DocuSign Envelope ID: 75AF580A-3FD8-44F4-B545-49B427C93A2C

FEDERAL AID PROJECT NO.			
F 2024(060), etc.			
CONT	SECT	JOB	HIGHWAY
0160	05	049, etc.	US 277, etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE, etc.		1

DESIGN CRITERIA: PREVENTIVE MAINTENANCE
A.D.T. (20XX): N/A
A.D.T. (20XX): N/A
% TRUCK IN ADT: N/A
FUNCTIONAL CLASS: PRINCIPAL ARTERIAL - OTHER
DESIGN SPEED: N/A
TDLR REQUIRED: NO

INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

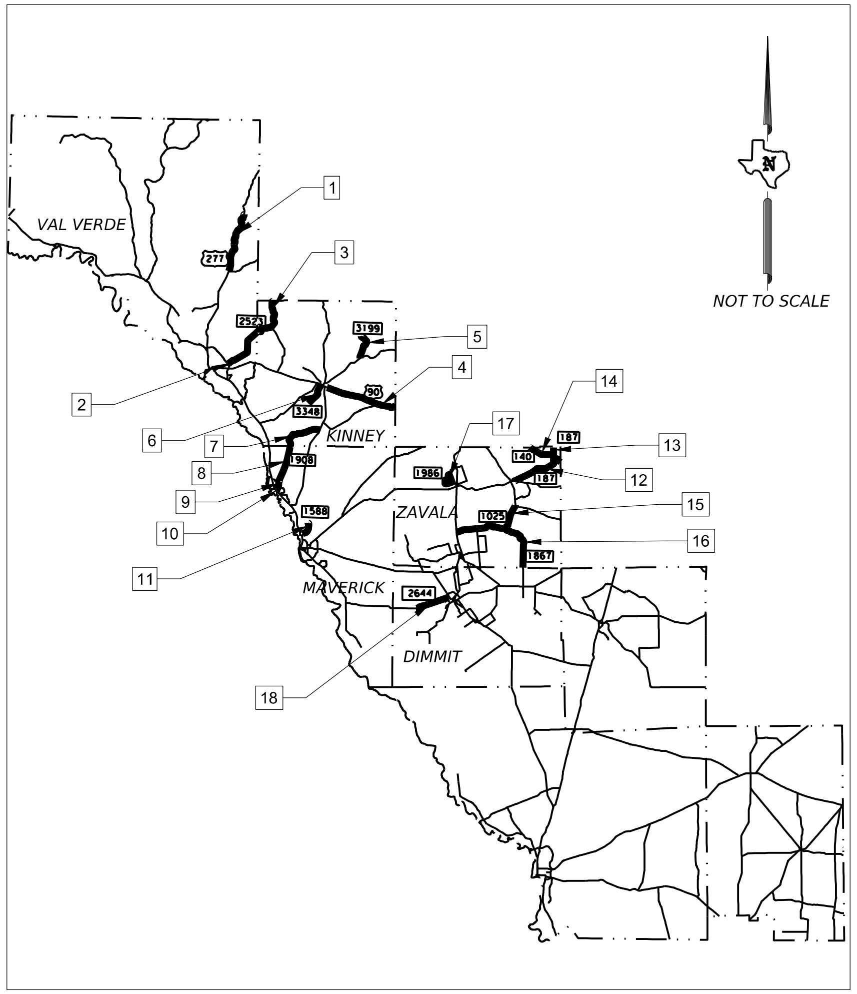
FEDERAL AID PROJECT NO. F 2024(060), etc.

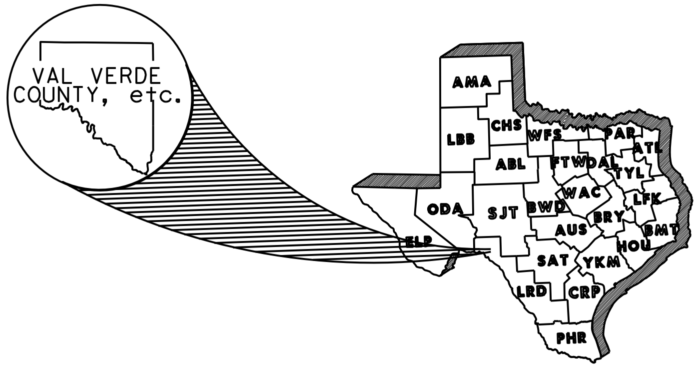
US 277, etc.
VAL VERDE COUNTY, etc.
CSJ: 0160-05-049, etc.

NET LENGTH OF ROADWAY	=	890,218.84 FT.	=	168.602	MI.
NET LENGTH OF BRIDGE	=	2,645.00 FT.	=	0.501	MI.
NET LENGTH OF PROJECT	=	892,863.84 FT.	=	169.103	MI.

LIMITS FROM: 12.336 Mi South of Edwards County Line, etc. TO: US 377, etc.

FOR THE CONSTRUCTION OF RESURFACE OF EXISTING HIGHWAY CONSISTING OF SEAL COAT & PAVEMENT MARKINGS





EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: 1 CROSSING -- LOC.#4-CSJ:0023-04-067--DOT# 742856E

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, JULY 5, 2022)

DATE: 7/6/2023 9:08:57 AM
FILE: c:\txdot\pw online\txdot5\ricardo gonzalez jr\d0754940\049titlesht.dgn

FINAL PLANS

LETTING DATE: ____________________

DATE CONTRACTOR BEGAN WORK: ____________________

DATE WORK WAS COMPLETED & ACCEPTED:

FINAL CONTRACT COST: $ ____________________

CONTRACTOR : ____________________

FINAL AS BUILTS

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

____
AREA ENGINEER

____
DATE

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

Texas Department of Transportation

SUBMITTED FOR LETTING: 7/6/2023
DocuSigned by:
TRANSPORTATION ENGINEER
3F87CF7168DC4E4...

SUBMITTED FOR LETTING: 7/6/2023
DocuSigned by:
Vanessa Rosales-Herrera
AREA ENGINEER
70CAB6EA8F3B42B...

RECOMMENDED FOR LETTING: 7/6/2023
DocuSigned by:
Roberto Rodriguez III
DISTRICT DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT
B6B[illegible]...

RECOMMENDED FOR LETTING: 7/6/2023
DocuSigned by:
, P.E.
DISTRICT ENGINEER
A5A9883ECD1E4F7...

STATE OF TEXAS
ANGEL FRANCISCO MARTINEZ
140491
LICENSED PROFESSIONAL ENGINEER

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ON THE "INDES OF SHEETS" HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

DocuSigned by:
EE686EFA1E05460...
7/31/2023
DATE

Texas Department of Transportation

US 277, etc.

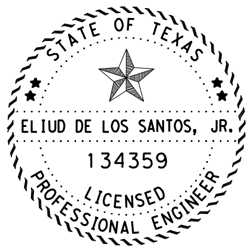
INDEX OF SHEETS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		2

DATE: 7/31/2023 9:36:03 AM
FILE: c:\txdot\pw_online\txdot5\max.torresid0754940\049index.dgn

COUNTY	LOCATION	PROJECT CSJ	HIGHWAY	LENGTH		TYPE OF WORK	PROJECT LIMITS		REFERENCE MARKER
				FEET	MILES				
VAL VERDE	1	0160-05-049	US 277	84,791.52	16.059	Sealcoat	FROM:	12.336 Mi South of Edwards County Line	506 +0.521
							TO:	US 377	522 +0.689
	2	1592-01-015	RM 2523	63,259.68	11.981	Sealcoat	FROM:	Kinney County Line	502 +0.251
							TO:	SL 79	514 +0.241
KINNEY	3	1592-02-013	RM 2523	61,480.32	11.644	Sealcoat	FROM:	Edward County Line	490 +0.002
							TO:	Val Verde County Line	502 +0.011
	4	0023-04-067	US 90	96,940.80	18.360	Sealcoat	FROM:	0.375 MILES EAST OF SH 131	450 +1.472
							TO:	KINNEY/UVALDE COUNTY LINE	468 +2.002
	5	3299-01-006	FM 3199	35,640.00	6.750	Sealcoat	FROM:	END	496 -0.011
							TO:	RM 334	502 +0.710
	6	2752-02-006	RM 3348	31,574.40	5.980	Sealcoat	FROM:	US 90	518 -0.032
							TO:	END	524 +0.010
	7	1814-01-011	FM 1908	55,281.60	10.470	Sealcoat	FROM:	SH 131	518 -0.177
							TO:	MAVERICK CO LINE	528 +0.489
MAVERICK	8	1814-02-015	FM 1908	49,732.32	9.419	Sealcoat	FROM:	KINNEY COUNTY LINE	530 +0.000
							TO:	FM 1591	538 +1.480
	9	0299-05-017	FM 1908	11,996.16	2.272	Sealcoat	FROM:	FM 1591	538 +1.480
							TO:	FM 1590	540 +1.742
	10	0299-06-015	FM 1908	2,170.08	0.411	Sealcoat	FROM:	FM1590	540 +1.742
							TO:	US 277	542 +0.365
	11	1508-01-012	FM 1588	18,427.20	3.490	Sealcoat	FROM:	BEGINNING OF ROADWAY	544 +0.000
							TO:	US 277	548 +0.056
ZAVALA	12	2486-01-013	RM 187	66,274.56	12.552	Sealcoat	FROM:	FM 140	542 -0.912
							TO:	US 57	552 +1.733
	13	0369-04-010	RM 187	9,905.28	1.876	Sealcoat	FROM:	UVALDE COUNTY LINE	538 +0.267
							TO:	FM140	540 +0.143
	14	0875-02-011	FM 140	50,080.80	9.485	Sealcoat	FROM:	UVALDE COUNTY LINE	432 +0.463
							TO:	Frio CL	442 +0.009
	15	1279-01-038	FM 1025	103,229.28	19.551	Sealcoat	FROM:	US 83	410 -0.056
							TO:	FM 117	428 +1.514
	16	1799-01-020	FM 1867	70,371.84	13.328	Sealcoat	FROM:	FM 1025	544 -0.164
							TO:	Dimmit County Line	558 +0.000
	17	2449-01-009	FM 1986	34,188.00	6.475	Sealcoat	FROM:	FM 1436 North	530 -0.074
							TO:	FM 1436 South	536 +0.440
DIMMIT	18	2636-02-010	FM 2644	47,520.00	9.000	Sealcoat	FROM:	9 MILES EAST OF MAVERICK COUNTY LINE	400 +1.812
							TO:	US 277	410 +0.916
			TOTAL	892,863.84	169.103				



The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on 7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

NOT TO SCALE

Texas Department of Transportation

US 277, etc.

PROJECT LOCATION REFERENCE

SHEET 1 OF 1

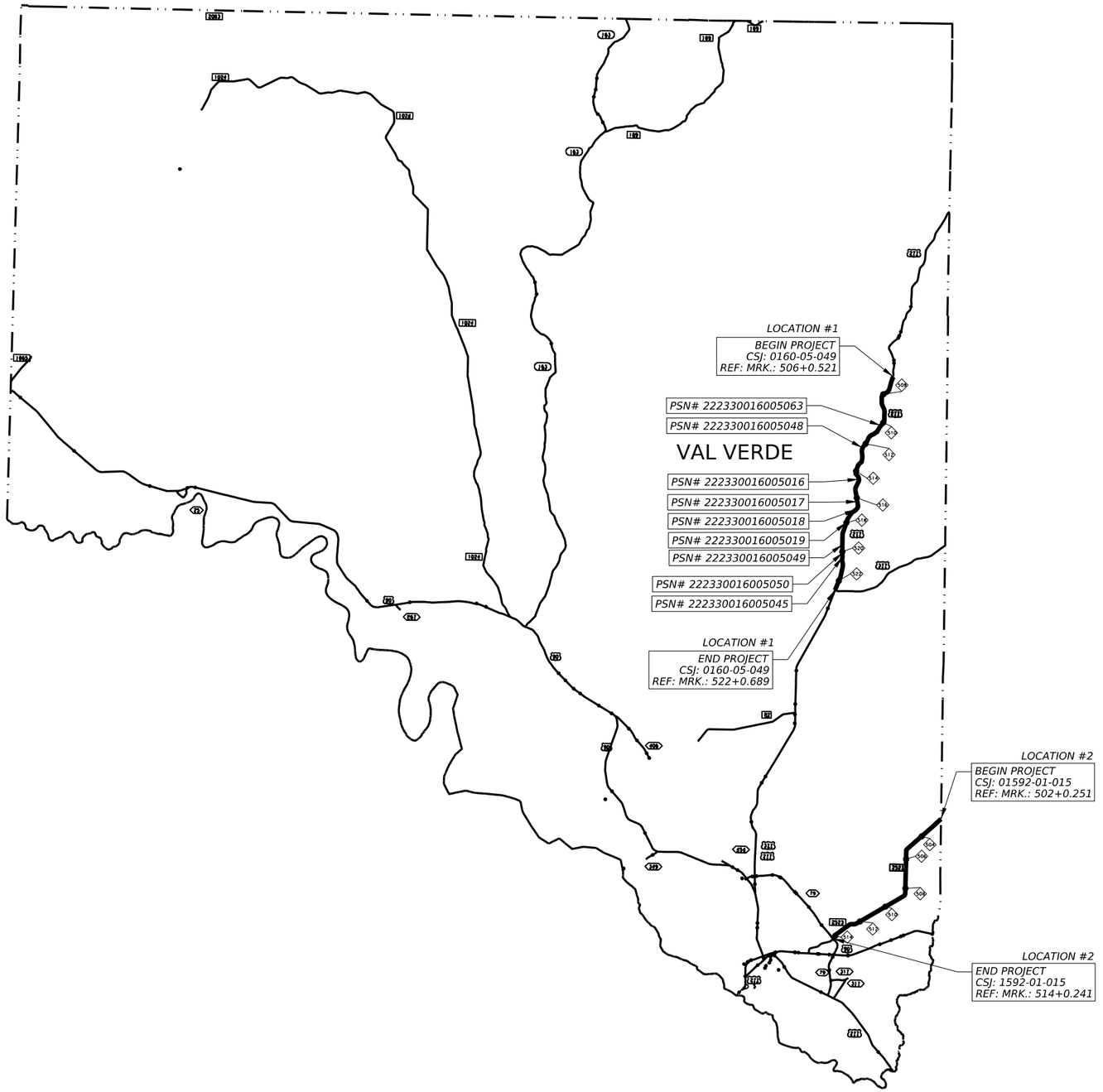
CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.

DIST	COUNTY	SHEET NO.
22	VAL VERDE	3

DATE: 7/6/2023 11:27:09 AM
FILE: c:\txdot\pw online\txdot5\ricardo gonzalez jr\d0754940\049proreffloc.dgn

LOC. #	HWY	PSN #	TYPE	LENGTH (FT)
1	US 277	# 222330016005016	SPAN	140
1	US 277	# 222330016005017	SPAN	630
1	US 277	222330016005018	CULVERT	39
1	US 277	222330016005019	CULVERT	30
1	US 277	# 222330016005045	SPAN	120
1	US 277	222330016005048	CULVERT	22
1	US 277	222330016005049	CULVERT	116
1	US 277	222330016005050	CULVERT	32
1	US 277	222330016005063	CULVERT	65

PROPOSING TO CLEAN AND SEAL EXISTING BRIDGE JOINTS.
REFER TO "CLEANING AND SEALING EXISTING BRIDGE JOINTS" SHEET(S) FOR MORE INFORMATION.



STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

0 22500 45000
SCALE IN FEET

Texas Department of Transportation

US 277, etc.

LOCATION MAP
VAL VERDE

SHEET 1 OF 1

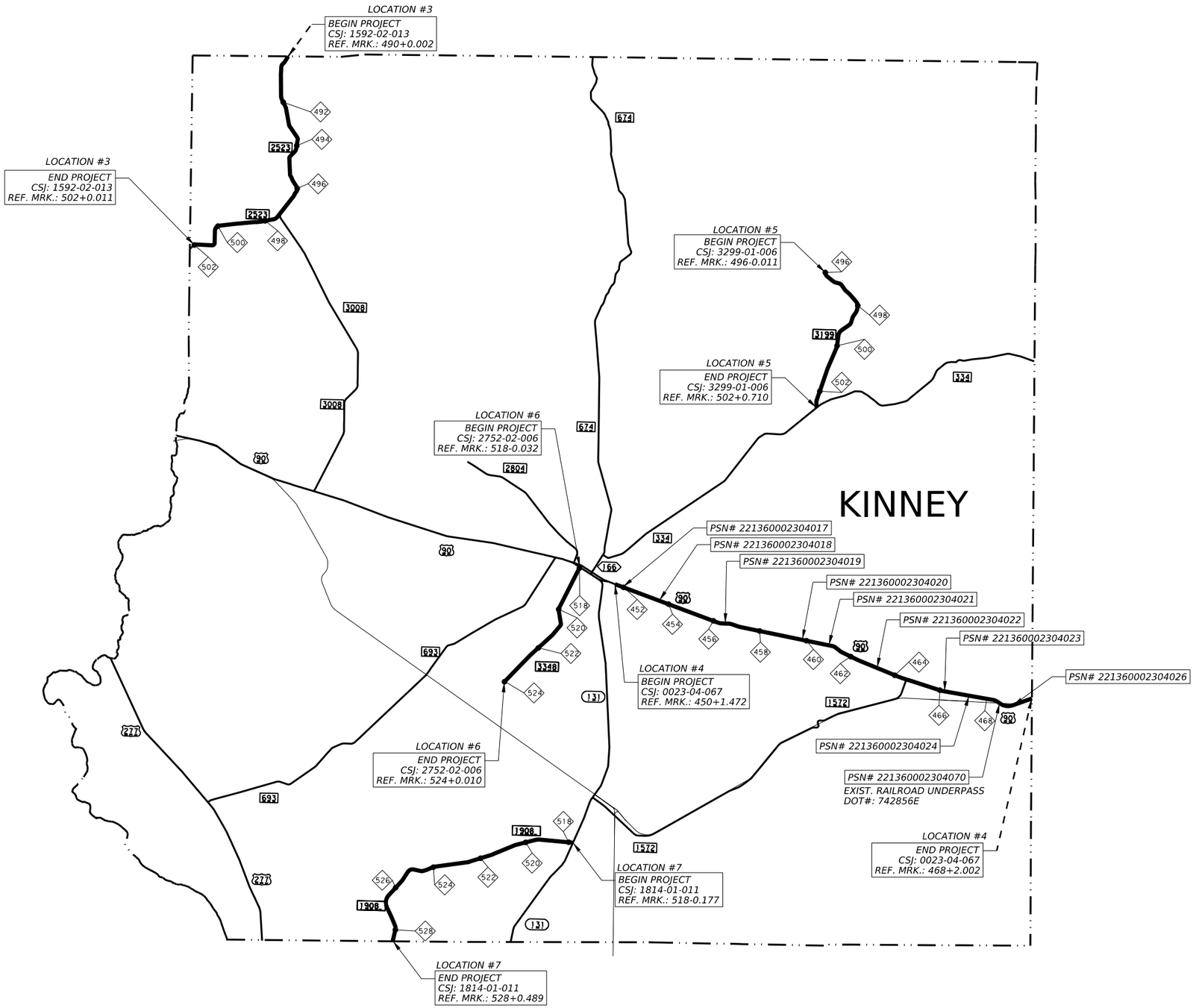
CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		4

DATE: 7/6/2023 9:09:45 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049valverdelocmap.dgn

DW:
CK:
DW:
CK:

LOC. #	HWY	PSN #	TYPE	LENGTH (FT)
4	US 90	221360002304017	CULVERT	40
4	US 90	221360002304018	CULVERT	87
4	US 90	# 221360002304019	SPAN	120
4	US 90	221360002304020	CULVERT	34
4	US 90	# 221360002304021	SPAN	140
4	US 90	221360002304022	CULVERT	23
4	US 90	221360002304023	CULVERT	73
4	US 90	221360002304024	CULVERT	23
4	US 90	221360002304026	CULVERT	26
4	US 90	# 221360002304070	SPAN	224

PROPOSING TO CLEAN AND SEAL EXISTING BRIDGE JOINTS. REFER TO "CLEANING AND SEALING EXISTING BRIDGE JOINTS" SHEET(S) FOR MORE INFORMATION.



STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

0 12500 25000
SCALE IN FEET

Texas Department of Transportation

US 277, etc.

LOCATION MAP
KINNEY

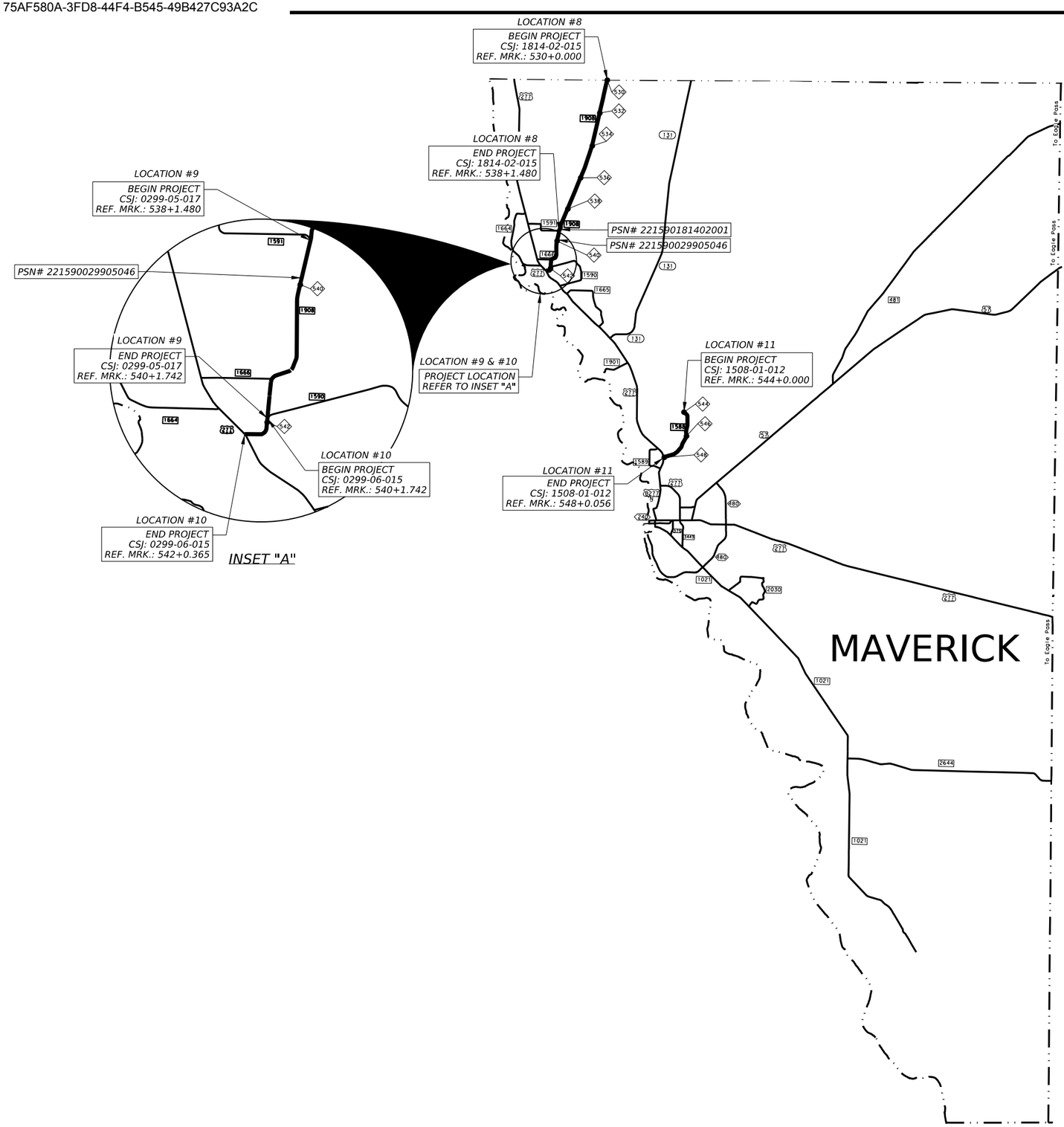
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		5

DATE: 7/6/2023 9:09:58 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049kinneylocmap.dgn

DW:
CK:
DW:
CK:

CK:
DW:
CK:
DW:



LOC. #	HWY	PSN #	TYPE	LENGTH (FT)
8	FM 1908	# 221590181402001	SPAN	76
9	FM 1908	221590029905046	CULVERT	42

#BRIDGE JOINTS WILL REMAIN FOR THIS LOCATION NO PROPOSED CLEANING AND SEALING OF EXISTING BRIDGE JOINTS.

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

0 17500 35000
SCALE IN FEET

Texas Department of Transportation

US 277, etc.

LOCATION MAP
MAVERICK

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		6

DATE: 7/6/2023 9:10:12 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\dd0754940\049maverick\locmap.dgn

LOC. #	HWY	PSN #	TYPE	LENGTH (FT)
15	FM 1025	222540127901004	CULVERT	122
15	FM 1025	222540127901005	CULVERT	65
15	FM 1025	# 222540127901006	SPAN	270
16	FM1867	222540179901002	CULVERT	29
16	FM1867	222540179901003	CULVERT	31
16	FM1867	222540179901004	CULVERT	26

 # PROPOSING TO CLEAN AND SEAL EXISTING BRIDGE JOINTS. REFER TO "CLEANING AND SEALING EXISTING BRIDGE JOINTS" SHEET(S) FOR MORE INFORMATION.

ZAVALA

LOCATION #14
BEGIN PROJECT
CSJ: 0875-02-011
REF. MRK.: 432+0.463

LOCATION #13
BEGIN PROJECT
CSJ:0369-04-010
REF. MRK.: 538+0.267

LOCATION #13
END PROJECT
CSJ: 0369-04-010
REF. MRK.: 540+0.143

LOCATION #14
END PROJECT
CSJ: 0875-02-001
REF. MRK.: 442+0.009

LOCATION #12
BEGIN PROJECT
CSJ: 2486-01-013
REF. MRK.: 542-0.912

LOCATION #12
END PROJECT
CSJ: 2486-01-013
REF. MRK.: 552+1.733

LOCATION #17
BEGIN PROJECT
CSJ: 2449-01-009
REF. MRK.: 530-0.074

LOCATION #17
END PROJECT
CSJ: 2449-01-009
REF. MRK.: 536+0.440

LOCATION #15
END PROJECT
CSJ: 1279-01-038
REF. MRK.: 428+1.514

LOCATION #16
BEGIN PROJECT
CSJ: 1799-01-020
REF. MRK.: 544-0.164

LOCATION #15
BEGIN PROJECT
CSJ: 1279-01-038
REF. MRK.: 410-0.056

LOCATION #16
END PROJECT
CSJ: 1799-01-020
REF. MRK.: 558+0.000

PSN# 222540127901005
PSN# 222540127901004
PSN# 222540127901006
PSN# 222540179901004
PSN# 222540179901003
PSN# 222540179901002

To Uvalde
To Eagle Pass
To Sabinal
To Pearsall
To Dilley
To Carrizo Springs
To Big Wells

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

0 10000 20000
SCALE IN FEET

Texas Department of Transportation

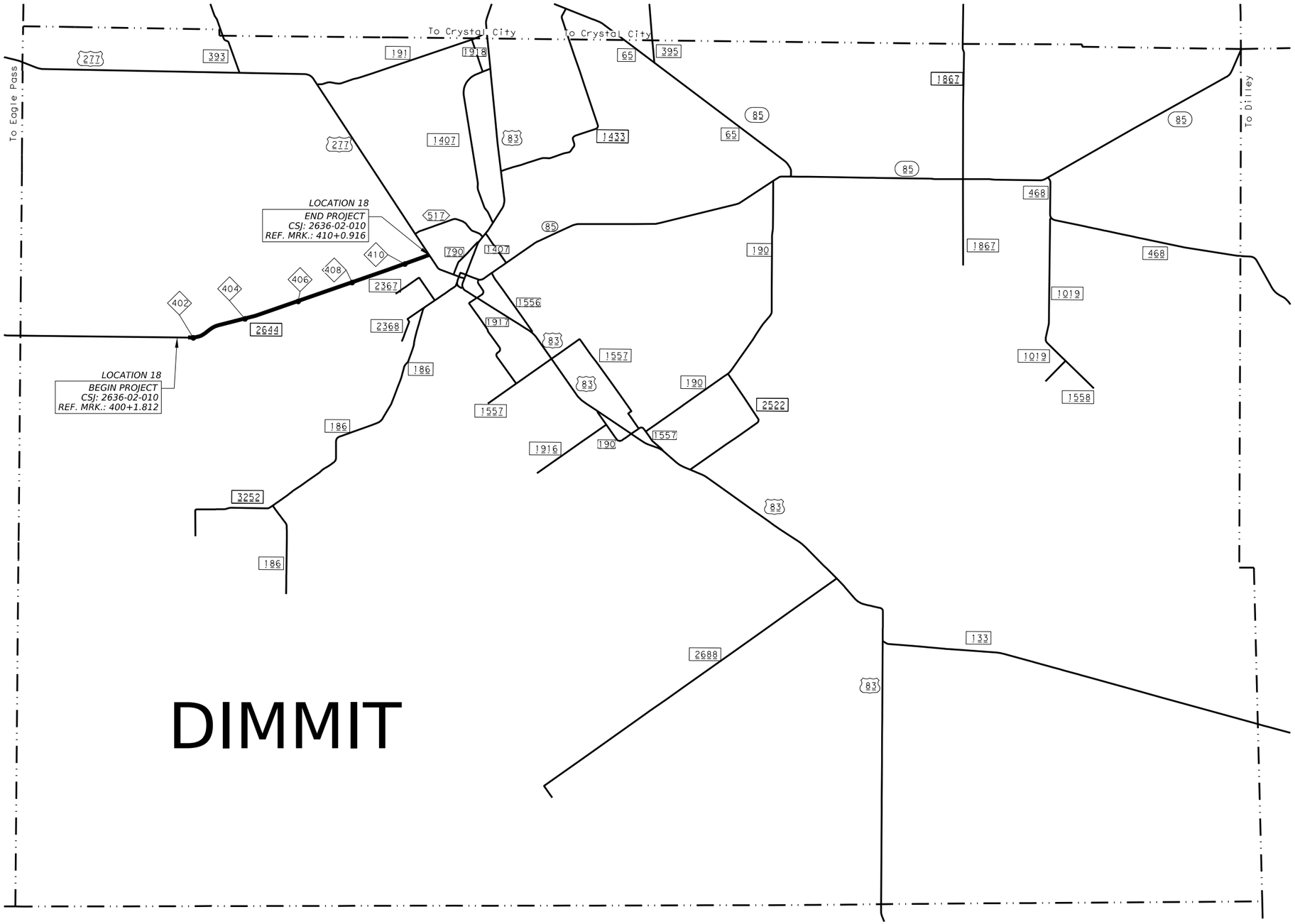
US 277, etc.

LOCATION MAP
ZAVALA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		7

DATE: 7/6/2023 9:10:46 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049zavalalocmap.dgn



STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

0 10000 20000
SCALE IN FEET

Texas Department of Transportation

US 277, etc.

LOCATION MAP
DIMMIT

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		8

DATE: 7/6/2023 9:10:59 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jrtd075494\0049dimmitlocmap.dgn

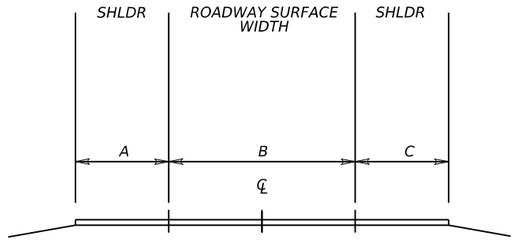
SHLDR WIDTH	ROADWAY WIDTH (TRAVEL LANES)			SHLDR WIDTH	SURFACE WIDTH	SURFACE AREA	DESCRIPTION									
A	B			C			TYPICAL SECTION	LOCATION NUMBER		HIGHWAY	COUNTY	TYPE	GRADE	*ASPH RATE (GAL/SY)	*AGGR RATE (SY/CY)	APPROX. FT.
LT	LT	TOTA	RT	RT												
FT	FT	FT	FT	FT	FT	SY										
2	24	48	24	2	52	47,227	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	8173.84
2	30	60	30	2	64	17,813	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	2505.00
2	24	48	24	2	52	46,107	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	7980.00
6	18	36	18	6	48	3,200	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	600.00
10	12	24	12	10	44	4,473	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	915.00
6	18	36	18	6	48	2,667	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	500.00
2	24	48	24	2	52	34,118	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	5905.00
6	18	36	18	6	48	3,040	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	570.00
10	12	24	12	10	44	52,849	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	10810.00
2	12	24	12	2	28	3,080	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	990.00
2	18	36	18	2	40	2,133	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	480.00
2	24	48	24	2	52	6,760	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	1170.00
6	18	36	18	6	48	2,267	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	425.00
10	12	24	12	10	44	9,044	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	1850.00
10	12	30	18	6	46	2,044	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	400.00
6	18	42	24	2	50	3,333	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	600.00
2	24	48	24	2	52	13,971	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	2418.00
2	24	42	18	6	50	2,778	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	500.00
6	18	30	12	10	46	3,220	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	630.00
10	12	24	12	10	44	19,810	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	4052.00
10	12	30	18	6	46	2,479	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	485.00
6	18	42	24	2	50	2,222	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	400.00
2	24	48	24	2	52	15,773	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	2730.00
2	24	42	18	6	50	5,333	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	960.00
2	24	36	12	10	48	19,733	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	3700.00
6	18	30	12	10	46	1,380	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	270.00
6	18	36	18	6	48	2,960	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	555.00
10	12	36	24	2	48	10,747	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	2015.00
10	12	30	18	6	46	2,862	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	560.00
10	12	24	12	10	44	105,809	1	LOC.	1	US 277	VAL VERDE	PB	3S	0.38	90	21642.68
TOTAL						449,232										84,791.52
0	11	22	11	0	22	107,800	1	LOC.	2	RM 2523	VAL VERDE	PB	3S	0.38	90	44100.00
1.5	11.5	23	11.5	1.5	26	1,390	1	LOC.	2	RM 2523	VAL VERDE	PB	3S	0.38	90	481.00
3	12	24	12	3	30	62,262	1	LOC.	2	RM 2523	VAL VERDE	PB	3S	0.38	90	18678.68
TOTAL						171,452										63,259.68
0	10	20	10	0	20	136,623	1	LOC.	3	RM 2523	KINNEY	PB	3S	0.38	90	61480.32
TOTAL						136,623										61,480.32

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

✱ *REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.*



TYPICAL SECTION No. 1

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:

3F87CF7168DC4E4...

NOT TO SCALE

Texas Department of Transportation

US 277, etc.

