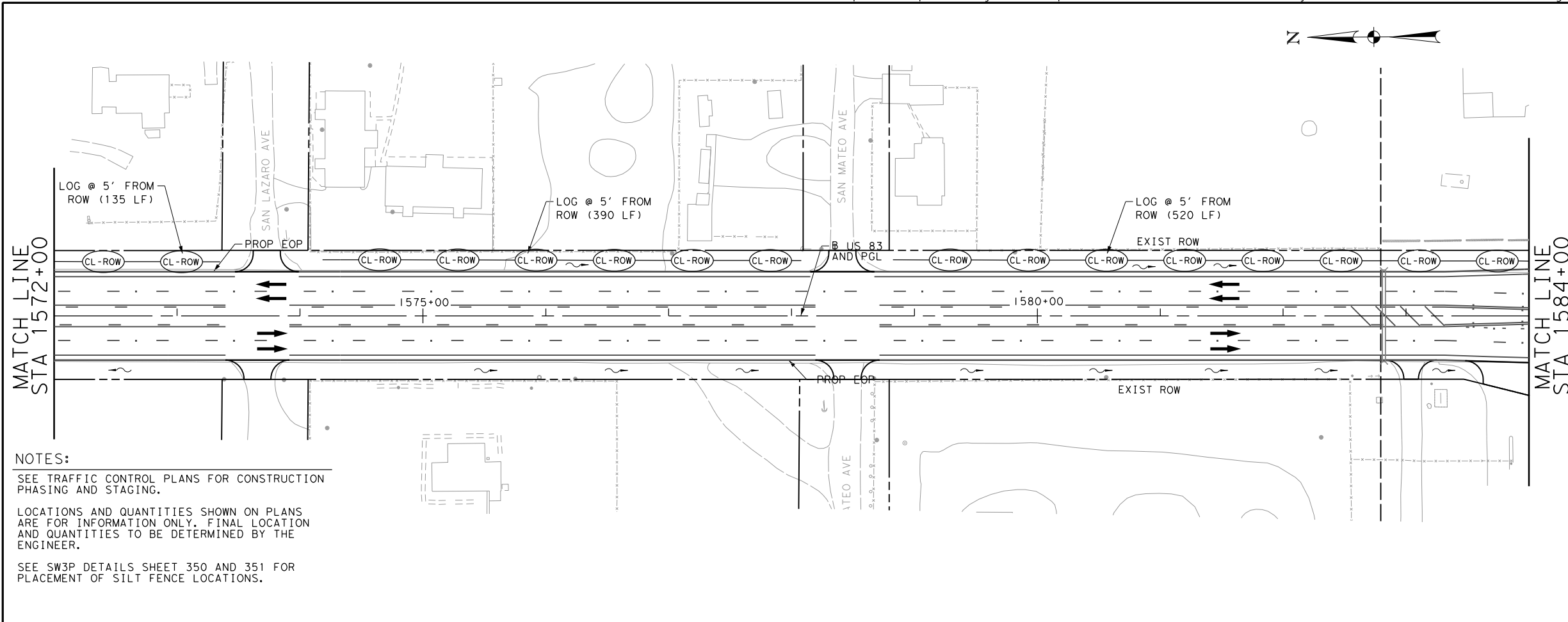


SHEET 3 OF 24

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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1548+00 TO STA 1572+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		352
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW

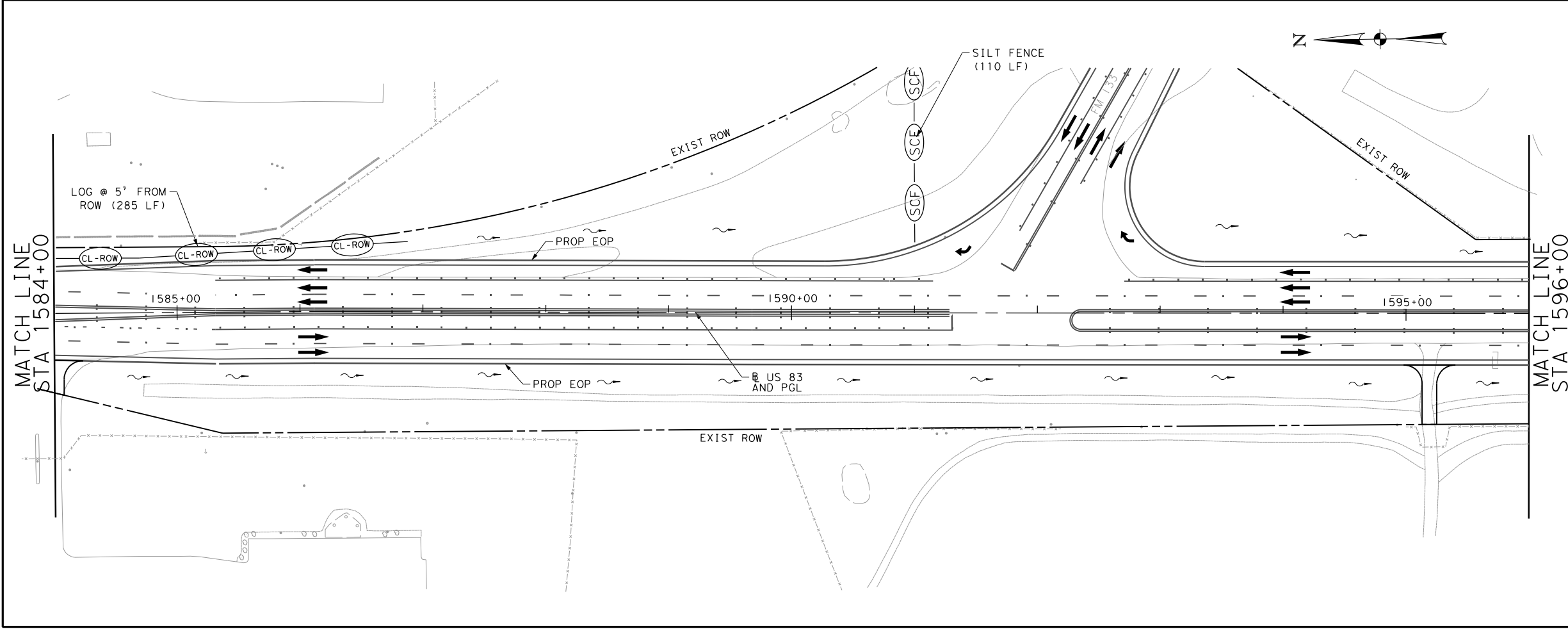


**NOTES:**

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

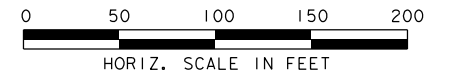


STATE OF TEXAS  
 JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
 5-2-2024

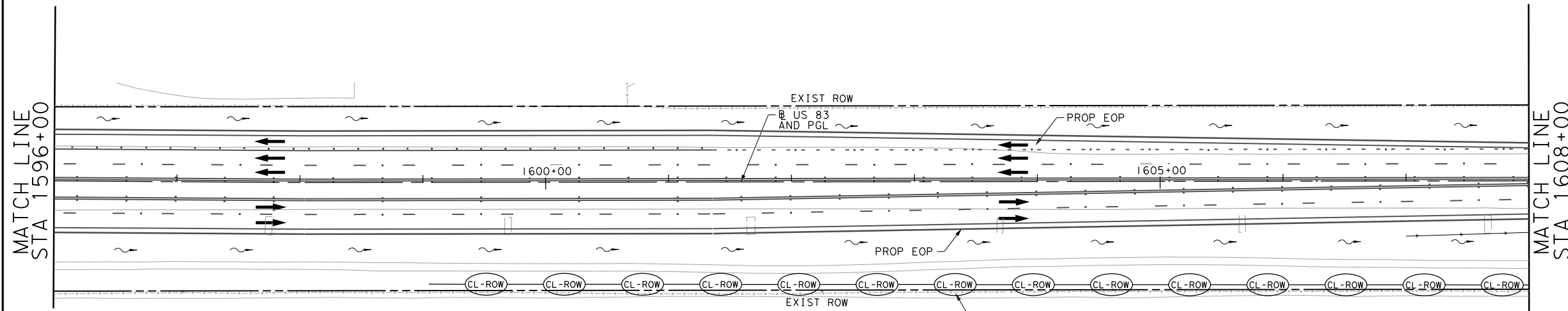
SHEET 4 OF 24

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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1572+00 TO STA 1596+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		353
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83





- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG
  - DIKE
  - EXIST ROW



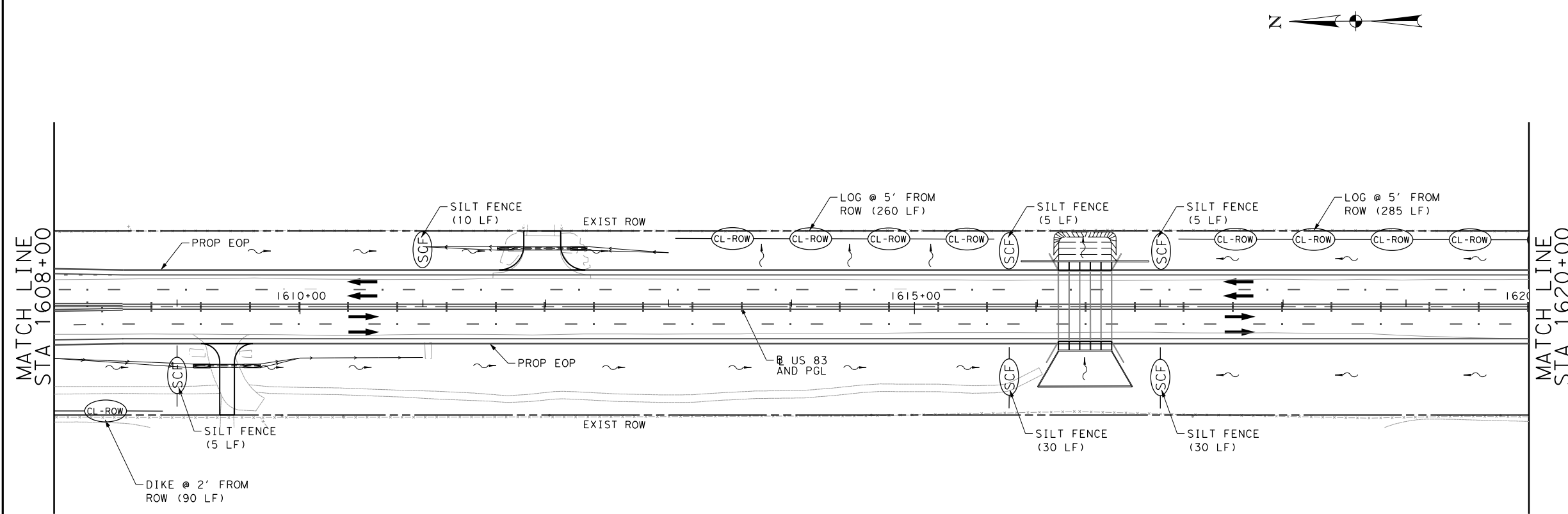
NOTES:

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

LOG @ 5' FROM ROW (895 LF)



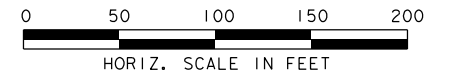
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*Juan Flores*

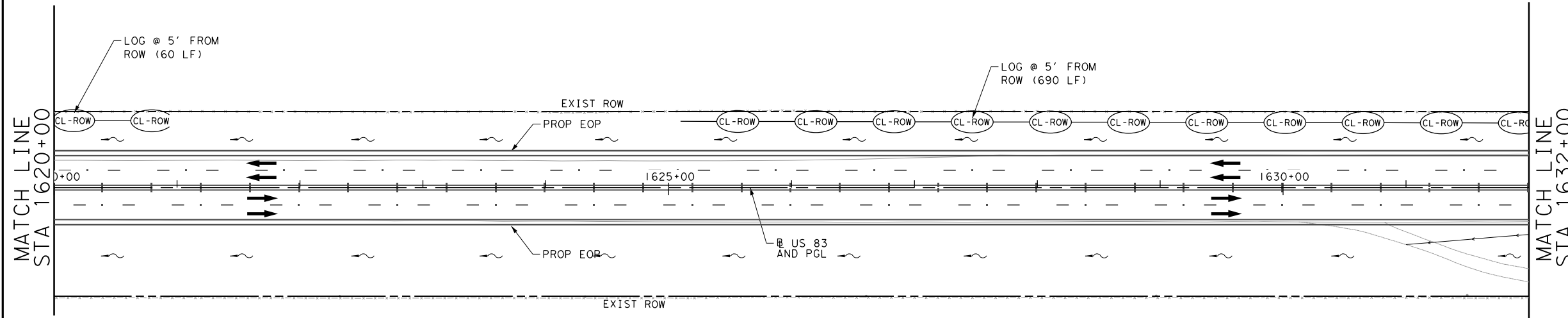
5-2-2024

SHEET 5 OF 24

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FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	354	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW



NOTES:

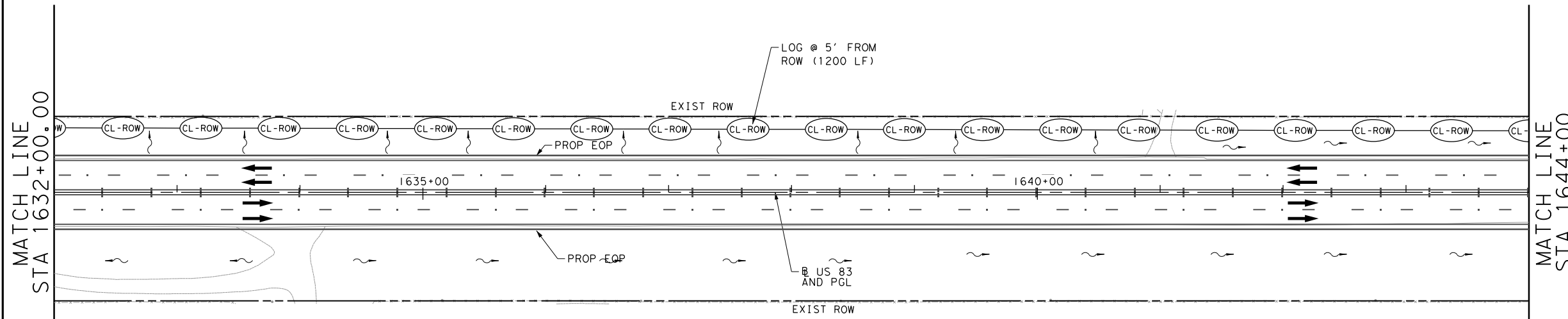
SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

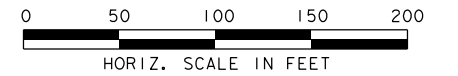


5-2-2024

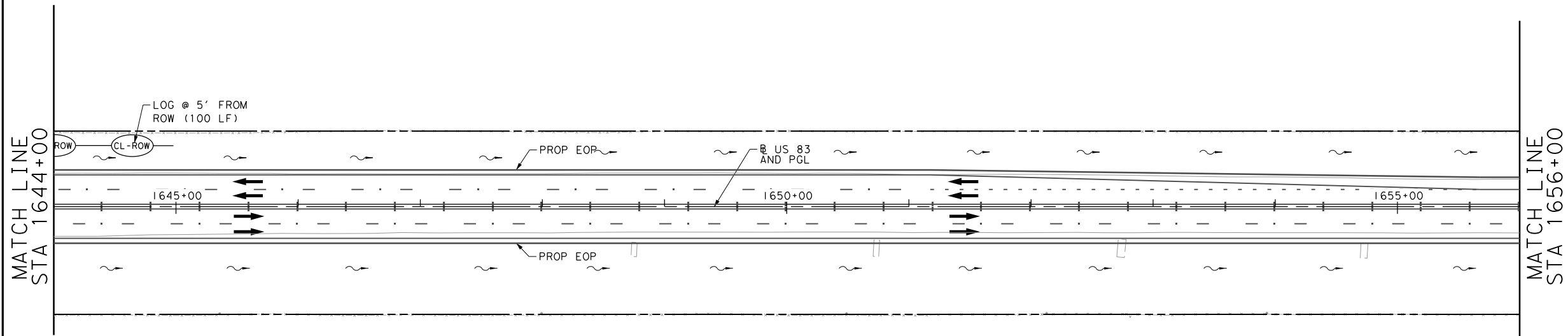


SHEET 6 OF 24

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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1620+00 TO STA 1644+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		355
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG
  - EDGE OF ROW
  - DIKE
  - EXIST ROW

