

PROJECT NO.		SHEET NO.	
6452-35-001		1	
STATE	STATE DISTRICT	COUNTY	
TEXAS	22	DIMMIT	
CONT.	SECT.	JOB	HIGHWAY NO.
6452	35	001	VARIOUS

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STATE OF TEXAS

TEXAS DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED

HIGHWAY ROUTINE MAINTENANCE CONTRACT

PROJECT NO. RMC 6452-35-001
 PROJECT LENGTH : VARIOUS
 PROJECT LIMITS : VARIOUS
 COUNTY : DIMMIT, ETC.
 HIGHWAY : VARIOUS
 RMC# 6452-35-001

FOR CALL-OUT MILL-INLAY & SPOT BASE REPAIR

FINAL PLANS

Letting Date : _____

Work Began : _____

Date Accepted : _____

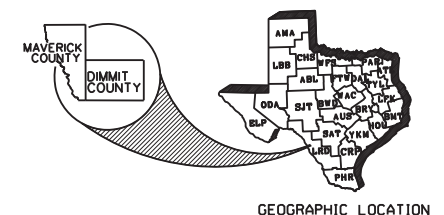
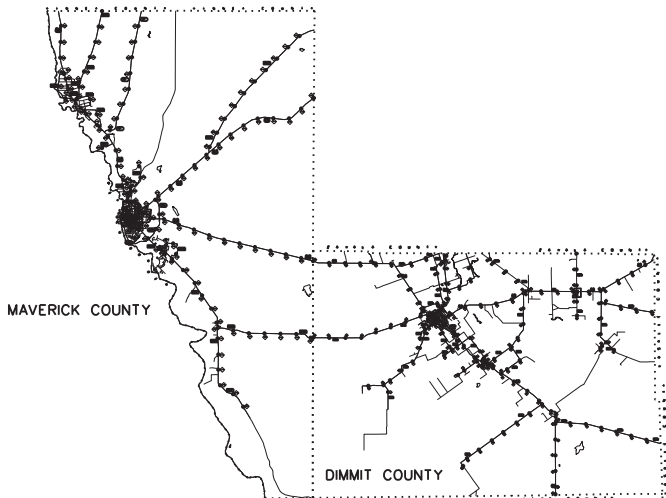
Contractor : _____

Total Cost : _____



RECOMMENDED 11/30/2023
 FOR LETTING:
 DocuSigned by:
Jorge A. Millan, P.E.
 JORGE A. MILLAN, P.E.
 AREA ENGINEER

APPROVED 11/29/2023
 FOR LETTING:
 DocuSigned by:
Vanessa Rosales-Herrera
 VANESSA ROSALES-HERRERA, P.E.
 DIRECTOR OF MAINTENANCE



GEOGRAPHIC LOCATION

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A SINGLE ASTERISK (*) HAVE BEEN ISSUED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

DATE 11/29/2023

DocuSigned by:
Vanessa Rosales-Herrera
 VANESSA ROSALES-HERRERA, P.E.

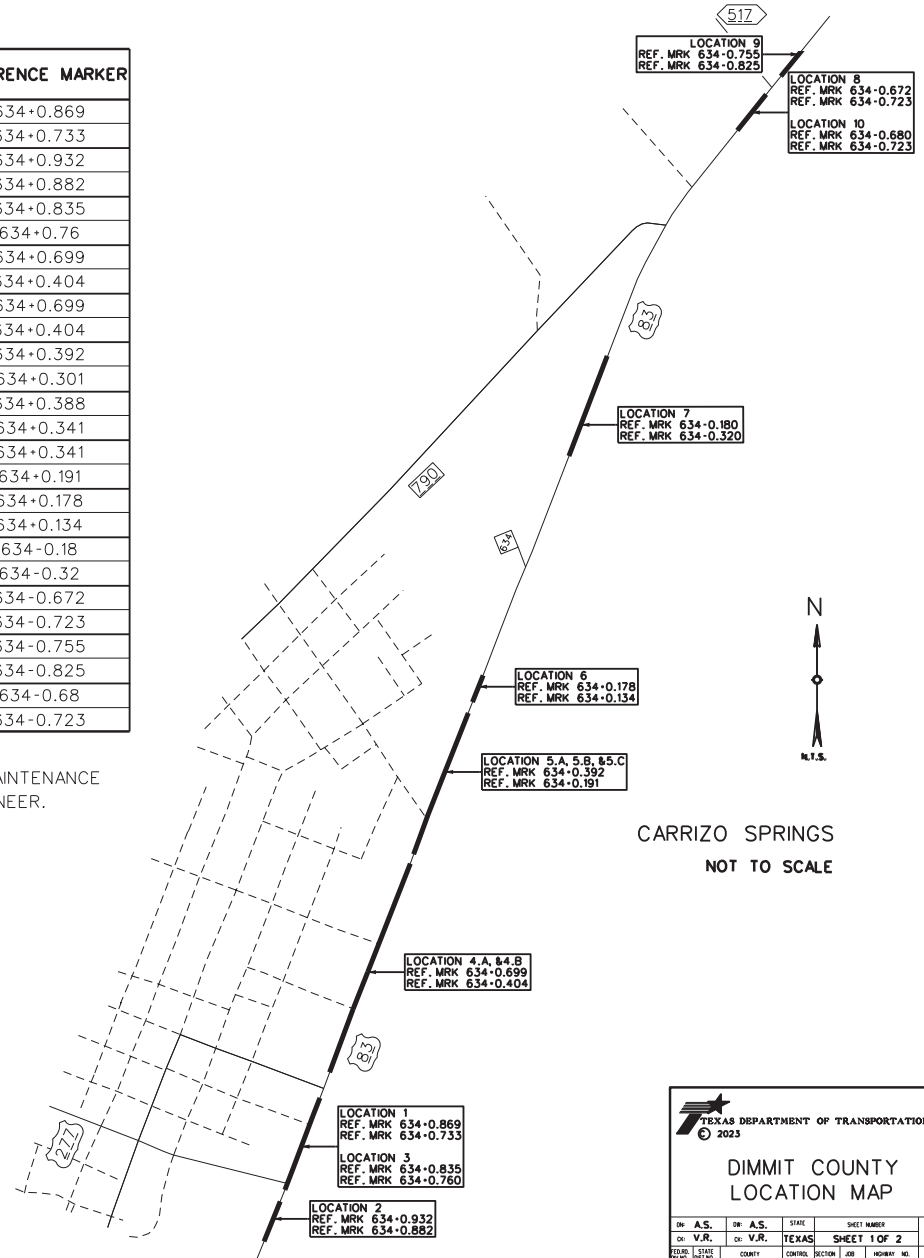
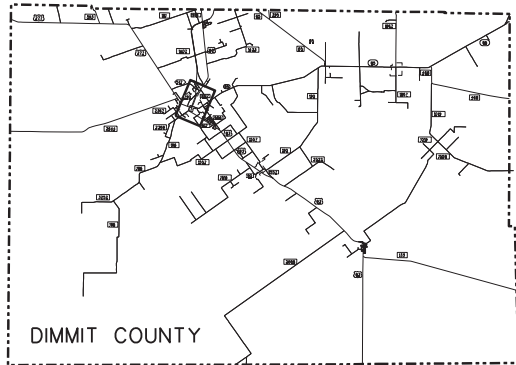
SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, JUNE 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT.

EQUATIONS: NONE
 EXCEPTIONS: NONE
 RAILROAD CROSSINGS: NONE
 TDLR REQUIRED: NO

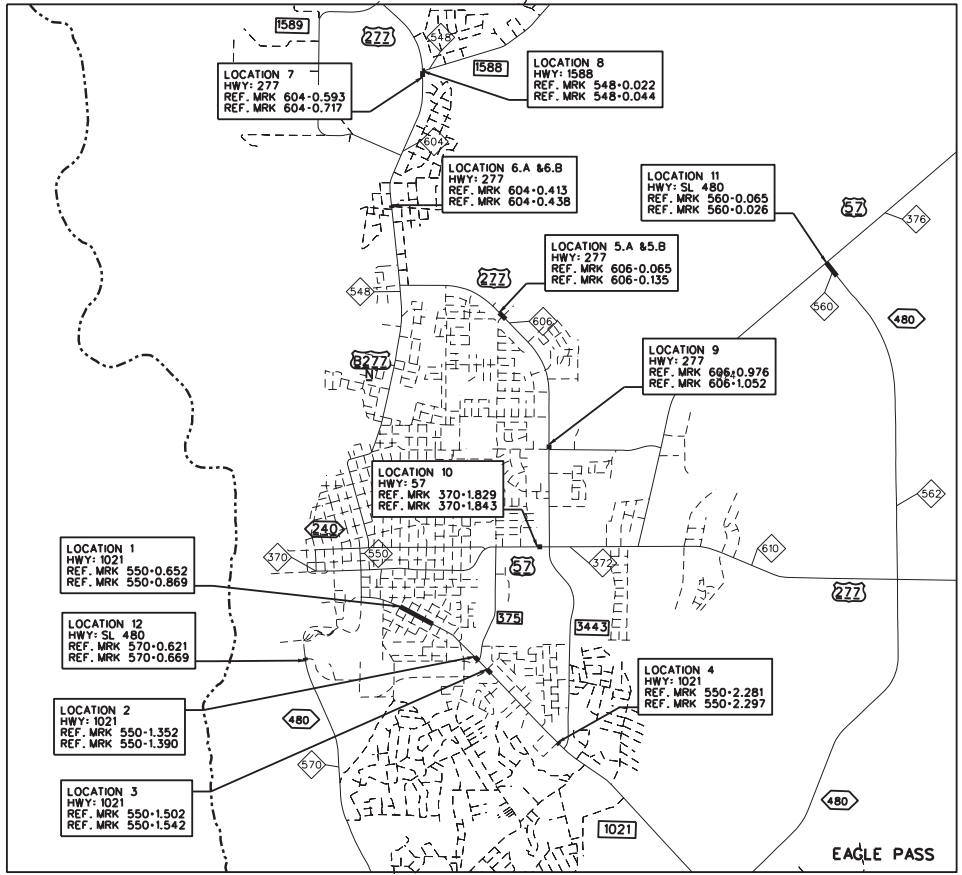
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LOCATION	HIGHWAY	LENGTH	TYPE OF WORK	PROJECT LIMITS		REFERENCE MARKER
		MILES		FROM:	TO:	
1	US 83 NB (INSIDE & OUTSIDE LANE)	0.057	CRCP	FROM: US 277	634+0.869	
				TO: SH 85	634+0.733	
2	US 83 NB (INSIDE & OUTSIDE LANE)	0.049	MILL&INLAY	FROM: LOVERS LN	634+0.932	
				TO: US 277	634+0.882	
3	US 83 (EOP TO EOP)	0.073	MILL&INLAY	FROM: EXXON (US 277)	634+0.835	
				TO: MOBIL ON NOPAL ST	634+0.76	
4.A	US 83 NB (OUTSIDE LANE)	0.114	MILL&INLAY	FROM: SH 85	634+0.699	
				TO: OLD COTULLA RD	634+0.404	
4.B	US 83 SB (OUTSIDE LANE)	0.292	MILL&INLAY	FROM: E. SAN PEDRO AVE	634+0.699	
				TO: SH 85	634+0.404	
5.A	US 83 NB (INSIDE & OUTSIDE LANES)	0.049	MILL&INLAY	FROM: ROCHA ST	634+0.392	
				TO: THOMPSON ST	634+0.301	
5.B	US 83 NB (OUTSIDE LANE)	0.146	MILL&INLAY	FROM: THOMPSON ST	634+0.388	
				TO: M G'S DRIVE UP (EAST)	634+0.341	
5.C	US 83 SB (OUTSIDE LANE)	0.090	MILL&INLAY	FROM: ~140' N OF THOMPSON	634+0.341	
				TO: ROCHA ST	634+0.191	
6	US 83 SB (OUTSIDE LANE)	0.043	MILL&INLAY	FROM: EAST AVE	634+0.178	
				TO: M G'S DRIVE UP (EAST)	634+0.134	
7	US 83 NB (INSIDE & OUTSIDE LANES)	0.191	MILL&INLAY	FROM: N MOBILE CENTRAL ST	634-0.18	
				TO: ~ 500' N OF ORLANDO	634-0.32	
8	US 83 NB (OUTSIDE LANE)	0.038	MILL&INLAY	FROM: ~120' N OF LAKE SIDE	634-0.672	
				TO: US 83/SL 517 INT	634-0.723	
9	US 83 SB (OUTSIDE LANE)	0.057	MILL&INLAY	FROM: ~400' N OF SL 517	634-0.755	
				TO: US 83/SL 517 INT	634-0.825	
10	US 83 NB (INSIDE TURNING LANE)	0.030	SPOT BASE REPAIR	FROM: ~160' N OF LAKE SIDE	634-0.68	
				TO: US 83/SL 517 INT	634-0.723	

NOTE:
SPECIFIC LIMITS OF MILL/INLAY, BASE REPAIR OR CRCP REPAIRS WILL BE IDENTIFIED BY THE MAINTENANCE SUPERVISOR IN THE WORK ORDER OR UPON FIELD INSPECTION AND AS DIRECTED BY THE ENGINEER.



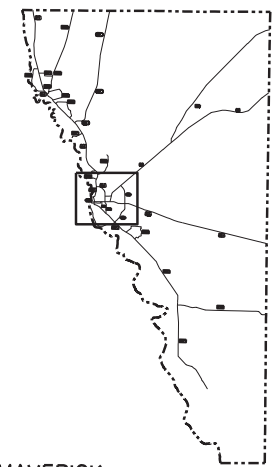
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NOT TO SCALE

LOCATION	HIGHWAY	LENGTH MILES	TYPE OF WORK	PROJECT LIMITS	REFERENCE MARKER
1	FM 1021 (EOP TO EOP)	0.217	MILL&INLAY	FROM: TRAVIS ST TO: ADOLPHUS ST	550+0.652 550+0.869
2	FM 1021 SE (INSIDE LANES)	0.045	MILL&INLAY	FROM: INT. OF FM 1021/BROWN ST TO: ~205' NW OF FM 1021/BROWN ST	550+1.352 550+1.39
3	FM 1021 NW (INSIDE TURNING LANE)	0.040	MILL&INLAY	FROM: ~210' SE OF TRUCK RTE TO: TRUCK RTE	550+1.502 550+1.542
4	FM 1021 (EOP TO EOP)	0.019	MILL&INLAY	FROM: INT. OF FM 1021/HERITAGE FARMS TO: INT. OF FM 1021/HERITAGE FARMS	550+2.281 550+2.297
5.A	US 277 NW (OUTSIDE LANE)	0.030	MILL&INLAY	FROM: ~160' SE OF N BIBB AVE TO: N BIBB AVE	606-0.065 606-0.095
5.B	US 277 SE (INSIDE & OUTSIDE LANE)	0.030	MILL&INLAY	FROM: ~160' NW OF N BIBB TO: N BIBB AVE	606-0.106 606-0.135
6.A	US 277 NB (OUTSIDE LANE)	0.028	MILL&INLAY	FROM: RITCHIE RD TO: DR GATES RD	604+0.413 604+0.438
6.B	US 277 SB (OUTSIDE LANE)	0.028	MILL&INLAY	FROM: SAN MIGUEL BLVD TO: DR GATES RD	604+0.453 604+0.475
7	US 277 NB (INSIDE & OUTSIDE LANE)	0.063	MILL&INLAY	FROM: ~330' S OF US 1588 TO: US 1588	604-0.593 604-0.717
8	FM 1588 (EOP TO EOP)	0.021	MILL&INLAY	FROM: INT. FM1588/US 277 TO: INT. FM1588/US 277	548+0.022 548+0.044
9	US 277 SB (INSIDE LANES)	0.074	MILL&INLAY	FROM: ~390 FT N OF 2ND ST TO: 2ND ST	606+0.976 606+1.052
10	US 57 (EOP TO EOP)	0.019	MILL&INLAY	FROM: 840 FT E OF HAROLD AVE TO: 250 FT BEFORE FM 3443	370+1.829 370+1.843
11	SL 480 (EOP TO EOP)	0.091	SPOT BASE REPAIR	FROM: INT. SL 480 NW/US 57 TO: INT. SL 480 NW/US 57	560-0.065 560+0.026
12	SL 480 (EOP TO EOP)	0.047	SPOT BASE REPAIR	FROM: INT. SL 480 N/INDUSTIAL PARK TO: INT. SL 480 N/INDUSTIAL PARK	570+0.621 570+0.669

NOTE: SPECIFIC LIMITS OF MILL/INLAY, BASE REPAIR OR CRCP REPAIRS WILL BE IDENTIFIED BY THE MAINTENANCE SUPERVISOR IN THE WORK ORDER OR UPON FIELD INSPECTION AND AS DIRECTED BY THE ENGINEER.



MAVERICK



TEXAS DEPARTMENT OF TRANSPORTATION
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MAVERICK COUNTY LOCATION MAP

DR: A.S.	DR: A.S.	STATE: TEXAS	SHEET NUMBER: SHEET 2 OF 2	SHEET NO: 3
BY: V.R.	BY: V.R.	COUNTY: DIMMIT	SECTION: 35	JOB: 001
DATE: 11/29/2023	DATE: 11/29/2023	CONTROL: 6452	VARIOUS	

Project Number: RMC – 6452-35-001

Sheet: 4

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

GENERAL NOTES:

This routine maintenance contract is for flexible pavement and concrete structure repair on various sections of roadways within Dimmit and Maverick County.

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

Vanessa Rosales-Herrera, P.E. at vanessa.rosales@txdot.gov
Angel Alejo at angel.alejo@txot.gov

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

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

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

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

Arrange a Pre-work Meeting between representatives of the State and the Contractor prior to beginning work. Outline the proposed work and submit plans for performing the work while providing safe passage of traffic at all times. Access is available to the TXDOT Maintenance yard during normal working hours only.

Maintain the right-of-way in a satisfactory appearance as shown in the plans and/or as approved by the Engineer.

Perform work expeditiously during daylight hours. Nighttime work will be allowed to be performed, as approved and directed by the Engineer. Refer to the Sequence of Work, Traffic Control Plan, etc. shown in the plans for other details.

Each project location shall be opened to traffic at the end of the workday.

Equipment that remains in the ROW outside of working hours must be parked outside of the clear zone and in a way that does not obstruct sight distance for the traveling public.

Conform to the Texas Manual on Uniform Traffic Control Devices (TMUTCD) for sign types for which details are not shown in the plans.

General Notes

Project Number: RMC – 6452-35-001

Sheet: 4

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

Excavated material will need to be removed and disposed of by the contractor.

Maintain the roadway surface and work zone striping within the project limit while the traffic control plan is in effect.

Furnish crew(s) and equipment capable of maintaining work in a continuous manner for the completion of the work listed on the work order.

When working near aerial electrical lines and/or utility poles, provide adequate safety measures as needed to comply with the appropriate sections of Federal and State regulations.

Exact limits of the work areas will be marked by the Engineer or representative.

SUPERVISION:

Meet with the respective Maintenance Supervisor prior to the beginning of each workday. Discuss location, limits, type of work, construction time, inspections, special considerations and any other issue or topic as directed by the Engineer.

The Maintenance Supervisors in charge are:

Dimmit County
Juan D. Moreno
2001 N. First St.
Carrizo Springs, TX, 78834
830-876-8135

Maverick County
Charles Fite
2440 Main St.
Eagle Pass, TX, 78852
830-776-0506

Employees are required to wear proper safety equipment. Contractor is responsible for supplying personal protective equipment (PPE) for employees.

The Contractor is responsible that all material used in this contract be approved and certified by the Materials & Test Division. A listing of state approved material producers is available on the Department's website.

ITEM 3 AWARD AND EXECUTION OF CONTRACT:

Two work orders will be used to procure work of the type identified in the contract at locations that have been determined.

Each work order will include the type of work, the location and limits, estimated quantities, and number of days allowed for work order completion.

The time allowed for each work order will be based on a production rate of five hundred (500) square yards per day.

General Notes

Project Number: RMC – 6452-35-001

Sheet: 5

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

This contract duration is for 8 months. Time charges and work will start on the day stated on the Work Authorization letter. The contract will be in effect until the work on the last workorder is completed.

ITEM 4 SCOPE OF WORK:

If agreed upon in writing by both parties to the Contract, the Contract may be extended for an additional period of time not to exceed the original Contract time period. The extended Contract shall be for the original bid quantities, terms and conditions plus any approved, applicable change orders.

When the Contract is extended by agreement, a performance and/or payment bond, if required shall be executed in the amount of the extension before the additional work begins.

ITEM 5 CONTROL OF WORK:

The Contractor shall maintain and preserve the integrity of all "existing survey markers" by avoiding the disturbance of such markers, which include all control points (horizontal and/or vertical), stakes, marks, and right-of-way markers. The Department will repair all Contractor disturbed control points, stakes, marks, and right-of-way markers. The cost for any and all repairs to the "existing survey markers" will be deducted from money due or to become due to the Contractor.

Prior to construction, Contractor must call 811 to verify any utilities located within project limits. Contractor will also coordinate with utility owners listed below for any adjustments needed to sanitary sewer manholes, water valves, gas valves, telecommunication, other utilities located within project limits. The utility company is responsible for any adjustment when necessary. The work should be performed in a manner as to not delay construction contractor work activity.

Contractor will make necessary arrangements with the utility owner(s) when utility adjustments are required, as a result of construction activities.

Reference all existing striping and pavement markings in a manner which allow the markings to be re-established if necessary.

Questions regarding the plan work limits should be brought to the Engineer's attention prior to commencing work. Measuring equipment will be in working condition and calibrated to the manufacturer's specifications.

Field verify all dimensions and notify Engineer prior to initiating any work.

General Notes

Project Number: RMC – 6452-35-001

Sheet: 5

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

ITEM 8 PROSECUTION AND PROGRESS:

The total duration of this contract is **171** Standard Workweek in accordance with **Section 8.3.1.5 "Standard Workweek"**.

No closures will be allowed on the weekends which include the following holidays: January 1, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, December 25 and Easter weekend.

ITEM 9 MEASUREMENT AND PAYMENT:

Submit Material on hand (MOH) payment requests at least 5 working days prior to the end of the month for payment on that month's estimate. For out of town MOH, submit requests at least 10 working days prior to the end of the month.

ITEM 110 EXCAVATION:

Pay item is only for excavated subgrade material removed from soft spot locations. Material excavated on soft spots will be property of the contractor.

Item 247 - Flexible Base

Conform to the following flexible base (TY E GR 1-2) requirements:

A pre-placement meeting must be conducted at least 48 hrs. prior to flex base placing operations.

If the flexible base comes from a stockpile, test the stockpile before delivery to the project. Stockpile must be labeled and designated the contractor and the project. Follow the department guide schedule for testing frequency. The Contractor's attention is called to the fact that the preliminary test will require approximately 30 days and it is the Contractor's responsibility to advise the Engineer of the location of the flexible base source sufficiently in advance to avoid delays. Blade the side slopes to remove all grass from the area of construction before placing flexible base on that portion of the roadway to be widened, level-up, seal coat, or HMAC overlay. Blade the sod back onto the side slopes after the proposed items of work have been completed. This work is subsidiary to pertinent work items.

ITEM 351 FLEXIBLE PAVEMENT STRUCTURE REPAIR

Minimum production rate is five hundred (500) square yards per day.

General Notes

Project Number: RMC – 6452-35-001

Sheet: 6

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

Flexible Pavement Structure Repair shall be limited to the amount that can be repaired per day and must match existing surface elevation. No exposed drop offs shall be left over night.

Excavation of the existing flexible base material to the required 6" depth, will be in accordance with Item 110 and will not be paid directly but will be subsidiary to item 351. In addition, all flexible material removed under this item will remain the property of the Contractor.

Square the sides of the repair area by saw-cutting or other approved methods. Remove loose and foreign materials. Clean and dry the repair area. Apply SS-1H as a tack coat in accordance with Item 300 at 0.20 gal/sy to surfaces of the repair area, unless otherwise directed. Saw cutting, furnishing and applying tack coat will not be measured but will be subsidiary to Item 351 "Flexible Pavement Structure Repair".

Provide 4" of HMA TY-B PG 64-22 and 2" of HMA TY-C PG 76-22 in accordance with Item 3076 for all repairs as specified by the work order or Maintenance Supervisor. HMA TY-B PG 64-22 and HMA TY-C PG 76-22 will not be measured but will be subsidiary to Item 351 "Flexible Pavement Structure Repair".

The quantity of material must be agreed upon by the Contractor and Engineer prior to being ordered.

Clean roadway surface after repair operations. Apply Bonding Course in accordance with Item 3084 Bonding Course. Dispose of materials removed as directed or approved.

All the necessary equipment, material, personnel, and any incidentals needed to carry out all work mentioned above will be subsidiary to Item 351 "Flexible Pavement Structure Repair".

Item 361 - Repair of Concrete Pavement

Schedule work so that concrete placement follows full depth saw cutting by no more than 1 days.

ITEM 438 – CLEANING AND SEALING JOINTS AND CRACKS

The contractor will advise the Engineer of any loose or damaged seal joint areas not noted in the plans. Upon approval from the Engineer, these areas will be addressed and the Contractor compensated for such additional work.

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

General Notes

Project Number: RMC – 6452-35-001

Sheet: 6

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

Class 7 -low modulus silicone, rapid curing, self-leveling shall be used without ACP overlay and existing armor joints. Refer to the 2014 Standard Specification for additional information.

ITEM 500 MOBILIZATION:

"Materials-on-Hand" payments will not be considered in determining percentages used to compute mobilization payments.

Only one mobilization callout will be paid per Work Order regardless of the number of locations and type of work identified in the Work Order.

ITEM 502 BARRICADES, SIGNS, AND TRAFFIC HANDLING:

Designate, as the Contractor Responsible Person (CRP), an English-speaking employee on-call nights and weekends (or any other time that work is not in progress) with a local address and telephone number for maintenance of signs and barricades. This employee will be located within one (1) hour of traveling time to the project site. Notify the Engineer in writing of the name, address and telephone number of this employee. Furnish this information to local law enforcement officials.

The time frame for the Contractor to provide properly maintained traffic control devices before they are considered to be in non-compliance with this Item is 48 hours regardless of the days of the week involved after notification is done in writing by the Engineer.

Notify the Engineer at least two weeks prior to a proposed traffic pattern change(s) that will require a revision to traffic signals. This is required to provide the State/City time to perform a traffic study, determine the new signal timing and phasing settings that need to be implemented with the traffic change.

When advanced warning flashing arrow panel(s) is/are specified, maintain one standby unit in good condition at the job site ready for immediate use is required.

Place eight inches of both red and white stripes in an inverted "V" design on the back of all TMA's. Conform all sheeting to Departmental Material Specification D-9-8300, Type C.

Provide shadow vehicles equipped with Truck Mounted Attenuators (TMA) as shown on Traffic Control Plan (TCP) standards (2 series).

Limit lane closures to a maximum of 2 miles. If more than one lane closure location is desired, provide a minimum of a 2 mile passing zone between locations. Provide a separate sign set up for each location.

General Notes

Project Number: RMC – 6452-35-001

Sheet: 7

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

Ensure equipment not in use, stockpile aggregate, and other working materials are:

- A minimum of 30 feet from the edge of the travel lane;
- Do not obstruct traffic or sight distance;
- Do not interfere with the access from abutting property; or
- Do not interfere with roadway drainage.

