

ROUTINE MAINTENANCE CONTRACT PROJECT NUMBER			
RMC - 647062001			
CONT	SECT	JOB	HIGHWAY
6470	62	001	US 377
DIST	COUNTY		SHEET NO.
SJT	KIMBLE		1

INDEX OF SHEETS

SEE SHEET NO. 2

**STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION**

**PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT**

ROUTINE MAINTENANCE CONTRACT

RMC - 647062001

US 377

KIMBLE

NET LENGTH OF PROJECT = 378.806 MI

FINAL PLANS	
Letting Date:	_____
Name of Contractor:	_____
Date Work Began:	_____
Date Work Completed:	_____
Date Work Accepted:	_____
Final Contract Cost:	_____

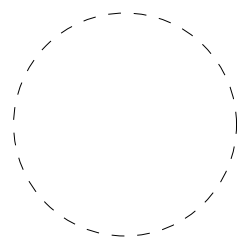
VARIOUS LIMITS IN SAN ANGELO DISTRICT

WORK CONSISTING OF CLEANING AND SEALING JOINTS AND CRACKS

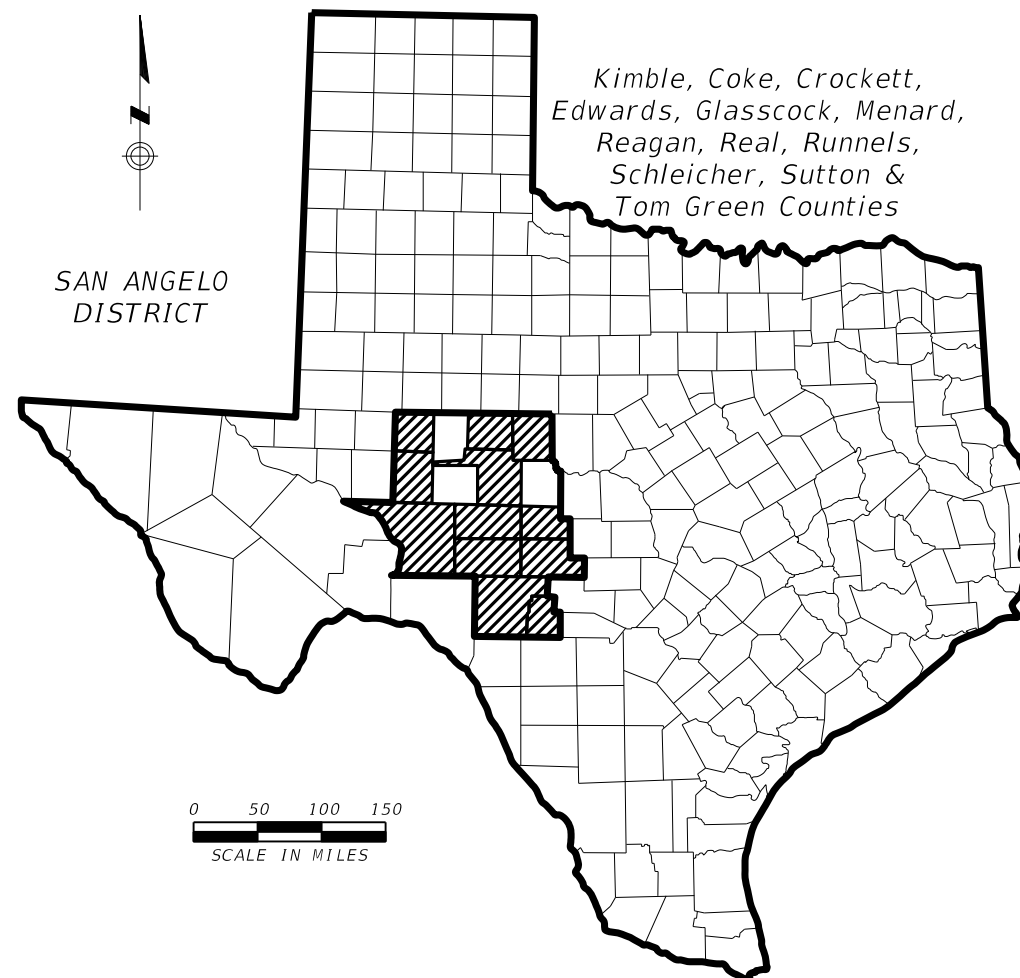
Project was built according to the Plans & Specifications.
These final plans reflect the work done and the quantities
shown thereon and on the Final Estimate are Final Quantities.

Area Engineer

Date



Summary of Change Orders:



0 50 100 150
SCALE IN MILES

EXCEPTIONS

NONE

EQUATIONS

NONE

RAILROAD CROSSINGS

NONE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION
SEPTEMBER 1, 2024, SPECIAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED
IN THE CONTRACT SHALL GOVERN ON THIS PROJECT.

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RECOMMENDED FOR LETTING:

DocuSigned by: 10/21/2024

Jon Eck
85F6EA905F1744A...
Maintenance Engineer

APPROVED FOR LETTING:

DocuSigned by: 10/21/2024

Jordan A. Sejka
2926CE8D1B10401...
District Director of Maintenance

DATE: 10/18/2024 7:01:05 PM
FILE: pw://t.xdot.projectwiseonline.com/TXD0T2/Documents/07 - SJT/Maintenance Projects/RMC 6470-62-001 2025 District Wide Crack Seal/1 - Pre-Letting/001 TITLE SHEET.dgn

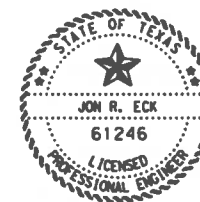
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2	INDEX OF SHEETS
3	GENERAL NOTES
4	ESTIMATE & QUANTITY SHEET
5-9	QUANTITY SUMMARY
10	LOCATION MAP SAN ANGELO DISTRICT
11	LOCATION MAP SAN ANGELO

TRAFFIC CONTROL PLAN

TRAFFIC CONTROL STANDARDS

#	12-23	BC(1)-21 THRU BC(12)-21
#	24-28	TCP(1-1)-18 THRU TCP(1-5)-18
#	29	TCP(5-1)-18
#	30-34	TCP(6-1)-12 thru TCP(6-5)-12
#	35	TCP(6-8)-14
#	36	TCP(6-9)-14



THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY AN # HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

Jon R. Eck
P.E.

21 Oct 24

DATE

		San Angelo District		
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SHEET 1 OF 1				
©TXDOT 2024	CONT	SECT	JOB	HIGHWAY
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GENERAL NOTES

The work consists of cleaning and sealing joints and cracks in asphaltic pavement on various highways in Kimble, Coke, Crockett, Edwards, Glasscock, Menard, Reagan, Real, Runnels, Schleicher, Sutton, and Tom Green Counties.

The following Standard Sheets have been modified: none.

Locate the project bulletin board at a location approved by the Engineer and always make it accessible to the public. Do not remove the bulletin board until approved. If a construction site notice is required for the project, post a copy at each geographically separated work location.

Contractor questions on this project are to be addressed by the following individual:

Jesus Garcia, P.E.; email Jesus.Garcia9@txdot.gov

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

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

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

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

The Junction Area Engineer, Jesus Garcia, P.E is the Engineer in charge of the work. Direct any questions concerning the work to him at telephone 325-446-2413(b), 325-446-9603(o), 325-215-3049(c). Direct any questions concerning the letting process to the District Maintenance Office in San Angelo at telephone 325-947-9214.

A meeting shall be conducted before work begins. The Contractor and the Superintendent(s) responsible for the supervision of the work shall attend. The Contractor shall discuss proposed work methods, work schedules, and any other information which may affect the work.

Provide the Engineer a telephone number and an email address to receive work related messages. Maintain a person to answer the telephone between the hours of 8:00 am and 5:00 pm weekdays. Maintain an answering machine or an answering service for those hours the person is not available. Reply to each message within twenty-four hours of its sending time.

Item 6, "Control of Materials"

When allowed by The Engineer, The Contractor may store materials and equipment in approved areas within the right of way or at Department facilities.

Item 7, "Legal Relations and Responsibilities"

No significant traffic generator events have been identified.

Should hazardous material be encountered, the Contractor shall inform the Engineer.

Item 8, "Prosecution and Progress"

Submit the sequence of work and estimated progress schedule on paper or as a Portable Document Format (PDF) electronic file compatible with Adobe Systems Incorporated "Acrobat Reader XI".

Commence work upon the issuance of a work order by the Engineer.

Nighttime work will not be allowed, complete all work by sunset.

Item 9, "Measurement and Payment"

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

Item 502, "Barricades, Signs and Traffic Handling"

Use of mobile operations, TCP (3-1)-13, TCP (3-2)-13, TCP (3-3)-14, TCP (3-4)-13 is not allowed.

The Contractor shall use the traffic control plans included in the Plans according to the typical usage definitions shown, unless otherwise directed by the Engineer.

The Texas Manual on Uniform Traffic Control Devices must be complied with during all operations under this contract.

The Contractor may work at multiple locations simultaneously, providing additional labor, equipment, and material to complete the work and safely conduct traffic through the work locations.

Project Barricades will not be required for this project.

Undertake no work until the required traffic controls are in place.

The Contractor shall clear traffic control devices from the roadway before darkness and safely store them.

Any additional signs deemed necessary by the Engineer for traffic control shall not be paid for directly but shall be considered subsidiary to the various bid items.

Any additional flaggers deemed necessary by the Engineer for traffic control shall not be paid for directly but shall be considered subsidiary to the various bid items.

Trailer-Mounted Flashing Arrow Boards and Portable Changeable Message Signs required in the traffic control plans shall not be paid for directly but shall be considered subsidiary to the various bid items.

TMA & TA Vehicles will be paid for under Item 505, Truck-Mounted Attenuator (TMA) and Trailer Attenuator (TA).

TxDOT will not provide or sell traffic control devices.

Item 505, “Truck-Mounted Attenuator (TMA) and Trailer Attenuator (TA)”

Signs and arrow boards required for Truck-Mounted and Trailer Attenuator Vehicles shall not be paid for directly but shall be considered subsidiary to the various bid items.

Utilize a Truck-Mounted Attenuator Vehicle with a Flashing Arrow Board in lieu of Trailer Mounted Flashing Arrow Board when a Trailer Mounted Flashing Arrow Board is shown.

The Contractor shall be required to provide at a minimum an Advance Warning Vehicle, a Trail Vehicle, a Shadow Vehicle, and a Ramp Control Vehicle meeting the requirements of this Item and The Traffic Control Plan for crack sealing operations on the main lanes and shoulders of IH 10. The Ramp Control Vehicle shall be fully equipped to also serve as a Shadow Vehicle or an additional Shadow Vehicle.

Place or relocate TMA/TAs as shown or as directed by the Engineer.

Item 506, “Temporary Erosion, Sedimentation, and Environmental Controls”

The project is exempt from the Texas Pollutant Discharge Elimination System (TPDES) General Permit (TXR150000). Exempt projects are those that disturb less than one acre or routine maintenance activities that maintain the original line and grade, hydraulic capacity, or original purposes of the site. No temporary erosion control measures or Storm Water Pollution Prevention Plan (SW3P) have been included in the plans.

Item 712, “Cleaning and Sealing Joints and Cracks (Asphalt Concrete)”

Clean and Seal joints and cracks with hot rubber-asphalt crack sealer.

Perform crack sealing under existing traffic conditions. Perform the work to cause the least disruption to traffic.

Provide sufficient equipment and personnel to maintain the work schedule. This may require multiple crews.

Leave in a clean, safe condition all roadway surfaces at the end of the workday.

Do not park unattended equipment within thirty feet (30') of the pavement edge.

Repair any vegetation damaged by work activity at no cost to the Department.



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6470-62-001

DISTRICT San Angelo
HIGHWAY US0377

COUNTY Kimble

CONTROL SECTION JOB				6470-62-001		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00211148			
COUNTY				Kimble			
HIGHWAY				US0377			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	500-7001	MOBILIZATION	LS	1.000		1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3.000		3.000	
	505-7003	TMA (MOBILE OPERATION)	DAY	295.000		295.000	
	712-7001	JT / CRCK SEAL (RUBBER - ASPHALT)	LMI	866.524		866.524	

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San Angelo Residency (Note 1, 2, & 3)														
Tract Number	County	Highway	Control Section	Limits	Reference Markers	DFO Begin	DFO End	Treatment Description	Centerline Miles	Lanes & Shoulders / Parking Configuration(s)	Width	Number of Lanes	ITEM 0712-7001 JT/CRCK SEAL (RUBBER ASPHALT) LMI	
1	041 - Coke	FM0384	1641-01	Intersection of US 277 East to The Runnels Co Line	386-0.108 to 388+0.934	0.001	2.966	Main Lanes	2.965	12.-12.	24	2	5.930	
				Add Intersection of US 277 (Northeast)	386-0.108			Intersection		Var	12	1	0.177	
				Add Intersection of US 277 (Southeast)	386-0.108			Intersection		Var	12	1	0.109	
				See Tract 16 for continuation										
6	088 - Glasscock	RM1357	3052-01	!00 Feet North of The Intersection of RM 2401 South to The Reagan Co Line	344+1.594 to 344+1.887	8.265	8.558	Main Lanes	0.293	12.-12.	24	2	0.586	
				Add Intersection of RM 2401 (West)	344+1.613			Intersection		Var	12	1	0.093	
				Add Intersection of RM 2401 (East)	344+1.613			Intersection		Var	12	1	0.073	
				See Tract 12 for continuation										
12	192 - Reagan	RM1357	3052-02	The Glasscock Co Line South to The Intersection of SH 137	344+1.887 to 358+1.681	8.558	22.202	Main Lanes	13.644	12.-12.	24	2	27.288	
				Add Intersection of SH 137 (Northwest)	358+1.681			Intersection		Var	12	1	0.017	
				Add Intersection of SH 137 (Southwest)	358+1.681			Intersection		Var	12	1	0.013	
13	192 - Reagan	RM1555	1486-02	The Upton Co Line South to The Intersection of US 67	294+0.237 to 306+0.103	10.298	20.465	Main Lanes, Shoulders	10.167	4-12-12-4	32	2	20.334	
				Add Intersection of US 67 (Northwest)	306+0.103			Intersection		Var	12	1	0.081	
				Add Intersection of US 67 (Northeast)	306+0.103			Intersection		Var	12	1	0.079	
16	200 - Runnels	FM0384	1641-02	The Coke Co Line East to 5.648 miles East of The Runnels Co Line (Co Rd 377)	388+0.934 to 394+1.353	2.966	8.614	Main Lanes, Shoulders	5.648	2-12-12-2	28	2	11.296	
17	200 - Runnels	FM1677	1646-01	The Intersection of FM 2595 South to The Intersection of SH 153	316-0.044 to 324+0.341	0.001	8.928	Main Lanes	8.927	10.-10.	20	2	17.854	
				Add Intersection of FM 2595 (Southwest)	316-0.044			Intersection		Var	12	1	0.005	
				Add Intersection of FM 2595 (Southeast)	316-0.044			Intersection		Var	12	1	0.007	
				Add Intersection of SH 153 (Northwest)	324+0.341			Intersection		Var	12	1	0.049	
				Add Intersection of SH 153 (Northeast)	324+0.341			Intersection		Var	12	1	0.083	
18	200 - Runnels	FM1770	1731-01	Intersection of US 83 East to 0.200 miles East of US 83 (N Rogers Street)	404-1.988 to 404-1.788	0.005	0.205	Main Lanes, Shoulders-Paved Ditches	0.200	26-12-12-26	76	6	1.200	
				0.200 miles East of US 83 (N Rogers Street) East to The West End of Bluff Creek Bridge	404-1.788 to 404-0.659	0.205	1.334	Main Lanes, Shoulders	1.129	6-12-12-6	36	2	2.258	
				The West End of Bluff Creek Bridge East to The Coleman Co Line	404-0.659 to 416+1.184	1.334	15.114	Main Lanes	13.780	12.-12.	24	2	27.560	
				Add Intersection of FM 2647 (South)	406+0.563			Intersection		Var	12	1	0.097	
				Add Intersection of FM 382 (North)	414+0.765			Intersection		Var	12	1	0.185	
19	200 - Runnels	FM2405	2282-02	The Taylor Co Line South to The Intersection of US 83	318+0.045 to 324+1.943	1.366	9.249	Main Lanes	7.883	10.-10.	20	2	15.766	
				Add Intersection of US 83 (Northwest)	324+1.943			Intersection		Var	12	1	0.039	
				Add Intersection of US 83 (Southwest)	324+1.943			Intersection		Var	12	1	0.043	
20a	200 - Runnels	SL0438	0650-05	The Intersection of SH 153 East to 0.487 miles West of The Intersection of US 83 (128 feet West of Sanders Street)	400-0.005 to 400+1.814	0.094	1.913	Main Lanes	1.819	12.-12.	24	2	3.638	
				0.487 miles West of The Intersection of US 83 East to The Intersection of US 83	400+1.814 to 402+0.413	1.913	2.392	Main Lanes, Shoulders	0.479	6-12-12-6	36	2	0.958	
				Add Intersection of SH 153 (West)	400-0.090			Intersection		Var	12	1	0.367	
20b	200 - Runnels	SL0438	0650-05	The Intersection of US 83 East to 0.616 miles East of The Intersection of US 83 (Co Rd 396)	404-1.292 to 404-0.680	2.555	3.167	Main Lanes, Shoulders	0.612	2-12-12-2	28	2	1.224	
				0.616 miles East of The Intersection of US 83 East to The Intersection of SH 153	404-0.680 to 404-0.047	3.167	3.800	Main Lanes	0.633	10.-10.	20	2	1.266	
				Add Intersection of SH 153 (East)	404+0.019			Intersection		Var	12	1	0.349	
21	207 - Schleicher	RM0864	1846-02	The Sutton Co Line East to The Menard Co Line	388+0.078 to 398+0.047	26.002	35.477	Main Lanes	9.475	12.-12. 10.-10.	24 20	2	18.950	
				See Tract 10 for continuation										
22	207 - Schleicher	RM2084	1923-02	The Tom Green Co Line South to The Intersection of US 190	392+0.013 to 406+0.765	12.772	27.490	Main Lanes	14.718	12.-12.	24	2	29.436	
				Add Intersection of SH 190 (South)	406+0.867			Intersection		Var	12	1	0.697	

QUANTITY SUMMARY

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© TXDOT 2024 REVISIONS	CONT	SECT	JOB	HIGHWAY
	6470	62	001	US 377
	DIST	COUNTY	SHEET NO.	
SJT	KIMBLE	5		