TYPICAL SECTIONS

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		9

DATE: 7/6/2023 9:13:36 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.rtd\0754940\049typsec.dgn

CK: DW: CK: DW:

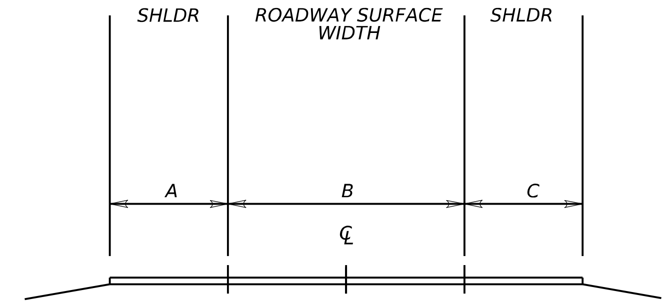
SHLDR WIDTH A LT FT	ROADWAY WIDTH (TRAVEL LANES) B LT FT	TOTA FT	RT FT	SHLDR WIDTH C RT FT	SURFACE WIDTH FT	SURFACE AREA SY	TYPICAL SECTION	LOCATION NUMBER		HIGHWAY	COUNTY	TYPE	GRADE	*ASPH RATE (GAL/SY)	*AGGR RATE (SY/CY)	APPROX. FT.
8	12	24	12	8	40	12,984	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	2921.49
EXIST. CONCRETE SURFACE TO REMAIN UNDISTURBED/ RESTRIPING ONLY PSN#22-136-0-0023-04-017																40.00
8	12	30	18	4	42	3,484	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	746.49
8	12	36	24	4	48	35,688	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	6691.49
8	12	30	18	6	44	2,672	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	546.49
8	12	24	12	8	40	51,651	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	11621.49
8	18	30	12	8	46	4,097	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	801.49
8	24	36	12	8	52	8,098	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	1401.49
8	18	30	12	8	46	2,205	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	431.49
8	12	24	12	8	40	6,644	2	LOC.	4	US 90	KINNEY	PD	4	0.38	90	1495.00
SURFACE TO REMAIN UNDISTURBED/ RESTRIPING ONLY PSN#22-136-0-0023-04-019																120.00
8	12	24	12	8	40	40,629	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	9141.49
6	18	30	12	8	44	4,090	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	836.49
4	24	36	12	8	48	1,501	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	281.49
4	24	42	18	6	52	1,511	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	261.49
4	24	48	24	4	56	3,494	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	561.49
8	24	48	24	8	64	7,548	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	1061.49
8	24	42	18	8	58	5,017	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	778.49
8	24	36	12	8	52	19,902	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	3444.49
8	18	30	12	8	46	2,359	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	461.49
8	12	24	12	8	40	27,489	2	LOC.	4	US 90	KINNEY	PD	4	0.38	90	6185.00
EXIST. CONCRETE SURFACE TO REMAIN UNDISTURBED/ RESTRIPING ONLY PSN#22-136-0-0023-04-021																140.00
8	12	24	12	8	40	9,184	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	2066.49
8	12	30	18	5	43	2,300	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	481.49
8	12	36	24	2	46	23,825	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	4661.49
8	12	30	18	5	43	4,355	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	911.49
8	12	24	12	8	40	30,273	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	6811.49
5	18	42	24	2	49	2,839	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	521.49
2	24	48	24	2	52	18,440	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	3191.49
6	18	42	24	2	50	3,064	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	551.49
8	12	36	24	2	46	953	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	186.49
8	12	30	18	6	44	2,036	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	416.49
8	12	24	12	8	40	7,784	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	1751.49
5	18	30	12	8	43	2,300	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	481.49
2	24	36	12	8	46	6,371	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	1246.49
5	18	30	12	8	43	1,823	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	381.49
8	12	24	12	8	40	69,902	2	LOC.	4	US 90	KINNEY	PD	4	0.38	90	15728.00
SURFACE TO REMAIN UNDISTURBED/ RESTRIPING ONLY PSN#22-136-0-0023-04-070																224.00
8	12	24	12	8	40	13,931	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	3134.49
8	12	30	18	6	44	2,134	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	436.49
8	12	36	24	4	48	20,195	1	LOC.	4	US 90	KINNEY	PD	3	0.38	90	3786.49
		TOTAL				462,773										96,940.80
0	10	20	10	0	20	77,178	1	LOC.	5	FM 3199	KINNEY	PB	3S	0.38	90	34730.00
0	13	26	13	0	26	2,629	1	LOC.	5	FM 3199	KINNEY	PB	3S	0.38	90	910.00
		TOTAL				79,807										35,640.00
0	10	20	10	0	20	28,199	1	LOC.	6	RM 3348	KINNEY	PB	3S	0.38	90	12689.4
0	12	24	12	0	24	9,045	1	LOC.	6	RM 3348	KINNEY	PB	3S	0.38	90	3392.0
0	14	26	12	0	26	5,740	1	LOC.	6	RM 3348	KINNEY	PB	3S	0.38	90	1987.0
0	10	20	10	0	20	1,389	1	LOC.	6	RM 3348	KINNEY	PB	3S	0.38	90	625.0
0	14	28	14	0	28	1,944	1	LOC.	6	RM 3348	KINNEY	PB	3S	0.38	90	625.0
0	10	20	10	0	20	27,236	1	LOC.	6	RM 3348	KINNEY	PB	3S	0.38	90	12256.0
		TOTAL				73,553										31,574.40
1	11	22	11	2	25	109,243	1	LOC.	7	FM 1908	KINNEY	PB	3S	0.38	90	39327.41
1	11	22	11	1	24	42,545	1	LOC.	7	FM 1908	KINNEY	PB	3S	0.38	90	15954.19
		TOTAL				151,787										55,281.60
1	11	22	11	1	24	132,620	1	LOC.	8	FM 1908	MAVERICK	PB	3S	0.38	90	49732.32
		TOTAL				132,620										49,732.32

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

* REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.



TYPICAL SECTION No. 1

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

NOT TO SCALE

Texas Department of Transportation

US 277, etc.

TYPICAL SECTIONS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		10

DATE: 7/6/2023 9:13:36 AM
FILE: c:\txdot\pw online\txdot5\ricardo gonzalez jr\d0754940\049typsec.dgn

	SHLDR WIDTH	ROADWAY WIDTH (TRAVEL LANES)			SHLDR WIDTH	SURFACE WIDTH	SURFACE AREA	DESCRIPTION									
	A	B			C			TYPICAL SECTION	LOCATION NUMBER		HIGHWAY	COUNTY	TYPE	GRADE	*ASPH RATE (GAL/SY)	*AGGR RATE (SY/CY)	APPROX. FT.
	LT	LT	TOTA	RT	RT												
	FT	FT	FT	FT	FT	FT	SY										
	1	10	20	10	1	22	20,806	1	LOC.	9	FM 1908	MAVERICK	PB	3S	0.38	90	8511.36
	1	11	22	11	1	24	9,293	1	LOC.	9	FM 1908	MAVERICK	PB	3S	0.38	90	3484.80
	TOTAL						30,098										11,996.16
US 277/ FM 1908	1	11	22	11	1	24	2,560	1	LOC.	10	FM 1908	MAVERICK	PB	3S	0.38	90	960.00
JCT FM 1590	1	10	20	10	1	22	2,958	1	LOC.	10	FM 1908	MAVERICK	PB	3S	0.38	90	1210.08
	TOTAL						5,518										2,170.08
Beg. Of Roadway	4	11	22	11	4	30	16,083	1	LOC.	11	FM 1588	MAVERICK	PD	3	0.38	90	4825.00
	4	12	24	12	4	32	15,307	1	LOC.	11	FM 1588	MAVERICK	PD	3	0.38	90	4305.00
	5	12	24	12	4	33	13,090	1	LOC.	11	FM 1588	MAVERICK	PD	3	0.38	90	3570.00
US 277 Int.	9	12	24	12	9	42	26,727	1	LOC.	11	FM 1588	MAVERICK	PD	3	0.38	90	5727.20
	TOTAL						71,207										18,427.20
	2	11	22	11	2	26	191,460	1	LOC.	12	RM 187	ZAVALA	PB	3S	0.38	90	66274.56
	TOTAL						191,460										66,274.56
	2	11	22	11	2	26	28,615	1	LOC.	13	RM 187	ZAVALA	PB	3S	0.38	90	9905.28
	TOTAL						28,615										9,905.28
	3	12	24	12	3	30	6,943	1	LOC.	14	FM 140	ZAVALA	PB	3S	0.38	90	2083.00
	2	12	24	12	2	28	117,360	1	LOC.	14	FM 140	ZAVALA	PB	3S	0.38	90	37723.00
	3	15.5	31	15.5	3	37	674	1	LOC.	14	FM 140	ZAVALA	PB	3S	0.38	90	164.00
	4	19	38	19	2	44	963	1	LOC.	14	FM 140	ZAVALA	PB	3S	0.38	90	197.00
	3	15.5	31	15.5	3	37	1,122	1	LOC.	14	FM 140	ZAVALA	PB	3S	0.38	90	273.00
	2	12	24	12	2	28	29,994	1	LOC.	14	FM 140	ZAVALA	PB	3S	0.38	90	9640.80
	TOTAL						157,057										50,080.80
	4	12	24	12	4	32	230,311	1	LOC.	15	FM 1025	ZAVALA	PB	3S	0.38	90	64775.00
FM 1867 TURN	4	12	24	12	4	32	2,530	1	LOC.	15	FM 1025	ZAVALA	PB	3S	0.38	90	711.48 @
	2	12	24	12	2	28	1,291	1	LOC.	15	FM 1025	ZAVALA	PB	3S	0.38	90	415.00
	EXIST. CONCRETE SURFACE TO REMAIN UNDISTURBED/ RESTRIPING ONLY PSN#22-254-0-1279-01-006																270.00 @
	2	12	24	12	2	28	117,504	1	LOC.	15	FM 1025	ZAVALA	PB	3S	0.38	90	37769.28
FM 117 TURN	4	12	24	12	4	32	1,564	1	LOC.	15	FM 1025	ZAVALA	PB	3S	0.38	90	439.82
	TOTAL						353,200										65,190.00
	2	12	24	12	2	28	218,935	1	LOC.	16	FM 1867	ZAVALA	PB	3S	0.38	90	70371.84
	TOTAL						218,935										70,371.84
	0	10	20	10	0	20	75,973	1	LOC.	17	FM 1986	ZAVALA	PB	3S	0.38	90	34188.00
	TOTAL						75,973										34,188.00
	2	12	24	12	2	28	147,840	1	LOC.	18	FM 2644	DIMMIT	PB	3S	0.38	90	47520.00
	TOTAL						147,840										47,520.00

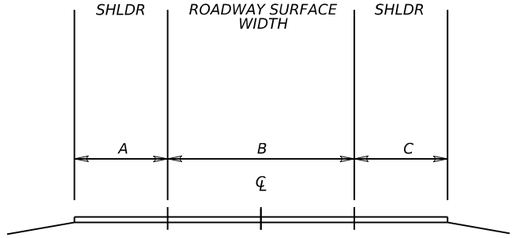
NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

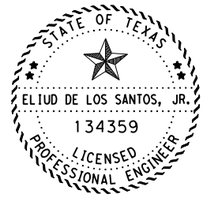
@ *LENGTH SHOWN ARE FOR CONTRACTOR'S INFORMATION ONLY AND ARE NOT PART OF THE OVERALL ROADWAY TOTAL LENGTH.*

RATES OF APPLICATION:

* *REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.*



TYPICAL SECTION No. 1



The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:

3F87CF7168DC4E4...

NOT TO SCALE

Texas Department of Transportation

US 277, etc.

TYPICAL SECTIONS

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		11

DATE: 7/6/2023 9:13:37 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.irid\d0754940\1049\typsec.dgn

GENERAL NOTES:

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

Eliud De Los Santos – Eliud.Delossantos@txdot.gov

Angel Martinez – 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

Reference all existing striping and pavement markings in a manner which allow the markings to be re-established. Place extra reference (if needed) to ensure that the markings (lane lines, edge lines, ramp gores, etc.) are in-line with signs on OSB's, TMS arrows, etc.

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

Item 6 - Control of Materials

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

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

The Buy America Material Classification Sheet is located at the below link:

https://www.txdot.gov/business/resources/materials/buy-america-materials-classification-sheet.html for clarification on material categorization.

Item 7 - Legal Relations and Responsibilities

No significant traffic generator events identified.

The total disturbed areas within the ROW are anticipated at less than one (1) acre and/or this project is classified as "surface work" consisting of an asphalt overlay of an existing roadway without shoulder-up disturbances. Due to this type of construction, the project qualifies for exclusion under the *Construction General Permit* (CGP) issued by the Texas Commission on Environmental Quality (TCEQ) on March 5, 2018 and amended on January 28, 2022. However, should the sum of the Engineer's anticipated disturbances and all of the Contractor's (On ROW and off ROW) PSLs equal or exceed the one (1) acre threshold, both TxDOT and the Contractor shall have project responsibilities under the CGP that reverts to non-exclusion status. To ensure project compliance with all applicable water quality regulations, the Contractor shall obtain Engineer approval for all non-depicted areas of disturbance that increases the Engineer's initial soil and vegetation disturbed area estimates before associated work operations start.

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, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, December 25 and Easter weekend.

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, traffic signal upgrades, 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 _5_ 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 of the month.

Item 316 – Seal Coat

A pre-placement meeting must be conducted at least 48 hrs. prior to seal coat placement.

The usual open season for application of asphalt is from: April 1st to September 30th, unless otherwise approved in writing by the Engineer.

In addition to other asphalt distributor requirements, the asphalt distributor shall be capable of providing a transversely varied asphalt rate. The Contractor shall demonstrate that the distributor can apply an asphalt rate outside the wheel path locations between 22 and 32 percent higher than the asphalt rate being applied in the wheel paths. The contractor's calibration of the distributor will include verification of this capability and a description of the spray bar(s) and nozzles to be used. The percentage difference in asphalt rate provided by each tested spray bar and nozzle arrangement shall be provided to the Engineer. The Engineer will select the pavements where transversely varied asphalt rate is to be provided and will provide this information at the pre-construction meeting.

The estimated application rate noted in the plans is for locations outside the wheel paths and is for estimation purposes only.

Remove excess accumulated rock (Windrow) from edge of pavement swept by brooms.
Self-propelled broom sweeper working properly and have an approved bristle size.
Approved thermal probe, gauge method for temperature reading, easy and safe access.

Item 438 – Cleaning and Sealing Joints and Cracks

The contractor will advise the Engineer of any loose or damaged seal joint areas Not noted in the plans. Upon approval from the Engineer, these areas will be

Addressed and the Contractor compensated for such additional work.

After cleaning and sealing of joints, care will be taken to assure that the bent Caps and abutment seats are clean of all debris. Cleaning and removal of this Excess material will not be paid for directly but will be subsidiary to this item.

Class 3 – hot poured rubber sealant shall be used with ACP overlay.
Class 4 -low modulus silicone, non-sag shall be used on vertical faces on bridge Elements.
Class 7 -low modulus silicone, rapid curing, self-leveling shall be used without ACP overlay and existing armor joints.
Refer to the 2014 Standard Specification for additional information.

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.

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;
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 21st through January 1st, every effort should be taken to ensure that all travel lanes remain open where possible.

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

Item 506 - Temporary Erosion, Sedimentation, and Environmental Controls

It is not anticipated that any erosion, sedimentation, or environmental control devices will be needed on this project. However, in the event that such controls are necessary, the SW3P for this project shall consist of the use of any temporary erosion control measures deemed necessary by the Engineer and as provided under this item. Payment for this work will be determined in accordance with Article 4.4, "Changes in the Work".

Item 666 – Reflectorized 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 677 – Eliminating Existing Pavement Markings and Markers

Pavement markings to be eliminated consists of edge line and centerline profile markings.

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.

Item 6185 – Truck Mounted Attenuator (TMA) and Trailer

Provide One (1) Truck Mounted Attenuator as required by the Engineer. Provide backup and 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 0160-05-049 **DISTRICT** Laredo **COUNTY** Dimmit, Kinney, Maverick, Val Verde, Zavala
HIGHWAY FM 1025, FM 140, FM 1588, FM 1867, FM 1908, FM 1986, FM 2644, FM 3199, RM 187, RM 2523, RM 3348, US 277, US 90

			CONTROL SECTION JOB	**0023-04-067**		**0160-05-049**		**0299-05-017**		**0299-06-015**		**0369-04-010**		**0875-02-011**	
			PROJECT ID	**A00189215**		**A00130801**		**A00180326**		**A00180325**		**A00180361**		**A00180352**	
			COUNTY	**Kinney**		**Val Verde**		**Maverick**		**Maverick**		**Zavala**		**Zavala**	
			HIGHWAY	**US 90**		**US 277**		**FM 1908**		**FM 1908**		**RM 187**		**FM 140**	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	316-6015	ASPH (AC-15P)	GAL			170,709.000		11,438.000		2,097.000		10,874.000		59,682.000	
	316-6016	ASPH (AC-20XP)	GAL	175,854.000											
	316-6221	AGGR(TY-PB GR-3S SAC-B)	CY			4,992.000		335.000		62.000		318.000		1,746.000	
	316-6238	AGGR(TY-PD GR-3 SAC-B)	CY	5,142.000											
	438-6001	CLEANING AND SEALING EXISTING JOINTS	LF	648.000		862.170									
	500-6001	MOBILIZATION	LS			1.000									
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO			7.000									
	510-6001	ONE-WAY TRAF CONT (FLAGGER CONT)	HR	60.000		100.000									
	510-6002	ONE-WAY TRAF CONT (PILOT CAR)	HR	60.000		60.000		30.000		30.000		30.000		40.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	5,026.000		10,652.000									
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	19,662.000		16,762.000		1,147.000		224.000		831.000		9,756.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	2,256.000		2,820.000									
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF			540.000								100.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF							35.000		11.000			
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	8.000		10.000								1.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA											1.000	
	666-6225	PAVEMENT SEALER 6"	LF	332,774.000		318,943.000		36,458.000		7,919.000		39,622.000		152,696.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	8,364.000		8,437.000									
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	13,612.000		17,741.000		2,084.000		178.000				8,662.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	114,661.000		120,361.000		10,381.000		3,400.000		19,811.000		44,164.000	
	666-6343	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	LF	193,881.000		169,584.000		23,993.000		4,341.000		19,811.000		99,870.000	
	672-6007	REFL PAV MRKR TY I-C	EA	469.000		978.000								5.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	2,133.000		1,901.000		239.000		52.000		286.000		1,302.000	
	672-6017	TRAFFIC BUTTON TY Y	EA	28,809.000		26,293.000		2,675.000		774.000		3,963.000		12,165.000	
	672-6018	TRAFFIC BUTTON TY B	EA	9,922.000		7,594.000		2,115.000		93.000				7,769.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	2,096.000		294,900.000									
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA			2.000									
	6185-6002	TMA (STATIONARY)	DAY	3.000		5.000									
	6185-6003	TMA (MOBILE OPERATION)	HR	260.000		220.000		40.000		40.000		40.000		120.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS			1.000									
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS			1.000									
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS			1.000									

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0160-05-049 **DISTRICT** Laredo **COUNTY** Dimmit, Kinney, Maverick, Val Verde, Zavala

HIGHWAY FM 1025, FM 140, FM 1588, FM 1867, FM 1908, FM 1986, FM 2644, FM 3199, RM 187, RM 2523, RM 3348, US 277, US 90

				CONTROL SECTION JOB	**1279-01-038**		**1508-01-012**		**1592-01-015**		**1592-02-013**		**1799-01-020**		**1814-01-011**	
				PROJECT ID	**A00180346**		**A00180320**		**A00130807**		**A00130785**		**A00180347**		**A00180307**	
				COUNTY	**Zavala**		**Maverick**		**Val Verde**		**Kinney**		**Zavala**		**Kinney**	
				HIGHWAY	**FM 1025**		**FM 1588**		**RM 2523**		**RM 2523**		**FM 1867**		**FM 1908**	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**		EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	316-6015	ASPH (AC-15P)	GAL		134,216.000				65,152.000		51,917.000		83,196.000		57,680.000	
	316-6016	ASPH (AC-20XP)	GAL				27,059.000									
	316-6221	AGGR(TY-PB GR-3S SAC-B)	CY		3,925.000				1,906.000		1,519.000		2,433.000		1,687.000	
	316-6238	AGGR(TY-PD GR-3 SAC-B)	CY				792.000									
	438-6001	CLEANING AND SEALING EXISTING JOINTS	LF		128.000											
	500-6001	MOBILIZATION	LS													
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO													
	510-6001	ONE-WAY TRAF CONT (FLAGGER CONT)	HR		80.000								40.000			
	510-6002	ONE-WAY TRAF CONT (PILOT CAR)	HR		50.000		30.000		40.000		40.000		40.000		40.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA													
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA		20,268.000		2,024.000		11,324.000		12,024.000		14,514.000		9,522.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF													
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF													
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF		124.000								12.000		11.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA													
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA													
	666-6225	PAVEMENT SEALER 6"	LF		300,051.000		58,363.000		165,683.000		175,015.000		214,330.000		139,751.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF													
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF		21,728.000		3,773.000		14,768.000		13,571.000		14,231.000		13,187.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF		73,016.000		17,735.000		24,395.000		38,483.000		59,355.000		16,000.000	
	666-6343	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	LF		207,611.000		36,855.000		126,520.000		122,961.000		140,744.000		110,564.000	
	672-6007	REFL PAV MRKR TY I-C	EA													
	672-6009	REFL PAV MRKR TY II-A-A	EA		2,018.000		419.000		1,062.000		1,188.000		1,481.000		865.000	
	672-6017	TRAFFIC BUTTON TY Y	EA		22,107.000		5,737.000		8,018.000		12,411.000		18,270.000		5,372.000	
	672-6018	TRAFFIC BUTTON TY B	EA		19,106.000		1,616.000		17,236.000		12,108.000		9,809.000		16,731.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF		300,051.000								214,330.000			
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA													
	6185-6002	TMA (STATIONARY)	DAY		4.000								2.000			
	6185-6003	TMA (MOBILE OPERATION)	HR		240.000		60.000		160.000		160.000		160.000		120.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS													
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS													
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS													

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0160-05-049 **DISTRICT** Laredo **COUNTY** Dimmit, Kinney, Maverick, Val Verde, Zavala

HIGHWAY FM 1025, FM 140, FM 1588, FM 1867, FM 1908, FM 1986, FM 2644, FM 3199, RM 187, RM 2523, RM 3348, US 277, US 90

				1814-02-015		2449-01-009		2486-01-013		2636-02-010		2752-02-006		3299-01-006	
		CONTROL SECTION JOB													
		PROJECT ID		A00180335		A00180350		A00196575		A00189212		A00130787		A00130784	
		COUNTY		Maverick		Zavala		Zavala		Dimmit		Kinney		Kinney	
		HIGHWAY		FM 1908		FM 1986		RM 187		FM 2644		RM 3348		FM 3199	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	316-6015	ASPH (AC-15P)	GAL	50,396.000		28,870.000		72,755.000				27,951.000		30,327.000	
	316-6016	ASPH (AC-20XP)	GAL							56,180.000					
	316-6221	AGGR(TY-PB GR-3S SAC-B)	CY	1,474.000		845.000		2,128.000		1,643.000		818.000		887.000	
	316-6238	AGGR(TY-PD GR-3 SAC-B)	CY												
	438-6001	CLEANING AND SEALING EXISTING JOINTS	LF												
	500-6001	MOBILIZATION	LS												
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO												
	510-6001	ONE-WAY TRAF CONT (FLAGGER CONT)	HR												
	510-6002	ONE-WAY TRAF CONT (PILOT CAR)	HR	40.000		30.000		40.000		40.000		30.000		30.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA												
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	8,506.000		3,263.000		13,774.000		10,172.000		2,615.000		3,457.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF												
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF												
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF			47.000		25.000						16.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA												
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA												
	666-6225	PAVEMENT SEALER 6"	LF	129,812.000		93,926.000		203,472.000		151,092.000		77,807.000		102,029.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF												
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	10,922.000		7,911.000		13,146.000		9,086.000		7,514.000		7,630.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	19,424.000		17,639.000		57,777.000		46,965.000		7,144.000		23,183.000	
	666-6343	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	LF	99,466.000		68,376.000		132,549.000		95,041.000		63,149.000		71,216.000	
	672-6007	REFL PAV MRKR TY I-C	EA												
	672-6009	REFL PAV MRKR TY II-A-A	EA	795.000		626.000		1,524.000		1,060.000		470.000		684.000	
	672-6017	TRAFFIC BUTTON TY Y	EA	5,332.000		6,006.000		17,840.000		14,260.000		2,232.000		7,190.000	
	672-6018	TRAFFIC BUTTON TY B	EA	14,546.000		7,646.000		8,612.000		4,705.000		10,386.000		7,020.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF												
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA												
	6185-6002	TMA (STATIONARY)	DAY												
	6185-6003	TMA (MOBILE OPERATION)	HR	120.000		80.000		160.000		120.000		80.000		80.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS												
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS												
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS												

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0160-05-049

DISTRICT Laredo

COUNTY Dimmit, Kinney, Maverick, Val Verde, Zavala

HIGHWAY FM 1025, FM 140, FM 1588, FM 1867, FM 1908, FM 1986, FM 2644, FM 3199, RM 187, RM 2523, RM 3348, US 277, US 90

CONTROL SECTION JOB / PROJECT ID / COUNTY / HIGHWAY				TOTAL EST.	TOTAL FINAL
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**		
	316-6015	ASPH (AC-15P)	GAL	857,260.000	
	316-6016	ASPH (AC-20XP)	GAL	259,093.000	
	316-6221	AGGR(TY-PB GR-3S SAC-B)	CY	26,718.000	
	316-6238	AGGR(TY-PD GR-3 SAC-B)	CY	5,934.000	
	438-6001	CLEANING AND SEALING EXISTING JOINTS	LF	1,638.170	
	500-6001	MOBILIZATION	LS	1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	7.000	
	510-6001	ONE-WAY TRAF CONT (FLAGGER CONT)	HR	280.000	
	510-6002	ONE-WAY TRAF CONT (PILOT CAR)	HR	700.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	15,678.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	159,845.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	5,076.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	640.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	281.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	19.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	1.000	
	666-6225	PAVEMENT SEALER 6"	LF	2,699,743.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	16,801.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	179,744.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	713,894.000	
	666-6343	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	LF	1,786,532.000	
	672-6007	REFL PAV MRKR TY I-C	EA	1,452.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	18,105.000	
	672-6017	TRAFFIC BUTTON TY Y	EA	199,454.000	
	672-6018	TRAFFIC BUTTON TY B	EA	157,014.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	811,377.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000	
	6185-6002	TMA (STATIONARY)	DAY	14.000	
	6185-6003	TMA (MOBILE OPERATION)	HR	2,260.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000	

CK: DW: CK: DN:

SUMMARY OF MOBILIZATION ITEMS		
	500	502
	6001	6001
LOCATION - CSJ	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING
	LS	MO
1 - 0160-05-049	1.00	7.00
PROJECT TOTALS	1	7

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS							
	510	510	662	662	6001	6185	6185
	6001	6002	6109	6111	6002	6002	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (FLAGGER CONT)	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY W	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	HR	HR	EA	EA	EA	DAY	HR
1 - 0160-05-049	100	60	10652	16762	2	5	220
PROJECT TOTALS	100	60	10652	16762	2	5	220

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

✱ REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF	SY	GAL	CY
1 - 0160-05-049	84791.52	449232.0	170708.2	4991.5
TOTAL	84,791.52	449232	170,709	4,992

SUMMARY OF BRIDGE ITEMS	
	438 6001
LOCATION # - PSN#	CLEANING AND SEALING EXISTING JOINTS
	LF
1 - 222330016005016	218
1 - 222330016005017	560
1 - 222330016005045	84.17
PROJECT TOTALS	862.17

SUMMARY OF PAVEMENT MARKINGS													
	666	666	666	666	666	666	666	666	672	672	672	672	677
	6018	6036	6054	6225	6306	6318	6321	6343	6007	6009	6017	6018	6001
LOCATION - CSJ	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B	ELIM EXT PAV MRK & MRKS (4")
	LF	LF	EA	LF	LF	LF	LF	LF	EA	EA	EA	EA	LF
1 - 0160-05-049	2820	540	10	318943	8437	17741	120361	169584	978	1901	26293	7594	294900
PROJECT TOTALS	2820	540	10	318943	8437	17741	120361	169584	978	1901	26293	7594	294900

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
2 - 1592-01-015	40	11324	160
PROJECT TOTALS	40	11324	160

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
2 - 1592-01-015	63259.68	171451.8	65151.7	1905.0
TOTAL	63,259.68	171452	65,152	1,906

SUMMARY OF PAVEMENT MARKINGS							
	666	666	666	666	672	672	672
	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	EA	EA	EA
2 - 1592-01-015	165683	14768	24395	126520	1062	8018	17236
PROJECT TOTALS	165683	14768	24395	126520	1062	8018	17236

DATE: 7/6/2023 9:18:03 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049sumofqty.dgn

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		19

CK:
DW:
CK:
DW:

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
3 - 1592-02-013	40	12024	160
PROJECT TOTALS	40	12024	160

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
3 - 1592-02-013	61480.32	136622.9	51916.7	1518.0
TOTAL	61,480.32	136623	51,917	1,519

SUMMARY OF PAVEMENT MARKINS							
	666	666	666	666	672	672	672
	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	EA	EA	EA
3 - 1592-02-013	175015	13571	38483	122961	1188	12411	12108
PROJECT TOTALS	175015	13571	38483	122961	1188	12411	12108

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

✱ *REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.*

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS						
	510	510	662	662	6185	6185
	6001	6002	6109	6111	6002	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (FLAGGER CONT)	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY W	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	HR	HR	EA	EA	DAY	HR
4 - 0023-04-067	60	60	5026	19662	3	260
PROJECT TOTALS	60	60	5026	19662	3	260

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6016	6238
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-20XP)	AGGR(TY-PD GR-3 SAC-B)
	LF		GAL	CY
4 - 0023-04-067	96940.80	465101.7	176738.6	5167.8
TOTAL	96,940.80	465102	176,739	5,168

SUMMARY OF PAVEMENT MARKINGS											
	666	666	666	666	666	666	666	672	672	672	672
	6018	6054	6225	6306	6318	6321	6343	6007	6009	6017	6018
LOCATION - CSJ	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	EA	LF	LF	LF	LF	LF	EA	EA	EA	EA
4 - 0023-04-067	2256	8	332774	8364	13612	114661	193881	469	2133	28809	9922
PROJECT TOTALS	2256	8	332774	8364	13612	114661	193881	469	2133	28809	9922

SUMMARY OF BRIDGE ITEMS	
	438 6001
LOCATION # - PSN#	CLEANING AND SEALING EXISTING JOINTS
	LF
4 - 221360002304019	308
4 - 221360002304021	132
4 - 221360002304070	208
PROJECT TOTALS	648

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		20

DATE: 7/6/2023 9:18:03 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049sumofqty.dgn

CK:
DW:
CK:
DW:

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
5 - 3299-01-006	30	3457	80
PROJECT TOTALS	30	3457	80

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
5 - 3299-01-006	35640.00	79806.7	30326.5	886.7
TOTAL	35,640.00	79807	30,327	887

SUMMARY OF PAVEMENT MARKINGS								
	666	666	666	666	666	672	672	672
	6048	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD) (100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	LF	EA	EA	EA
5 - 3299-01-006	16	102029	7630	23183	71216	684	7190	7020
PROJECT TOTALS	16	102029	7630	23183	71216	684	7190	7020

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

✱ *REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.*

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
6 - 2752-02-006	30	2615	80
PROJECT TOTALS	30	2615	80

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
6 - 2752-02-006	31574.40	73553.1	27950.2	817.3
TOTAL	31,574.40	73554	27,951	818

SUMMARY OF PAVEMENT MARKINGS							
	666	666	666	666	672	672	672
	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD) (100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	EA	EA	EA
6 - 2752-02-006	77807	7514	7144	63149	470	2232	10386
PROJECT TOTALS	77807	7514	7144	63149	470	2232	10386

DATE: 7/6/2023 9:18:04 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0754940l049sumofqty.dgn

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

SHEET 3 OF 9

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		21

CK:
DW:
CK:
DN:

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
7 - 1814-01-011	40	9522	120
PROJECT TOTALS	40	9522	120

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
7 - 1814-01-011	55281.60	151787.3	57679.2	1686.5
TOTAL	55,281.60	151788	57,680	1,687

SUMMARY OF PAVEMENT MARKINGS								
	666	666	666	666	666	672	672	672
	6048	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	LF	EA	EA	EA
7 - 1814-01-011	11	139751	13187	16000	110564	865	5372	16731
PROJECT TOTALS	11	139751	13187	16000	110564	865	5372	16731

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

✱ REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
8 - 1814-02-015	40	8506	120
PROJECT TOTALS	40	8506	120

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
8 - 1814-02-015	49732.32	132619.5	50395.4	1473.6
TOTAL	49,732.32	132620	50,396	1,474

SUMMARY OF PAVEMENT MARKINGS							
	666	666	666	666	672	672	672
	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	EA	EA	EA
8 - 1814-02-015	129812	10922	19424	99466	795	5332	14546
PROJECT TOTALS	129812	10922	19424	99466	795	5332	14546

DATE: 7/6/2023 9:18:04 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049sumofqty.dgn

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		22

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
9 - 0299-05-017	30	1147	40
PROJECT TOTALS	30	1147	40

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
9 - 0299-05-017	11996.16	30098.3	11437.4	334.4
TOTAL	11,996.16	30099	11,438	335

SUMMARY OF PAVEMENT MARKINGS							
	666	666	666	666	672	672	672
	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	EA	EA	EA
9 - 0299-05-017	36458	2084	10381	23993	239	2675	2115
PROJECT TOTALS	36458	2084	10381	23993	239	2675	2115

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

* REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
10 - 0299-06-015	30	224	40
PROJECT TOTALS	30	224	40

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
10 - 0299-06-015	2170.08	5518.0	2096.8	61.3
TOTAL	2,170.08	5518	2,097	62

SUMMARY OF PAVEMENT MARKINGS								
	666	666	666	666	666	672	672	672
	6048	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	LF	EA	EA	EA
10 - 0299-06-015	35	7919	178	3400	4341	52	774	93
PROJECT TOTALS	35	7919	178	3400	4341	52	774	93

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

SHEET 5 OF 9

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		23

DATE: 7/6/2023 9:18:05 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0754940\049sumofqty.dgn

CK:
DW:
CK:
DW:

CK:
DW:
CK:
DW:

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
11 - 1508-01-012	30	2024	60
PROJECT TOTALS	30	2024	60

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6016	6238
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-20XP)	AGGR(TY-PD GR-3 SAC-B)
	LF		GAL	CY
11 - 1508-01-012	18427.20	71206.9	27058.6	791.2
TOTAL	18,427.20	71207	27,059	792

SUMMARY OF PAVEMENT MARKINGS							
	666	666	666	666	672	672	672
	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	EA	EA	EA
11 - 1508-01-012	58363	3773	17735	36855	419	5737	1616
PROJECT TOTALS	58363	3773	17735	36855	419	5737	1616

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

✱ *REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.*

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
12 - 2486-01-013	40	13774	160
PROJECT TOTALS	40	13774	160

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
12 - 2486-01-013	66274.56	191459.8	72754.7	2127.3
TOTAL	66,274.56	191460	72,755	2,128

SUMMARY OF PAVEMENT MARKINGS								
	666	666	666	666	666	672	672	672
	6048	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	LF	EA	EA	EA
▲ 12 - 2486-01-013	25	203472	13146	57777	132549	1524	17840	8612
PROJECT TOTALS	25	203472	13146	57777	132549	1524	17840	8612

▲ *REFER TO "PAVEMENT MARKING CURVE RE-STRIPING DETAIL LOCATION 12 THRU 14" SHEET(S) FOR INFORMATION ON CURVE STRIPING CHANGE.*

DATE: 7/31/2023 2:26:20 PM
FILE: c:\txdot\pw_online\txdot5\max.torresid\d0754940\049sumofqty.dgn

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		24

CK:
DW:
CK:
DN:

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
13 - 0369-04-010	30	831	40
PROJECT TOTALS	30	831	40

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
13 - 0369-04-010	9905.28	28615.3	10873.8	317.9
TOTAL	9,905.28	28616	10,874	318

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

✱ REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.

