CONT	SECT	JOB	HIGHWAY
2121	02	182, ETC.	IH10, ETC.
DIST		COUNTY	SHEET NO.
ELP		EL PASO	1

DESIGN SPEED = REFER TO PROJECT LAYOUT SHEET
A.D.T. (2022) = REFER TO PROJECT LAYOUT SHEET
A.D.T. (2042) = REFER TO PROJECT LAYOUT SHEET

SEE SHEET 2 FOR
INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT: F 2024(503)
CSJ: 2121-02-182, ETC.
IH-10, ETC
EL PASO

CSJ: 2121-03-169
CSJ: 2121-03-170
NET LENGTH OF ROADWAY = 0.000 LF = 0.000 MI
NET LENGTH OF BRIDGE = 340.000 FT = 0.064 MI
NET LENGTH OF PROJECT = 340.000 LF = 0.064 MI

CSJ: 2121-02-182
CSJ: 2121-02-183
NET LENGTH OF ROADWAY = 0.000 LF = 0.000 MI
NET LENGTH OF BRIDGE = 270.000 FT = 0.051 MI
NET LENGTH OF PROJECT = 270.000 FT = 0.051 MI

FINAL PLANS

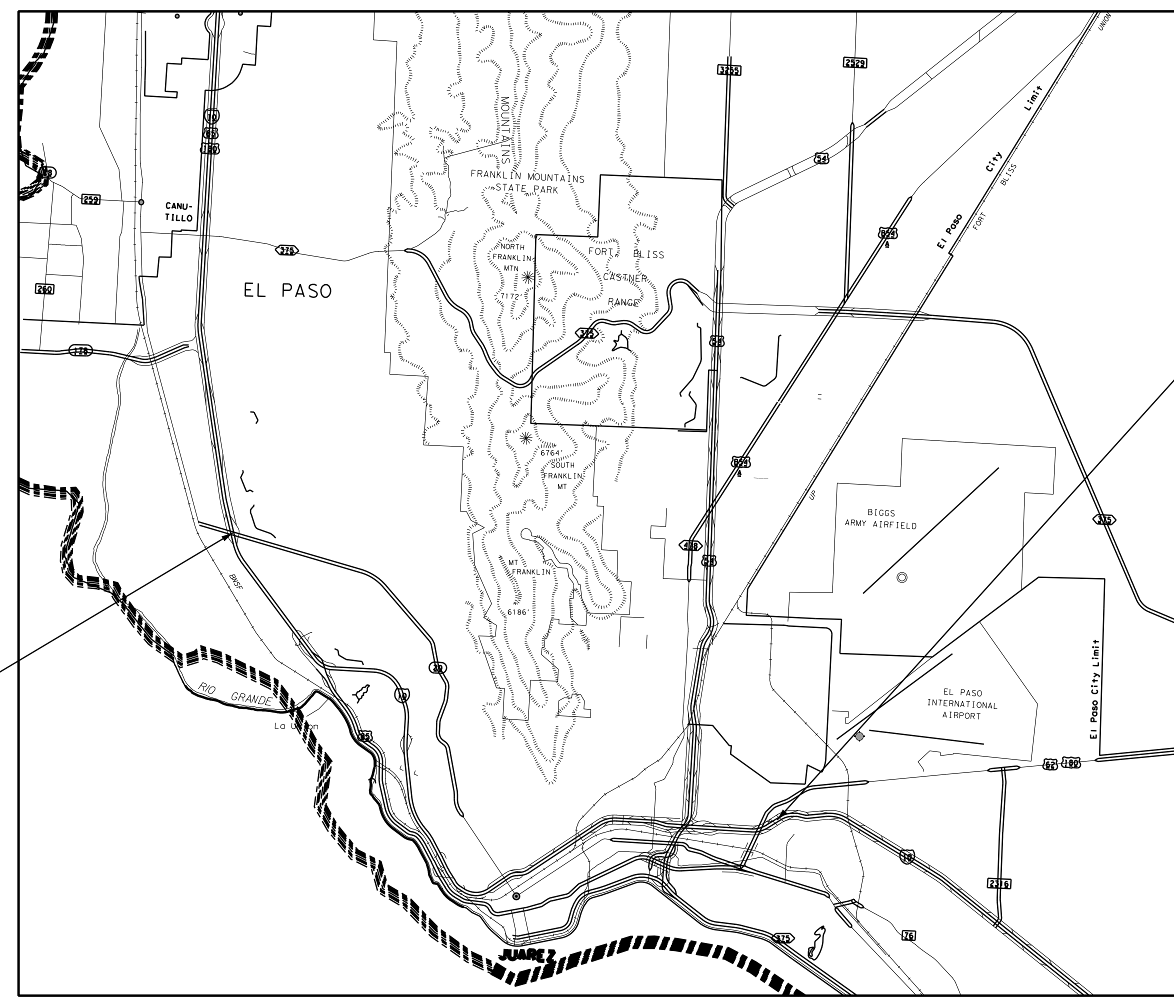
CONTRACTOR: ________
LETTING DATE: ________
TIME CHARGES BEGAN: ________
DATE CONTRACTOR BEGAN WORK: ________
DATE WORK WAS COMPLETED: ________
DATE WORK WAS ACCEPTED: ________
TOTAL DAYS CHARGED: ________
ORIGINAL CONTRACT AMOUNT: $
AMOUNT OF CONTRACT AMENDMENTS: $
FINAL CONTRACT COST: $

________ 20 ____

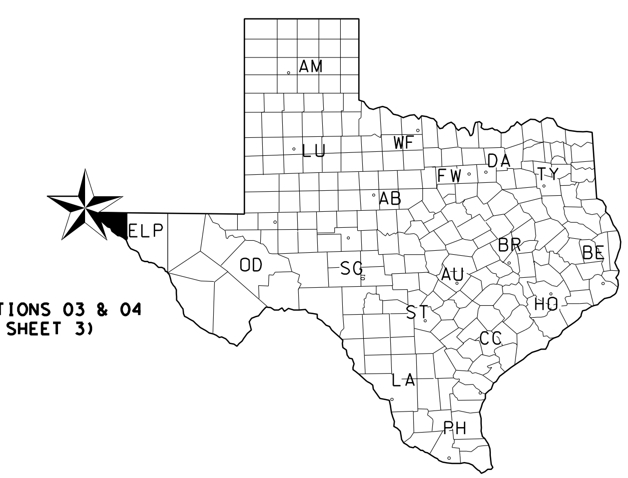
AREA ENGINEER

FOR THE CONSTRUCTION BRIDGE REHABILITATION CONSISTING OF CLEANING AND SEALING EXISTING JOINTS, PLANE EXISTING OVERLAY, RESURFACING BRIDGE DECK, AND CONCRETE REPAIRS.

LOCATIONS 01 & 02
(SEE SHEET 3)



LOCATIONS 03 & 04
(SEE SHEET 3)



KEY TO COUNTIES

EXCEPTIONS: N/A
EQUATIONS: N/A
RAILROAD CROSSINGS: N/A

TDLR INSPECTION NOT REQUIRED

Texas Department of Transportation

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER
10/9/2023

RECOMMENDED FOR LETTING: 10/10/2023
DocuSigned by:
Eduardo Perales, P.E.
2778... SPECIFICATIONS REVIEW COMMITTEE CHAIRMAN

RECOMMENDED FOR LETTING: 10/10/2023
DocuSigned by:
L. Raul Ortega Jr., P.E.
0F1... DISTRICT DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 10/10/2023
DocuSigned by:
7A68C5EA0D94... DISTRICT ENGINEER

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023)

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

DATE: 10/9/2023 2:34:42 PM
FILE: P:_V-TPD\Projects\TX\2019\D190247TX.07\1_Design\500_CADD\dgn\02 Plan Files\01 general\C_XXX_S_GCS01.dgn

INDEX OF SHEETS

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/24/2023

THE STANDARD SHEETS HAVE BEEN ISSUED
BY ME AND ARE APPLICABLE TO THIS PROJECT.

RICARDO A PRIETO — 10/24/2023
NAME — DATE

NO.	DATE	REVISION	APPROV.

consor
F-12040

Texas Department of Transportation

INDEX OF SHEETS

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			2
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC.

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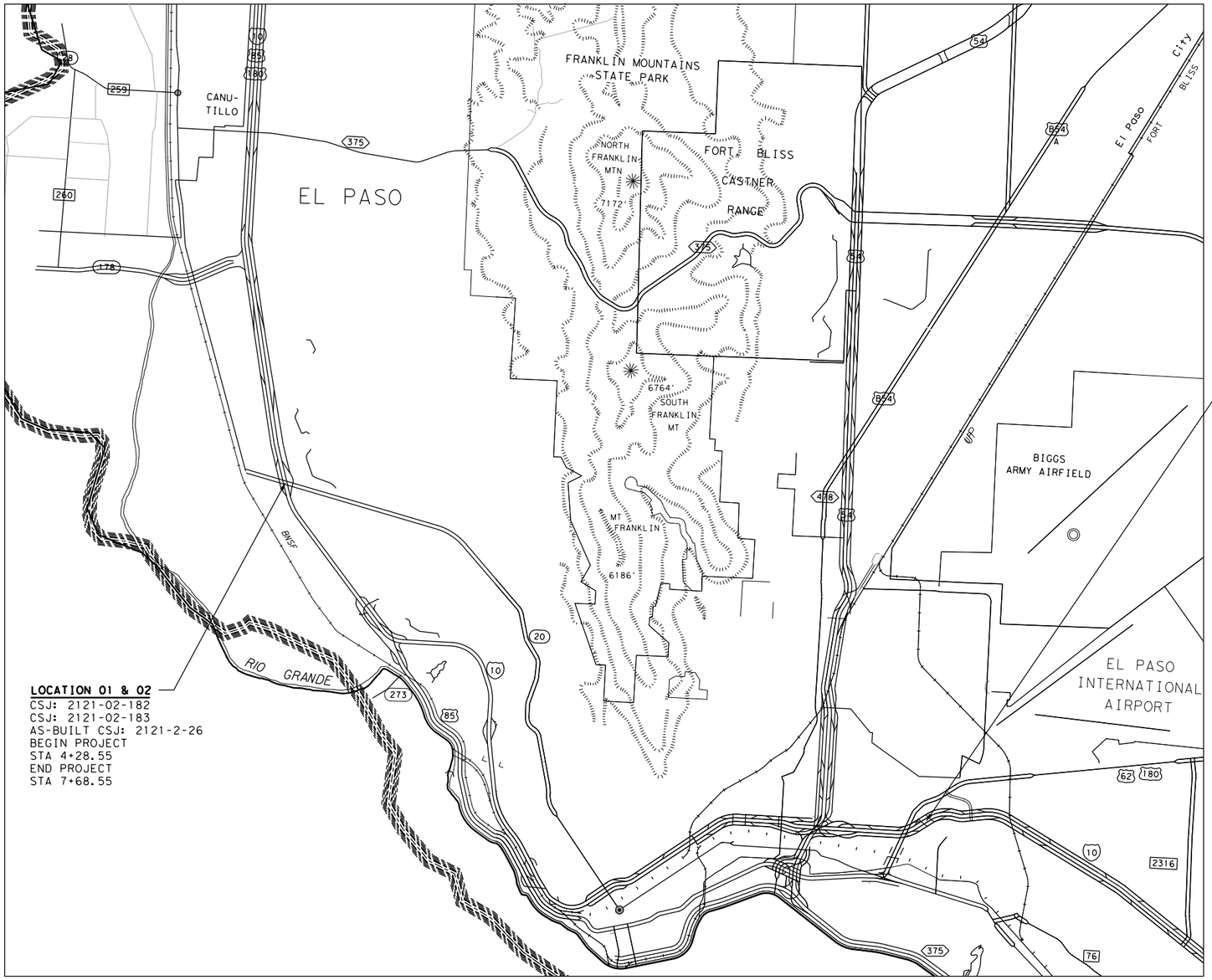


LOCATION	STRUCTURE ID	FACILITY CARRIED	FACILITY CROSSED	LOCATION	LATTITUDE	LONGITUDE	DESIGN SPEED	ADT (2022)	ADT (2042)
01	24-072-0-2121-02-207	EXECUTIVE CNTR EB	IH10 EB & WB	2.65 MI SE OF SUNLAND PK	31.792652	-106.520250	35	126,673	177,342
02	24-072-0-2121-02-282	EXECUTIVE CNTR WB	IH10 EB & WB	2.65 MI SE OF SUNLAND PK	31.793615	-106.519464	35	126,673	177,342
03	24-072-0-2121-03-164	IH10 EB	TROWBRIDGE DRIVE	0.3 MI E US 62 ON I-10	31.779807	-106.417512	60	176,690	247,366
04	24-072-0-2121-03-163	IH10 WB	TROWBRIDGE DRIVE	0.3 MI E US 62 ON I-10	31.780462	-106.417148	60	176,690	247,366

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/9/2023

NO.	DATE	REVISION	APPROV.

consor
F-12040

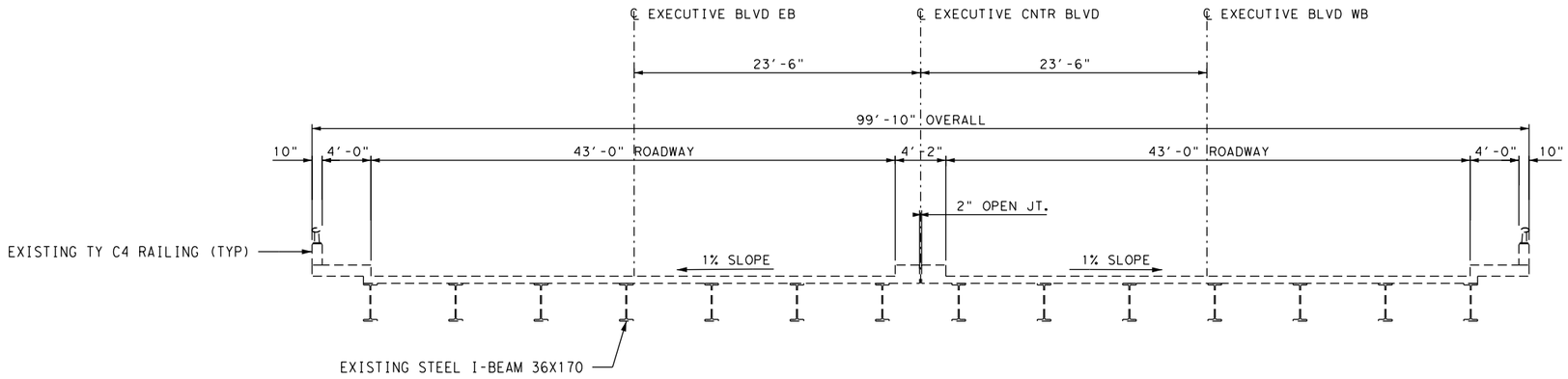
Texas Department of Transportation

PROJECT LOCATION MAP

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			3
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

D190247TX.07

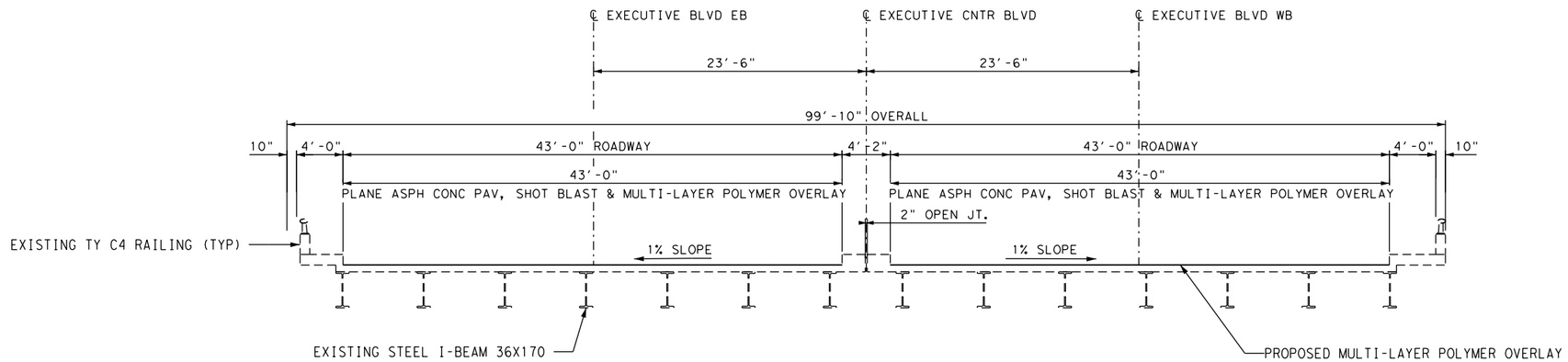


EXISTING BRIDGE TYPICAL SECTION

EXECUTIVE CNTR BLVD
CSJ: 2121-02-182
CSJ: 2121-02-183
AS-BUILT CSJ: 2121-2-26
STA 4+28.55 TO STA 7+68.55

NOTE:

1. FOR BRIDGE REPAIRS REFER TO "BRIDGE REPAIR LAYOUT" SHEET 32 & SHEET 33.



PROPOSED BRIDGE TYPICAL SECTION

EXECUTIVE CNTR BLVD
CSJ: 2121-02-182
CSJ: 2121-02-183
AS-BUILT CSJ: 2121-2-26
STA 4+28.55 TO STA 7+68.55

SCALE: NTS

RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

10/3/2023

NO.	DATE	REVISION	APPROV.

consor
F-12040

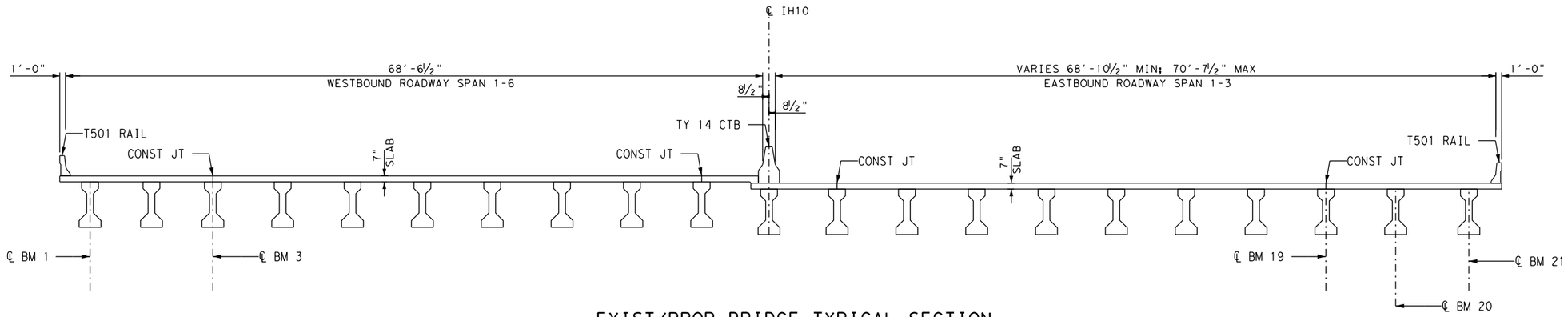
Texas Department of Transportation

TYPICAL SECTIONS

24-072-0-2121-02-207
EXECUTIVE CNTR EB
24-072-0-2121-02-282
EXECUTIVE CNTR WB
SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			4
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

D190247TX.07



NOTE:

1. FOR BRIDGE REPAIRS REFER TO "BRIDGE REPAIR LAYOUT" SHEET 35 & SHEET 37.

SCALE: NTS

EXIST/PROP BRIDGE TYPICAL SECTION

IH-10
CSJ: 2121-03-169
CSJ: 2121-03-170
AS-BUILT CSJ: 2121-3-85
STA 121+48.82 TO STA 124+19.82

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

consor
F-12040

Texas Department of Transportation

TYPICAL SECTIONS

24-072-0-2121-03-164
IH10 EB
24-072-0-2121-03-163
IH10 WB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			5
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

D190247TX.07

General Requirements

Maintain the entire project area in a neat and orderly manner throughout the duration of the work. Remove all construction litter and undesirable vegetation within the right of way inside the project limits. This work will be subsidiary to the various bid items.

General Project Description – This project consists of bridge rehabilitation along I-10 in El Paso, TX.

West Area Office:

Jonathan Concha, P.E.	**Aldo Madrid, P.E.**	**Monica Ruiz, P.E.**
West El Paso Area Engineer	**Director of Construction**	**District Construction Engineer**
Jonathan.Concha@txdot.gov	Aldo.Madrid@txdot.gov	Monica.Ruiz@txdot.gov

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

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

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

The Letting Pre-Bid Q&A 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 4 – Scope of Work

Schedule and perform all work to ensure proper drainage during the course of construction or maintenance operations. All labor, tools, equipment, and supervision required, to ensure drainage, removal, and handling of water shall be considered incidental work.

Item 5 – Control of Work

Keep traveled surfaces used in hauling operations clear and free of dirt or other material.

Coordinate with respective utility owners before adjusting existing utility manholes, meters, valve covers, etc.

Existing pavement, utilities, structures, etc. damaged as a result of construction operations will be repaired at no additional cost to the Department.

Restore any area disturbed or damaged to a condition “as good as” or “better than” prior to start of construction operation. This work will be at the Contractor’s expense.

Item 6 – Control of Materials

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

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

The Buy America Material Classification Sheet is located at the link below. https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html.

Item 7 – Legal Relations and Responsibilities

Comply with all requirements of the Environmental Permits Issues and Commitments (EPIC) Sheet.

Do not discharge any liquid pollutant from vehicles onto the roadside. Immediately clean spills and dispose in compliance with local, state, and federal regulations to the satisfaction of the Engineer at no additional cost to the Department.

Occupational Safety & Health Administration (OSHA) regulations prohibit operations that bring people or equipment within 10 ft. of an energized electrical line. Where workers and/or equipment may be close to an energized electrical line, notify the electrical power company and make all necessary adjustments to ensure the safety of workers near the energized line.

No significant traffic generator events identified.

Law Enforcement Personnel

Coordinate with TxDOT Engineer for off-duty Law enforcement assistance when needed to direct traffic during significant closures and detours, as approved unless otherwise directed by the engineer. The officer shall monitor or direct traffic during the closure as directed by the Engineer. Patrol vehicles must be clearly marked to correspond with the officer’s agency and equipped with appropriate lights to identify them as law enforcement. For patrol vehicles not owned by a law enforcement agency, markings will be retroreflective and legible from 100 ft. from both sides and the rear of the vehicle. Lights will be high intensity and visible from all angles.

Contractor to submit a written request at least 48 hrs prior to the need for lar enforcement to the Engineer. The Engineer will make arrangements with the respective entity to formally request the services.

Fees resulting from contractor-initiated cancellations shall be the Contractor’s responsibility.

The method used to direct traffic at signalized intersections shall be as approved. Additional officers and vehicles may be provided when approved or directed.

Show proof of certification by the Texas Commission on Law Enforcement Standards.

Complete the daily tracking form provided by the department and submit proof of payment such as cancelled checks for the approved invoices that have been billed to the project no later than 30 days from the invoice date.

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site.

Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case-by-case basis

Item 8 – Prosecution and Progress

Working days will be calculated in accordance with Section 8.3.1., “Standard Workweek.”

Submit baseline schedule and obtain approval prior to beginning construction. The monthly progress payment will be held if the monthly update is not submitted.

Item 354 – Planing and Texturing Pavement

When a bridge deck is planed and textured, remove excess material. Do not broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints, rails on bridge, and all railroad tracks encountered as approved by the engineer. Clean all these features if they weren’t properly protected. This work is subsidiary work to applicable bid items. Refer to Item 438, “Cleaning and Sealing Joints”, for procedures and methods.

Item 401 – Flowable Backfill

All flowable backfill shall be non-excavatable

Item 502 – Barricades, Signs, and Traffic Handling

Prior to beginning construction, the Engineer will approve the routing of traffic and sequence of work.

Additional signs and barricades, placed as directed, will be considered subsidiary to this Item

Safety Contingency

The contractor Force Account “Safety Contingency” that has been established for this project is intended to be utilized for work zone enhancement, to improve the effectiveness of the TCP that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor’s Responsible Person based on weekly

or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Item 506 – Temporary Erosion, Sedimentation, and Environmental Controls

Place Best Method Practices (BMP’s) in locations as designated in the plans or as directed to meet field conditions.

The total disturbed area for this project is **0.00** acres. Establish the authorization requirements for Storm Water Discharges for soil disturbed area in this project, all project locations in the Contract, and Contractor Project Specific Locations (PSLs), within one mile of the project limits. Both the Department and the Contractor shall obtain an authorization to discharge storm water from TCEQ for the construction activities shown on the plans. Obtain required authorization from the TCEQ for any Contractor PSLs for construction support activities on or off right of way.

Best Method Practices (BMP’s) may be adjusted to meet field conditions, or as directed. The Engineer will verify all locations prior to placement of BMPs. Maintain and properly place the erosion control measures to prevent storm water pollution to the Waters of the United States, as directed. Within the project limits, keep all inlets functional as long as possible to accept storm water as part of the Storm Water Pollution Prevention Plan (SWP3), as directed.

It is not anticipated that any erosion, sedimentation, or environmental control devices will be needed on this project. However, in the event that such controls are necessary, the Storm Water Pollution Prevention Plan (SWP3) for this project shall consist of the use of any temporary erosion control measures deemed necessary by the Engineer and as provided under this Item. Payment for the work will be determined in accordance with Article 9.7, “Payment for Extra Work and Force Account Method.”

Item 666 –Retro reflectorized Pavement Markings

Use a pilot line for final striping and remove pilot line after all striping is complete. Removal will be in accordance with the methods specified in Item 677, “Eliminating Existing Pavement Markings and Markers,” and will be subsidiary to this Item.

Air blasting is required as pavement surface preparation.

In those areas where existing pavement markings are to be covered or removed, field locate and record the existing pavement markings by survey or other approved method by the Engineer as directed. Place final striping on these locations.

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

All TMA Operators must participate in a TMA workshop to be conducted by the El Paso District Safety Office, on the proper use of TMAs, prior to working on Department Right of Way (ROW). A certificate of completion will be issued to TMA Operators that successfully complete the TMA

workshop. The certificate of completion must be carried by TMA Operators at all times while working on Department right of way.

Acquire the TCP and TMA Operator's certificates of completion prior to the authorization to begin work. No time suspension will be granted and no traffic control work will be allowed without certificates of completion.

In addition to the shadow vehicles with Truck Mounted Attenuator (TMA) that are specified as being required on the traffic control plan for this project, provide 2 additional shadow vehicle(s) with TMA for TCP (6-6)-12 as detailed on General Note of this standard sheet.

Therefore, 10 total shadow vehicles with TMA will be required for this type of work. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

The supporting vehicle for the TMA shall have a minimum gross (i.e., ballasted) vehicular weight of 19,000 pounds.