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Tract Number	County	Highway	Control Section	Limits	Reference Markers	DFO Begin	DFO End	Treatment Description	Centerline Miles	Lanes & Shoulders / Parking Configuration(s)	Width	Number of Lanes	ITEM 0712-7001 JT/CRK SEAL (RUBBER ASPHALT) LMI		
27	226 - Tom Green	US0067-EBML	0158-02	The Runnels Co Line West to 0.490 miles East of The Intersection of US 277	652+0.626 to 664+0.088	423.222	433.300	Main Lanes, Shoulders	10.078	10-12-12-4	38	3	30.234		
		US0067-WBML		The Runnels Co Line West to 0.490 miles East of The Intersection of US 277	652+0.626 to 664+0.088	423.222	433.300	Main Lanes, Shoulders	10.078	4-12-12-10	38	3	30.234		
		US0067-EBML		Beginning of Bridge Approach Slab East to End of bridge Approach Slab (Crows Nest Creek)	656+1.030 to 656+1.110	426.242	426.322	Bridge Exception	0.080	10-12-12-4	38	-3	-0.240		
		US0067-WBML		Beginning of Bridge Approach Slab East to End of bridge Approach Slab (Crows Nest Creek)	656+1.030 to 656+1.110	426.242	426.322	Bridge Exception	0.080	4-12-12-10	38	-3	-0.240		
		US0067-TA	Add	Intersection of US 67-TA (0.367 miles South of The Runnels Co Line)	654+0.363			Median		Var	12	1	0.051		
		US0067-TA	Add	Intersection of US 67-TA (0.499 miles South of The Runnels Co Line)	654+0.494			Median		Var	12	1	0.021		
		US0067-TA	Add	Intersection of US 67-TA (0.649 miles South of The Runnels Co Line)	654+0.645			Median		Var	12	1	0.036		
		US0067-TA	Add	Intersection of US 67-TA (0.915 miles South of The Runnels Co Line)	654+0.911			Median		Var	12	1	0.031		
		US0067-TA	Add	Intersection of US 67-TA (1.417 miles South of The Runnels Co Line)	654+1.413			Median		Var	12	1	0.059		
		US0067-TA	Add	Intersection of US 67-TA (1.955 miles South of The Runnels Co Line)	654+1.951			Median		Var	12	1	0.069		
		US0067-TA	Add	Intersection of US 67-TA (2.525 miles South of The Runnels Co Line)	656+0.535			Median		Var	12	1	0.040		
		US0067-TA	Add	Intersection of US 67-TA (3.723 miles South of The Runnels Co Line)	656+1.733			Median		Var	12	1	0.037		
					Add	Intersection (4.648 miles South of The Runnels Co Line)	658+0.735			Median		Var	12	1	0.011
				FM 1692	Add	Intersection of FM 1692 (4.876 miles South of The Runnels Co Line)	658+0.963			Median, Turn Lane		Var	12	1	0.069
				FM 1692	Add	Intersection of FM 1692 (4.876 miles South of The Runnels Co Line)	658+0.963			Acceleration / Deceleration Lanes		Var	12	1	0.238
				FM 1692	Add	Intersection of FM 1692 (4.876 miles South of The Runnels Co Line)	658+0.963			Intersection		Var	12	1	0.101
				US0067-TA	Add	Intersection of US 67-TA (5.242 miles South of The Runnels Co Line)	658+1.329			Median		Var	12	1	0.021
				US0067-TA	Add	Intersection of US 67-TA (5.728 miles South of The Runnels Co Line)	658+1.815			Median		Var	12	1	0.025
				US0067-TA	Add	Intersection of US 67-TA (6.159 miles South of The Runnels Co Line)	660+0.171			Median, Turn Lanes		Var	12	1	0.070
				US0067-TA	Add	Intersection of US 67-TA (6.195 miles South of The Runnels Co Line)	660+0.207			Median, Turn Lanes		Var	12	1	0.088
		US0067-TA	Add	Intersection of US 67-TA (6.472 miles South of The Runnels Co Line)	660+0.484			Acceleration / Deceleration Lanes		Var	12	1	0.211		
		US0067-TA	Add	Intersection of US 67-TA (6.472 miles South of The Runnels Co Line)	660+0.484			Median, Turn Lanes		Var	12	1	0.147		
		US0067-TA	Add	Intersection of US 67-TA (6.472 miles South of The Runnels Co Line)	660+0.484			Deceleration / Acceleration Lanes		Var	12	1	0.176		
		US0067-TA	Add	Intersection of US 67-TA (7.206 miles South of The Runnels Co Line)	660+1.218			Median		Var	12	1	0.032		
28	226 - Tom Green	RM2084	1923-01	The Intersection of SL 110 South to 0.202 miles South of The Intersection of SL 110 (Mckildrick Draw)	378-0.027 to 378+0.172	0.003	0.202	Main Lanes, Shoulders	0.199	12-12-12-12	48	4	0.796		
				0.202 miles South of The Intersection of SL 110 South to 0.366 miles South of The Intersection of SL 110 (Beg School Zone)	378+0.172 to 378+0.336	0.202	0.366	Main Lanes, Shoulders	0.164	4-12-12-4	32	2	0.328		
				0.366 miles South of The Intersection of SL 110 South to 0.646 miles South of The Intersection of SL 110 (End School Zone)	378+0.336 to 378+0.616	0.366	0.646	Main Lanes	0.280	12--12--12.	36	3	0.840		
				0.646 miles South of The Intersection of SL 110 South to The Schleicher Co Line	378+0.616 to 392+0.013	0.646	12.772	Main Lanes	12.126	12--12	24	2	24.252		
				Add	Intersection of SL 110 (Southeast)	378-0.027			Intersection		Var	12	1	0.011	
				See Tract 22 for continuation											
29	226 - Tom Green	SL0110	0159-08	The Intersection (Northern) of US 277 South to 0.02 miles South of The Intersection (Northern) of US 277	376-0.074 to 376-0.022	0.000	0.053	Main Lanes, Shoulders	0.053	8-12-12-8	40	4	0.212		
				0.02 miles South of the Intersection (Northern) of US 277 South to 0.10 miles South of The Intersection (Northern) of US 277	376-0.022 to 376+0.029	0.053	0.104	Main Lanes, Shoulders	0.051	6-12-12-6	36	2	0.102		
				0.10 miles South of the Intersection (Northern) of US 277 South to the North end of the South Concho River Bridge	376+0.029 to 376+0.583	0.104	0.657	Main Lanes, Shoulders / Parking	0.553	10-12-12-10	44	4	2.212		
				North end of the South Concho River Bridge South to the South end of the South Concho River Bridge	376+0.583 to 376+0.646	0.657	0.721	Main Lanes	0.064	10--10.	20	2	0.128		
				South end of the South Concho River Bridge South to the North end of the South Concho River Relief Bridge	376+0.646 to 376+0.780	0.721	0.855	Main Lanes, Shoulders	0.134	8-12-12-8	40	4	0.536		
				North end of the South Concho River Relief Bridge South to the South end of the South Concho River Relief Bridge	376+0.780 to 376+0.810	0.855	0.884	Main Lanes	0.029	12--12.	24	2	0.058		
				South end of the South Concho River Relief Bridge South to the Intersection (Southern) of US 277	376+0.810 to 378+0.118	0.884	1.066	Main Lanes, Shoulders	0.182	8-12-12-8	40	4	0.728		
				Add	Holland St South to the Intersection of SL 110 (Old US 277)	376-0.049			Main Lanes, Shoulders		Var	12	1	0.429	
	Add	SL 110 South to a Private Drive (Old US 277)	378+0.065			Main Lanes, Shoulders		Var	12	1	0.155				
30	226 - Tom Green	SS0126	0070-08	The Intersection of FM 1223 North to The Intersection of FM 388	338-0.173 to 338+0.040	0.004	0.217	Main Lanes, Shoulders	0.213	4-12-12-12-12-4	56	4	0.852		
				Add	Intersection FM 1223 (Southeast)	338-0.173			Trn Ln, Intersection		Var	12	1	0.047	
Totals:									126.736				281.520		

QUANTITY SUMMARY

SHEET 2 OF 5

© TXDOT 2024 REVISIONS	CONT	SECT	JOB	HIGHWAY
	6470	62	001	US 377
	DIST	COUNTY	SHEET NO.	
SJT	KIMBLE	6		

DATE: 10/18/2024 7:11:13 PM
 FILE: pw://ttdot.projectwiseonline.com:TXDOT2/Documents/07 - SUT/Maintenance Projects/RMC 6470-62-001 2025 District Wide Crack Seal/1 - Pre-Letting/007 QUANTITY SUMMARY.dgn

Junction Residency (Notes 1, 2, & 3)															
Tract Number	County	Highway	Control Section	Limits	Reference Markers	DFO Begin	DFO End	Treatment Description	Centerline Miles	Lanes & Shoulders / Parking Configuration(s)	Width	Number of Lanes	ITEM 0712-7001 JT/CRCK SEAL (RUBBER ASPHALT) LMI		
2	053 - Crockett	RM2398	0140-14	0.090 miles West of The RM 2398 Underpass Intersection East to The RM 2398 Underpass Intersection	326+0.332 to 326+0.422	14.736	14.826	Main Lanes, Shoulders	0.090	8-12-12-8	40	4	0.360		
		IH0010-X Lt Frt Rd	0140-11	The RM 2398 Underpass Intersection East to 0.771 miles West of The Intersection of SH 163	364+0.000 to 365+0.235	363.996	365.245	Main Lanes, Shoulders	1.249	8-12-12-8	40	4	4.996		
		SL0466	0140-16	0.771 miles West of The Intersection of SH 163 East to 0.658 miles West of The Intersection of SH 163	326+0.000 to 326+0.113	0.000	0.113	Main Lanes, Shoulders	0.113	8-12-12-8	40	4	0.452		
			0140-16	0.658 miles West of The Intersection of SH 163 East to The Intersection of SH 163	326+0.113 to 326+0.771	0.113	0.771	Main Lanes, Shoulders	0.658	18-12-12-18	60	4	2.632		
			0140-13	The Intersection of SH 163 East to 0.474 miles East of The Intersection of SH 163	326+0.771 to 326+1.245	0.771	1.245	Main Lanes, Shoulders	0.474	18-12-12-18	60	4	1.896		
			0140-13	0.474 miles East of The Intersection of SH 163 East to 0.102 miles West of The SL 466 Underpass Intersection	326+1.245 to 328+0.920	1.245	2.866	Main Lanes, Shoulders	1.621	2-12-12-2	28	2	3.242		
			0140-13	0.102 miles West of The SL 466 Underpass Intersection East to The SL 466 Underpass Intersection	328+0.920 to 328+1.022	2.866	2.968	Main Lanes, Shoulders	0.102	4-12-12-4	32	2	0.204		
		IH0010-X Lt Frt Rd	0141-01	The SL 466 Underpass Intersection East to 0.102 miles East of The SL 466 Underpass Intersection	368+0.000 to 368+0.102	368.054	368.157	Main Lanes, Shoulders	0.103	4-12-12-4	32	2	0.206		
3	070 - Edwards	US0377	0201-02	9.605 miles East of The Val Verde Co Line West to 8.887 miles East of The Val Verde Co Line	626+1.154 to 626+1.872	414.640	415.358	Main Lanes, Passing lane, Shoulders	0.718	2-12-12-12-2	40	3	2.154		
				8.887 miles East of The Val Verde Co Line West to 7.922 miles East of The Val Verde Co Line	626+1.872 to 628+0.920	415.358	416.323	Main Lanes, Shoulders	0.965	2-12-12-2	28	2	1.930		
				7.922 miles East of The Val Verde Co Line West to 7.314 miles East of The Val Verde Co Line	628+0.920 to 628+1.528	416.323	416.931	Main Lanes, Passing lane, Shoulders	0.608	2-12-12-12-2	40	3	1.824		
				7.314 miles East of The Val Verde Co Line West to The Val Verde Co Line	628+1.528 to 638+0.013	416.931	424.245	Main Lanes, Shoulders	7.314	2-12-12-2	28	2	14.628		
4	070 - Edwards	RM2523	1592-03	The Intersection of FM 388 South to 0.589 miles South of FM 388	474-0.158 to 490+0.001	0.002	14.402	Main Lanes, Shoulders	14.400	10--10.	20	2	28.800		
				Add Intersection US 377 (Southwest)	474-0.158			Intersection		Var	12	1	0.038		
				Add Intersection US 377 (Southeast)	474-0.158			Intersection		Var	12	1	0.047		
5	070 - Edwards	RM2995	2999-01	9.370 miles North of The Intersection SH 55 South to The Intersection of SH 55	448-0.039 to 458+0.084	0.000	9.366	Main Lanes	9.366	10--10.	20	2	18.732		
				Add Intersection SH 55 (Northwest)	458+0.084			Intersection		Var	12	1	0.004		
				Add Intersection SH 55 (Northeast)	458+0.084			Intersection		Var	12	1	0.020		
7	134 - Kimble	RM1674	0141-18	240 feet East of The RM 1674 Underpass Intersection East to The Intersection of US 377	432+0.800 to 442+1.015	28.574	38.637	Main Lanes	10.063	12--12.	24	2	20.126		
8	134 - Kimble	RM2291	2140-02	The Menard Co Line South to The Intersection of FM 1674	414+0.000 to 428+0.375	16.496	30.886	Main Lanes	14.390	10--10.	20	2	28.780		
								Main Lanes, Shoulders		2-10--10--2	24	2			
								Main Lanes, Shoulders		4-12-12-4	32	2			
				RM1674-CN Connector	Intersection of RM 1674 (Northwest)	428+0.432			Main Lanes, Shoulders	0.134	Var	12	1	0.134	
		RM1674-CN Connector	Intersection of RM 1674 (Northeast)	428+0.432			Main Lanes, Shoulders, Gores	0.113	Var	12	1	0.113			
9	134 - Kimble	SL0291	0141-10	The SL 291 South Underpass Intersection (Exit 437) East to The SL 291 North Underpass Intersection (Exit 437)	396-0.136 to 396-0.021	0.003	0.118	Main Lanes, Shoulders	0.115	4-12-12-4	32	2	0.230		
				The SL 291 North Underpass Intersection (Exit 437) East to 260 feet West of The IH 10 WB Exit Intersection (Exit 438)	396-0.021 to 396+1.582	0.118	1.721	Main Lanes, Shoulders	1.603	2-12-12-2	28	2	3.206		
				260 feet West of The IH 10 WB Exit Intersection (Exit 438) East to The SL 291 South Underpass Intersection (Exit 438)	396+1.582 to 396+1.724	1.721	1.863	Main Lanes, Shoulders	0.142	4-12-12-4	28	2	0.284		
				The SL 291 South Underpass Intersection (Exit 438) East to The IH 10 EB Exit Intersection (Exit 442)	396+1.724 to 400+0.428	1.863	4.571	Main Lanes	2.708	12--12.	24	2	5.416		
				The IH 10 EB Exit Intersection (Exit 442) East to The SL 291 North Overpass Intersection (Exit 442)	400+0.428 to 400+0.710	4.571	4.853	Main Lanes, Shoulders	0.282	2-12-12-2	28	2	0.564		
10	164 - Menard	RM0864	1296-06	The Schleicher Co Line East to The Intersection of RM 1674	398+0.047 to 398+0.506	35.477	35.936	Main Lanes	0.459	10--10.	20	2	0.918		
				1843-03	The Intersection of RM 1674 East to The Intersection of US 190	398+0.506 to 404+0.571	35.936	41.943	Main Lanes	6.007	12--12.	24	2	12.014	
					Add Exception: Conrete Overflow	398+1.860 to 398+1.821	37.090	37.251	Main Lanes	0.161	12--12.	24	-2	-0.322	
					Add Intersection of US 190 (Southwest)	404+0.571			Intersection		Var	12	1	0.016	
					Add Intersection of US 190 (Southeast)	404+0.571			Intersection		Var	12	1	0.010	
11	164 - Menard	FM2092	2008-01	2.095 miles West of Ellis St / Frisco Ave (US 83) East to 0.669 miles West of Ellis St / Frisco Ave (US 83)(RV Park Rd)	412+0.000 to 412+1.426	0.000	1.426	Main Lanes	1.426	10--10.	20	2	2.852		
				0.669 miles West of Ellis St / Frisco Ave (US 83) East to 0.205 miles West of Ellis St / Frisco Ave (US 83)(Mears Cir)	412+1.426 to 412+1.890	1.426	1.890	Main Lanes, Shoulders	0.464	2-10-10-2	24	2	0.928		
				0.205 miles West of Ellis St / Frisco Ave (US 83) East to 0.078 miles West of Ellis St / Frisco Ave (US 83) (Callan St)	412+1.890 to 412+2.017	1.890	2.017	Main Lanes, Shoulders	0.127	8-12-12-8	40	4	0.508		
				0.078 miles West of Ellis St / Frisco Ave (US 83) East to 0.296 miles East of Ellis St / Frisco Ave (US 83)(Skruggs St)	412+2.017 to 414+0.332	2.017	2.391	Main Lanes, Parking	0.374	24-12-12-24	72	6	2.244		
				0.296 miles East of Ellis St / Frisco Ave (US 83) East to 0.387 miles East of Ellis St / Frisco Ave (US 83)(Ruby St)	414+0.332 to 414+0.423	2.391	2.482	Main Lanes, Parking	0.091	16-12-12-16	56	4	0.364		
				0.387 miles East of Ellis St / Frisco Ave (US 83) East to 5.117 miles East of Ellis St / Frisco Ave (US 83)(Arnold Rd)	414+0.423 to 418+1.043	2.482	7.212	Main Lanes, Shoulders	4.730	2-12-12-2	28	2	9.460		
				5.117 miles East of Ellis St / Frisco Ave (US 83) East to The Intersection of SH 29	418+1.043 to 424+1.231	7.212	13.352	Main Lanes	6.140	10--10.	20	2	12.280		
				Add Intersection of SH 29 (Northwest)	424+1.231			Intersection		Var	12	1	0.018		
	Add Intersection of SH 29 (Northeast)	424+1.231			Intersection		Var	12	1	0.022					

QUANTITY SUMMARY

SHEET 3 OF 5					
TXDOT	2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	6470	62	001	US 377	
DIST	SJT	COUNTY	KIMBLE	SHEET NO.	7

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Tract Number	County	Highway	Control Section	Limits	Reference Markers	DFO Begin	DFO End	Treatment Description	Centerline Miles	Lanes & Shoulders / Parking Configuration(s)	Width	Number of Lanes	ITEM 0712-7001 JT/CRCK SEAL (RUBBER ASPHALT) LMI	
14	193 - Real	SH0055	0235-03	The South End of The Nueces River Bridge Approach Slab South to 3.400 miles North of The Intersection of RM 337	502+0.044 to 502+0.382	58.844	59.182	Main Lanes, Shoulders	0.338	8-12-12-8	40	4	1.352	
				3.400 miles North of The Intersection RM 337 South to 0.144 miles North of The Intersection of RM 337 (Seventh St)	502+0.382 to 504+1.606	59.182	62.408	Main Lanes, Shoulders	3.226	6-12-12-6	36	2	6.452	
				0.144 miles North of The Intersection of RM 337 South to 0.282 miles South of The Intersection of RM 337 (South St)	504+1.606 to 506+0.276	62.408	62.834	Main Lanes, Parking	0.426	16-12-12-16	56	4	1.704	
				0.282 miles South of the Intersection of RM 337 South to The Uvalde Co Line	506+0.276 to 508+0.992	62.834	65.810	Main Lanes, Shoulders	2.976	6-12-12-6	36	2	5.952	
15	193 - Real	RM0337	0792-01	The Intersection of SH 55 East to 186 feet East of Llano St	400-0.058 to 400+0.297	0.002	0.357	Main Lanes, Shoulders	0.355	12-12-12-12	48	4	1.420	
				186 feet East of Llano St East to 8.010 miles East of The Intersection of SH 55	400+0.297 to 408+0.115	0.357	8.010	Main Lanes, Shoulders	7.653	2-12-12-2	28	2	15.306	
				8.010 miles East of The Intersection of SH 55 East to 9.539 miles East of The Intersection of SH 55	408+0.115 to 408+1.644	8.010	9.539	Main Lanes	1.529	12.-12.	24	2	3.058	
				9.539 miles East of The Intersection of SH 55 East to 5.015 miles West of The Intersection of US 83	408+1.644 to 416+0.203	9.539	15.998	Main Lanes, Shoulders	6.459	2-12-12-2	28	2	12.918	
				5.015 miles West of The Intersection of US 83 East to 3.740 miles West of The Intersection of US 83	416+0.203 to 416+1.478	15.998	17.273	Main Lanes	1.275	12.-12.	24	2	2.550	
				3.740 miles West of The Intersection of US 83 East to 0.537 miles West of The Intersection of US 83 (Cattail Rd)	416+1.478 to 420+0.723	17.273	20.476	Main Lanes, Shoulders	3.203	2-12-12-2	28	2	6.406	
			0792-02	0.537 miles West of The Intersection of US 83 East to The West limit of The Intersection of US 83	420+0.723 to 420+1.257	20.476	21.010	Main Lanes, Shoulders	0.534	10-12-12-10	44	4	2.136	
				The East limit of The Intersection of US 83 East to 285 feet East of Pecan Ln	420+1.266 to 420+1.495	21.019	21.248	Main Lanes, Shoulders	0.229	10-12-12-10	44	4	0.916	
				285 feet East of Pecan Ln East to 6.063 miles East of The Intersection of US 83	420+1.495 to 426+1.319	21.248	27.076	Main Lanes, Shoulders	5.828	2-12-12-2	28	2	11.656	
				6.063 miles East of The Intersection of US 83 East to The Bandera Co Line	426+1.319 to 434+0.006	27.076	32.954	Main Lanes	5.878	12.-12.	24	2	11.756	
23	218 - Sutton	IH0010 WBML	0141-04	The East End of The US 277 Underpass Bridge Approach Slab East to 7.556 miles East of The Intersection of US 277	400+0.660 to 408+0.149	400.655	408.147	WB Main Lanes, Shoulders, Only	7.492	10-12-12-4	38	3	22.476	
				The East End of The US 277 Underpass Bridge Approach Slab East to 7.556 miles East of The Intersection of US 277	400+0.667 to 408+0.149	400.662	408.147	EB Main Lanes, Shoulders, Only	7.485	4-12-12-10	38	3	22.455	
			0141-05	7.556 miles East of The Intersection of US 277 East to 18.117 miles East of The Intersection of US 277	408+0.149 to 418+0.713	408.147	418.708	WB Main Lanes, Shoulders, Only	10.561	10-12-12-4	38	3	31.683	
				7.556 miles East of The Intersection of US 277 East to 18.117 miles East of The Intersection of US 277	408+0.149 to 418+0.713	408.147	418.708	EB Main Lanes, Shoulders, Only	10.561	4-12-12-10	38	3	31.683	
			0141-06	18.117 miles East of The Intersection of US 277 East to 27.426 miles East of The Intersection of US 277	418+0.713 to 428+0.023	418.708	428.017	WB Main Lanes, Shoulders, Only	9.309	10-12-12-4	38	3	27.927	
				18.117 miles East of The Intersection of US 277 East to 27.426 miles East of The Intersection of US 277	418+0.713 to 428+0.023	418.708	428.017	EB Main Lanes, Shoulders, Only	9.309	4-12-12-10	38	3	27.927	
			0141-07	27.426 miles East of The Intersection of US 277 East to The Kimble Co Line	428+0.023 to 434+0.536	428.017	434.528	WB Main Lanes, Shoulders, Only	6.511	10-12-12-4	38	3	19.533	
				27.426 miles East of The Intersection of US 277 East to The Kimble Co Line	428+0.023 to 434+0.536	428.017	434.528	EB Main Lanes, Shoulders, Only	6.511	4-12-12-10	38	3	19.533	
24	218 - Sutton	RM0189	0962-01	The Val Verde Co Line North to The Intersection of US 277	350+0.287 to 370+0.065	14.327	33.593	Main Lanes	19.266	12.-12.	24	2	38.532	
				Add Intersection of US 277 (Northwest)	370+0.065			Intersection		Var	12	1	0.034	
				Add Intersection of US 277 (Southwest)	370+0.065			Intersection		Var	12	1	0.030	
25	218 - Sutton	RM1312	0141-12	The Crockett Co Line East to 75 feet East of The Intersection of FM 2129	344+0.007 to 350+0.046	0.302	6.397	Main Lanes	6.095	12.-12.	24	2	12.190	
				75 feet East of The Intersection of FM 2129 East to 70 feet West of The Intersection of IH 10-CN (Exit 388)	350+0.046 to 350+1.868	6.397	8.219	Main Lanes, Shoulders	1.822	2-12-12-2	28	2	3.644	
				70 feet West of The Intersection of IH 10-CN East to 1.319 miles East of The Intersection of IH 10-CN (Exit 388)	350+1.868 to 350+3.200	8.219	9.551	Main Lanes	1.332	12.-12.	24	2	2.664	
				1.319 miles East of The Intersection of IH 10-CN East to The North Intersection of RM 1989 Overpass (Exit 392)	350+3.200 to 356+0.790	9.551	13.068	Main Lanes, Shoulders	3.517	2-12-12-2	28	2	7.034	
			IH0010 Lt Frt Rd	0141-03	The North Intersection of RM 1989 Overpass East to 140 feet East of The North Intersection of RM 1989 Overpass (Exit 392)	393-0.590 to 393-0.564	392.472	392.498	Main Lanes, Shoulders	0.026	2-12-12-2	28	2	0.052
				Add Intersection of RM 2129 (North)	350+0.032			Intersection		Var	12	1	0.085	
				Add Intersection of IH 10-TA (South)	350+1.881			Intersection		Var	12	1	0.034	
				Add Intersection of RM 1989 (South)	356+0.790			Intersection		Var	12	1	0.059	
26	218 - Sutton	RM3130	0141-15	2.461 miles West of The Int. of RM 3307 East to 1.122 miles West of The South Int. of RM 3130 Overpass (Exit 420)	372+0.000 to 382+0.594	0.000	10.377	Main Lanes	10.377	12.-12.	24	2	20.754	
				1.122 miles West of The South Int. of RM 3130 Overpass East to 820 feet West of The South Int. of RM 3130 Overpass (Exit 420)	382+0.594 to 382+1.561	10.377	11.344	Main Lanes, Shoulders	0.967	2-12-12-2	28	2	1.934	
				820 feet West of The South Int. of RM 3130 Overpass East to The North Int. of RM 3130 Overpass (Exit 420)	382+1.561 to 382+1.860	11.344	11.643	Main Lanes, Shoulders	0.299	4-12-12-4	32	2	0.598	
				0141-16	The North Int. of RM 3130 Overpass East to 564 feet East of The North Int. of RM 3130 Overpass (Exit 420)	382+1.860 to 382+1.963	11.643	11.746	Main Lanes, Shoulders	0.103	4-12-12-4	32	2	0.206
				564 feet East of The North Int. of RM 3130 Overpass East to 2.089 miles West of The North Int. of IH 10-TA Underpass (Exit 429)	382+1.963 to 390+0.172	11.746	17.846	Main Lanes	6.100	12.-12.	24	2	12.200	
				2.089 miles West of The North Int. of IH 10-TA Underpass East to 0.983 miles West of The North Int. of IH 10-TA Underpass (Exit 429)	390+0.172 to 390+1.278	17.846	18.952	Main Lanes, Climbing Lane, Shoulders	1.106	4-12-12-12-4	44	3	3.318	
			0141-15	0.983 miles West of The North Int. of IH 10-TA Underpass East to 0.243 miles West of The North Int. of IH 10-TA Underpass (Exit 429)	390+1.278 to 392+0.016	18.952	19.692	Main Lanes	0.740	12.-12.	24	2	1.480	
				0.243 miles West of The North Int. of IH 10-TA Underpass East to 0.131 miles East of The North Int. of IH 10-TA Underpass (Exit 429)	392+0.016 to 392+0.390	19.692	20.066	Main Lanes, Shoulders	0.374	4-12-12-4	32	2	0.748	
				0.131 miles East of The North Int. of IH 10-TA Underpass East to 0.589 miles West of The North Int. of IH 10-TA Overpass (Co Rd 310)	392+0.390 to 396+0.138	20.066	23.739	Main Lanes	3.673	12.-12.	24	2	7.346	
				0.589 miles West of The North Int. of IH 10-TA Overpass East to 0.215 miles East of The North Int. of IH 10-TA Overpass	396+0.138 to 396+0.937	23.739	24.538	Main Lanes, Shoulders	0.799	4-12-12-4	32	2	1.598	
				0.215 miles East of The North Int. of IH 10-TA Overpass East to The End of Maintenance	396+0.937 to 396+1.453	24.538	25.054	Main Lanes	0.516	10.-10.	20	2	1.032	
				Add Intersection of RM 3307 (North)	374+0.484			Intersection		Var	12	1	0.156	
Add	Add Intersection of IH 10-TA (South)	392+0.259			Intersection		Var	12	1	0.057				
	Add Intersection of IH 10-TA (South)	396+0.723			Intersection		Var	12	1	0.090				
Totals:									252.070				585.004	