SUMMARY OF PAVEMENT MARKINGS						
	666	666	666	666	672	672
	6048	6225	6321	6343	6009	6017
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y
	LF	LF	LF	LF	EA	EA
▲ 13 - 0369-04-010	11	39622	19811	19811	286	3963
PROJECT TOTALS	11	39622	19811	19811	286	3963

▲ REFER TO "PAVEMENT MARKING CURVE RE-STRIPING DETAIL LOCATION 12 THRU 14" SHEET(S) FOR INFORMATION ON CURVE STRIPING CHANGE.

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
14 - 0875-02-011	40	9756	120
PROJECT TOTALS	40	9756	120

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
14 - 0875-02-011	50080.80	157057.0	59681.7	1745.1
TOTAL	50,080.80	157,057	59,682	1,746

SUMMARY OF PAVEMENT MARKINGS											
	666	666	666	666	666	666	666	672	672	672	672
	6036	6054	6078	6225	6318	6321	6343	6007	6009	6017	6018
LOCATION - CSJ	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	REFL PAV MRK TY I (W)(WORD)(100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	EA	EA	LF	LF	LF	LF	EA	EA	EA	EA
▲ 14 - 0875-02-011	100	1	1	152696	8662	44164	99870	5	1302	12165	7769
PROJECT TOTALS	100	1	1	152696	8662	44164	99870	5	1302	12165	7769

▲ REFER TO "PAVEMENT MARKING CURVE RE-STRIPING DETAIL LOCATION 12 THRU 14" SHEET(S) FOR INFORMATION ON CURVE STRIPING CHANGE.

DATE: 7/31/2023 2:26:42 PM
FILE: c:\txdot\pw_online\txdot5\max.torresld\0754940\049sumofqty.dgn

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		25

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS					
	510	510	662	6185	6185
	6001	6002	6111	6002	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (FLAGGER CONT)	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	HR	HR	EA	DAY	HR
15 - 1279-01-038	80	50	20268	4	240
PROJECT TOTALS	80	50	20268	4	240

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
15 - 1279-01-038	103229.28	354041.0	134535.6	3933.8
TOTAL	103,229.28	354,041	134,536	3,934

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

* REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.

SUMMARY OF PAVEMENT MARKINGS									
	666	666	666	666	666	672	672	672	677
	6048	6225	6318	6321	6343	6009	6017	6018	6001
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD) (100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B	ELIM EXT PAV MRK & MRKS (4")
	LF	LF	LF	LF	LF	EA	EA	EA	LF
15 - 1279-01-038	124	300051	21728	73016	207611	2018	22107	19106	300051
PROJECT TOTALS	124	300051	21728	73016	207611	2018	22107	19106	300051

SUMMARY OF BRIDGE ITEMS	
	438
	6001
LOCATION # - PSN#	CLEANING AND SEALING EXISTING JOINTS
	LF
15 - 222540127901006	128
PROJECT TOTALS	128

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS					
	510	510	662	6185	6185
	6001	6002	6111	6002	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (FLAGGER CONT)	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	HR	HR	EA	DAY	HR
16 - 1799-01-020	40	40	14514	2	160
PROJECT TOTALS	40	40	14514	2	160

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
16 - 1799-01-020	70371.84	218934.6	83195.2	2432.6
TOTAL	70,371.84	218935	83,196	2,433

SUMMARY OF PAVEMENT MARKINGS									
	666	666	666	666	666	672	672	672	677
	6048	6225	6318	6321	6343	6009	6017	6018	6001
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD) (100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B	ELIM EXT PAV MRK & MRKS (4")
	LF	LF	LF	LF	LF	EA	EA	EA	LF
16 - 1799-01-020	12	214330	14231	59355	140744	1481	18270	9809	214330
PROJECT TOTALS	12	214330	14231	59355	140744	1481	18270	9809	214330

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

SHEET 8 OF 9

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		26

DATE: 7/6/2023 9:18:06 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049sumofqty.dgn

CK:
DW:
CK:
DW:

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
17 - 2449-01-009	30	3263	80
PROJECT TOTALS	30	3263	80

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6015	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-15P)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
17 - 2449-01-009	34188.00	75973.3	28869.9	844.1
TOTAL	34,188.00	75974	28,870	845

SUMMARY OF PAVEMENT MARKINGS								
	666	666	666	666	666	672	672	672
	6048	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD) (100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	LF	EA	EA	EA
17 - 2449-01-009	47	93926	7911	17639	68376	626	6006	7646
PROJECT TOTALS	47	93926	7911	17639	68376	626	6006	7646

NOTES:

APPLICATION RATES NOTED IN PLANS ARE FOR BIDDING AND ESTIMATION PURPOSES ONLY. ACTUAL APPLICATION RATES SHALL BE DETERMINED AND ADJUSTED AS NECESSARY.

RATES OF APPLICATION:

* REFER TO TABLE FOR ASPHALT BINDER AND AGGREGATE PRODUCTION RATES.

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
	510	662	6185
	6002	6111	6003
LOCATION - CSJ	ONE-WAY TRAF CONT (PILOT CAR)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	TMA (MOBILE OPERATION)
	HR	EA	HR
18 - 2636-02-010	40	10172	120
PROJECT TOTALS	40	10172	120

SUMMARY OF ROADWAY				
		SURFACE TREATMENT		
			316	316
			6016	6221
LOCATION-CSJ	LENGTH	1st CRSE AREA	ASPH (AC-20XP)	AGGR(TY-PB GR-3S SAC-B)
	LF		GAL	CY
18 - 2636-02-010	47520.00	147840.0	56179.2	1642.7
TOTAL	47,520.00	147840	56,180	1,643

SUMMARY OF PAVEMENT MARKINGS							
	666	666	666	666	672	672	672
	6225	6318	6321	6343	6009	6017	6018
LOCATION - CSJ	PAVEMENT SEALER 6"	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REF PROF PAV MRK TY I(W)6"(SLD) (100MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	LF	LF	LF	LF	EA	EA	EA
18 - 2636-02-010	151092	9086	46965	95041	1060	14260	4705
PROJECT TOTALS	151092	9086	46965	95041	1060	14260	4705

Texas Department of Transportation

US 277, etc.

SUMMARY OF QUANTITIES

SHEET 9 OF 9

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		27

CK: DW: CK: DW:

DATE: 7/6/2023 9:18:06 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0754940\049sumofqty.dgn

CK
DW
CK
DW

TCP GENERAL NOTES

1. *This is a suggested Traffic Control Plan (TCP). The Contractor may submit an alternate Traffic Control Plan, signed and sealed by a Licensed Professional Engineer in Texas, for approval by the Engineer. When mutually beneficial changes are proposed to the existing Traffic Control Plan 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 Plans 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 (TMUTCD), the State Standard Traffic Control Plans (TCP) sheets, and the Barricades and Construction (BC) sheets. Refer to the project general notes for additional information regarding the Traffic Control Plan.*

4. *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.*

5. *Cover all existing signs that conflict with the Traffic Control Plan 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.*

6. *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 items 502 "Barricades, Signs and Traffic Handling".*

7. *Use plastic drums to channelize traffic when existing pavement markings have been obliterated.*

8. *Limit the length of daily lane closures to maximum of two-miles. Such area must not exceed two miles, unless approved by the engineer. Within the two mile section, only close off the area where actual work is being performed. Allow for all lanes open to traffic during non-working hours unless otherwise specified in the sequence of construction. Any additional overnight lane closures not specified in the sequence of construction will require approval by the Engineer.*

9. *Maintain a minimum of one through lane open in each direction during working hours unless otherwise mentioned in the sequence of construction or as directed by the Engineer.*

10. *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.*

11. *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).*

12. *Maintain the roadway surface and work zone striping within the project while the traffic control plan is in effect. Place and be responsible for all work zone pavement markings in accordance with standard sheets WZ(STPM), BC (11), BC (12) and the TMUTCD.*

13. *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 permitted by the sequence of construction. Provide for safe and convenient access to abutting property, highways, public roads, and street crossings except as otherwise shown on the sequence of construction.*

14. *Regulate all construction traffic to minimal 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. *Notify the Engineer in writing two weeks prior to shifting of traffic within each phase of the Traffic Control Plan, when applicable and/or as directed by the engineer.*

16. *Moving an existing sign to a temporary location is subsidiary to item 502. Installations with permanent supports at permanent locations will be paid for under the applicable bid item(s).*

17. *Use truck mounted attenuators as noted on the plans, TxDOT traffic control plan standards or as directed by the engineer. For locations that are adjacent to each other, a single truck mounted attenuator of the entire work area is acceptable.*

18. *If the contractor chooses to work multiple locations in urban/rural areas simultaneously with approval of the engineer, the contractor will be responsible for providing all applicable traffic control devices, including portable changeable message boards, at their own expense.*

19. *Placement of portable changeable message sign as advance notice of lane closures will be required at least 1 week before closure or 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. Portable changeable message sign must be used in all phases of the project and is intended to be relocated as needed or as directed by the engineer.*

20. *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.*

21. *Place all stockpiled material, waste material, signs, barricades, channelizing devices, and work vehicles not in use, at a minimum of 30 feet from the outer edge of the nearest travel lane.*

22. *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 will not block drainage.*

23. *During non-working hours all drop-offs are to be filled. Refer to standard WZ(UL) for lateral drop-offs and details shown in the plans or as directed by the engineer.*

24. *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.*

25. *Remove from the work area all loose materials and debris resulting from construction operations at the end of each workday.*

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

NOT TO SCALE

Texas Department of Transportation

US 277, etc.

TCP
GENERAL NOTES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		28

DATE: 7/6/2023 9:18:21 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez ir\d0754945\TCP General Notes.dgn

CK: DW: CK: DW:

SEAL COAT SEQUENCE OF CONSTRUCTION

GENERAL INSTRUCTIONS

THIS IS A DISTRICT-WIDE ROADWAY SURFACING SEAL COAT PROJECT. WORK ON EACH ROADWAY SECTION SHALL BE PERFORMED IN (4) PHASES. REFER TO TCP PHASES, TCP GENERAL NOTES AND CORRESPONDING PLAN SHEETS FOR MORE DETAILED INFORMATION.

THE WORK HAS BEEN IDENTIFIED BY REFERENCE LOCATION NUMBERS AND VARIOUS REFERENCE LOCATIONS CAN BE WORKED ON SIMULTANEOUSLY WHEN APPROVED BY THE ENGINEER. ONCE WORK HAS BEGUN AT A REFERENCE LOCATION, IT MUST BE WORKED ON CONTINUOUSLY THROUGH COMPLETION. ADDITIONAL SIGNING TO SAFELY GUIDE TRAFFIC THROUGH THE WORK AREA WILL BE REQUIRED AS DIRECTED BY THE ENGINEER.

PRE-PLACEMENT MEETING MUST BE CONDUCTED BEFORE PLACEMENT OF SEAL COAT.

TRAFFIC CONTROL DEVICES:

CONTRACTOR SHALL MAINTAIN TCP AND LANE CLOSURE UNTIL ALL WORK IN AREA HAS BEEN COMPLETED. ADJACENT LANES (SAME DIRECTION) MAY BE COMBINED WHEN APPLICABLE.

AT THE COMMENCEMENT OF THE PROJECT, ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCEPTABLE CONDITION, AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AS PER GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES AND FEATURES.

WHERE APPLICABLE, THE CONTRACTOR WILL PLACE ALL TRAFFIC CONTROL SIGNS, BARRICADES, AND CHANNELIZING DEVICES FOR ONE-WAY TRAFFIC CONTROL OPERATIONS AS SHOWN ON THE TRAFFIC CONTROL PLANS. REFER TO STANDARDS AND CONSTRUCTION STANDARD SHEETS AS WELL AS GENERAL NOTES.
A PILOT CAR AND RADIO EQUIPPED FLAGGERS ARE REQUIRED FOR ALL UNDIVIDED ROADWAY LOCATIONS AS DIRECTED BY THE ENGINEER. THE PILOT CAR WITH NECESSARY FLAGGERS AND/OR RADIO EQUIPPED FLAGGERS AND SIGNS, EQUIPMENT, LABOR AND INCIDENTALS REQUIRED FOR THIS METHOD OF TRAFFIC CONTROL WILL BE PAID FOR DIRECTLY THROUGH ITEM 510.

ADDITIONAL NOTES:

CONCRETE PAVEMENT AREAS AND OTHER AREAS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, WILL BE LEFT UNDISTURBED.

FOR LOCATIONS WITH RAILROAD CROSSINGS, THE CONTRACTOR WILL COORDINATE WITH THE ENGINEER TO OBTAIN FLAGGERS PRIOR TO COMMENCING THE PROPOSED WORK. REFER TO THE RAILROAD REQUIREMENTS AND RAILROAD SCOPE OF WORK FOR MORE INFORMATION.

CONTRACTOR WILL VERIFY, IF APPLICABLE, ANY RAILROAD R.O.W. BEFORE CONSTRUCTION STARTS. NO WORK IS TO BE DONE WITHIN THE RAILROAD R.O.W., UNLESS SPECIFICALLY STATED ON THE PLANS. AT NO TIME DURING CONSTRUCTION OPERATIONS SHALL THE CONTRACTOR ALLOW EQUIPMENT TO ENCROACH WITHIN 25 FEET OF THE NEAR RAIL.

SEQUENCE OF WORK

PHASE 1- INSTALL TRAFFIC CONTROL DEVICES

SET UP TEMPORARY TRAFFIC CONTROL DEVICES AND BARRICADES FOR SURFACING OPERATIONS ON THE PROPOSED LOCATIONS AND BEFORE COMMENCING WORK ON THE ROADWAY.

PHASE 2: TCP (SC-1)-22, TCP (SC-2)-22, TCP (SC -3)-22, TCP (SC-4)-22, AND TCP (SC-7)-22
PHASE 3: TCP (3-1)-13, TCP (3-3)-14
PHASE 4: TCP (2-2b)-18

PHASE 2- PLACE SEAL COAT

PREPARE EXISTING SEAL COAT SURFACE AS SPECIFIED ON ITEM 316 " SEAL COAT" SURFACE PREPARATION, IN ADDITION ELIMINATE EXISTING EDGE AND CENTERLINE PROFILE MARKINGS, AS APPLICABLE.

SEAL COAT EXISTING PAVEMENT SURFACE AT WIDTH SPECIFIED AND ALONG THE LIMITS SHOWN ON THE PLANS. REFER TO " TYPICAL SECTIONS" AND "PROJECT LOCATION REFERENCE" SHEETS FOR MORE DETAILS.

UPON COMPLETION, MIRROR SAME WORK IN PHASE 2 TO THE REMAINING SECTIONS OF ROADWAY.

AT THE END OF EACH DAY, BEFORE OPENING TO TRAFFIC, WORK ZONE SHORT TERM TABS SHALL BE INSTALLED TO GUIDE TRAFFIC.

PHASE 3- PLACE FINAL PAVEMENT MARKINGS & RAISED PAVEMENT MARKERS

REMOVE WORK ZONE SHORT TERM TABS PREVIOUSLY INSTALLED IN PHASE 2.

INSTALL PAVEMENT MARKING SEALER OF TYPE II AND PROCEED TO THE INSTALLATION OF FINAL PAVEMENT MARKINGS OF TYPE I. REFER TO STANDARDS AND ANY SUPPLEMENTAL PAVEMENT MARKING SHEETS IN THE PLANS FOR MORE DETAILS.

INSTALL PROFILE PAVEMENT MARKINGS FOR ALL LOCATIONS SHOWN IN THE PLANS.

PHASE 4- PERFORM CLEAN UP

CLEAN AND SEAL JOINTS IN LOCATIONS SHOWN IN THE PLANS.

PERFORM FINAL CLEAN UP AND REMOVE ALL BARRICADES, AS DIRECTED BY THE ENGINEER.

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:
3F87CF7168DC4E4...

NOT TO SCALE

Texas Department of Transportation

US 277, etc.

TCP
SEQUENCE OF
CONSTRUCTION

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		29

DATE: 7/6/2023 9:18:36 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez [rid07549451]TCP Sequence of Construction.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

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

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

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

Texas Department of Transportation

Traffic Safety Division Standard

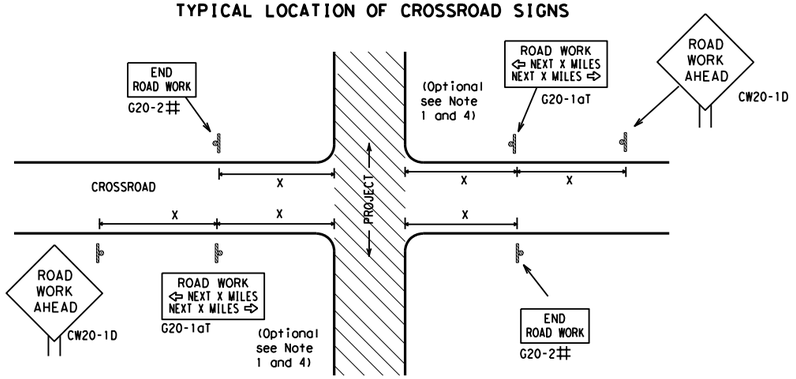
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		30

DATE: 7/6/2023 9:18:51 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\bc-21.dgn

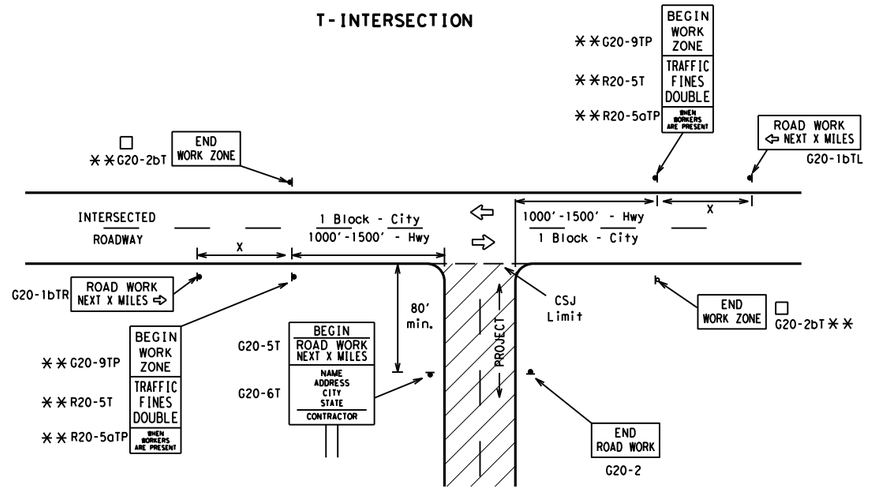
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign △ Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
*	*[3]

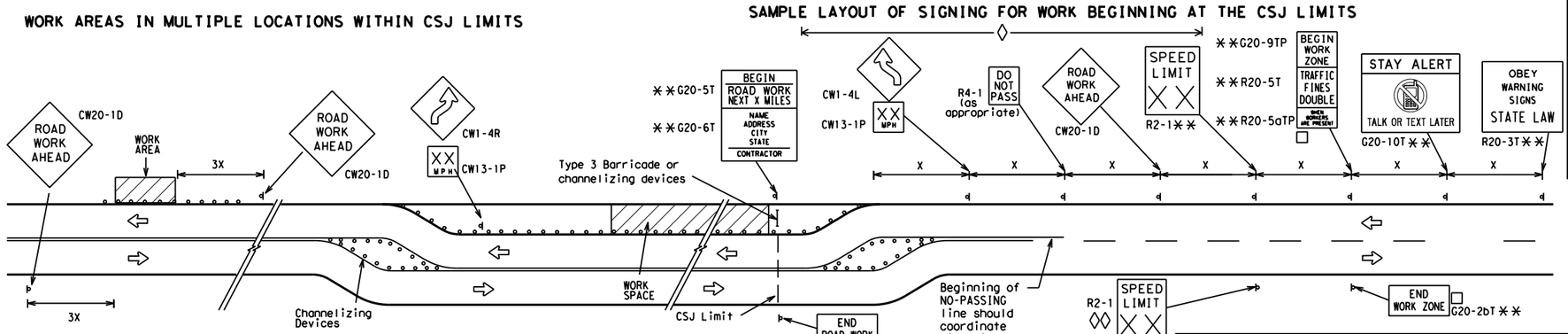
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

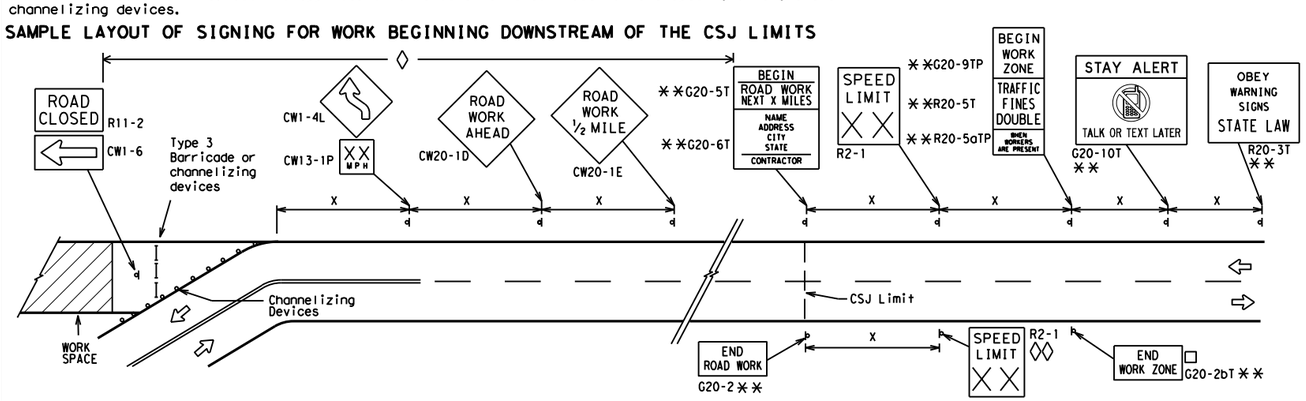
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

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

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

⟼	Type 3 Barricade
○ ○ ○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	VAL VERDE		31

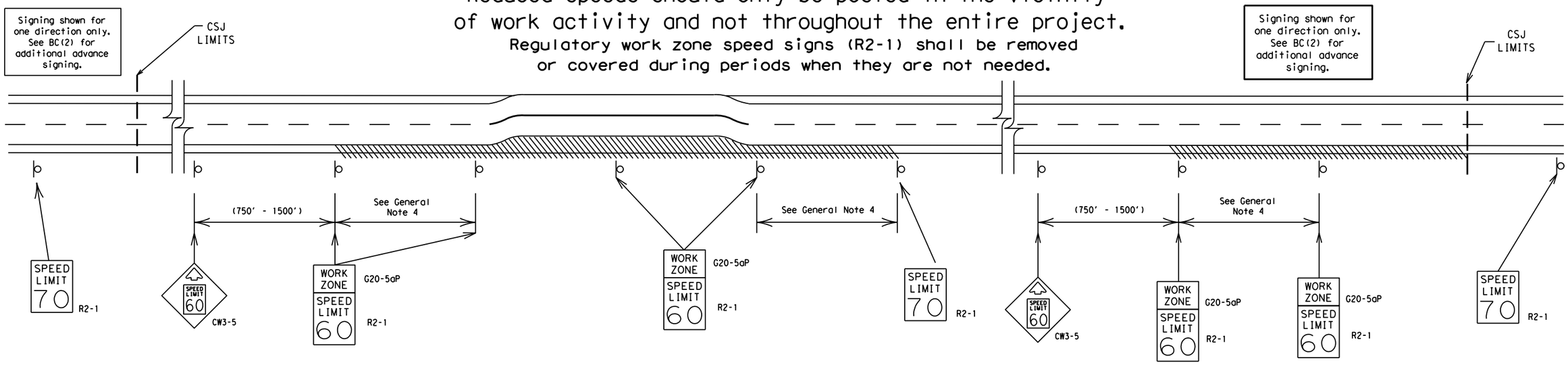
DATE: 7/6/2023 9:18:51 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\bc-21.dgn

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation

Traffic Safety Division Standard

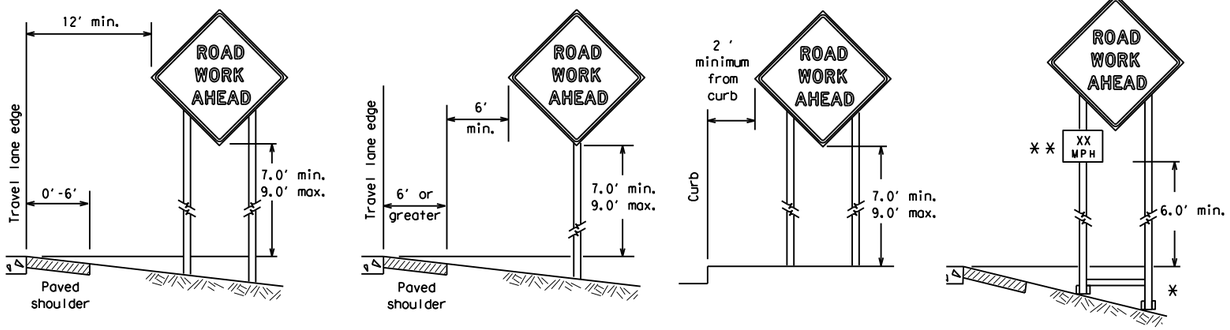
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	VAL VERDE		32

DATE: 7/6/2023 9:18:52 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\bc-21.dgn

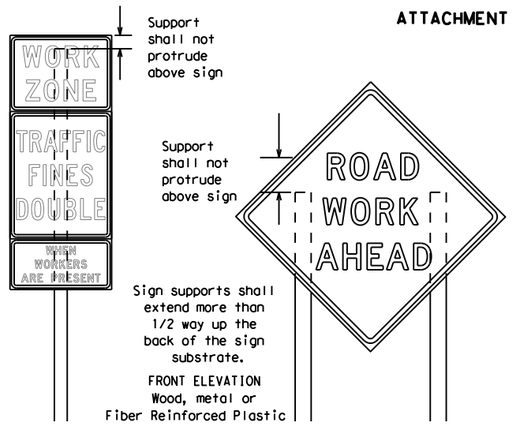
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

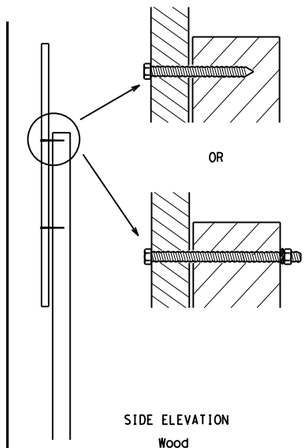


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





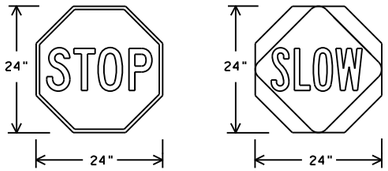
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

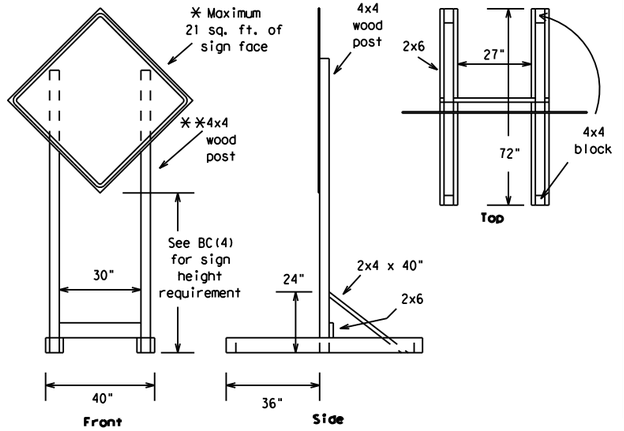
1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

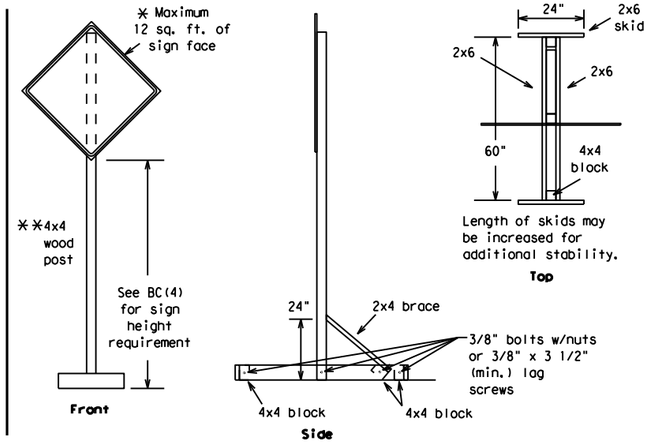
Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

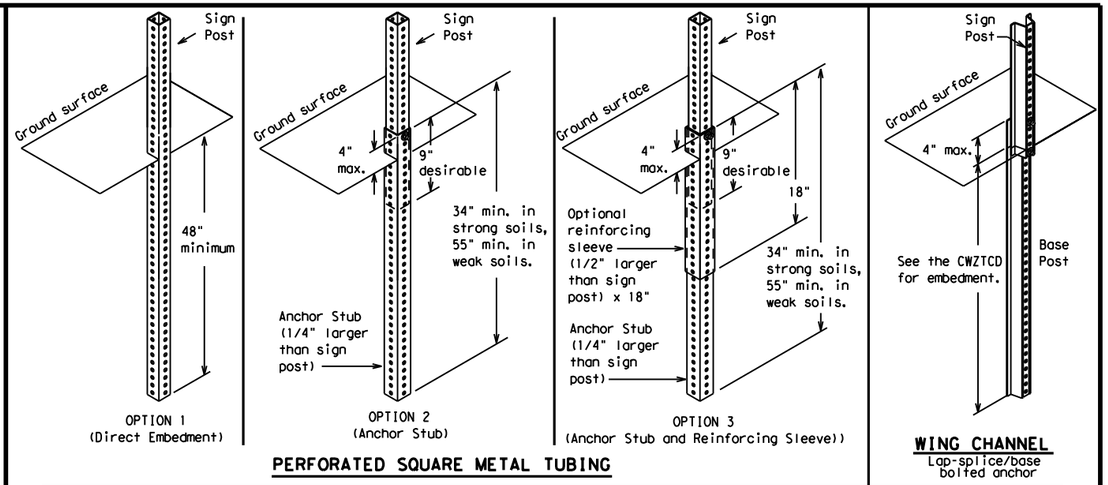
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	VAL VERDE		33





SKID MOUNTED WOOD SIGN SUPPORTS

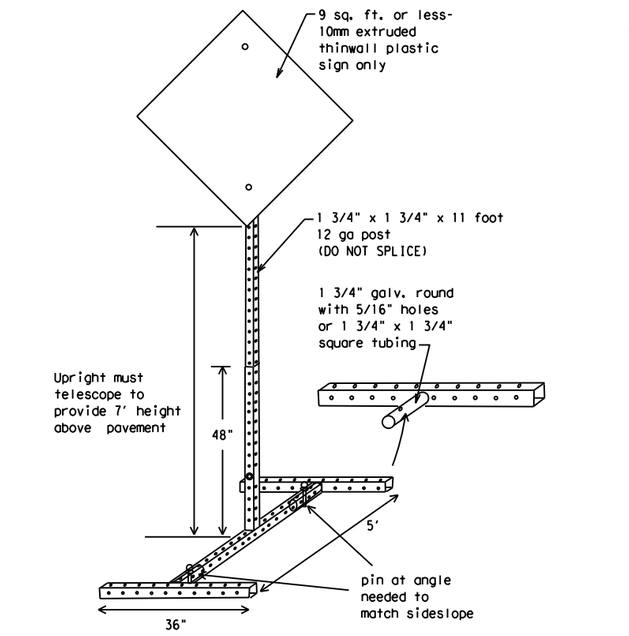
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

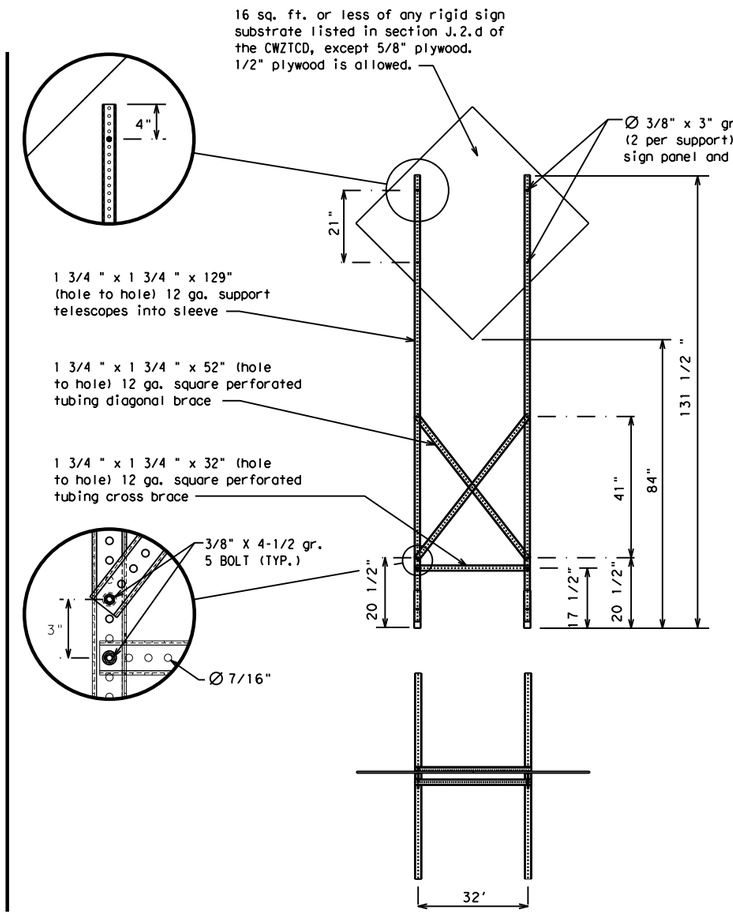


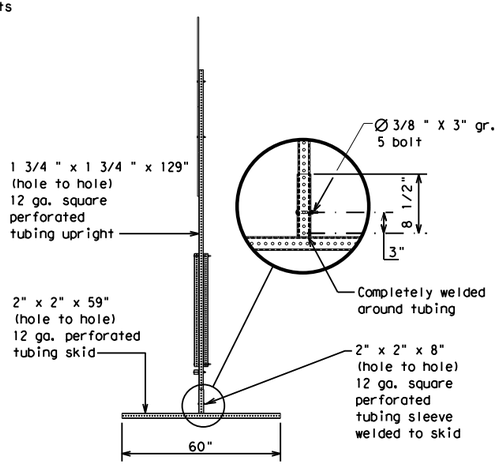
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

☐ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	VAL VERDE		34

DATE: 7/6/2023 9:18:52 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\bc-21.dgn

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

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

- FREEWAY CLOSED X MILE
- FRONTAGE ROAD CLOSED
- ROAD CLOSED AT SH XXX
- SHOULDER CLOSED XXX FT
- ROAD CLSD AT FM XXXX
- RIGHT LN CLOSED XXX FT
- RIGHT X LANES CLOSED
- RIGHT X LANES OPEN
- CENTER LANE CLOSED
- DAYTIME LANE CLOSURES
- NIGHT LANE CLOSURES
- I-XX SOUTH EXIT CLOSED
- VARIOUS LANES CLOSED
- EXIT XXX CLOSED X MILE
- EXIT CLOSED
- RIGHT LN TO BE CLOSED
- MALL DRIVEWAY CLOSED
- X LANES CLOSED TUE - FRI
- XXXXXXXX BLVD CLOSED

Other Condition List

- ROADWORK XXX FT
- ROAD REPAIRS XXXX FT
- FLAGGER XXXX FT
- LANE NARROWS XXXX FT
- RIGHT LN NARROWS XXXX FT
- TWO-WAY TRAFFIC XX MILE
- MERGING TRAFFIC XXXX FT
- CONST TRAFFIC XXX FT
- LOOSE GRAVEL XXXX FT
- UNEVEN LANES XXXX FT
- DETOUR X MILE
- ROUGH ROAD XXXX FT
- ROADWORK PAST SH XXXX
- ROADWORK NEXT FRI-SUN
- BUMP XXXX FT
- US XXX EXIT X MILES
- TRAFFIC SIGNAL XXXX FT
- LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

- MERGE RIGHT
- FORM X LINES RIGHT
- DETOUR NEXT X EXITS
- USE XXXXX RD EXIT
- USE EXIT XXX
- USE EXIT I-XX NORTH
- STAY ON US XXX SOUTH
- USE I-XX E TO I-XX N
- TRUCKS USE US XXX N
- WATCH FOR TRUCKS
- WATCH FOR TRUCKS
- EXPECT DELAYS
- EXPECT DELAYS
- PREPARE TO STOP
- REDUCE SPEED XXX FT
- END SHOULDER USE
- USE OTHER ROUTES
- WATCH FOR WORKERS
- STAY IN LANE *

Location List

- AT FM XXXX
- BEFORE RAILROAD CROSSING
- NEXT X MILES
- PAST US XXX EXIT
- XXXXXXX TO XXXXXXX
- US XXX TO FM XXXX

Warning List

- SPEED LIMIT XX MPH
- MAXIMUM SPEED XX MPH
- MINIMUM SPEED XX MPH
- ADVISORY SPEED XX MPH
- RIGHT LANE EXIT
- USE CAUTION
- DRIVE SAFELY
- DRIVE WITH CARE

** Advance Notice List

- TUE-FRI XX AM- X PM
- APR XX-XX X PM-X AM
- BEGINS MONDAY
- BEGINS MAY XX
- MAY X-X XX PM - XX AM
- NEXT FRI-SUN
- XX AM TO XX PM
- NEXT TUE AUG XX
- TONIGHT XX PM- XX AM

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

Texas Department of Transportation

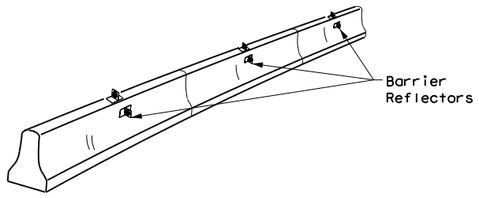
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

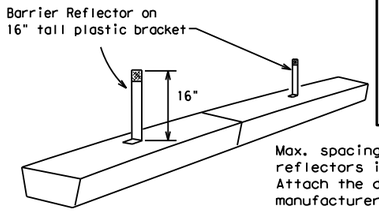
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	VAL VERDE		35

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



CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.

