

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	BR 2024(781)		1
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	ECTOR	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

# STATE OF TEXAS

## DEPARTMENT OF TRANSPORTATION

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### PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

PROJECT No. BR 2024(781)

**HIGHWAY: VARIOUS**  
**COUNTY: ECTOR**

FOR THE CONSTRUCTION OF: BRIDGE CYCLIC MAINTENANCE  
CONSISTING OF: CLEAN AND SEAL BRIDGE JOINTS, CLEAN BENTS AND ABUTMENTS, CLEAN DRAIN INLETS

FINAL PLANS

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

LETTING DATE: MARCH 2024

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

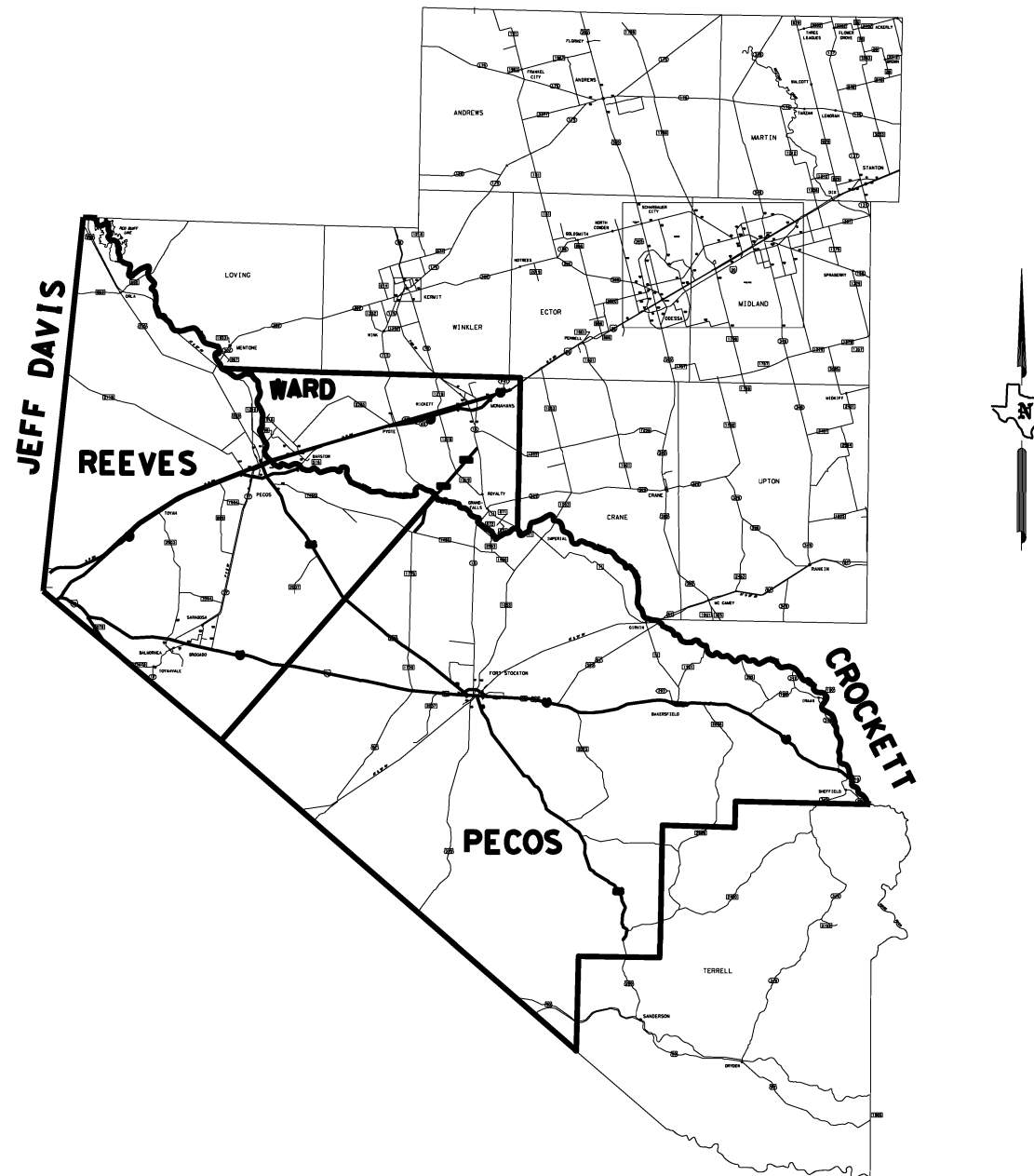
DATE WORK WAS COMPLETED: \_\_\_\_\_

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

FINAL CONTRACT COST: \$ \_\_\_\_\_

EXCEPTIONS: NONE      EQUATIONS: NONE

RR CROSSINGS: NONE



COUNTY \_\_\_\_\_ PROJ. NO. \_\_\_\_\_  
HWY. NO. \_\_\_\_\_ LETTING DATE \_\_\_\_\_  
DATE ACCEPTED \_\_\_\_\_

PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS CONSTRUCTION (FROM FHWA 1273, OCTOBER, 2023).

NOT TO SCALE

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TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING: 1/4/2024

DocuSigned by:  
Astor Mendez, P.E., P.E.  
9104081800444 AREA ENGINEER

RECOMMENDED FOR LETTING: 1/4/2024

DocuSigned by:  
[Signature], P.E.  
DIRECTOR OF TRANSPORTATION  
PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 1/4/2024

DocuSigned by:  
[Signature], P.E.  
90200044090140 DISTRICT ENGINEER

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
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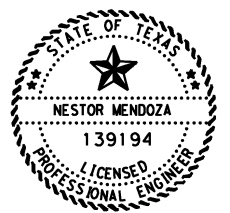
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THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE WITH AN (\*) HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

\_\_\_\_\_, PE \_\_\_\_\_ DATE

DocuSigned by:  
*Nestor T Mendoza, P.E.*  
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 1/22/2024



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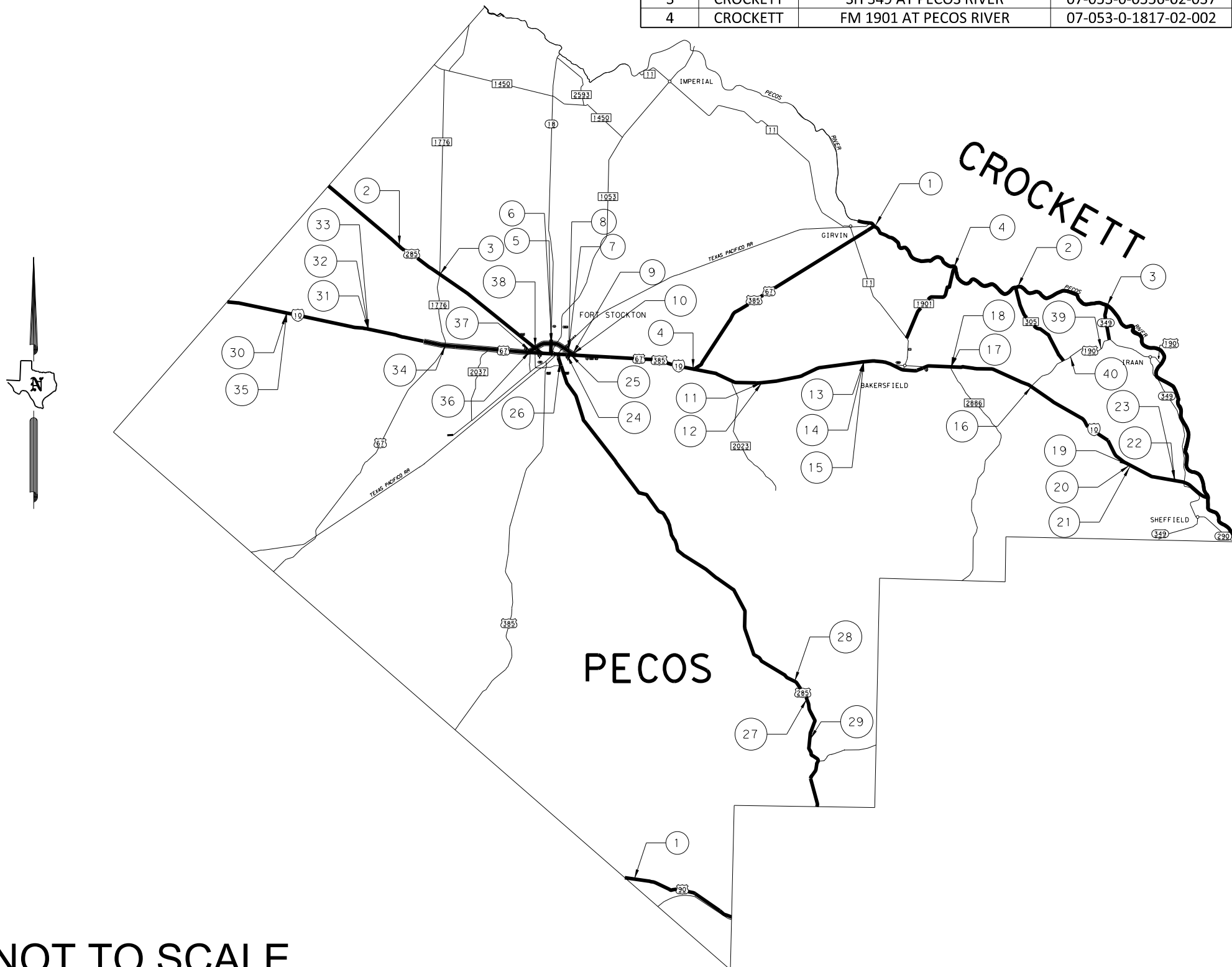
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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		2
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

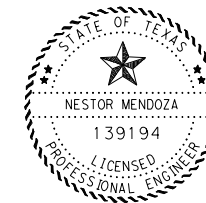
REF	COUNTY	LOCATION	NBI
1	CROCKETT	US 67 AT PECOS RIVER	07-053-0-0076-03-128
2	CROCKETT	FM 305 AT PECOS RIVER	07-053-0-0229-05-042
3	CROCKETT	SH 349 AT PECOS RIVER	07-053-0-0556-02-037
4	CROCKETT	FM 1901 AT PECOS RIVER	07-053-0-1817-02-002

REF	COUNTY	LOCATION	NBI
1	PECOS	US 90 AT DRY CREEK	06-186-0-0021-06-103
2	PECOS	US 285 AT COYANOSA DRAW	06-186-0-0139-07-052
3	PECOS	US 285 AT FM 1776	06-186-0-0139-07-184
4	PECOS	US 67 NB AT IH 10	06-186-0-0140-01-126
5	PECOS	IH 10 WB AT SH 18	06-186-0-0140-01-313
6	PECOS	IH 10 EB AT SH 18	06-186-0-0140-01-314
7	PECOS	IH 10 EB AT COMANCHE CREEK	06-186-0-0140-01-320
8	PECOS	IH 10 WB AT COMANCHE CREEK	06-186-0-0140-01-321
9	PECOS	IH 10 EB AT 7-D RD	06-186-0-0140-01-322
10	PECOS	IH 10 WB AT 7-D RD	06-186-0-0140-01-323
11	PECOS	IH 10 WB / DRAW	06-186-0-0140-02-137
12	PECOS	IH 10 EB DRAW	06-186-0-0140-02-138
13	PECOS	IH 10 SFR AT TUNIS CREEK	06-186-0-0140-03-021
14	PECOS	IH 10 WB AT TUNIS CREEK	06-186-0-0140-03-160
15	PECOS	IH 10 EB AT TUNIS CREEK	06-186-0-0140-03-161
16	PECOS	US 190 AT IH 10	06-186-0-0140-04-185
17	PECOS	IH 10 WB AT FM 2886	06-186-0-0140-04-220
18	PECOS	IH 10 EB AT FM 2886	06-186-0-0140-04-221
19	PECOS	IH 10 SFR AT FOUR MILE DRAW	06-186-0-0140-05-043
20	PECOS	IH 10 EB AT FOUR MILE DRAW	06-186-0-0140-05-253
21	PECOS	IH 10 WB AT FOUR MILE DRAW	06-186-0-0140-05-254
22	PECOS	IH 10 EB AT WHITE OAK CREEK	06-186-0-0140-06-276
23	PECOS	IH 10 WB AT WHITE OAK CREEK	06-186-0-0140-06-277
24	PECOS	US 385 / BI 10 CANAL	06-186-0-0140-17-001
25	PECOS	US 385 / IH 10 BUS AT COMANCHE	06-186-0-0140-17-002
26	PECOS	US 285 AT COMANCHE CREEK	06-186-0-0293-01-043
27	PECOS	US 285 AT MIDDLE FORK BIG CANYON	06-186-0-0293-03-017
28	PECOS	US 285 AT BIG CANYON	06-186-0-0293-03-024
29	PECOS	US 285 AT CLARK PLACE DRAW	06-186-0-0293-03-027
30	PECOS	IH 10 WB AT HACKBERRY DRAW	06-186-0-0441-07-016
31	PECOS	IH 10 NFR COYANOSA CREEK	06-186-0-0441-07-021
32	PECOS	IH 10 WB AT COYANOSA CREEK	06-186-0-0441-07-073
33	PECOS	IH 10 EB AT COYANOSA CREEK	06-186-0-0441-07-074
34	PECOS	US 67 (FM 1776) AT IH 10	06-186-0-0441-07-087
35	PECOS	IH 10 EB AT HACKBERRY DRAW	06-186-0-0441-07-177
36	PECOS	IH 10 EB AT BI 10	06-186-0-0441-08-180
37	PECOS	IH 10 WB AT BI 10	06-186-0-0441-08-181
38	PECOS	US 285 AT IH 10	06-186-0-0441-08-183
39	PECOS	US 190 AT RICHBURG DRAW	06-186-0-1640-01-002
40	PECOS	US 190 / DRAW	06-186-0-1640-01-003



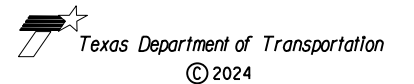
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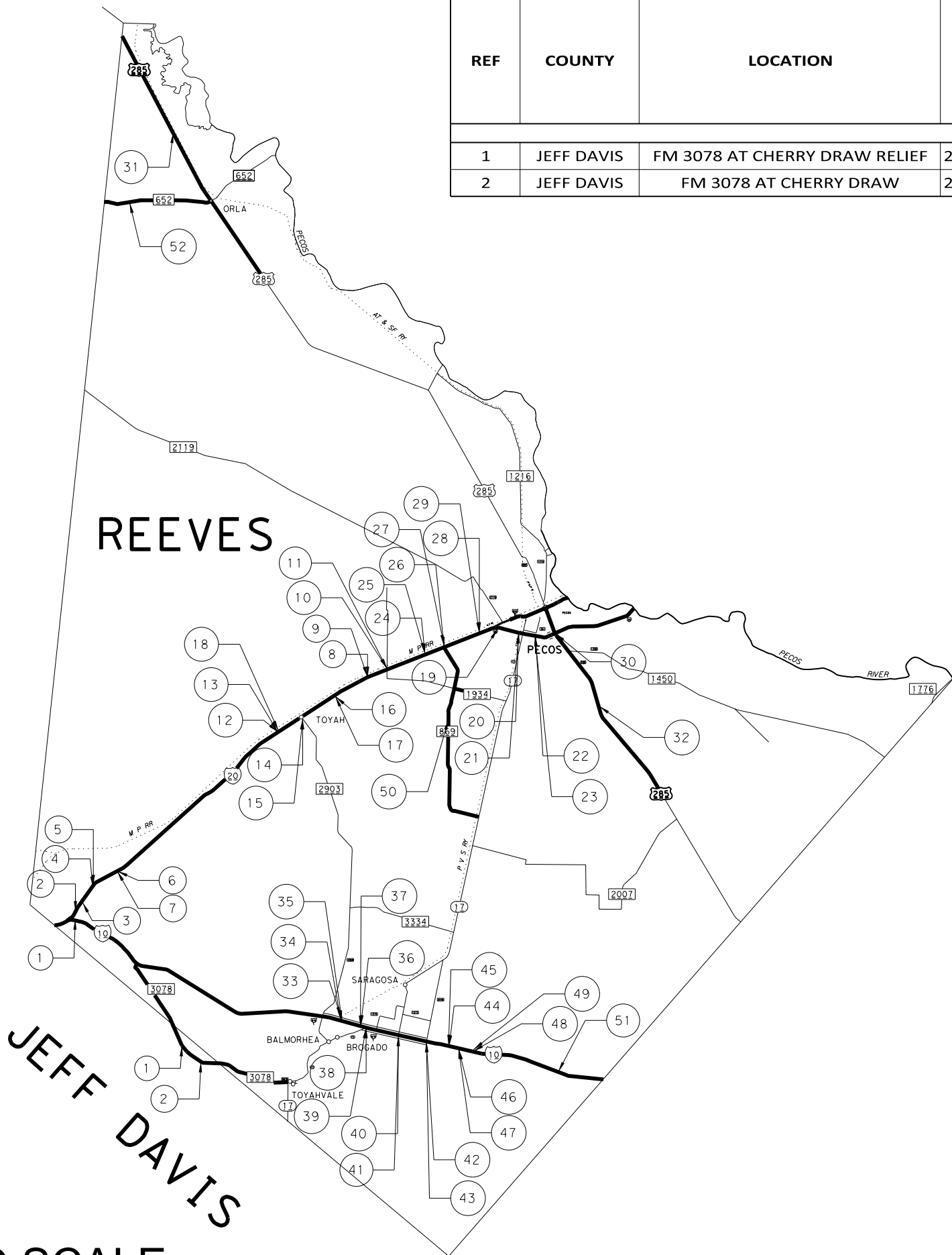


**PROJECT LAYOUT**  
 PECOS & CROCKETT CO.

SHEET 1 OF 3



FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			3
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS



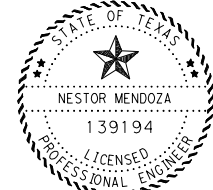
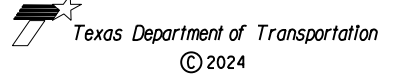
REF	COUNTY	LOCATION	NBI
1	JEFF DAVIS	FM 3078 AT CHERRY DRAW RELIEF	24-123-0-0441-02-191
2	JEFF DAVIS	FM 3078 AT CHERRY DRAW	24-123-0-0441-02-192

REF	COUNTY	LOCATION	NBI
1	REEVES	IH 20 EB AT COLD SPRINGS DRAW	06-195-0-0003-05-087
2	REEVES	IH 20 WB AT COWAN DRAW	06-195-0-0003-05-088
3	REEVES	IH 20 EB AT NINEMILE DRAW	06-195-0-0003-05-089
4	REEVES	IH 20 WB AT STOCKS RD	06-195-0-0003-05-125
5	REEVES	IH 20 EB AT STOCKS RD	06-195-0-0003-05-126
6	REEVES	IH 20 WB AT COWARD DRAW	06-195-0-0003-05-129
7	REEVES	IH 20 EB AT COWARD DRAW	06-195-0-0003-05-130
8	REEVES	IH 20 WB AT SALT DRAW	06-195-0-0003-06-050
9	REEVES	IH 20 EB AT SALT DRAW	06-195-0-0003-06-075
10	REEVES	IH 20 WB AT SHAW RD	06-195-0-0003-06-076
11	REEVES	IH 20 EB AT SHAW RD	06-195-0-0003-06-077
12	REEVES	IH 20 WB AT MOODY DRAW	06-195-0-0003-06-146
13	REEVES	IH 20 EB AT NMOODY DRAW	06-195-0-0003-06-147
14	REEVES	IH 20 WB AT FM 2903	06-195-0-0003-06-148
15	REEVES	IH 20 EB AT FM 2903	06-195-0-0003-06-149
16	REEVES	IH 20 WB AT BILINGSLEA DRAW	06-195-0-0003-06-150
17	REEVES	IH 20 EB AT BILINGSLEA DRAW	06-195-0-0003-06-151
18	REEVES	IH 20 N FR AT MOODY DRAW	06-195-0-0003-06-181
19	REEVES	IH 20 BUS AT IH 20	06-195-0-0003-07-051
20	REEVES	IH 20 WB AT INDUSTRIAL BLVD	06-195-0-0003-07-056
21	REEVES	IH 20 EB AT INDUSTRIAL BLVD	06-195-0-0003-07-057
22	REEVES	IH 20 WB AT COUNTRY CLUB DR	06-195-0-0003-07-060
23	REEVES	IH 20 EB AT COUNTRY CLUB DR	06-195-0-0003-07-061
24	REEVES	IH 20 WB HERMOSA RD	06-195-0-0003-07-078
25	REEVES	IH 20 EB HERMOSA RD	06-195-0-0003-07-079
26	REEVES	IH 20 WB AT FM 869	06-195-0-0003-07-080
27	REEVES	IH 20 EB AT FM 869	06-195-0-0003-07-081
28	REEVES	IH 20 WB AT PECOS GIN RD	06-195-0-0003-07-085
29	REEVES	IH 20 EB AT PECOS GIN RD	06-195-0-0003-07-086
30	REEVES	US 285 AT IH 20	06-195-0-0003-07-177
31	REEVES	US 285 AT SALT CREEK	06-195-0-0139-02-185
32	REEVES	US 285 AT TOYAH LAKE	06-195-0-0139-05-072
33	REEVES	IH 10 NFR AT TOYAH CREEK	06-195-0-0441-05-135
34	REEVES	IH 10 WB AT TOYAH CREEK & SERVICE RD	06-195-0-0441-05-136
35	REEVES	IH 10 EB AT TOYAH CREEK & SERVICE RD	06-195-0-0441-05-137
36	REEVES	IH 10 WB AT CARRASCO DRAW	06-195-0-0441-05-138
37	REEVES	IH 10 EB AT CARRASCO DRAW	06-195-0-0441-05-139
38	REEVES	IH 10 WB AT SH 17 (IH 10 BUS F)	06-195-0-0441-05-140
39	REEVES	IH 10 EB AT SH 17 (IH 10 BUS F)	06-195-0-0441-05-141
40	REEVES	IH 10 EB AT SH 17	06-195-0-0441-05-142
41	REEVES	IH 10 WB AT SH 17	06-195-0-0441-05-143
42	REEVES	IH 10 EB AT FM 2448	06-195-0-0441-05-144
43	REEVES	IH 10 WB AT FM 2448	06-195-0-0441-05-145
44	REEVES	IH 10 EB AT SANDIA DRAW	06-195-0-0441-05-146
45	REEVES	IH 10 WB AT SANDIA DRAW	06-195-0-0441-05-147
46	REEVES	IH 10 EB AT COX DRAW	06-195-0-0441-05-148
47	REEVES	IH 10 WB AT COX DRAW	06-195-0-0441-05-149
48	REEVES	IH 10 EB AT U RANCH DRAW	06-195-0-0441-05-150
49	REEVES	IH 10 WB AT U RANCH DRAW	06-195-0-0441-05-151
50	REEVES	FM 869 AT SALT DRAW	06-195-0-1183-02-082
51	REEVES	IH 10 WB AT BARILLA DRAW	06-195-0-0441-06-046
52	REEVES	RM 652 SALT DRAW	06-195-0-2451-03-009

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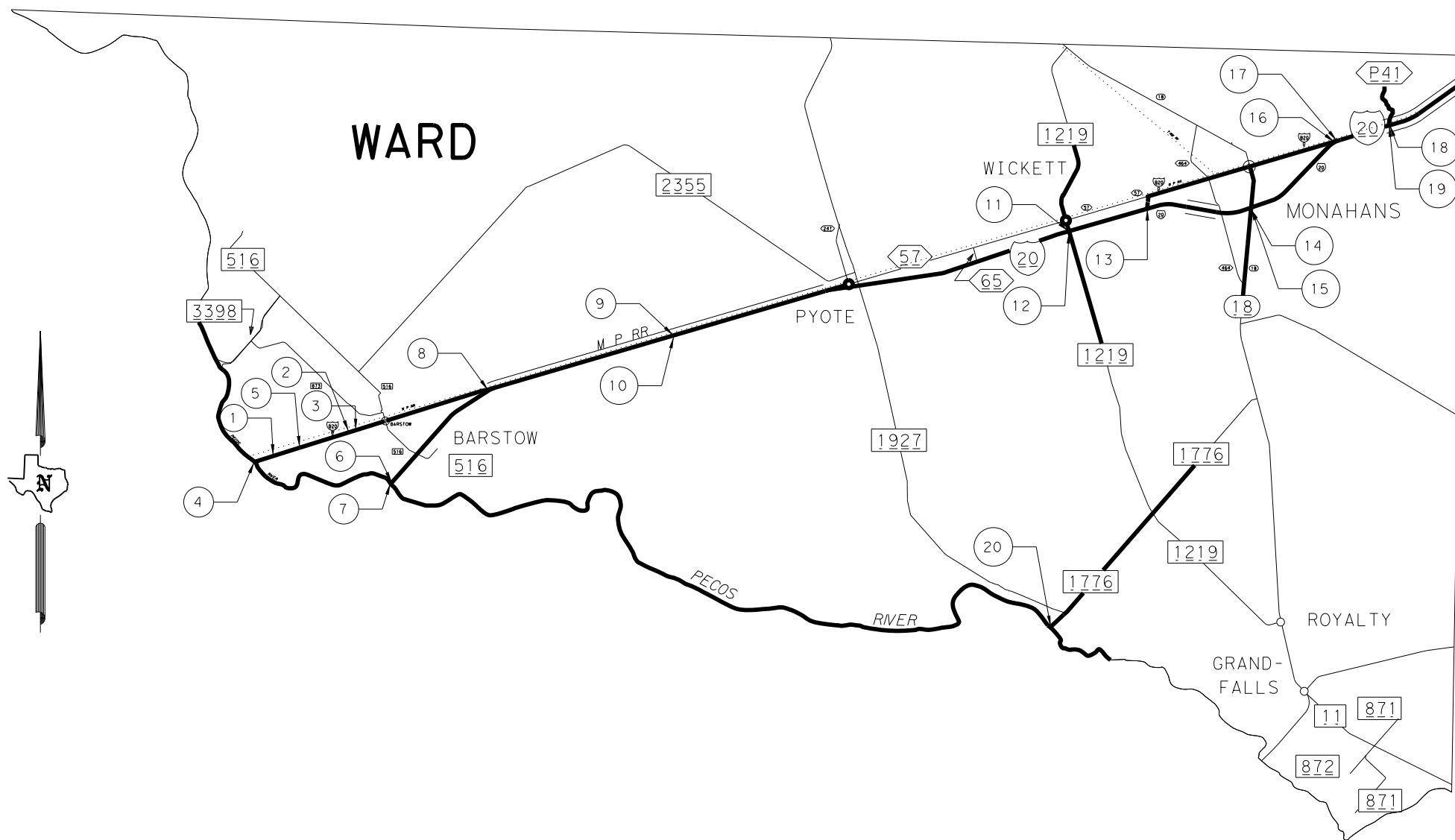
**PROJECT LAYOUT**  
REEVES & JEFF DAVIS CO.

SHEET 2 OF 3



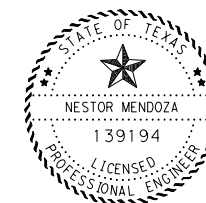
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*Nestor Mendoza, P.E.*  
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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			4
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS



REF	COUNTY	LOCATION	NBI
1	WARD	IH 20 BUS AT PECOS RIVER RELIEF	06-238-0-0004-01-002
2	WARD	IH 20 BUS AT DRAW	06-238-0-0004-01-004
3	WARD	IH 20 BUS AT DRAW	06-238-0-0004-01-005
4	WARD	IH 20 BUS AT PECOS RIVER	06-238-0-0004-01-016
5	WARD	IH 20 BUS AT PECOS RIVER RELIEF	06-238-0-0004-01-085
6	WARD	IH 20 WB AT PECOS RIVER	06-238-0-0004-02-046
7	WARD	IH 20 EB AT PECOS RIVER	06-238-0-0004-02-047
8	WARD	IH 20 BUS AT IH 20	06-238-0-0004-02-064
9	WARD	IH 20 WB AT SERVICE RD	06-238-0-0004-02-067
10	WARD	IH 20 EB AT SERVICE RD	06-238-0-0004-02-068
11	WARD	IH 20 WB AT FM 1219	06-238-0-0004-04-028
12	WARD	IH 20 EB AT FM 1219	06-238-0-0004-04-029
13	WARD	IH 20 BUS AT IH 20	06-238-0-0004-04-030
14	WARD	IH 20 WB AT SH 18	06-238-0-0004-04-031
15	WARD	IH 20 EB AT SH 18	06-238-0-0004-04-032
16	WARD	IH 20 WB AT IH 20 BUS	06-238-0-0004-04-033
17	WARD	IH 20 EB AT IH 20 BUS	06-238-0-0004-04-034
18	WARD	IH 20 WB AT PARK RD 41	06-238-0-0004-04-082
19	WARD	IH 20 EB AT PARK RD 41	06-238-0-0004-04-083
20	WARD	FM 1776 AT PECOS RIVER	06-238-0-2262-01-003

DocuSigned by:  
*Nestor T Mendoza, P.E.*  
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**PROJECT LAYOUT**  
 WARD CO.

SHEET 3 OF 3



NOT TO SCALE

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			5
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

**Material Specification Information**

Grading Requirements (gn1)

Item	Description	Grading Requirements				Soil		Wet
		Percent Retained - Sieves				Constants		Ball
		1-3/4"	7/8"	3/8"	#40	L.L.	P.I.	Mill
						Max.	Max.	Max.
247	Type A GR 4	0-3	10-35	20-55	65-85	40	12	40

The maximum increase in material passing the number 40 sieve resulting from the wet ball mill test shall not exceed 20%.

Cure the finished section of flex base until the moisture content is at least half of the optimum moisture content or as directed by the engineer before applying the next successive course or prime coat.

There is potential for gypsum in the area and additional time may be necessary to process the subgrade and/or base material.

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

- [ODA-PreLettingQuestions@txdot.gov](mailto:ODA-PreLettingQuestions@txdot.gov)

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

All contractor questions shall be reviewed by the Engineer. All questions and any corresponding responses that are generated shall 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.

**Item 5: Control of the Work**

The following TxDOT Department standards have been modified for this project:

For any structures containing bird nests, schedule all work to complete the demolition of the existing structures identified in the plans between September 15, 2024 and March 15, 2025. Failure to complete this work during the specified timeframe may cause construction delays due to environmental regulations.

The existing alignment is the control for the Contractor staking. Establish reference points for the control prior to removing the existing surface.

Use Method C for construction surveying.

In the event the finished surface does not conform to the typical sections or does not meet the required IRI, rework the non-conforming area to the limits necessary and employ additional survey control as directed.

**Item 6: Control of Materials**

Restrict storage of equipment and materials to approved areas. The Engineer shall not approve storage in any TxDOT yard.

Promptly and properly dispose of any waste generated from servicing equipment on the project.

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

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

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

<https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html> for clarification on material categorization. (e6)

**Item 7: Legal Relations and Responsibilities**

If access to the project is required through a new or unapproved driveway (i.e. Material source, stockpile location, field office, etc.), obtain an approved "Permit to Construct Access Driveway Facilities on Highway Right Of Way" (TxDOT Form 1058) before beginning any construction operations.

Utilities (public, private and TxDOT) exist throughout the project. Prior to any excavation, investigate to determine the utility locations within the project right of way. Contact the TxDOT Odessa Traffic Operations shop at 432-498-4690 to investigate and determine the location of any TxDOT utility that may exist within the project right of way. Exercise caution when excavating in areas where investigations have determined that utilities exist. The contractor is responsible for maintaining utility markings.

No significant traffic generator events identified.

As an element of ensuring public safety and convenience under Article 7.2.4, the Contractor is hereby directed to open all closed lanes and shoulder and remove all traffic control devices from any areas where work is not being actively performed unless overnight traffic control is required and approved by the engineer. Removed devices must be stored outside of the clear zones near the right of way line or removed from the right of way line entirely.

At any time during construction that a previously installed crash cushion is damaged by the traveling public and is requested to be repaired by the Engineer, the repair shall be paid at the same unit cost as the original installation.

**Item 8: Prosecution and Progress**

The following portions of the plans may affect the Contractor's planned construction sequencing. The Contractor's attention is directed to the appropriate plan sheet or standard sheet.

- Traffic Control Plan
- Storm Water Pollution Prevention Plan
- Environmental Permit, Issues And Commitments (EPIC)

Maintain ingress and egress to side streets and private property at all times.

Maintain ingress and egress to the frontage roads at all times.

Working day charges shall start **07/01/2024**.

Start roadway work by **07/03/2024**.

Working days shall be computed and charged in accordance with Article 8. 3.1.4. "Standard Workweek."

**90** day lead time is needed to allow for sufficient time to obtain and produce materials needed for various bid items in this project.

**Item 502: Barricades, Signs, and Traffic Handling**

Stop work immediately if any major traffic control element such as an advanced warning flashing panel or TMA or PCMS is not in good working order or control setup.

Maintain "No Center Line", "Do Not Pass" and "Pass With Care" signs until the permanent lane markings have been placed in accordance with plans.

Place orange fencing around sidewalk, wheelchair ramps and other pedestrian areas that pose a hazard to pedestrian traffic as directed.

Use Shoulder Drop-Off (CW8-9A) signs during construction when shoulder drop-off conditions are 3 inches or greater or as directed. Placement shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices".

Place chevrons, at a minimum, on every other drum used for outsides of curves, merging tapers and shifting tapers.

Vertical panels shall be self-righting.

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

When construction operations result in a drop-off of more than 2 inches, a 3:1 or flatter slope shall be required. The slope must be constructed with a compacted material capable of supporting vehicles as approved by the Engineer. This work shall be done expeditiously during daylight hours. Flaggers and appropriate signing to safely guide traffic through the work area shall be required as directed by the Engineer. This shall be considered subsidiary to Item 502.

**Item 506: Temporary Erosion, Sedimentation, and Environmental Controls**

In accordance with the Construction General Permit (CGP), erosion control and stabilization measures should be initiated as soon as practicable to include (list what our stabilization measures are – for example, replacing topsoil from windrow, erosion control blankets, seeding, etc.)

It is not anticipated that erosion control devices shall be needed on this project. In the event that devices are needed, the Storm Water Pollution Prevention Plan shall consist of using the following items and/or items as directed by the Engineer. Payment for the work may be determined in accordance with Item 4, Article 4. "Changes in the Work".

- Temporary Sediment Control Fence
- Rock Filter Dams
- Biodegradable Erosion Control Logs
- Construction Exits
- Earthwork For Erosion Control

The disturbed area in this project, all project locations in the contract, and Contractor Project Specific Locations (PSLS), within 1 mile of the project limits, for the contract shall further establish the authorization requirements for storm water discharges. The department shall obtain an authorization to discharge storm water from the Texas Commission On Environmental Quality (TCEQ) for the construction activities shown on the plans.

The Contractor is to obtain any required authorization from the TCEQ for any Contractor PSLS for construction support activities on or off the right of way. When the total area disturbed for all projects in the contract and PSLS within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLS on the right of way, to the Engineer (or to the appropriate MS4 operator when on an off-state system route).

Upon acceptance of the project, all SW3P devices shall become property of the State and maintenance responsibility is transferred to the State until final stabilization is attained.

When applying cement for emulsion, asphalt treatment, or any other soil stabilization, sprinkle water as needed to control cement from blowing and contaminating adjacent vegetation and waters.

Provide a minimum of two SW3P Signs. Obtain from the Engineer a copy of the project's completed TPDES Storm Water Program Construction Site Notice (TxDOT) and Contractor's copy of the Construction Site Notice. Laminate the sheets and bond with adhesive to 36" X 36" plywood sign blanks. Ensure the sheets remain dry. Apply Type C Blue reflective sheeting as the background and add the text "SW3P" in 5" white lettering, centered at the top. Attach the signs to approved temporary mounts and locate at each of the project limits just inside the right of way line at a readable height or as directed by the Engineer. If the sign cannot be placed outside the clear zone, it must adhere to the TMUTCD. SW3P signs, maintenance, and reposting (for replacement or as needed to ensure readability) shall be subsidiary to Item 502.