Erect signs in locations not obstructing the traveling public's view of the normal roadway signing or necessary sight distance at intersections and curves.

During the holiday time frame of December 21st through January 1st, every effort should be taken to ensure that all travel lanes remain open where possible.

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

ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIROMENTAL CONTROLS:

Erosion control log item to be used to mitigate erosion and sedimentation that can be caused by the removed flexible base stockpile. Installation location of the erosion control log to be determined in the field as per Maintenance Supervisor.

ITEM 585 RIDE QUALITY FOR PAVEMENT SURFACES

Use pay adjustment Schedule 2 for mill/inlay sections.

ITEM 666 REFLECTORIZED PAVEMENT MARKINGS:

Reflectivity requirements for Type I will be as per Item 666.

All respective call-outs will begin within 72 hours of written notification. Complete work within 10 calendar days.

Centerline and "No Passing Zones" are established by TxDOT. Other necessary markings (edge lines, gores, offset points, etc.) will be established at the contractor's expense.

Remove temporary pavement markings (flexible-reflective roadway marker tabs or removable prefabricated pavement markings) immediately after permanent markings are placed. This work will be considered subsidiary to this bid item.

General Notes

Project Number: RMC – 6452-35-001

Sheet: 7

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

Place pavement marking material on roadways at any time during the year. Use standard installation method as this material is subject to temperature and moisture limitations specified.

Quantities may be varied during actual operations to accommodate field conditions.

Sealer for Type I Markings will be exclusive for concrete areas. The pavement sealer must be acrylic unless otherwise shown on the plans.

ITEM 3076 - DENSE-GRADED HOT-MIX ASPHALT

Apply Bonding Course in accordance with Item 3084 Bonding Course.

Substitute Binders (grade dumping) will not be allowed on the final riding surface.

The use of RAP or RAS will not be allowed on the final riding surface.

Refer to Item 585 for ride quality requirements.

For mill inlays sections:

Only mill what can be paved at the end of the workday.

Furnish equipment in accordance with pertinent items. Finish to grade and compact to conform to roadway surface. Compact with pneumatic and flat wheel rollers as directed or approved. Vibratory roller may not be used.

ITEM 3084 – BONDING COURSE

An average rate of 0.20 GAL/SY was used for estimation purposes. Contractor shall choose an option shown below and bid accordingly.

OPTIONS:

MATERIAL	MINIMUM TYPICAL APPLICATION RATE (GAL/SY)
TRAIL – Emulsified Asphalt	#
TRAIL – Hot Applied	#
Spray Applied Underseal Membrane	#

Typical Application Rate may vary from 0.07 to 0.20 GAL/SY depending on option.

Apply bonding course at every intermediate layer, unless otherwise directed. The type of tack coat must be approved by the Engineer.

General Notes

Project Number: RMC – 6452-35-001

Sheet: 8

County: Dimmit, Etc.

Control: 6452-35-001

Highway: US 83, Etc.

The Engineer may adjust the application rates as per field conditions.

Shear Bond Strength Test will be performed for informational purposes and will not be used for specification compliance. The target shear bond strength is a minimum of 40 psi and for final surface layer a minimum of 50 psi.

ITEM 6185 TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER:

Provide ONE (1) Truck Mounted Attenuator for stationary operations and TWO (2) Truck Mounted Attenuators for mobile operations as required by the Engineer. Provide backup and keep operational and available of the jobsite at all times during traffic control operations. The TMA will be made available for utilization for the entire duration of the project.

SEQUENCE OF CONSTRUCTION

SUGGESTED SEQUENCE OF CONSTRUCTION

THE CONTRACTOR WILL PLACE ALL GENERAL PROJECT TRAFFIC CONTROL SIGNS, BARRICADES, AND CHANNELIZING DEVICES AS SHOWN IN THE TCP LAYOUTS INCLUDED IN THE PLANS, LATEST VERSION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (T&MUTCD), BARRICADES AND CONSTRUCTION (BC) SHEETS, WORK ZONE STANDARD SHEETS, CONSTRUCTION STANDARD SHEETS, AND AS NOTED IN THE GENERAL NOTES. THE FOLLOWING BRIEFLY DESCRIBES THE SEQUENCE OF CONSTRUCTION UNLESS OTHERWISE SPECIFIED, ALL CONSTRUCTION IS TO BE PERFORMED OFF THE ROADWAY LIMITS USING APPROVED TCP STANDARDS.

NOTE: PRIOR TO PERFORMING ROADWAY IMPROVEMENTS CONTAIN APPROVAL FROM THE CORRESPONDING ENGINEER FOR LANE CLOSURE TIME FRAMES.

GENERAL SEQUENCE OF WORK:

PHASE I PEDESTRIAN IMPROVEMENTS

PHASE II ROADWAY IMPROVEMENTS

PHASE III BRIDGE IMPROVEMENTS

PHASE IV PERFORM FINAL CLEAN UP

PHASE I: PEDESTRIAN IMPROVEMENTS (SIDEWALK, CURB RAMPS, CURB & GUTTER REPAIRS):

1. PLACE APPLICABLE TRAFFIC CONTROL STANDARD AND DETAILS FOR PEDESTRIAN REPAIRS (TCP SIDEWALK DETAIL, WZ (BTS-1,2)-13, TCP SERIES)
2. PERFORM SIDEWALK, PED RAMP, CURB & GUTTER REPAIRS.

PHASE II ROADWAY IMPROVEMENTS


1. PLACE APPLICABLE TRAFFIC CONTROL STANDARD FOR ROADWAY REPAIRS (TCP SERIES)
2. PERFORM ROADWAY REPAIRS

PHASE III BRIDGE IMPROVEMENTS

1. PLACE APPLICABLE TRAFFIC CONTROL STANDARD FOR BRIDGE REPAIRS
2. PERFORM BRIDGE IMPROVEMENTS

PHASE IV PERFORM FINAL CLEAN UP

1. UPON COMPLETION OF ALL CONSTRUCTION AND WITH THE APPROVAL OF THE ENGINEER, REMOVE AND RELOCATE THE MATERIAL AS DIRECTED BY THE ENGINEER. AFTER THIS TASK HAS BEEN COMPLETED, INITIATE PROJECT CLEAN-UP WITH THE APPROVAL OF THE ENGINEER.
2. REMOVAL OF TCP MAY INITIATE.



TEXAS DEPARTMENT OF TRANSPORTATION
© 2023

TCP SEQUENCE OF CONSTRUCTION

DR	S.P.	DR	S.P.	STATE	SHEET NUMBER		SHEET NO.
CR:	V.R.	CR:	V.R.	TEXAS	SHEET 1 OF 1		
FED. DIST. NO.	STATE DIST. NO.	COUNTY	CONTROL SECTION	JOB	HIGHWAY NO.		
22	VAR.	6452	35	001	VAR.		9



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6452-35-001

DISTRICT Laredo
HIGHWAY US0277

COUNTY Maverick

CONTROL SECTION JOB				6452-35-001		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00202703			
COUNTY				Maverick			
HIGHWAY				US0277			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	110-6001	EXCAVATION (ROADWAY)	CY	2,540.000		2,540.000	
	216-6001	PROOF ROLLING	HR	150.000		150.000	
	247-6060	FL BS (CMP IN PLC)(TY E GR 4)(FNAL POS)	CY	2,540.000		2,540.000	
	351-6002	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	SY	5,080.000		5,080.000	
	354-6045	PLANE ASPH CONC PAV (2")	SY	25,707.000		25,707.000	
	361-6006	FULL - DEPTH REPAIR CRCP (12")	SY	400.000		400.000	
	438-6002	CLEANING AND SEALING EXIST JOINTS(CL3)	LF	375.000		375.000	
	438-6008	CLEANING AND SEALING JOINTS (CL 7)	LF	1,716.000		1,716.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	8.000		8.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	250.000		250.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	250.000		250.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	950.000		950.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	1,800.000		1,800.000	
	666-6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	11,000.000		11,000.000	
	666-6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	7,500.000		7,500.000	
	666-6053	REFL PAV MRK TY I (W)(ARROW)(090MIL)	EA	155.000		155.000	
	666-6056	REFL PAV MRK TY I (W)(DBL ARROW)(090MIL)	EA	12.000		12.000	
	666-6077	REFL PAV MRK TY I (W)(WORD)(090MIL)	EA	95.000		95.000	
	666-6146	REFL PAV MRK TY I (Y)24"(SLD)(090MIL)	LF	1,300.000		1,300.000	
	666-6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF	35,000.000		35,000.000	
	666-6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	33,500.000		33,500.000	
	666-6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	10,100.000		10,100.000	
	666-6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	42,000.000		42,000.000	
	672-6007	REFL PAV MRKR TY I-C	EA	1,450.000		1,450.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	2,050.000		2,050.000	
	3076-6032	D-GR HMA TY-C SAC-A PG76-22	TON	2,956.000		2,956.000	
	3084-6001	BONDING COURSE	GAL	20,565.000		20,565.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	90.000		90.000	

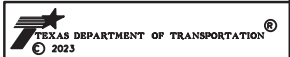
DISTRICT	COUNTY	CCSJ	SHEET
Laredo	Maverick	6452-35-001	

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS						
LOCATION	500 6033	502 6001	662 6111	662 6109	6001 6002	6185 6002
	MOBILIZATION (CALLOUT)	BARRICADES, SIGNS AND TRAFFIC HANDLING	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	WK ZN PAV MRK SHT TERM (TAB)TY W	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)
	EA	MO	EA	EA	EA	DAY
ALL LOCATIONS	2	8	1800	950	2	90
PROJECT TOTALS	2	8	1800	950	2	90

SUMMARY OF ROADWAY ITEMS												
LOCATION	110 6001	216 6001	247 6060	351 6002	354 6045	361 6006	438 6002	438 6008	506 6041	506 6043	3076 6032	3084 6001
	EXCAVATION (ROADWAY)	PROOF ROLLING	FL BS (CMP IN PLCXTY E GR 4/FNAL POS)	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	PLANE ASPH CONC PAV (2")	FULL - DEPTH REPAIR CRCP (12")	CLEANING AND SEALING EXIST JOINTS(C13)	CLEANING AND SEALING EXIST JOINTS(C7)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)	D-GR HMA TY-C SAC-A PG76-22	BONDING COURSE
	CY	HR	CY	SY	SY	SY	LF	LF	LF	LF	TON	GAL
ALL LOCATIONS	2540	150	2540	5080	25707	400	375	1716	250	250	2956	20565
PROJECT TOTALS	2540	150	2540	5080	25707	400	375	1716	250	250	2956	20565

SUMMARY OF PAVEMENT MARKING & DELINEATOR ITEMS												
LOCATION	666 6035	666 6047	666 6053	666 6056	666 6077	666 6146	666 6305	666 6308	666 6317	666 6320	672 6007	672 6009
	REFL PAV MRK TY I (W)8"(SLD) (90MIL)	REFL PAV MRK TY I (W)24"(SLD) (90MIL)	REFL PAV MRK TY I (W)ARROW (90MIL)	REFL PAV MRK TY I(W)DBL ARROW (90MIL)	REFL PAV MRK TY I (W)WORD (90MIL)	REFL PAV MRK TY I (Y)24"(SLD) (90MIL)	RE PM W/RET RED TY I (W)6"(BRK) (90MIL)	RE PM W/RET RED TY I (W)6"(SLD) (90MIL)	RE PM W/RET RED TY I (Y)6"(BRK) (90MIL)	RE PM W/RET RED TY I (Y)6"(SLD) (90MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A
	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF	EA	EA
ALL LOCATIONS	11000	7500	155	12	95	1300	35000	33500	10100	42000	1450	2050
PROJECT TOTALS	11000	7500	155	12	95	1300	35000	33500	10100	42000	1450	2050





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SUMMARY SHEET

DN: M.S.	DP: M.S.	STATE	SHEET NUMBER	SHEET NO.
DR: R.C.	CR: R.C.	TEXAS	SHEET 1 OF 1	
PROJECT NO.	COUNTY	CONTROL SECTION	JOB	PROJECT NO.
22	DIMMIT	6452	35	001 VARIOUS

LEGEND

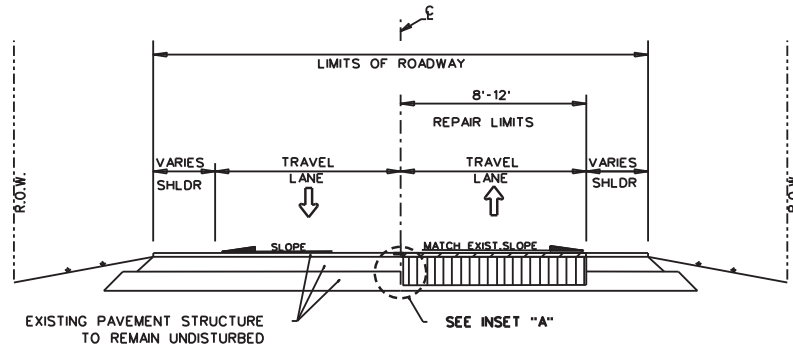
	EXISTING ACP
	PROPOSED SURF. TREAT
	SPOT BASE REPAIR
	OVER SIZE CRUSHED ROCK

*** RATES OF APPLICATION**

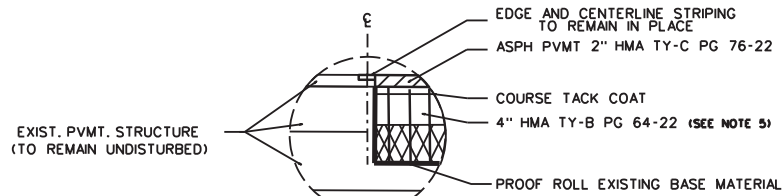
SPOT BASE REPAIRS:
BASE: D-GR HMA TY-B PG 64-22 (120LB/SY/IN)
TACK COAT: (0.20 GAL/SY) (SEE NOTE 7)

NOTES:

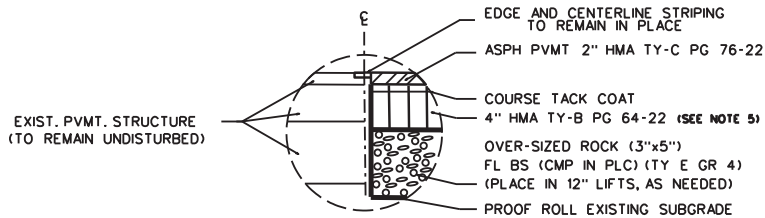
- APPLICATION RATES ARE FOR ESTIMATION PURPOSES ONLY. THESE RATES MAY BE ADJUSTED ON THE FIELD AS PER ENGINEER.
- MAINTAIN EXISTING PGL THROUGHOUT THE PROJECT. FLEXIBLE PAVEMENT SECTIONS WILL BE LEFT UNDISTURBED UNLESS SPECIFIED BY THE ENGINEER.
- REFER TO CALLOUT/WORK ORDER FOR LIMITS INFORMATION.
- TYPICAL SECTIONS SHOWN DEPICT TYPICAL WORK TO BE DONE THROUGHOUT PROJECT. TYPICAL SECTION LANES! WIDTHS MAY CHANGE DUE TO EXISTING ROADWAY CONDITIONS FOR ALL LOCATIONS REQUIRING SPOT BASE REPAIRS.
- USAGE OF INSET "A"**
 DEPTH OF THE REPAIR AND PLACEMENT OF D-GR HMA TY-B PG 64-22 WILL BE 4" AND MAY BE DONE IN ONE LIFT. THE PLACEMENT OF D-GR-HMA TY-C PG 76-22 WILL BE 2" AND MAY BE DONE IN ONE LIFT. USE DETAIL "B", IF SOFT SPOTS ARE ENCOUNTERED DURING PROOF ROLLING AFTER VERIFICATION AND APPROVED BY MAINTENANCE SUPERVISOR.
- USAGE OF INSET "B"**
 WHEN SOFT SPOTS ARE ENCOUNTERED AND ADDITIONAL DEPTH REQUIRES REPAIR AND APPROVED BY MAINTENANCE SUPERVISOR, REMOVAL OF 12" EXISTING MATERIAL IN THIS SCENARIO WILL BE PAID THROUGH ITEM 100- EXCAVATION (ROADWAY), AND OVER SIZED ROCK 13"x5" MATERIAL AND PLACEMENT WILL BE PAID UNDER ITEM 247.
- TACK COAT IS SUBSIDIARY TO ITEM 351
- EXISTING PAVEMENT - BASE LAYERS MAY VARY



SPOT BASE REPAIRS (SEE NOTE 4)
TYPICAL SECTION



INSET "A"
 USAGE WHEN DEPTH REPAIR IS ONLY 6" (SEE NOTE 5)



INSET "B"
 USAGE FOR DEPTH REPAIRS GREATER THAN 6" (SEE NOTE 6)



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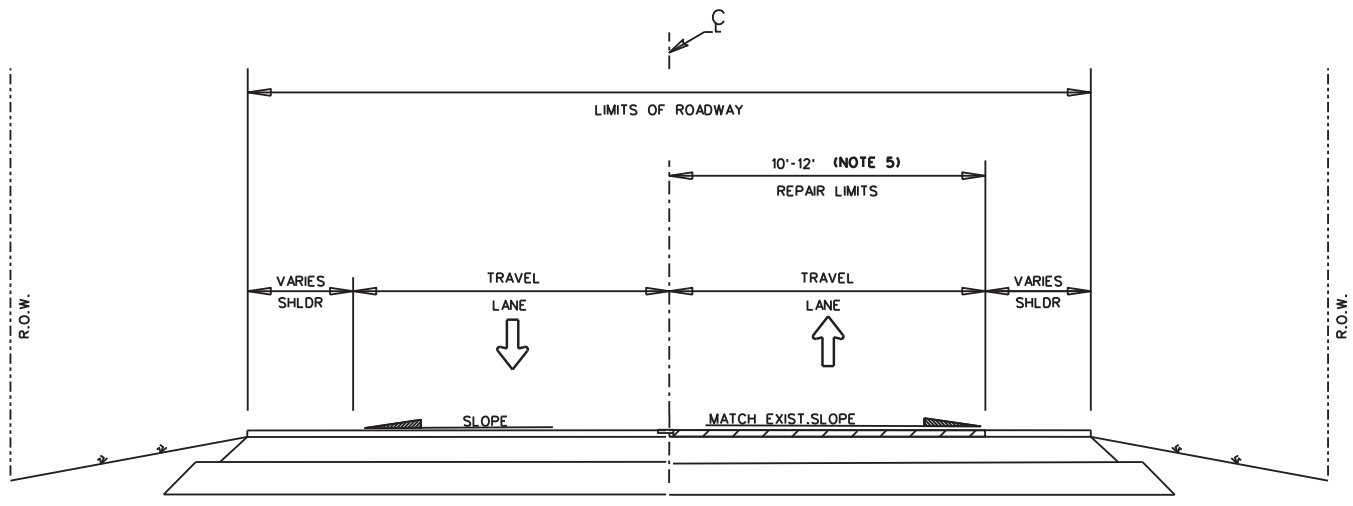
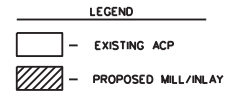
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 Vanessa Rosales-Herrera
 70CABEAFB194276



SPOT BASE REPAIR DETAIL

DN: S.P.	DR: S.P.	STATE: TEXAS	SHEET NUMBER: SHEET 1 OF 1	SHEET NO: 12
CR: V.R.	CC: V.R.	COUNTY: DIMMIT	SECTION: 6452 35	JOB NO: 001 VARIOUS
DATE: 22	DATE: 22	DATE: 22	DATE: 22	DATE: 22

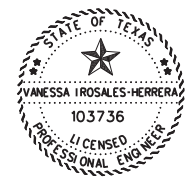
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TYPICAL SECTION - PROPOSED 2" MILL WITH 2" INLAY D-GR HMA TY-C SAC-A PG76-22 W/ BONDING COURSE

NOTES:

1. APPLICATION RATES ARE FOR ESTIMATION PURPOSES ONLY. THESE RATES MAY BE ADJUSTED ON THE FIELD AS PER ENGINEER.
2. MAINTAIN EXISTING PGL THROUGHOUT THE PROJECT. FLEXIBLE PAVEMENT SECTIONS WILL BE LEFT UNDISTURBED UNLESS SPECIFIED BY THE ENGINEER.
3. REFER TO CALLOUT/WORK ORDER FOR LIMITS INFORMATION.
4. TYPICAL SECTIONS SHOWN DEPICT TYPICAL WORK TO BE DONE THROUGHOUT PROJECT. TYPICAL SECTION LANE(S) WIDTHS MAY CHANGE DUE TO EXISTING ROADWAY CONDITIONS FOR ALL LOCATIONS REQUIRING MILL/INLAY.
5. MILL/INLAY LIMITS SHALL BE LESS THAN 12" FROM THE INSIDE OF THE LANE STRIPE AND LESS THAN 12" INSIDE OF THE EDGE STRIPE OF A LANE. (JOINT TO NOT FALL ON THE WHEEL PATH.)
6. RATES OF APPLICATION D-GR HMA TY-C SAC-A 115LBS/SY/IN BONDING COURSE 0.8 GAL/SY.
7. THE USE OF VIBRATORY EQUIPMENT WILL BE PROHIBITED FOR LOCATION 1 IN MAVERICK COUNTY, FROM THE END OF THE BRIDGE TO ADOLPHUS ST.



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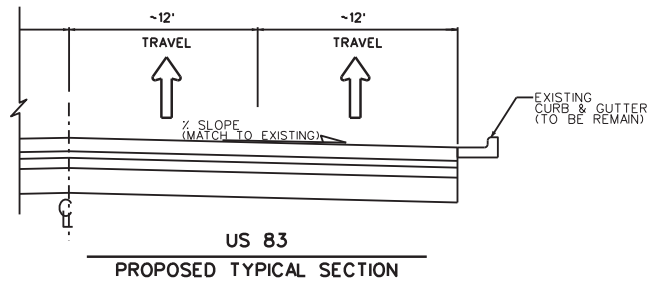
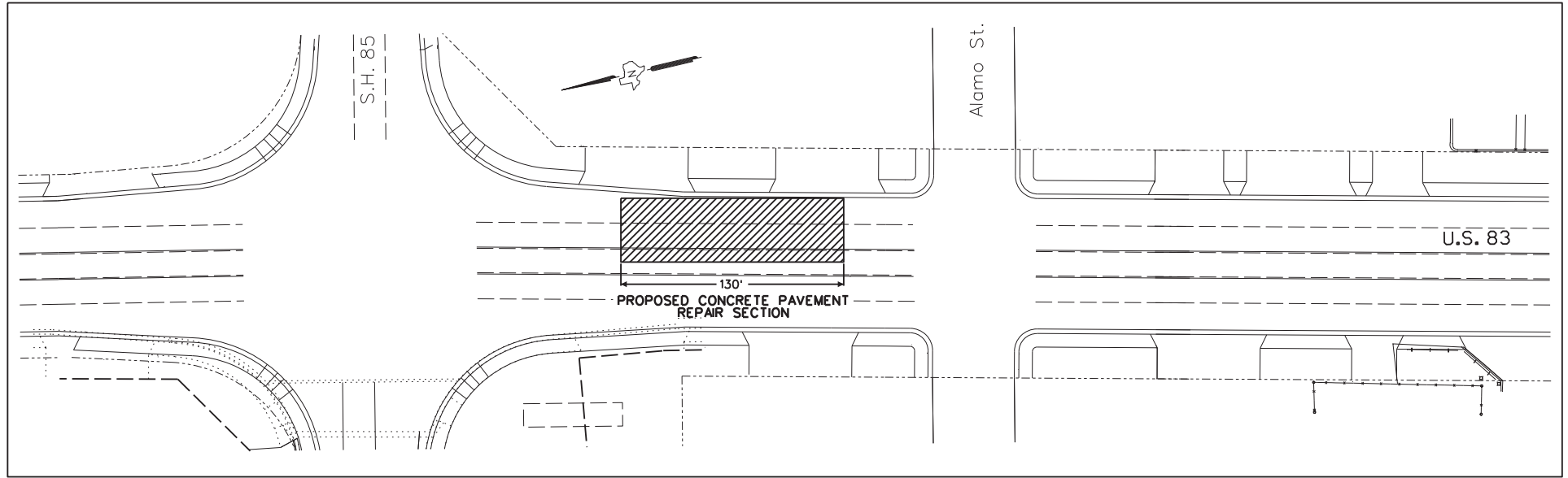
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Vanessa Irosales-Herrera
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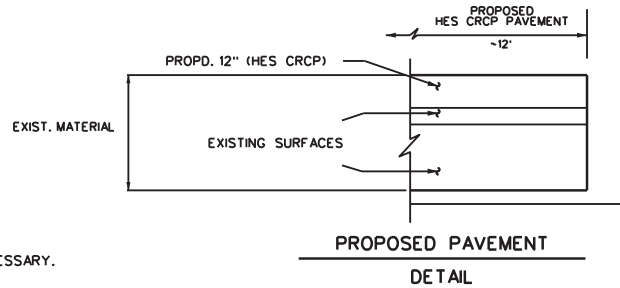
TYPICAL SECTION MILL/INLAY

ON M.S.	OF M.S.	STATE	SHEET NUMBER	SHEET NO.
OF R.C.	OF R.C.	TEXAS	SHEET 1 OF 1	13
PROJECT NUMBER	COUNTY	CONTRACT	SECTION	JOB
22	DIMMIT	6452	35	001 VARIOUS

11/29/2023 5PACHICA T:\LRD05\TMT\TY 2024\MT Contract (F224)\Mill & Inlay SBR DIMMIT COUNTY\CAD\005_Mill-Inlay_TypicalSection.dgn



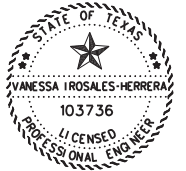
PROPOSED TYPICAL SECTION



PROPOSED PAVEMENT DETAIL

NOTES:

1. WORK SHOWN SHALL BE DONE AT NIGHT AND WEEKENDS TO MINIMIZE INCONVENIENCE TO THE TRAVELING PUBLIC AND SURROUNDING BUSINESSES.
2. REFER TO STANDARDS TCP (2-5b)-18, BC SHEETS, TCP GENERAL NOTES, TMUTCD AND ALL OTHER APPLICABLE SHEETS FOR SIGNS, SIGN SPACING, AND CHANNELIZING DEVICE SPACING NOT SHOWN. WORK SPACE ON OPPOSITE SIDE SHALL BE MIRRORED.
3. SEE TxDOT STANDARDS TRANS-20 & CRCP(1)-20 FOR MORE INFORMATION ON PROPOSED CONCRETE PAVEMENT.
4. FLAGGERS AND LAW ENFORCEMENT SHALL BE USED TO FACILITATE TRAFFIC MANAGEMENT AS DEEMED NECESSARY.
5. TEMPORARY ILLUMINATION SHALL BE POSITIONED SUCH THAT THE ENTIRE INTERSECTION IS ILLUMINATED AND GLARE IS MINIMIZED FOR APPROACHING TRAFFIC.
6. ILLUMINATION, BULLROCK & MILLING MATERIALS, AND LABOR SHALL BE CONSIDERED SUBSIDIARY TO ITEM 361 "CONCRETE PAVEMENTS".