	Basis of Estimate for Stationary TMAs				
			TMA(Stationary)		
Location	Standard	Phase	Required	Additional	TOTAL
1 & 2	TCP (6-6)-12	II	8	2	10
3	TCP (6-6)-12	I	4	2	6
4	TCP (6-6)-12	II	4	2	6

	Basis of Estimate for Mobile TMAs			
		TMA(Mobile)		
Location	Standard	Required	Additional	TOTAL
1	WZ(RCD)-13	1	0	1
2	WZ(RCD)-13	1	0	1

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 2121-02-182 **DISTRICT** El Paso **COUNTY** El Paso
HIGHWAY IH 10

												TOTAL EST.	TOTAL FINAL
			CONTROL SECTION JOB	**2121-02-182**		**2121-02-183**		**2121-03-169**		**2121-03-170**			
			PROJECT ID	**A00200296**		**A00200300**		**A00200301**		**A00200302**			
			COUNTY	**El Paso**		**El Paso**		**El Paso**		**El Paso**			
			HIGHWAY	**IH 10**		**IH 10**		**IH 10**		**IH 10**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	354-6134	PLANE ASPH CONC PAV (0" TO 1/2" MICRO)	SY	1,570.000		1,570.000						3,140.000	
	401-6001	FLOWABLE BACKFILL	CY	15.000								15.000	
	429-6002	CONC STR REPAIR (EPOXY MORTAR)	SF			30.000		15.000		25.000		70.000	
	429-6005	CONC STR REPAIR(DECK REP (FULL DEPTH))	SF	20.000		20.000						40.000	
	429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF					80.000		50.000		130.000	
	429-6009	CONC STR REPAIR (STANDARD)	SF	120.000						10.000		130.000	
	438-6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	132.000		132.000		219.000		219.000		702.000	
	439-6013	MULTI-LAYER POLYMER OVERLAY	SY	1,570.000		1,570.000						3,140.000	
	483-6013	SHOT BLASTING	SY	1,570.000		1,570.000						3,140.000	
	500-6001	MOBILIZATION	LS	1.000								1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3.000								3.000	
	506-6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF			30.000						30.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF			30.000						30.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	280.000		200.000						480.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	280.000		200.000						480.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF					80.000		135.000		215.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF					80.000		135.000		215.000	
	666-6171	REFL PAV MRK TY II (W) 6" (BRK)	LF	340.000		340.000						680.000	
	666-6174	REFL PAV MRK TY II (W) 6" (SLD)	LF	340.000		340.000						680.000	
	666-6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	250.000		250.000						500.000	
	666-6184	REFL PAV MRK TY II (W) (ARROW)	EA	1.000		1.000						2.000	
	666-6185	REFL PAV MRK TY II (W) (DBL ARROW)	EA	1.000		1.000						2.000	
	666-6192	REFL PAV MRK TY II (W) (WORD)	EA	2.000		2.000						4.000	
	666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	350.000		350.000						700.000	
	666-6211	REFL PAV MRK TY II (Y) 8" (SLD)	LF	60.000		60.000						120.000	
	776-6053	REPLACE (STEEL RAIL)	LF			10.000						10.000	
	780-6002	CNC CRACK REPAIR (DISCRETE)(INJECT)	LF			20.000		40.000				60.000	
	786-6001	CARBON FIBER REINF POLYMER PROTECTION	SF					35.000		10.000		45.000	
	6185-6002	TMA (STATIONARY)	DAY	3.000		3.000		1.000		1.000		8.000	
	6185-6003	TMA (MOBILE OPERATION)	HR	2.000		2.000						4.000	
	7306-6002	BRIDGE SUBSTRUCTURE CLEANING (BENT)	EA	3.000		3.000						6.000	
	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	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000								1.000	

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/4/2023

TxDOTCONNECT

Report Generated By: txdotconnect_internal_ext

Report Created On: Oct 4, 2023 10:22:37 AM

DISTRICT	COUNTY	CCSJ	SHEET
El Paso	El Paso	2121-02-182	7

D190247TX.07

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10/4/2023

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SUMMARY OF TCP ITEMS		
LOCATION	6185 6002	6185 6003
	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	DAY	HR
CSJ: 2121-02-182	3	2
CSJ: 2121-02-183	3	2
CSJ: 2121-03-170	1	
CSJ: 2121-03-169	1	
PROJECT TOTALS	**8**	**4**

SUMMARY OF BRIDGE ITEMS													
LOCATION	354 6134	401 6001	429 6002	429 6005	429 6007	429 6009	438 6004	439 6013	483 6013	776 6053	780 6002	786 6001	7306 6002
	PLANE ASPH CONC PAV (0" TO 1/2" MICRO)	FLOWABLE BACKFILL	CONC STR REPAIR (EPOXY MORTAR)	CONC STR REPAIR(DECK REP (FULL DEPTH))	CONC STR REPAIR (VERTICAL & OVERHEAD)	CONC STR REPAIR (STANDARD)	CLEANING AND SEALING EXIST JOINTS(CL7)	MULTI-LAYER POLYMER OVERLAY	SHOT BLASTING	REPLACE (STEEL RAIL)	CNC CRACK REPAIR (DISCRETE)(INJECT)	CARBON FIBER REINF POLYMER PROTECTION	BRIDGE SUBSTRUCTURE CLEANING (BENT)
	SY	CY	SF	SF	SF	SF	LF	SY	SY	LF	LF	SF	EA
CSJ: 2121-02-182	1570	15		20		120	132	1570	1570				3
CSJ: 2121-02-183	1570		30	20			132	1570	1570	10	20		3
CSJ: 2121-03-170			25		50	10	219					10	
CSJ: 2121-03-169			15		80		219				40	35	
PROJECT TOTALS	**3140**	**15**	**70**	**40**	**130**	**130**	**702**	**3140**	**3140**	**10**	**60**	**45**	**6**

SUMMARY OF PAVEMENT MARKING ITEMS								
LOCATION	666 6171	666 6174	666 6178	666 6184	666 6185	666 6192	666 6210	666 6211
	REFL PAV MRK TY II (W) 6" (BRK)	REFL PAV MRK TY II (W) 6" (SLD)	REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (W) (ARROW)	REFL PAV MRK TY II (W) (DBL ARROW)	REFL PAV MRK TY II (W) (WORD)	REFL PAV MRK TY II (Y) 6" (SLD)	REFL PAV MRK TY II (Y) 8" (SLD)
	LF	LF	LF	EA	EA	EA	LF	LF
CSJ: 2121-02-182	340	340	250	1	1	2	350	60
CSJ: 2121-02-183	340	340	250	1	1	2	350	60
CSJ: 2121-03-170								
CSJ: 2121-03-169								
PROJECT TOTALS	**680**	**680**	**500**	**2**	**2**	**4**	**700**	**120**

SUMMARY OF EROSION CONTROL ITEMS						
LOCATION	506 6001	506 6011	506 6038	506 6039	506 6041	506 6043
	ROCK FILTER DAMS (INSTALL) (TY 1)	ROCK FILTER DAMS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
	LF	LF	LF	LF	LF	LF
CSJ: 2121-02-182			280	280		
CSJ: 2121-02-183	30	30	200	200		
CSJ: 2121-03-170					135	135
CSJ: 2121-03-169					80	80
PROJECT TOTALS	**30**	**30**	**480**	**480**	**215**	**215**

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

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Texas Department of Transportation

GENERAL
SUMMARY OF QUANTITY

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			8
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC.

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TRAFFIC CONTROL PLAN NARRATIVE:

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC", OF THE TXDOT STANDARD SPECIFICATIONS. IN ADDITION TO THESE REQUIREMENTS, THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

GENERAL:

1. TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED AND APPROVED BY THE ENGINEER.

2. THE CONTRACTOR MAY PROPOSE OR RECOMMEND MODIFICATIONS TO THE SEQUENCE OF CONSTRUCTION FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, AND EFFECT OF OVERALL PROJECT IN TIME AND COST. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE OR SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. IF AT ANY TIME, DURING CONSTRUCTION, THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.

3. DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.

4. THE CONTRACTOR WILL NOTIFY THE ENGINEER IN WRITING OF UPCOMING LANE CLOSURES 10 BUSINESS DAYS IN ADVANCE FOR ALL TEMPORARY CLOSURES OR DETOURS.

5. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.

6. NO EQUIPMENT WILL BE LEFT WITHIN 30 FEET OF TRAVEL WAY AFTER WORKING HOURS UNLESS LOCATED BEHIND TRAFFIC BARRIER.

7. COVER PERMANENT SIGNS IF NOT USED. PAYMENT WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

8. SEE BC STANDARDS AND THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) FOR SIGN SPACING AND LOCATION REQUIREMENTS NOT SHOWN IN THE PLANS.

9. SEE THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) FOR CHANNELIZING DEVICE SPACING REQUIREMENTS NOT SHOWN IN THE PLANS.

10. THE CONTRACTOR WILL PROVIDE, CONSTRUCT, AND MAINTAIN ALL BARRICADES AND SIGNS IN ACCORDANCE WITH STATE STANDARDS. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND THE STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS.

11. BARRICADES AND WARNING SIGNS SHALL BE PLACED AS SHOWN ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGNS DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS TO PROVIDE FOR THE SAFE PASSAGE OF TRAFFIC AT ALL TIMES.

12. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN FLAGGERS AS DIRECTED AND APPROVED BY THE ENGINEER, AT SUCH POINTS, AND FOR SUCH PERIODS OR TIME AS MAY BE REQUIRED, TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTOR'S PERSONNEL.

13. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE ENGINEER, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

14. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENT SURFACES. WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS PAVEMENT, THEY SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED AND APPROVED BY THE ENGINEER.

15. THROUGHOUT CONSTRUCTION OPERATIONS, THE CONTRACTOR WILL BE REQUIRED TO CONDUCT THEIR HAULING OPERATIONS IN A MANNER SUCH THAT VEHICLES WILL NOT HAUL OVER PERVIOUSLY RE-COMPACTED SUBGRADE OR COMPACTED BASE MATERIAL, EXCEPT IN SHORT SECTIONS FOR DUMPING MANIPULATIONS.

16. UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE AND FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE SITE ALL SURPLUS AND DISCARDED MATERIALS AND DEBRIS OF EVERY KIND LEAVING THE ENTIRE PROJECT IN A SMOOTH, NEAT, AND SIGHTLY CONDITION.

17. ALL BARRICADES, SIGNS, AND FLAGGERS WILL BE PAID UNDER ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".

SEQUENCE OF CONSTRUCTION:

1. PREPARING RIGHT OF WAY AND REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE CONSTRUCTION IS OCCURING, AS PER THE PHASES NOTED BELOW.

PHASE 1:

1. INSTALL ADVANCE WARNING SIGNS ACCORDING TO THE BC STANDARDS AND THE LATEST TMUTCD.

2. SET UP TRAFFIC CONTROL IN ACCORDANCE WITH THE TCP LAYOUTS, TYPICAL SECTIONS, AND APPLICABLE TCP STANDARDS

3. INSTALL TEMPORARY EROSION CONTROL IN ACCORDANCE WITH THE PLANS OR AS DIRECTED.

4. MICRO-MILL EXISTING SURFACE OVERLAY, SHOT BLAST, INSTALL MULTI-LAYER POLYMER OVERLAY, CLEAN AND SEAL EXISTING BRIDGE JOINTS AND INSTALL REFLECTIVE PAVEMENT MARKINGS

PHASE 2:

1. SET UP TRAFFIC CONTROL IN ACCORDANCE WITH THE TCP LAYOUTS, TYPICAL SECTIONS, AND APPLICABLE TCP STANDARDS.

2. CONDUCT CONCRETE STRUCTURE REPAIRS AND CLEAN BRIGE SUBSTRUCTURE OF ALL DEBRIS.

3. REMOVE ANY TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON THE PLANS.

5. COMPLETE ALL WORK ON THE PLANS AND AS DIRECTED.

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
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TRAFFIC CONTROL PLAN NARRATIVE
CSJ: 2121-02-182
EXECUTIVE CNTR EB
CSJ: 2121-02-183
EXECUTIVE CNTR WB
SHEET 1 OF1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			9
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

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LEGEND

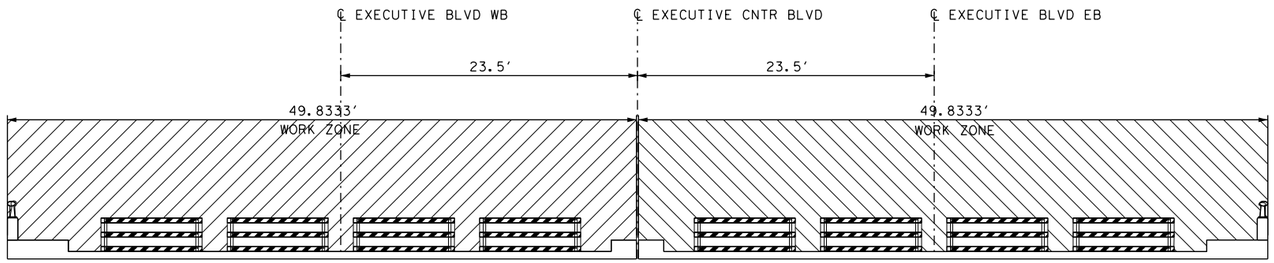
➡ PROPOSED TRAFFIC ARROW

▨ WORK ZONE

NOTES:

1. APPLY TRAFFIC PLAN SET UP AS DESCRIBED IN THE TCP TABLES UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

2. PROVIDE AND MAINTAIN ALL BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH TXDOT BC AND TCP STANDARDS, AND PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."



PHASE I

STA 4+28.55 TO STA 7+68.55

LOCATION	DIRECTION	FACILITY CROSSED	NBI #	PROPOSED WORK	TCP TIMELINE	PROPOSED TCP STANDARD
01	EXECUTIVE CNTR BLVD EB	IH10	24-072-0-2121-02-207	- CLEAN AND SEAL JT, MICRO-MILL EXISTING OVERLAY SHOT BLAST INSTALL MULTI-LAYER POLYMER OVERLAY, REFLECTIVE PAVE MARKINGS AND CONCRETE REPAIRS.	- BRIDGE ROAD CLOSURE ONLY DURING NIGHT TIME HOURS (9PM-6AM, SUN-THU). - USE TYPE 3 BARRICADES AT THIS LOCATION AS SHOWN FOR ROAD CLOSURE.	- REFER TO WORK ZONE ROAD CLOSURE WZ(RCD)-13. (PHASE I) - REFER TO TCP (6-6)-12 FREEWAY CLOSURE. (PHASE II)
02	EXECUTIVE CNTR BLVD WB	IH10	24-072-0-2121-02-282	- CLEAN AND SEAL JT, MICRO-MILL EXISTING OVERLAY SHOT BLAST INSTALL MULTI-LAYER POLYMER OVERLAY, REFLECTIVE PAVE MARKINGS AND CONCRETE REPAIRS.	- BRIDGE ROAD CLOSURE ONLY DURING NIGHT TIME HOURS (9PM-6AM, SUN-THU). - USE TYPE 3 BARRICADES AT THIS LOCATION AS SHOWN FOR ROAD CLOSURE.	- REFER TO WORK ZONE ROAD CLOSURE WZ(RCD)-13. (PHASE I) - REFER TO TCP (6-6)-12 FREEWAY CLOSURE. (PHASE II)

SCALE: NTS

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TRAFFIC CONTROL PLAN
TYPICAL SECTION
CSJ: 2121-02-182
EXECUTIVE CNTR EB
CSJ: 2121-02-183
EXECUTIVE CNTR WB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			10
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

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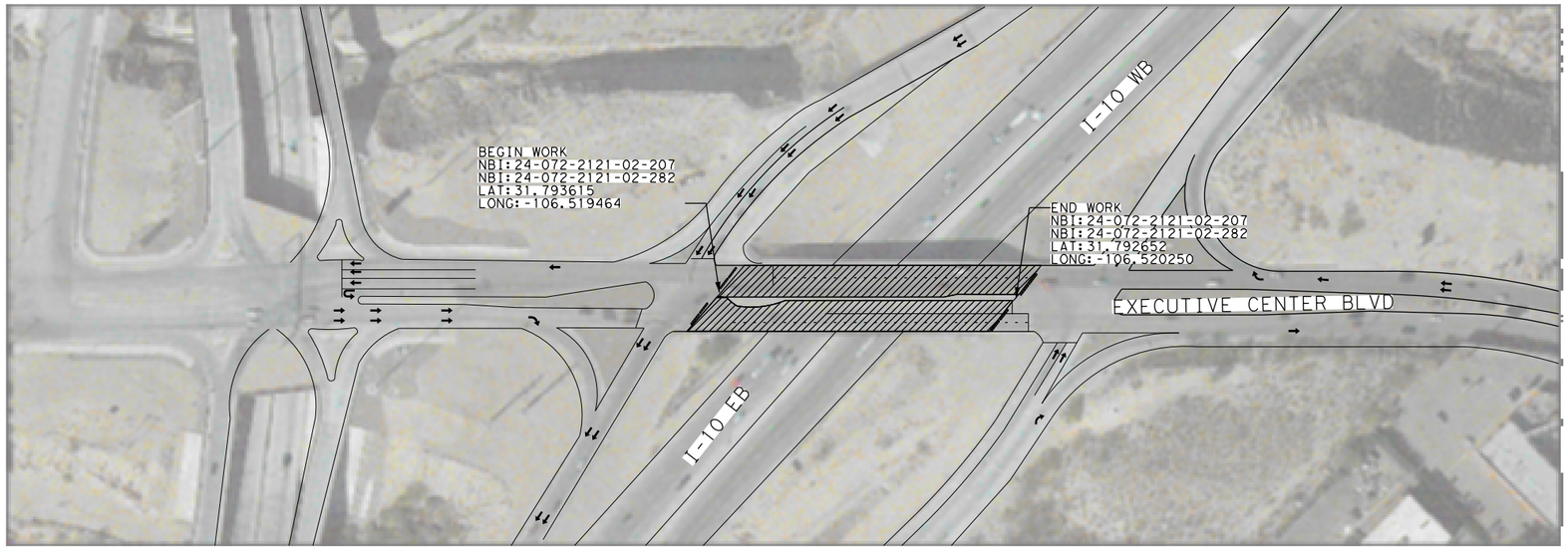

LEGEND

WORK ZONE

TRAFFIC DIRECTION

TYPE 3 BARRICADES

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TRAFFIC CONTROL PHASE I LAYOUT

CSJ: 2121-02-182
CSJ: 2121-02-183
EXECUTIVE CNTR EB & WB
SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			11
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC.

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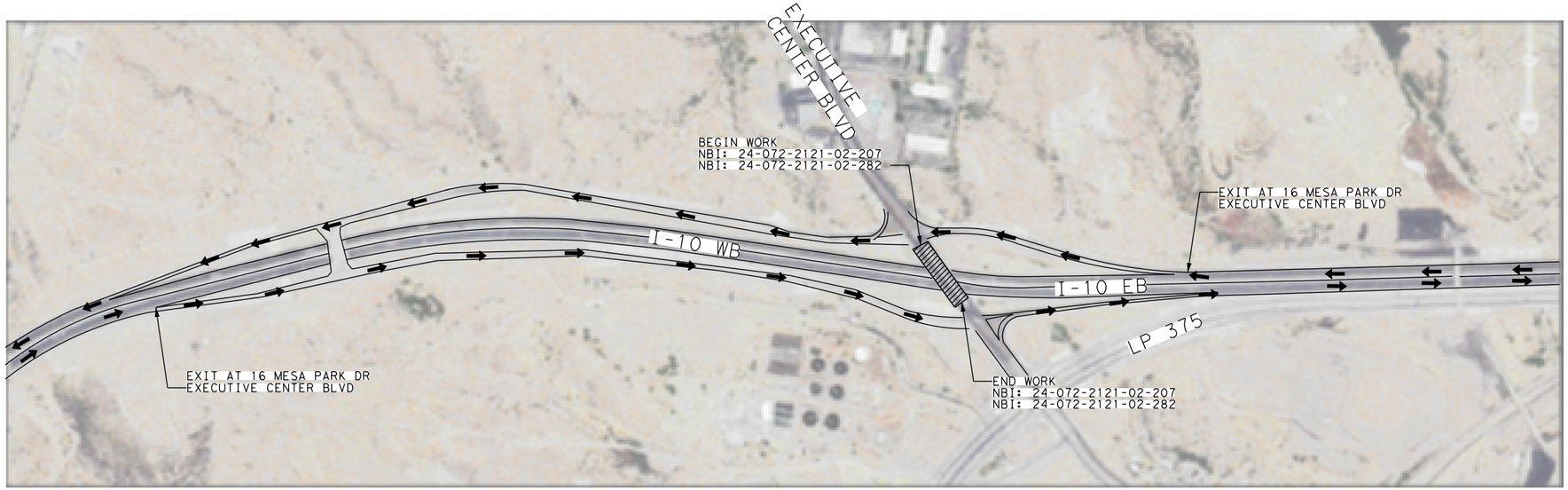

LEGEND

WORK ZONE

TRAFFIC DIRECTION

NOTE:

1. REFER TO TCP(6-6)-12 FOR FREEWAY CLOSURE AND ADVANCE WARNING SIGNS.

SCALE: NTS

STATE OF TEXAS
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Texas Department of Transportation

TRAFFIC CONTROL PHASE II DETOUR LAYOUT

CSJ: 2121-02-182
CSJ: 2121-02-183
EXECUTIVE CNTR EB & WB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			12
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

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TRAFFIC CONTROL PLAN NARRATIVE:

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC", OF THE TXDOT STANDARD SPECIFICATIONS. IN ADDITION TO THESE REQUIREMENTS, THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

GENERAL:

1. TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED AND APPROVED BY THE ENGINEER.

2. THE CONTRACTOR MAY PROPOSE OR RECOMMEND MODIFICATIONS TO THE SEQUENCE OF CONSTRUCTION FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, AND EFFECT OF OVERALL PROJECT IN TIME AND COST. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE OR SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. IF AT ANY TIME, DURING CONSTRUCTION, THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.

3. DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.

4. THE CONTRACTOR WILL NOTIFY THE ENGINEER IN WRITING OF UPCOMING LANE CLOSURES 10 BUSINESS DAYS IN ADVANCE FOR ALL TEMPORARY CLOSURES OR DETOURS.

5. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.

6. NO EQUIPMENT WILL BE LEFT WITHIN 30 FEET OF TRAVEL WAY AFTER WORKING HOURS UNLESS LOCATED BEHIND TRAFFIC BARRIER.

7. COVER PERMANENT SIGNS IF NOT USED. PAYMENT WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

8. SEE BC STANDARDS AND THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) FOR SIGN SPACING AND LOCATION REQUIREMENTS NOT SHOWN IN THE PLANS.

9. SEE THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) FOR CHANNELIZING DEVICE SPACING REQUIREMENTS NOT SHOWN IN THE PLANS.

10. THE CONTRACTOR WILL PROVIDE, CONSTRUCT, AND MAINTAIN ALL BARRICADES AND SIGNS IN ACCORDANCE WITH STATE STANDARDS. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND THE STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS.

11. BARRICADES AND WARNING SIGNS SHALL BE PLACED AS SHOWN ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGNS DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS TO PROVIDE FOR THE SAFE PASSAGE OF TRAFFIC AT ALL TIMES.

12. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN FLAGGERS AS DIRECTED AND APPROVED BY THE ENGINEER, AT SUCH POINTS, AND FOR SUCH PERIODS OR TIME AS MAY BE REQUIRED, TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTOR'S PERSONNEL.

13. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE ENGINEER, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

14. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENT SURFACES. WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS PAVEMENT, THEY SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED AND APPROVED BY THE ENGINEER.

15. THROUGHOUT CONSTRUCTION OPERATIONS, THE CONTRACTOR WILL BE REQUIRED TO CONDUCT THEIR HAULING OPERATIONS IN A MANNER SUCH THAT VEHICLES WILL NOT HAUL OVER PERVIOUSLY RE-COMPACTED SUBGRADE OR COMPACTED BASE MATERIAL, EXCEPT IN SHORT SECTIONS FOR DUMPING MANIPULATIONS.

16. UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE AND FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE SITE ALL SURPLUS AND DISCARDED MATERIALS AND DEBRIS OF EVERY KIND LEAVING THE ENTIRE PROJECT IN A SMOOTH, NEAT, AND SIGHTLY CONDITION.

17. ALL BARRICADES, SIGNS, AND FLAGGERS WILL BE PAID UNDER ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".

SEQUENCE OF CONSTRUCTION:

1. PREPARING RIGHT OF WAY AND REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE CONSTRUCTION IS OCCURING, AS PER THE PHASES NOTED BELOW.

PHASE 1:

1. INSTALL ADVANCE WARNING SIGNS ACCORDING TO THE BC STANDARDS AND THE LATEST TMUTCD.
2. INSTALL TEMPORARY EROSION CONTROL IN ACCORDANCE WITH THE PLANS OR AS DIRECTED.
3. SET UP TRAFFIC CONTROL IN ACCORDANCE WITH THE TCP LAYOUTS, TYPICAL SECTIONS, AND APPLICABLE TCP STANDARDS.
4. CLEAN AND SEAL EXISTING BRIDGE JOINTS.

PHASE 2:

1. INSTALL TEMPORARY EROSION CONTROL IN ACCORDANCE WITH THE PLANS OR AS DIRECTED.
2. SET UP TRAFFIC CONTROL IN ACCORDANCE WITH THE TCP LAYOUTS, TYPICAL SECTIONS, AND APPLICABLE TCP STANDARDS.
3. CLEAN AND SEAL EXISTING BRIDGE JOINTS.

PHASE 3:

1. INSTALL TEMPORARY EROSION CONTROL IN ACCORDANCE WITH THE PLANS OR AS DIRECTED.
2. SET UP TRAFFIC CONTROL IN ACCORDANCE WITH THE TCP LAYOUTS, TYPICAL SECTIONS, AND APPLICABLE TCP STANDARDS.
3. REPAIR CRACKS AND SPALLS AT SUBSTRUCTURE. REPAIR OVERHEAD IMPACT SPALL AT BEAMS. APPLY CFRP AT BEAMS WITH EXPOSED STRANDS.

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
91123
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10/3/2023

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TRAFFIC CONTROL PLAN NARRATIVE
CSJ: 2121-03-170
IH10 EB
CSJ: 2121-03-169
IH10 WB
SHEET 1 OF1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			13
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC.

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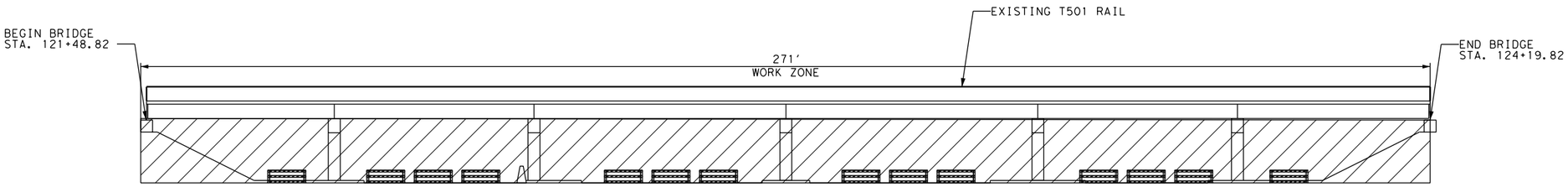
LEGEND

- PROPOSED TRAFFIC ARROW
- WORK ZONE
- EXISITNG TRAFFIC ARROW

NOTES:

1. APPLY TRAFFIC PLAN SET UP AS DESCRIBED IN THE TCP TABLES UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

2. PROVIDE AND MAINTAIN ALL BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH TXDOT BC AND TCP STANDARDS, AND PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."



PHASE III

STA. 121+48.82 TO STA. 124+19.82

LOCATION	DIRECTION	FACILITY CROSSED	NBI #	PROPOSED WORK	TCP TIMELINE	PROPOSED TCP STANDARD
03	IH10 EB	TROWBRIDGE DR.	24-072-0-2121-03-164	- CLEAN AND SEAL JT, CONCRETE BEAM REPAIR, AND APPLCATION OF CARBON FIBER REINFORCED PROTECTION AT BEAMS WITH EXPOSED STRANDS.	- BRIDGE ROAD CLOSURE ONLY DURING NIGHT TIME HOURS (9PM-6AM, SUN-THU). - USE TYPE 3 BARRICADES AT THIS LOCATION AS SHOWN FOR ROAD CLOSURE.	- REFER TO WORK ZONE ROAD CLOSURE WZ(RCD)-13.(PHASE III) - TCP (6-6)-12 FREEWAY CLOSURE.(PHASE I & II)
04	IH10 WB	TROWBRIDGE DR.	24-0-72-0-2121-03-163	- CLEAN AND SEAL JT, CONCRETE BEAM REPAIR, AND APPLCATION OF CARBON FIBER REINFORCED PROTECTION AT BEAMS WITH EXPOSED STRANDS.	- BRIDGE ROAD CLOSURE ONLY DURING NIGHT TIME HOURS (9PM-6AM, SUN-THU). - USE TYPE 3 BARRICADES AT THIS LOCATION AS SHOWN FOR ROAD CLOSURE.	- REFER TO WORK ZONE ROAD CLOSURE WZ(RCD)-13(PHASE III) - REFER TO TCP (6-6)-12 FREEWAY CLOSURE.(PHASE I & II)

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
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PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

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Texas Department of Transportation

TRAFFIC CONTROL PLAN TYPICAL SECTION

CSJ: 2121-03-170
IH10 EB
CSJ: 2121-03-169
IH10 WB

SHEET 1 OF1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			14
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

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LEGEND

WORK ZONE

TRAFFIC DIRECTION

NOTES:

1. PHASES SHALL BE ONE DIRECTION AT A TIME, UNLESS DIRECTED BY THE ENGINEER OTHERWISE.

2. CONTRACTOR SHALL BE PERMITTED TO PERFORM WORK IN ONE PHASE BY CLOSING BOTH DIRECTIONS AT ONCE, AS PER AREA ENGINEER'S APPROVAL.

3. REFER TO TCP(6-6)-12 FOR FREEWAY CLOSURE AND ADVANCE WARNING SIGNS.

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

consor
F-12040

Texas Department of Transportation

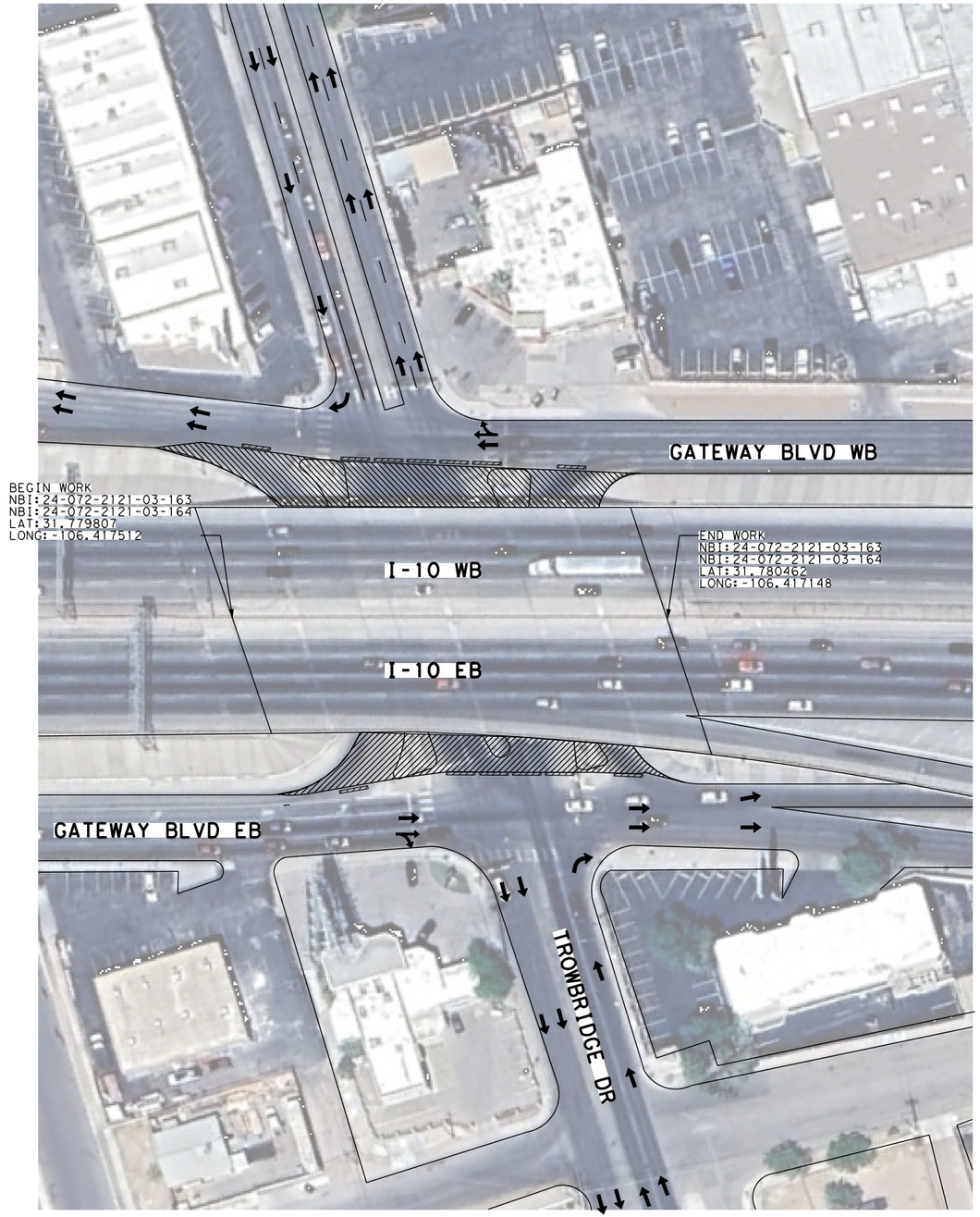
TRAFFIC CONTROL PHASE I & II DETOUR LAYOUT

CSJ: 2121-03-170
CSJ: 2121-03-169
IH10 EB & WB

SHEET 1 OF1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			15
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC.