**Item 6001: Portable Changeable Message Sign**

PCMS shall be placed in operation a minimum of one (1) week prior to construction. Location(s) and duration for PCMS shall be as directed by the Engineer;

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

General Note 5 of TCP (2-1)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

General Note 7 of TCP (2-2)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

General Note 8 of TCP (2-3)-23 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

General Note 6 of TCP (2-4)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

General Note 4 of TCP (2-5)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as

"required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

General Note 7 of TCP (2-6)-18 provides for additional shadow vehicle(s) with truck mounted attenuator (TMA); one (1) additional shadow vehicle with TMA is included in the basis of estimate for this operation. The shadow vehicle(s) with TMA specified on the traffic control plan as "required" plus the 'additional shadow vehicle' is the quantity that has been estimated for this operation.

There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (6-2)-12; the shadow vehicle(s) with TMA specified on the traffic control plan as "required" is the quantity that has been estimated for this operation.

There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (6-3)-12; the shadow vehicle(s) with TMA specified on the traffic control plan as "required" is the quantity that has been estimated for this operation.

There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (6-4)-12; the shadow vehicle(s) with TMA specified on the traffic control plan as "required" is the quantity that has been estimated for this operation.

There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (6-5)-12; the shadow vehicle(s) with TMA specified on the traffic control plan as "required" is the quantity that has been estimated for this operation.

There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (3-1)-13; the shadow vehicle(s) with TMA specified on the traffic control plan as "required" is the quantity that has been estimated for this operation.

There are no General Notes for additional shadow vehicle(s) with truck mounted attenuator (TMA) on TCP (3-2)-13; the shadow vehicle(s) with TMA specified on the traffic control plan as "required" is the quantity that has been estimated for this operation.

The Contractor shall be responsible for determining if one or more operations shall be ongoing at the same time to determine the total number of TMAs needed for the project.





# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0906-00-282

DISTRICT Odessa

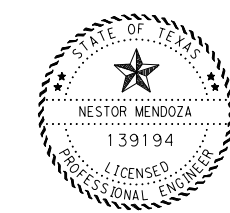
COUNTY VARIOUS

HIGHWAY Various

CONTROL SECTION JOB				0906-00-282		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00205706			
COUNTY				Ector			
HIGHWAY				Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	428-6001	PENETRATING CONCRETE SURFACE TREATMENT	SY	24,984.000		24,984.000	
	438-6002	CLEANING AND SEALING EXIST JOINTS(CL3)	LF	24,784.000		24,784.000	
	438-6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	3,827.000		3,827.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12.000		12.000	
	764-6001	DRAIN INLET CLEANING	EA	185.000		185.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	240.000		240.000	
	6185-6002	TMA (STATIONARY)	DAY	240.000		240.000	
	7306-6001	BRIDGE SUBSTRUCTURE CLEANING (ABUT)	EA	236.000		236.000	
	7306-6002	BRIDGE SUBSTRUCTURE CLEANING (BENT)	EA	496.000		496.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

SUMMARY OF BRIDGE ITEMS														BRIDGE DESCRIPTION	COMMENTS	
REF	COUNTY	LOCATION	NBI	DECK WIDTH	STRUCTURE LENGTH	JOINTS NO.	428	438	438	764	7306	7306				
							6001	6002	6004	6001	6001	6002				
							PENETRATING CONCRETE SURFACE TREATMENT	CLEANING AND SEALING EXIST JOINTS(CL3)	CLEANING AND SEALING EXIST JOINTS(CL7)	DRAIN INLET CLEANING	BRIDGE SUBSTRUCTURE CLEANING (ABUT)	BRIDGE SUBSTRUCTURE CLEANING (BENT)				
							SY	LF	LF	EA	EA	EA				
							FT	FT	EA							
1	PECOS	US 90 AT DRY CREEK	06-186-0-0021-06-103	29.8	236	10			298.0		0.0	2.0	8.0	9 Simple Span Concrete Flat Slab Bridge on Concrete Bents		
2	PECOS	US 285 AT COYANOSA DRAW	06-186-0-0139-07-052	47.8	204	8			383.0		14.0	2.0	4.0	8 - Simple Span Concrete Flat Slab Bridge on Concrete & Steel Substructure	JOINTS COVERED BY ASPHALT	
3	PECOS	US 285 AT FM 1776	06-186-0-0139-07-184	42.8	175	4	833.0			172.0	0.0	2.0	2.0	3 Simple Span Prestressed Concrete I-Girder Bridge on Concrete Substructure		
4	PECOS	US 67 NB AT IH 10	06-186-0-0140-01-126	30	500	4			120.0		0.0	2.0	2.0	5 - Simple Span Prestressed Concrete I-Beam Bridge on Concrete Substructure		
5	PECOS	IH 10 WB AT SH 18	06-186-0-0140-01-313	37.2	220	4			149.0		0.0	2.0	2.0	3 simple span prestressed concrete I-beam bridge on concrete substructure		
6	PECOS	IH 10 EB AT SH 18	06-186-0-0140-01-314	37.2	220	4			149.0		0.0	2.0	2.0	3 simple span prestressed concrete I-beam bridge on concrete substructure	JOINTS COVERED BY ASPHALT	
7	PECOS	IH 10 EB AT COMANCHE CREEK	06-186-0-0140-01-320	38.3	300	5			192.0		0.0	2.0	3.0	4 simple span prestressed concrete I-beam bridge on concrete substructure		
8	PECOS	IH 10 WB AT COMANCHE CREEK	06-186-0-0140-01-321	46.3	300	5			232.0		0.0	2.0	3.0	4 simple span prestressed concrete I-beam bridge on concrete substructure	JOINTS COVERED BY ASPHALT	
9	PECOS	IH 10 EB AT 7-D RD	06-186-0-0140-01-322	37.2	185	4			149.0		0.0	2.0	2.0	3 simple span prestressed concrete I-beam bridge on concrete substructure		
10	PECOS	IH 10 WB AT 7-D RD	06-186-0-0140-01-323	37.2	185	4			149.0		0.0	2.0	2.0	3 simple span prestressed concrete I-beam bridge on concrete substructure	JOINTS COVERED BY ASPHALT	
11	PECOS	IH 10 WB / DRAW	06-186-0-0140-02-137	42.0	120	5			210.0		0.0	2.0	3.0	4 Simple Span Concrete Flat Slab Bridge on Concrete Bents	JOINTS COVERED BY ASPHALT	
12	PECOS	IH 10 EB DRAW	06-186-0-0140-02-138	42.0	120	5			210.0		0.0	2.0	3.0	4 Simple Span Concrete Flat Slab Bridge on Concrete Bents	JOINTS COVERED BY ASPHALT	
13	PECOS	IH 10 SFR AT TUNIS CREEK	06-186-0-0140-03-021	21.8	741	27			589.0		0.0	2.0	25.0	26 Simple Span Concrete T-Beam Bridge on Concrete Bents		
14	PECOS	IH 10 WB AT TUNIS CREEK	06-186-0-0140-03-160	42.0	780	14			588.0		0.0	2.0	12.0	12 Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents		
15	PECOS	IH 10 EB AT TUNIS CREEK	06-186-0-0140-03-161	42.0	780	13			546.0		0.0	2.0	11.0	12 Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents		
16	PECOS	US 190 AT IH 10	06-186-0-0140-04-185	40.6	340	5			203.0		0.0	2.0	3.0	4 Span Continuous Prestressed Concrete I-Beam Bridge on Concrete Bents		
17	PECOS	IH 10 WB AT FM 2886	06-186-0-0140-04-220	42.0	180	2			84.0		0.0	2.0	2.0	3 Span Continuous Prestressed Concrete I-Beam Bridge on Concrete Bents		
18	PECOS	IH 10 EB AT FM 2886	06-186-0-0140-04-221	42.0	180	4			168.0		0.0	2.0	2.0	3 Span Continuous Prestressed Concrete I-Beam Bridge on Concrete Bents		
19	PECOS	IH 10 SFR AT FOUR MILE DRAW	06-186-0-0140-05-043	21.8	542	20			436.0		0.0	2.0	18.0	19 Simple Span Concrete T-Beam Bridge on Concrete Bents		
20	PECOS	IH 10 EB AT FOUR MILE DRAW	06-186-0-0140-05-253	42.0	585	10			420.0		0.0	2.0	8.0	9 Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents		
21	PECOS	IH 10 WB AT FOUR MILE DRAW	06-186-0-0140-05-254	42.0	585	10			420.0		0.0	2.0	8.0	9 Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents		
22	PECOS	IH 10 EB AT WHITE OAK CREEK	06-186-0-0140-06-276	38.3	142	4			154.0		0.0	2.0	2.0	3 Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents		
23	PECOS	IH 10 WB AT WHITE OAK CREEK	06-186-0-0140-06-277	38.3	142	4			154.0		0.0	2.0	2.0	3 Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents		
24	PECOS	US 385 / BI 10 CANAL	06-186-0-0140-17-001	68.0	24	2			136.0		0.0	2.0	0.0	Single span concrete flat slab bridge on concrete abutments		
25	PECOS	US 385 / IH 10 BUS AT COMANCHE	06-186-0-0140-17-002	68.0	485	18			1224.0		0.0	2.0	16.0	17 simple span concrete T-beam bridge on concrete substructure		
26	PECOS	US 285 AT COMANCHE CREEK	06-186-0-0293-01-043	63.3	375	10	2638.0			633.0	0.0	2.0	8.0	9 simple span prestressed concrete slab beam bridge on concrete substructure		
27	PECOS	US 285 AT MIDDLE FORK BIG CANYON	06-186-0-0293-03-017	27.5	357	15			413.0		0.0	2.0	13.0	14 Simple Span Concrete Flat Slab Bridge on Concrete Bents	JOINTS COVERED BY ASPHALT	
28	PECOS	US 285 AT BIG CANYON	06-186-0-0293-03-024	35.7	263	9			322.0		0.0	2.0	7.0	10 Simple Span Concrete Flat Slab Bridge on Concrete Bents	JOINTS COVERED BY ASPHALT	
29	PECOS	US 285 AT CLARK PLACE DRAW	06-186-0-0293-03-027	35.6	131	6			214.0		0.0	2.0	4.0	5 Simple Span Concrete Flat Slab Bridge on Concrete Bents		
30	PECOS	IH 10 WB AT HACKBERRY DRAW	06-186-0-0441-07-016	41.7	257	10			417.0		18.0	2.0	8.0	9 Simple Span Concrete T-Beam Bridge on Concrete Bents		
31	PECOS	IH 10 NFR COYANOSA CREEK	06-186-0-0441-07-021	28.0	360	10			280.0		18.0	2.0	8.0	9 Simple Span Steel I-Beam Bridge on Concrete Bents		
32	PECOS	IH 10 WB AT COYANOSA CREEK	06-186-0-0441-07-073	41.7	360	10			417.0		18.0	2.0	8.0	9 Simple Span Concrete Pan Girder Bridge on Concrete Bents		
33	PECOS	IH 10 EB AT COYANOSA CREEK	06-186-0-0441-07-074	41.7	360	10			417.0		18.0	2.0	8.0	9 Simple Span Concrete Pan Girder Bridge on Concrete Bents		
34	PECOS	US 67 (FM 1776) AT IH 10	06-186-0-0441-07-087	48.0	360	5			240.0		0.0	2.0	3.0	4 simple span prestressed concrete I-beam bridge on concrete substructure		
35	PECOS	IH 10 EB AT HACKBERRY DRAW	06-186-0-0441-07-177	37.8	195	4			152.0		0.0	2.0	2.0	3 Simple Span Prestressed Concrete I-Beam Bridge on Concrete Bents		
36	PECOS	IH 10 EB AT BI 10	06-186-0-0441-08-180	37.2	185	4			149.0		0.0	2.0	2.0	3 simple span prestressed concrete I-beam bridge on concrete substructure		
37	PECOS	IH 10 WB AT BI 10	06-186-0-0441-08-181	37.2	185	4			149.0		0.0	2.0	2.0	3 simple span prestressed concrete I-beam bridge on concrete substructure		
38	PECOS	US 285 AT IH 10	06-186-0-0441-08-183	67.2	345	5			336.0		0.0	2.0	3.0	4 simple span prestressed concrete I-beam bridge on concrete substructure		
39	PECOS	US 190 AT RICHBURG DRAW	06-186-0-1640-01-002	36.0	90	4			144.0		0.0	2.0	2.0	3 Simple Span Concrete T-Beam Bridge Widened with Pan Girders on Concrete Bents		
40	PECOS	US 190 / DRAW	06-186-0-1640-01-003	36.0	60	3			108.0		0.0	2.0	1.0	2 Simple Span Concrete T-Beam Bridge Widened with Pan Girders on Concrete Bents		
PECOS CO. SUBTOTAL							3471.0	11121.0	805.0	86.0	80.0	224.0				

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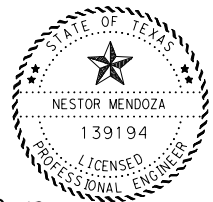
**CONSOLIDATED SUMMARY**  
 PECOS CO.  
 SHEET 1 OF 5

Texas Department of Transportation  
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FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				8
STATE	STATE DIST.	COUNTY		
TEXAS	ODA	VARIOUS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0906	00	282	VARIOUS	



SUMMARY OF BRIDGE ITEMS														
REF	COUNTY	LOCATION	NBI	DECK WIDTH	STRUCTURE LENGTH	JOINTS NO.	428	438	438	764	7306	7306	BRIDGE DESCRIPTION	COMMENTS
							6001	6002	6004	6001	6001	6002		
							PENETRATING CONCRETE SURFACE TREATMENT	CLEANING AND SEALING EXIST JOINTS(CL3)	CLEANING AND SEALING EXIST JOINTS(CL7)	DRAIN INLET CLEANING	BRIDGE SUBSTRUCTURE CLEANING (ABUT)	BRIDGE SUBSTRUCTURE CLEANING (BENT)		
				FT	FT	EA	SY	LF	LF	EA	EA	EA		
1	WARD	IH 20 BUS AT PECOS RIVER RELIEF	06-238-0-0004-01-002	43.6	154	10		436.0		22.0	2.0	10.0	11 simple span concrete flat slab bridge	
2	WARD	IH 20 BUS AT DRAW	06-238-0-0004-01-004	43.6	126	10		436.0		14.0	2.0	8.0	9 simple span concrete slab bridge	
3	WARD	IH 20 BUS AT DRAW	06-238-0-0004-01-005	43.6	112	9		393.0		12.0	2.0	5.0	8 simple span concrete slab bridge	
4	WARD	IH 20 BUS AT PECOS RIVER	06-238-0-0004-01-016	42.5	193	6		255.0		23.0	2.0	4.0	5 simple span steel stringer bridge	
5	WARD	IH 20 BUS AT PECOS RIVER RELIEF	06-238-0-0004-01-085	43.0	1450	23	6928.0		989.0	0.0	2.0	21.0	21 simple span prestressed concrete girder	
6	WARD	IH 20 WB AT PECOS RIVER	06-238-0-0004-02-046	40.1	155	4		161.0		6.0	2.0	2.0	3 simple span prestressed concrete girder	
7	WARD	IH 20 EB AT PECOS RIVER	06-238-0-0004-02-047	40.1	155	4		161.0		6.0	2.0	2.0	3 simple span prestressed concrete girder	
8	WARD	IH 20 BUS AT IH 20	06-238-0-0004-02-064	33.0	300	2		66.0		0.0	2.0	3.0	4 span continuous steel stringer bridge	
9	WARD	IH 20 WB AT SERVICE RD	06-238-0-0004-02-067	40.1	150	4		161.0		0.0	2.0	2.0	3 simple span prestressed concrete girder	
10	WARD	IH 20 EB AT SERVICE RD	06-238-0-0004-02-068	40.1	150	4		161.0		0.0	2.0	2.0	3 simple span prestressed concrete girder	
11	WARD	IH 20 WB AT FM 1219	06-238-0-0004-04-028	37.2	132	4		149.0		0.0	2.0	2.0	3 simple span prestressed concrete girder	
12	WARD	IH 20 EB AT FM 1219	06-238-0-0004-04-029	37.2	132	4		149.0		0.0	2.0	2.0	3 simple span prestressed concrete girder	
13	WARD	IH 20 BUS AT IH 20	06-238-0-0004-04-030	30	232	5		150.0		0.0	2.0	3.0	4 simple span prestressed concrete girder	
14	WARD	IH 20 WB AT SH 18	06-238-0-0004-04-031	37.2	182	5		186.0		0.0	2.0	3.0	4 simple span prestressed concrete beam	
15	WARD	IH 20 EB AT SH 18	06-238-0-0004-04-032	37.2	182	5		186.0		0.0	2.0	3.0	4 simple span prestressed concrete beam	
16	WARD	IH 20 WB AT IH 20 BUS	06-238-0-0004-04-033	37.2	167	4		149.0		0.0	2.0	2.0	3 simple span prestressed concrete girder	2 OF JOINTS COVERED BY
17	WARD	IH 20 EB AT IH 20 BUS	06-238-0-0004-04-034	37.2	167	4		149.0		0.0	2.0	2.0	3 simple span prestressed concrete girder	2 OF JOINTS COVERED BY
18	WARD	IH 20 WB AT PARK RD 41	06-238-0-0004-04-082	41.9	160	4	745.0		168.0	0.0	2.0	2.0	3 simple span prestressed concrete girder	JOINTS NEWLY REPAIRED
19	WARD	IH 20 EB AT PARK RD 41	06-238-0-0004-04-083	41.9	160	4	745.0		168.0	0.0	2.0	2.0	3 simple span prestressed concrete girder	JOINTS NEWLY REPAIRED
20	WARD	FM 1776 AT PECOS RIVER	06-238-0-2262-01-003	43.2	280	5	1344.0		216.0	0.0	2.0	3.0	4 simple span prestressed concrete beam	
<b>WARD CO. SUBTOTAL</b>							<b>9762.0</b>	<b>3348.0</b>	<b>1541.0</b>	<b>83.0</b>	<b>40.0</b>	<b>83.0</b>		



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**CONSOLIDATED SUMMARY**  
 WARD CO.  
 SHEET 3 OF 5  
 Texas Department of Transportation  
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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			10
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

**SUMMARY OF BRIDGE ITEMS**

REF	COUNTY	LOCATION	NBI	DECK WIDTH	STRUCTURE LENGTH	JOINTS NO.	428	438	438	764	7306	7306	BRIDGE DESCRIPTION	COMMENTS
							6001	6002	6004	6001	6001	6002		
							PENETRATING CONCRETE SURFACE TREATMENT	CLEANING AND SEALING EXIST JOINTS(CL3)	CLEANING AND SEALING EXIST JOINTS(CL7)	DRAIN INLET CLEANING	BRIDGE SUBSTRUCTURE CLEANING (ABUT)	BRIDGE SUBSTRUCTURE CLEANING (BENT)		
				FT	FT	EA	SY	LF	LF	EA	EA	EA		
1	CROCKETT	US 67 AT PECOS RIVER	07-053-0-0076-03-128	56	330	4	2054.0		224.0	16.0	2.0	2.0	3 - Simple Span Prestressed Concrete Beam Bridge on	
2	CROCKETT	FM 305 AT PECOS RIVER	07-053-0-0229-05-042	40	230	5	1023.0		200.0	0.0	2.0	3.0	4 Simple Span Prestressed Concrete I-Beam Bridge	
3	CROCKETT	SH 349 AT PECOS RIVER	07-053-0-0556-02-037	42	240	3	1120.0		126.0	0.0	2.0	1.0	2 - Simple Span Prestressed Concrete I-Beam Bridge	
4	CROCKETT	FM 1901 AT PECOS RIVER	07-053-0-1817-02-002	40	150	4	667.0		160.0	0.0	2.0	2.0	3 Simple Span Prestressed Concrete Girder Bridge	
<b>CROCKETT CO. SUBTOTAL</b>							<b>4864.0</b>	<b>0.0</b>	<b>710.0</b>	<b>16.0</b>	<b>8.0</b>	<b>8.0</b>		

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**CONSOLIDATED SUMMARY**

CROCKETT CO.

SHEET 4 OF 5

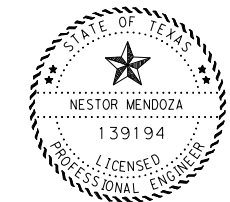


FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			11
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

SUMMARY OF BRIDGE ITEMS														
REF	COUNTY	LOCATION	NBI	DECK WIDTH	STRUCTURE LENGTH	JOINTS NO.	428	438	438	764	7306	7306	BRIDGE DESCRIPTION	COMMENTS
							6001	6002	6004	6001	6001	6002		
							PENETRATING CONCRETE SURFACE TREATMENT	CLEANING AND SEALING EXIST JOINTS(CL3)	CLEANING AND SEALING EXIST JOINTS(CL7)	DRAIN INLET CLEANING	BRIDGE SUBSTRUCTURE CLEANING (ABUT)	BRIDGE SUBSTRUCTURE CLEANING (BENT)		
				FT	FT	EA	SY	LF	LF	EA	EA	EA		
1	JEFF DAVIS	FM 3078 AT CHERRY DRAW RELIEF	24-123-0-0441-02-191	34	90	3	340.0		102.0	0.0	2.0	1.0	2 - Simple Span Prestressed Concrete Girder Bridge on Concrete Substructure	
2	JEFF DAVIS	FM 3078 AT CHERRY DRAW	24-123-0-0441-02-192	34	150	4	567.0		136.0	0.0	2.0	2.0	3 - Simple Span Prestressed Concrete Girder Bridge on Concrete Substructure	
<b>JEFF DAVIS CO. SUBTOTAL</b>							<b>907.0</b>	<b>0.0</b>	<b>238.0</b>	<b>0.0</b>	<b>4.0</b>	<b>3.0</b>		

SUMMARY OF BRIDGE ITEMS							
REF	COUNTY	428	438	438	764	7306	7306
		6001	6002	6004	6001	6001	6002
		PENETRATING CONCRETE SURFACE TREATMENT	CLEANING AND SEALING EXIST JOINTS (CL3)	CLEANING AND SEALING EXIST JOINTS (CL7)	DRAIN INLET CLEANING	BRIDGE SUBSTRUCTURE CLEANING (ABUT)	BRIDGE SUBSTRUCTURE CLEANING (BENT)
		SY	LF	LF	EA	EA	EA
1	PECOS CO.	3471.0	11121.0	805.0	86.0	80.0	224.0
2	REEVES CO.	5980.0	10315.0	533.0	0.0	104.0	178.0
3	WARD CO.	9762.0	3348.0	1541.0	83.0	40.0	83.0
4	CROCKETT CO.	4864.0	0.0	710.0	16.0	8.0	8.0
5	JEFF DAVIS CO.	907.0	0.0	238.0	0.0	4.0	3.0
<b>PROJECT TOTAL</b>		<b>24984.0</b>	<b>24784.0</b>	<b>3827.0</b>	<b>185.0</b>	<b>236.0</b>	<b>496.0</b>

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**CONSOLIDATED SUMMARY**  
 JEFF DAVIS CO.

SHEET 5 OF 5  
 Texas Department of Transportation  
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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			12
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

### TCP NARRATIVE SUMMARY

REF	COUNTY	NBI	ROADWAY CARRIED BY STRUCTURE	ROADWAY INTERSECTED	TCP NEEDED ON FACILITIES CARRIED	TCP NEEDED ON ROADWAY INTERSECTED	STRUCTURE NOTES
1	PECOS	061860002106103	US 90	DRY CREEK	TCP (2-3) - 23	NONE	
2	PECOS	061860013907052	US 285	COYANOSA	TCP (2-3) - 23	NONE	
3	PECOS	061860013907184	US 285	FM 1776	TCP (2-3) - 23	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-4) - 18	
4	PECOS	061860014001126	US 67 NB	IH 10	TCP (2-1) - 18	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
5	PECOS	061860014001313	IH 10 WB	SH 18	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-4) - 18	
6	PECOS	061860014001314	IH 10 EB	SH 18	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-4) - 18	
7	PECOS	061860014001320	IH 10 EB	COMANCHE CREEK	TCP (6-2) - 12 , TCP (6-20) -	NONE	
8	PECOS	061860014001321	IH 10 WB	COMANCHE CREEK	TCP (6-2) - 12 , TCP (6-20) -	NONE	
9	PECOS	061860014001322	IH 10 EB	7-D RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
10	PECOS	061860014001323	IH 10 WB	7-D RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
11	PECOS	061860014002137	IH 10 WB	DRAW	TCP (6-2) - 12	NONE	
12	PECOS	061860014002138	IH 10 EB	DRAW	TCP (6-2) - 12	NONE	
13	PECOS	061860014003021	IH 10 SFR	TUNIS CREEK	TCP (2-4) - 18	NONE	
14	PECOS	061860014003160	IH 10 WB	TUNIS CREEK	TCP (6-2) - 12	NONE	
15	PECOS	061860014003161	IH 10 EB	TUNIS CREEK	TCP (6-2) - 12	NONE	
16	PECOS	061860014004185	US 190	IH 10	TCP (2-3) - 23	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
17	PECOS	061860014004220	IH 10 WB	FM 2886	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
18	PECOS	061860014004221	IH 10 EB	FM 2886	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
19	PECOS	061860014005043	IH 10 SFR	FOUR MILE	TCP (2-3) - 23	NONE	

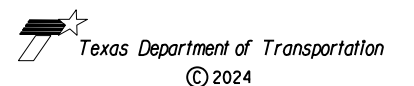
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### TCP NARRATIVE

PECOS CO.

SHEET 1 OF 7



NOTE:

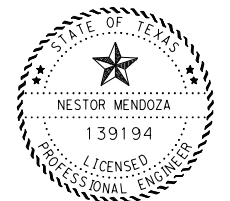
- 1- TCP LISTED IS RECOMMENDED AND ALL TCP SETUP WILL BE APPROVED BY THE ENGINEER.
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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			13
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

### TCP NARRATIVE SUMMARY

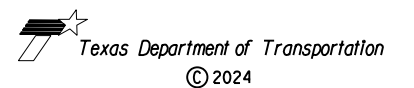
REF	COUNTY	NBI	ROADWAY CARRIED BY STRUCTURE	ROADWAY INTERSECTED	TCP NEEDED ON FACILITIES CARRIED	TCP NEEDED ON ROADWAY INTERSECTED	STRUCTURE NOTES
20	PECOS	061860014005253	IH 10 EB	FOUR MILE	TCP (6-2) - 12	NONE	
21	PECOS	061860014005254	IH 10 WB	FOUR MILE	TCP (6-2) - 12	NONE	
22	PECOS	061860014006276	IH 10 EB	WHITE OAK	TCP (6-2) - 12	NONE	
23	PECOS	061860014006277	IH 10 WB	WHITE OAK	TCP (6-2) - 12	NONE	
24	PECOS	061860014017001	US 385 / BI 10	BI 10 _ CANAL	TCP (2-4) - 18	NONE	
25	PECOS	061860014017002	US 385 / IH 10	COMANCHE	TCP (2-4) - 18	NONE	
26	PECOS	061860029301043	US 285	COMANCHE	TCP (2-4) - 18	NONE	
27	PECOS	061860029303017	US 285	MIDDLE FORK	TCP (2-3) - 23	NONE	
28	PECOS	061860029303024	US 285	BIG CANYON	TCP (2-3) - 23	NONE	
29	PECOS	061860029303027	US 285	CLARK PLACE	TCP (2-3) - 23	NONE	
30	PECOS	061860044107016	IH 10 WB	HACKBERRY	TCP (6-2) - 12	NONE	
31	PECOS	061860044107021	IH 10 NFR	COYANOSA	TCP (2-3) - 23	NONE	
32	PECOS	061860044107073	IH 10 WB	COYANOSA	TCP (6-2) - 12	NONE	
33	PECOS	061860044107074	IH 10 EB	COYANOSA	TCP (6-2) - 12	NONE	
34	PECOS	061860044107087	US 67 (FM 1776)	IH 10	TCP (2-3) - 23	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
35	PECOS	061860044107177	IH 10 EB	HACKBERRY	TCP (6-2) - 12	NONE	
36	PECOS	061860044108180	IH 10 EB	BI 10	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
37	PECOS	061860044108181	IH 10 WB	BI 10	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
38	PECOS	061860044108183	US 285	IH 10	TCP (2-4) - 18	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
39	PECOS	061860164001002	US 190	RICHBURG DRAW	TCP (2-3) - 23	NONE	
40	PECOS	061860164001003	US 190	DRAW	TCP (2-3) - 23	NONE	

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**TCP NARRATIVE**  
 PECOS CO.

SHEET 2 OF 7



NOTE:

- 1- TCP LISTED IS RECOMMENDED AND ALL TCP SETUP WILL BE APPROVED BY THE ENGINEER.
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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			14
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS



TCP NARRATIVE SUMMARY							
REF	COUNTY	NBI	ROADWAY CARRIED BY STRUCTURE	ROADWAY INTERSECTED	TCP NEEDED ON FACILITIES CARRIED	TCP NEEDED ON ROADWAY INTERSECTED	STRUCTURE NOTES
1	REEVES	061950000305087	IH 20 EB	COLD SPRINGS DRAW	CLOSE INDIVIDUAL LANE AS NECESSARY,	NONE	
2	REEVES	061950000305088	IH 20 WB	COWAN DRAW	CLOSE INDIVIDUAL LANE AS NECESSARY,	NONE	
3	REEVES	061950000305089	IH 20 EB	NINEMILE DRAW	CLOSE INDIVIDUAL LANE AS NECESSARY,	NONE	
4	REEVES	061950000305125	IH 20 WB	STOCKS RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
5	REEVES	061950000305126	IH 20 EB	STOCKS RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
6	REEVES	061950000305129	IH 20 WB	COWARD DRAW	TCP (6-2) - 12	NONE	
7	REEVES	061950000305130	IH 20 EB	COWARD DRAW	TCP (6-2) - 12	NONE	
8	REEVES	061950000306050	IH 20 WB	SALT DRAW	TCP (6-2) - 12	NONE	
9	REEVES	061950000306075	IH 20 EB	SALT DRAW	TCP (6-2) - 12	NONE	
10	REEVES	061950000306076	IH 20 WB	SHAW RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
11	REEVES	061950000306077	IH 20 EB	SHAW RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
12	REEVES	061950000306146	IH 20 WB	MOODY DRAW	TCP (6-2) - 12	NONE	
13	REEVES	061950000306147	IH 20 EB	MOODY DRAW	TCP (6-2) - 12	NONE	
14	REEVES	061950000306148	IH 20 WB	FM 2903	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
15	REEVES	061950000306149	IH 20 EB	FM 2903	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
16	REEVES	061950000306150	IH 20 WB	BILINGSLEA DRAW	TCP (6-2) - 12	NONE	
17	REEVES	061950000306151	IH 20 EB	BILINGSLEA DRAW	TCP (6-2) - 12	NONE	
18	REEVES	061950000306181	IH 20 N FR	MOODY DRAW	TCP (2-3) - 23	NONE	
19	REEVES	061950000307051	IH 20 BUS	IH 20	TCP (2-3) - 23	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
20	REEVES	061950000307056	IH 20 WB	INDUSTRIAL BLVD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
21	REEVES	061950000307057	IH 20 EB	INDUSTRIAL BLVD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
22	REEVES	061950000307060	IH 20 WB	COUNTRY CLUB DR	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
23	REEVES	061950000307061	IH 20 EB	COUNTRY CLUB DR	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
24	REEVES	061950000307078	IH 20 WB	HERMOSA RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
25	REEVES	061950000307079	IH 20 EB	HERMOSA RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	

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**TCP NARRATIVE**  
 REEVES CO.

SHEET 3 OF 7



NOTE:

- 1- TCP LISTED IS RECOMMENDED AND ALL TCP SETUP WILL BE APPROVED BY THE ENGINEER.
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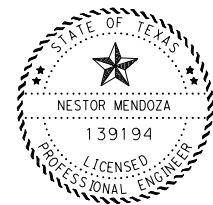
FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				15
STATE	STATE DIST.	COUNTY		
TEXAS	ODA	VARIOUS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0906	00	282	VARIOUS	

TCP NARRATIVE SUMMARY							
REF	COUNTY	NBI	ROADWAY CARRIED BY STRUCTURE	ROADWAY INTERSECTED	TCP NEEDED ON FACILITIES CARRIED	TCP NEEDED ON ROADWAY INTERSECTED	STRUCTURE NOTES
26	REEVES	061950000307080	IH 20 WB	FM 869	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
27	REEVES	061950000307081	IH 20 EB	FM 869	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
28	REEVES	061950000307085	IH 20 WB	PECOS GIN RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
29	REEVES	061950000307086	IH 20 EB	PECOS GIN RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
30	REEVES	061950000307177	US 285	IH 20	TCP (2-3) - 23	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
31	REEVES	061950013902185	US 285	SALT CREEK	TCP (2-3) - 23	NONE	
32	REEVES	061950013905072	US 285	TOYAH LAKE	TCP (2-3) - 23	NONE	
33	REEVES	061950044105135	IH 10 NFR	TOYAH CREEK	TCP (2-3) - 23	NONE	
34	REEVES	061950044105136	IH 10 WB	TOYAH CREEK & SERVICE RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
35	REEVES	061950044105137	IH 10 EB	TOYAH CREEK & SERVICE RD	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
36	REEVES	061950044105138	IH 10 WB	CARRASCO DRAW	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
37	REEVES	061950044105139	IH 10 EB	CARRASCO DRAW	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
38	REEVES	061950044105140	IH 10 WB	SH 17 (IH 10 BUS F)	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
39	REEVES	061950044105141	IH 10 EB	SH 17 (IH 10 BUS F)	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
40	REEVES	061950044105142	IH 10 EB	SH 17	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
41	REEVES	061950044105143	IH 10 WB	SH 17	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
42	REEVES	061950044105144	IH 10 EB	FM 2448	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
43	REEVES	061950044105145	IH 10 WB	FM 2448	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
44	REEVES	061950044105146	IH 10 EB	SANDIA DRAW	TCP (6-2) - 12	NONE	
45	REEVES	061950044105147	IH 10 WB	SANDIA DRAW	TCP (6-2) - 12	NONE	
46	REEVES	061950044105148	IH 10 EB	COX DRAW	TCP (6-2) - 12	NONE	
47	REEVES	061950044105149	IH 10 WB	COX DRAW	TCP (6-2) - 12	NONE	
48	REEVES	061950044105150	IH 10 EB	U RANCH DRAW	TCP (6-2) - 12	NONE	
49	REEVES	061950044105151	IH 10 WB	U RANCH DRAW	TCP (6-2) - 12	NONE	
50	REEVES	061950118302082	FM 869	SALT DRAW	TCP (2-3) - 23	NONE	
51	REEVES	061950044106046	IH 10 WB	BARILLA DRAW	TCP (6-2) - 12	NONE	
52	REEVES	061950245103009	RM 652	SALT DRAW	TCP (2-3) - 23	NONE	

NOTE:

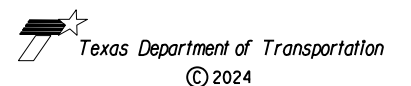
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**TCP NARRATIVE**  
 REEVES CO.

SHEET 4 OF 7

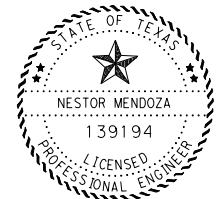


FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			16
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

### TCP NARRATIVE SUMMARY

REF	COUNTY	NBI	ROADWAY CARRIED BY STRUCTURE	ROADWAY INTERSECTED	TCP NEEDED ON FACILITIES CARRIED	TCP NEEDED ON ROADWAY INTERSECTED	STRUCTURE NOTES
1	WARD	062380000401002	IH 20 BUS	Pecos River Relief	TCP (2-3) - 23	NONE	
2	WARD	062380000401004	IH 20 BUS	Draw	TCP (2-3) - 23	NONE	
3	WARD	062380000401005	IH 20 BUS	Draw	TCP (2-3) - 23	NONE	
4	WARD	062380000401016	IH 20 BUS	Pecos River	TCP (2-3) - 23	NONE	
5	WARD	062380000401085	IH 20 Bus	Pecos River Relief	TCP (2-3) - 23	NONE	
6	WARD	062380000402046	IH 20 WB	Pecos River	TCP (6-2) - 12	NONE	
7	WARD	062380000402047	IH 20 EB	Pecos River	TCP (6-2) - 12	NONE	
8	WARD	062380000402064	IH 20 BUS	IH 20	TCP (2-3) - 23	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
9	WARD	062380000402067	IH 20 WB	Service Rd	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
10	WARD	062380000402068	IH 20 EB	Service Rd	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
11	WARD	062380000404028	IH 20 WB	FM 1219	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
12	WARD	062380000404029	IH 20 EB	FM 1219	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
13	WARD	062380000404030	IH 20 BUS	IH 20	TCP (2-3) - 23	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (6-2) - 18	
14	WARD	062380000404031	IH 20 WB	SH 18	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
15	WARD	062380000404032	IH 20 EB	SH 18	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
16	WARD	062380000404033	IH 20 WB	IH 20 BUS	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
17	WARD	062380000404034	IH 20 EB	IH 20 BUS	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY, TCP (2-3) - 23	
18	WARD	062380000404082	IH 20 WB	Park Rd 41	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
19	WARD	062380000404083	IH 20 EB	Park Rd 41	TCP (6-2) - 12	CLOSE INDIVIDUAL LANE AS NECESSARY	
20	WARD	062380226201003	FM 1776	Pecos River	TCP (2-3) - 23	NONE	

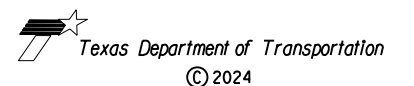
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### TCP NARRATIVE

WARD CO.