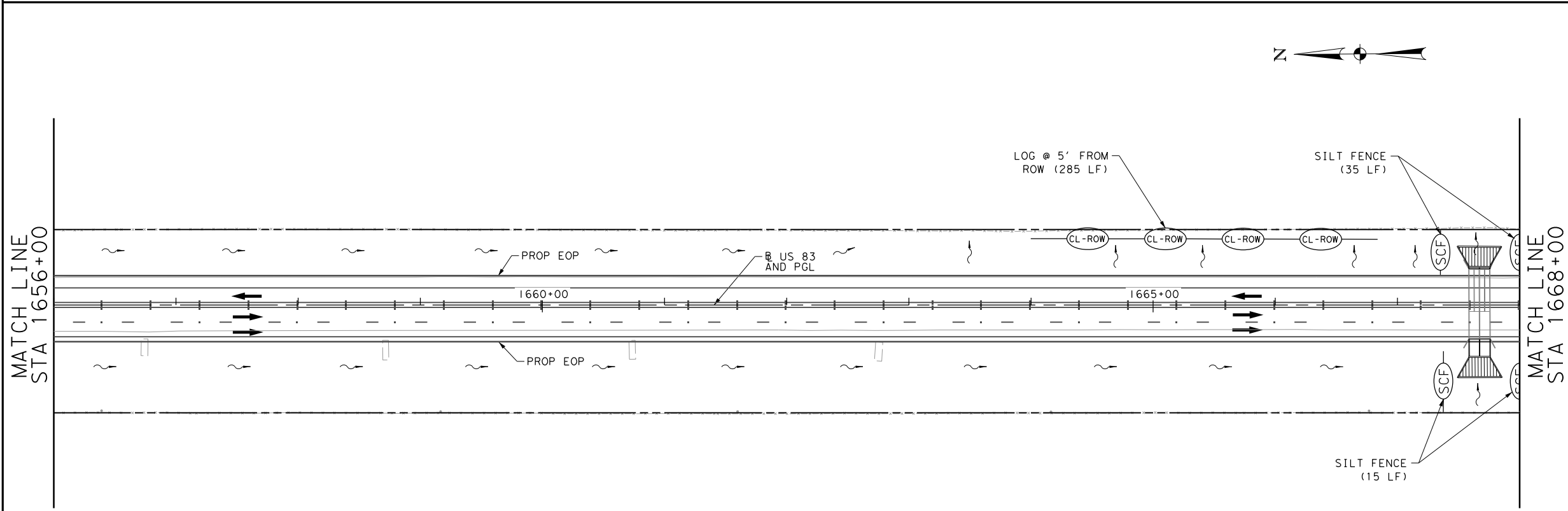


NOTES:

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

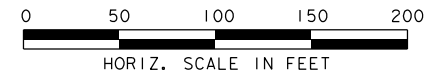
SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



5-2-2024

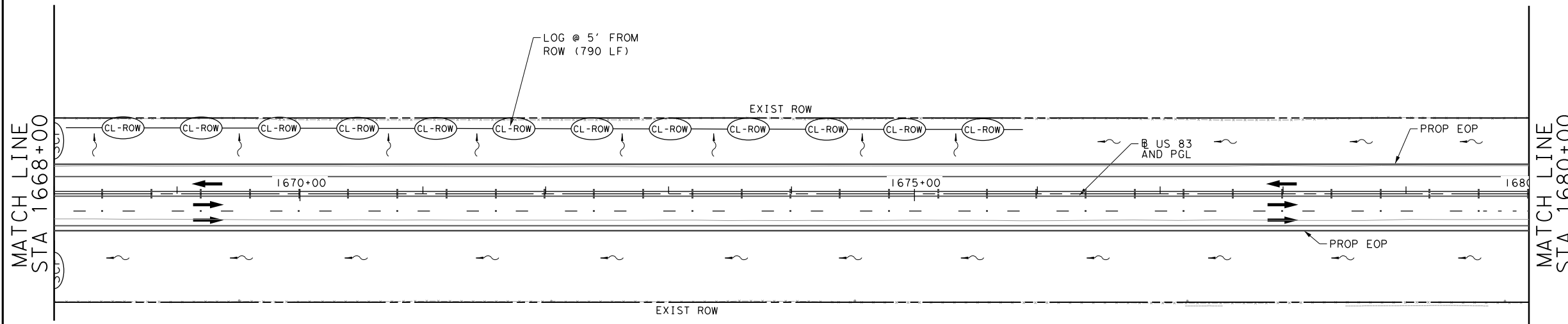
SHEET 7 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1644+00 TO STA 1668+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		356
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



LEGEND:

- SILT FENCE
- EROSION CONTROL LOG  
EDGE OF ROW
- DIKE
- EXIST ROW



NOTES:

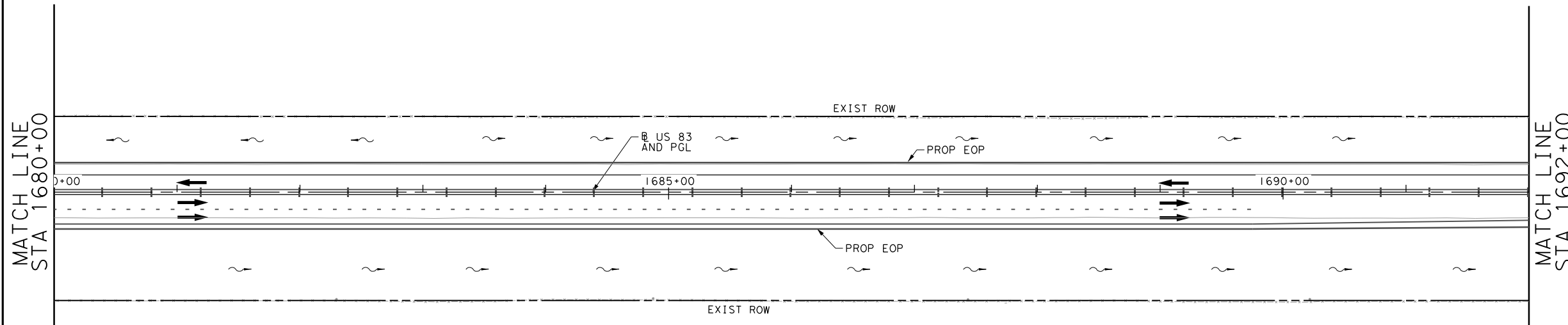
SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

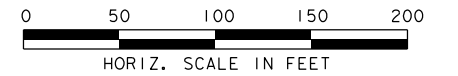


5-2-2024

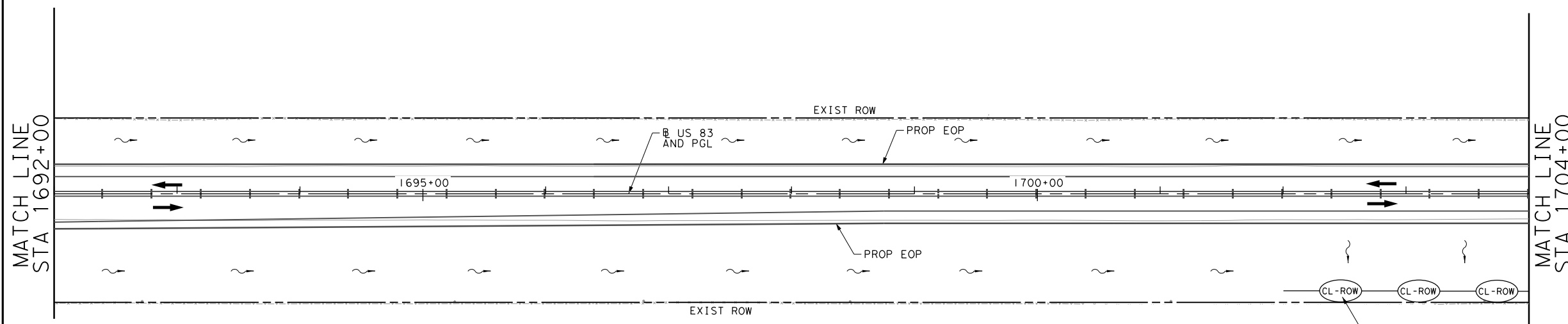


SHEET 8 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1668+00 TO STA 1692+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		357
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG
  - DIKE
  - EXIST ROW



**NOTES:**

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

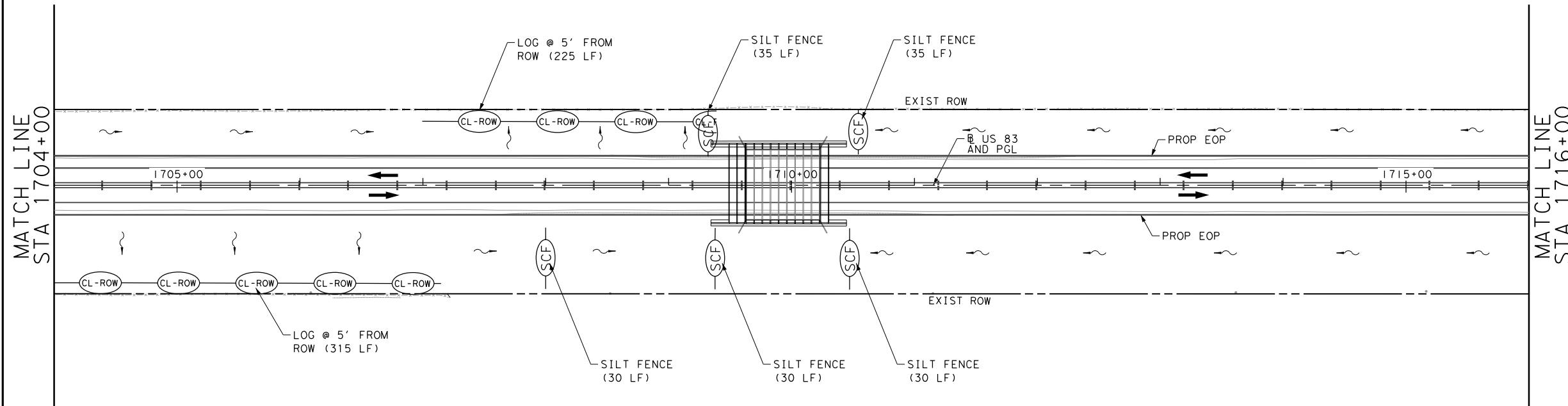
LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

LOG @ 5' FROM ROW (200 LF)



5-2-2024



LOG @ 5' FROM ROW (315 LF)

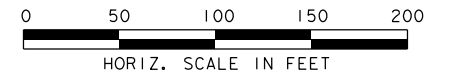
SILT FENCE (30 LF)

SILT FENCE (30 LF)

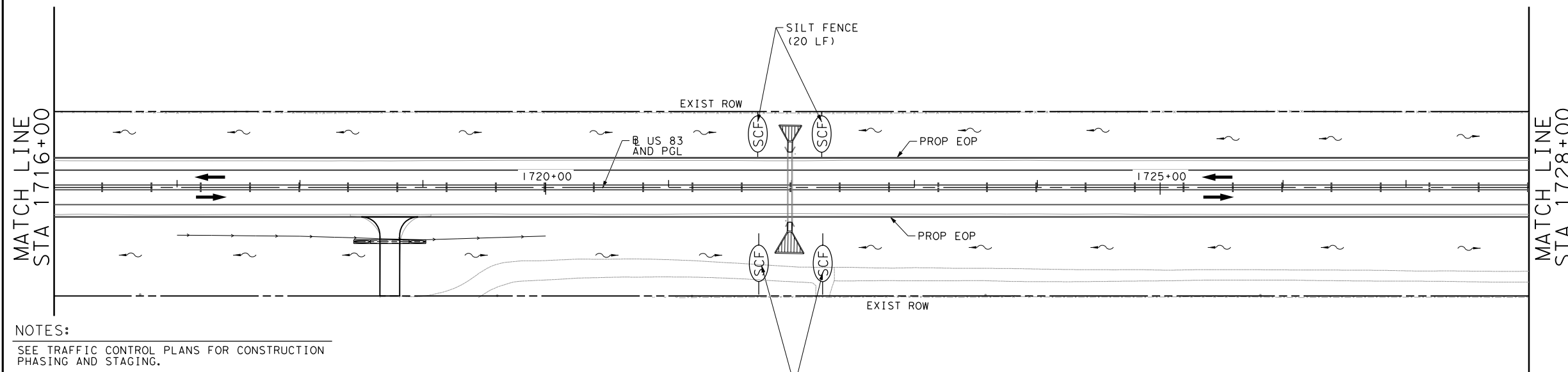
SILT FENCE (30 LF)

SHEET 9 OF 24

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1692+00 TO STA 1716+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		358
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



- LEGEND:**
- (SCF)— SILT FENCE
  - (CL-ROW)— EROSION CONTROL LOG EDGE OF ROW
  - (D)— DIKE
  - - - - - EXIST ROW

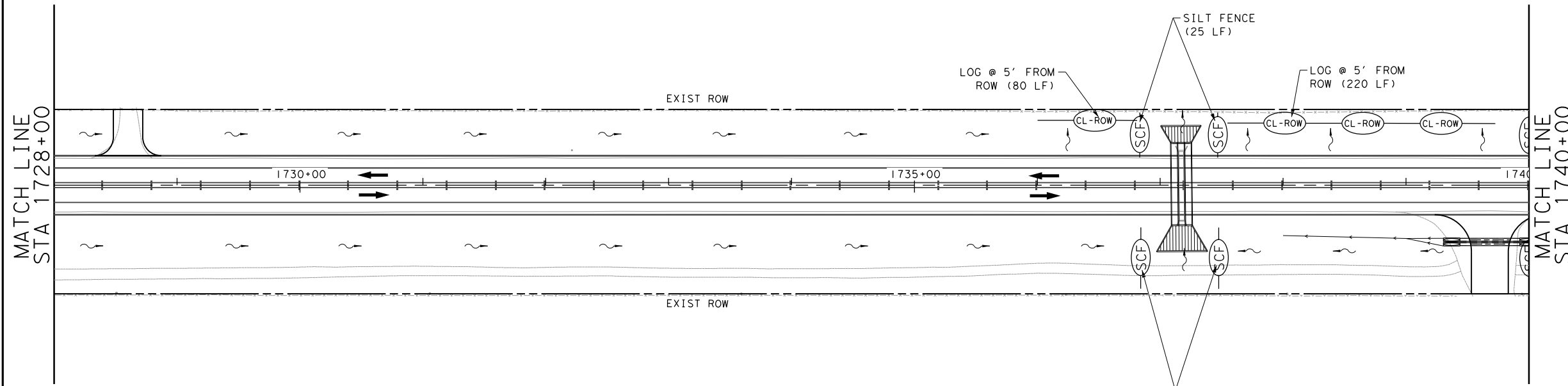


**NOTES:**

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

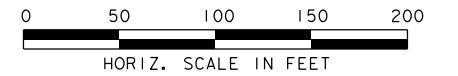
LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



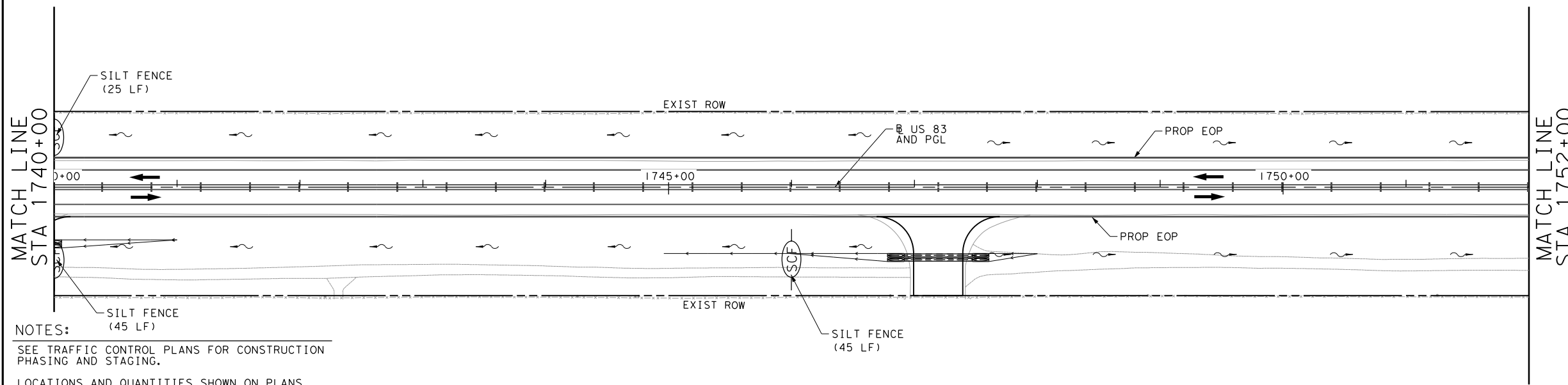
SHEET 10 OF 24

NO.		REVISIONS	BY	DATE
<b>ARREDONDO, ZEPEDA &amp; BRUNZ, LLC</b> 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098				
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1716+00 TO STA 1740+00</b>				
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.	
6	C 37-8-42		359	
STATE	DISTRICT	COUNTY		
TEXAS	LRD	DIMMIT		
CONTROL	SECTION	JOB	HIGHWAY NO.	
0037	08	042, ETC.	US 83	