D1902471X.07



LEGEND

WORK ZONE

PROPOSED TRAFFIC DIRECTION

TYPE 3 BARRICADES

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

consor

F-12040

Texas Department of Transportation

TRAFFIC CONTROL PHASE III LAYOUT

CSJ: 2121-03-170
CSJ: 2121-03-169
IH10 EB & WB

SHEET 1 OF1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			16
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

D190247TX.07

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	2121	02	182,ETC.	IH10,ETC.
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		17

DATE: 10/3/2023 6:15:08 PM
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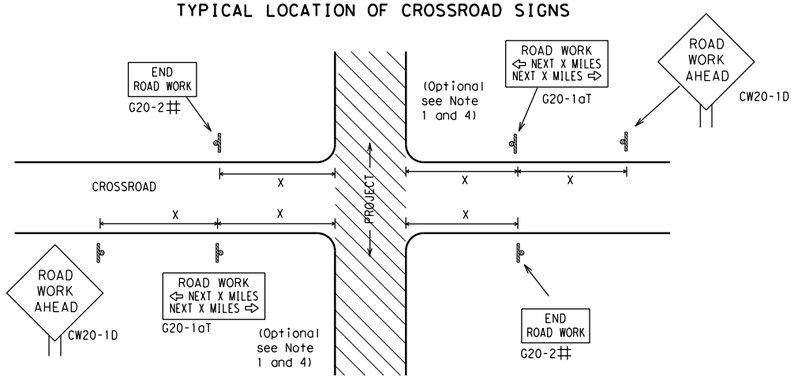
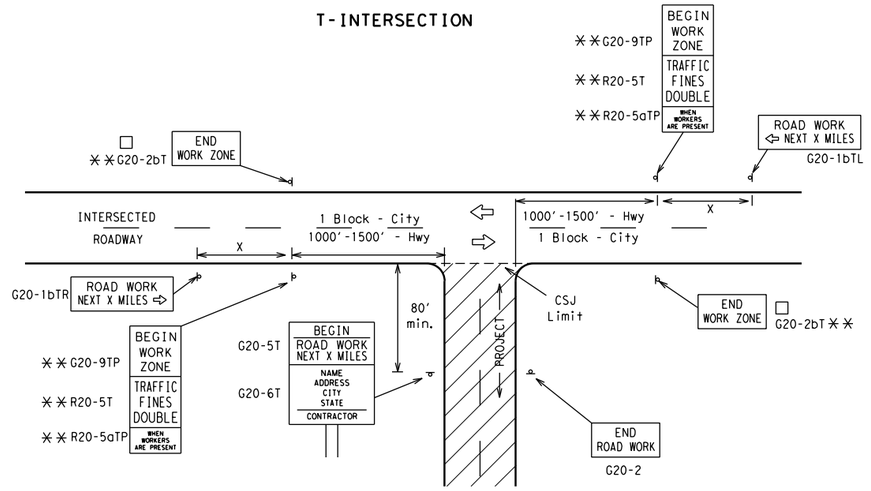
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

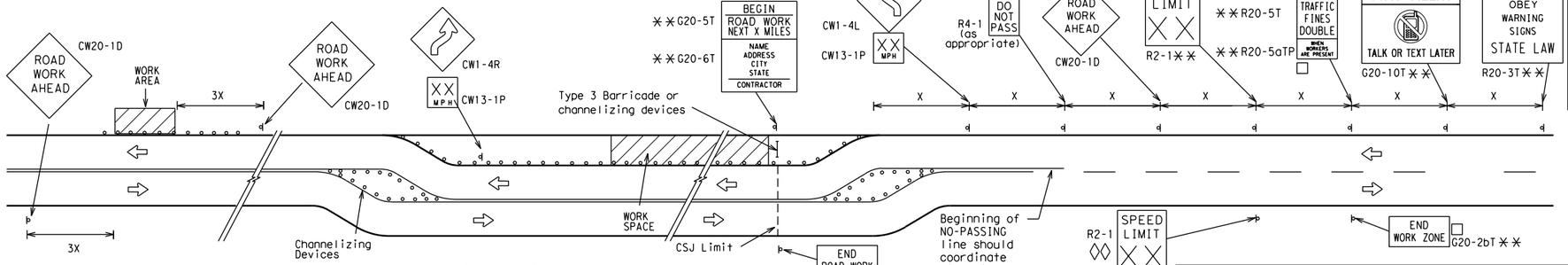
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

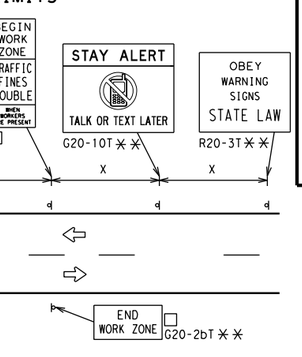
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

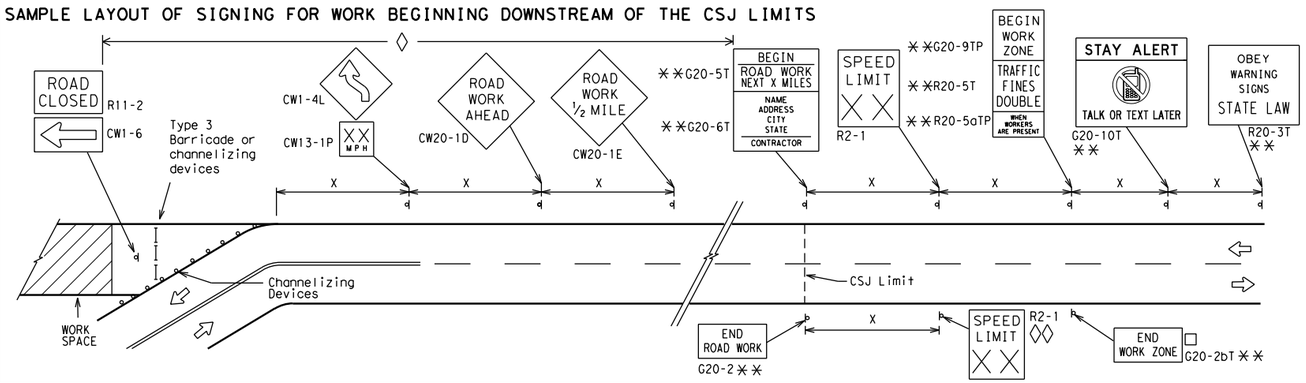


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182, ETC.	IH10, ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	EL PASO		18

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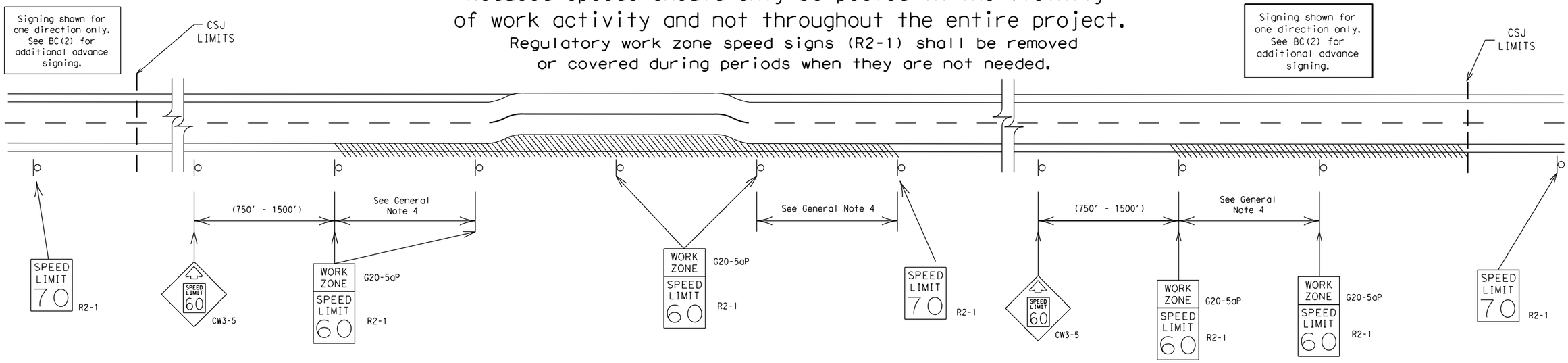
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	2121	02	182,ETC.	IH10,ETC.
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		19

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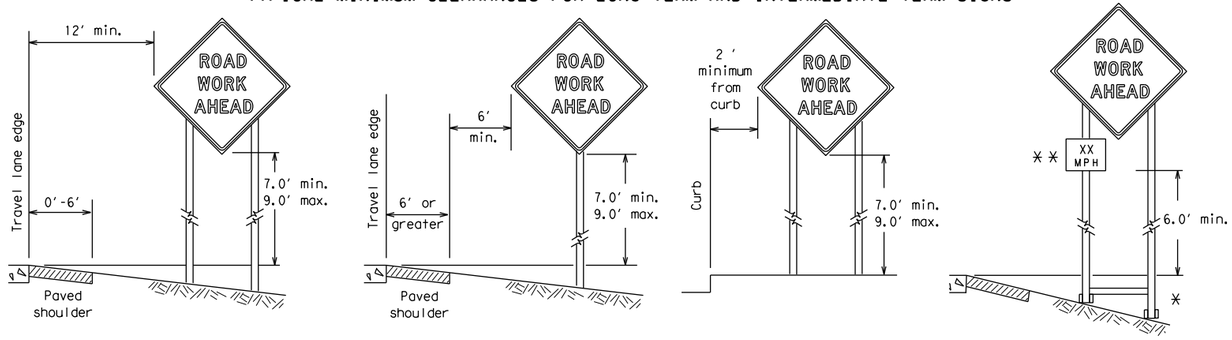
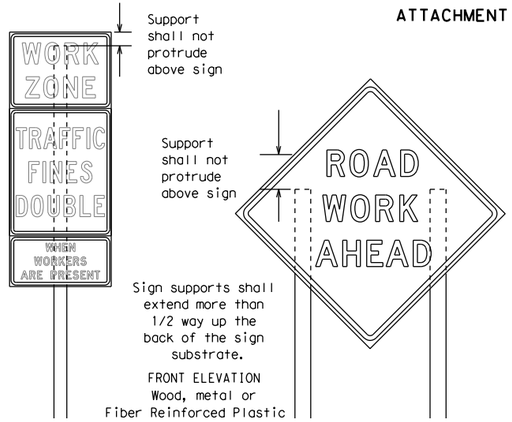
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



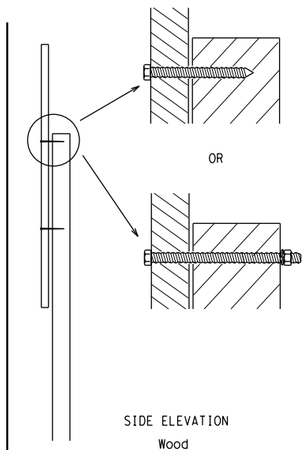
⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

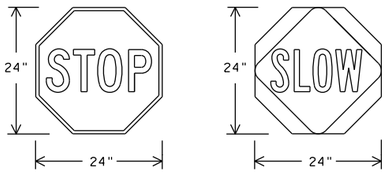
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
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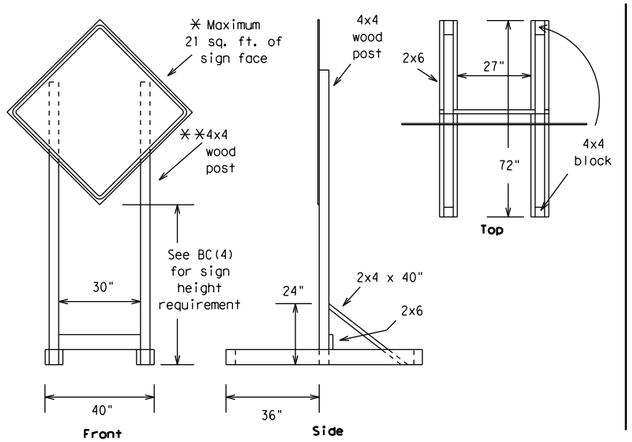
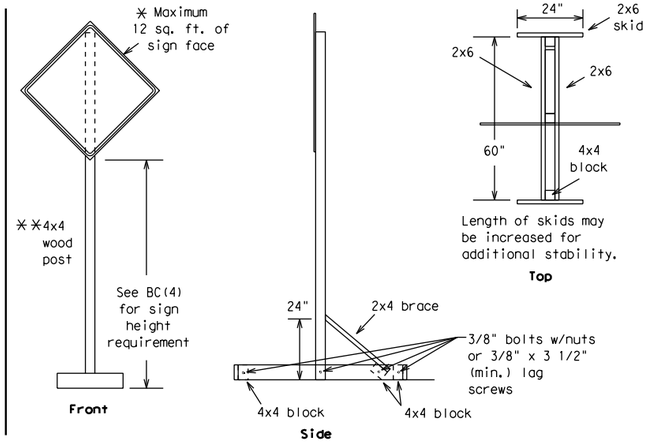
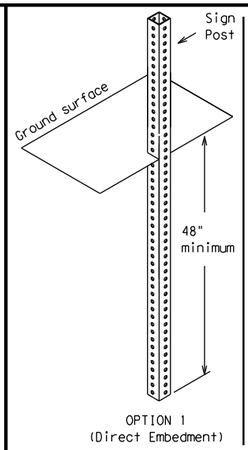
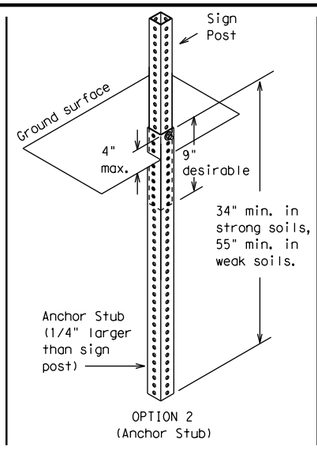


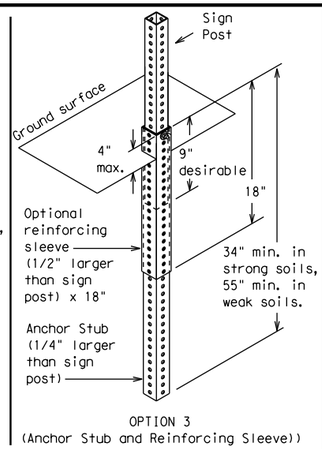


SKID MOUNTED WOOD SIGN SUPPORTS

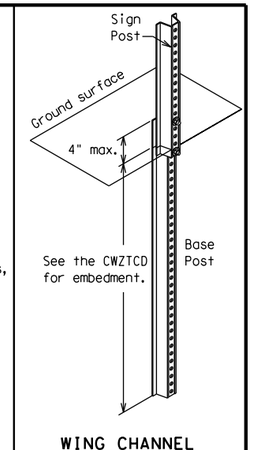
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS







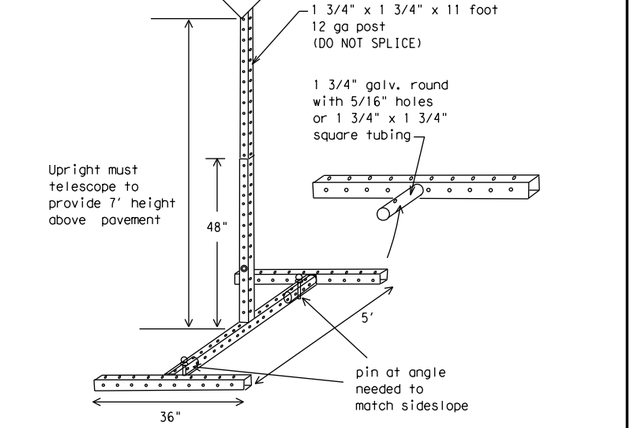
PERFORATED SQUARE METAL TUBING

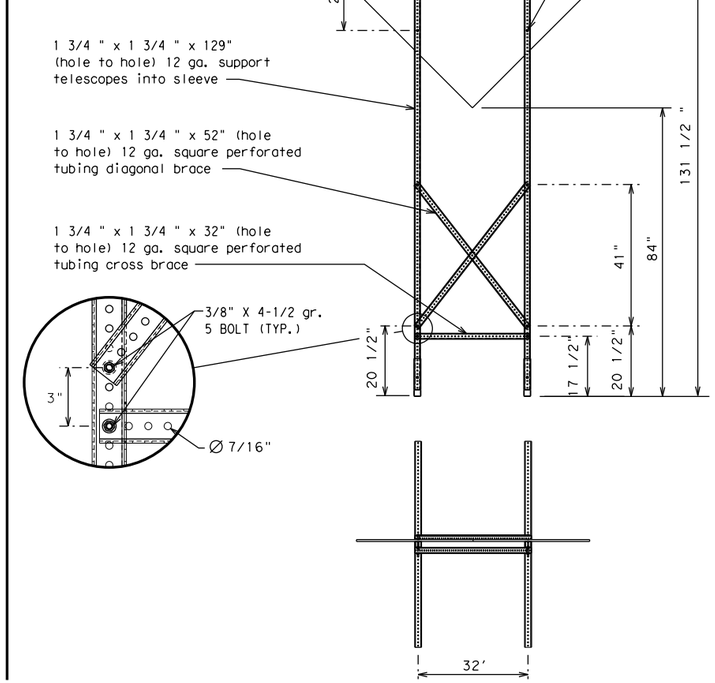


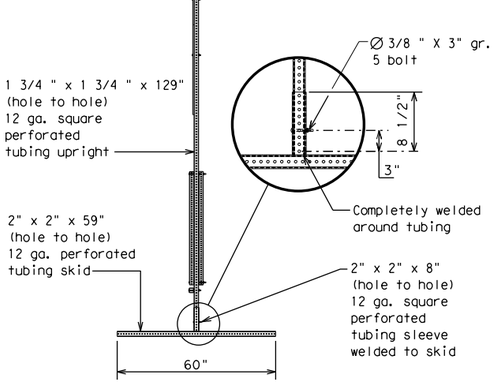
WING CHANNEL
Lap-splice/base bolted anchor

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	EL PASO		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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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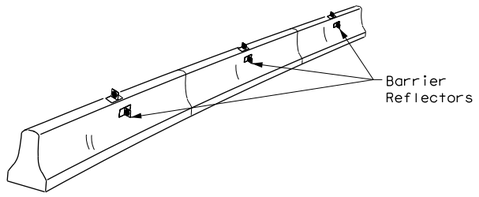
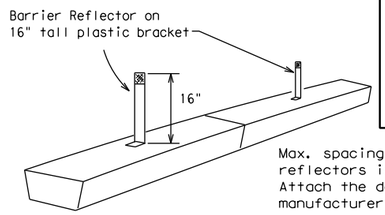
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



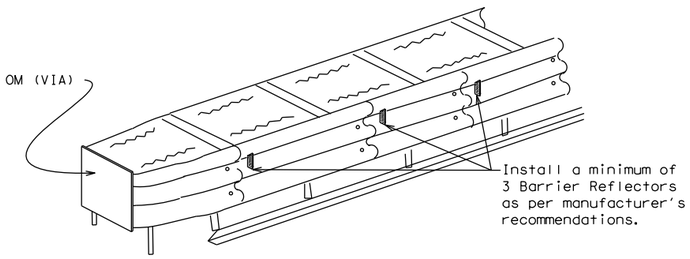
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

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.

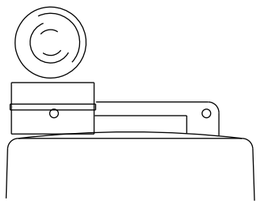
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

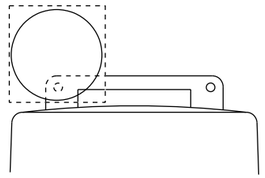
1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this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



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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



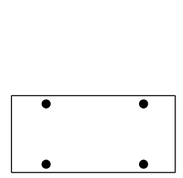
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

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

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

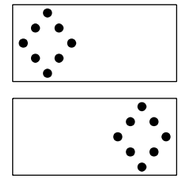
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

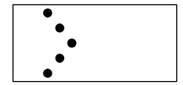


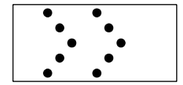
4 CORNER CAUTION

OR

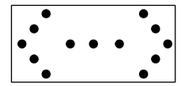


ALTERNATING DIAMOND CAUTION

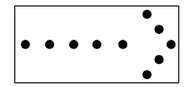




RIGHT/LEFT SEQUENTIAL CHEVRON (right chevron shown; left is similar)



DOUBLE ARROW



RIGHT/LEFT ARROW (right arrow shown; left is similar)

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	EL PASO		23

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

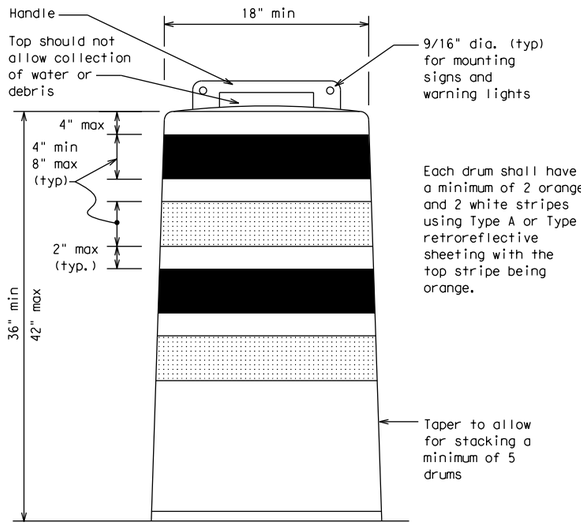
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

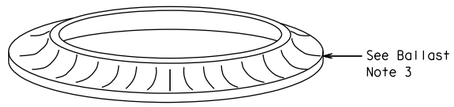
RETROREFLECTIVE SHEETING

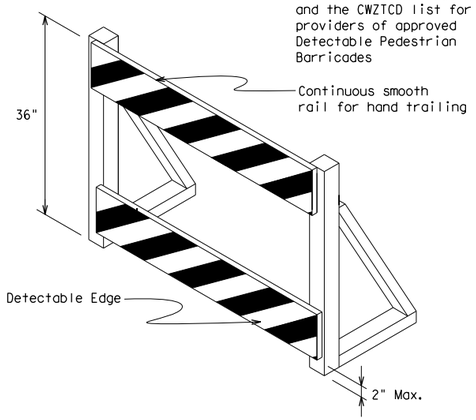
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

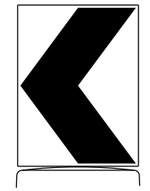




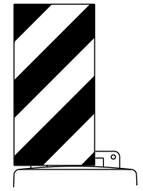


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	ELP	EL PASO		24
7-13				

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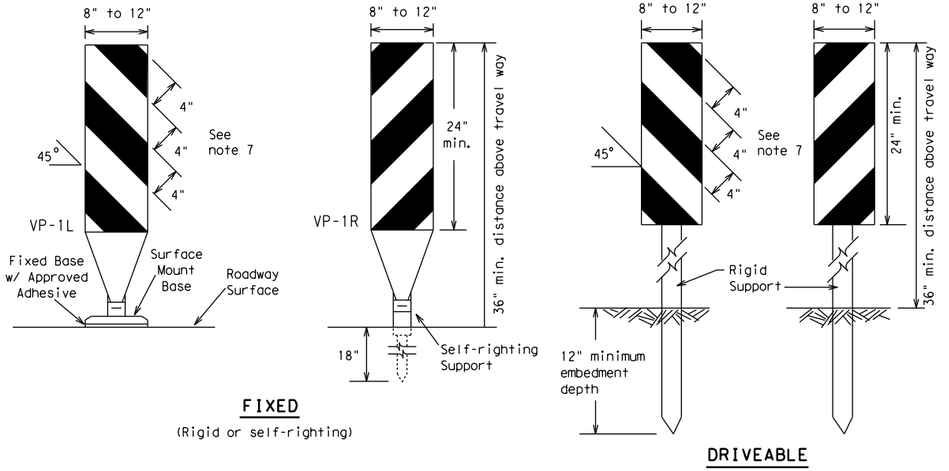
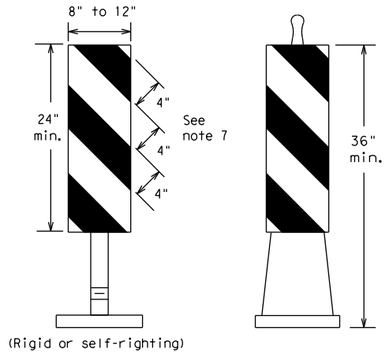


FIXED
(Rigid or self-righting)

DRIVEABLE

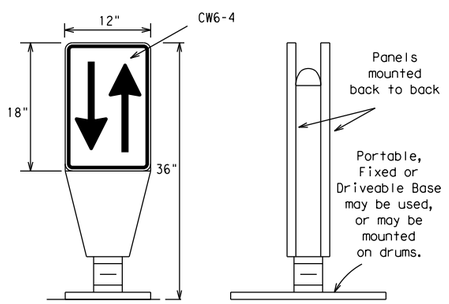


(Rigid or self-righting)

PORTABLE

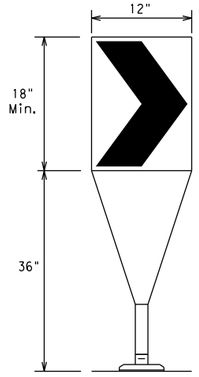
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



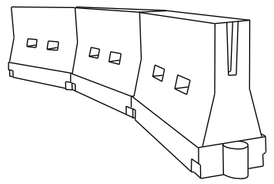
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	EL PASO		25

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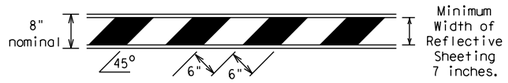
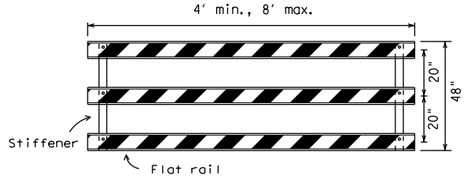
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



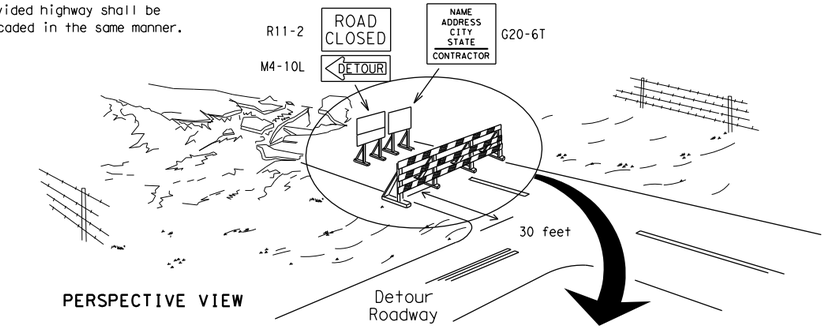
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

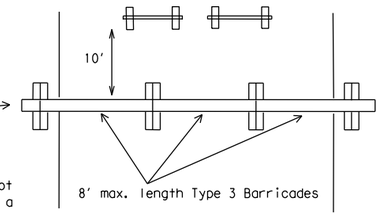
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

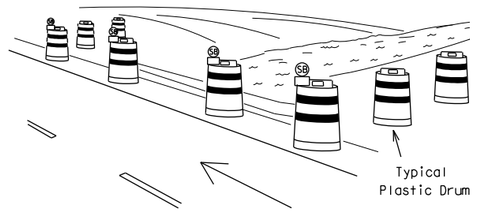
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

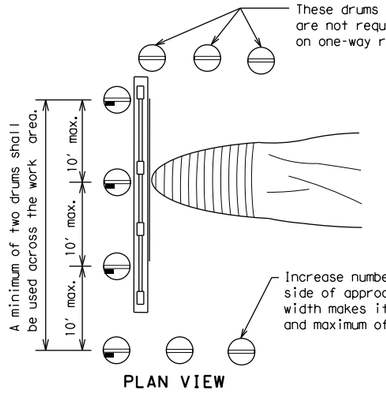
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

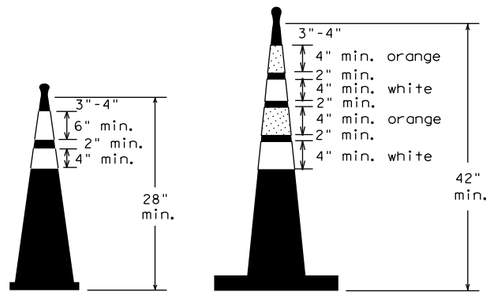
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



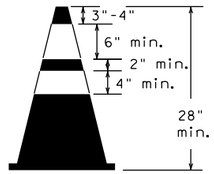
PLAN VIEW

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

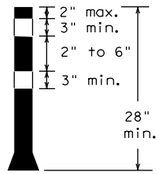
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