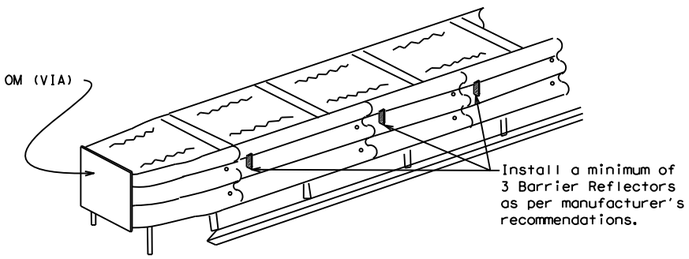


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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)

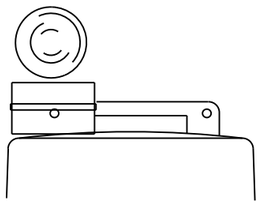


DELINEATION OF END TREATMENTS

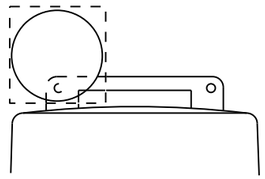
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate 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



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



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

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

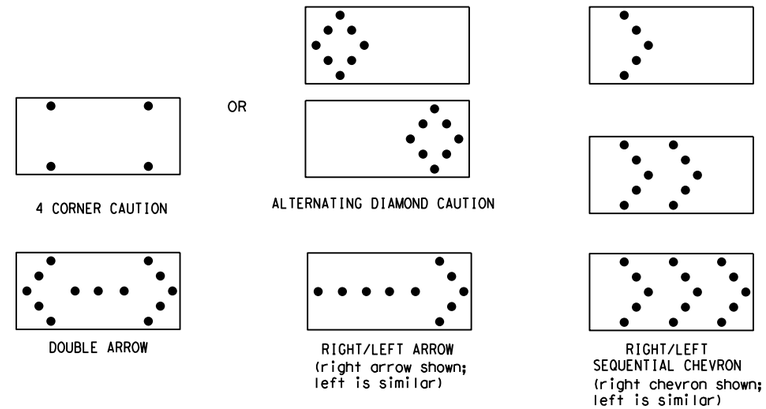
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

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

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	VAL VERDE		36

101

DATE: 7/6/2023 9:18:53 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\bc-21.dgn

GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

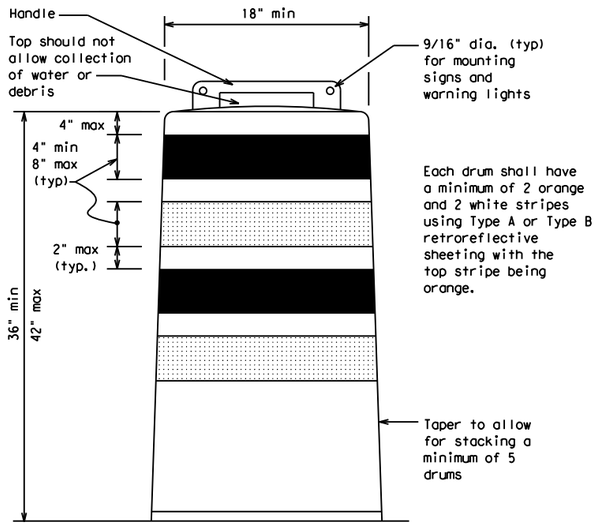
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

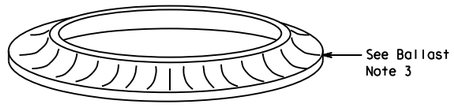
RETROREFLECTIVE SHEETING

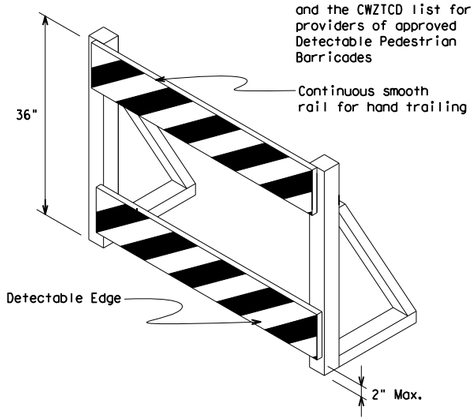
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

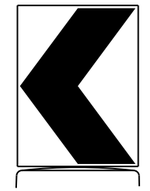




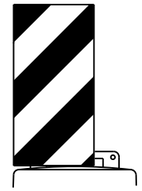


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

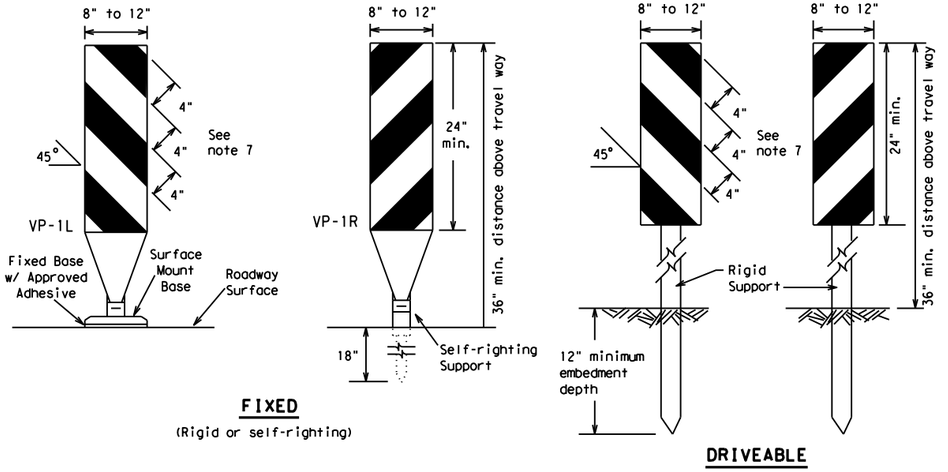
Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

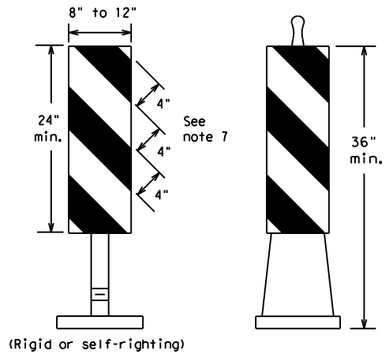
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	22	VAL VERDE		37
7-13				

102



FIXED
(Rigid or self-righting)

DRIVEABLE

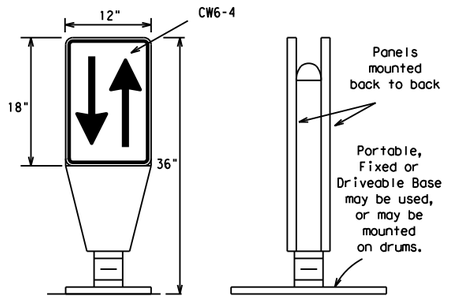


(Rigid or self-righting)

PORTABLE

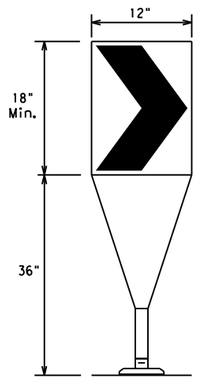
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



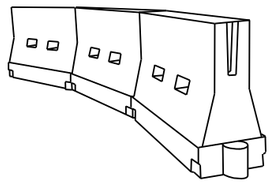
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

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

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

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150′	165′	180′	30′	60′
35		205′	225′	245′	35′	70′
40		265′	295′	320′	40′	80′
45	L = WS	450′	495′	540′	45′	90′
50		500′	550′	600′	50′	100′
55		550′	605′	660′	55′	110′
60		600′	660′	720′	60′	120′
65		650′	715′	780′	65′	130′
70		700′	770′	840′	70′	140′
75		750′	825′	900′	75′	150′
80		800′	880′	960′	80′	160′

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

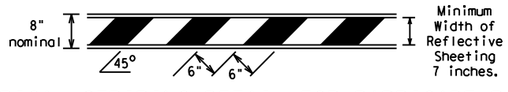
BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	22	VAL VERDE		38

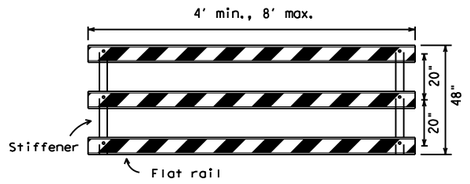
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



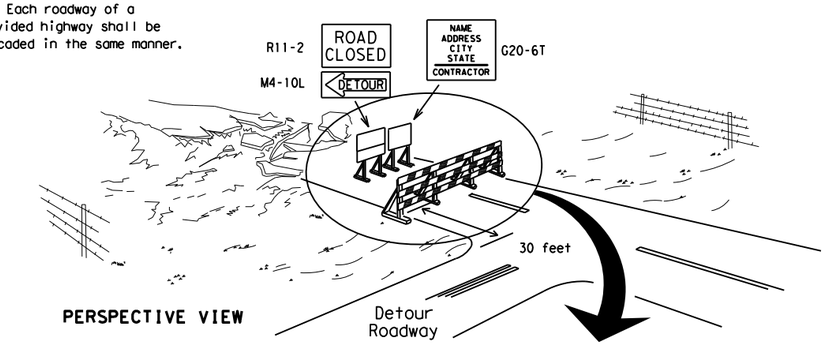
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

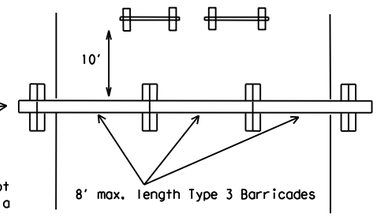
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

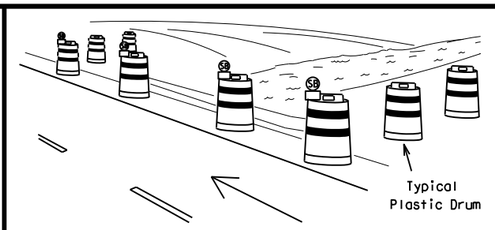
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

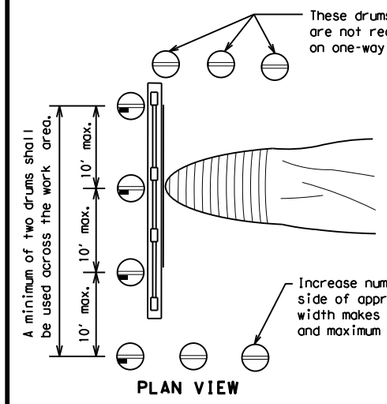
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

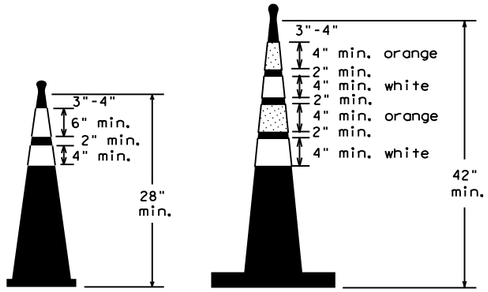
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



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

PLAN VIEW

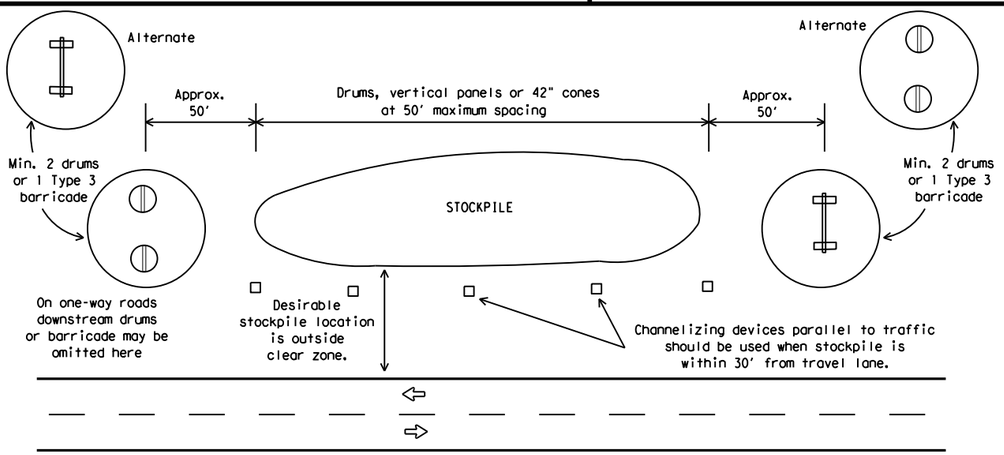
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers 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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	0160	05	049, etc.	US 277, etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		39

104

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

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

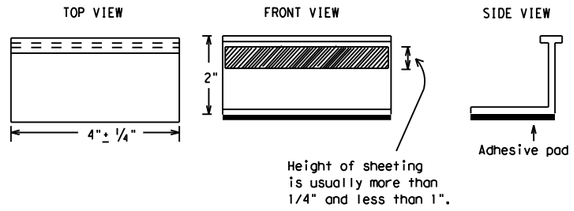
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

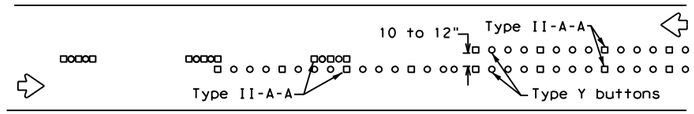
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	22	VAL VERDE		40
11-02 8-14				

105

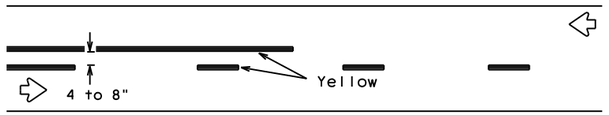
DATE: 7/6/2023 9:18:54 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\bc-21.dgn

PAVEMENT MARKING PATTERNS

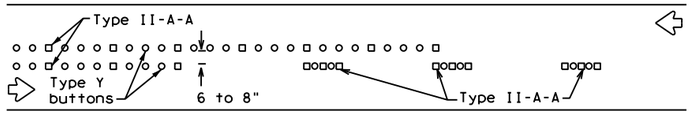
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



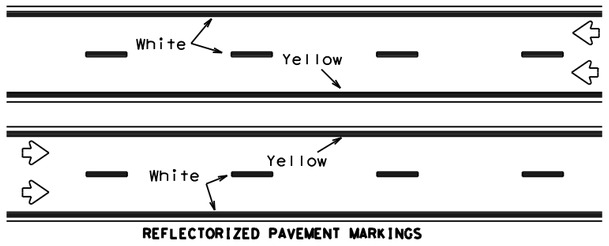
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



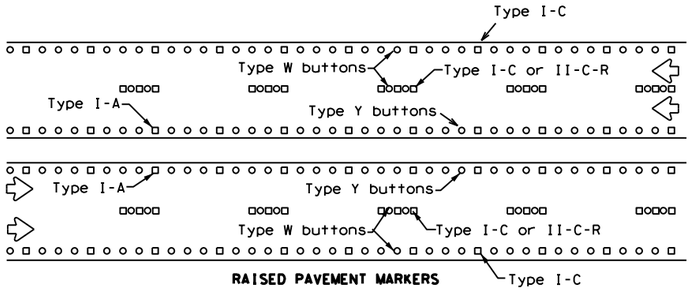
RAISED PAVEMENT MARKERS - PATTERN B

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

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



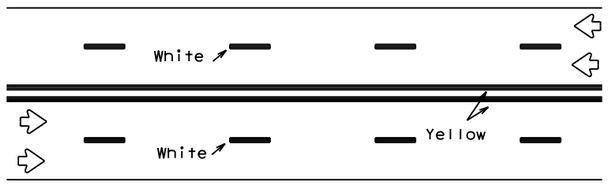
REFLECTORIZED PAVEMENT MARKINGS



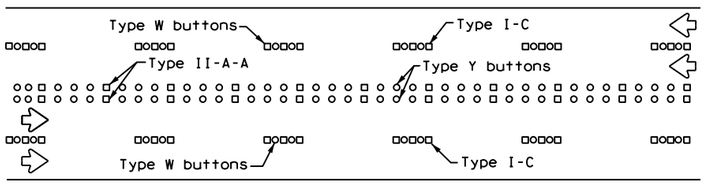
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



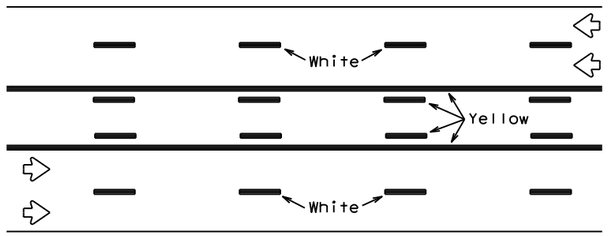
REFLECTORIZED PAVEMENT MARKINGS



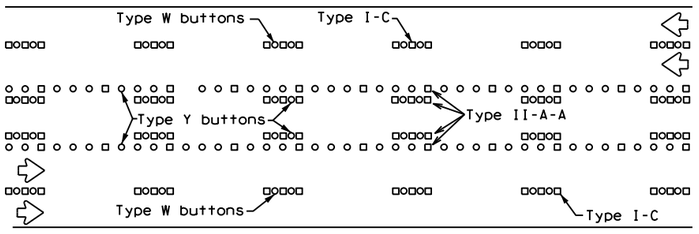
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

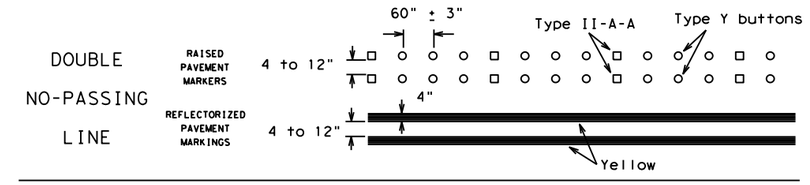
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

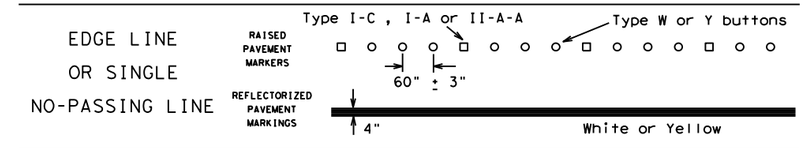
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

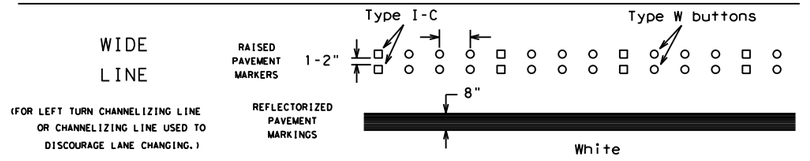


EDGE LINE OR SINGLE NO-PASSING LINE



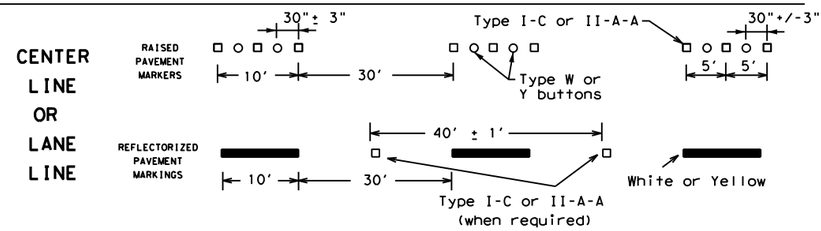
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

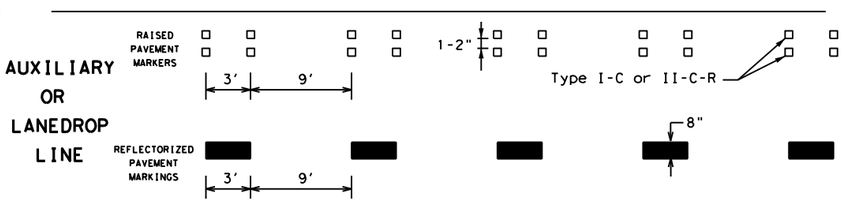


BROKEN LINES

CENTER LINE OR LANE LINE

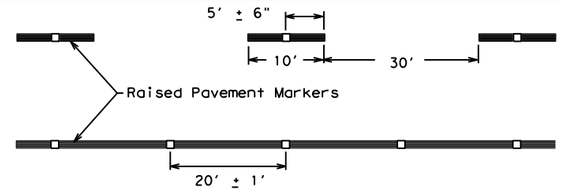


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

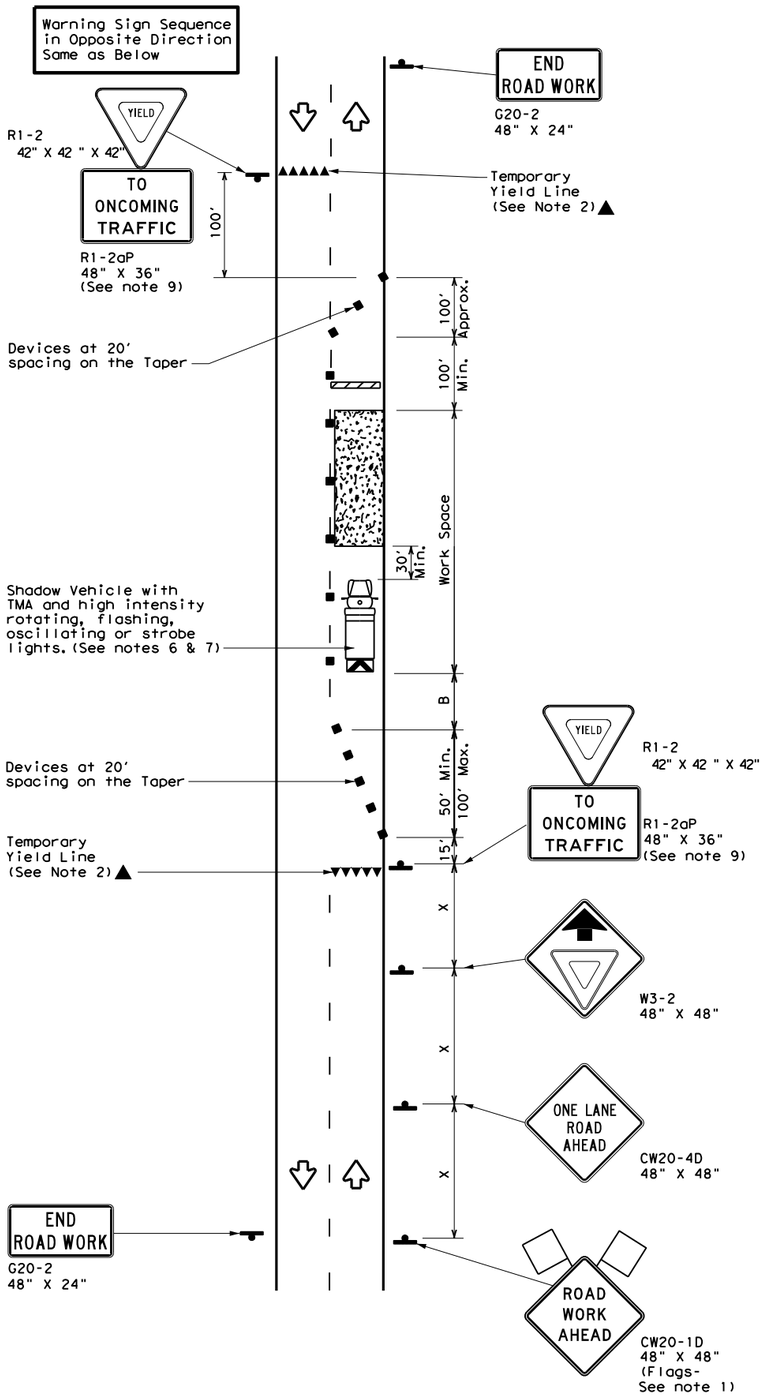
Texas Department of Transportation

Traffic Safety Division Standard

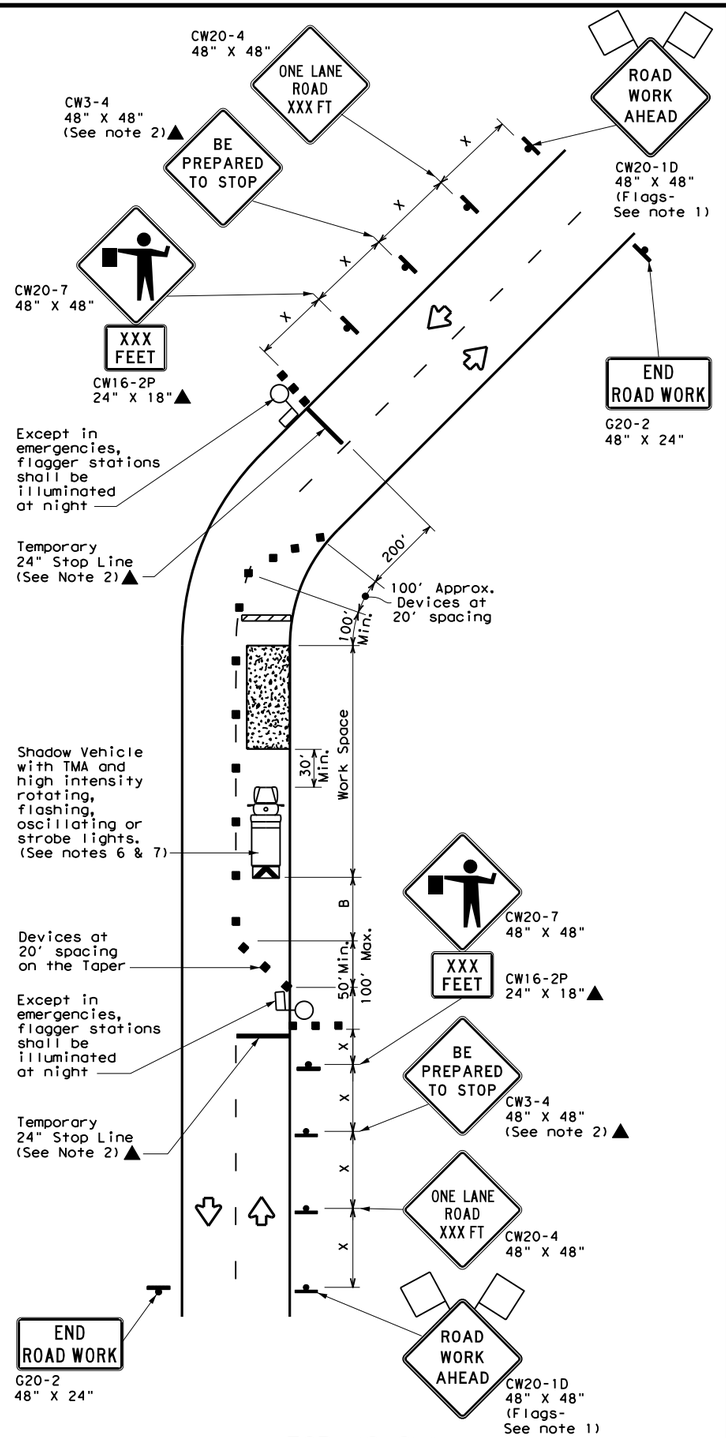
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		41



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



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

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

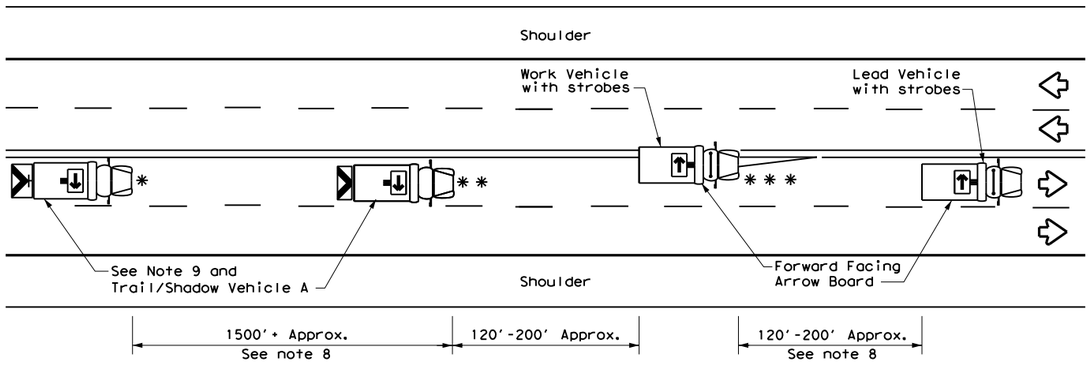
10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

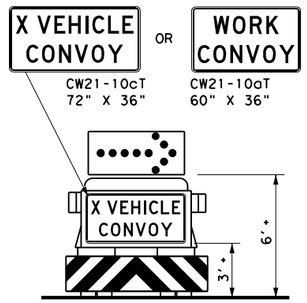
TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		42



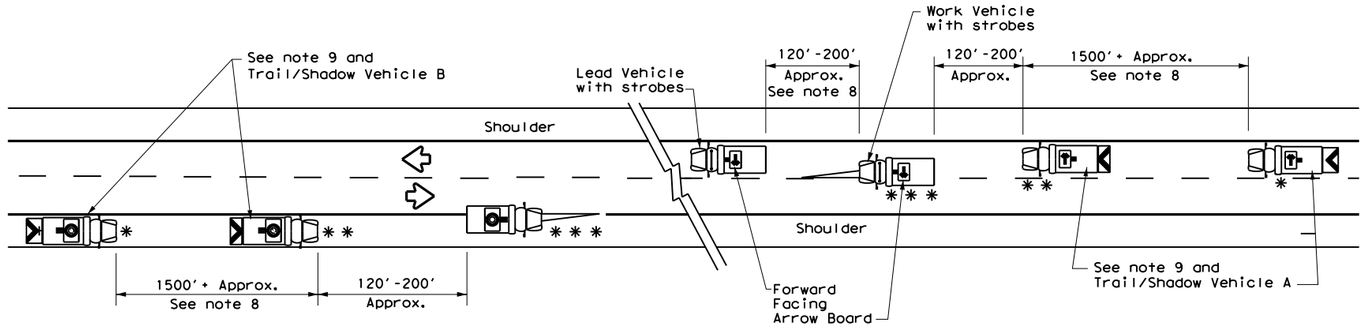
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