SHEET 5 OF 7



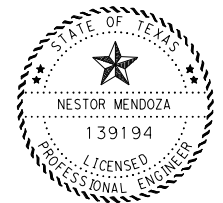
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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			17
STATE	STATE DIST.	COUNTY	
TEXAS	ODA	VARIOUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0906	00	282	VARIOUS

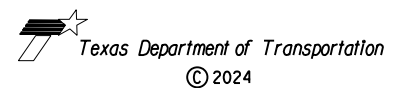
TCP NARRATIVE SUMMARY							
REF	COUNTY	NBI	ROADWAY CARRIED BY STRUCTURE	ROADWAY INTERSECTED	TCP NEEDED ON FACILITIES CARRIED	TCP NEEDED ON ROADWAY INTERSECTED	STRUCTURE NOTES
1	CROCKETT	070530007603128	US 67	Pecos River	TCP (2-3) - 23	NONE	
2	CROCKETT	070530022905042	FM 305	Pecos River	TCP (2-3) - 23	NONE	
3	CROCKETT	070530055602037	SH 349	Pecos River	TCP (2-3) - 23	NONE	
4	CROCKETT	070530181702002	FM 1901	Pecos River	TCP (2-3) - 23	NONE	

DocuSigned by:  
*Nestor T Mendoza, P.E.*  
 9104D8EB1809444...  
 1/22/2024



**TCP NARRATIVE**  
 CROCKETT CO.

SHEET 6 OF 7



NOTE:

- 1- TCP LISTED IS RECOMMENDED AND ALL TCP SETUP WILL BE APPROVED BY THE ENGINEER.
- 2- TRAFFIC CONTROL SETUP WILL NOT STAY IN PLACE UNLESS WORK THAT IS ASSOCIATED TO THE SETUP IS IN PROGRESS.

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				18
STATE	STATE DIST.	COUNTY		
TEXAS	ODA	VARIOUS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0906	00	282	VARIOUS	

TCP NARRATIVE SUMMARY							
REF	COUNTY	NBI	ROADWAY CARRIED BY STRUCTURE	ROADWAY INTERSECTED	TCP NEEDED ON FACILITIES CARRIED	TCP NEEDED ON ROADWAY INTERSECTED	STRUCTURE NOTES
1	JEFF DAVIS	241230044102191	FM 3078	CHERRY DRAW RELIEF	TCP (2-3) - 23	NONE	
2	JEFF DAVIS	241230044102192	FM 3078	CHERRY DRAW	TCP (2-3) - 23	NONE	

DocuSigned by:  
*Nestor Mendonza, P.E.*  
 9104D8EB1809444...  
 1/22/2024



**TCP NARRATIVE**  
 JEFF DAVIS CO.

SHEET 7 OF 7



NOTE:

- 1- TCP LISTED IS RECOMMENDED AND ALL TCP SETUP WILL BE APPROVED BY THE ENGINEER.
- 2- TRAFFIC CONTROL SETUP WILL NOT STAY IN PLACE UNLESS WORK THAT IS ASSOCIATED TO THE SETUP IS IN PROGRESS.

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				19
STATE	STATE DIST.	COUNTY		
TEXAS	ODA	VARIOUS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0906	00	282	VARIOUS	

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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 shall 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).

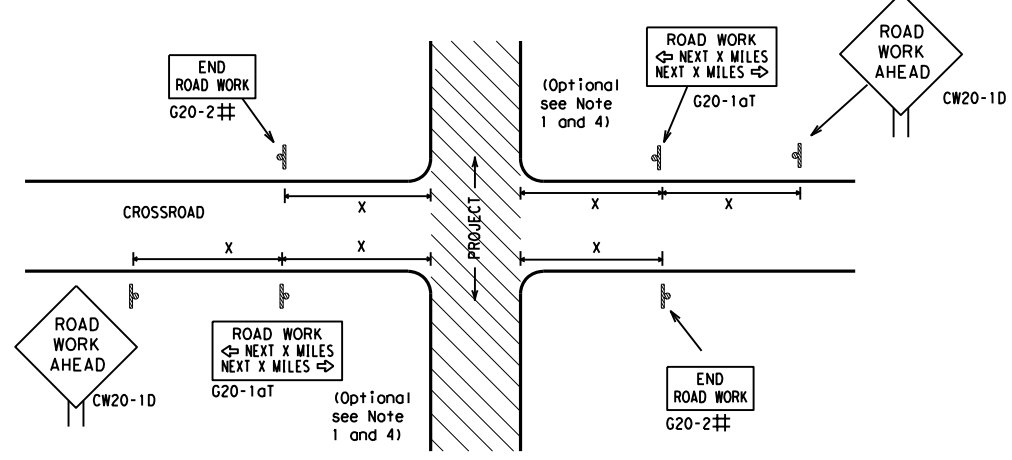
<b>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT</b> <a href="http://www.txdot.gov">http://www.txdot.gov</a>
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD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

SHEET 1 OF 12

 Texas Department of Transportation		 Traffic Safety Division Standard	
<b>BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS</b>			
<b>BC (1) -21</b>			
FILE:	bc-21.dgn	DN:	TxDOT
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		DW:	TxDOT
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		CONT	SECT
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		SHEET NO.	20

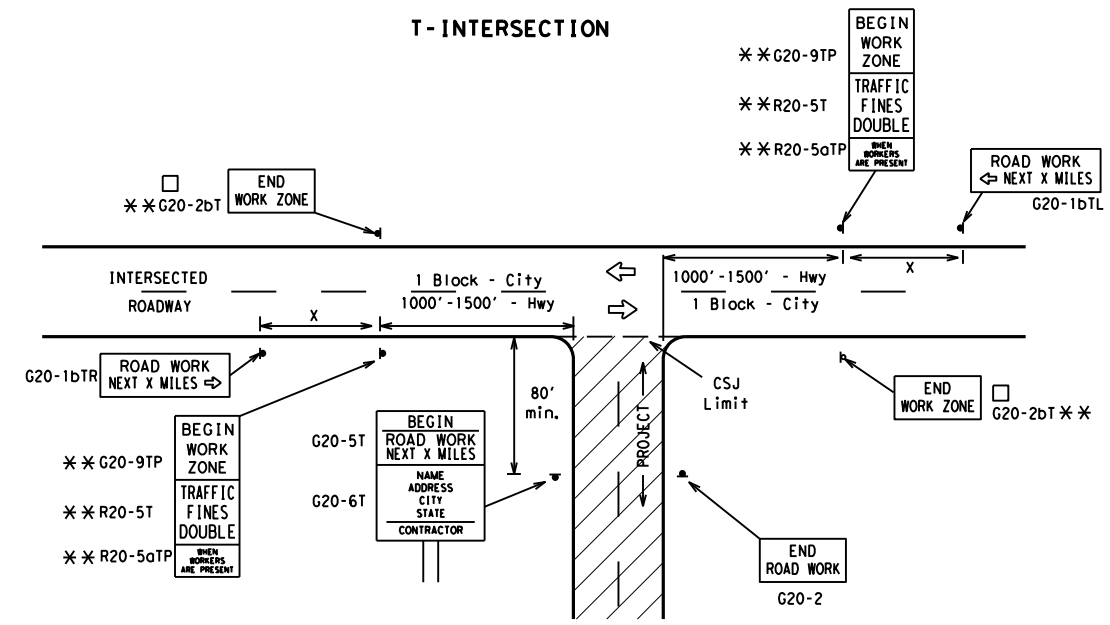
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**TYPICAL LOCATION OF CROSSROAD SIGNS**



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

**T-INTERSECTION**



**CSJ LIMITS AT T-INTERSECTION**

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

**TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING<sup>1,5,6</sup>**

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

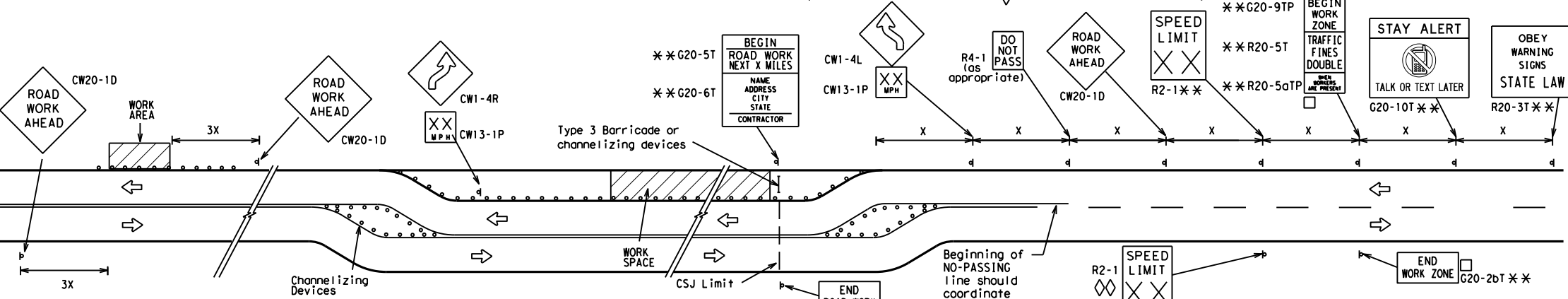
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

**GENERAL NOTES**

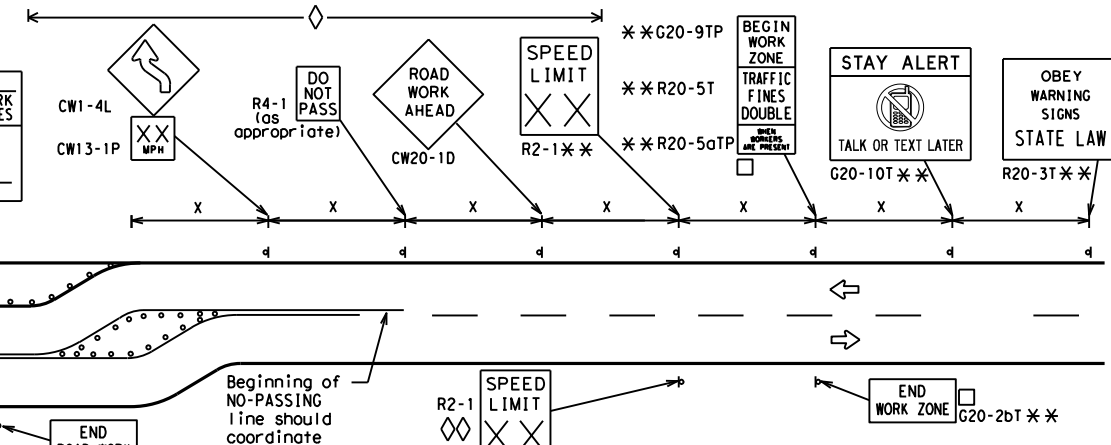
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

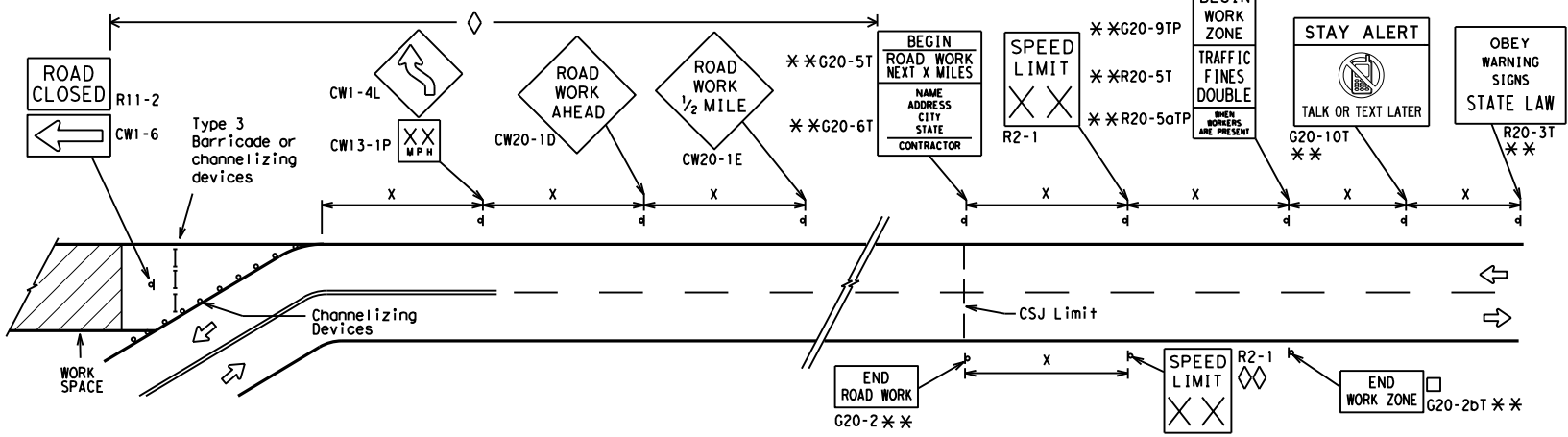


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

**SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS**



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



**NOTES**

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

**LEGEND**

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

SHEET 2 OF 12



**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**BC(2)-21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	00	282	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ODA	VARIOUS		21

DATE: FILE:

# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

### SHORT TERM WORK ZONE SPEED LIMITS

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

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

## GENERAL NOTES

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

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

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SHEET 3 OF 12



## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

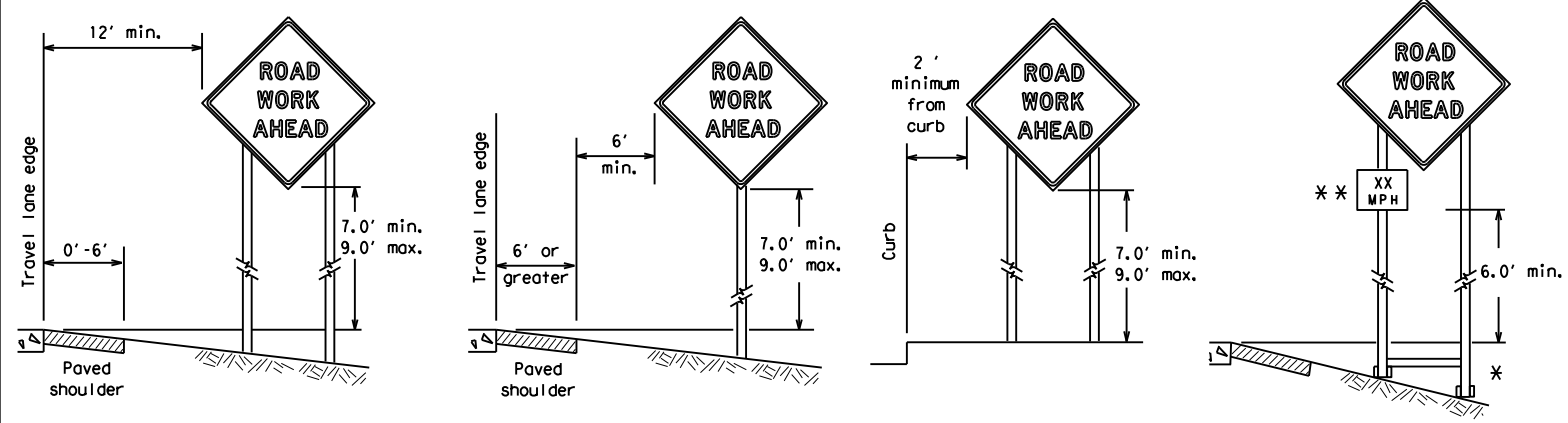
BC (3) - 21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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9-07	8-14					DIST		COUNTY	SHEET NO.
7-13	5-21					ODA		VARIOUS	22



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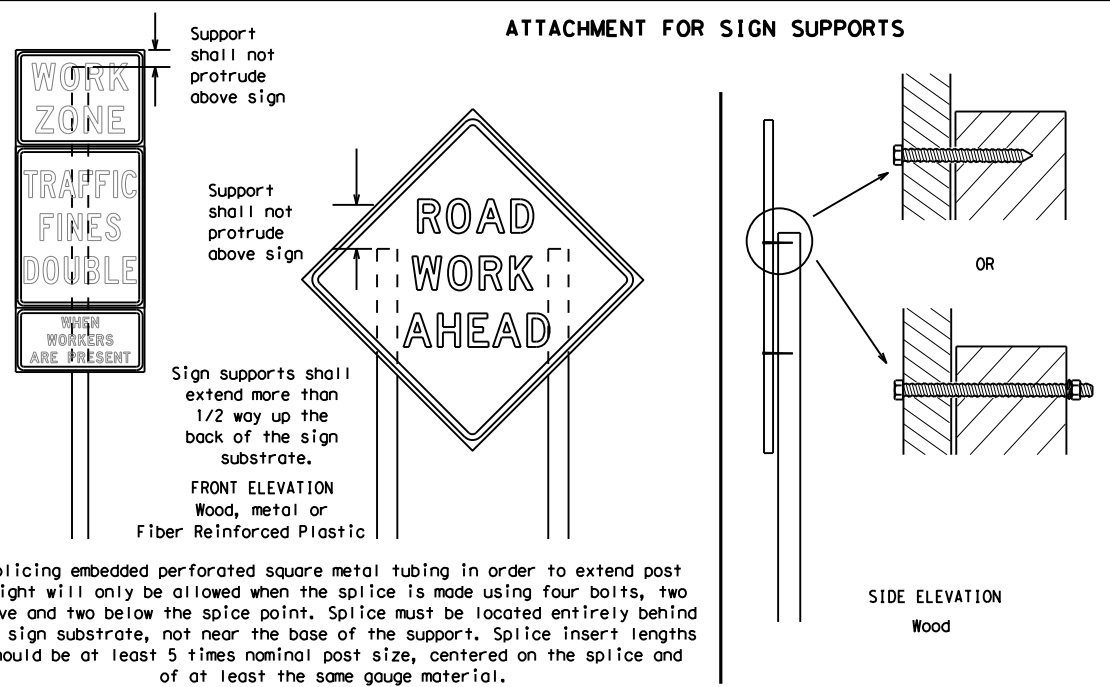
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



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

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

**ATTACHMENT FOR SIGN SUPPORTS**



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

**GENERAL NOTES FOR WORK ZONE SIGNS**

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

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

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

**SIGN MOUNTING HEIGHT**

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

**SIZE OF SIGNS**

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

**SIGN SUBSTRATES**

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

**REFLECTIVE SHEETING**

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

**SIGN LETTERS**

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

**REMOVING OR COVERING**

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

**SIGN SUPPORT WEIGHTS**

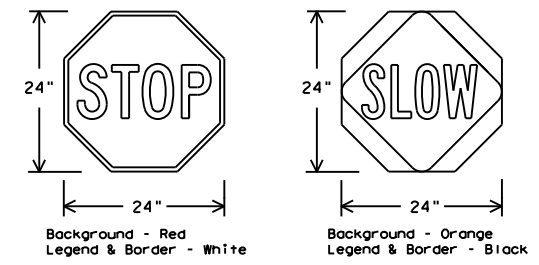
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not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

**FLAGS ON SIGNS**

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

**STOP/SLOW PADDLES**

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



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

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

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



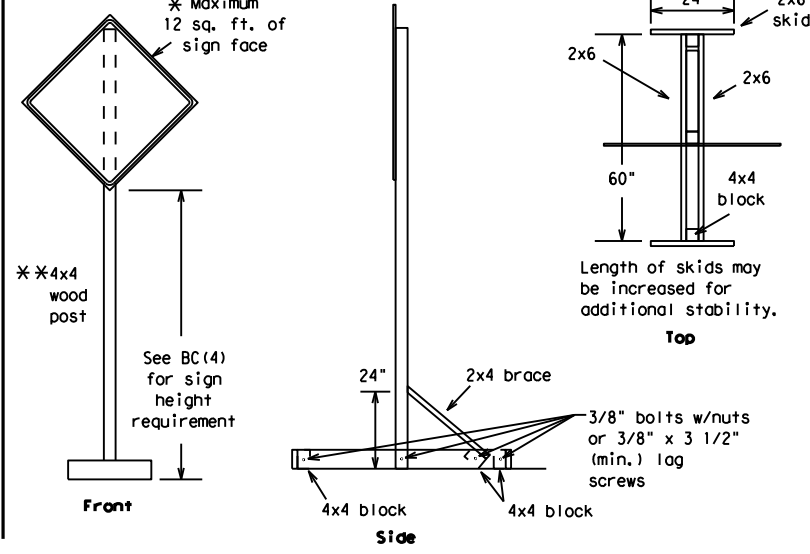
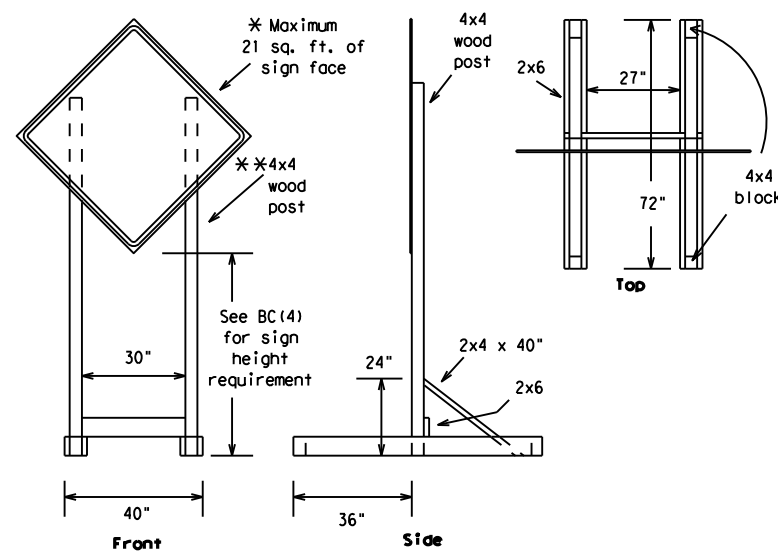
**BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES**

**BC (4) - 21**

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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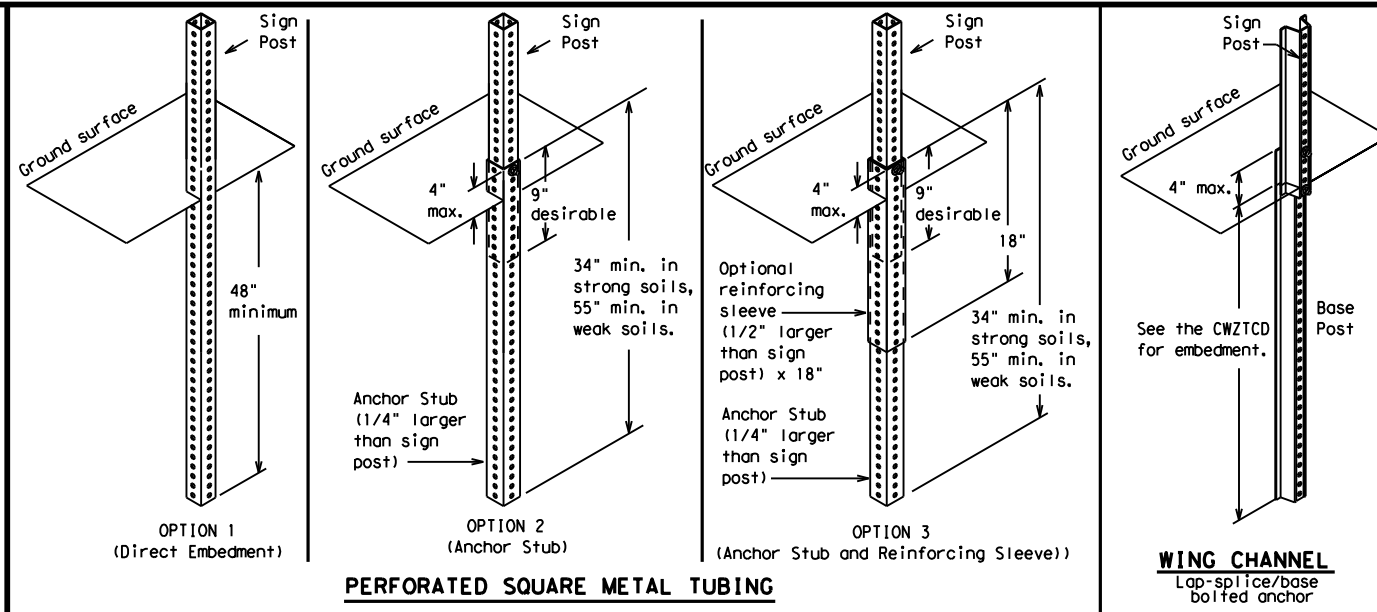
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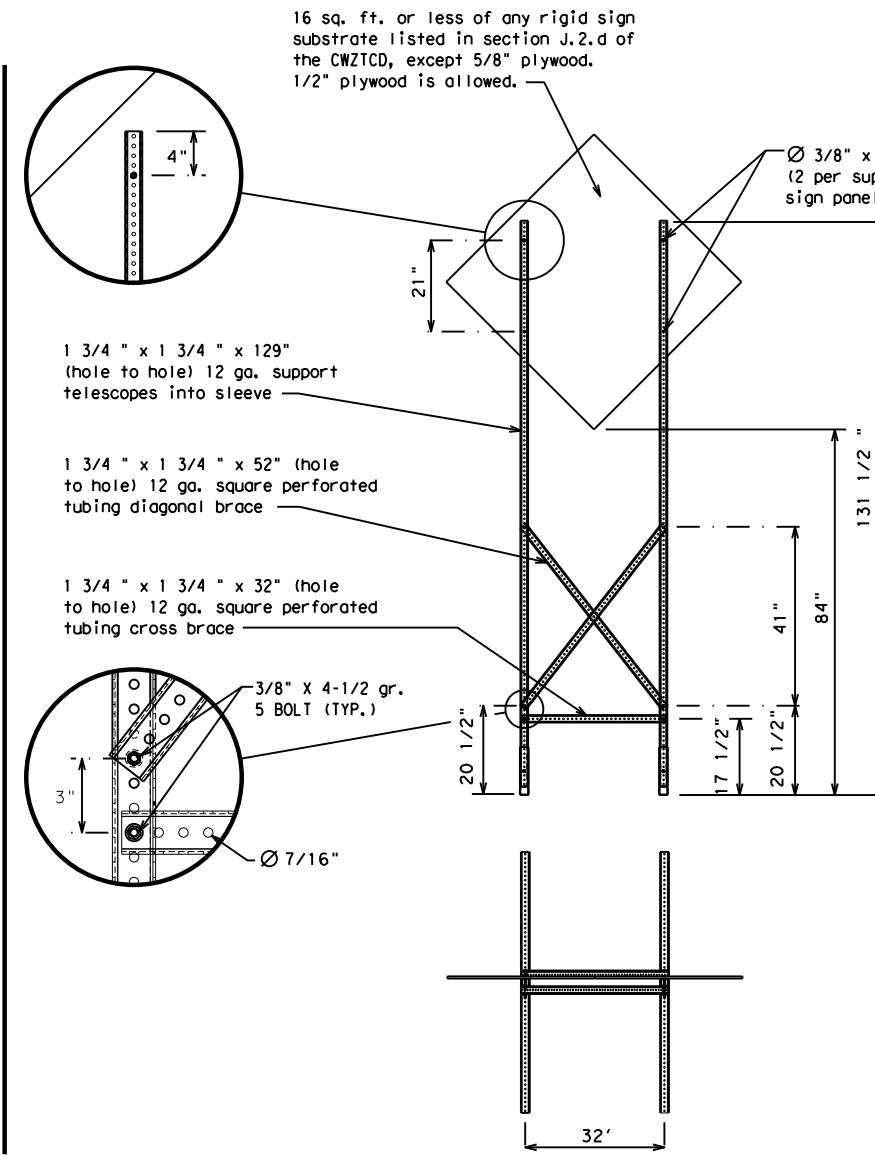
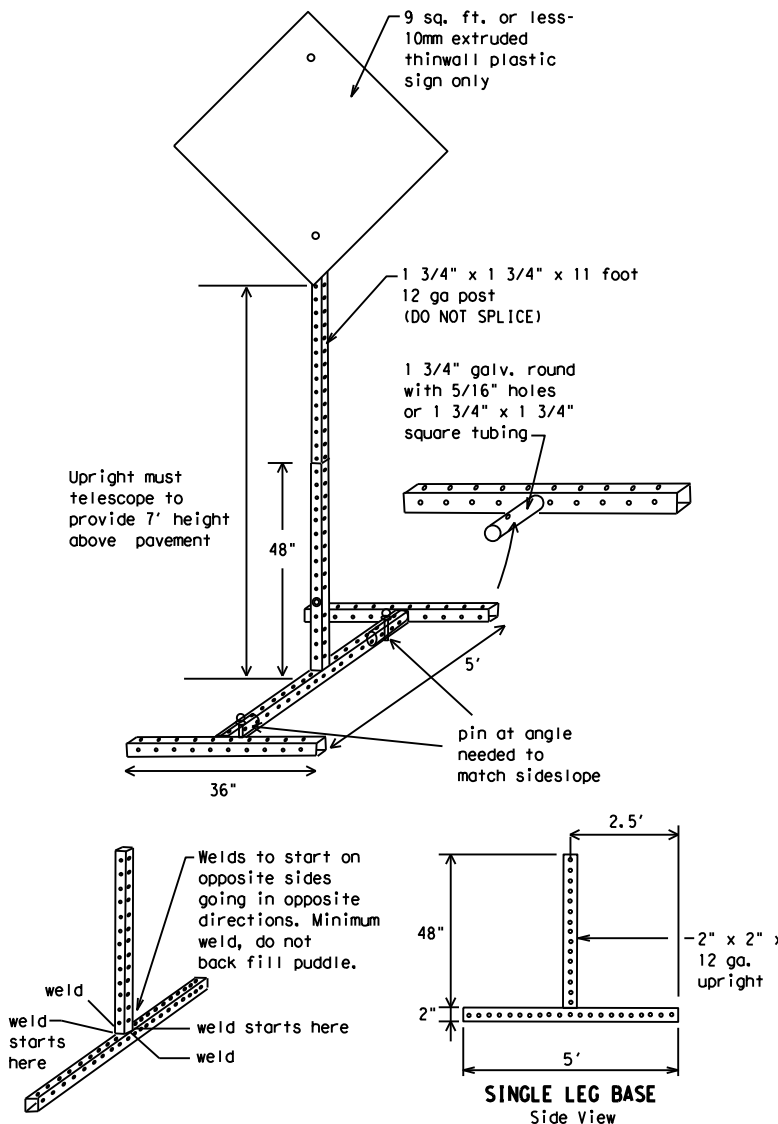
### SKID MOUNTED WOOD SIGN SUPPORTS

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



### GROUND MOUNTED SIGN SUPPORTS

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



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

### WEDGE ANCHORS

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

### OTHER DESIGNS

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

### GENERAL NOTES

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

- \* See BC(4) for definition of "Work Duration."
- \*\* Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.
- See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

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
ROAD CLOSED AT SH XXX
ROAD CLSD AT FM XXXX
RIGHT X LANES CLOSED
CENTER LANE CLOSED
NIGHT LANE CLOSURES
VARIOUS LANES CLOSED
EXIT CLOSED
MALL DRIVEWAY CLOSED
XXXXXXXX BLVD CLOSED

### Other Condition List

FRONTAGE ROAD CLOSED
SHOULDER CLOSED XXX FT
RIGHT LN CLOSED XXX FT
RIGHT X LANES OPEN
DAYTIME LANE CLOSURES
I-XX SOUTH EXIT CLOSED
EXIT XXX CLOSED X MILE
RIGHT LN TO BE CLOSED
X LANES CLOSED TUE - FRI

ROADWORK XXX FT
FLAGGER XXXX FT
RIGHT LN NARROWS XXXX FT
MERGING TRAFFIC XXXX FT
LOOSE GRAVEL XXXX FT
DETOUR X MILE
ROADWORK PAST SH XXXX
BUMP XXXX FT
TRAFFIC SIGNAL XXXX FT

ROAD REPAIRS XXXX FT
LANE NARROWS XXXX FT
TWO-WAY TRAFFIC XX MILE
CONST TRAFFIC XXX FT
UNEVEN LANES XXXX FT
ROUGH ROAD XXXX FT
ROADWORK NEXT FRI-SUN
US XXX EXIT X MILES
LANES SHIFT *

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

## Phase 2: Possible Component Lists

### Action to Take/Effect on Travel List

MERGE RIGHT
DETOUR NEXT X EXITS
USE EXIT XXX
STAY ON US XXX SOUTH
TRUCKS USE US XXX N
WATCH FOR TRUCKS
EXPECT DELAYS
REDUCE SPEED XXX FT
USE OTHER ROUTES
STAY IN LANE *

FORM X LINES RIGHT
USE XXXXX RD EXIT
USE EXIT I-XX NORTH
USE I-XX E TO I-XX N
WATCH FOR TRUCKS
EXPECT DELAYS
PREPARE TO STOP
END SHOULDER USE
WATCH FOR WORKERS

### 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.

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

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

## 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.

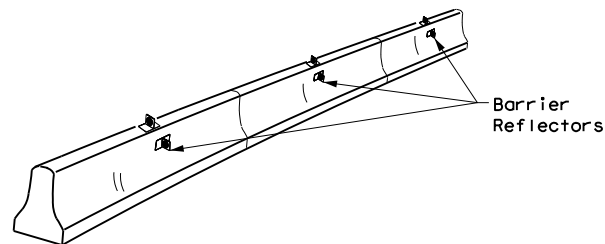
SHEET 6 OF 12

<h3>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</h3>			
<h2>BC (6) - 21</h2>			
FILE: bc-21.dgn	DN: TxDOT	CR: TxDOT	DW: TxDOT
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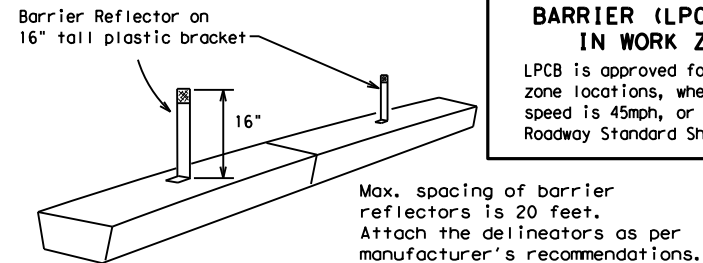
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



**CONCRETE TRAFFIC BARRIER (CTB)**

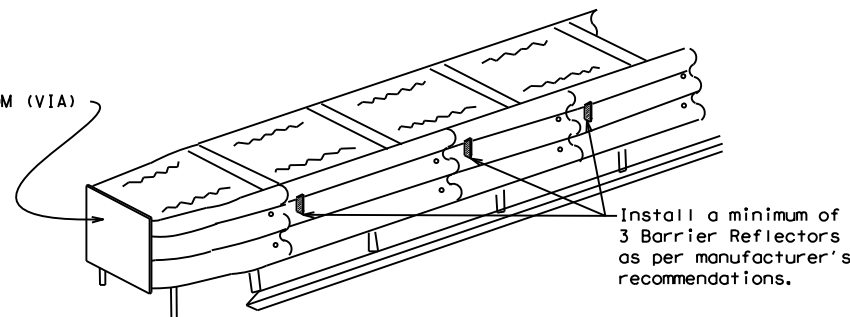
- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector.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



**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

**LOW PROFILE CONCRETE BARRIER (LPCB)**



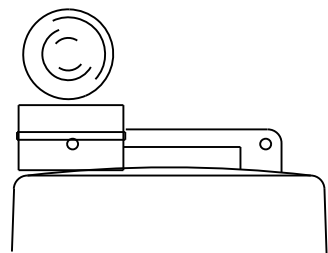
**DELINEATION OF END TREATMENTS**

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

**BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS**

**WARNING LIGHTS**

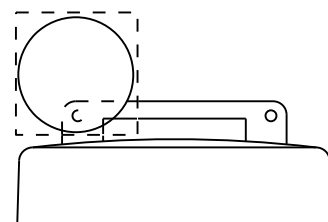
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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



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.



