FED.RD. DIV.NO.	FEDERAL PROJECT NO.		SHEET NO.
6	F 2023 (054)		1
STATE	STATE DIST.	COUNTY	
TEXAS	AMA	POTTER, ETC	
CONT.	SECT.	JOB	HIGHWAY NO.
0904	00	200, ETC	VARIOUS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT
FEDERAL PROJECT: F 2023 (054)
HIGHWAY - VARIOUS
POTTER COUNTY, ETC.

2023 AMARILLO DISTRICT CRACK SEAL PROJECTS

FOR THE CONSTRUCTION OF CRACK SEAL TYPE WORK
LIMITS: VARIOUS LOCATIONS IN THE AMARILLO DISTRICT
NET LENGTH: 523.248 MILES

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX OF SHEETS

FC 1-5: 0904-00-200

FOR THE CONSTRUCTION OF CRACK SEAL TYPE WORK
LIMITS: VARIOUS LOCATIONS IN THE AMARILLO DISTRICT

NET LENGTH: 427.470 MILES

FC 6: 0904-00-201

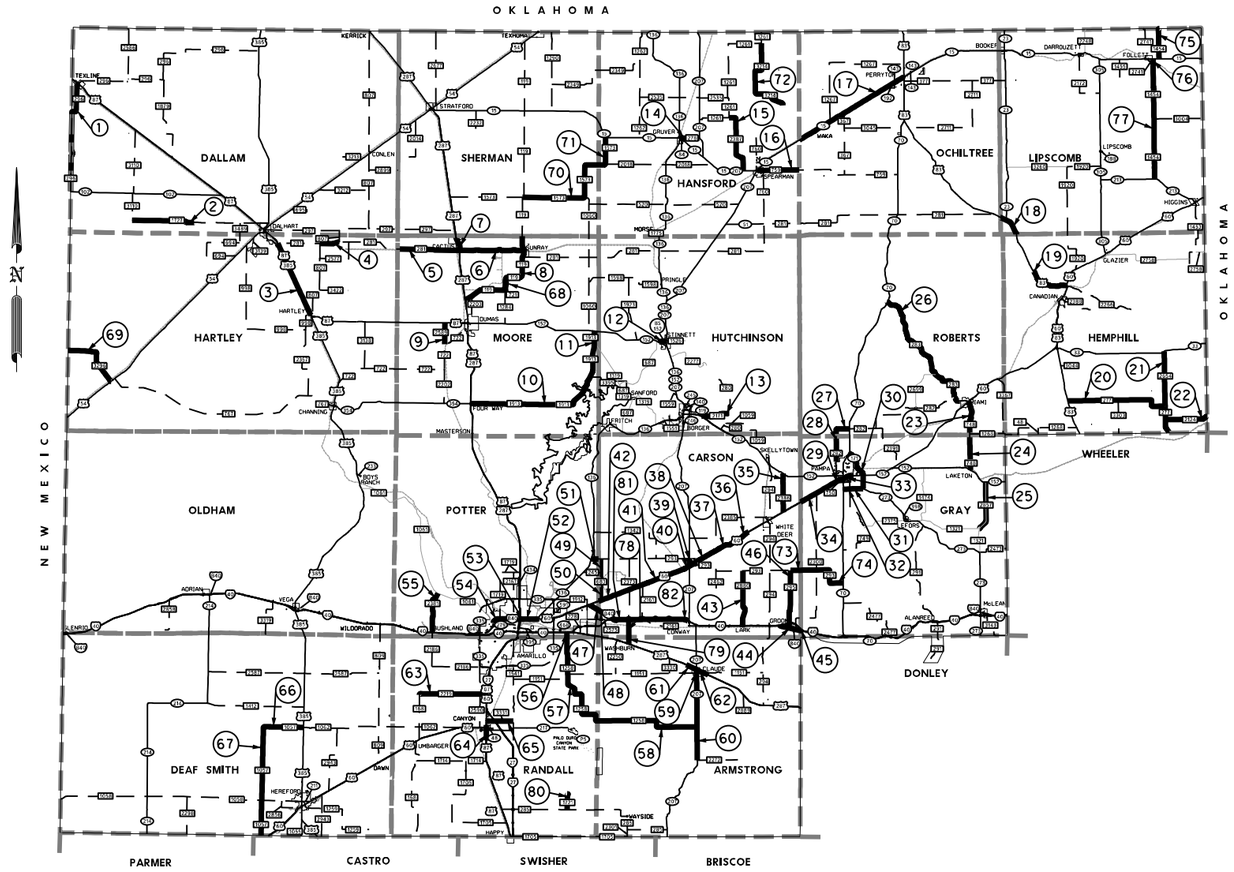
FOR THE CONSTRUCTION OF CRACK SEAL TYPE WORK
LIMITS: VARIOUS LOCATIONS IN THE AMARILLO DISTRICT

NET LENGTH: 95.011 MILES

ROBERTS COUNTY AIRPORT: 0904-10-003

FOR THE CONSTRUCTION OF CRACK SEAL TYPE WORK
LIMITS: RUNWAYS ONLY WITHIN THE AIRPORT

NET LENGTH: 0.767



EXCEPTIONS:

(REF #06)	FM 281	MOORE COUNTY (WITHIN RAILROAD RIGHT-OF-WAY LIMITS ONLY)	DOT# 595895P (TXNW)
(REF #08)	FM 119	MOORE COUNTY (WITHIN RAILROAD RIGHT-OF-WAY LIMITS ONLY)	DOT# 595875D (TXNW)
(REF #69)	FM 3296	HARTLEY COUNTY (WITHIN RAILROAD RIGHT-OF-WAY LIMITS ONLY)	DOT# 596155N (UPRR)

RAILROADS:

(REF #01)	FM 296	DALLAM COUNTY	DOT# 274838P (BNSF)
(REF #05)	FM 281	MOORE COUNTY	DOT# 017072E (BNSF)
(REF #05)	FM 281	MOORE COUNTY	DOT# 017071X (BNSF)
(REF #30)	SL 171	GRAY COUNTY	DOT# 016609L (BNSF)
(REF #30)	SL 171	GRAY COUNTY	DOT# 014541T (BNSF)
(REF #35)	FM 2386	CARSON COUNTY	DOT# 014565G (BNSF)
(REF #50)	FM 683	CARSON COUNTY	DOT# 014590P (BNSF)
(REF #52)	US 60	POTTER COUNTY	DOT# 017164S (BNSF)
(REF #52)	US 60	POTTER COUNTY	DOT# 017163K (BNSF)
(REF #65)	FM 3331	RANDALL COUNTY	DOT# 014801J (BNSF)
(REF #79)	FM 2373	ARMSTRONG COUNTY	DOT# 275228K (BNSF)

EQUATIONS:

NONE

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

FINAL PLANS AND QUANTITIES AS CONSTRUCTED

CONTRACTORS NAME: _____

CONTRACTORS ADDRESS: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED & ACCEPTED: _____

FINAL CONTRACT COST: $ _____

_____ , PE _____

AREA ENGINEER DATE

2022 Texas Department of Transportation

RECOMMENDED FOR LETTING: DATE: 7/5/2022

DocuSigned by: Bernardo Fuentes, PE 25B59152F691499...

AREA ENGINEER

DATE: 7/6/2022

DocuSigned by: Kit Black 9B5A6EA6AE8B46E...

DISTRICT DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: DATE: 7/7/2022

DocuSigned by: Blair Johnson 8B80E3AEB2BC43A...

DISTRICT ENGINEER

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3-3A	GENERAL NOTES
4	ESTIMATE & QUANTITY SUMMARY
5-9	PROJECT SUMMARY
	TRAFFIC CONTROL PLAN STANDARDS
10-21	BC (1)-21 THRU BC (12)-21
22-25	TCP (1-1 THRU 1-4)-18
26	TCP (2-6)-18
27-28	TCP (3-1 THRU 3-2)-13
29-35	TCP (6-1 THRU 6-7)-12
36-37	TCP (6-8 THRU 6-9)-14
38	WZ (RS)-22
39	WZ (TD)-17
	ROADWAY DETAILS
40-42	ADDITIONAL AREAS SUMMARY
43-45	ADDITIONAL AREAS TYPICAL
46-51	ADDITIONAL AREAS EXHIBITS
	ENVIRONMENTAL ISSUES
52	STORMWATER POLLUTION PREVENTION PLAN (SW3P)
53	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS
	RAILROAD ISSUES
54-55	RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS
56-59	RAILROAD SCOPE OF WORK

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

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL

INDEX OF SHEETS

Texas Department of Transportation

SHEET 1 OF 1

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		2

DATE: 5/18/2022 12:27:13 PM
FILE: \\FS-AMAHQ.dot.state.tx.us\DATA\Data\AMA\GROUPS\AMATPD\Construction Projects\Crack Seal Projects\Crack Seal 2023\0904-00-200 FY 23 Crack Seal\4 - Design\Plan Set\1. General\

GENERAL NOTES

General

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

TO:	Dumas Area Engineer	Bernardo.Ferrel@txdot.gov
CC:	Assistant Area Engineer	Ofelia.Garbalena@txdot.gov
	Director of Construction	Kenneth.Petr@txdot.gov
	Construction Manager	Thomas.Nagel@txdot.gov

Contractor questions will be accepted through email, phone, or in person by the above individuals.

All Contractor questions will be reviewed by the Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following Address.

https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

All questions submitted that generate responses will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

Item 7 Legal Relations and Responsibilities

No significant traffic generator events identified.

Item 8 Prosecution and Progress

The latest start work date and beginning of working day charges is November 28, 2022.

All crack seal work will be performed when the ambient temperature is below 60 degrees Fahrenheit unless otherwise directed by the Engineer.

Working days will be computed and charged in accordance with Article 8.3.1.1 Five-Day Workweek.

No lane closures will be allowed on weekdays before 8:30AM or after 4:30PM on the following References:

REF	HIGHWAY
52	US 60: 1.663 MILES EAST OF US 87 TO SH 136
53	US 60: US 87 TO 1.663 MILES EAST OF US 87
54	BI – 40: RM 1061 TO US 87

Item 502 Barricades, Signs, and Traffic Handling

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.

Temporary rumble strips will be required as shown on WZ(RS)-22 regardless of loose gravel, and/or soft or bleeding asphalt. Adjust the traffic control setup such that rumble strips are not placed in areas of heavily rutted pavements, unpaved surfaces, or horizontal curves. Temporary rumble strips will not be allowed on interstate highway.

The Contractor is to have the option of using either plastic drums, vertical panels, grabber cones or a combination where drums are shown as channelizing devices, as approved by the Engineer. Plastic drums are to be used in all transition areas in accordance with BC(8)-21 and WZ(TD)-17.

Lane closures will be required for all crack seal operations. TCP for mobile operations will be prohibited during crack seal operations.

For two lane / two-way roadways, lane closures are to be limited to a maximum of 15 minute que time.

For all other roadways, lane closures are to be limited to a maximum of 5 Miles.

If more than one lane closure location is desired a minimum of 2 miles passing zone is required between each location.

Notify the Engineer 24 hours prior to any lane closure.

Contractor is to use the Texas Manual on Uniform Traffic Control Devices to ensure that no traffic will be stopped within the Rail Road Right of Way.

For all airport runway work, notify the Engineer 4 working days prior to beginning any work on the airport reference.

Place crack sealing under existing traffic conditions with a minimum of interference to the operation of the facility. Protect all existing pavement markings from damage or disfigurement.

County: POTTER **Sheet: 3A**

Highway: VARIOUS **Control:** 0904-00-200

Item 712 Cleaning and Sealing Joints and Cracks

Use Class B rubber-asphalt crack sealer.

Use of Class A rubber-asphalt crack sealer is not allowed

For all airport runway work, it is imperative that the pavement surface remain free of sealing materials. Therefore, all excess sealing compounds/materials will be removed at the contractor's expense prior to acceptance and final payment. Fill to 1/8" below asphalt surface.

All equipment and vehicles are to be approved by the Engineer prior to use and be able to efficiently produce the desired results.

Contractor will NOT Crack Seal any surface with Concrete as the final riding surface.

Item 6001 Portable Changeable Message Sign

Supply 2 Portable Changeable Message Signs (Type II – Lamp Matrix) for this project. This work will be paid at the unit price bid for each unit, which will include any moving, maintenance, and removing of the PCMS. No payment will be made for removing and replacing damaged PCMS. The Portable Changeable Message Signs will become property of the Contractor at the completion of the project.

If the Contractor chooses to have more than one lane closure set-up at a time, provide additional PCMS in accordance with TCP at no additional charge to the department.

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

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan for this project, provide 0 additional shadow vehicle(s) with TMA for TCP for all TCP Standards as detailed on the General Notes of the standard sheets.

Therefore, 3 total shadow vehicles with TMA will be required for this type of work. The Contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0904-00-200 **DISTRICT** Amarillo **COUNTY** Potter, Roberts
HIGHWAY Various

			CONTROL SECTION JOB	**0904-00-200**		**0904-00-201**		**0904-10-003**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00176414**		**A00176415**		**A00187363**			
			COUNTY	**Potter**		**Potter**		**Roberts**			
			HIGHWAY	**Various**		**Various**		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	500-6001	MOBILIZATION	LS	1.000						1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4.000						4.000	
	712-6008	JT / CRCK SEAL (RUBBER - ASPHALT)	LMI	1,235.757		191.128				1,426.885	
	712-6022	JT/CRCK SEAL(RUBBER ASPHALT) RAMPS	LMI					3.068		3.068	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	100.000						100.000	
	6185-6003	TMA (MOBILE OPERATION)	HR	1,200.000						1,200.000	
	18	RAILROAD FLAGGING: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS			1.000				1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS			1.000				1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS			1.000				1.000	

2023 CRACK SEAL LIST (0904-00-200) - FC 1-5

REF	CONTROL & SECTION	HIGHWAY	COUNTY	LIMITS		FROM MKR	FROM DISP	TO MKR	TO DISP	LENGTH	# OF LANES	THRU LANE	ADD'L AREA	0712 6008 JT/CRCK SEAL (RUBBER-ASPHALT)	NOTES
				FROM	TO					MILES		LMI	LMI	LMI	
1	1141-01	FM 296	DALLAM	SH 102	US 87	230	- 0.020	246	+ 1.694	16.891	2	33.782	0.007	33.765	NO CRACK SEAL ON CONCRETE PAVEMENT SURFACE. CRACK SEAL UP TO RAILROAD CONCRETE PANELS.
2	0794-01	FM 1727	DALLAM	FM 3110	9.3 MILES EAST OF FM 3110	240	+ 0.000	248	+ 1.246	9.300	2	18.600	0.007	18.607	
3	0041-01	US 87	HARTLEY	.8 MILES SOUTH OF DALLAM CO LINE	US 87/ US 385 INTERCHANGE	56	- 0.004	68	+ 1.855	13.060	5, 6	74.560	8.026	82.586	SEE ADD'L AREA "A".
4	1727-01	FM 281	HARTLEY	FM 807 SOUTH	FM 807 NORTH	270	+ 0.659	272	+ 1.617	2.991	2	5.982		5.982	
5	1727-02	FM 281	MOORE	HARTLEY COUNTY LINE	US 287	284	+ 0.002	292	+ 1.842	9.400	2	18.800		18.800	CRACK SEAL UP TO RAILROAD CONCRETE PANELS.
6	0794-04	FM 281	MOORE	US 287	FM 119	292	+ 1.842	304	+ 0.025	9.651	2	19.302	0.014	19.306	NO CRACK SEAL IN RAILROAD'S RIGHT-OF-WAY.
7	0066-04	US 287	MOORE	SHERMAN COUNTY LINE	FM 281 (NORTH ABUTMENT)	50	+ 0.003	52	+ 0.412	2.351	6	14.106	3.264	17.370	SEE ADD'L AREA "B".
8	0727-01	FM 119	MOORE	SHERMAN COUNTY LINE	US 287	44	+ 0.007	60	+ 0.538	16.705	2	33.410	0.110	33.497	NO CRACK SEAL IN RAILROAD'S RIGHT-OF-WAY.
9	2001- 02	FM 2589	MOORE	US 87	FM 722	56	- 0.042	58	+ 1.322	3.223	2	6.446	0.502	6.948	
10	1244-02	FM 1913	MOORE	US 87	FM 1319	290	- 0.045	316	+ 0.038	25.402	2	50.804		50.804	
11	2437-02	FM 1913	MOORE	FM 1319	SH 152	316	+ 0.038	318	+ 0.014	1.976	2	3.952		3.952	
12	0557-03	BS 152B	HUTCHINSON	SH 152	SH 207	318	- 0.089	318	+ 1.062	1.152	2, 4	3.138	0.090	3.228	
13	0557-07	FM 2171	HUTCHINSON	SH 152	FM 280	324	- 0.089	328	+ 0.214	4.299	2	8.598	0.074	8.632	NO CRACK SEAL ON CONCRETE PAVEMENT SURFACE.
14	0790-05	FM 278	HANSFORD	SH 15	SH 207	322	- 0.120	324	+ 1.038	2.934	2	5.868	0.496	6.364	
15	2335-01	FM 2387	HANSFORD	FM 1261	SH 15	26	- 0.058	34	+ 1.361	9.580	2	19.160		19.160	
16	0308-04	FM 759	HANSFORD	SH 15	OCHILTREE COUNTY LINE	334	- 0.017	340	+ 0.005	6.349	2, 4	14.698		14.698	
17	0355-04	SH 15	OCHILTREE	HANSFORD CL	US 83	346	+ 0.000	364	+ 0.014	18.369	4	73.476		73.476	

FY 23 CRACK SEAL

PROJECT SUMMARY

2022 Texas Department of Transportation

SHEET 1 OF 5

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		5

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2023 CRACK SEAL LIST (0904-00-200) - FC 1-5

REF	CONTROL & SECTION	HIGHWAY	COUNTY	LIMITS		FROM MKR	FROM DISP	TO MKR	TO DISP	LENGTH	# OF LANES	THRU LANE	ADD'L AREA	0712 6008 JT/CRCK SEAL (RUBBER-ASPHALT)	NOTES
				FROM	TO					MILES		LMI	LMI	LMI	
18	0030-04	US 83	LIPSCOMB	OCHILTREE CL	HEMPHILL CL	44	+ 1.204	50	+ 0.012	3.659	4	14.636		14.636	
19	0030-05	US 83	HEMPHILL	HORSE CREEK BRIDGE (EAST ABUTMENT)	US 60	56	+ 0.234	62	+ 0.098	6.043	2	12.086	0.160	12.246	
20	0798-04	FM 277	HEMPHILL	US 83	WHEELER CL	380	- 0.038	398	+ 1.941	19.631	2	39.262	0.078	39.340	
21	2612-01	RM 2654	HEMPHILL	SH 33	FM 277	62	- 0.037	70	+ 0.166	8.253	2	16.506	0.016	16.522	
22	1999-01	FM 2124	HEMPHILL	FM 277	OKLAHOMA STATE LINE	394	- 0.067	400	+ 0.074	6.401	2	12.802		12.802	
23	0797-02	FM 748	ROBERTS	US 60 IN MIAMI	GRAY CO	68	- 0.053	72	+ 1.272	5.178	2, 3	11.066		11.066	
24	0797-03	FM 748	GRAY	ROBERTS COUNTY LINE	SH 152	72	+ 1.272	78	+ 1.260	5.281	2	10.562	0.016	10.578	
25	0797-04	RM 2857	GRAY	SH 152	RM 1321	80	- 0.024	86	+ 1.333	7.424	2	14.848	0.032	14.880	
26	0797-01	FM 283	ROBERTS	SH 70	FM 282	54	- 0.065	74	+ 0.738	20.885	2	41.770	0.119	41.889	SEE ADD'L AREA "C".
27	2492-01	FM 282	ROBERTS	GRAY COUNTY LINE	SH 70	350	+ 1.144	354	+ 1.116	2.945	2	5.890	0.014	5.904	
28	2492-02	FM 282	GRAY	23RD AVE	ROBERTS COUNTY LINE	346	+ 1.085	350	+ 1.144	3.940	2	7.880		7.880	
29	0169-10	FM 282	GRAY	FM 750	US 60	344	+ 0.039	344	+ 0.089	0.128	4	0.512	0.008	0.520	
30	2403-01	SL 171	GRAY	SH 70 (NORTH)	SH 273	76	- 0.063	82	+ 0.065	6.195	4, 6, 7	30.406	0.332	30.738	CRACK SEAL BRIDGE OVER RAILROADS
31	0560-01	SH 273	GRAY	SL 171 (EAST)	SL 171 (WEST)	82	+ 0.109	84	- 0.097	1.982	4, 7	8.993		8.993	
32	0560-01	SL 171	GRAY	SH 273	SH 70 (SOUTH)	84	- 0.047	84	+ 0.965	1.140	4, 7	5.367	0.138	5.505	
33	0169-07	US 60	GRAY	SH 70	TIGNOR ST	380	+ 1.615	382	+ 0.772	1.646	7	11.522	0.021	11.543	
34	0169-06	US 60	GRAY	CARSON COUNTY LINE	SH 70	372	+ 0.310	380	+ 1.615	7.347	5, 6, 7	45.708	0.023	45.731	

FY 23 CRACK SEAL

PROJECT SUMMARY

2022 Texas Department of Transportation

SHEET 2 OF 5

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		6

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2023 CRACK SEAL LIST (0904-00-200) - FC 1-5

REF	CONTROL & SECTION	HIGHWAY	COUNTY	LIMITS		FROM MKR	FROM DISP	TO MKR	TO DISP	LENGTH	# OF LANES	THRU LANE	ADD'L AREA	0712 6008 JT/CRCK SEAL (RUBBER-ASPHALT)	NOTES
				FROM	TO					MILES		LMI	LMI	LMI	
35	2722-02	FM 2386	CARSON	SH 152	US 60	76	+ 0.960	84	+ 0.096	5.796	2	11.592	0.014	11.606	CRACK SEAL UP TO RAILROAD CONCRETE PANELS.
36	0169-05	US 60	CARSON	CR S	CR W	358	+ 0.646	362	+ 1.440	4.740	6	28.440	2.274	30.714	SEE ADD'L AREAS "D" & "E"
37	0169-05	US 60	CARSON	0.67 MILES WEST OF CR S	CR S	356	+ 1.963	358	+ 0.646	0.670	6	4.020	0.180	4.200	
38	0169-04	US 60	CARSON	PANHANDLE EAST CITY LIMITS	0.67 MILES WEST OF CR S	352	+ 1.890	356	+ 1.962	3.931	6, 8	23.812	0.822	24.634	
39	0356-02	SH 207	CARSON	FM 293	0.2 MI NORTH OF US 60	104	+ 1.432	106	+ 0.726	1.117	3, 5	4.805		4.805	
40	0169-04	US 60	CARSON	PANHANDLE WEST CITY LIMITS	PANHANDLE EAST CITY LIMITS	352	+ 0.627	352	+ 1.890	1.263	7	8.841		8.841	
41	0169-04	US 60 (EB ONLY)	CARSON	5 MILES WEST OF PANHANDLE	PANHANDLE WEST CITY LIMITS	348	+ 0.063	352	+ 0.627	4.623	6, 7	28.373	2.040	30.413	SEE ADD'L AREAS "F" & "G"
42	0169-03	US 60 (EB ONLY)	CARSON	POTTER COUNTY LINE	5 MILES WEST OF PANHANDLE	338	+ 0.005	348	+ 0.063	9.934	3	29.802	0.738	30.540	
43	2970-03	FM 2880	CARSON	FM 293	0.153 MILES S OF I-40	94	- 0.026	102	+ 0.752	8.608	2	15.537		15.439	NO CRACK SEAL ON CONCRETE PAVEMENT SURFACE.
44	0275-21	BI-40 (F)	CARSON	IH 40 WEST GROOM	GRAY COUNTY LINE	336	- 0.257	340	+ 0.055	3.324	4, 6, 7	20.840	0.048	20.888	
45	0275-22	BI-40 (F)	GRAY	CARSON COUNTY LINE	IH 40 EAST GROOM	340	+ 0.055	340	+ 0.265	0.211	4, 6	0.874	0.876	1.750	SEE ADD'L AREA "H"
46	0793-01	FM 295	CARSON	FM 293	BI 40 F	94	- 0.108	102	+ 0.874	8.701	2, 4	17.642		17.642	
47	0169-13	BI-40 (D)	POTTER	US 60	CARSON COUNTY LINE	312	- 0.050	312	+ 1.475	1.525	7	10.675	0.183	10.858	
48	0169-14	BI-40 (D)	CARSON	POTTER COUNTY LINE	IH 40	312	+ 1.475	316	+ 0.566	3.061	7	21.182	0.405	21.500	NO CRACK SEAL ON CONCRETE PAVEMENT SURFACE. SEE ADD'L AREAS "I" & "J"
49	1840-01	FM 683	CARSON	FM 293	FM 245	92	- 0.101	94	+ 0.052	2.006	2	4.012	0.228	4.240	
50	0664-02	FM 683	CARSON	FM 245	US 60	94	+ 0.052	98	+ 0.211	4.204	2, 3	8.489	0.013	8.502	CRACK SEAL UP TO RAILROAD CONCRETE PANELS.
51	0753-01	FM 293	POTTER	SH 136	CARSON COUNTY LINE	308	- 0.037	310	+ 0.002	1.102	2	2.204		2.204	

FY 23 CRACK SEAL

PROJECT SUMMARY

2022 Texas Department of Transportation

SHEET 3 OF 5

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		7

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2023 CRACK SEAL LIST (0904-00-200) - FC 1-5

REF	CONTROL & SECTION	HIGHWAY	COUNTY	LIMITS		FROM MKR	FROM DISP	TO MKR	TO DISP	LENGTH	# OF LANES	THRU LANE	ADD'L AREA	0712 6008 JT/CRCK SEAL (RUBBER-ASPHALT)	NOTES
				FROM	TO					MILES		LMI	LMI	LMI	
52	0169-02	US 60	POTTER	1.663 MILES EAST OF US 87	SH 136	326	+ 0.420	326	+ 1.584	1.165	4, 5, 7	5.578	1.971	7.229	NO CRACK SEAL ON CONC PAVEMENT SURFACE. CRACK SEAL UP TO RAILROAD CONCRETE PANELS. SEE ADD'L AREA "K"
53	0169-01	US 60	POTTER	US 87	1.663 MILES EAST OF US 87	324	+ 0.760	326	+ 0.420	1.663	5, 6	8.542	0.159	8.701	
54	0090-06	BI-40	POTTER	RM 1061	US 87	296	+ 0.857	300	+ 1.180	4.293	4, 6, 8	25.360	1.730	27.010	NO CRACK SEAL ON CONCRETE PAVEMENT SURFACE. SEE ADD'L AREA "L"
55	2494-01	RM 2381	POTTER	RM 1061	IH 40	96	- 0.038	102	+ 0.044	6.176	2	12.352		12.352	
56	2493-01	FM 1258	POTTER	I-40	RANDALL COUNTY LINE	102	- 0.082	102	+ 0.597	0.680	2	1.360		1.360	
57	2493-02	FM 1258	RANDALL	POTTER COUNTY LINE	ARMSTRONG COUNTY LINE	102	+ 0.597	120	+ 0.050	16.221	2, 3	34.152		34.152	
58	1335-01	FM 1258	ARMSTRONG	RANDALL COUNTY LINE	SH 207	120	+ 0.050	134	+ 1.383	15.767	2	31.534	0.008	31.542	
59	0357-02	SH 207	ARMSTRONG	US 287 IN CLAUDE	FM 1151 "Y" INTERSECTION	124	+ 0.915	124	+ 1.550	0.635	2, 4	1.510		1.510	
60	0357-03	SH 207	ARMSTRONG	FM 1151 "Y" INTERSECTION	FM 2272	124	+ 1.550	138	+ 0.557	13.004	4	52.016		52.016	
61	0042-03	US 287	ARMSTRONG	0.3 MILES WEST OF CITY LIMITS OF CLAUDE	FM 1151	140	+ 1.861	142	+ 1.233	1.393	4, 6, 8	10.164	0.131	10.295	
62	0042-04	US 287	ARMSTRONG	FM 1151	0.4 MILES EAST OF CLAUDE CITY LIMITS	142	+ 1.233	144	+ 0.444	1.226	4, 6	5.400		5.400	
63	2002-02	FM 2219	RANDALL	FM 168	IH 27	282	- 0.069	292	+ 0.252	10.273	2, 4	21.198	0.480	21.648	NO CRACK SEAL ON CONC INTERSECTION. SEE ADD'L AREA "M"
64	0067-01	US 87	RANDALL	RUSSELL LONG INTERSECTION	SOUTH CITY LIMITS OF CANYON	164	- 0.572	164	+ 1.426	1.998	5, 6, 7	11.232	0.032	11.264	
65	3527-01	FM 3331	RANDALL	US 60	FM 1541	292	- 0.252	296	+ 0.300	4.151	2	8.302	0.566	8.868	CRACK SEAL ROAD BENEATH RAILROAD BRIDGE. SEE ADD'L AREA "N"
66	1246-01	FM 1057	DEAF SMITH	US 385	CR 16A	114	- 0.039	118	+ 1.824	5.851	2	11.702	0.012	11.714	
67	2219-01	FM 1057	DEAF SMITH	CR 16A	PARMER COUNTY LINE	118	+ 1.824	138	+ 0.042	16.447	2	32.894		32.894	
												CSJ TOTAL:		1,235.093	

FY 23 CRACK SEAL

PROJECT SUMMARY

2022 Texas Department of Transportation

SHEET 4 OF 5

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		8

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2023 CRACK SEAL LIST (0904-00-201) - FC 6

REF	CONTROL & SECTION	HIGHWAY	COUNTY	LIMITS		FROM MKR	FROM DISP	TO MKR	TO DISP	LENGTH	# OF LANES	THRU LANE	ADD'L AREA	0712 6008 JT/CRCK SEAL (RUBBER-ASPHALT)	NOTES
				FROM	TO					MILES		LMI	LMI	LMI	
68	0727-05	FM 721	MOORE	FM 119	END OF STATE MAINTENANCE	296	- 0.026	296	+ 0.480	0.503	2	1.006		1.006	
69	1108-02	RM 3296	HARTLEY	NEW MEXICO STATE LINE	US 54	230	+ 0.000	238	+ 1.607	9.390	2	18.780	0.012	18.716	NO CRACK SEAL IN RAILROAD'S RIGHT-OF-WAY.
70	1489-01	FM 1573	SHERMAN	SOUTH FM 119	HANSFORD COUNTY LINE	298	+ 0.819	316	+ 0.006	16.281	2	32.562		32.562	
71	1489-02	FM 1573	HANSFORD	SHERMAN COUNTY LINE	SH 15	316	+ 0.006	320	+ 1.172	5.242	2	10.484	0.393	10.877	
72	2900-01	FM 3214	HANSFORD	FM 1261	END OF STATE MAINTENANCE	14	- 0.034	26	+ 1.119	13.299	2	26.598		26.598	
73	0753-03	FM 293	CARSON	FM 295	GRAY COUNTY LINE	340	+ 0.738	342	+ 0.314	1.573	2	3.146		3.146	
74	0753-04	FM 293	GRAY	CARSON COUNTY LINE	SH 70	342	+ 0.314	350	+ 2.083	8.244	2	16.488	0.012	16.500	
75	1339-01	FM 1454	LIPSCOMB	OKLAHOMA STATE LINE	SH 15	14	- 0.058	18	+ 0.696	4.627	2	9.254	0.010	9.264	
76	1339-03	FM 1454	LIPSCOMB	SH 15	FM 2741	20	- 0.435	20	+ 0.167	0.601	2	1.202	0.077	1.279	
77	1339-02	FM 1454	LIPSCOMB	FM 2741	SH 213	20	+ 0.167	38	+ 0.862	17.480	2	34.960	0.008	34.968	
78	2218-01	FM 2373	CARSON	0.1 MILE SOUTH OF IH 40 SOUTH FRONTAGE ROAD	ARMSTRONG COUNTY LINE	100	+ 1.344	104	+ 0.002	2.368	2	4.736		4.736	
79	2218-02	FM 2373	ARMSTRONG	CARSON COUNTY LINE	US 287	104	+ 0.002	104	+ 1.035	1.032	2	2.064	0.010	2.074	CRACK SEAL UP TO RAILROAD CONCRETE PANELS.
80	2496-01	FM 1721	RANDALL	END OF STATE MAINTENANCE	FM 285	126	- 0.006	128	+ 0.050	2.523	2	5.046	0.014	5.060	
81	0275-02	IH 40 (NFR)	CARSON	BI-40-D	3.72 MILES WEST OF CONWAY	84	+ 1.528	92	+ 1.102	8.057	2	16.114	0.604	16.718	
82	0275-03	IH 40 (NFR)	CARSON	3.72 MILES WEST OF CONWAY	SH 207	92	+ 1.102	96	+ 0.893	3.791	2	7.582	0.042	7.624	
												CSJ TOTAL:		191.128	

2023 CRACK SEAL LIST (0904-10-003) AIRPORT

REF	CONTROL & SECTION	HIGHWAY	COUNTY	LIMITS		LENGTH	# OF LANES	THRU LANE	ADD'L AREA	0712 6022 JT/CRCK SEAL (RUBBER-ASPHALT) RAMPS	NOTES
				FROM	TO	MILES		LMI	LMI	LMI	
83	0904-00	ROBERTS CO AIRPORT	ROBERTS	RUNWAY 1	RUNWAY 1	0.767	0	0.000	3.068	3.068	WORK TO BE DONE ON RUNWAY ONLY. NO TAXIWAYS. SEE ADD'L AREA "O".
								CSJ TOTAL:		3.068	

FY 23 CRACK SEAL

PROJECT SUMMARY

2022 Texas Department of Transportation

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		9

DATE: 5/18/2022 12:27:23 PM
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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

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	0904	00	200, ETC	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	AMA	POTTER, ETC		10

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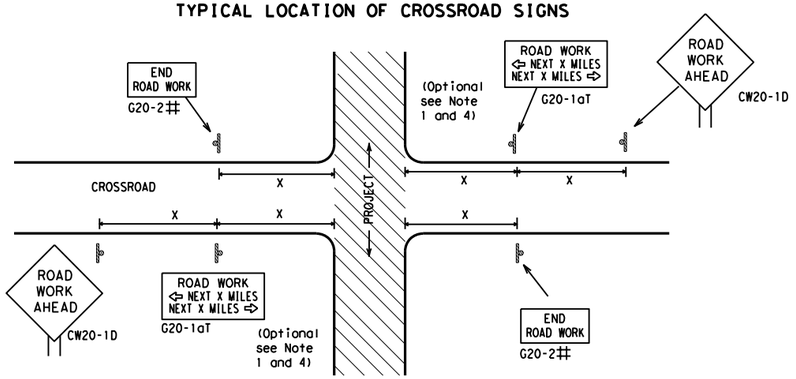
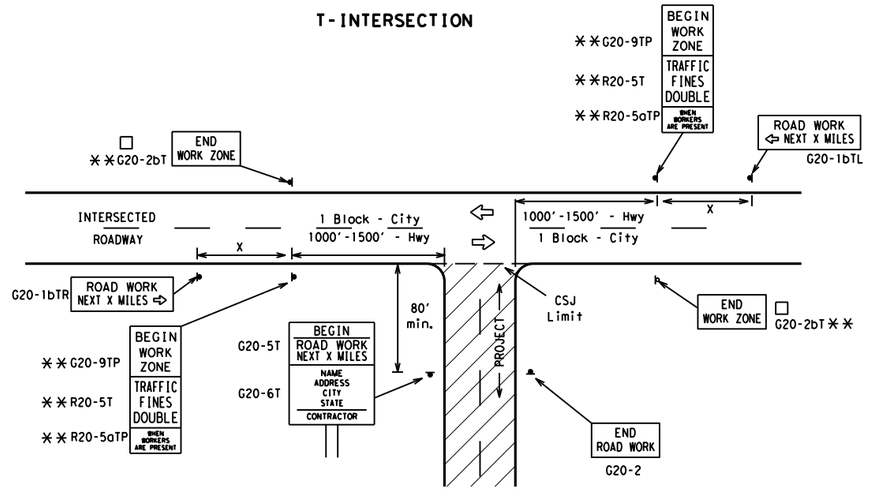
TYPICAL LOCATION OF CROSSROAD SIGNS



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

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume 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.