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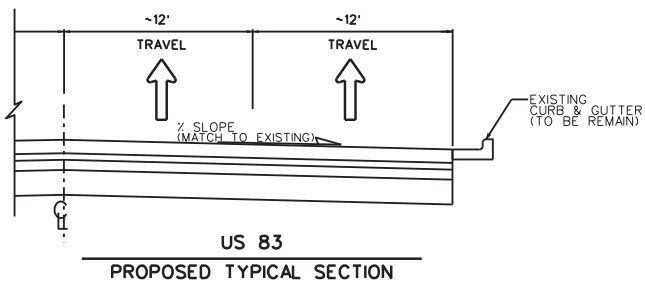
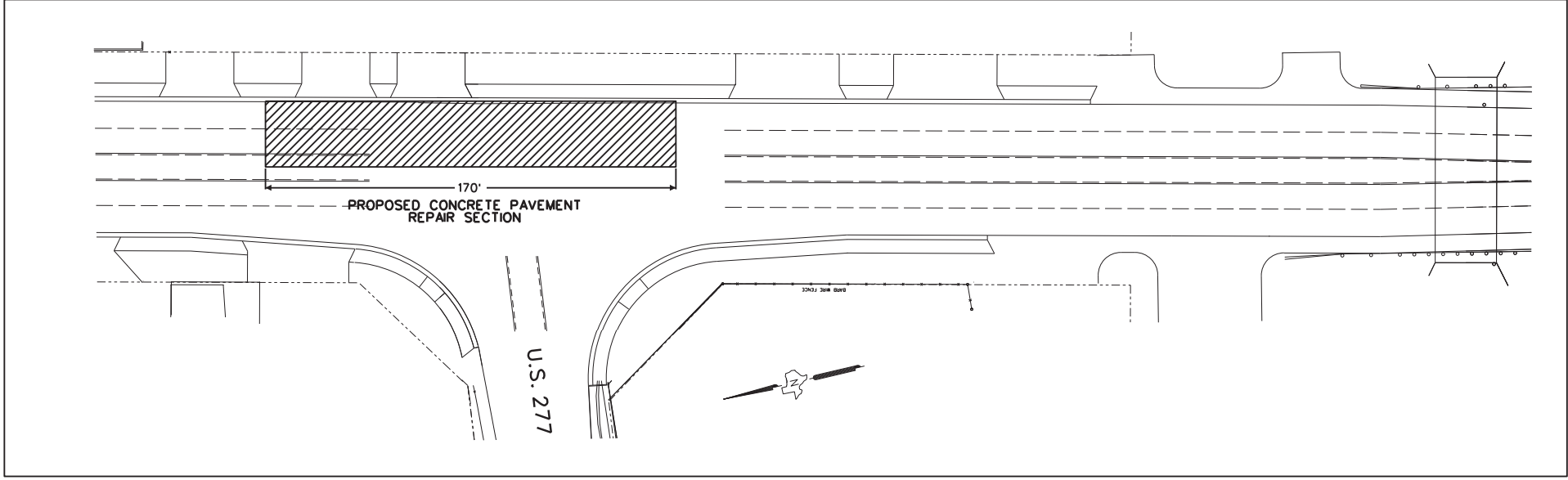
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Vanessa Irosales-Herrera
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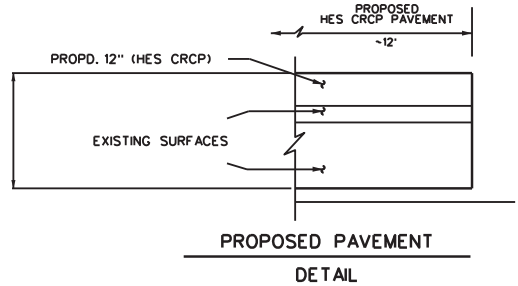
CONCRETE PAVEMENT REPAIR LOCATION

DR. A.S.	DR. A.S.	STATE	SHEET NUMBER	SHEET NO.
BY V.R.	BY V.R.	TEXAS	SHEET 1 OF 2	
DATE ISSUED	COUNTY	CONTROL SECTION	JOB	PROJECT NO.
22	DIMMIT	6452	35	001 VARIOUS

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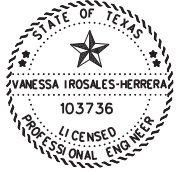
US 83
PROPOSED TYPICAL SECTION



PROPOSED PAVEMENT
DETAIL

NOTES:

1. WORK SHOWN SHALL BE DONE AT NIGHT AND WEEKENDS TO MINIMIZE INCONVENIENCE TO THE TRAVELING PUBLIC AND SURROUNDING BUSINESSES.
2. REFER TO STANDARDS TCP (2-5b)-18, BC SHEETS, TCP GENERAL NOTES, TMTUCD AND ALL OTHER APPLICABLE SHEETS FOR SIGNS, SIGN SPACING, AND CHANNELIZING DEVICE SPACING NOT SHOWN. WORK SPACE ON OPPOSITE SIDE SHALL BE MIRRORRED.
3. SEE TxDOT STANDARDS TRANS-20 & CRCP(1)-20 FOR MORE INFORMATION ON PROPOSED CONCRETE PAVEMENT.
4. FLAGGERS AND LAW ENFORCEMENT SHALL BE USED TO FACILITATE TRAFFIC MANAGEMENT AS DEEMED NECESSARY.
5. TEMPORARY ILLUMINATION SHALL BE POSITIONED SUCH THAT THE ENTIRE INTERSECTION IS ILLUMINATED AND GLARE IS MINIMIZED FOR APPROACHING TRAFFIC.
6. ILLUMINATION, BULLROCK & MILLING MATERIALS, AND LABOR SHALL BE CONSIDERED SUBSIDIARY TO ITEM 361 "CONCRETE PAVEMENTS".



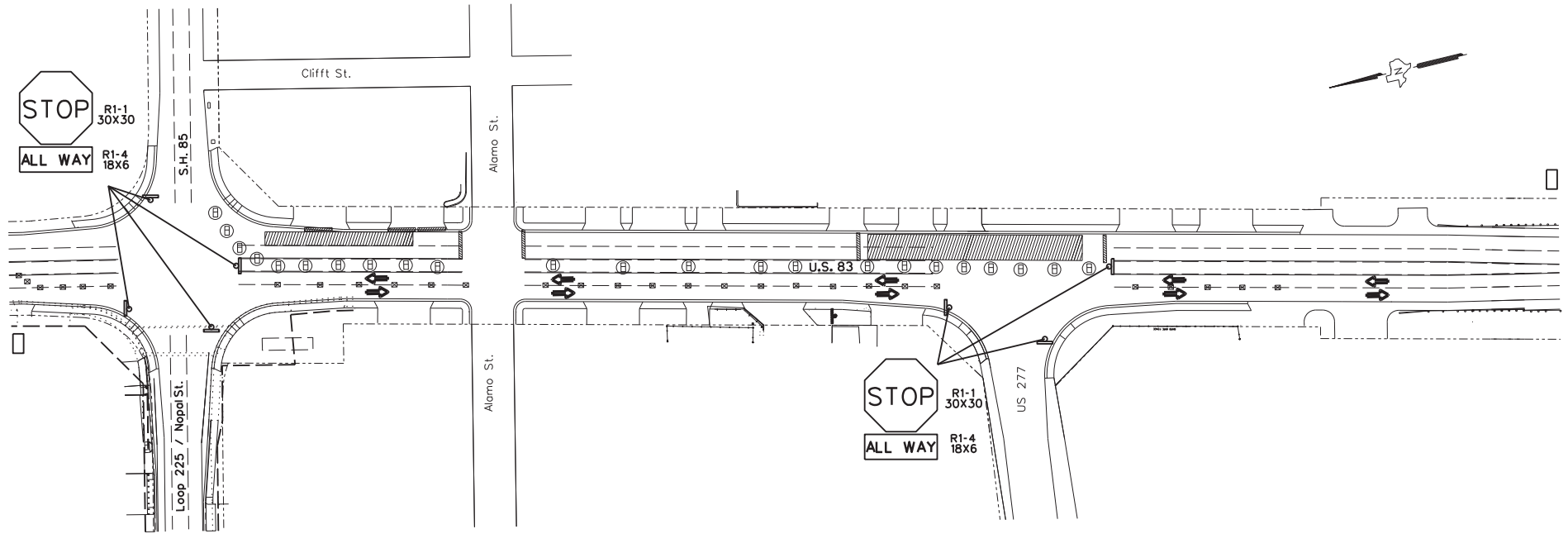
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Vanessa Irosales-Herrera
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TEXAS DEPARTMENT OF TRANSPORTATION
CONCRETE PAVEMENT REPAIR LOCATION

DR: S.P.	DE: S.P.	STATE: TEXAS	SHEET NUMBER: SHEET 2 OF 2	SHEET NO: 15
BY: V.R.	CD: V.R.	COUNTY: DIMMIT	SECTION: 6452 35	JOB: 001 VARIOUS
DATE: 11/29/2023	SCALE:			

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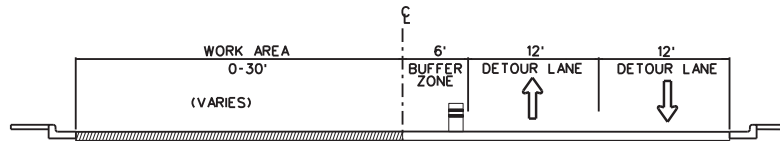


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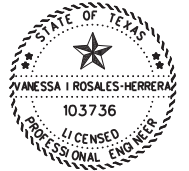
-  PORTABLE MESSAGE BOARD
-  STOP SIGN
-  CHANNELIZING DEVICES (DRUMS)
-  CHANNELIZING DEVICES (VERTICAL PANELS)
-  TYPE 3 BARRICADE

NOTES:

1. CONTRACTOR TO COORDINATE WITH MAINTENANCE SUPERVISOR AND ADVISE AT LEAST 48 HOURS IN ADVANCE TO SET TRAFFIC LIGHTS TO "FLASHING" RED DURING THIS CONSTRUCTION PHASE.
2. FOR PLACEMENT OF CONSTRUCTION WARNING SIGNS AND CHANNELIZING DEVICES REFER TO THE TRAFFIC CONTROL PLAN SHEETS.



TCP TYPICAL SECTION
(NOT TO SCALE)



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Vanessa Rosales-Herrera
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US 83 TCP
DIMMIT COUNTY

DATE	BY	STATE	SHEET NUMBER	SHEET NO.
01/29/2023	V.R.	TEXAS	SHEET 1 OF 1	16
PROJECT NO.	COUNTY	SECTION	JOB	POSTAL NO.
22	DIMMIT	6452	35	001 VARIOUS

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

- 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).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- 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:

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


COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

- Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
- Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

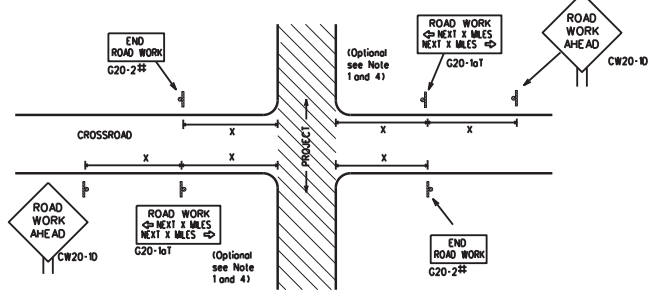
<p>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov</p>
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)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

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 FILE: TXLRDDSTMTN1.FY 2023\MMT Contract (F2241)M111 & Inlay SBR DIMMIT COUNTY\CDM\TXDOT STANDARDS\BC-21.dgn

 <p>Texas Department of Transportation</p>		<p>Traffic Safety Division Standard</p>	
<p>BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS</p> <p>BC(1)-21</p>			
FILE:	bc-21.dgn	DN:	CK:
CONT:	6452	SECT:	35
JOB:	001	HIGHWAY:	VARIOUS
REVISIONS:	4-03 7-13	COUNTY:	22
9-07 8-14		SHEET NO.:	17
5-10 5-21			

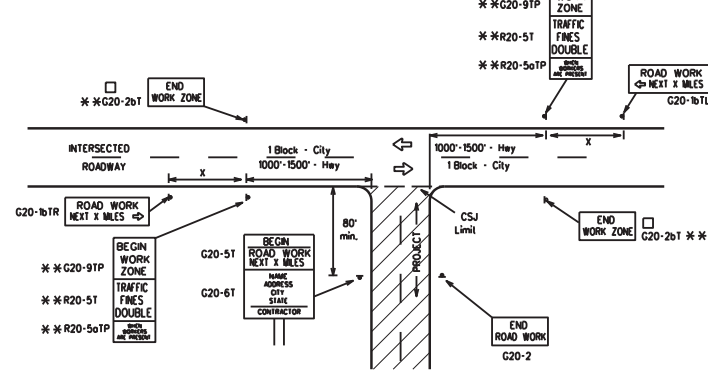
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

- The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
- If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades (see BC10) 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

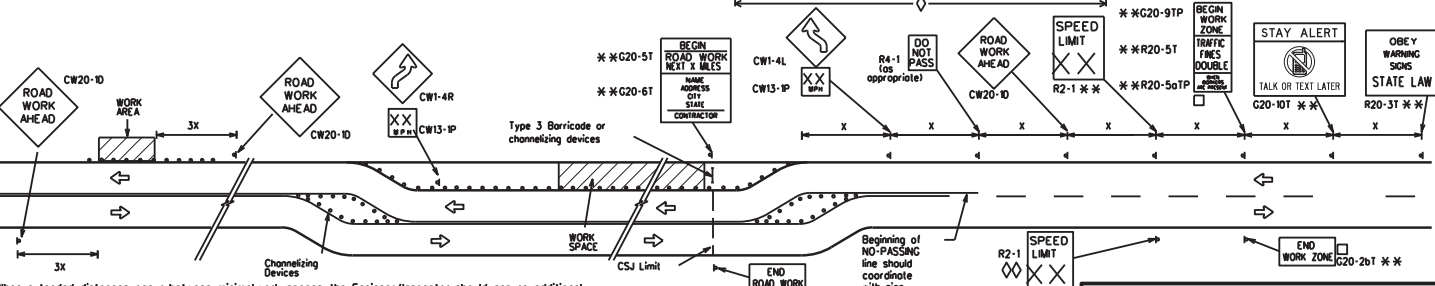
Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Spacing * (Feet (Approx.))
CW20 ⁴ CW21 CW22 CW23 CW25	48" x 48"	48" x 48"	30	120
			35	160
			40	240
			45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	50	400
			55	500 ²
			60	600 ²
			65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

- 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

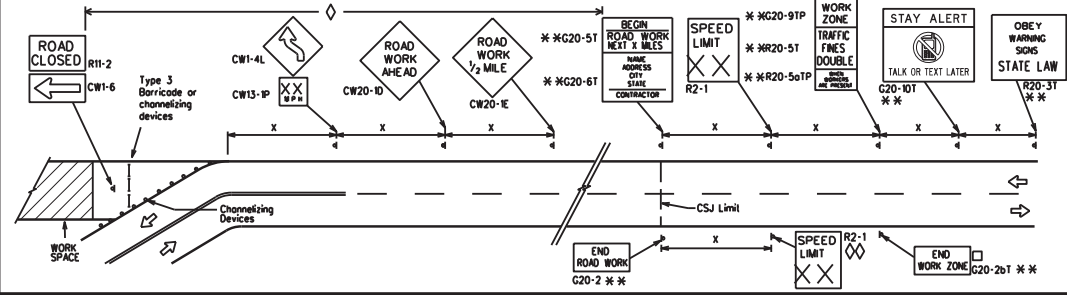
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

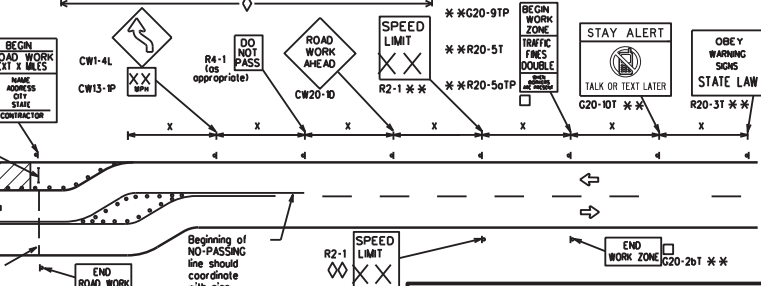


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

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

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

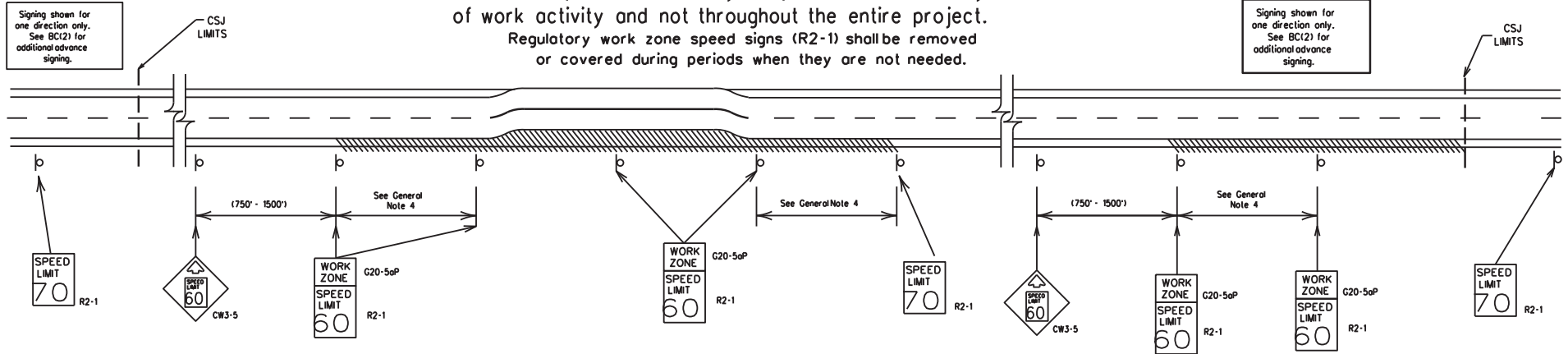
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REVISIONS	REV: 6452	DATE: 8-14	BY: 7-13	COUNTY: DIMMITT	SHEET NO: 18

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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 controls 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. Low enforcement.
 - B. Flogger 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.

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SHEET 3 OF 12



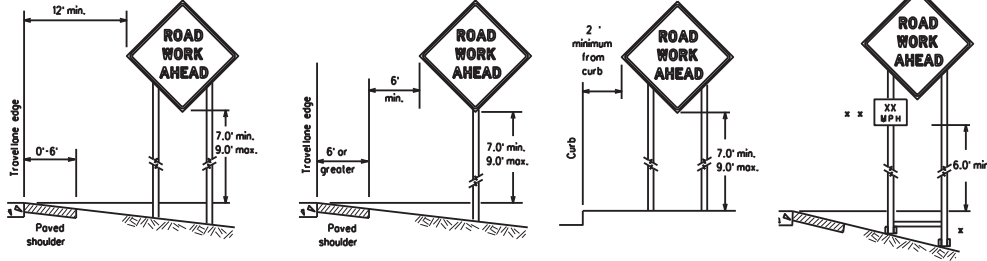
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

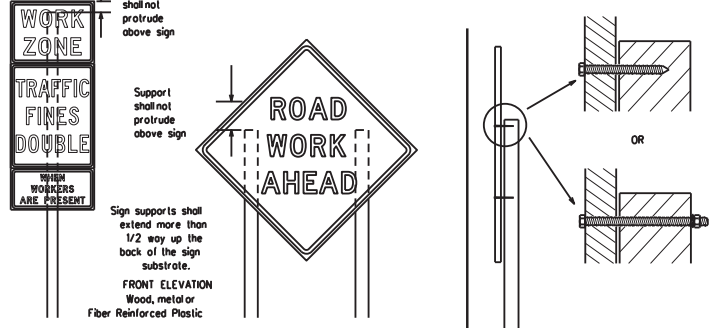
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TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



- * When placing skid supports on uneven 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 road sign.

ATTACHMENT FOR SIGN SUPPORTS



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

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

- All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B or Type B₁, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

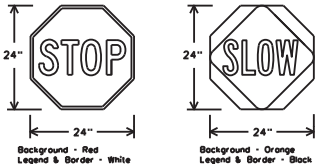
FLAGS ON SIGNS

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

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STOP/SLOW PADDLES

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



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B ₁ OR C ₁ SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

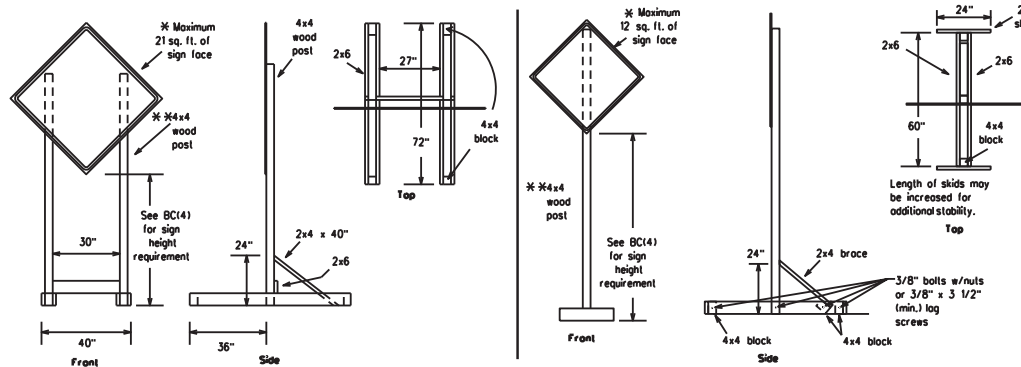


BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

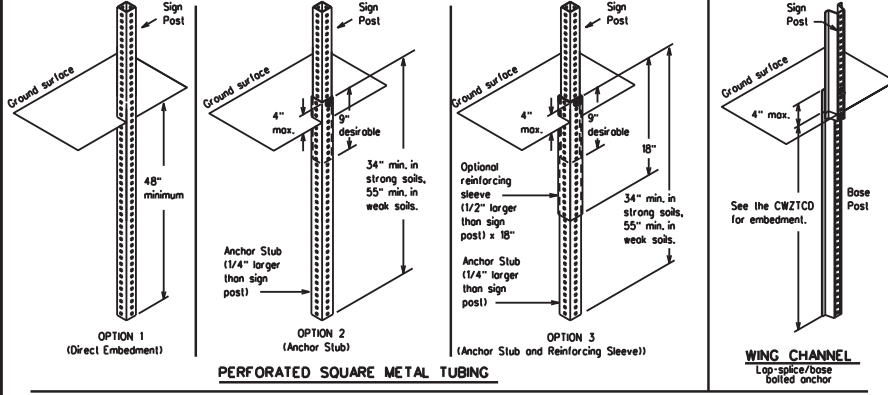
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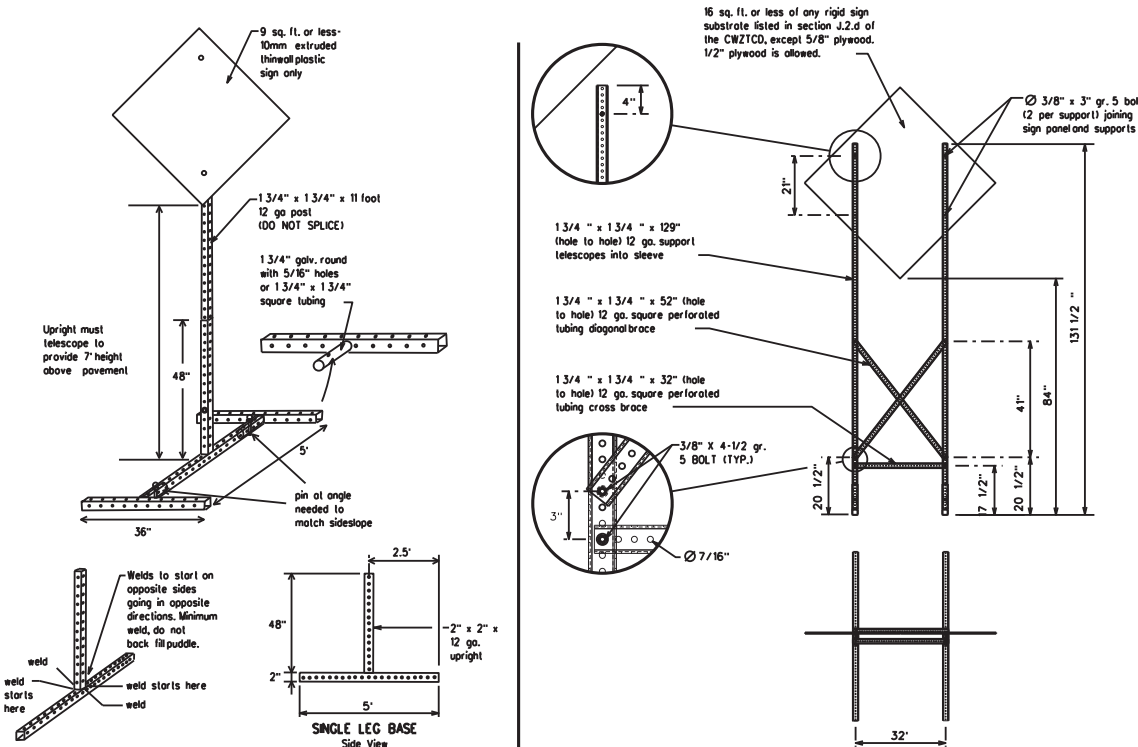
SKID MOUNTED WOOD SIGN SUPPORTS

LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



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

SHEET 5 OF 12



BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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7-13	5-21	22		DIMMIT	21

DATE: 11/29/2023
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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

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

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

* * See Application Guidelines Note 6.

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

roadway designation = IH-number, US-number, SH-number, FM-number

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- A Full Matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(17), for the same size arrow.

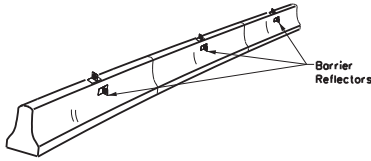


BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(16)-21

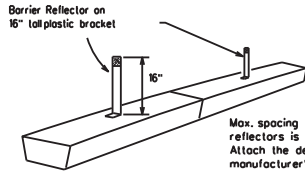
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		6452	35	001	VARIOUS
9-07	8-14	DIST		COUNTY	SHEET NO.
	7-13	22		DIMMIT	22

- 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 BC11.
- Color of Barrier Reflectors shall be as specified in the T MUTCD. The cost of the reflectors shall be considered subsidiary to Item S12.



CONCRETE TRAFFIC BARRIER (CTB)

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



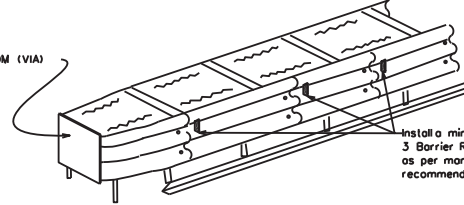
LOW PROFILE CONCRETE BARRIER (LPCB)

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.

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

See D & OM (VIA)



DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

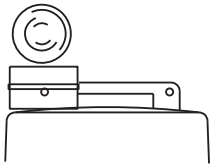
- Warning lights shall meet the requirements of the T MUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

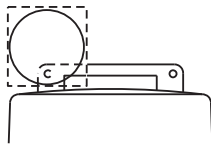
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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

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

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



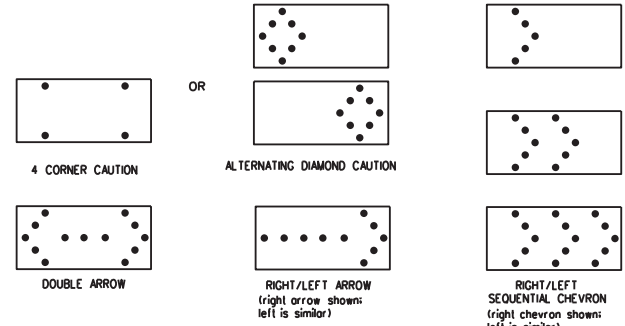
Type C Warning Light or approved substitute mounted on a drum adjacent to the travelway.



