

**STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION**

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

STATE PROJECT NO.			
RMC 6465-77-001			
COUNTY	SECTION	JOB	SECTION
6465	77	001	US 377 ETC
POST	COUNTY		SHEET NO.
FTW	ERATH, ETC.		1

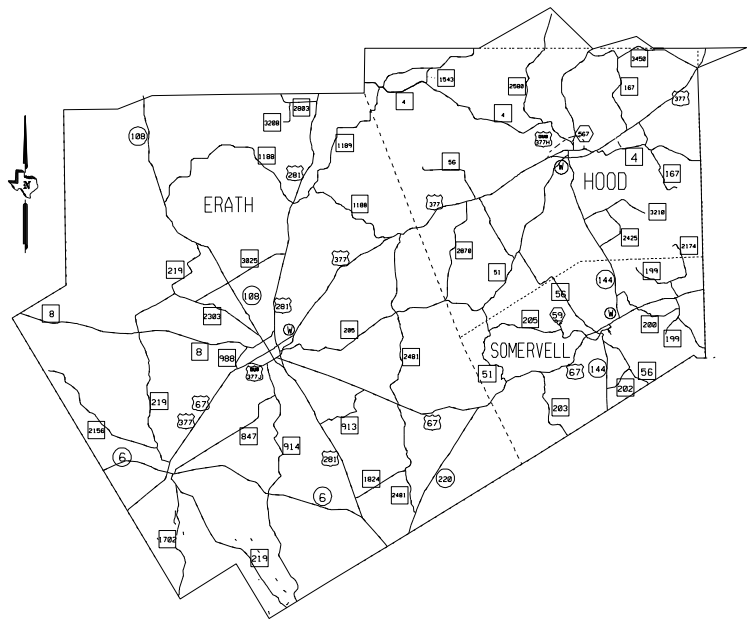
**PLANS OF PROPOSED
HIGHWAY ROUTINE MAINTENANCE CONTRACT**

TREE TRIMMING & BRUSH REMOVAL

PROJECT NO. RMC 6465-77-001

HIGHWAY: US 377, ETC

LIMITS OF WORK: ERATH, HOOD, SOMERVELL COUNTIES



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

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6/27/2024

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6/27/2024

GENERAL

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX SHEET
3A-3H	GENERAL NOTES
4	ESTIMATE AND QUANTITIES
5	PROJECT LIMITS
6	PROJECT SECTION MAP

TCP STANDARDS

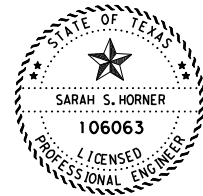
SHEET NO.	DESCRIPTION
7	TCP (1-1) - 18
8	TCP (1-2) - 18
9	TCP (1-3) - 18
10	TCP (1-4) - 18
11	TCP (2-1) - 18
12	TCP (2-2) - 18
13	TCP (2-3) - 23
14	TCP (2-4) - 18
15	TCP (5-1) - 18

BC STANDARDS

SHEET NO.	DESCRIPTION
16	BC (1) - 21
17	BC (2) - 21
18	BC (3) - 21
19	BC (4) - 21
20	BC (5) - 21
21	BC (6) - 21
22	BC (7) - 21
23	BC (8) - 21
24	BC (9) - 21
25	BC (10) - 21

TREE AND BRUSH REMOVAL STANDARDS

SHEET NO.	DESCRIPTION
26	TRB - 15 (1)
27	TRB - 15 (2)



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

DocuSigned by: Sarah S. Horner, PE 6/27/2024
802BEC410FA483 DATE



INDEX SHEET

REV. NO.	DATE	STATE PROJECT NO.	SHEET NO.
6	6/27/2024	RMC 6465-77-001	2
REVISIONS		STATE DISTRICT COUNTY	
		TEXAS FTW ERATH, ETC.	
		CONTROL SECTION JOB	
		6465 77 001	US377, ETC.

Project Number: RMC 6465-77-001 **Sheet 3A**
County: Erath, Hood & Somervell Counties **Control:** 6465-77-001
Highway: US 377, ETC.

**FORT WORTH DISTRICT MAINTENANCE GENERAL NOTES
 2014 SPECIFICATIONS**

Special Notes:

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

Area Engineer: Sarah Horner sarah.horner@txdot.gov
 Asst. Area Engineer: Noel Spaar noel.spaar@txdot.gov
 Design Manager: Craig Moss forrest.moss@txdot.gov

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

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

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

General Notes:

Plans are required for this project. Plans may be obtained from one of the plan companies listed in the "Special Notice to Contractors" or viewed at Texas Department of Transportation's (TxDOT's) Internet site at <https://www.txdot.gov/business/letting-bids/plans-online.html>.

Contract Prosecution: Each contract awarded by the Department stands on its own and as such, is separate from other contracts. A Contractor awarded multiple contracts must be capable and sufficiently staffed to concurrently process and/or execute all contracts and work orders at the same time.

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

Personnel will be experienced in items of work in the contract which they will be performing. Safety vests and hard hats will be pre-approved and worn at all times outside vehicles within the work area. Safety vests shall be Class III.

Provide and maintain a dedicated email address for receipt of work orders and correspondence throughout the term of this contract.

Project Number: RMC 6465-77-001 **Sheet 3B**
County: Erath, Hood & Somervell Counties **Control:** 6465-77-001
Highway: US 377, ETC.

Project Description - This project consists of Tree & Brush Removal on sections of highway within Erath, Hood & Somervell Counties as shown in the contract and defined in these general notes and specifications. Coordinate all work through the Maintenance Offices listed below:

Erath	Hood/Somervell
Jason Medders 2281 E. Washington Stephenville, TX 76401 (254) 965-3511	Casey Elliot 5721 SH 144 Granbury, TX 76048 (254) 897-2647

Prior to mobilizing equipment into the Fort Worth District, all equipment will be clean and free of any debris from prior use in other districts or counties.

Contractor will be responsible for notifying a "one call" center when necessary. It will also be the Contractor's responsibility to notify the City and State for any utility and line locations. Telephone numbers are listed below:

TxDOT Traffic Operations Center (817)-370-3661
 City of Fort Worth (Illumination) – (817)-392-8100
 DIG TESS 1-(800)-344-8377

This is not to be considered a complete list of contacts. Contractor may need to contact additional agencies for utilities and line locations. Provide TxDOT with confirmation tickets of utility and line locates.

Item 4 Scope of Work

Item 4.4 Changes In The Work. This contract may be extended in accordance with Special Provision 004--001.

Item 7 Legal Relations and Responsibilities

Item 7.2.4. Public Safety and Convenience. Personal vehicles will not be parked within the right-of-way at any time, including any section closed to the traveling public.

Operations will be curtailed or halted during special events that may result in delays or congestion to the traveling public.

No work that restricts or interferes with traffic shall be allowed from 3:00 pm on the day preceding the Holiday or Event to 9:00 am on the day after the Holiday or Event. The following Holiday/Event lane closure restriction requirements apply to this project:

Project Number: RMC 6465-77-001

Sheet 3C

County: Erath, Hood & Somervell Counties

Control: 6465-77-001

Highway: US 377, ETC.