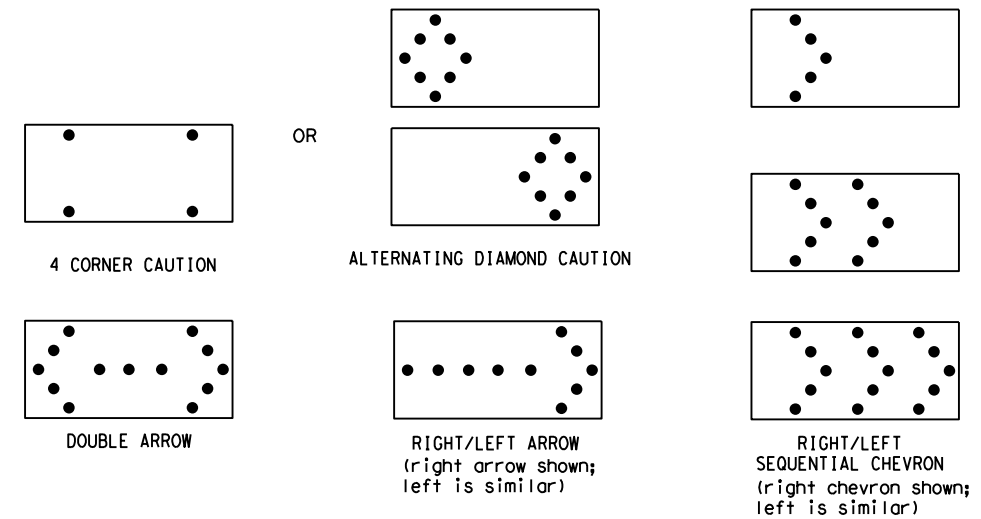
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

**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.

Texas Department of Transportation

Traffic Safety Division Standard

**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:

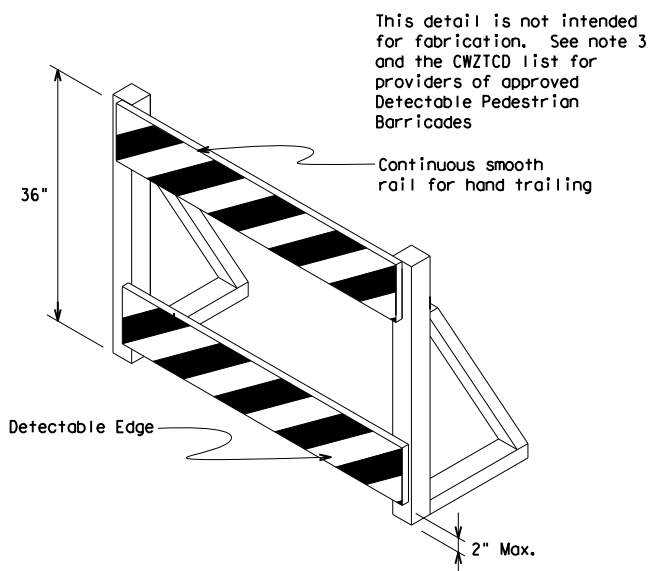
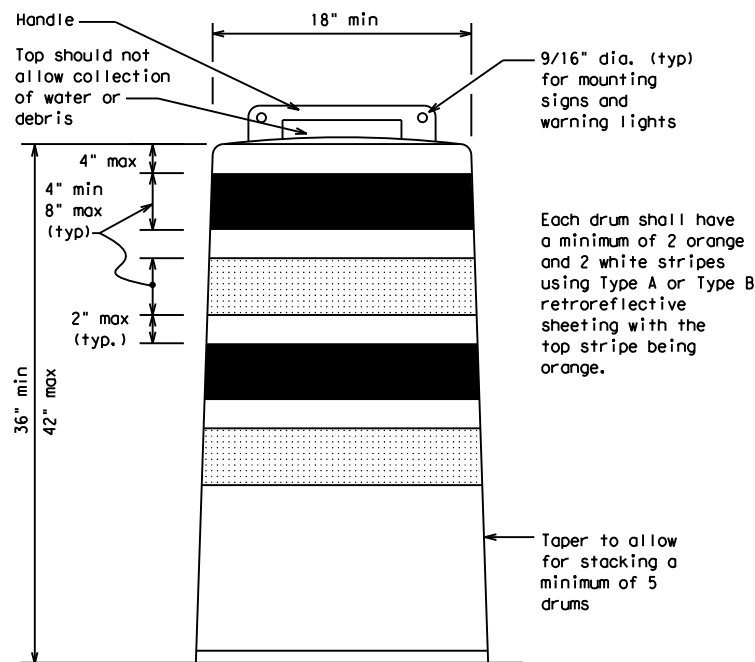
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

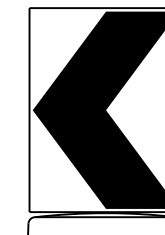
### BALLAST

- 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.

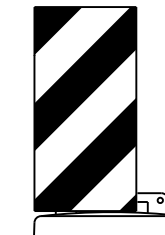


### DETECTABLE PEDESTRIAN BARRICADES

- 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<sub>FL</sub> or Type C<sub>FL</sub> 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

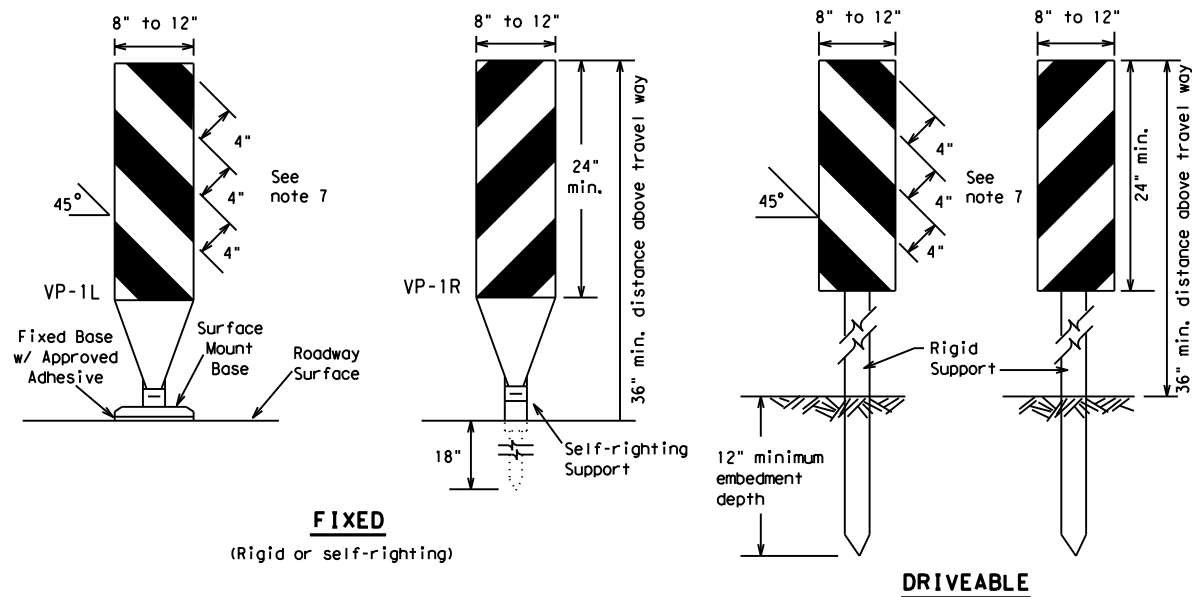


## BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

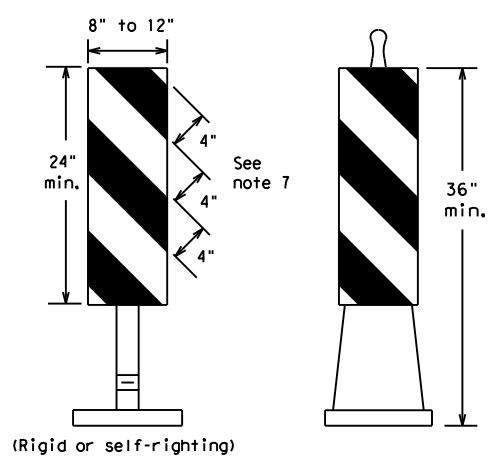
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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7-13									

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

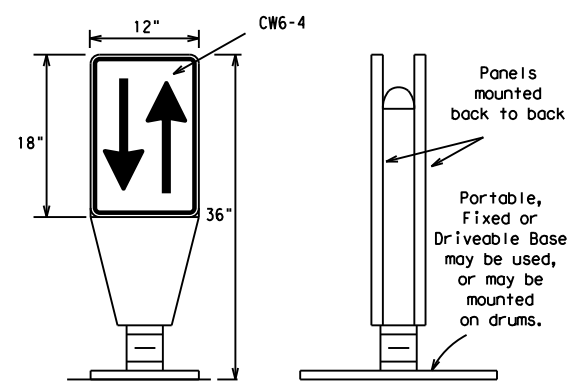
**DRIVEABLE**



**PORTABLE**

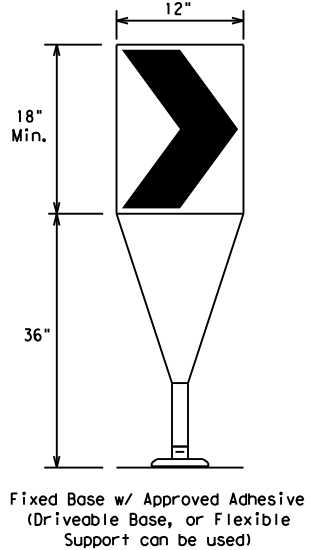
**VERTICAL PANELS (VPs)**

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



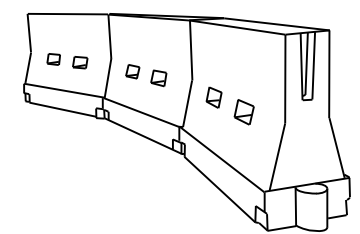
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

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



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

**CHEVRONS**



**LONGITUDINAL CHANNELIZING DEVICES (LCD)**

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

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

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

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

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

**GENERAL NOTES**

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

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

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

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

SHEET 9 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (9) - 21**

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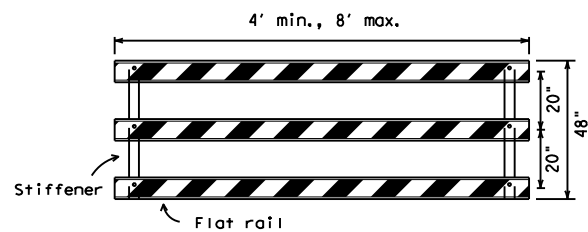
**TYPE 3 BARRICADES**

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.



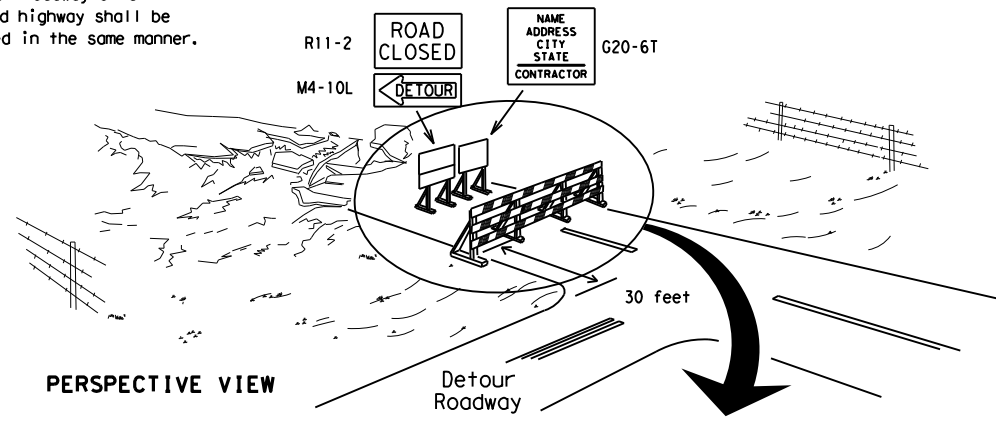
**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



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

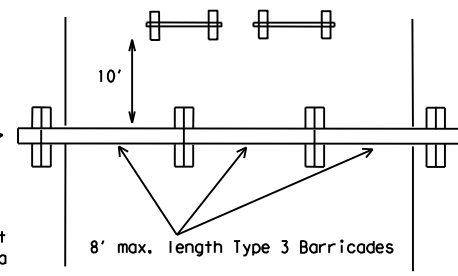
**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

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



PERSPECTIVE VIEW

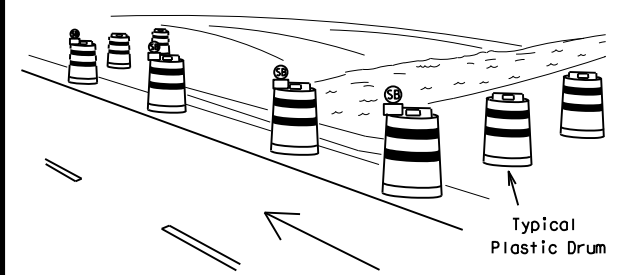
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



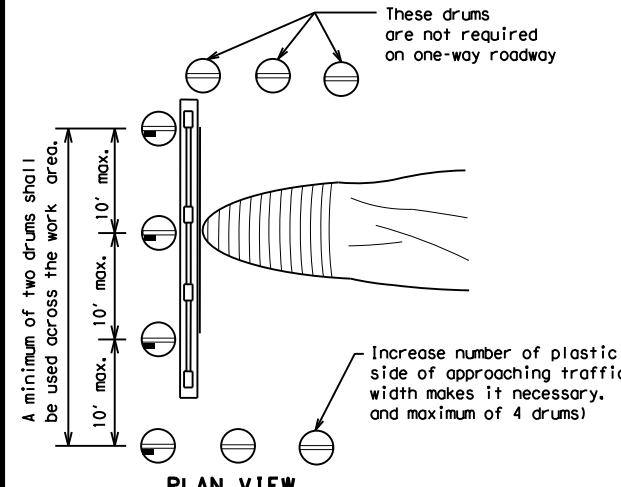
PLAN VIEW

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

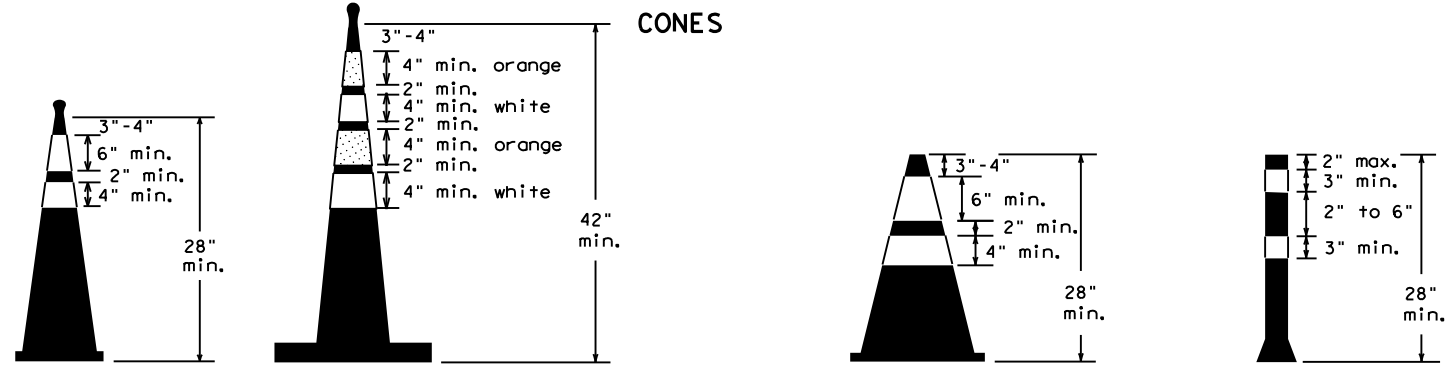


PLAN VIEW

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

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

**CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS**

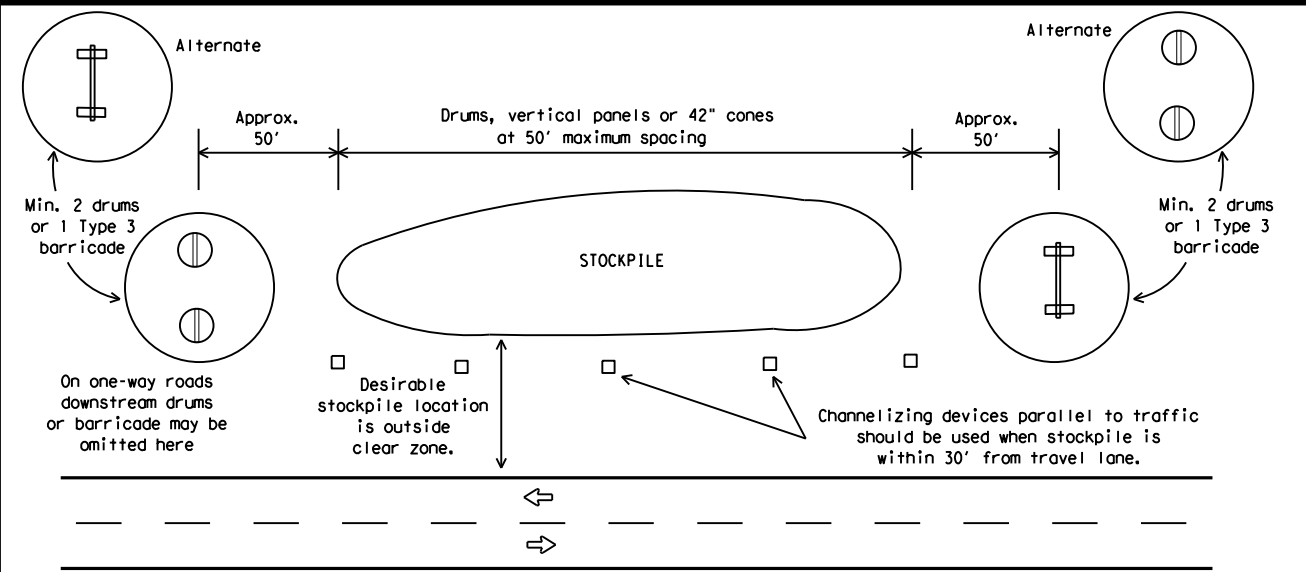


Two-Piece cones

One-Piece cones

Tubular Marker

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



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

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.



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (10) - 21**

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## 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.

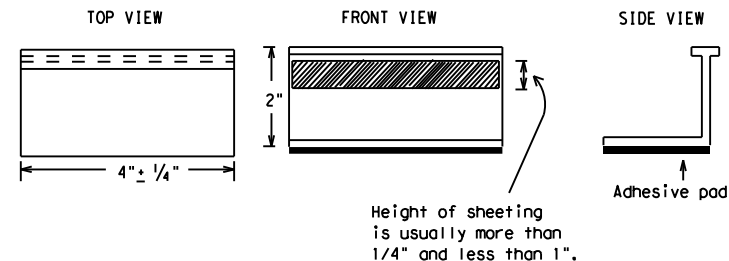
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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).

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DATE:  
FILE:

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
	0906	00	282	VARIOUS
REVISIONS				
2-98 9-07 5-21				
1-02 7-13	DIST	COUNTY	SHEET NO.	
11-02 8-14	ODA	VARIOUS	30	

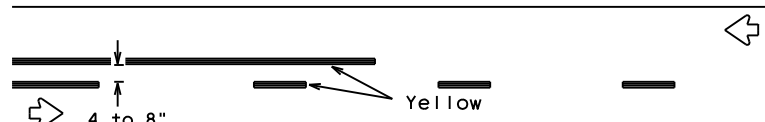
105



## PAVEMENT MARKING PATTERNS

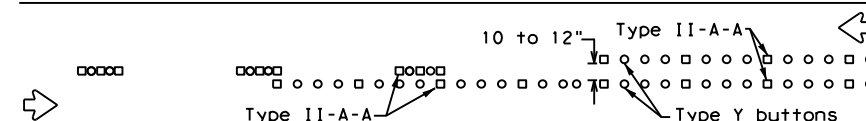


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

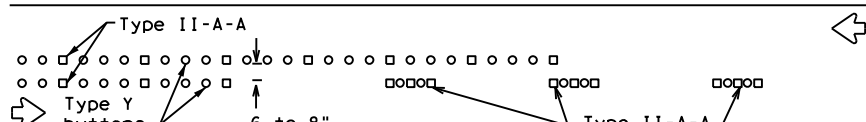


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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



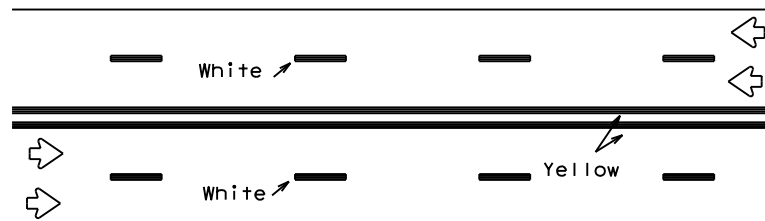
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



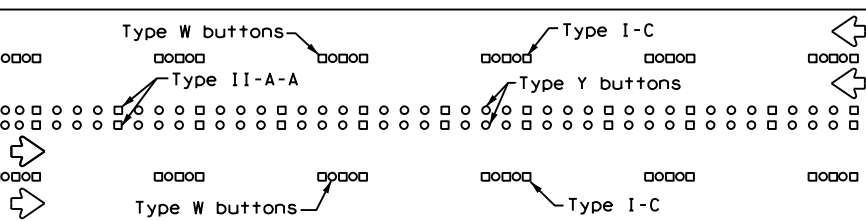
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



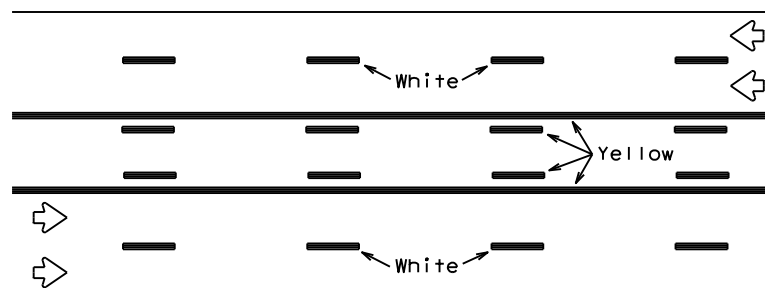
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



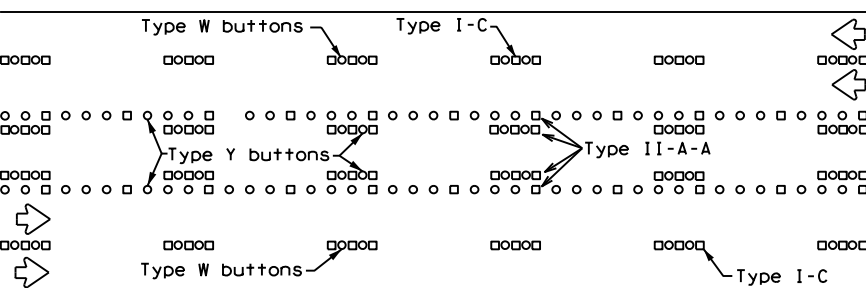
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

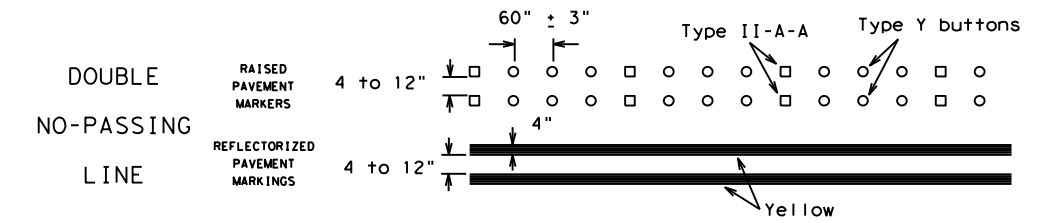
Prefabricated markings may be substituted for reflectORIZED pavement markings.



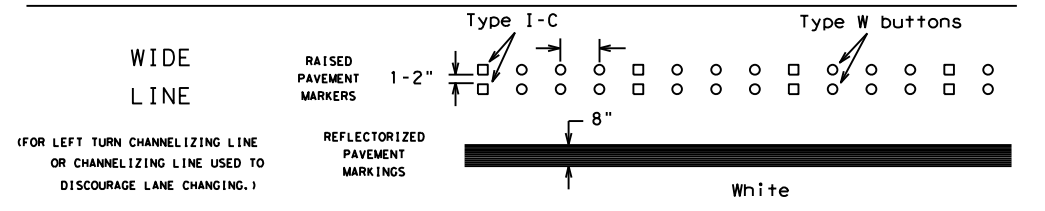
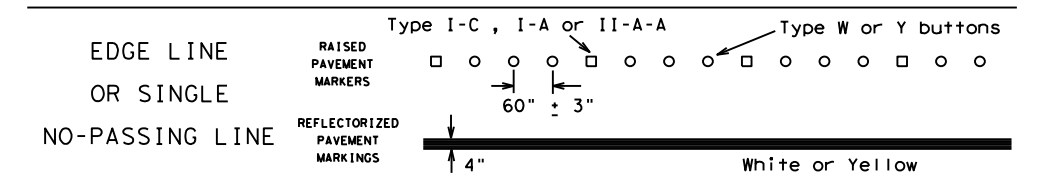
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

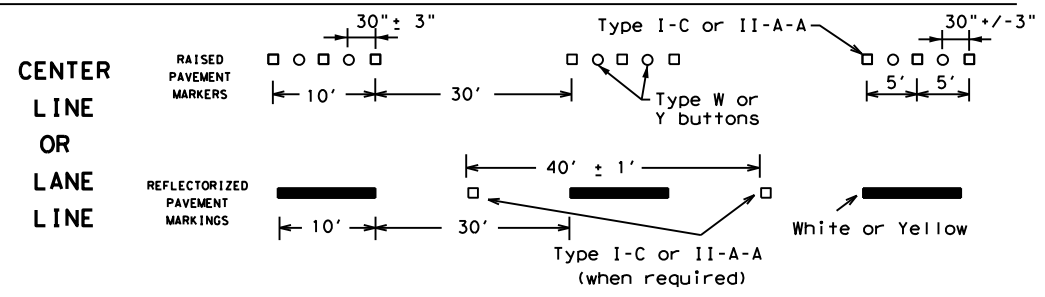
## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



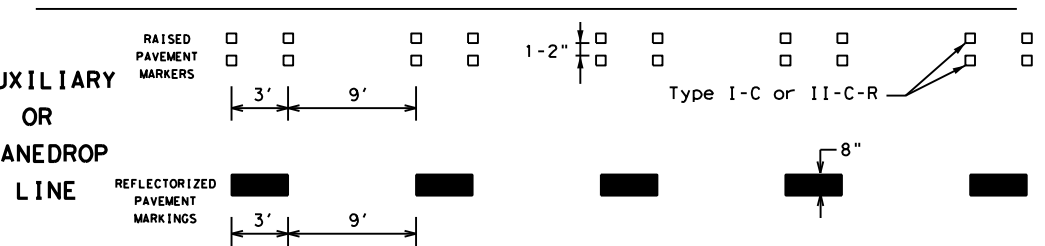
### SOLID LINES



### BROKEN LINES

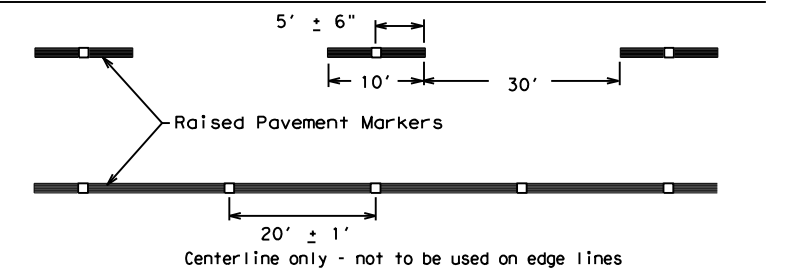


### AUXILIARY OR LANEDROP LINE



### 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

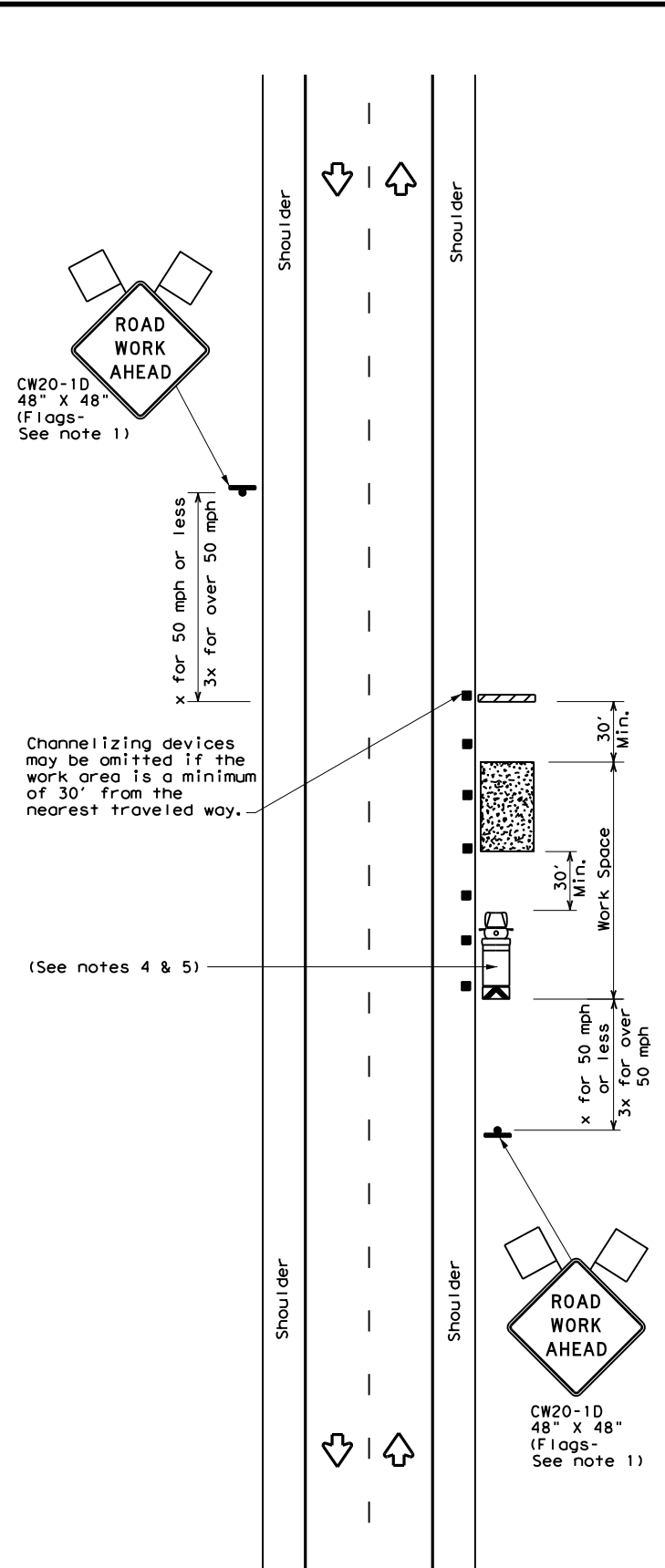
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	00	282	VARIOUS
1-97 9-07 5-21	DIST	COUNTY	SHEET NO.	
2-98 7-13	ODA	VARIOUS	31	
11-02 8-14				

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DATE: FILE:

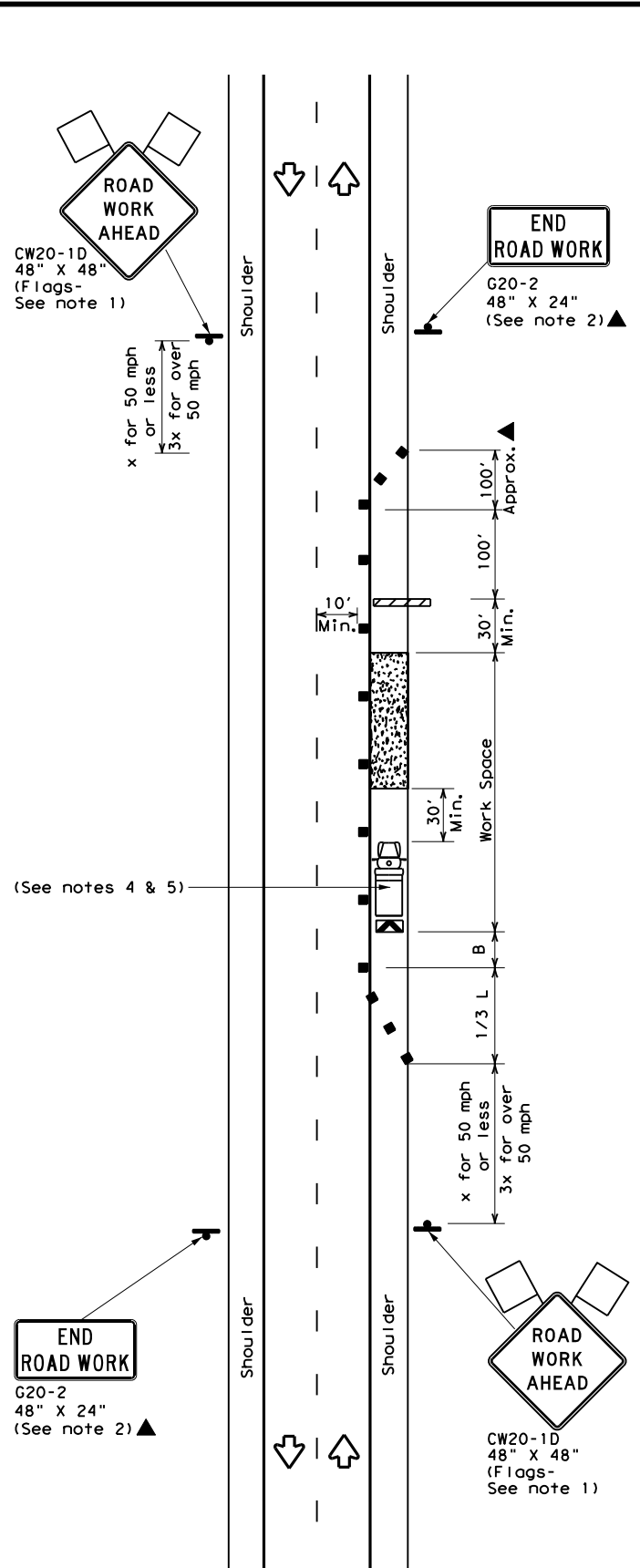
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:  
FILE:



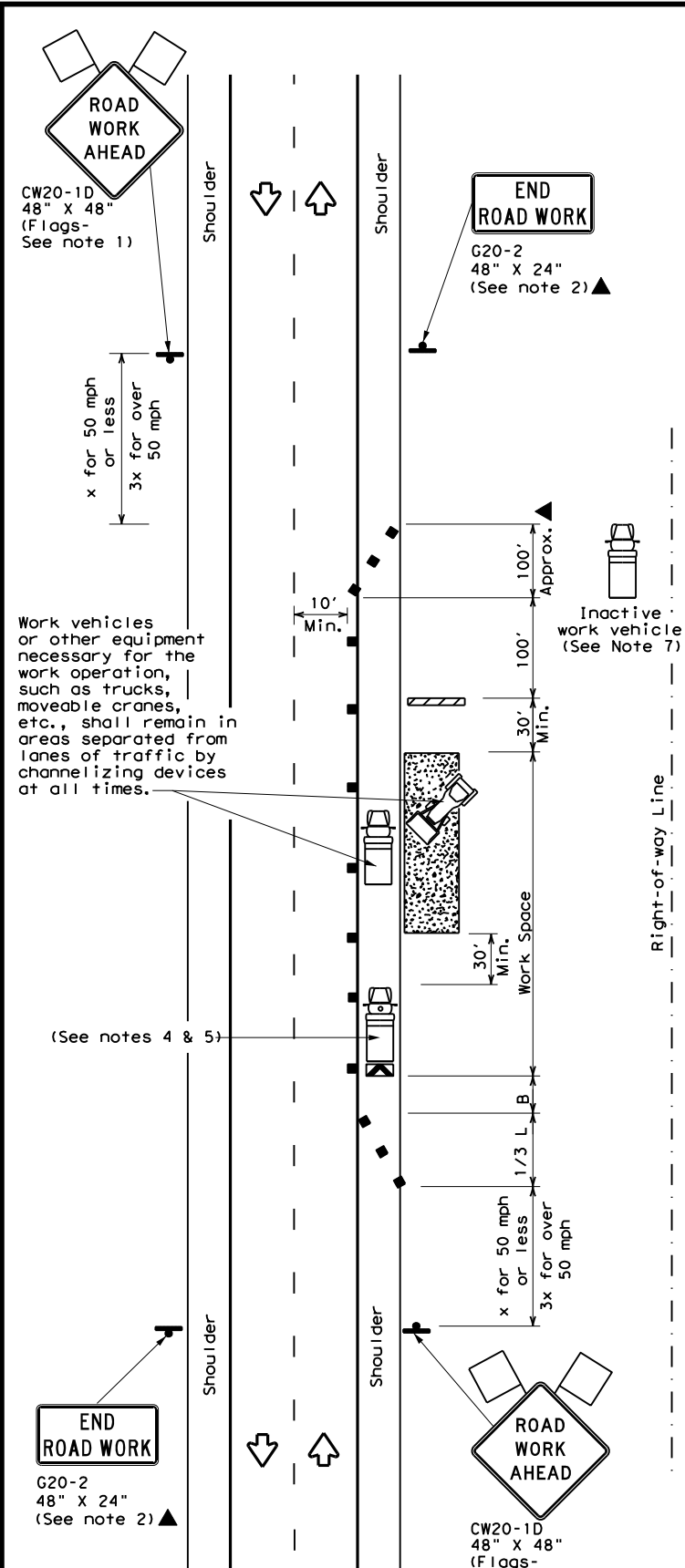
TCP (2-1a)

**WORK SPACE NEAR SHOULDER**  
Conventional Roads



TCP (2-1b)

**WORK SPACE ON SHOULDER**  
Conventional Roads



TCP (2-1c)

**WORK VEHICLES ON SHOULDER**  
Conventional Roads

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

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

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

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

**GENERAL NOTES**

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

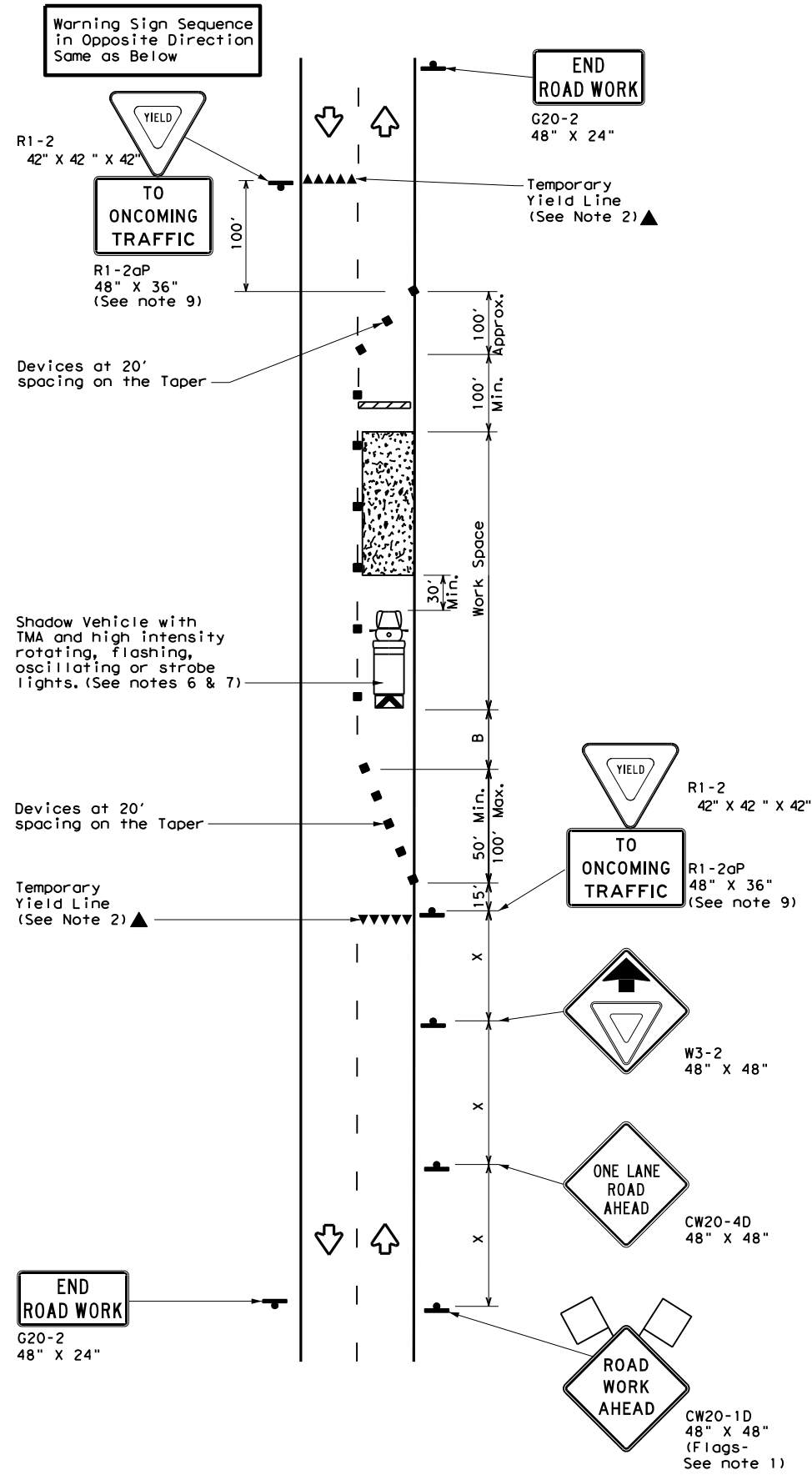


**TRAFFIC CONTROL PLAN**  
**CONVENTIONAL ROAD**  
**SHOULDER WORK**

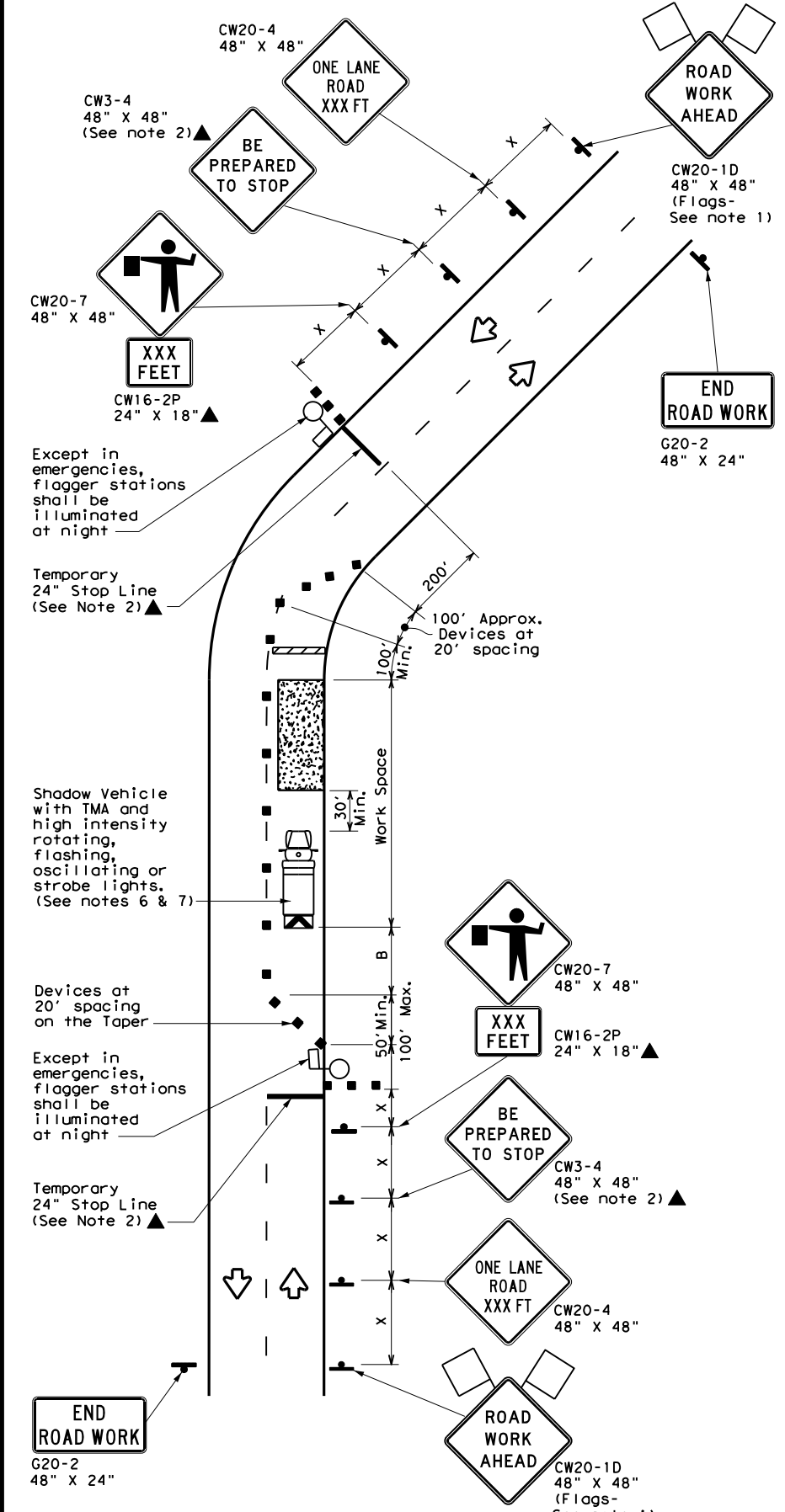
**TCP (2-1) - 18**

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	00	282	VARIOUS
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	ODA	VARIOUS	32	
1-97 2-18				

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



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

**LEGEND**

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

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

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

**TYPICAL USAGE**

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

**GENERAL NOTES**

- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
  - Flaggers should use two-way radios or other methods of communication to control traffic.
  - Length of work space should be based on the ability of flaggers to communicate.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-2a)**
- The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
  - The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.
- TCP (2-2b)**
- Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
  - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
  - Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.



**TRAFFIC CONTROL PLAN  
ONE-LANE TWO-WAY  
TRAFFIC CONTROL**

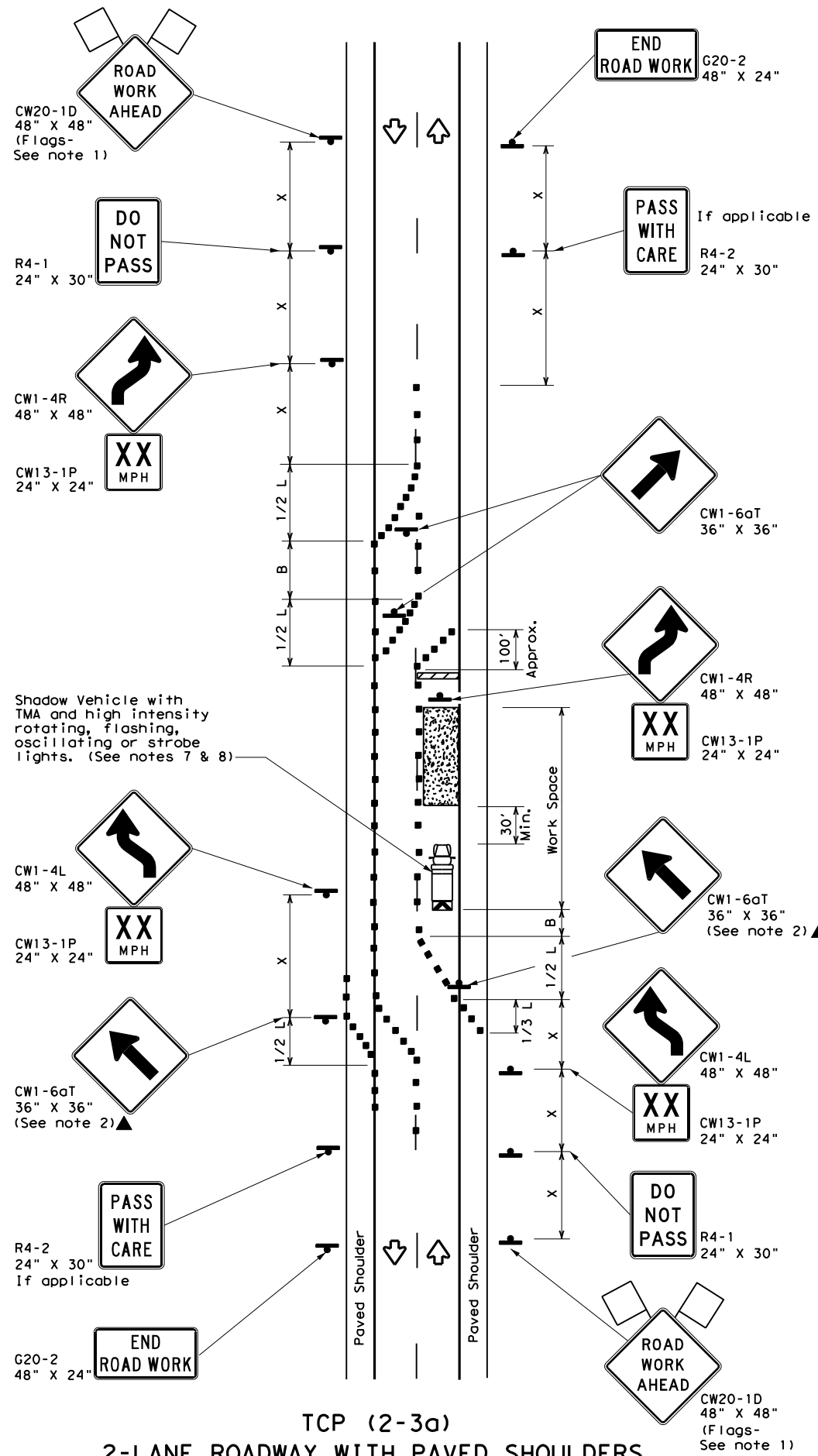
**TCP (2-2) - 18**

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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8-95 3-03	DIST	COUNTY	SHEET NO.	
1-97 2-12	ODA	VARIOUS	33	
4-98 2-18				

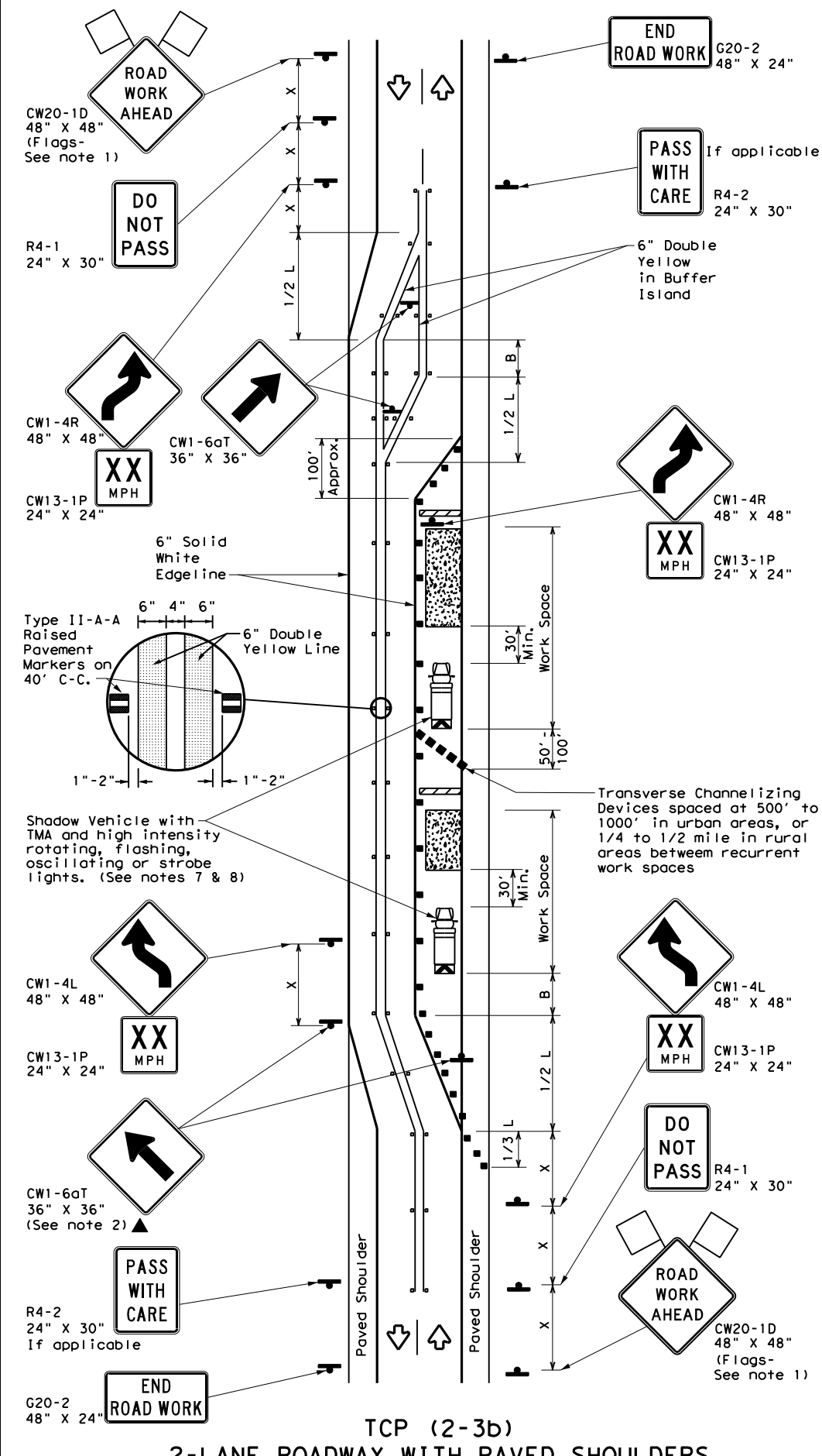
DATE:  
FILE:

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DATE: FILE:



TCP (2-3a)  
2-LANE ROADWAY WITH PAVED SHOULDERS  
ONE LANE CLOSED  
ADEQUATE FIELD OF VIEW



TCP (2-3b)  
2-LANE ROADWAY WITH PAVED SHOULDERS  
ONE LANE CLOSED  
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS <sup>2</sup> / 60	150'	165'	180'	30'	70'	120'	90'
35		205'	225'	245'	35'	80'	160'	120'
40	L = WS	265'	295'	320'	40'	90'	240'	155'
45		350'	395'	440'	45'	100'	320'	195'
50	L = WS	450'	505'	560'	50'	110'	400'	240'
55		550'	605'	660'	55'	120'	500'	295'
60	L = WS	650'	715'	780'	60'	130'	600'	350'
65		750'	825'	900'	65'	140'	800'	410'
70	L = WS	850'	925'	1000'	70'	150'	900'	475'
75		950'	1025'	1100'	75'	160'	1000'	540'

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
			✓	✓
				TCP (2-3b) ONLY

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
  - Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
  - The R4-1 "DO NOT PASS," R4-2 "PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
  - Conflicting pavement marking shall be removed for long term projects.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-3a)**
- Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

Traffic Safety Division Standard

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

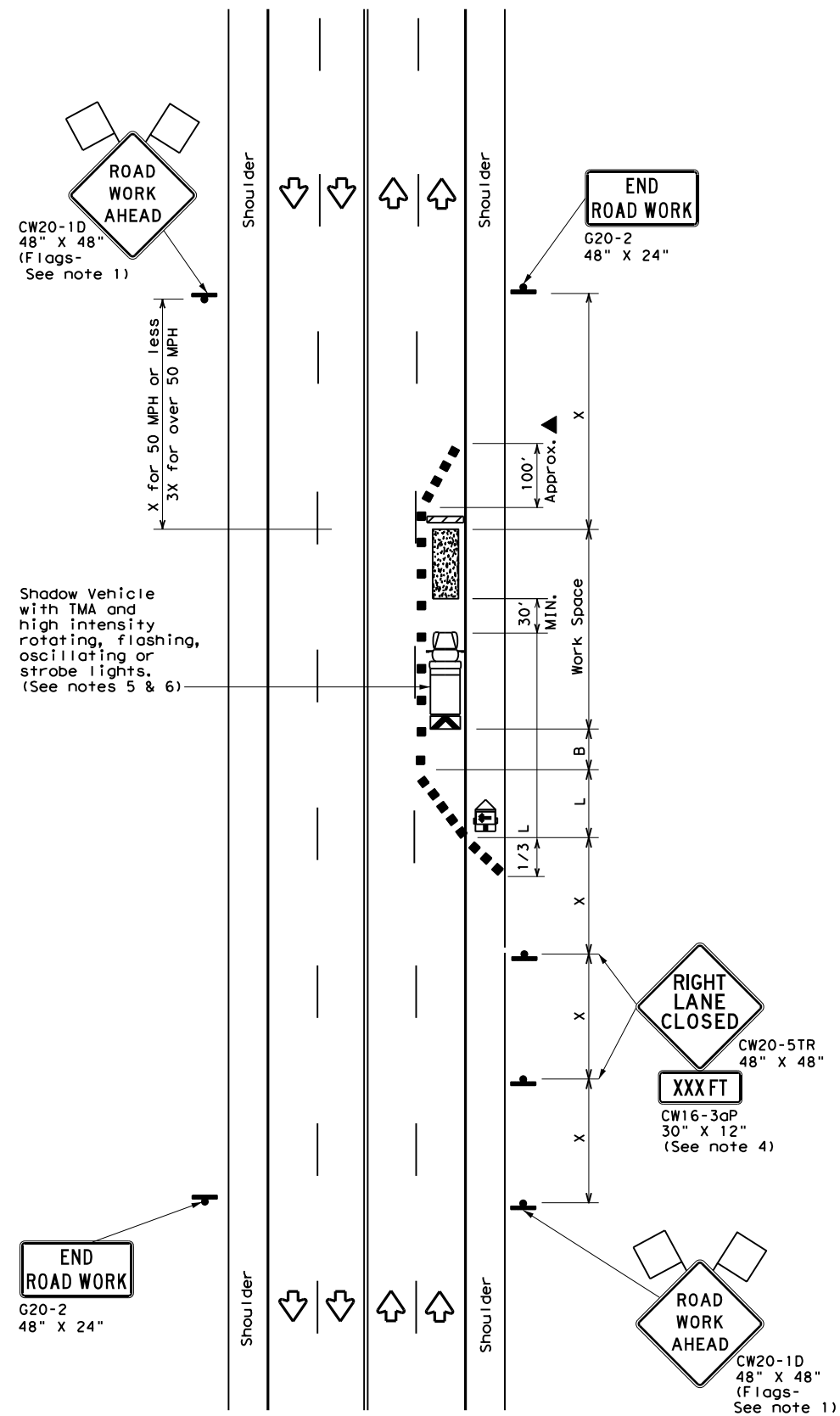
**TCP (2-3) -23**

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© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	00	282	VARIOUS
12-85 4-98 2-18	DIST	COUNTY	SHEET NO.	
8-95 3-03 4-23	ODA	VARIOUS	34	
1-97 2-12				

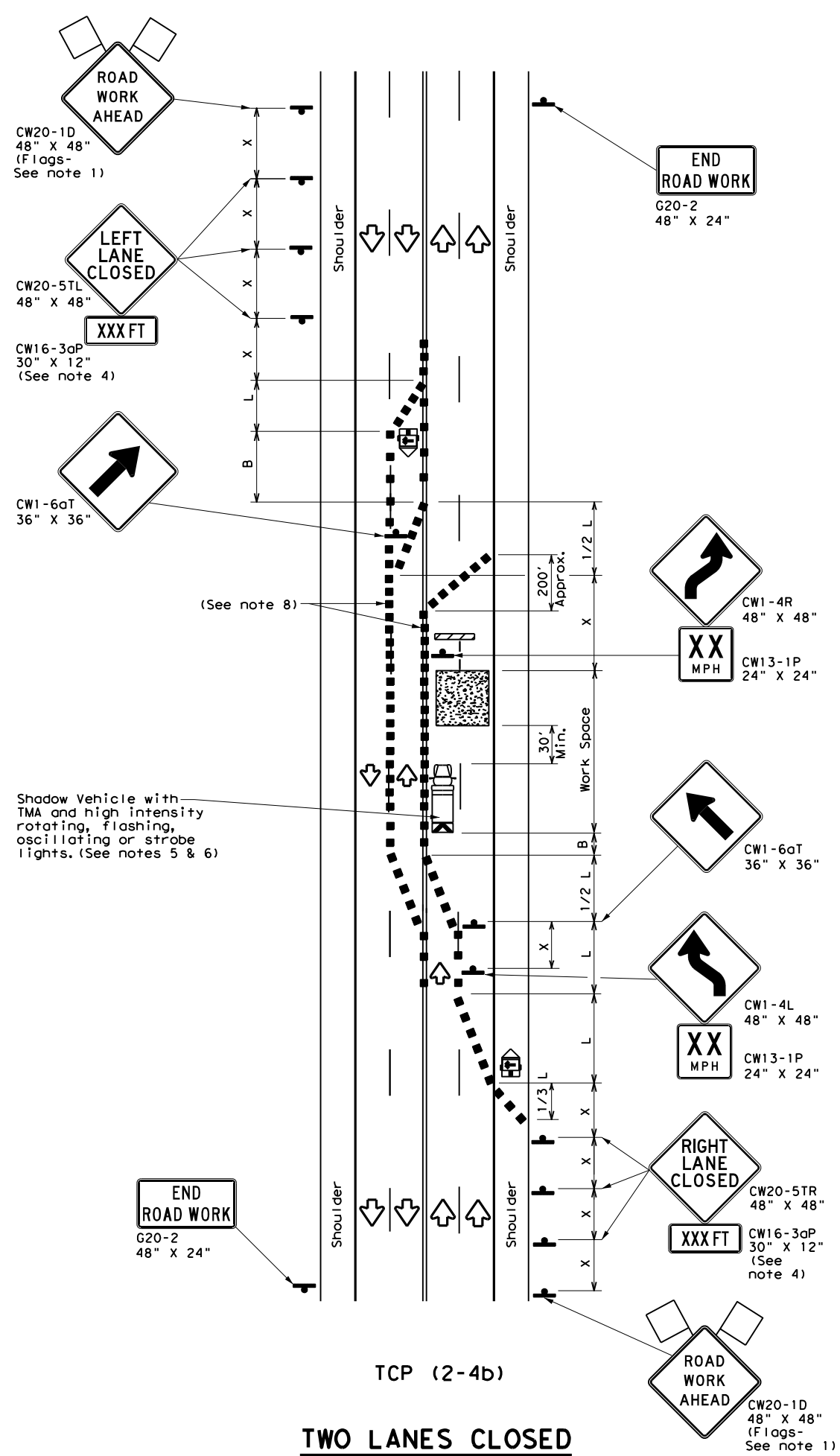
163

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DATE: FILE:



TCP (2-4a)  
**ONE LANE CLOSED**



TCP (2-4b)  
**TWO LANES CLOSED**

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

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

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

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

**GENERAL NOTES**

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
- For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

**TCP (2-4a)**

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

**TCP (2-4b)**

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

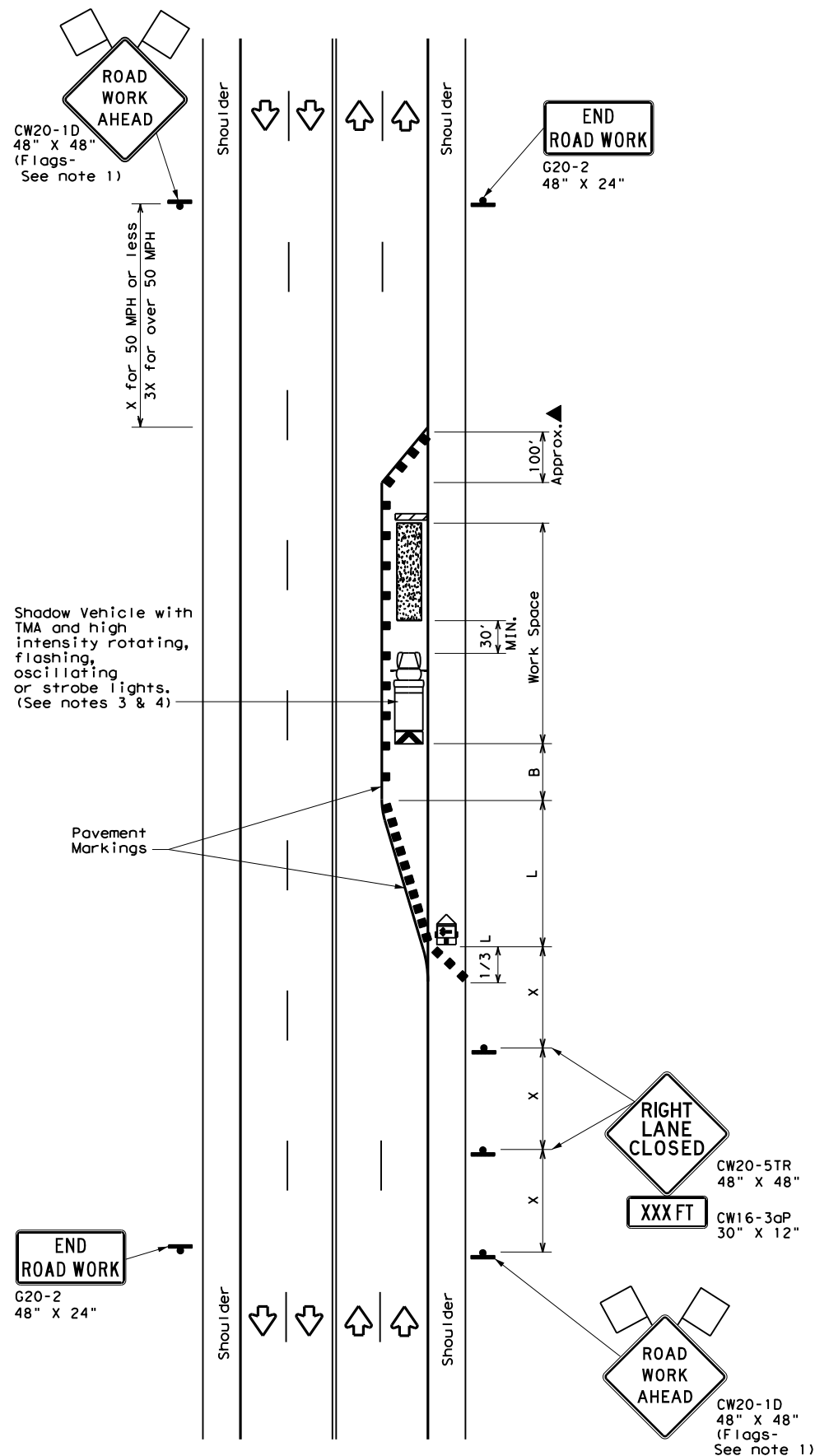
**TRAFFIC CONTROL PLAN  
 LANE CLOSURES ON MULTILANE  
 CONVENTIONAL ROADS**

**TCP (2-4) - 18**

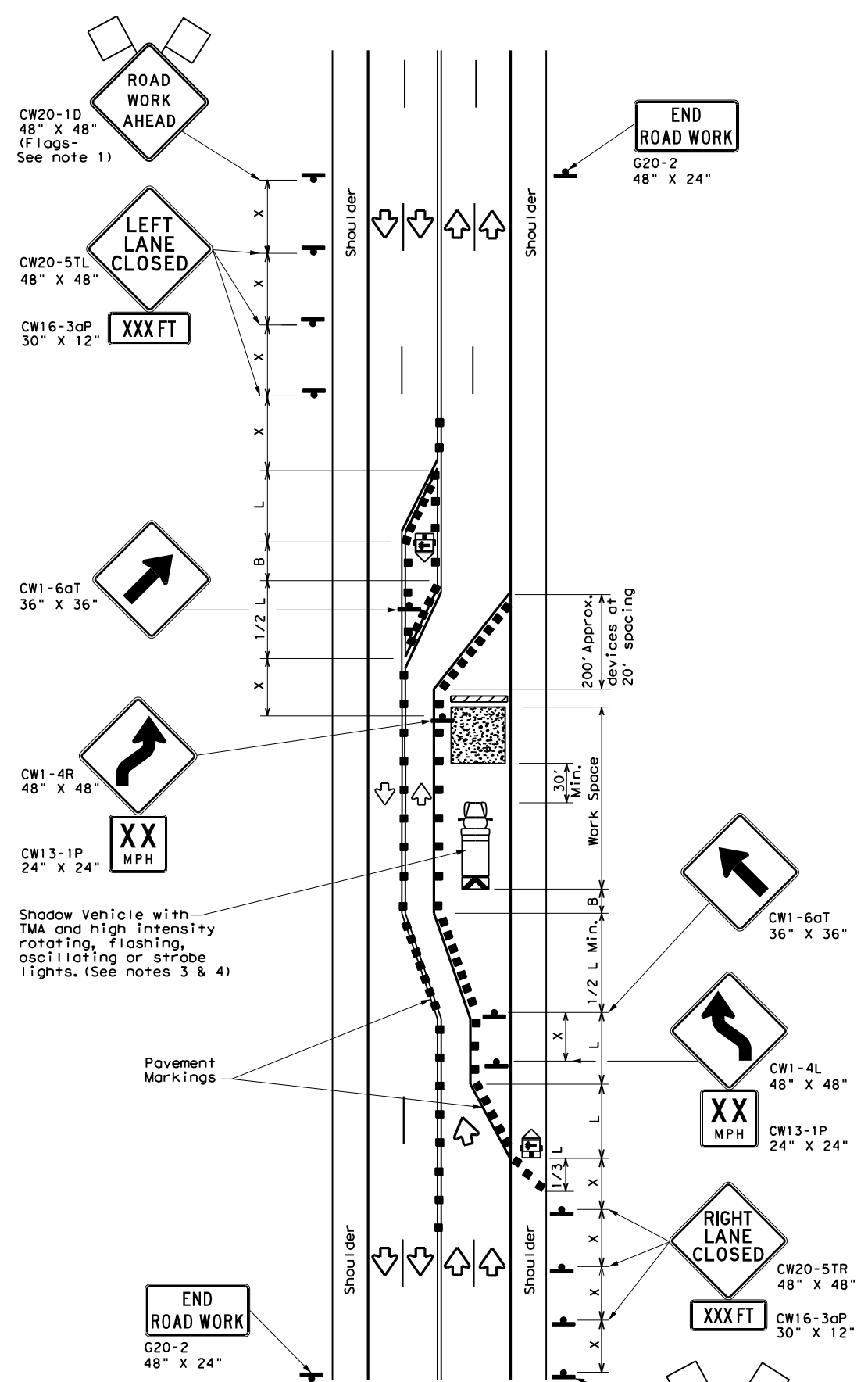
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	00	282	VARIOUS
8-95 3-03	DIST	COUNTY	SHEET NO.	
1-97 2-12	ODA	VARIOUS	35	
4-98 2-18				

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DATE: FILE:



TCP (2-5a)  
**ONE LANE CLOSED**



TCP (2-5b)  
**TWO LANES CLOSED**

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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
  - The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.
- TCP (2-5a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-5b)**
- Conflicting pavement markings shall be removed for long-term projects.