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

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

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



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

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

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

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

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

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



Traffic Safety Division Standard

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

BC(7)-21

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TxDOT November 2002	CONT SECT:	JOB:	HIGHWAY:	
REVISIONS:	6452 35	001	VARIOUS	
9-07 8-14	DIST:	COUNTY:	SHEET NO.	
7-13 5-21	22	DIMMITT	23	

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DATE: 11/29/2002
FILE: T:\LRD\STMT\TYE_2024\MT Contract (F24)M111 & Inlay_SBR_DIMMITT COUNTY\CAD\TXDOT STANDARDS\bc-21.dgn

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 DATE: 11/29/2023
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

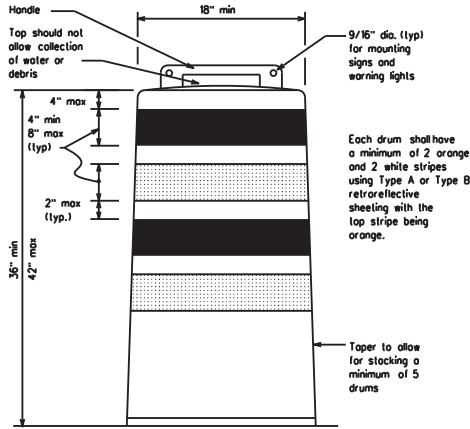
- Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

RETROREFLECTIVE SHEETING

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

BALLAST

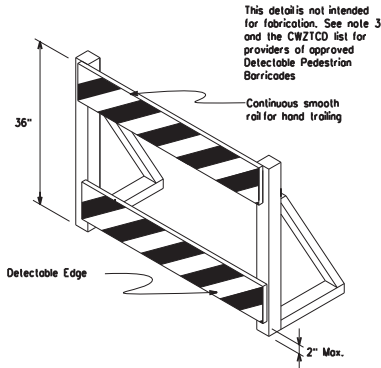
- Unbolstered bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, shall weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting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



Each drum shall have a minimum of 2 orange and 2 white stripes using Type A or Type B retroreflective sheeting with the top stripe being orange.



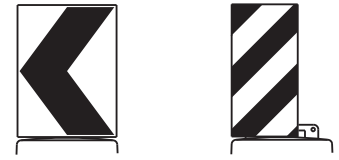
See Ballast Note 3



This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades

DETECTABLE PEDESTRIAN BARRICADES

- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Divisions, Sidewalk Detours and Crosswalk Closures.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
- Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
- Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
- Warning lights shall not be attached to detectable pedestrian barricades.
- Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand training 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 travelway

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

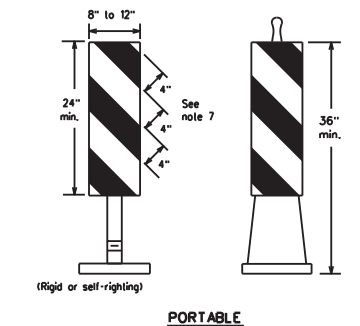
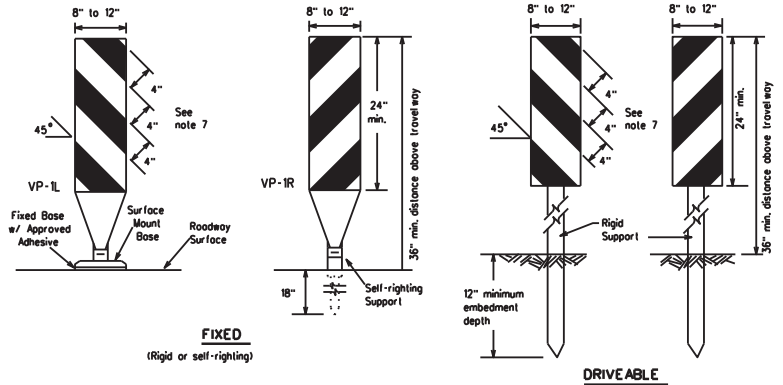
- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B or Type C Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material,"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

SHEET 8 OF 12

				Traffic Safety Division Standard	
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES					
BC(8)-21					
FILE:	bc-21.dgn	DN:	CK:	DN:	CK:
November 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS 4-03 8-14 9-07 5-21 7-13	6452	35	001	VARIOUS	
	DIST	COUNTY	SHEET NO.		
	22	DIMMIT	24		

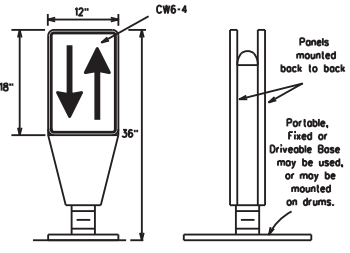
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DATE: 11/29/2023
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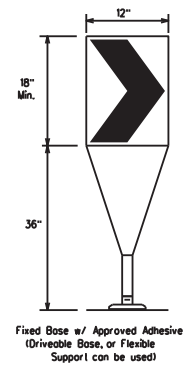
- Vertical Panels (VPs) are normally used to channelize traffic or divide opposing lanes of traffic.
- VPs may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
- VPs 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.
- VPs used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable bases. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panels is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



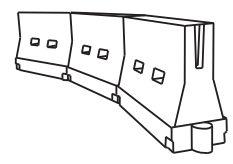
- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLDs are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
- Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
- Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or fared 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 cones and the top of the unit shall not be less than 32 inches in height.

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

GENERAL NOTES

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

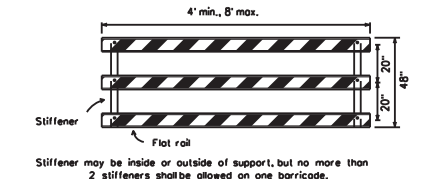
BC(9)-21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
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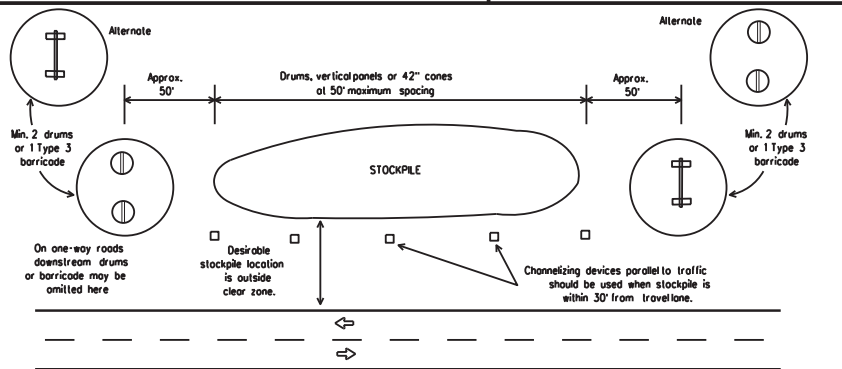
TYPE 3 BARRICADES

1. Refer to the *Compliant Work Zone Traffic Control Devices List (CWZTCL)* 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 on 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 liners) 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.

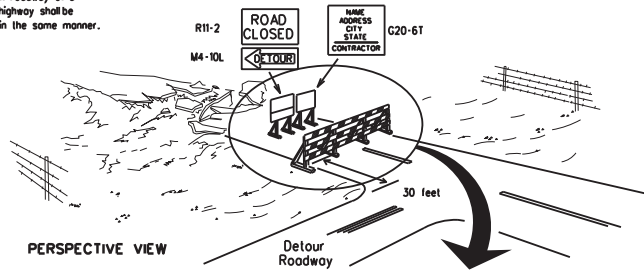


TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

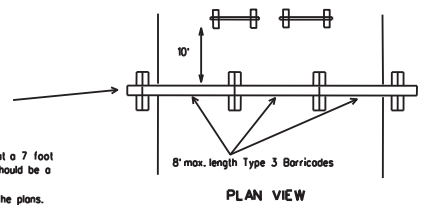
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

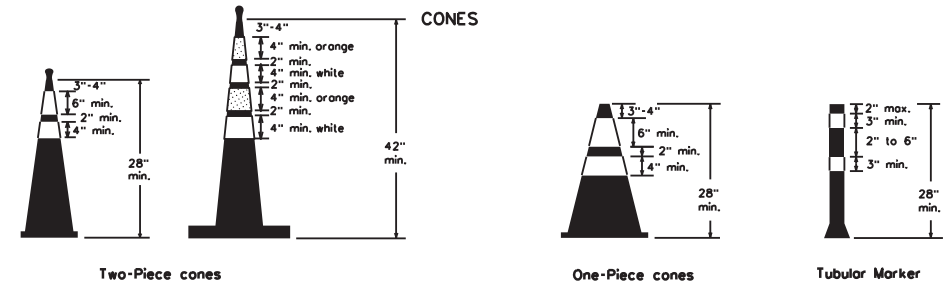
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.

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.



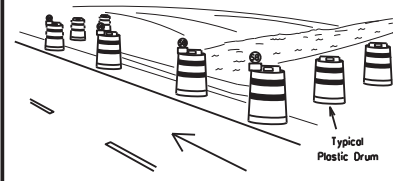
PLAN VIEW

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION

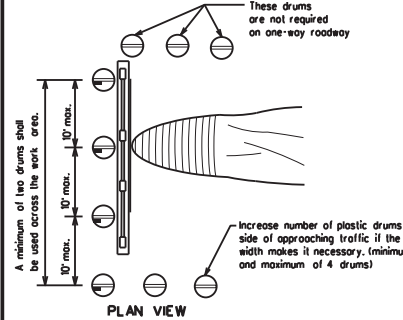


28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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 balls, 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 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.



PERSPECTIVE VIEW



PLAN VIEW

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

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

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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		Traffic Safety Division Standard	
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES			
BC(10)-21			
FILE:	bc-21.dgn	DN:	CK:
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7-13	5-21	DIST:	COUNTY:
		22	DIMMIT
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC112.
- All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

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

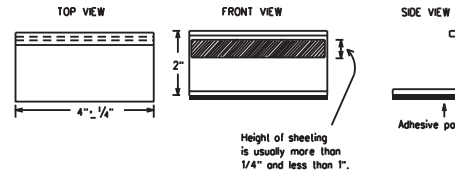
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
 - Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
 - Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
- Small design variances may be noted between lab manufacturers.
- See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(17-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC11.

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DATE: 11/29/2023
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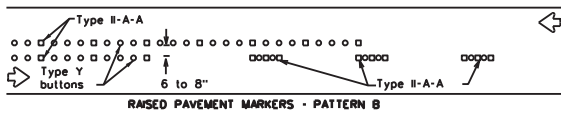
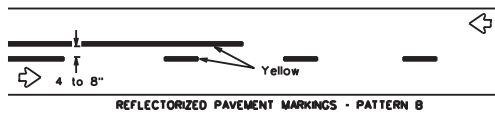
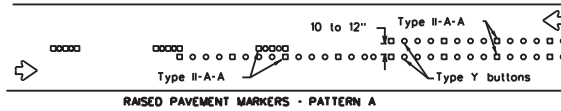
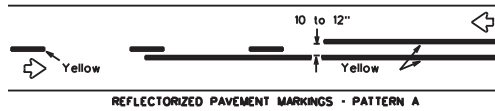


BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

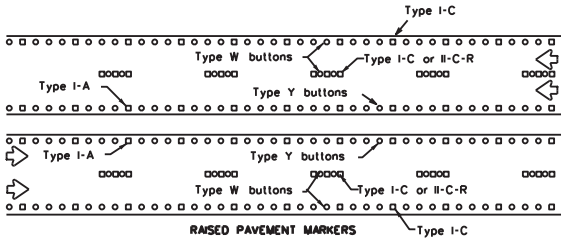
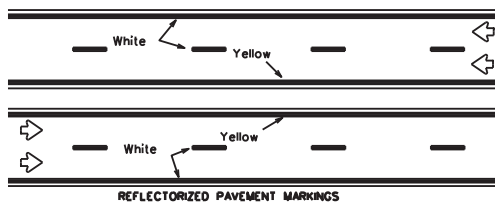
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REVISIONS	6452	35	001	VARIOUS
2-98 9-07 5-21	DIST	COUNTY	SHEET NO.	
1-02 7-13	22	DIMMIT	27	
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PAVEMENT MARKING PATTERNS



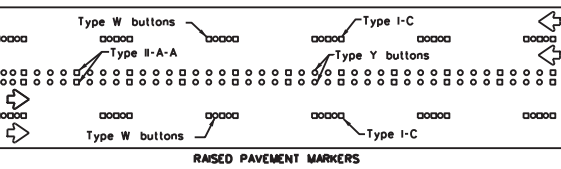
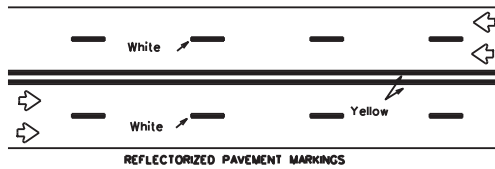
Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectORIZED pavement markings.

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



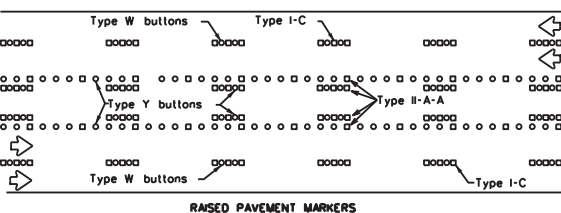
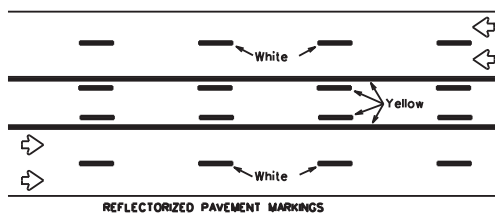
Prefabricated markings may be substituted for reflectORIZED pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectORIZED pavement markings.

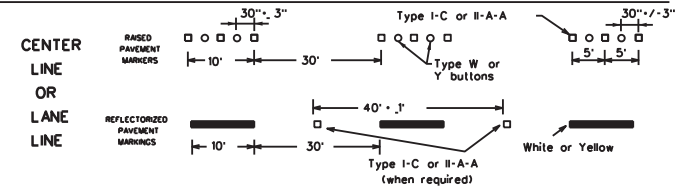
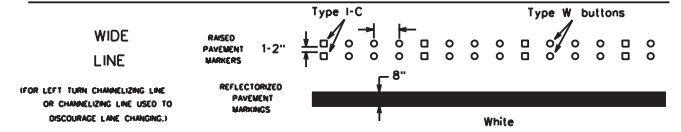
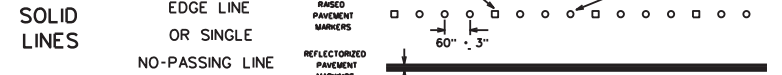
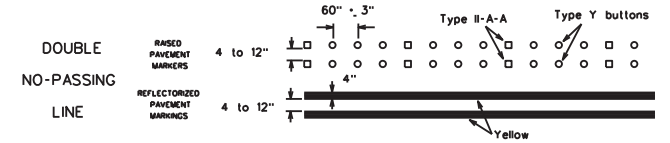
LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



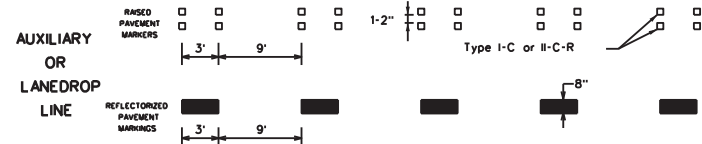
Prefabricated markings may be substituted for reflectORIZED pavement markings.

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

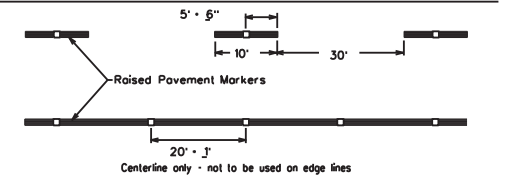


BROKEN LINES



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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."

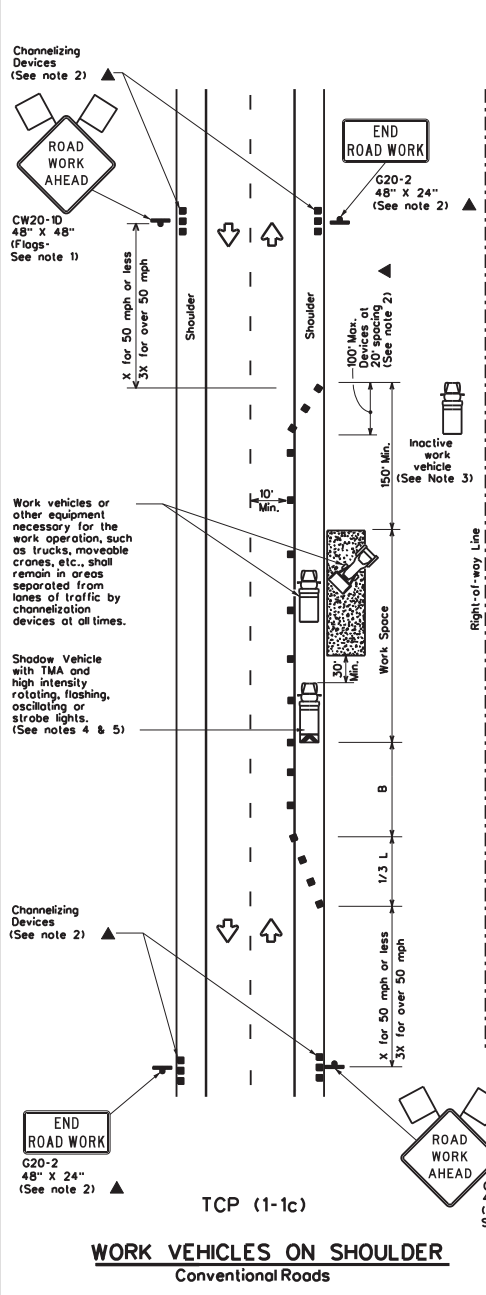
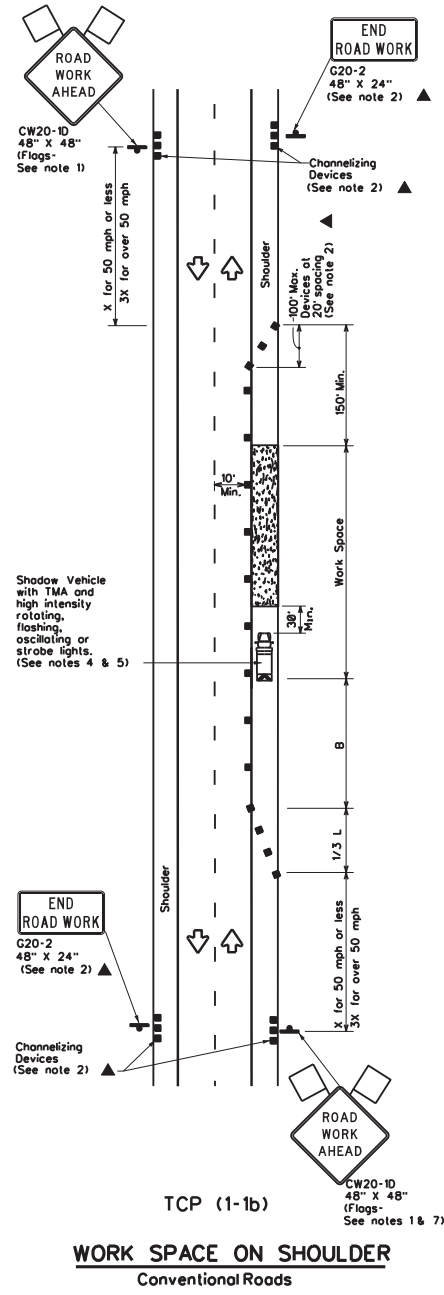
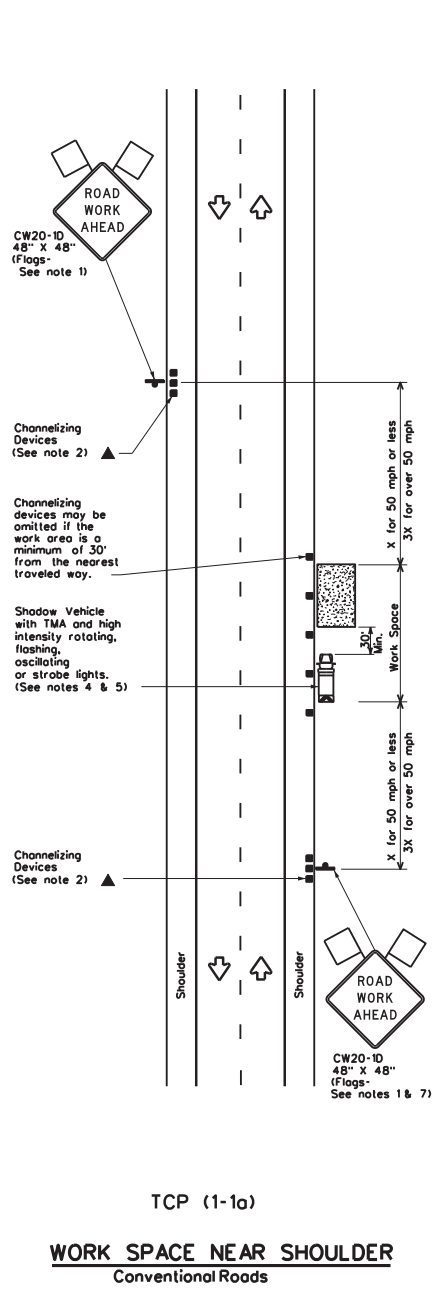
FILE: bc-21.dgn	DN:	CK:	DN:	CK:
© TXDOT February 1998	CONT	SECT	JOB	HIGHWAY
1-97 9-07 5-21	6452	35	001	VARIOUS
2-98 7-13	DIST	COUNTY	COUNTY	SHEET NO.
11-02 8-14	22		DIMMIT	28

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DATE: 11/29/2023
 FILE: T:\LDD\STMT\TVEY_2024\MIT_Contract (F24)M111 & Inlay_SBR_DIMMIT_COUNTY\CAD\TXDOT STANDARDS\bc-21.dgn

DSC# 4465.
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DATE: 11/29/2023 3:31:39 PM
 FILE: T:\LRODST\MTN\LEY 262A\MMT Contract (F24)M11 & Inlay SBR DIMMIT COUNTY\CAD\TMC\graphics\station\signs\18.dgn



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

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

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

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

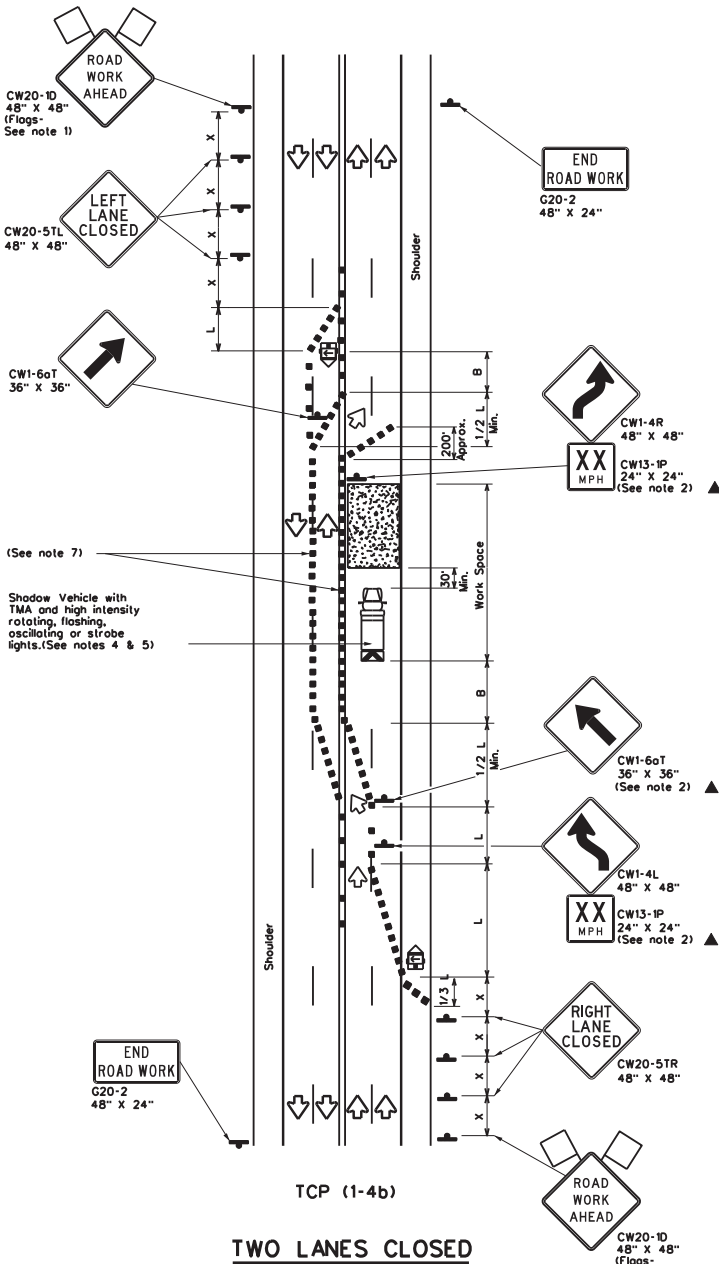
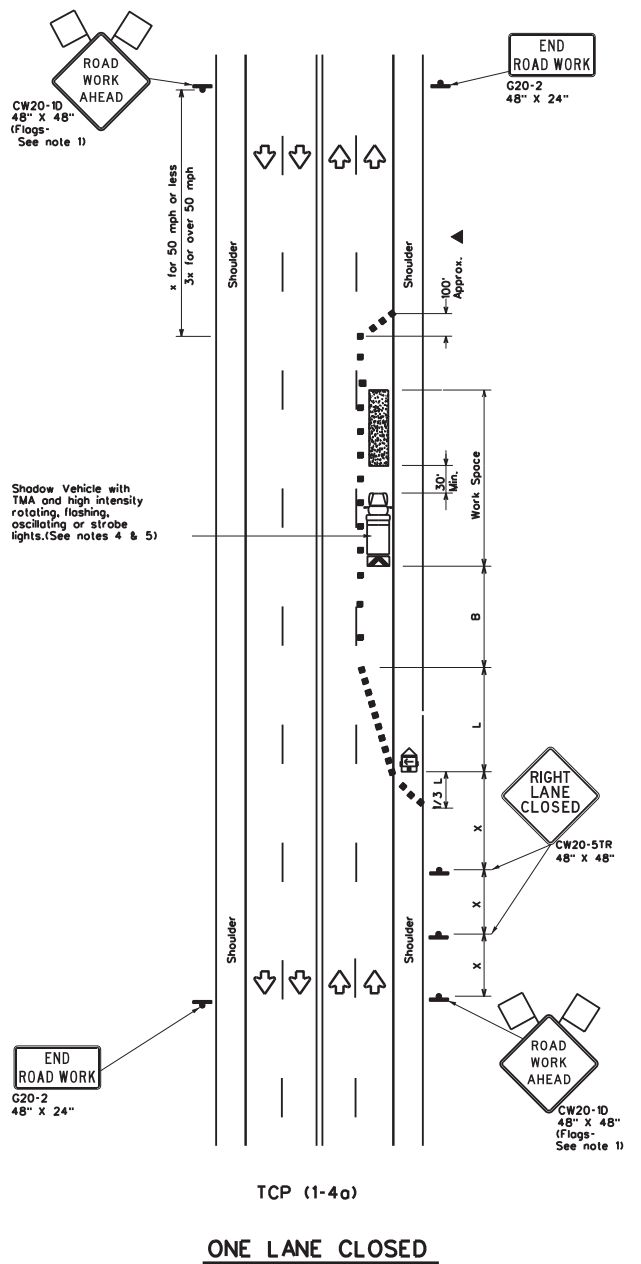
- GENERAL NOTES**
- Flags attached to signs where shown are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
 - See TCP15-1 for shoulder work on divided highways, expressways and freeways.
 - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK
TCP(1-1)-18