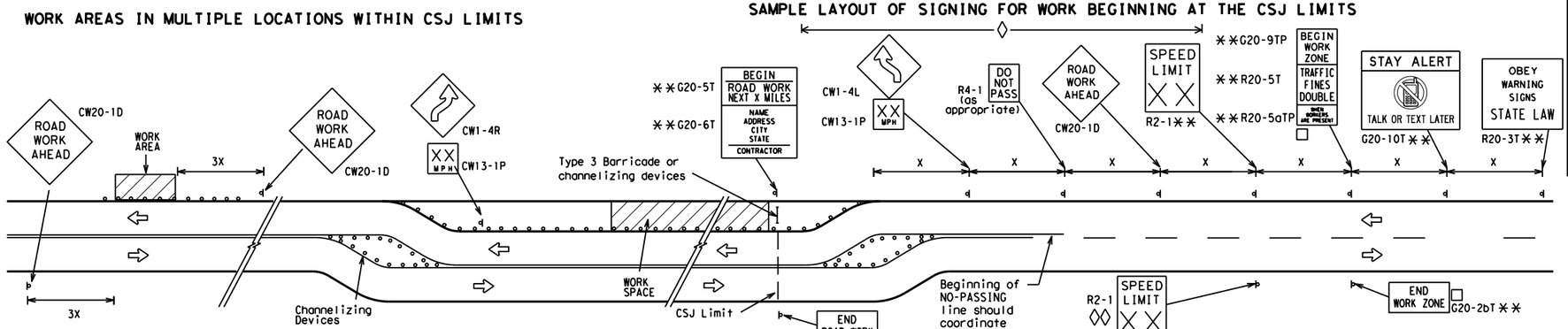
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

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.

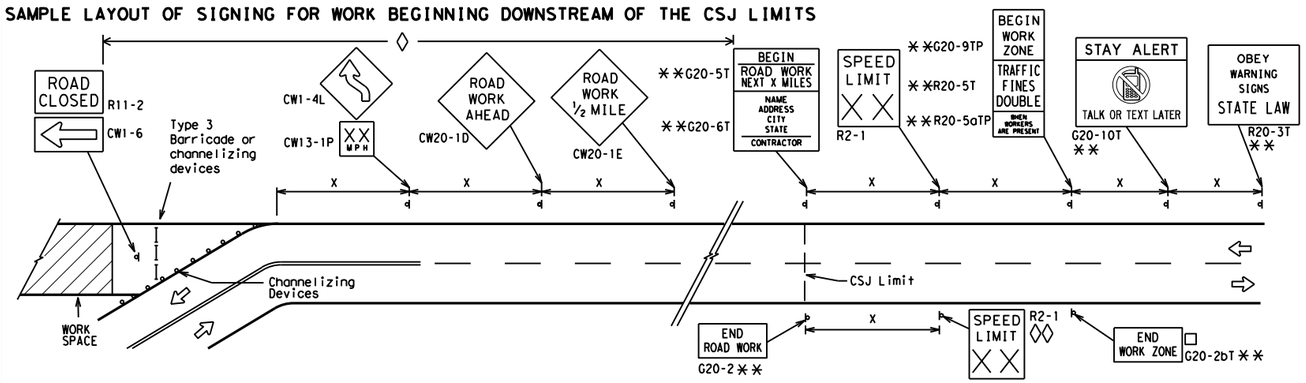
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE 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	0904	00	200, ETC	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AMA	POTTER, ETC		11

DATE: 5/18/2022 12:27:24 PM
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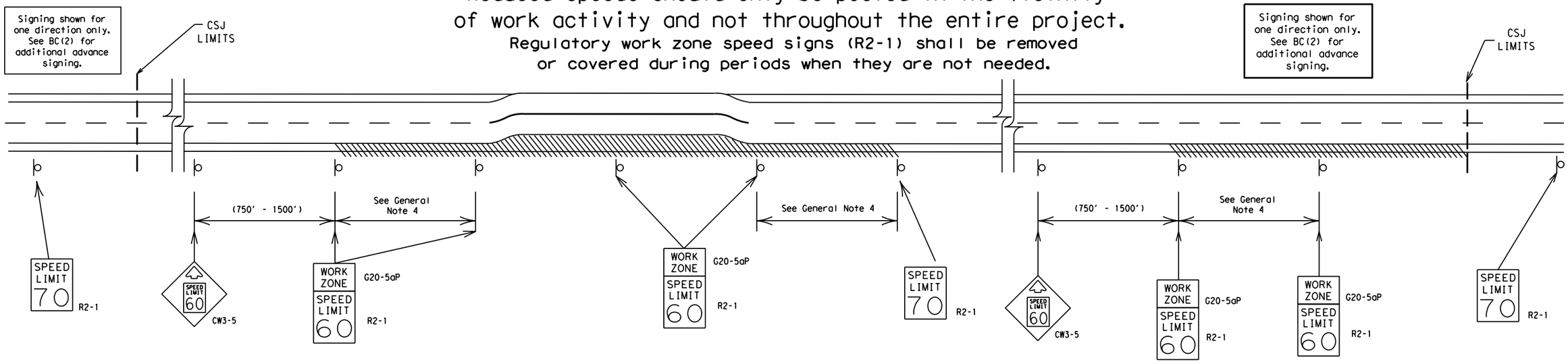
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the 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 9-07 8-14 7-13 5-21	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		12

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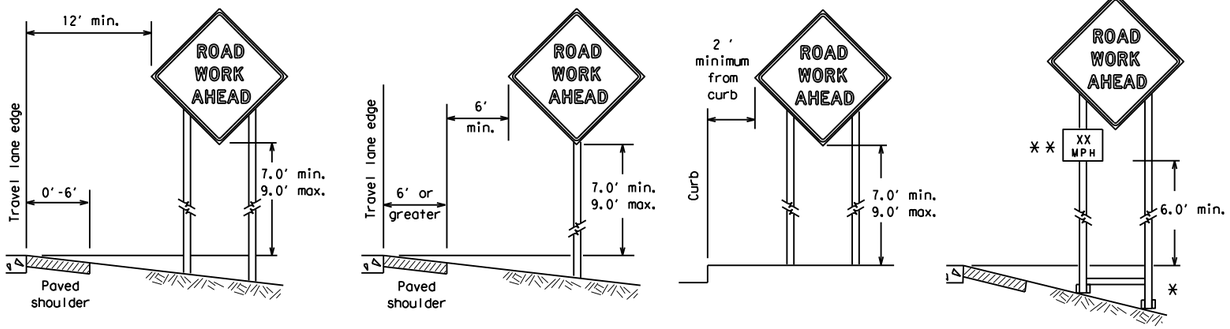
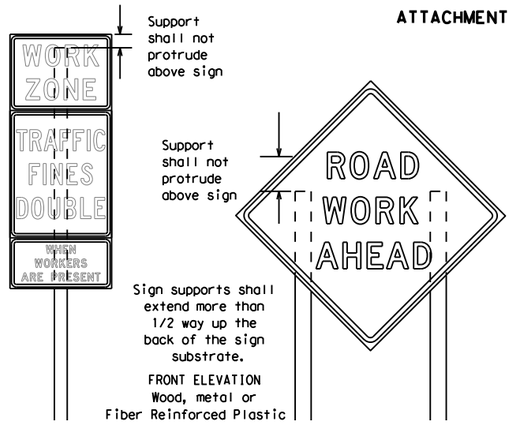
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



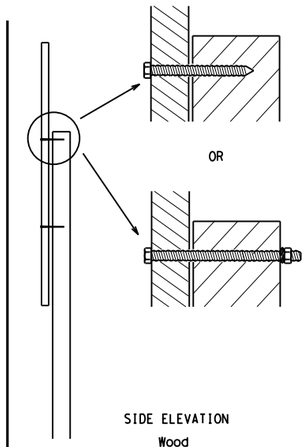
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

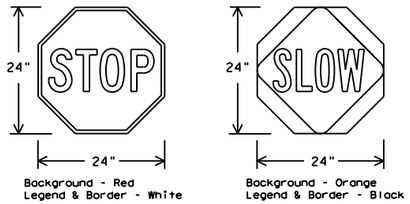
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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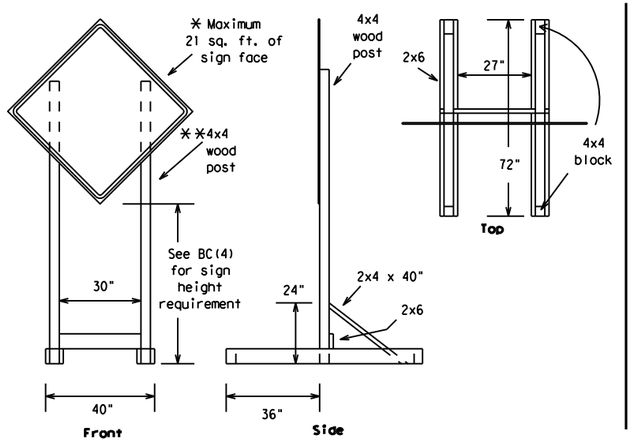
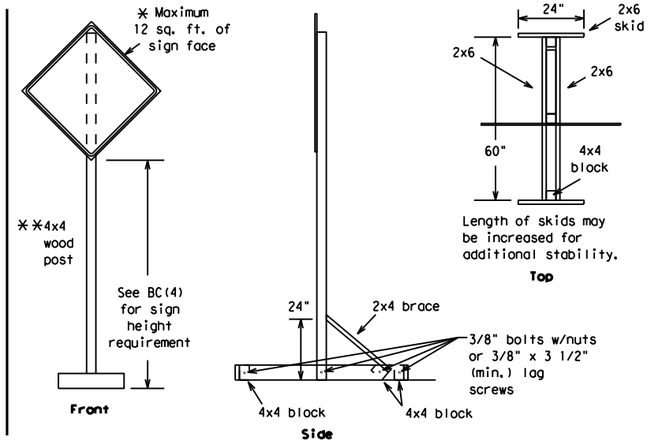
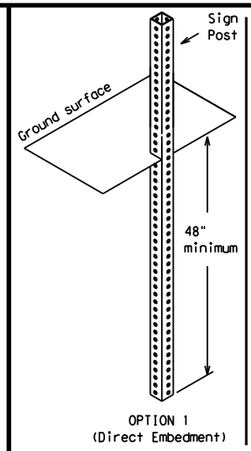
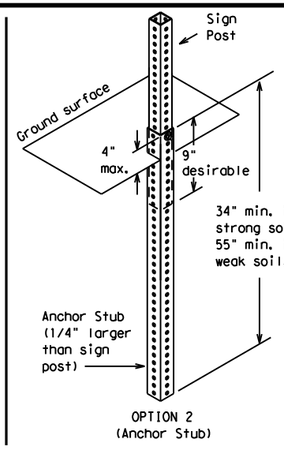


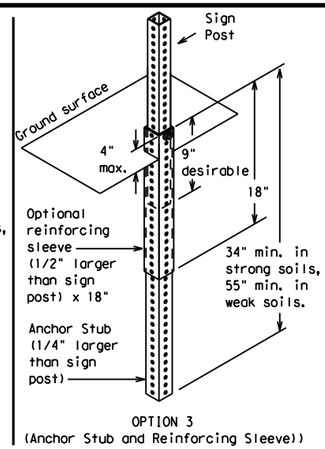


SKID MOUNTED WOOD SIGN SUPPORTS

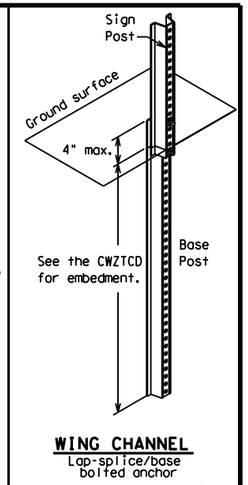
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS







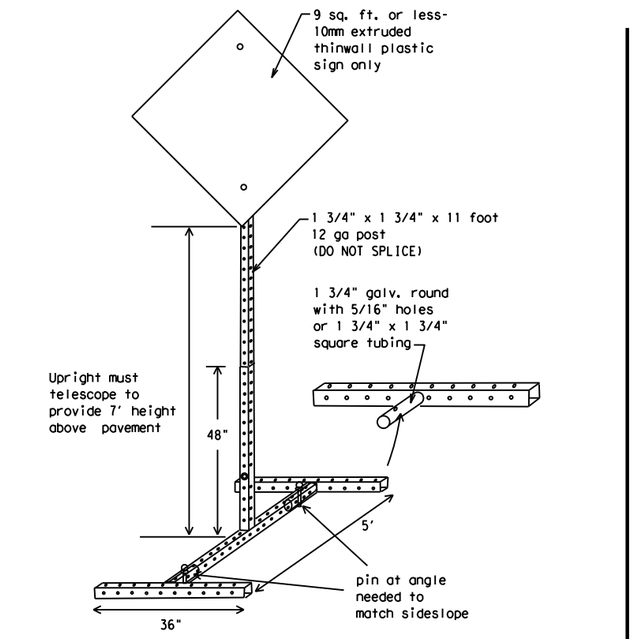
PERFORATED SQUARE METAL TUBING

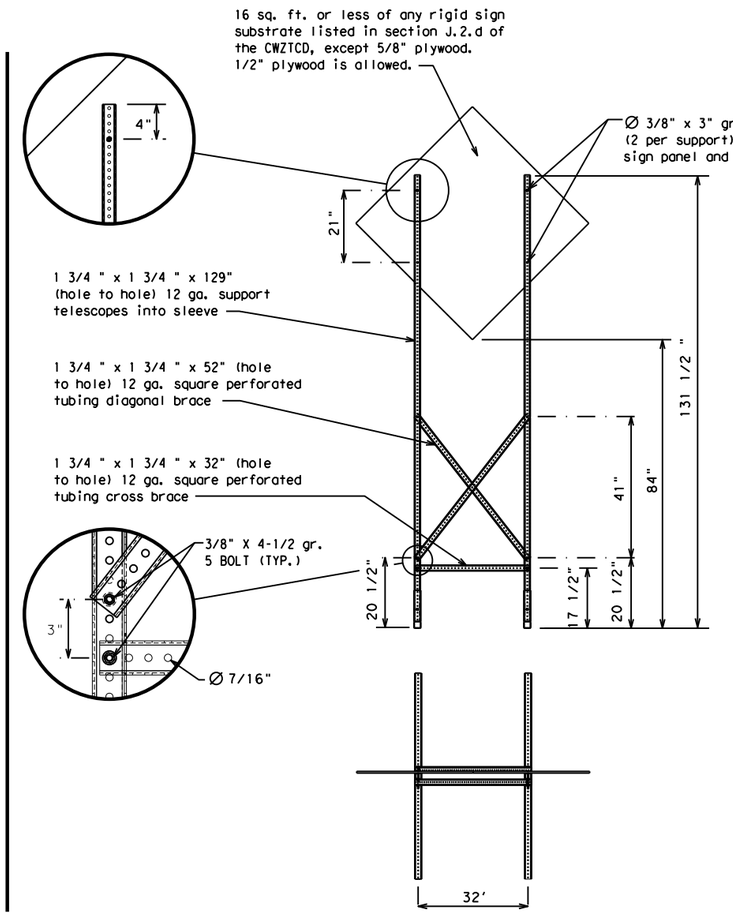


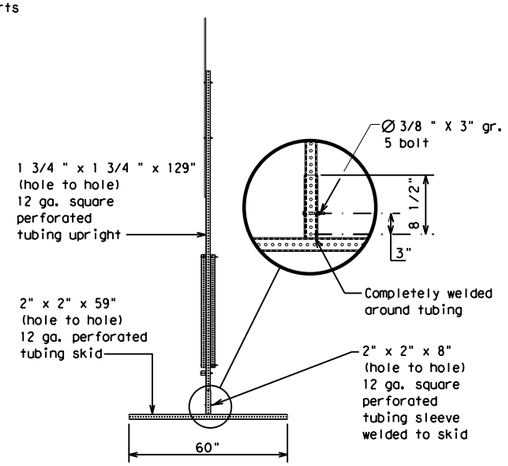
WING CHANNEL
Lap-splice/base bolted anchor

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

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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7-13 5-21	AMA	POTTER, ETC		14

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** 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

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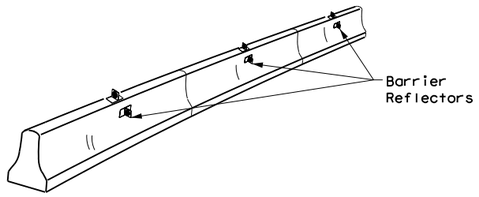
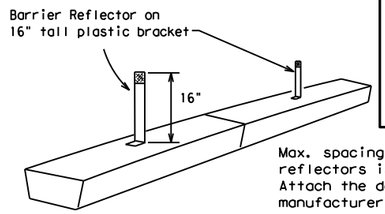
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

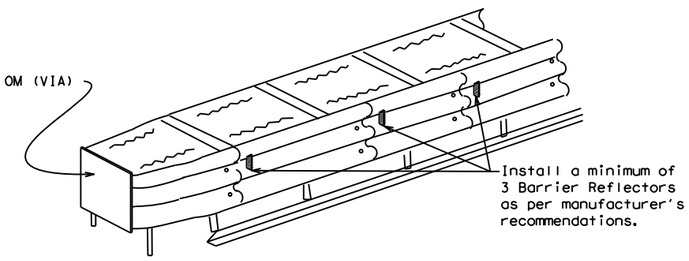


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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)

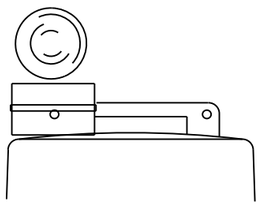


DELINEATION OF END TREATMENTS

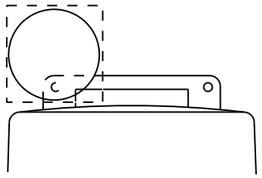
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

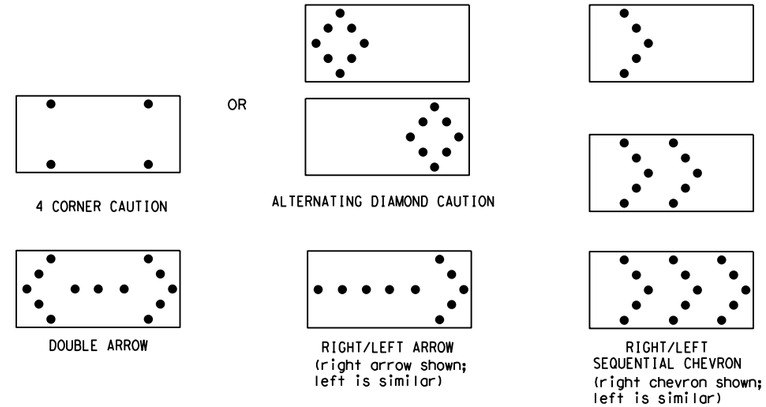
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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	0904	00	200, ETC	VARIOUS
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7-13 5-21	AMA	POTTER, ETC		16

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

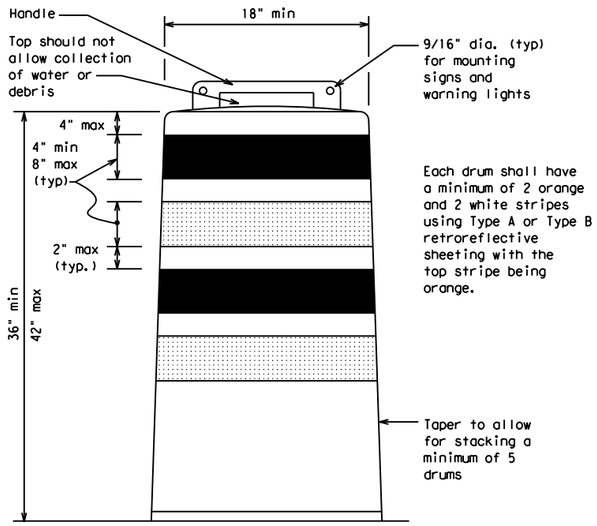
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

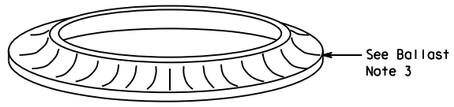
RETROREFLECTIVE SHEETING

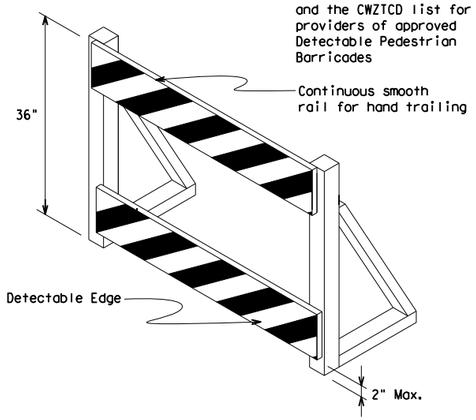
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

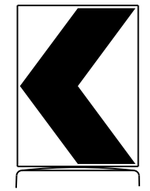




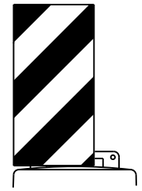


DETECTABLE PEDESTRIAN BARRICADES

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

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9-07 5-21	AMA	POTTER, ETC		17
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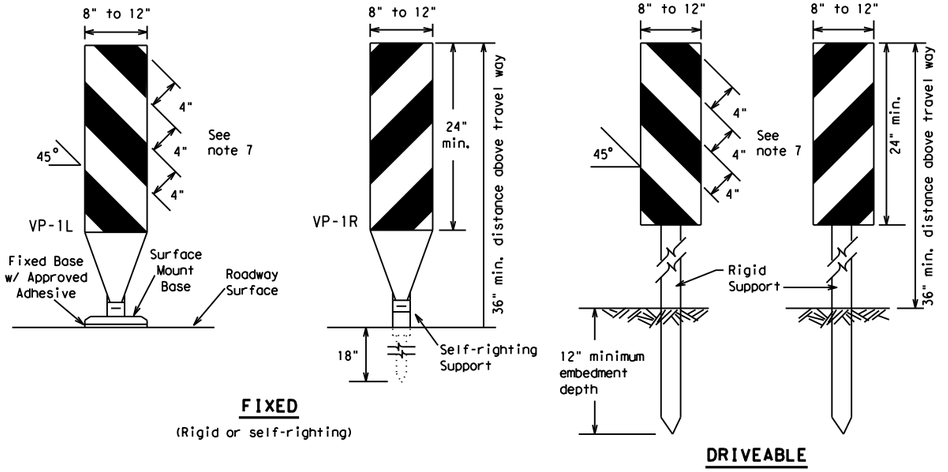
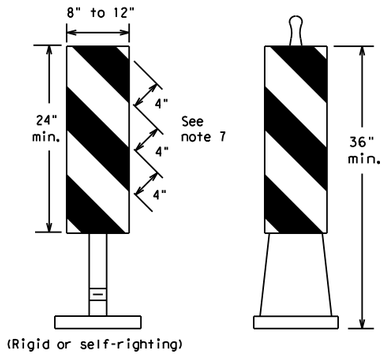


FIXED
(Rigid or self-righting)

DRIVEABLE

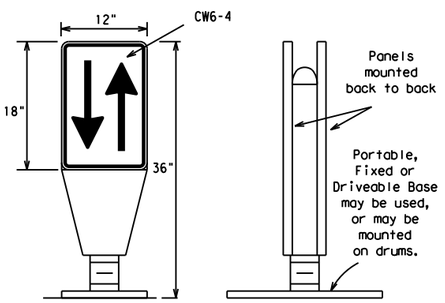


(Rigid or self-righting)

PORTABLE

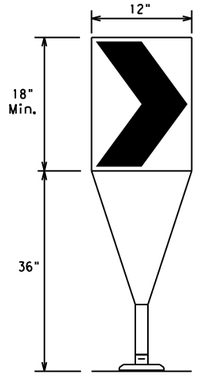
VERTICAL PANELS (VPs)

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.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

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.



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	0904	00	200, ETC	VARIOUS
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7-13 5-21	AMA	POTTER, ETC		18

103

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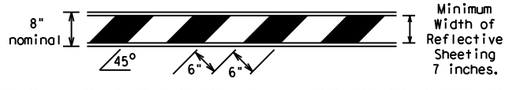
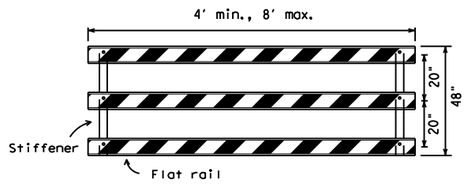
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



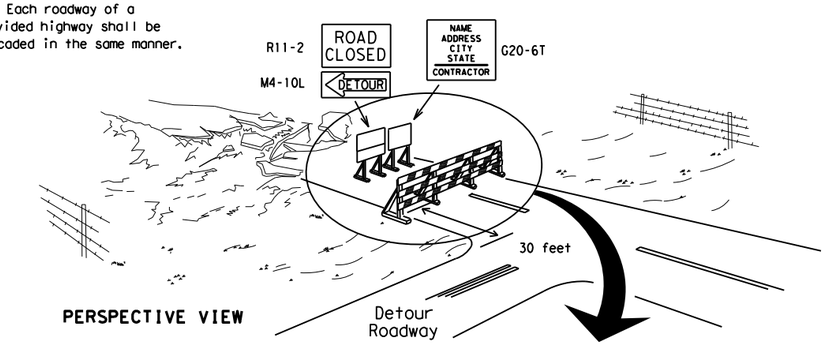
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

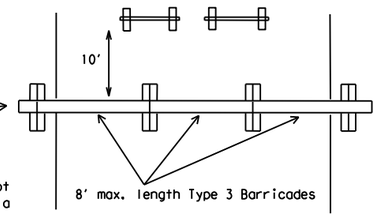
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

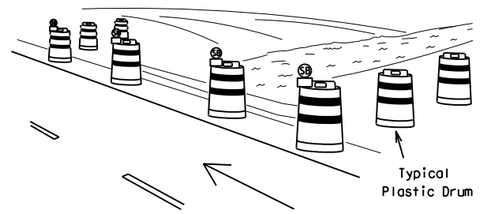
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

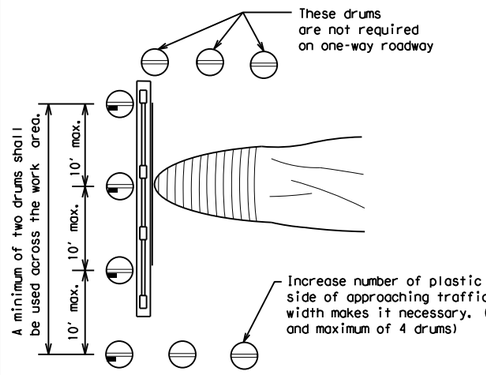
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

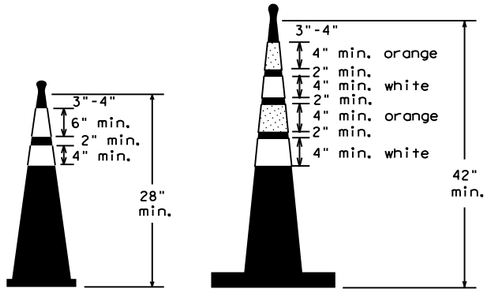
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



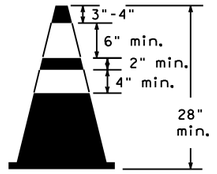
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

PLAN VIEW

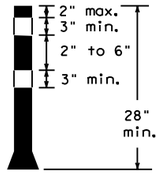
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

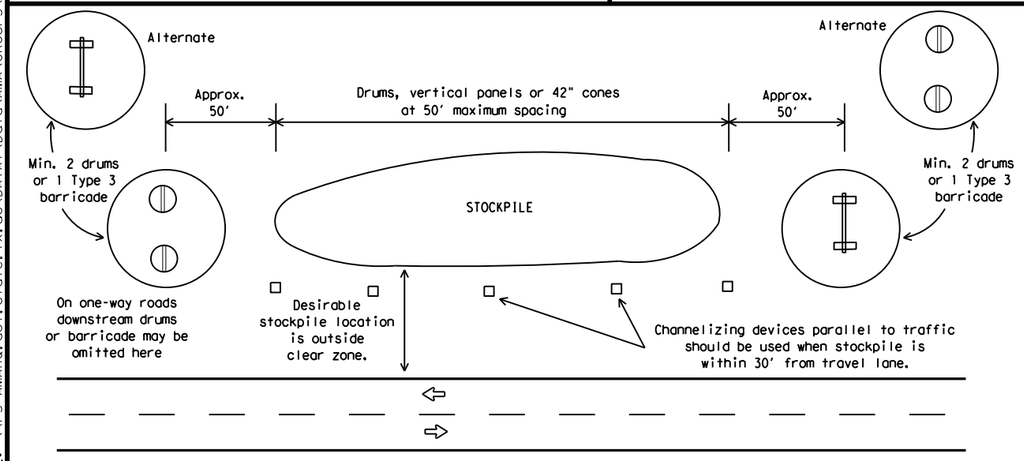


Tubular Marker

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

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

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

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
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AMA	POTTER, ETC		19

104

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

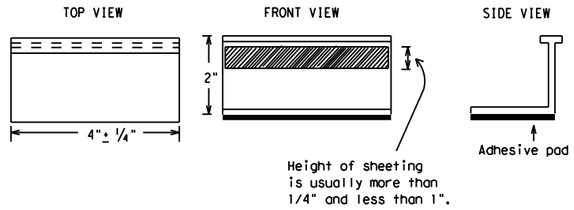
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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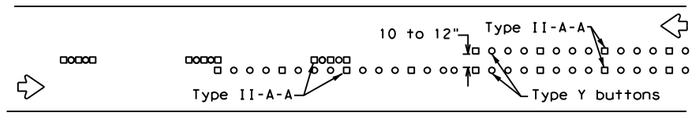
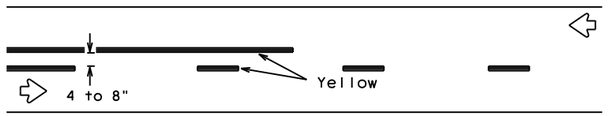
PAVEMENT MARKING PATTERNS

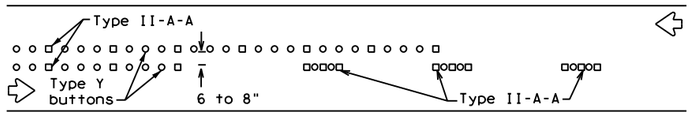
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



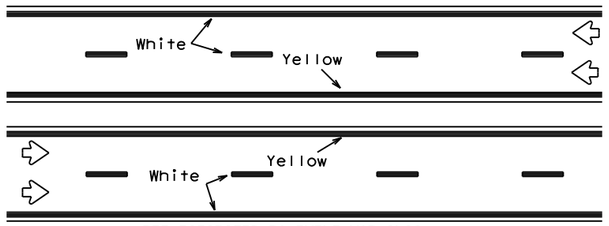
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