Holiday Lane Closure Restrictions	
New Year's Eve and New Year's Day (December 31 through January 1)	3 PM December 30 through 9 AM January 2
Easter Holiday Weekend (Friday through Sunday)	3PM Thursday through 9 AM Monday
Memorial Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Independence Day (July 3 through July 5)	3 PM July 2 through 9 AM July 6
Labor Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Thanksgiving Holiday (Wednesday through Sunday)	3 PM Tuesday through 9 AM Monday
Christmas Holiday (December 23 through December 26)	3 PM December 22 through 9 AM December 27

Modifications to Lane Closure / Work Restrictions:

Submit a request in writing for approval by the Engineer a minimum of 10 days in advance of implementing a change to lane closure restrictions.

When deemed necessary, the Engineer will lengthen, shorten, or otherwise modify lane closure restrictions as traffic conditions warrant.

Item 8 Prosecution and Progress

Item 8.1. Prosecution of Work. Notification of work will be executed by work order on a callout basis. This contract has non-site-specific work. The locations shown in the plans are for contractor's information only.

Notify section supervisor twenty-four (24) hours in advance of the date and time the Contractor plans to commence work.

Notification of the non-site-specific work will be executed by a call-out work order. This contract will have multiple and concurrent work orders. No more than four (4) work orders will be issued to be performed at the same time.

Upon issuance of the initial work order all work orders thereafter shall begin operations within seventy-two (72) hours after verbal and/or written notification.

Item 8.3. Computation of Contract Time for Completion. Time will be charged in accordance

Project Number: RMC 6465-77-001

Sheet 3D

County: Erath, Hood & Somervell Counties

Control: 6465-77-001

Highway: US 377, ETC.

with Item 8.3.1.5 Calendar Day in the Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges.

Working days for work orders will be calculated by dividing quantities by production rate. A fraction of the day will be rounded up to the next whole number. If the total number of working days is not used during the completion of the work order the working days will not be carried forward to a subsequent work order. Each work order will define the total number of working days for that work order as defined in Section 8.3.1.4. Standard Work Week in the Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges.

If the total number of working days is not used during the completion of the work order the working days will not be carried forward to a subsequent work order.

The Engineer has the right to grant additional time or terminate a work order if inordinate amounts of adverse weather conditions occur. These conditions may be roadway icing, excessive rainfall, or any other weather condition that could prevent the contractor from completing a work order in the time specified. If a work order is terminated, the Contractor will only be paid for the work that has been satisfactorily completed on the work order.

For Non-Site-Specific items, Contractor may prosecute work at any time within the identified timeline shown on this "Schedule of Work" Table. Once work starts, it is of utmost importance that work be prosecuted to completion within the timeframe noted in the contract.

Item 8.3.2. Restricted Work Hours. Perform work as shown below, unless otherwise approved:

<i>Daytime Work</i>
7:00 am – 4:00 pm Monday – Friday Saturday-Optional
Excluding National Holidays

The contractor has the option of working on Saturdays or State holidays with forty-eight (48) hour advance notice. Work on Sundays or National holidays will not be permitted without written permission from the Engineer.

Item 8.5. Project Schedules. Prepare the schedules as a Bar Chart.

Item 8.6. Failure to Complete Work on Time. The response time specified in the contract is an essential element. Liquidated damages will be assessed when the Contractor fails to begin work within the specified response times for any Item(s). The dollar amount specified in this contract will be deducted from any money due or to become due for any Item(s) and will continue to be deducted for each day until work begins. This amount will be assessed not as a penalty, but as liquidated damages.

Project Number: RMC 6465-77-001**Sheet 3E****County:** Erath, Hood & Somervell Counties**Control:** 6465-77-001**Highway:** US 377, ETC.

Failure to complete a project in the working days specified in the work order, time charges will continue for each working day until work is completed for that work order. The amount assessed for liquidated damages will be based on the total value of the original contract, in accordance with Special Provision 000-1243, not the estimated amount on individual work orders.

When a minimum production rate is shown in the plans, liquidated damages will be charged for each working day the minimum production rate is not met.

Item 9.2. Plans Quantity Measurement.

This contract is for callout work and work orders, plans quantity measurement requirements are not applicable.

Item 500. Mobilization.

Mobilization for callout work will be paid for each callout work request.

Item 502. Barricades, Signs, and Traffic Handling.

Provide equipment such as trucks, trailers, autos, etc., with highly visible omni-directional warning flashing lights. These lights will be used within the work zone at all times. Provide forward facing arrow panel on lead vehicles when working in a continuous turn lanes. The Engineer will approve all equipment and vehicles prior to use.

All traffic control, with the exception of Special Specification 6185 Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA), is subsidiary to the various bid items in accordance with Section 502.4.1.6 Contracts with Callout Work Orders.

Mount signs on their own stands. Attach two (2) brightly colored safety flags to each sign. Do not hang or lean signs on or against any other sign post or delineator post. Erect signs in such a manner that they will not obstruct the traveling public's view of normal roadway signing or obstruct sight distance at intersections or curves.

Shadow vehicles equipped with Truck-Mounted Attenuators (TMA's) are required as shown on all Traffic Control Plan (TCP) Standards. Striping will be required on the back panel of truck mounted attenuators, and will be 8 inches of red and white stripes placed on an inverted "V" design. Sheeting will conform to departmental material Specification D-9-8300, Type "C".

Provide signing and traffic control in compliance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD), latest edition, and the appropriate traffic control method as outlined in the TMUTCD, and elsewhere in the plans.

Portable Changeable Message Signs (PCMS) shown on the Traffic Control Plan (TCP) Standards as "optional" will be required on this contract. Additional PCMS may be required and will be paid for under the appropriate bid item. PCMS shall be placed a minimum of 48 hours in advance of work on all roadways, and 7 days in advance of work on Tier 1 roadways.

General Notes

Sheet E

Project Number: RMC 6465-77-001**Sheet 3F****County:** Erath, Hood & Somervell Counties**Control:** 6465-77-001**Highway:** US 377, ETC.

Lane closures will be required on roadways as indicated in the plans and will be a maximum of two (2) miles from beginning of taper to end of closure. Lane closures will also be required on roadways allowing mobile operations in areas with inadequate field of view as determined by the Engineer.

Provide a Department Approved Truck Mounted Attenuator (TMA) behind all equipment overhanging roadway travel lanes. Trailer all slow moving vehicles (designed to operate 25mph or less) crossing freeway main lanes.

Dedicated personnel must be on duty to maintain barricades.

Equipment and materials will not be left within thirty feet (30') of the travel lane during non-working hours.

Item 752. Tree and Brush Removal.

All work, except emergency work, is to be completed between September 15 and March 15 to ensure compliance with the Migratory Bird Treaty Act. Emergency work is any work required to eliminate a potential hazard(s) to the traveling public or from causing property damage.

Avoid pruning oak trees between March 15 and the end of June to limit the potential spread of Oak Wilt disease.

Complete at least one (1) centerline mile of tree trimming per day.

Complete at least one (1) acre of channel per day.

Trim branches, limbs and brush to the fence line or TxDOT right-of-way line and a height of 18 feet above the pavement, unless otherwise directed.

Pick up and remove all trees and limbs felled from right-of-way on the same day, unless otherwise approved.

Trees less than 4 in. Diameter are considered brush and are to be removed.

Remove trees that are already down in the right-of-way. These trees will be paid for in the same manner as trees that are to be felled and removed. Trees that have fallen onto the right-of-way from private property will be cut and measured at the right-of-way line.