FILE: tcp1-18.dgn	DATE: 11/29/2023	BY: 6452	CHK: 35	DATE: 12/01/2023	JOB: 001	PROJECT: VARIOUS
© TxDOT December 1985		REV: 2-94 4-98	REV: 8-95 2-12	REV: 1-97 2-18	DIST: 22	COUNTY: DIMMIT
SHEET NO. 29						29

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DATE: 11/29/2023
 FILE: T:\LRODST\MTN\LEV_2024\MTN_Contract (F24) (M)11 & Inlay_SBR_DIMMIT COUNTY_CAD\Work\Signage\Signage-18.dwg



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

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

x Conventional Roads Only
 xx Taper lengths have been rounded off.
 L=Length of Taper(F)T W=Width of Offset(F)T S=Posted Speed(MPH)

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

- GENERAL NOTES**
- Flags attached to signs where shown are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- TCP (1-4g)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.
- TCP (1-4b)**
- Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This lighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Traffic Operations Division Standard

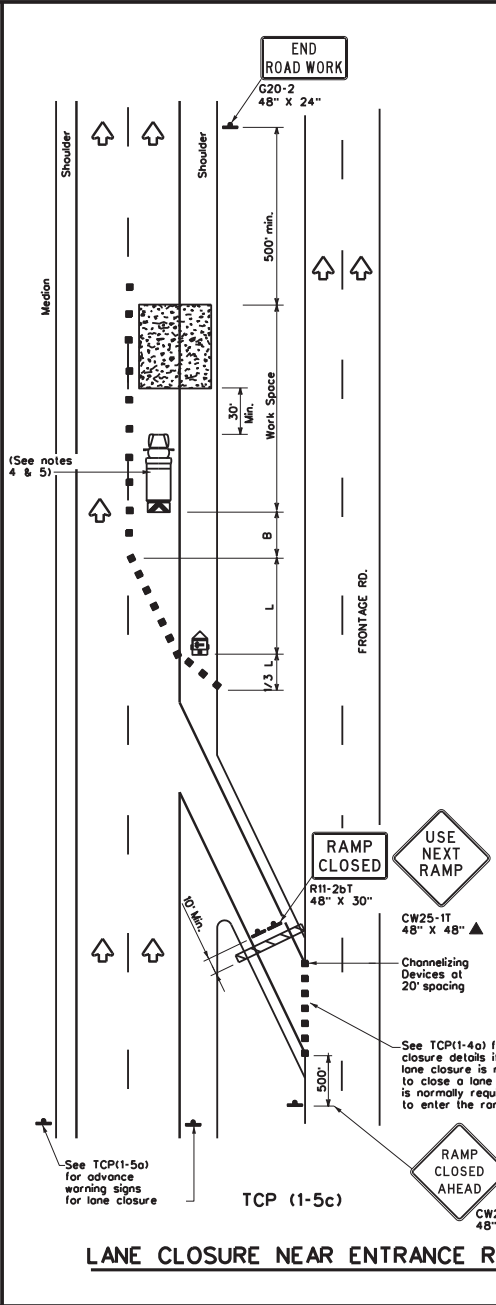
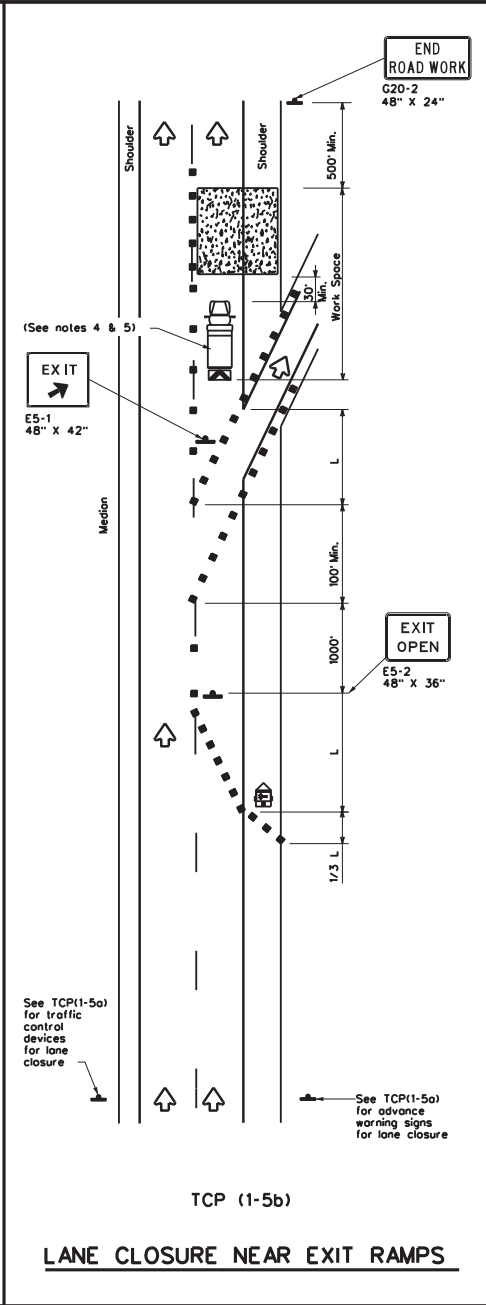
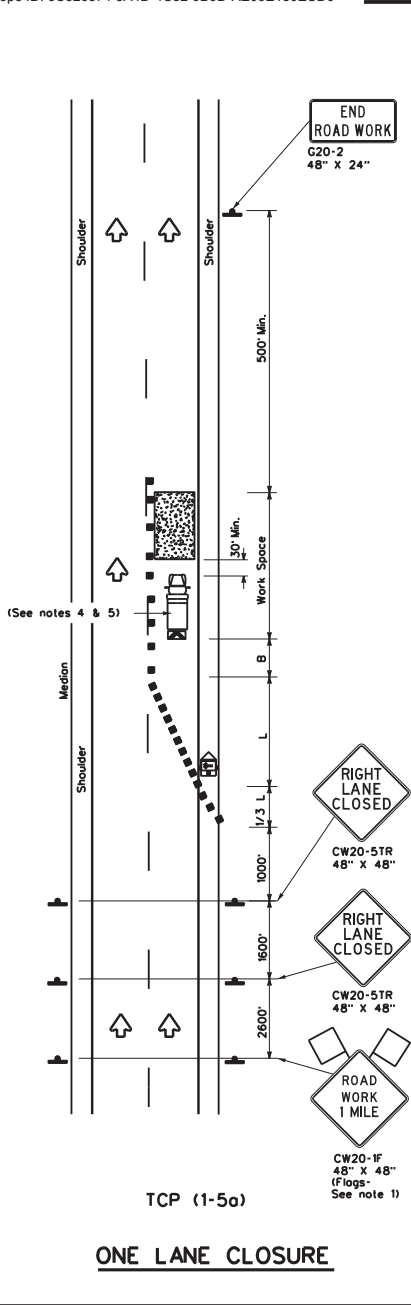
TRAFFIC CONTROL PLAN
 LANE CLOSURES ON MULTILANE
 CONVENTIONAL ROADS

TCP(1-4)-18

FILE: tcp1-4-18.dgn	DATE: December 1985	BY: 6452	CHK: 35	JOB: 001	HIGHWAY: VARIOUS
REVISIONS		DATE	BY	DESCRIPTION	SHEET NO.
2-94	4-96	8-95	2-12	1-97	2-18
		22	DIMMIT		30

DSC# 4465.
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DATE: 11/29/2023
 FILE: T:\LRODST\TNT\LEV_2023\MMT_Contract (F224)\M111 & Inlay_SBR_DIMMIT_COUNTY_CAD\TNS\graphics\signing\figs\18_26_Traffic Control Plans



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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
 - Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation
 Traffic Operations Division

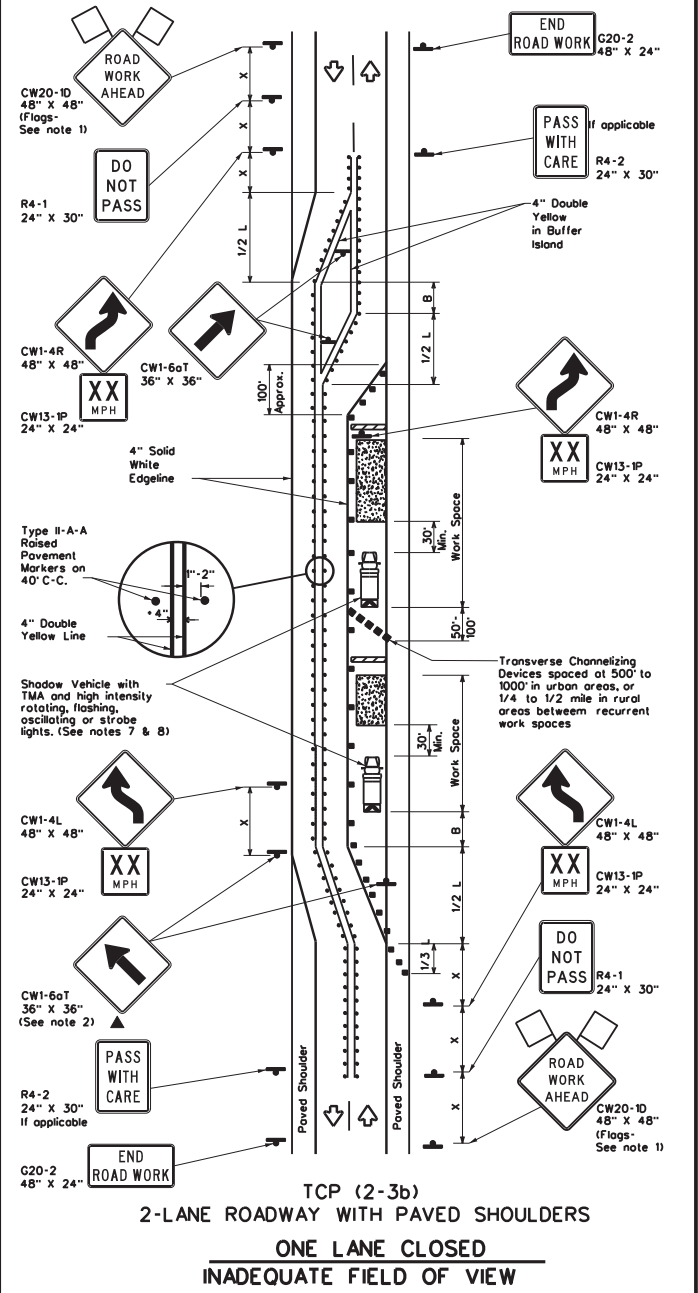
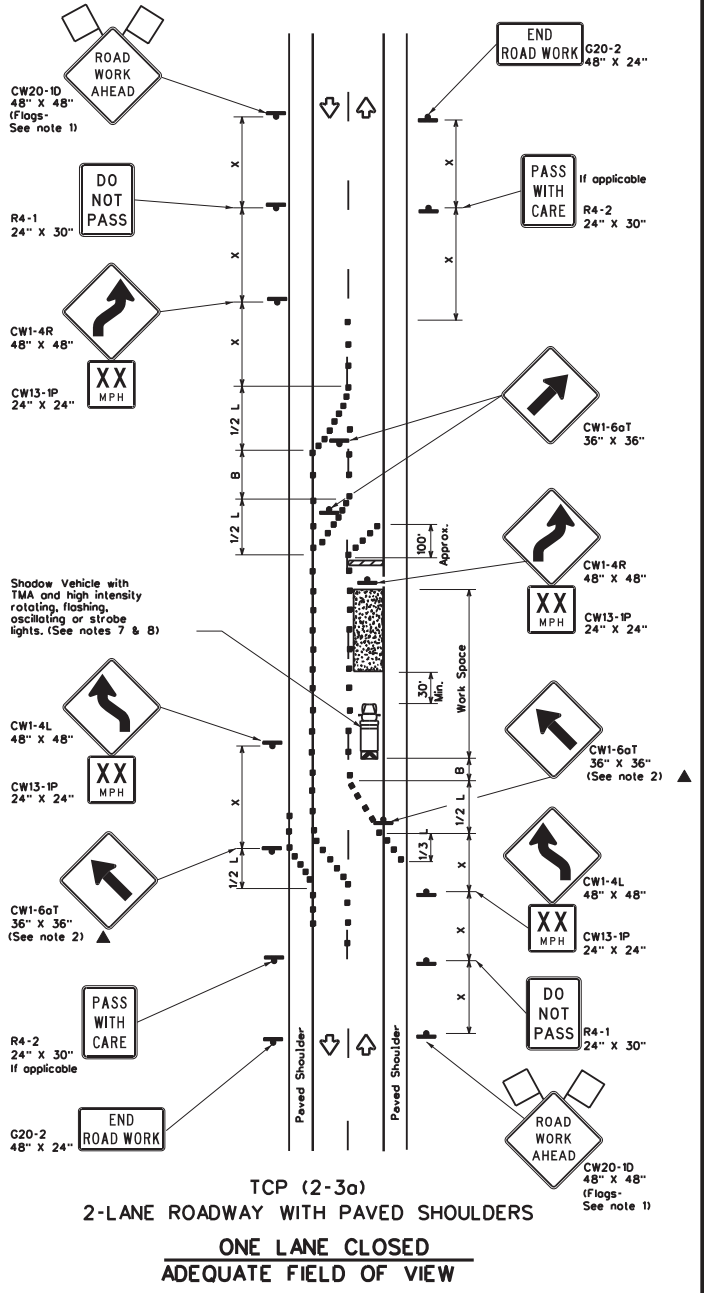
**TRAFFIC CONTROL PLAN
 LANE CLOSURES FOR
 DIVIDED HIGHWAYS**

TCP(1-5)-18

FILE: tcp1-5-18.dgn	DATE: 11/29/2023	BY: []	CHECKED: []	DATE: []	BY: []
REVISED: February 2012	6452	35	001	VARIOUS	
2-18	DIST: 22	COUNTY: DIMMIT	SHEET NO.:		31

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DATE: 11/29/2023 FILE: T:\LRODST\TNT\LEY_2024\NMT_Contract (F24)M111 & Inlay_SBR_DIMMIT_COUNTY_CAD\TNS\signage\Signage\2-3a\2-3a.dgn



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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
 - Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safety control traffic. Flagger should be positioned at end of traffic queue.
 - The R4-1 "DO NOT PASS", R4-2 "PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-10 "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
 - Conflicting pavement marking shall be removed for long term projects.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-3a)**
- Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
 TRAFFIC SHIFTS ON
 TWO-LANE ROADS

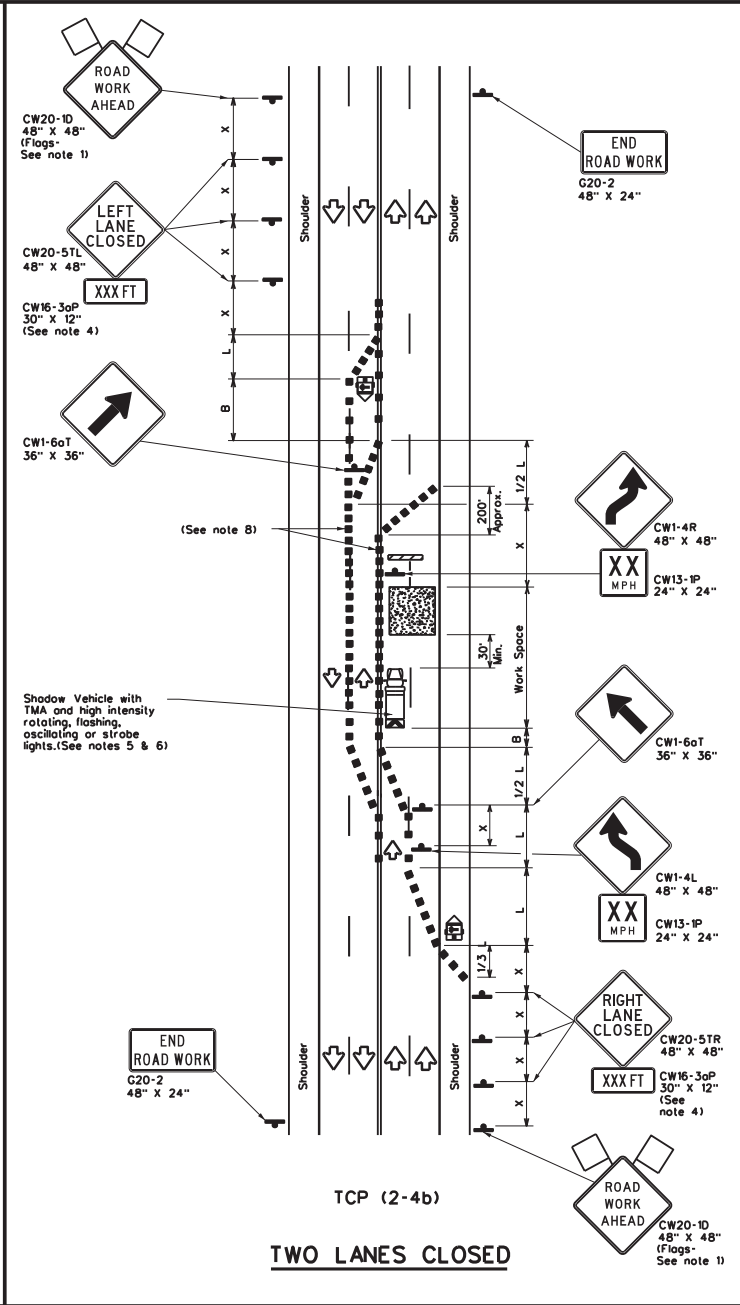
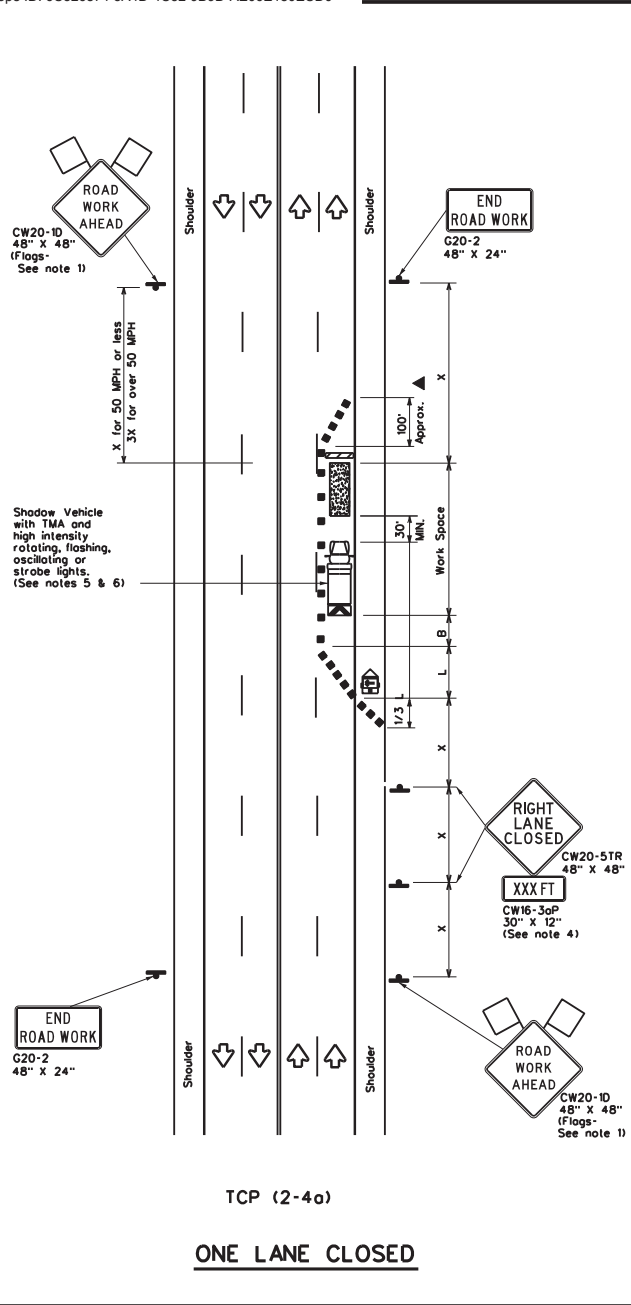
TCP(2-3)-18

FILE: tcp(2-3)-18.dgn	DATE: December 1985	CONT: 6452	SECT: 35	JOB: 001	HIGHWAY: VARIOUS
REV: 8-95 3-01	REV: 1-97 2-12	DIST: 22	COUNTY: DIMMIT	SHEET NO: 32	

16.3

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DATE: 11/29/2023
 FILE: T:\LRODST\TNT\LEV_2023\TMT Contract (F224)M11 & Inlay_SBR_DIMMIT COUNTY\CAD\TMC\signage\TCPL\TCPL2-4.dwg



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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
 - For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3oP supplemental plaque.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-4a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-4b)**
- For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

Traffic Operations Division Standard

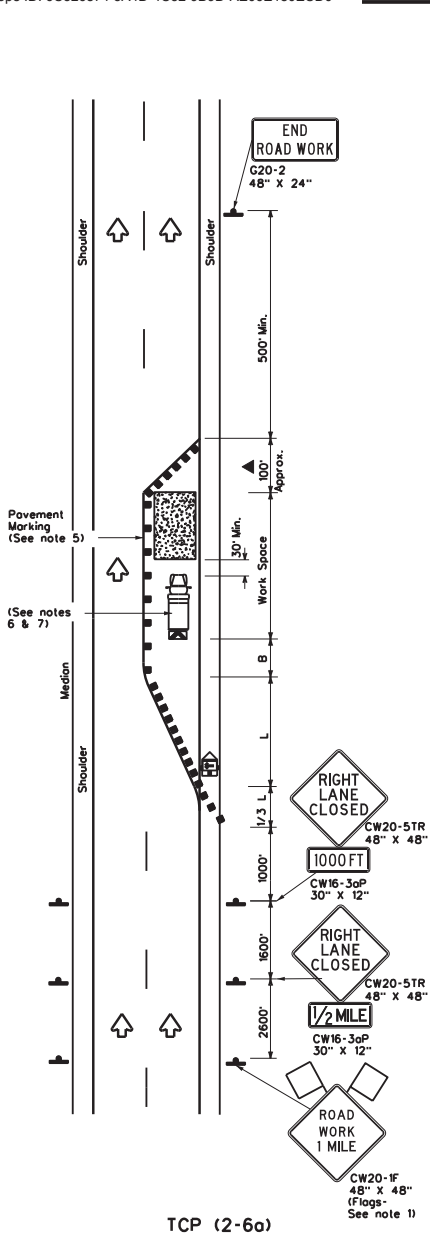
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

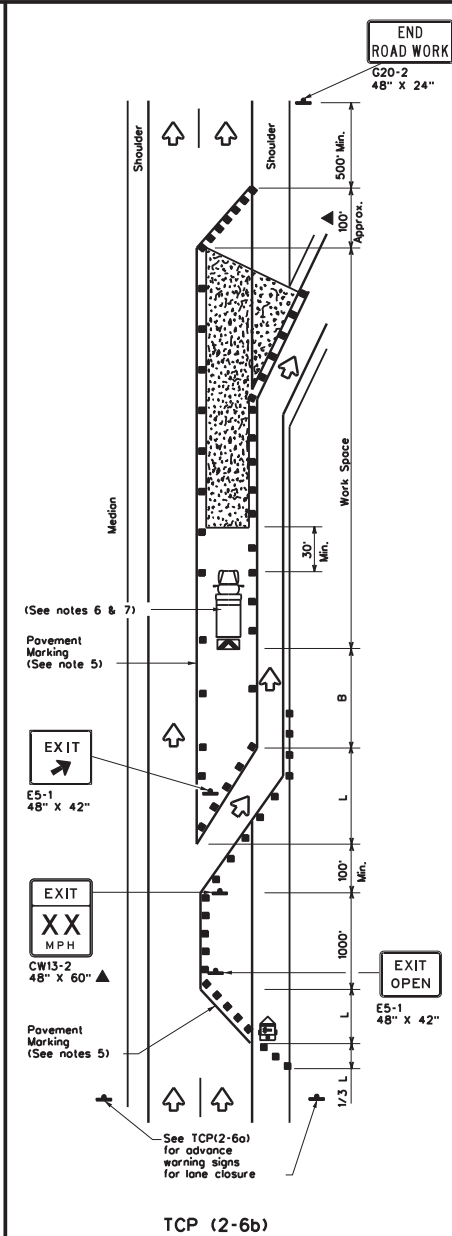
FILE: tcp2-4-18.dgn	DATE: 11/29/2023	BY: [initials]	CHECKED: [initials]	DATE: [initials]	DATE: [initials]
© TxDOT December 1985	REVISED: 6452 35	JOB: 001	HIGHWAY: VARIOUS		
	DIST: 22	COUNTY: DIMMIT	SHEET NO. 33		

DSC# 4465.
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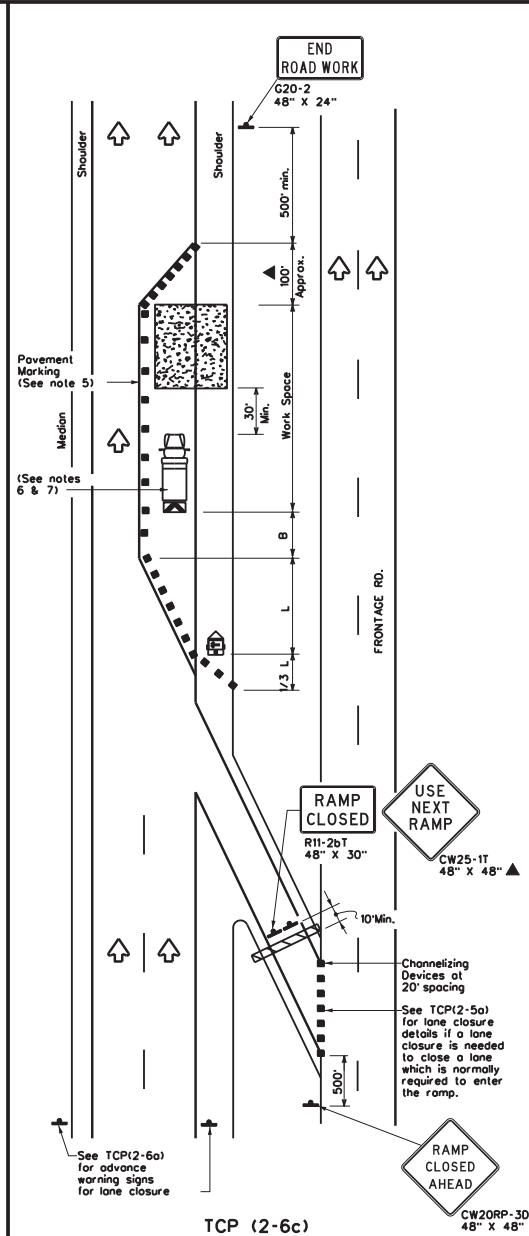
DATE: 11/29/2023
 FILE: T:\LRODST\MTN\LEY 2024\MMT Contract (F2424)\M11 & Inlay SBR DIMMIT COUNTY.CAD\TRC\prop\sign\TC2-6-18.dwg