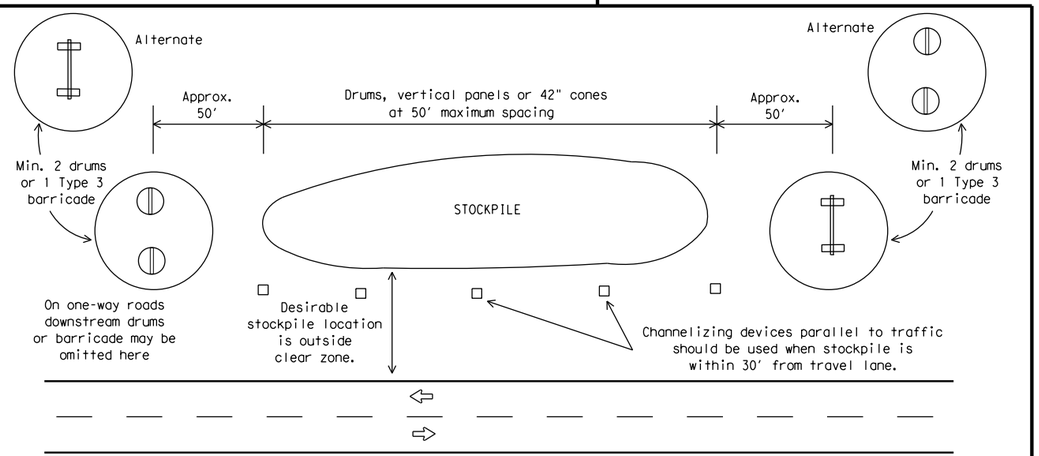


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

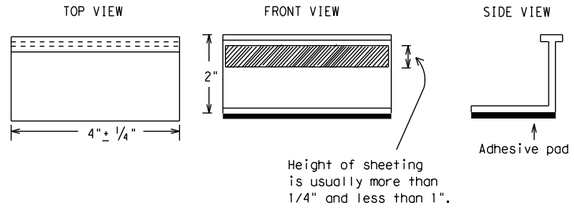
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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1-02 7-13	DIST	COUNTY		SHEET NO.
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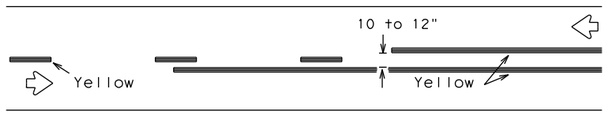
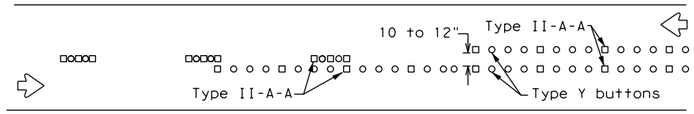
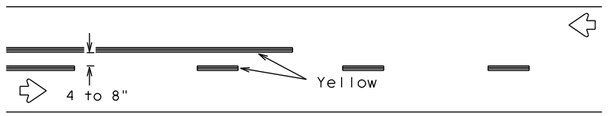
PAVEMENT MARKING PATTERNS



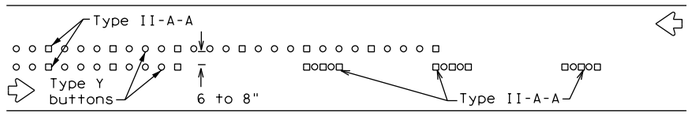
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



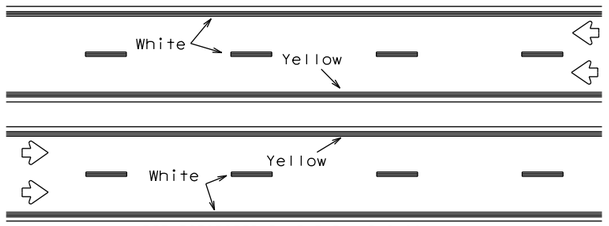
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



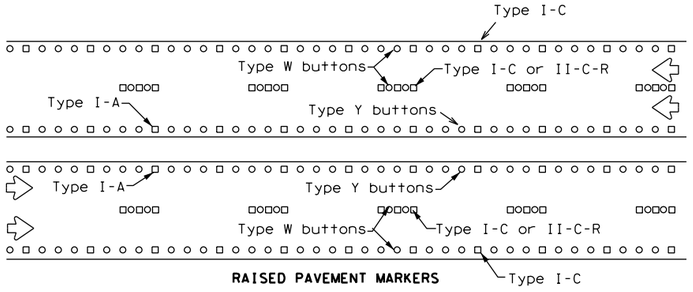
RAISED PAVEMENT MARKERS - PATTERN B

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

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



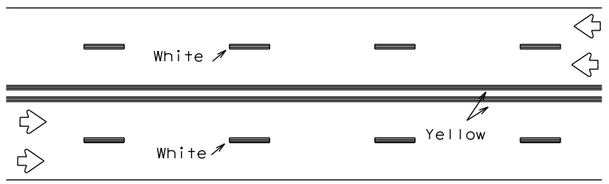
REFLECTORIZED PAVEMENT MARKINGS



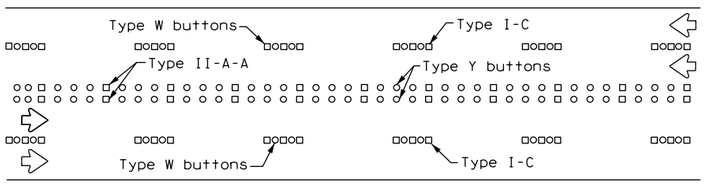
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



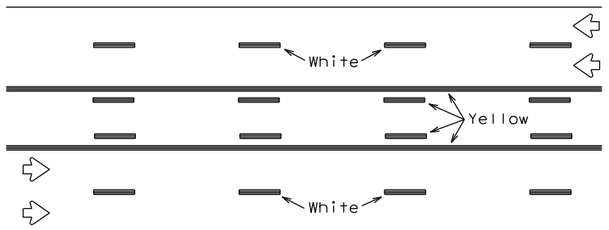
REFLECTORIZED PAVEMENT MARKINGS



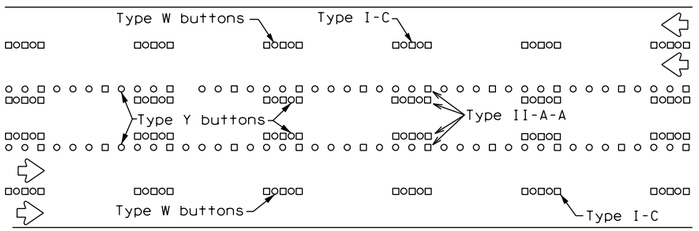
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

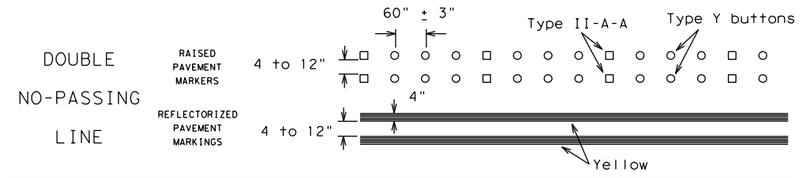
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

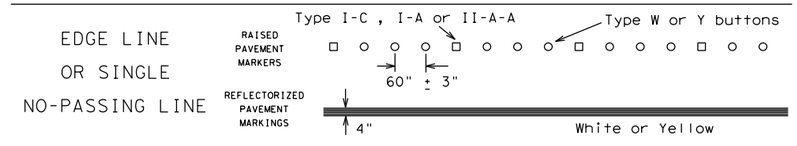
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

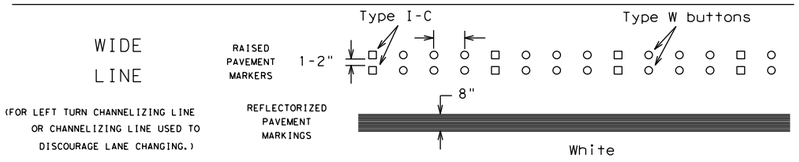


EDGE LINE OR SINGLE NO-PASSING LINE



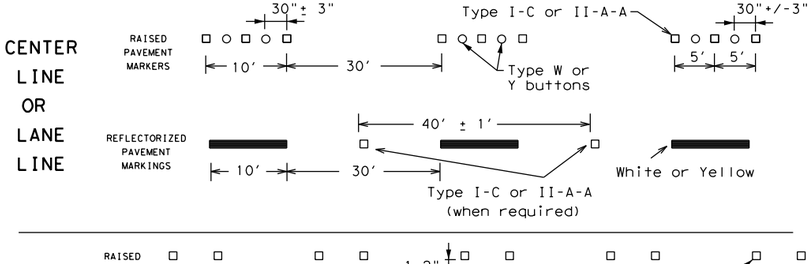
WIDE LINE

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

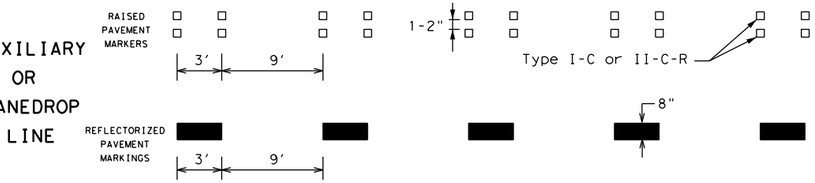


BROKEN LINES

CENTER LINE OR LANE LINE

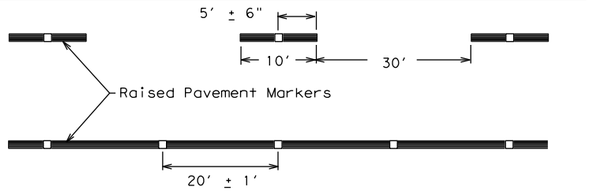


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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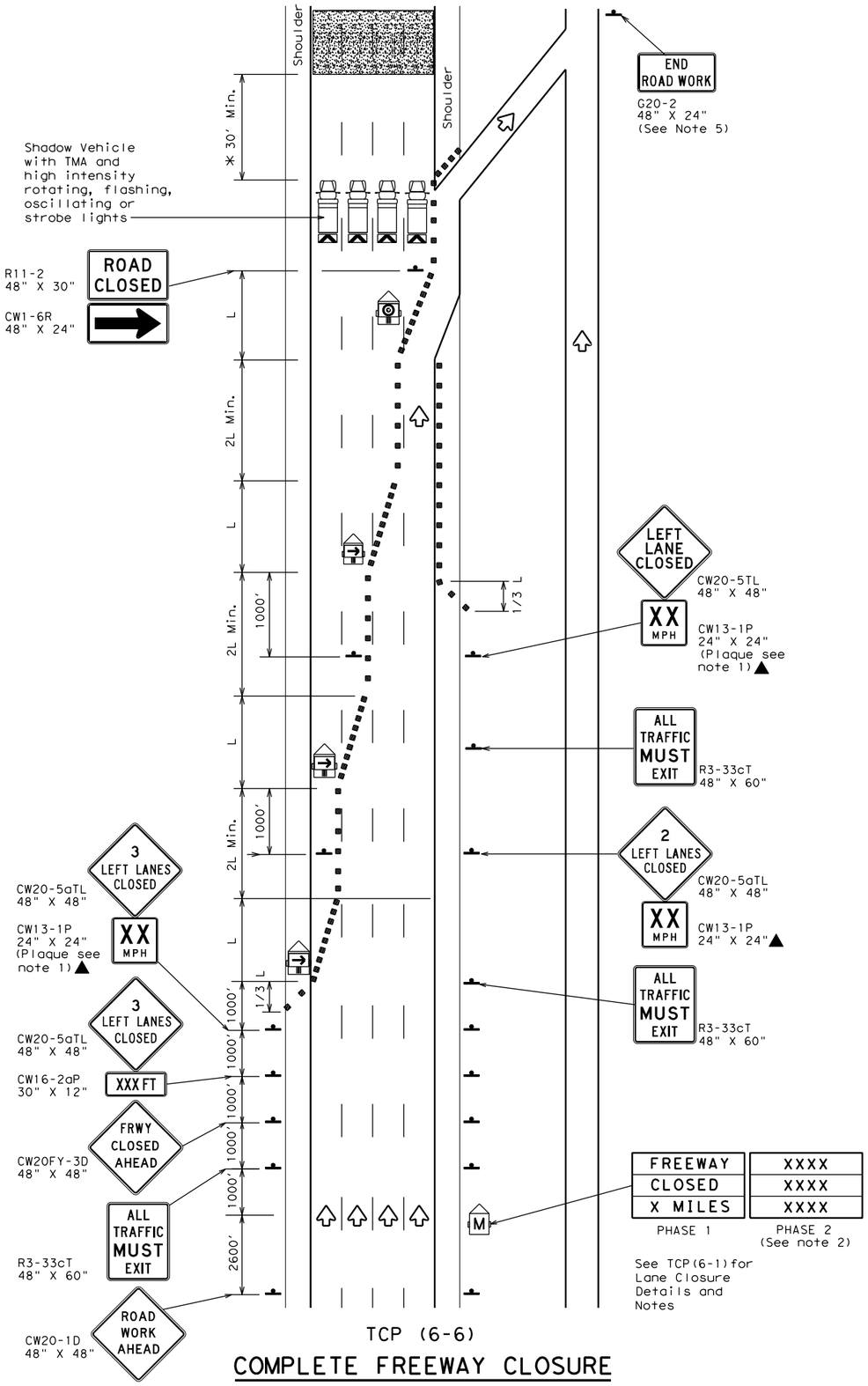

TCP (6-6)

COMPLETE FREEWAY CLOSURE

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

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

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

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

GENERAL NOTES

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

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
FREEWAY CLOSURE

TCP(6-6)-12

FILE: tcp6-6.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	ELP	EL PASO		29

DATE: 10/3/2023 6:15:23 PM
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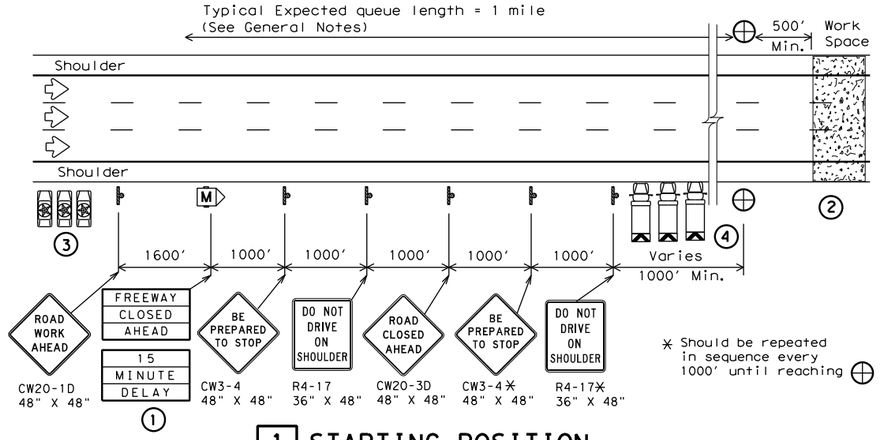


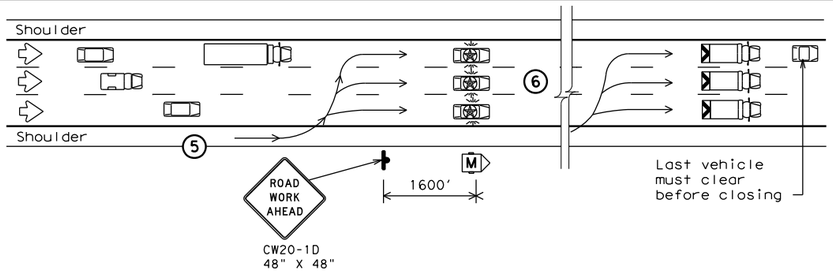
1 STARTING POSITION

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

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

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

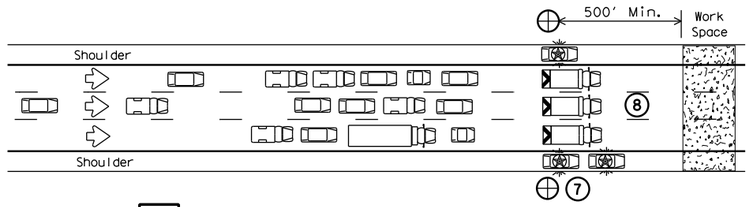
(4) One barrier vehicle with a Truck Mounted Attenuator and amber or blue and amber high intensity flashing/oscillating/strobe lighting shall be used for each lane to be closed.



2 REDUCING SPEED OPERATION

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

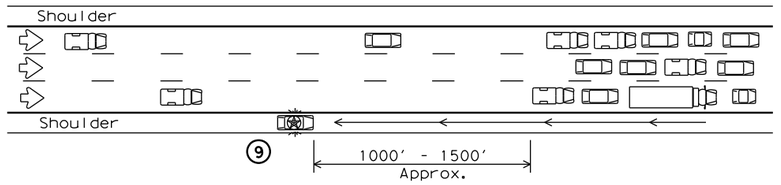
(6) Once the LEOVs have achieved an abreast blocking formation while traveling toward the CP, emergency lights and headlights should be turned "ON". The LEOVs should maintain formation, not allow traffic to pass, and begin to decelerate. The LEOVs should continue to decelerate, giving the barrier vehicles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



3 ALL TRAFFIC STOPPED AT CP

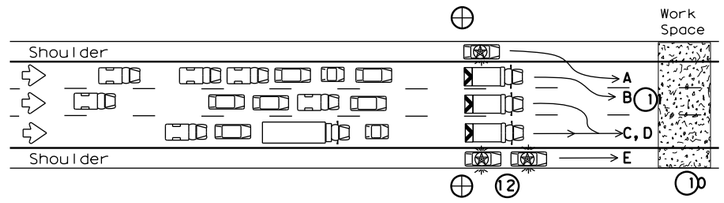
(7) Once traffic is stopped the LEOVs should park on the shoulders with emergency lighting "ON" in order to provide law enforcement presence at the closure and keep shoulders blocked ahead of the work space. They should stay in radio contact with the WARNING LEOV.

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



4 WARNING THE TRAFFIC QUEUE

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



5 RELEASING STOPPED TRAFFIC

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHORT DURATION FREEWAY CLOSURE SEQUENCE

TCP(6-7)-12

FILE: tcp6-7.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
1-97 8-12	DIST	COUNTY		SHEET NO.
4-98	ELP	EL PASO		30

DATE: 10/3/2023 6:15:27 PM
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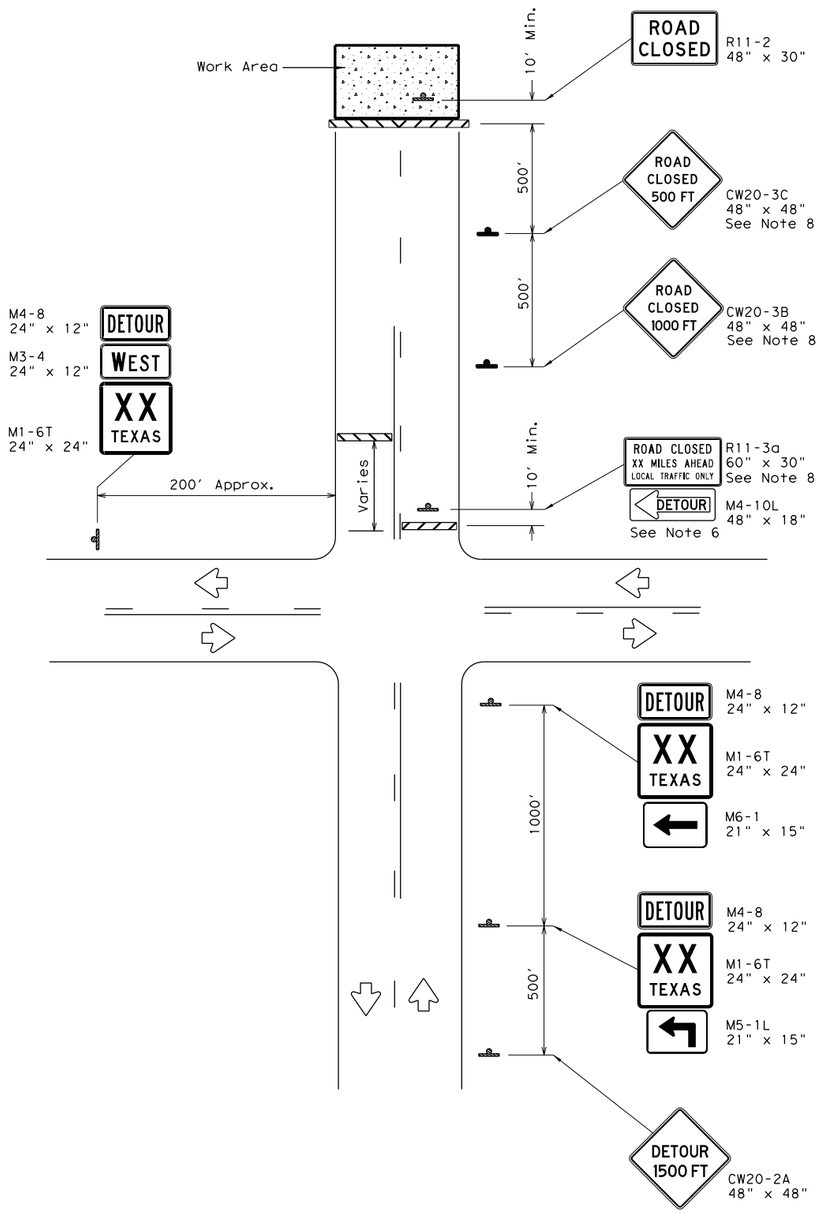
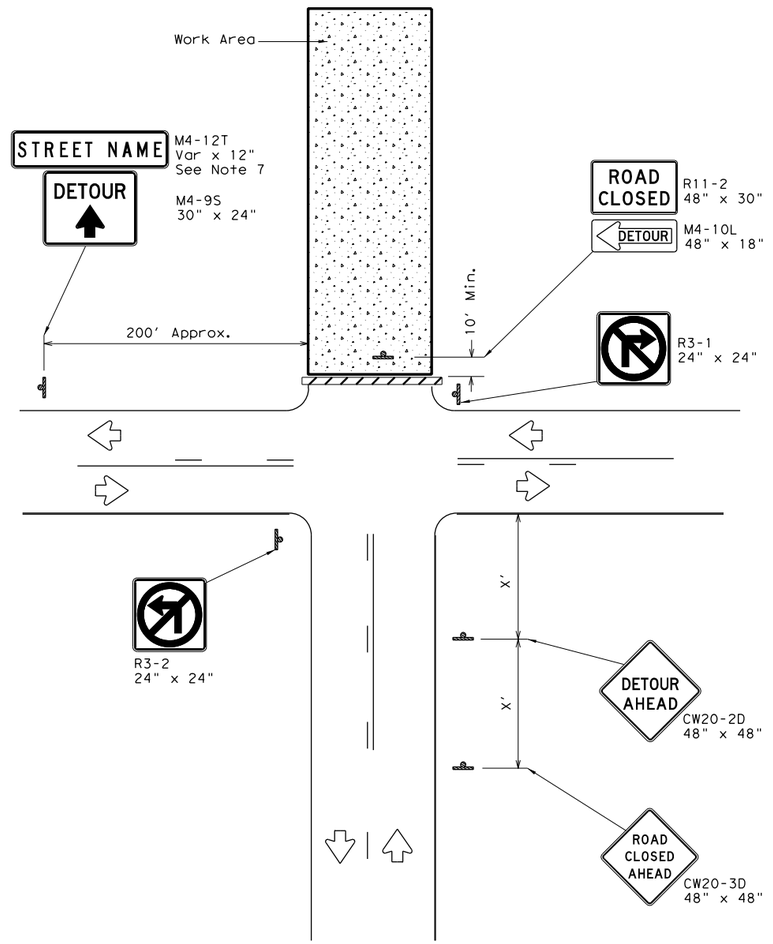


ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

* Conventional Roads Only

GENERAL NOTES

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

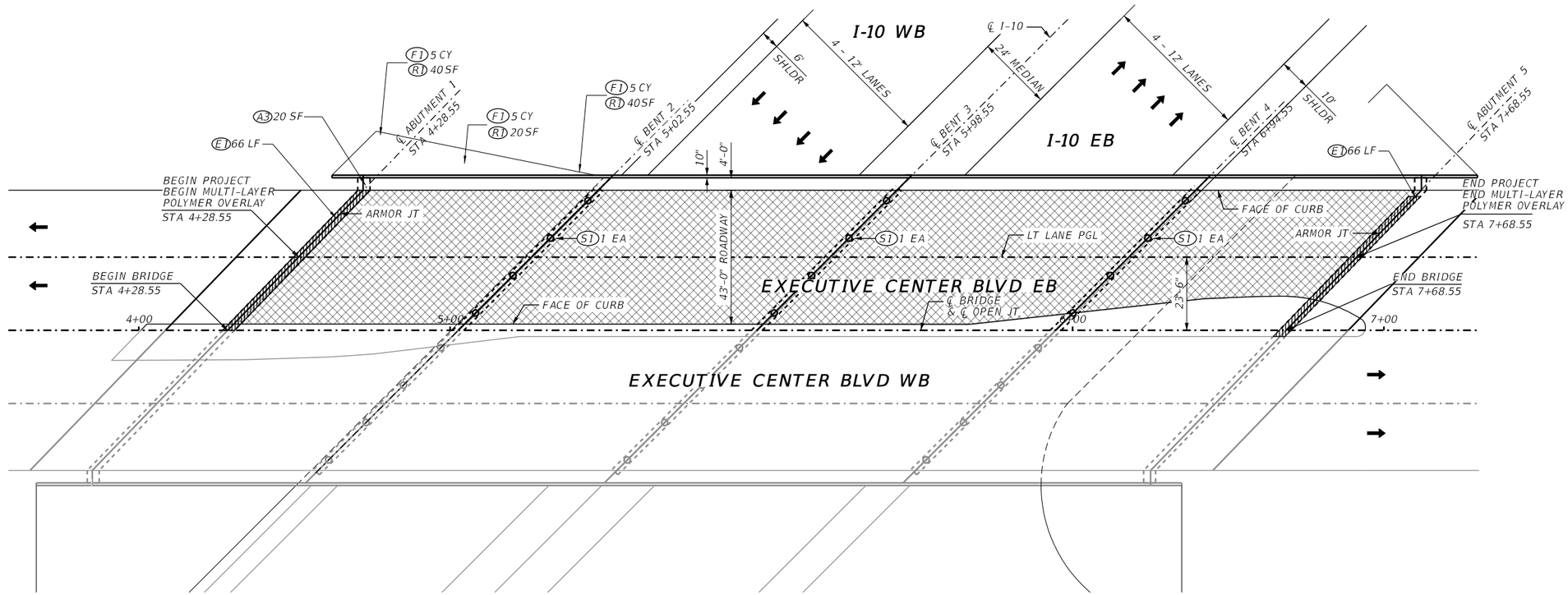
Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182,ETC.	IH10,ETC.
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	ELP	EL PASO		31



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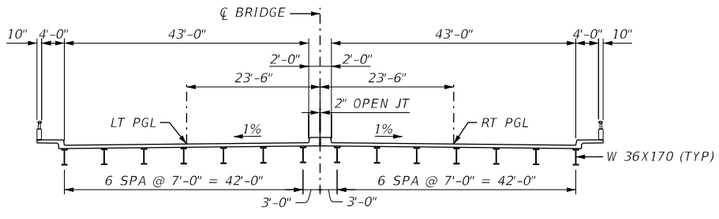

TYPICAL SECTION

BRIDGE QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
354	6134	PLANE ASPH CONC PAV (0" TO ½" MICRO)	SY	1570
401	6001	FLOWABLE BACKFILL (F1)	CY	15
429	6005	CONC STR REPAIR (DECK REP (FULL DEPTH))	SF	20
429	6009	CONC STR REPAIR (STANDARD) (A3) (R1)	SF	120
438	6004	CLEANING AND SEALING EXIST JOINTS (CL 7) (E1)	LF	132
439	6013	MULTI-LAYER POLYMER OVERLAY	SY	1570
483	6013	SHOT BLASTING	SY	1570
7306	6002	BRIDGE SUBSTRUCTURE CLEANING (BENT) (S1)	EA	3

MULTI-LAYER POLYMER OVERLAY (MLPO) NOTES:

PERFORM WORK IN ACCORDANCE WITH ITEM 439, "BRIDGE DECK OVERLAYS" AND BELOW INSTRUCTIONS. A TECHNICAL REPRESENTATIVE OF THE OVERLAY MANUFACTURER SHOULD BE PRESENT AT THE PRE-CONSTRUCTION MEETING AND EXECUTION OF ALL WORK ASSOCIATED WITH THE OVERLAY INSTALLATION.

1. MICRO-MILL CONCRETE DECK TO REMVE UP TO ¼" OF DECK SURFACE TO EXPOSE COARSE AGGREGATE.
2. INSPECT THE BRIDGE DECK FOR ANY POTENTIAL DECK REPAIRS OR DELAMINATED CONCRETE. PERFORM PARTIAL AND/OR FULL DEPTH BRIDGE DECK REPAIRS IN ACCORDANCE WITH ITEM 429, "CONCRETE STRUCTURE REPAIR" AND CHAPTER 3, SECTION 4 OF TXDOT CONCRETE REPAIR MANUAL. REPAIR MATERIALS MUST BE COMPATIBLE WITH MLPO SYSTEM. CURE REPAIRS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS APPROVED OTHERWISE. TEST MOISTURE CONTENT IN CONCRETE REPAIRS TO ENSURE IT CONFORMS TO MANUFACTURER'S REQUIREMENTS. THIS WORK WILL BE PAID FOR IN ACCORDANCE WITH ITEM 429, "CONCRETE STRUCTURE REPAIR."
3. PREPARE THE DECK SURFACE BY SHOT BLASTING AND CLEANING WITH HIGH PRESSURE AIR. REMOVE ALL OIL AND OTHER CONTAMINANTS. PROVIDE A SURFACE PROFILE WITH LESS THAN ¼" DEVIATION. AREAS WITH A DEVIATION GREATER THAN ¼" SHALL BE REPAIRED AS A PARTIAL DEPTH DECK REPAIR AS INSTRUCTED IN THE PREVIOUS STEP.
4. MASK EXISTING JOINTS AND DECK DRAINS.
5. INSTALL MULTI-LAYER POLYMER OVERLAY PER ITEM 439, "BRIDGE DECK OVERLAYS."
6. INSTALL PAVEMENT MARKINGS AS SHOWN ON PLANS AFTER THE OVERLAY IS CURED.
7. SEAL ALL THE EXPANSION JOINTS. SEE ELSEWHERE IN PLANS FOR JOINT DETAILS.