Dispose of all vegetative matter the same day work is performed by chipping debris and spreading along the right-of-way in layers not to exceed 4 inches deep. Dispose of any other materials removed from state rights-of-way in accordance with applicable environmental laws, rules, regulations and requirements in the contract.

General Notes

Sheet F

Project Number: RMC 6465-77-001

Sheet 3G

County: Erath, Hood & Somervell Counties

Control: 6465-77-001

Highway: US 377, ETC.

Remove a tree in increments when cutting the trees at ground level and anytime there is danger to the traveling public, utility lines, or private property.

Item 6001. Portable Changeable Message Sign.

Provide electronic portable changeable message sign unit(s) as directed.

If more than one (1) crew works on the same day, but in different locations, each crew will use portable changeable message signs and arrow panels.

Each sign will have the following eighteen (18) messages programmed in its permanent memory:

1. Ramp Closed Ahead
2. Use Other Routes
3. Right Lane Closed
4. Left Lane Closed
5. Closed Ahead
6. Two Lane
7. Detour Ahead
8. Thru Traffic
9. Be Prepared To Stop
10. Merging Traffic
11. Expect 15 Minute Delay
12. Max Speed **MPH
13. Merge Right
14. Merge Left
15. No Exit Next ** Miles
16. Various Lanes Closed
17. Two Left Lanes Closed
18. Two right Lanes Closed

Item 6185. Truck Mounted Attenuators (TMA).

General Notes

Sheet G

Project Number: RMC 6465-77-001

Sheet 3H

County: Erath, Hood & Somervell Counties

Control: 6465-77-001

Highway: US 377, ETC.

The total number of truck mounted attenuators (TMA) required when utilizing the traffic control standards are shown in the tables below.

TCP 1 Series	Scenario	Required TMA
(1-1)-18		1
(1-2)-18		1
(1-3)-18	A	1
	B	2
(1-4)-18		1

TCP 2 Series	Scenario	Required TMA
(2-1)-18	All	1
(2-2)-18	All	1
(2-3)-18	A	1
	B	2

TCP 5 Series	Scenario	Required TMA
(5-1)-18	A	1
	B	2

Shadow vehicles equipped for truck mounted attenuators (TMA) for mobile and stationary operations must be available for use at any time as determined by the Engineer.

The Contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMA needed for the project for those times per plan requirements. Additional TMAs used that are not specified in the plans in which the Contractor expects compensation will require prior approval from the Engineer.

The Department may furnish TMA's and other traffic control devices on this contract at the Engineer's discretion if it is in the best interest of the State.

General Notes

Sheet H



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6465-77-001

DISTRICT Fort Worth
HIGHWAY US0377

COUNTY Erath

CONTROL SECTION JOB				6465-77-001		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00208425			
COUNTY				Erath			
HIGHWAY				US0377			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	500-6033	MOBILIZATION (CALLOUT)	EA	4,000		4,000	
	752-6003	TREE TRIMMING / BRUSH REMOVAL	MI	71,750		71,750	
	752-6004	TREE TRIMMING / BRUSH REMOVAL(CHANNELS)	AC	2,500		2,500	
	752-6005	TREE REMOVAL (4" - 12" DIA)	EA	10,000		10,000	
	752-6006	TREE REMOVAL (12" - 18" DIA)	EA	10,000		10,000	
	752-6007	TREE REMOVAL (18" - 24" DIA)	EA	10,000		10,000	
	752-6008	TREE REMOVAL (24" - 30" DIA)	EA	24,000		24,000	
	752-6009	TREE REMOVAL (30" - 36" DIA)	EA	10,000		10,000	
	752-6010	TREE REMOVAL (36" - 42" DIA)	EA	23,000		23,000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	80,000		80,000	
	6185-6002	TMA (STATIONARY)	DAY	80,000		80,000	



DISTRICT	COUNTY	CCSJ	SHEET
Fort Worth	Erath	6465-77-001	4

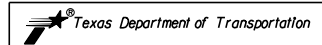
**Highway Limits
Tree Trimming, Brush Removal and Tree Removal
Erath/Hood/Somervell Counties**

Location No.	County	Highway	Limits	Beginning RM	Ending RM	752-6003 Tree Trimming (MI)	752-6004 Brush Removal (Channels) (AC)	752-6005 Tree Removal (4"-12") (EA)	752-6006 Tree Removal (12"-18") (EA)	752-6007 Tree Removal (18"-24") (EA)	752-6008 Tree Removal (24"-30") (EA)	752-6009 Tree Removal (30"-36") (EA)	752-6010 Tree Removal (36"-42") (EA)
1	Erath	FM 1189	Hood County Line US 281	296	206	9.25					4.00		6.00
2	Erath	FM 219	SH 108 US 67/377	496	514	13.30					10.00		5.00
3	Erath	FM 2156	FM 219 Eastland County Line	486	496	8.50							
4	Erath	SH 6	Comanche County Line US 67/377	396	400	4.00							2.00
5	Erath	FM 1702	FM 219 Comanche County Line	316	324	6.30							
6	Erath/Hood/Somervell	Various	Various Various				2.50	10.00	10.00	10.00	10.00	10.00	10.00
7	Hood	FM 4	FM 167 Johnson County Line	330	336	4.30							
8	Hood	FM 2870	US 377 FM 205	294	304	8.6							
9	Hood	FM 167	FM 4 End of Maintenance	294	298	4.3							
10	Hood	FM 51	North FM 51 / FM 56 Split Hood / Somervell County Line	328	336	6.5							
11	Somervell	FM 51	Hood / Somervell County Line US 67	336	342	6.7							
TOTAL						71.75	2.50	10.00	10.00	10.00	24.00	10.00	23.00

Note To Contractor:

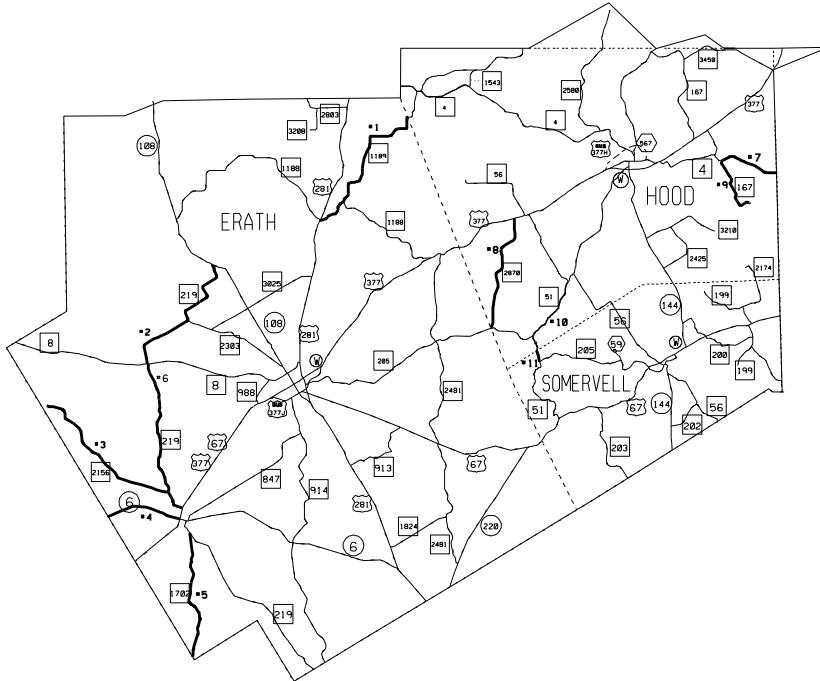
Measurement for payment is continuous between the limits identified on the plan sheets. Tree trimming/Brush Removal may or may not be continuous and may or may not be on both sides of the roadway. Payment for this item will be based on the centerline mile of the roadway itself and includes all work performed on both sides of the roadway. Payment will not be made for a segment of roadway until both sides are complete. It is the Contractor's responsibility to inspect the roadway segments identified in the plans prior to bidding the work to determine the type and density of trees and brush to be trimmed/removed.