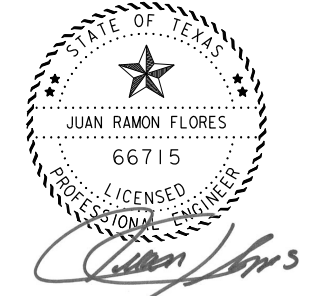


LEGEND:

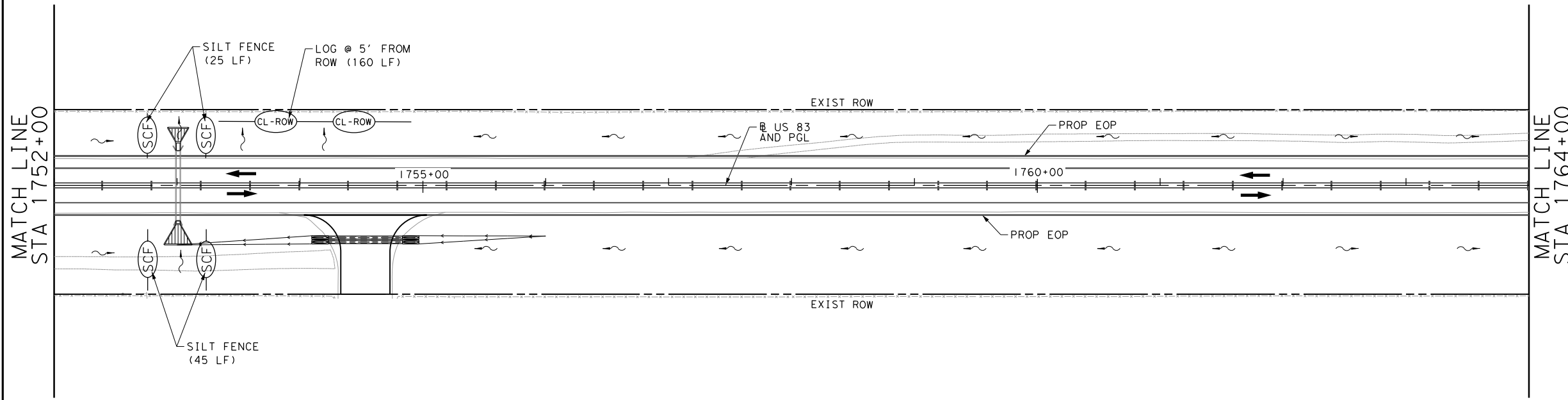
- SILT FENCE
- EROSION CONTROL LOG  
EDGE OF ROW
- DIKE
- EXIST ROW



NOTES:  
 SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.  
 LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.  
 SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



5-2-2024



SHEET 11 OF 24

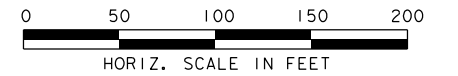
NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
 11355 McCree Road - Dallas, Texas 75238  
 (214) 341-8900  
 FIRM REGISTRATION No. F-10098

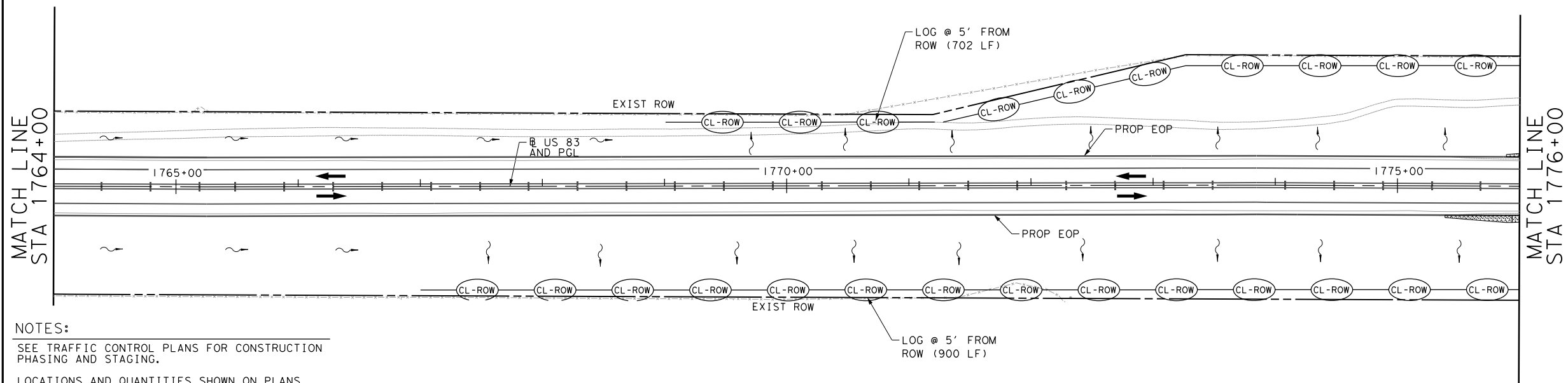
**Texas Department of Transportation**  
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**US 83  
 SW3P LAYOUT  
 STA 1740+00 TO STA 1764+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		360
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW

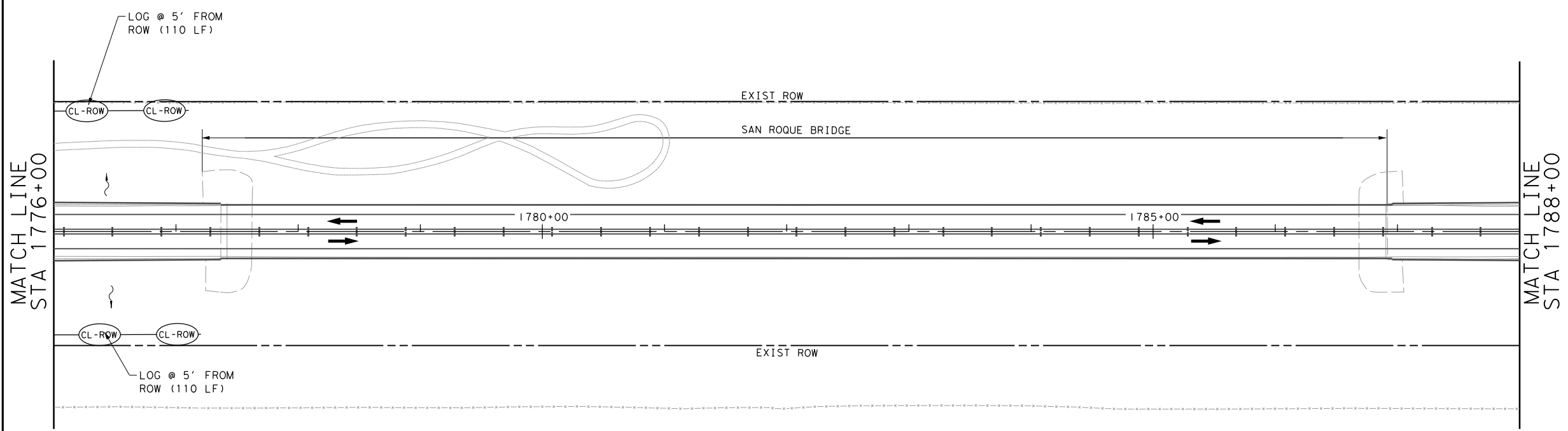


**NOTES:**

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

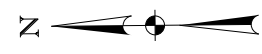
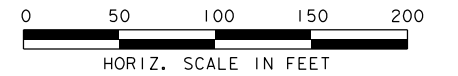


STATE OF TEXAS  
 JUAN RAMON FLORES  
 66715  
 LICENSED PROFESSIONAL ENGINEER  
 5-2-2024

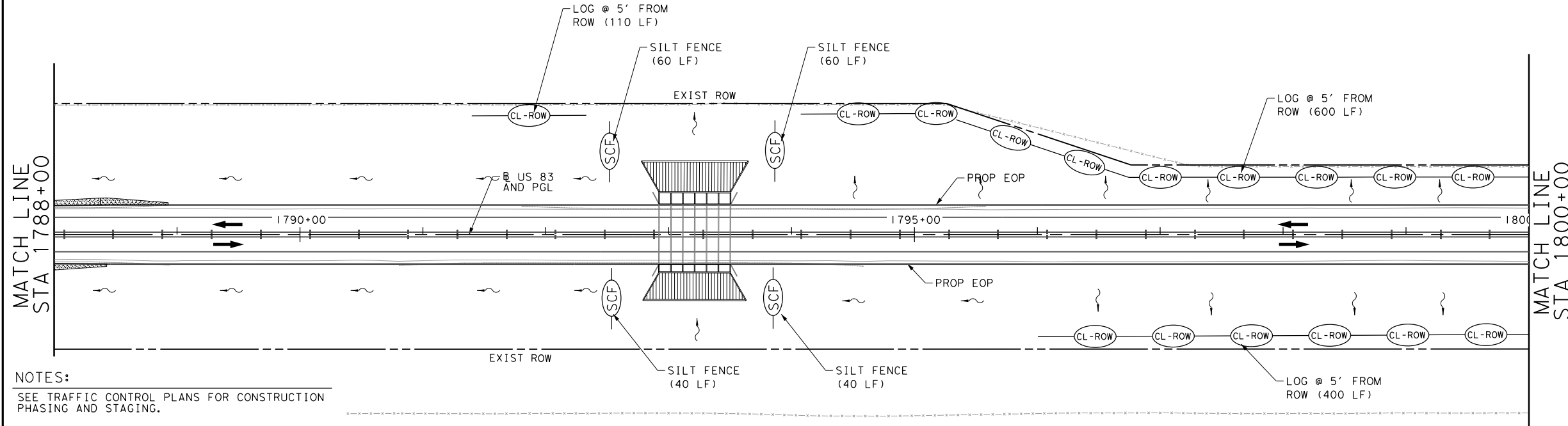
SHEET 12 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1764+00 TO STA 1788+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		361
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83

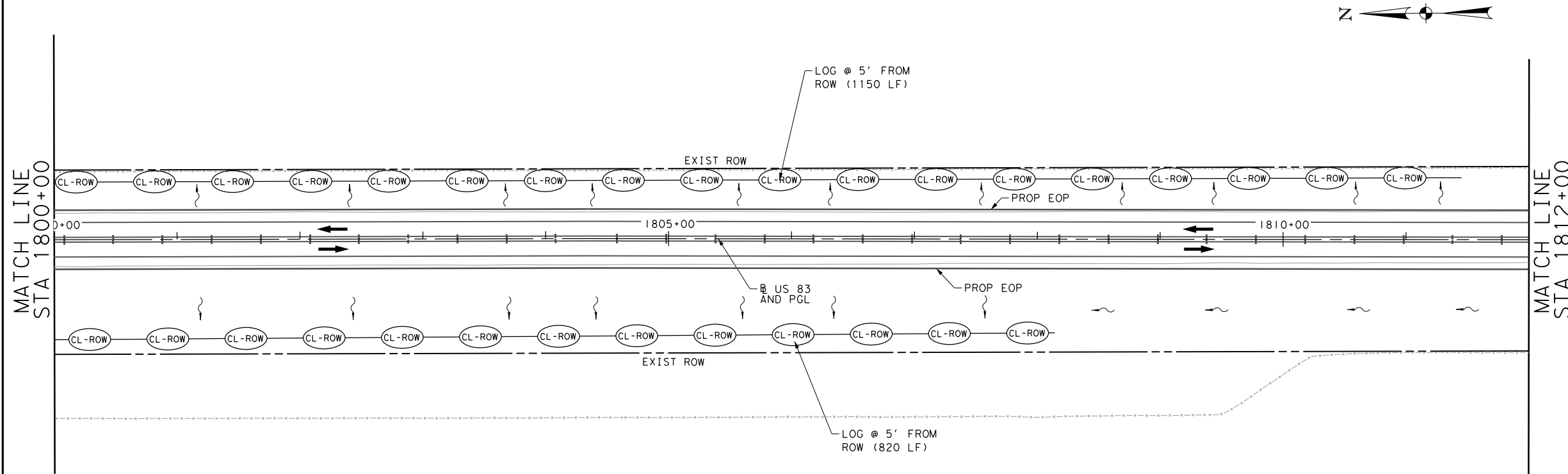




- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW

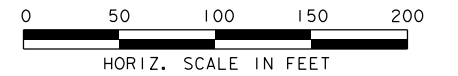


**NOTES:**  
 SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.  
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 SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

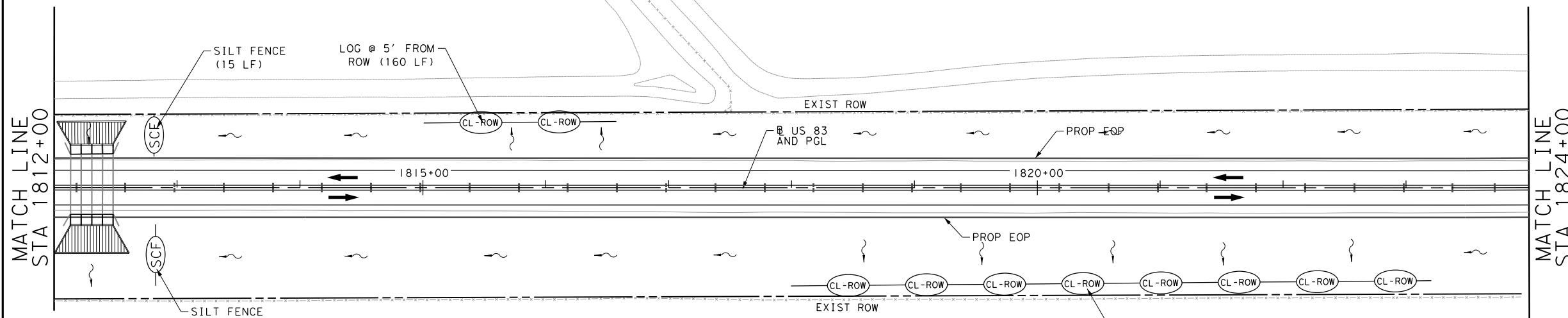


SHEET 13 OF 24

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1788+00 TO STA 1812+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	362	
STATE	DISTRICT	COUNTY	HIGHWAY NO.
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	US 83
0037	08	042, ETC.	



- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG  
EDGE OF ROW
  - DIKE
  - EXIST ROW



**NOTES:**

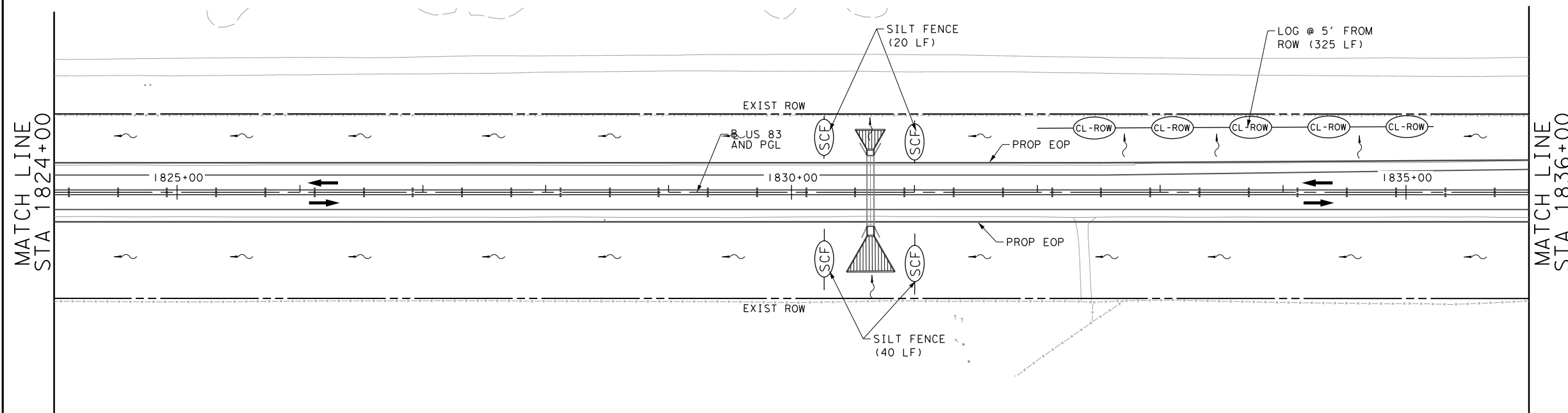
SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