QUANTITY SUMMARY

SHEET 4 OF 5

© TxDOT 2024 <small>REVISIONS</small>	CONT	SECT	JOB	HIGHWAY
	6470	62	001	US 377
	DIST	COUNTY	SHEET NO.	
SJT	KIMBLE	8		

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Project Totals		
Subtotals	Centerline Miles	ITEM 0712-7001 JT/CRCK SEAL (RUBBER ASPHALT) LMI
Totals San Angelo Residency:	126.736	281.520
Totals Junction Residency:	252.070	585.004
Project Total	378.806	866.524

(Note 1): It is the intent that the entire width of the roadway, and the intersections of intersecting state highways be treated, except were noted (Tract 15 - US 83 Main Lanes and Shoulders, and Tract 23 - IH 10 Main Lanes and Shoulders ONLY). Quantities are reflective of this.

(Note 2): Locations labeled with 'Add' are additional treatment locations, consisting of such things as Intersections, Median Crossovers, Turn Lanes, Turnarounds, etc.. These specific locations are to be treated and payed for by the Lane Mile with the full area of these features included as additional Lane Miles at the following conversion rate: 5280 feet L x 12 feet W equal to 1.000 LMI.

(Note 3): See https://www.txdot.gov/apps/statewide_mapping/StatewidePlanningMap.html for reference.

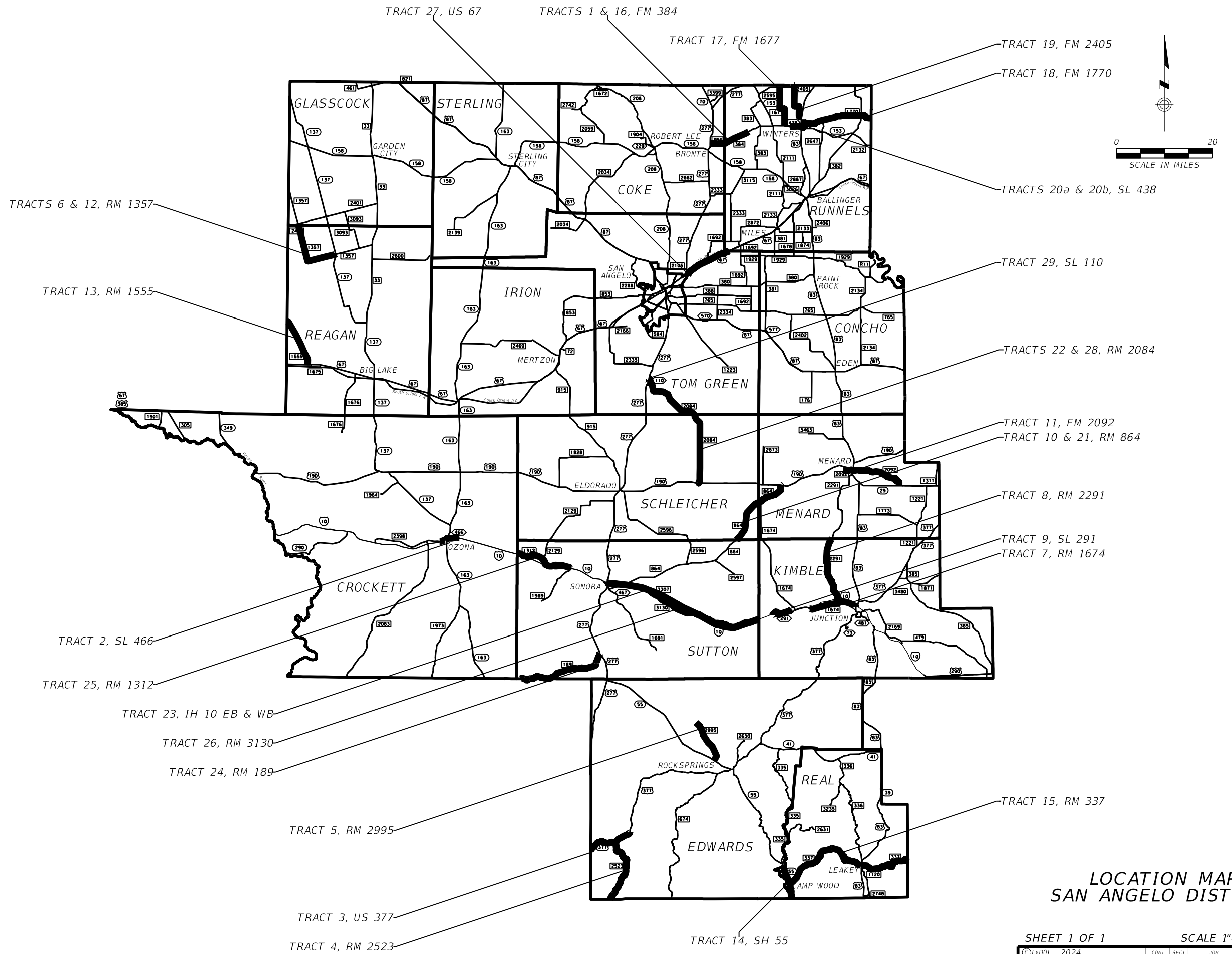
ITEM 505-7003 TMA (STATIONARY) DAY;
 TMA Basis of Estimate: 4 vehicles per crew (IH 10 Locations) for the fraction of total work for IH 10 Locations: (203.217 LMI/ 866.524 LMI), plus
 2 vehicles per crew (Other Locations) for the fraction of work for Other Locations: (663.307 LMI/ 866.524 LMI), for
 2 crews per project, for 3 months, at 20 working days per month, = 295 TMA DAYS per project

QUANTITY SUMMARY

SHEET 5 OF 5

© TxDOT 2024 REVISIONS	CONT	SECT	JOB	HIGHWAY
	6470	62	001	US 377
	DIST	COUNTY		SHEET NO.
SJT	KIMBLE		9	

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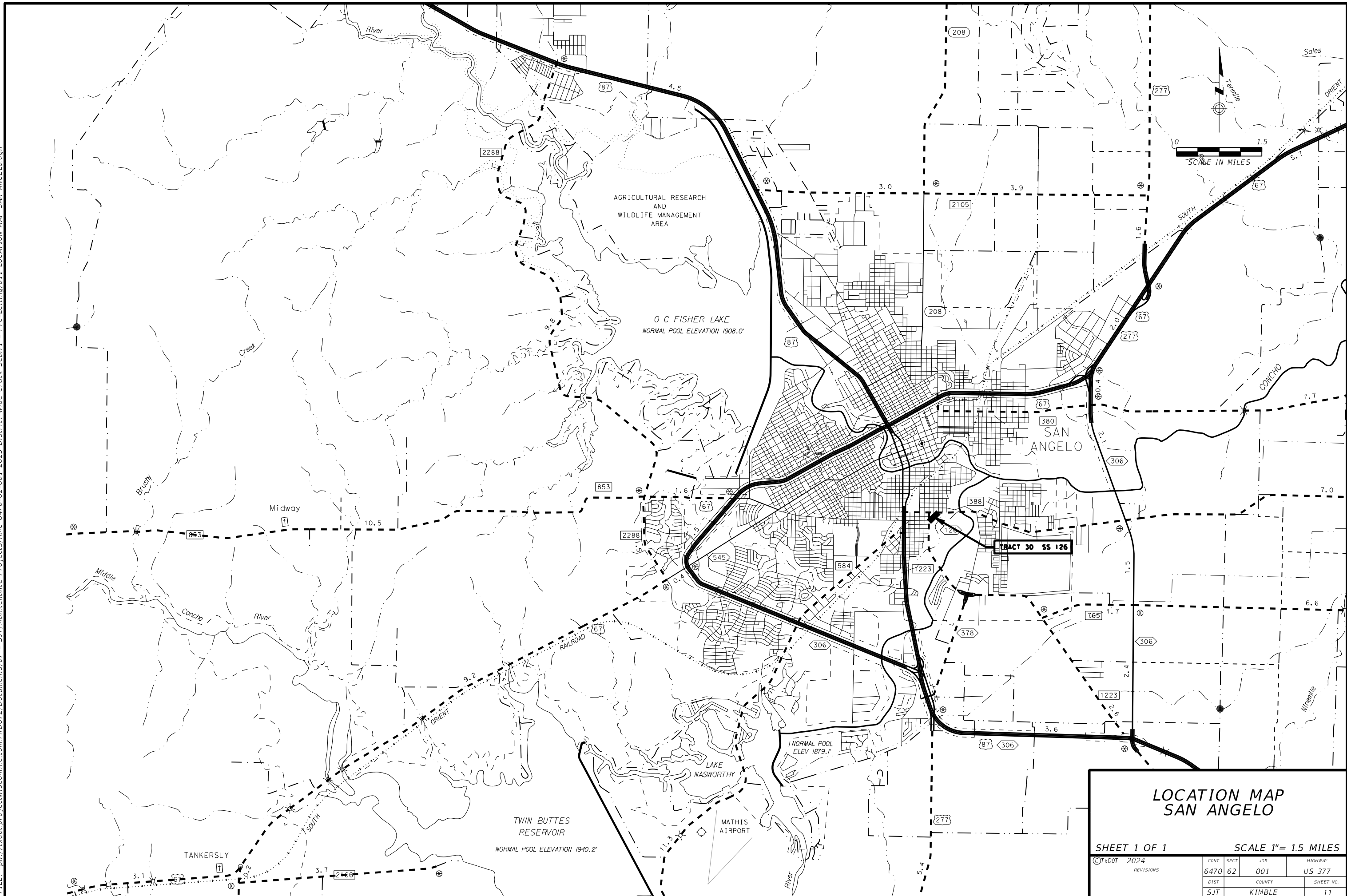


LOCATION MAP
 SAN ANGELO DISTRICT

SHEET 1 OF 1 SCALE 1"= 20 MILES

REV	DATE	BY	DESCRIPTION	CONT	SECT	JOB	HIGHWAY
1	2024		REVISIONS	6470	62	001	US 377
				DIST		COUNTY	SHEET NO.
				SJT		KIMBLE	10

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**LOCATION MAP
SAN ANGELO**

SHEET 1 OF 1 SCALE 1" = 1.5 MILES

© TXDOT REVISIONS	2024	CONT	SECT	JOB	HIGHWAY
		6470	62	001	US 377
		DIST	COUNTY	SHEET NO.	
	SJT	KIMBLE	11		

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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).

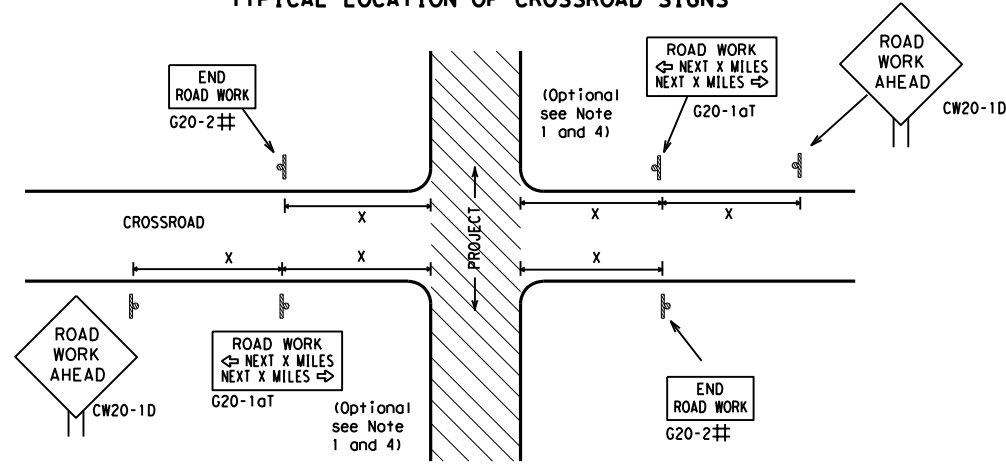
THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS) "
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS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

SHEET 1 OF 12

 Texas Department of Transportation		Traffic Safety Division Standard	
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS			
BC (1) -21			
FILE:	bc-21.dgn	DN:	TxDOT
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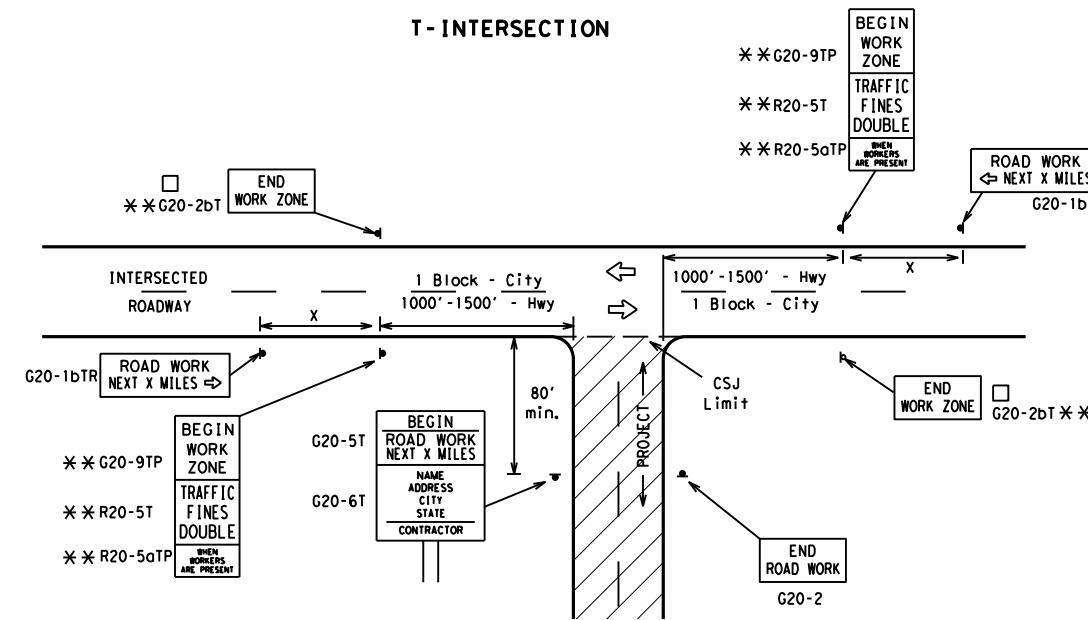
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TYPICAL LOCATION OF CROSSROAD SIGNS



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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING^{1,5,6}

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Δ Spacing "x" Feet (Apprx.)
CW20 ⁴	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	55	500 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	60	600 ²
			65	700 ²
			70	800 ²
			75	900 ²
			80	1000 ²
			*	* ³

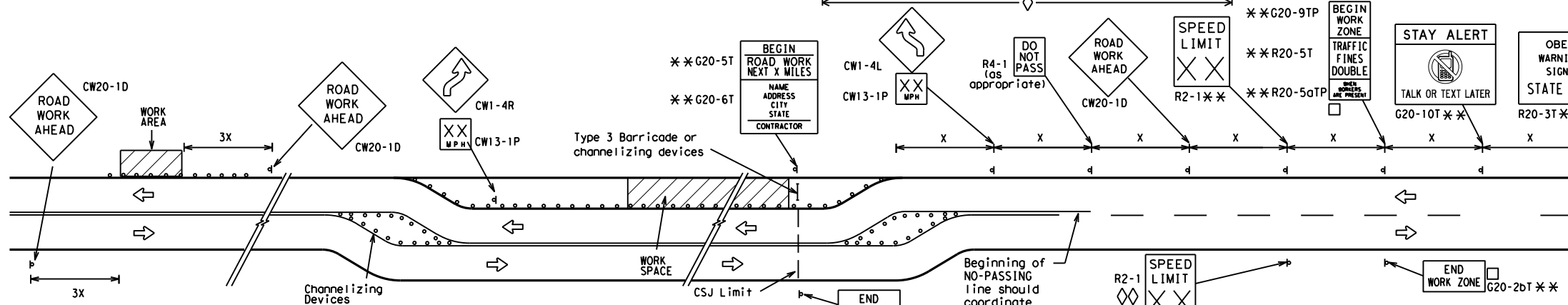
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

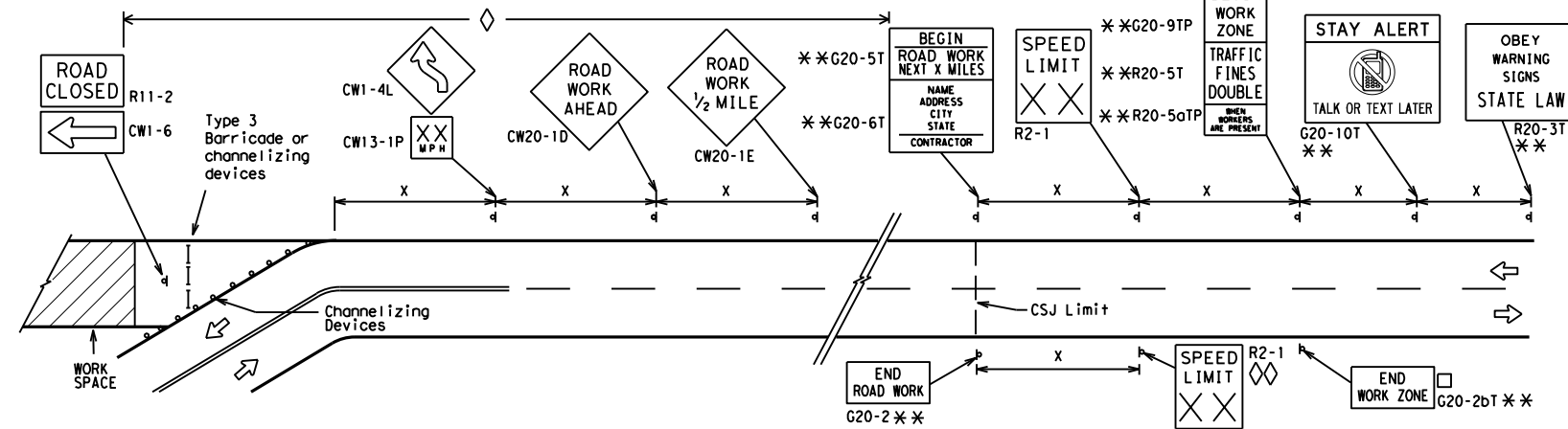
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

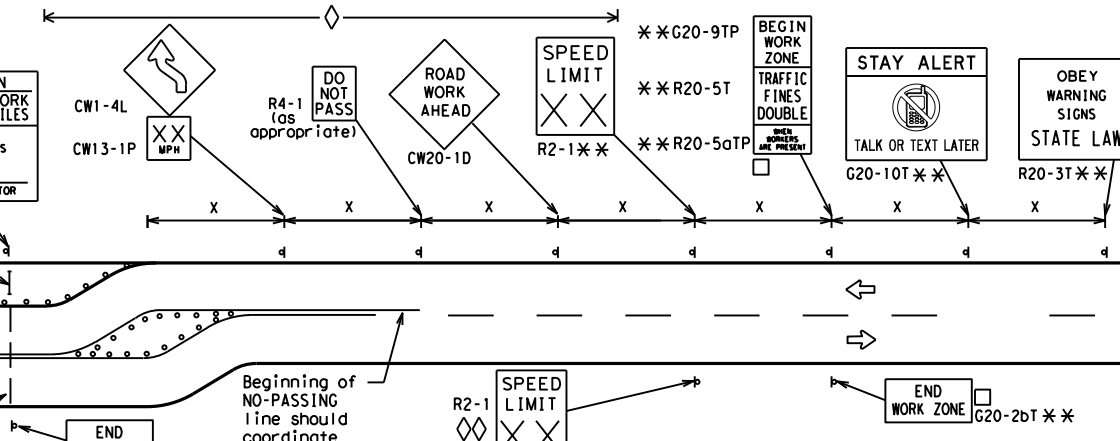


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "x" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
- CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
- Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
- Contractor will install a regulatory speed limit sign at the end of the work zone.