This is a Non-Site Specific contract. The locations and quantities shown in the plans are not guaranteed and are for the contractor's information only.



PROJECT LIMITS

FIG. NO. 015.00	STATE PROJECT NO. RMC 6465-77-001		SHEET NO.
6			
STATE	DISTRICT	COUNTY	5
TEXAS	FTW	ERATH, ETC.	
CONTROL	SECTION	JOB	HIGHWAY NO.
6465	77	001	US 377, ETC.



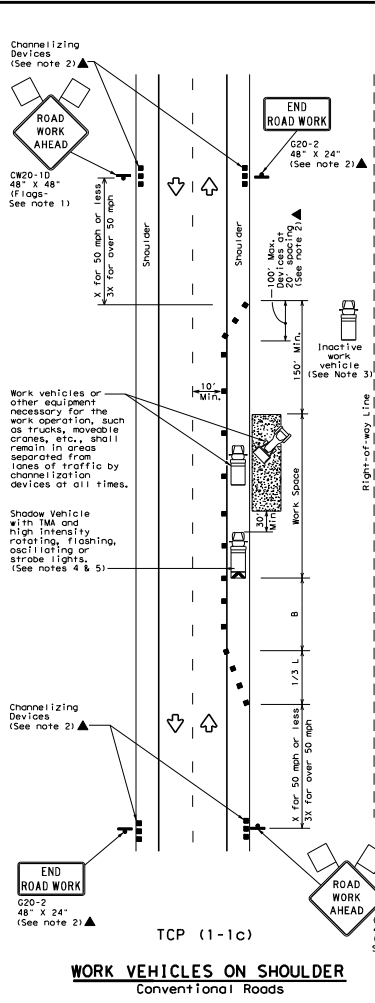
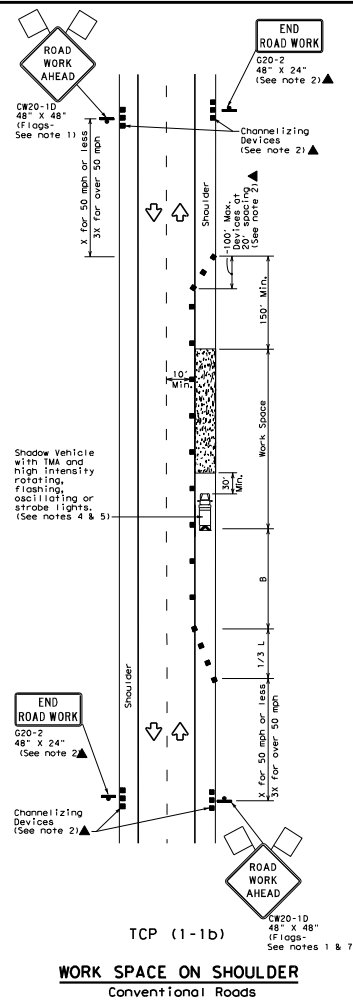
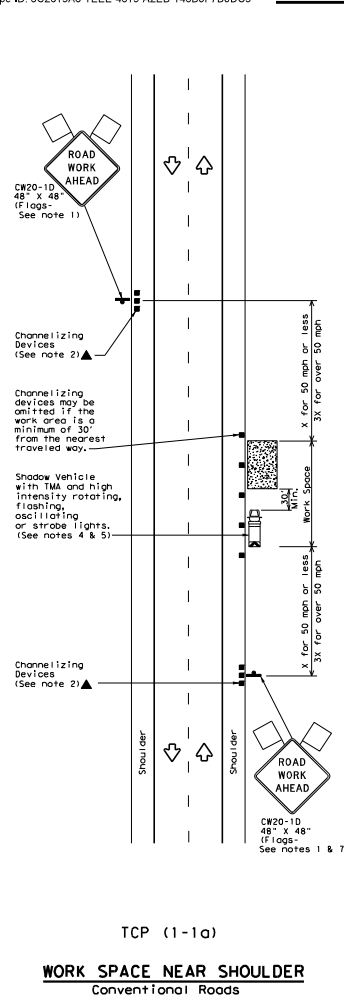
ERATH, HOOD, SOMERVELL

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SECTION MAP				
C.O.	FED. RD. DIST. NO.	STATE PROJECT NO.		SHEET NO.
	5	RMC	6465-77-001	
REVISIONS	STATE	DISTRICT	COUNTY	6
	TEXAS	FTW	ERATH, ETC.	
	CONTROL	SECTION	JOB	HIGHWAY NO.
	6465	77	001	US377, ETC

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Texas Department of Transportation for the use of this standard or for damages resulting from its use.



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

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

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

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

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol. It is 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 TCP(5-1) for shoulder work on divided highways, expressways and freeways.
- CW20-10 "SHOULDER WORK" signs may be used in place of CW20-10 "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

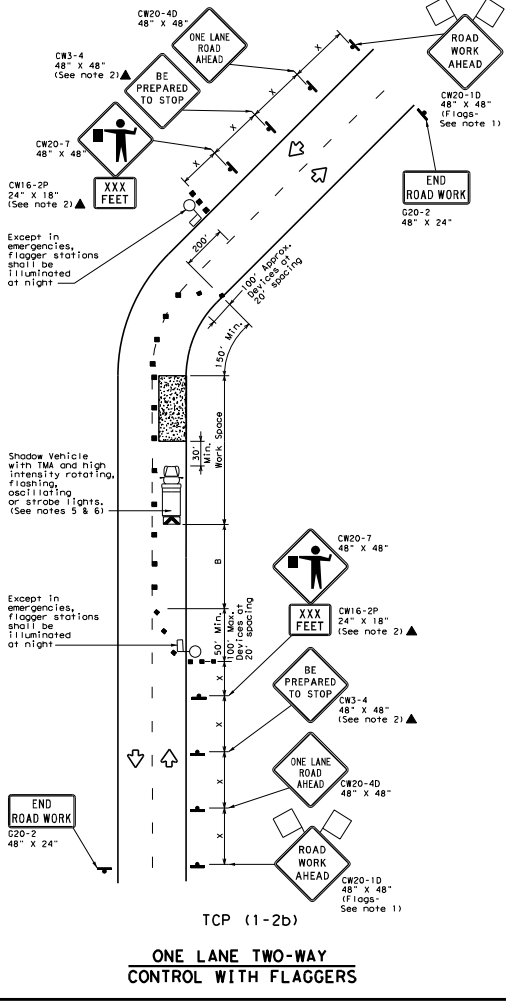
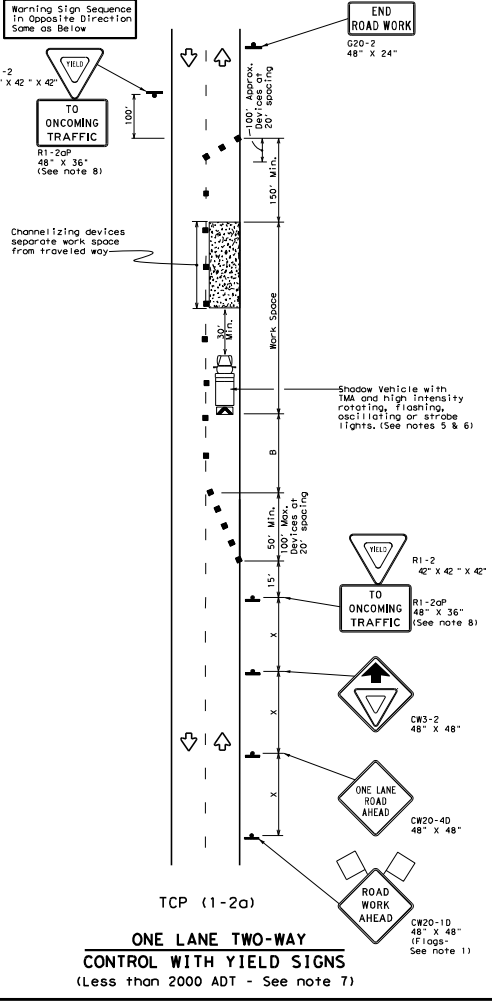
Texas Department of Transportation Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (1-1)-18