Texas Department of Transportation  
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN**  
**LONG TERM LANE CLOSURES**  
**MULTILANE CONVENTIONAL RDS.**

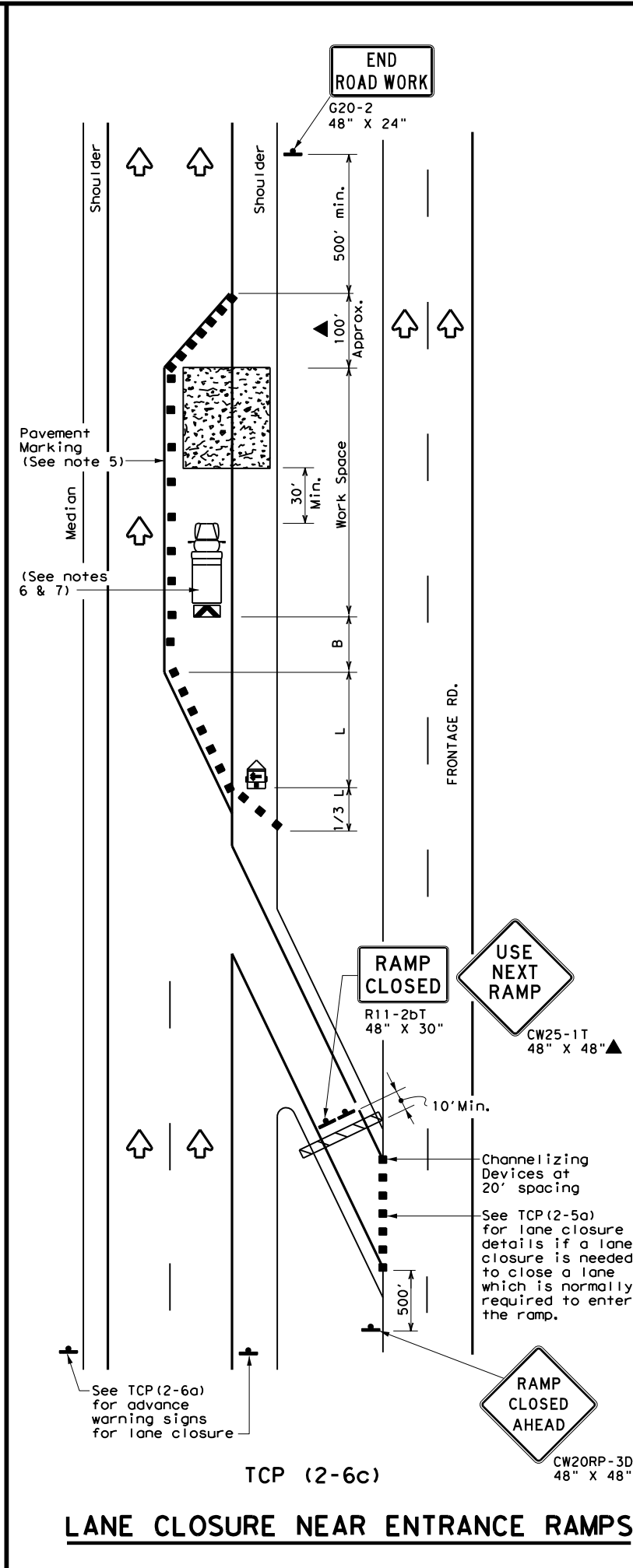
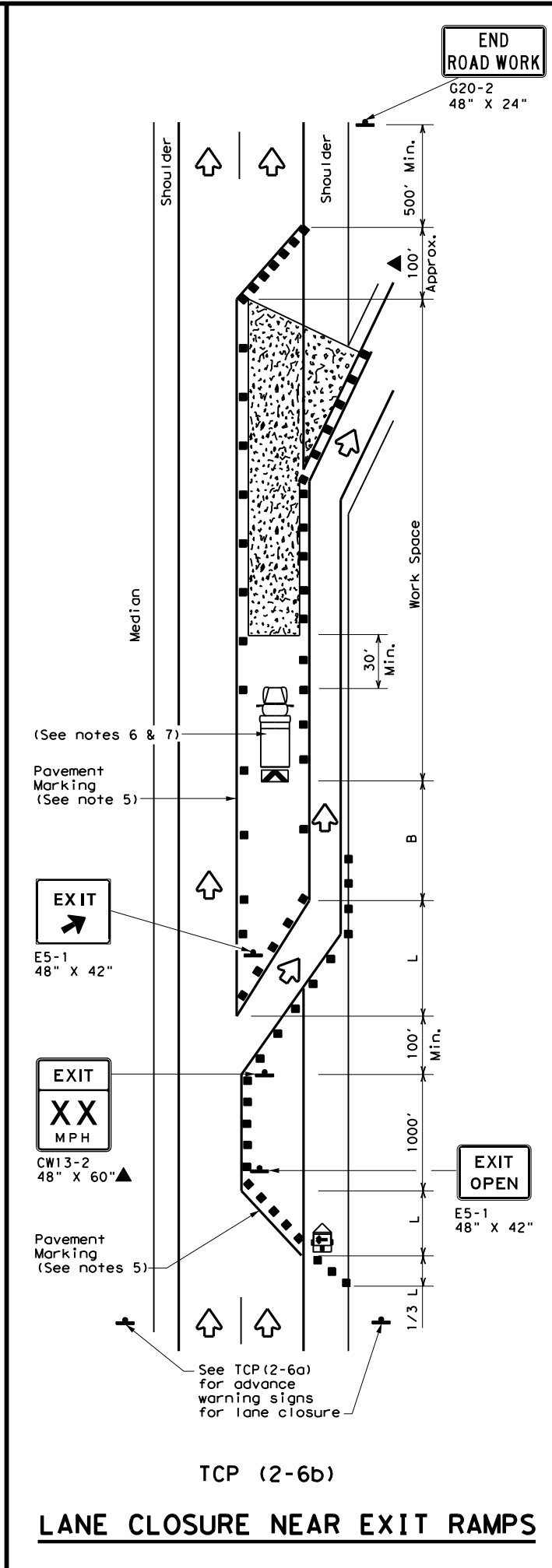
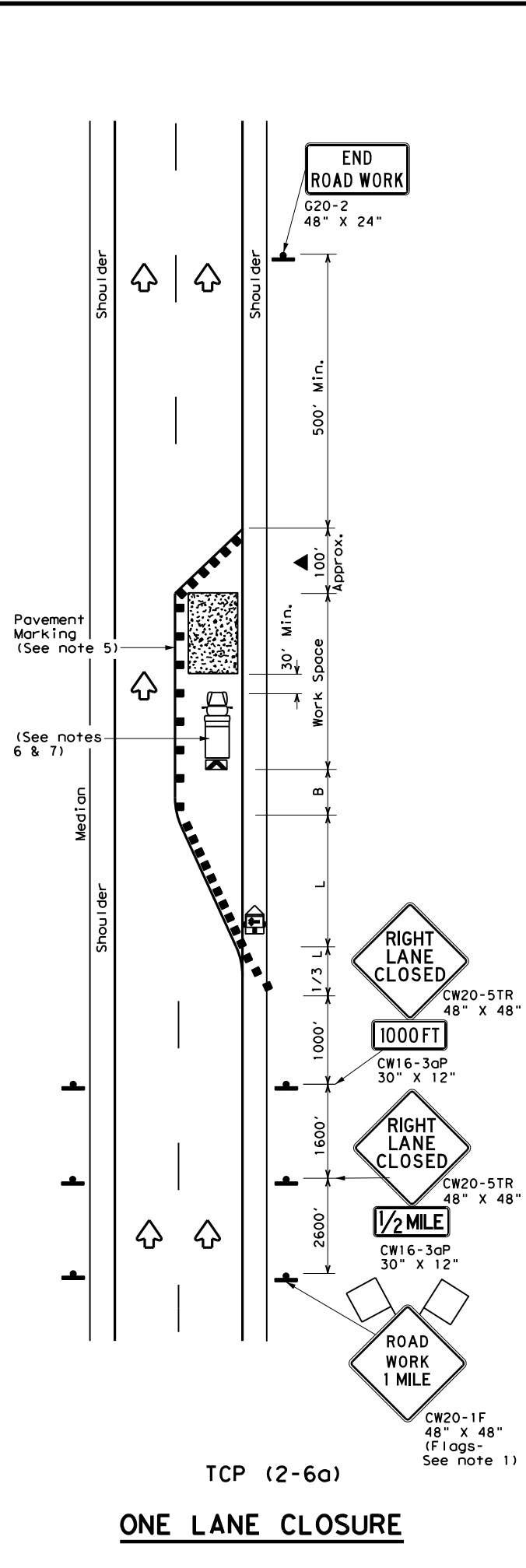
**TCP (2-5) - 18**

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© TxDOT December 1985	REVISIONS	CONT. SECT. JOB HIGHWAY
8-95 2-12	0906 00	282 VARIOUS
1-97 3-03	DIST. COUNTY	SHEET NO.
4-98 2-18	ODA VARIOUS	36

165

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DATE:  
FILE:



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

Texas Department of Transportation  
 Traffic Operations Division Standard

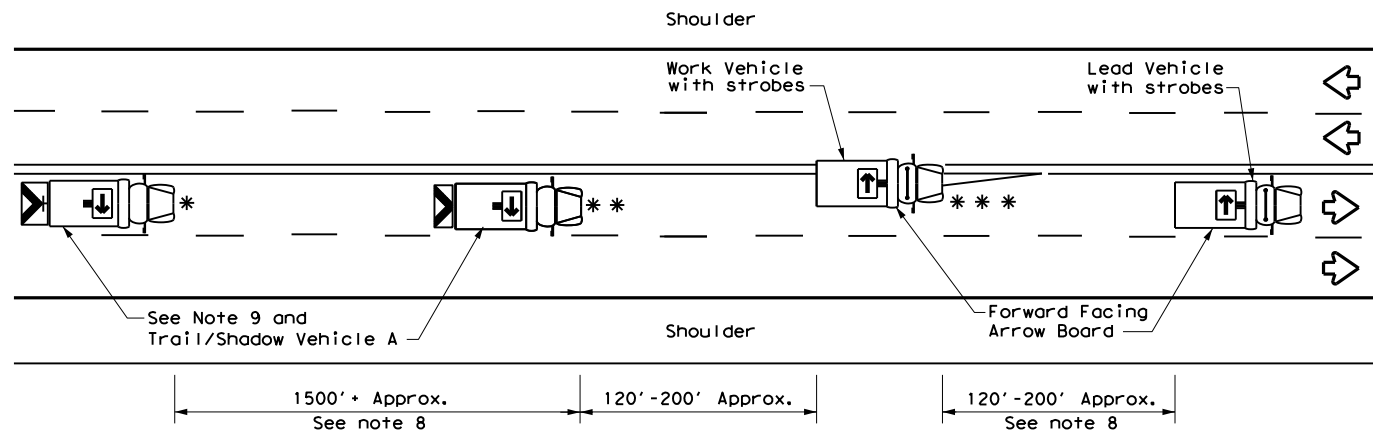
**TRAFFIC CONTROL PLAN  
LANE CLOSURES ON  
DIVIDED HIGHWAYS**

**TCP (2-6) - 18**

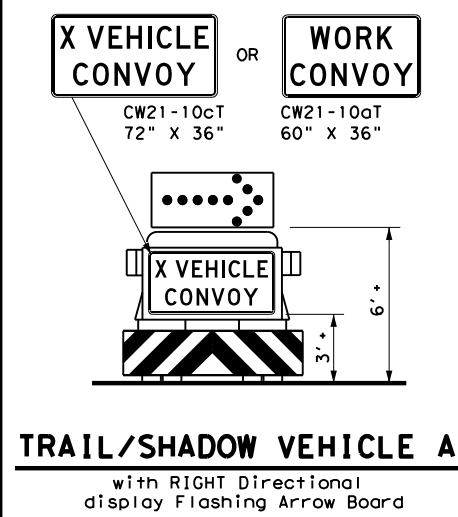
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906	00	282	VARIOUS
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	ODA	VARIOUS	37	
1-97 2-18				

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**TCP (3-1a)**  
**UNDIVIDED MULTILANE ROADWAY**



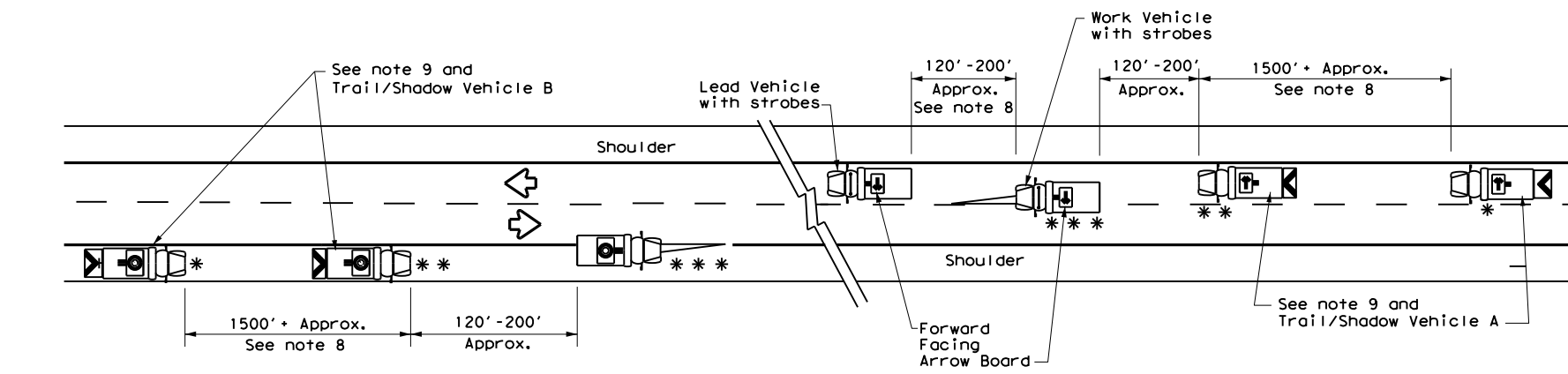
**TRAIL/SHADOW VEHICLE A**  
with RIGHT Directional display Flashing Arrow Board

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

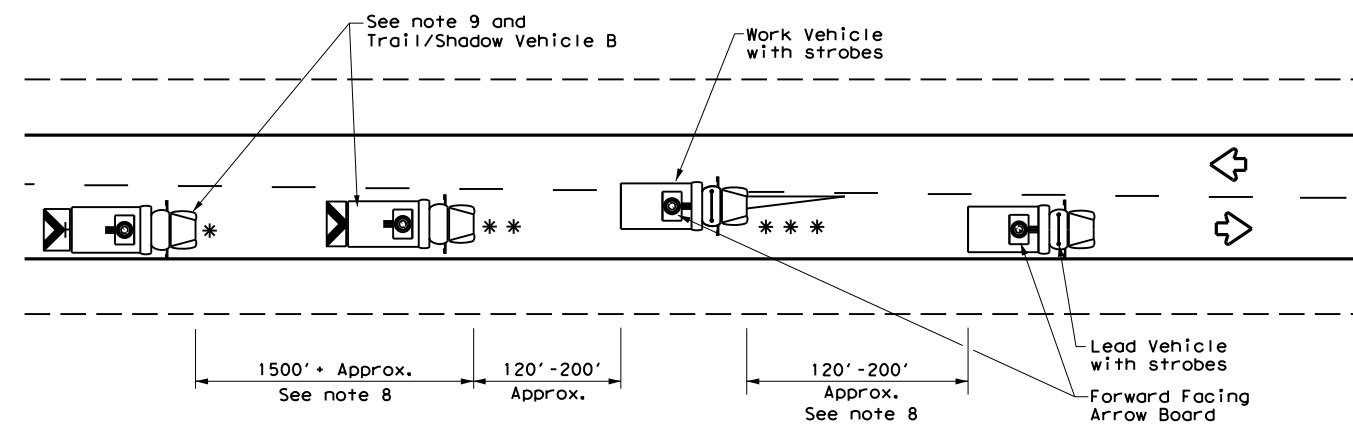
TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
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**GENERAL NOTES**

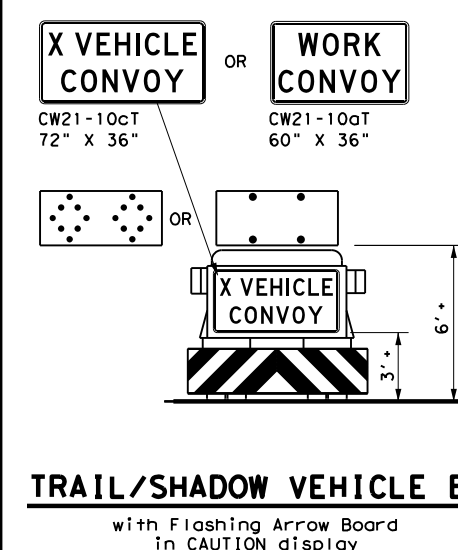
1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic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



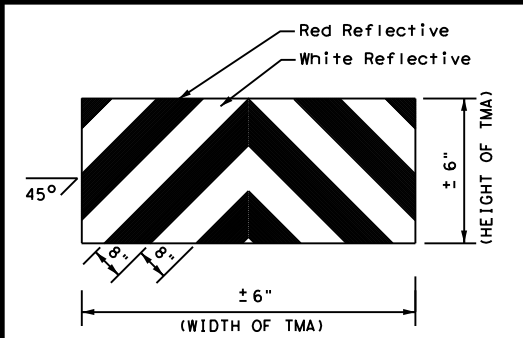
**TCP (3-1b)**  
**TWO-WAY ROADWAY WITH PAVED SHOULDERS**



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



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



**STRIPING FOR TMA**

**TRAFFIC CONTROL PLAN  
MOBILE OPERATIONS  
UNDIVIDED HIGHWAYS**

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

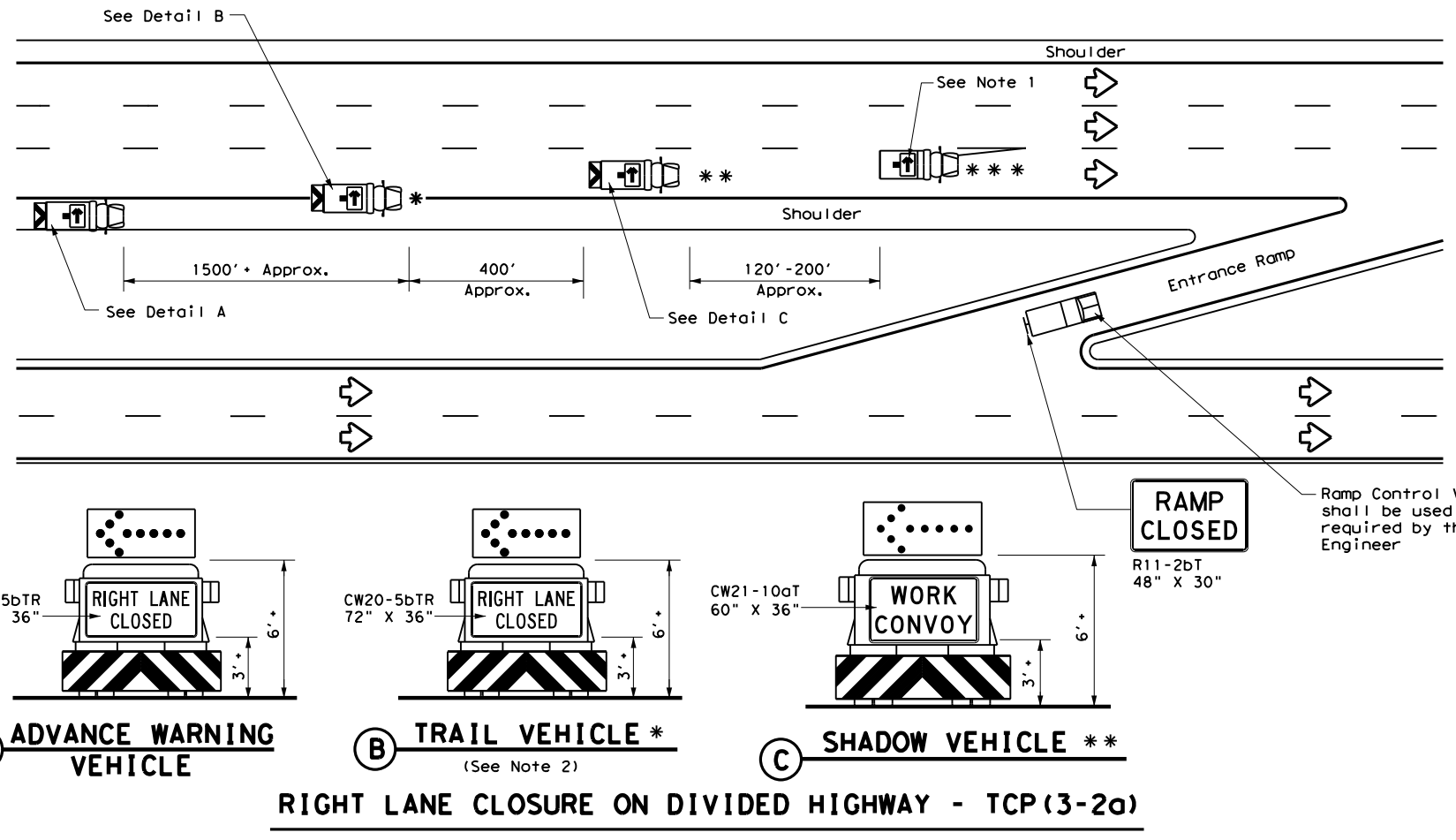
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© TxDOT December 1985	CON: 0906	SECT: 00	JOB: 282	HIGHWAY: VARIOUS
REVISIONS				
2-94 4-98				
8-95 7-13				
1-97				
	DIST: ODA	COUNTY: VARIOUS	SHEET NO. 38	

DATE: FILE:

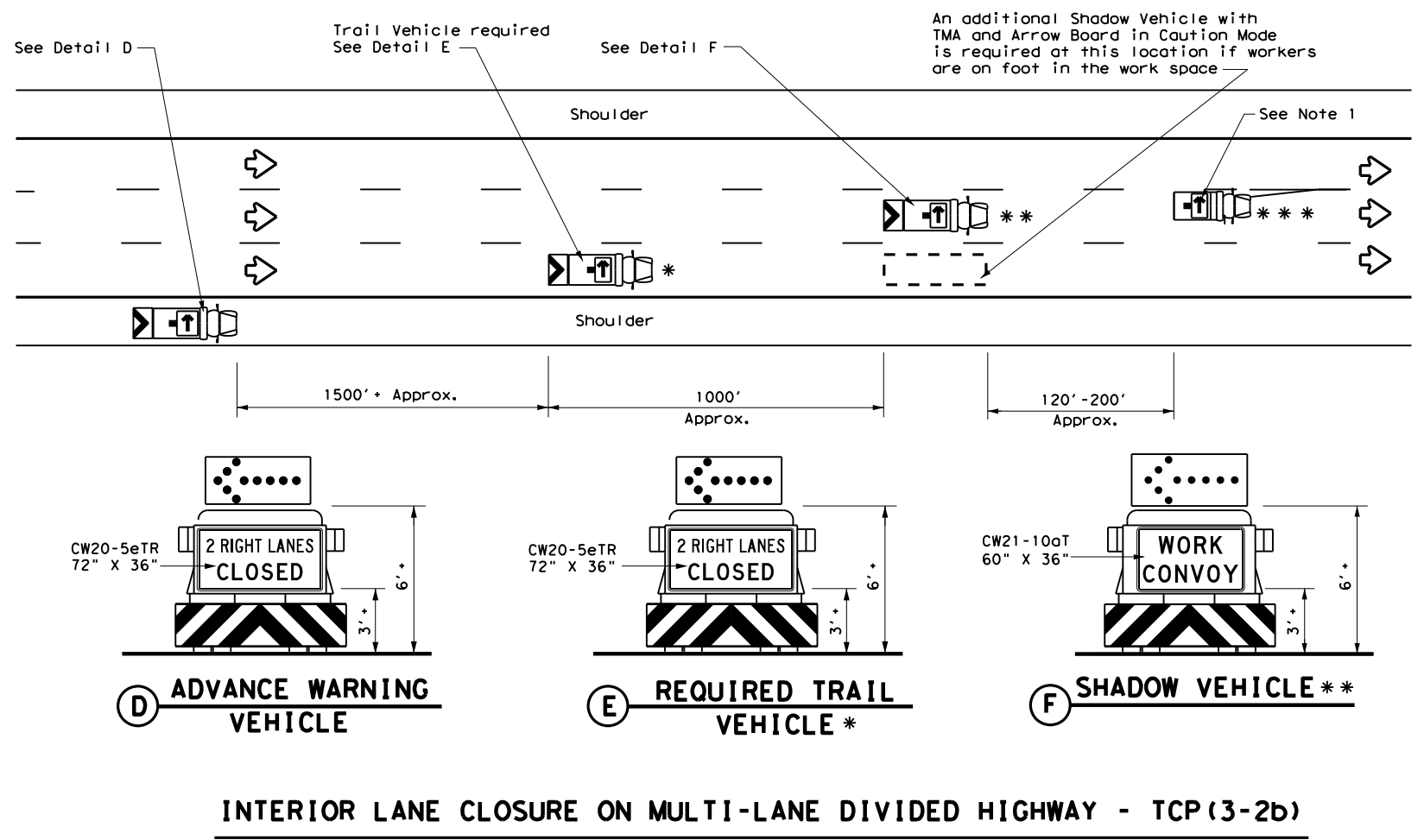


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DATE: FILE:



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



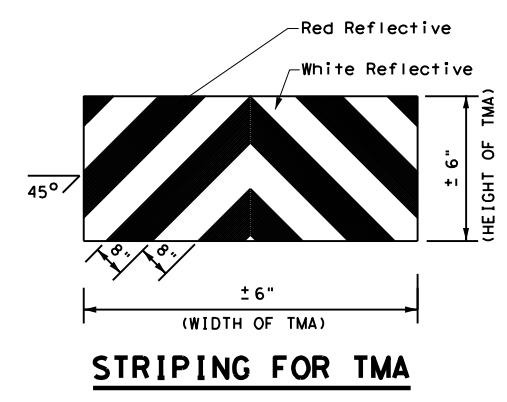
**INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)**

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**GENERAL NOTES**

- ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
- For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
- The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
- The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
- Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
- Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE may vary according to terrain, work activity and other factors.
- Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
- The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board, must be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
- Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
- The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
- Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
- The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.

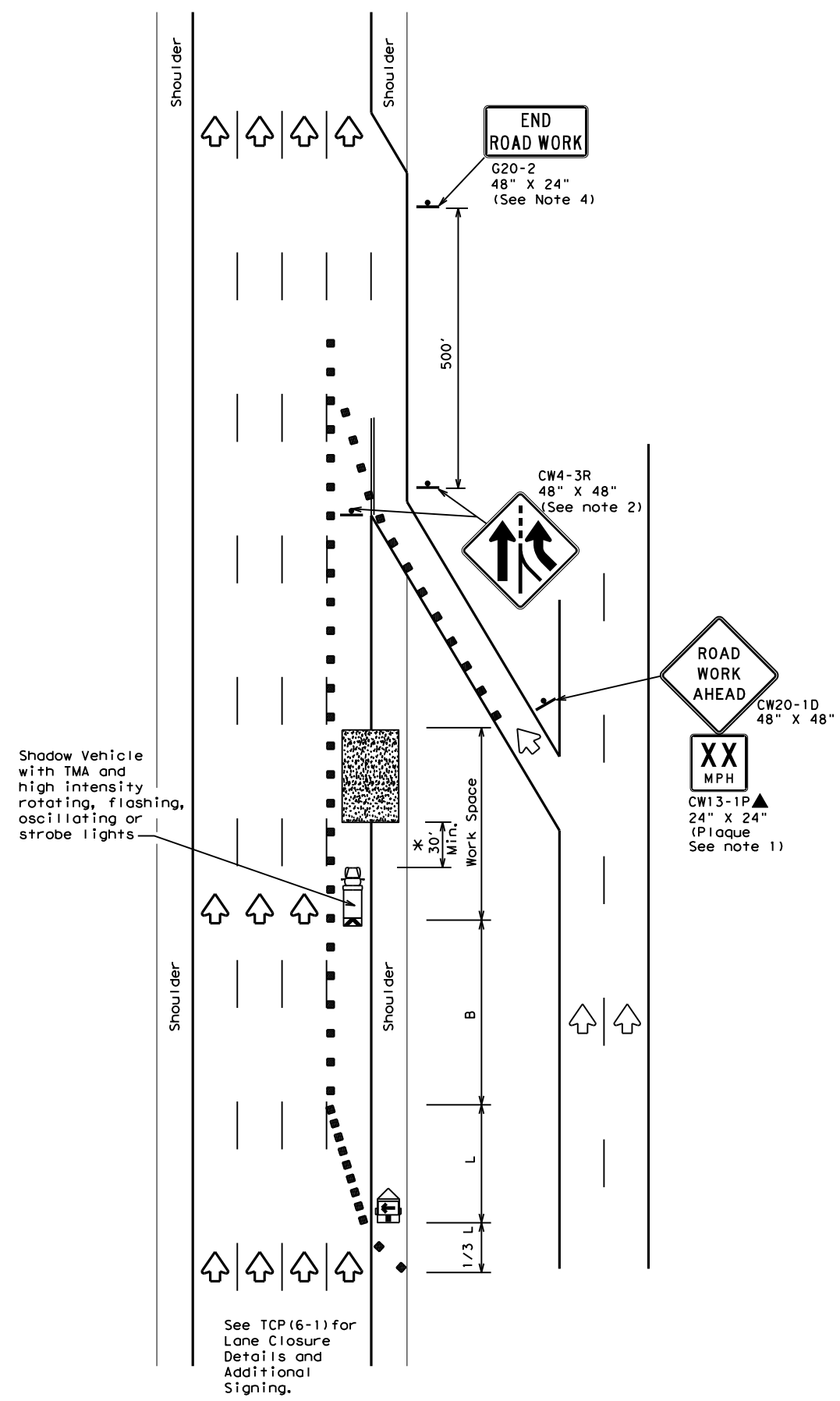


**STRIPING FOR TMA**

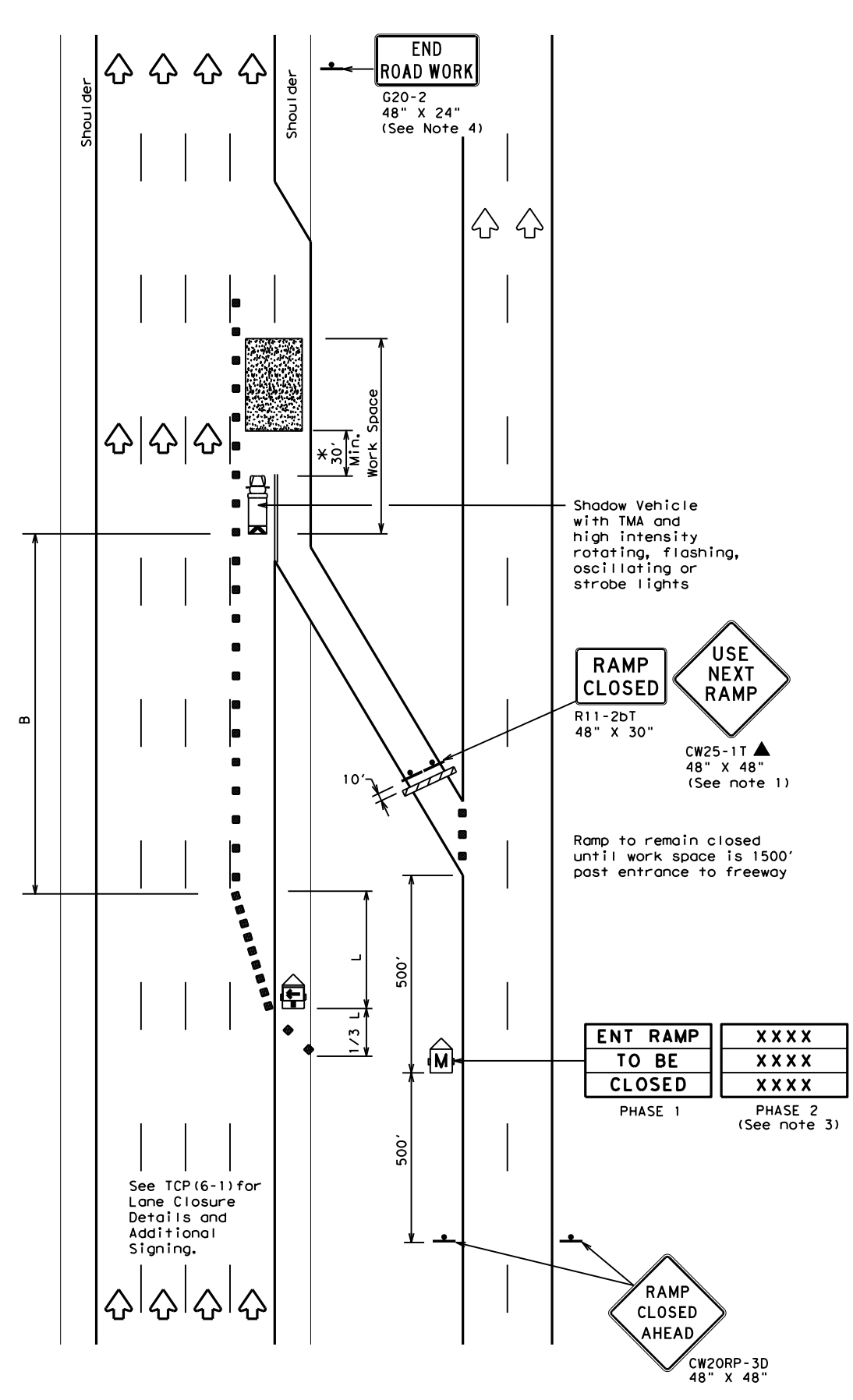
		<b>Traffic Operations Division Standard</b>	
<b>TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS</b>			
<b>TCP(3-2)-13</b>			
FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT December 1985	CON: 0906	SECT: 00	JOB: 282
REVISIONS		HIGHWAY	
2-94 4-98	DIST: COUNTY		SHEET NO.
8-95 7-13	ODA: VARIOUS		39
1-97			

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DATE:  
FILE:



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 mainlane 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.