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

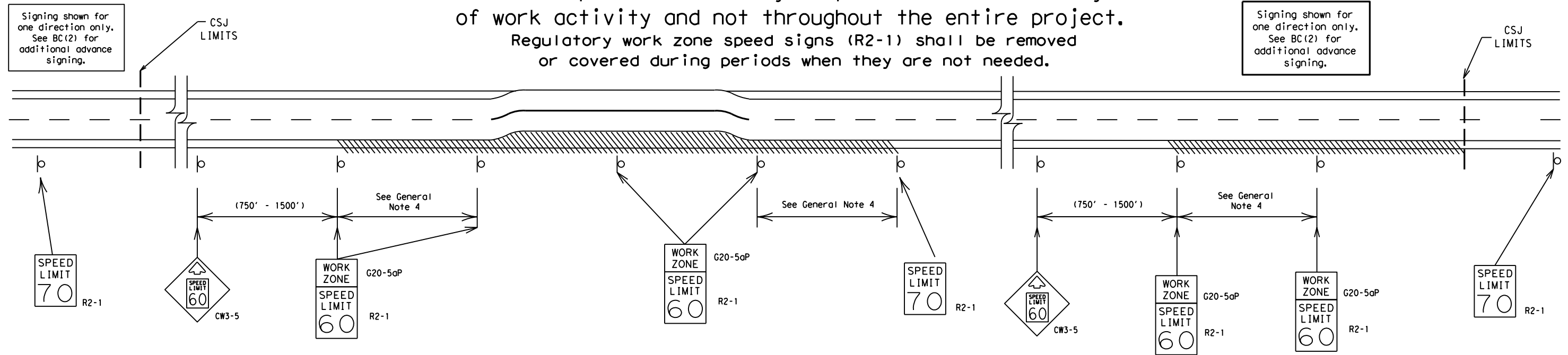
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- Frequency of work zone speed limit signs should be:

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

SHEET 3 OF 12



BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) -21

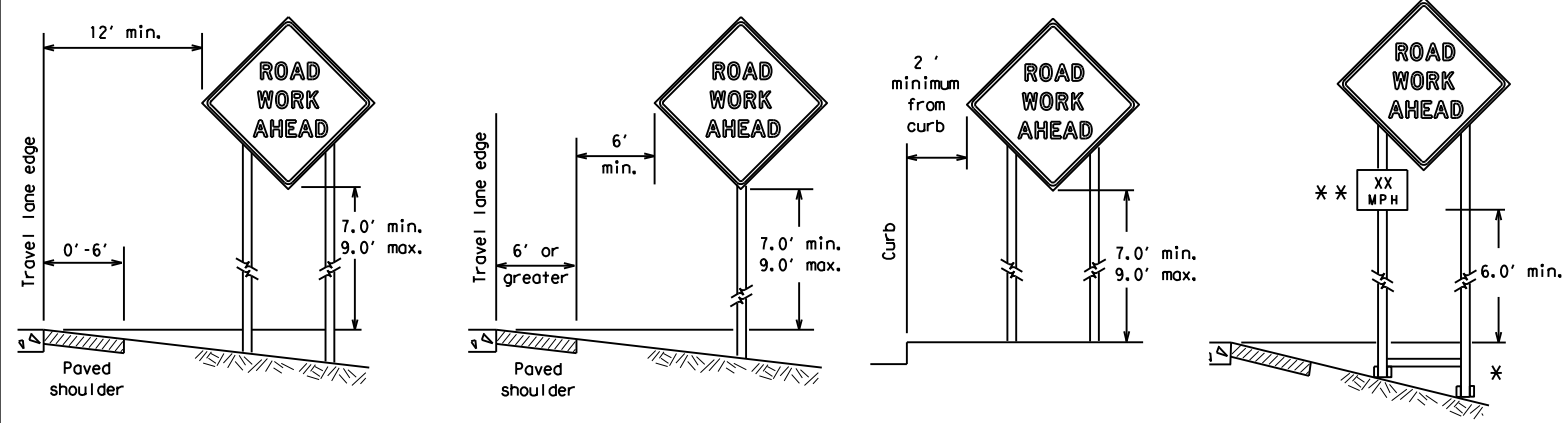
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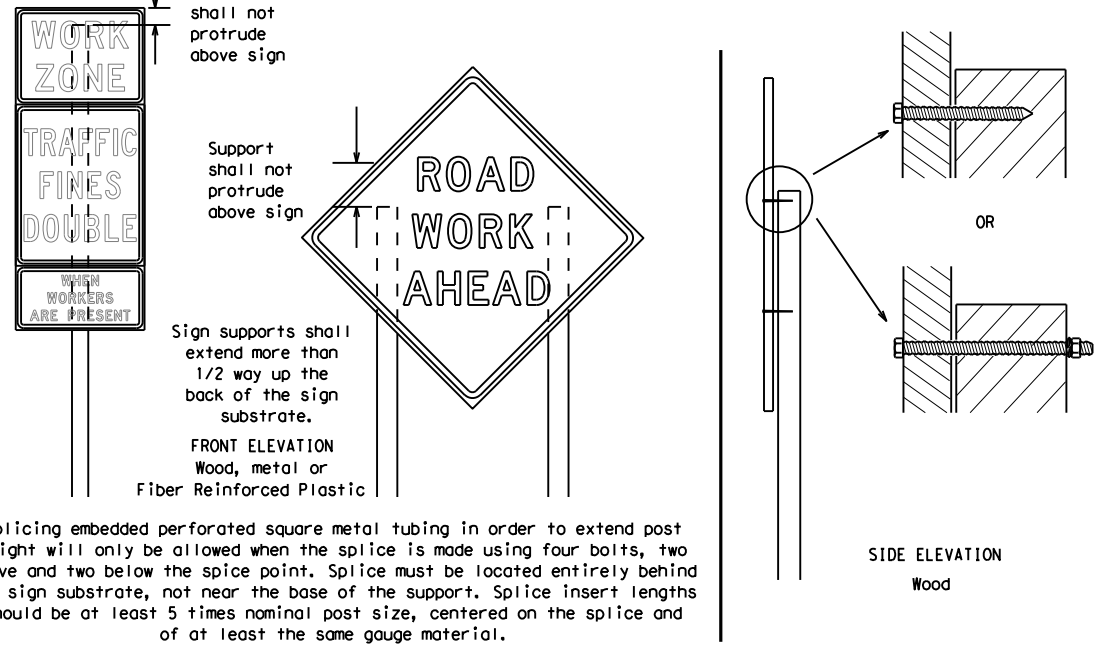
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

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

ATTACHMENT FOR SIGN SUPPORTS



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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

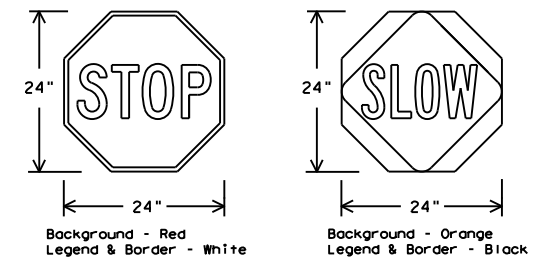
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not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

FLAGS ON SIGNS

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

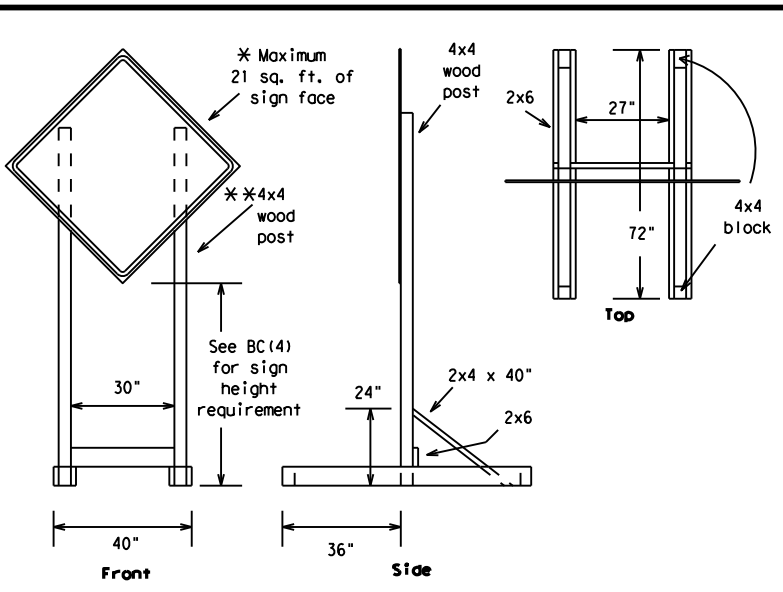


BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC (4) - 21

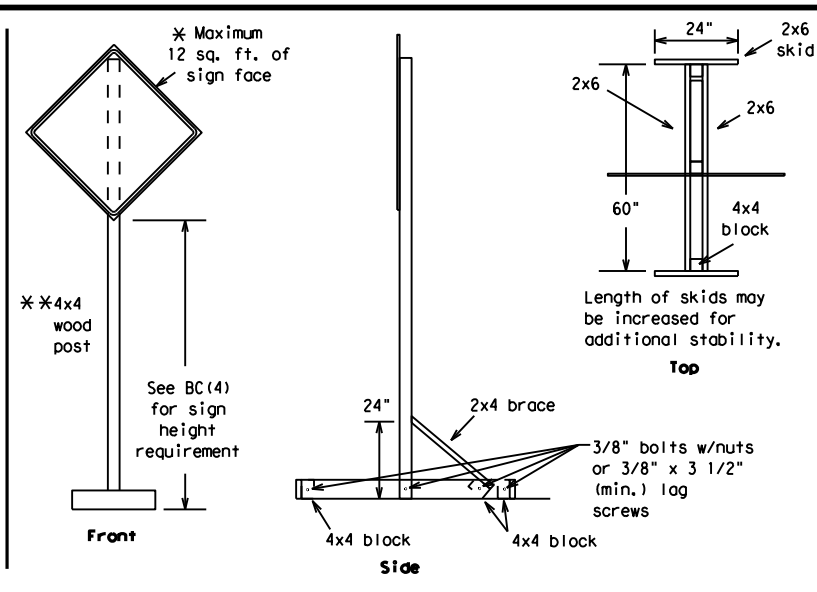
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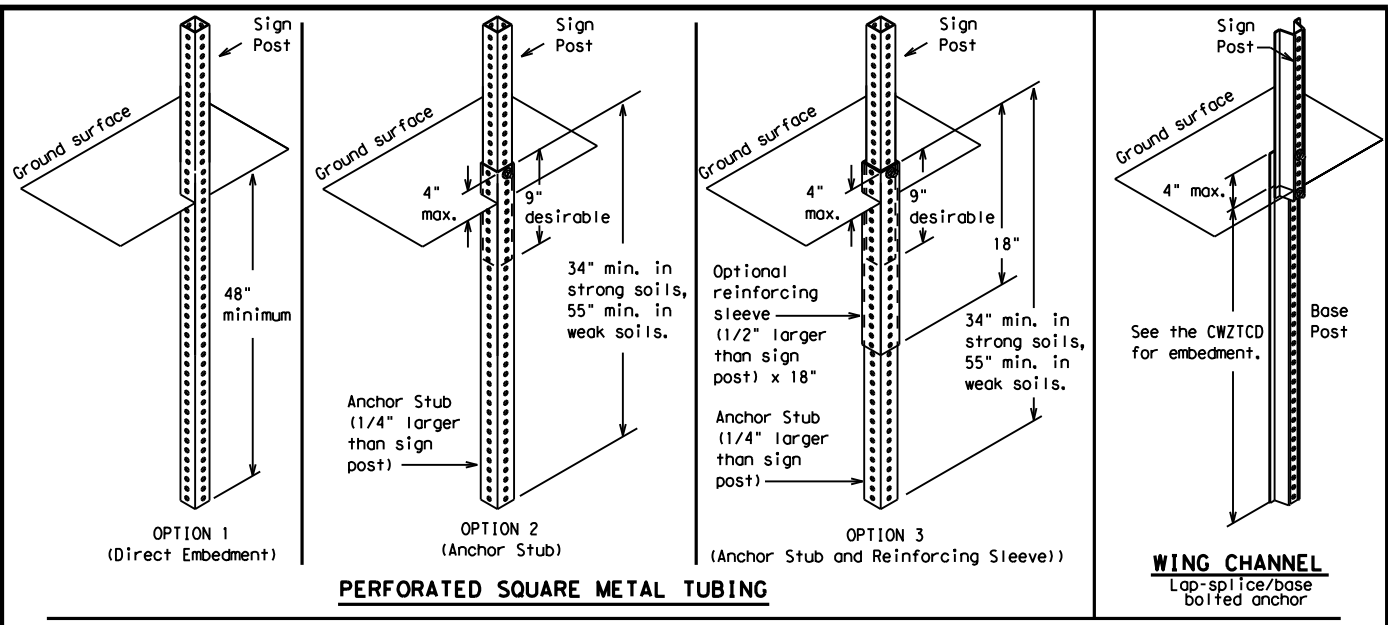
SKID MOUNTED WOOD SIGN SUPPORTS

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



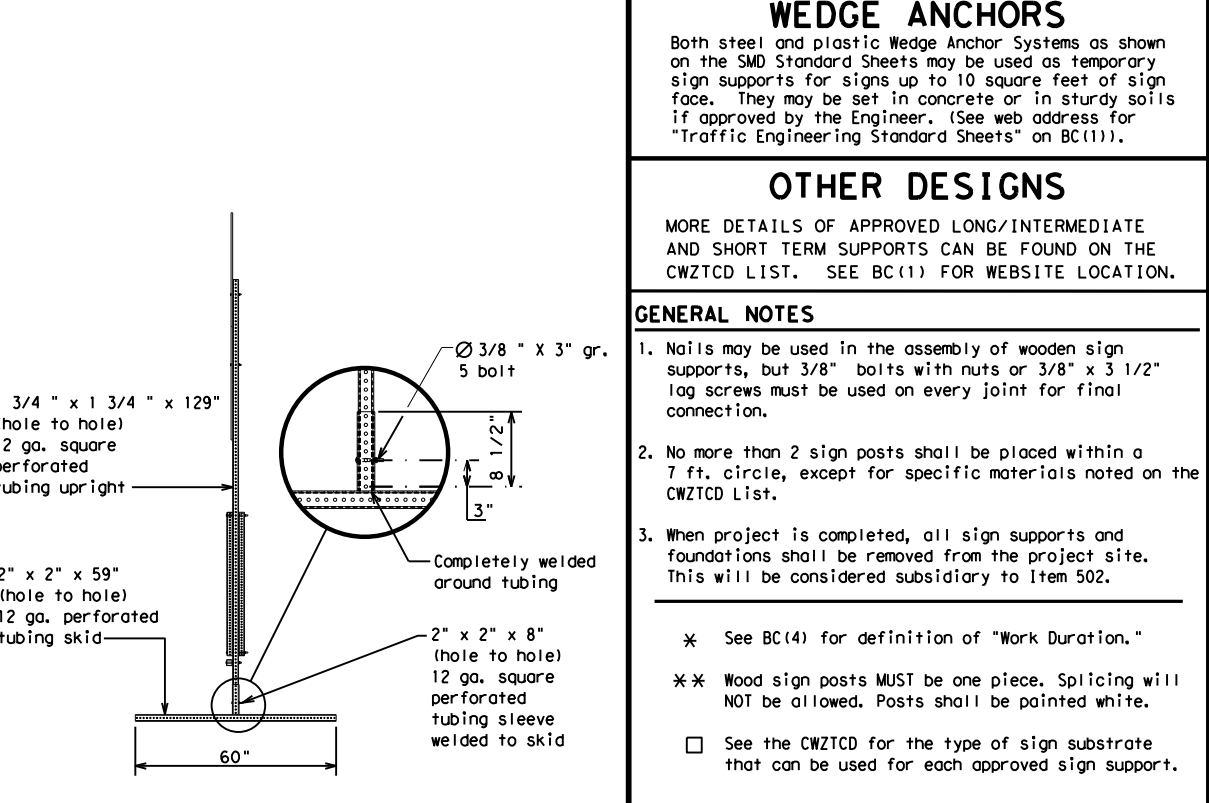
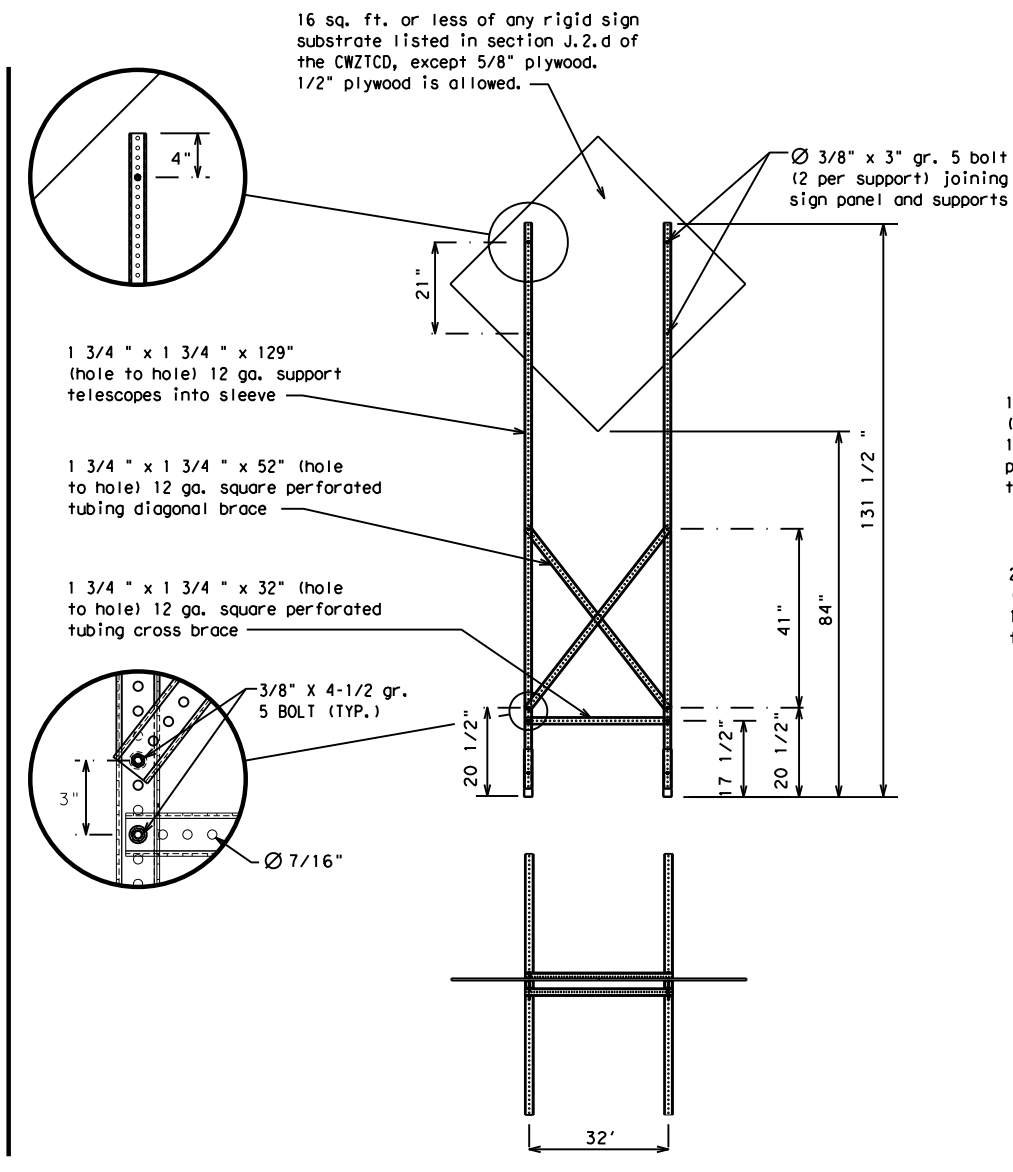
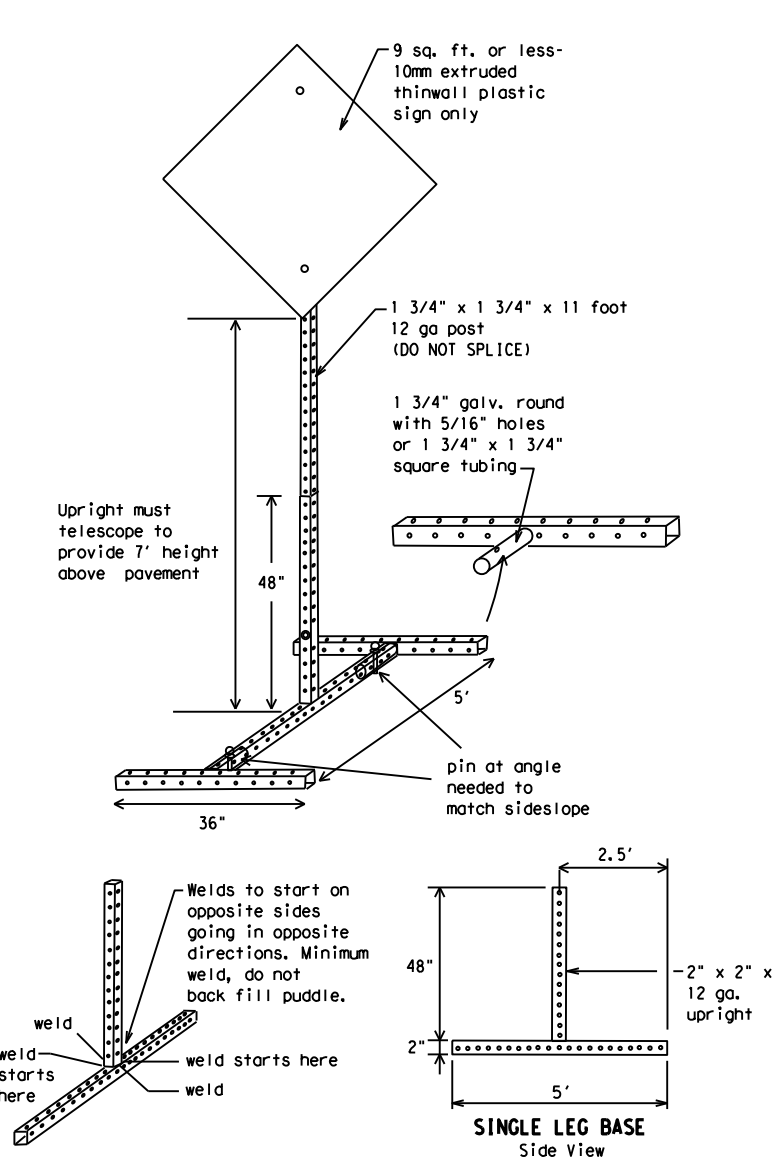
SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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