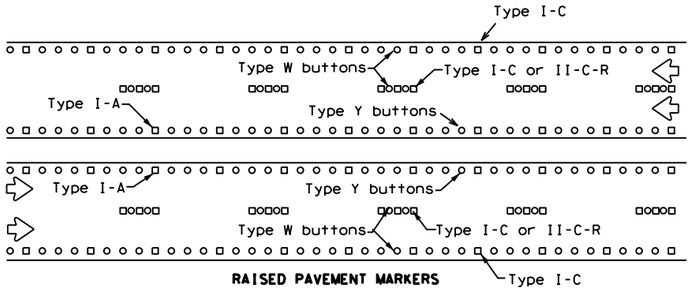
RAISED PAVEMENT MARKERS - PATTERN B

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

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



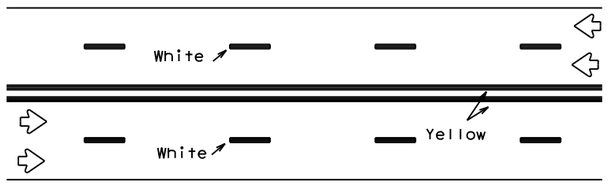
REFLECTORIZED PAVEMENT MARKINGS



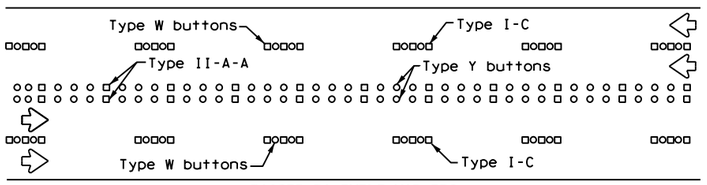
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



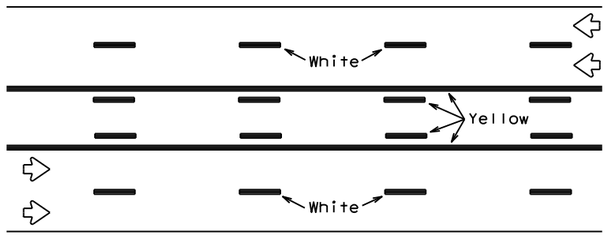
REFLECTORIZED PAVEMENT MARKINGS



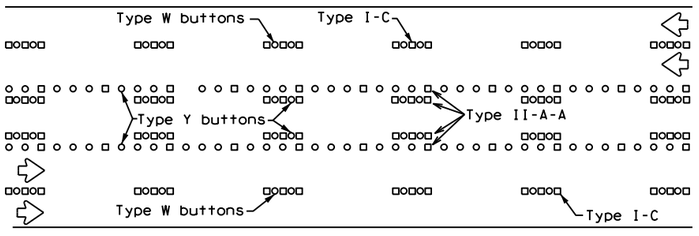
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

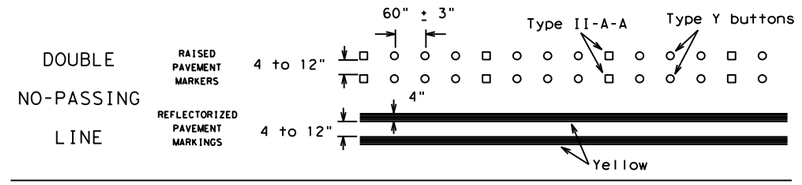
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

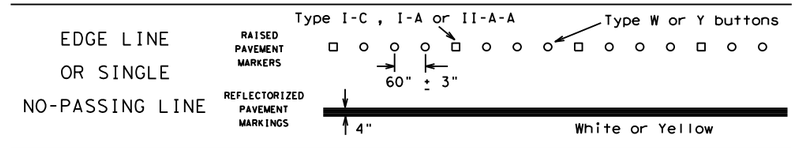
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

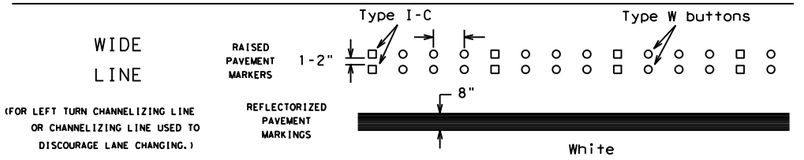


EDGE LINE OR SINGLE NO-PASSING LINE



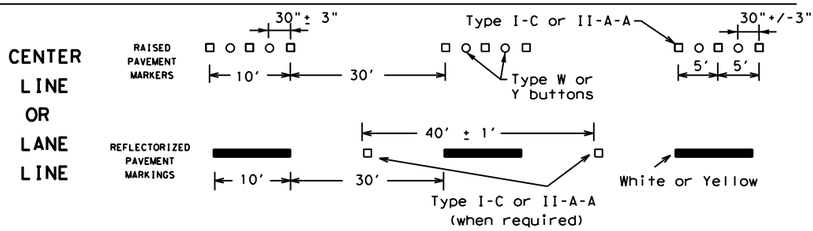
WIDE LINE

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

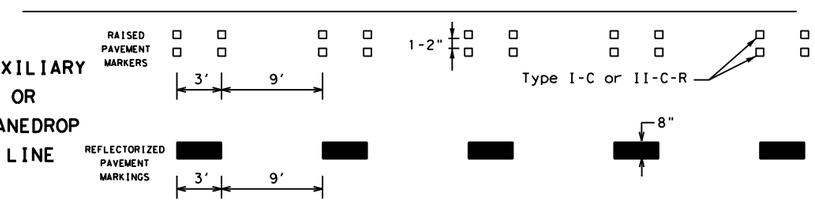


BROKEN LINES

CENTER LINE OR LANE LINE

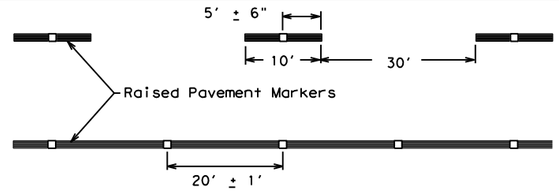


AUXILIARY OR LANEDROP LINE



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."

SHEET 12 OF 12

Texas Department of Transportation

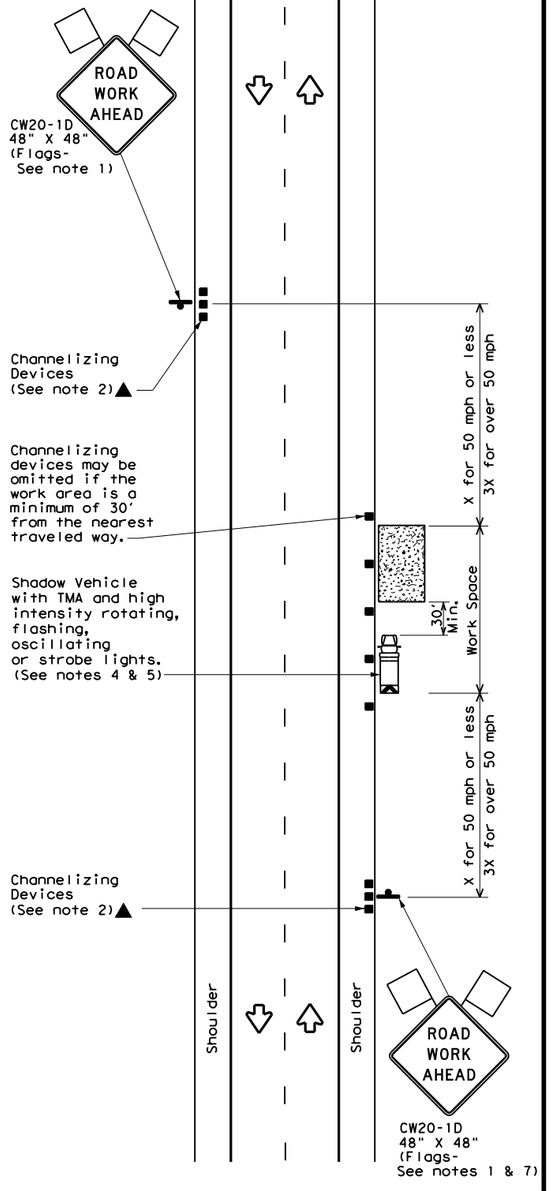
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

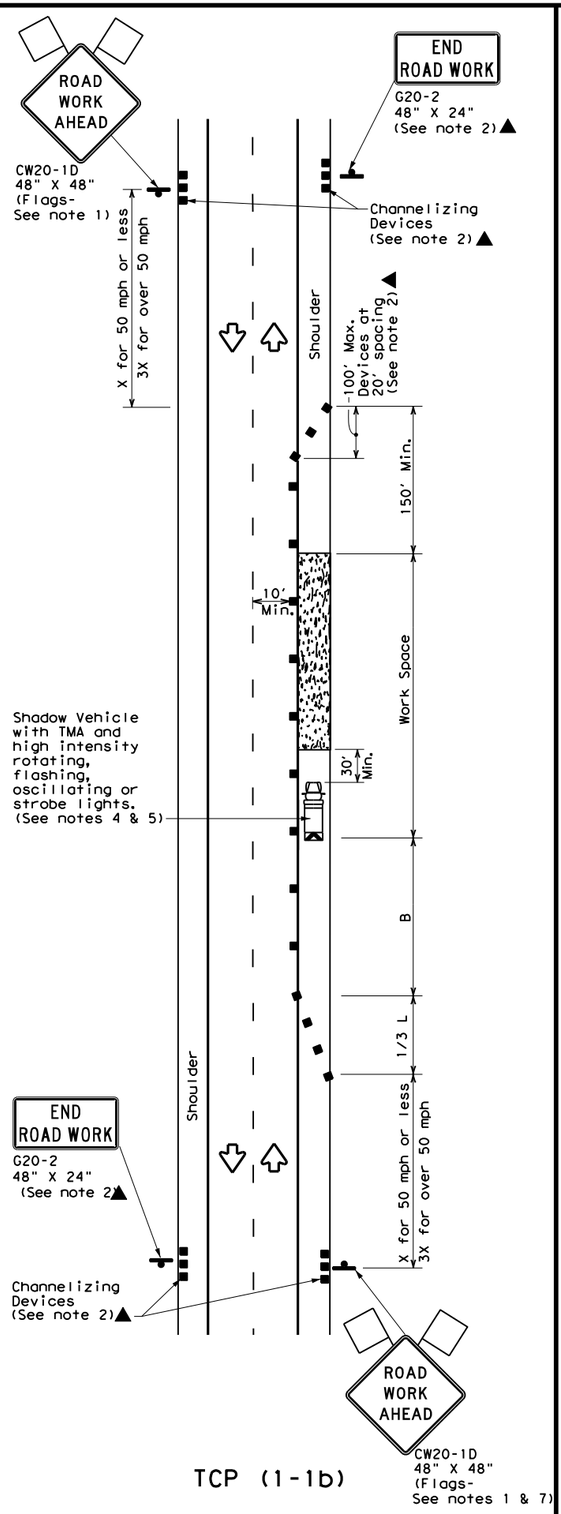
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		21

106



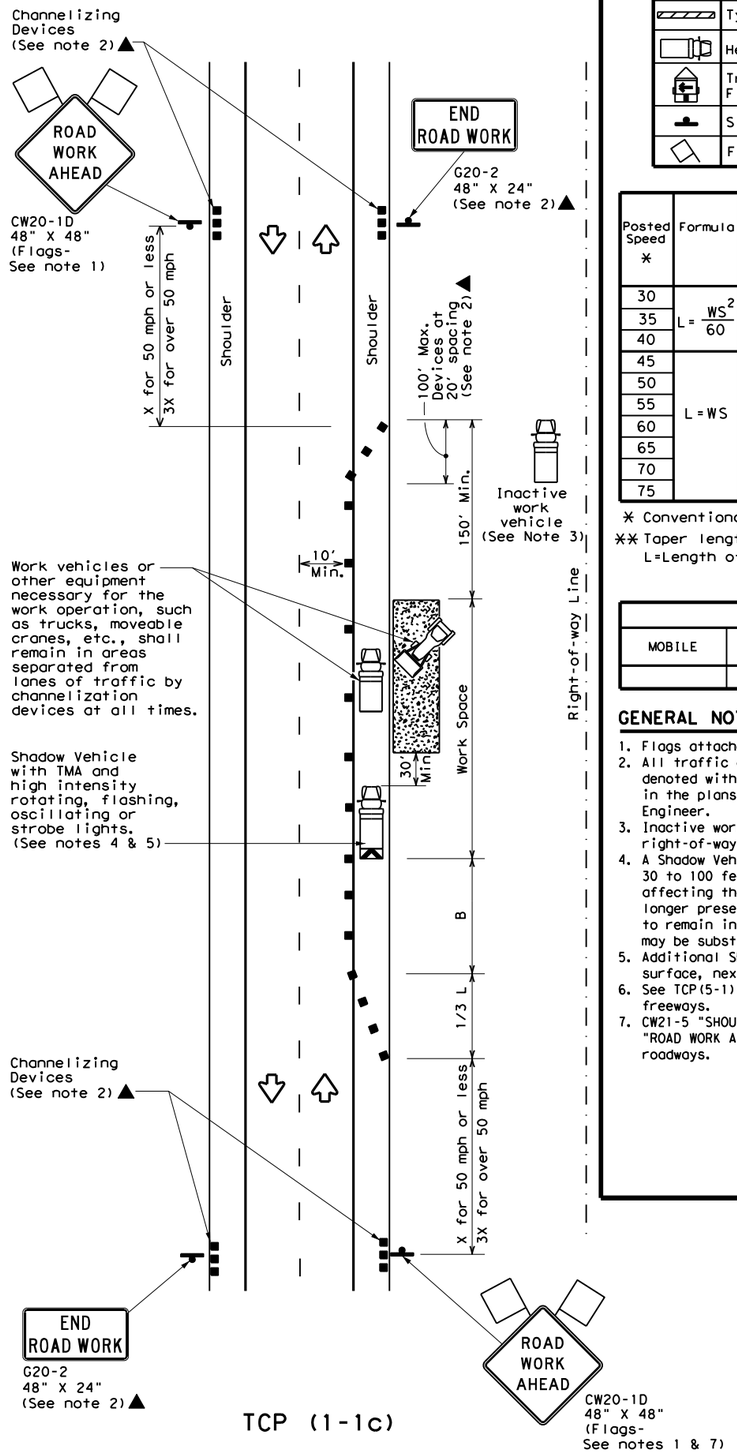
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(1-1)-18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		22

151

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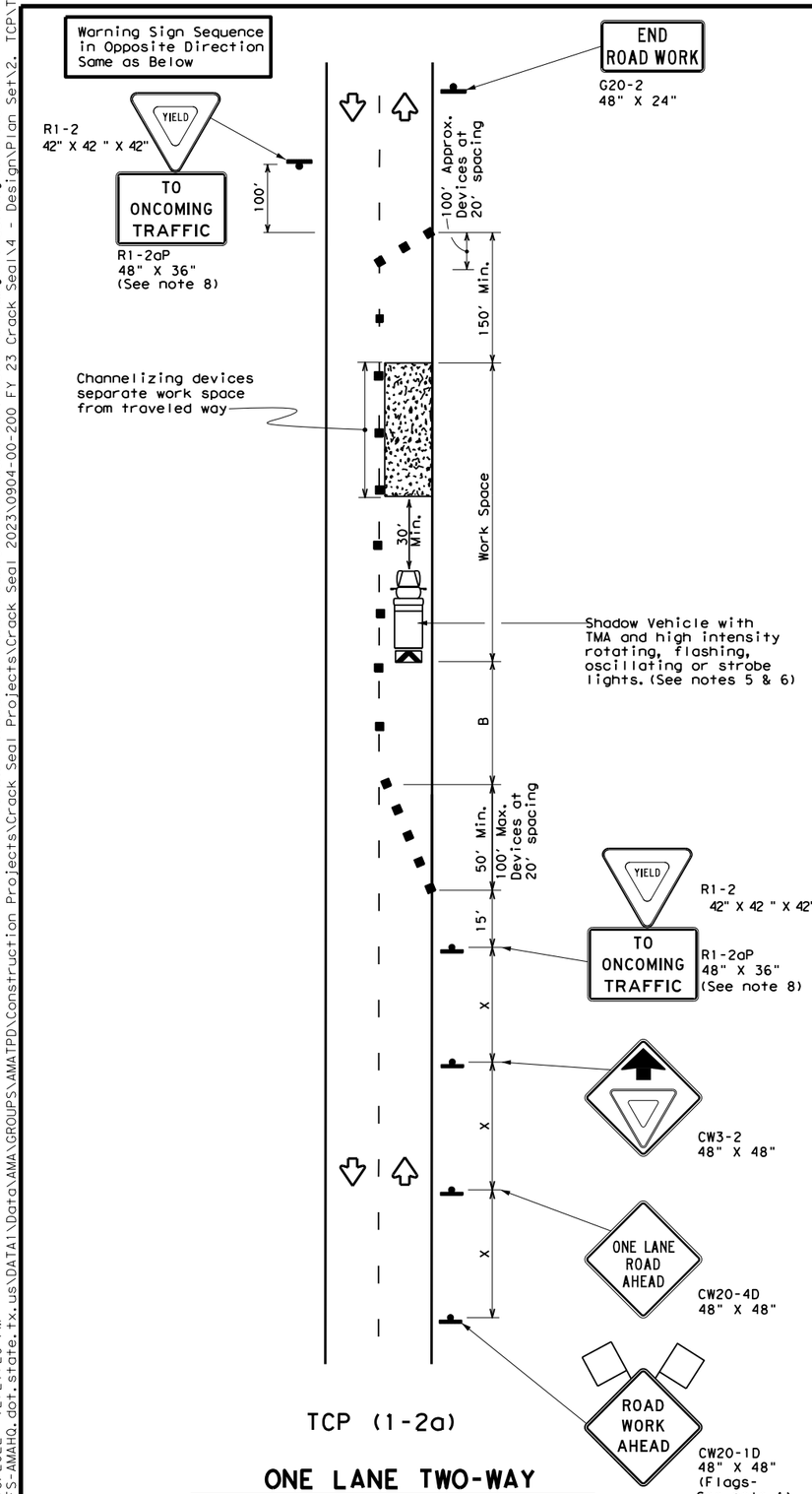
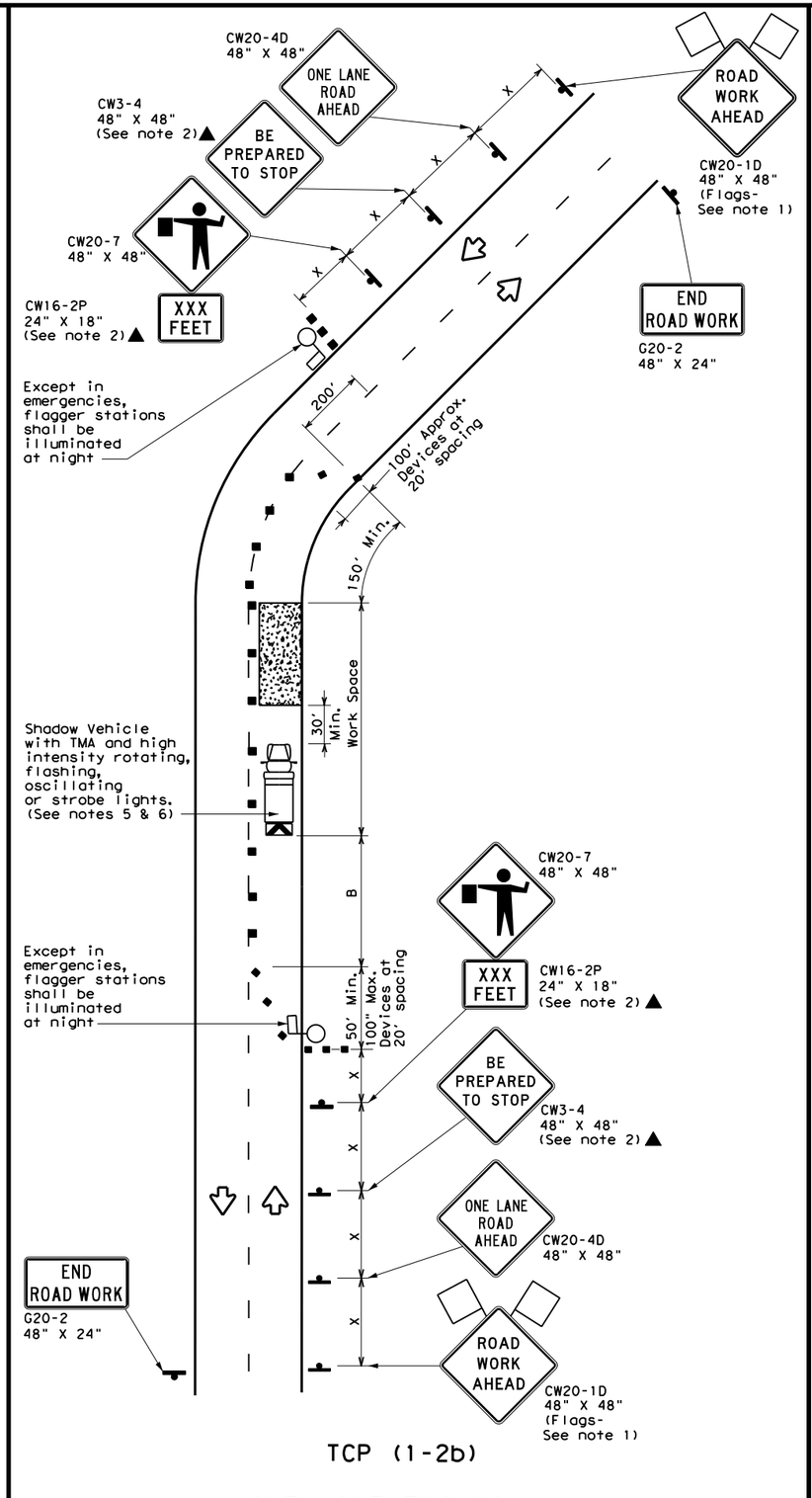


TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

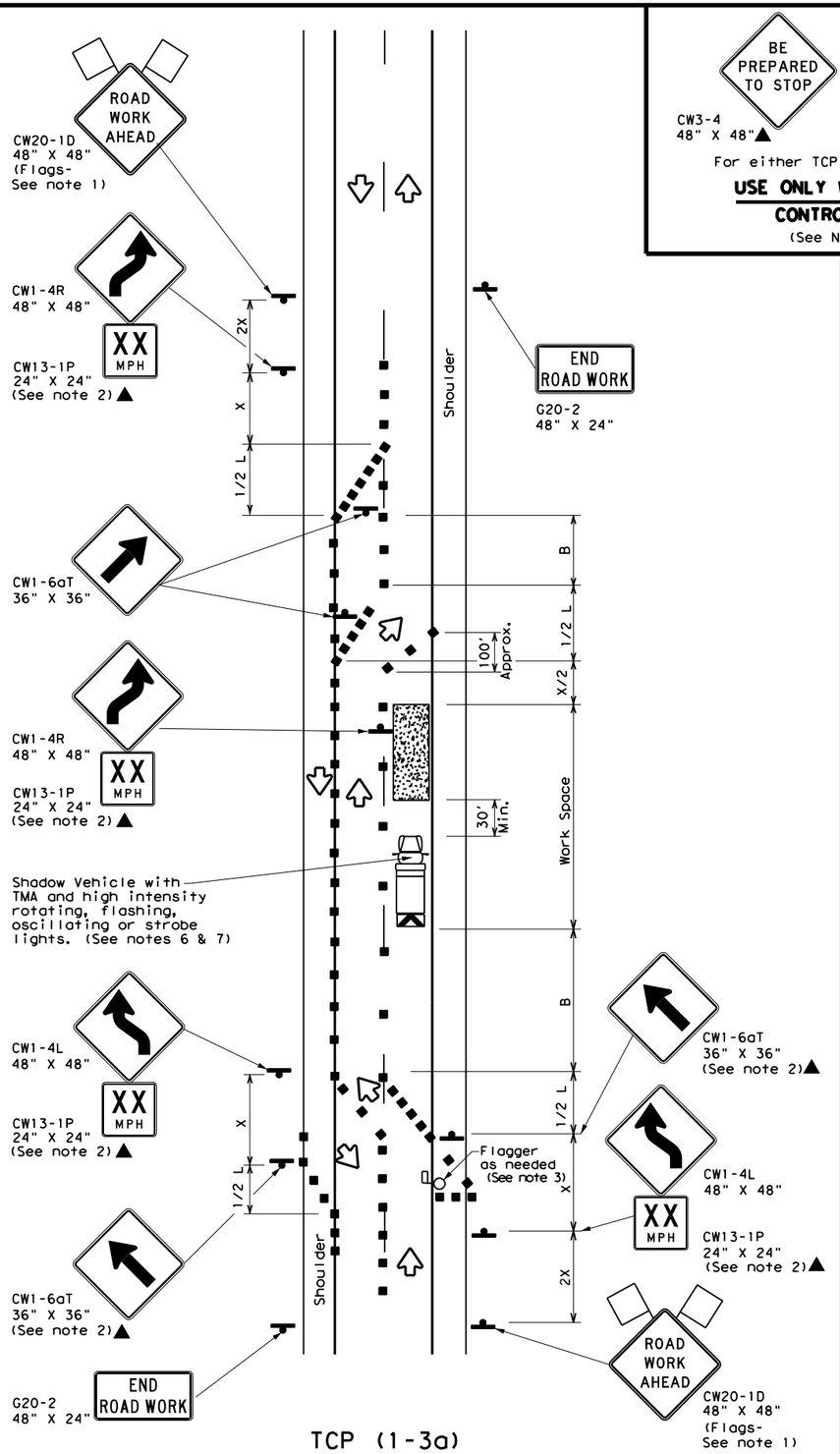
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

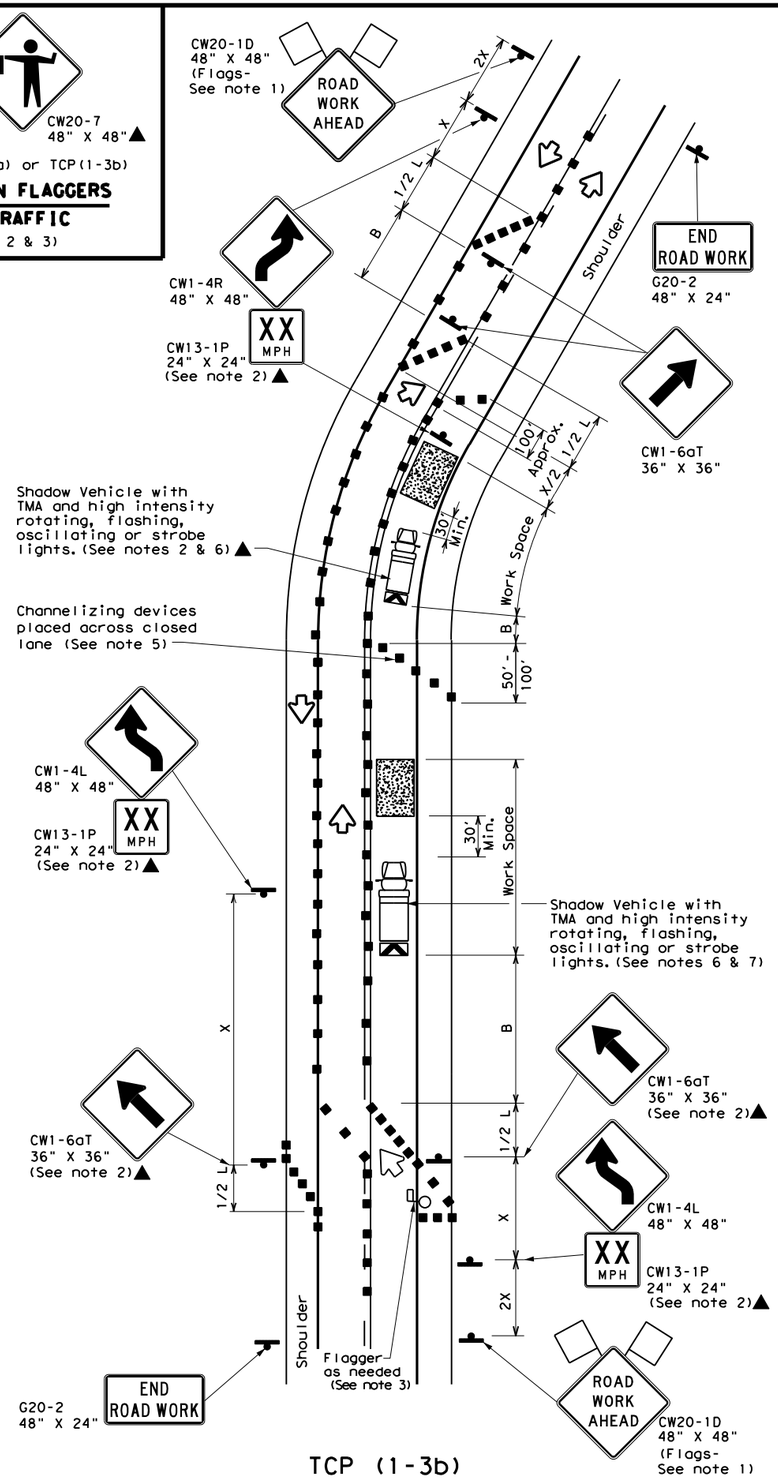
TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		23



TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (1-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
8. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20', or 15' if posted speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

Texas Department of Transportation — *Traffic Operations Division Standard*

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS
TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	AMA	POTTER, ETC		24
1-97 2-18				

DATE: 5/18/2022 12:27:31 PM
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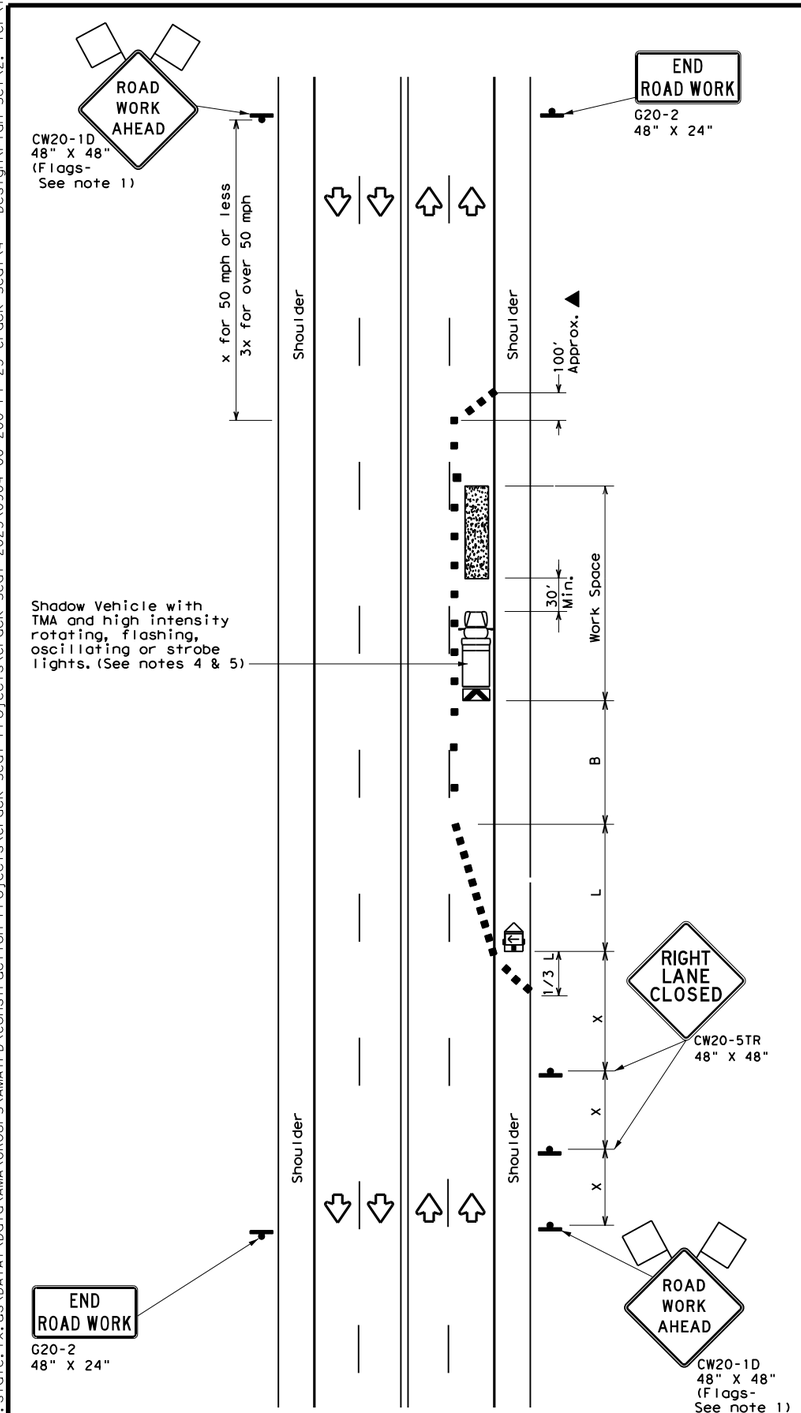
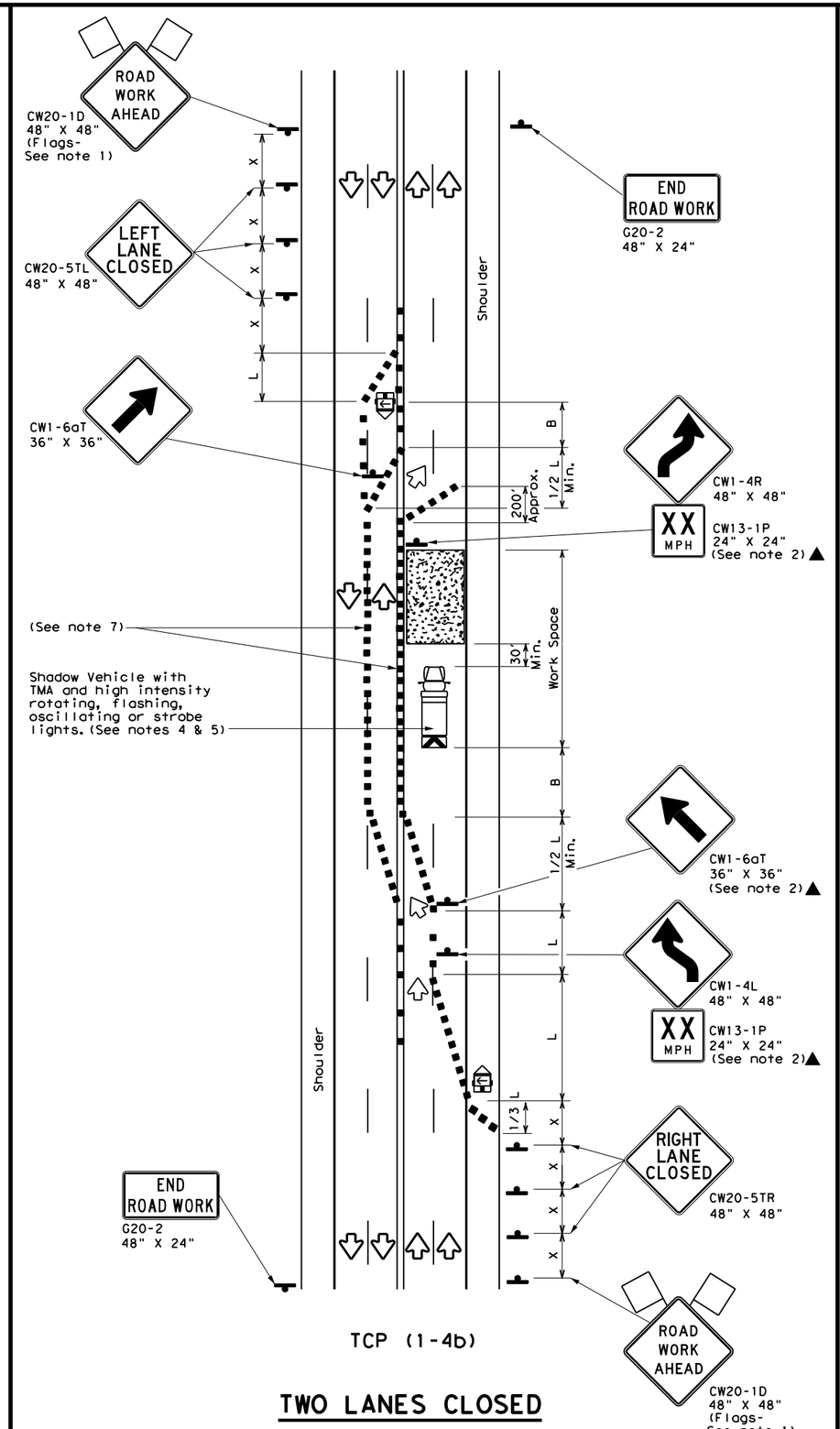


TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

6. If this TCP is used for a left lane closure , CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-18

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	AMA	POTTER, ETC		25
1-97 2-18				

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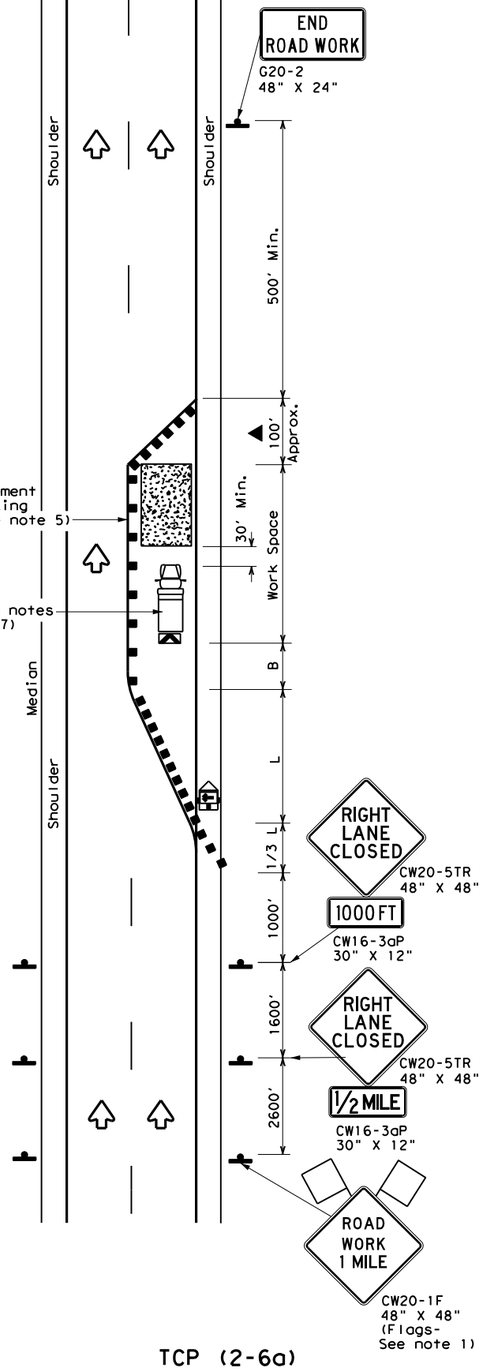
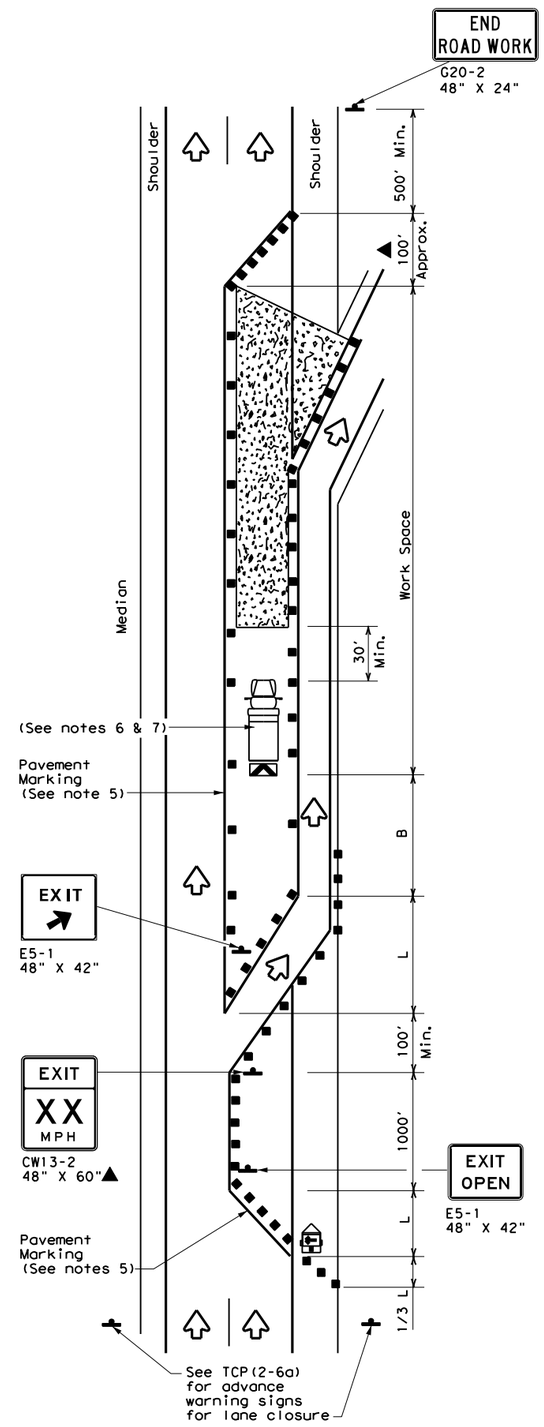


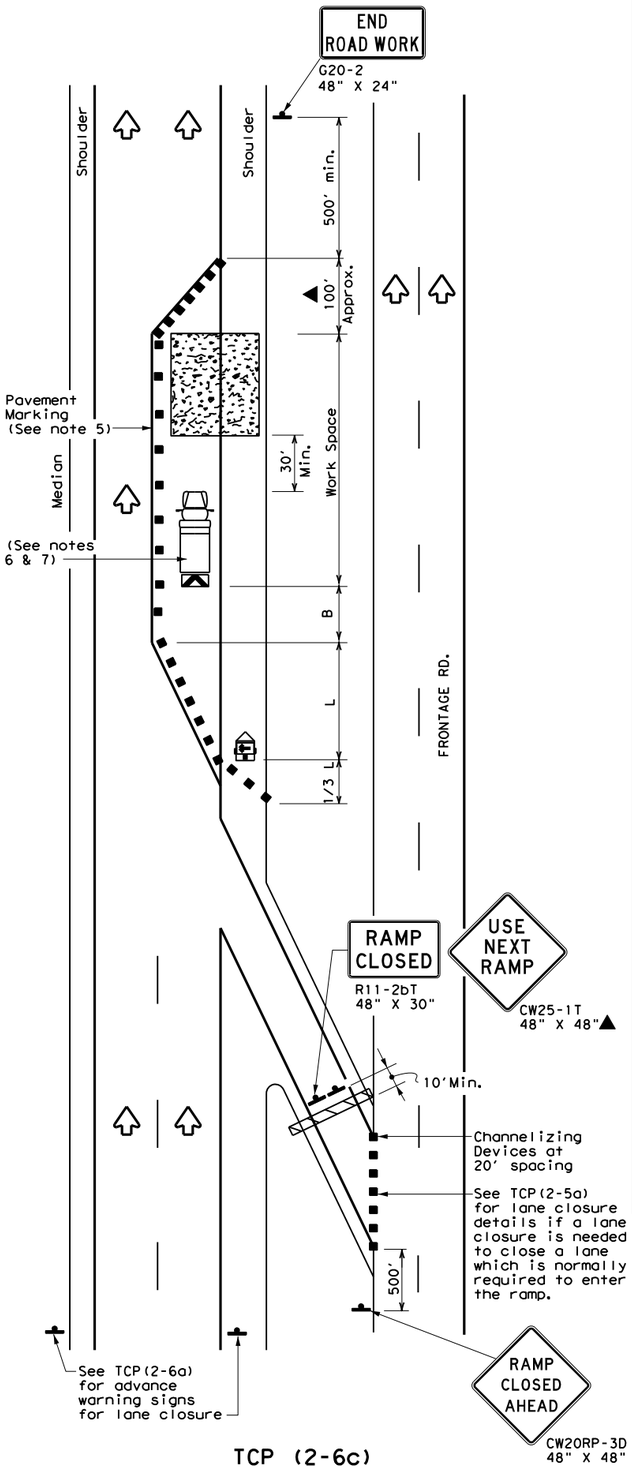
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on Intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0904	00	200, ETC	VARIOUS
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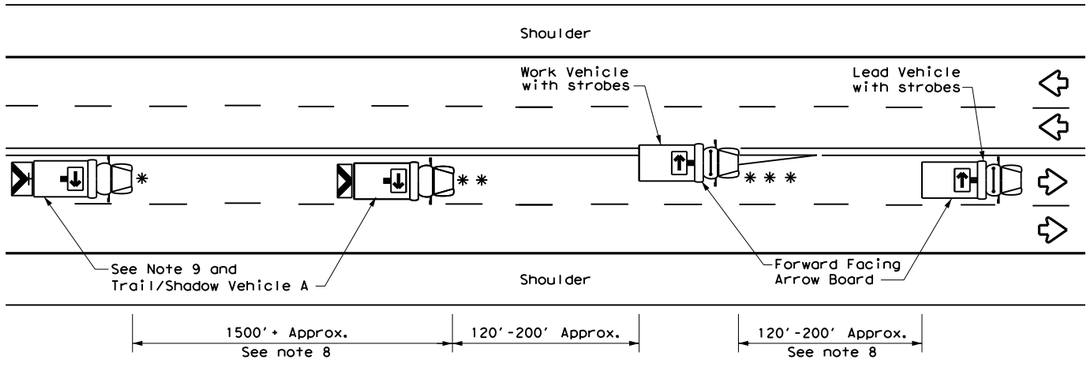
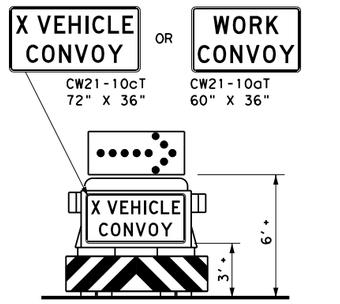
8-95 2-12	AMA	POTTER, ETC		26
1-97 2-18				



TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

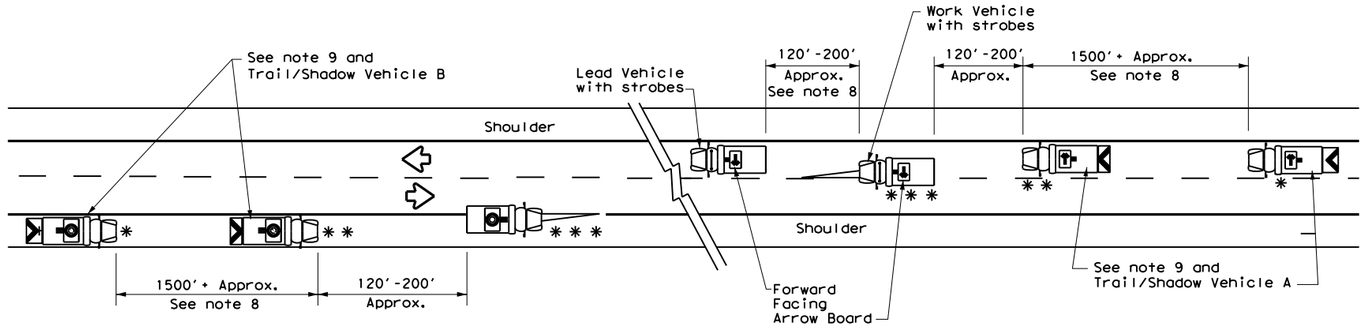
with RIGHT Directional display Flashing Arrow Board

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

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

GENERAL NOTES

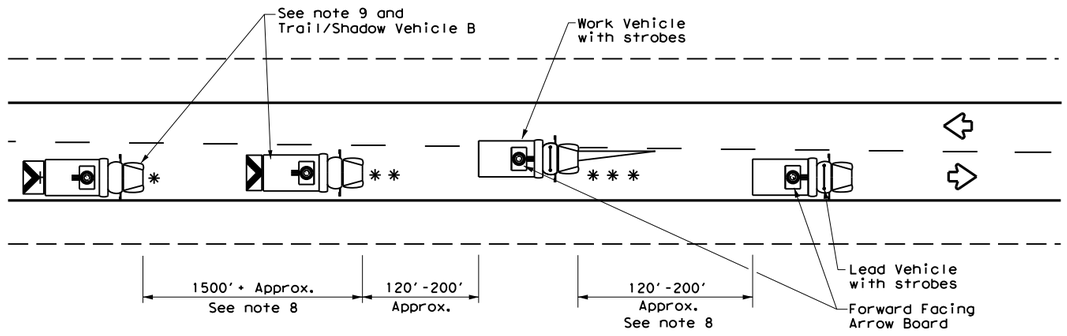
1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic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



WORK ON SHOULDER — WORK ON TRAVEL LANE

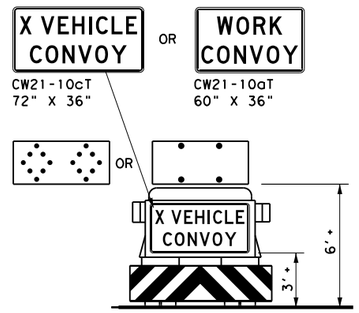
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



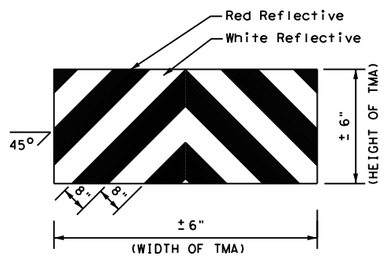
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

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	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		27

DATE: 5/18/2022 12:27:36 PM
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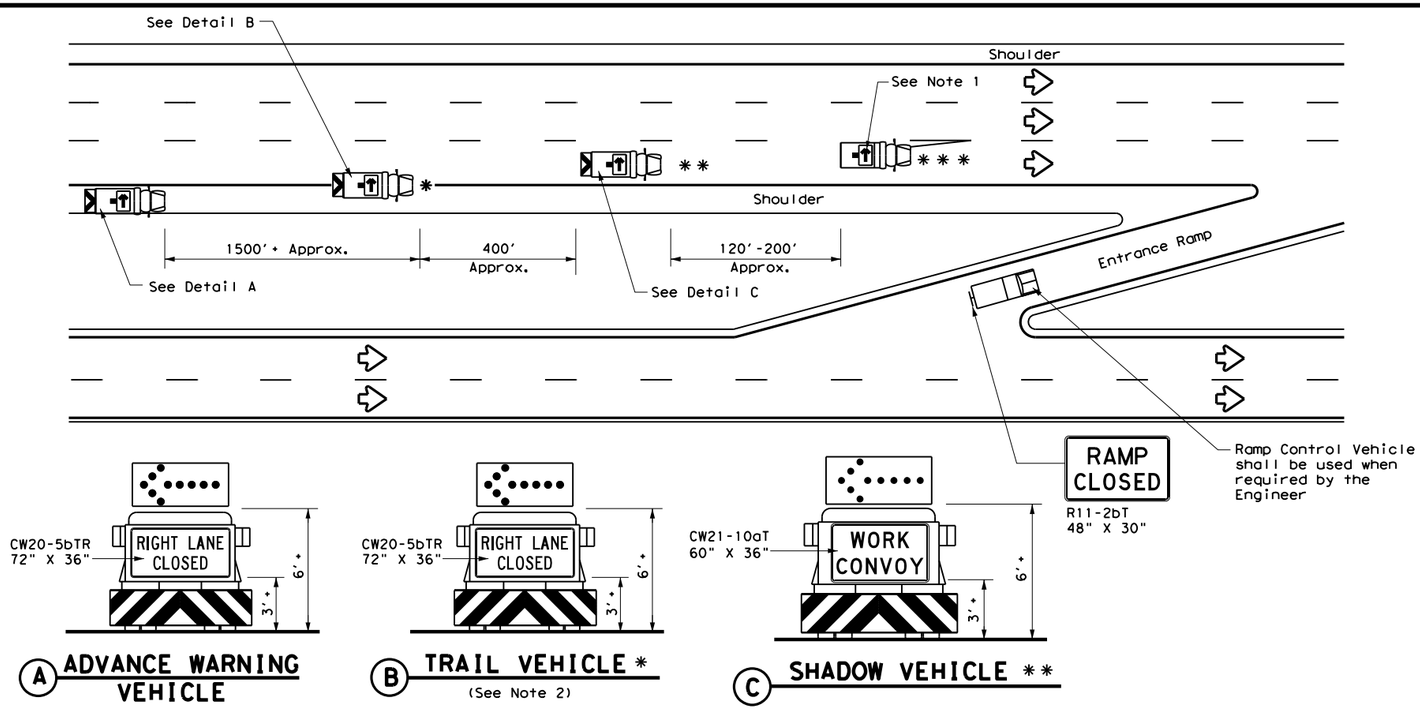
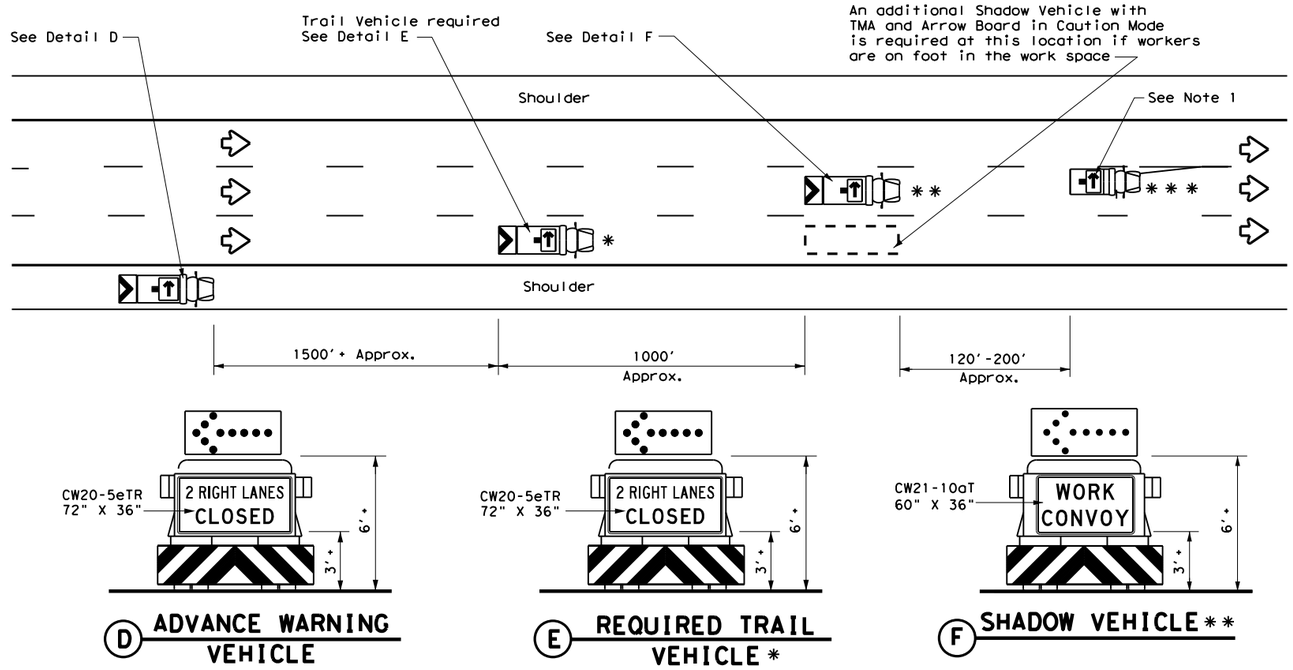


RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



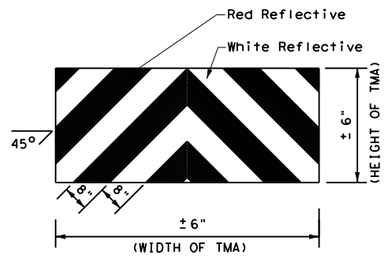
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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. ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. 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.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
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 may vary according to terrain, work activity and other factors.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a 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, must 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. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0904	00	200, ETC	VARIOUS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	AMA	POTTER, ETC		28
1-97				

176

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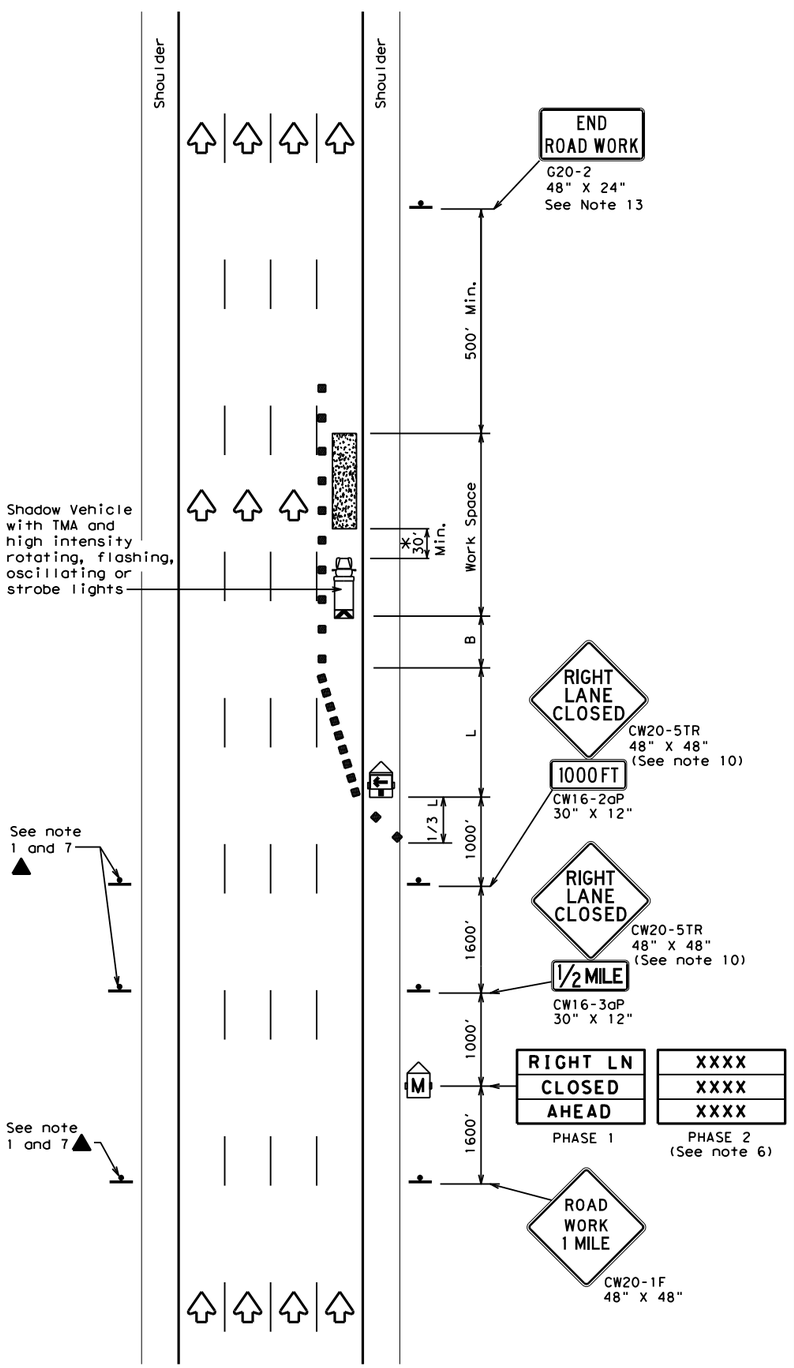
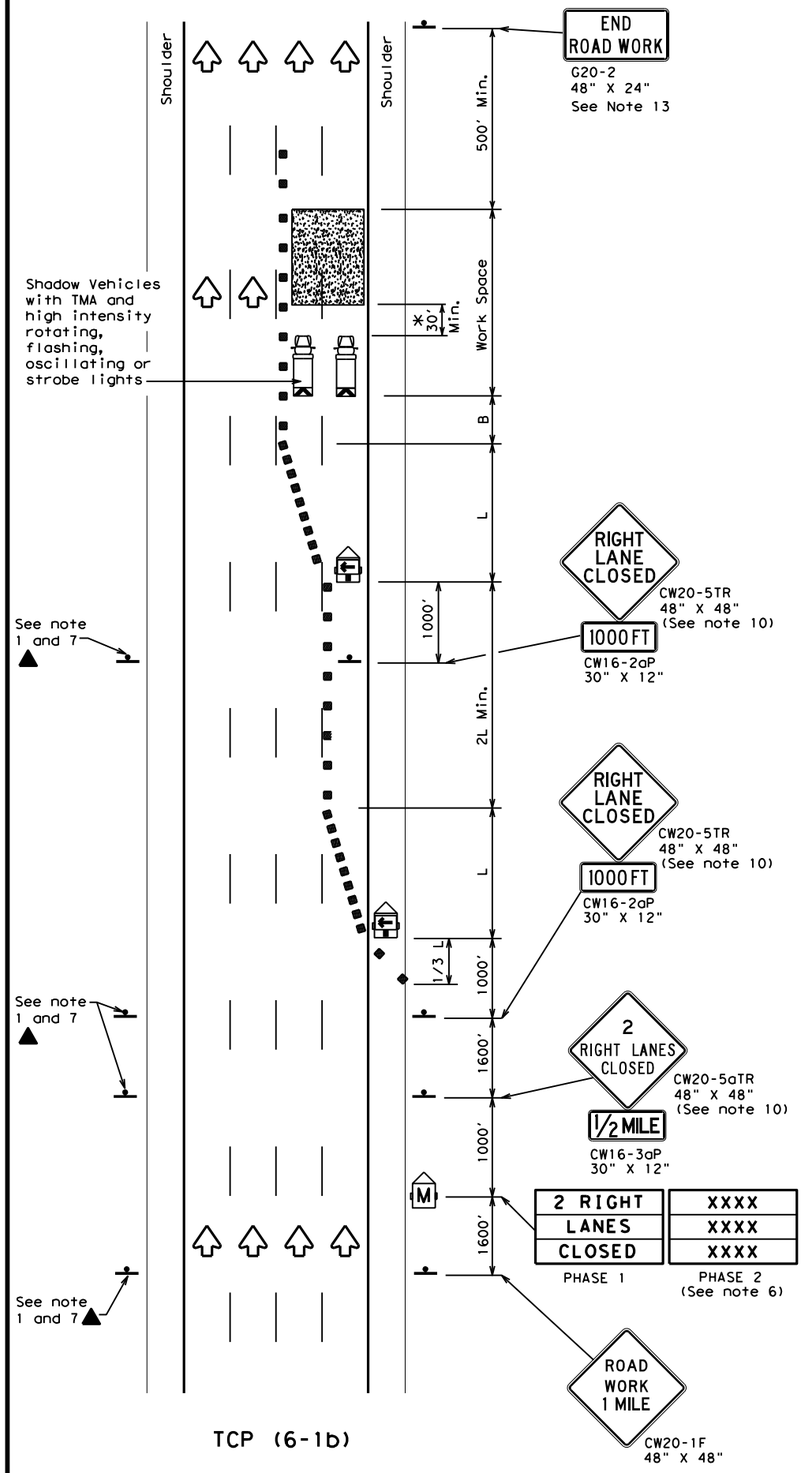


TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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 "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. Drums or 42"cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
3. All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
4. The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
5. Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
6. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
7. Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
8. The number of closed lanes may be increased provided the spacing of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMUTCD.
9. Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
10. Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions shown in the SHSD for Texas with distances on the sign face rather than mounted on a plaque below the sign may be used.
11. When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
12. For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
13. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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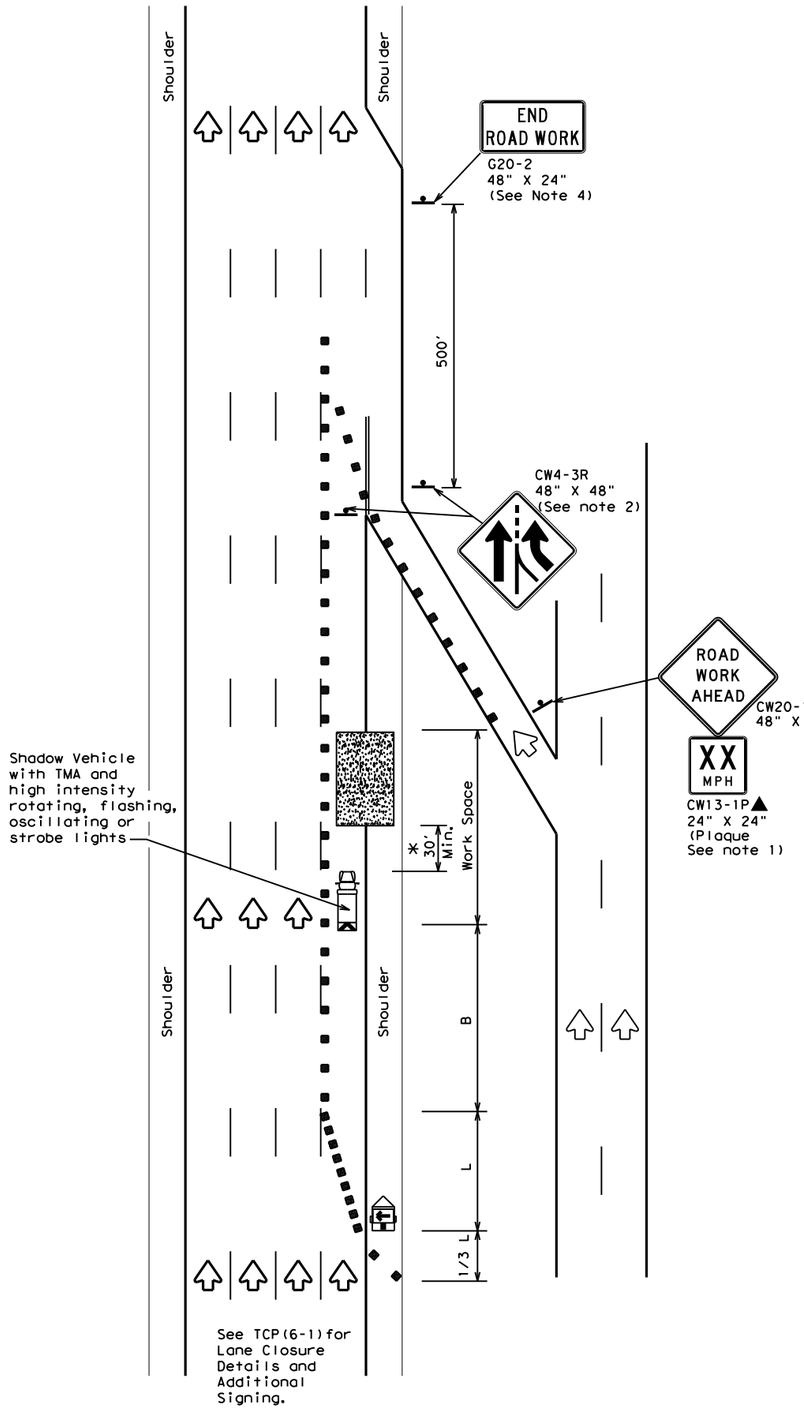
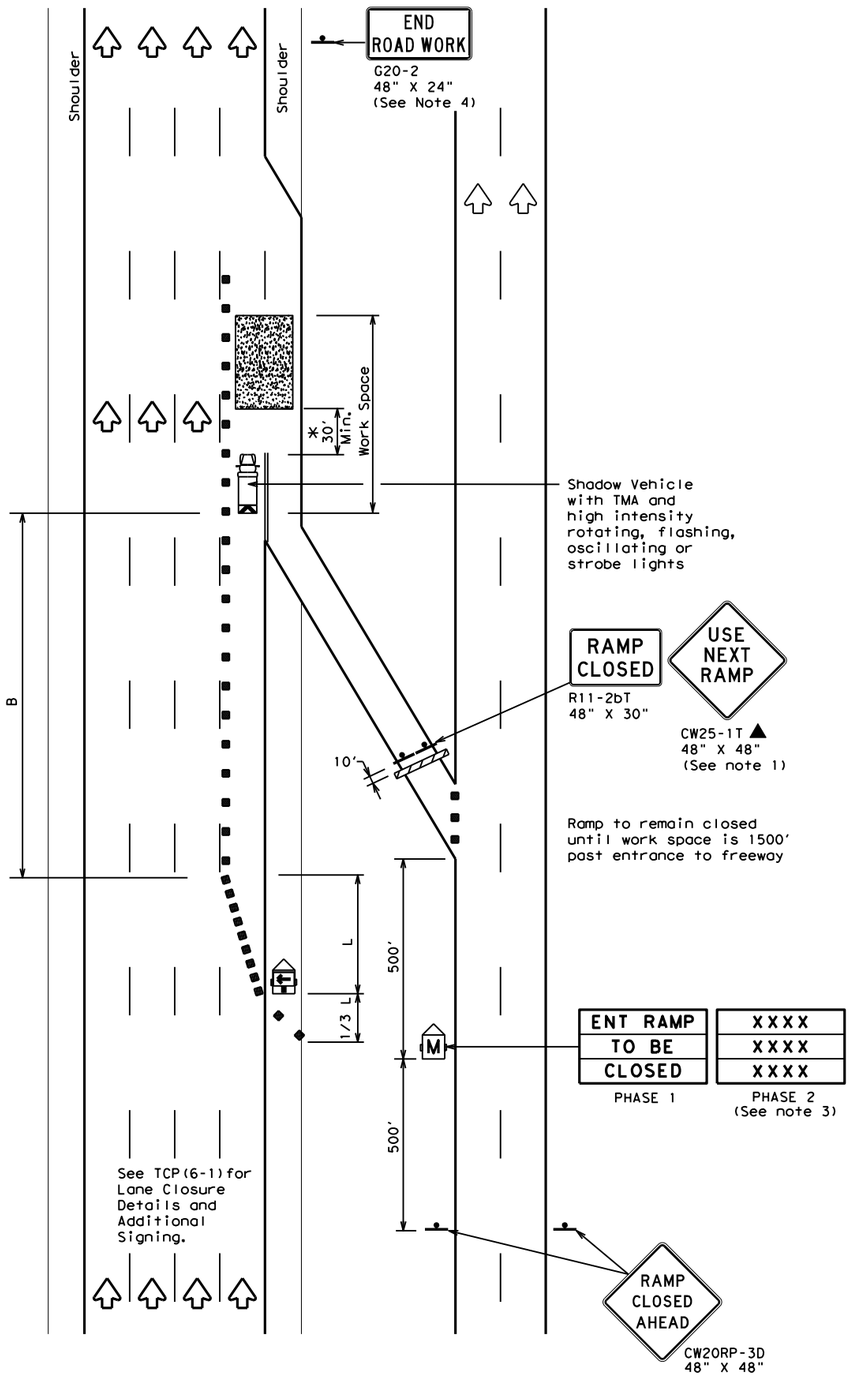
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		29