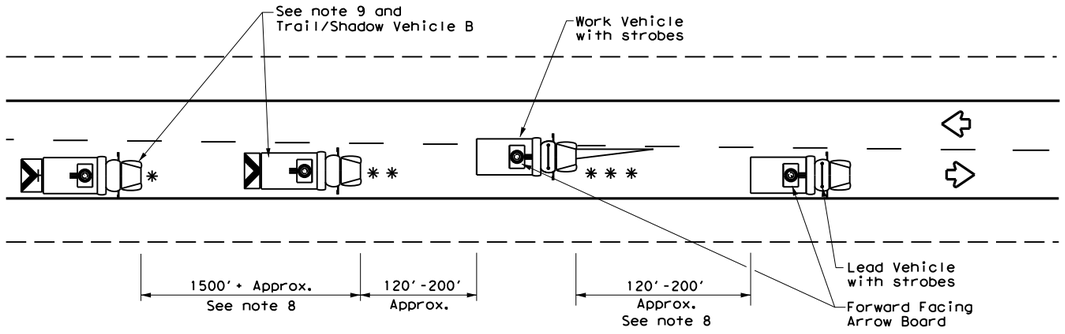
with RIGHT Directional display Flashing Arrow Board



WORK ON SHOULDER — WORK ON TRAVEL LANE

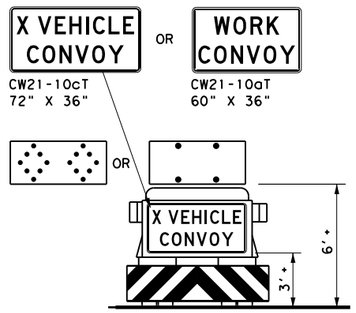
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

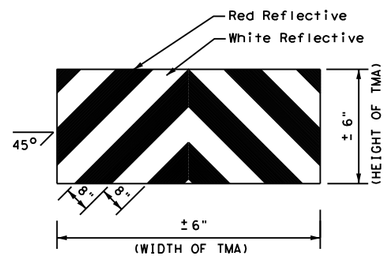
with Flashing Arrow Board in CAUTION display

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

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

GENERAL NOTES

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



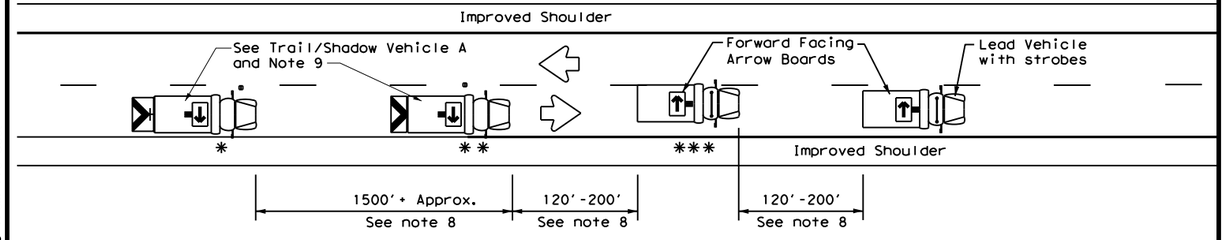
STRIPING FOR TMA

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

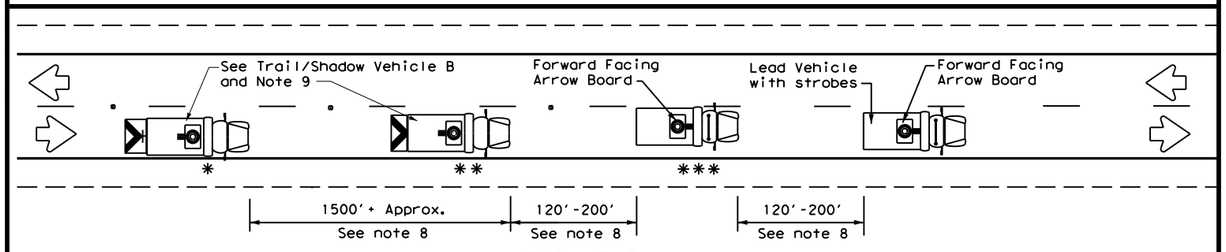
TCP(3-1)-13

FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		43



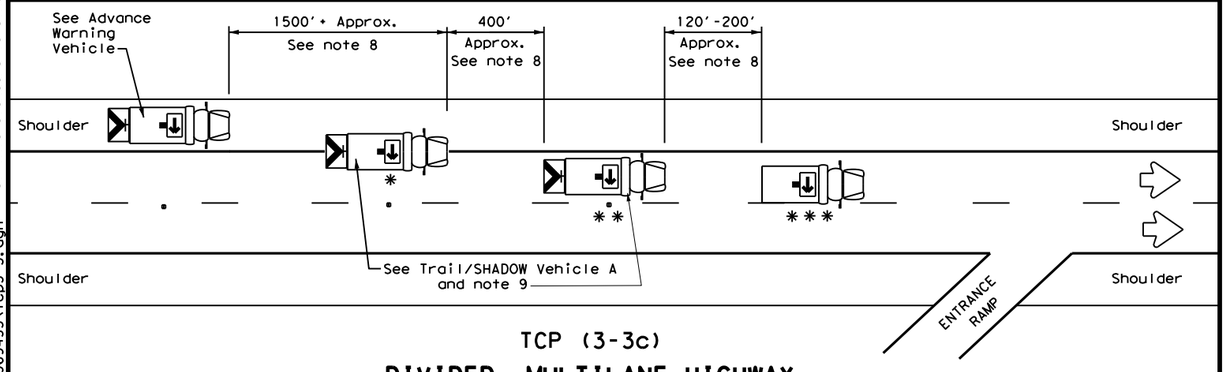
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS
(WORK ON TRAVEL LANE)



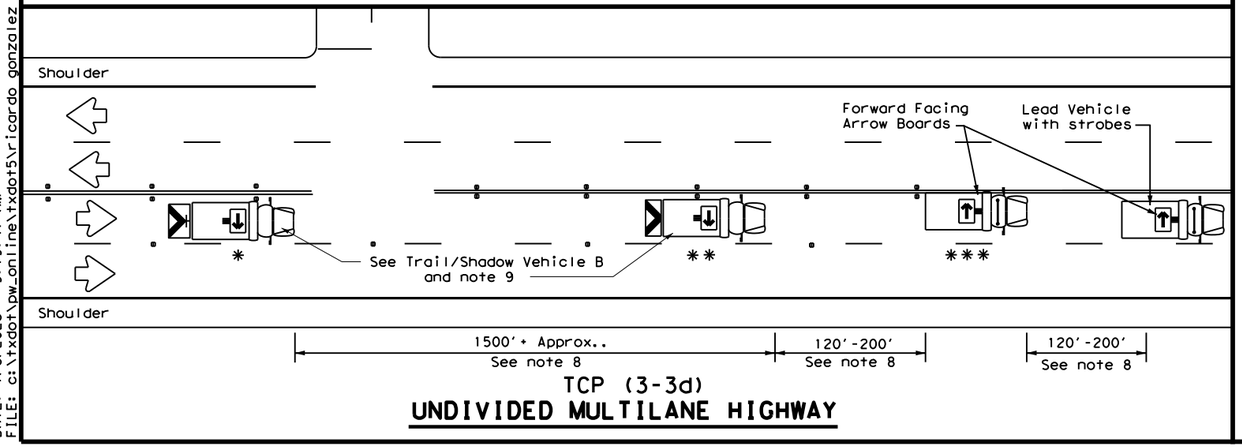
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS
(WORK ON TRAVEL LANE)



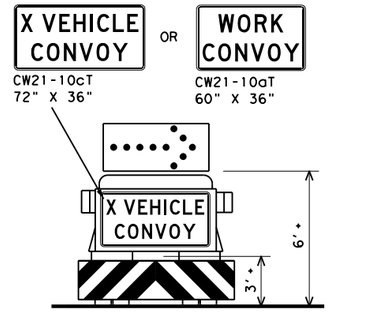
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



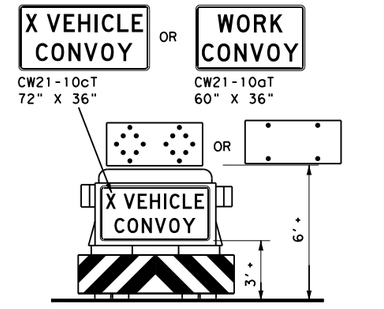
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



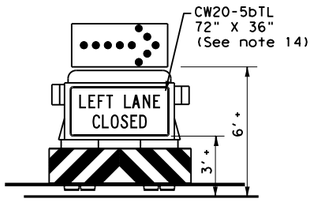
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

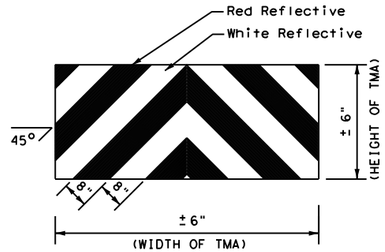


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

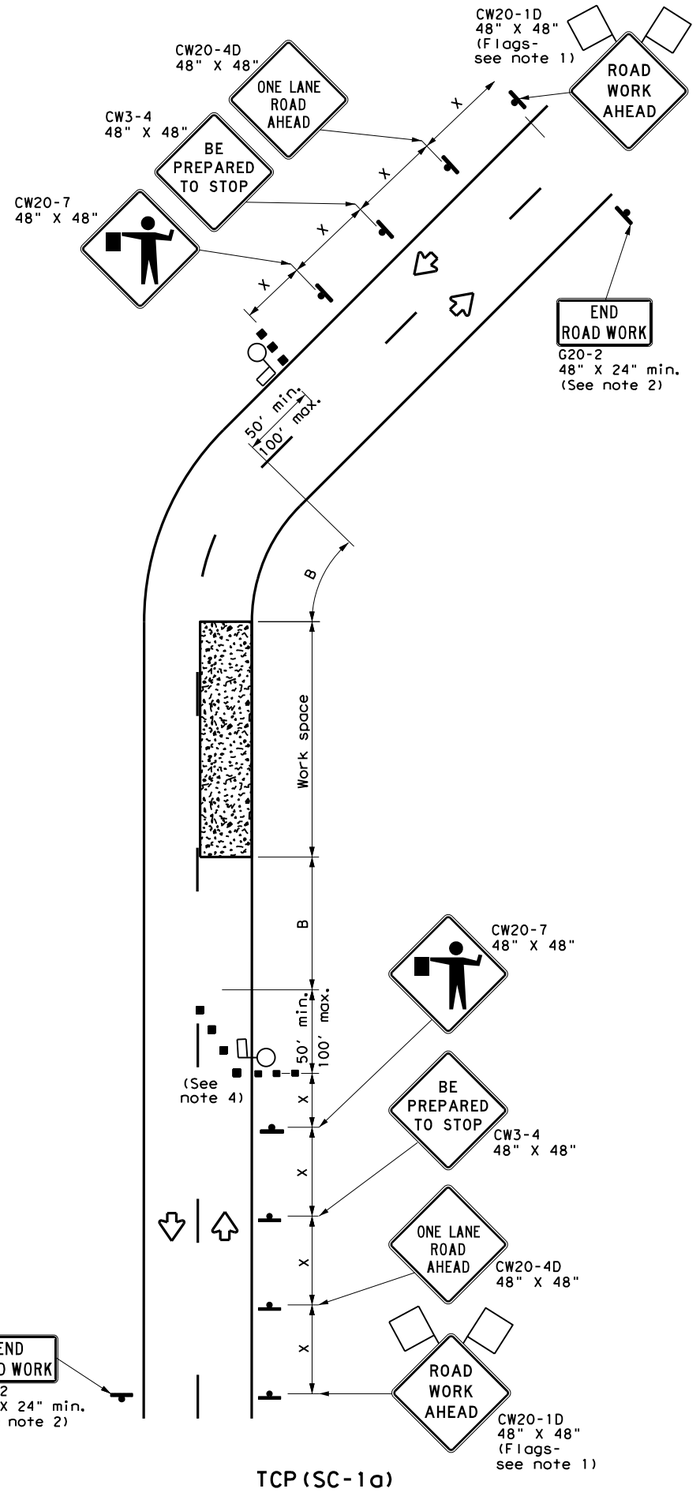
Texas Department of Transportation

Traffic Operations Division Standard

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

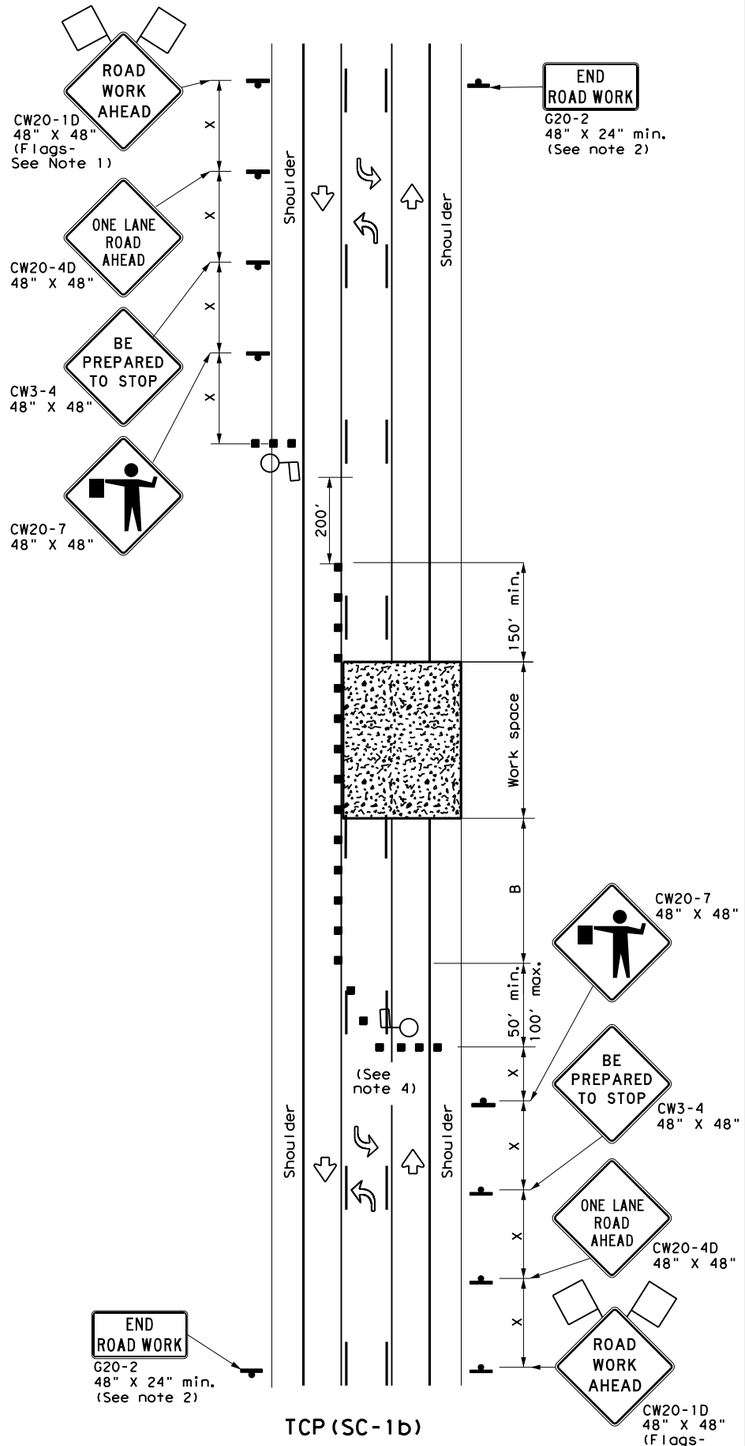
FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	22	VAL VERDE		44
1-97 7-14				

DATE: 7/6/2023 9:19:53 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\tcpsc-1-22.dgn



TCP(SC-1a)

ONE LANE TWO-WAY (TWO LANES) CONTROL WITH PILOT VEHICLE



TCP(SC-1b)

ONE LANE TWO-WAY (THREE LANES) CONTROL WITH PILOT VEHICLE AND CHANNELIZING DEVICES

LEGEND

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing Distance "X"	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

L = Length of Taper (FT) W = Width of Offset (FT) S = Posted Speed (MPH)

TYPICAL USAGE

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
3. Sign spacing may be increased or an additional ROAD WORK AHEAD (CW20-1D) sign may be used if advance warning ahead of the flagger sign is less than 1500 feet.
4. Flaggers should use two-way radios or other methods of communication at all times for traffic control coordination.
5. Flaggers should use 24" STOP (CW20-8) / SLOW (CW20-8aT) paddles to control traffic. Flags should be limited to emergency situations.
6. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
7. If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning additional traffic control personnel (flaggers) at the intersection.
8. Temporary rumble strips are not required on seal coat operations.
9. The pilot car is used to guide vehicles through traffic control zone. The pilot car shall have an identification name displayed and PILOT CAR, FOLLOW ME (G20-4) sign or message board mounted in a conspicuous position on rear.

TCP (SC-1a)

1. Channelizing devices on the centerline are not required when a pilot car is leading traffic, unless directed by the Engineer.

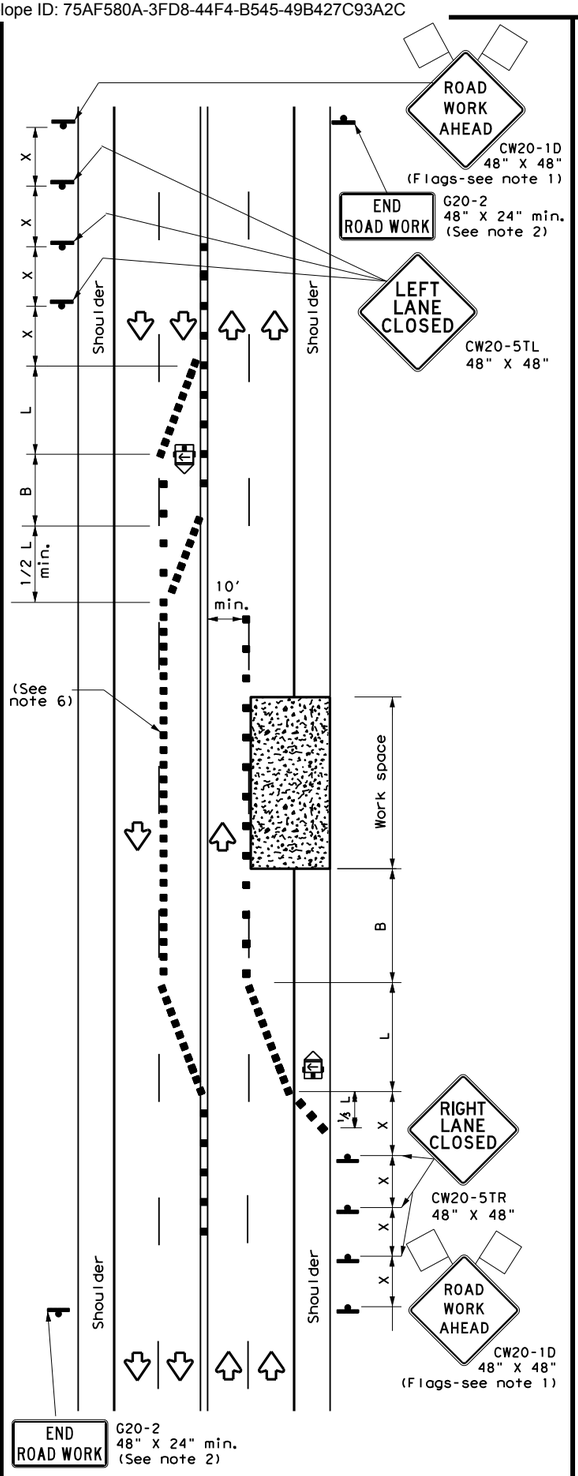
Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS ONE-LANE TWO-WAY

TCP(SC-1)-22

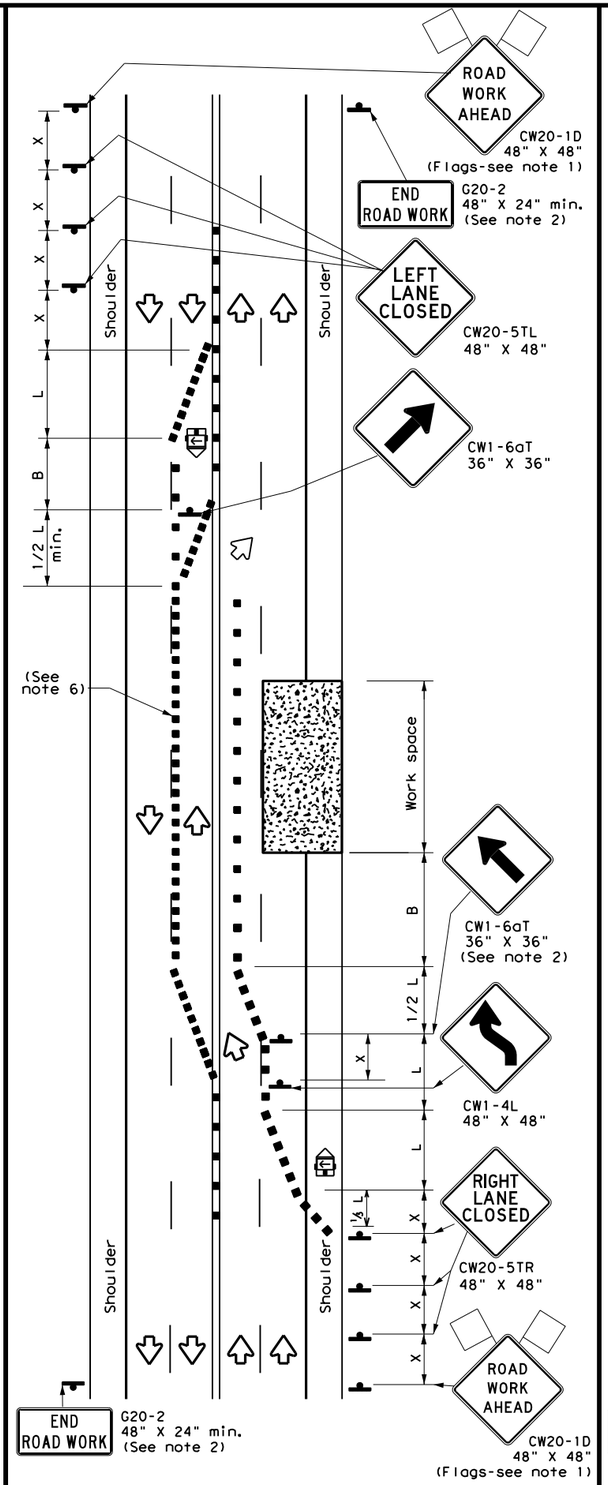
FILE: tcpsc-1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-21 10-22	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		45

DATE: 7/6/2023 9:20:06 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\tcpsc-2-22.dgn



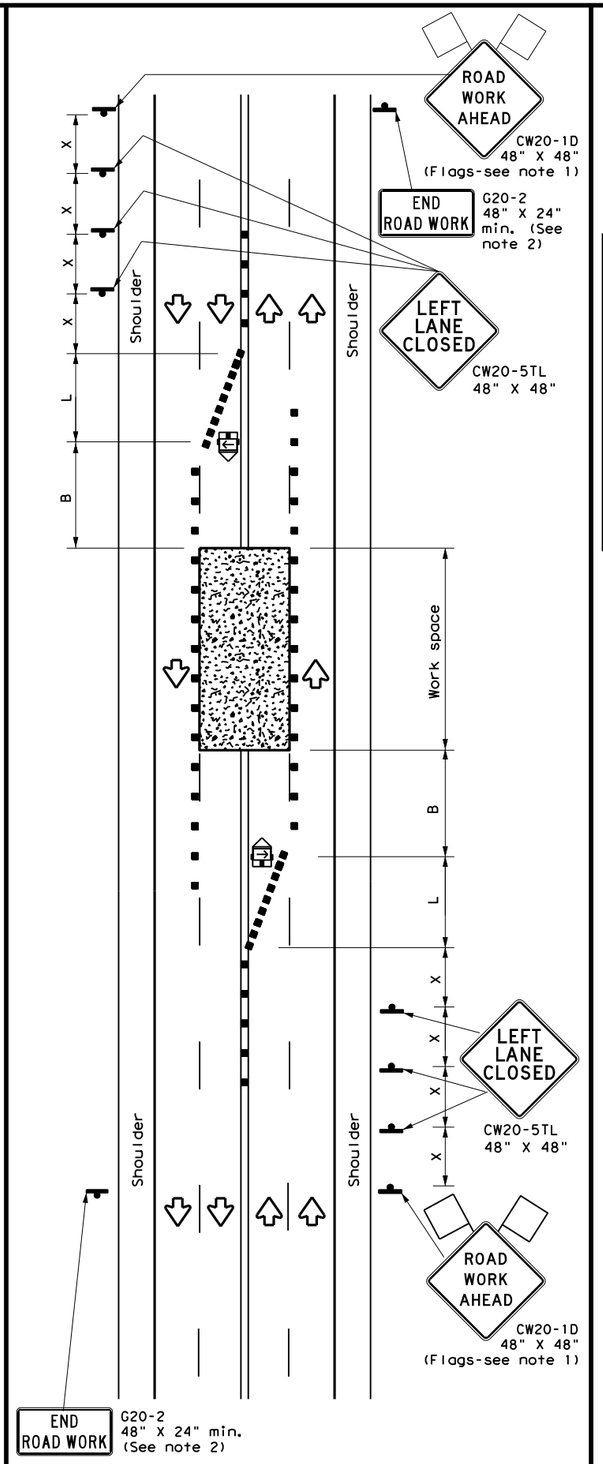
TCP (SC-2a)

ONE LANE CLOSED EACH DIRECTION
CONTROL W/ CHANNELIZING DEVICES



TCP (SC-2b)

ONE LANE CLOSED EACH DIRECTION
CONTROL W/ CHANNELIZING DEVICES



TCP (SC-2c)

CENTER LANES CLOSED
CONTROL W/ CHANNELIZING DEVICES

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
3. The ROAD WORK AHEAD (CW20-1D) sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning additional traffic control personnel (flaggers) at the intersection.
5. Temporary rumble strips are not required on seal coat operations.

TCP (SC-2a) and (SC-2b)

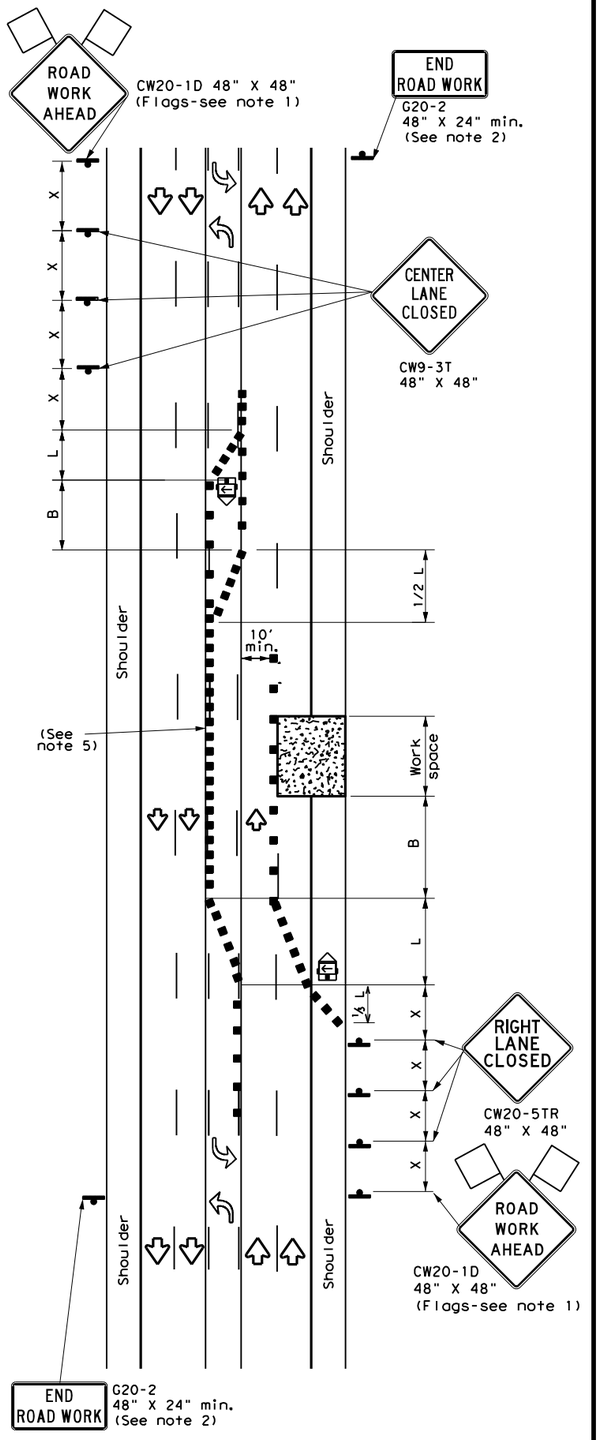
6. Channelizing devices which separate two-way traffic shall be spaced on tapers at:
   a.) 20 feet;
   b.) 15 feet when posted speeds are 35 mph or slower; or
   c.) at 1/2(S) for tangent sections.
   This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN SEALCOAT OPERATIONS MULTILANE ROADS (UNDIVIDED)
TCP(SC-2)-22

FILE: tcpsc-2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-21 10-22	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		46

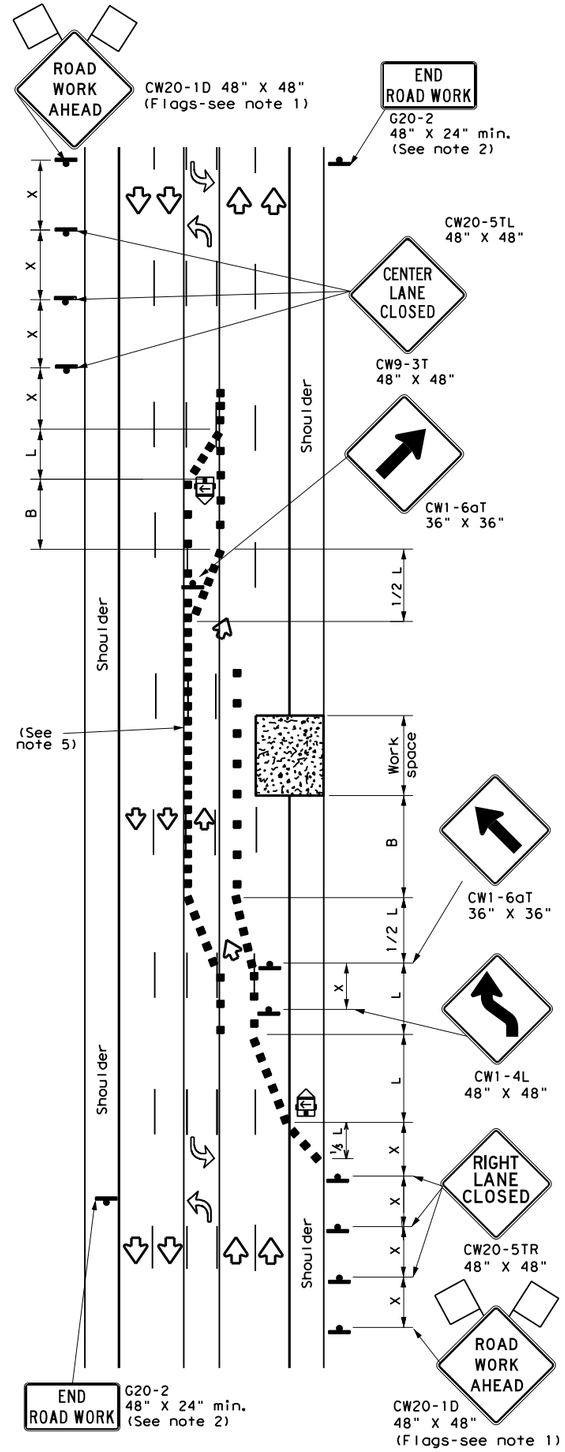
DATE: 7/6/2023 9:20:18 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0969455\tcpsc-3-22.dgn



TCP(SC-3a)

ONE LANE CLOSED

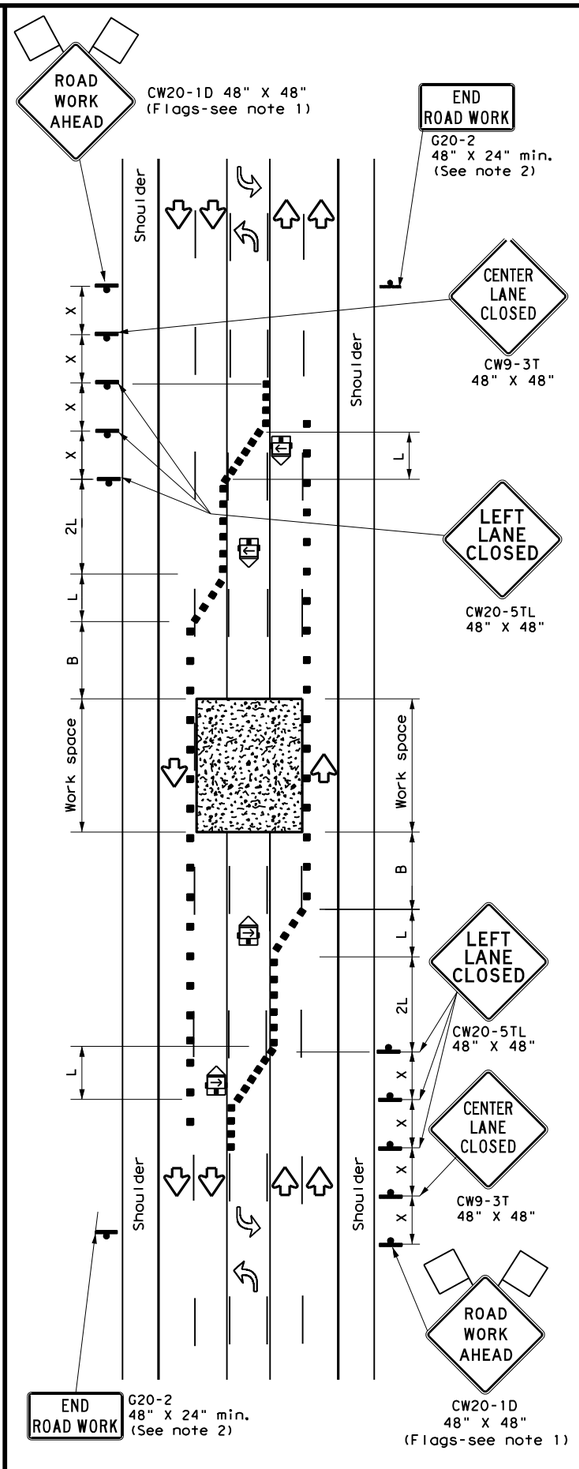
CONTROL W/ CHANNELIZING DEVICES



TCP(SC-3b)

TWO LANES CLOSED

CONTROL W/ CHANNELIZING DEVICES



TCP(SC-3c)

CENTER LANES CLOSED

CONTROL W/ CHANNELIZING DEVICES

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
3. If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning additional traffic control personal (flaggers) at the intersection.
4. Temporary rumble strips are not required on seal coat operations.