GROUND MOUNTED SIGN SUPPORTS

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



WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

- Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
 - No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
 - When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.
- * See BC(4) for definition of "Work Duration."
 - ** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.
 - ☐ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12



BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	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
XXXXXXXX TO XXXXXX
US XXX TO FM XXXX

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

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

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



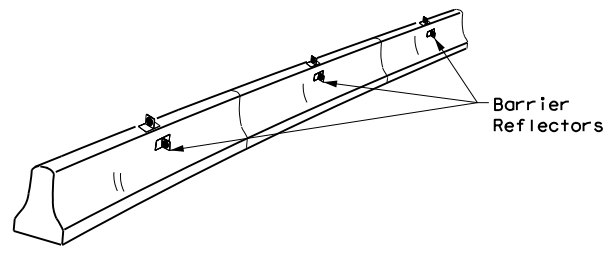
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC (6) - 21

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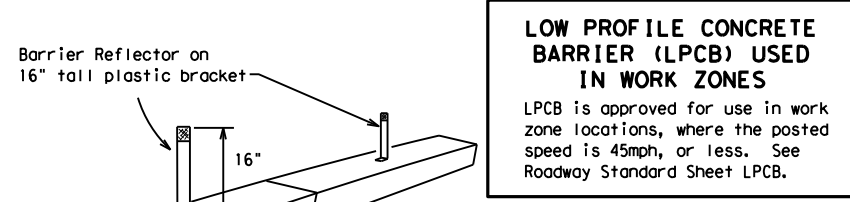
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



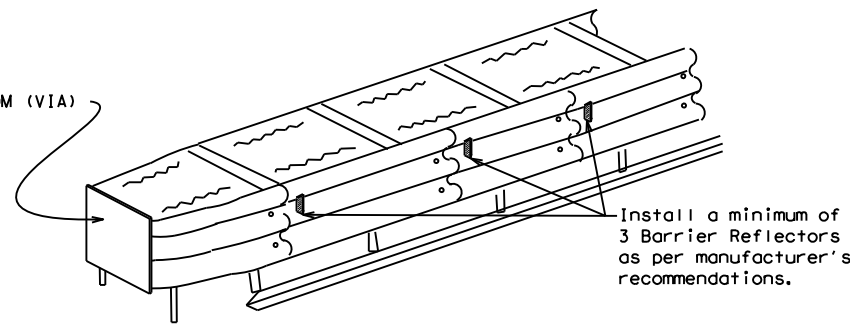
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



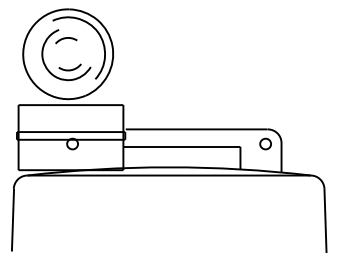
DELINEATION OF END TREATMENTS

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

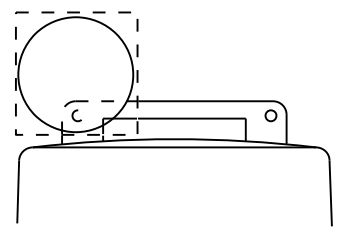
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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



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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



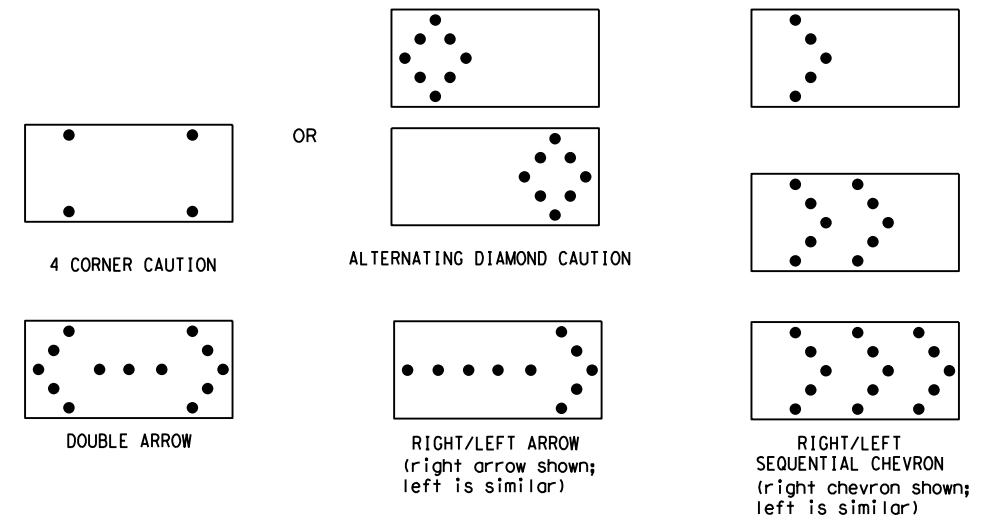
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

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

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

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



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

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

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

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

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

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



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

BC (7) -21

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

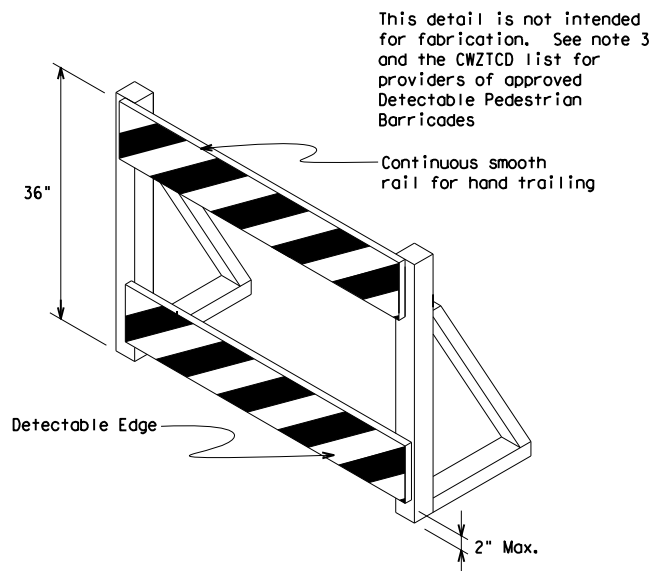
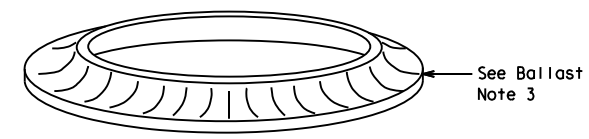
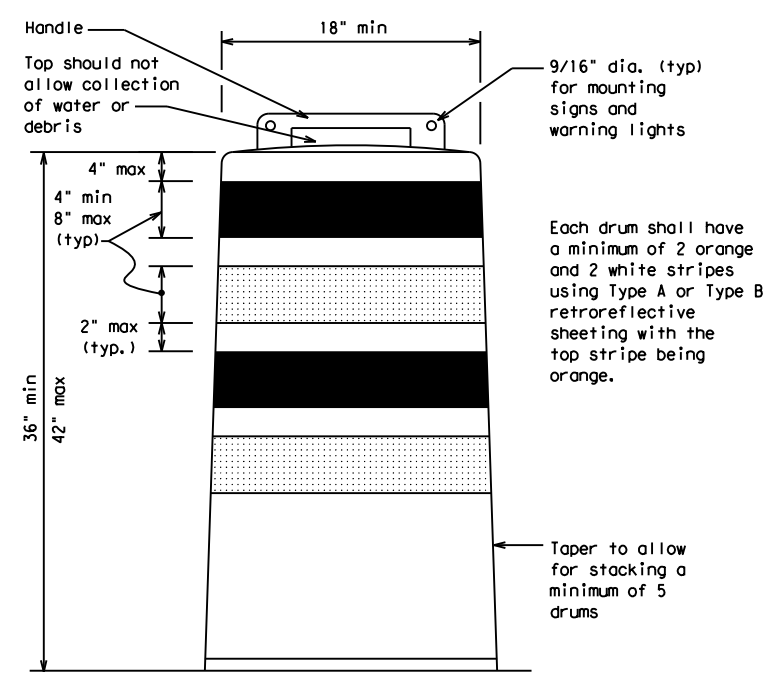
- Pre-qualified plastic drums shall meet the following requirements:
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
 - The body and base shall lock together in such a manner that the body separates from the base when impacted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

RETROREFLECTIVE SHEETING

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

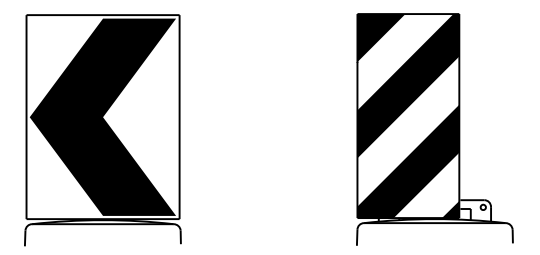
BALLAST

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



DETECTABLE PEDESTRIAN BARRICADES

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



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

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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

SHEET 8 OF 12



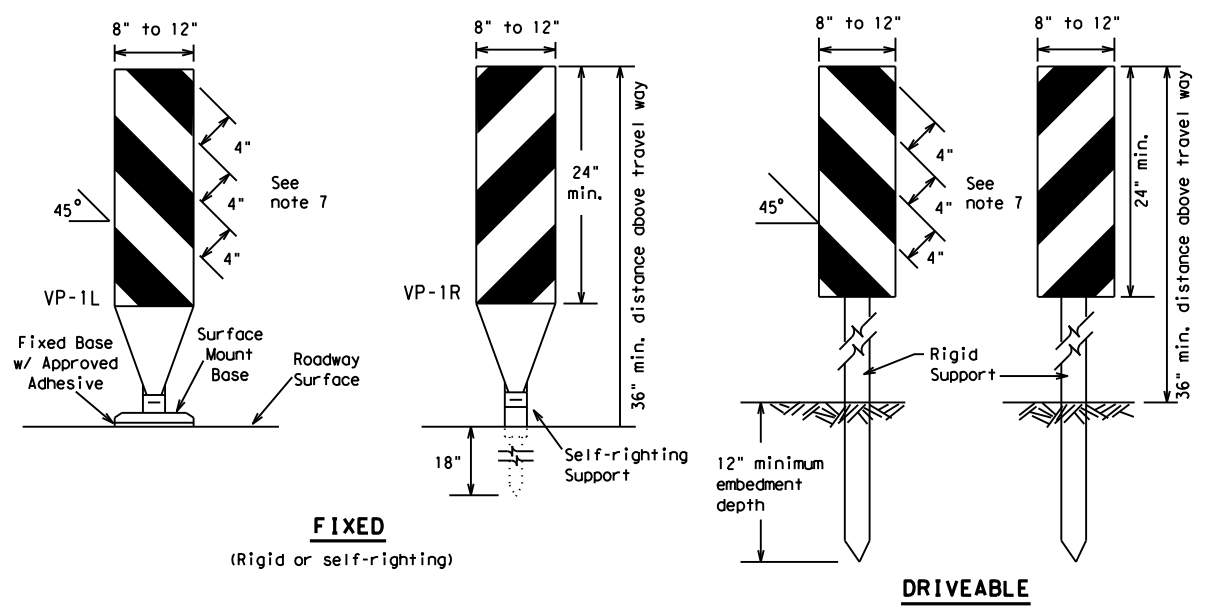
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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7-13									

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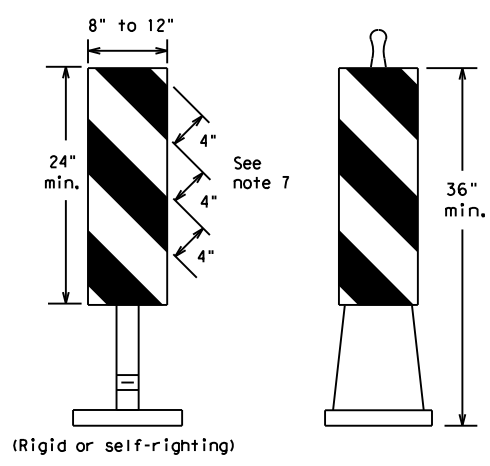
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FIXED
(Rigid or self-righting)

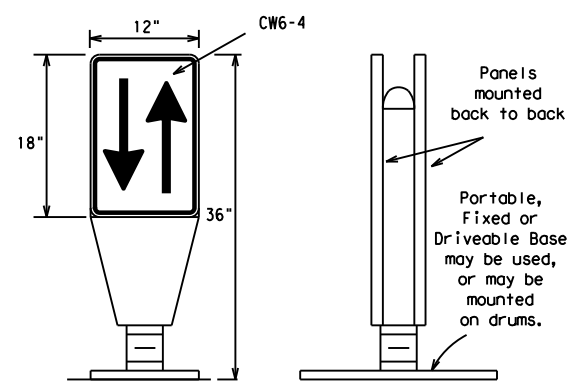
DRIVEABLE

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



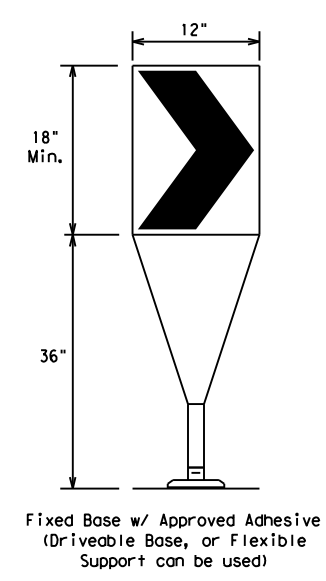
PORTABLE

VERTICAL PANELS (VPs)



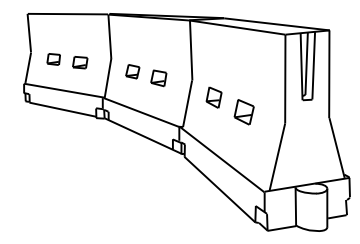
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

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



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

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

GENERAL NOTES

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 21

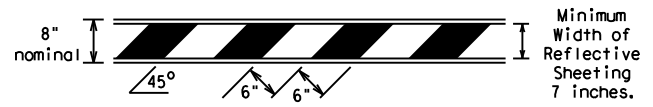
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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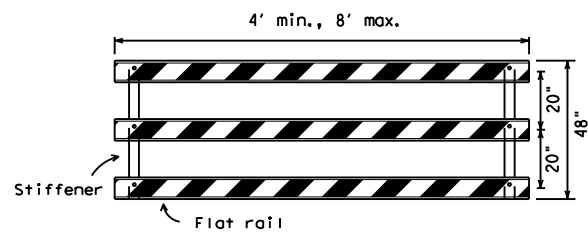
TYPE 3 BARRICADES

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.



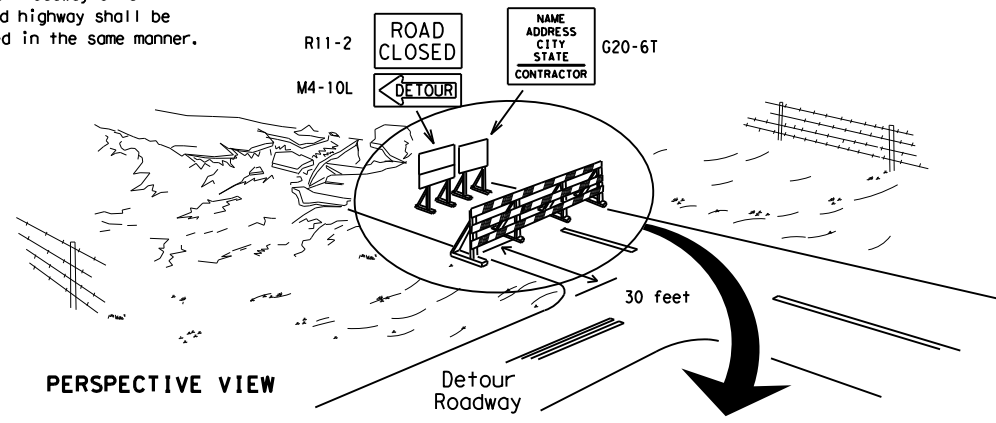
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

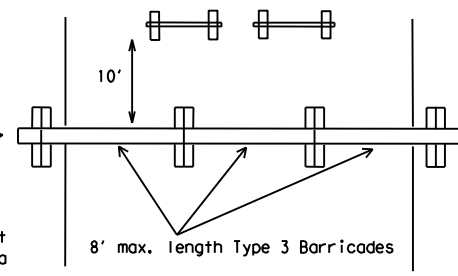
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

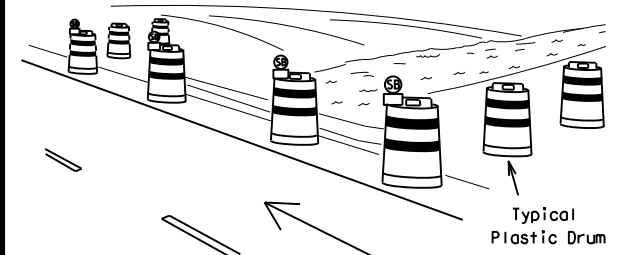
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

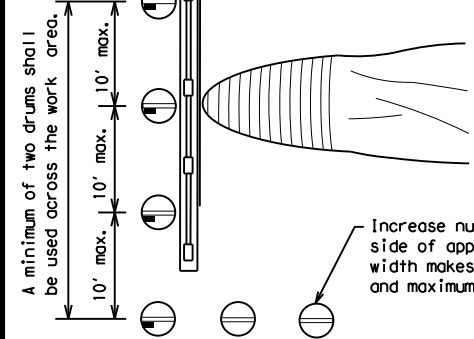
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

These drums are not required on one-way roadway

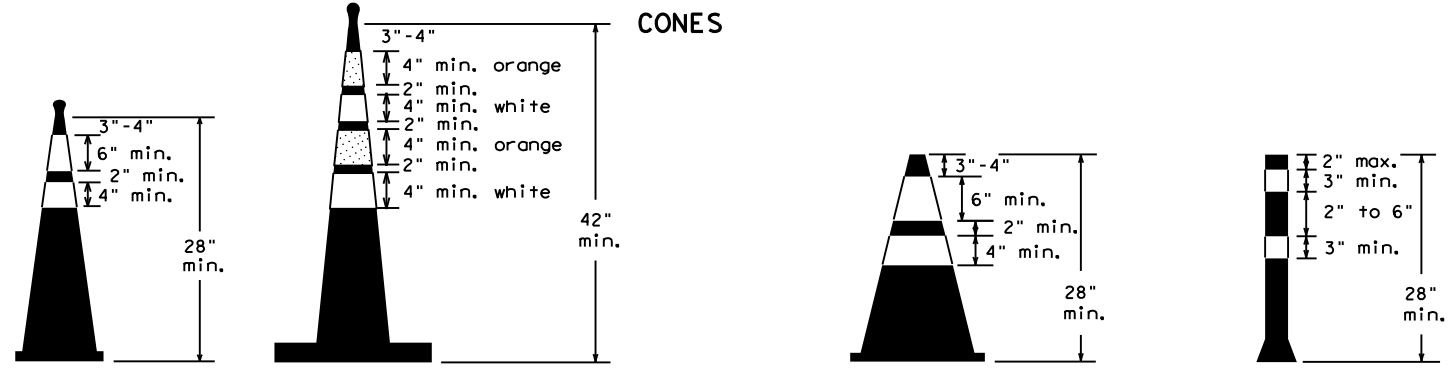


PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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