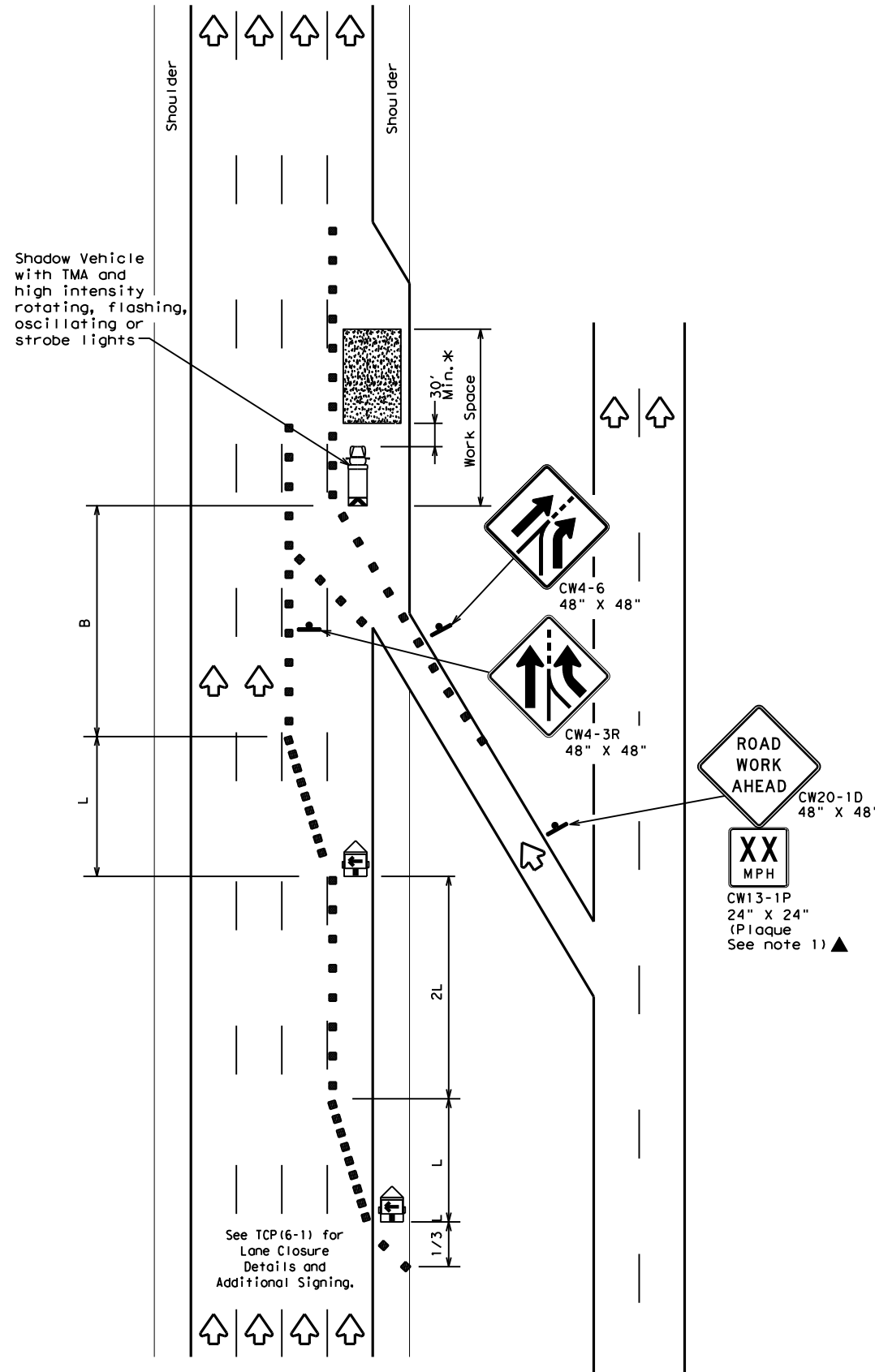
**TRAFFIC CONTROL PLAN**  
**WORK AREA NEAR RAMP**

**TCP (6-2) - 12**

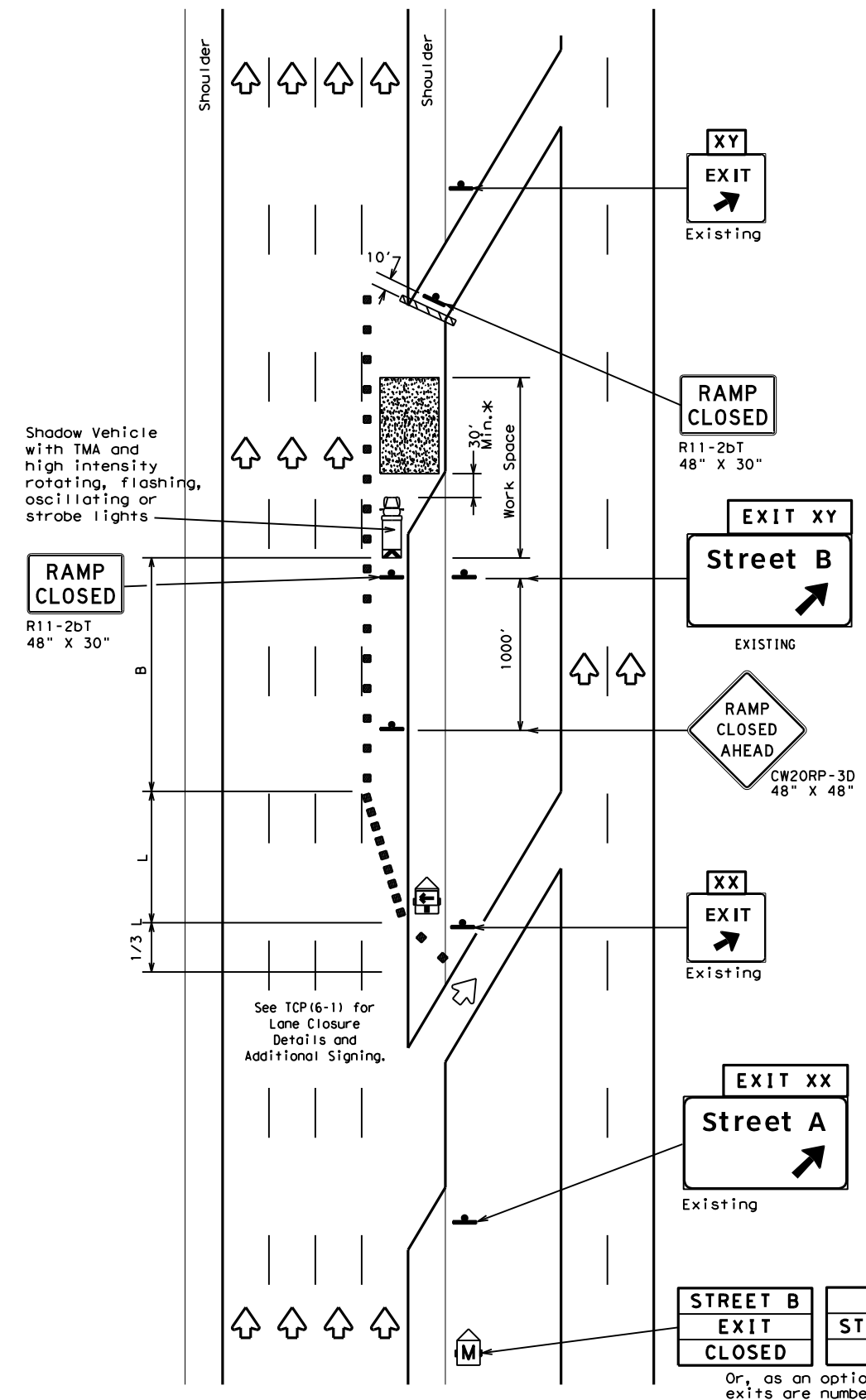
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©TxDOT	February 1994	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0906 00	282	VARIOUS					
1-97	8-98			DIST	COUNTY	SHEET NO.			
4-98	8-12	ODA	VARIOUS			40			

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DATE: FILE:



TCP (6-3a)  
ENTRANCE RAMP OPEN



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

STREET B  
EXIT  
CLOSED

USE  
STREET A  
EXIT

Or, as an option when  
exits are numbered

EXIT XY  
CLOSED

USE  
EXIT XX

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

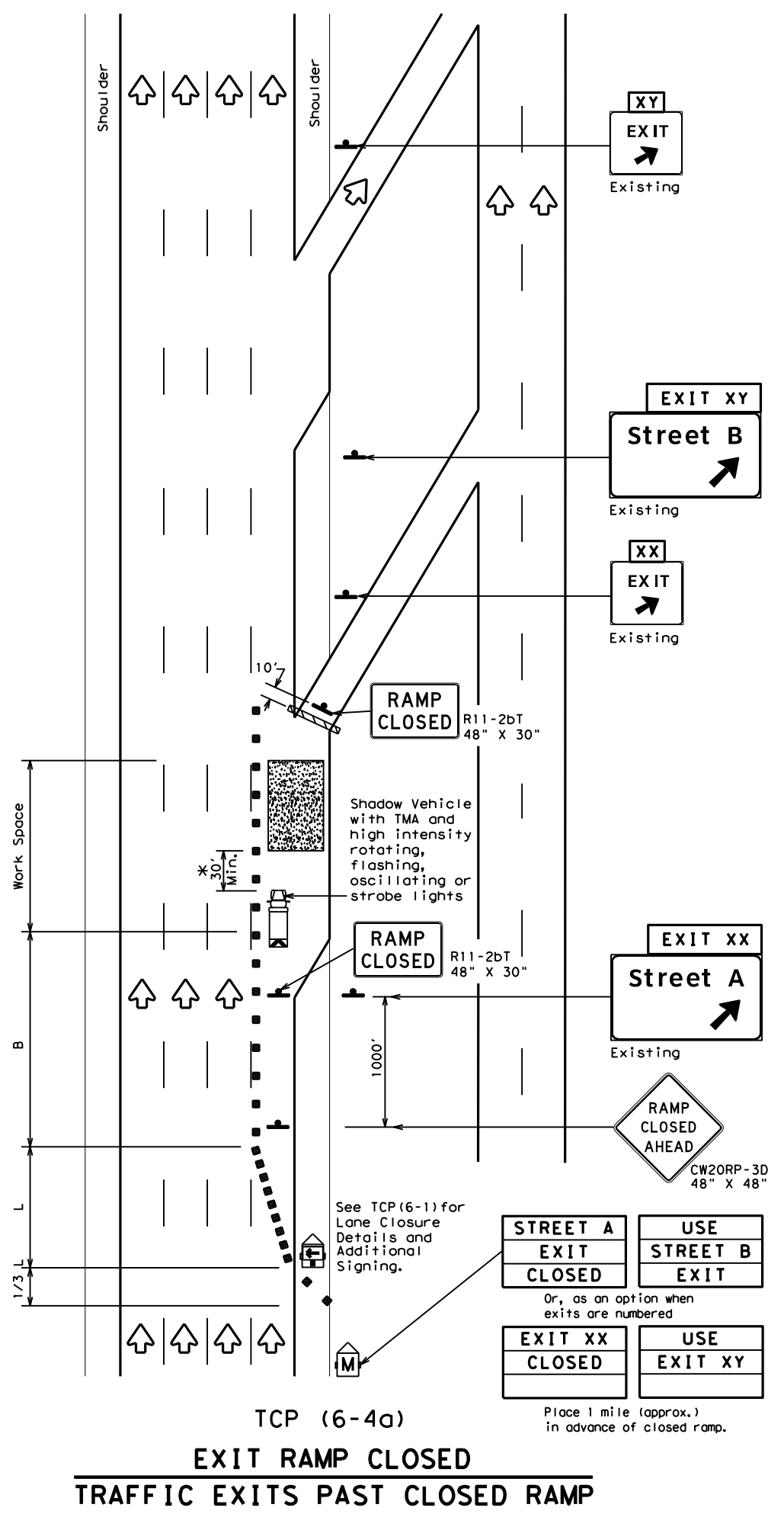
TRAFFIC CONTROL PLAN  
WORK AREA BEYOND RAMP

TCP (6-3) - 12

FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906 00		282	VARIOUS
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	ODA	VARIOUS	41	

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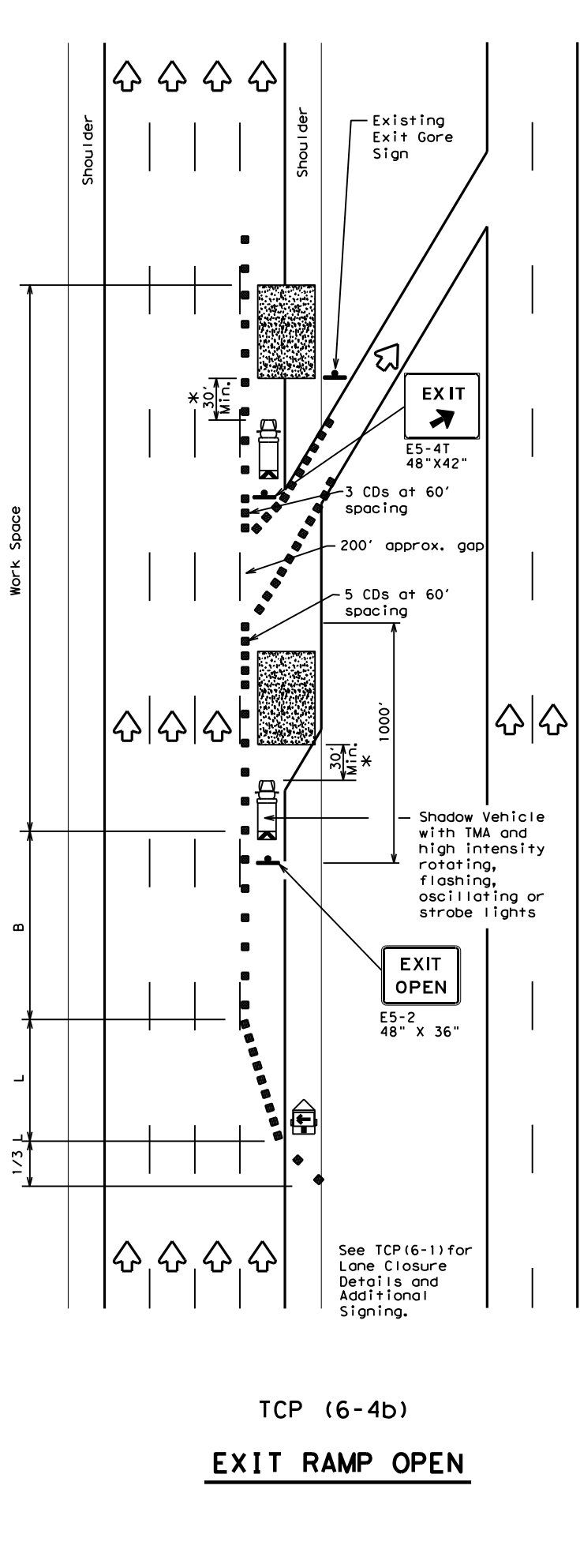


**TCP (6-4a)**  
**EXIT RAMP CLOSED**  
**TRAFFIC EXITS PAST CLOSED RAMP**

STREET A EXIT CLOSED	USE STREET B EXIT
EXIT XX CLOSED	USE EXIT XY

Or, as an option when exits are numbered

Place 1 mile (approx.) in advance of closed ramp.



**TCP (6-4b)**  
**EXIT RAMP OPEN**

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		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.

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

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

Texas Department of Transportation  
Traffic Operations Division Standard

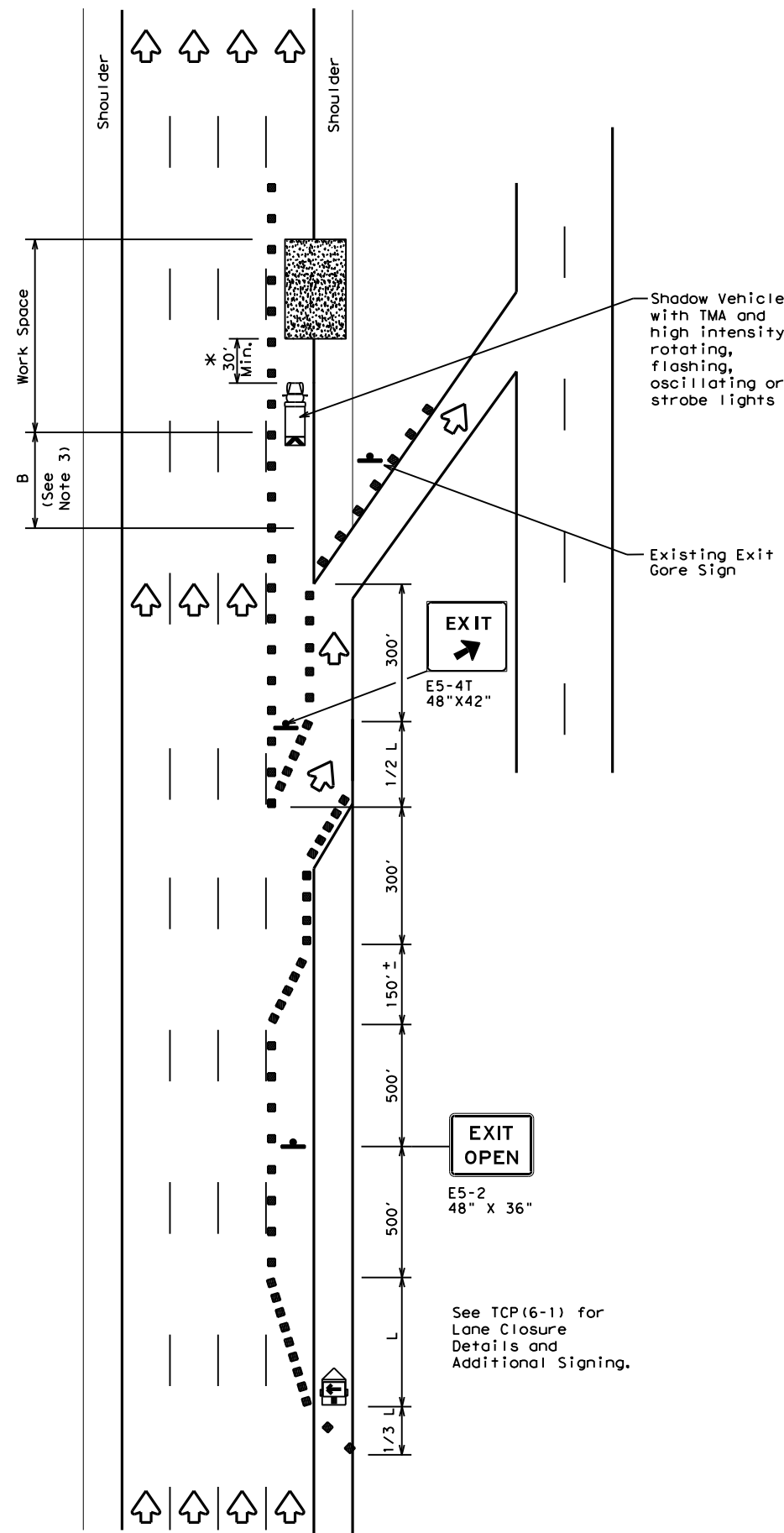
**TRAFFIC CONTROL PLAN**  
**WORK AREA AT EXIT RAMP**

**TCP (6-4) - 12**

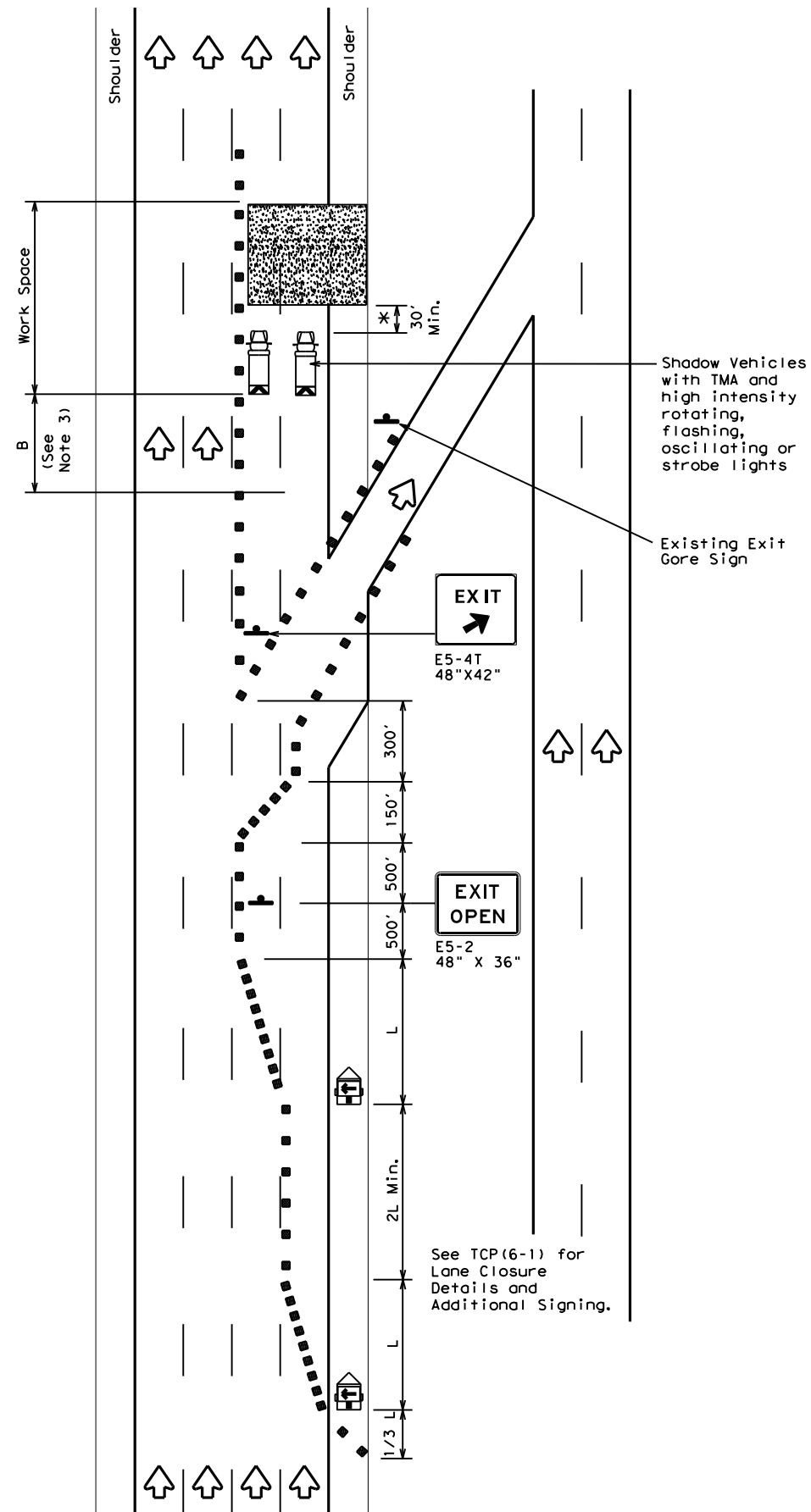
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©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906 00		282	VARIOUS
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	ODA	VARIOUS		42

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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.



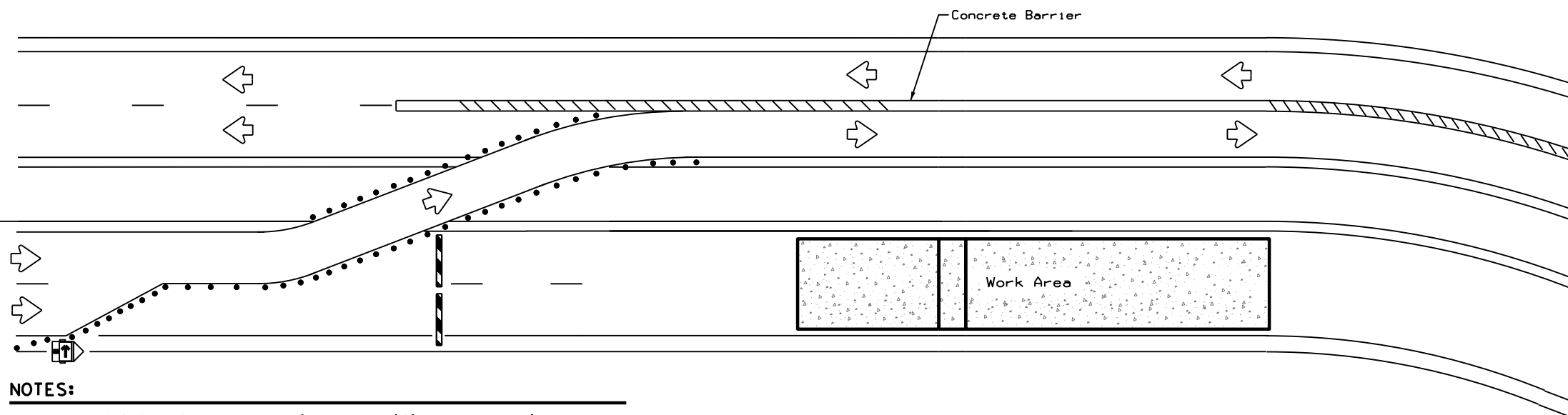
**TRAFFIC CONTROL PLAN  
WORK AREA BEYOND EXIT RAMP**

**TCP (6-5) - 12**

FILE: tcp6-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0906 00		282	VARIOUS
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	ODA	VARIOUS		43

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

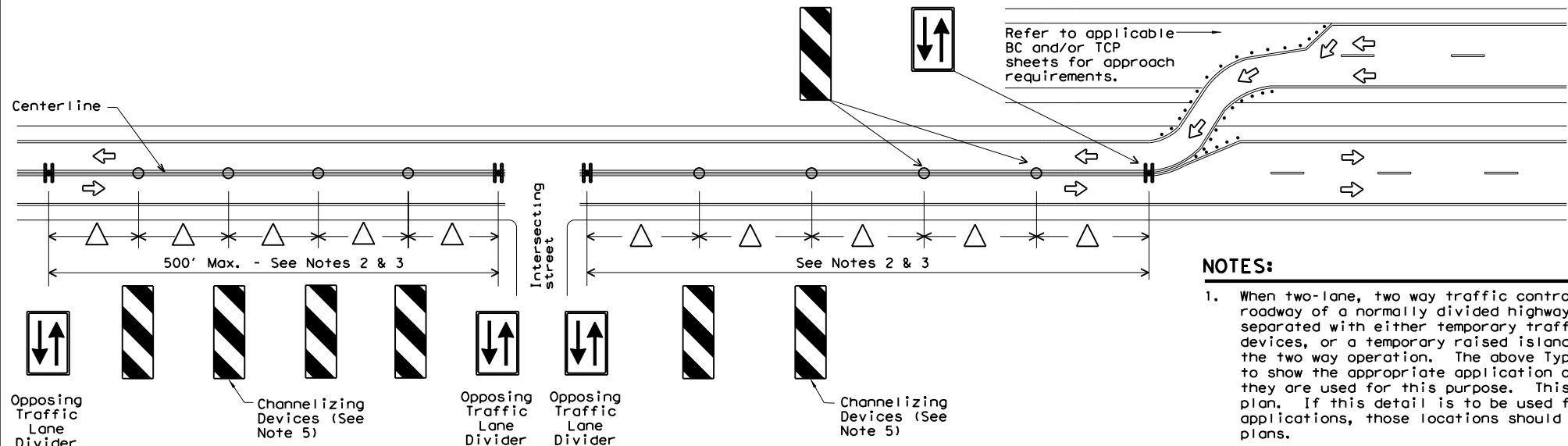
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the Compliant Work Zone Traffic Control Devices List (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:  
<http://www.txdot.gov/business/resources/producer-list.html>

**NOTES:**

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

**BARRIER DELINEATION WITH MODULAR GLARE SCREENS**



**NOTES:**

- When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.
- Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.
- Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
- Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
- Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

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



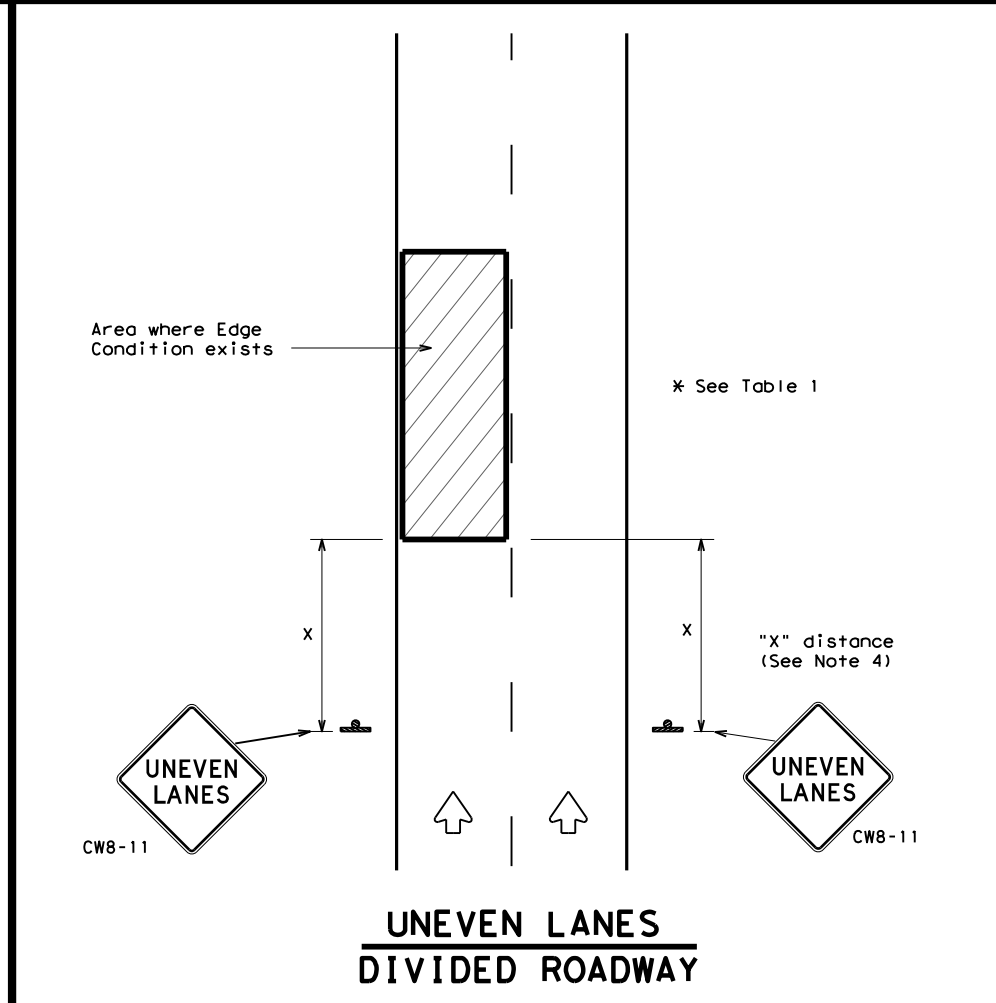
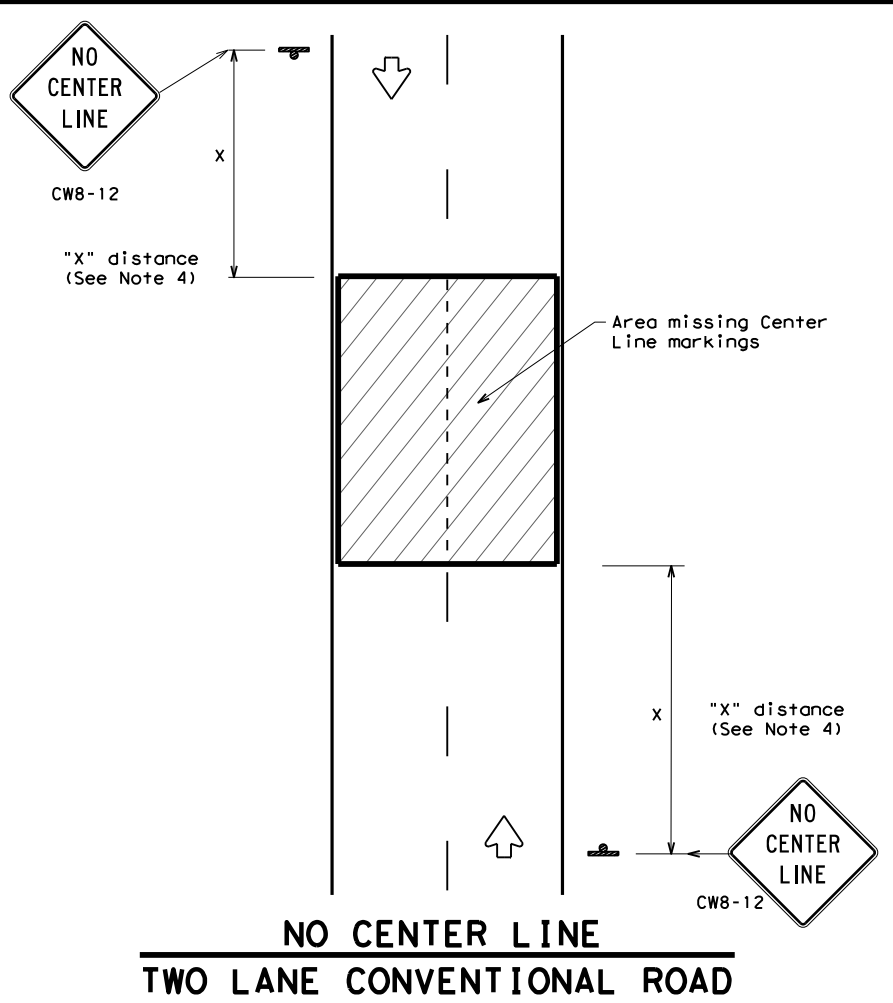
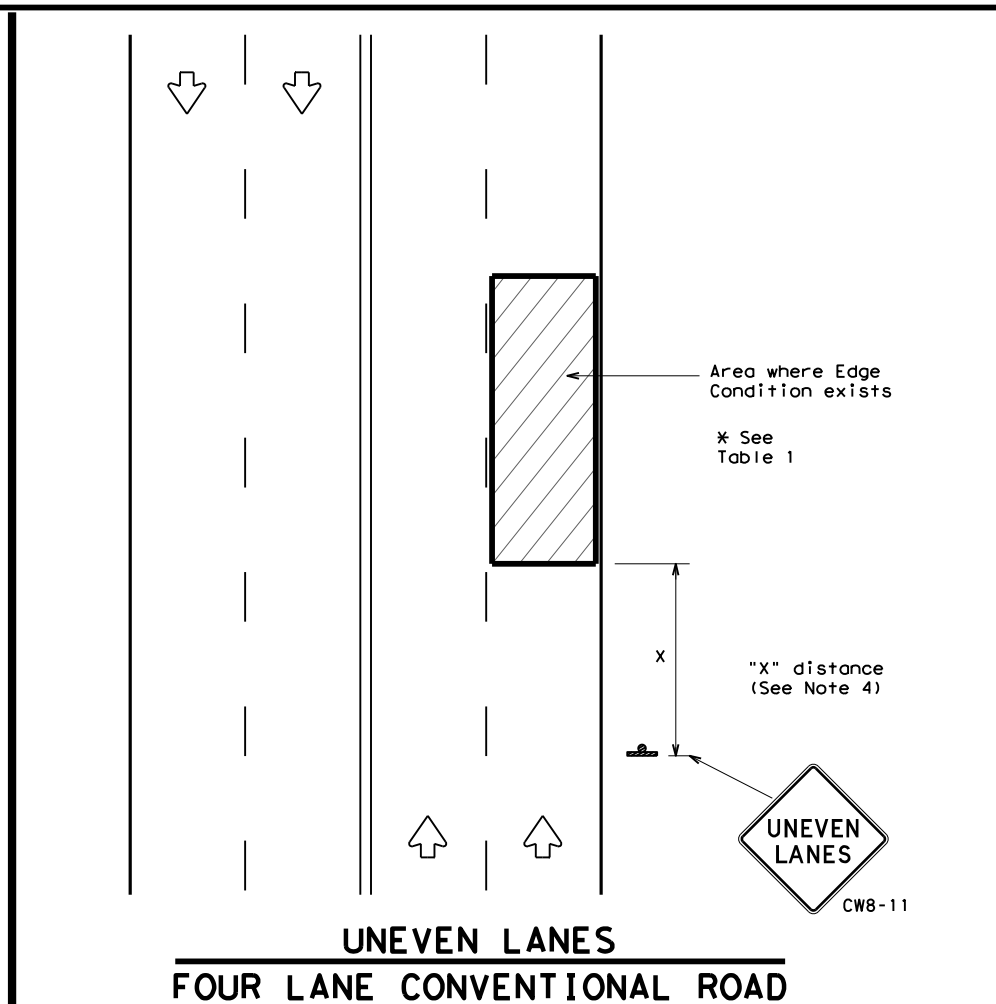
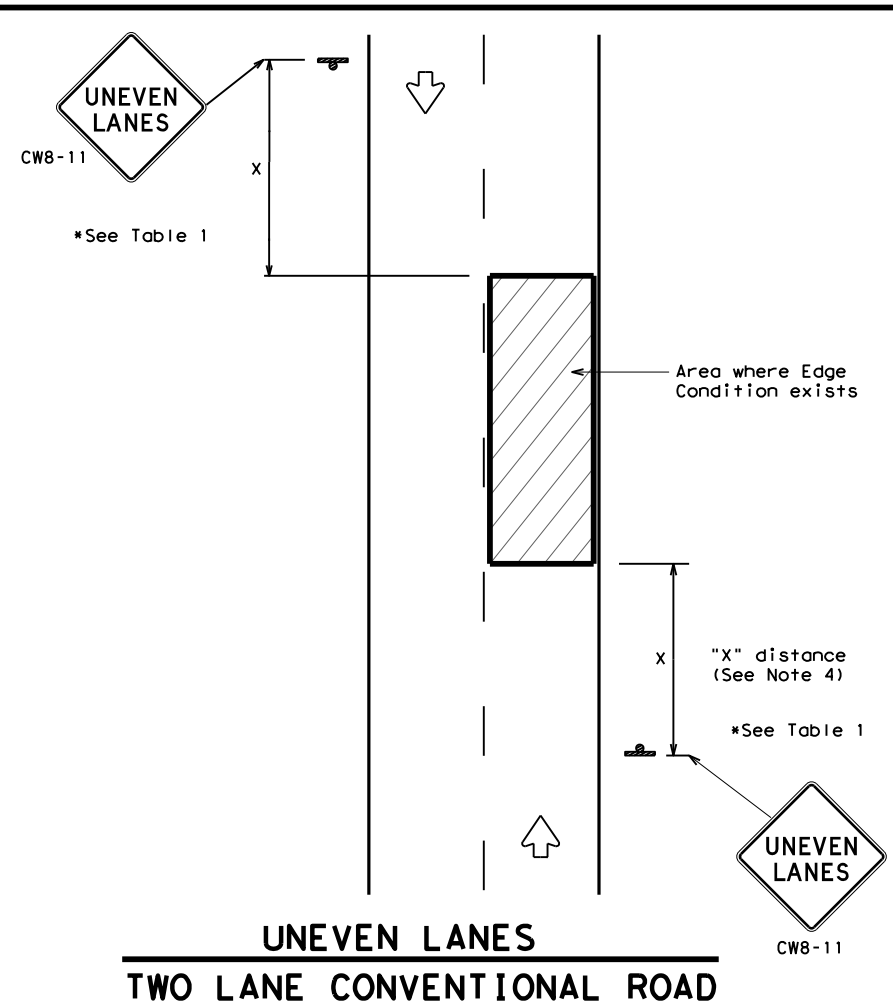
**TRAFFIC CONTROL PLAN TYPICAL DETAILS**