201



TCP (6-2a)

ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b)

ENTRANCE RAMP CLOSED

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. ADDED LANE Symbol (CW4-3) sign may be omitted when sign between ramp and mainlane can be seen from both roadways.
3. See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
4. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP

TCP(6-2)-12

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©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0904	00	200, ETC	VARIOUS
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AMA	POTTER, ETC		30

202

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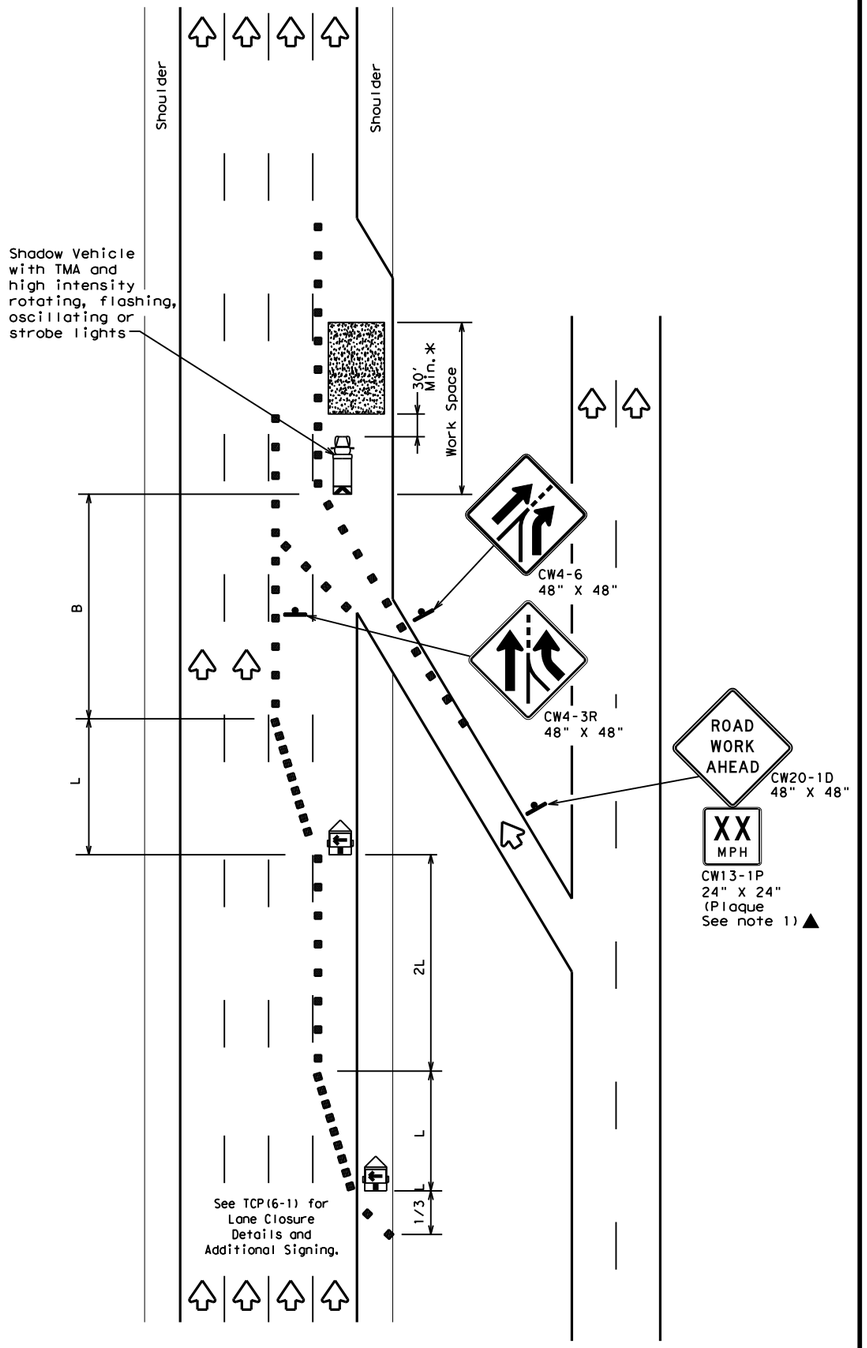
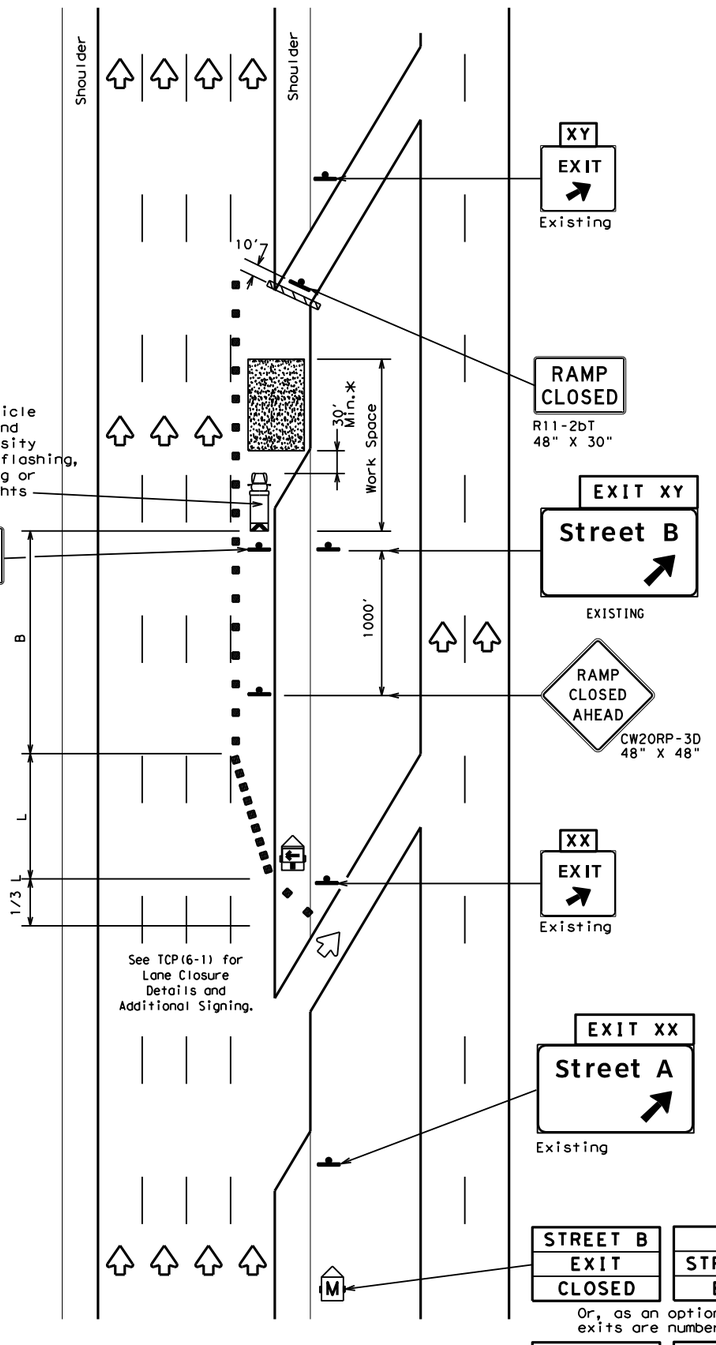


TCP (6-3a)

ENTRANCE RAMP OPEN



TCP (6-3b)

EXIT RAMP CLOSED
TRAFFIC EXITS PRIOR TO CLOSED RAMP

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 "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP(6-3)-12

FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
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1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AMA	POTTER, ETC		31

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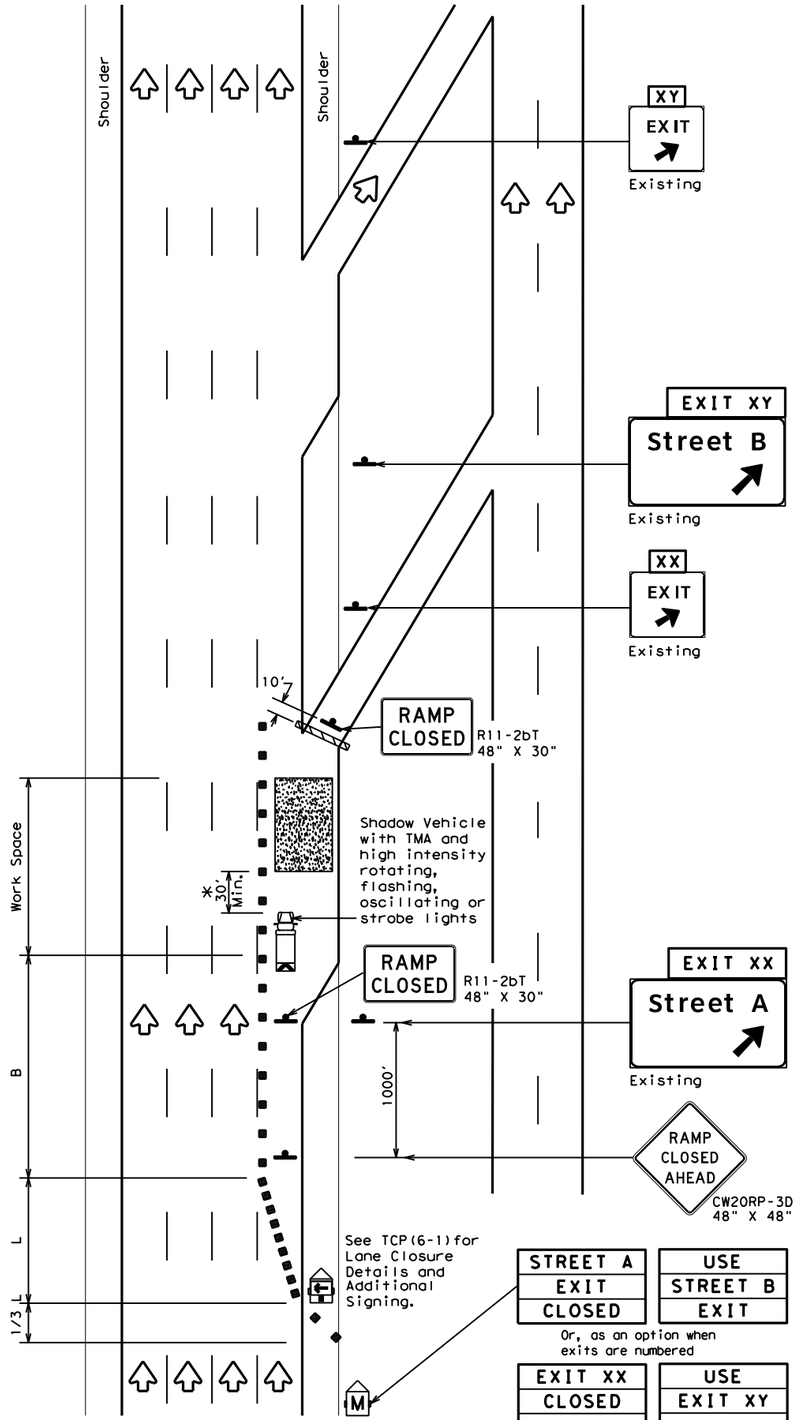
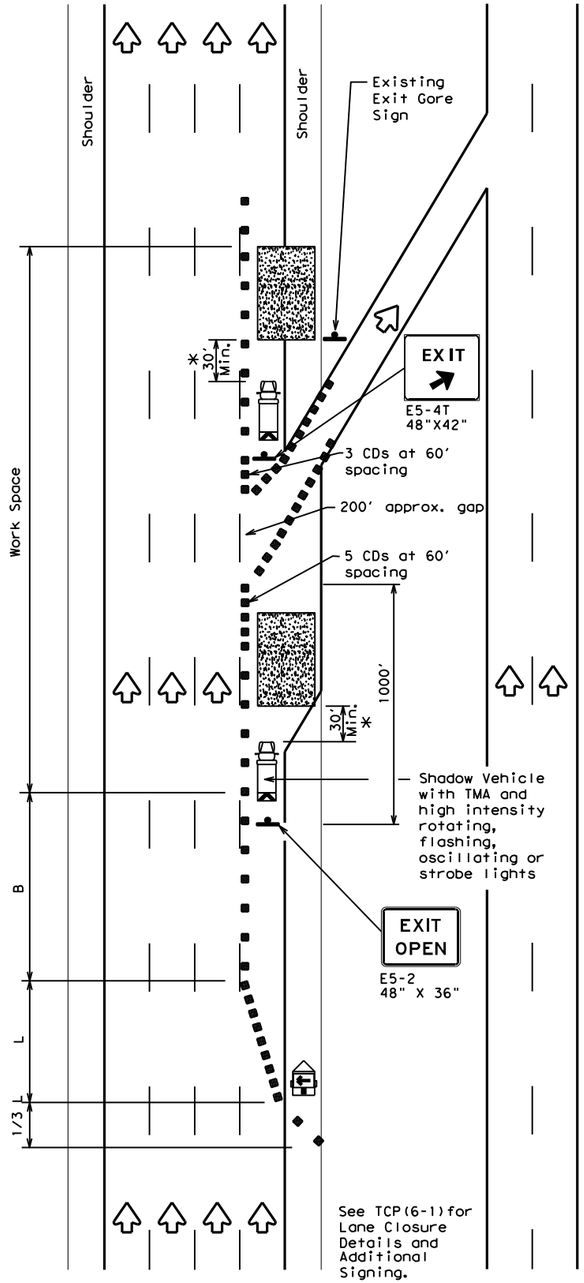


TCP (6-4a)

EXIT RAMP CLOSED
TRAFFIC EXITS PAST CLOSED RAMP



TCP (6-4b)

EXIT RAMP OPEN

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	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 "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. See BC Standards for sign details.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA AT EXIT RAMP

TCP(6-4)-12

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©TxDOT Feburary 1994	CONT	SECT	JOB	HIGHWAY
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4-98 8-12	AMA	POTTER, ETC		32

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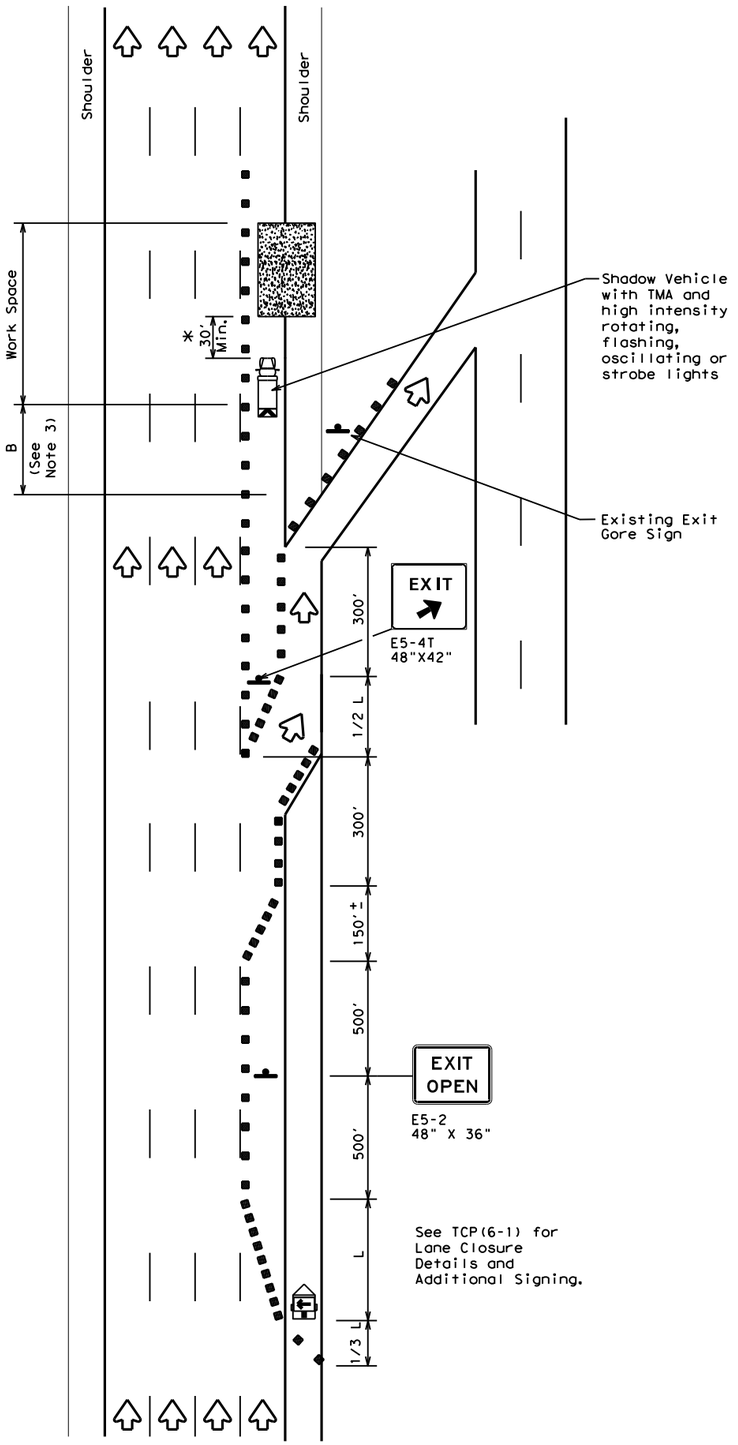
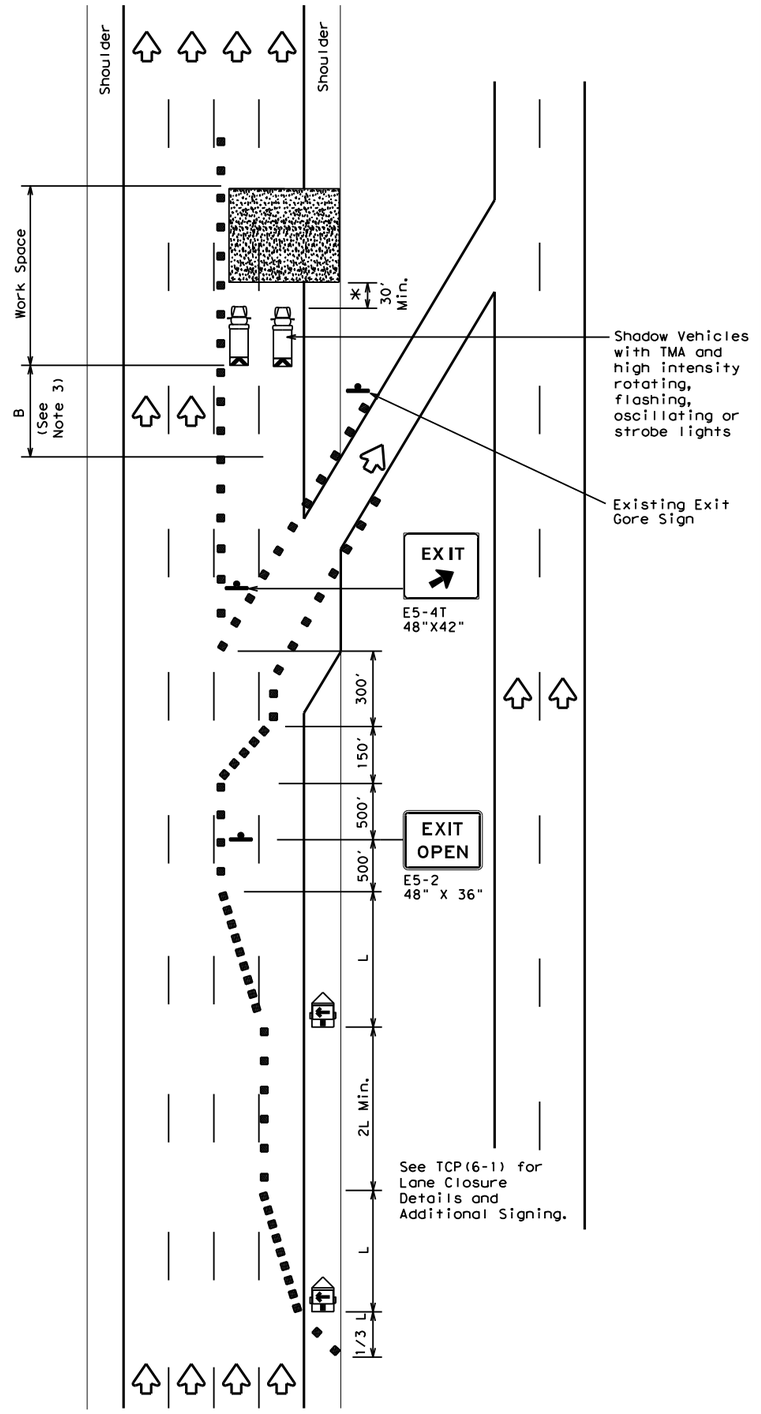


TCP (6-5a)

EXIT RAMP OPEN



TCP (6-5b)

EXIT RAMP OPEN
TWO LANE CLOSURE WITHIN 1500' PAST EXIT RAMP

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 "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. See BC standards for sign details.
3. If adequate longitudinal buffer length "B" does not exist between the work space and the exit ramp, consideration should be given to closing the ramp.

*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND EXIT RAMP

TCP(6-5)-12

FILE: tcp6-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1998	CONT	SECT	JOB	HIGHWAY
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1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AMA	POTTER, ETC		33

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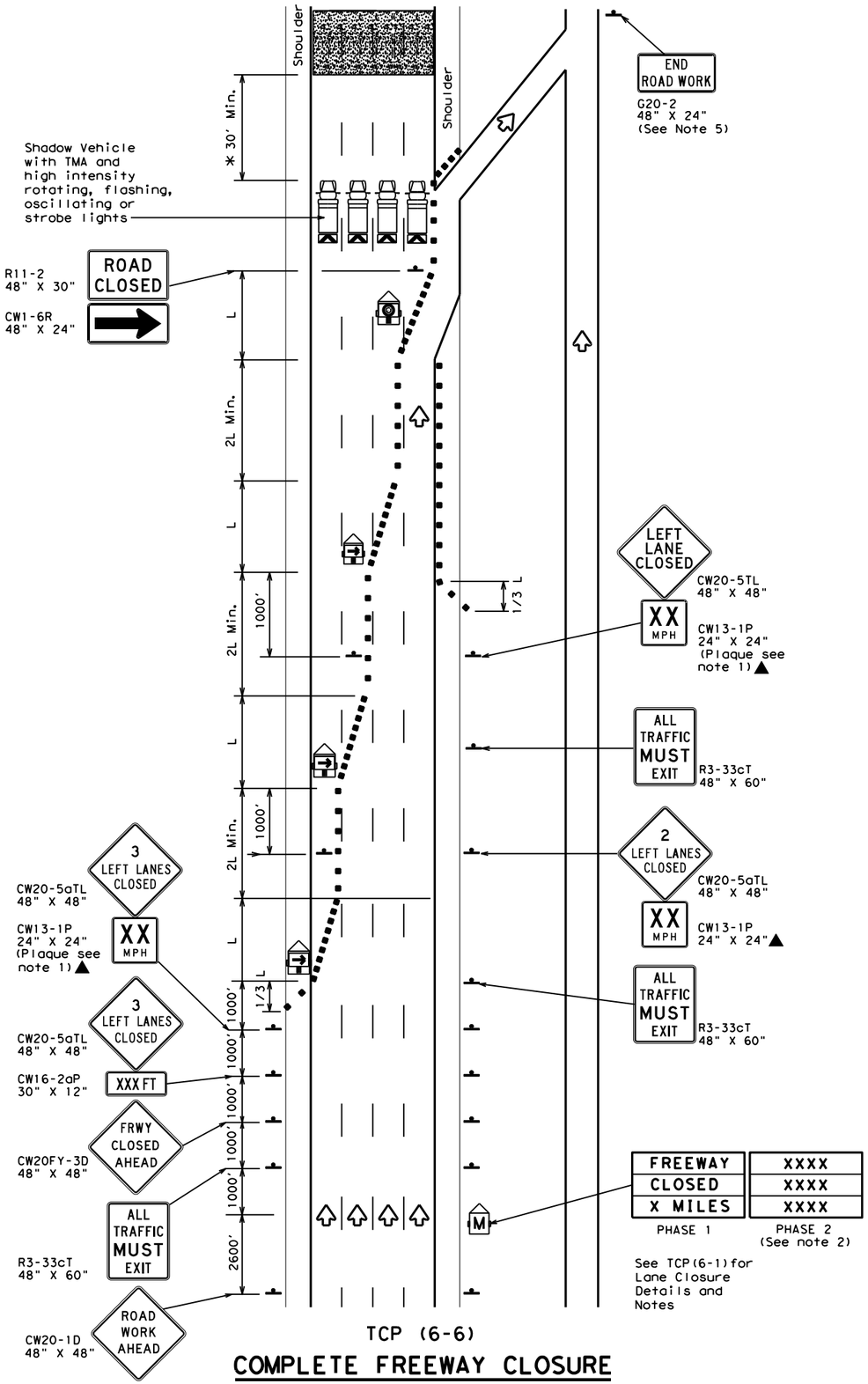

TCP (6-6)

COMPLETE FREEWAY CLOSURE

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE RIGHT," recommended speed, delay, exit information, or other specific warnings.
3. Where queuing is anticipated beyond signing shown, additional PCMS signs, other warning signs, devices or Law Enforcement Officers should be available to warn approaching high speed traffic of the end of the queue, as directed by the Engineer.
4. Entrance ramps located from the advance warning area to the exit ramp should be closed whenever possible.
5. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY CLOSURE

TCP(6-6)-12

FILE: tcp6-6.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
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4-98 8-12	AMA	POTTER, ETC		34

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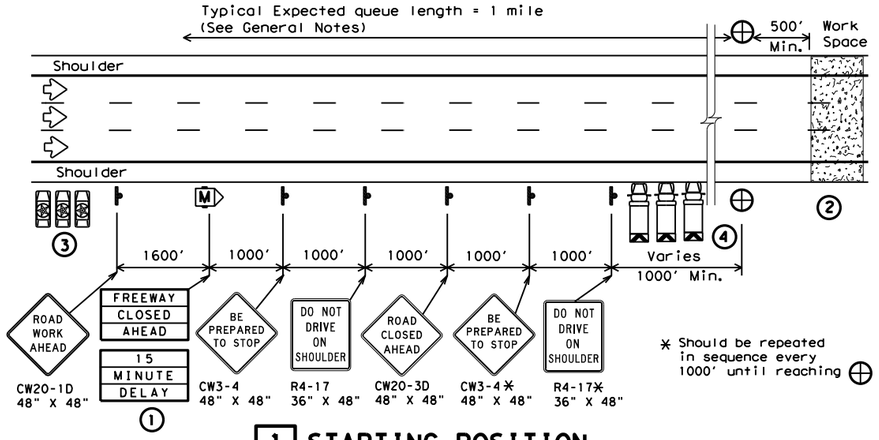


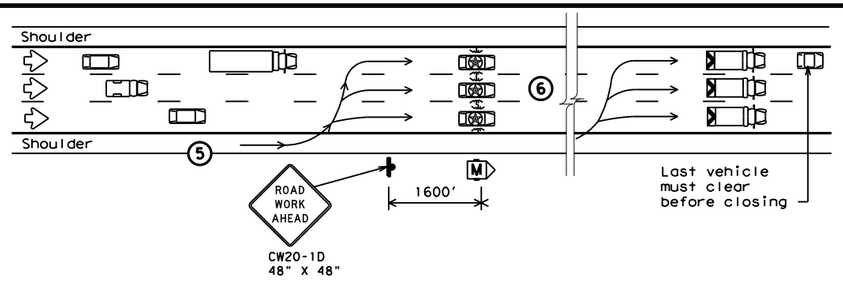
1 STARTING POSITION

(1) Traffic control devices should be installed or located near their intended position prior to beginning temporary roadway closure sequence. Duplicate signs should be erected on the median side of the roadway when median width permits. Warning signs should not be placed on the paved shoulders that will be used by the WARNING LEOV, or where movement of the LEOVs or barrier vehicles will be impeded.

(2) Prior to beginning the roadway closure sequence, all equipment, materials, personnel, and other items necessary to complete the work should be gathered near the work area. Entrance ramps located in the area where a queue is expected to build should be closed.

(3) There should be one LEOV for every lane to be controlled, plus a minimum of one to warn traffic approaching a queue. An additional lead law enforcement officer is desirable to remain with the Engineer's or Contractor's point of contact (POC) during the operation in order to improve communication with all LEOVs involved.

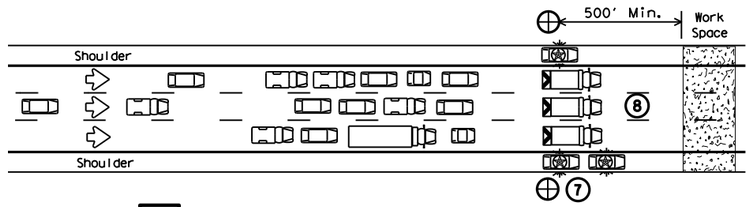
(4) One barrier vehicle with a Truck Mounted Attenuator and amber or blue and amber high intensity flashing/oscillating/strobe lighting shall be used for each lane to be closed.



2 REDUCING SPEED OPERATION

(5) Starting position of the LEOVs should be in advance of the most distant warning signs.

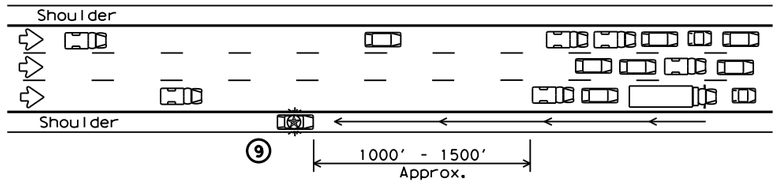
(6) Once the LEOVs have achieved an abreast blocking formation while traveling toward the CP, emergency lights and headlights should be turned "ON". The LEOVs should maintain formation, not allow traffic to pass, and begin to decelerate. The LEOVs should continue to decelerate, giving the barrier vehicles opportunity to be staged upstream of the work space after traffic has cleared. The LEOVs should then continue to decelerate slowly until bringing traffic to a stop near the barrier vehicles.



3 ALL TRAFFIC STOPPED AT CP

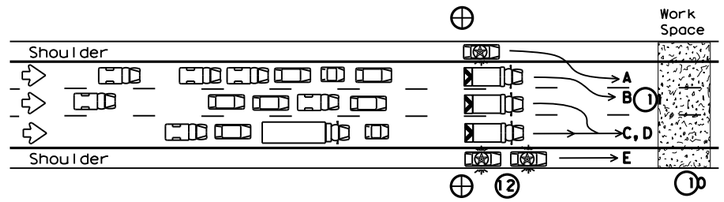
(7) Once traffic is stopped the LEOVs should park on the shoulders with emergency lighting "ON" in order to provide law enforcement presence at the closure and keep shoulders blocked ahead of the work space. They should stay in radio contact with the WARNING LEOV.