TCP (SC-3a) and (SC-3b)

5. Channelizing devices which separate two-way traffic shall be spaced on tapers at:
   a.) 20 feet;
   b.) 15 feet when posted speeds are 35 mph or slower; or
   c.) at 1/2(S) for tangent sections.
   This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

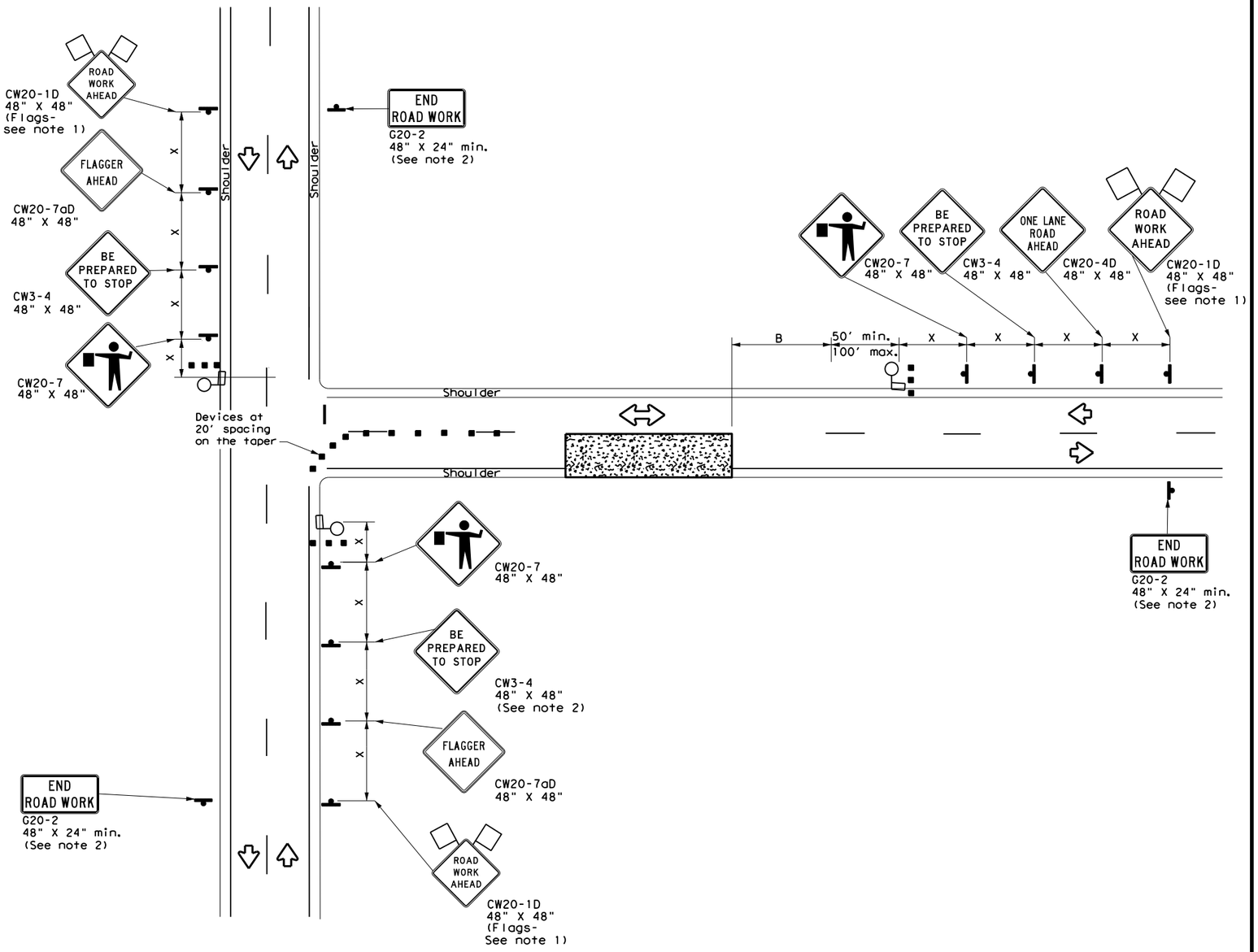
Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS MULTILANE ROADS (W/ CENTER LEFT TURN LANE)

TCP(SC-3)-22

FILE: tcpsc-3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-21 10-22	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		47

DATE: 7/6/2023 9:20:31 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\tcpsc-4-22.dgn



ONE LANE TWO-WAY (T-INTERSECTION) CONTROL WITH PILOT VEHICLE

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing Distance "X"	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

L = Length of Taper (FT) W = Width of Offset (FT) S = Posted Speed (MPH)

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
3. Flaggers should use two-way radios or other methods of communication at all times for traffic control coordination.
4. Flaggers should use 24" STOP (CW20-8) / SLOW (CW20-8aT) paddles to control traffic. Flags should be limited to emergency situations.
5. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
6. Temporary rumble strips are not required on seal coat operations.
7. The pilot car is used to guide vehicles through traffic control zone. The pilot car shall have an identification name displayed and PILOT CAR, FOLLOW ME (G20-4) sign or message board mounted in a conspicuous position on rear.

Texas Department of Transportation | Traffic Safety Division Standard

TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS NEAR INTERSECTION

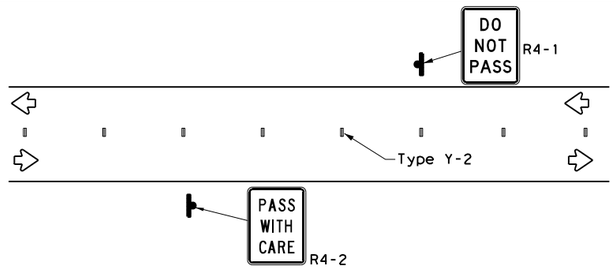
TCP(SC-4)-22

FILE: tcpsc-4-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-21 10-22	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		48

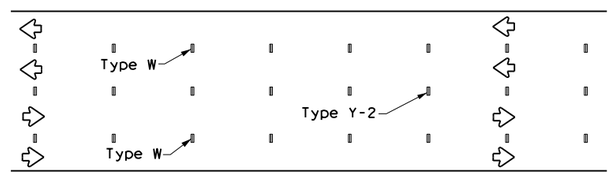
220

DATE: 7/6/2023
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\tcpsc-7-22.dgn

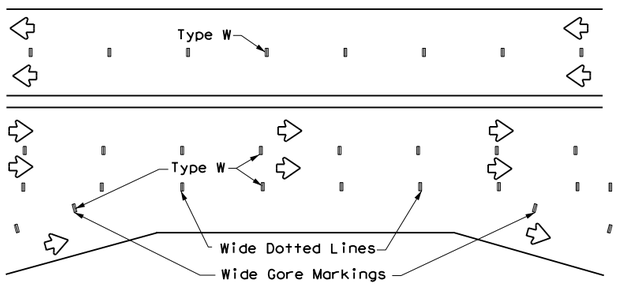
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS (TABS)



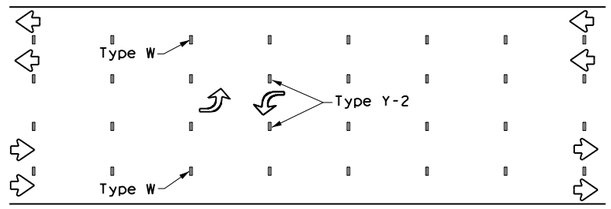
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS

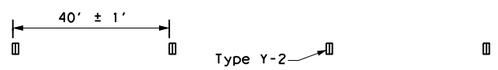
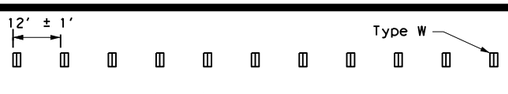


LANE LINES FOR DIVIDED HIGHWAY

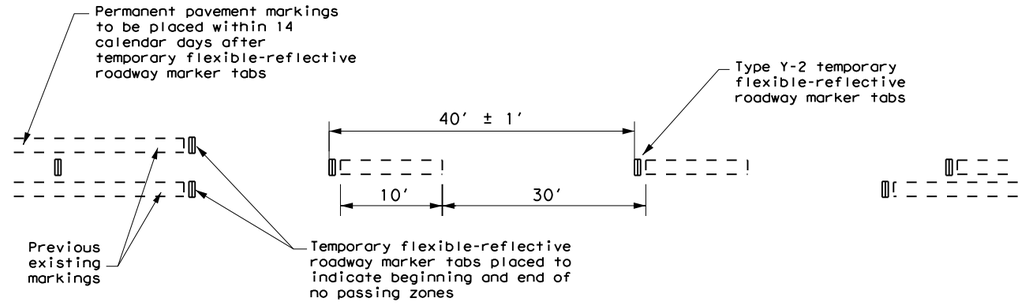


TWO-WAY LEFT TURN LANE

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS (TABS)

SOLID LINES	DOUBLE NO-PASSING LINE	
	SINGLE NO-PASSING LINE or CHANNELIZATION LINE	
	8" WIDE SOLID LINE	
BROKEN LINES (FOR CENTER LINE OR LANE LINE)		
WIDE DOTTED LINES (FOR LANE DROP LINES)		
WIDE GORE MARKINGS		

TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS



TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS

1. Temporary markings for surfacing projects shall be Temporary Flexible-Reflective Roadway Marker Tabs with protective cover unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement no more than two days before the surfacing is applied. After the surfacing is rolled and swept, the protective cover over the reflective strip shall be removed.
2. Temporary Flexible-Reflective Roadway Marker Tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with a yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
3. Temporary Flexible-Reflective Roadway Marker Tabs will require normal maintenance replacement when used on roadways with an Average Daily Traffic (ADT) per lane of up to 7500 vehicles with no more than 10% truck mix. When roadway volumes exceed these values, additional maintenance replacement of these devices should be planned for.
4. 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.
5. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 4.
6. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
7. Tabs shall NOT be used to simulate edge lines.

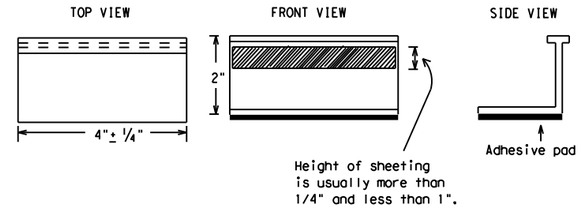
NOTES:

1. 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.
2. For exit gores where a lane is being dropped, place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are NOT acceptable.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above may be found along with embedded links to their respective MPLs at the following website: http://www.txdot.gov

TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS



Texas Department of Transportation

Traffic Safety Division Standard

TEMPORARY PAVEMENT MARKINGS FOR SEAL COAT OPERATIONS

TCP(SC-7)-22

FILE: tcpsc-7-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
4-21	DIST	COUNTY		SHEET NO.
10-22	22	VAL VERDE		49

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

TABS: 4" to 12" | 20' ± 6" | Type Y-2

TAPE: 4" to 12" | 20' ± 6" | 6" | Yellow | 4.5' ± 6"

SINGLE NO-PASSING LINE or CHANNELIZATION LINE

TABS: 20' ± 6" | Type Y-2 or W

TAPE: 20' ± 6" | 6" | 4.5' ± 6" | Yellow or White

BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

TABS: 40' ± 1' | Type Y-2 or W | 1' ± 3"

TAPE: 40' ± 1' | 6" | 4.5' ± 6" | Yellow or White

WIDE DOTTED LINES

(FOR LANE DROP LINES)

TABS: 12' ± 6" | 4" ± 1" | 3' ± 3" | Type W

TAPE: 12" | 12' ± 6" | 3' ± 3" | White

WIDE GORE MARKINGS

TABS: 20' ± 6" | 4" ± 1" | Type W

TAPE: 12" | 20' ± 6" | 4.5' ± 6" | White

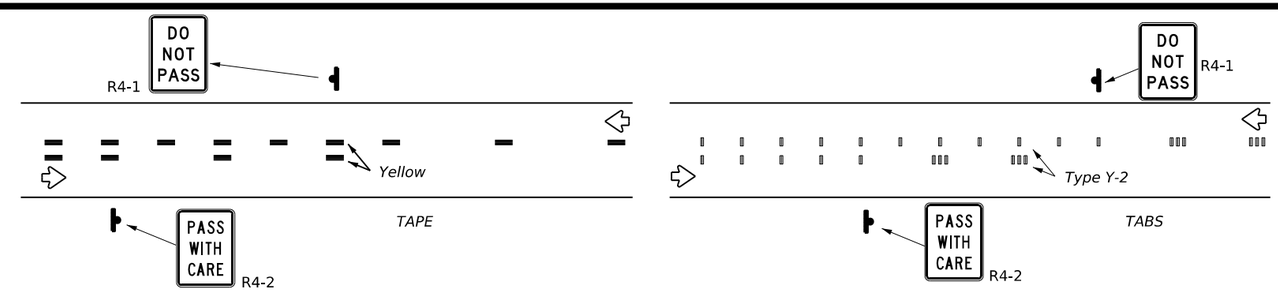
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

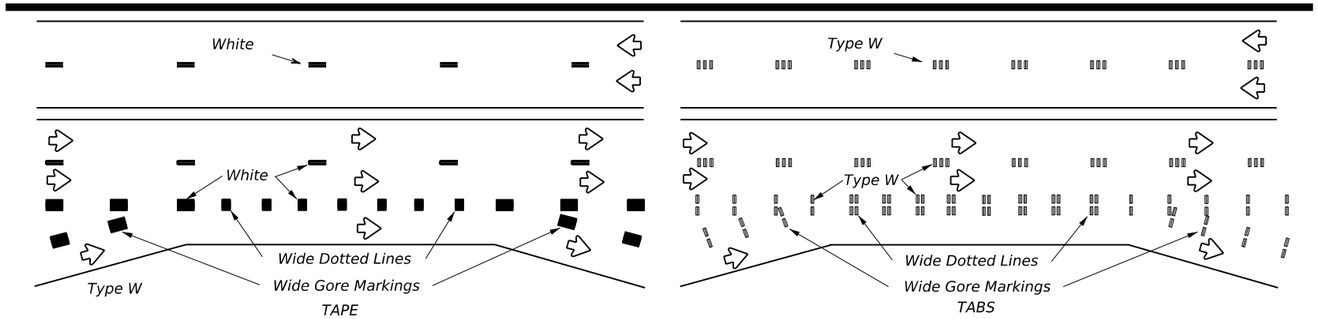
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

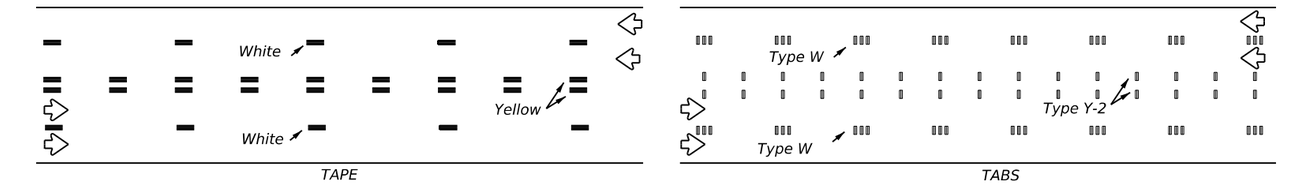
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



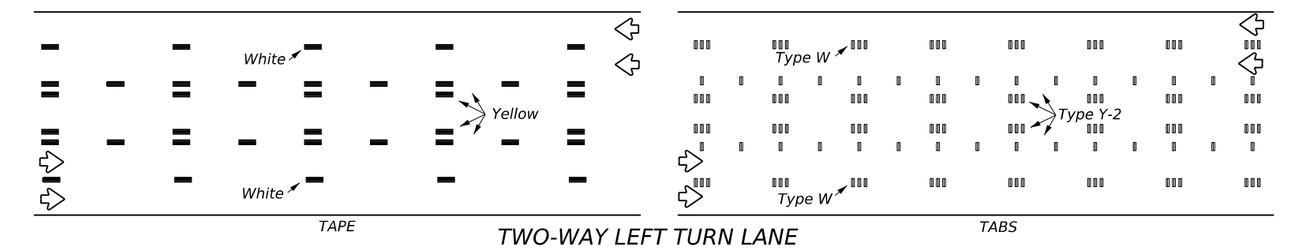
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



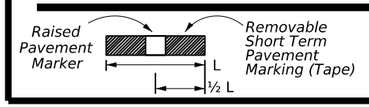
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

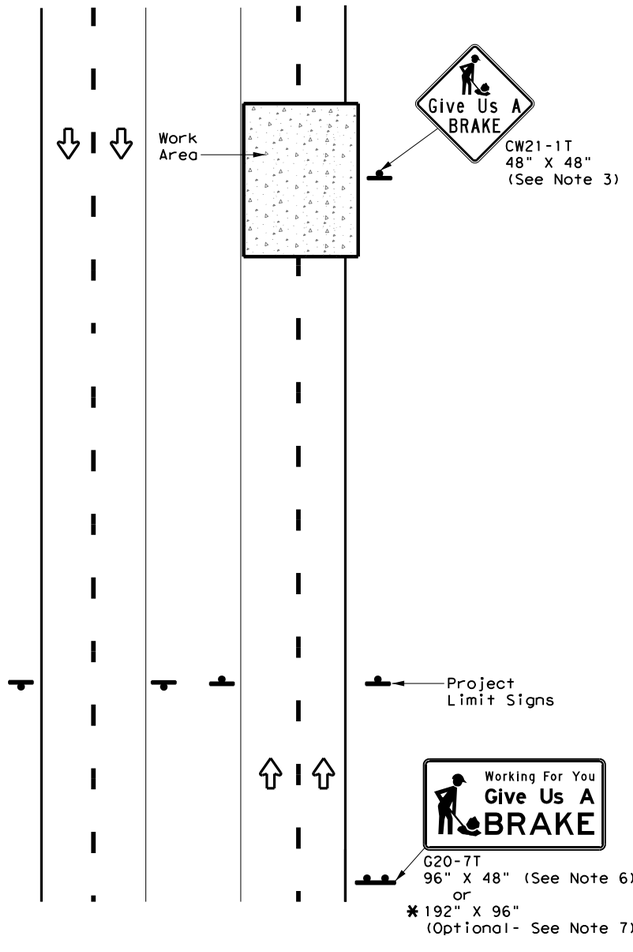
WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

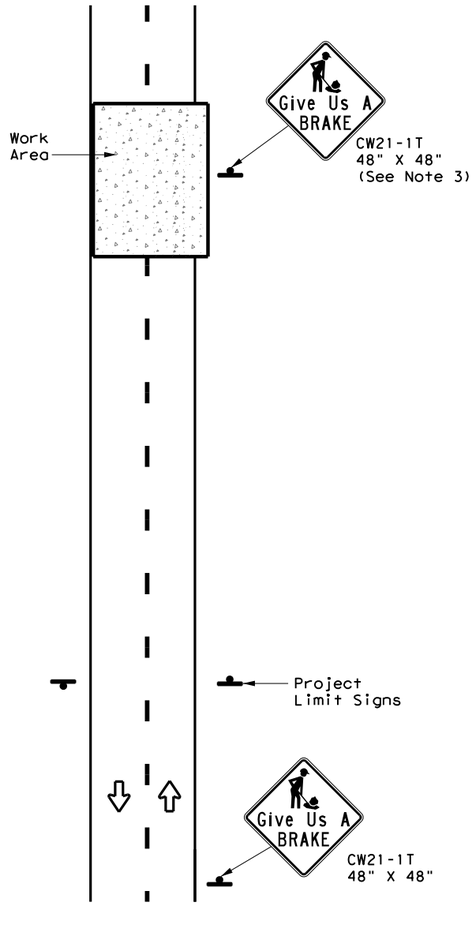
FILE: wzstpm-23.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
4-92 7-13	DIST	COUNTY		SHEET NO.
1-97 2-23	22	VAL VERDE		50
3-03				

111

DATE: 7/6/2023 9:20:54 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969455\wz(stpm)-23.dgn



DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

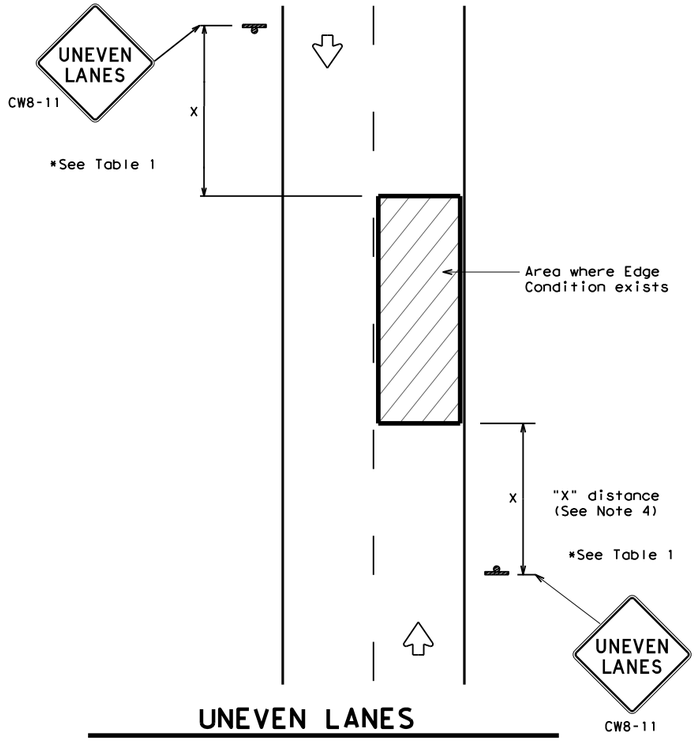
Texas Department of Transportation

Traffic Operations Division Standard

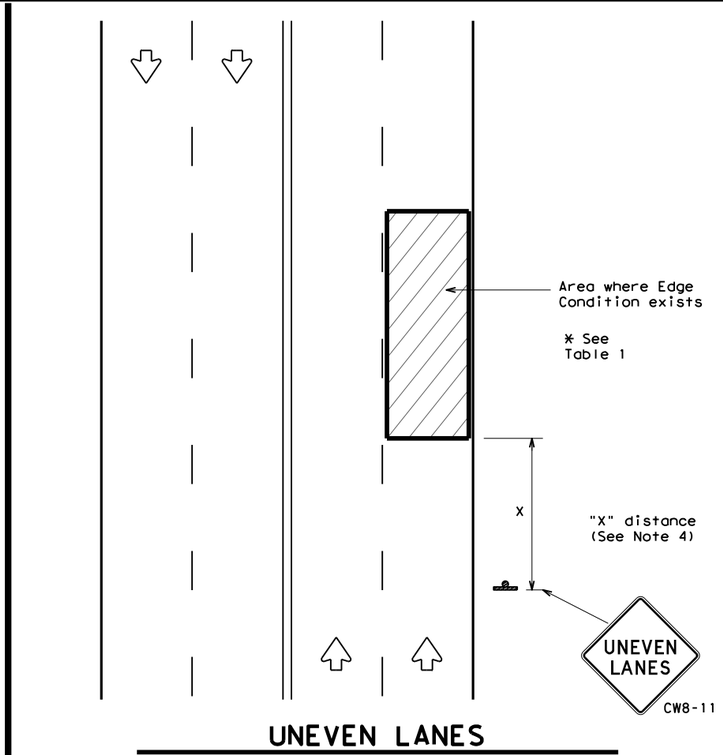
WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

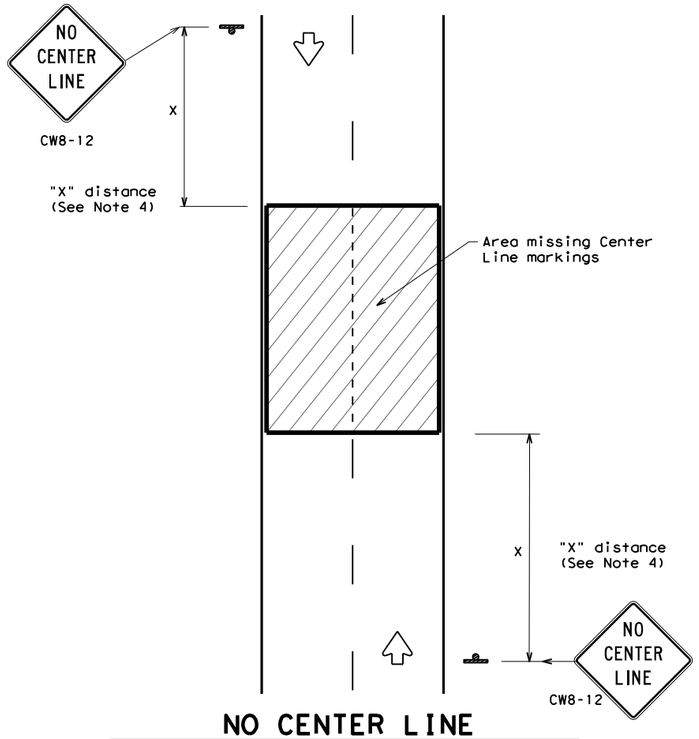
FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	22	VAL VERDE		51



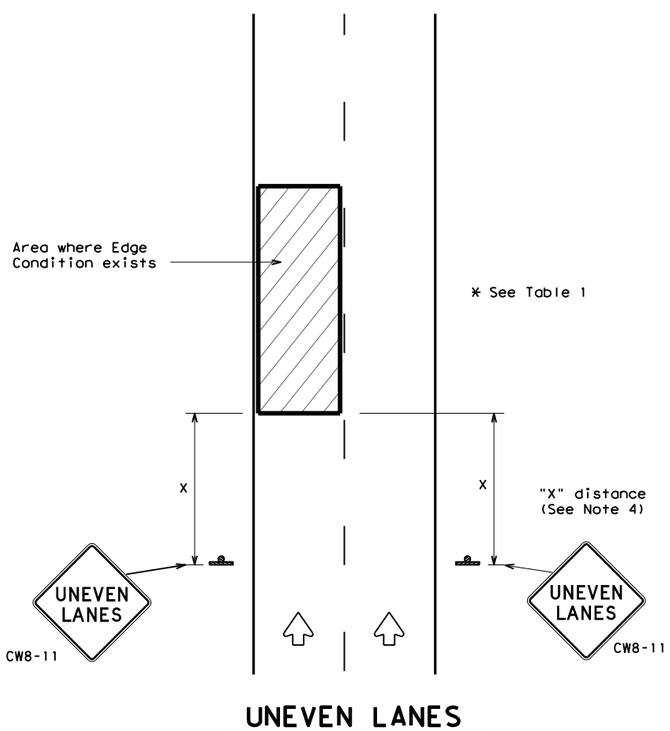
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

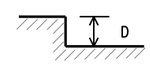
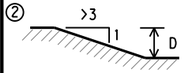
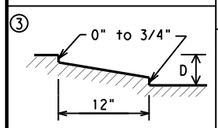
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

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

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

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

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

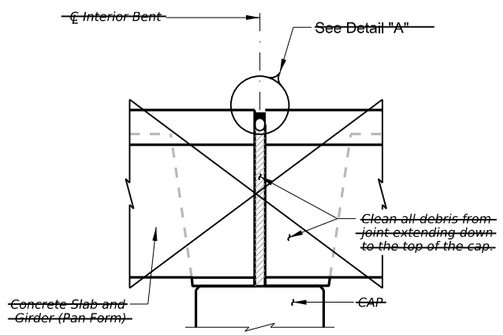
Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

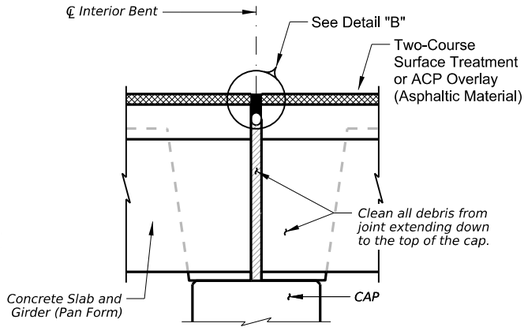
WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	22	VAL VERDE		52



JOINT WITH SILICONE SEAL

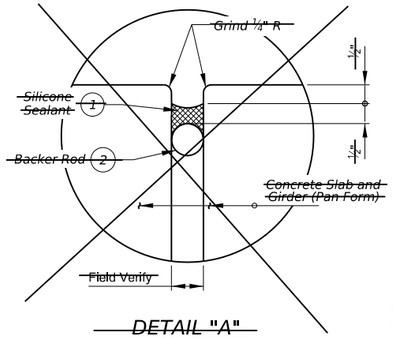
(used without ACP Overlay)



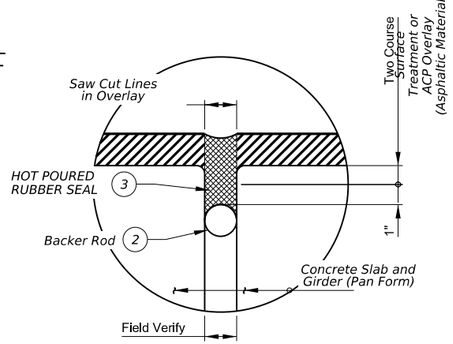
JOINT WITH HOT POURED RUBBER SEAL

(used with asphaltic material)

REF. LOC.# 1-PSN:22-233-0-0160-05-016
REF. LOC.# 1-PSN:22-233-0-0160-05-045
REF. LOC.# 4-PSN:22-136-0-0023-04-019
REF. LOC.# 4-PSN:22-136-0-0023-04-021
REF. LOC.# 4-PSN:22-136-0-0023-04-070
REF. LOC.# 15-PSN:22-254-0-1279-01-006



DETAIL "A"



DETAIL "B"

EXISTING CONCRETE SLAB & GIRDER JOINT REPAIR

PROCEDURE FOR CLEANING AND SEALING EXISTING CONCRETE GIRDER JOINT WITH SILICONE SEAL:

1) Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.

2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.

3) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening. Fill void below backer rod with extruded polystyrene foam.

4) Seal the joint opening with a Class 7 Silicone. Recess seal ½" below top of concrete in travel lanes and ⅛" below top of concrete in shoulders.

PROCEDURE FOR CLEANING AND SEALING EXISTING CONCRETE GIRDER JOINT WITH HOT POURED RUBBER SEAL:

1) Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a ½" minimum joint opening or match the existing joint opening. Clean joint opening of all old expansion materials/devices, bituminous materials, dirt, grease and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints."

2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.

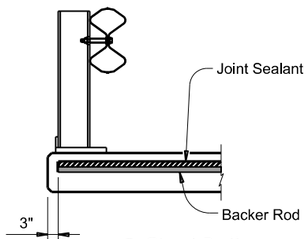
3) Place backer rod into joint opening 1" below the top of concrete. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F. The backer rod must be 25% larger than the joint opening. Fill void below backer rod with extruded polystyrene foam.

4) Seal the joint opening with a Class 3, "Hot Poured Rubber." Seal flush to the top of the asphaltic concrete pavement.

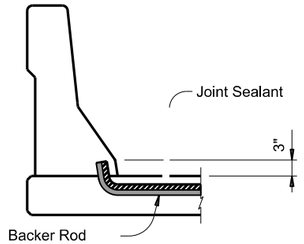
(1) Use Class 7 silicone sealant. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."

(2) Backer rod must be 25% larger than joint opening and must be compatible with the sealant.

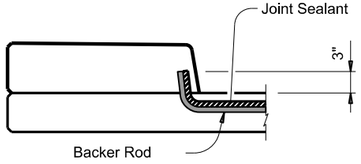
(3) Use Class 3 (Hot Poured Rubber Seal). Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."



Shown @ Steel Rail



Shown @ Concrete Barrier



Shown @ Curb

JOINT SEALANT TERMINATION DETAILS

GENERAL NOTES

Cleaning existing joint opening (full depth) of all debris, providing and placing backer rod, saw-cutting joint opening, and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the foot of "Cleaning and Sealing of Existing Joints."

Obtain approval for all tools, equipment, materials and techniques proposed for use to prepare the joint.

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. Provide Class 7 silicone sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints inconcrete.

Extend sealant up into rail or curb 3 inches on low side or sides of deck. If the Class 7 Sealant cannot be effectively placed in the vertical position, a Class 4 Sealant compatible with the Class 7 sealant is allowed for the extension of the seal into the curb or rail. Prepare surfaces where sealant is to be placed in accordance with manufacturer's specifications.

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on

7/6/2023

DocuSigned by:

3F87CF7168DC4E4...

NOT TO SCALE

Texas Department of Transportation

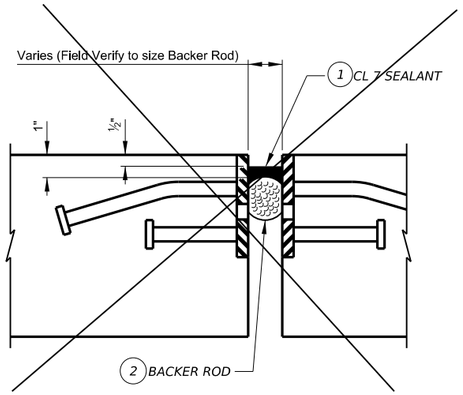
US 277, etc.