FILE:	TOP: 1-18.DWG	NO:	REV:	DATE:	BY:	CHK:	APP:
01/001	December 1995	001	12/01				HSW/MT
2-94	4-94	6443	77	081			US377, ETC.
8-95	2-12						COUNTY
1-97	2-18						SHEET NO.
151							2

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Texas Department of Transportation for the use of this standard or for incorrect results or damages resulting from its use.



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
	Flagger		Flagger

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

* 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.
 - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
 - Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
 - 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 (1-2a)**
- R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distances. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
 - R1-2 "YIELD" sign with R1-2p "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.
- TCP (1-2b)**
- Flaggers should use two-way radios or other methods of communication to control traffic.
 - Length of work space should be based on the ability of flaggers to communicate.
 - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
 - Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
 - Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

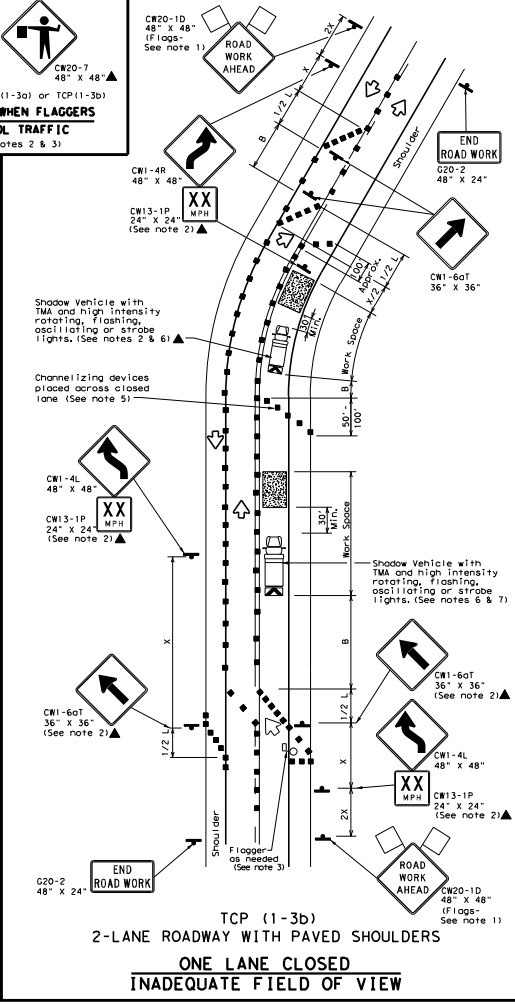
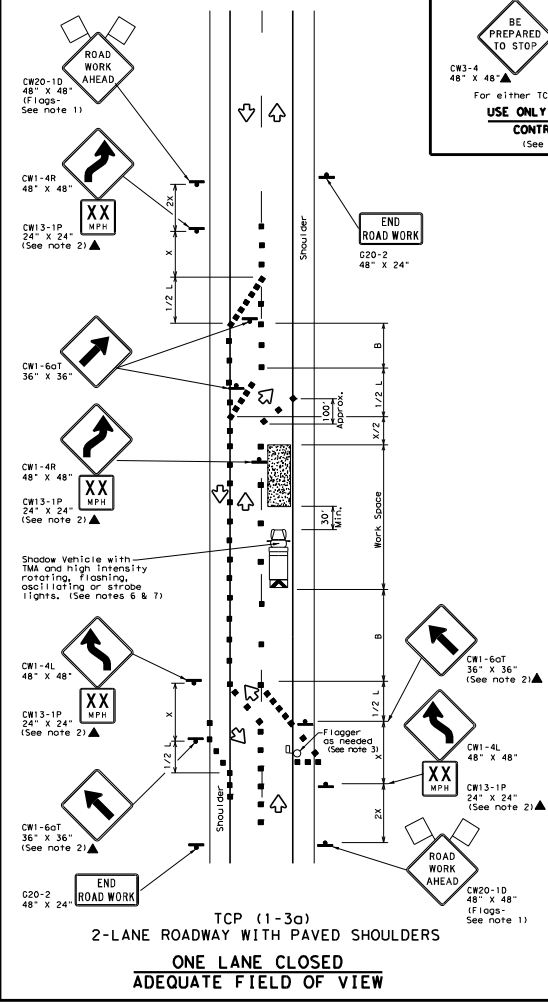
Texas Department of Transportation

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP (1-2) - 18

FILE: T01-2-18.dgn	DATE: 12/18/95	BY: [initials]	CHECKED: [initials]	DATE: [initials]
4-90 4-98 REVISIONS	6464 17 001	DIST: [initials]	COUNTY: [initials]	SHEET NO. [initials]
2-94 2-12	1-97 2-18	FILE: [initials]	DATE: [initials]	BY: [initials]

DISCUSSION: This use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Board of Professional Engineers, Architects, and Surveyors of the State of Texas.



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

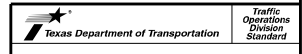
Posted Speed MPH	Formula	Minimum Desirable Taper Lengths M*			Suggested Maximum Spacing of Channelizing Devices On a Tangent		Minimum Spacing 'x'	Suggested Longitudinal Buffer Space "B"
		10' Offset	12' Offset	13' Offset	On a Tangent	Distance		
30	L + WS	150'	165'	180'	30'	60'	120'	90'
35	L + WS	205'	225'	245'	35'	70'	160'	120'
40	L + WS	265'	295'	320'	40'	80'	240'	155'
45	L + WS	450'	495'	540'	45'	90'	320'	195'
50	L + WS	500'	550'	600'	50'	100'	400'	240'
55	L + WS	550'	605'	660'	55'	110'	500'	295'
60	L + WS	600'	660'	720'	60'	120'	600'	350'
65	L + WS	650'	715'	780'	65'	130'	700'	410'
70	L + WS	700'	770'	840'	70'	140'	800'	475'
75	L + WS	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.
 - Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safety control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
 - DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
 - When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
 - 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.
 - Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers of 20', or 15' if posted speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