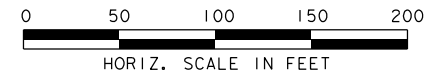


5-2-2024

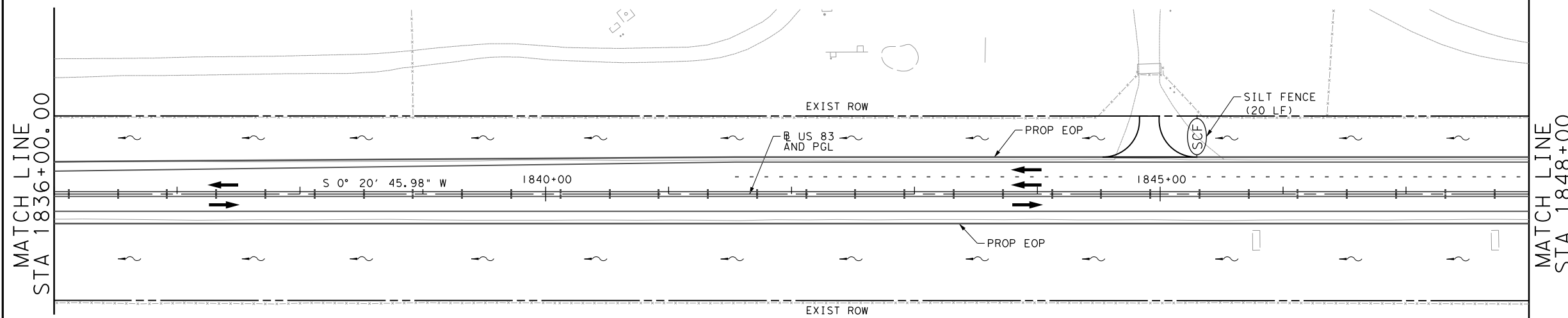


SHEET 14 OF 24

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1812+00 TO STA 1836+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		363
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG
  - EDGE OF ROW
  - DIKE
  - EXIST ROW

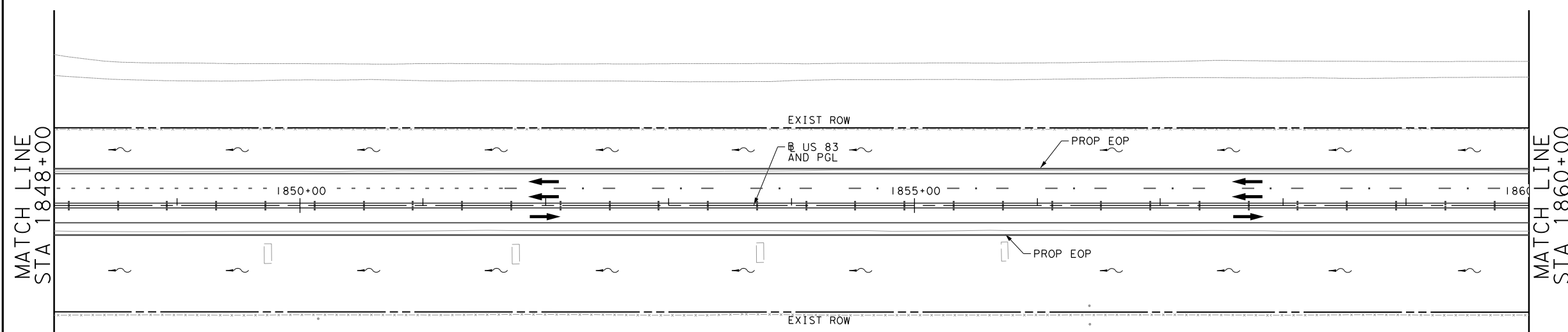


NOTES:

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

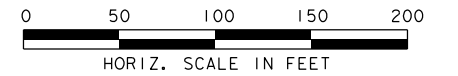
LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



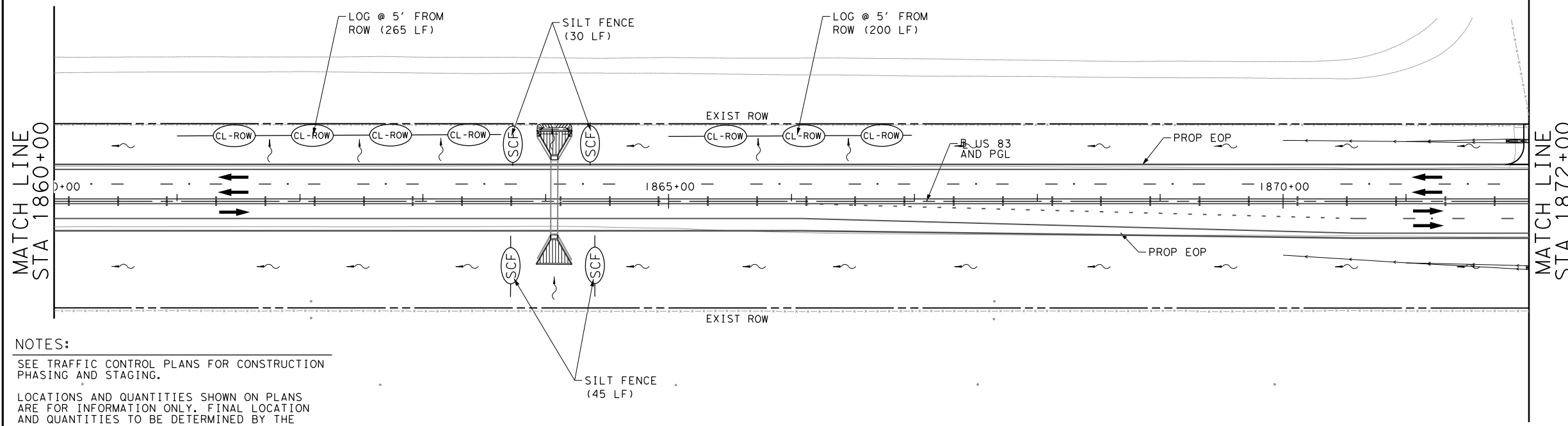
SHEET 15 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCreer Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1836+00 TO STA 1860+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		364
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

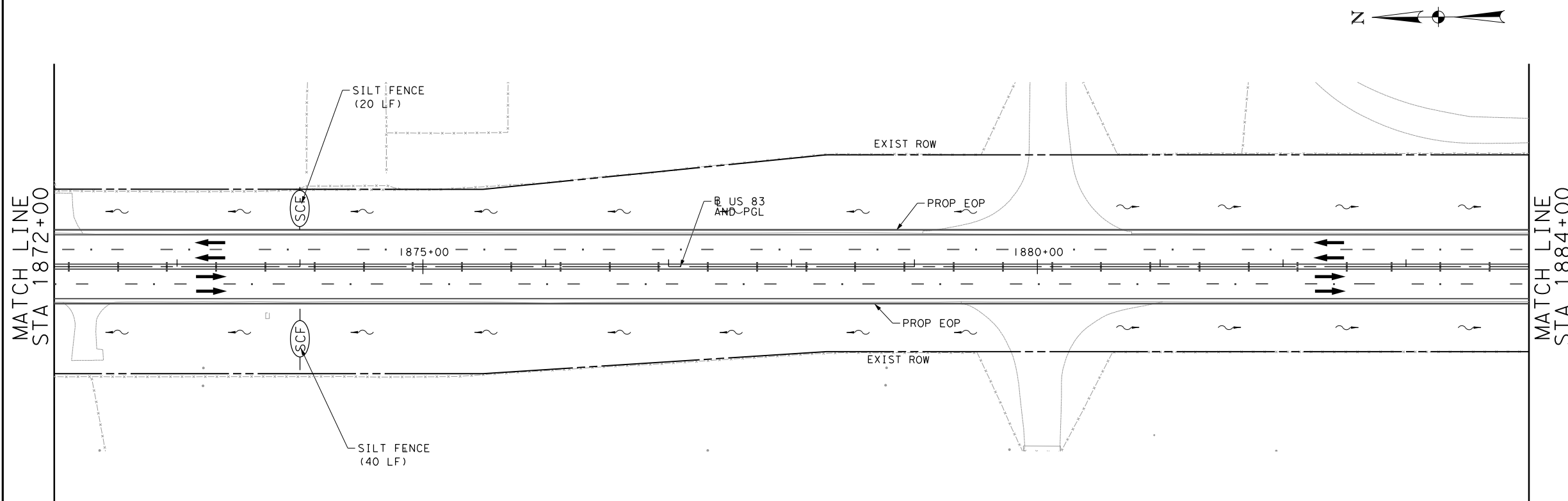


LEGEND:

- SILT FENCE
- EROSION CONTROL LOG EDGE OF ROW
- DIKE
- EXIST ROW



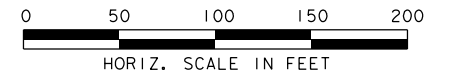
NOTES:  
 SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.  
 LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.  
 SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



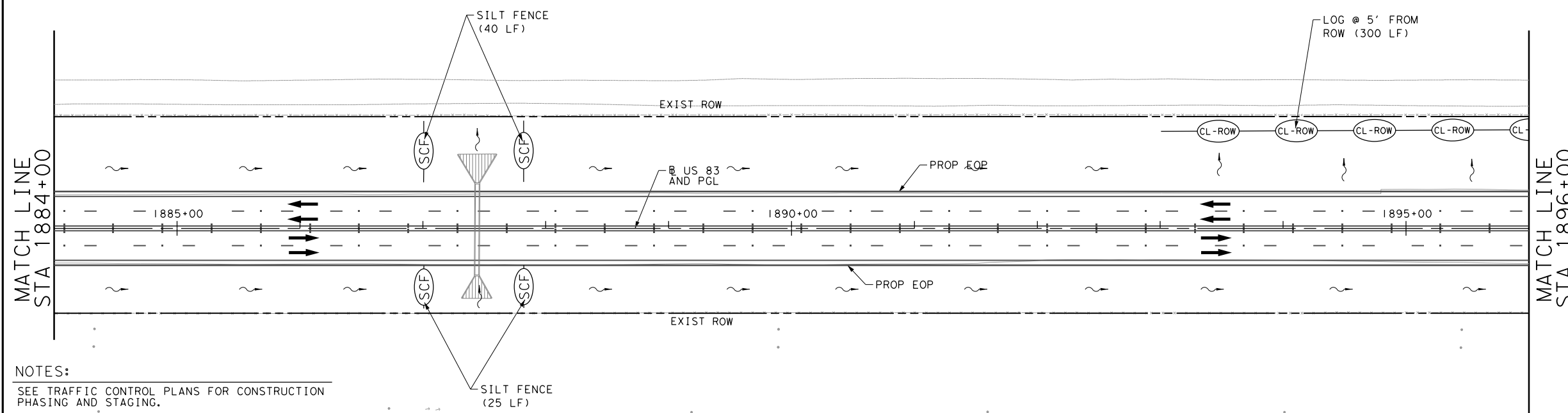
5-2-2024

SHEET 16 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1860+00 TO STA 1884+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		365
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW

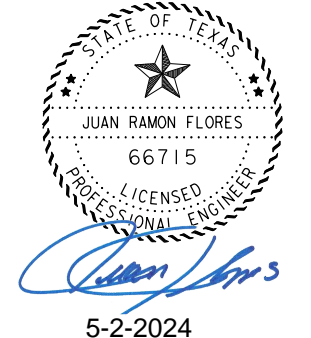
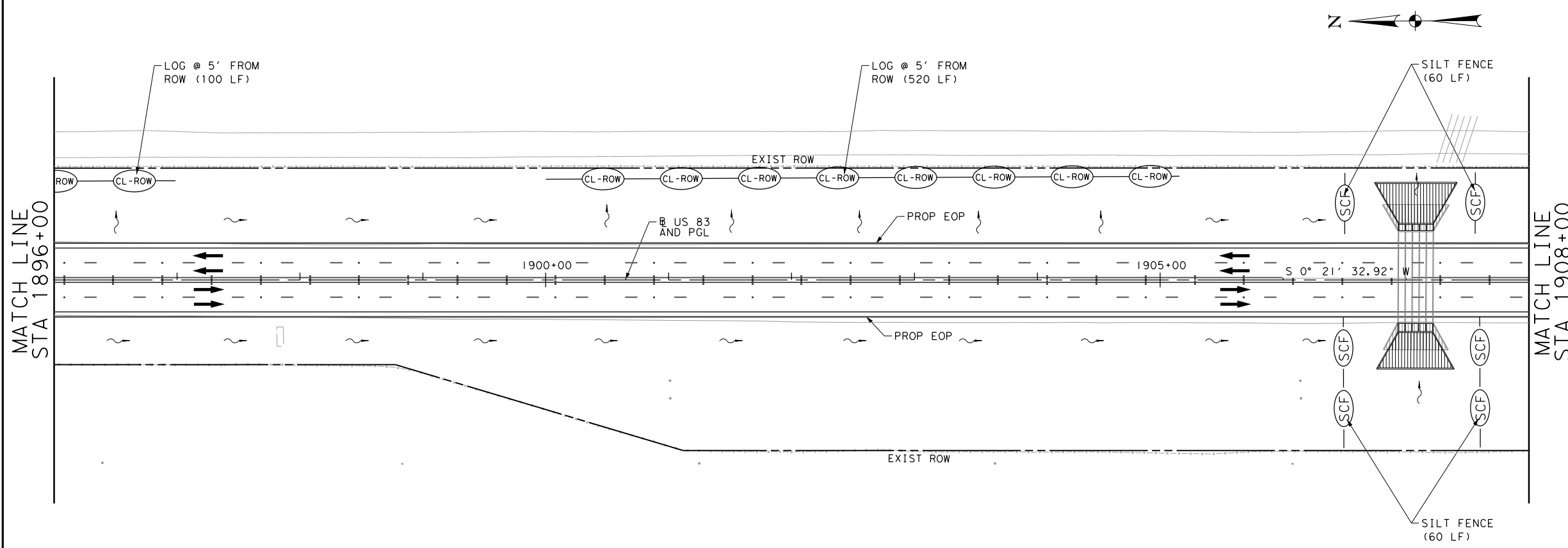


NOTES:

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

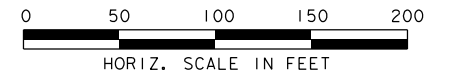
LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

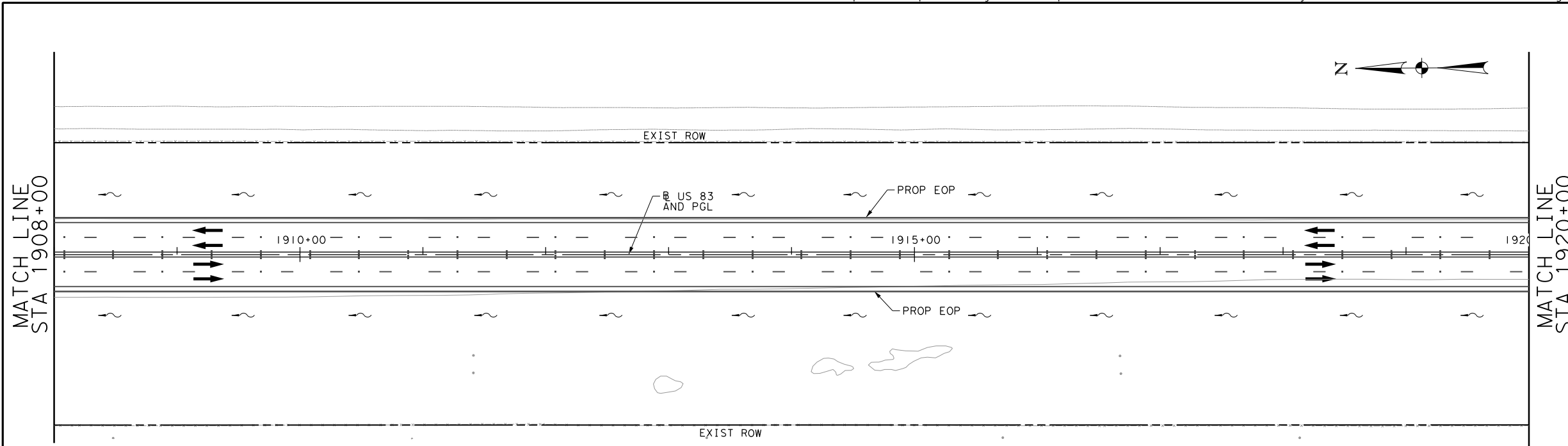


SHEET 17 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1884+00 TO STA 1908+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	366	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW

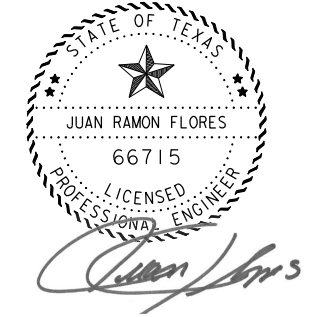
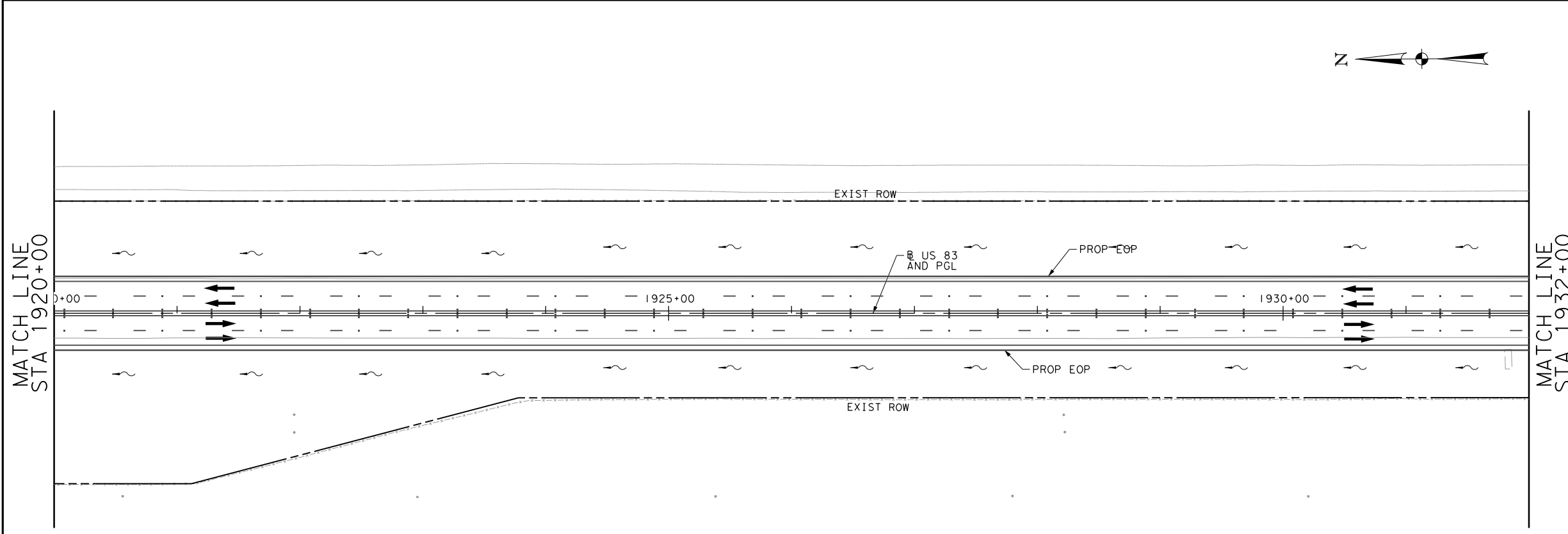


NOTES:

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

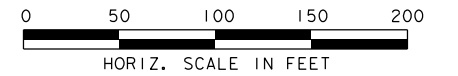
SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



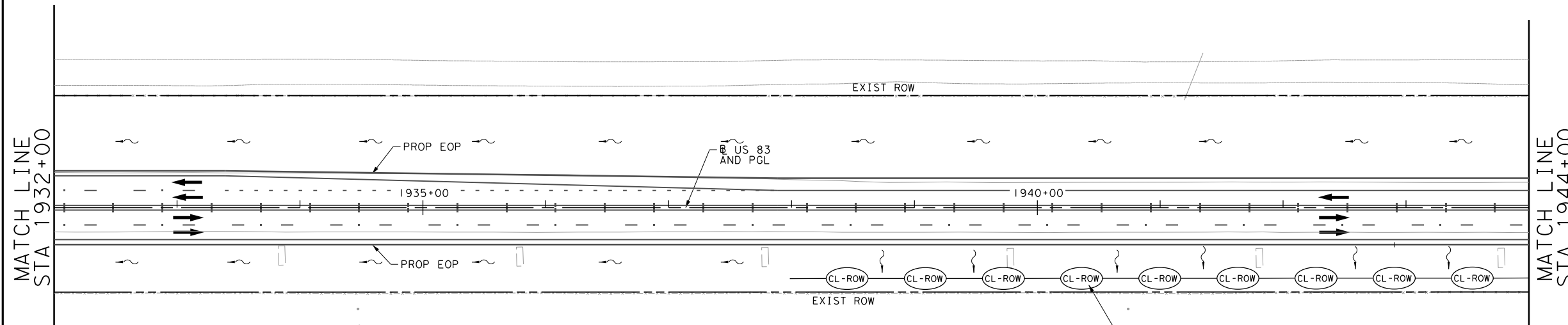
5-2-2024

SHEET 18 OF 24

NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1908+00 TO STA 1932+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		367
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG
  - EDGE OF ROW
  - DIKE
  - EXIST ROW

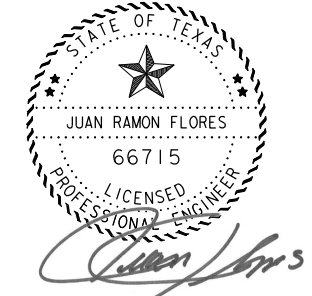
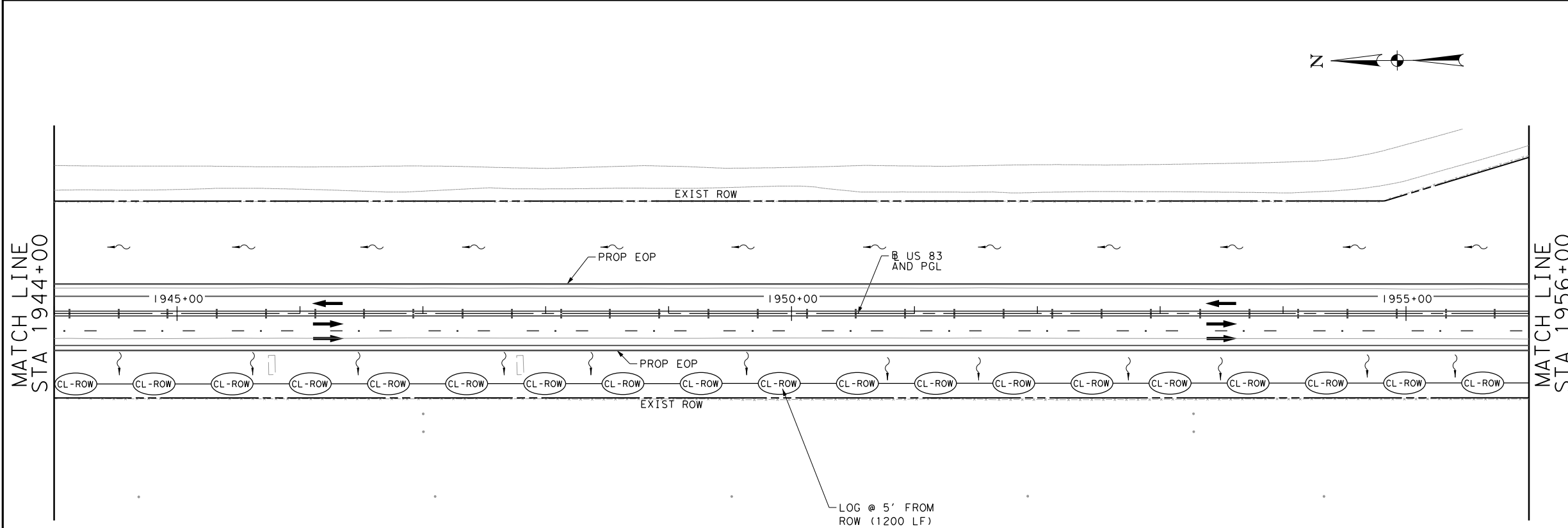


NOTES:

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

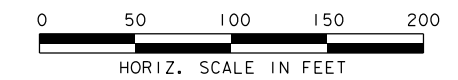
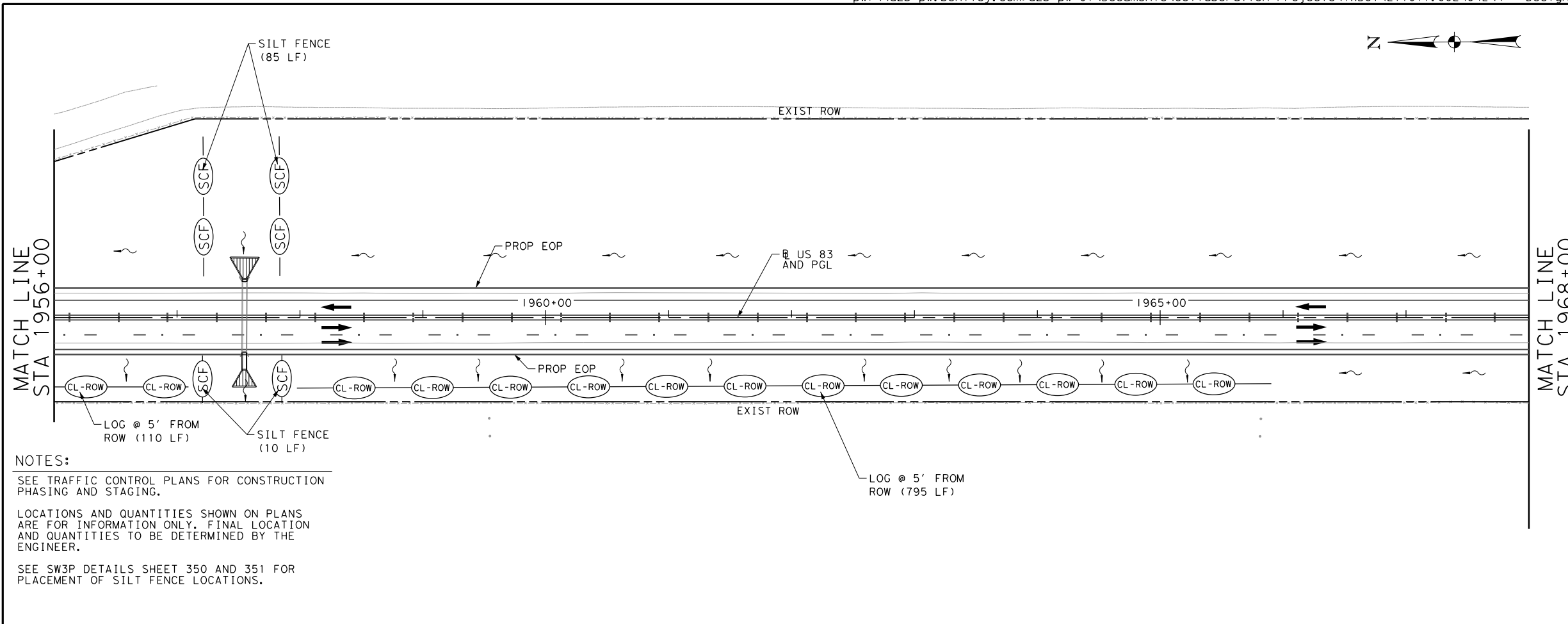
SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



5-2-2024

SHEET 19 OF 24

NO.	REVISIONS	BY	DATE
ARREDONDO, ZEPEDA & BRUNZ, LLC 11355 McCree Road - Dallas, Texas 75238 (214) 341-8900 FIRM REGISTRATION No. F-10098			
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1932+00 TO STA 1956+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		368
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83



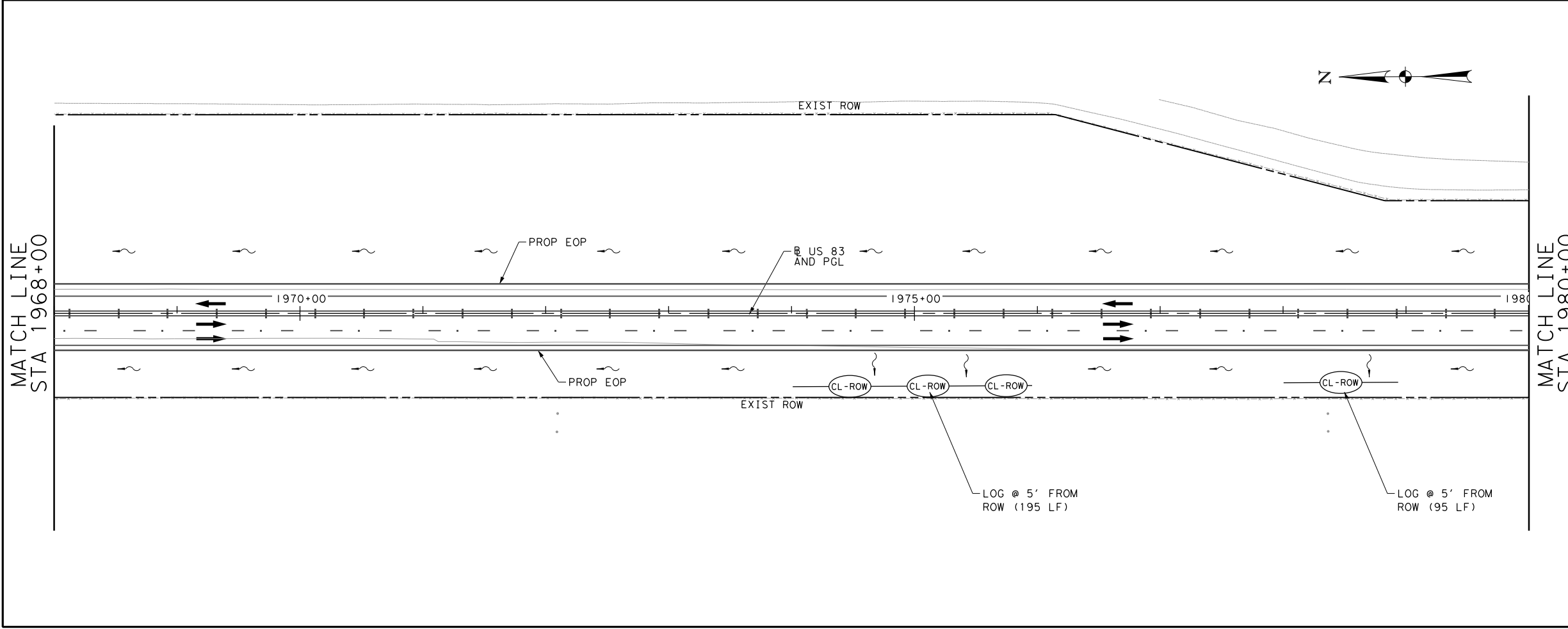
- LEGEND:**
- (SCF)— SILT FENCE
  - (CL-ROW)— EROSION CONTROL LOG
  - (D)— DIKE
  - - - - - EXIST ROW

**NOTES:**

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



5-2-2024

SHEET 20 OF 24

NO.	REVISIONS	BY	DATE

**A7&B** ARREDONDO, ZEPEDA & BRUNZ, LLC  
11355 McCree Road - Dallas, Texas 75238  
(214) 341-8900  
FIRM REGISTRATION No. F-10098

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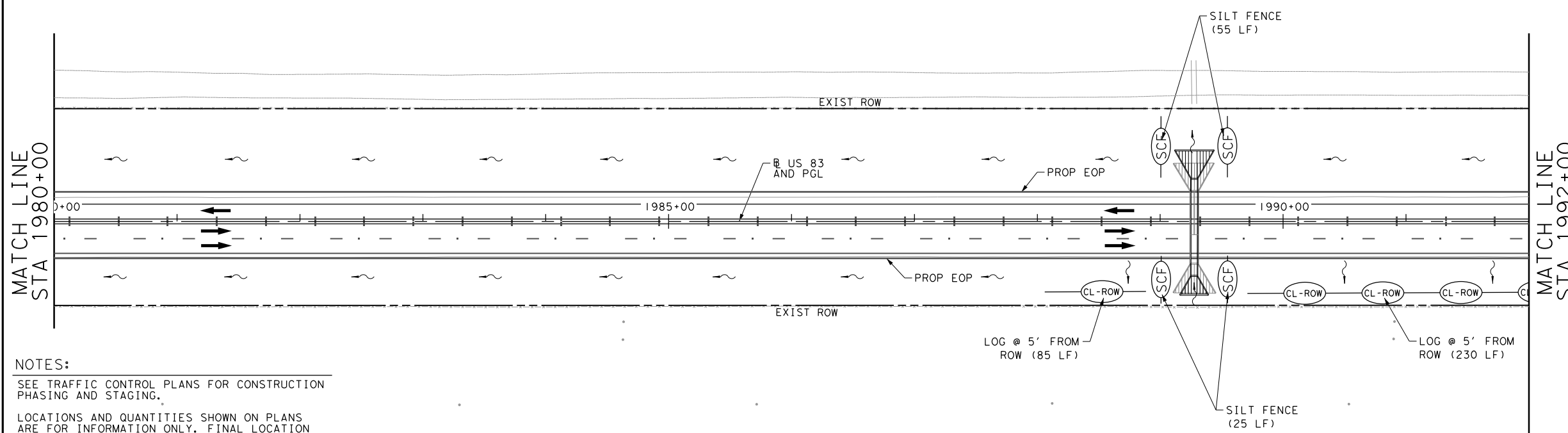
**US 83  
SW3P LAYOUT  
STA 1956+00 TO STA 1980+00**