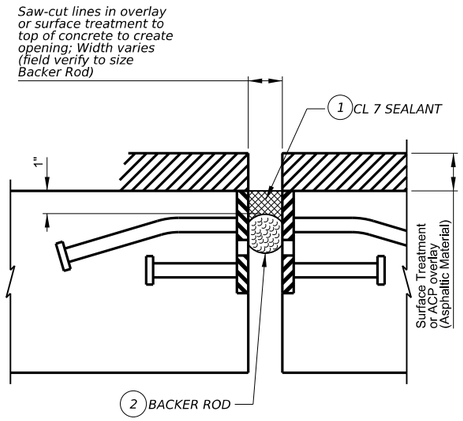
CLEANING AND SEALING EXISTING BRIDGE JOINTS

SHEET 1 OF 2

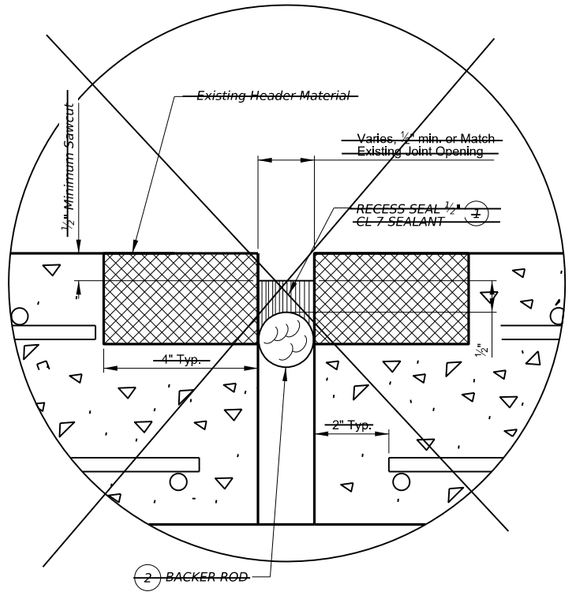
CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		53

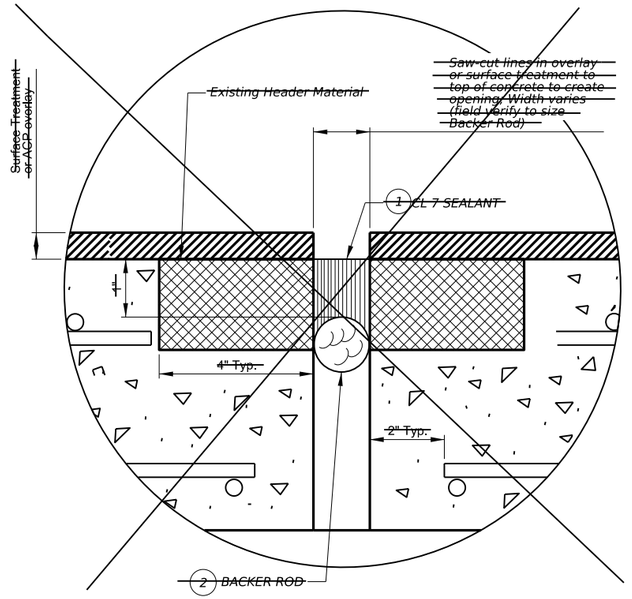
DATE: 7/6/2023 9:21:30 AM
FILE: c:\txdot\pw online\txdot15\ricardo gonzalez jr\d0754950\049 jointsealdet.dgn





REF. LOC.# 1-PSN:22-233-0-0160-05-017
REF. LOC.# 4-PSN:22-136-0-0023-04-070





CLEANING AND SEALING EXISTING ARMOR JOINTS

PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS

1a) FOR DECKS WITHOUT SURFACE TREATMENT:
Remove existing seal.

1b) FOR DECKS WITH SURFACE TREATMENT:
Sawcut through the asphalt at the cenerline of the joint. make multiple sawcuts to create a ½" minimum joint opening or match existing joint opening. Clean joint opening of all deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints".

2) Abrasive blast clean existing steel surface where seal is to be placed.

3) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.

4) Condition of existing steel angle, plate, or rail shall be determined prior to sealing the exist joint. The entire length of existing joint shall be checked and any portion that is determined to be unsound by the Engineer shall be removed and replaced as directed by the Engineer. Compensation for any work beyond the scope of cleaning and sealing will be addressed with the Engineer.

5) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening.

6a) FOR DECKS WITH NO SURFACE TREATMENT:
Seal the joint opening with a Class 7 Sealant. Recess seal ½" below top of concrete in travel lanes and ⅛" below top of concrete in shoulders.

6b) FOR DECKS WITH SURFACE TREATMENTS:
Seal the joint opening with a Class 7 Sealant flush with top surface of deck, below the surface treatment.

~~PROCEDURE FOR CLEANING AND SEALING EXISTING HEADER JOINTS:~~

~~1a) FOR DECKS WITHOUT SURFACE TREATMENT:~~
~~Remove existing seal.~~

~~1b) FOR DECKS WITH SURFACE TREATMENT:~~
~~Sawcut through the asphalt at the cenerline of the joint, make multiple sawcuts to create a 5/8" minimum joint opening or match existing joint opening. Clean joint opening of all deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints".~~

~~2) Abrasive blast clean existing concrete where seal is to be placed.~~

~~3) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.~~

~~4) Condition of existing header material shall be determined prior to sealing the exist joint. The entire length of existsing joint shall be checked and any portion that is determined to be unsound by the Engineer shall be removed and replaced as directed by the Engineer. Compensation for any work beyond the scope of cleaning and sealing will be addressed with the Engineer.~~

~~5) Place backer rod into joint opening 1" below the top of concrete. The backer rod must be 25% larger than the joint opening.~~

~~6a) FOR DECKS WITH NO SURFACE TREATMENT:~~
~~Seal the joint opening with a Class 7 Sealant.~~
~~Recess seal 5/8" below top of concrete in travel lanes and ⅛" below top of concrete in shoulders.~~

~~6b) FOR DECKS WITH SURFACE TREATMENTS:~~
~~Seal the joint opening with a Class 7 Sealant, flush with top of header material, below the surface treatment.~~

~~CLEANING AND SEALING EXISTING HEADER JOINTS~~

(1) Use Class 7 sealant that conforms to DMS-6310. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."

(2) Backer rod must be 25% larger than joint opening and must be compatible with the sealant.

GENERAL NOTES

Verify actual joint condition and bridge configuration prior to begining work and selecting appropriate detail to be used.

Cleaning existing joint opening (full depth) if all debris, providing and placing backer rod, saw-cutting joint opening, and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the foot of "Cleaning and Sealing of Existing Joints."

Obtain approval for all tools, equipment, materials and techniques proposed for use to prepare the joint.

~~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.~~

Provide Class 7 silicone sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in concrete.

Extend sealant up into rail or curb 3 inches on low side or sides of deck. If the Class 7 Sealant cannot be effectively placed in the vertical position, a Class 4 Sealant compatible with the Class 7 sealant is allowed for the extension of the seal into the curb or rail. Prepare surfaces where sealant is to be placed in accordance with manufacturer's specifications.

STATE OF TEXAS
ELIUD DE LOS SANTOS, JR.
134359
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by ELIUD DE LOS SANTOS, JR. P.E. 134359, on
7/6/2023
DocuSigned by:
3F87CF7168DC4E4...

NOT TO SCALE

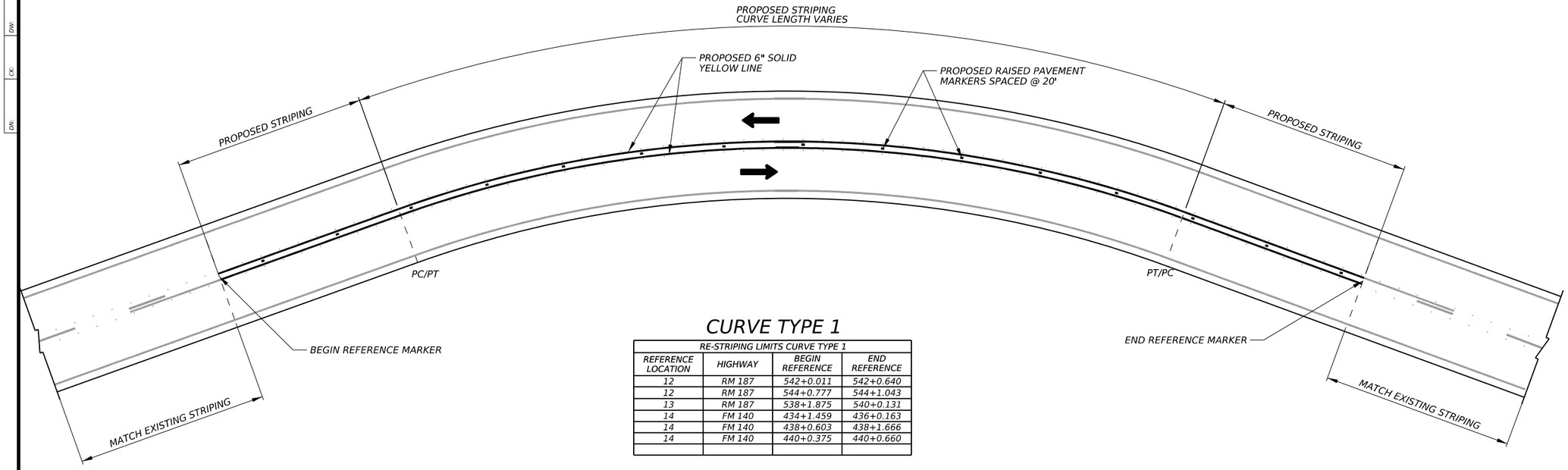
Texas Department of Transportation

US 277, etc.

CLEANING AND SEALING EXISTING BRIDGE JOINTS

CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		54

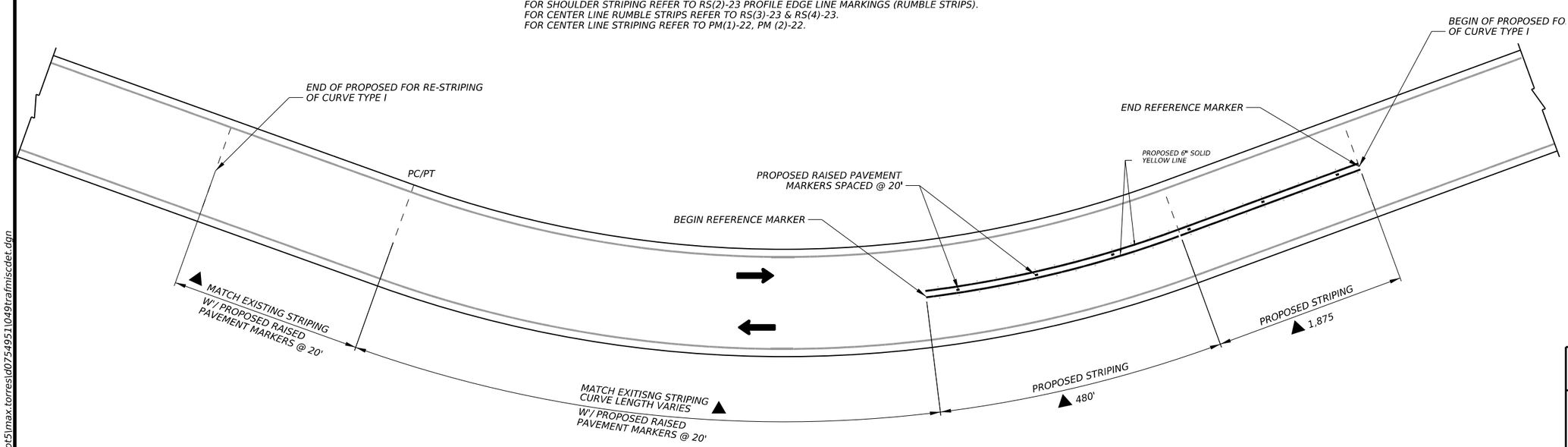
DATE: 7/6/2023 9:21:30 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.lrd\d0754950\049_jointsealdet.dgn



CURVE TYPE 1

RE-STRIPING LIMITS CURVE TYPE 1			
REFERENCE LOCATION	HIGHWAY	BEGIN REFERENCE	END REFERENCE
12	RM 187	542+0.011	542+0.640
12	RM 187	544+0.777	544+1.043
13	RM 187	538+1.875	540+0.131
14	FM 140	434+1.459	436+0.163
14	FM 140	438+0.603	438+1.666
14	FM 140	440+0.375	440+0.660

NOTES:
THE INTENT OF THIS DETAIL IS TO ILLUSTRATE THE PAVEMENT MARKING AND RAISED PAVEMENT MARKERS AT CURVE LOCATION SHOW.
ALL OTHER INFORMATION SHOULD BE DEPICTED IN THE FOLLOWING:
FOR SHOULDER STRIPING REFER TO RS(2)-23 PROFILE EDGE LINE MARKINGS (RUMBLE STRIPS).
FOR CENTER LINE RUMBLE STRIPS REFER TO RS(3)-23 & RS(4)-23.
FOR CENTER LINE STRIPING REFER TO PM(1)-22, PM (2)-22.



CURVE TYPE 2

RE-STRIPING LIMITS CURVE TYPE 2			
REFERENCE LOCATION	HIGHWAY	BEGIN REFERENCE	END REFERENCE
14	FM 140	438+1.9233	440+0.026

RESTRIPE CURVE AS PER EXISTING CONDITIONS AND EXTEND NO PASSING AT EAST END OF CURVE AS SHOWN ON DETAIL

STATE OF TEXAS
DENNICE L. GARZA
114212
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by DENNICE L. GARZA P.E. 114212, on

7/31/2023

DocuSigned by:

633630C5730C4A4...

Texas Department of Transportation

US 277, etc.

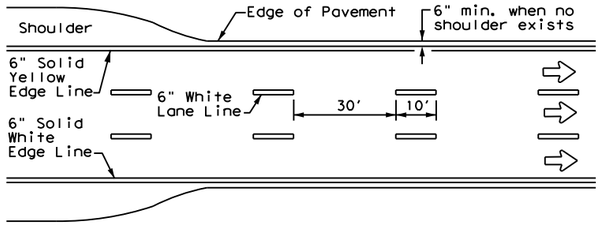
PAVEMENT MARKING
CURVE RE-STRIPING DETAIL
LOCATIONS 12 THRU 14

SHEET 1 OF 1

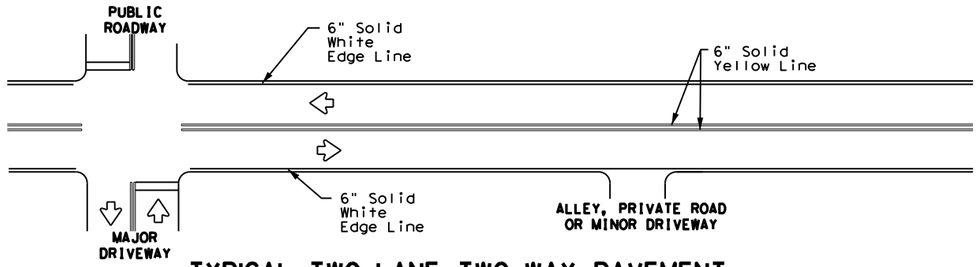
CONT	SECT	JOB	HIGHWAY
0160	05	049,etc.	US 277,etc.
DIST	COUNTY		SHEET NO.
22	VAL VERDE		54A

DATE: 7/31/2023 9:30:25 AM
FILE: c:\txdot\pw_online\txdot5\max.torres\d0754951049trafmiscdet.dgn

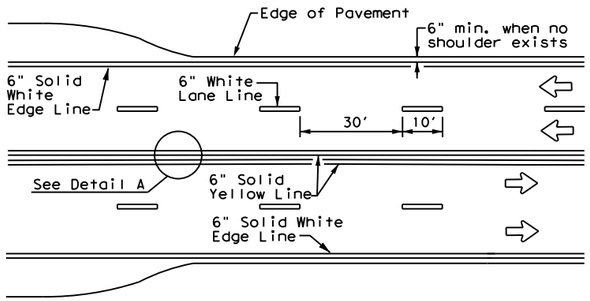
DW:
CK:
DW:
CK:

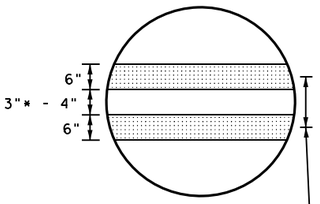


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

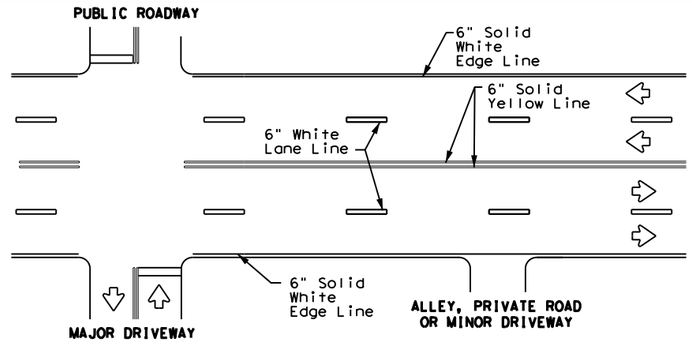




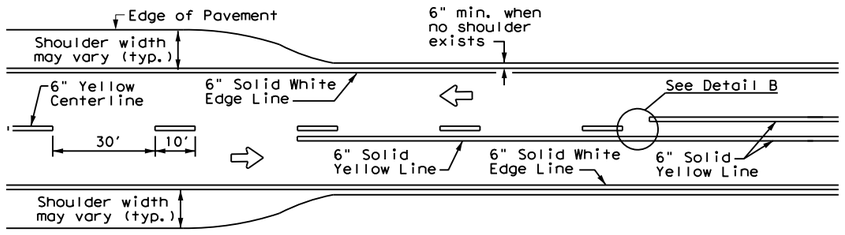
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

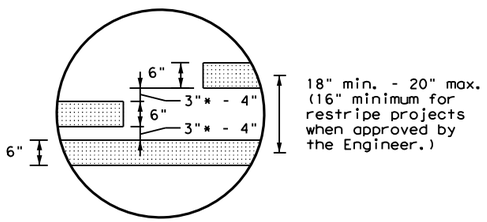
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

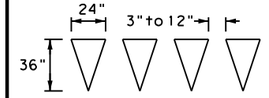


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

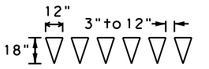


DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

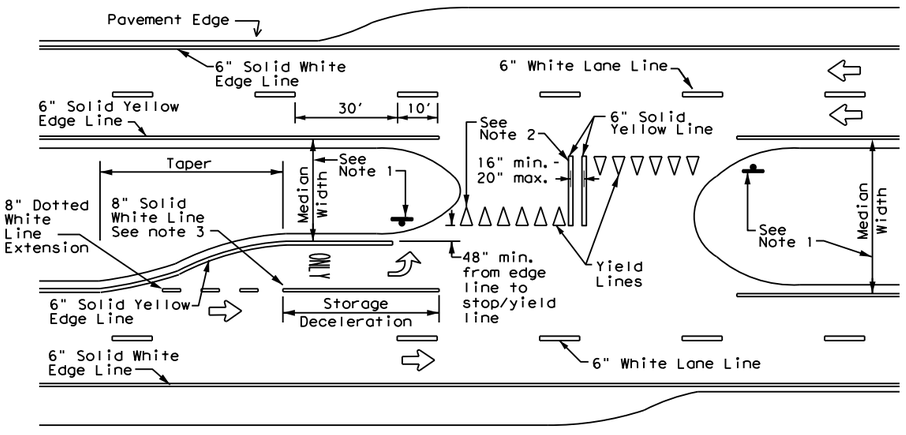


For posted speed on road being marked equal to or greater than 45 MPH.



For posted speed on road being marked equal to or less than 40 MPH.

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

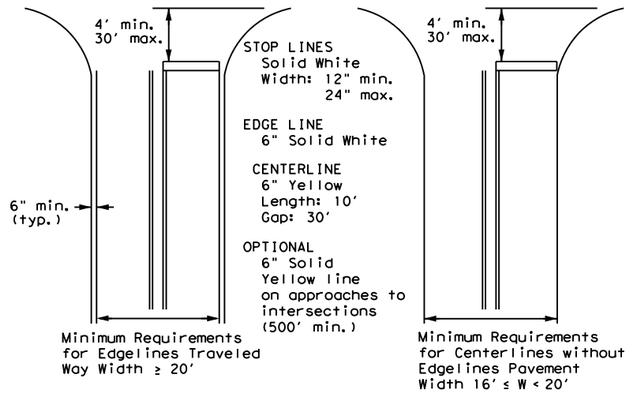
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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.
2. 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.
3. 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

1. 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.
2. 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.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

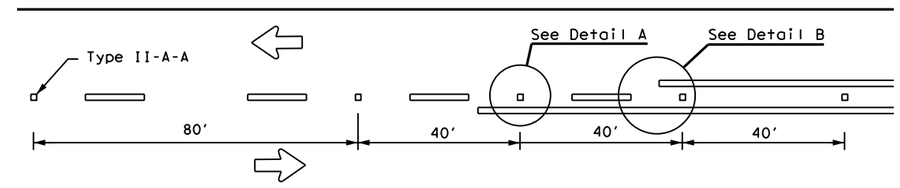
TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

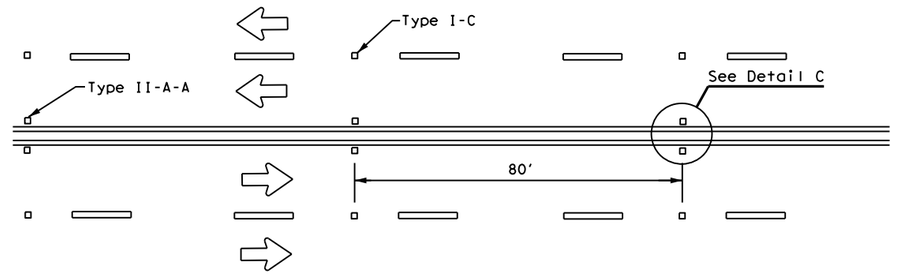
FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0160	05	049,etc.	US 277,etc.
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	22	VAL VERDE		55

22A

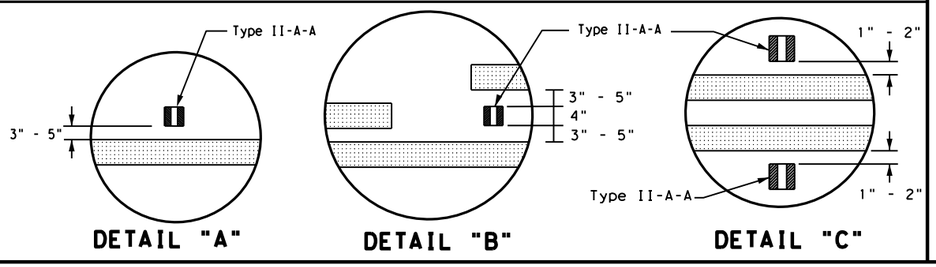
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

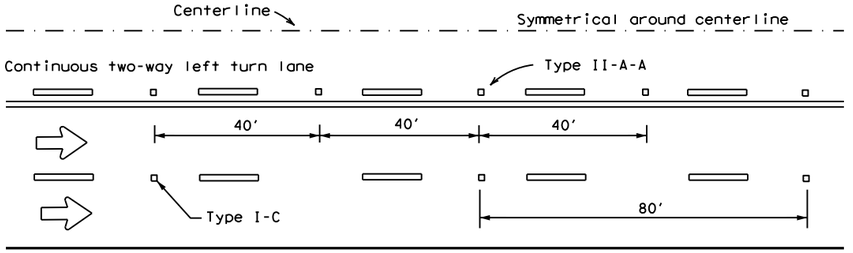


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

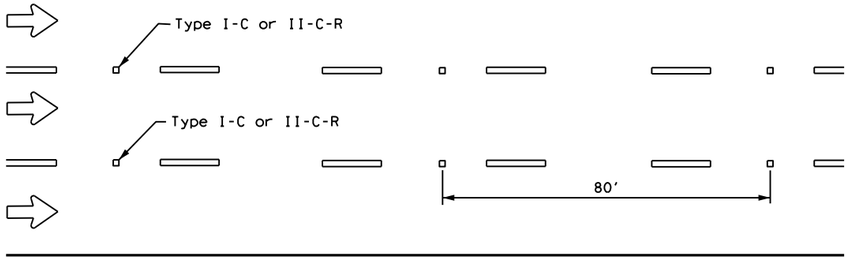


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



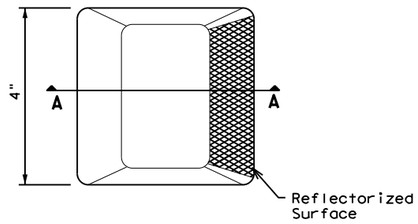
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

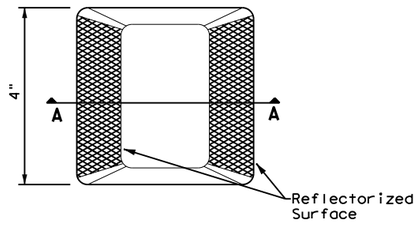
See Note 3.

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

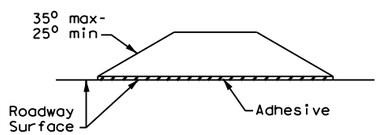
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

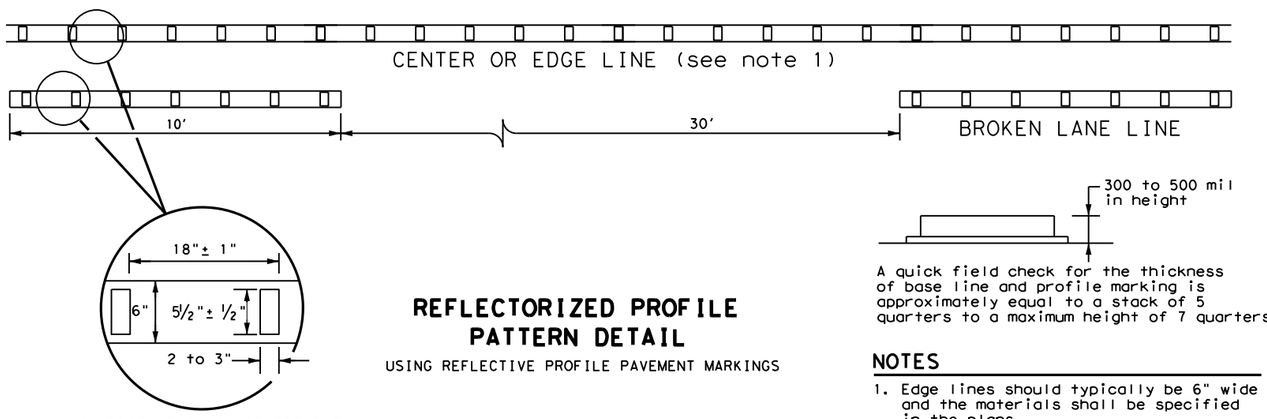


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation

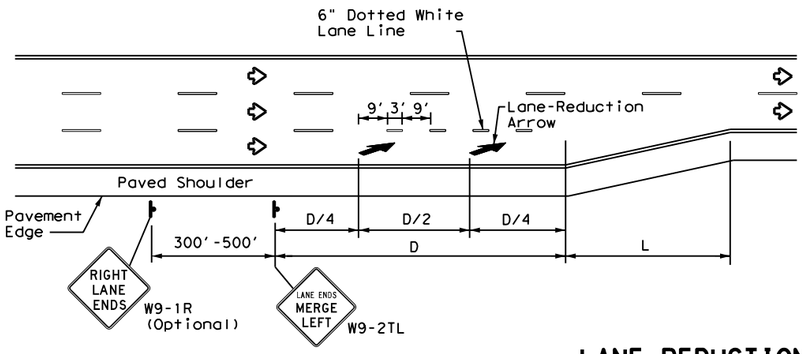
Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		56

22B

DATE: 7/6/2023 9:21:54 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969456\pm2-22.dgn

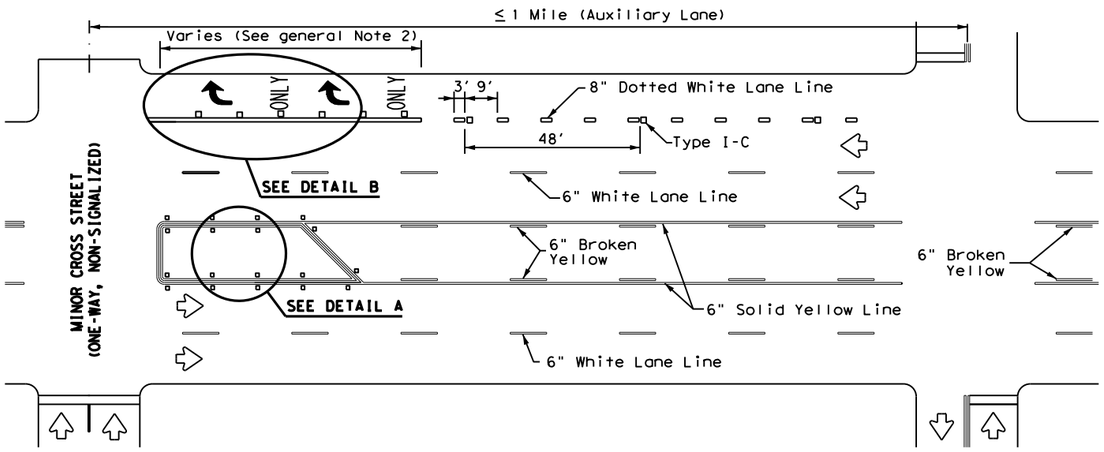


LANE REDUCTION

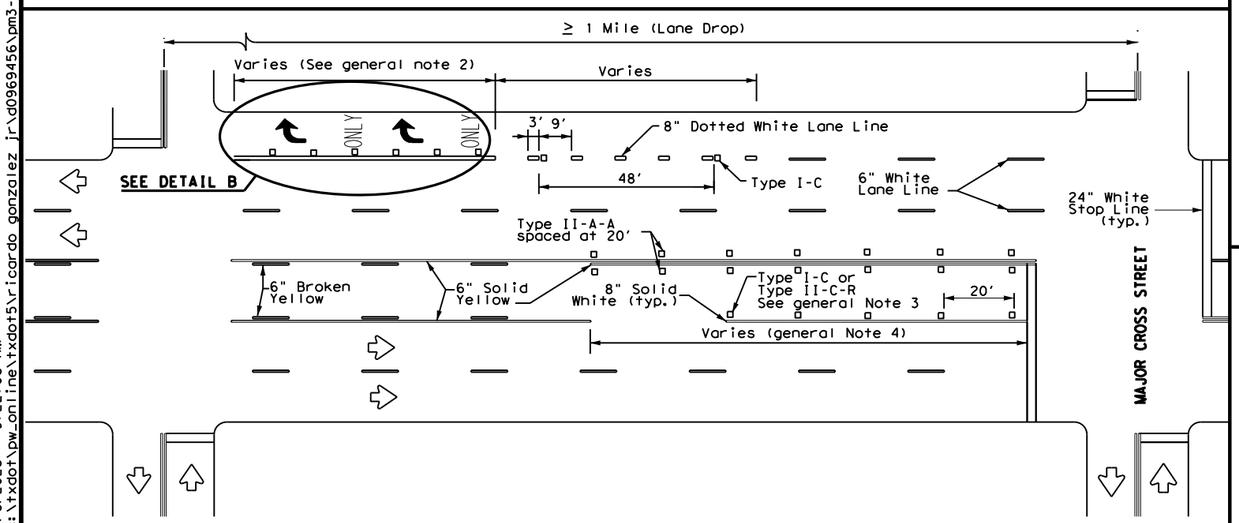
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

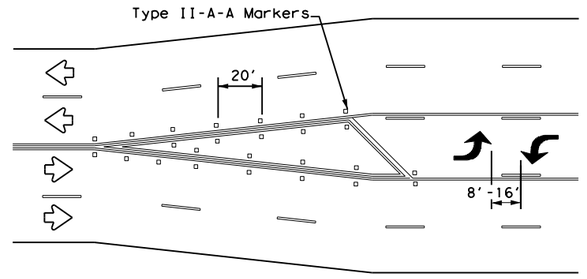
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

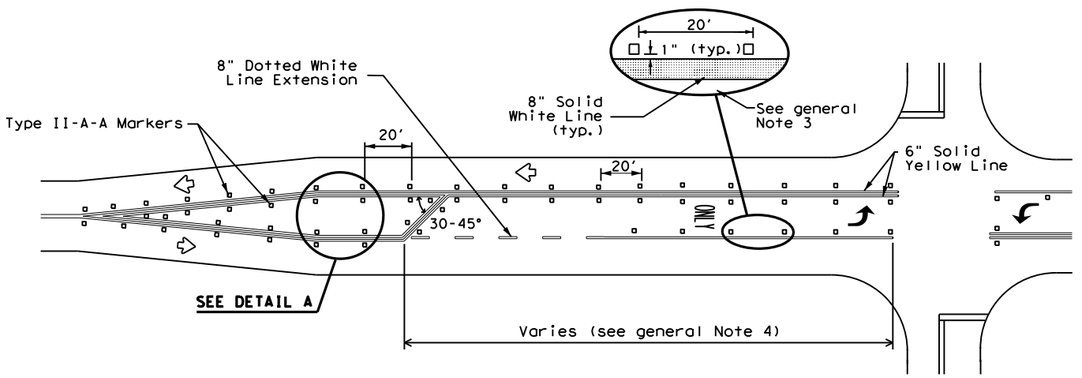
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

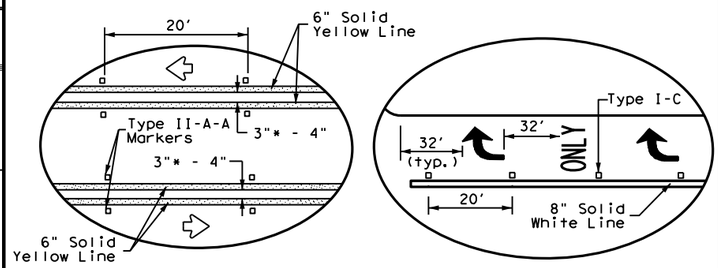
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation — Traffic Safety Division Standard

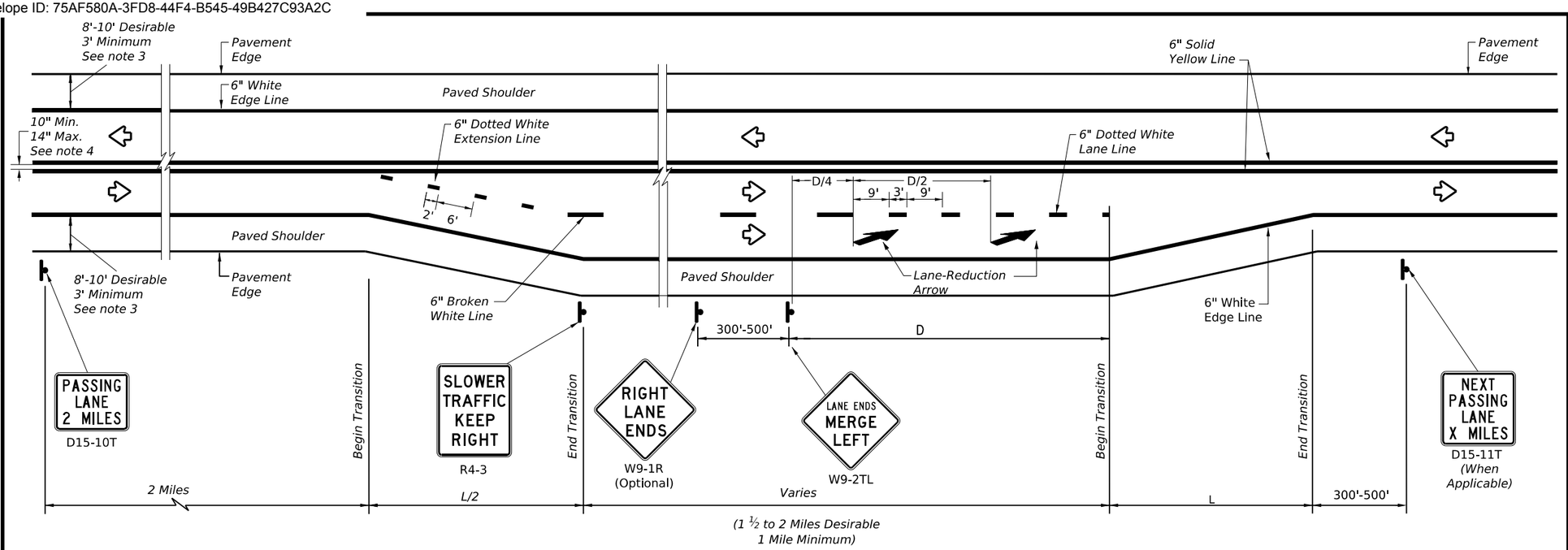
TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20	0160	05	049,etc.	US 277,etc.
5-00 2-10 12-22	DIST	COUNTY		SHEET NO.
8-00 2-12	22	VAL VERDE		57

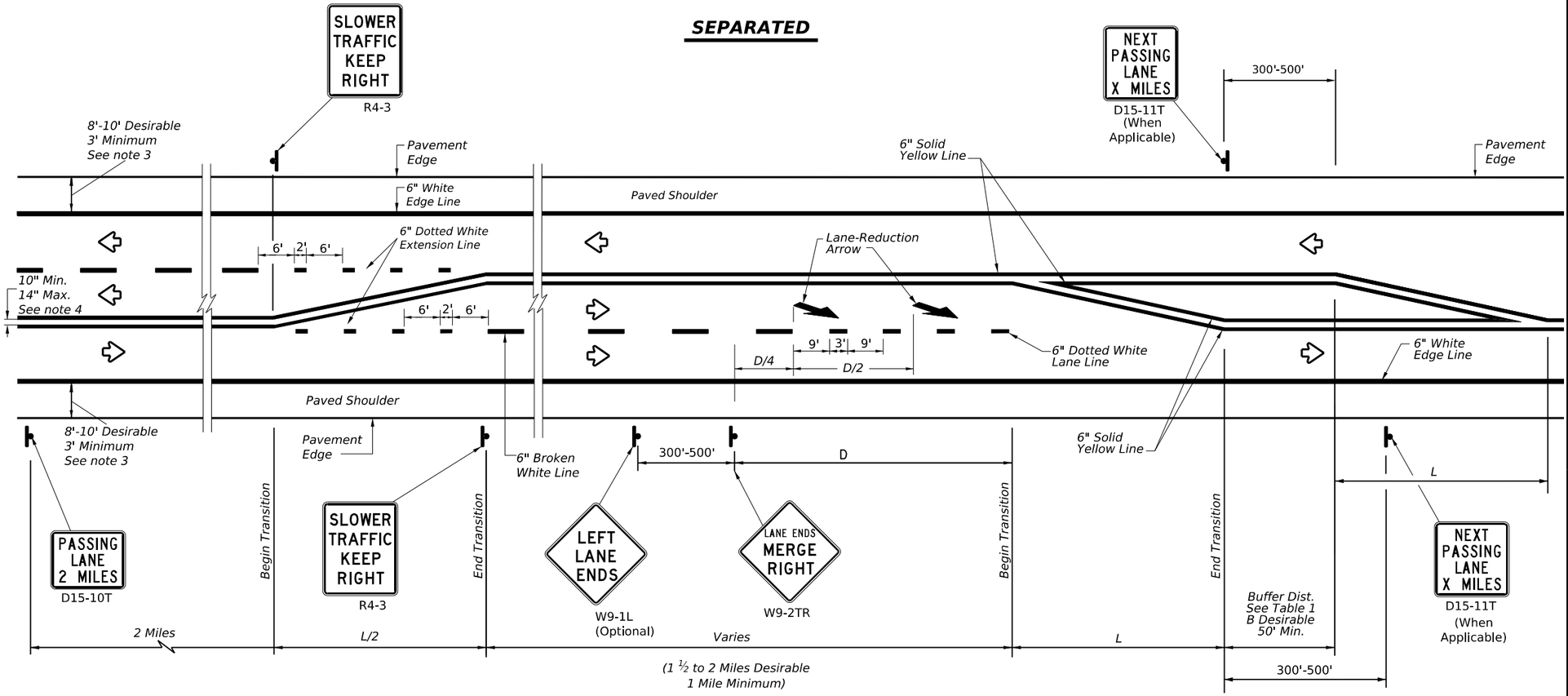
22C

DATE: 7/6/2023 9:22:06 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969456\pm3-22.dgn

DATE: 7/6/2023 9:22:18 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0969456\ts2-1-23.dgn



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

1. For minimum and desirable design details, see the Roadway Design Manual, Chapter 4, Section 6, Super 2 Highways.
2. 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.
3. For rumble strip options available for the designed shoulder width, see Rumble Strip Standard sheet RS(2).
4. For pavement marking details, see Pavement Marking Standard sheet PM(1).