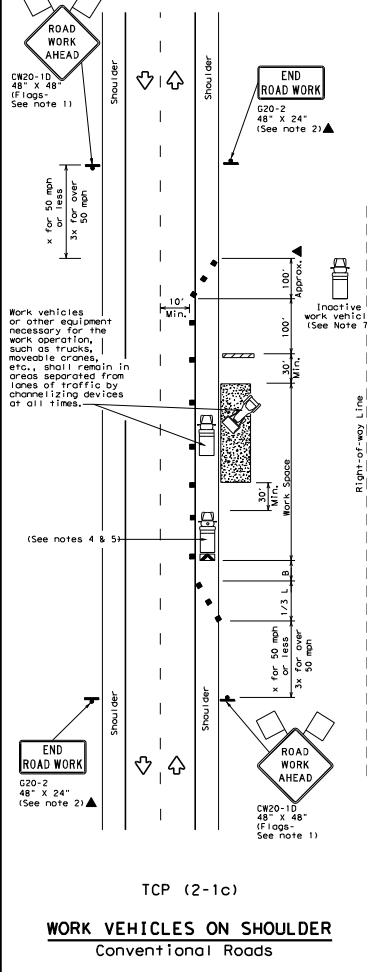
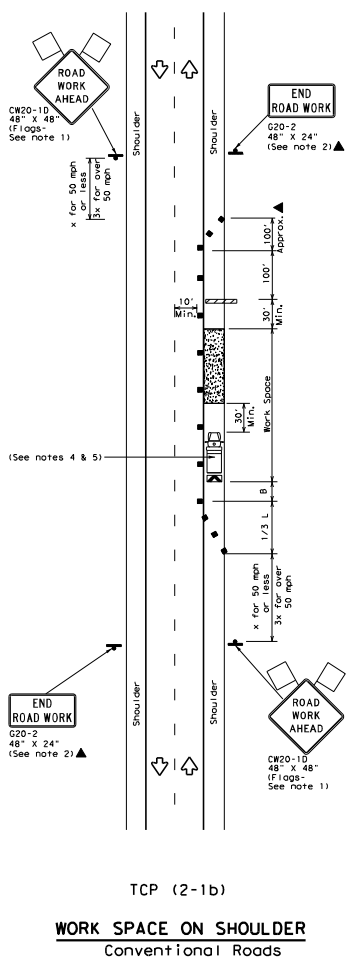
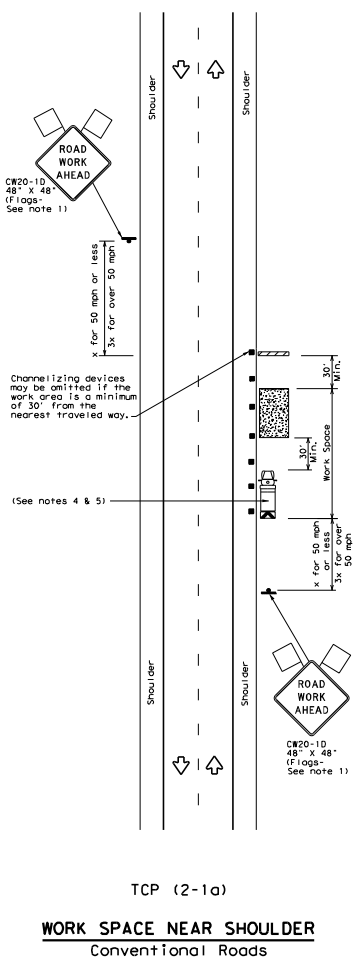


Traffic Operations Division Standard

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

Plan: TCP(1-3)-18, Sign	Rev:	Rev:	Rev:	Rev:
12/2007	December 1985	01	02	03
2-84	4-88	6-95	11-01	03/07, ETC.
8-95	2-12	01/01	COUNTY	SHEET NO.
1-01	2-18	1718	DATA, ETC.	9

DATE: FILE: DTS: LMSB: This use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the State of Texas for the use of this standard or for the consequences of its use.



Posted Speed		Formula			Minimum Desirable Taper Lengths (ft)		Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing		Suggested Longitudinal Buffer Space	
30	40	10'	11'	12'	On a Tangent	On a Curve	Distance	Sign Spacing	Distance	Sign Spacing	Distance	Sign Spacing
30	40	150'	165'	180'	30'	60'	120'	90'	120'	90'	120'	90'
35	45	205'	225'	245'	35'	70'	160'	120'	160'	120'	160'	120'
40	50	265'	295'	320'	40'	80'	240'	155'	240'	155'	240'	155'
45	55	450'	495'	540'	45'	90'	320'	195'	320'	195'	320'	195'
50	60	500'	550'	600'	50'	100'	400'	240'	400'	240'	400'	240'
55	65	550'	605'	660'	55'	110'	500'	295'	500'	295'	500'	295'
60	70	600'	660'	720'	60'	120'	600'	350'	600'	350'	600'	350'
65	75	650'	715'	780'	65'	130'	700'	410'	700'	410'	700'	410'
70	80	700'	770'	840'	70'	140'	800'	475'	800'	475'	800'	475'
75	85	750'	825'	900'	75'	150'	900'	540'	900'	540'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper (FT) W=Width of Face (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 stored in the plans, or for routine maintenance work, when approved by the Engineer.
- Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
- Show Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Show 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 Show Vehicle and TMA.
- Additional Show Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- See TCP(2-11) for shoulder work on divided highways, expressways and freeways.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- CW20-10 "SHOULDER WORK" signs may be used in place of CW20-10 "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

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

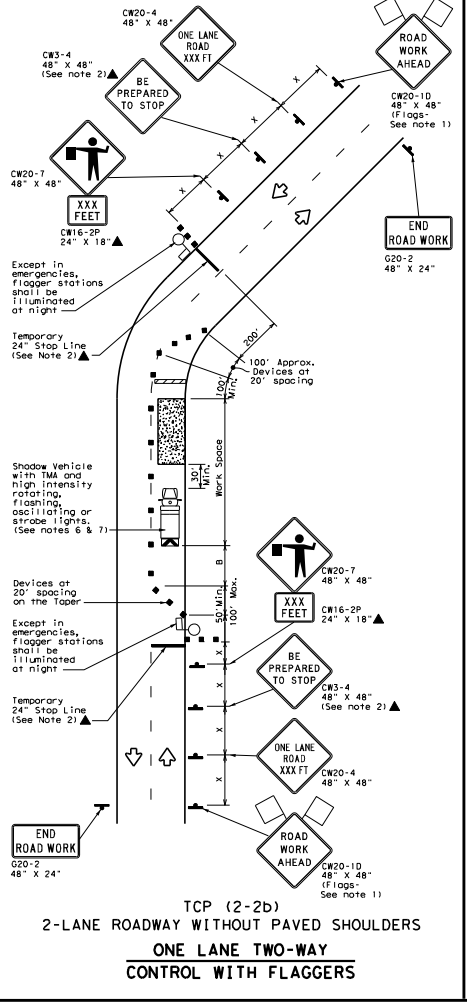
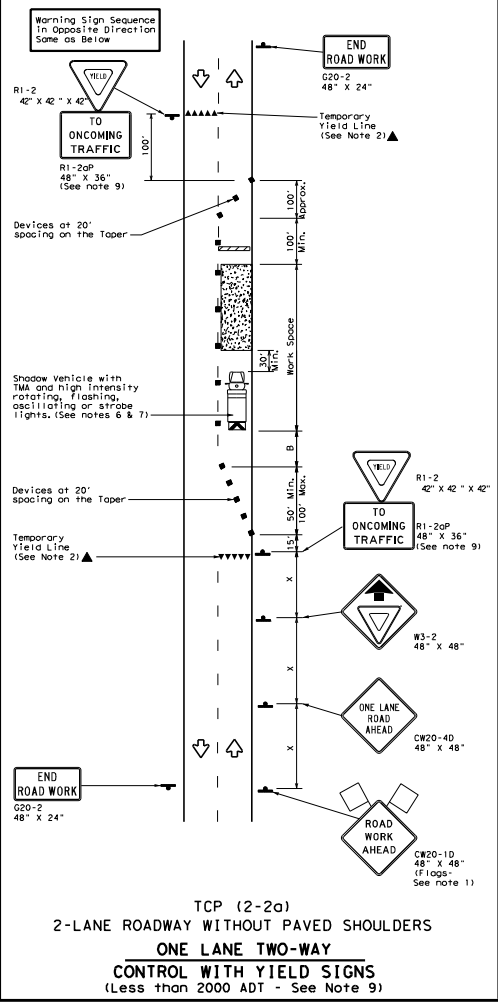
TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (2-1) - 18