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



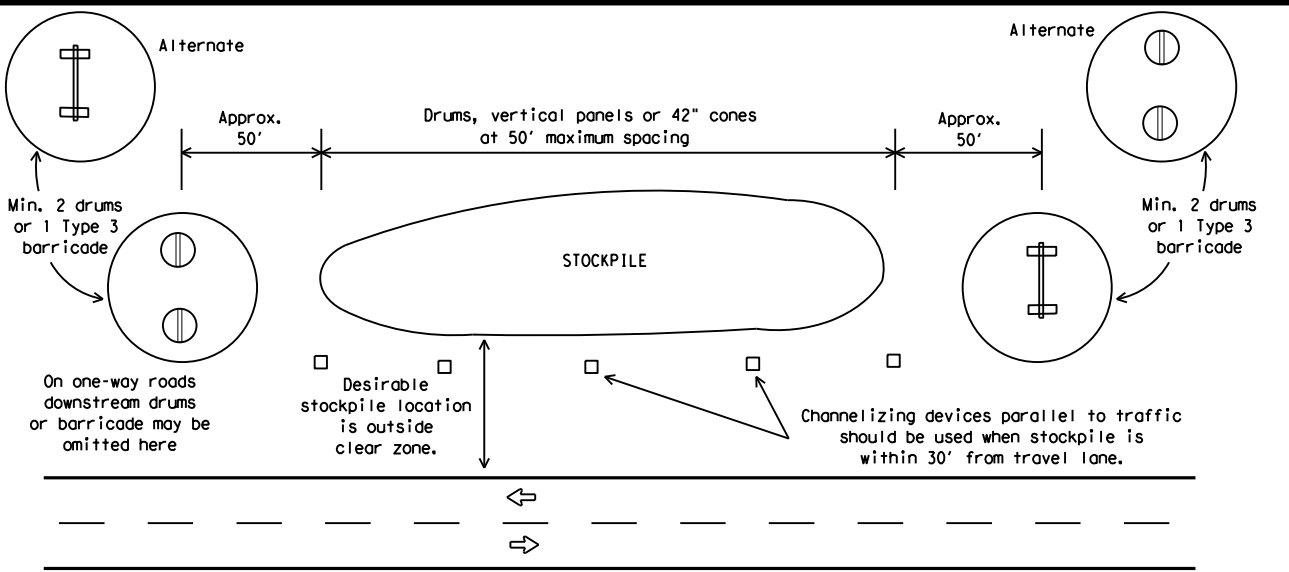
Two-Piece cones

One-Piece cones

Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.
 42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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7-13 5-21	SJT	KIMBLE	21	

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

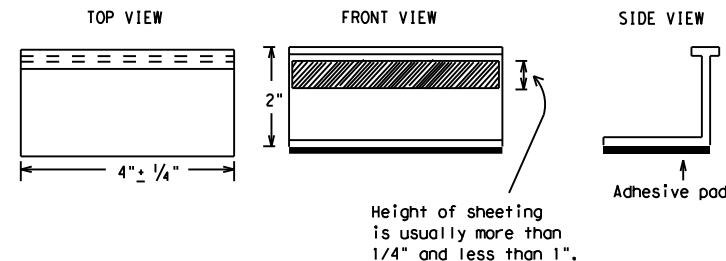
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

SHEET 11 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

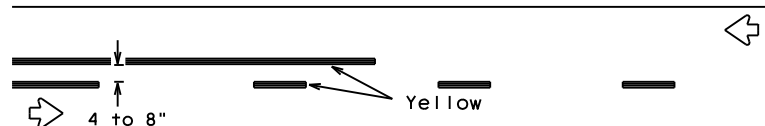
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6470	62	001	US 377
2-98 9-07 5-21	DIST	COUNTY	SHEET NO.	
1-02 7-13	SJT	KIMBLE	22	
11-02 8-14				

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PAVEMENT MARKING PATTERNS

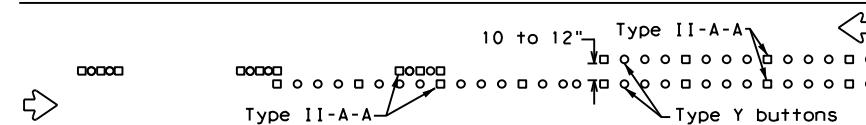


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

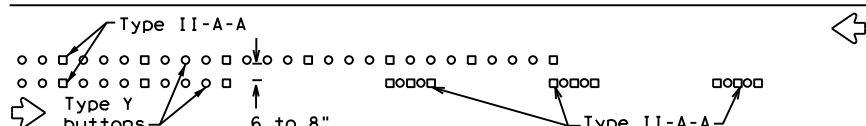


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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

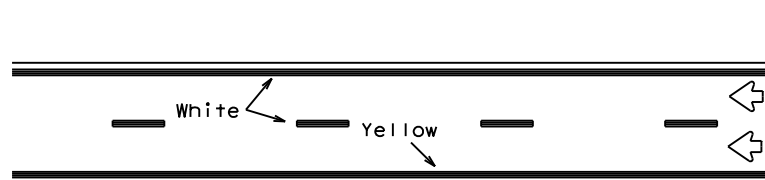


RAISED PAVEMENT MARKERS - PATTERN A



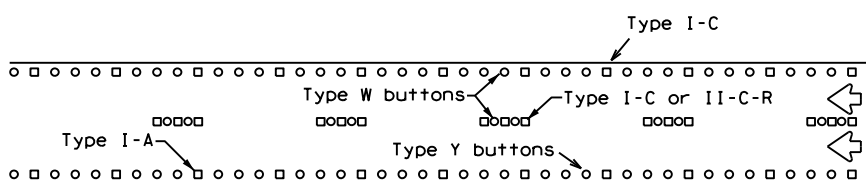
RAISED PAVEMENT MARKERS - PATTERN B

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



REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



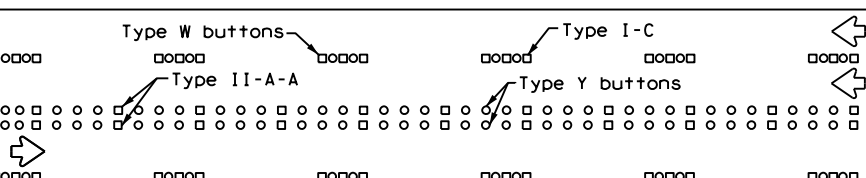
RAISED PAVEMENT MARKERS

EDGE & LANE LINES FOR DIVIDED HIGHWAY



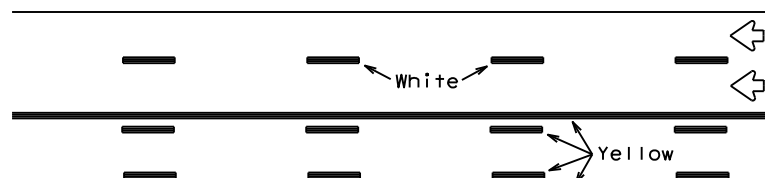
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



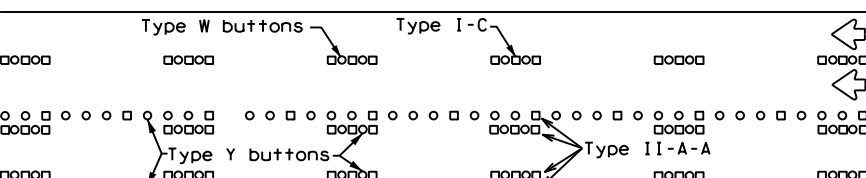
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

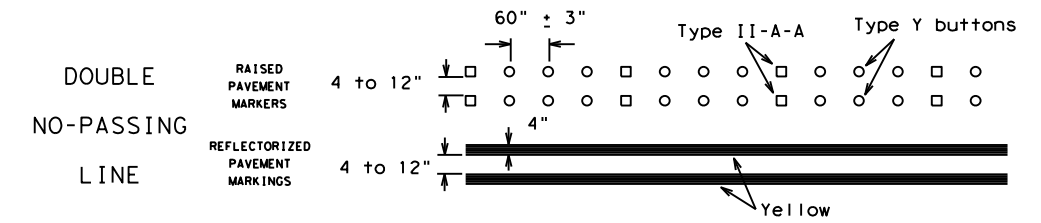
Prefabricated markings may be substituted for reflectORIZED pavement markings.



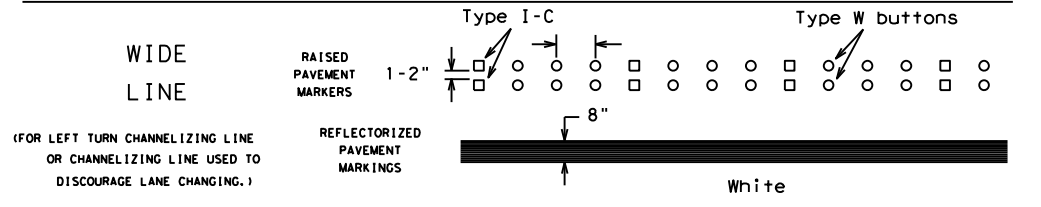
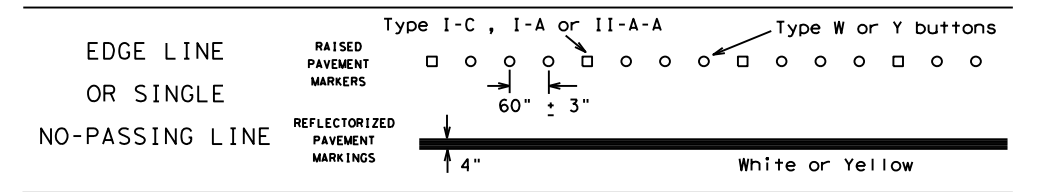
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE

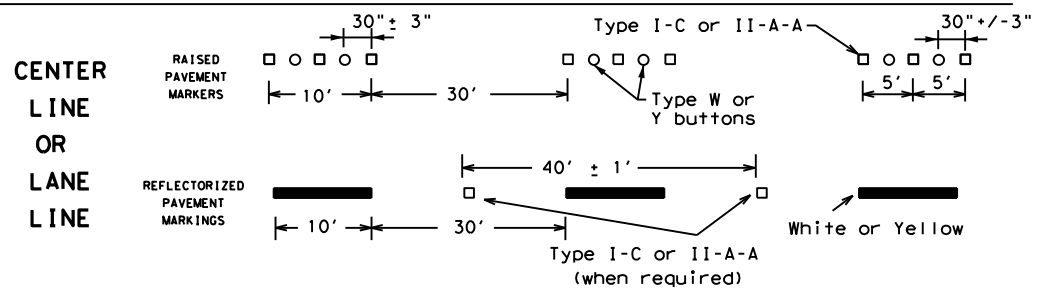
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



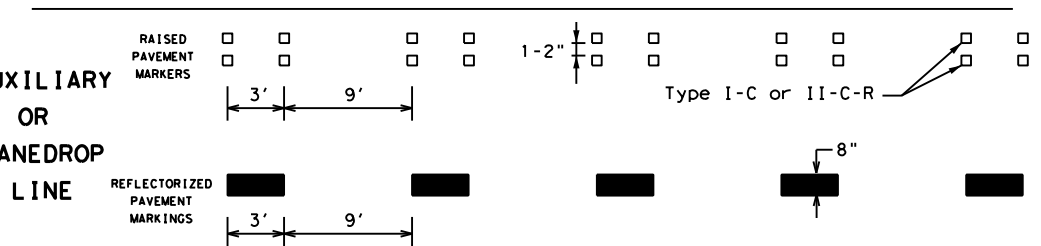
SOLID LINES



BROKEN LINES

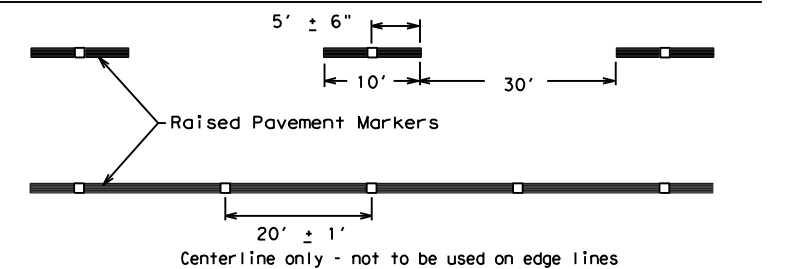


AUXILIARY OR LANEDROP LINE



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.



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

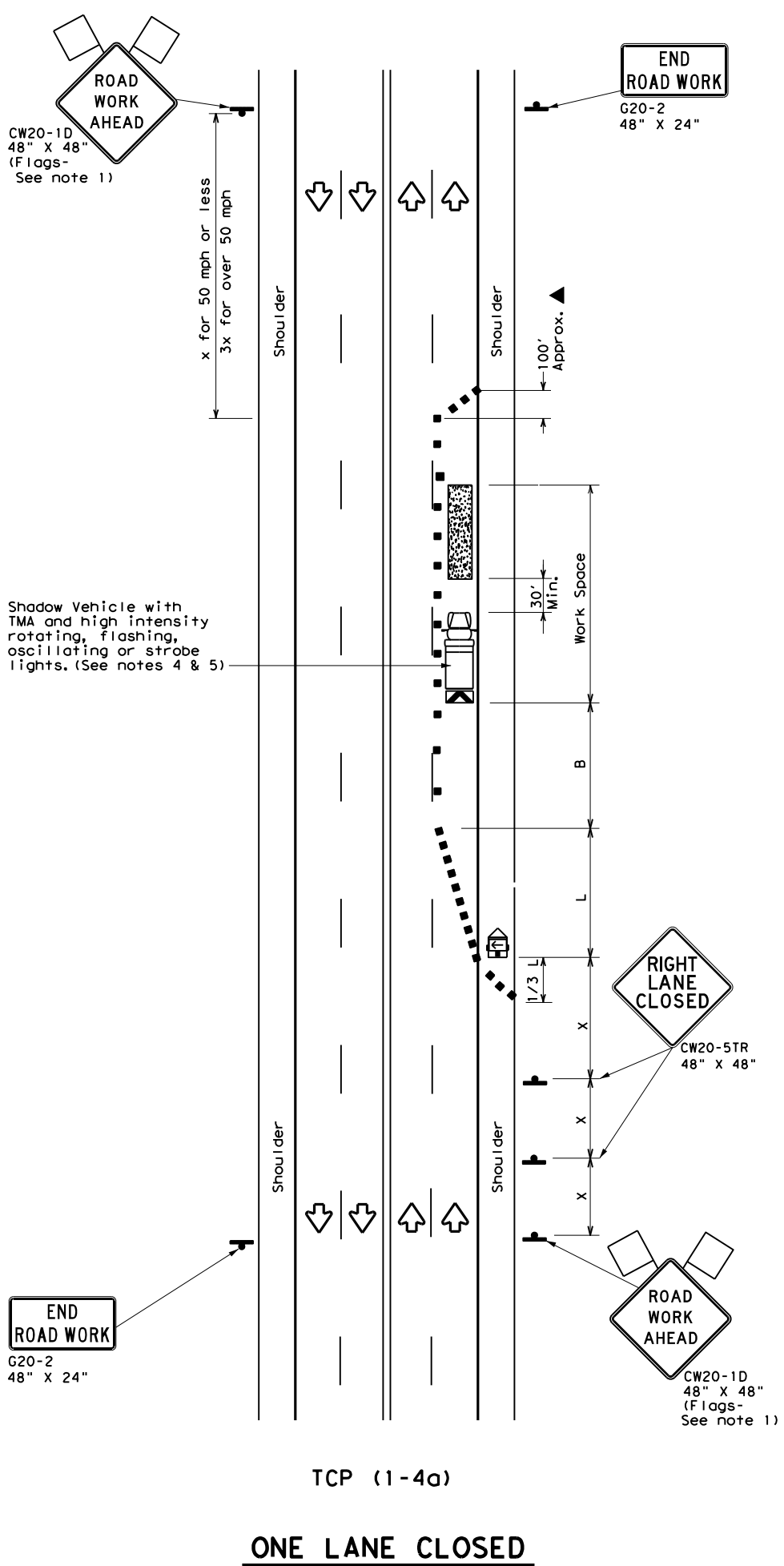
BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6470	62	001	US 377
1-97 9-07 5-21				
2-98 7-13				
11-02 8-14	DIST	COUNTY	SHEET NO.	
	SJT	KIMBLE	23	

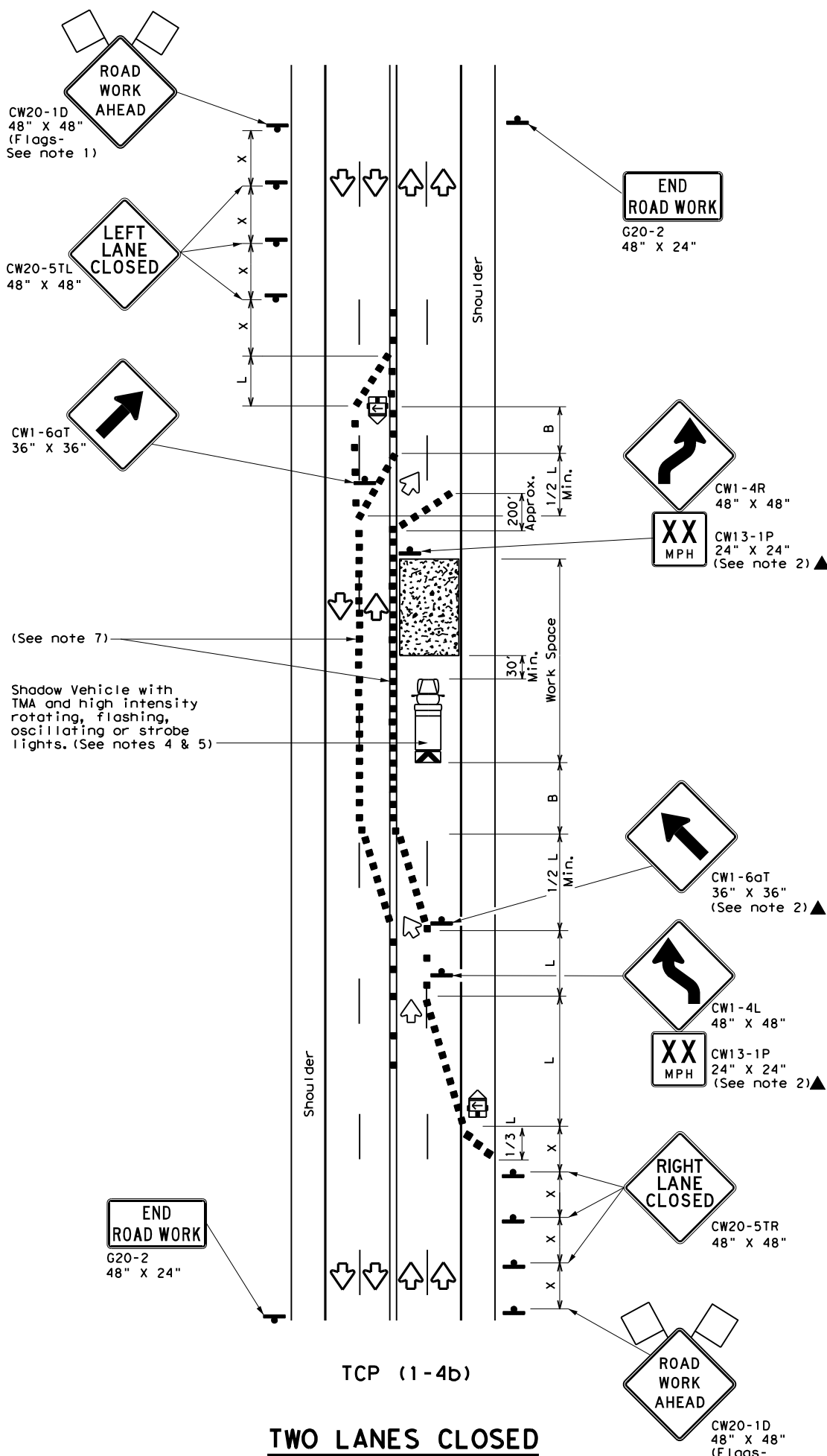
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TXDOT for any purpose whatsoever. TXDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect use of this standard. PROJECT: 6470-62-001 - Pre-Letting/023 BC(12)-21.dgn
 DATE: 10/18/2024 7:22:57 PM
 FILE: pw://txdot.projectwiseonline.com:TXDOT12/Documents/07 - SJT/Maintenance Projects/RMC 6470-62-001 - SJT/Maintenance Projects/RMC 6470-62-001 - Pre-Letting/023 BC(12)-21.dgn

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."