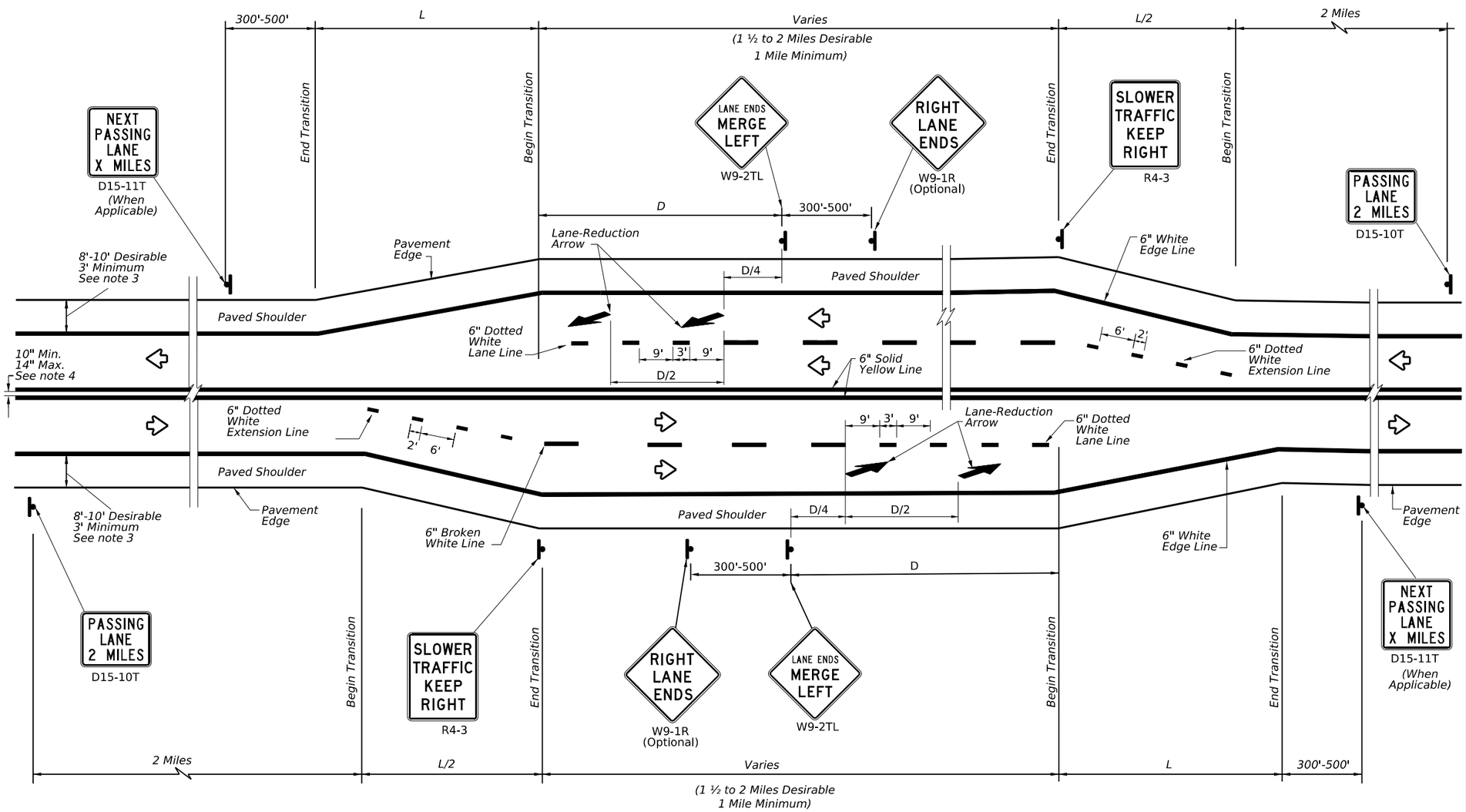
Texas Department of Transportation

Traffic Safety Division Standard

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	0160	05	049,etc.	US 277,etc.
5-10 3-18 2-12 2-23 3-12	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		58



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=12x70=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

1. For minimum and desirable design details, see the Roadway Design Manual, Chapter 4, Section 6, Super 2 Highways.
2. 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.
3. For rumble strip options available for the designed shoulder width, see Rumble Strip Standard sheet RS(2).
4. For pavement marking details, see Pavement Marking Standard sheet PM(1).

Texas Department of Transportation

Traffic Safety Division Standard

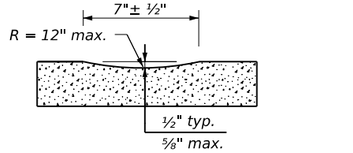
TEXAS SUPER 2 PASSING LANES

TS2(PL-2)-23

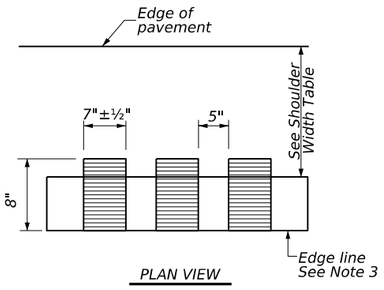
FILE: ts2-2-23.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
5-10 3-18 2-12 2-23 3-12	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		59

DATE: 7/6/2023 9:22:30 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0969456\ts2-2-23.dgn

DATE: 7/6/2023 9:22:41 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0969456\rs(2)-23.dgn

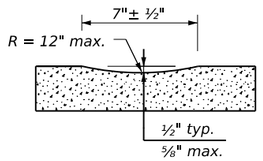


PROFILE VIEW
OPTION 1

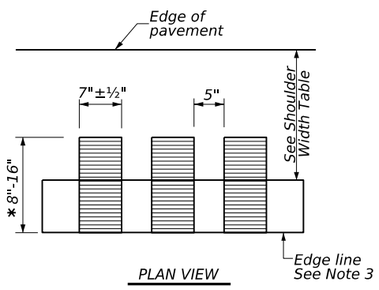


PLAN VIEW

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



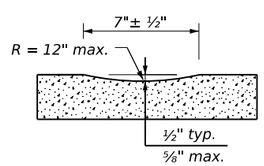
PROFILE VIEW
OPTION 2



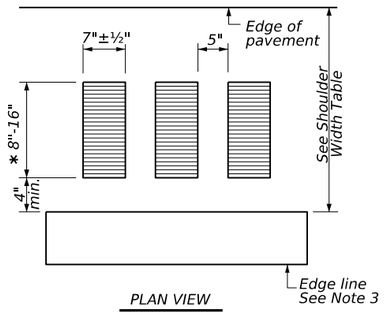
PLAN VIEW

∗ This distance may vary based on width of shoulder

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



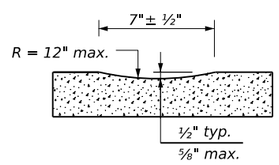
PROFILE VIEW
OPTION 3



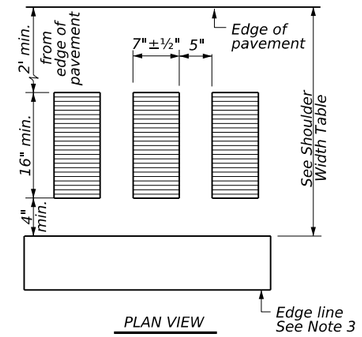
PLAN VIEW

∗ This distance may vary based on width of shoulder

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)

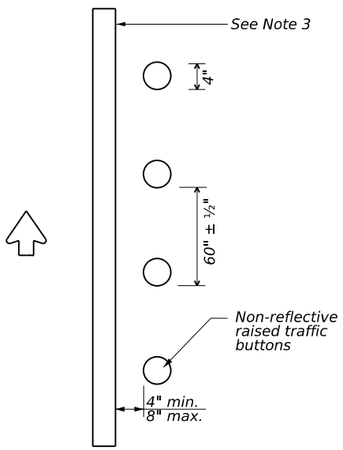


PROFILE VIEW
OPTION 4



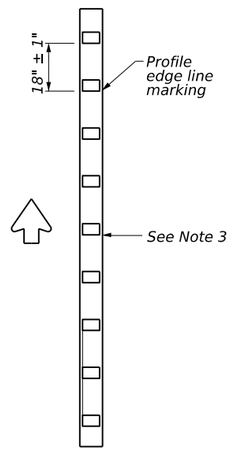
PLAN VIEW

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



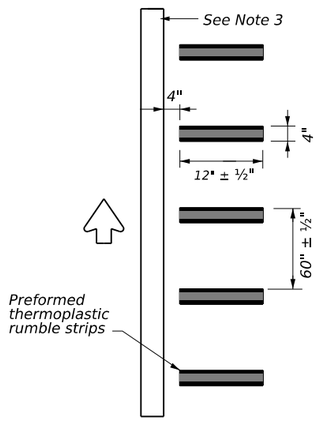
PLAN VIEW
OPTION 5

RAISED EDGE LINE (Rumble Strips)



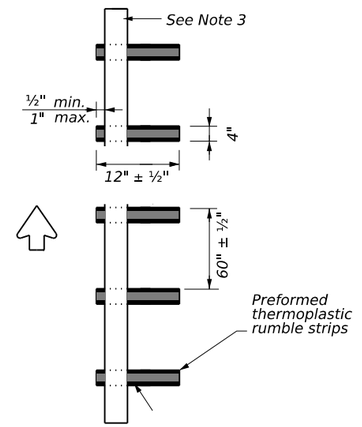
PLAN VIEW
OPTION 6

PROFILE EDGE LINE MARKINGS (Rumble Strips)



PLAN VIEW
OPTION 7

PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)



PLAN VIEW
OPTION 8

PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)

SHOULDER WIDTH TABLE		
EQUAL TO OR LESS THAN 2 FEET	GREATER THAN 2 FEET LESS THAN 4 FEET	EQUAL TO OR GREATER THAN 4 FEET
Option 1, 5, 6 or 8	Option 1, 2, 3 5, 6 or 7	Option 2, 4, 5 6 or 7

GENERAL NOTES

1. Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
2. Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
3. Use Standard Sheet PM(2) and FPM(1) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
4. See the Shoulder Width Table below for determining what options may be used for edge line rumble strips.
5. Breaks in edge line rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections, or driveways with high usage of large trucks when installed on conventional highways.
6. Rumble strips shall not be placed across exit or entrance ramps, acceleration or deceleration lanes, crossovers, gore areas, or intersections with other roadways.
7. Consideration should be given to noise levels when edgeline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
8. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING MILLED DEPRESSION EDGE LINE RUMBLE STRIPS:

9. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
10. Pavement markings can be applied over milled shoulder rumble strips to create an edge line rumble strip.

WHEN INSTALLING RAISED OR PROFILE EDGE LINE RUMBLE STRIPS:

11. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
12. Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edge line when used as a rumble strip. The color of the button should match the color of the adjacent edge line marking (white or yellow). The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
13. Non-reflective traffic buttons shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
14. The minimum distance between the edge line and the buttons should be used if the shoulder is less than 8 feet in width.
15. Raised profile thermoplastic markings used as edge lines may substitute for buttons.

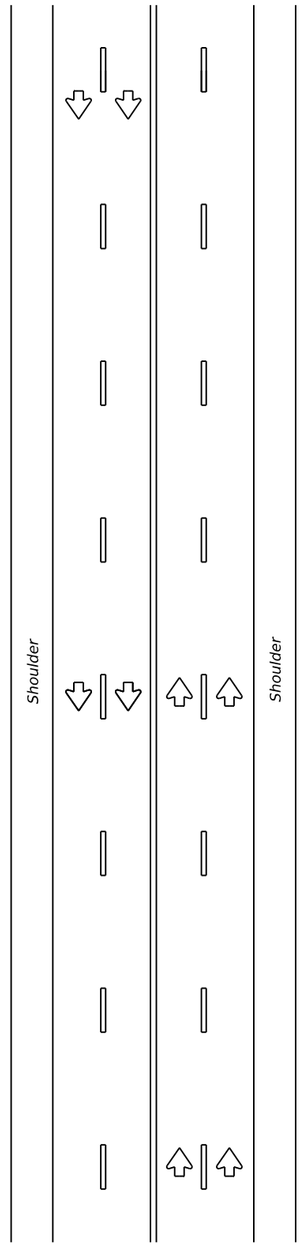
Texas Department of Transportation

Traffic Safety Division Standard

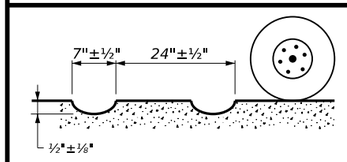
EDGE LINE RUMBLE STRIPS ON UNDIVIDED OR TWO LANE HIGHWAYS
RS(2)-23

FILE: rs(2)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
10-13 1-23	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		60

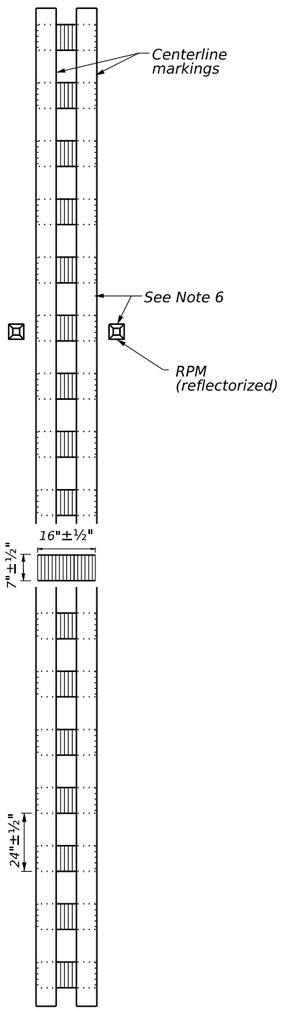
CENTERLINE RUMBLE STRIPS



MULTILANE UNDIVIDED HIGHWAY WITH SHOULDER

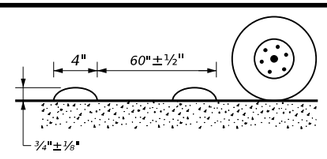


PROFILE VIEW

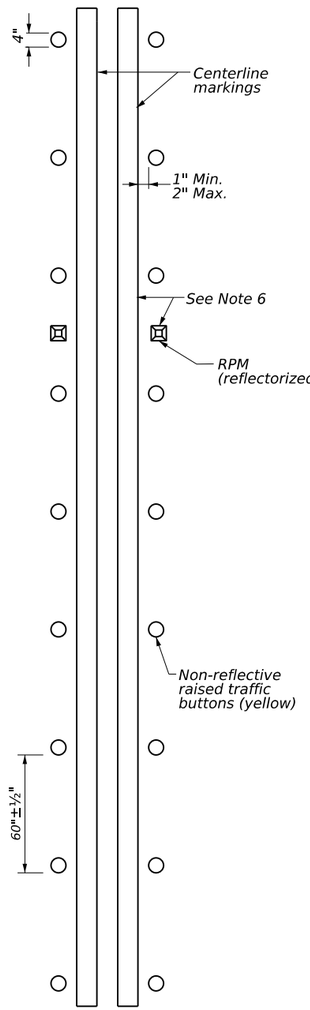


PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

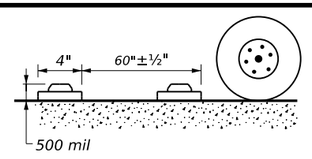


PROFILE VIEW

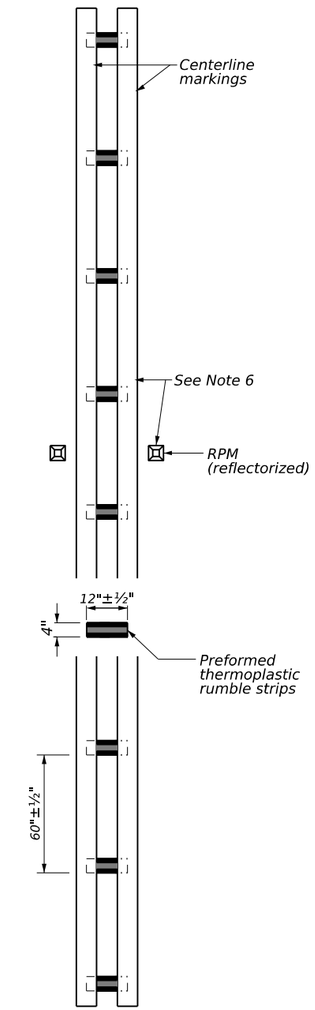


PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

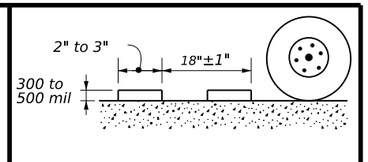


PROFILE VIEW

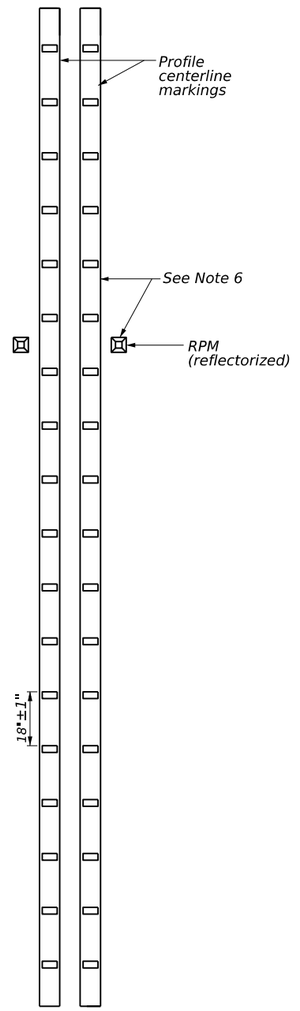


PLAN VIEW
OPTION 3

PREFORMED THERMOPLASTIC RUMBLE STRIPS



PROFILE VIEW



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS

GENERAL NOTES

1. *This standard sheet provides guidelines for installing centerline rumble strips on multilane undivided highways.*
2. *Centerline and edge line rumble strips or profile markings shall not be placedon roadways with a posted speed limit of 45 MPH or less.*
3. *Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.*
4. *See dimensions for milled rumble strips. Other shapes and dimensions may beused if approved by the Traffic Safety Division.*
5. *Breaks in milled centerline rumble strips shall occur at least 50 feet and nomore than 150 feet in advance of bridges, railroad crossing, intersections ordriveways with high usage of large trucks.*
6. *Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.*
7. *Consideration should be given to noise levels when centerline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.*
8. *Pavement markings must be applied over milled centerline rumble strips for normal centerline spacing. For wider medians, specify in the plans the exact placement of the rumble strips. Place the rumble strips under each centerline marking or centered in the middle of the median.*

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. *Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per manufacturer's recommendations.*
10. *When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The color of the button should be yellow for a continuous no passing roadway. The button will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.*
11. *Consideration shall be given to bicyclists. See RS(6).*

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

12. *See standard sheet RS(2).*

DATE: 7/6/2023 9:22:54 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0969456\rs(3)-23.dgn

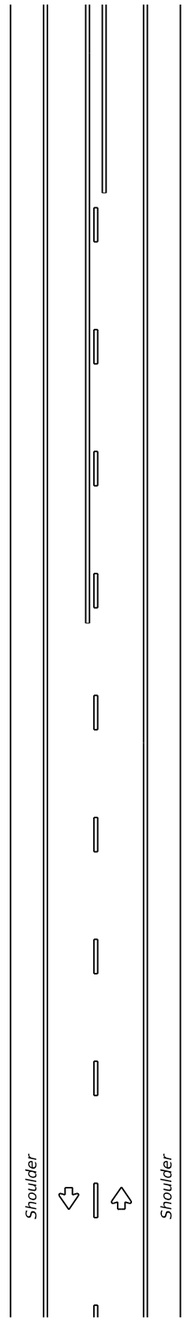
Texas Department of Transportation

Traffic Safety Division Standard

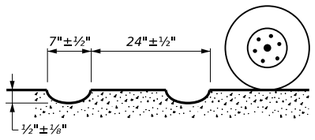
CENTERLINE RUMBLE STRIPS ON MULTILANE UNDIVIDED HIGHWAYS RS(3)-23

FILE: rs(3)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
10-13 1-23	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		61

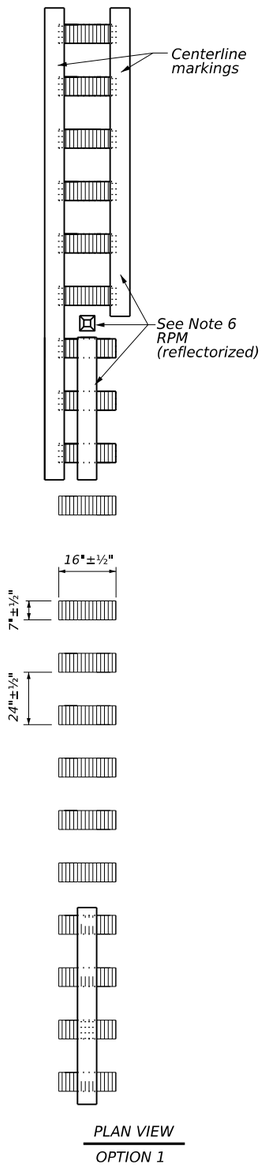
CENTERLINE RUMBLE STRIPS



TWO LANE TWO-WAY HIGHWAYS

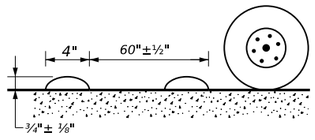


PROFILE VIEW

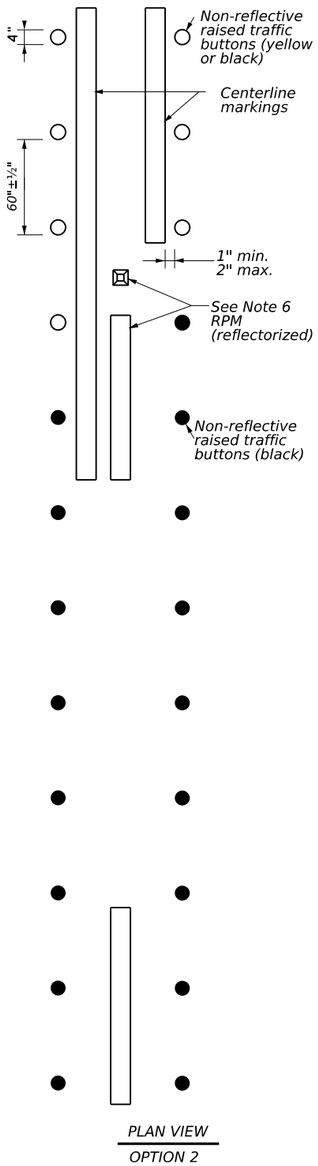


PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

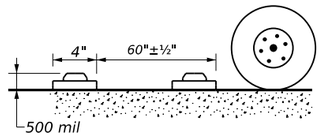


PROFILE VIEW

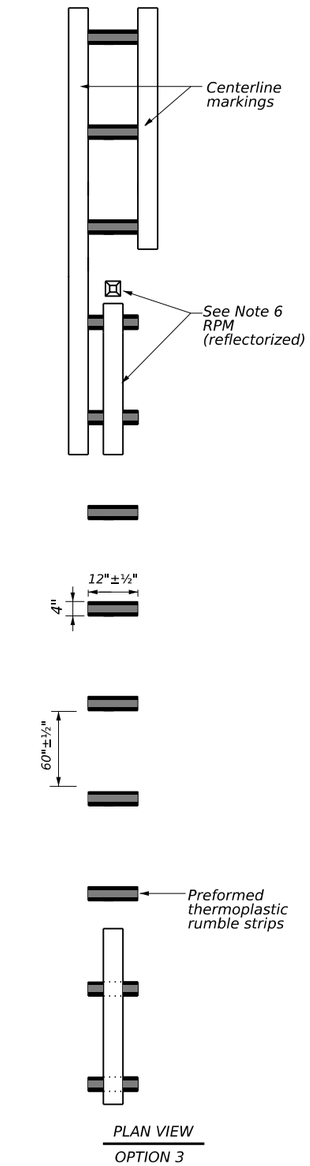


PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

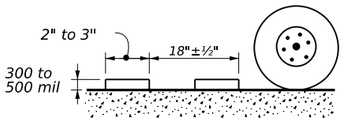


PROFILE VIEW

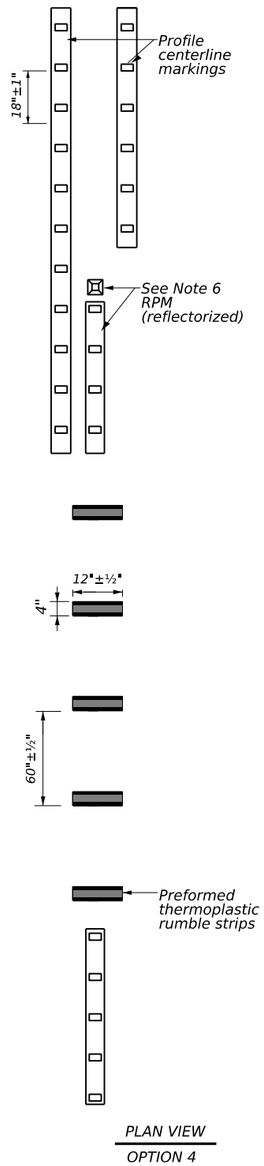


PLAN VIEW
OPTION 3

PREFORMED THERMOPLASTIC RUMBLE STRIPS



PROFILE VIEW



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS AND PREFORMED THERMOPLASTIC RUMBLE STRIPS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on two-lane highways with or without shoulders.
2. Centerline and edge line rumble strips or profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
3. Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
4. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
5. Breaks in milled centerline rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections or driveways with high usage of large trucks.
6. Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
8. Pavement markings must be applied over milled centerline rumble strips.

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per manufacturer's recommendations.
10. When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
11. The color of the button should be yellow for a continuous no passing roadway. Black buttons should be used in areas where passing is allowed.
12. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

13. See standard sheet RS(2).

DATE: 7/6/2023 9:23:06 AM
FILE: c:\txdot\pw_online\txdot5\ricardo.gonzalez.jr\d0969456\rs(4)-23.dgn

Texas Department of Transportation

Traffic Safety Division Standard

CENTERLINE RUMBLE STRIPS ON TWO LANE TWO-WAY HIGHWAYS RS(4)-23

FILE: rs(4)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0160	05	049,etc.	US 277,etc.
10-13 1-23	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		62

DATE: 7/6/2023
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0754952\EPIC - SealCoast,Overlays,GuardRailsProjects.dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required
☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.

2.

3.

4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☐ Silt Fence	☒ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☒ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ 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.

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 Horned Lizard - The Contractor will avoid harvester ant mound in the selection of PSLs where feasible
2. Texas Tortoise -The Contractor should cover utility trenches overnight, and should visually inspect all trenches before filling.
3. Reticulated Collared Lizard - This lizard may potentially occur in the project area. The Contractor shall avoid harming or handeling this species.
4. Texas Indigo Snake - This snake may potentially occur in the project area. The Contractor shall avoid harming or handeling this species.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
FHWA:	Federal Highway Administration	PSL:	Project Specific Location
MOA:	Memorandum of Agreement	TCEQ:	Texas Commission on Environmental Quality
MOU:	Memorandum of Understanding	TPDES:	Texas Pollutant Discharge Elimination System
MS4:	Municipal Separate Stormwater Sewer System	TPWD:	Texas Parks and Wildlife Department
MBTA:	Migratory Bird Treaty Act	TxDOT:	Texas Department of Transportation
NOT:	Notice of Termination	T&E:	Threatened and Endangered Species
NWP:	Nationwide Permit	USACE:	U.S. Army Corps of Engineers
NOI:	Notice of Intent	USFWS:	U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☒ No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS)	0160	05	049,etc.	US 277,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.	22	VAL VERDE		63

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☐ This project is adjacent or parallel work, not within RR ROW:

DOT No.: Loc.#4 - DOT #742856E
Crossing Type: UNDERPASS
RR Company Operating Track at Crossing: Union Pacific Railroad Company
RR Company Owning Track at Crossing: Union Pacific Railroad Company
RR MP: 322.580
RR Subdivision: Del Rio
City: Near Bracketville, TX
County: Kinney County
CSJ at this Crossing: Loc.#4 - CSJ:0023-04-067

Scope of Work, including any TCP, to be performed by State Contractor:

For all railroad crossing State Contractor will be surface treating , applying pavement markings, cleaning and sealing of existing bridge joints & equipment will be going over the crossing these crossings.

Scope of Work to be performed by Railroad Company:

For all railroad crossing Railroad Company will be flagging as support for proposed seal coating.

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1 day per location

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: TxDOT will pay flagging invoices. Flagging Agreement with Railroad will be needed
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-677

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **KCS** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate Construction Inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required. Railroad Point of Contact: _____
☑ Not Required

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits	
Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits	
☐ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____ https://bnsf.railpermitting.com
- ☐ KCS https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: Union Pacific Railroad Emergency Line
Railroad Emergency Line at: 1-800-772-7677
Location: DOT 742856E
RR Milepost: 322.580
Subdivision: Del Rio

RRD Review Only
Initials: _____
Date: 07/11/2023

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf	DN: TxDOT	CK: RG	DW: KM	CK: RG
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS 3/2023	0160	05	049 etc.	US 277, etc.
	DIST	COUNTY		SHEET NO.
	22	Val Verde etc.		64

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

A. Complete the railroad course "Orientation for Contractor's Safety", and maintain current registration prior to working on railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."

B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
A. 15' - 0" (BNSF)(UPRR)and 14'-0" (KCS) horizontal from centerline of track
B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		65

3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractors's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
   1. Pre-construction meetings.
   2. Pile driving/drilling of caissons or drilled shafts.
   3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
   4. Erection of precast concrete or steel bridge superstructure.
   5. Placement of waterproofing (prior to placing ballast on bridge deck).
   6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.

D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

   UPRR 1-800-336-9193
   7:00 AM to 9:00 PM CST Monday-Friday except holidays,
   staffed 24 hrs/day for emergencies
   48 hrs notice required

   BNSF 1-800-533-2891
   24 hour number
   5 working days notice required

   KCS 1-800-344-8377
   Texas One Call, a 24 hour number
   48 hrs notice required, excluding weekends and holidays

   If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of $\frac{1}{4}$ inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0160	05	049,etc.	US 277,etc.
	DIST	COUNTY		SHEET NO.
	22	VAL VERDE		66

DATE: 7/6/2023 9:23:43 AM
FILE: c:\txdot\pw_online\txdot5\ricardo gonzalez jr\d0754946\non-bridge-projects.dgn