Plan:	1020-1-18-001	Rev:	01	Date:	01/01/95
Drawn:	444	Checked:	77	Job:	001
Revised:	8-95	Revised:	2-12	County:	US 377, ETC.
Revised:	11-97	Revised:	2-18	City:	DAWTS, ETC.

1811

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

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

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

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

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

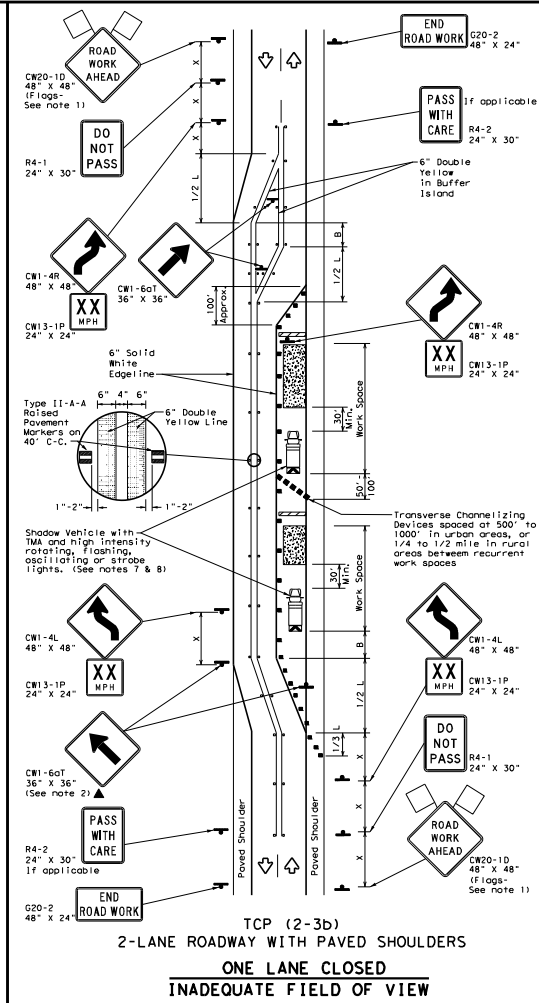
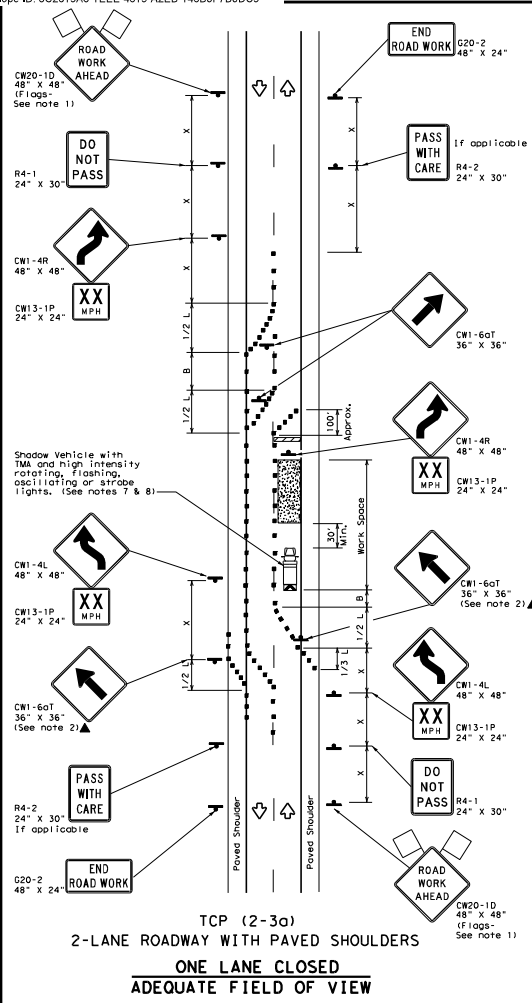
TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP (2-2) - 18

FILE: 1027-2-18.dgn	DATE: 04/05	BY: JTB	CHECKED: JTB
REVISED: 1995	DATE: 04/05	BY: JTB	CHECKED: JTB
REVISED: 1-91	DATE: 1-91	BY: JTB	CHECKED: JTB
REVISED: 4-89	DATE: 4-89	BY: JTB	CHECKED: JTB

1152

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Board of Professional Engineers, Architects, and Surveyors of the State of Texas for the use of this standard in other forms or for purposes not intended by the Board.



LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers 11-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths	Suggested Maximum Spacing of Channelizing Devices	Minimum Sign Spacing	Suggested Longitudinal Buffer Space
30	10' WS	150' 115' 120'	30'	120'	90'
35	L WS	205' 225' 245'	35'	160'	120'
40		265' 295' 320'	40'	240'	155'
45		450' 495' 540'	45'	300'	195'
50		500' 550' 600'	50'	400'	240'
55		550' 605' 660'	55'	500'	295'
60		600' 660' 720'	60'	600'	350'
65		650' 715' 780'	65'	700'	410'
70		700' 770' 840'	70'	800'	475'
75		750' 825' 900'	75'	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
				TCP (2-3a) ONLY

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
 - Flagger control shall NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
 - The R4-1 "DO NOT PASS," R4-2 "PASS WITH CARE," and construction regulatory speed zone signs may be installed within CW20-ID "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)
 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.