**TCP (2-6a)
ONE LANE CLOSURE**



**TCP (2-6b)
LANE CLOSURE NEAR EXIT RAMP**



**TCP (2-6c)
LANE CLOSURE NEAR ENTRANCE RAMP**

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

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

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

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

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

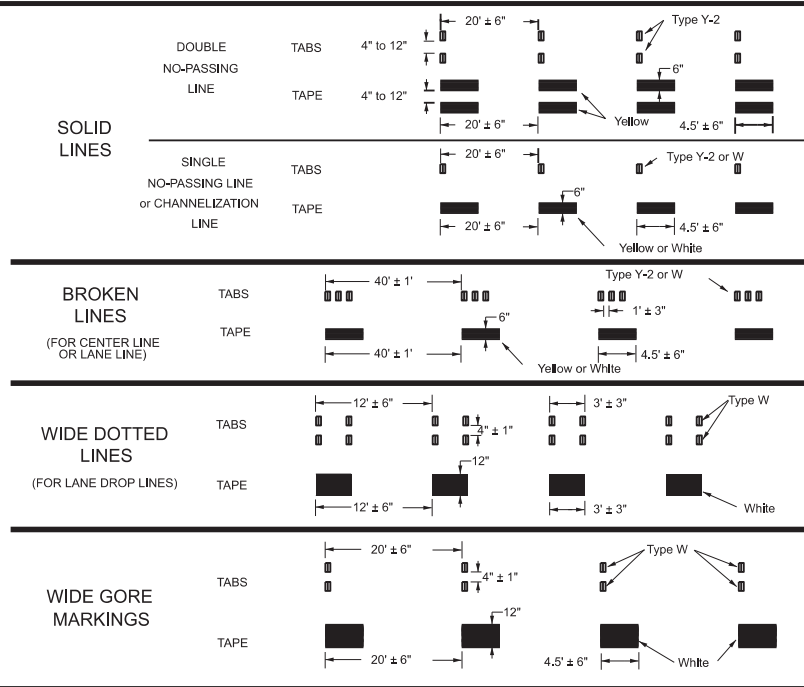
Texas Department of Transportation
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
LANE CLOSURES ON
DIVIDED HIGHWAYS**
TCP(2-6)-18

FILE: tcp2-6-18.dgn	DATE: December 1985	DATE: 12/85	DATE: 01/86	DATE: 02/86
REVISED: 4-98	REVISED: 8-95	REVISED: 2-12	REVISED: 1-97	REVISED: 2-18
6452	35	001	VARIOUS	
DIST: 22		COUNTY: DIMMIT		SHEET NO: 34

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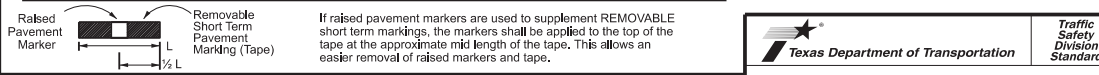
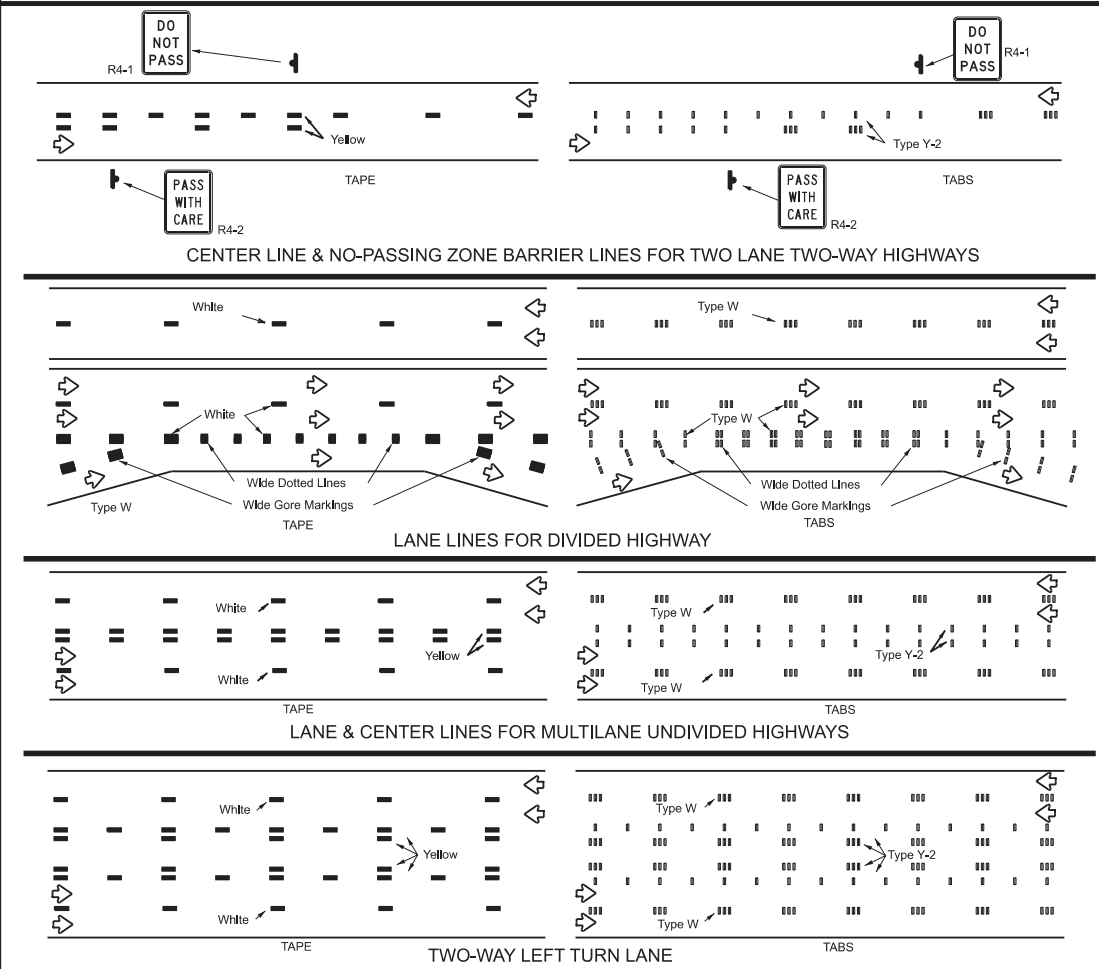
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



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

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

WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



- PREFABRICATED PAVEMENT MARKINGS**
- Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
 - Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Construction-Grade Prefabricated Pavement Markings."
- RAISED PAVEMENT MARKERS**
- All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.
- DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)**
- DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:
http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

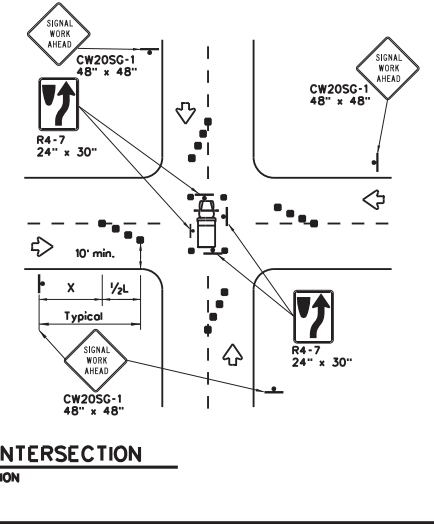
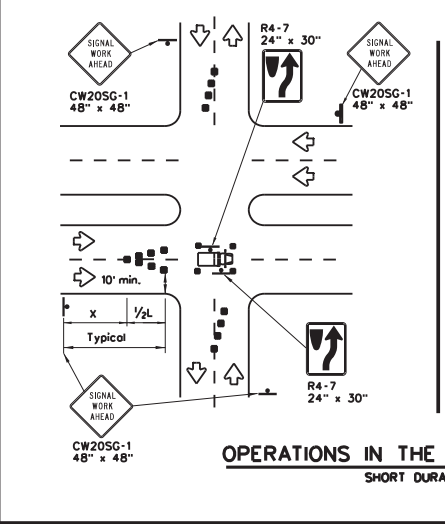
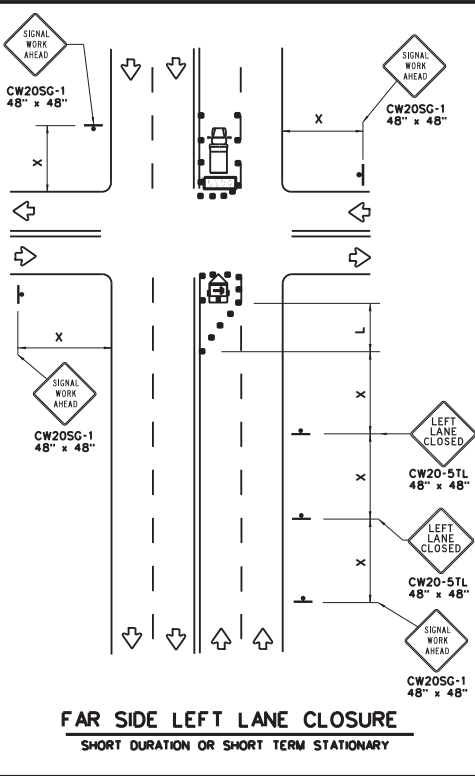
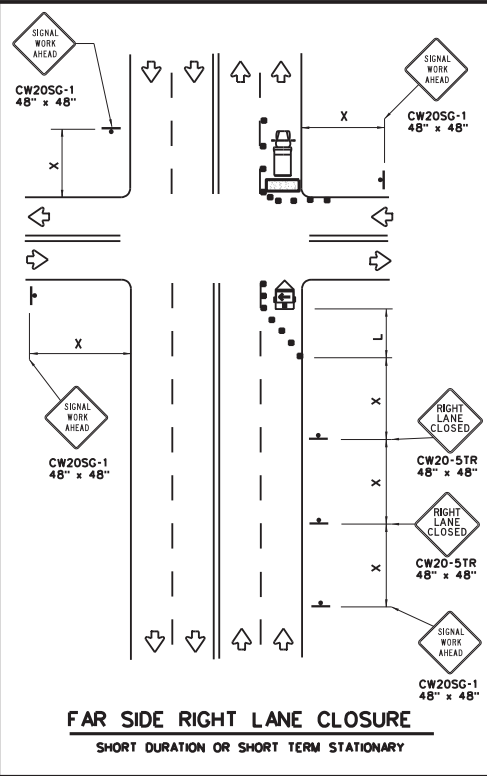
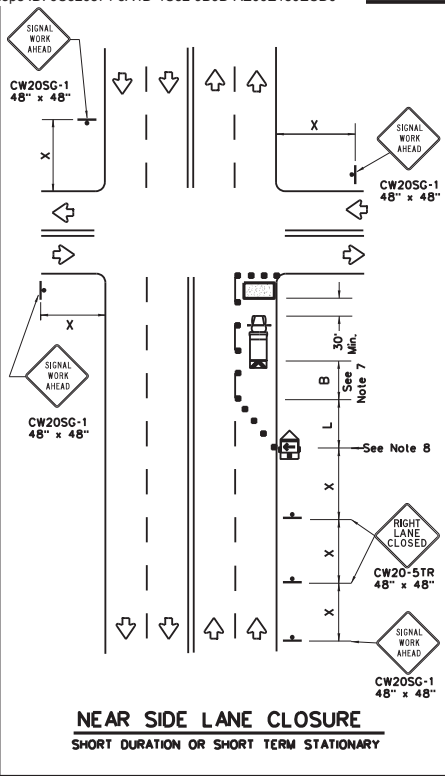
WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

FILE: wzstpm-23.dgn	CR:	CR:	CR:	CR: R.C.
TxDOT February 2023	CONT: 6452	SECT: 35	JOB: 001	HIGHWAY: VARIOUS
4-02 1-07 3-03	REVISED: 7-13 2-23	SHEET: 22	COUNTY: DIMMIT	SHEET NO.: 35

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DATE: 11/29/2023
 FILE: T:\LRODST\TNT\LEV_2023\NMT_Contract (F724)M111 & Inlay_SBR_DIMMIT_COUNTY_CAD\Workbooks\Signage\Signage\Signage.dwg



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

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

x Conventional Roads Only
 x x Taper lengths have been rounded off.
 L- Length of Taper (F) W- Width of Offset (F) S- Posted Speed (MPH)

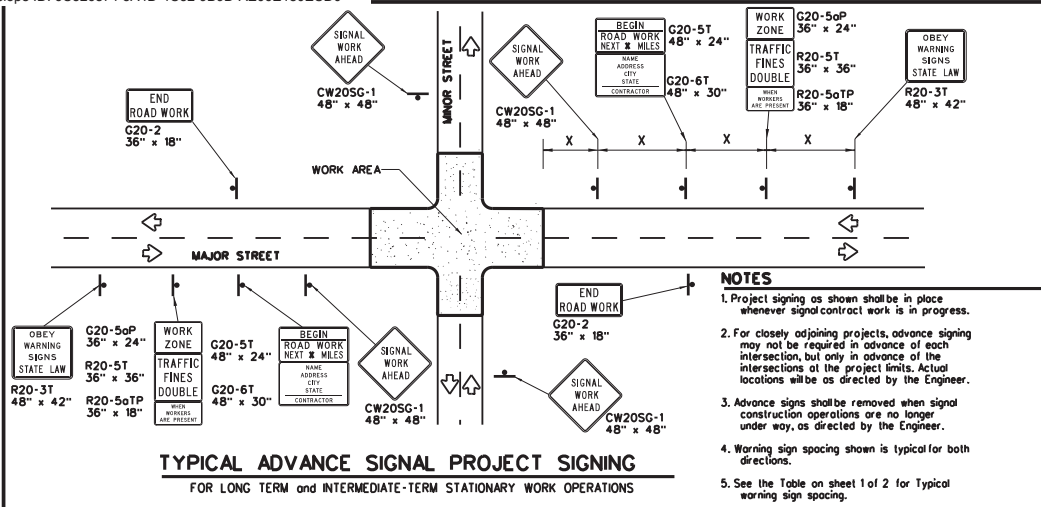
WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

GENERAL NOTES

- The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
- Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
- Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
- Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
- High level warning devices (flag trees) may be used at corners of the vehicle.
- When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
- For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
- The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
- Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5L) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

		Traffic Operations Division Standard	
<h2>TRAFFIC SIGNAL WORK TYPICAL DETAILS</h2>			
<h3>WZ(BTS-1)-13</h3>			
FILE: wzbts-13.dgn	DN:	CK:	DN:
© TxDOT April 1992	CONT SECT:	JOB:	HIGHWAY:
REVISIONS:	6452	35	001
2-98 10-99 7-13 4-98 3-03	DIST:	COUNTY:	SHEET NO.:
	22	DIMMIT	36

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- NOTES**
1. Project signing as shown shall be in place whenever signal contract work is in progress.
 2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
 3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
 4. Warning sign spacing is typical for both directions.
 5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

TYPICAL ADVANCE SIGNAL PROJECT SIGNING
FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. 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".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6C.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
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 will 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.

LEGEND

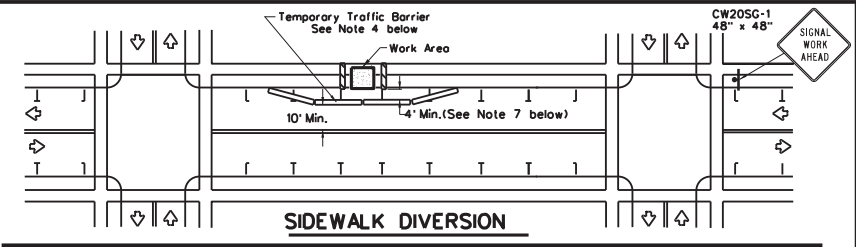
	Sign
	Channelizing Devices
	Type 3 Barricade

DEPARTMENTAL MATERIAL SPECIFICATIONS

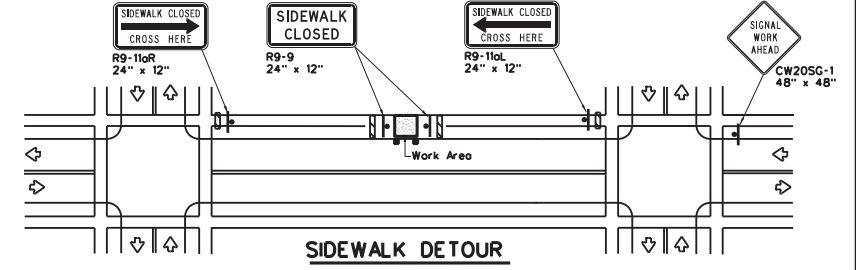
SIGN FACE MATERIALS	DMS-B300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-B310

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B _{FL} OR TYPE C _{FL} SHEETING
WHITE	BACKGROUND	TYPE A SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

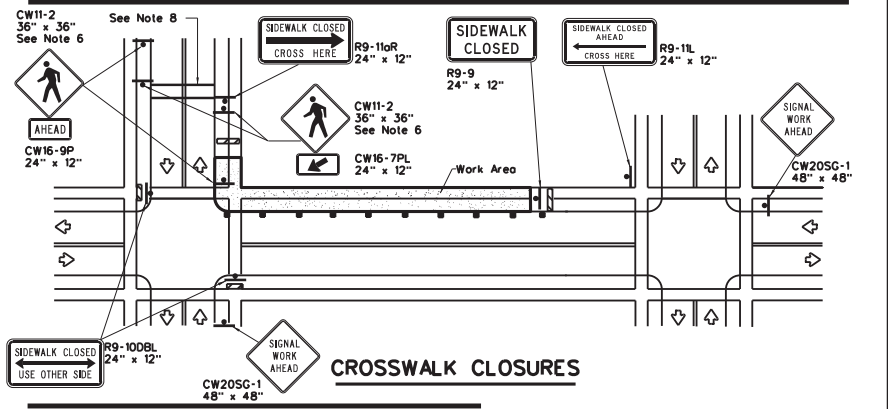
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC Standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.



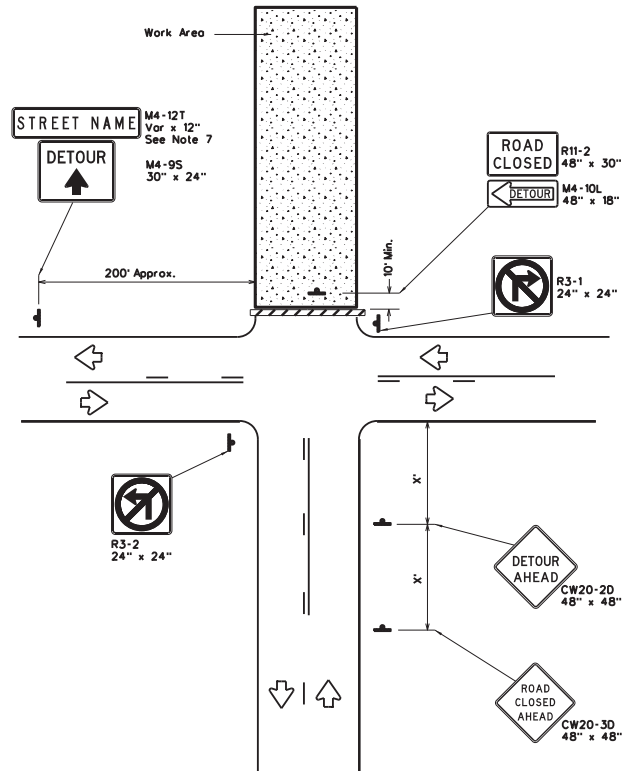
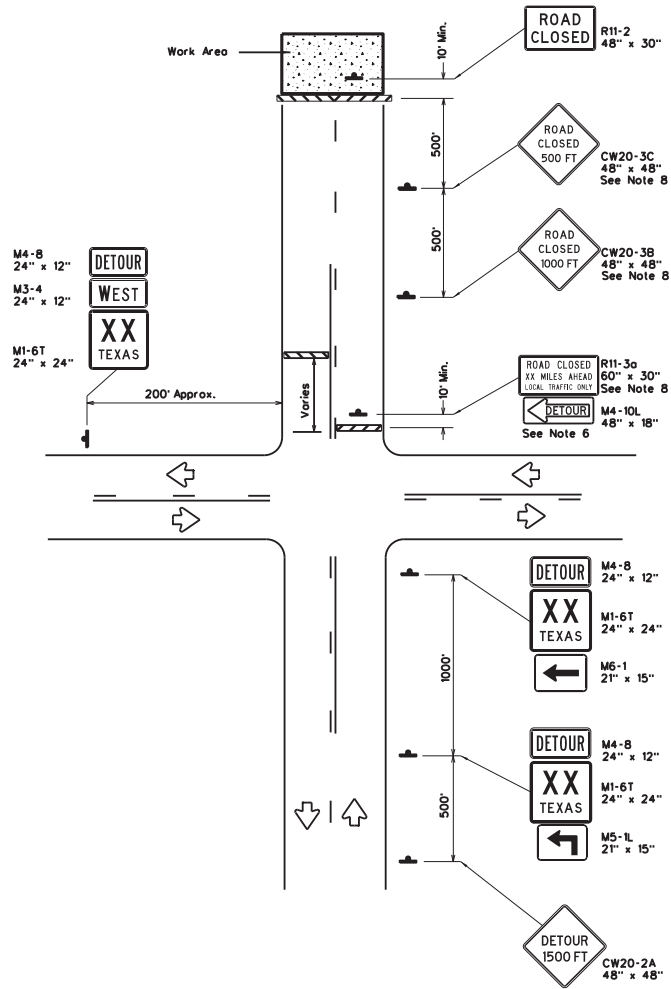
TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

FILE: wzbts-13.dgn	DN:	CK:	DN:	CK:
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2:98 10-99 7-13	DIST:	COUNTY:	SHEET NO.:	
4-98 3-03	22	DIMMIT	37	

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DATE: 11/29/2023
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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

- This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
- Barricades used shall meet the requirements shown on Barricade and Construction Standard BC100 and listed on the Compliant Work Zone Traffic Control Devices list (CW2TCD).
- Stockpiled materials shall not be placed on the traffic side of barricades.
- Barricades at the road closure should extend from pavement edge to pavement edge.
- 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.
- 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.
- The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
- 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 or 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.
- 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

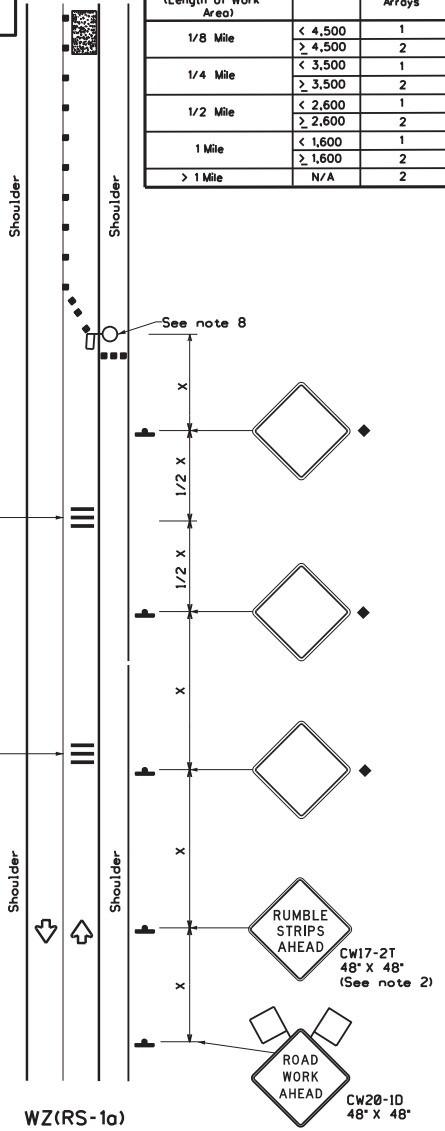
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© TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	6452	35	001	VARIOUS
1-97 4-98 7-13	DIST	COUNTY	SHEET NO.	
2-98 3-03	22	DIMMIT	38	
TTS				

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

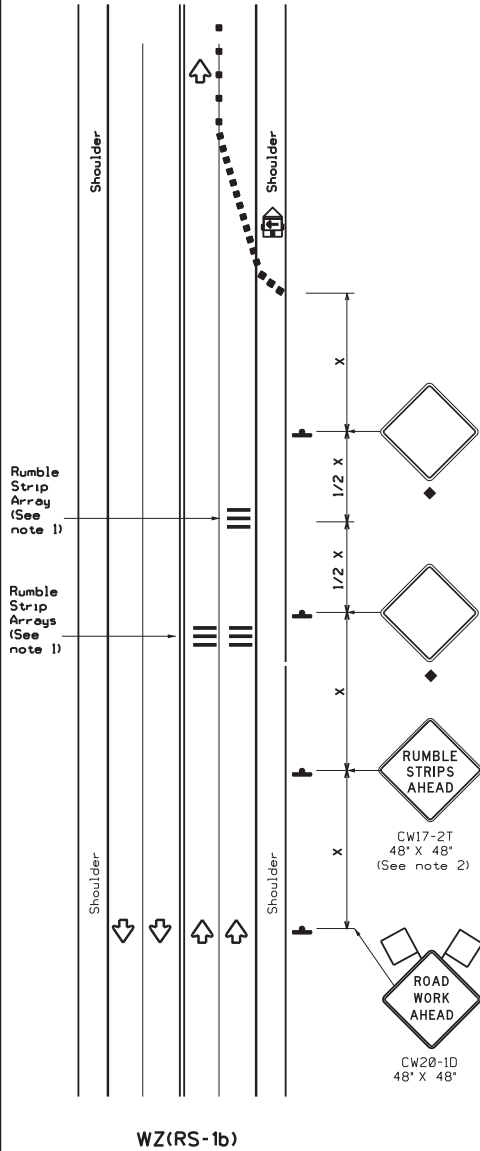
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Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	> 4,500	2
1/4 Mile	< 3,500	1
	> 3,500	2
1/2 Mile	< 2,600	1
	> 2,600	2
1 Mile	< 1,600	1
	> 1,600	2
> 1 Mile	N/A	2



RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

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

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

Posted Speed x	Formula	Minimum Desirable Taper Lengths x x			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x"	Suggested Longitudinal Buffer Space "S"
		10' Offset	15' Offset	20' Offset	On a Taper	On a Tangent		
30	L - WS / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40	L - WS	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L - WS	500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60	L - WS	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70	L - WS	700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