(8) The barrier vehicles should be parked, one in each lane, the parking brake set, with the high visibility flashing/oscillating/strobe lighting "ON," and the transmission in gear.



4 WARNING THE TRAFFIC QUEUE

(9) The WARNING LEOV should proceed to the right shoulder of the roadway, with emergency lights on approximately 1000' in advance of the traffic queue (stopped traffic) as the queue develops. When determined that limited sight distance situations (crest of hills, sharp roadway curvature, etc.) may occur to motorists approaching the queue, the WARNING LEOV may proceed 1/4 mile or more in advance of the queue.



5 RELEASING STOPPED TRAFFIC

(10) All equipment, materials, personnel, and other items should be removed from the roadway and maintain an adequate clear zone.

(11) When the roadway is clear for traffic, the LEOV should proceed forward from the left shoulder followed by the barrier vehicles, from left to right, as shown alphabetically in the plan view.

(12) The LEOV or LEOVs on the right shoulder may remain on the shoulder until satisfied that traffic is moving satisfactorily before merging or proceeding.

(13) LEOVs and barrier vehicles should re-group at their respective starting positions if necessary.

LEGEND			
■ ■	Channelizing Devices	⊕	Control Position (CP)
M	Portable Changeable Message Sign (PCMS)		Barrier Vehicle with Truck Mounted Attenuator
	Law Enforcement Officer's Vehicle(LEOV)		Traffic Flow

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

GENERAL NOTES

1. All traffic control devices shall conform with the latest edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Additional guidelines for traffic control devices may be found in the TMUTCD. Signs conflicting with the roadway closure sequence should be completely removed or covered. Additional traffic control devices may be required for closure of access roads, cross streets, exit and entrance ramps as directed by the Engineer.

2. Law enforcement officers and all workers involved should review and understand all procedures before the roadway closure sequence begins. Pre-work meetings may be held for this purpose. Local emergency services and media should have advance notification of roadway closure, expected dates and approximate times of closures.

3. Law enforcement officers shall be in uniform and have jurisdiction in the locale of the work area. An additional WARNING Law Enforcement Officer's Vehicle (LEOV) may be used on the median side of the roadway where median shoulder width permits (See sequence #9).

4. The roadway closure should be during off-peak hours, as shown in the plans, or as directed by the Engineer.

5. Work should be limited to approximately 15 minutes maximum duration unless otherwise directed by the Engineer based on existing roadway conditions. If the work is not complete within 15 minutes, or if the end of the traffic queue extends past the most distant advance warning signs, the work area should be cleared of all equipment, materials, personnel, and other items, and the roadway reopened. When the queue has dissipated and the traffic flow appears normal the roadway closure sequence may be repeated.

6. For traffic volumes greater than 1000 Passenger Cars Per Hour Per Lane (PCPHPL), or for roadway closures that exceed 15 minutes, see details elsewhere in the plan.

7. If traffic queues beyond the advance warning signs during one road closure sequence, the advance warning should be extended prior to repeating the road closure sequence. When possible, PCMS signs should be located in advance of the last available exit prior to the closure to allow motorists the choice of an alternate route.

THIS PLAN IS INTENDED TO BE USED AT LOCATIONS/TIMES WHEN TRAFFIC VOLUMES ARE LESS THAN 1000 PASSENGER CARS PER HOUR PER LANE.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHORT DURATION FREEWAY CLOSURE SEQUENCE

TCP(6-7)-12

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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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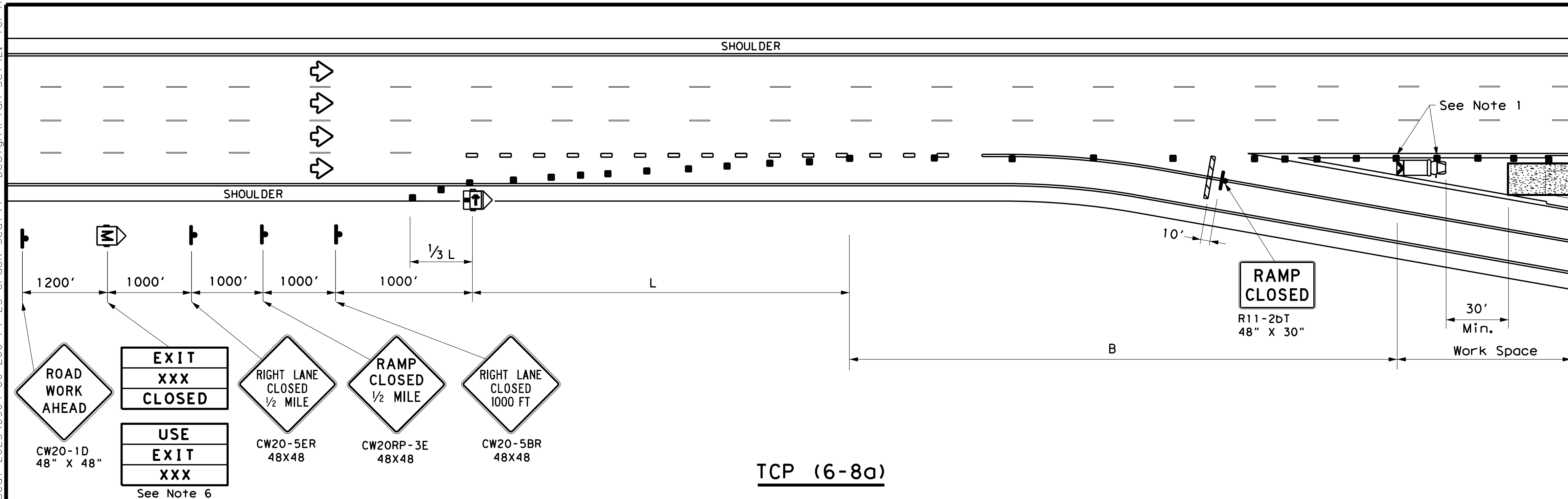
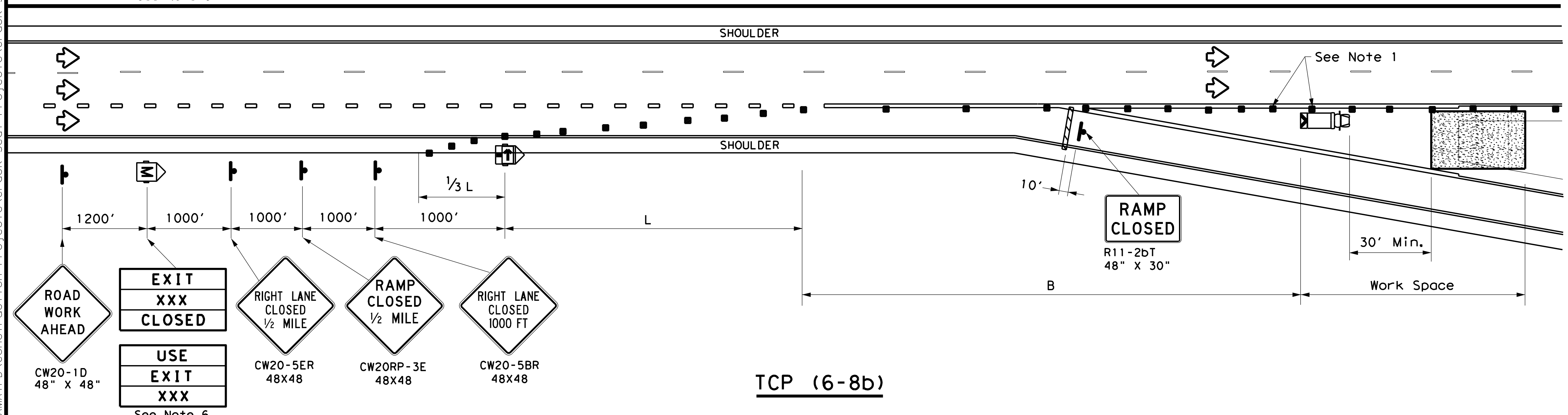
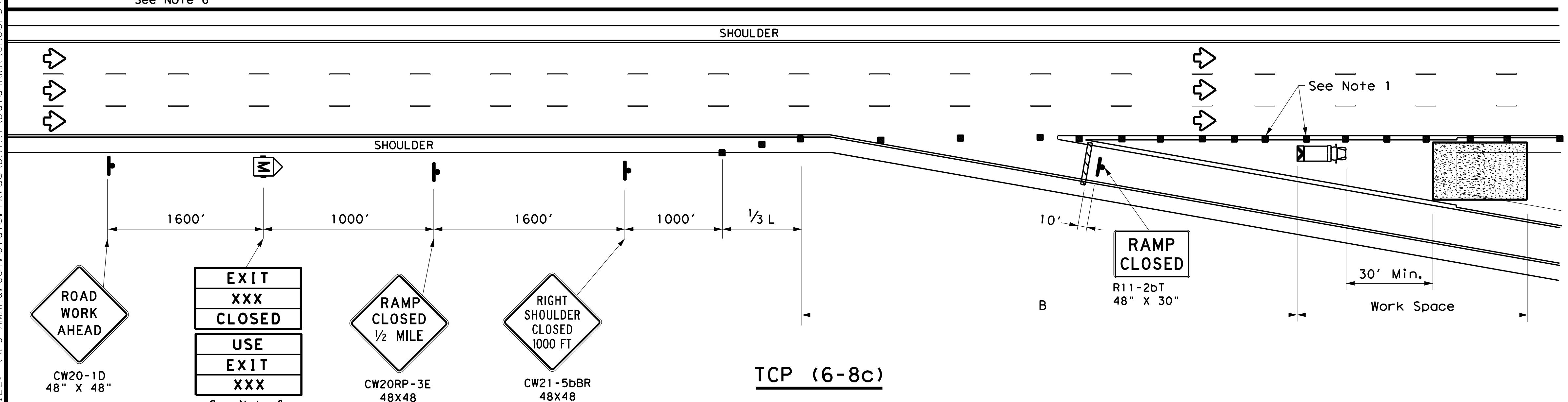
1-97 8-12	DIST	COUNTY		SHEET NO.
4-98	AMA	POTTER, ETC		35







LEGEND

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. Place channelizing devices in the gore at 20' spacing.
2. See the Standard Highway Sign Design for Texas (SHSD) for sign details.
3. The PCMS may be omitted when a permanent DMS sign is available in an appropriate location to display a similar message as called for on the PCMS.
4. When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) for traffic control details.
5. Truck mounted attenuator is required.
6. The PCMS may be omitted if replaced with a "RAMP CLOSED" AHEAD (CW20RP-3D) Sign.
7. Roadway ADT should be greater than 10,000.

Texas Department of Transportation

Traffic Operations Division Standard

WORK IN EXIT GORE FOR ADT GREATER THAN 10,000

TCP(6-8)-14

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©TxDOT February 2014	CONT	SECT	JOB	HIGHWAY
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	DIST		COUNTY	SHEET NO.
	AMA		POTTER, ETC	36

208

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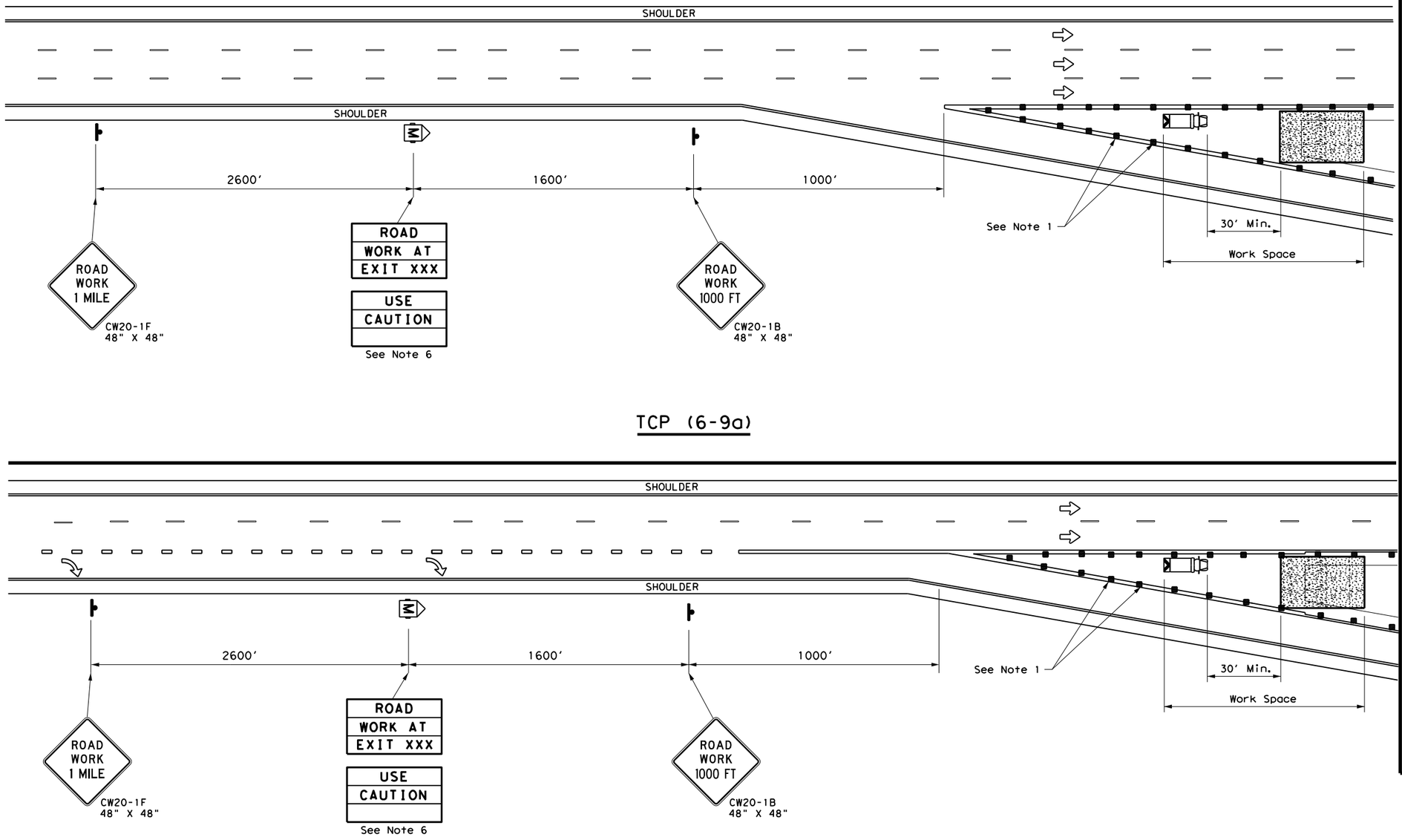

TCP (6-9a)

TCP (6-9b)

LEGEND

	Type 3 Barricade		Channelizing Devices (CDs)
	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 "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** 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. Place channelizing devices in the gore at 20' spacing.
2. See the Standard Highway Sign Design for Texas (SHSD) for sign details.
3. The PCMS may be omitted when a permanent DMS sign is available in an appropriate location to display a similar message as called for on the PCMS.
4. When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) and TCP(6-8) for traffic control details.
5. Truck mounted attenuators are required.
6. The PCMS may be omitted if replaced with a "ROAD WORK ½ MILE" (CW20-1E).
7. Roadway ADT should be less than 10,000.

Texas Department of Transportation

Traffic Operations Division Standard

WORK IN EXIT GORE FOR ADT LESS THAN 10,000

TCP(6-9)-14

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REVISIONS	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		37

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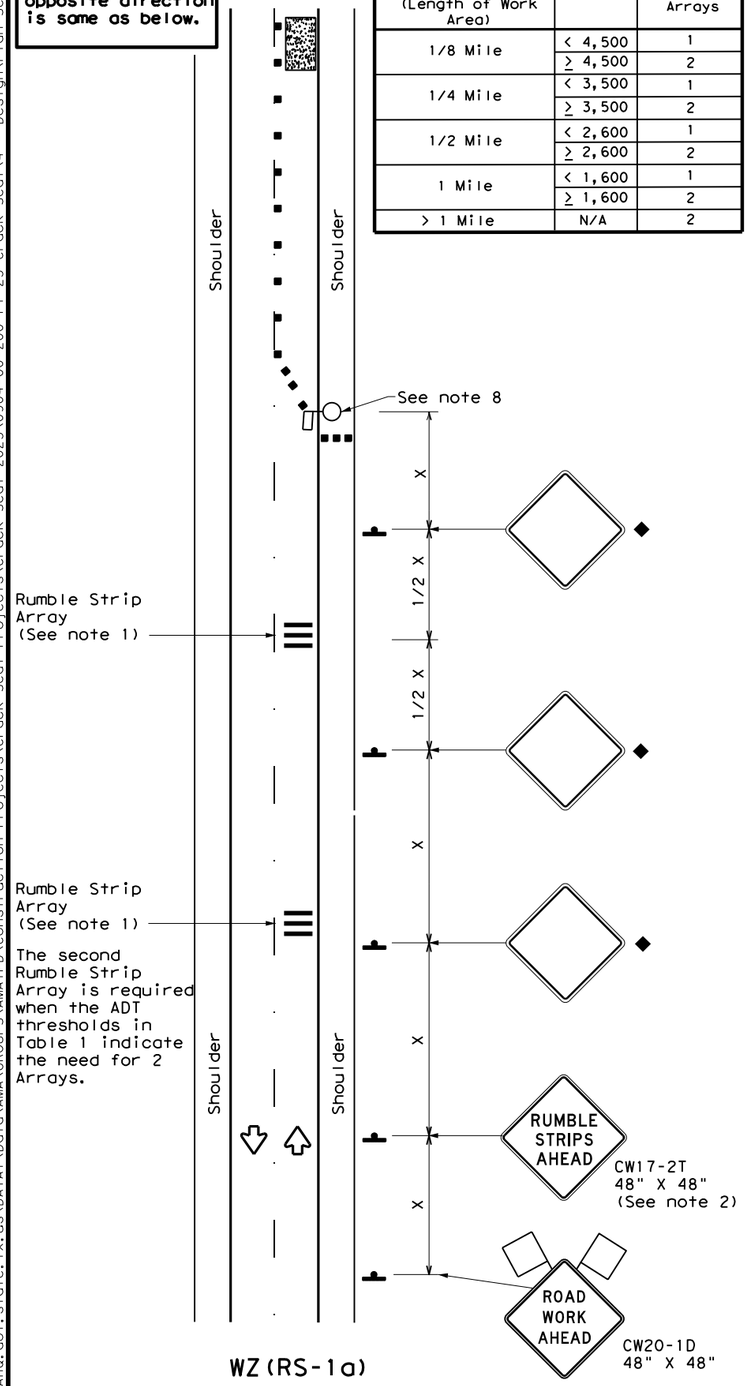
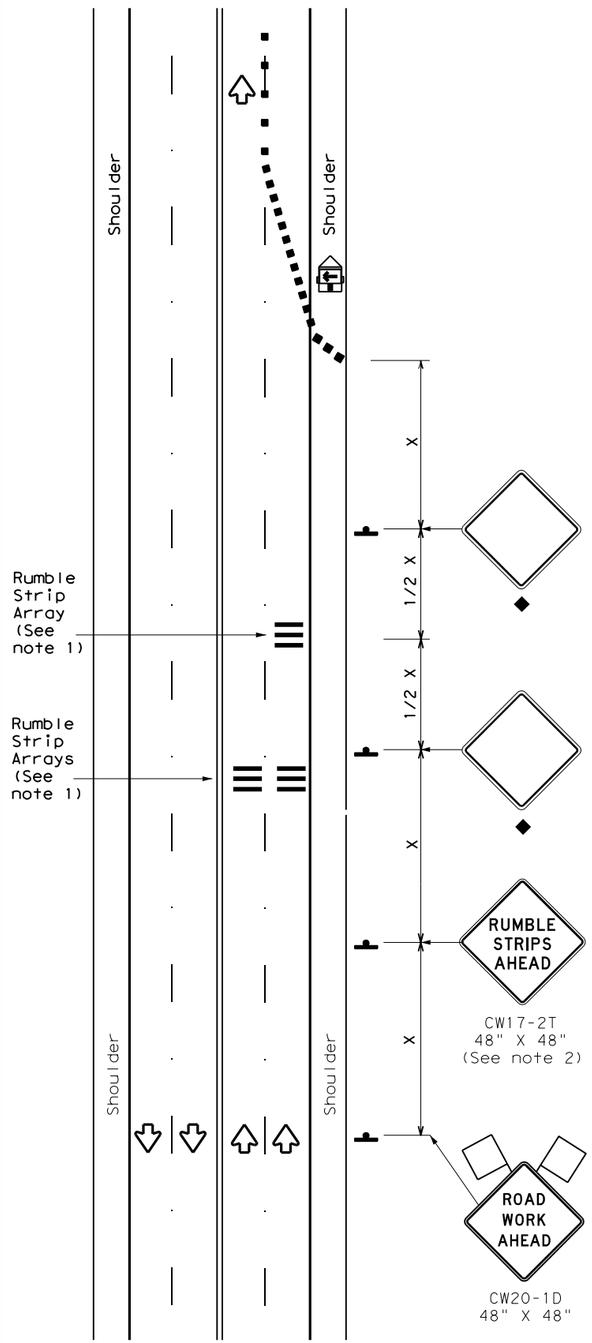
Warning sign and rumble strip sequence in opposite direction is same as below.

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



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

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

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

* Conventional Roads Only

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

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

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.

* For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

TABLE 2	
Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35' +

Texas Department of Transportation — Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		38

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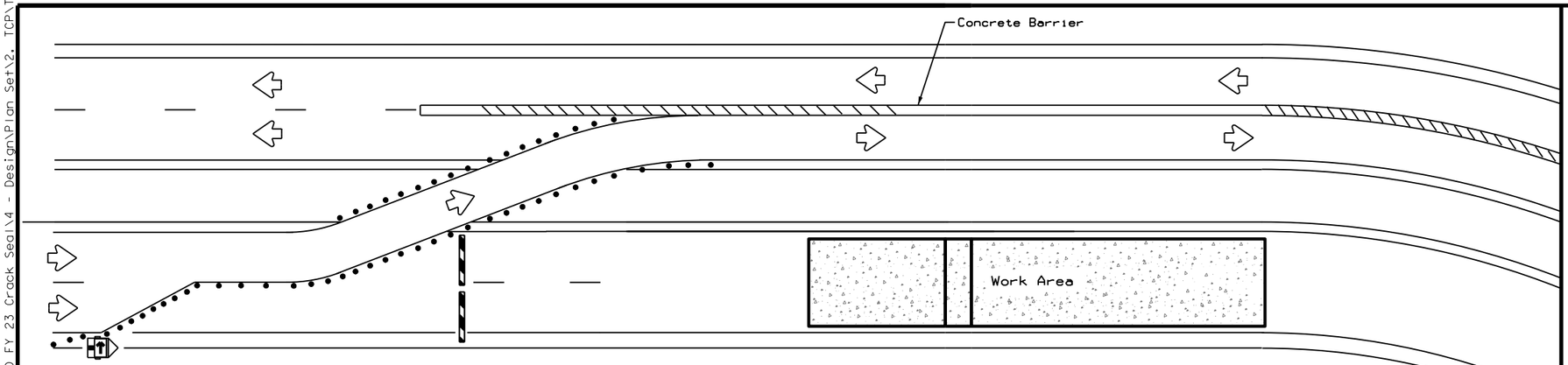


NOTES:

1. Length of Safety Glare screen will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular safety glare screen units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one safety glare screen unit.
3. Screen Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one glare screen panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

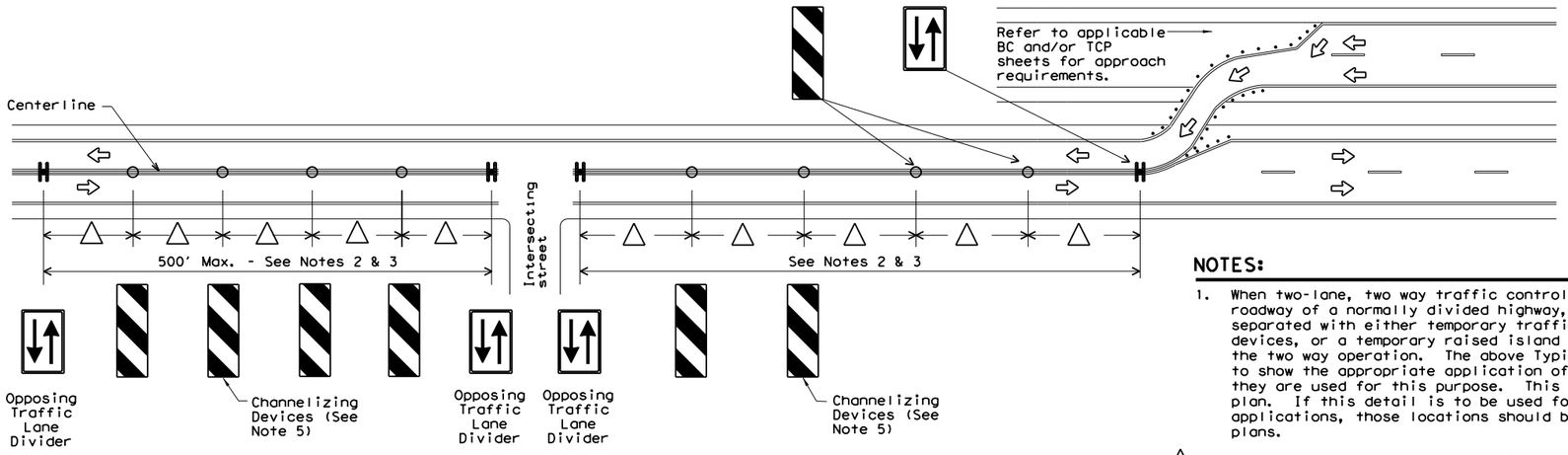
BARRIER DELINEATION WITH MODULAR GLARE SCREENS

LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\\\\	Safety glare screen

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the Compliant Work Zone Traffic Control Devices List" CWZTCD)describes pre-qualified products and their sources and may be found at the following web address:

http://www.txdot.gov/business/resources/producer-list.html



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD)
SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.

△2. Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.

3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

FILE: wztd-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 2-17 3-03 7-13	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		39

110

ADDITIONAL AREA SUMMARY - REF 01 - 1141-01 - FM 296			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 102	0.007
		TOTAL:	0.007

ADDITIONAL AREA SUMMARY - REF 02 - 1141-01 - FM 296			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	G	FM 3110	0.007
		TOTAL:	0.007

ADDITIONAL AREA SUMMARY - REF 03 - 0041-01 - US 87			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	A	0.71 MI N OF FM 281	0.091
CROSSOVER	A	0.22 MI N OF FM 281	0.086
CROSSOVER	A	FM 281	0.110
CROSSOVER	A	0.39 MI S OF FM 281	0.090
CROSSOVER	A	0.41 MI N OF CR C	0.103
CROSSOVER	A	CR C	0.091
CROSSOVER	A	0.58 MI S OF CR C	0.082
CROSSOVER	A	1.18 MI S OF CR C	0.099
CROSSOVER	A	0.44 MI N OF CR E	0.084
CROSSOVER	A	CR E	0.101
CROSSOVER	B	0.59 MI S OF CR E	0.054
CROSSOVER	B	1.11 MI S OF CR E	0.054
CROSSOVER	B	.73 MI N OF CR G	0.059
CROSSOVER	B	0.38 MI N OF CR G	0.048
CROSSOVER	B	CR G	0.065
CROSSOVER	B	0.07 MI S OF CR G	0.050
CROSSOVER	B	0.46 MI S OF CR G	0.057
CROSSOVER	B	0.7 MI N OF CR I	0.069
CROSSOVER	B	0.47 MI N OF CR I	0.059
CROSSOVER	A	CR I	0.108
CROSSOVER	B	0.39 MI S OF CR I	0.110
CROSSOVER	A	CR K	0.110
CROSSOVER	C	0.16 MI S OF CR K	0.027
CROSSOVER	B	0.4 MI S OF CR K	0.038
ADD'L AREA "A"	EXH	INTERCHANGE	6.181
		TOTAL:	8.026

ADDITIONAL AREA SUMMARY - REF 06 - 0794-04 - FM 281			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	FM 119	0.014
		TOTAL:	0.014

ADDITIONAL AREA SUMMARY - REF 07 - 0066-04 - US 287			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
ENTRY RAMP	D	FM 281	0.663
ADD'L AREA "B"	EXH	BIRCH AVE/FRONTAGE RD	0.951
CROSSOVER	A	LOLLIS DR	0.093
CROSSOVER	A	BIRCH AVE	0.090
CROSSOVER	A	FLINT ST	0.129
CROSSOVER	A	BOULDER AVE	0.152
CROSSOVER	A	CLINE ST	0.101
CROSSOVER	A	TUMBLEWEED RD	0.158
CROSSOVER	A	PALO DURO DR	0.144
CROSSOVER	A	LOMETA DR	0.176
CROSSOVER	B	SOUTH DR	0.076
CROSSOVER	A	CENTER DR	0.133
CROSSOVER	A	NORTH DR	0.150
CROSSOVER	A	MANFORT RD	0.148
CROSSOVER	A	SHERMAN COUNTY LINE	0.100
		TOTAL:	3.264

ADDITIONAL AREA SUMMARY - REF 08 - 0727-01 - FM 119			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	J	US 287	0.110
		TOTAL:	0.110

ADDITIONAL AREA SUMMARY - REF 09 - 2001-02 - FM 2589			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	K	FM 722	0.502
		TOTAL:	0.502

ADDITIONAL AREA SUMMARY - REF 12 - 0557-03 - BS 152B			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	L	SH 207	0.090
		TOTAL:	0.090

ADDITIONAL AREA SUMMARY - REF 13 - 0557-07 - FM 2171			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 152	0.074
		TOTAL:	0.074

ADDITIONAL AREA SUMMARY - REF 14 - 0790-05 - FM 278			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	K	SH 15	0.067
INTERSECTION	K	SH 207	0.429
		TOTAL:	0.496

ADDITIONAL AREA SUMMARY - REF 19 - 0030-05 - US 83			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	US 60	0.160
		TOTAL:	0.160

ADDITIONAL AREA SUMMARY - REF 20 - 0798-04 - FM 277			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	US 83	0.016
INTERSECTION	F	RM 2654	0.062
		TOTAL:	0.078

ADDITIONAL AREA SUMMARY - REF 21 - 2612-01 - RM 2654			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 33	0.016
		TOTAL:	0.016

ADDITIONAL AREA SUMMARY - REF 24 - 0797-03 - FM 748			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 152	0.016
		TOTAL:	0.016

ADDITIONAL AREA SUMMARY - REF 25 - 0797-04 - RM 2857			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 152	0.016
INTERSECTION	F	FM 282	0.016
		TOTAL:	0.032

ADDITIONAL AREA SUMMARY - REF 26 - 0797-01 - FM 283			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	J	SH 70	0.103
ADD'L AREA "C"	EXH	FM 282	0.016
		TOTAL:	0.119

ADDITIONAL AREA SUMMARY - REF 27 - 2492-01 - FM 282			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 70	0.014
		TOTAL:	0.014

ADDITIONAL AREA SUMMARY - REF 29 - 0169-10 - FM 282			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	US 60	0.008
		TOTAL:	0.008

ADDITIONAL AREA SUMMARY - REF 30 - 0560-01 - SL 171			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 70 (NORTH)	0.072
INTERSECTION	H	US 60	0.182
INTERSECTION	F	SH 273	0.078
		TOTAL:	0.332

ADDITIONAL AREA SUMMARY - REF 32 - 0169-07 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 70 (SOUTH)	0.050
INTERSECTION	H	FM 249	0.088
		TOTAL:	0.138

ADDITIONAL AREA SUMMARY - REF 33 - 0169-07 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 70	0.021
		TOTAL:	0.021

ADDITIONAL AREA SUMMARY - REF 34 - 0169-06 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 70	0.023
		TOTAL:	0.023

ADDITIONAL AREA SUMMARY - REF 35 - 2722-02 - FM 2386			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 152	0.006
INTERSECTION	F	US 60	0.008
		TOTAL:	0.014

ADDITIONAL AREA SUMMARY - REF 36 - 0169-05 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	A	CR S	0.169
ADD'L AREA "D"	EXH	EASTBOUND REST AREA	0.764
ADD'L AREA "E"	EXH	WESTBOUD REST AREA	0.586
CROSSOVER	A	SOUTH CR T	0.160
CROSSOVER	A	NORTH CR T	0.137
CROSSOVER	A	CR U	0.163
CROSSOVER	A	CR V	0.139
CROSSOVER	A	CR W	0.156
		TOTAL:	2.274

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FY 23 CRACK SEAL
ADDITIONAL AREA SUMMARY

2022 Texas Department of Transportation

SHEET 1 OF 3

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		40

ADDITIONAL AREA SUMMARY - REF 37 - 0169-05 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	C	0.47 MI WEST OF CR S	0.019
CROSSOVER	A	CR S	0.161
		TOTAL:	0.180

ADDITIONAL AREA SUMMARY - REF 38 - 0169-04 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	A	FM 293	0.155
CROSSOVER	A	0.20 MI WEST OF NORTH CR 12	0.161
CROSSOVER	A	NORTH CR 12	0.146
CROSSOVER	C	SOUTH CR 12	0.019
CROSSOVER	A	CR Q	0.161
CROSSOVER	C	0.16 MI WEST OF CR 13	0.019
CROSSOVER	A	CR R	0.161
		TOTAL:	0.822