LEGEND

- CLEANING AND SEALING EXISTING JOINT SEE DETAIL
- MICRO-MILL SHOT BLASTING MULTI-LAYER POLYMER OVERLAY

REPAIR CALL-OUT LEGEND

XX XX
- REPAIR QUANTITY UNIT
- ESTIMATED REPAIR QUANTITY
- REPAIR TYPE DESIGNATION - SEE BELOW

REPAIR TYPE DESCRIPTION

- (A3) INTERMEDIATE SPALL (STANDARD)
- (E1) CLEANING AND SEALING EXISTING JOINTS (CL 7)
- (F1) FLOWABLE BACKFILL
- (R1) CONCRETE RIPRAP UNDERMINING REPAIR
- (S1) BRIDGE SUBSTRUCTURE CLEANING (BENT)

NOTES:

1. SEE "BRIDGE SPALL REPAIR DETAILS," AND "MISCELLANEOUS REPAIRS" SHEETS FOR REPAIR NOTES, DETAILS AND ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL MASK ALL EXISTING JOINTS AND DECK DRAINS BEFORE COMMENCING WORK.

0 20' 40'

SCALE: 1" = 40' HORZ
1" = 40' VERT

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

consor
F-12040

Texas Department of Transportation

BRIDGE REPAIR LAYOUT

24-072-0-2121-02-207
EXECUTIVE CNTR EB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			32
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

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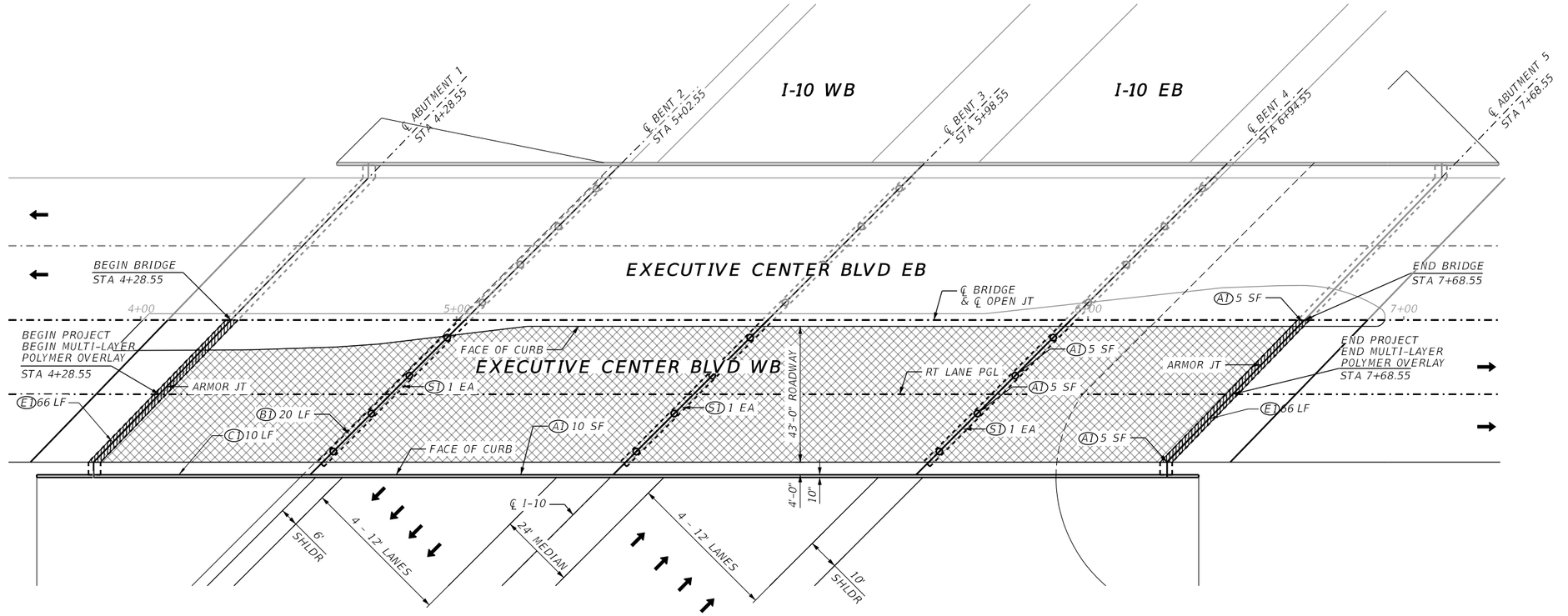
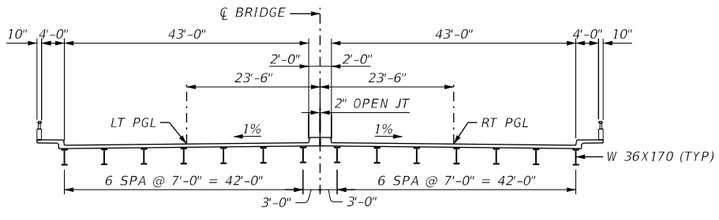


PLAN



TYPICAL SECTION

BRIDGE QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
354	6134	PLANE CONC PAV (0" TO ½" MICRO)	SY	1570
429	6002	CONC STR REPAIR (EPOXY MORTAR) (A1)	SF	30
429	6005	CONC STR REPAIR (DECK REP (FULL DEPTH))	SF	20
438	6004	CLEANING AND SEALING EXIST JOINTS (CL 7) (E1)	LF	132
439	6013	MULTI-LAYER POLYMER OVERLAY	SY	1570
483	6013	SHOT BLASTING	SY	1570
776	6053	REPLACE (STEEL RAIL) (C1)	LF	10
780	6002	CONC CRCK REPAIR (DISCRETE)(INJECT) (B1)	LF	20
7306	6002	BRIDGE SUBSTRUCTURE CLEANING (BENT) (S1)	EA	3

MULTI-LAYER POLYMER OVERLAY (MLPO) NOTES:

PERFORM WORK IN ACCORDANCE WITH ITEM 439, "BRIDGE DECK OVERLAYS" AND BELOW INSTRUCTIONS. A TECHNICAL REPRESENTATIVE OF THE OVERLAY MANUFACTURER SHOULD BE PRESENT AT THE PRE-CONSTRUCTION MEETING AND EXECUTION OF ALL WORK ASSOCIATED WITH THE OVERLAY INSTALLATION.

1. MICRO-MILL CONCRETE DECK TO REMVE UP TO ¼" OF DECK SURFACE TO EXPOSE COARSE AGGREGATE.
2. INSPECT THE BRIDGE DECK FOR ANY POTENTIAL DECK REPAIRS OR DELAMINATED CONCRETE. PERFORM PARTIAL AND/OR FULL DEPTH BRIDGE DECK REPAIRS IN ACCORDANCE WITH ITEM 429, "CONCRETE STRUCTURE REPAIR" AND CHAPTER 3, SECTION 4 OF TXDOT CONCRETE REPAIR MANUAL. REPAIR MATERIALS MUST BE COMPATIBLE WITH MLPO SYSTEM. CURE REPAIRS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS APPROVED OTHERWISE. TEST MOISTURE CONTENT IN CONCRETE REPAIRS TO ENSURE IT CONFORMS TO MANUFACTURER'S REQUIREMENTS. THIS WORK WILL BE PAID FOR IN ACCORDANCE WITH ITEM 429, "CONCRETE STRUCTURE REPAIR."
3. PREPARE THE DECK SURFACE BY SHOT BLASTING AND CLEANING WITH HIGH PRESSURE AIR. REMOVE ALL OIL AND OTHER CONTAMINANTS. PROVIDE A SURFACE PROFILE WITH LESS THAN ¼" DEVIATION. AREAS WITH A DEVIATION GREATER THAN ¼" SHALL BE REPAIRED AS A PARTIAL DEPTH DECK REPAIR AS INSTRUCTED IN THE PREVIOUS STEP.
4. MASK EXISTING JOINTS AND DECK DRAINS.
5. INSTALL MULTI-LAYER POLYMER OVERLAY PER ITEM 439, "BRIDGE DECK OVERLAYS."
6. INSTALL PAVEMENT MARKINGS AS SHOWN ON PLANS AFTER THE OVERLAY IS CURED.
7. SEAL ALL THE EXPANSION JOINTS. SEE ELSEWHERE IN PLANS FOR JOINT DETAILS.

LEGEND

- CLEANING AND SEALING EXISTING JOINT SEE DETAIL
- MICRO-MILL SHOT BLASTING MULTI-LAYER POLYMER OVERLAY

REPAIR CALL-OUT LEGEND

(XX) XX XX
- REPAIR QUANTITY UNIT
- ESTIMATED REPAIR QUANTITY
- REPAIR TYPE DESIGNATION - SEE BELOW

REPAIR TYPE DESCRIPTION

- (A1) MINOR SPALL
- (B1) EPOXY INJECT CRACK
- (C1) REPLACE (STEEL RAIL)
- (E1) CLEANING AND SEALING EXISTING JOINTS
- (S1) BRIDGE SUBSTRUCTURE CLEANING (BENT)

NOTES:

1. SEE "BRIDGE SPALL REPAIR DETAILS," AND "MISCELLANEOUS REPAIRS" SHEETS FOR REPAIR NOTES, DETAILS AND ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL MASK ALL EXISTING JOINTS AND DECK DRAINS BEFORE COMMENCING WORK.

0 20' 40'

SCALE: 1" = 40' HORZ
1" = 40' VERT

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

consor
F-12040

Texas Department of Transportation

BRIDGE REPAIR LAYOUT

24-072-0-2121-02-282
EXECUTIVE CNTR WB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			33
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

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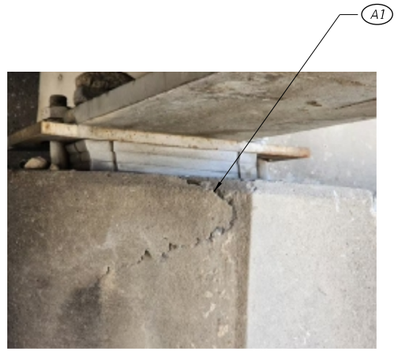
REPAIR TYPE	LOCATION	UNIT	QTY
A1	BENT 4 COLUMNS 2 & 3 SOUTH FACE	SF	10
A1	ABUTMENT 5 NORTH CORNER	SF	5
A1	ABUTMENT 5 SOUTH CORNER	SF	5
B1	BENT 2 COLUMN 4	LF	20
A1	TOTAL	SF	20
B1	TOTAL	LF	20

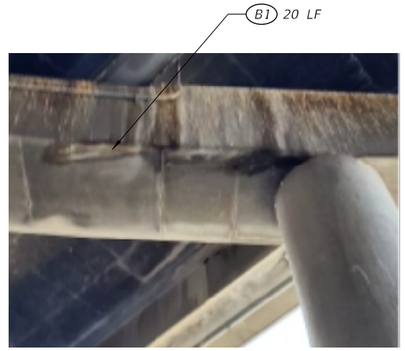
BENT 4 COLUMN 2 SOUTH FACE



ABUTMENT 5 SOUTH CORNER

BENT 4 COLUMN 3 SOUTH FACE

ABUTMENT 5 NORTH CORNER



BENT 2 COLUMN 4

REPAIR TYPE DESCRIPTION

A1 MINOR SPALL

B1 EPOXY INJECT CRACK

NOTES:

SEE "BRIDGE SPALL REPAIR DETAILS" SHEETS FOR REPAIR NOTES, DETAILS AND ADDITIONAL INFORMATION.

PHOTOGRAPHS ARE PROVIDED FOR CONTRACTOR'S INFORMATION AND ARE INTENDED TO SHOW GENERALIZED IDEA OF THE STRUCTURE'S CONDITION. EXTENT OF DAMAGE MAY VARY FROM WHAT IS SHOWN IN PHOTOS.

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

consor
F-12040

Texas Department of Transportation

SUBSTRUCTURE REPAIR

24-072-0-2121-02-282
EXECUTIVE CNTR WB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			34
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

D190247TX.07

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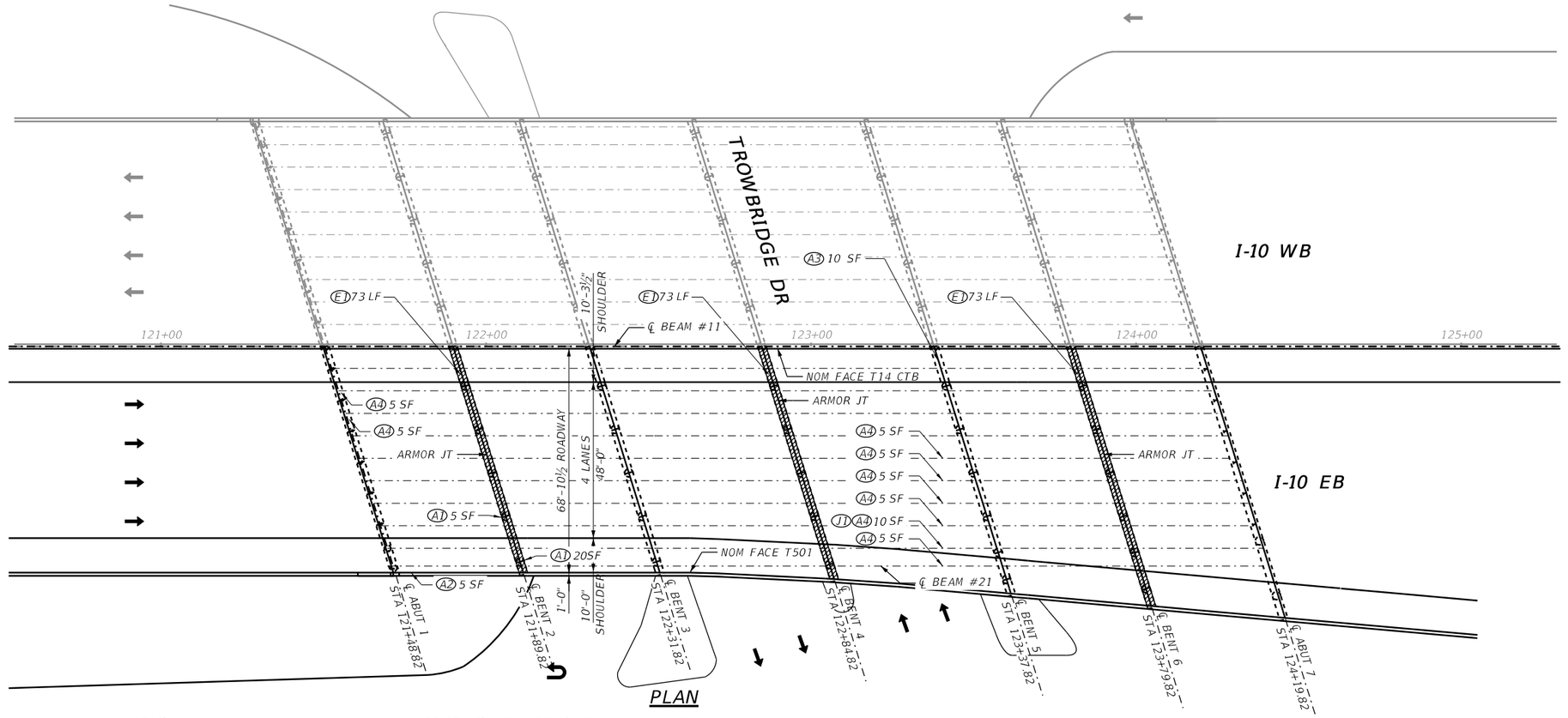
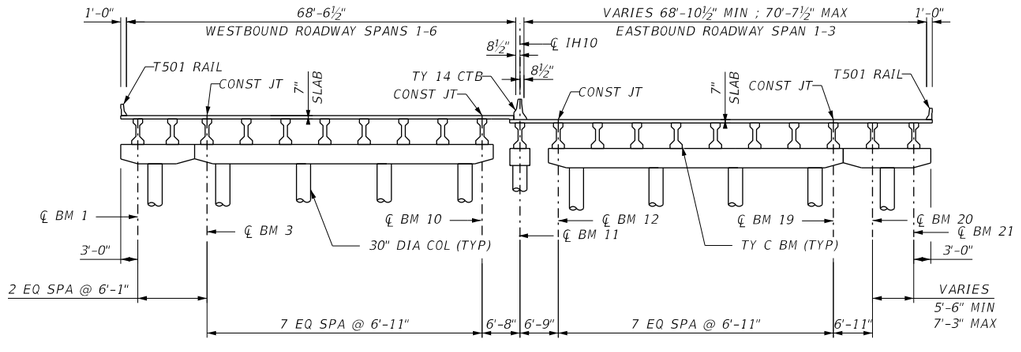


PLAN



TYPICAL SECTION

BRIDGE QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
429	6002	CONC STR REPAIR (EPOXY MORTAR) (A1)	SF	25
429	6007	CONC STR REPAIR (VERTICAL & OVERHEAD) (A2) (A4)	SF	50
429	6009	CONC STR REPAIR (STANDARD) (A3)	SF	10
438	6004	CLEANING AND SEALING EXIST JOINTS (CL 7) (E1)	LF	219
786	6001	CARBON FIBER REINF POLYMER PROTECTION (J1)	SF	10

LEGEND

CLEANING AND SEALING EXISTING JOINT SEE DETAIL

REPAIR CALL-OUT LEGEND

(XX) XX XX
- REPAIR QUANTITY UNIT
- ESTIMATED REPAIR QUANTITY
- REPAIR TYPE DESIGNATION - SEE BELOW

REPAIR TYPE DESCRIPTION

- (A1) MINOR SPALL
- (A2) INTERMEDIATE SPALL
- (A3) INTERMEDIATE SPALL (STANDARD)
- (A4) CONCRETE BEAM SPALL
- (E1) CLEANING AND SEALING EXISTING JOINTS (CL 7)
- (J1) CARBON FIBER REINF POLYMER PROTECTION

NOTES:

1. SEE "BRIDGE SPALL REPAIR DETAILS," AND "MISCELLANEOUS REPAIRS" SHEETS FOR REPAIR NOTES, DETAILS AND ADDITIONAL INFORMATION.

0 20' 40'

SCALE: 1" = 40' HORZ
1" = 40' VERT

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/30/2023

NO.	DATE	REVISION	APPROV.

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Texas Department of Transportation

BRIDGE REPAIR LAYOUT

24-072-0-2121-03-164
IH10 EB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

D190247TX.07

REPAIR TYPE	LOCATION	UNIT	QTY
A1	BENT 2 COLUMN 6 NORTH FACE	SF	20
A1	BENT 5 BASE OF COLUMN 3 SOUTH FACE	SF	5
A1	TOTAL	SF	25

BENT 2 COLUMN 6 NORTH FACE

BENT 5 BASE OF COLUMN 3 SOUTH FACE

REPAIR TYPE DESCRIPTION

A1 MINOR SPALL

NOTES:

SEE "BRIDGE SPALL REPAIR DETAILS" SHEETS FOR REPAIR NOTES, DETAILS AND ADDITIONAL INFORMATION.

PHOTOGRAPHS ARE PROVIDED FOR CONTRACTOR'S INFORMATION AND ARE INTENDED TO SHOW GENERALIZED IDEA OF THE STRUCTURE'S CONDITION. EXTENT OF DAMAGE MAY VARY FROM WHAT IS SHOWN IN PHOTOS.

SCALE: NTS

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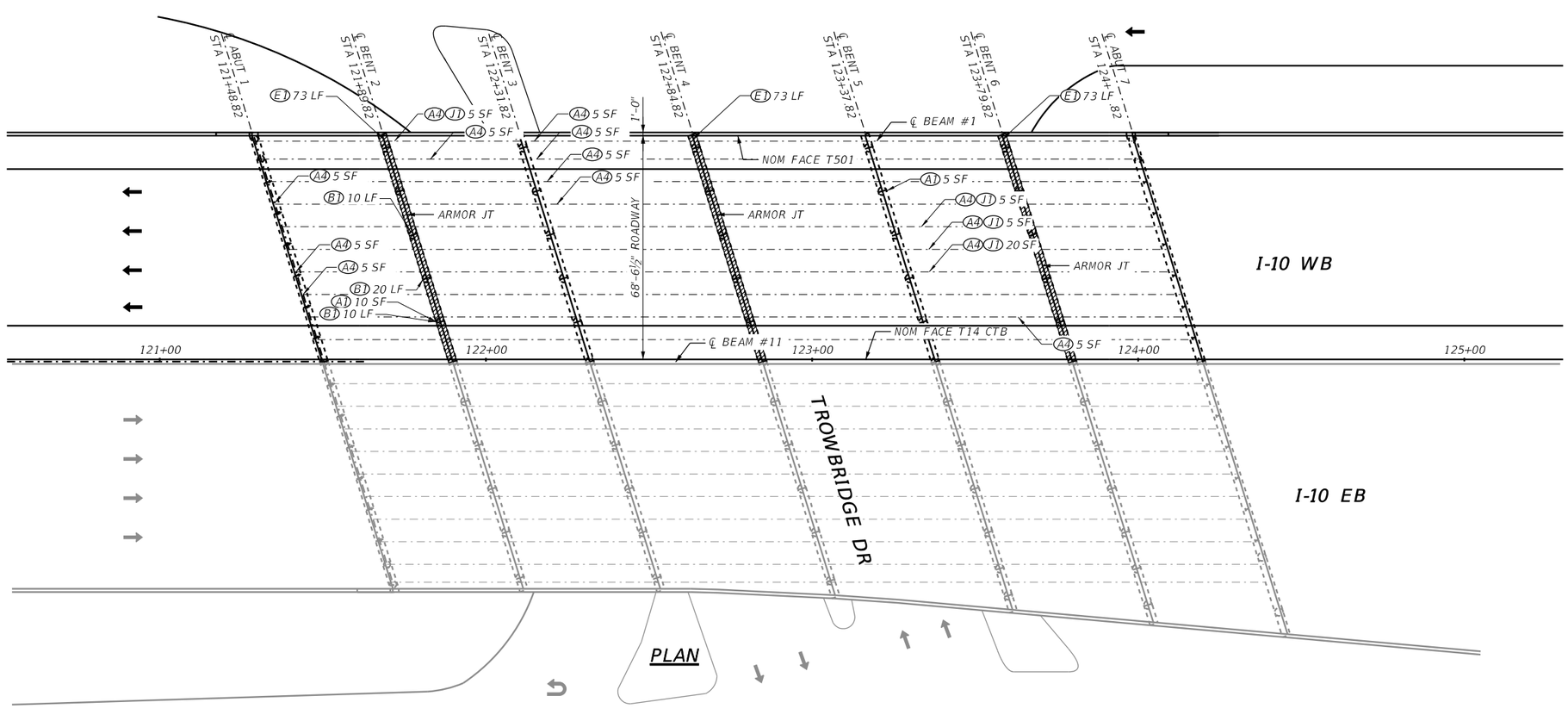
SUBSTRUCTURE REPAIR

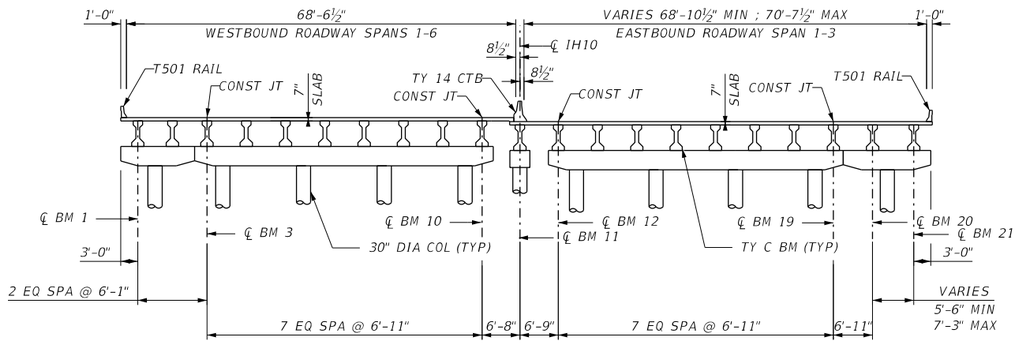
24-072-0-2121-03-164
IH10 EB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			36
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

D190247TX.07





TYPICAL SECTION

BRIDGE QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
429	6002	CONC STR REPAIR (EPOXY MORTAR) (A1)	SF	15
429	6007	CONC STR REPAIR (VERTICAL & OVERHEAD) (A2) (A4)	SF	80
438	6004	CLEANING AND SEALING EXIST JOINTS (CL 7) (E1)	LF	219
780	6002	CONC CRCK REPAIR (DISCRETE)(INJECT) (B1)	LF	40
786	6001	CARBON FIBER REINF POLYMER PROTECTION (J1)	SF	35

LEGEND

CLEANING AND SEALING EXISTING JOINT SEE DETAIL

REPAIR CALL-OUT LEGEND

(XX) XX XX
- XX XX — REPAIR QUANTITY UNIT
- XX XX — ESTIMATED REPAIR QUANTITY
- (XX) — REPAIR TYPE DESIGNATION - SEE BELOW

REPAIR TYPE DESCRIPTION

- (A1) MINOR SPALL
- (A2) INTERMEDIATE REPAIR
- (A4) CONCRETE BEAM SPALL
- (B1) EPOXY INJECT CRACK
- (E1) CLEANING AND SEALING EXISTING JOINTS
- (J1) CFRP

NOTES:

1. SEE "BRIDGE SPALL REPAIR DETAILS," AND "MISCELLANEOUS REPAIRS" SHEETS FOR REPAIR NOTES, DETAILS AND ADDITIONAL INFORMATION.

0 20' 40'

SCALE: 1" = 40' HORZ
1" = 40' VERT

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BRIDGE REPAIR LAYOUT

24-072-0-2121-03-163
IH10 WB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			37
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

D190247TX.07

REPAIR TYPE	LOCATION	UNIT	QTY
B1	BENT 2 COLUMN 3 EAST FACE	LF	10
B1	BENT 2 COLUMN 2 EAST FACE	LF	20
A1	BENT 2 COLUMN 1 EAST FACE	SF	10
B1	BENT 2 COLUMN 1 EAST FACE	LF	10
A1	BENT 5 COLUMN 4 WEST FACE	SF	5
A1	TOTAL	SF	15
B1	TOTAL	LF	40

BENT 2 COLUMN 3 EAST FACE

BENT 5 COLUMN 4 WEST FACE

REPAIR TYPE DESCRIPTION

A1 MINOR SPALL

B1 EPOXY INJECT CRACK

NOTES:

SEE "BRIDGE SPALL REPAIR DETAILS" SHEETS FOR REPAIR NOTES, DETAILS AND ADDITIONAL INFORMATION.

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SCALE: NTS

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SUBSTRUCTURE REPAIR

24-072-0-2121-03-163
IH10 WB

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			38
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

D190247TX.07

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10/3/2023

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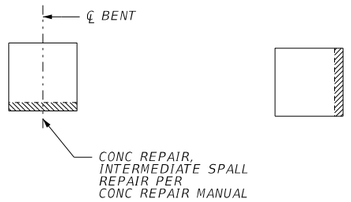
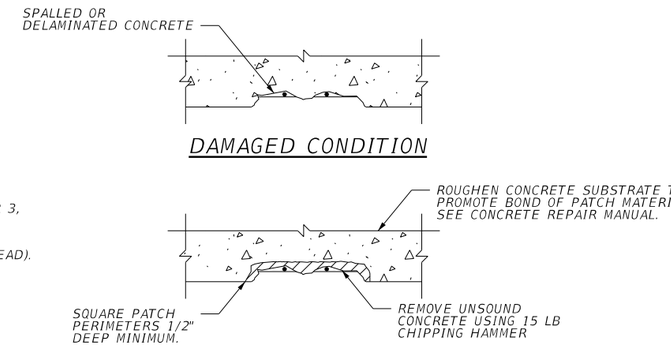
(A1) MINOR SPALL
1. IDENTIFY AND MARK ALL REPAIR LOCATIONS PRIOR TO BEGINNING WORK. VERIFY AREAS AND QUANTITIES WITH THE ENGINEER. PROVIDE ACCESS FOR THE ENGINEER TO INSPECT AND VERIFY REPAIR AREAS.
2. PREPARE DETAILED REPAIR PROCEDURE IN ACCORDANCE WITH CHAPTER 3, SECTION 1 OF THE TXDOT CONCRETE REPAIR MANUAL.
3. IF GREATER THAN ½ OF BAR IS EXPOSED, PROCEED AS INTERMEDIATE SPALL REPAIR.
4. REPAIRS ARE PAID AS ITEM 429 6002 CONC STR REPAIR (EPOXY MORTAR).

(A2) INTERMEDIATE SPALL (VERTICAL & OVERHEAD)
1. IDENTIFY AND MARK ALL REPAIR LOCATIONS PRIOR TO BEGINNING WORK. VERIFY AREAS AND QUANTITIES WITH THE ENGINEER. PROVIDE ACCESS FOR THE ENGINEER TO INSPECT AND VERIFY REPAIR AREAS.
2. PREPARE DETAILED REPAIR PROCEDURE IN ACCORDANCE WITH CHAPTER 3, SECTION 2 OF THE TXDOT CONCRETE REPAIR MANUAL AND INTERMEDIATE CONCRETE REPAIR DETAIL.
3. TROWEL APPLY TYPE C REPAIR MATERIALS PER DMS-4655 TO A MAXIMUM DEPTH OF 4". REPAIRS DEEPER THAN 4" SHOULD BE FORMED AND POURED IN ACCORDANCE WITH CHAPTER 3, SECTION 2 OF THE TXDOT CONCRETE REPAIR MANUAL. BAGGED CONCRETE (EXTENDED) IS PERMISSIBLE FOR FORMED AND POURED REPAIRS.
4. REPAIRS ARE PAID AS ITEM 429 6007 CONCRETE STRUCTURE REPAIR (VERTICAL AND OVERHEAD).
5. APPLIES TO FOLLOWING SCENARIOS.