DATE: 10/18/2024 7:26:07 PM
 FILE: pw://txdot.projectwiseonline.com:TXDOT12/Documents/07 - SJT/Maintenance/PHS/2024/10/18/2024-10-18-18.dgn
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ONE LANE CLOSED



TWO LANES CLOSED

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

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

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

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

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

TCP (1-4a)

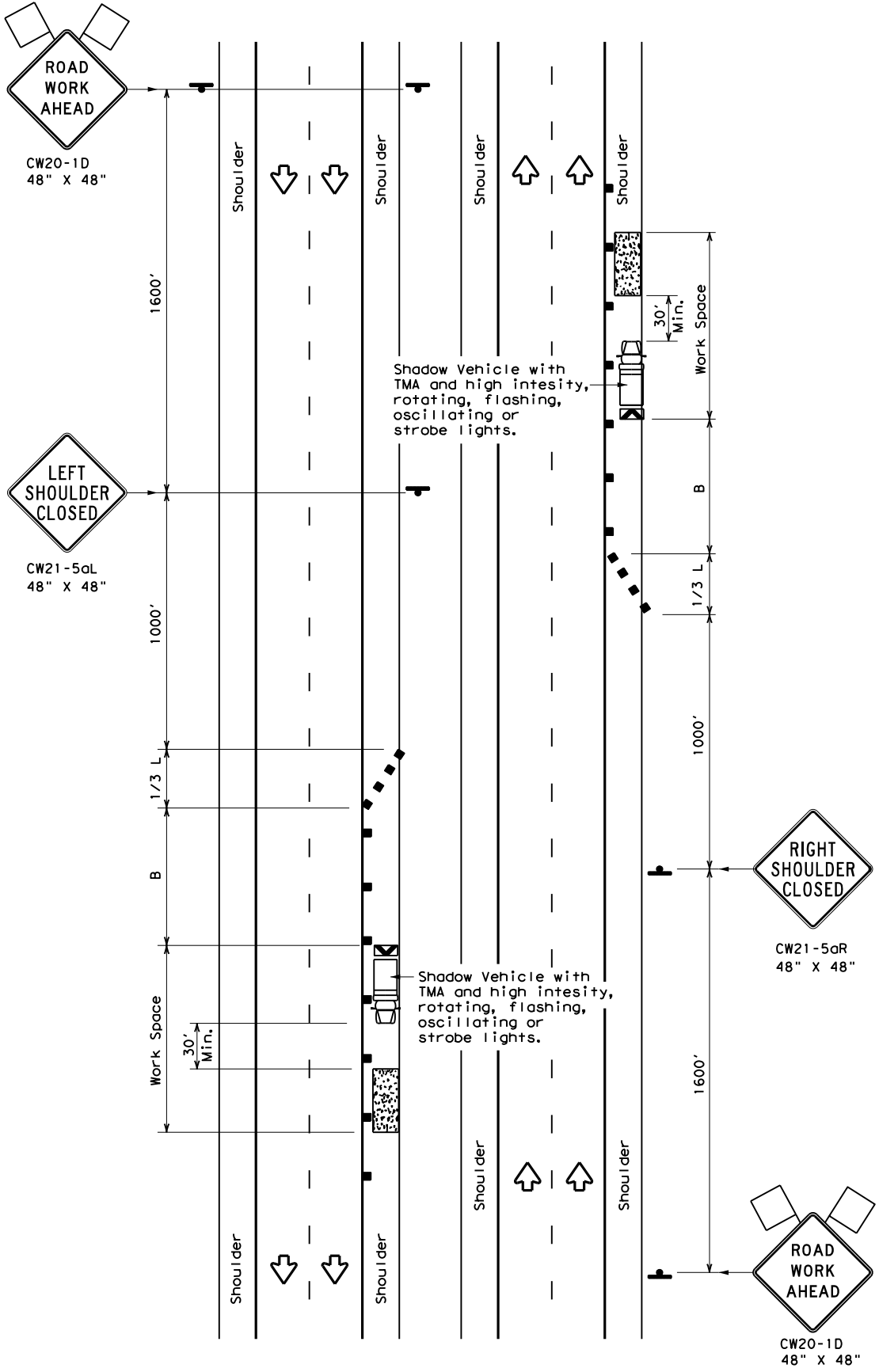
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

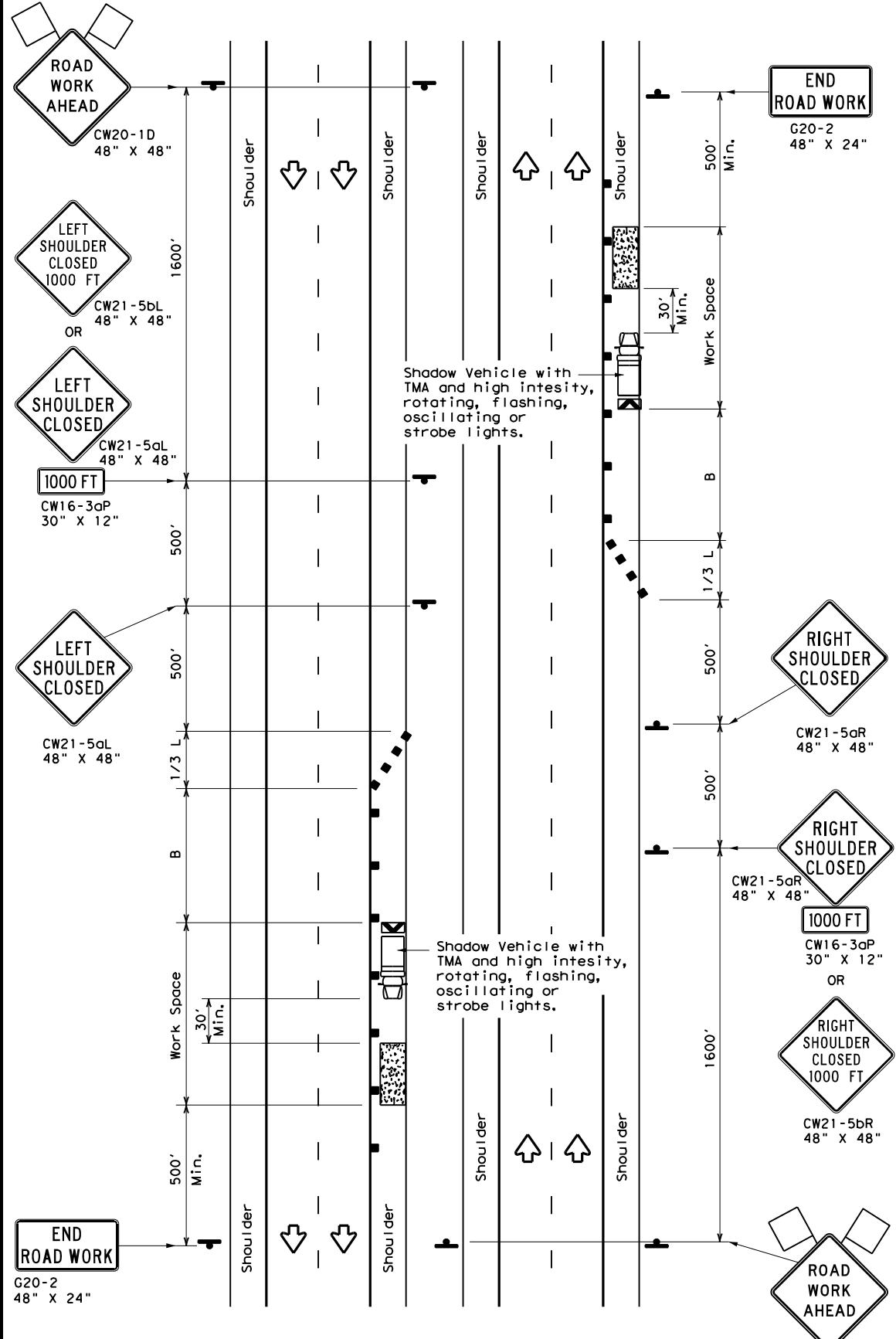
- Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas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

		Traffic Operations Division Standard	
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS			
TCP (1-4) - 18			
FILE:	tcp1-4-18.dgn	DN:	CK:
© TxDOT	December 1985	CONT	SECT
REVISIONS		6470	62
2-94	4-98		
8-95	2-12		
1-97	2-18		
		JOB	HIGHWAY
		001	US 377
		DIST	COUNTY
		SJT	KIMBLE
		SHEET NO.	27

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 DATE: 10/18/2024 7:27:55 PM
 FILE: pw://txdot.projectwiseonline.com:TXDOT12/Documents/07 - SJT/Maintenance/PHS/SHOULDER/TCP(5-1)-18.dgn



TCP (5-1a)
WORK AREA ON SHOULDER



TCP (5-1b)
WORK AREA ON SHOULDER

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30	L = WS ² / 60	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
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'

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	TCP (5-1a)	TCP (5-1b)	TCP (5-1b)	

- GENERAL NOTES**
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the performance or quality of the work. Type 3 barricades or drums may be substituted when workers on foot are no longer present when approved by the Engineer.
 - 28" tall or taller one-piece cones will be allowed only for Short Duration or Short Term stationary operations when workers are present to maintain the devices upright and in proper location. Intermediate Term stationary work areas should use Drums, Vertical Panels or 42" tall two-piece cones.

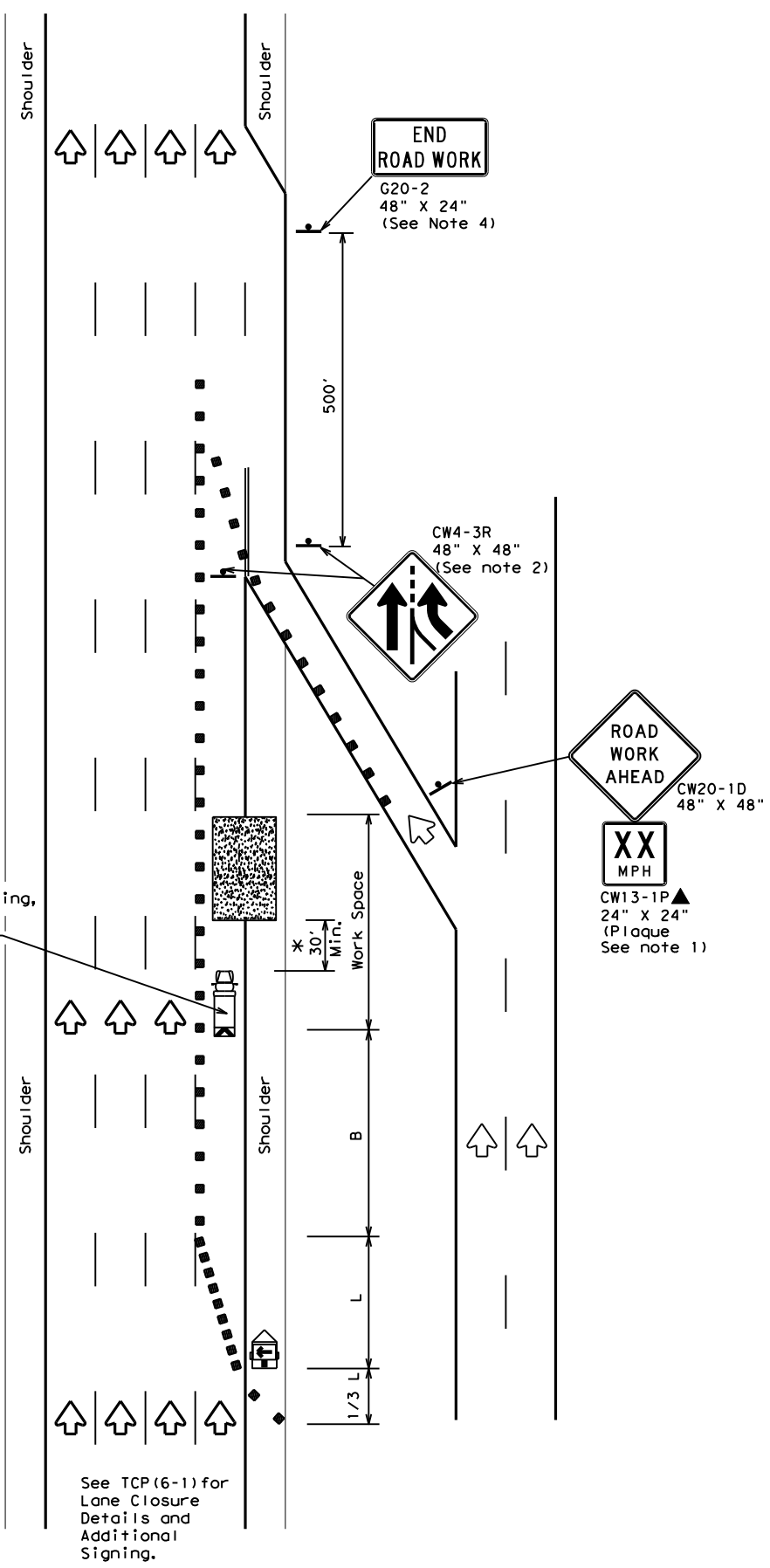


**TRAFFIC CONTROL PLAN
 SHOULDER WORK FOR
 FREEWAYS / EXPRESSWAYS**

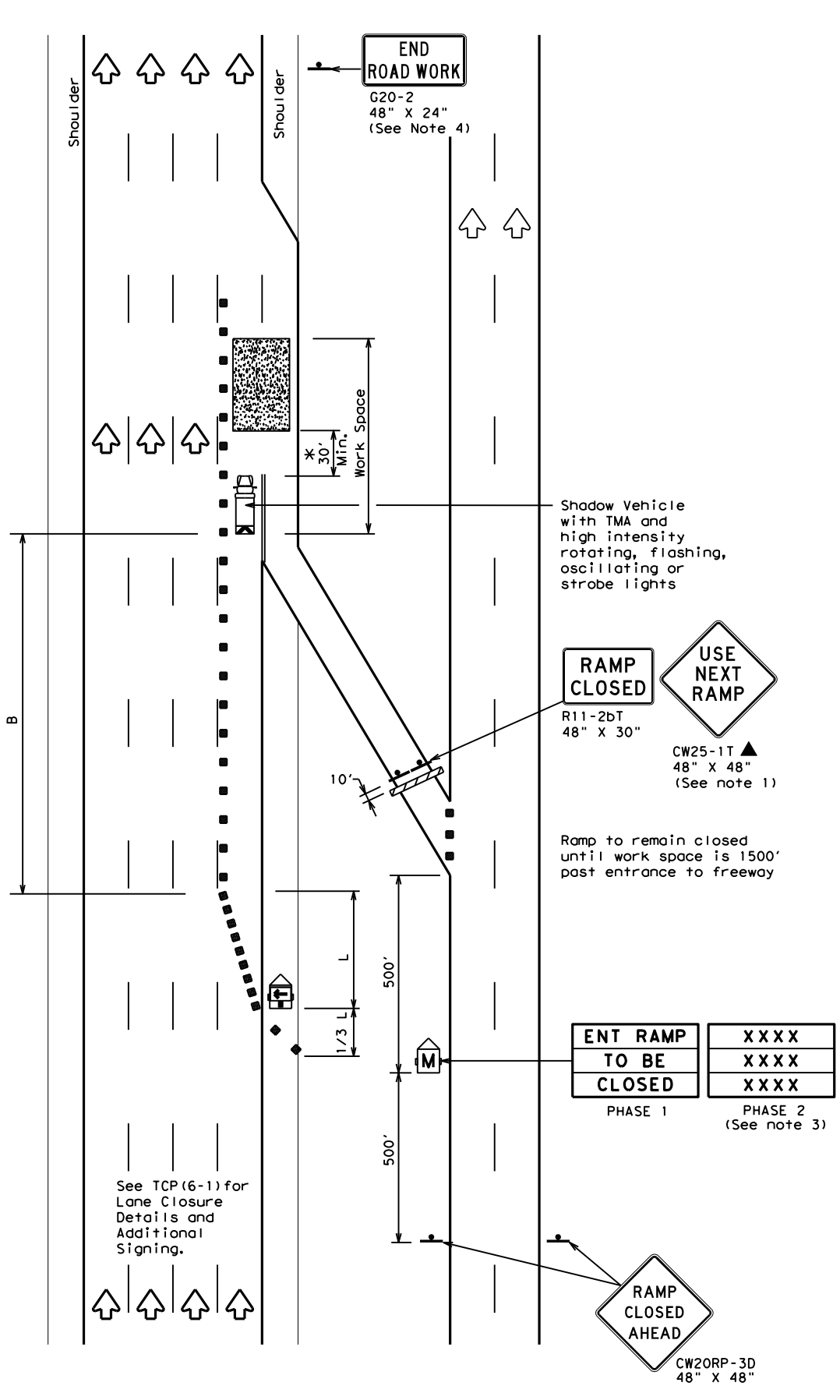
TCP (5-1) - 18

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
2-18	REVISIONS	6470	62	001
	DIST	COUNTY	SHEET NO.	
	SJT	KIMBLE	29	

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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		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

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- ADDED LANE Symbol (CW4-3) sign may be omitted when sign between ramp and mainline can be seen from both roadways.
- See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
- 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.

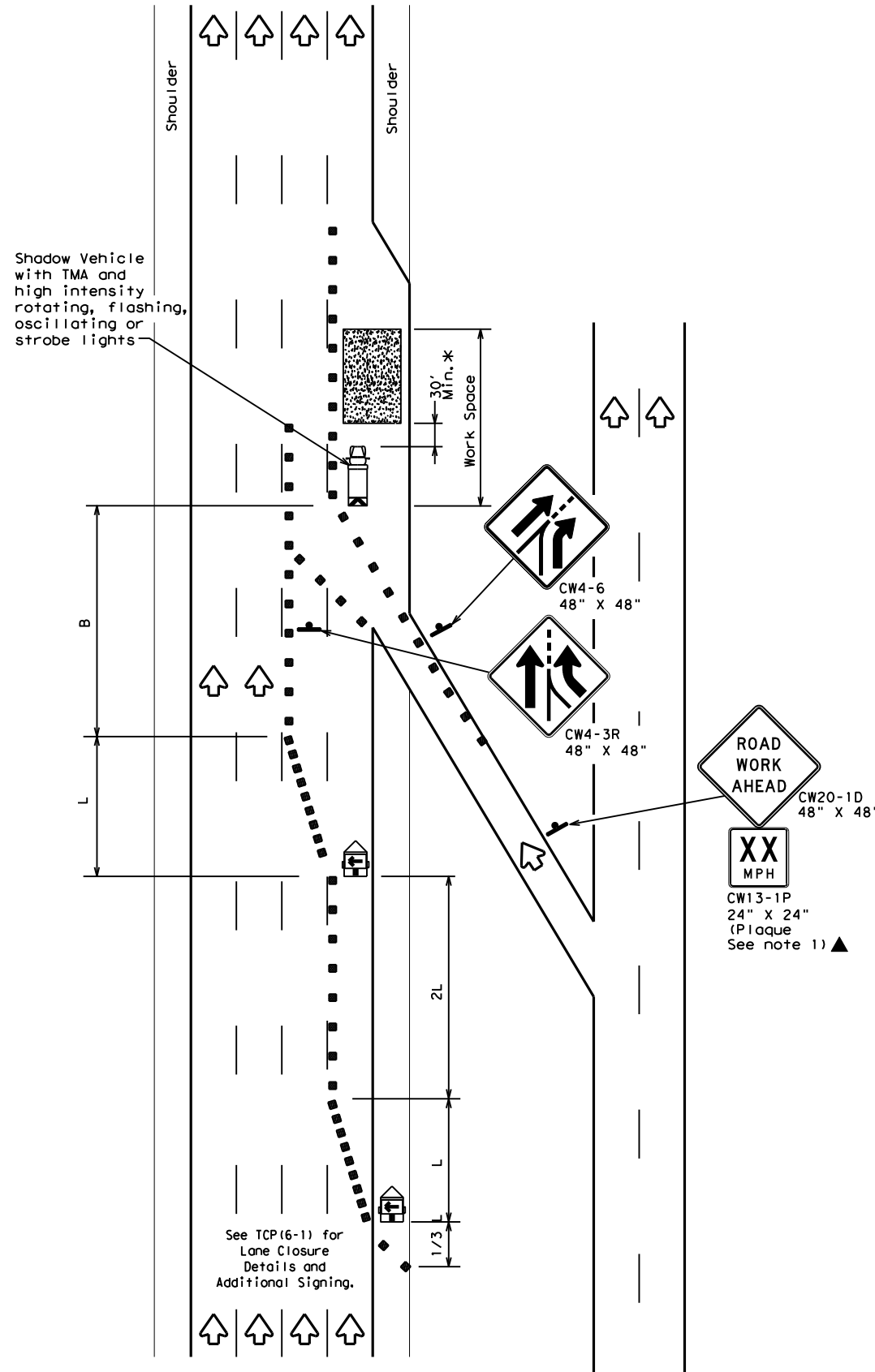


TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP

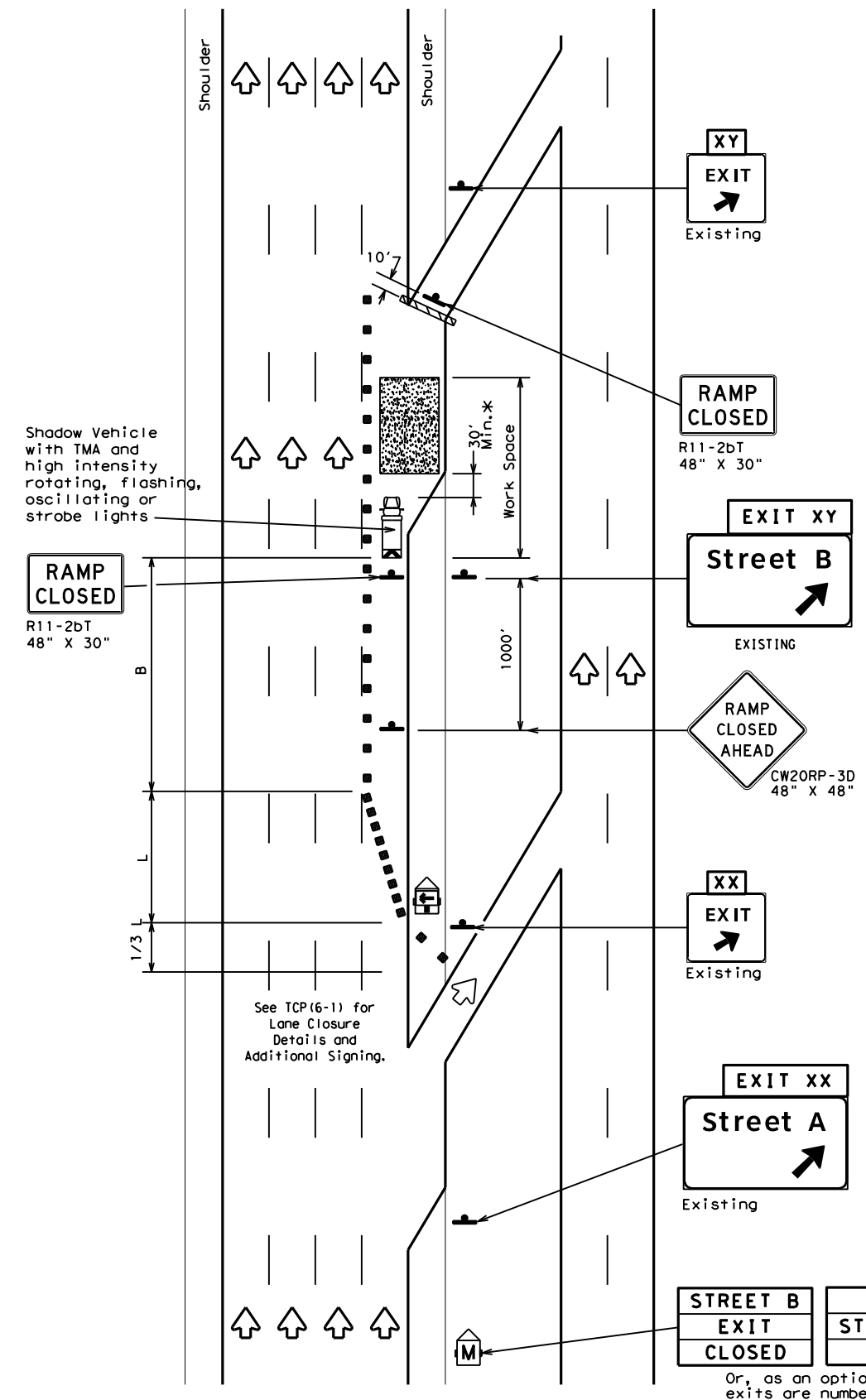
TCP (6-2) - 12

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©TxDOT	February 1994	CONT	SECT	JOB	HIGHWAY				
REVISIONS		6470	62	001	US 377				
1-97	8-98			DIST	COUNTY	SHEET NO.			
4-98	8-12			SJT	KIMBLE	31			

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TCP (6-3a)
ENTRANCE RAMP OPEN



TCP (6-3b)
EXIT RAMP CLOSED
TRAFFIC EXITS PRIOR TO CLOSED RAMP

Place 1 mile (approx.) in advance of Street A exit.