ADDITIONAL AREA SUMMARY - REF 41 - 0169-03 - US 60 (EB ONLY)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	C	0.53 MI WEST OF CR J	0.016
ADD'L AREA "F"	EXH	HISTORICAL MARKER	0.114
CROSSOVER	C	CR J	0.016
CROSSOVER	C	0.33 MI EAST OF CR J	0.016
CROSSOVER	C	0.18 MI WEST OF CR K	0.023
CROSSOVER	C	CR K	0.023
CROSSOVER	C	0.24 MI EAST OF CR K	0.023
CROSSOVER	C	0.39 MI WEST OF CR L	0.023
CROSSOVER	C	CR L	0.023
CROSSOVER	C	0.49 MI EAST OF CR L	0.016
CROSSOVER	C	0.74 MI EAST OF CR L	0.016
CROSSOVER	C	1.10 MI EAST OF CR L	0.016
ADD'L AREA "G"	EXH	0.12 MI EAST OF PANHANDLE	1.715
		TOTAL:	2.040

ADDITIONAL AREA SUMMARY - REF 42 - 0169-03 - US 60 (EB ONLY)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LF)
CROSSOVER	A	FM 683	0.262
CROSSOVER	C	0.32 MI EAST OF FM 683	0.023
CROSSOVER	C	CR 6	0.012
CROSSOVER	C	CR B	0.016
CROSSOVER	C	0.22 MI EAST OF CR B	0.023
CROSSOVER	C	0.50 MI EAST OF CR B	0.023
CROSSOVER	C	CR C	0.023
CROSSOVER	C	0.25 MI EAST OF CR C	0.023
CROSSOVER	C	CR 7	0.023
CROSSOVER	C	0.67 MI WEST OF CR 8	0.023
CROSSOVER	C	CR 8	0.023
CROSSOVER	A	FM 2161	0.179
CROSSOVER	C	0.46 MI EAST OF FM 2161	0.016
CROSSOVER	C	1.04 MI EAST OF FM 2161	0.023
CROSSOVER	C	1.59 MI EAST OF FM 2161	0.023
CROSSOVER	C	2.11 MI EAST OF FM 2161	0.023
		TOTAL:	0.738

ADDITIONAL AREA SUMMARY - REF 44 - 0275-21 - BI-40 (F)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LF)
CROSSOVER	C	CR BB	0.016
CROSSOVER	C	0.29 MI WEST OF GRAY CL	0.016
CROSSOVER	C	0.25 MI WEST OF GRAY CL	0.016
		TOTAL:	0.048

ADDITIONAL AREA SUMMARY - REF 45 - 0275-22 - BI-40 (F)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LF)
CROSSOVER	C	IH 40	0.023
INTERSECTION	F	IH-40	0.016
INTERSECTION	F	IH-40 N FFRONTAGE	0.016
ADD'L AREA "H"	EXH	IH-40 S FRONTAGE	0.821
		TOTAL:	0.876

ADDITIONAL AREA SUMMARY - REF 47 - 0169-13 - BI-40 (D)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LF)
INTERSECTION	F	US 60	0.027
CROSSOVER	A	RAEF RD	0.156
		TOTAL:	0.183

ADDITIONAL AREA SUMMARY - REF 48 - 0169-14 - BI-40 (D)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	A	CR A	0.110
CROSSOVER	C	0.78 MI S OF CR A	0.016
CROSSOVER	C	0.17 MI N OF IH 40	0.016
ADD'L AREA "I"	EXH	IH-40	0.107
ADD'L AREA "J"	EXH	IH-40	0.156
		TOTAL:	0.405

ADDITIONAL AREA SUMMARY - REF 49 - 1840-01 - FM 683			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	L	FM 293	0.141
INTERSECTION	G	FM 245	0.087
		TOTAL:	0.228

ADDITIONAL AREA SUMMARY - REF 50 - 0664-02 - FM 683			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	US 60	0.013
		TOTAL:	0.013

ADDITIONAL AREA SUMMARY - REF 52 - 0169-01 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
ADD'L AREA "K"	EXH	RAILROAD OVERPASS	1.971
		TOTAL:	1.971

ADDITIONAL AREA SUMMARY - REF 53 - 0169-01 - US 60			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	B	N PIERCE ST	0.072
CROSSOVER	B	N BUCHANAN ST	0.027
CROSSOVER	A	N LINCOLN ST	0.060
		TOTAL:	0.159

ADDITIONAL AREA SUMMARY - REF 54 - 0090-06 - BI-40			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
ADD'L AREA "L"	EXH	FM 1061	0.883
CROSSOVER	A	.097 MI NO OF FM 1061	0.082
CROSSOVER	A	PLUM CREEK DR	0.082
CROSSOVER	C	GRACE LANE	0.018
CROSSOVER	C	PALOMINO ST	0.018
CROSSOVER	C	NW 4TH AVE	0.018
CROSSOVER	A	N BELLEVIEW ST	0.082
CROSSOVER	C	N FAIRMONT ST	0.012
CROSSOVER	B	N MARYLAND ST	0.050
CROSSOVER	C	N TENNESSEE ST	0.012
CROSSOVER	C	N CAROLINA ST	0.012
CROSSOVER	C	N LOUISIANA ST	0.012
CROSSOVER	C	N ALABAMA ST	0.012
CROSSOVER	C	N KENTUCKY ST	0.012
CROSSOVER	C	N FLORIDA ST	0.012
CROSSOVER	A	S McMASTERS ST	0.101
CROSSOVER	B	N LAMAR ST	0.050
CROSSOVER	C	N FANIN ST	0.012
CROSSOVER	C	N BONHAM	0.012
CROSSOVER	B	N TRAVIS ST	0.050
CROSSOVER	A	N POLK ST	0.080
CROSSOVER	B	N TAYLOR ST	0.054
CROSSOVER	B	N FILMORE ST	0.054
		TOTAL:	1.730

ADDITIONAL AREA SUMMARY - REF 58 - 1335-01 - FM 1258			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 207	0.008
		TOTAL:	0.008

ADDITIONAL AREA SUMMARY - REF 61 - 0042-03 - US 287			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	B	0.14 MI EAST OF CR 14	0.131
		TOTAL:	0.131

ADDITIONAL AREA SUMMARY - REF 63 - 2002-02 - FM 2219			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
ADD'L AREA "M"	EXH	IH 27	0.480
		TOTAL:	0.480

ADDITIONAL AREA SUMMARY - REF 64 - 3527-01- FM 3331			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
CROSSOVER	C	0.32 MI SOUTH OF 17TH AVE	0.016
CROSSOVER	C	0.17 MI NORTH OF CANYON CL	0.016
		TOTAL:	0.032

ADDITIONAL AREA SUMMARY - REF 65 - 3527-01- FM 3331			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
ADD'L AREA "N"	EXH	IH 27	0.550
INTERSECTION	F	FM 1541	0.016
		TOTAL:	0.566

ADDITIONAL AREA SUMMARY - REF 66 - 1246-01 - FM 1057			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	US 385	0.012
		TOTAL:	0.012

ADDITIONAL AREA SUMMARY - REF 69 - 1108-02 - RM 3296			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	US 54	0.012
		TOTAL:	0.012

ADDITIONAL AREA SUMMARY - REF 71 - 1489-02 - FM 1573			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	L	SH 15	0.393
		TOTAL:	0.393

ADDITIONAL AREA SUMMARY - REF 74 - 0753-04 - FM 293			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 70	0.012
		TOTAL:	0.012

FY 23 CRACK SEAL
ADDITIONAL AREA SUMMARY

2022 Texas Department of Transportation

SHEET 2 OF 3

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		41

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ADDITIONAL AREA SUMMARY - REF 75 - 1339-01 - FM 1454			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 15	0.010
		TOTAL:	0.010

ADDITIONAL AREA SUMMARY - REF 76 - 1339-03 - FM 1454			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 15	0.012
INTERSECTION	G	FM 2741	0.065
		TOTAL:	0.077

ADDITIONAL AREA SUMMARY - REF 77 - 1339-02 - FM 1454			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	SH 213	0.008
		TOTAL:	0.008

ADDITIONAL AREA SUMMARY - REF 79 - 2218-02 - FM 2373			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	US 287	0.010
		TOTAL:	0.010

ADDITIONAL AREA SUMMARY - REF 80 - 2496-01 - FM 1721			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	FM 285	0.014
		TOTAL:	0.014

ADDITIONAL AREA SUMMARY - REF 81 - 0275-02 - IH 40 (N FR)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	BI-40-D	0.008
INTERSECTION	I	FRONTAGE ROAD RAMP TIE IN	0.302
INTERSECTION	F	FM 2373	0.008
INTERSECTION	F	FM 2373	0.008
EXIT RAMP	E	IH-40 AT FM 2373	0.190
ENTRY RAMP	D	IH-40 WEST OF FM 2161	0.016
INTERSECTION	F	FM 2161	0.008
INTERSECTION	F	FM 2161	0.008
EXIT RAMP	E	IH-40 WEAST OF FM 2161	0.040
INTERSECTION	F	CR I	0.008
INTERSECTION	F	CR I	0.008
		TOTAL:	0.604

ADDITIONAL AREA SUMMARY - REF 82 - 0275-03 - IH 40 (N FR)			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
INTERSECTION	F	CR K	0.010
INTERSECTION	F	CR K	0.010
ENTRY RAMP	D	IH-40 WEST OF SH 207	0.014
INTERSECTION	F	SH 207	0.008
		TOTAL:	0.042

ADDITIONAL AREA SUMMARY - REF 83 - 0904-10-003 - ROBERTS CO AIRPORT			
DESCRIPTION	TYPE	LOCATION	LENGTH (LMI)
ADD'L AREA "O"	EXH	RUNWAY ONLY	3.068
		TOTAL:	3.068

FY 23 CRACK SEAL
ADDITIONAL AREA SUMMARY

2022 Texas Department of Transportation

SHEET 3 OF 3

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		42

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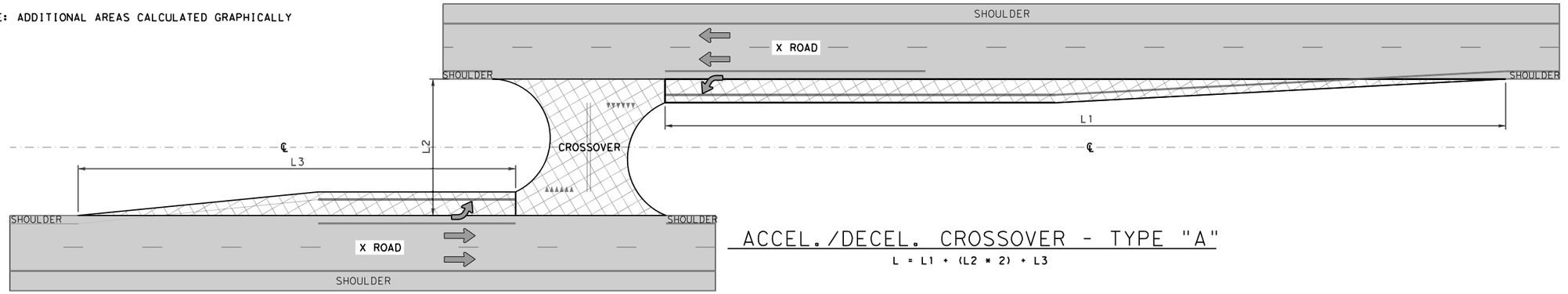
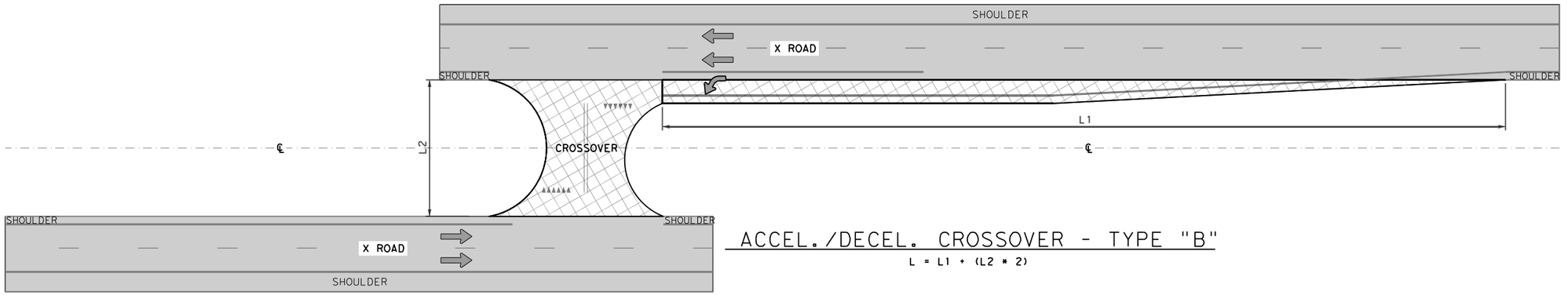
NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY



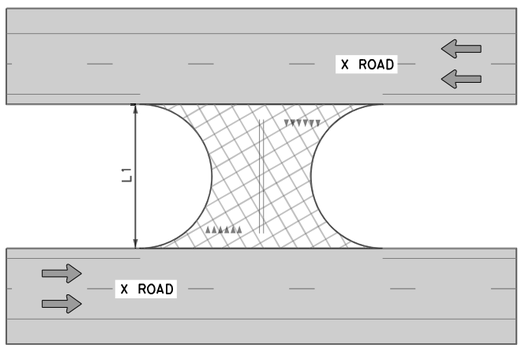
ACCEL./DECEL. CROSSOVER - TYPE "A"

L = L1 + (L2 * 2) + L3



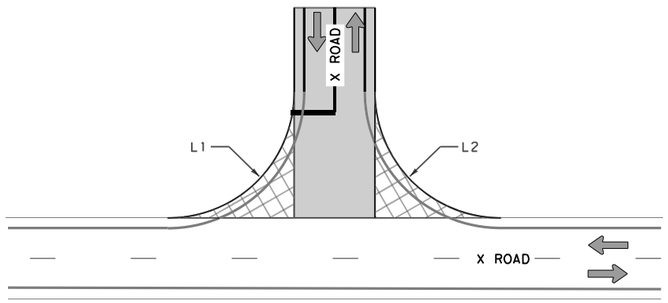
ACCEL./DECEL. CROSSOVER - TYPE "B"

L = L1 + (L2 * 2)



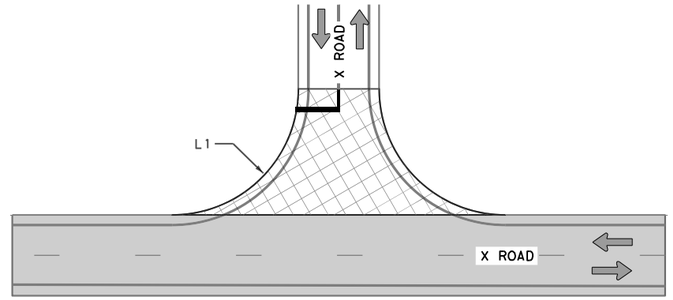
TYPICAL CROSSOVER - TYPE "C"

L = L1 * 2



INTERSECTION - TYPE "F"

L = L1 + L2



INTERSECTION - TYPE "G"

L = L1 * 2

LEGEND

NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA TYPICALS

SCALE: 1" = 60'

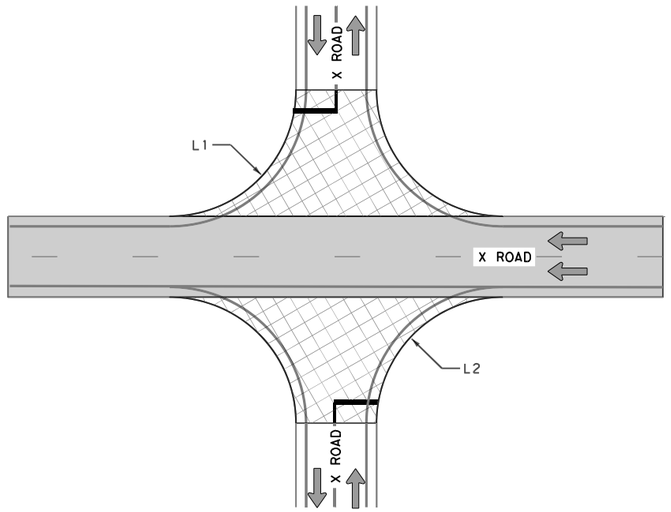
2022 Texas Department of Transportation

SHEET 1 OF 3

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		43

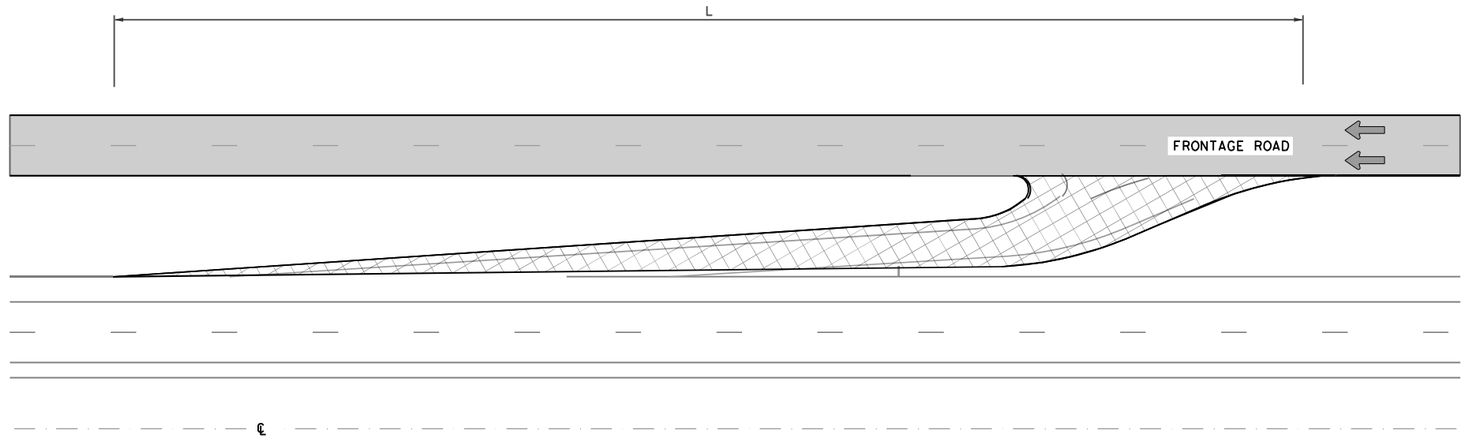
DATE: 5/18/2022 12:27:57 PM
FILE: \\FS-AMAHQ.dot.state.tx.us\DATA1\Data\AMA\GROUPS\AMATPD\Construction Projects\Crack Seal Projects\Crack Seal 2023\0904-00-200 FY 23 Crack Seal\4 - Design\Plan Set\3. Roadway\

NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY

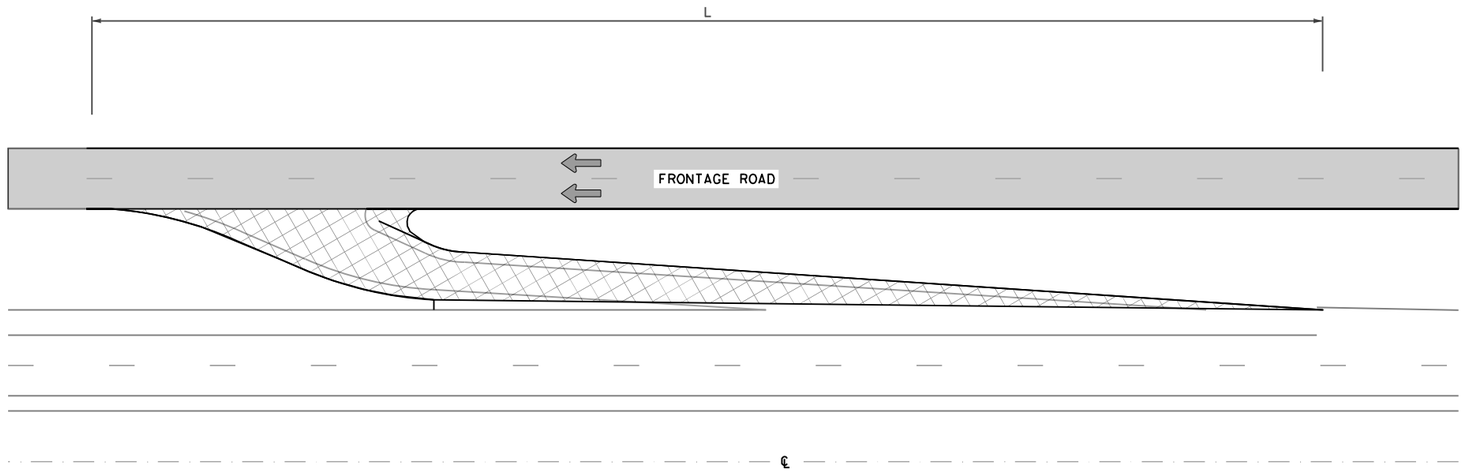


INTERSECTION - TYPE "H"

L = L1 + L2



TYPICAL ENTRY RAMP - TYPE "D"



TYPICAL EXIT RAMP - TYPE "E"

LEGEND

NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA TYPICALS

SCALE: 1" = 60'

2022 Texas Department of Transportation

SHEET 2 OF 3

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		44

DATE: 5/18/2022 12:27:57 PM
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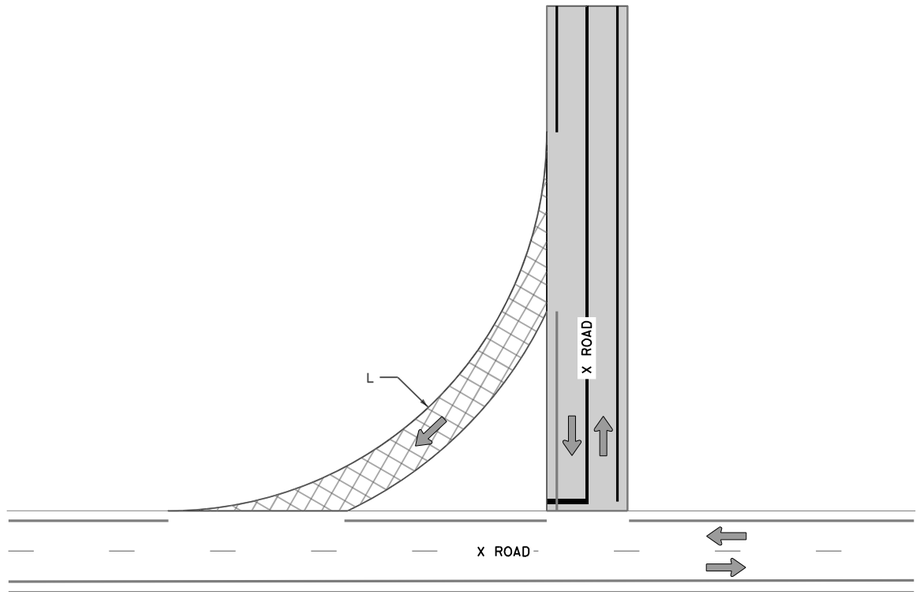
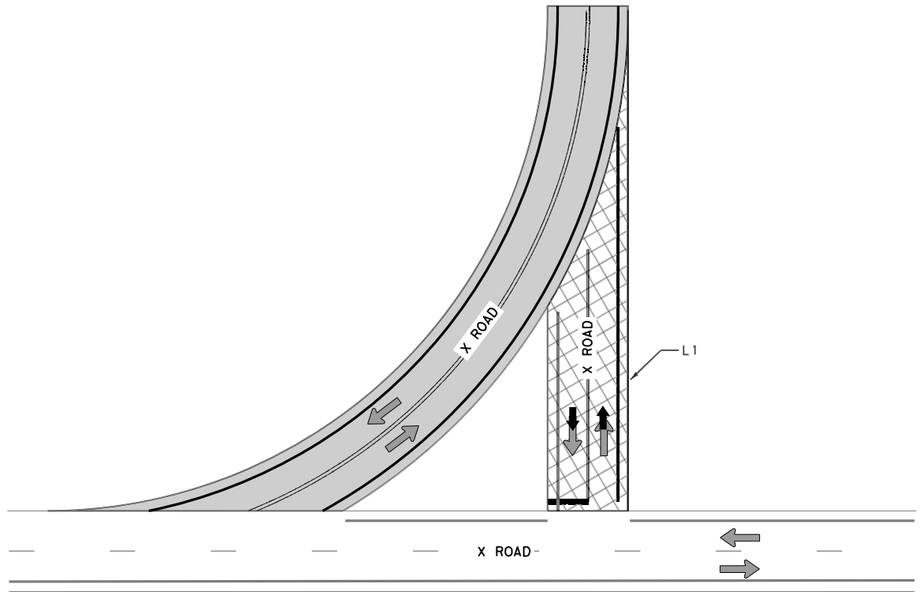


INTERSECTION - TYPE "I"

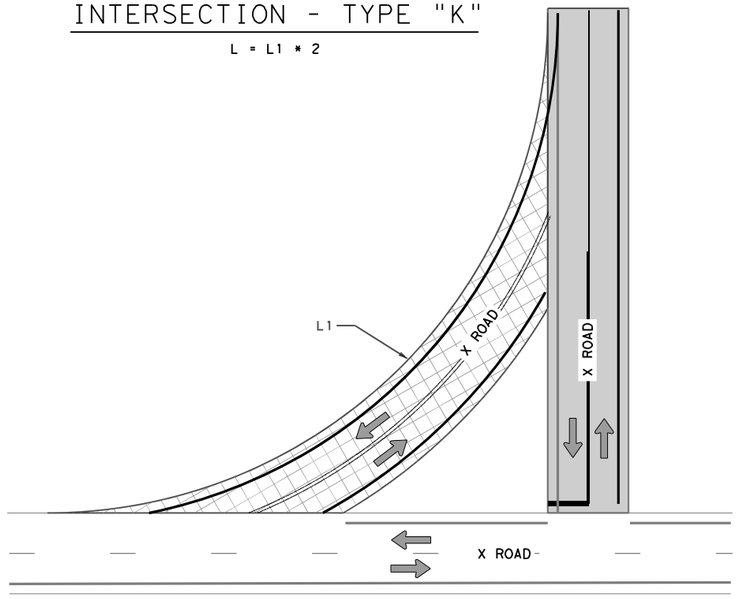


INTERSECTION - TYPE "K"

L = L1 * 2

INTERSECTION - TYPE "J"

L = L1 + L2



INTERSECTION - TYPE "L"

L = L1 * 2

LEGEND

NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA TYPICALS

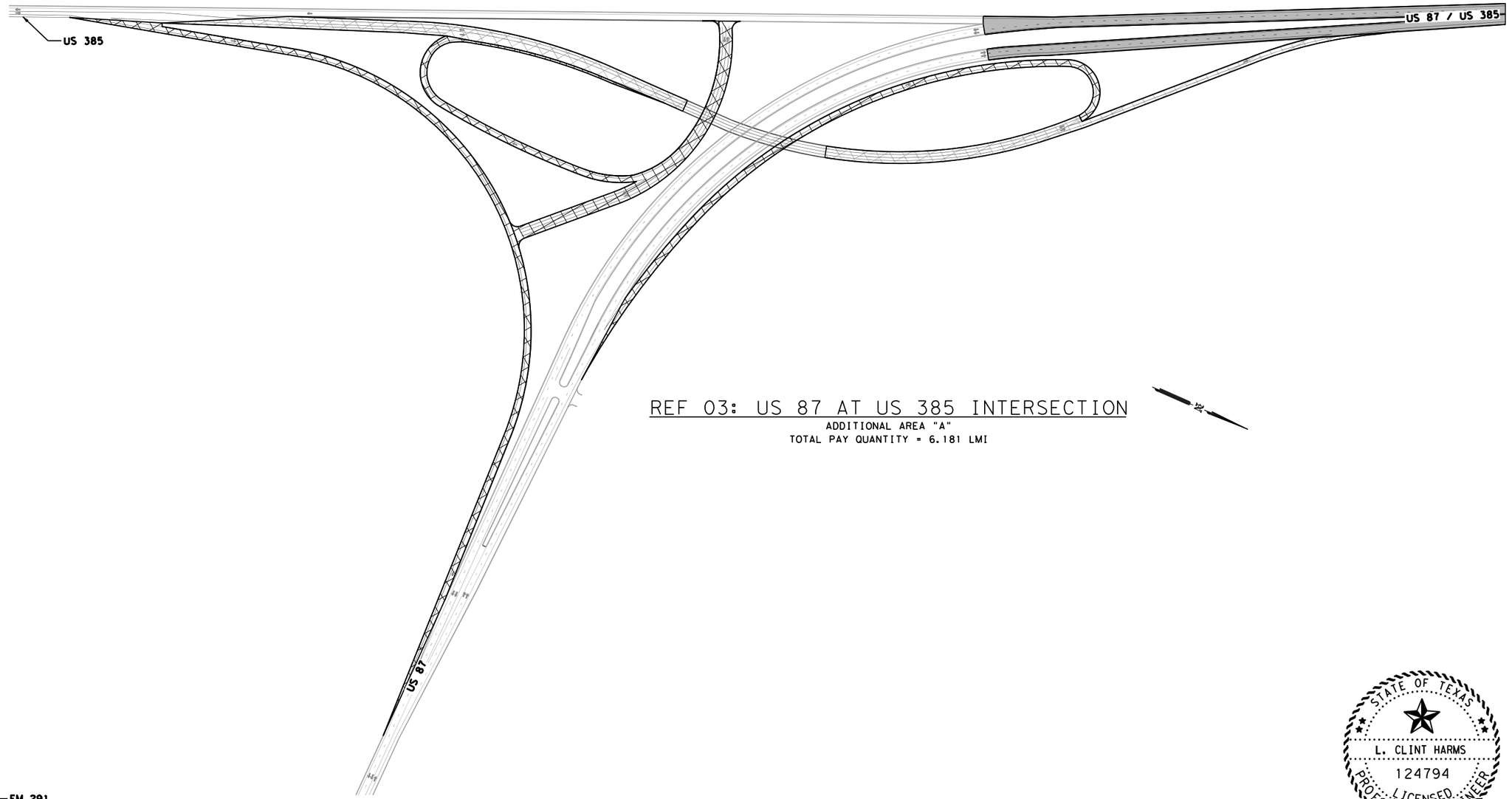
SCALE: 1" = 60'

2022 Texas Department of Transportation

SHEET 3 OF 3

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		45

NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY
ALL MEASUREMENTS ACCOUNT FOR ALL LANES



REF 03: US 87 AT US 385 INTERSECTION

ADDITIONAL AREA "A"
TOTAL PAY QUANTITY = 6.181 LMI

REF 07: US 287 AT FM 281

ADDITIONAL AREA "B"
TOTAL PAY QUANTITY = 0.951 LMI

LEGEND

- NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL
- ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA EXHIBITS

SCALE: 1" = 400'

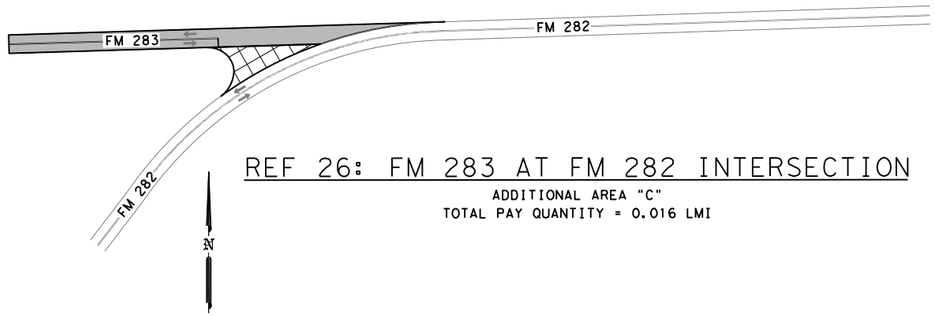
2022 Texas Department of Transportation

SHEET 1 OF 6

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		46

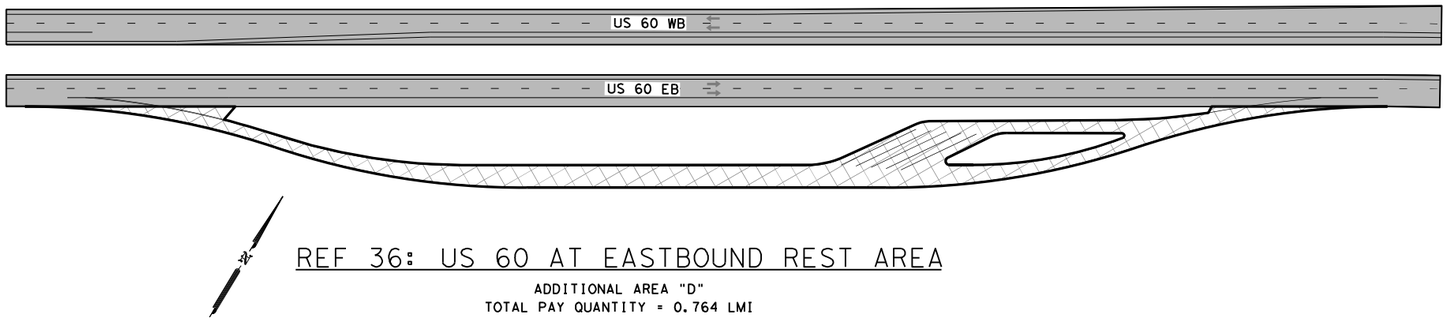
DATE: 5/18/2022 12:28:01 PM
FILE: I:\AMA\PD\Construction Projects\Crack Seal Projects\Crack Seal 2023\0904-00-200 FY 23 Crack Seal\4 - Design\Plan Set\3. Roadway\Additional Area\EXHIBITS\01 - REF 03 & REF 07.

NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY
ALL MEASUREMENTS ACCOUNT FOR ALL LANES



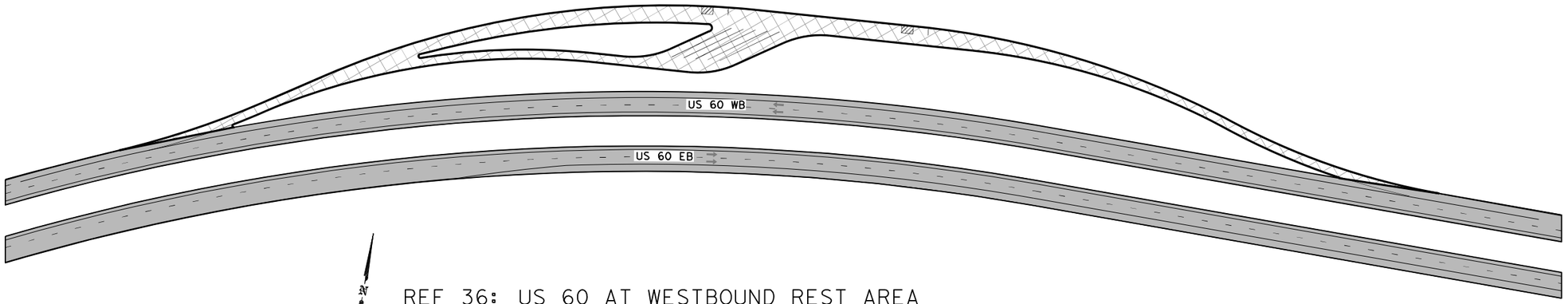
REF 26: FM 283 AT FM 282 INTERSECTION

ADDITIONAL AREA "C"
TOTAL PAY QUANTITY = 0.016 LMI



REF 36: US 60 AT EASTBOUND REST AREA

ADDITIONAL AREA "D"
TOTAL PAY QUANTITY = 0.764 LMI



REF 36: US 60 AT WESTBOUND REST AREA

ADDITIONAL AREA "E"
TOTAL PAY QUANTITY = 0.586 LMI

LEGEND

NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA EXHIBITS

SCALE: 1" = 200'

2022 Texas Department of Transportation

SHEET 2 OF 6

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		47

DATE: 5/18/2022 12:28:04 PM
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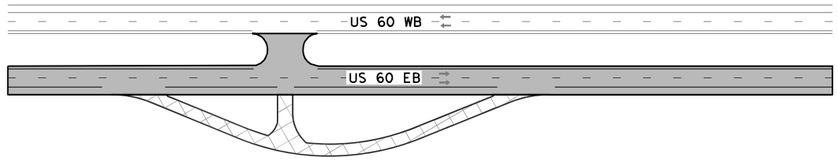
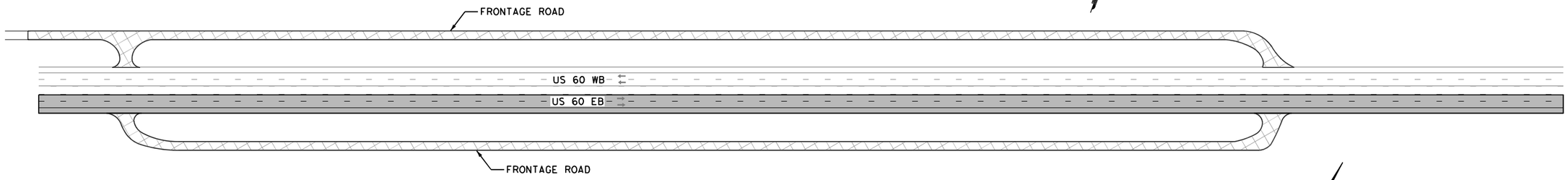
NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY
ALL MEASUREMENTS ACCOUNT FOR ALL LANES



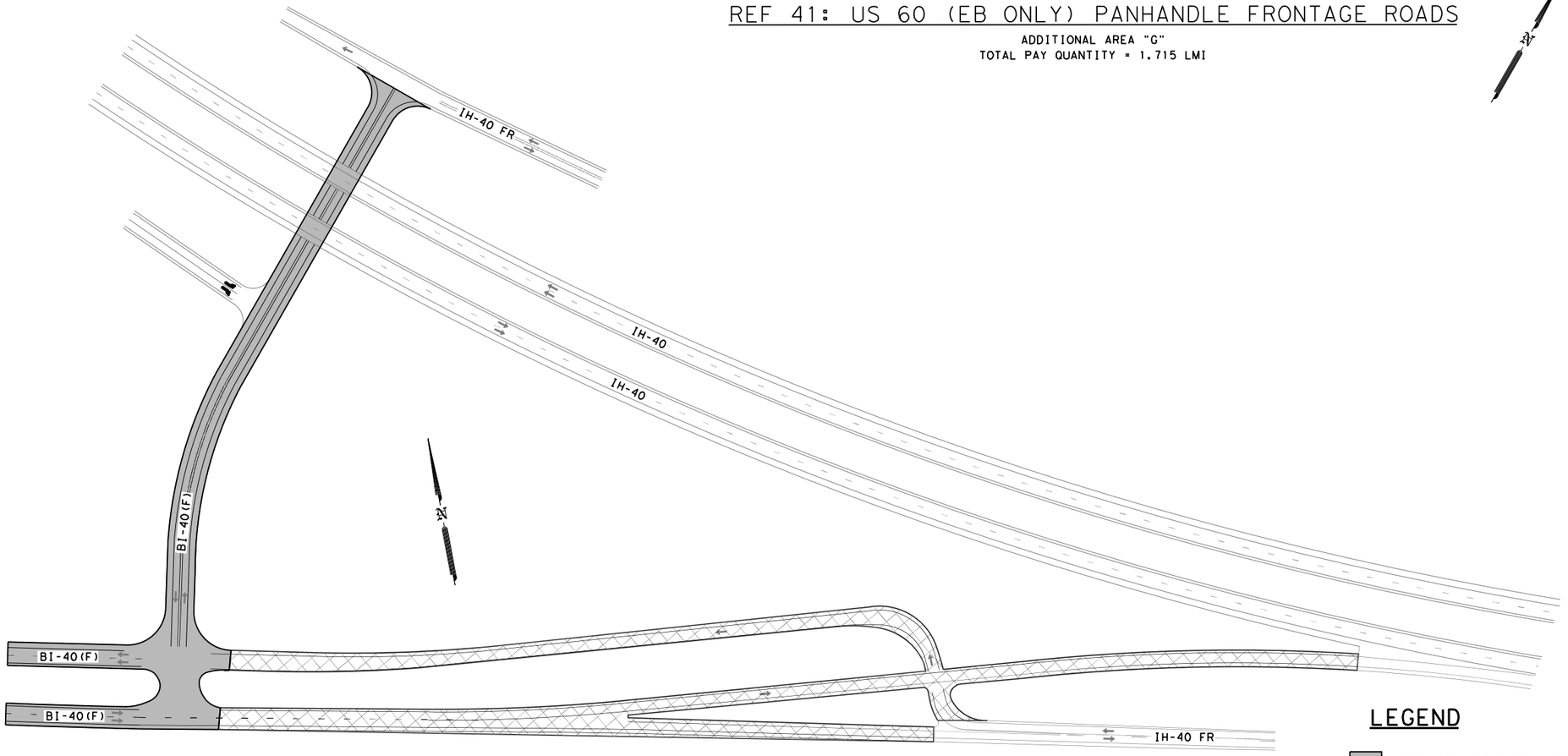
REF 41: US 60 (EB ONLY) AT HISTORICAL MARKER

ADDITIONAL AREA "F"
TOTAL PAY QUANTITY = 0.114 LMI



REF 41: US 60 (EB ONLY) PANHANDLE FRONTAGE ROADS

ADDITIONAL AREA "G"
TOTAL PAY QUANTITY = 1.715 LMI



REF 45: BI-40(F) AT IH-40 S FRONTAGE

ADDITIONAL AREA "H"
TOTAL PAY QUANTITY = 0.821 LMI

LEGEND

NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA EXHIBITS

SCALE: 1" = 200'

2022 Texas Department of Transportation

SHEET 3 OF 6

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		48

DATE: 5/18/2022 12:28:07 PM
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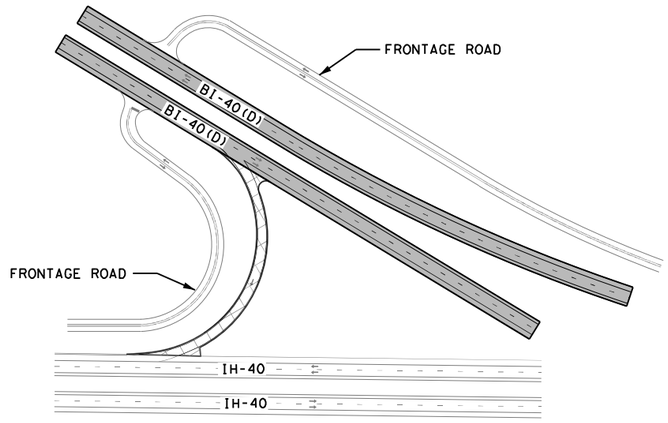
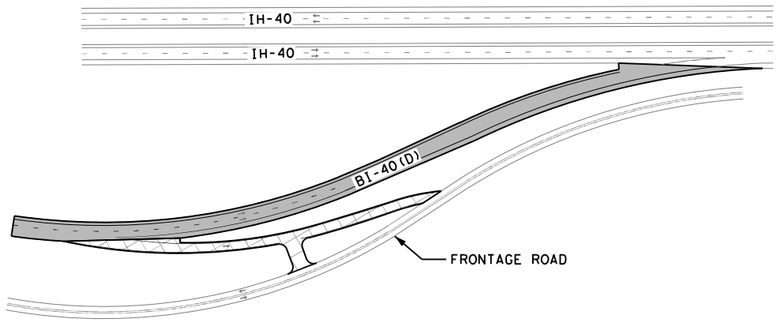
NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY
ALL MEASUREMENTS ACCOUNT FOR ALL LANES



N

REF 48: BI-40(D)AT IH-40 N ENTRY

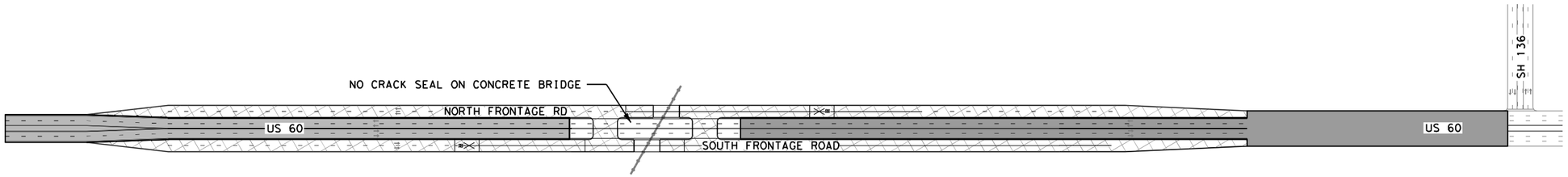
ADDITIONAL AREA "I"
TOTAL PAY QUANTITY = 0.107 LMI



N

REF 48: BI-40(D) AT IH-40 S ENTRY

ADDITIONAL AREA "J"
TOTAL PAY QUANTITY = 0.156 LMI



N

REF 52: US 60 AT RAILROAD OVERPASS

ADDITIONAL AREA "K"
TOTAL PAY QUANTITY = 1.971 LMI

LEGEND

NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
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PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA EXHIBITS

SCALE: 1" = 300'

2022 Texas Department of Transportation

SHEET 4 OF 6

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		49

DATE: 5/31/2022 11:33:01 AM
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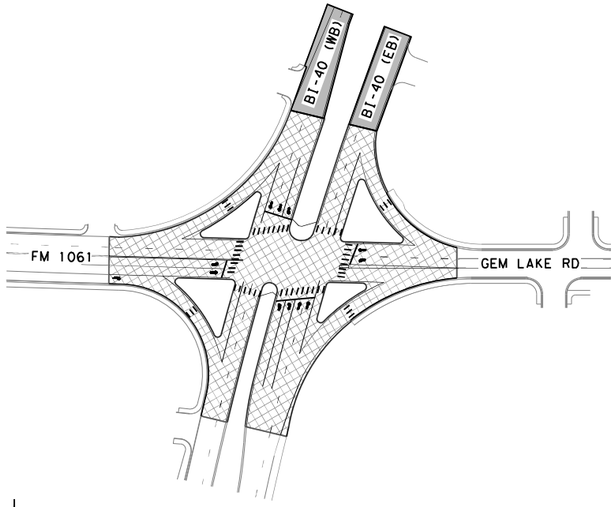
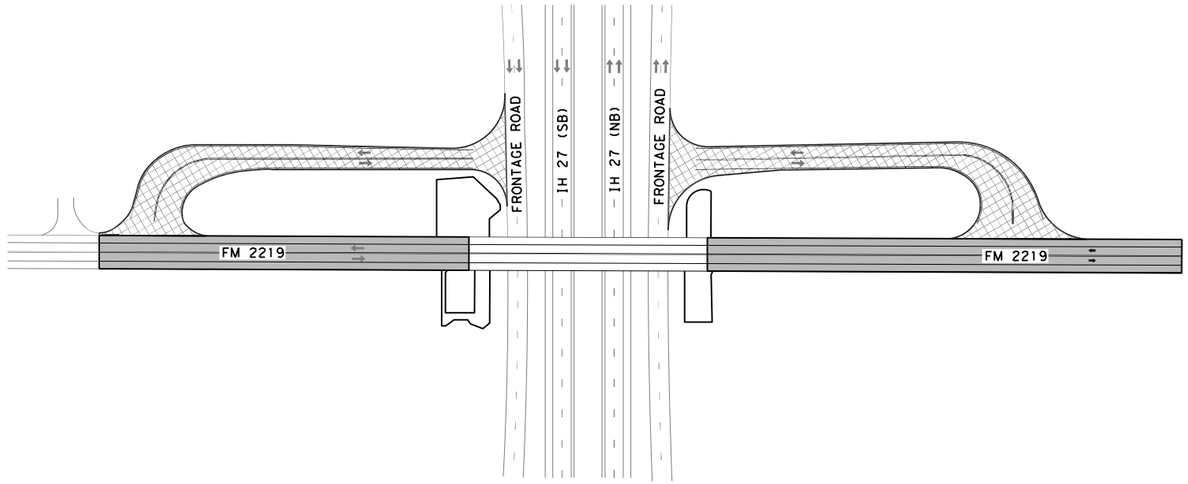
NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY
ALL MEASUREMENTS ACCOUNT FOR ALL LANES



N

REF 54: BI 40 AT FM 1061

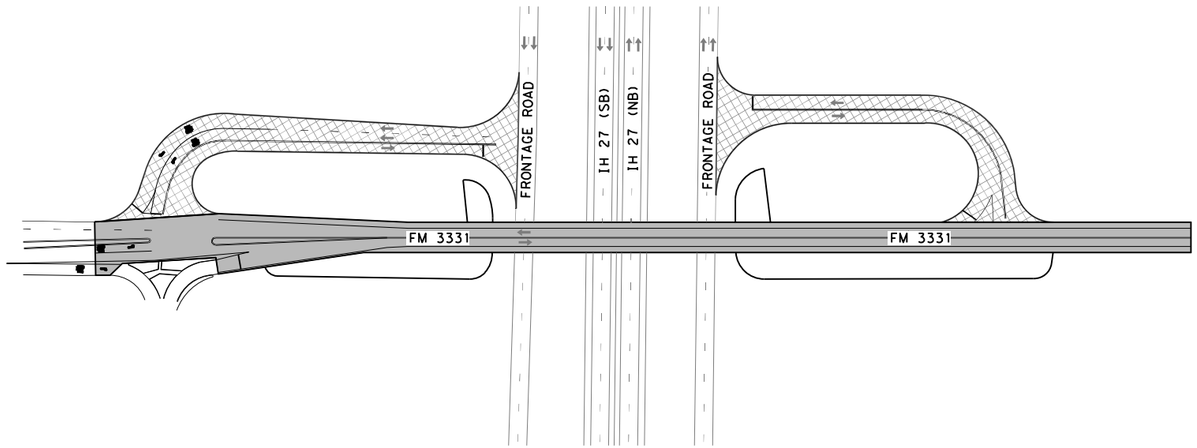
ADDITIONAL AREA "L"
TOTAL PAY QUANTITY = 0.883 LMI



N

REF 63: FM 2199 AT IH 27

ADDITIONAL AREA "M"
TOTAL PAY QUANTITY = 0.480 LMI



N

REF 65: FM 3331 AT IH 27

ADDITIONAL AREA "N"
TOTAL PAY QUANTITY = 0.550 LMI

LEGEND

NON-ADDITIONAL AREA PORTION OF ROADWAY RECEIVING CRACK SEAL

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA EXHIBITS

SCALE: 1" = 200'

2022 Texas Department of Transportation

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		50

DATE: 5/18/2022 12:28:12 PM
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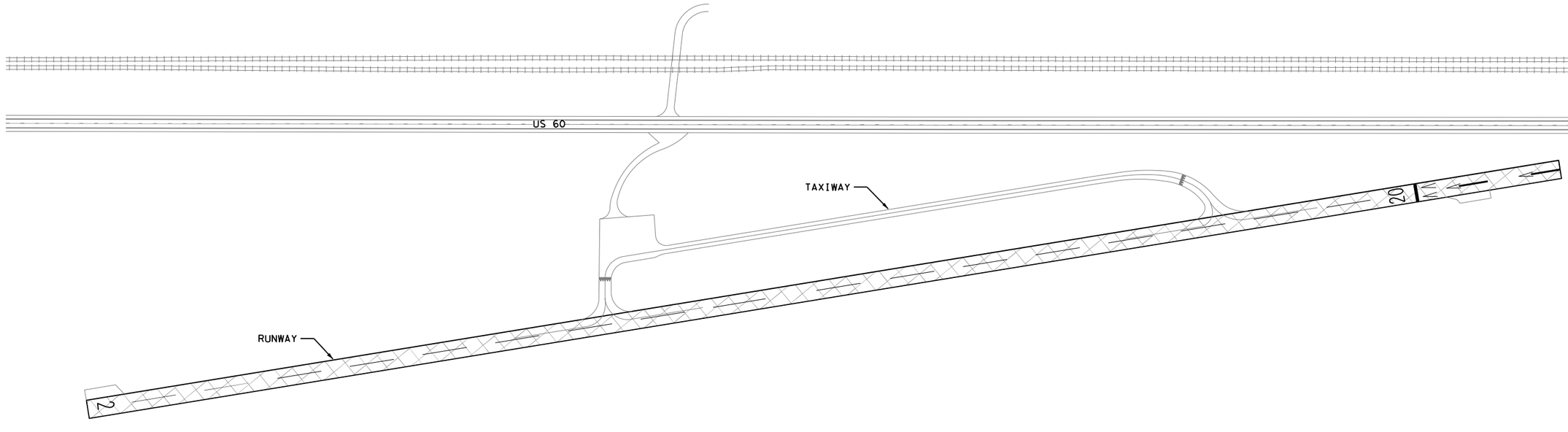
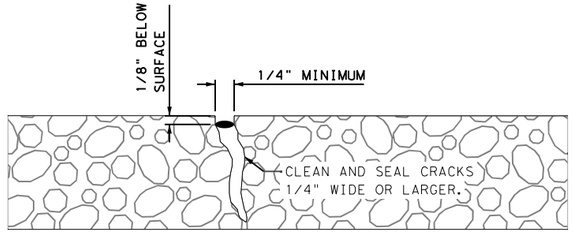
NOTE: ADDITIONAL AREAS CALCULATED GRAPHICALLY
ALL MEASUREMENTS ACCOUNT FOR ALL LANES





CRACK SEAL DETAIL

1. IT IS IMPERATIVE THAT THE PAVEMENT SURFACE REMAIN FREE OF SEALING MATERIALS. THEREFORE ALL EXCESS SEALING COMPOUNDS/MATERIALS WILL BE REMOVED AT THE CONTRACTOR'S EXPENSE PRIOR TO ACCEPTANCE AND FINAL PAYMENT.

REF 83: ROBERTS COUNTY AIRPORT - MIAMI, TX

ADDITIONAL AREA "O"
TOTAL PAY QUANTITY = 3.068 LMI

NOTES:

1. SCOPE OF WORK IS TO APPLY CRACK SEAL ON MAIN RUNWAY. FULL WIDTH OF THE RUNWAY TO BE COVERED.
2. RUNWAY IS 4,050' LONG AND 50' WIDE FOR PAY ITEM QUANTITY CALCULATION. 4 LANES WERE USED FOR THIS RUNWAY.

LEGEND

ADDITIONAL AREAS TO BE CRACK SEALED

STATE OF TEXAS
L. CLINT HARMS
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PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
ADDITIONAL AREA EXHIBITS

SCALE: 1" = 300'

2022 Texas Department of Transportation

SHEET 6 OF 6

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		51

DATE: 5/31/2022 11:32:21 AM
FILE: I:\AMA\PD\Construction Projects\Crack Seal Projects\Crack Seal 2023\0904-00-200 FY 23 Crack Seal\4 - Design\Plan Set\3. Roadway\Additional Area\EXHIBITS\06 - REF 83 - 0904-10

SITE DESCRIPTION

PROJECT LIMITS: VARIOUS LOCATIONS IN THE AMARILLO DISTRICT

PROJECT DESCRIPTION: CRACK SEAL TYPE OF WORK

MAJOR SOIL DISTURBING ACTIVITIES: NO SOIL TO BE DISTURBED

TOTAL PROJECT AREA: 1,992.59 ACRES

TOTAL AREA TO BE DISTURBED: 0 ACRE

WEIGHTED RUNOFF COEFFICIENT
(BEFORE CONSTRUCTION):
(AFTER CONSTRUCTION):

EXPLANATION OF THE TECHNICAL BASIS USED TO SELECT THE PRACTICES TO CONTROL POLLUTION WHERE FLOWS EXCEED PRE-DEVELOPMENT LEVELS: N/A

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: N/A

NAME OF RECEIVING WATERS: N/A

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

	TEMPORARY SEEDING
	PERMANENT PLANTING, SODDING, OR SEEDING
	MULCHING
	SOIL RETENTION BLANKET
X	BUFFER ZONES
X	PRESERVATION OF NATURAL RESOURCES

OTHER:

EROSION AND SEDIMENT CONTROLS (CONT.)

STRUCTURAL PRACTICES:

Permanent	Temporary	
		SILT FENCES
		HAY BALES
		ROCK BERMS
		DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
		DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
		DIVERSION DIKE AND SWALE COMBINATIONS
		PIPE SLOPE DRAINS
		PAVED FLUMES
		ROCK BEDDING AT CONSTRUCTION EXIT
		TIMBER MATTING AT CONSTRUCTION EXIT
		CHANNEL LINERS
		SEDIMENT TRAPS
		SEDIMENT BASINS
		STORM INLET SEDIMENT TRAP
		STONE OUTLET STRUCTURES
		CURBS AND GUTTERS
		STORM SEWERS
		VELOCITY CONTROL DEVICES
		EROSION CONTROL LOGS

OTHER:

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:
N/A

STORM WATER MANAGEMENT: DO NOT DISTURB ANY NATURAL AREA OF VEGETATION.

DESCRIPTION OF ANY MEASURES INSTALLED DURING THE CONSTRUCTION PROCESS TO CONTROL STORM WATER DISCHARGES AFTER CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED:
N/A

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: N/A

INSPECTION: N/A

WASTE MATERIALS: ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL STATE AND LOCAL CITY SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION, AND THE TRASH WILL BE HAULED TO A PERMITTED LANDFILL. NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS: PAINTS, ACIDS FOR CLEANING MASONRY SURFACES, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION, OR CONCRETE CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS, THE SPILL COORDINATOR SHOULD BE CONTACTED IMMEDIATELY AT (806) 356-3299. THE CONTRACTOR SHALL DEVELOP A SPILL PREVENTION AND RESPONSE PLAN AND SHALL IDENTIFY AND TRAIN PERSONNEL RESPONSIBLE FOR SPILL PREVENTION AND RESPONSE. THE SPILL RESPONSE PLAN WILL BE POSTED ON SITE AND SPILL CLEAN UP MATERIAL WILL BE READILY AVAILABLE ON SITE.

SANITARY WASTE: ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

OFF SITE VEHICLE TRACKING:

	HAUL ROADS DAMPENED FOR DUST CONTROL
X	LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
X	EXCESS DIRT ON ROAD REMOVED DAILY
	STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS: DISPOSAL AREAS, STOCKPILES, AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT MAY ENTER RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, WATERBODY OR STREAMBED. CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS. ALL WATERWAYS SHALL BE CLEARED AS SOON AS PRACTICABLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSEWORK, PILING, DEBRIS OR OTHER OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT A PART OF THE FINISHED WORK.

STATE OF TEXAS
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124794
LICENSED
PROFESSIONAL ENGINEER

06/30/2022

FY 23 CRACK SEAL
TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

2022 Texas Department of Transportation

SHEET 1 OF 1

DSN	CK	CONT	SECT	JOB	HIGHWAY
JD	AJ	0904	00	200, ETC	VARIOUS
DRWN	CK	DIST	COUNTY		SHEET NO.
JD	CH	AMA	POTTER, ETC		52

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I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1. Comply with City of Amarillo

2.

☐ No Action Required ☒ Required Action

Action No.

1. Comply with the City of Amarillo MS-4 permit on the following project numbers in Potter County: (#52) 0169-02 on US 60, (#53) 0169-01 on US 60, and (#54) 0090-06 on BI-40

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.

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.

3.

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.

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. Lesser Prairie Chicken: If prairie chickens are observed by construction crews or TxDOT staff during construction, please contact TxDOT Amarillo District environmental staff at 806-356-3249. Providing this information will not cause any project delays. This EPIC will only apply to the following control sections: Lipscomb County (#18) 0030-04 on US 83, (#75) 1339-01, (#76) 1339-02, (#77) 1339-03 all on FM 1454; Hemphill County (#19) 0030-05 on US 83, (#20) 0798-04 on FM 277, (#21) 2612-01 on FM 2654, (#22) 1999-01 on FM 2124; Gray County (#24) 0797-03 on FM 748, (#25) 0797-04 on RM 2857.

2. Bird BMP's: a) Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season; b) avoid the removal of unoccupied, inactive nests, as practicable; c) do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

3. The Migratory Bird Treaty Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, egg in part or in whole, without a Federal permit issued in accordance within the Act's policies and regulations. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided and bridge work would not begin until the young have left the nest.

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	0904	00	200, ETC	VARIOUS
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.
05-07-14 ADDED NOTE SECTION IV.	AMA	POTTER, ETC		53
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.				

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	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		54

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	0904	00	200, ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	AMA	POTTER, ETC		55

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

DOT #: 274838P
Crossing Type:** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 452.900
RR Subdivision: DALHART
City: TEXLINE
County: DALLAM
CSJ at this Crossing: 1171-01
Highway/Roadway name crossing the railroad: FM 596
# of regularly scheduled trains per day at this crossing: 14
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 017072E
Crossing Type:** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 63.580
RR Subdivision: BOISE CITY
City: CACTUS
County: MOORE
CSJ at this Crossing: 1727-02
Highway/Roadway name crossing the railroad: FM 281
# of regularly scheduled trains per day at this crossing: 6
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 017071X
Crossing Type:** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 63.580
RR Subdivision: BOISE CITY
City: DUMAS
County: MOORE
CSJ at this Crossing: 1727-02
Highway/Roadway name crossing the railroad: SH 281
# of regularly scheduled trains per day at this crossing: 18
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 016609L
Crossing Type:** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 1.480
RR Subdivision: PAMPA INDUSTRY
City: PAMPA
County: GRAY
CSJ at this Crossing: 2403-01
Highway/Roadway name crossing the railroad: LP 171
# of regularly scheduled trains per day at this crossing: 1
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY ON THE OVERPASS IN RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 014541T
Crossing Type:** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 497.080
RR Subdivision: PANHANDLE
City: PAMPA
County: GRAY
CSJ at this Crossing: 0560-01
Highway/Roadway name crossing the railroad: LP 171
# of regularly scheduled trains per day at this crossing: 82
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY ON THE OVERPASS IN RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK

PROJECT SPECIFIC DETAILS

SHEET 1 OF 4

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS 9/2021	0904	00	200, ETC	VARIOUS
	DIST		COUNTY	SHEET NO.
	AMA		POTTER, ETC	56

DATE: 5/31/2022 4:36:59 PM
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I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

DOT #: 014565G
Crossing Type: ** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 510.040
RR Subdivision: PANHANDLE
City: WHITE DEER
County: CARSON
CSJ at this Crossing: 2722-02
Highway/Roadway name crossing the railroad: FM 2386
# of regularly scheduled trains per day at this crossing: 72
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 014590P
Crossing Type: ** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 540.639
RR Subdivision: PANHANDLE
City: AMARILLO
County: CARSON
CSJ at this Crossing: 0664-02
Highway/Roadway name crossing the railroad: FM 683
# of regularly scheduled trains per day at this crossing: 72
# of switching movements per day at this crossing: NA
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 017164S
Crossing Type: ** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 1.120
RR Subdivision: BOISE CITY
City: AMARILLO
County: POTTER
CSJ at this Crossing: 0169-02
Highway/Roadway name crossing the railroad: US 60 WB FR
# of regularly scheduled trains per day at this crossing: 8
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 017163K
Crossing Type: ** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 1.100
RR Subdivision: BOISE CITY
City: AMARILLO
County: POTTER
CSJ at this Crossing: 0169-02
Highway/Roadway name crossing the railroad: US 60 EB FR
# of regularly scheduled trains per day at this crossing: 8
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

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

DOT #: 014801J
Crossing Type: ** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 568.370
RR Subdivision: HEREFORD
City: CANYON
County: RANDALL
CSJ at this Crossing: 3527-01
Highway/Roadway name crossing the railroad: FM 3331
# of regularly scheduled trains per day at this crossing: 98
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UNDER THE OVERPASS IN RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK

PROJECT SPECIFIC DETAILS

SHEET 2 OF 4

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:			
©TxDOT June 2014	CONT	SECT	JOB	HIGHWAY			
REVISIONS	0904	00	200, ETC	VARIOUS			
9/2021	DIST	COUNTY		SHEET NO.			
	AMA	POTTER, ETC		57			

DATE: 5/31/2022 4:36:59 PM
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I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

DOT #: 275228K
Crossing Type: ** PUBLIC
RR Company Owning Track at Crossing: BNSF
Operating RR Company at Track: BNSF
RR MP: 319.040
RR Subdivision: RED RIVER VALLEY
City: CLAUDE
County: ARMSTRONG
CSJ at this Crossing: 2218-02
Highway/Roadway name crossing the railroad: FM 2373
# of regularly scheduled trains per day at this crossing: 30
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: $1,200

Scope of Work at this Crossing to Be Performed by State Contractor:
STATE CONTRACTOR IS TO CRACK SEAL ROADWAY UP TO THE PANELS IN THE RAILROAD RIGHT-OF-WAY.

Scope of Work at this Crossing to Be Performed by Railroad Company:

** Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK

PROJECT SPECIFIC DETAILS

SHEET 3 OF 4

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:			
© TxDOT June 2014	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0904	00	200, ETC		VARIOUS		
9/2021	DIST	COUNTY			SHEET NO.		
	AMA	POTTER, ETC			58		

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III. FLAGGING & INSPECTION

\# of Days of Railroad Flagging Expected: 11

On this project, night or weekend flagging is:

☒ Expected

☐ Not Expected

Flagging services will be provided by:

☐ Railroad Company: TxDOT will pay flagging invoices

☒ 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 877-984-6777

☒ BNSF - BNSF.info@railpros.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:

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:

☐ Required

☒ 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.

V. RAILROAD INSURANCE REQUIREMENTS

Railroad reference number shall be provided by TxDOT CST or DO.

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

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

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.

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 combined single limit

Railroad Protective Liability		
☐	Not Required	
☒	Non - Bridge Projects	$2,000,000 / $6,000,000
☐	Bridge Projects	$5,000,000 / $10,000,000
☐	Other	

VI. CONTRACTOR'S RIGHT OF ENTRY (ROE) AGREEMENT

On this project, an ROE agreement is:

☒ Not Required

☐ Required: TxDOT CST to assist in obtaining with the UPRR (see Item 5, Article 8.3)

☐ Required: UPRR Maintenance Consent Letter. TxDOT CST to assist.

☐ Required: Contractor to obtain (see Item 5, Article 8.4)
With the following railroad companies: _____

To view previously approved ROE Agreement templates agreed upon between the State and Railroad, see:

http://www.txdot.gov/inside-txdot/division/rail/samples.html

Approved ROE Agreement 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 ROE agreement between the Contractor and the Railroad if required on project.

VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:

☒ Not Required

☐ Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call BNSF Railway Railroad Emergency Line
at 800-832-5452

Location: DOT 274838P
RR Milepost 452.900 DALHART Subdivision

Location: DOT 017072E
RR Milepost 63.580 BOISE CITY Subdivision

Location: DOT 017071X
RR Milepost 63.580 BOISE CITY Subdivision

Location: DOT 016609L
RR Milepost 1.480 PAMPA INDUSTRY Subdivision

Location: DOT 014541T
RR Milepost 497.080 PANHANDLE Subdivision

Location: DOT 014565G
RR Milepost 510.040 PANHANDLE Subdivision

Location: DOT 014590P
RR Milepost 540.639 PANHANDLE Subdivision

Location: DOT 017164S
RR Milepost 1.120 BOISE CITY Subdivision

Location: DOT 017163K
RR Milepost 1.100 BOISE CITY Subdivision

Location: DOT 014801j
RR Milepost 568.370 HEREFORD Subdivision

Location: DOT 275228K
RR Milepost 319.040 RED RIVER VALLEY Subdivision

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

SHEET 4 OF 4

FILE: RR Scope of Work.dgn		DN: TxDOT	CK:	DW:		CK:	
©TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0904	00	200, ETC		VARIOUS	
9/2021		DIST	COUNTY			SHEET NO.	
		AMA	POTTER, ETC			59	