SECTION (BENT)

PLAN (COLUMN/PILE)



DAMAGED CONDITION

PREPARATION

REPAIR

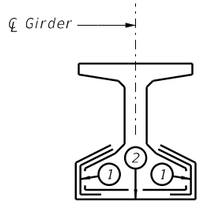
INTERMEDIATE CONCRETE REPAIR DETAIL (A2)

GENERAL NOTE:

1. ALL REPAIR NOTES STATED HERE MAY NOT BE FULLY ENCOMPASSING, REFERENCE THE TXDOT CONCRETE REPAIR MANUAL FOR FURTHER CLARIFICATION. THE TXDOT CONCRETE REPAIR MANUAL SHALL BE PRESENT AT ALL TIMES DURING ANY CONCRETE REPAIR WORK

(B1) EPOXY INJECT CRACK
1. PERFORM EPOXY INJECTION IN ACCORDANCE WITH TXDOT CONCRETE REPAIR MANUAL, CHAPTER 3, SECTION 5 AND ITEM 780.
2. REPAIRS ARE PAID AS ITEM 780 6002 CONCRETE CRACK REPAIR (DISCRETE) (INJECT).

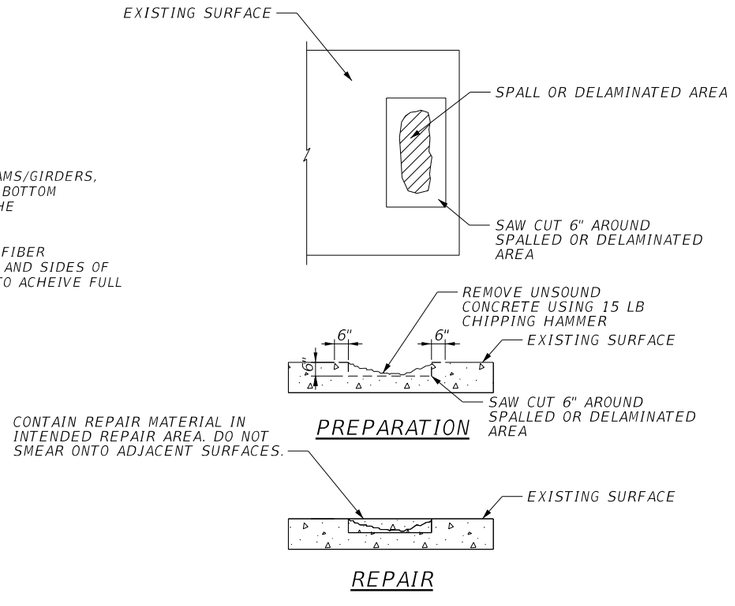
(J1)(A4) 1. IDENTIFY AND MARK ALL REPAIR LOCATIONS PRIOR TO BEGINNING WORK. VERIFY AREAS AND QUANTITIES WITH THE ENGINEER. PROVIDE ACCESS FOR THE ENGINEER TO INSPECT AND VERIFY REPAIR AREAS.
2. PREPARE DETAILED REPAIR PROCEDURE IN ACCORDANCE WITH CHAPTER 3, SECTION 2 OF THE TXDOT CONCRETE REPAIR MANUAL.
3. FOR HIGHER RISK OF OVERHEIGHT IMPACTS (EXPOSED STRANDS) PROCEED WITH DETAIL BELOW.
4. CRACKS EXTENDING OUTSIDE OF THE INTERMEDIATE SPALL REPAIR IN OTHERWISE SOUND CONCRETE SHALL BE EPOXY INJECTED ACCORDING TO THE TXDOT CONCRETE REPAIR MANUAL CHAPTER 3, SECTION 5.
5. FOR PREVIOUS CFRP APPLICATION FAILURE, CLEAN AREA AND PROCEED WITH APPLYING A NEW LAYER OF CFRP.
6. REPAIRS ARE PAID AS ITEM 429 6007 CONCRETE STRUCTURE REPAIR (VERTICAL AND OVERHEAD). AND ITEM 786 6002, "CARBON FIBER REINFORCED POLYMER (PROTECTION)."



1. FIRST LAYER – PLACE 24" WIDE CARBON FIBER FABRIC SHEETS LONGITUDINALLY ON BEAMS/GIRDERS, WITH FIBER ORIENTATION PARALLEL TO BEAM/GIRDER CENTERLINE. LOCATE SHEETS ON BOTTOM CORNERS OF BEAM/GIRDER AS SHOWN. OVERLAP FABRIC SHEETS A MINIMUM OF 6" IN THE LONGITUDINAL DIRECTION TO ACHIEVE FULL INSTALLATION LENGTH.

2. SECOND LAYER – PLACE FIBER FABRIC SHEETS TRANSVERSELY ON BEAM/GIRDER, WITH FIBER ORIENTATION PERPENDICULAR TO BEAM/GIRDER CENTERLINE. WRAP SHEETS ON BOTTOM AND SIDES OF BEAM/GIRDER TO LIMITS SHOWN. WRAP BUTT JOINTS IN THE LONGITUDINAL DIRECTION TO ACHEIVE FULL INSTALLATION LENGTH.

(A3) INTERMEDIATE SPALL (STANDARD)
1. IDENTIFY AND MARK ALL REPAIR LOCATIONS PRIOR TO BEGINNING WORK. VERIFY AREAS AND QUANTITIES WITH THE ENGINEER. PROVIDE ACCESS FOR THE ENGINEER TO INSPECT AND VERIFY REPAIR AREAS.
2. PREPARE DETAILED REPAIR PROCEDURE IN ACCORDANCE WITH CHAPTER 3, SECTION 2 OF THE TXDOT CONCRETE REPAIR MANUAL AND DETAIL BELOW.
3. TROWEL APPLY TYPE C REPAIR MATERIALS PER DMS-4655 TO A MAXIMUM DEPTH OF 4". REPAIRS DEEPER THAN 4" SHOULD BE FORMED AND POURED IN ACCORDANCE WITH CHAPTER 3, SECTION 2 OF THE TXDOT CONCRETE REPAIR MANUAL. BAGGED CONCRETE (EXTENDED) IS PERMISSIBLE FOR FORMED AND POURED REPAIRS.
4. REPAIRS ARE PAID AS ITEM 429 6009 CONCRETE STRUCTURE REPAIR (STANDARD).



PREPARATION

REPAIR

SCALE: NTS

STATE OF TEXAS
RICARDO A. PRIETO
91123
LICENSED
PROFESSIONAL ENGINEER

10/3/2023

NO.	DATE	REVISION	APPROV.

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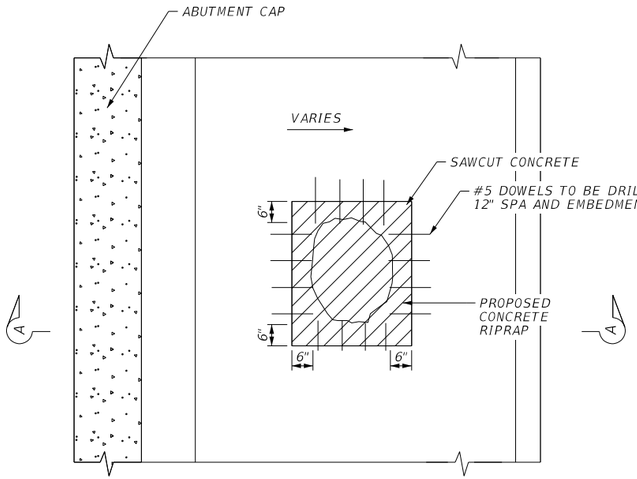
Texas Department of Transportation

BRIDGE SPALL REPAIR DETAILS

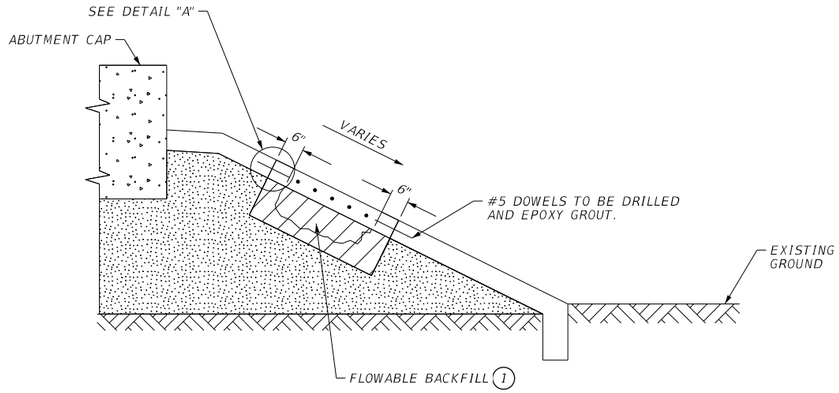
SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			39
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

D190247TX.07



PLAN VIEW



SECTION A-A

ELEVATION

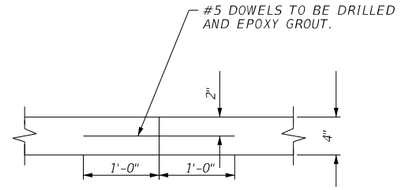
CONCRETE RIPRAP UNDERMINING REPAIR (R1)

NOTES:

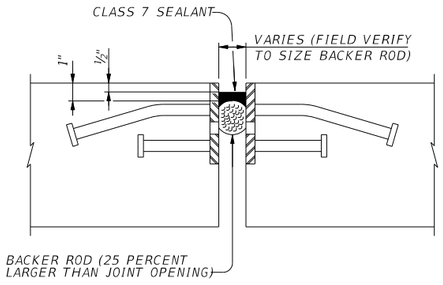
(1) EROSION SHALL BE FILLED WITH FLOWABLE BACKFILL AS SPECIFIED IN ITEM 401 AS APPROVED BY ENGINEER.

GENERAL NOTES:

CONCRETE REPAIR SHALL BE AS PER THE TXDOT CONCRETE REPAIR MANUAL AND SHALL BE PAID AS ITEM 429-6009 CONC STR REPAIR (STANDARD).



DOWEL EMBEDMENT DEPTH DETAIL "A"



CLEANING AND SEALING EXISTING ARMOR JOINTS (E1)

(SHOWING ARMOR JOINT SECTION)

PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS:

1) REMOVE EXISTING SEAL, IF PRESENT. CLEAN JOINT OPENING OF ALL DIRT AND OTHER DETERIOUS 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. THE BACKER ROD MUST BE 25% LARGER THAN THE JOINT OPENING.

5) SEAL THE JOINT OPENING WITH A CLASS 7 SILICONE. RECESS SEAL ½" BELOW TOP OF CONCRETE IN TRAVEL LANES AND ⅛" BELOW TOP OF CONCRETE IN SHOULDERS.

GENERAL NOTES:

CLEANING EXISTING JOINT OPENING (FULL DEPTH) OF ALL DEBRIS, PROVIDING AND PLACING BACKER ROD, SAW-CUTTING JOINT OPENING, AND SEALING JOINT IS PAID FOR BY AND MEASURED BY THE FOOT OF "CLEANING AND SEALING EXISTING JOINTS."

OBTAIN APPROVAL FOR ALL TOOLS, EQUIPMENT, MATERIALS AND TECHNIQUES PROPOSED FOR USE TO PREPARE THE JOINT.

PROVIDE CLASS 7 SILICONE SEALANT IN ACCORDANCE WITH DMS-6310, "JOINT SEALANTS AND FILLERS" "ALTERNATIVELY, GRAY SEAL 6990 BY FIBRECRETE PRESERVATION MAY BE SUBSTITUTED FOR THE CLASS 7 SEALANT WITH THE ENGEER'S APPROVAL."

EXTEND SEALANT UP INTO RAIL OR CURB 3 INCHES ON LOW SIDE OR SIDES OF DECK. IF THE CLASS 7 SEALANT CANNOT BE EFFECTIVELY PLACED IN THE VERTICAL POSITION, A CLASS 4 SEALANT COMPATIBLE WITH THE CLASS 7 SEALANT IS ALLOWED FOR THE EXTENSION OF THE SEAL INTO THE CURB OR RAIL. PREPARE SURFACES WHERE SEALANT IS TO BE PLACED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SCALE: NTS

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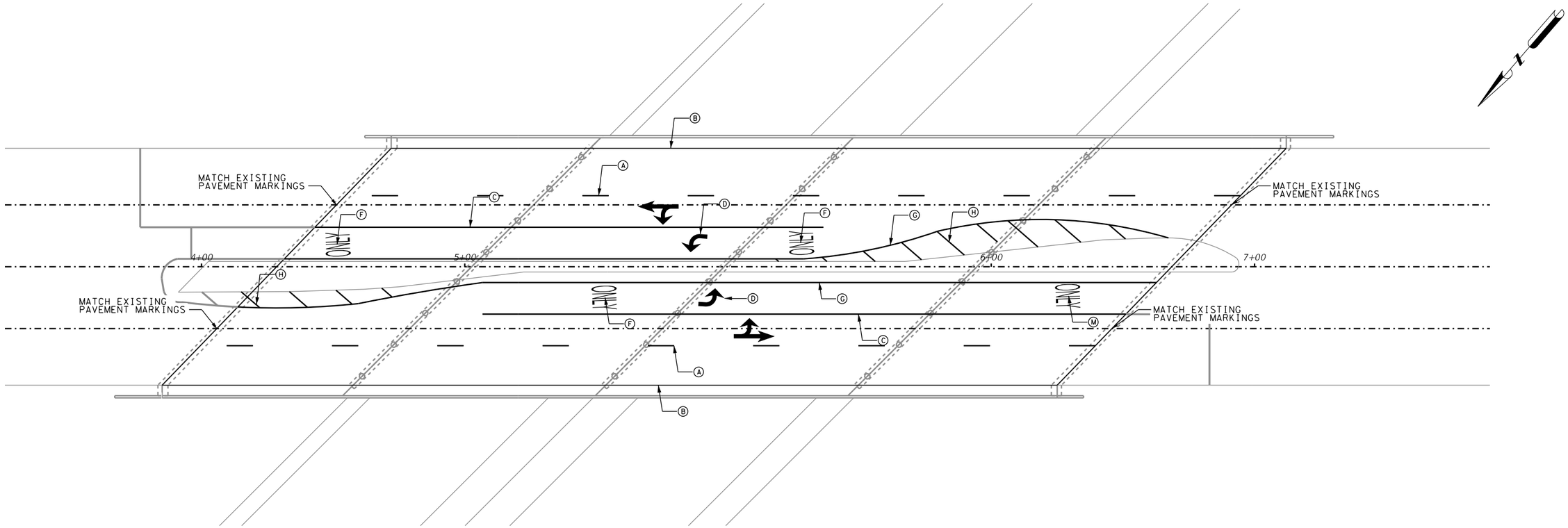
MISCELLANEOUS REPAIRS

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			40
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182,ETC.	IH10,ETC

D190247TX.07



PLAN

PAVEMENT MARKING QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QTY
666	6171	REFL PAV MRK TY II (W) 6" (BRK)	LF	680
666	6174	REFL PAV MRK TY II (W) 6" (SLD)	LF	680
666	6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	500
666	6184	REFL PAV MRK TY II (W) (ARROW)	EA	2
666	6185	REFL PAV MRK TY II (W) (DBL ARROW)	EA	2
666	6192	REFL PAV MRK TY II (W) (WORD)	EA	4
666	6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	700
666	6211	REFL PAV MRK TY II (Y) 8" (SLD)	LF	120

LEGEND

- (A) REFL PAV MRK TY II (W) 6" (BRK)
- (B) REFL PAV MRK TY II (W) 6" (SLD)
- (C) REFL PAV MRK TY II (W) 8" (SLD)
- (D) REFL PAV MRK TY II (W) (ARROW)
- (E) REFL PAV MRK TY II (W) (DBL ARROW)
- (F) REFL PAV MRK TY II (W) (WORD)
- (G) REFL PAV MRK TY II (Y) 6" (SLD)
- (H) REFL PAV MRK TY II (Y) 8" (SLD)

0 20′ 40′

SCALE: 1" = 40′ HORZ
1" = 40′ VERT

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PAVEMENT MARKING LAYOUT

24-072-2121-02-207
24-072-2121-02-282

SHEET 1 OF 1

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS	SEE TITLE SHEET			41
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
ELP	EL PASO	2121	02	182, ETC.	IH10, ETC.

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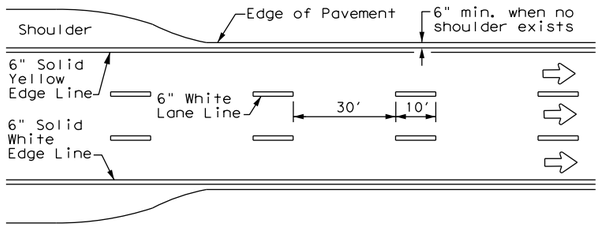
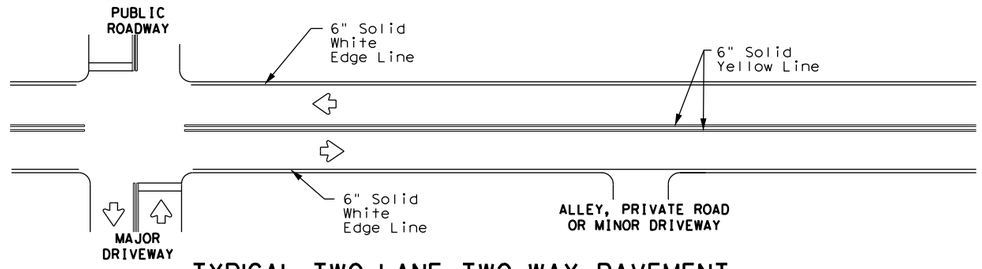
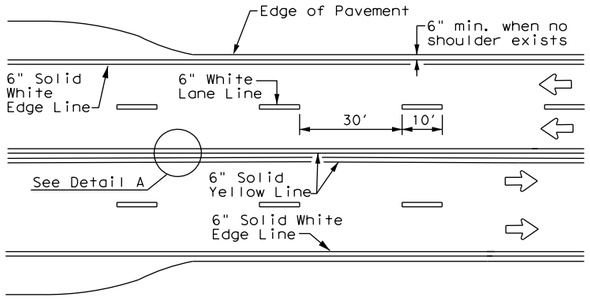
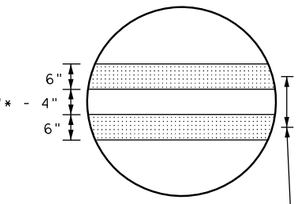


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





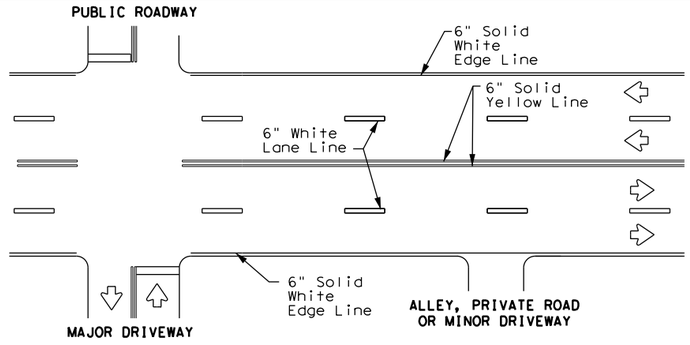
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

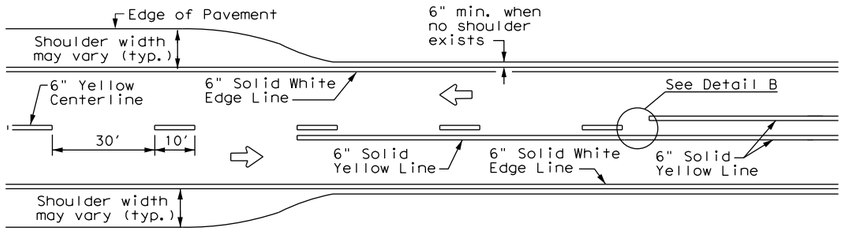
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

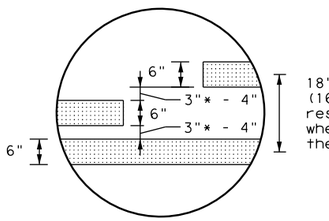
** 8" minimum for restripe projects when approved by the Engineer.



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

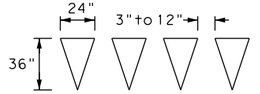


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



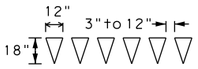
DETAIL "B"

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

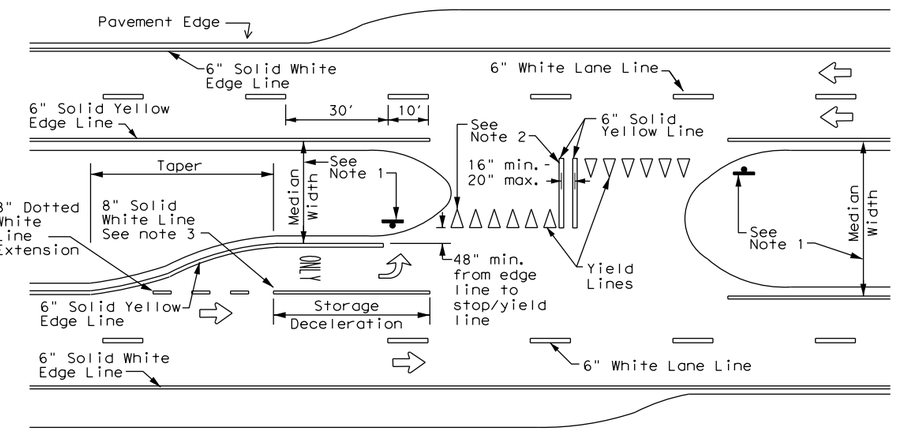


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

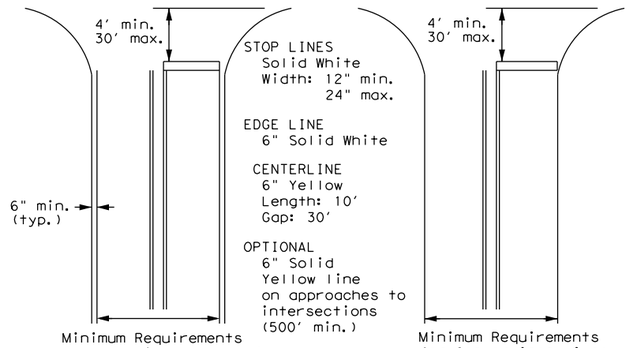
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

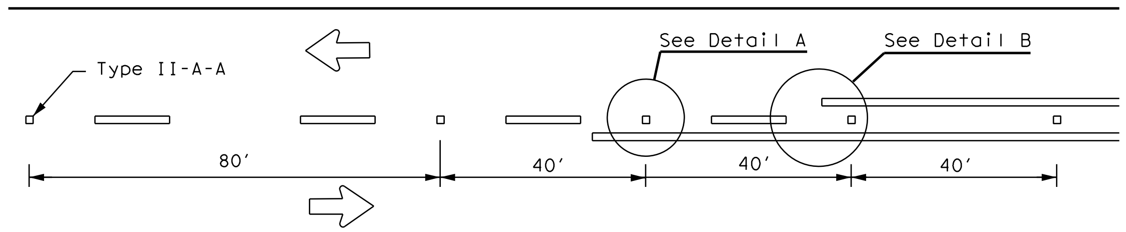
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	2121	02	182, ETC.	IH10, ETC.
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	ELP	EL PASO		42

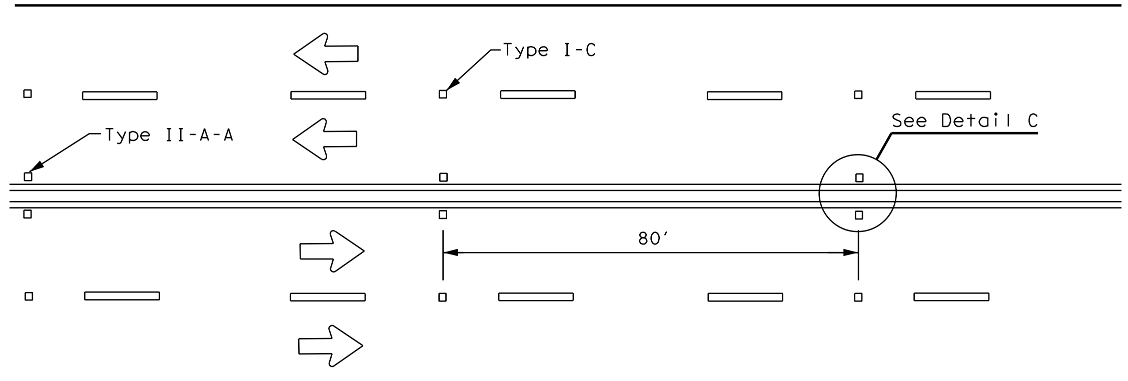
22A

DATE: 10/3/2023 6:16:00 PM
FILE: P:_V-TPD\Projects\TX\2019\D190247TX.07\1_Design\500_CADD\dgn\02 Plan Sheets\pm2-22.dgn

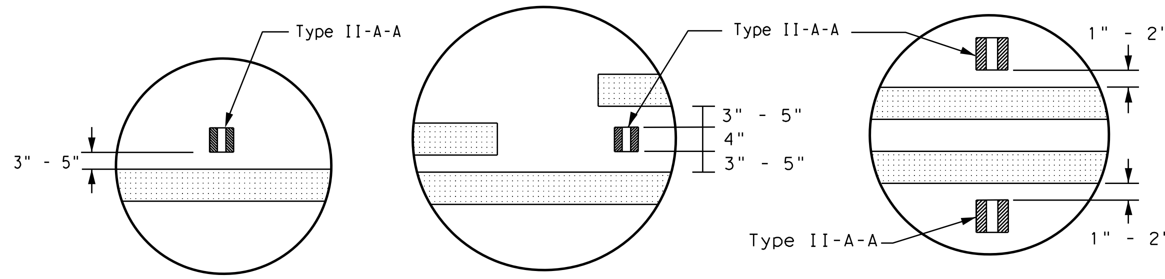
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



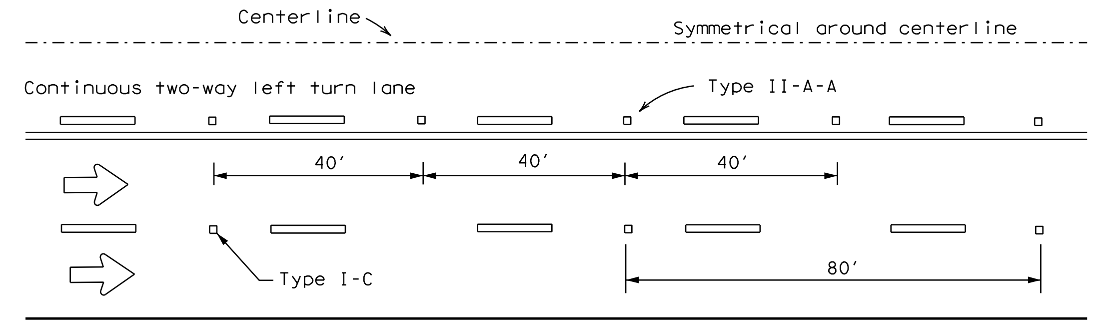
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



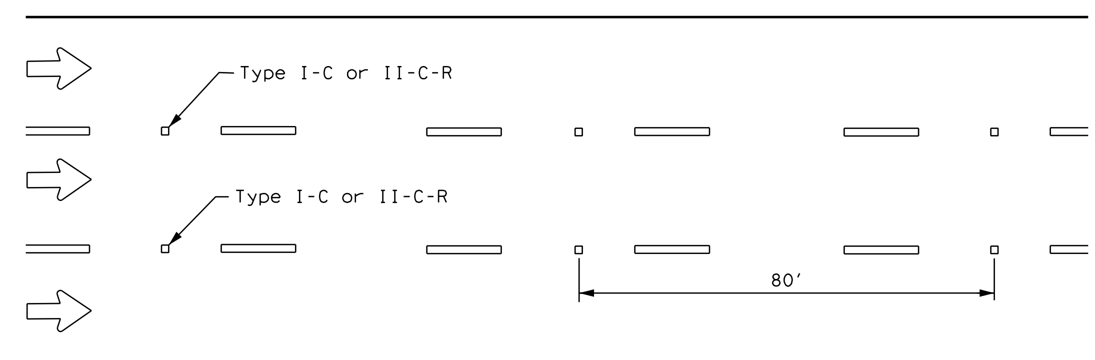
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



DETAIL "A"   DETAIL "B"   DETAIL "C"



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



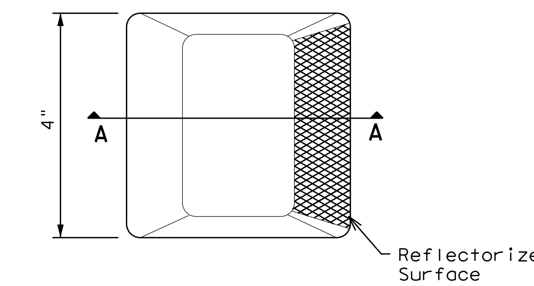
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

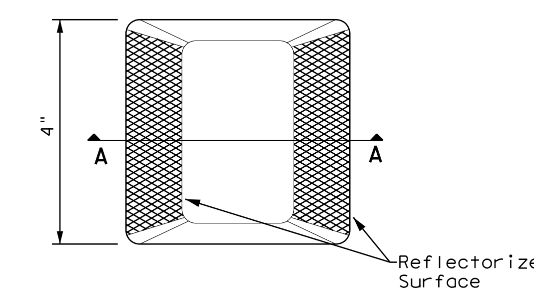
See Note 3.