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "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. 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.

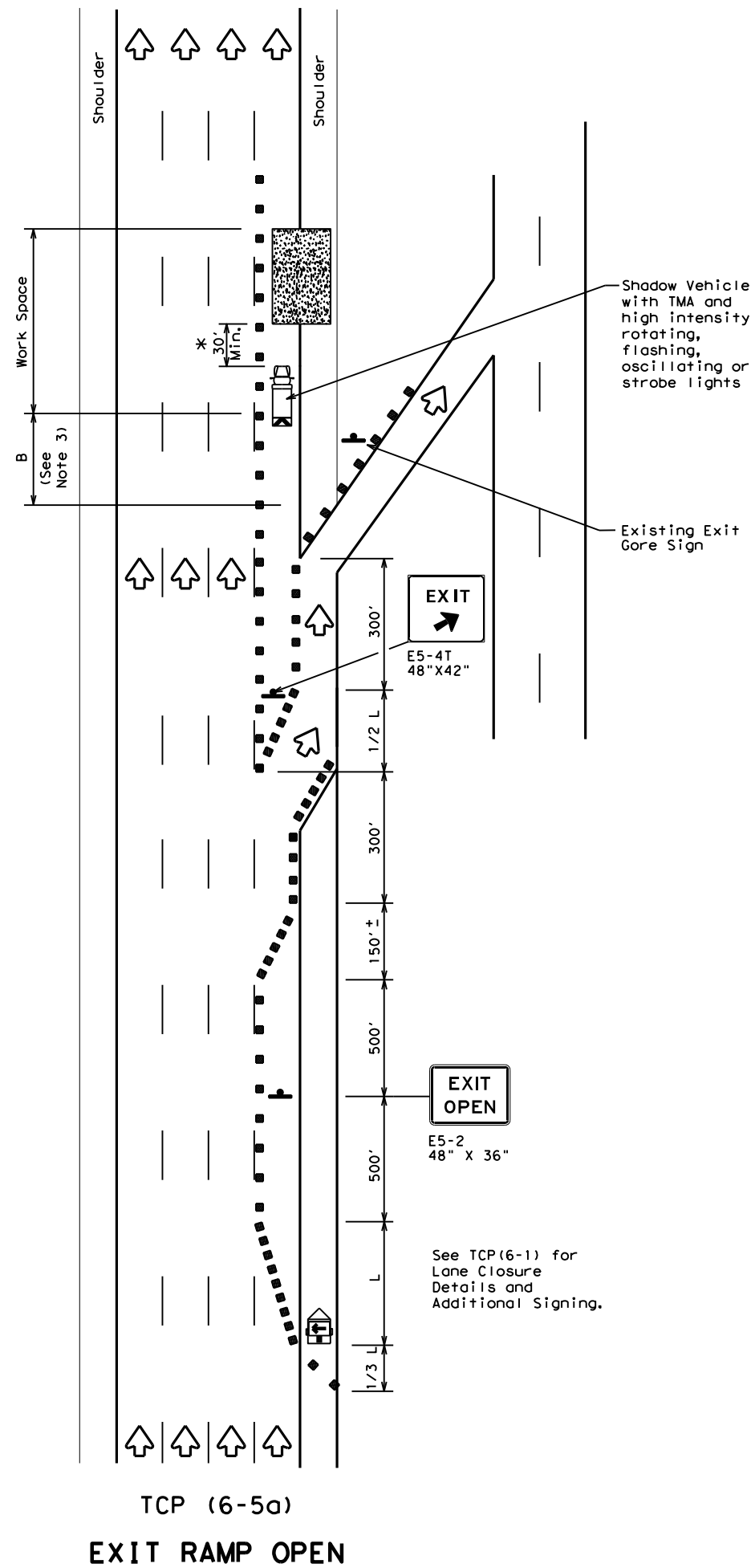
Texas Department of Transportation
Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP**

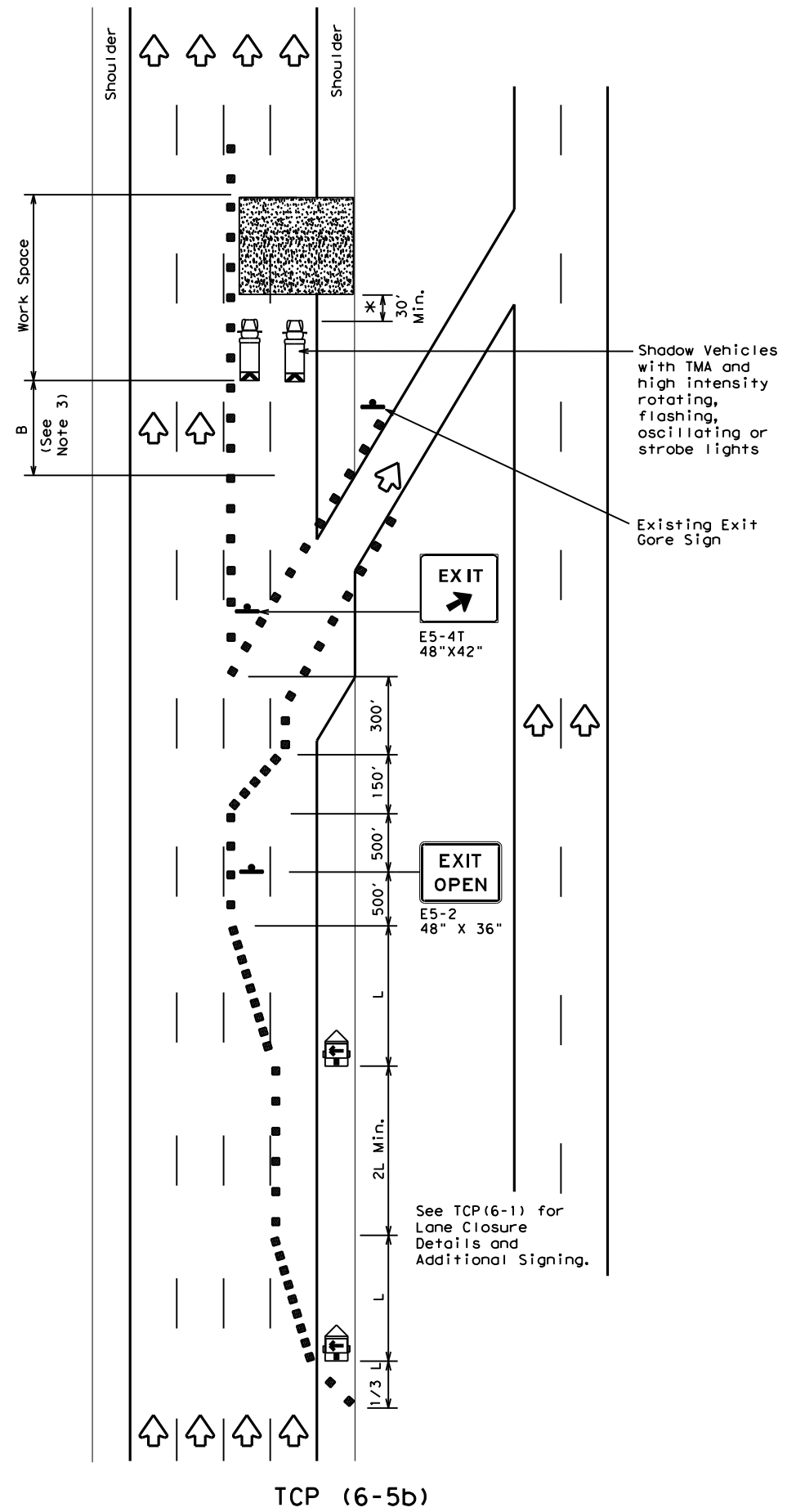
TCP (6-3) - 12

FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6470	62	001	US 377
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	SJT	KIMBLE	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		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

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

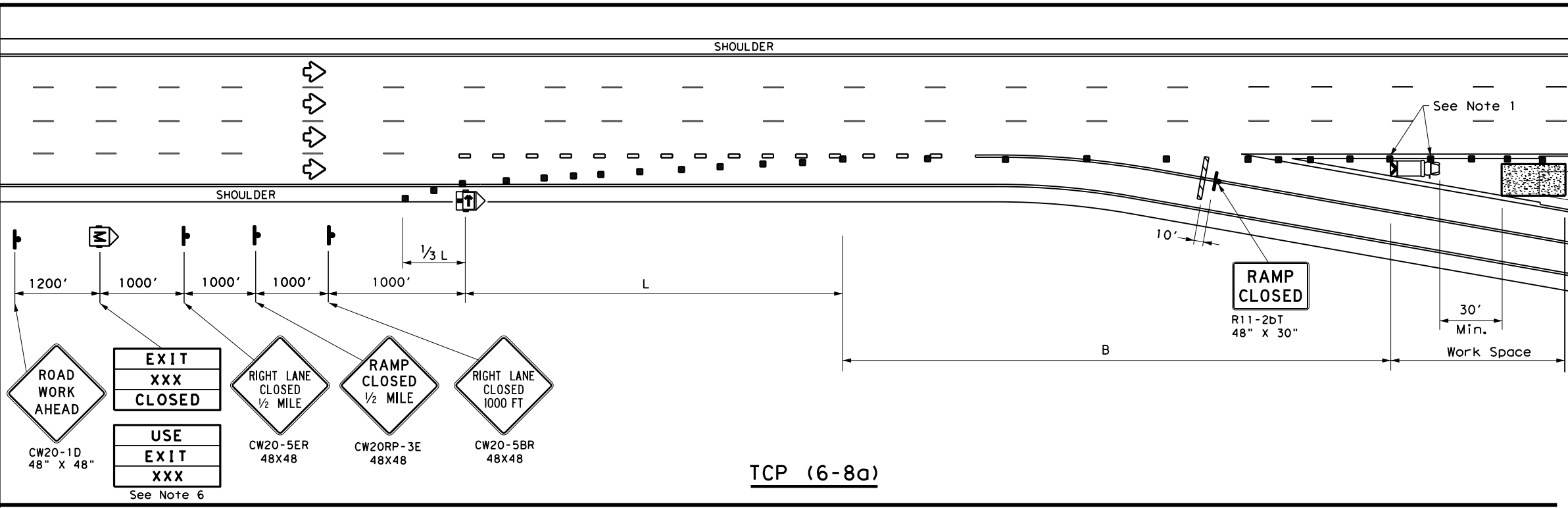


**TRAFFIC CONTROL PLAN
WORK AREA BEYOND EXIT RAMP**

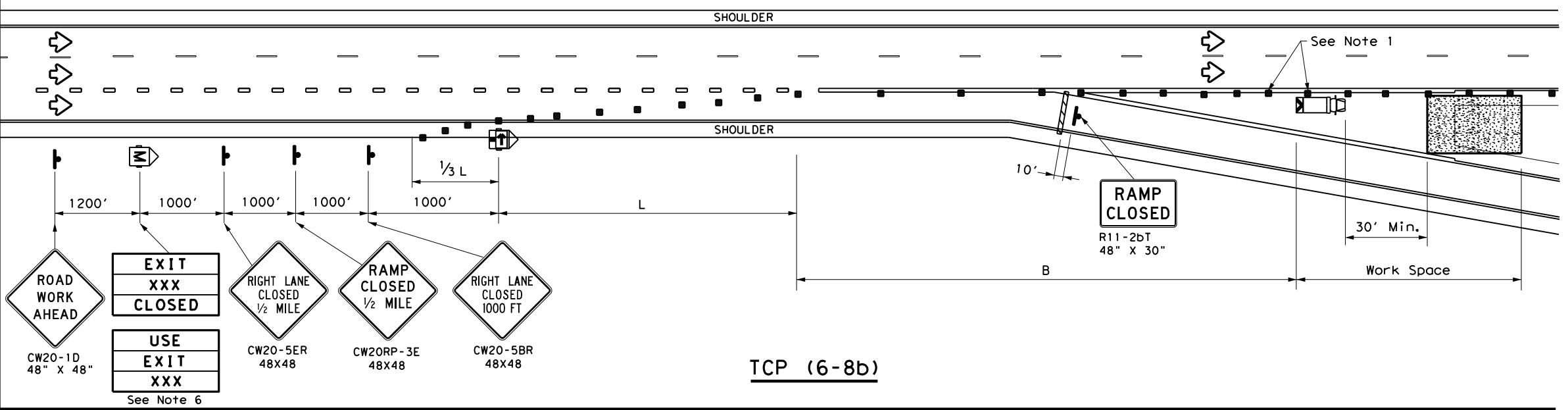
TCP (6-5) - 12

FILE: tcp6-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6470	62	001	US 377
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	SJT	KIMBLE	34	

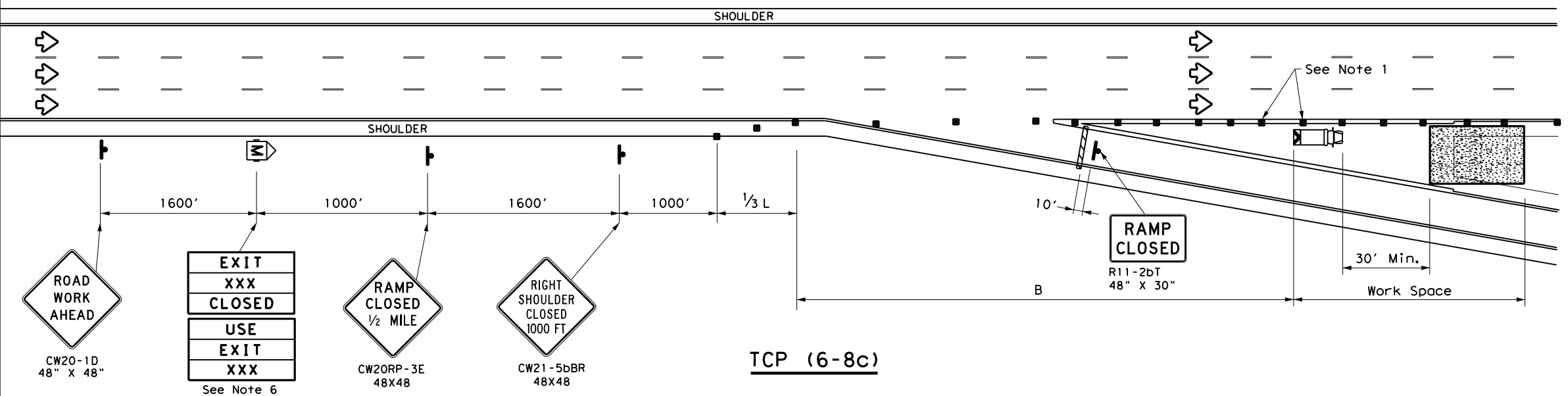
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TCP (6-8a)



TCP (6-8b)



TCP (6-8c)

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

- Place channelizing devices in the gore at 20' spacing.
- See the Standard Highway Sign Design for Texas (SHSD) for sign details.
- 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.
- 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.
- Truck mounted attenuator is required.
- The PCMS may be omitted if replaced with a "RAMP CLOSED" AHEAD (CW20RP-3D) Sign.
- Roadway ADT should be greater than 10,000.

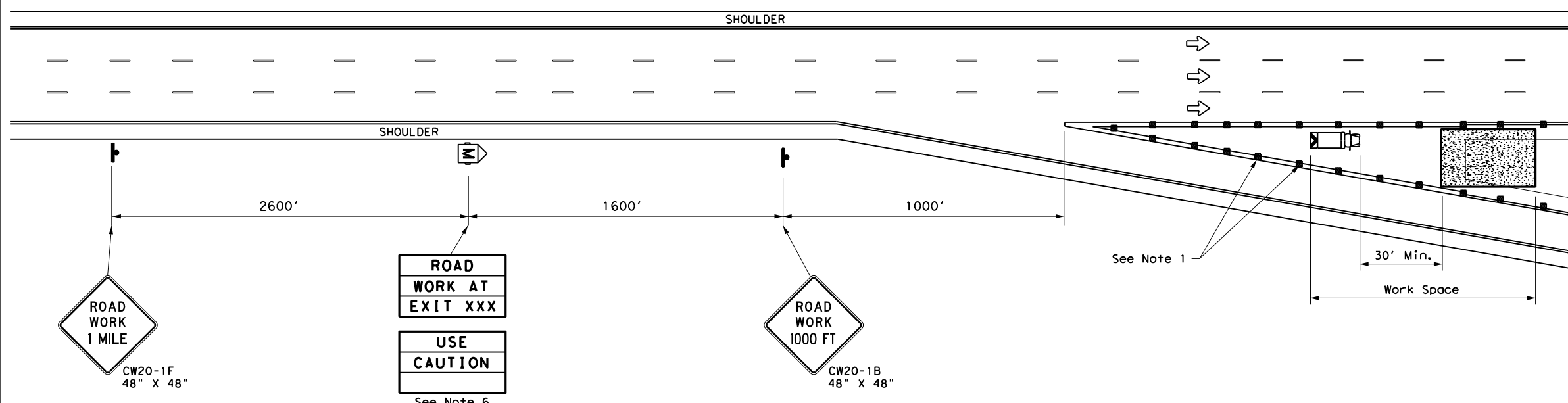


WORK IN EXIT GORE FOR ADT GREATER THAN 10,000

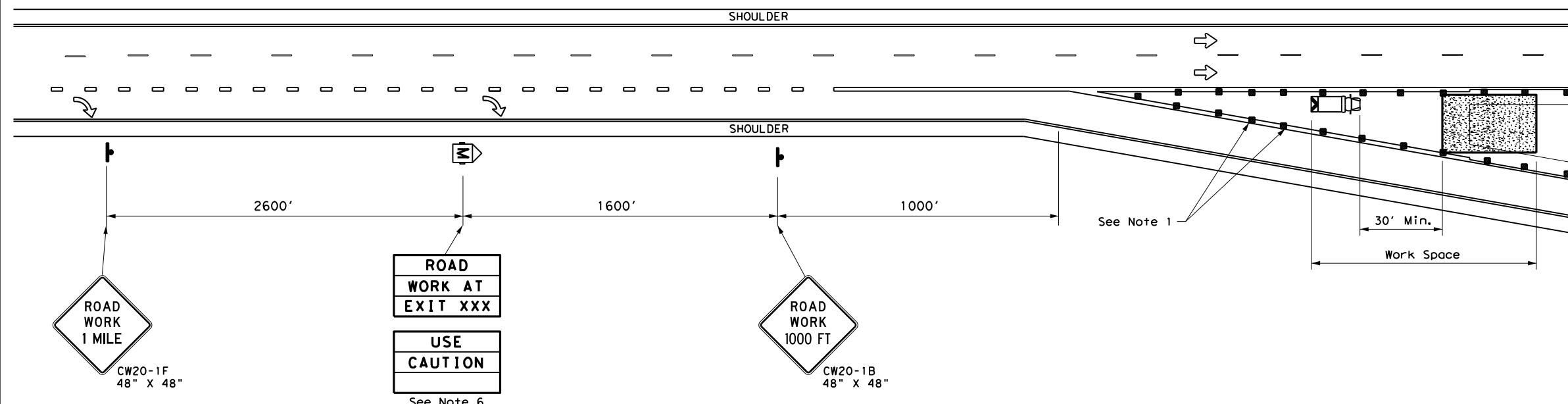
TCP (6-8) - 14

FILE: tcp6-8.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	6470	62	001	US 377
	DIST	COUNTY	SHEET NO.	
	SJT	KIMBLE	35	

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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		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**
- Place channelizing devices in the gore at 20' spacing.
 - See the Standard Highway Sign Design for Texas (SHSD) for sign details.
 - 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.
 - 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.
 - Truck mounted attenuators are required.
 - The PCMS may be omitted if replaced with a "ROAD WORK 1/2 MILE" (CW20-1E).
 - Roadway ADT should be less than 10,000.



WORK IN EXIT GORE FOR ADT LESS THAN 10,000

TCP (6-9) - 14

FILE: tcp6-9.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	6470	62	001	US 377
DIST	COUNTY	SHEET NO.		
SJT	KIMBLE	36		