FED. RD. DIV. NO.	STATE AID PROJECT NO.	SHEET NO.	
6	C 37-8-42	369	
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83





- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG
  - DIKE
  - EXIST ROW

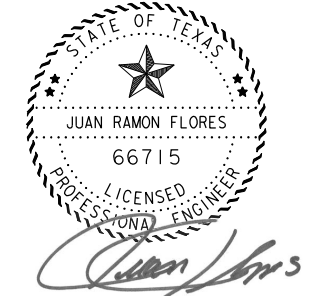


**NOTES:**

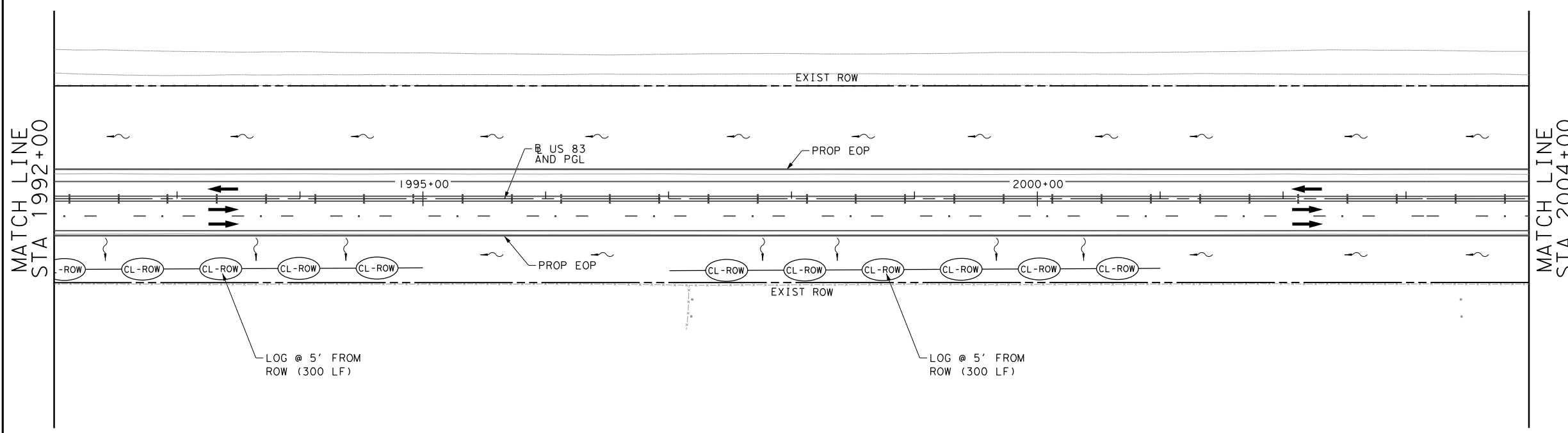
SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.

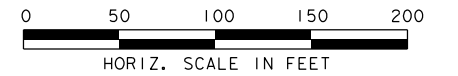


5-2-2024

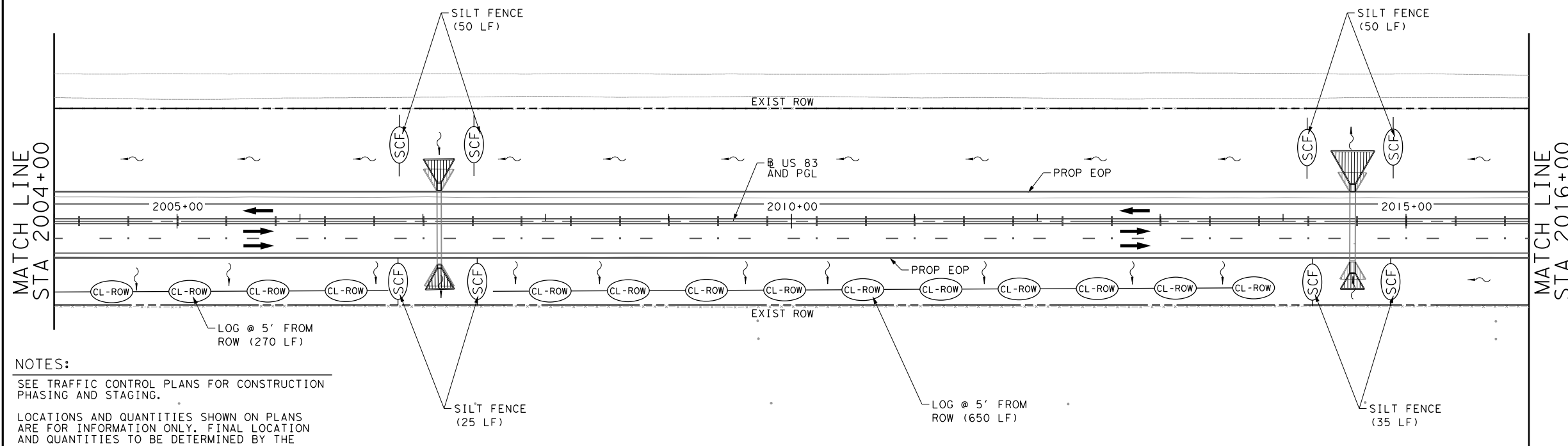


SHEET 21 OF 24

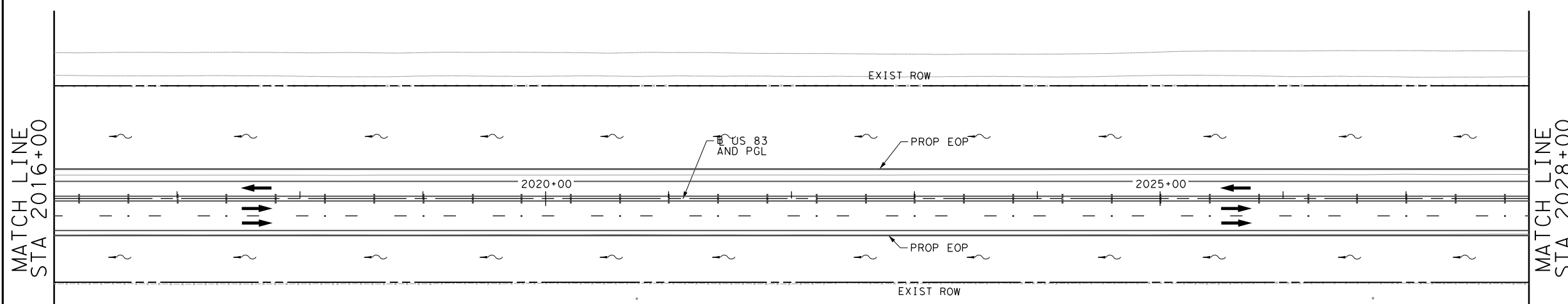
NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 1980+00 TO STA 2004+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		370
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW



**NOTES:**  
 SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.  
 LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.  
 SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



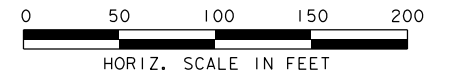
5-2-2024

MATCH LINE STA 2016+00

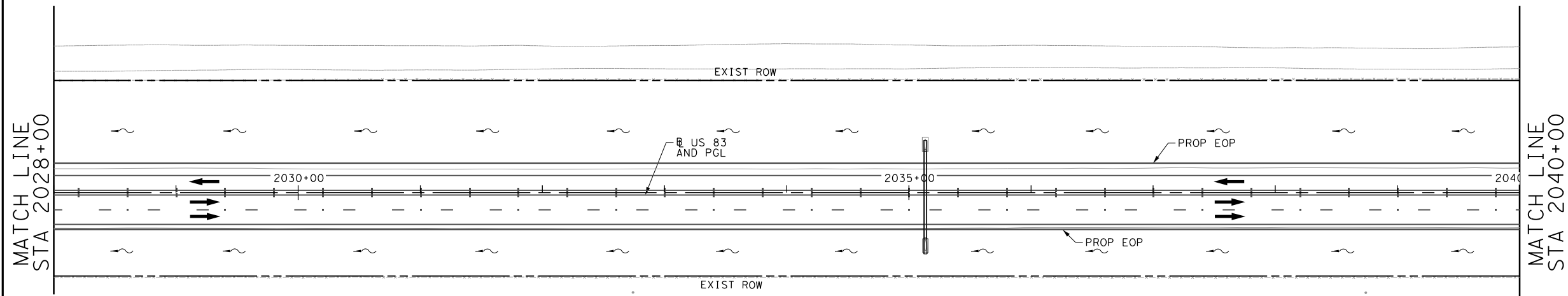
MATCH LINE STA 2028+00

SHEET 22 OF 24

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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 2004+00 TO STA 2028+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C-37-8-42		371
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



- LEGEND:
- SILT FENCE
  - EROSION CONTROL LOG  
EDGE OF ROW
  - DIKE
  - EXIST ROW

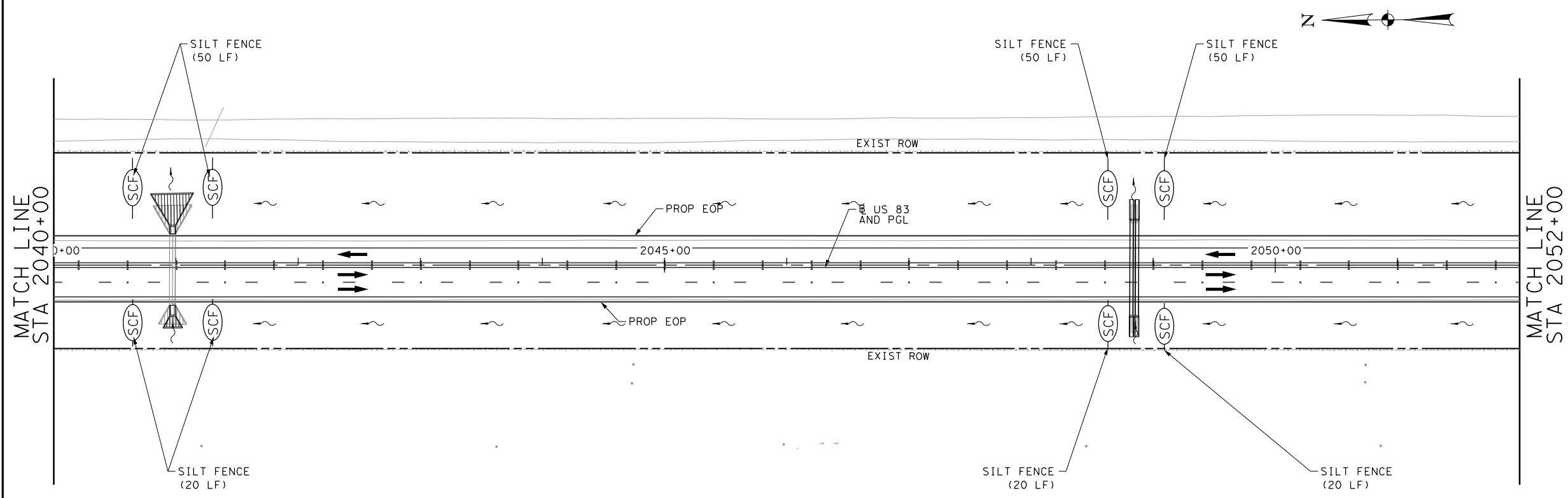


NOTES:

SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.

LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.

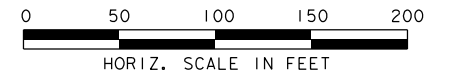
SEE SW3P DETAILS SHEET 350 AND 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



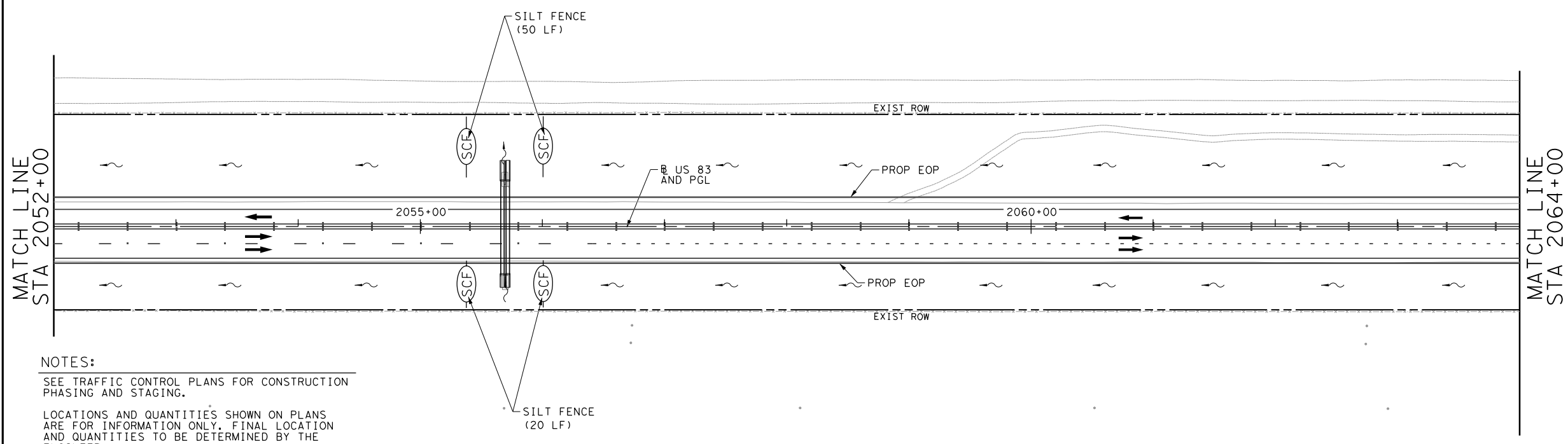
5-2-2024

SHEET 23 OF 24

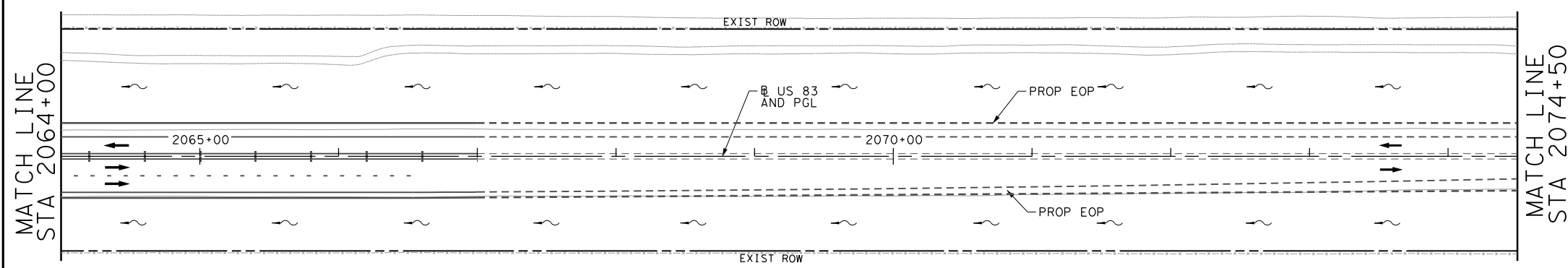
NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 2028+00 TO STA 2052+00</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		372
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	
CONTROL	SECTION	JOB	HIGHWAY NO.
0037	08	042, ETC.	US 83



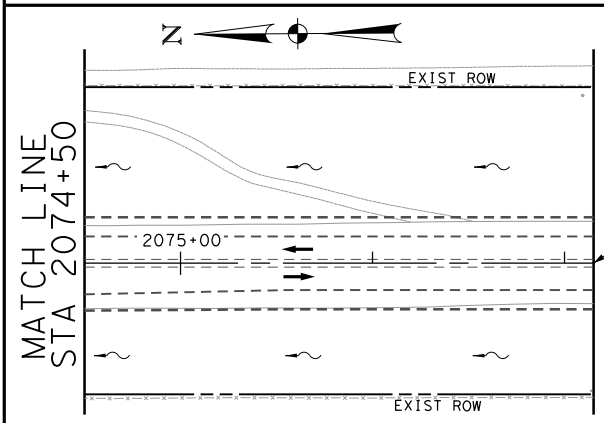
- LEGEND:**
- SILT FENCE
  - EROSION CONTROL LOG EDGE OF ROW
  - DIKE
  - EXIST ROW



**NOTES:**  
 SEE TRAFFIC CONTROL PLANS FOR CONSTRUCTION PHASING AND STAGING.  
 LOCATIONS AND QUANTITIES SHOWN ON PLANS ARE FOR INFORMATION ONLY. FINAL LOCATION AND QUANTITIES TO BE DETERMINED BY THE ENGINEER.  
 SEE SW3P DETAILS 350 & 351 FOR PLACEMENT OF SILT FENCE LOCATIONS.