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

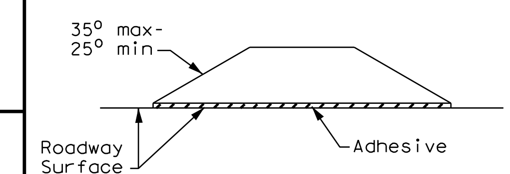
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

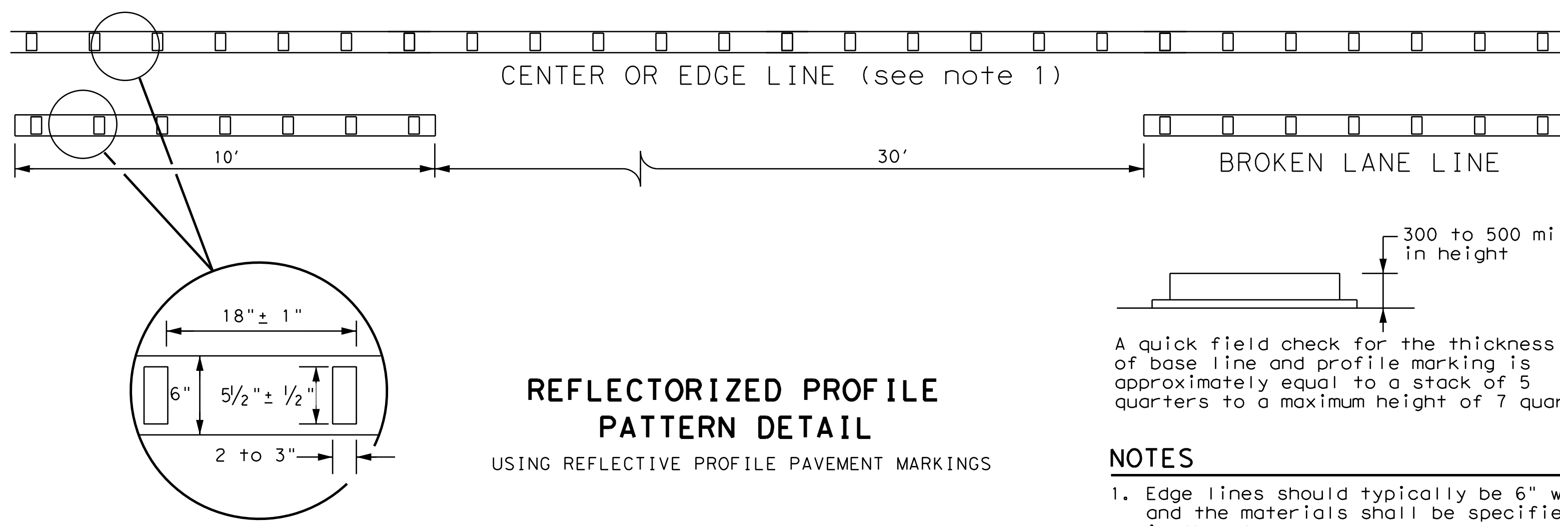


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



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

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

300 to 500 mil in height

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

NOTES

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

GENERAL NOTES

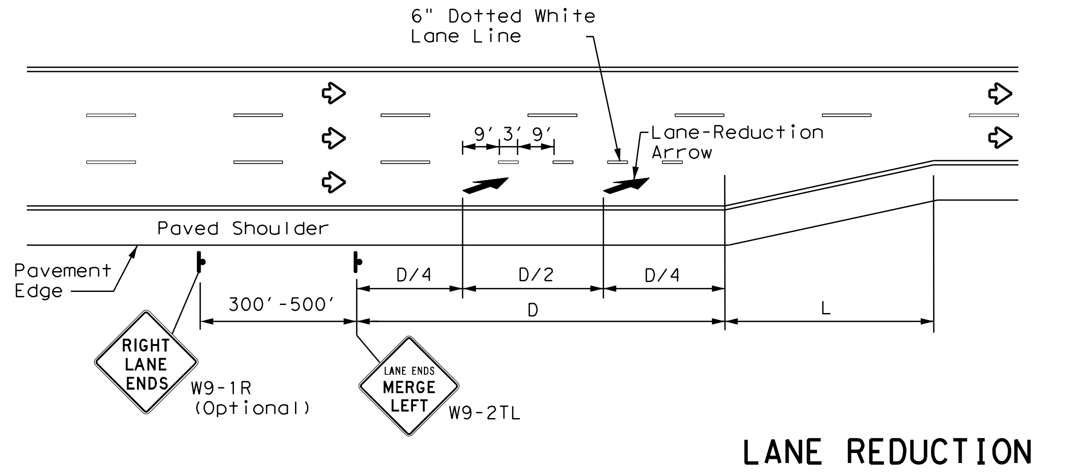
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians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

Texas Department of Transportation
Traffic Safety Division Standard

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

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20	2121	02	182,ETC.	IH10,ETC.
4-92 2-10 12-22	DIST		COUNTY	SHEET NO.
5-00 2-12	ELP		EL PASO	43

22B



LANE REDUCTION

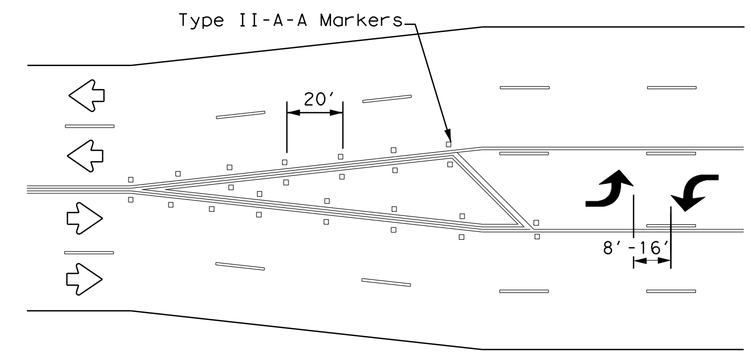
NOTES

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

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

GENERAL NOTES

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

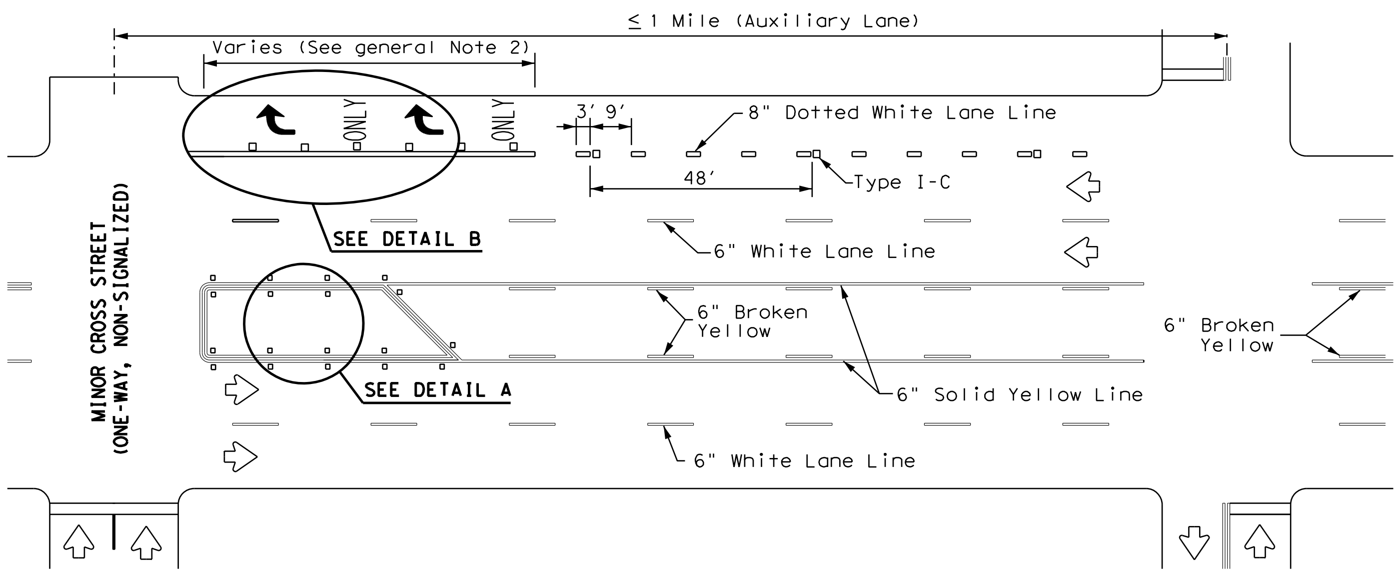


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

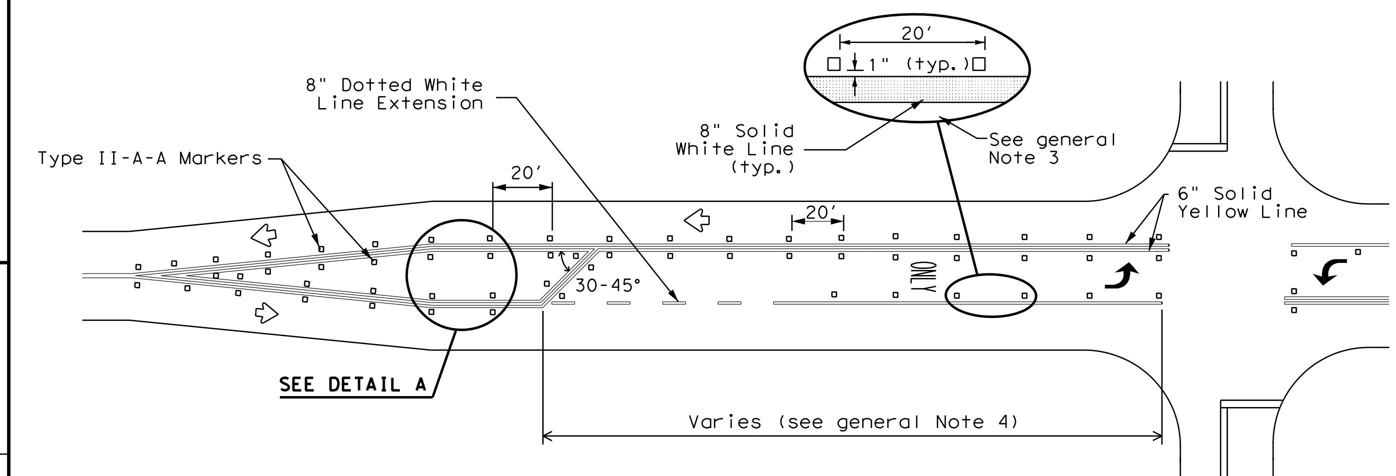
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

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

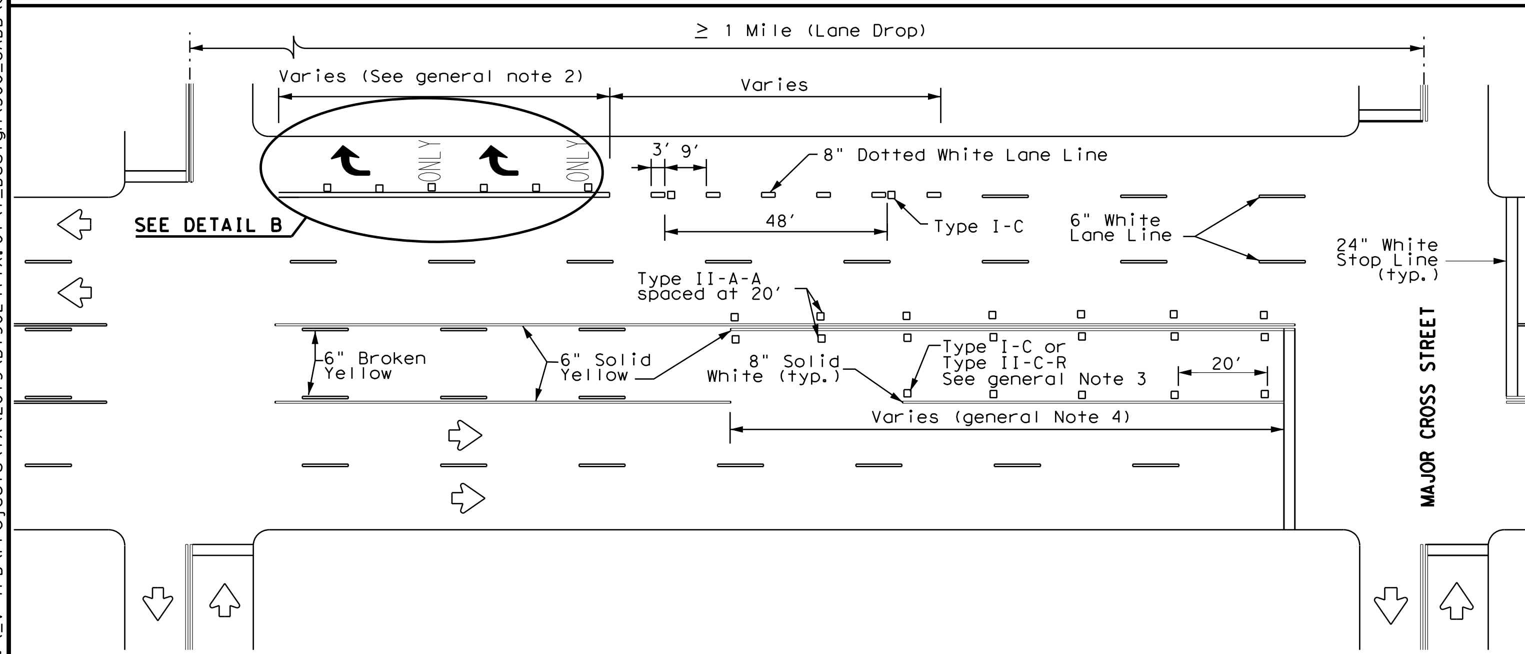
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



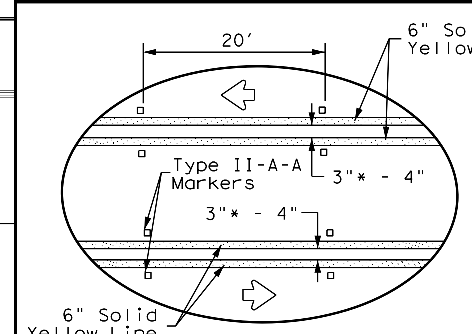
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



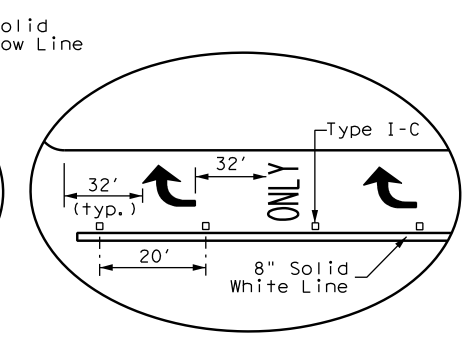
TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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



DETAIL A



DETAIL B

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

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT 2121	SECT 02	JOB 182,ETC.	HIGHWAY IH10,ETC.
REVISIONS 4-98 3-03 6-20; 5-00 2-10 12-22; 8-00 2-12	DIST ELP		COUNTY EL PASO	SHEET NO. 44

22C

DATE: 10/3/2023 6:16:00 PM
FILE: P:_V-TPD\Projects\TX\2019\D190247TX.07\1_Design\500_CADD\dgn\02 Plan Files\Signing & Striping\pm3-22.dgn

DATE: 10/3/2023 6:16:01 PM
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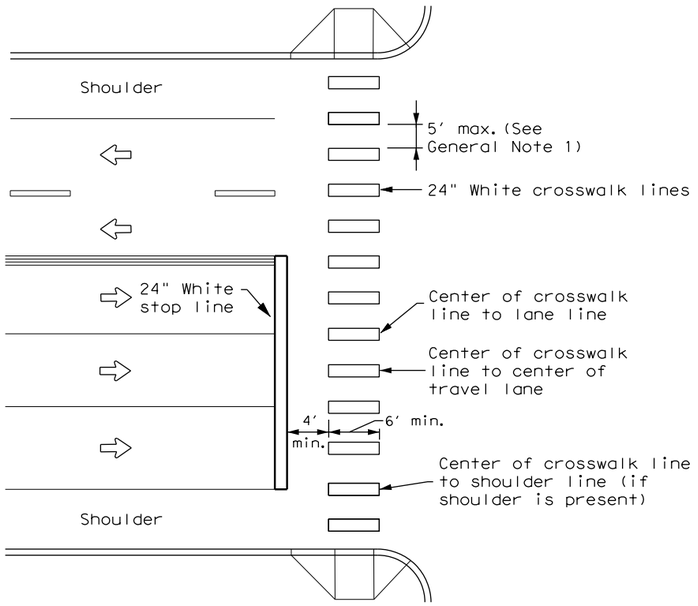


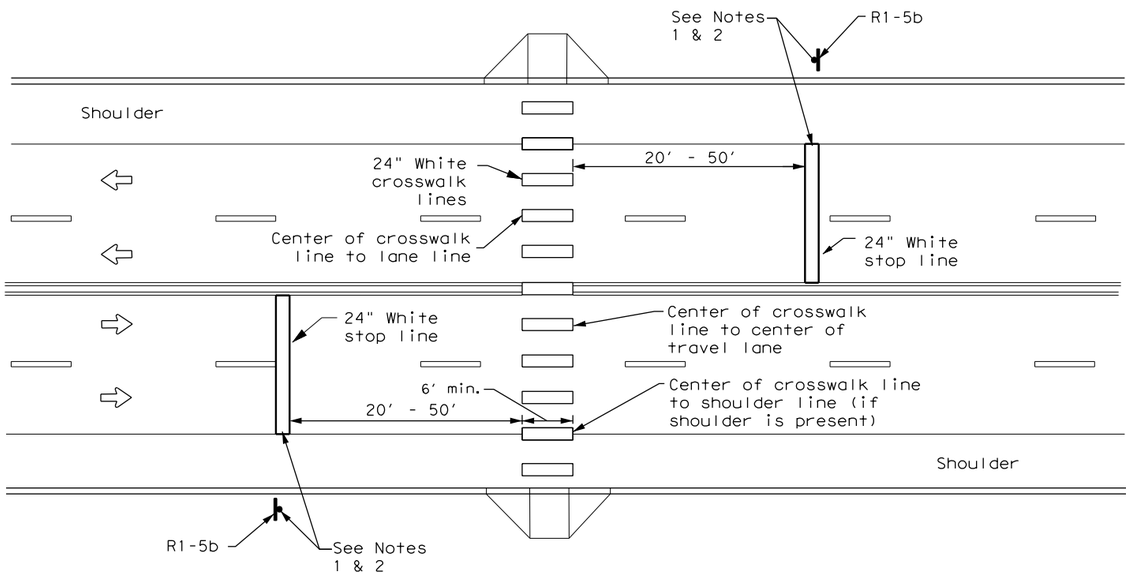
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6′ wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182, ETC.	IH10, ETC.
6-20	DIST	COUNTY		SHEET NO.
6-22	ELP	EL PASO		45
12-22				

220

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

CSJ 2121-02-182

1.2 PROJECT LIMITS:

From: 1.03 MI N OF EXECUTIVE CENTER BLVD

To: 0.93 MI S OF EXECUTIVE CENTER BLVD

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 31.792652 ,(Long) -106.520250

END: (Lat) 31.793615 ,(Long) -106.519464

1.4 TOTAL PROJECT AREA (Acres): 0.78

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.00

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Construction of bridge rehabilitation consisting of resurface deck, overlay, joint clean and repair

1.7 MAJOR SOIL TYPES:

Soil Type	Description
GRAVELLY LOAM	DARK BROWN, HARD W/ GRAVEL
LOAMY FINE SAND	BROWN, SOFT W/SAND

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
X No PSLs planned for construction

Type	Sheet #s
N/A	

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 2.3.)

☐ Mobilization
X 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
X Fuels, oils, and lubricants from construction vehicles, equipment, and storage
X Solvents, paints, adhesives, etc. from various construction activities
☐ Transported soils from offsite vehicle tracking
X Construction debris and waste from various construction activities
☐ Contaminated water from excavation or dewatering pump-out water
X Sanitary waste from onsite restroom facilities
X 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
N/A	

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

X Development of plans and specifications
X Perform SWP3 inspections
X Maintain SWP3 records and update to reflect daily operations
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

X Day To Day Operational Control
X Maintain schedule of major construction activities
X Install, maintain and modify BMPs
☐ Other: _____
☐ Other: _____
☐ Other: _____

STATE OF TEXAS
KENNETH E. GOTTLEABER
61759
REGISTERED PROFESSIONAL ENGINEER
10/4/2023

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			46
STATE	STATE DIST.	COUNTY	
TEXAS	EL PASO	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
2121	02	182	IH-10

STORMWATER POLLUTION PRVENTION 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

- ☐ X Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☐ Permanent Planting, Sodding or Seeding
- X ☐ Biodegradable Erosion Control Logs
- X ☐ 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

- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- X ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ 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

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
N/A		

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- X Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- X Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- X Chemical Management
- X Concrete and Materials Waste Management
- X Debris and Trash Management
- X Dust Control
- X Sanitary Facilities
- X Other: Sanitary waste from portable units will be collected by a licensed sanitary waste management contractor
- ☐ 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
N/A		

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

STATE OF TEXAS
KENNETH E. GOTTLEABER
61759
REGISTERED PROFESSIONAL ENGINEER
10/4/2023

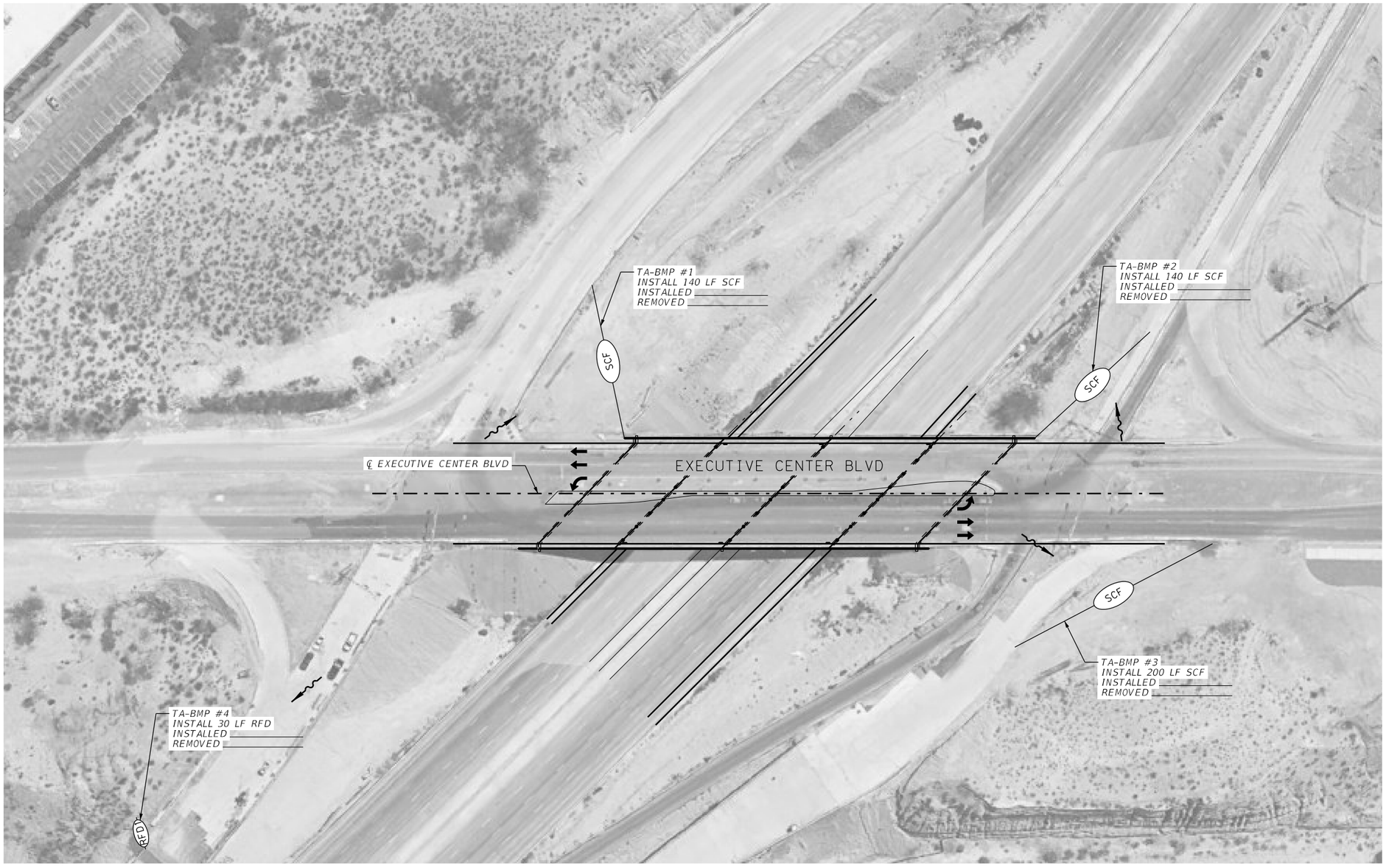
STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			47
STATE	STATE DIST.	COUNTY	
TEXAS	EL PASO	EL PASO	
CONT.	SECT.	JOB	HIGHWAY NO.
2121	02	182	IH-10

BID ITEM NO.	506	6001	506	6011	506	6038	506	6039
DESCRIPTION	ROCK FILTER DAMS (INSTALL) (TY 1)		ROCK FILTER DAMS (REMOVE)		TEMP SEDMT CONT FENCE (INSTALL)		TEMP SEDMT CONT FENCE (REMOVE)	
UNIT	LF		LF		LF		LF	
	30		30		480		480	
CSJ 2121-02-182 TOTAL	30		30		480		480	



LEGEND

- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- RFD — ROCK FILTER DAM
- FLOW DIRECTION

NOTES

1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD AND APPROVED BY THE ENGINEER IN THE FIELD.
2. EROSION CONTROL DEVICE INSTALLATION, MAINTENANCE AND REMOVAL SHALL IN BE ACCORDANCE WITH THE TxDOT STANDARDS FOR EROSION CONTROL.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
KENNETH E. GOTTLEABER
61759
REGISTERED PROFESSIONAL ENGINEER
10/4/2023

NO.	DATE	REVISION	APPROV.

Bartlett&West
9330 LBJ FREEWAY, STE 1150 - DALLAS, TX 75243
PHONE 888-200-6464
TBPE FIRM REGISTRATION NO. 6499

Texas Department of Transportation

IH 10

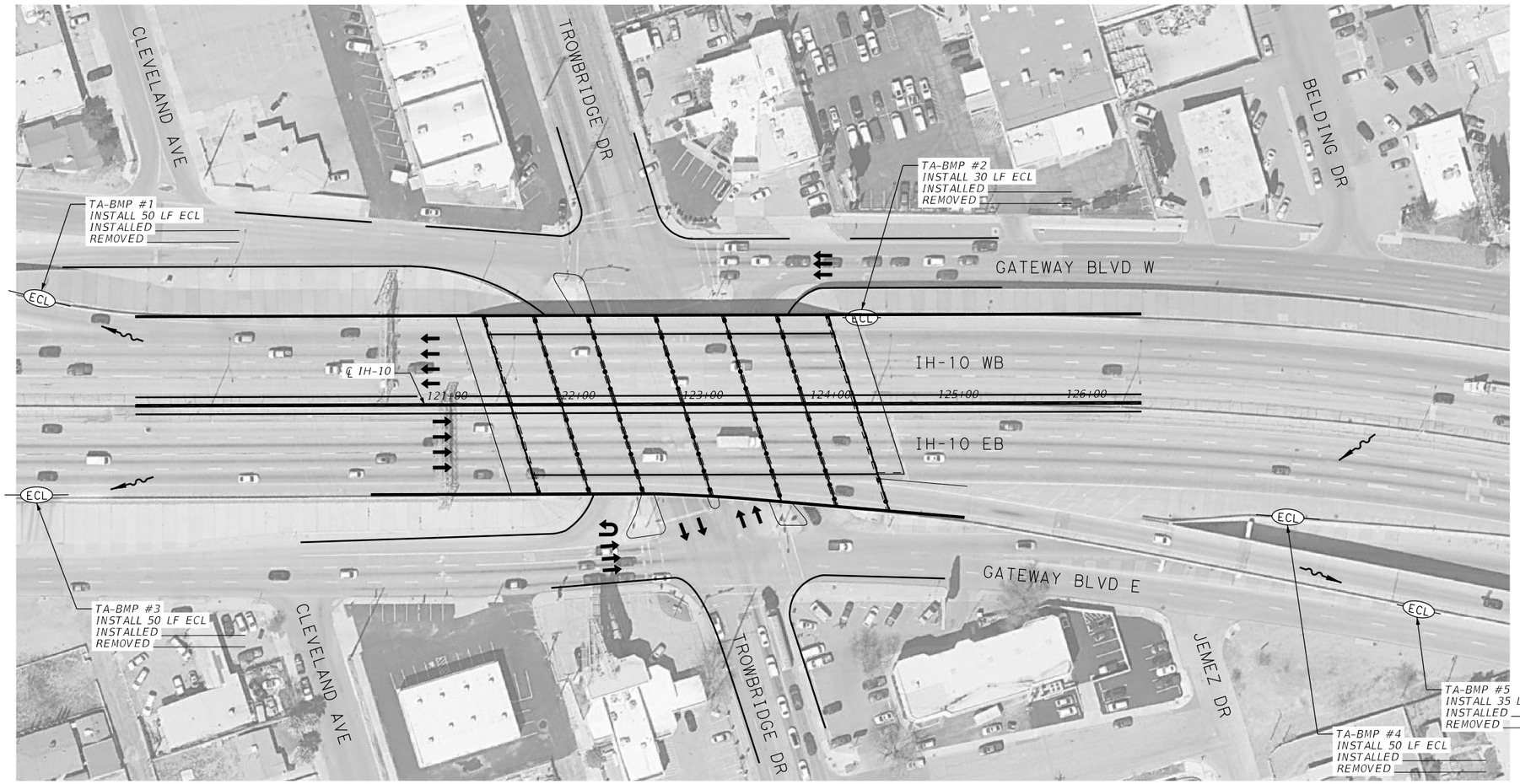
SWP3 LAYOUT

EXECUTIVE CENTER BLVD
24-072-02121-02-207

SHEET 1 OF 2

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS				48
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
EL PASO	EL PASO	2121	02	182	IH 10

BID ITEM NO.	506	6041	506	6043
DESCRIPTION	BIODEG EROSN CONT LOGS (INSTL) (12")		BIODEG EROSN CONT LOGS (REMOVE)	
UNIT	LF		LF	
	215		215	
CSJ 2121-03-170 TOTAL	215		215	



LEGEND

ECL — EROSION CONTROL LOG (12")

FLOW DIRECTION

NOTES

1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD AND APPROVED BY THE ENGINEER IN THE FIELD.
2. EROSION CONTROL DEVICE INSTALLATION, MAINTENANCE AND REMOVAL SHALL IN BE ACCORDANCE WITH THE TxDOT STANDARDS FOR EROSION CONTROL.