**WZ(TD) - 17**

FILE:	wz1d-17.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CR:	TxDOT
© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY				
4-98	2-17	REVISIONS	0906 00	282	VARIOUS				
3-03		DIST		COUNTY	SHEET NO.				
7-13		ODA		VARIOUS	44				

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

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B <sub>FL</sub> OR TYPE C <sub>FL</sub> SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

**GENERAL NOTES**

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

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

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

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



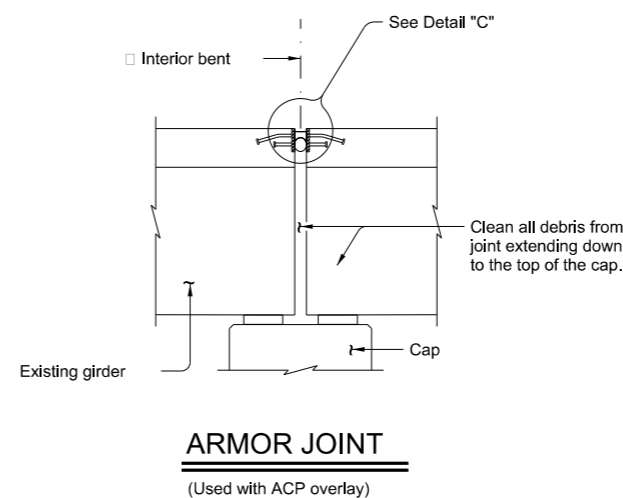
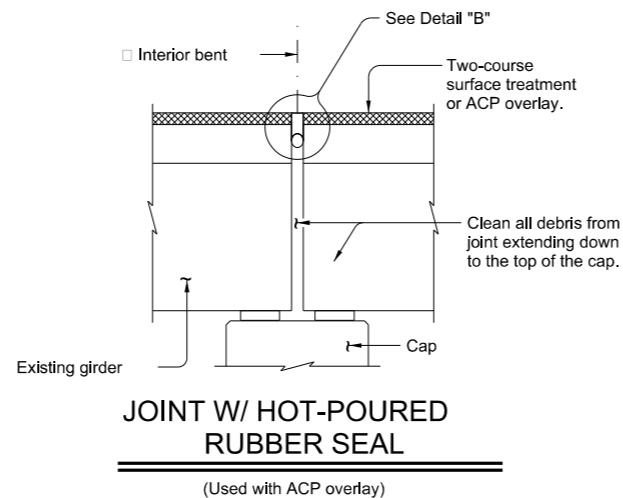
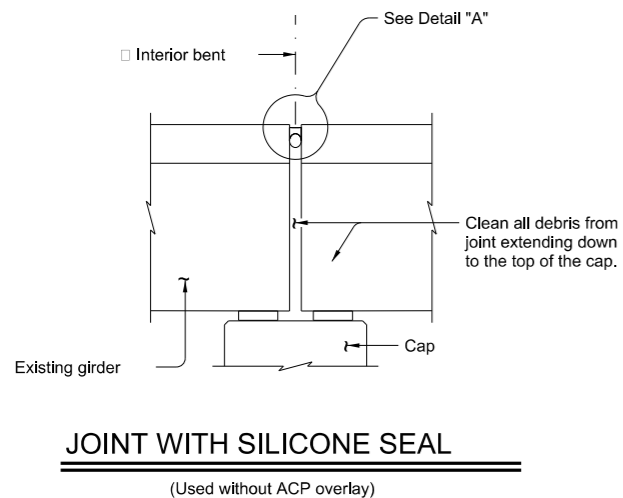
**SIGNING FOR UNEVEN LANES**

**WZ (UL) - 13**

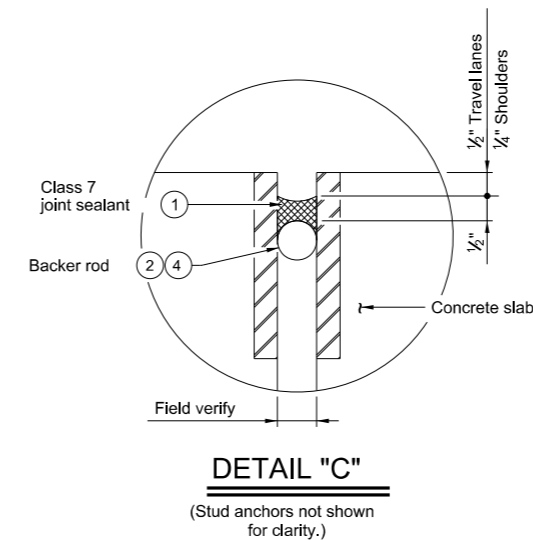
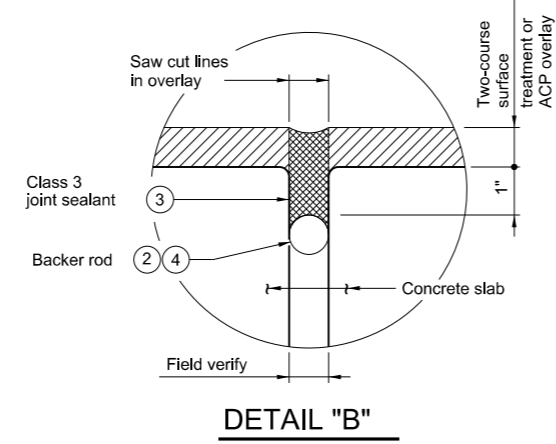
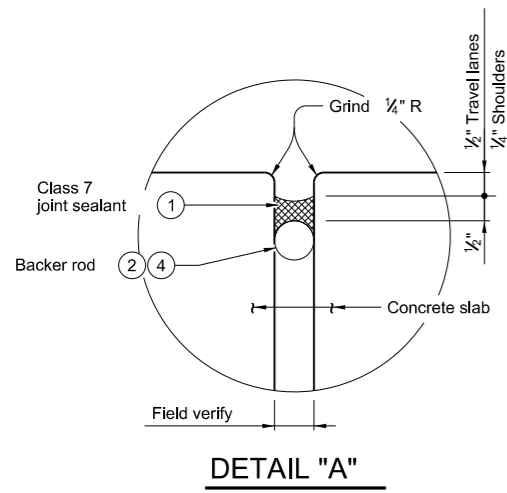
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REVISIONS	0906 00		282	VARIOUS
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	ODA	VARIOUS		45

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**NOTE TO DESIGNER:**  
 This sheet is to be used as a guide for cleaning and sealing existing bridge joints. Additionally, it includes procedures for minor repair work to existing header type joints. Details with appropriate notes from this guide should be prepared for the specific application. Particular care should be taken in identifying existing joint conditions and properly sizing joint sealant systems.  
 Use Item 438-6002 when specifying Class 3 joint sealant.  
 Use Item 438-6004 when specifying Class 7 joint sealant.  
 Use Item 438-6011 when specifying precompressed foam and silicone seal.  
 These sheets may not be used without modification. In all cases, details and notes not required must be crossed out or eliminated, and the phrase "Not to be used as a standard" must be removed. Sheet must be signed and sealed.



- 1) Use Class 7 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers." Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
- 2) Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
- 3) Use Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers". Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
- 4) Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

**PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH SILICONE SEAL:**

- 1) Clean joint opening of all existing expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.
- 2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.
- 3) Place backer rod into joint opening 1" below the top of concrete. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.
- 4) Seal the joint opening with a Class 7 joint sealant. Recess seal 1/2" below top of concrete in travel lanes and 1/4" below top of concrete in shoulders.

**PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH HOT-POURED RUBBER SEAL:**

- 1) Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a 1/2" minimum joint opening or match the existing joint opening. Clean joint opening of all old expansion materials/devices, bituminous materials, dirt, grease and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.
- 2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.
- 3) Place backer rod into joint opening 1" below the top of concrete. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.
- 4) Seal the joint opening with a Class 3 joint sealant. Seal flush to the top of the asphaltic concrete pavement.

**PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS:**

- 1) Remove existing seal, if present. Clean joint opening of all dirt and other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.
- 2) Abrasive blast clean existing steel surface where silicone seal is to be placed.
- 3) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.
- 4) Place backer rod into joint opening 1" below the top of concrete. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.
- 5) Seal the joint opening with a Class 7 joint sealant. Recess seal 1/2" below top of concrete in travel lanes and 1/4" below top of concrete in shoulders.

**GENERAL NOTES:**

Cleaning existing joint opening (full depth) of all debris, providing and placing backer rod, saw-cutting asphalt overlay, and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the linear foot. Obtain approval for all tools, equipment, materials and techniques proposed to clean and seal the joint. Provide Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in asphalt overlay. Provide Class 7 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in concrete. Extend sealant up into rail or curb 3 inches on low side or sides of deck. If the Class 7 joint sealant cannot be effectively placed in the vertical position, a Class 4 joint sealant compatible with the Class 7 joint sealant is allowed for the extension of the seal into the curb or rail. Prepare surfaces where sealant is to be placed in accordance with Manufacturer's specifications.

SHEET 1 OF 3



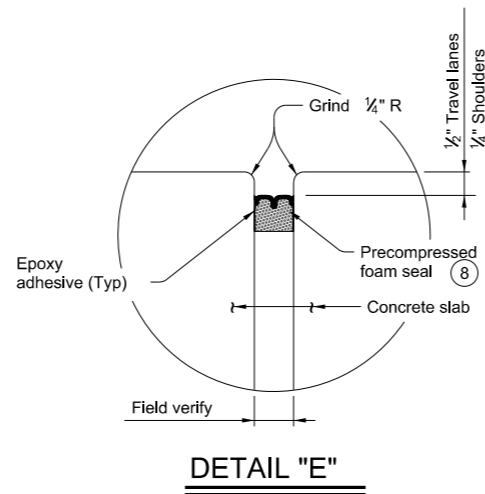
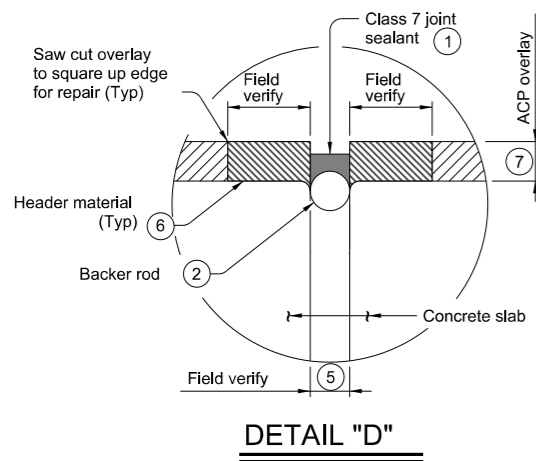
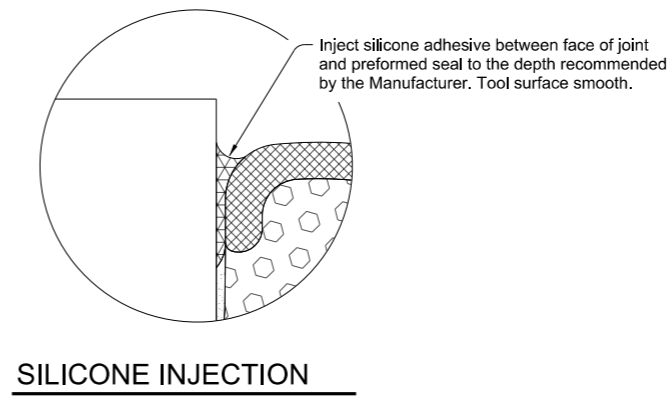
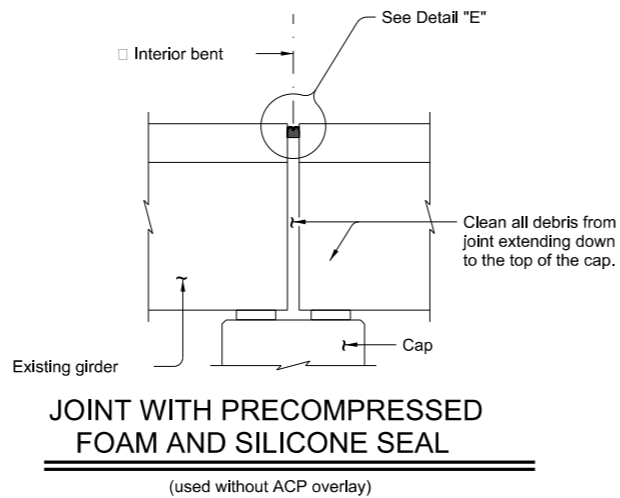
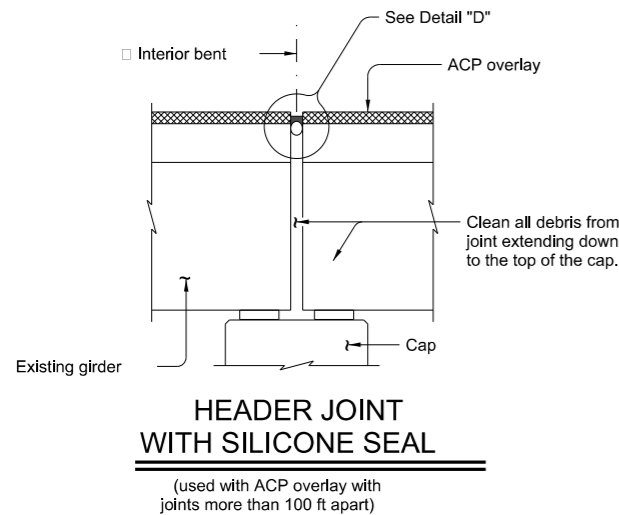
**CLEANING AND SEALING EXISTING BRIDGE JOINTS**

DocuSigned by:  
 Nestor T Mendonza, P.E.  
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 1/22/2024

FILE:	DN:	CR:	DWR:	CR:
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REVISIONS	0906	00	282	VARIOUS
	DIST	COUNTY	SHEET NO.	
	ODA	VARIOUS	46	



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- 1) Use Class 7 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers." Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
- 2) Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
- 5) Match existing joint opening or set at a minimum:
  - a. 1" at 70°F when the distance between joints is 150 ft or less
  - b. 2" at 70°F when the distance between joints is greater than 150 ft.
  - c. As directed by the Engineer.
- 6) Cleaning and sealing existing header joints does not necessitate replacement of existing header material. If replacement of header material is necessary, as determined by the Engineer, use header material in accordance with DMS-6140, "Polymer Concrete for Bridge Joint Systems." Match the thickness of the header material with the thickness of the overlay as shown in the plans, but do not exceed 4". Place header material flush with roadway surface. Do not cantilever header material over the joint opening. Repair of header material will be paid for in accordance with Item 785-6006, "Bridge Joint Repair (Header)."
- 7) Maximum thickness is 4".
- 8) See table of Approved Precompressed Foam Seal Manufacturers on Sheet 3 of 3.

**PROCEDURE FOR CLEANING AND SEALING HEADER JOINT WITH SILICONE SEAL AND HEADER JOINT REPAIR**

- 1) Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints."
- 2) Saw cut and remove damaged portions of existing header material to neat lines. Repair deck joint spalls greater than 2" deep in accordance with Item 785, "Bridge Joint Repair or Replacement." Shallower spalls may be filled with header material.
- 3) Clean the voided region of all materials that could inhibit the bond between header material and concrete or steel.
- 4) Form the joint opening to the required width and place header material to fill voided region. Repair header material in accordance with Item 785, "Bridge Joint Repair or Replacement."
- 5) Place backer rod into joint opening 1" below the top of header material. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.
- 6) Seal the joint opening with a Class 7 joint sealant. Recess seal 1/2" below top of header in travel lanes and 1/4" below top of header in shoulders.

**PROCEDURE FOR CLEANING AND SEALING JOINT WITH PRECOMPRESSED FOAM AND SILICONE SEAL**

- 1) Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." When sealing joints for slab spans, slab beam spans, pan girder spans, or box beam spans, fill void below proposed seal with extruded polystyrene foam.
- 2) Correctly size joint seal based on field measurement and in accordance with Manufacturer's specifications. Multiple seal widths may be required. Ensure proper seal is selected for each joint.
- 3) Abrasive blast clean existing joint surfaces where seal is to be applied.
- 4) Wipe down joint surfaces to remove contaminants.
- 5) Mask areas adjacent to joint opening sufficiently to keep epoxy off deck surface.
- 6) Apply epoxy to joint opening side surfaces.
- 7) While epoxy is still tacky, remove shrink wrap from seal and install in joint opening.
- 8) Recess top of joint seal 1/2" in travel lanes and 1/4" in shoulders.
- 9) Inject silicone adhesive along top interface of seal with joint side surface according to Manufacturer's recommendations. Tool to spread adhesive as necessary. See Silicone Injection detail.

SHEET 2 OF 3



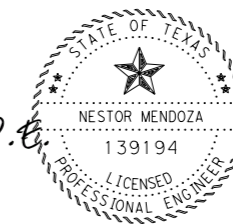
**CLEANING AND SEALING EXISTING BRIDGE JOINTS**

DocuSigned by:

*Nestor T Mendozay, P.E.*

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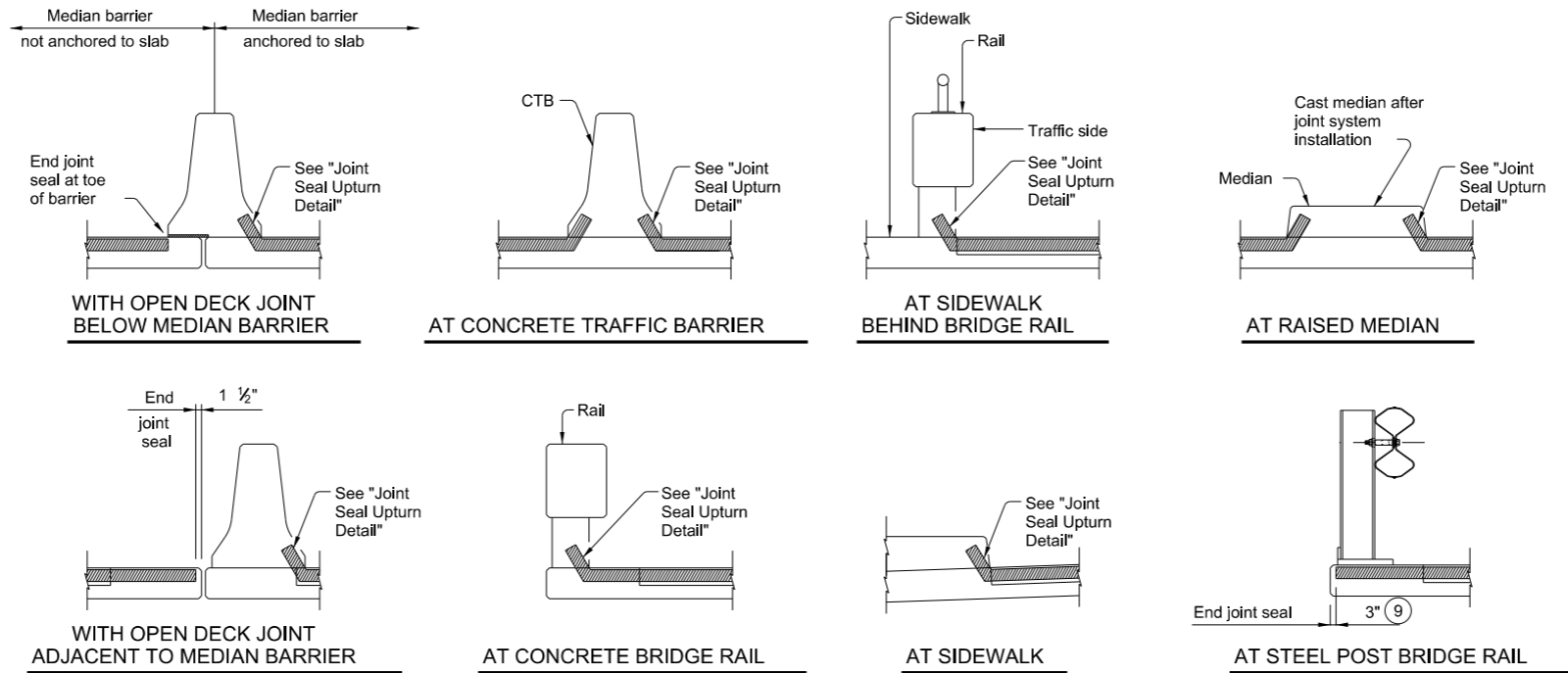
FILE:	DW:	CK:	DW:	CK:
©TxDOT	August 2022	CONT	SECT	JOB
REVISIONS		0906	00	282
		DIST	COUNTY	SHEET NO.
		ODA	VARIOUS	47

DATE:  
FILE:

**APPROVED PRECOMPRESSED  
FOAM SEAL MANUFACTURERS**

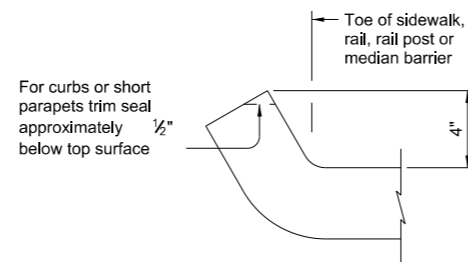
MANUFACTURER	SEAL TYPE
Watson Bowman Acme	Wabo FS
SSI	Silspec SES
Seallite	Seallite 50N
EMSEAL	BEJS

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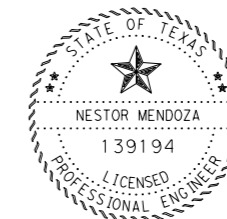


**JOINT SEALANT TERMINATION DETAILS**

⑨ 1 1/2" for precompressed foam and silicone seal



**JOINT SEAL UPTURN DETAIL**



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**Nestor T Mendoza, P.E.**  
 9104D8EB1809444...  
 1/22/2024

				Bridge Division	
<b>CLEANING AND SEALING EXISTING BRIDGE JOINTS</b>					
FILE:	DIN:	CK:	DW:	CK:	
©TxDOT	August 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS		0906	00	282	VARIOUS
		DIST	COUNTY		SHEET NO.
		ODA	VARIOUS		48

DATE:  
FILE:

**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

**1.0 SITE/PROJECT DESCRIPTION**

**1.1 PROJECT CONTROL SECTION JOB (CSJ):**

0906-00-282

**1.2 PROJECT LIMITS:**

From: DISTRICTWIDE

To: DISTRICTWIDE

**1.3 PROJECT COORDINATES:**

BEGIN: (Lat) \_\_\_\_\_, (Long) \_\_\_\_\_

END: (Lat) \_\_\_\_\_, (Long) \_\_\_\_\_

**1.4 TOTAL PROJECT AREA (Acres): VARIOUS**

**1.5 TOTAL AREA TO BE DISTURBED (Acres): VARIOUS**

**1.6 NATURE OF CONSTRUCTION ACTIVITY:**

BRIDGE CYCLIC MAINTENANCE, CLEAN AND SEAL JOINTS, CLEAN CAPS, CLEAN DRAIN HOLES

**1.7 MAJOR SOIL TYPES:**

Soil Type	Description
FINE SANDY LOAM	
SLOUGHTER LOAM	

**1.8 PROJECT SPECIFIC LOCATIONS (PSLs):**

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- PSLs determined during preconstruction meeting
- PSLs determined during construction
- No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

**1.9 CONSTRUCTION ACTIVITIES:**

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- Mobilization
- Install sediment and erosion controls
- Blade existing topsoil into windrows, prep ROW, clear and grub
- Remove existing pavement
- Grading operations, excavation, and embankment
- Excavate and prepare subgrade for proposed pavement widening
- Remove existing culverts, safety end treatments (SETs)
- Remove existing metal beam guard fence (MBGF), bridge rail
- Install proposed pavement per plans
- Install culverts, culvert extensions, SETs
- Install mow strip, MBGF, bridge rail
- Place flex base
- Rework slopes, grade ditches
- Blade windrowed material back across slopes
- Revegetation of unpaved areas
- Achieve site stabilization and remove sediment and erosion control measures
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.10 POTENTIAL POLLUTANTS AND SOURCES:**

- Sediment laden stormwater from stormwater conveyance over disturbed area
- Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- Solvents, paints, adhesives, etc. from various construction activities
- Transported soils from offsite vehicle tracking
- Construction debris and waste from various construction activities
- Contaminated water from excavation or dewatering pump-out water
- Sanitary waste from onsite restroom facilities
- Trash from various construction activities/receptacles
- Long-term stockpiles of material and waste
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.11 RECEIVING WATERS:**

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody

\* Add (\*) for impaired waterbodies with pollutant in ().

**1.12 ROLES AND RESPONSIBILITIES: TxDOT**

- Development of plans and specifications
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

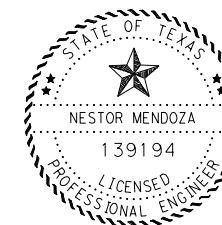
**1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR**

- Day To Day Operational Control
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:**

MS4 Entity

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**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**

© 2024 Sheet 1 of 2

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				49
STATE	STATE DIST.	COUNTY		
TEXAS	06	VARIUOS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0906	00	282	VARIUOS	

**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

**2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE**

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

**2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:**

**T / P**

- Protection of Existing Vegetation
- Vegetated Buffer Zones
- Soil Retention Blankets
- Geotextiles
- Mulching/ Hydromulching
- Soil Surface Treatments
- Temporary Seeding
- Permanent Planting, Sodding or Seeding
- Biodegradable Erosion Control Logs
- Rock Filter Dams/ Rock Check Dams
- Vertical Tracking
- Interceptor Swale
- Riprap
- Diversion Dike
- Temporary Pipe Slope Drain
- Embankment for Erosion Control
- Paved Flumes
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**2.2 SEDIMENT CONTROL BMPs:**

**T / P**

- Biodegradable Erosion Control Logs
- Dewatering Controls
- Inlet Protection
- Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- Sediment Control Fence
- Stabilized Construction Exit
- Floating Turbidity Barrier
- Vegetated Buffer Zones
- Vegetated Filter Strips
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

**T / P**

- Sediment Trap
  - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - 3,600 cubic feet of storage per acre drained
- Sedimentation Basin
  - Not required (<10 acres disturbed)
  - Required (>10 acres) and implemented.
    - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - 3,600 cubic feet of storage per acre drained
  - Required (>10 acres), but not feasible due to:
    - Available area/Site geometry
    - Site slope/Drainage patterns
    - Site soils/Geotechnical factors
    - Public safety
    - Other: \_\_\_\_\_

**2.3 PERMANENT CONTROLS:**

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

**2.4 OFFSITE VEHICLE TRACKING CONTROLS:**

- Excess dirt/mud on road removed daily
- Haul roads dampened for dust control
- Loaded haul trucks to be covered with tarpaulin
- Stabilized construction exit
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**2.5 POLLUTION PREVENTION MEASURES:**

- Chemical Management
- Concrete and Materials Waste Management
- Debris and Trash Management
- Dust Control
- Sanitary Facilities
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**2.6 VEGETATED BUFFER ZONES:**

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

**2.7 ALLOWABLE NON-STORMWATER DISCHARGES:**

- Fire hydrant flushings
- Irrigation drainage
- Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- Potable water sources
- Springs
- Uncontaminated groundwater
- Water used to wash vehicles or control dust
- Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

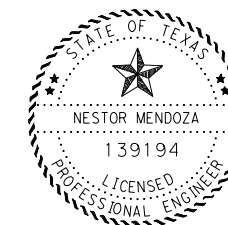
**2.8 INSPECTIONS:**

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

**2.9 MAINTENANCE:**

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

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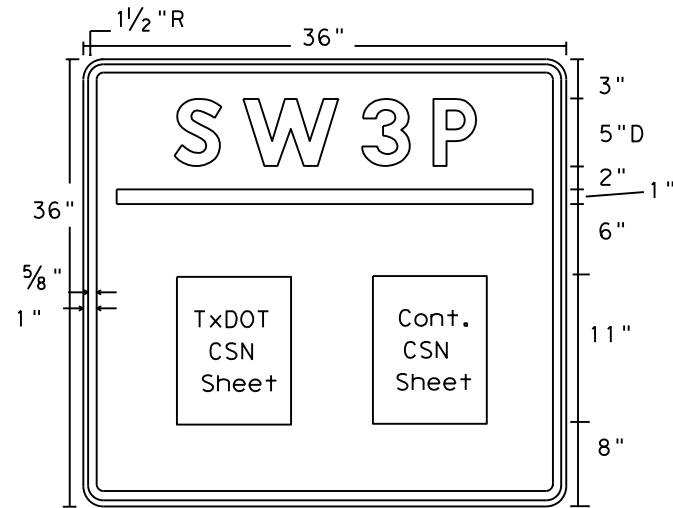
**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**

© 2024 Sheet 2 of 2

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				50
STATE	STATE DIST.	COUNTY		
TEXAS	06	VARIOUS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0906	00	282	VARIOUS	

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LEVELS DISPLAYED	
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SW3P SIGN  
TxDOT & Contractor  
Construction Site Note  
(CSN)

Sign Dimensions

36" X 36"

- Letters - White
- Numbers - White
- Border - White
- Background - Blue

GENERAL NOTES:

1. The alphabets and lateral spacing between letters and numerals shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways", (TMUTCD) latest edition, and the "Compliant Work Zone Traffic Control Devices List". Lateral spacing of text shall provide a balanced appearance. All materials shall conform to Department Specifications.
2. Legend and border may be applied by reverse screening process with transparent colored ink, cut-out white reflective sheeting applied to colored background or combination thereof. Background shall be reflective sheeting Type C.
3. CSN Sheets will be laminated and attached to the sign with an adhesive. Ensure sheets remain dry. (See Figure 1).
4. SW3P Signs should be placed just inside the ROW line at the project limits at a readable height. It may be placed perpendicular or parallel to ROW line. If the sign cannot be placed outside the clear zone, it will be mounted per TMUTCD requirements.
5. Final location of the signs will be as approved by the Engineer.

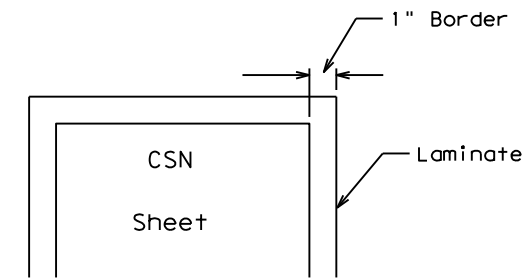
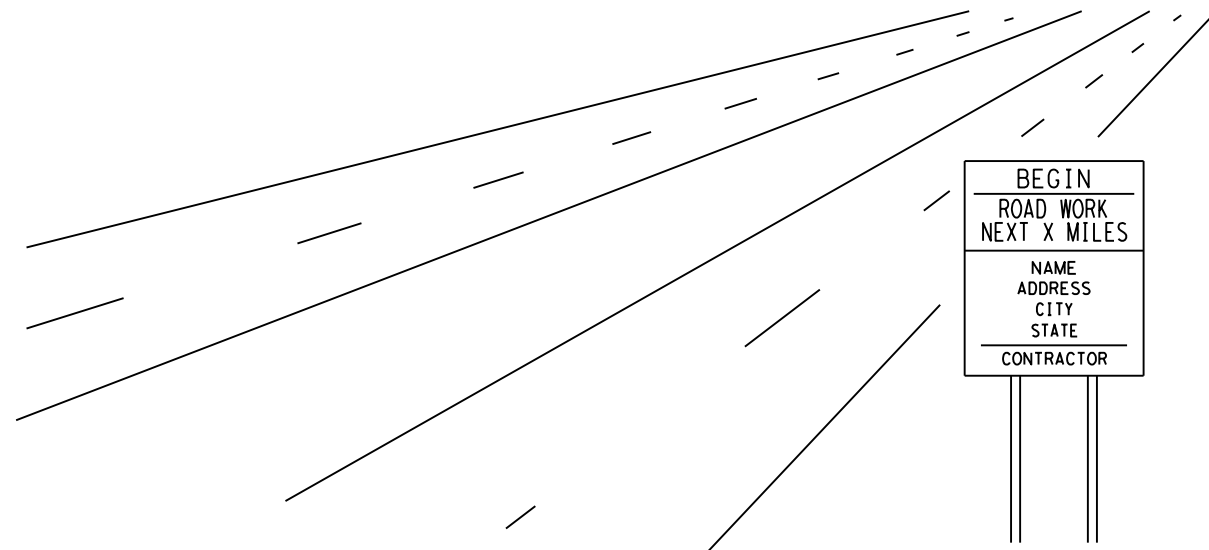


Figure 1



DEPARTMENT MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
FLAT SURFACE REFLECTIVE SHEETING	DMS-8300
VINYL NON-REFLECTIVE DECAL SHEETING	DMS-8320

COLOR	USAGE	REFLECTIVE SHEETING OR OTHER MATERIAL
BLUE	BACKGROUND	TYPE C (FLUORESCENT PRISMATIC)
WHITE	LEGEND & BORDERS	VINYL NON-REFLECTIVE DECAL SHEETING

Texas Department of Transportation  
DALLAS DISTRICT STANDARD

SW3P SIGN SHEET

FILE#	DISTRICT	FEDERAL AID PROJECT	SHEET
©TxDOT 2016	06		51
REVISION DATE: 10-16-15	COUNTY	CONTROL SECT	JOB HIGHWAY
	VARIOUS	0906 00	18 VARIOUS

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DATE: \_\_\_\_\_  
 FILE: \_\_\_\_\_

**I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402**

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

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

1.  
2.
- No Action Required     Required Action

Action No.

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

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

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

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

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

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

1.  
2.  
3.  
4.

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

**Best Management Practices:**

Erosion	Sedimentation	Post-Construction TSS
<input type="checkbox"/> Temporary Vegetation	<input type="checkbox"/> Silt Fence	<input checked="" type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

**III. CULTURAL RESOURCES**

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

- No Action Required     Required Action

Action No.

1.  
2.  
3.  
4.

**IV. VEGETATION RESOURCES**

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

- No Action Required     Required Action

Action No.

- 1.

**V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.**

- No Action Required     Required Action

Action No.

1. Avoid harm to migratory birds, eggs, and active nests;
  - Do not disturb, destroy, or remove active nests, including ground nesting birds during the nesting season.
2. Inactive nests and/or vegetation suspected to contain nests should be removed outside of nesting season (nesting season is typically March 15 to September 15).

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

**LIST OF ABBREVIATIONS**

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

**VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES**

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- \* Dead or distressed vegetation (not identified as normal)
- \* Trash piles, drums, canister, barrels, etc.
- \* Undesirable smells or odors
- \* Evidence of leaching or seepage of substances

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

- Yes     No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

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

- Yes     No

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

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

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

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

- No Action Required     Required Action

Action No.

1.  
2.  
3.

**VII. OTHER ENVIRONMENTAL ISSUES**

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

- No Action Required     Required Action

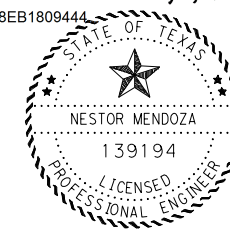
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DocuSigned by:

*Nestor T Mendoza, P.E.*

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1/22/2024

		Design Division Standard	
<b>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS</b> <b>EPIC</b>			
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP
©TxDOT: February 2015	CONT	SECT	JOB
12-12-2011 (DS) REVISIONS	0906	00	282
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY	SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	ODA	VARIOUS	52