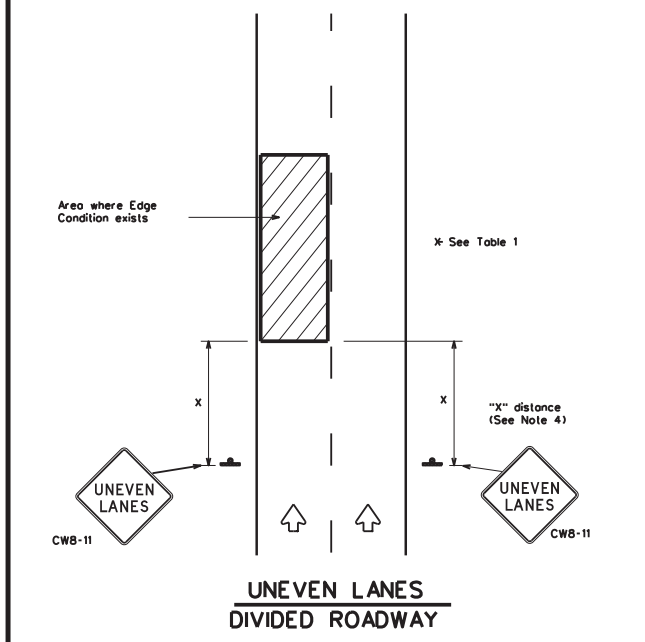
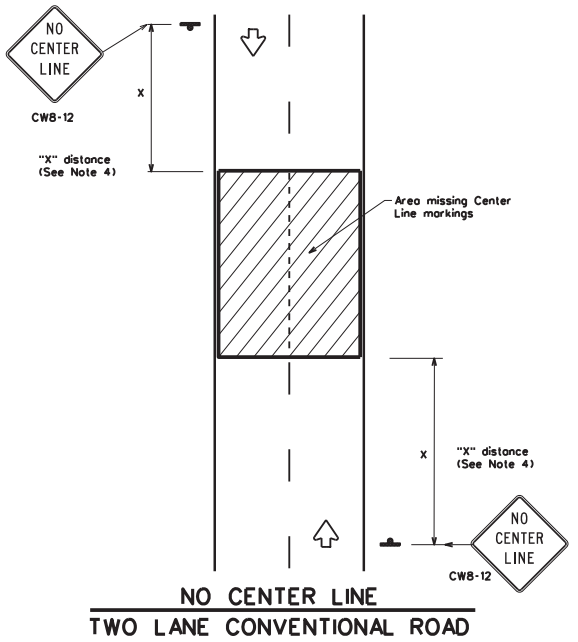
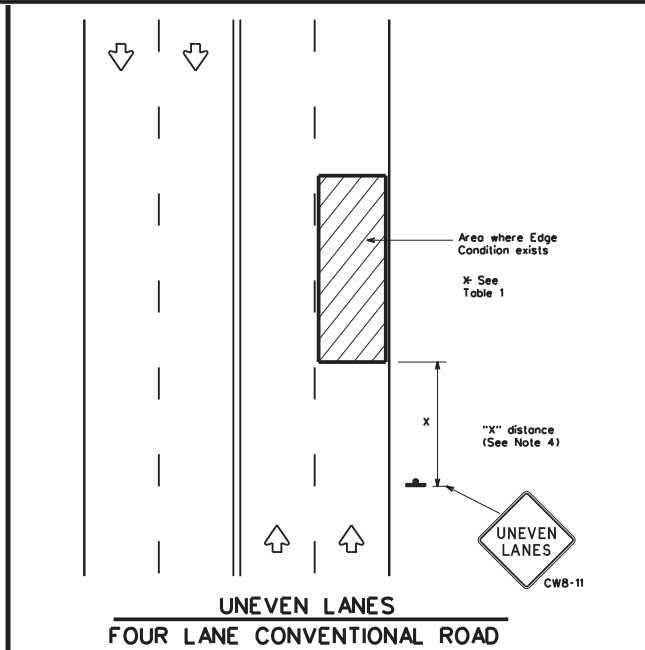
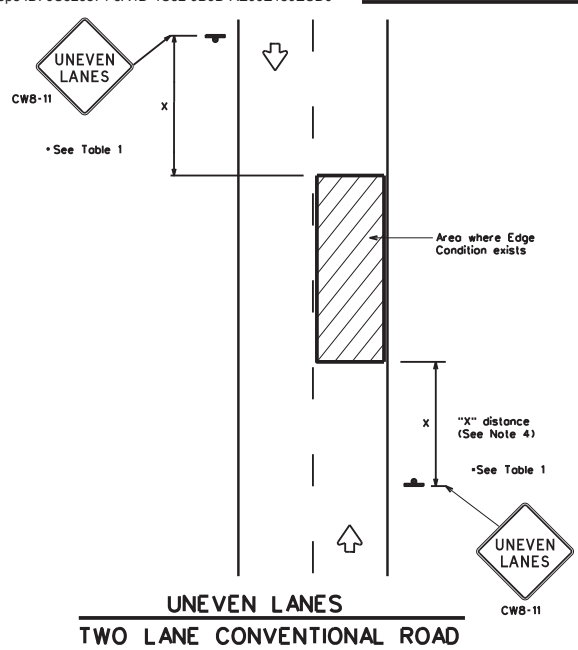
TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzs22.dgn	DATE: 11/29/2023	BY: [initials]	CHECKED: [initials]	DESIGNED: [initials]	DRAWN: [initials]
© TxDOT November 2012	REV: 01	REV: 01	REV: 01	REV: 01	REV: 01
6452	35	001	VARIOUS		
2-14	1-22	COUNTY		SHEET NO.	
4-16	22	DIMMIT		39	

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DATE: 11/29/2023
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DEPARTMENTAL MATERIAL SPECIFICATIONS			
PERMANENT PREFABRICATED PAVEMENT MARKINGS		DMS-8240	
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS		DMS-8241	
SIGN FACE MATERIALS		DMS-8300	
COLOR	USAGE	SHEETING MATERIAL	
ORANGE	BACKGROUND	TYPE B _{PL} OR TYPE C _{PL} SHEETING	
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING	

GENERAL NOTES

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

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

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

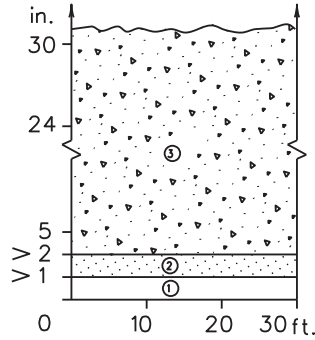
MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

SIGNING FOR UNEVEN LANES
WZ(UL)-13

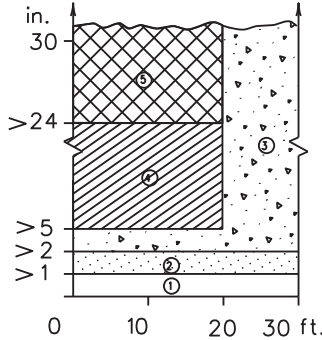
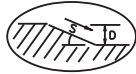
FILE: w2ul-13.dgn	DN:	CK:	DN:	CK:
© TxDOT April 1992	CONT SECT	JOB	HIGHWAY	
REVISIONS	6452 35	001	VARIOUS	
8-95 2-98 7-15	DIST	COUNTY	SHEET NO.	
1-97 3-03	22	DIMMIT	40	

DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

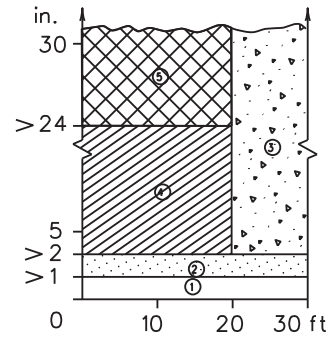
Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet



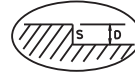
Edge Condition I
S = (3:1) (or flatter)



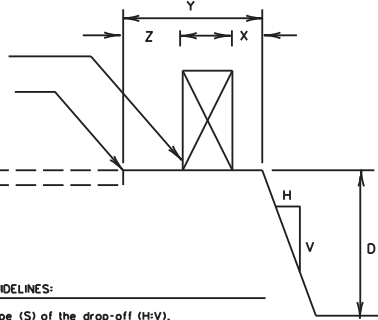
Edge Condition II
S = ((2.99):1) to (1:1)



Edge Condition III
S is steeper than (1:1)



Warning Device or Traffic Barrier
4" White Edge Line or Edge of Lanes being used for maintenance of traffic.



FACTORS CONSIDERED IN THE GUIDELINES:

- The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height" is the depth of the drop-off "D".
- Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.
- In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.
- The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a later offset of 6 feet, may indicate a higher level of treatment.
- If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-B sign), or 2) provide an edge slope such as Edge Condition I.

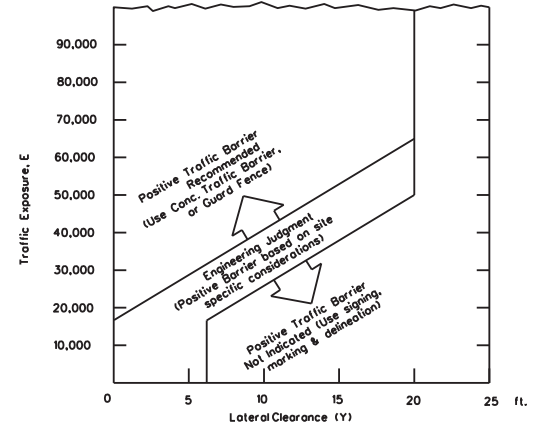
Zone Treatment Types Guidelines:

- No treatment.
- CW 8-11 "Uneven Lanes" signs.
- CW 8-9a "Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
- CW 8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge fill may be provided to change the edge slope to that of the preferable Edge Condition I.
- Check indications (Figure-1) for positive barrier. Where positive barrier is not indicated, the treatment shown above for Zone- 4 may be used after consideration of other applicable factors.

Edge Condition Notes:

- Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.
- Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exceeds 24 inches, the possibility for rollover is greater in most vehicles.
- Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.
- Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5



$E = ADT \times T$

Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition and, T is the duration time in years of the dropoff condition.

- Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.
- An approved end treatment should be provided for any positive barrier end located within a lateral offset of 20 feet from the edge of the travel lane.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

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DATE: 11/29/2023
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Engineer's Seal

11/29/2023

Date _____

DocuSigned by:
Vanessa Rosales-Herrera

Texas Department of Transportation
Traffic Operations Division

TREATMENT FOR VARIOUS EDGE CONDITIONS

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REVISIONS					
COMT	SECT	JOB	HIGHWAY		
6452	35	001	VARIOUS		
DIST	COUNTY		SHEET NO.		
22	DIMMIT		41		

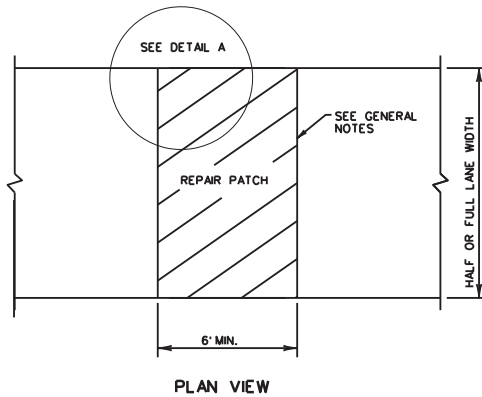
03-01
08-01 correct typos

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DATE:
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TABLE NO.1 STEEL BAR SIZE AND SPACING						
TYPE PAVEMENT	SLAB THICKNESS AND BAR SIZE		LONGITUDINAL*		TRANSVERSE*	
			REGULAR BARS	TIEBARS	BARS	TIEBARS
	T (IN.)	BAR SIZE	SPACING (IN.)	SPACING (IN.)	SPACING (IN.)	SPACING (IN.)
CRCP	6.0	*5	7.5	7.5	24	24
	6.5		7.0	7.0		
	7.0		6.5	6.5		
	7.5		6.0	6.0		
	8.0		9.0	9.0		
	8.5	8.5	8.5	24	24	
	9.0	8.0	8.0			
	9.5	7.5	7.5			
	10.0	7.0	7.0			
	10.5	6.75	6.75			
	11.0	6.5	6.5			
11.5	6.25	6.25	24	24		
>12.0	6.0	6.0				
JRCP	<8.0	*5	24.0	12.0	24	24
	>8.0	*6	24.0	12.0	24	24
CPCD	<8.0	*5	NONE	12.0	NONE	24
	>8.0	*6	NONE	12.0	NONE	24

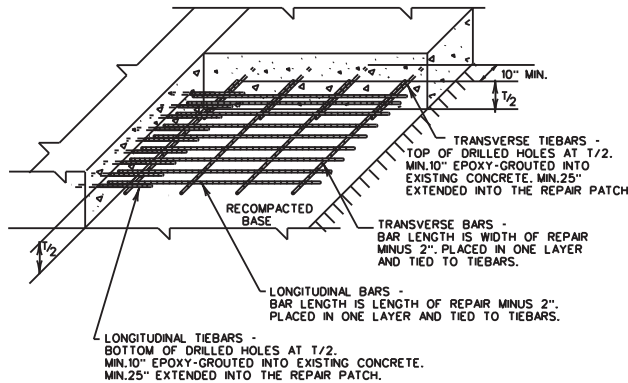
* USE 12" SPACING AS FIRST AND LAST SPACING AT END OR SIDE FOR ALL BARS.



FULL-DEPTH REPAIR OF CRCP, JRCP, AND CPCD

GENERAL NOTES

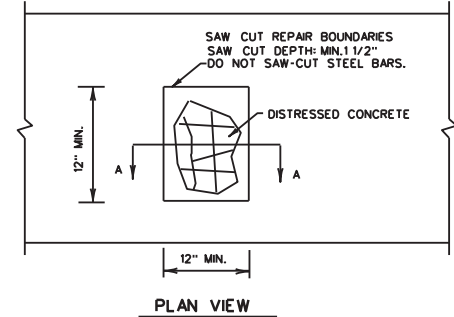
- ITEM 361,"REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
- MULTIPLE PIECE TIEBARS SHALL BE USED WHEN THE REPAIR AREA MUST BE PLACED IN TWO STAGES DUE TO SEQUENCE OF CONSTRUCTION.
- FULL DEPTH SAW CUTS SHALL BE MADE AROUND THE PERIMETER OF THE AREA TO BE REPAIRED. THE CUT SHALL BE MADE AT A RIGHT ANGLE TO THE PAVEMENT EDGE AND TO THE CENTER LINE OF THE PAVEMENT.
- AT LEAST ONE LONGITUDINAL FULL DEPTH SAW CUT SHALL BE AT AN EXISTING LONGITUDINAL JOINT.
- ADDITIONAL SAW CUTS MAY BE REQUIRED WITHIN THE AREA OF THE REPAIR TO FACILITATE REMOVAL OF THE CONCRETE OR TO ALLEVIATE BINDING OF THE FULL DEPTH SAW CUT AT THE REPAIR EDGE.
- THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
- EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



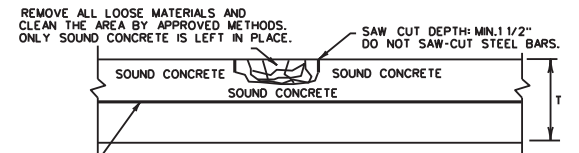
DETAIL A
GROUTED TIEBARS & REINFORCEMENT

GENERAL NOTES

- ITEM 361,"REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
- THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
- EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



PLAN VIEW



- LONGITUDINAL STEEL BARS:
- REPAIR AREAS MAY BE ADJUSTED AFTER REMOVING DISTRESSED CONCRETE. SWITCH THE HALF-DEPTH REPAIR TO FULL-DEPTH REPAIR IF EXPOSED EXISTING LONGITUDINAL BARS ARE DEFICIENT. AS APPROVED COMPENSATION WILL BE MADE FOR UNEXPECTED VOLUMES OF REPAIR AREAS OR CHANGES IN SCOPE OF WORK.
 - INCREASE THE REPAIR AREA AND PERFORM A FULL-DEPTH REPAIR AS DIRECTED IF LONGITUDINAL STEEL BARS WERE DAMAGED BY THE REMOVAL OPERATIONS. NO ADDITIONAL COMPENSATION WILL BE MADE.

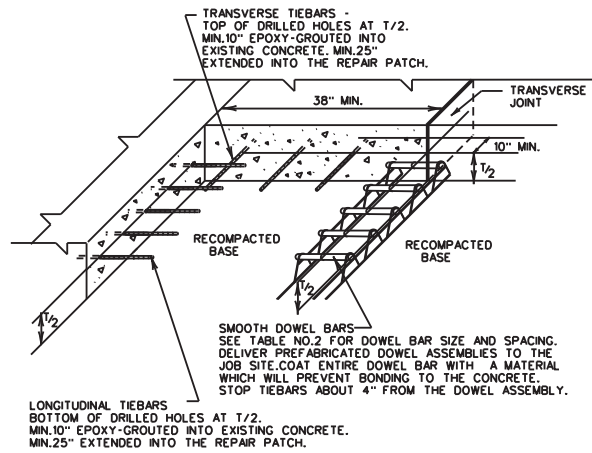
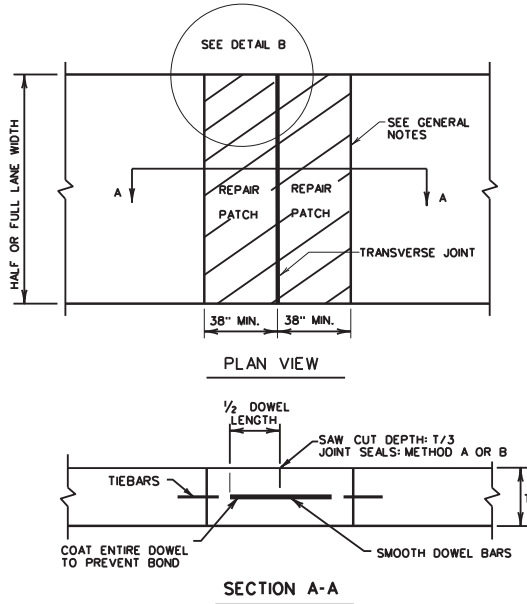
SECTION A-A
HALF-DEPTH REPAIR

SHEET 1 OF 2

				Design Division Standard	
REPAIR OF CONCRETE PAVEMENT					
REPCP-14					
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© TxDOT: DECEMBER 2014	CONT SECT	JOB	HIGHWAY		
REVISIONS	6452	35	001	VARIOUS	
	DIST	COUNTY	SHEET NO.		
	22	DIMMIT	42		

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DETAIL B
 GROUDED TIEBARS & DOWELS

REPAIR OF TRANSVERSE JOINT OF CPD

GENERAL NOTES

1. ITEM 361, "REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
2. MULTIPLE PIECE TIEBARS SHALL BE USED WHEN THE REPAIR AREA MUST BE PLACED IN TWO STAGES DUE TO SEQUENCE OF CONSTRUCTION.
3. FULL DEPTH SAW CUTS SHALL BE MADE AROUND THE PERIMETER OF THE AREA TO BE REPAIRED. THE CUT SHALL BE MADE AT A RIGHT ANGLE TO THE PAVEMENT EDGE AND TO THE CENTER LINE OF THE PAVEMENT.
4. AT LEAST ONE LONGITUDINAL FULL DEPTH SAW CUT SHALL BE AT AN EXISTING LONGITUDINAL JOINT.
5. ADDITIONAL SAW CUTS MAY BE REQUIRED WITHIN THE AREA OF THE REPAIR TO FACILITATE REMOVAL OF THE CONCRETE OR TO ALLEVIATE BINDING OF THE FULL DEPTH SAW CUT AT THE REPAIR EDGE.
6. THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
7. EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."
8. DOWEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1/4 IN. HORIZONTALLY AND VERTICALLY UNLESS OTHERWISE SPECIFIED. WHERE DOWEL BAR BASKETS ARE USED, REMOVE THE SHIPPING WIRES.

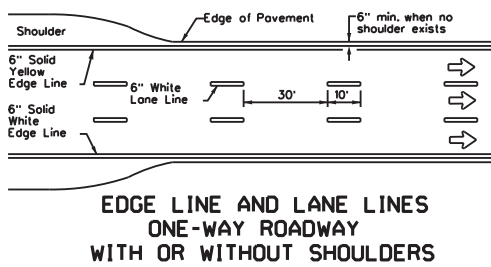
PAVEMENT THICKNESS (INCHES)	SIZE AND DIA.	LENGTH (IN.)	SPACING (IN.)
<10	*8 (1 IN.)	18.0	12.0
≥10	*10 (1 1/4 IN.)		

SHEET 2 OF 2

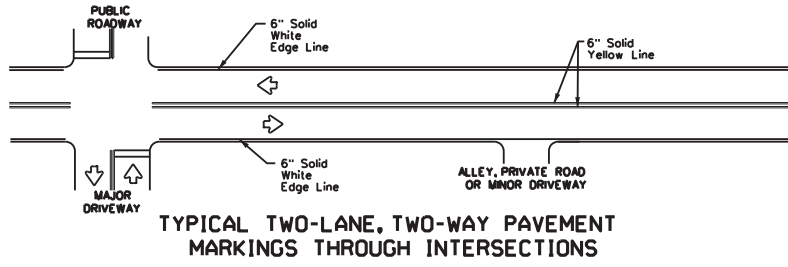
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REPAIR OF CONCRETE PAVEMENT			
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© TxDOT: DECEMBER 2014	CONT SECT	JOB	HIGHWAY
REVISIONS	6452 35	001	VASIOUS
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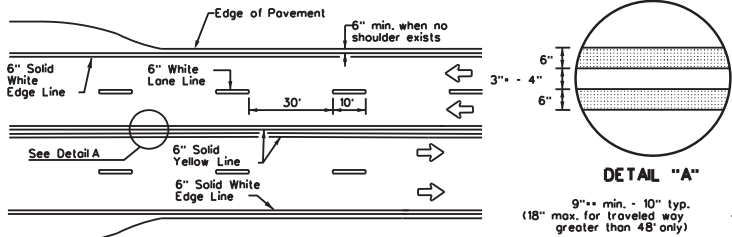
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**EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**

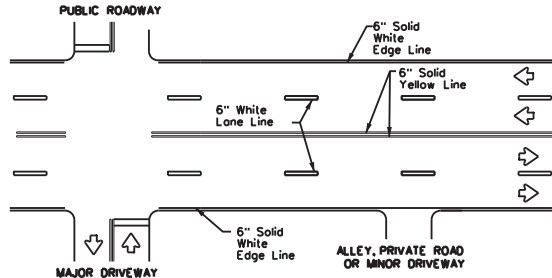


**TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**

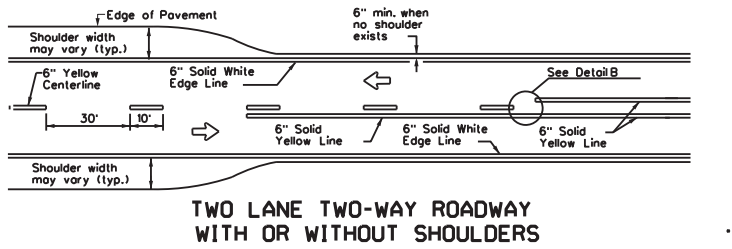


**CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**

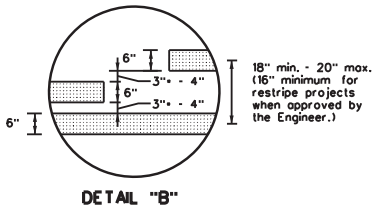
• 2" minimum for restripe projects when approved by the Engineer.
 •• 8" minimum for restripe projects when approved by the Engineer.



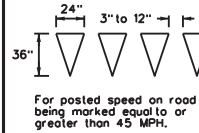
**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



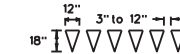
**TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



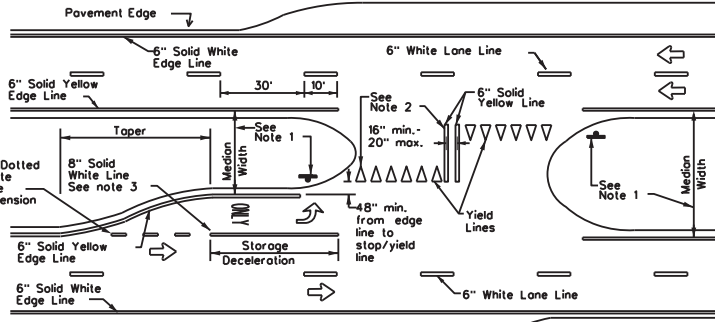
• 2" minimum for restripe projects when approved by the Engineer.



YIELD LINES



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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

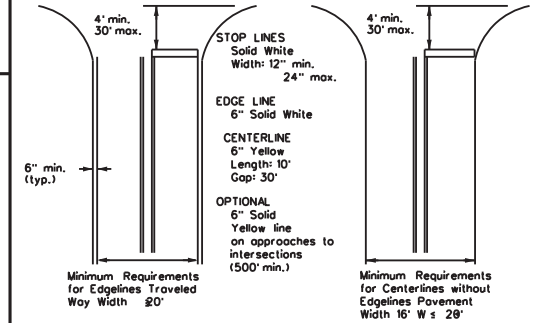
- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling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

- 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 leveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
- 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.



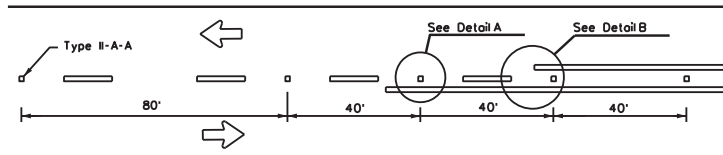
NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

**GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE**

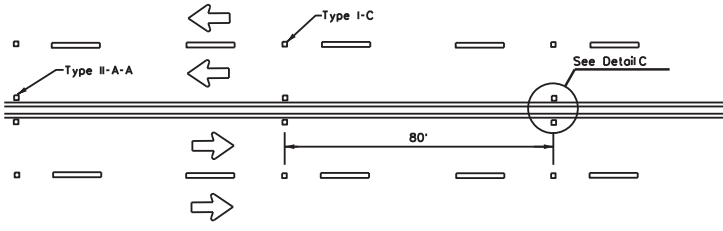
Based on Traveled Way and Pavement Widths for Undivided Roadways

		Traffic Safety Division Standard	
TYPICAL STANDARD PAVEMENT MARKINGS			
PM(1)-22			
FILE: pmt-22.dgn	DATE: 11-29-2023	COUNT: 35	SHEET NO: 44
© TxDOT December 2022		COUNTY: DIMMIT	
REVISIONS: 11-78 8-00 6-20 8-95 3-03 12-22 5-00 2-12		JOB: 001 HIGHWAY: VARIOUS	

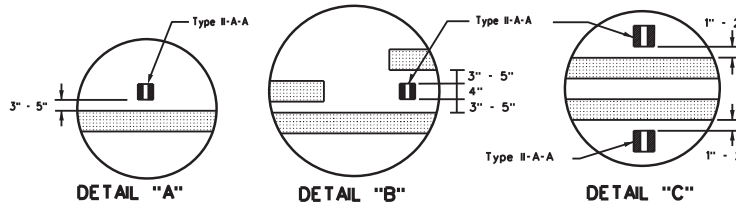
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



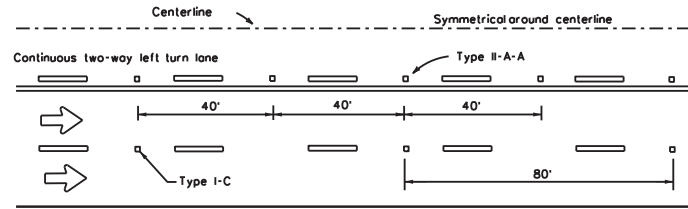
**CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS**



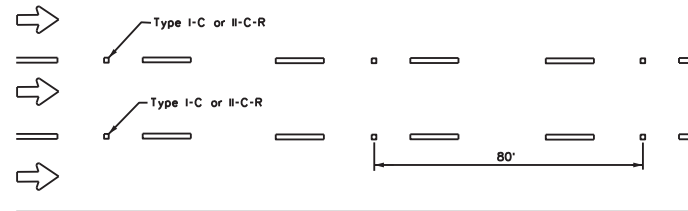
DETAIL "A"

DETAIL "B"

DETAIL "C"

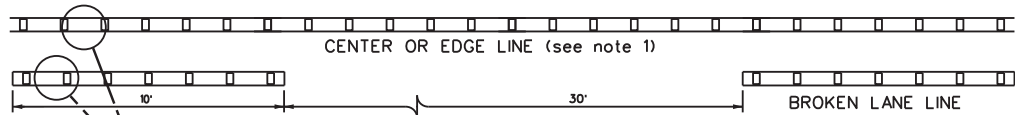


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



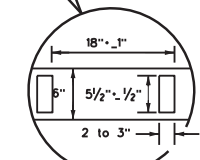
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.
See Note 3.