0 50' 100'

SCALE: 1" = 100'

STATE OF TEXAS
KENNETH E. GOTTLEABER
61759
REGISTERED PROFESSIONAL ENGINEER
10/4/2023

NO.	DATE	REVISION	APPROV.

Bartlett&West
9330 LBJ FREEWAY, STE 1150 - DALLAS, TX 75243
PHONE 888-200-6464
TBPE FIRM REGISTRATION NO. 6499

Texas Department of Transportation

IH 10

SWP3 LAYOUT

TROWBRIDGE DR
24-072-02121-03-164

SHEET 2 OF 2

FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT			SHEET NO.
6	TEXAS				49
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
EL PASO	EL PASO	2121	02	182	IH 10

TXXXX-XX

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

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

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

☒ Yes ☐ No

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

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

☒ Yes ☐ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

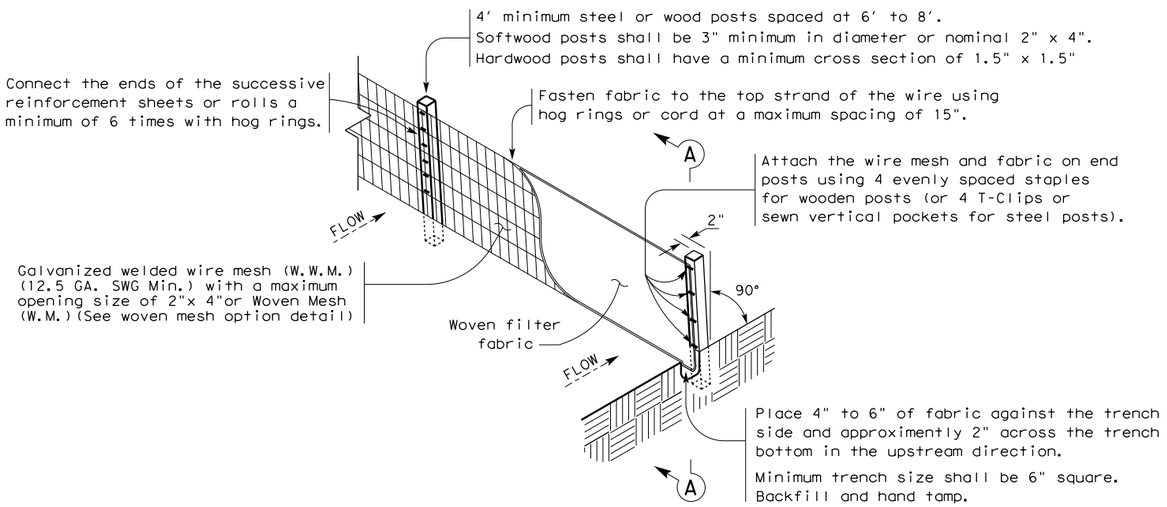
3.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

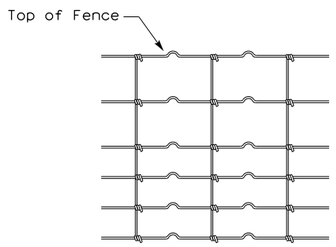
EPIC

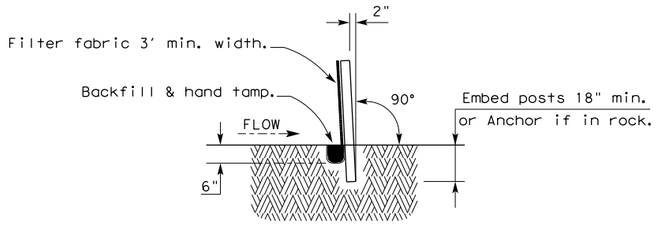
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	2121	02	182,ETC.	IH10,ETC.	
	DIST	COUNTY		SHEET NO.	
	ELP	EL PASO		50	



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

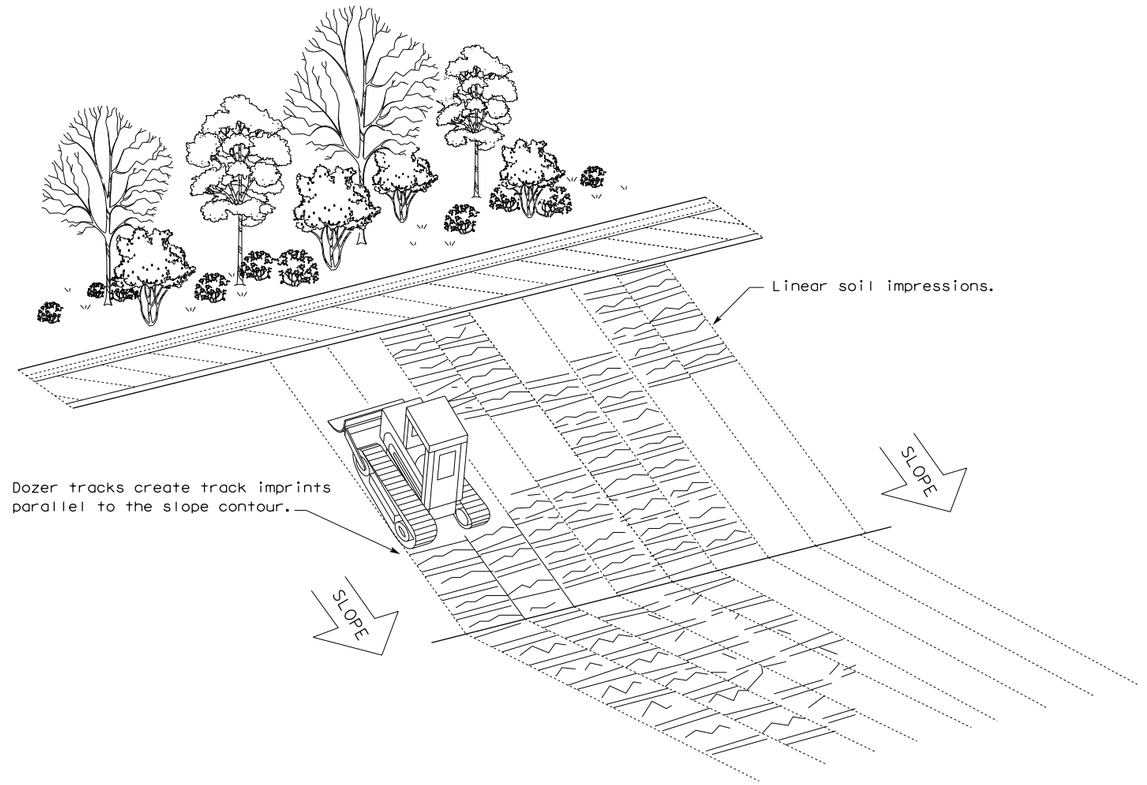
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

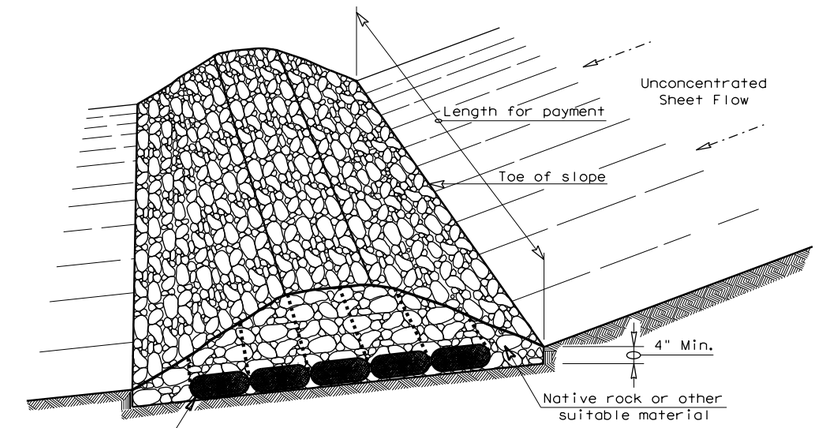
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	2121	02	182, ETC.		IH10, ETC.	
	DIST	COUNTY			SHEET NO.	
	ELP	EL PASO			51	

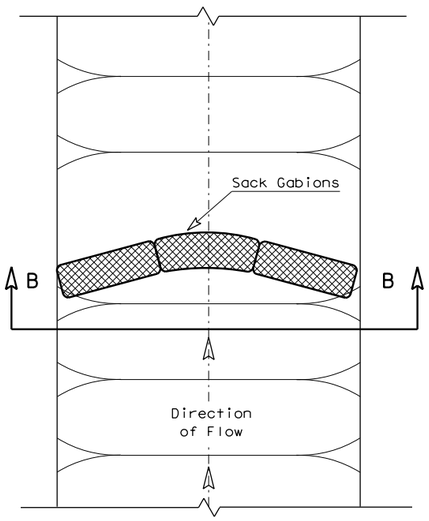
DATE
FILE

DATE:
FILE:

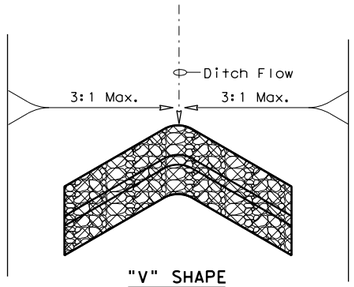


FILTER DAM AT TOE OF SLOPE

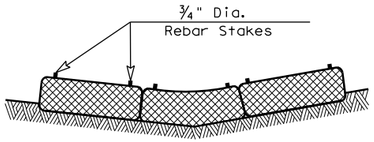
RFD1



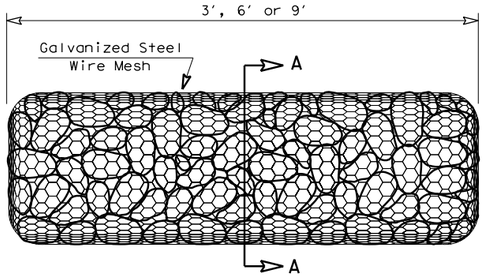
PLAN VIEW



"V" SHAPE PLAN VIEW

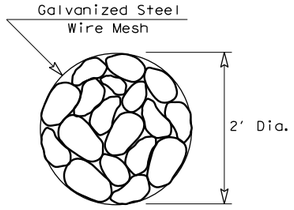


SECTION B-B

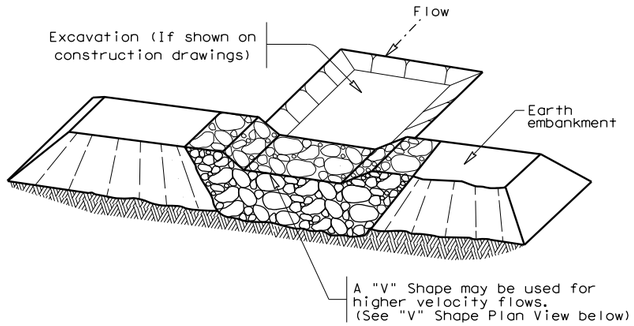


TYPE 4 (SACK GABIONS)

RFD4

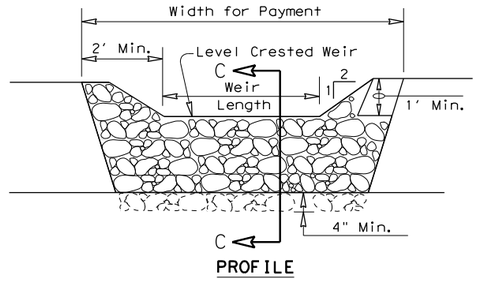


SECTION A-A

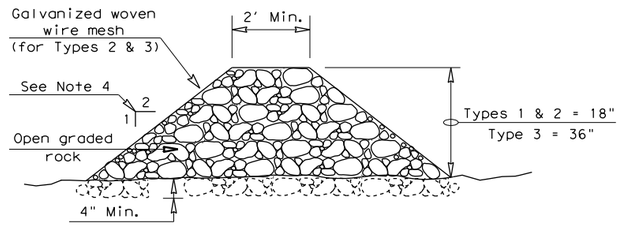


FILTER DAM AT SEDIMENT TRAP

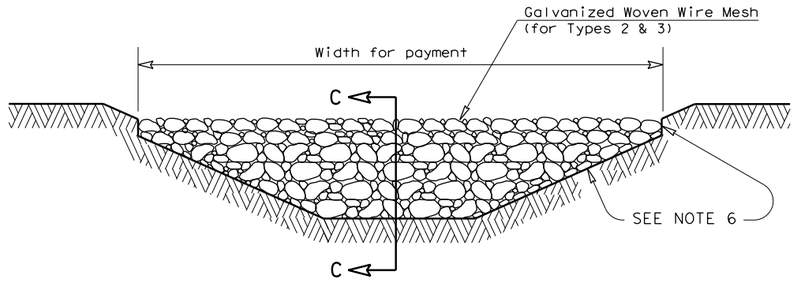
RFD1 — OR — RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation

Design Division Standard

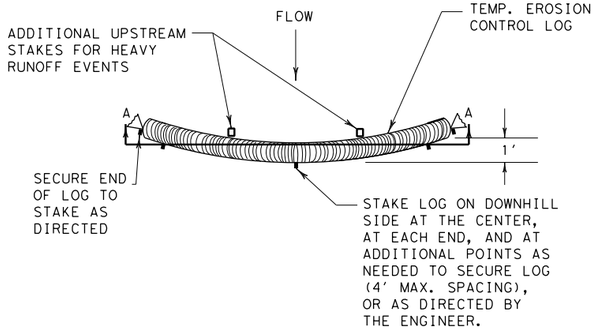
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

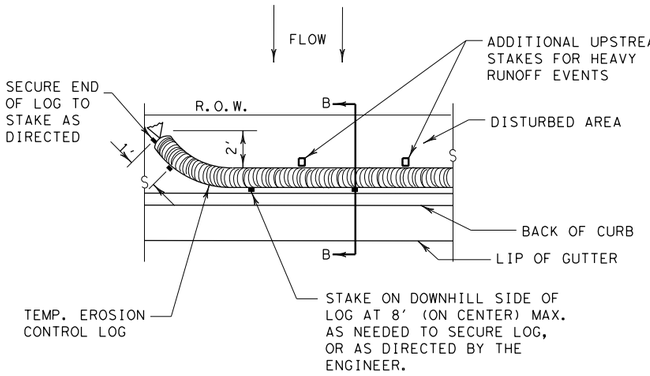
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	2121	02	182, ETC.	IH10, ETC.
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		52

DATE:
FILE:



PLAN VIEW



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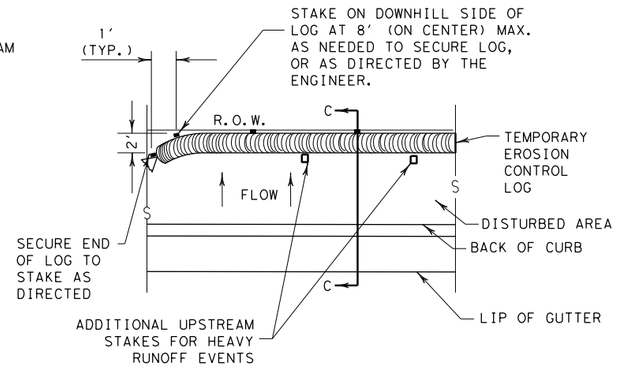
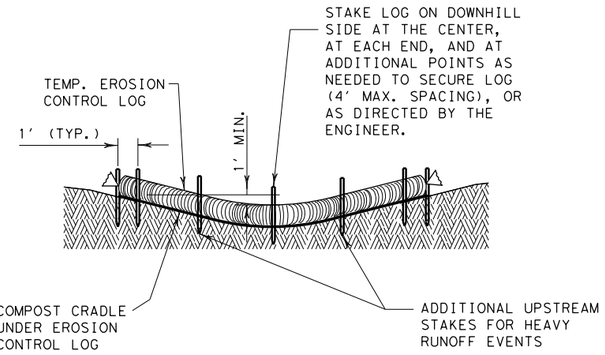


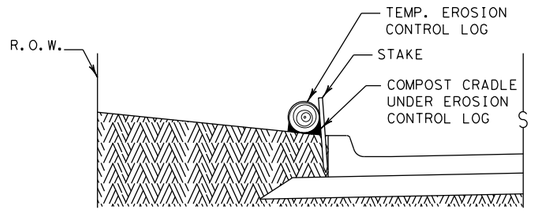
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

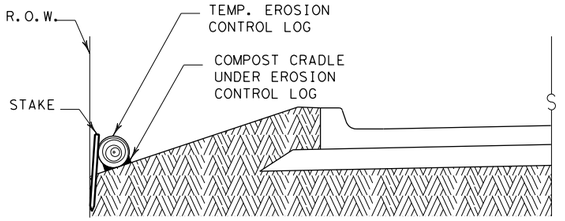
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

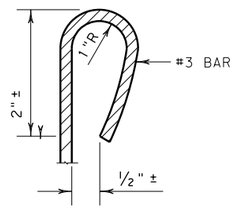
CL-BOC



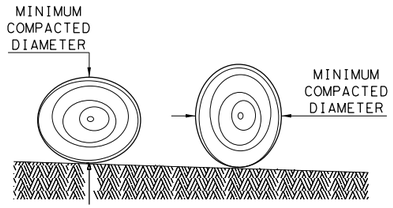
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

LEGEND

CL-D	EROSION CONTROL LOG DAM
CL-BOC	EROSION CONTROL LOG AT BACK OF CURB
CL-ROW	EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
CL-SST	EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
CL-SSL	EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
CL-DI	EROSION CONTROL LOG AT DROP INLET
CL-CI	EROSION CONTROL LOG AT CURB INLET
CL-GI	EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	2121	02	182, ETC.		IH10, ETC.	
	DIST	COUNTY			SHEET NO.	
	ELP	EL PASO			53	

DATE:
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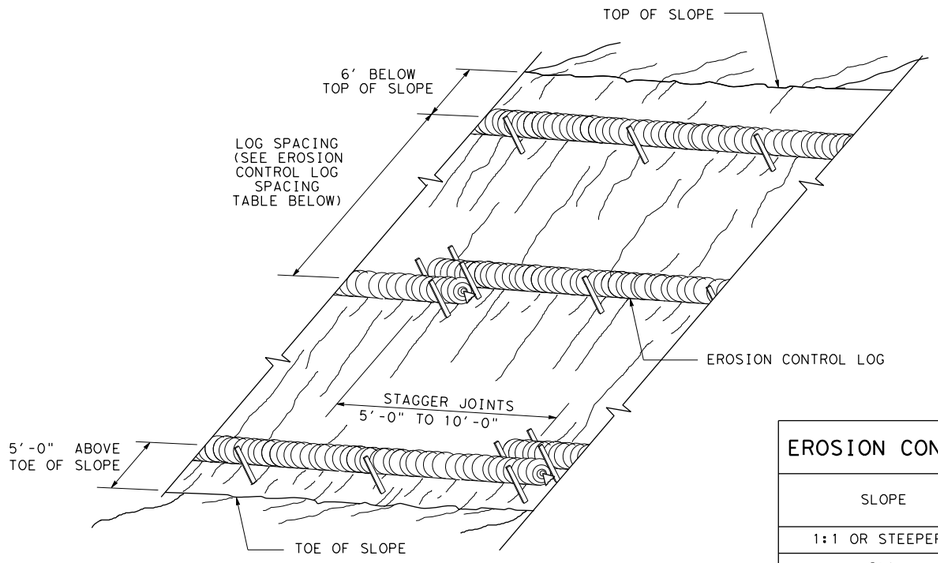
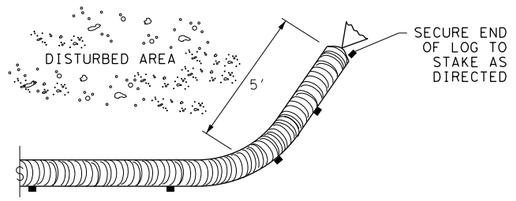


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

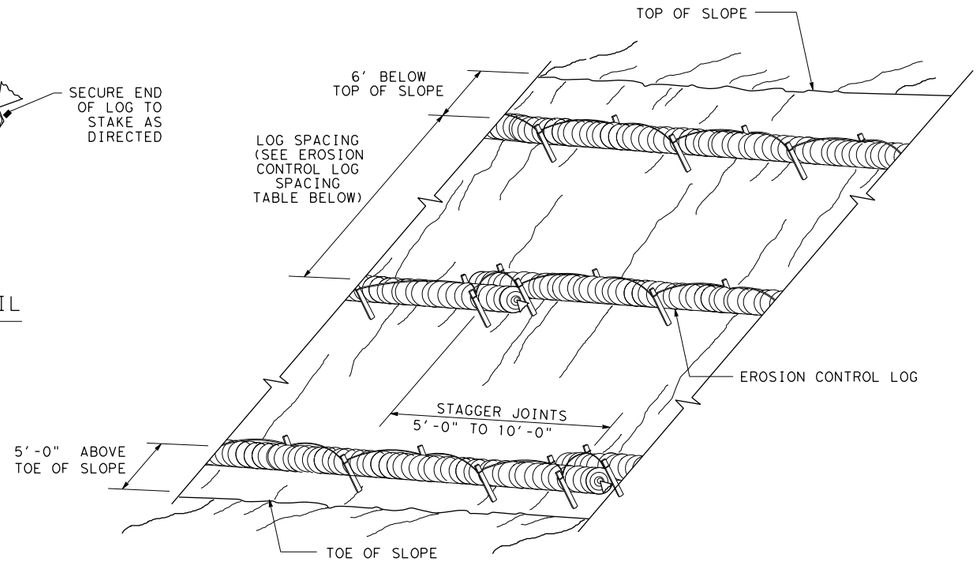
CL-SST



END SECTION RAP DETAIL

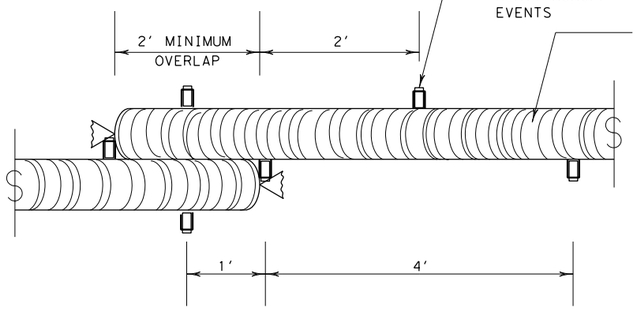
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5′	10′	15′	20′
2:1	10′	20′	30′	40′
3:1	15′	30′	45′	60′
4:1 OR FLATTER	20′	40′	60′	80′

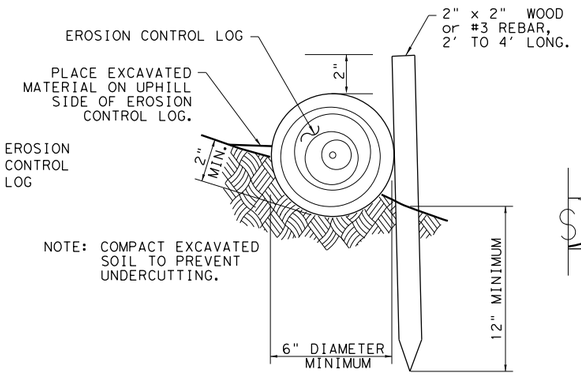
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

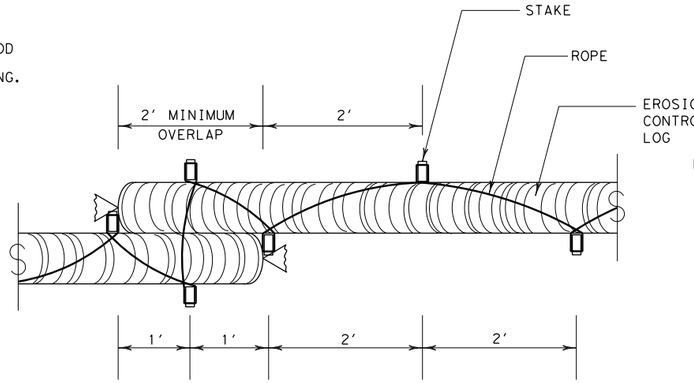


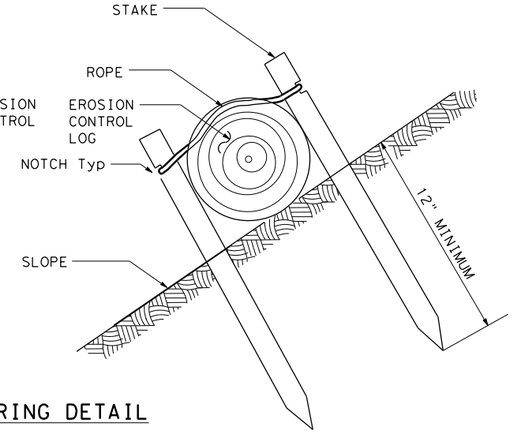


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

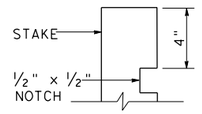
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
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REVISIONS	2121	02	182,ETC.	IH10,ETC.
	DIST	COUNTY		SHEET NO.
	ELP	EL PASO		54

DATE:
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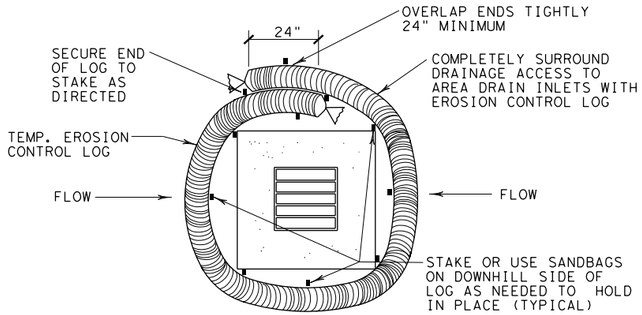
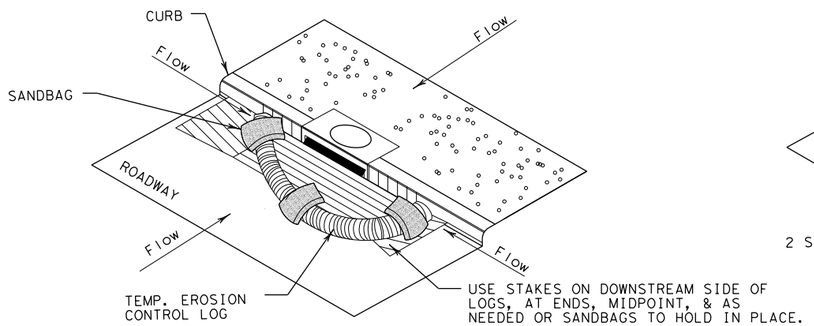


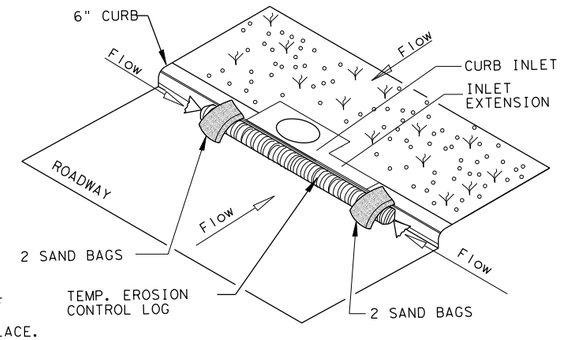
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

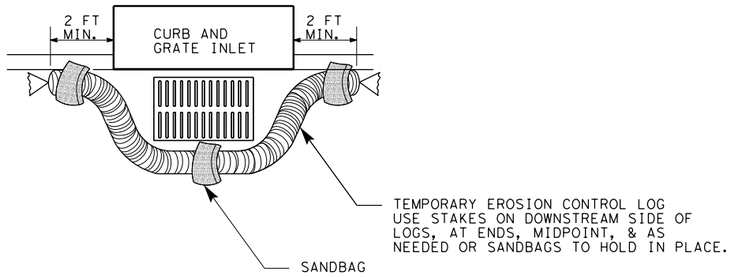
CL-CI



EROSION CONTROL LOG AT CURB INLET

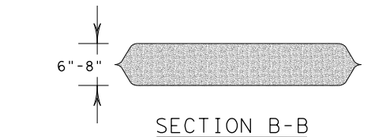
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

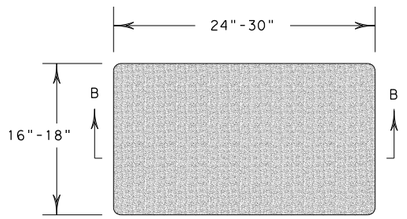


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

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