5-2-2024

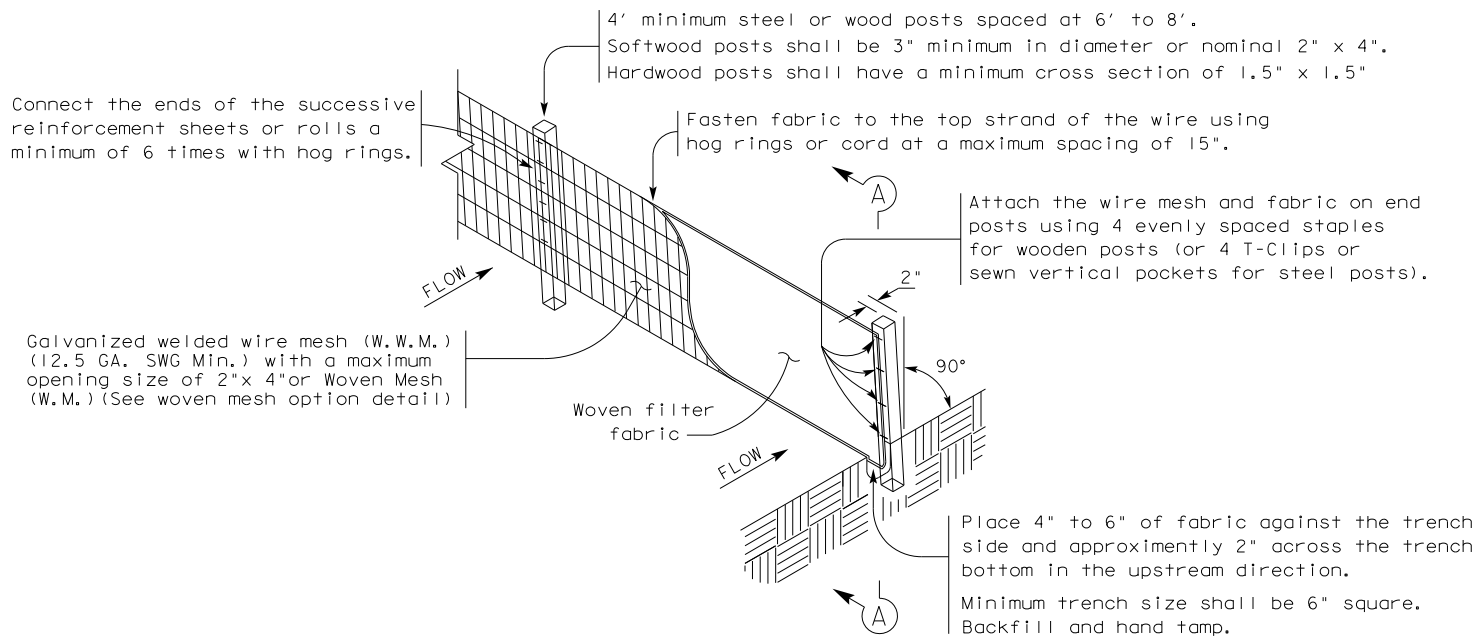


End Project  
 Sta. 2077+15.08  
 CCSJ: 0037-08-042, ETC.

SHEET 24 OF 24

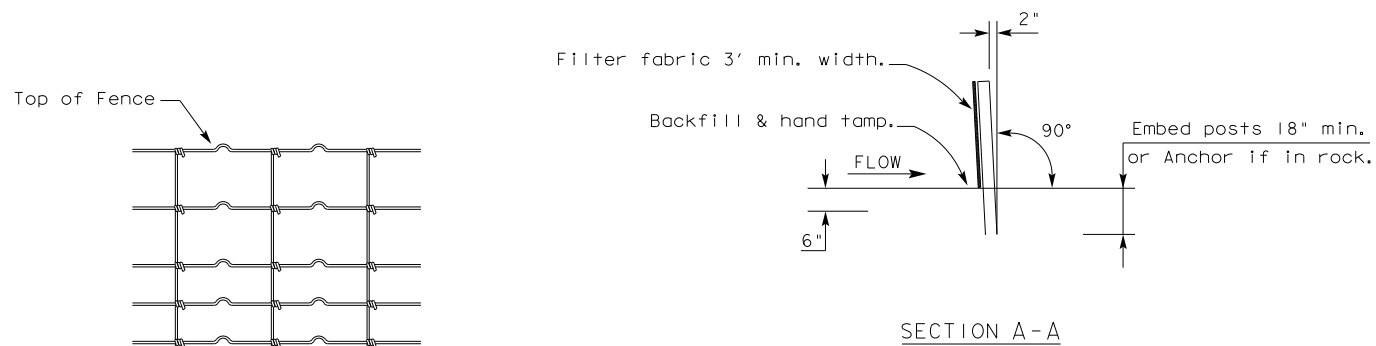
NO.	REVISIONS	BY	DATE
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<b>US 83</b> <b>SW3P LAYOUT</b> <b>STA 2052+00 TO STA 2077+15.08</b>			
FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
6	C 37-8-42		373
STATE	DISTRICT	COUNTY	
TEXAS	LRD	DIMMIT	HIGHWAY NO.
CONTROL	SECTION	JOB	
0037	08	042, ETC.	US 83

6/24/2020  
 P:\1\15\azb\pwl1.azb-engr.s.com\PAZBPROD01\Documents\Collaboration Projects\TXDOT\217017.002\042\4 - Design\Plan\_Set\9. Environmental\Standards(SW3P)\EC(1)-16.dgn  
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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/FT<sup>2</sup>. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

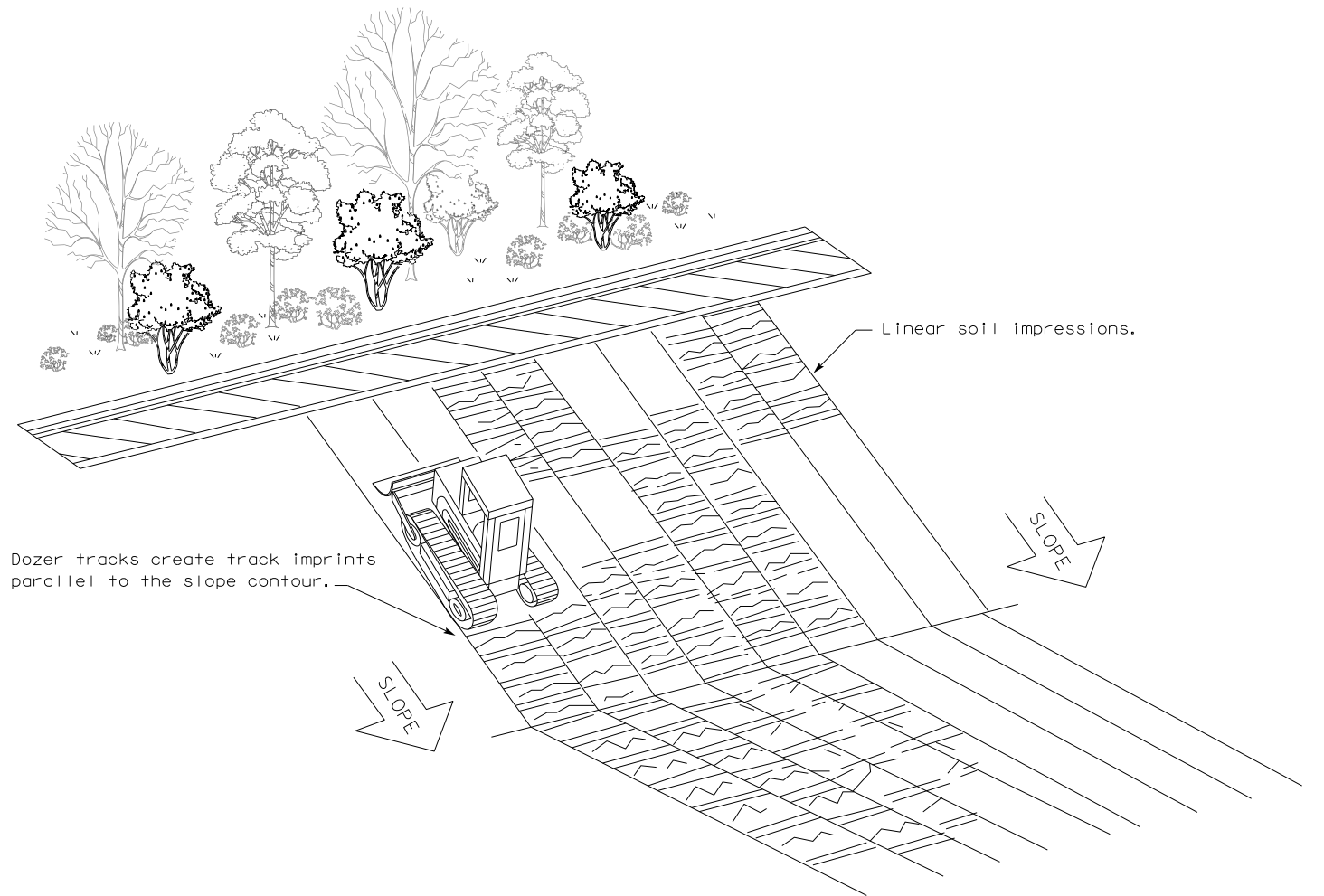
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

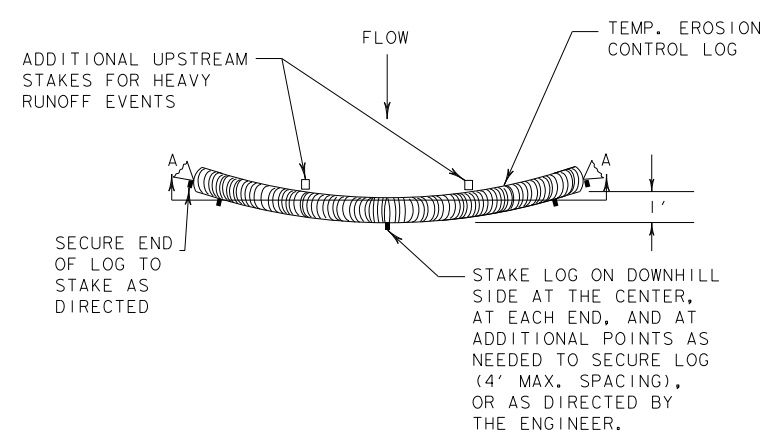
1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum 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.



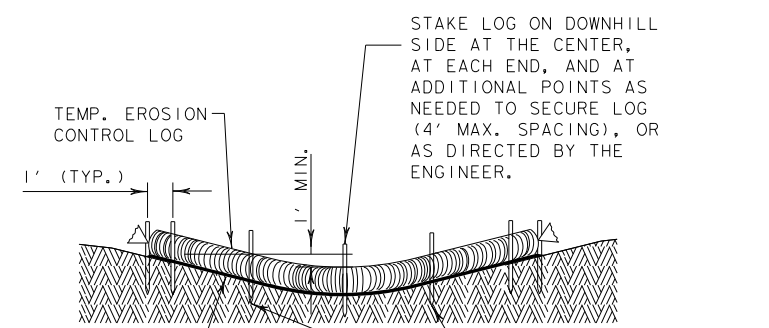
VERTICAL TRACKING

				<b>Design Division Standard</b>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING <b>EC(1)-16</b>					
FILE: ec116	DN: TXDOT	CK: KM	DW: VP	DN/CK: LS	
© TXDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS		0037	08	042, ETC.	US 83
	DIST	COUNTY		SHEET NO.	
	LRD	DIMMIT		374	

DATE: 6/11/2020  
 FILE: p:\w\azb\1.azb-engr.s.com:PWAZBPROD01\Documents\TxDOT\217017.002\042\4 - Design\Plan Set\9. Environmental\Standards\SW3P\EC(9)-16.dgn  
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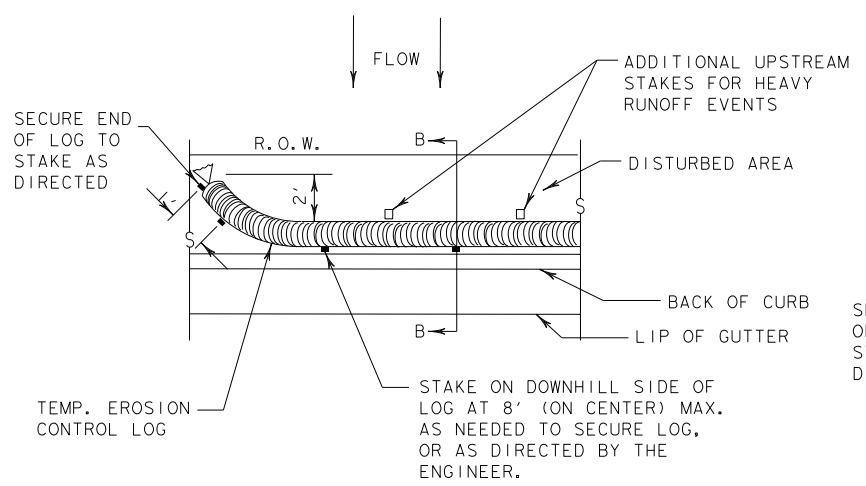
PLAN VIEW



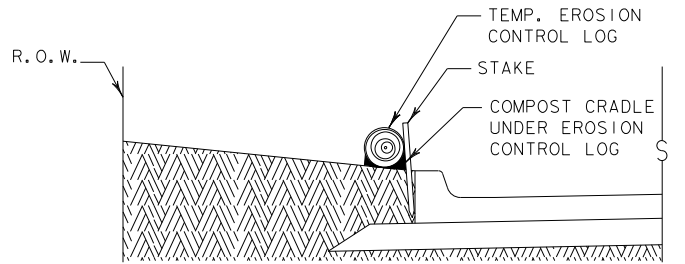
SECTION A-A

EROSION CONTROL LOG DAM

CL-D



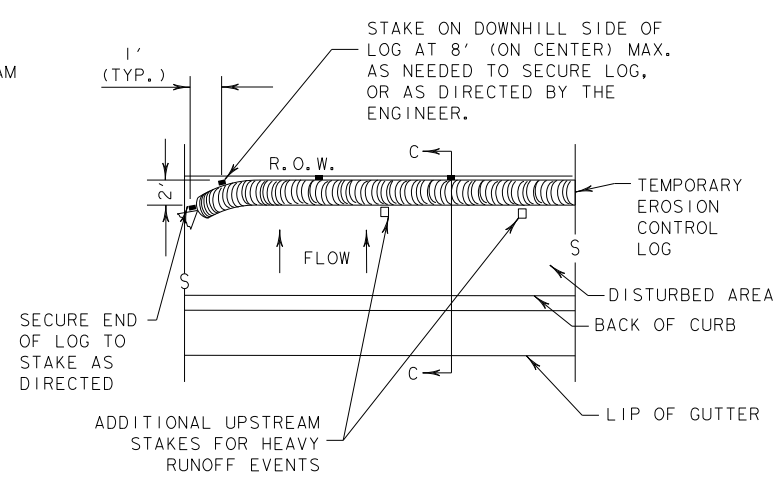
PLAN VIEW



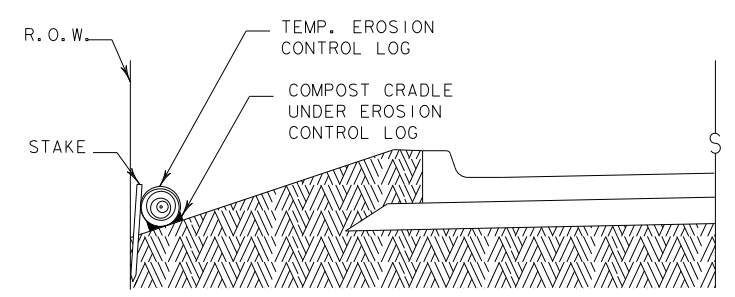
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



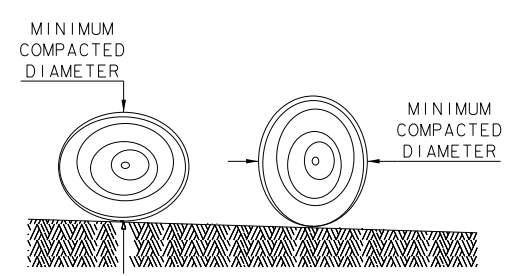
PLAN VIEW



SECTION C-C

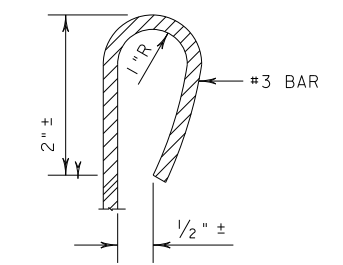
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

- 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



REBAR STAKE DETAIL

**SEDIMENT BASIN & TRAP USAGE GUIDELINES**

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

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

Control logs should be placed in the following locations:

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

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

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

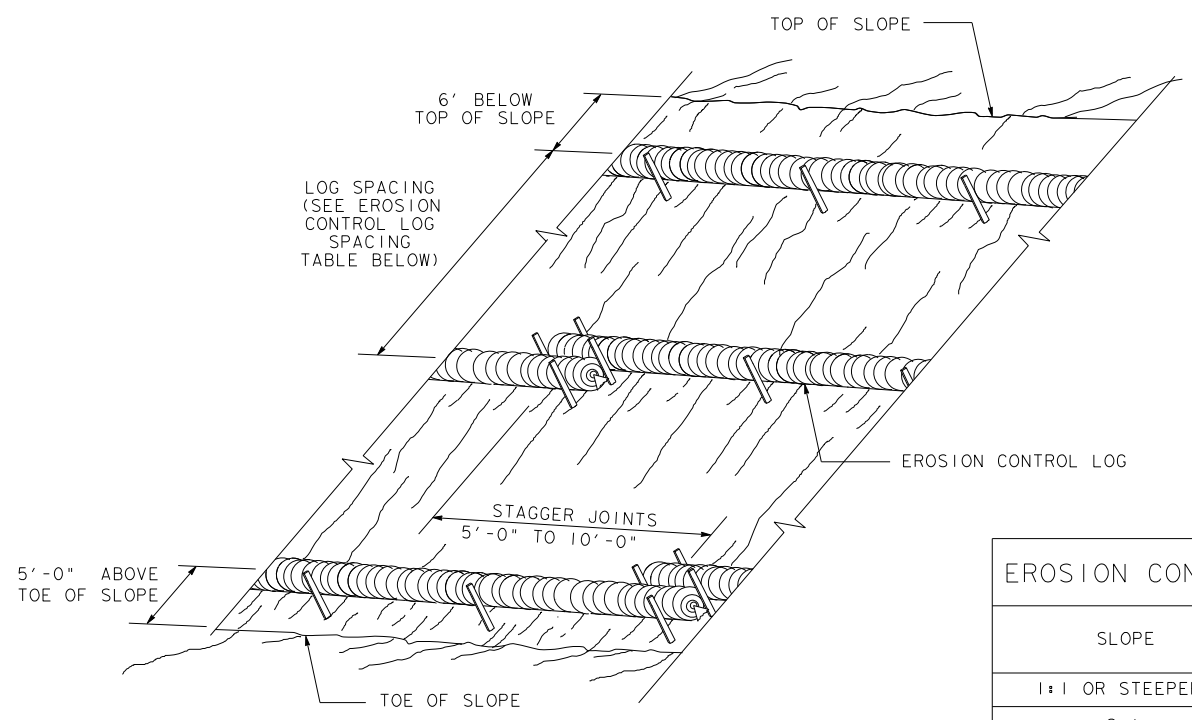
**GENERAL NOTES:**

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

SHEET 1 OF 3

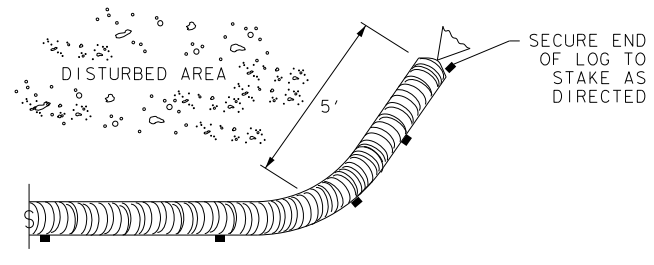
		<b>Design Division Standard</b>	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>EROSION CONTROL LOG</b> <b>EC(9) - 16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0037	08	042, ETC.
	DIST	COUNTY	SHEET NO.
	LRD	DIMMIT	375

DATE: 6/11/2020  
 FILE: p:\azb\azb\engr.s.com: PMAZBPROD01\Documents\TxDOT\217017.002\042\4 - Design\Plan Set\9. Environmental\Standards\SW3P\EC(9)-16.dgn  
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EROSION CONTROL LOGS ON SLOPES  
STAKE AND TRENCHING ANCHORING

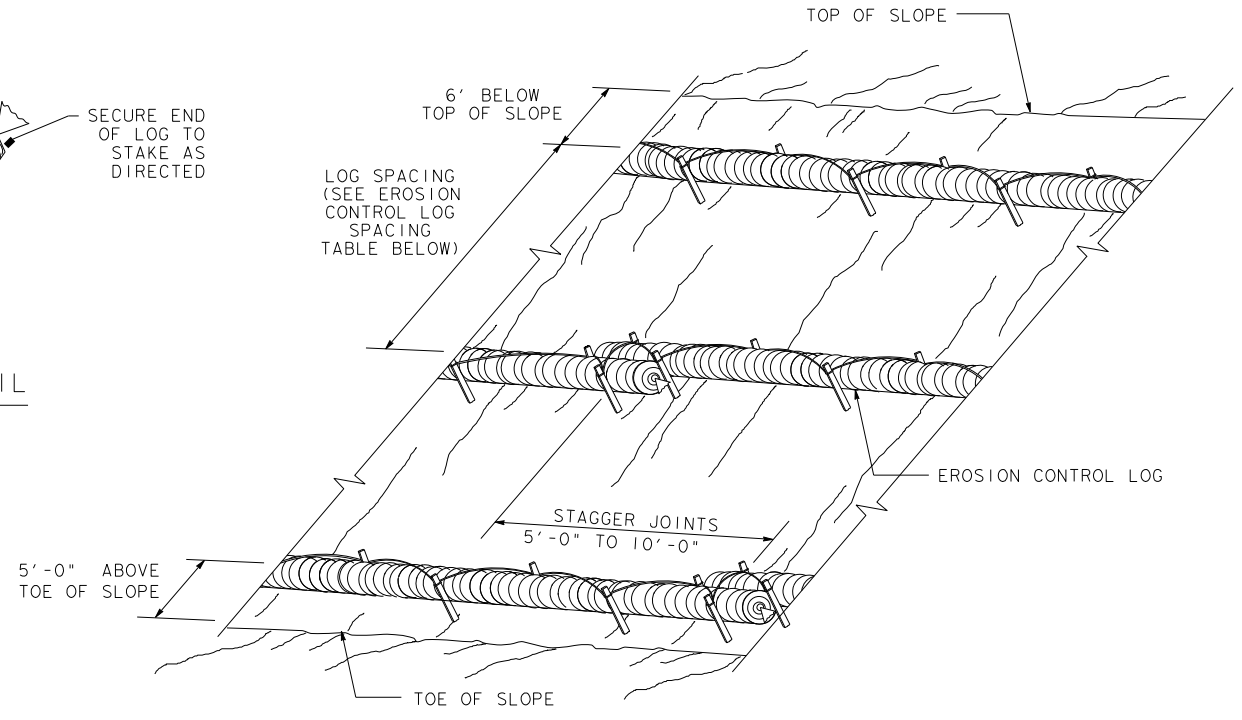
CL-SST



END SECTION RAP DETAIL

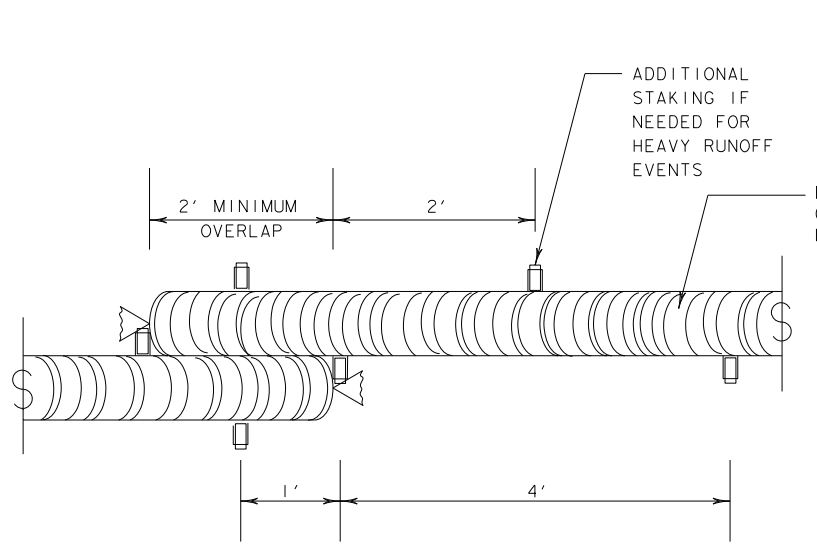
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



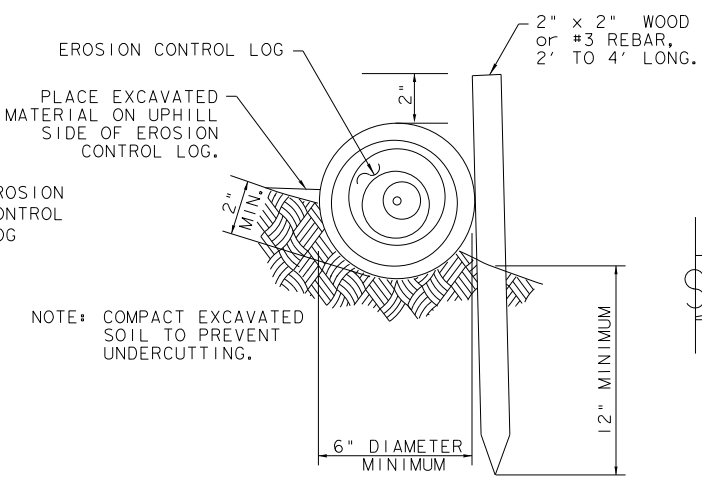
EROSION CONTROL LOGS ON SLOPES  
STAKE AND LASHING ANCHORING

CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

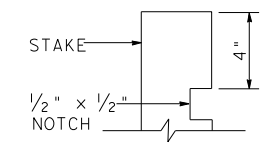
CL-SST



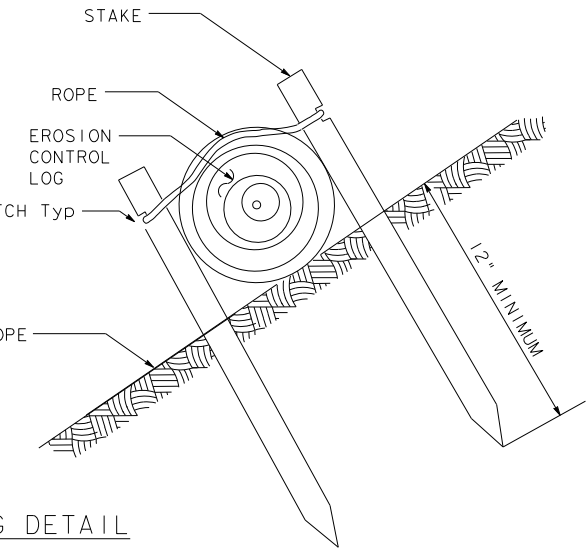
STAKE AND LASHING ANCHORING DETAIL

CL-SSL

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



STAKE NOTCH DETAIL

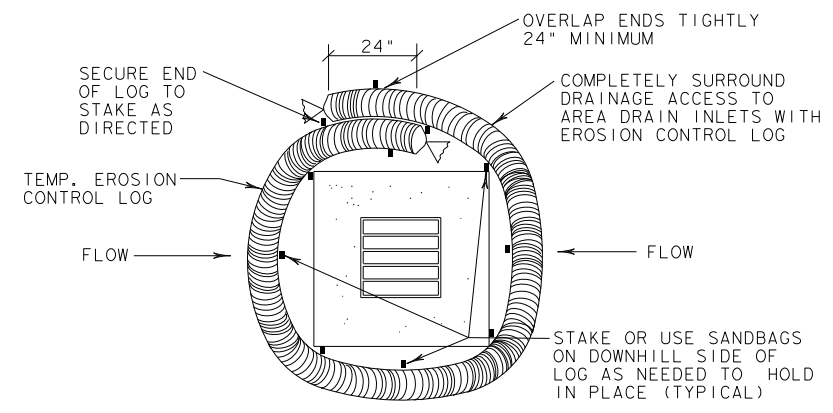


SHEET 2 OF 3

		<b>Design Division Standard</b>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG <b>EC(9) - 16</b>			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0037	08	042, ETC.
	DIST	COUNTY	SHEET NO.
	LRD	DIMMIT	376

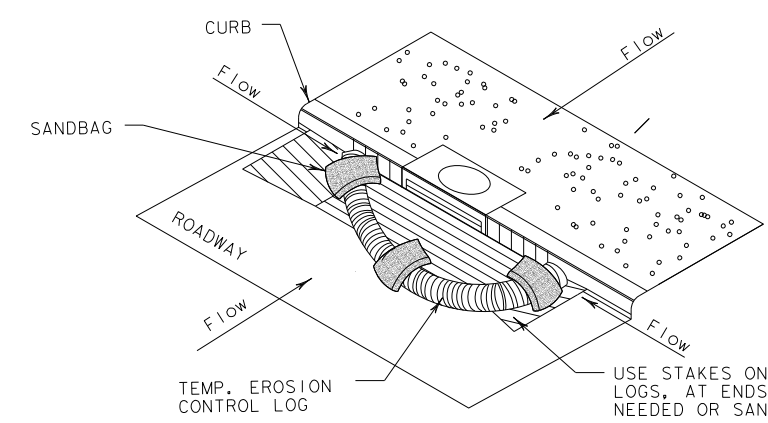
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DATE: 6/11/2020  
 FILE: p:\azb\azb\azb\engr.s.com: PMAZBPR001\Documents\TxDOT\217017.002\042\4 - Design\Plan Set\9. Environmental\Standards\SW3P\EC(9)-16.dgn



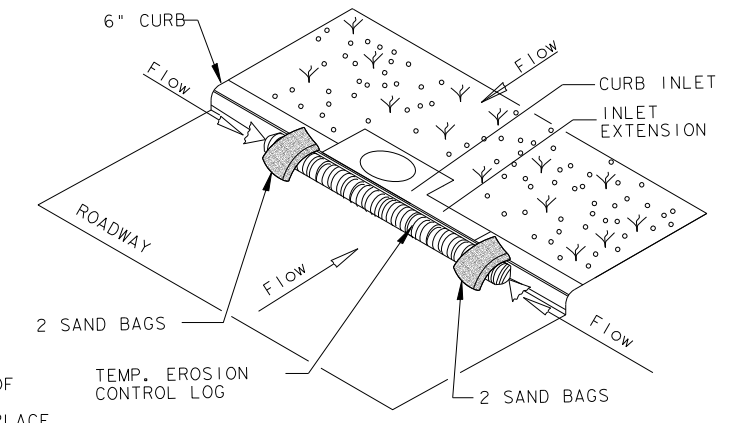
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

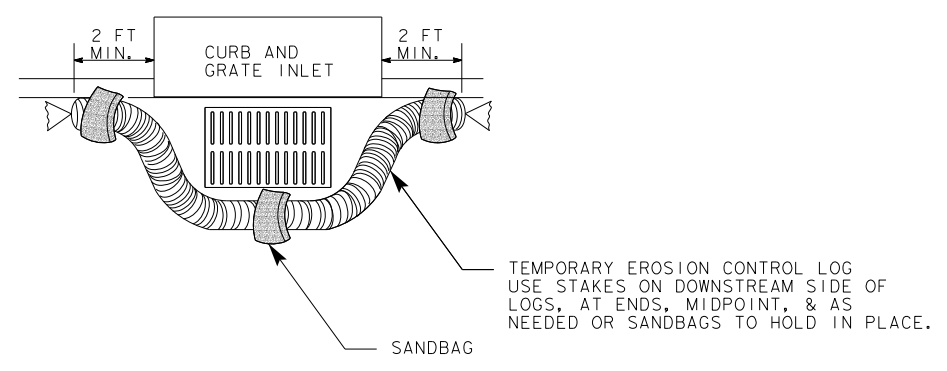
CL-CI



EROSION CONTROL LOG AT CURB INLET

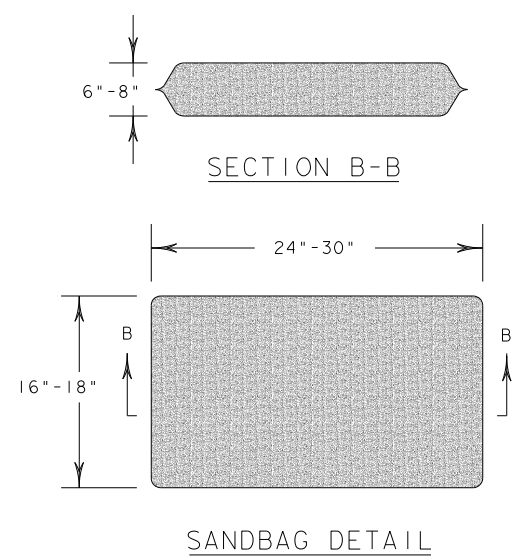
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NOTE:  
 EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SHEET 3 OF 3

		<b>Design Division Standard</b>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG <b>EC(9)-16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0037	08	042, ETC.
	DIST	COUNTY	SHEET NO.
	LRD	DIMMIT	377