CENTER OR EDGE LINE (see note 1)

BROKEN LANE LINE



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

**REFLECTORIZED PROFILE
PATTERN DETAIL**

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



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

NOTES

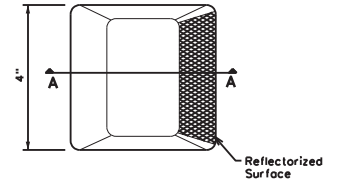
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

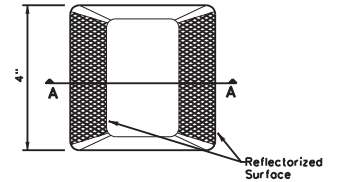
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians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

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

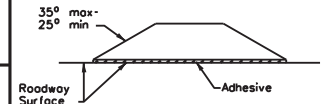
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



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

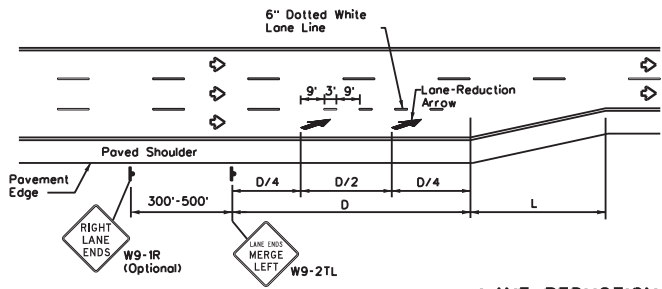
FILE: pm2-22.dgn	DATE: 11/29/2023	CONT: 22	SECT: 35	JOB: 001	HIGHWAY: VARIOUS
REVISIONS	4-77 8-00 6-20	6452	22	COUNTY: DIMMIT	SHEET NO. 45
4-92 2-10 12-22					
5-00 2-12					

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DATE: 11/29/2023
FILE: T:\LRODST\TNT\LEV_2024\MNT_Contract (F24)\M111 & Inlay_SBR_DIMMIT_COUNTY_CD\Drawings\propagating\page 22.dgn

DMS-4465: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to any other format or for any errors or omissions. For more information, please contact the TxDOT Engineering Department at (512) 465-2646.

DATE: 11/29/2023
 FILE: TXLRDDST1MNT.VFY 2024.MNT Contract (F2424)M11 & Inlay_SBR DIMMIT COUNTY.CAD\TXLRDDST1MNT.VFY



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.

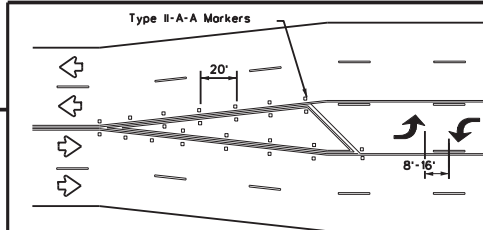
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	L - WS ² 60
35 MPH	565	
40 MPH	670	
45 MPH	775	L - WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

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.

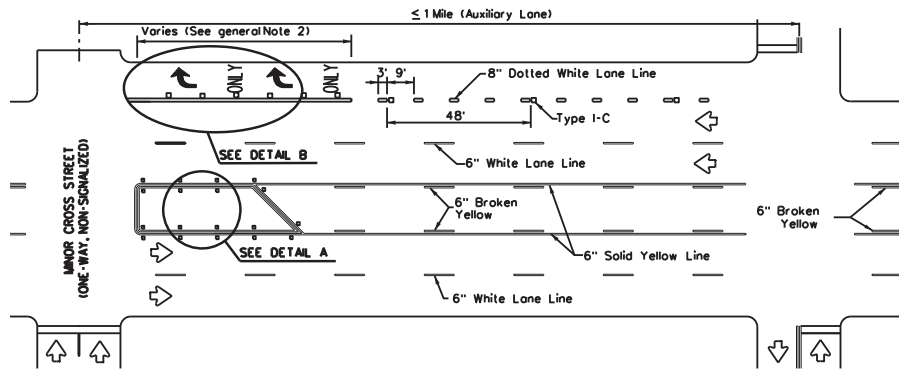
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

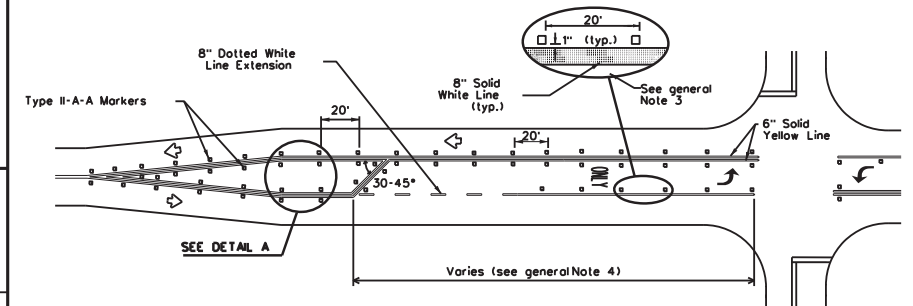


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

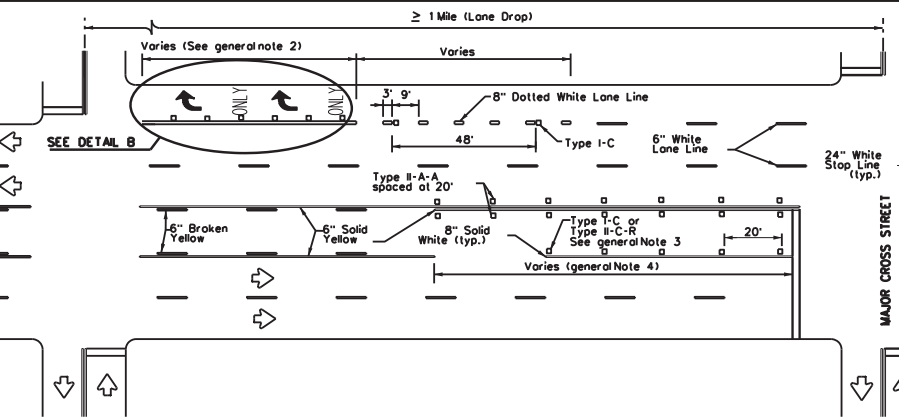
TYPICAL TRANSITION FOR TWLT AND DIVIDED HIGHWAY



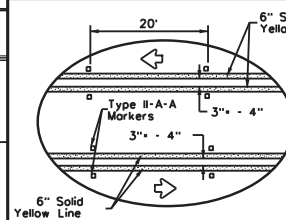
TYPICAL TWLT AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



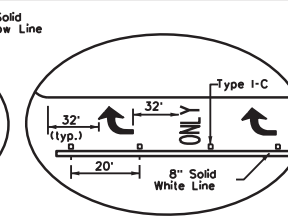
TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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



DETAIL A



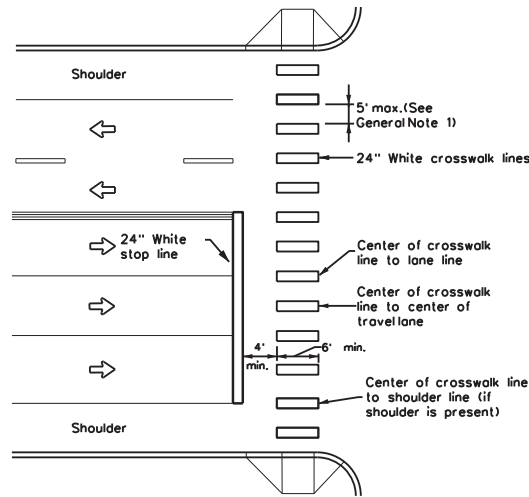
DETAIL B

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

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

FILE: pm3-22.dgn	DATE: 11/29/2023	BY: 6452	CHK: 35	JOB: 001	VARIOUS
© TxDOT December 2022		REVISONS		COUNTY	SHEET NO.
4-98	3-03	6-20		DIMMIT	46
5-00	2-10	12-22			
8-00	2-12				

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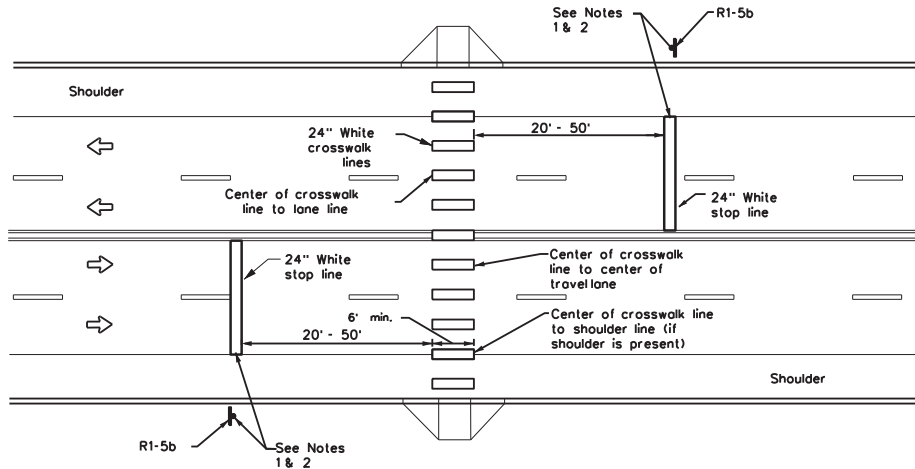
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

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 crosswalks.
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.

DATE: 11/29/2023
 FILE: T:\LRODST\MT\LEV_2024\MMT_Contract (F24)M111 & Inlay_SBR_DIMMIT_COUNTY_CAD\Drawings\Signage\22a.dwg

		Traffic Safety Division Standard	
CROSSWALK PAVEMENT MARKINGS			
PM(4)-22A			
FILE: pm4-22a.dgn	DATE: December 2022	CONT: 6452	SECT: 35
REVISIONS		JOB: 001	HIGHWAY: VARIOUS
6-20		DIST: 22	COUNTY: DIMMIT
6-22			SHEET NO. 47
12-22			
220			

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DATE: FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPOES 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.

-
- No Action Required Required Action
 Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPOES 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.

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-

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

Best Management Practices:

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

-
-

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.

-
-
-
-

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

- No Action Required Required Action
- Action No.

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

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

LIST OF ABBREVIATIONS

BMF: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SWMP: Storm Water Pollution Prevention Plan
DHS: Texas Department of State Health Services	PON: 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	TPOES: Texas Pollution 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 labeling 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 spills 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.

-
-
-


VII. OTHER ENVIRONMENTAL ISSUES

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

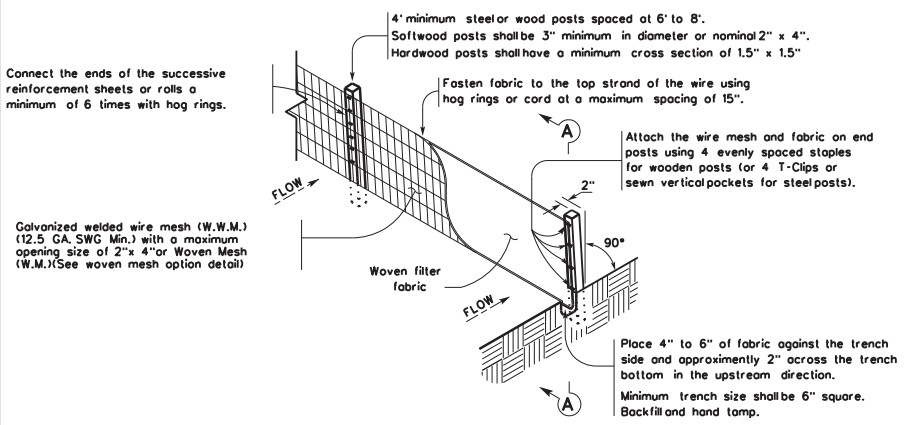
- No Action Required Required Action

Action No.

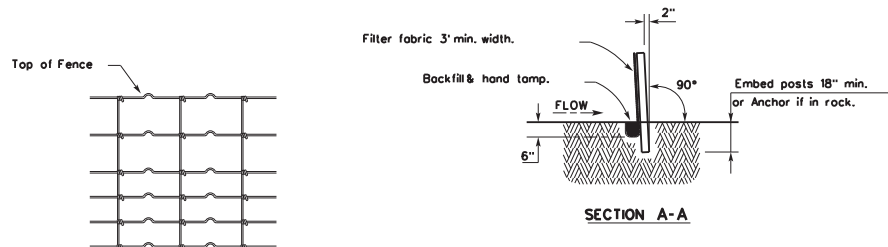
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 Texas Department of Transportation		Design Division Standard
<h2>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS</h2> <h3>EPIC</h3>		
FILE: epic.dgn	DN:	CR: DR: CR:
© TxDOT: February 2015	CONT	SECT
REVISIONS	6452	35
02-12-2011 1051		001
05-07-14 ADDD NOTE SECTION IV	DIST	COUNTY
02-23-2015 SECTION ICHANGED ITEM 102 TO ITEM 506, ADDD GRASSY SWALES	222	
		SHEET NO.
		DIMMIT
		48

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TEMPORARY SEDIMENT CONTROL FENCE



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

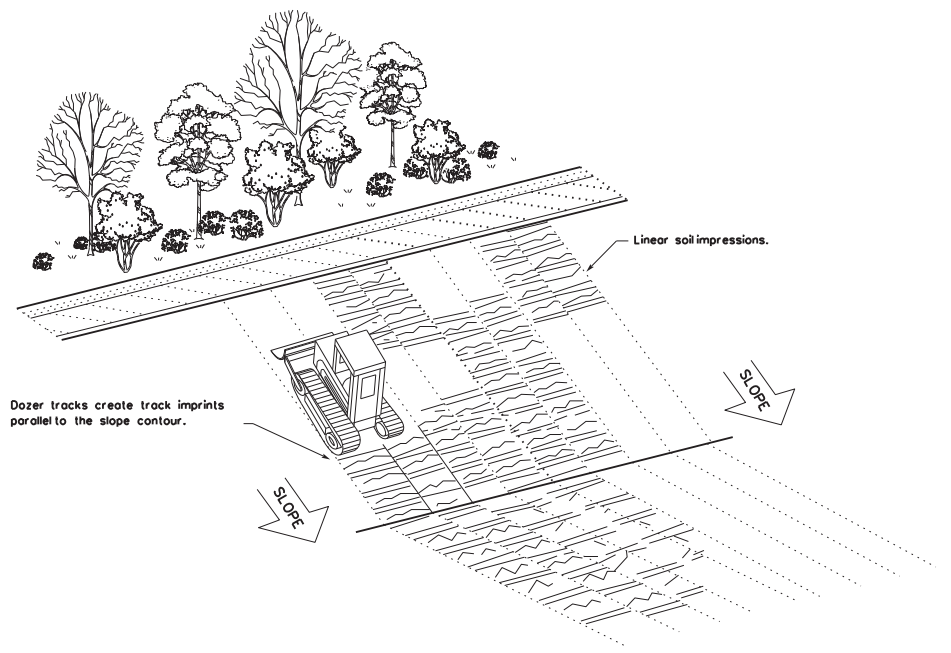
A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

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

LEGEND
Sediment Control Fence

GENERAL NOTES

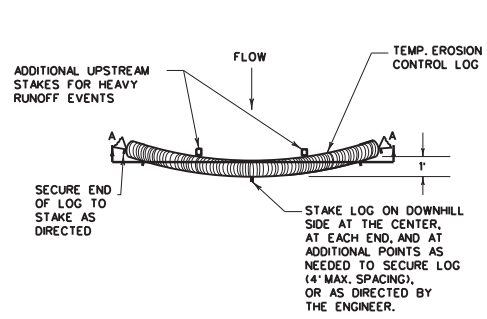
1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum 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 continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



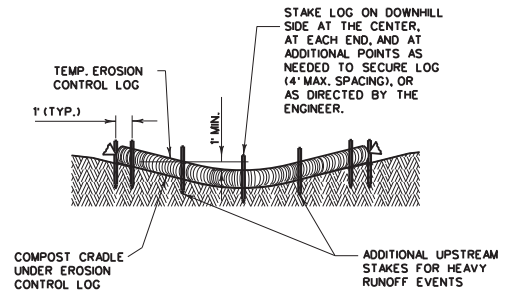
Texas Department of Transportation Design Division Standard			
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING EC(1)-16			
FILE: ec116	DN:	CK:	DN/CK:
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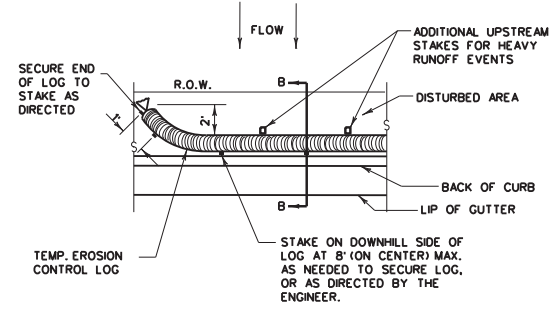
PLAN VIEW



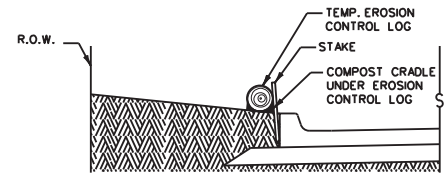
SECTION A-A
EROSION CONTROL LOG DAM

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

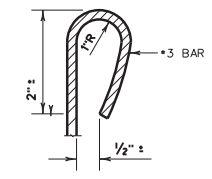


PLAN VIEW

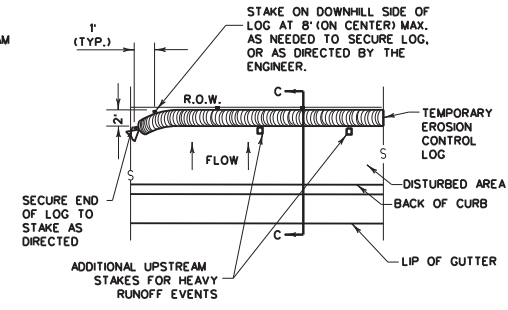


SECTION B-B
EROSION CONTROL LOG AT BACK OF CURB

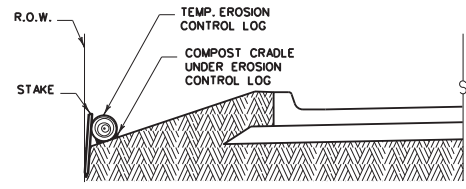
CL-BOC



REBAR STAKE DETAIL



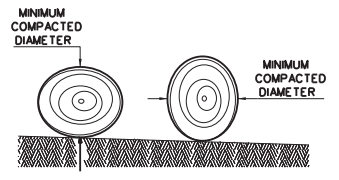
PLAN VIEW



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'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).

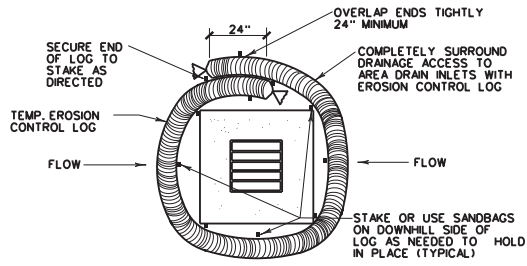
- Controllogs should be placed in the following locations:
1. Within drainage ditches spaced as needed or min. 500' on center
 2. Immediately preceding ditch inlets or drain inlets
 3. Just before the drainage enters a water course
 4. Just before the drainage leaves the right of way
 5. Just before 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.

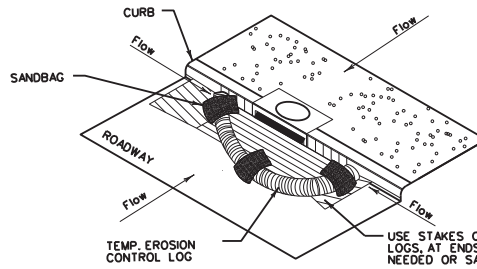
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC(9)-16			
FILE: ec916	DN:	CK:	DR:
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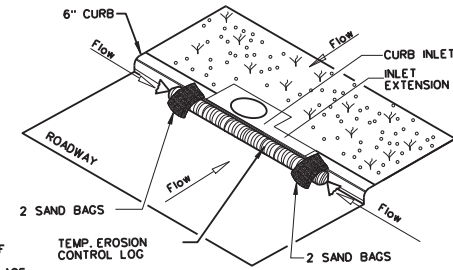
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

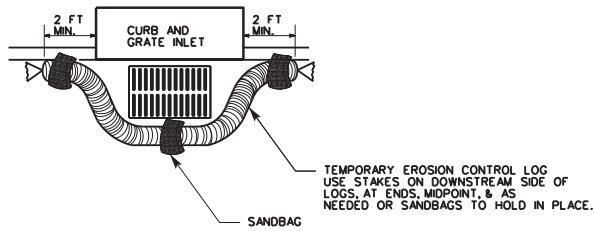
CL-CI



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.

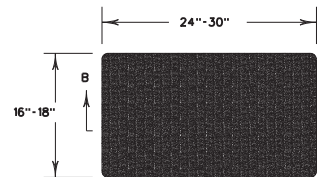


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



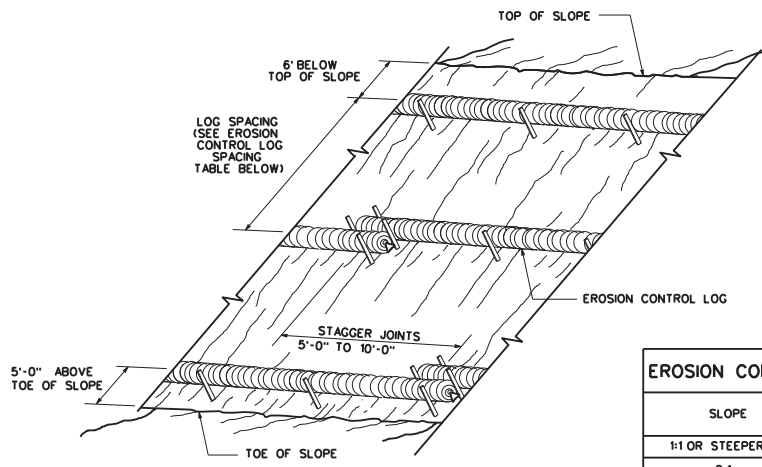
SANDBAG DETAIL

SHEET 3 OF 3

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC(9)-16			
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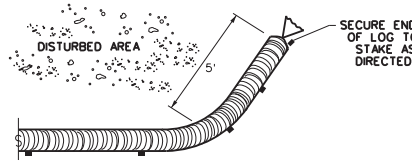
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**EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING**

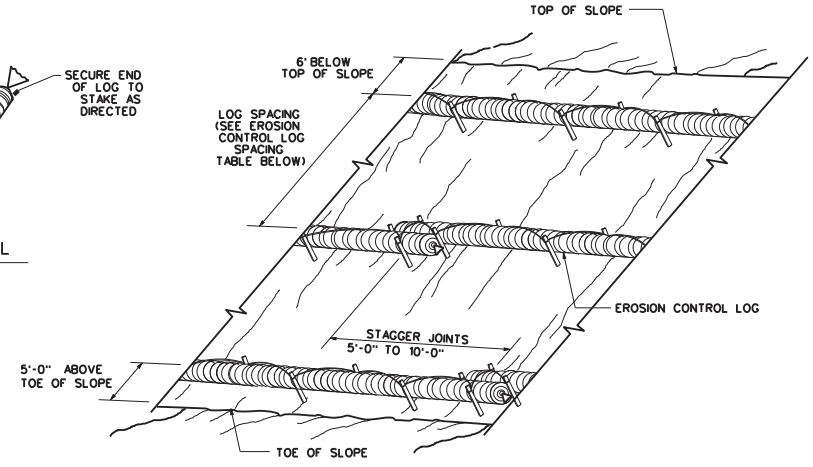
CL-SST



END SECTION RAP DETAIL

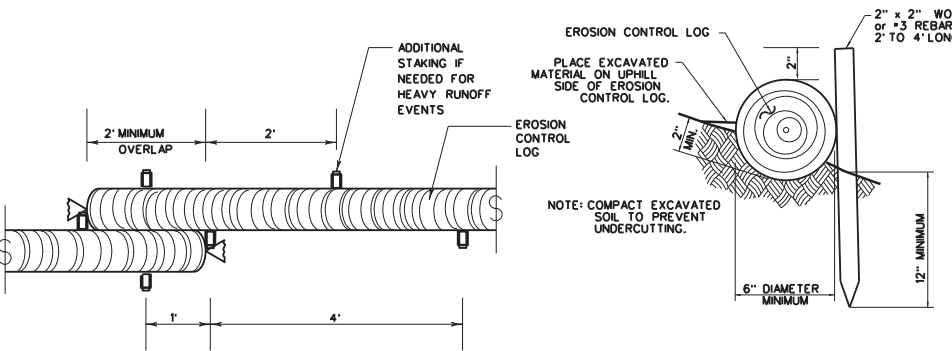
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



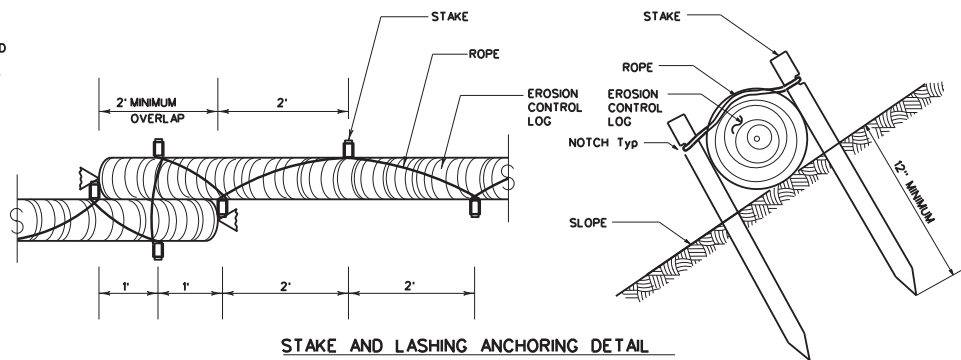
**EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING**

CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

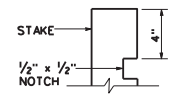
CL-SST



STAKE AND LASHING ANCHORING DETAIL

CL-SSL

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



STAKE NOTCH DETAIL

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