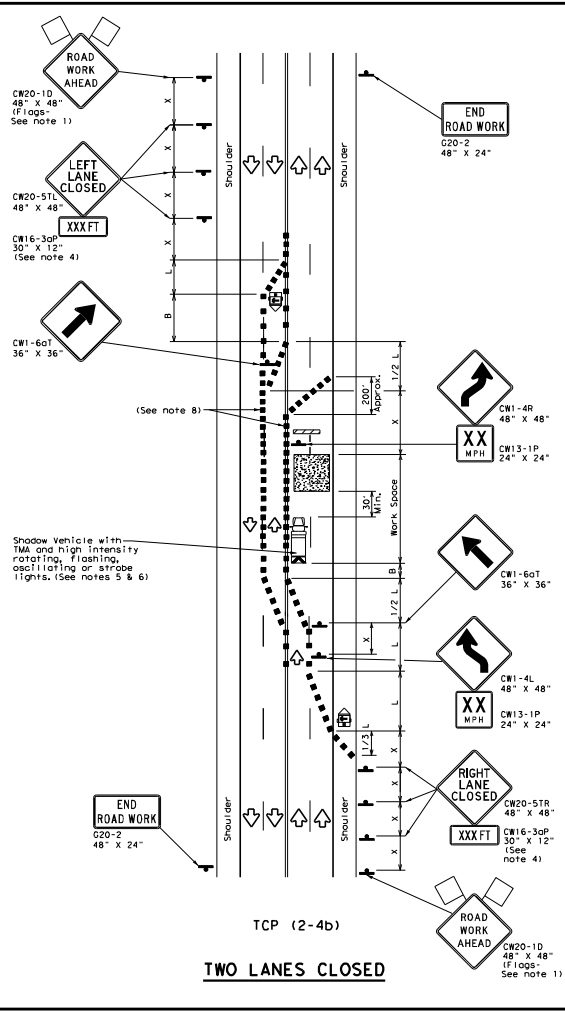
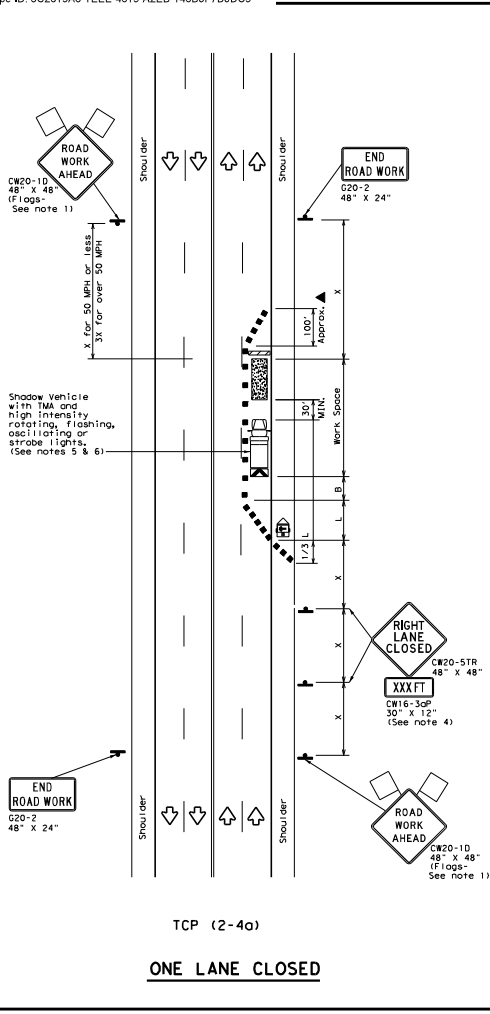


**TRAFFIC CONTROL PLAN
 TRAFFIC SHIFTS ON
 TWO-LANE ROADS**

TCP (2-3) - 23

Project	TCO(2-3) 23, 000	DATE	REV	BY	CHK
REVISED	APR 11 2023	DATE	REV	BY	CHK
12-85	4-98	2-18	6463	TF	081
8-95	3-03	4-23	0151	DMY	081
1-97	2-12		1153	FW	081, ETC.

DISC: T.M.A.S. is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by T.M.A.S. for the use of this standard in other than the intended application. T.M.A.S. is not responsible for any damages resulting from its use.



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

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

TYPICAL USAGE			
MOBILE	SHORT DURATION	SHORT 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 CW16-3p 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 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation Traffic Operations Division Standard

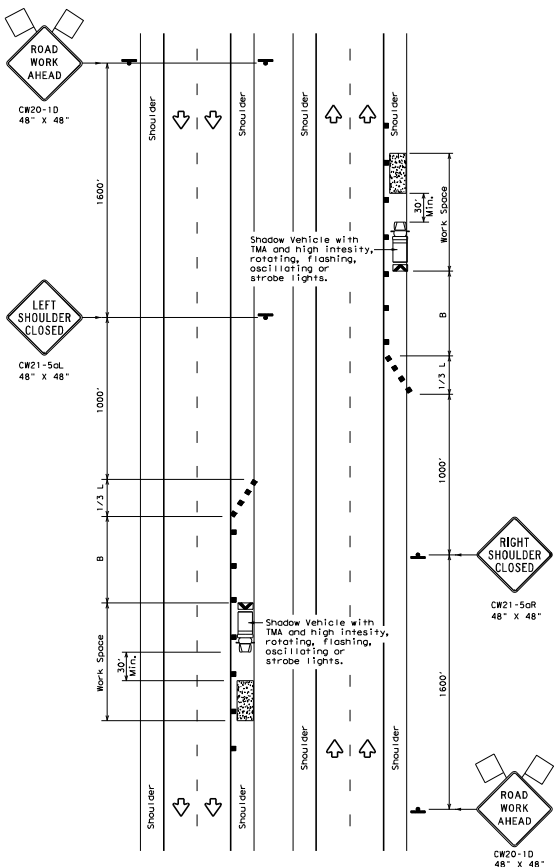
TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP (2-4) - 18

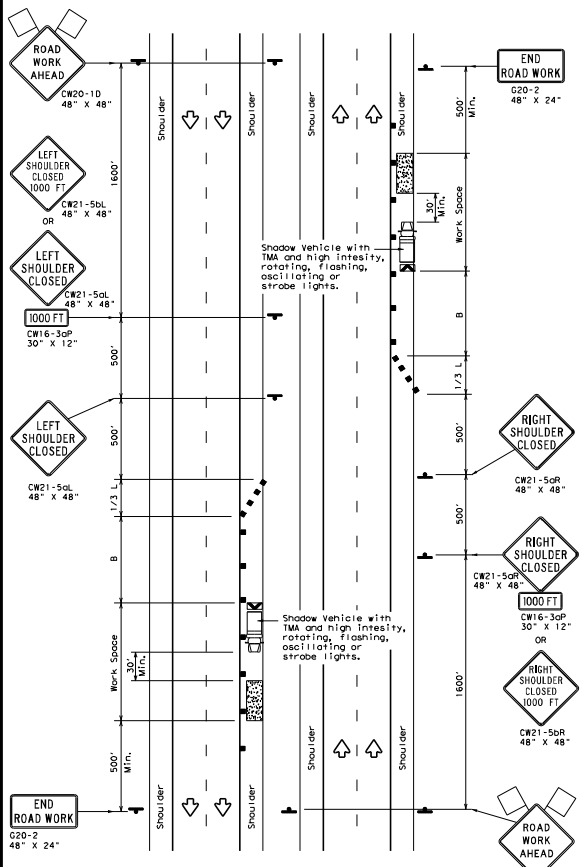
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DISC: ILMER
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TCP (5-1a)
WORK AREA ON SHOULDER



TCP (5-1b)
WORK AREA ON SHOULDER

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

Posted Speed (K)	Formula	Minimum Desirable Taper Lengths (ft)	Suggested Maximum Spacing of Channelizing Devices (ft)	Suggested Longitudinal Buffer Space (ft)
30	$L = \frac{S^2}{60}$	10', 11', 12'	On a tangent	90'
35		205', 225', 245'	On a tangent	120'
40		265', 295', 320'	On a tangent	155'
45		450', 495', 540'	On a tangent	195'
50		500', 550', 600'	On a tangent	240'
55		550', 605', 660'	On a tangent	295'
60		600', 660', 720'	On a tangent	350'
65		650', 715', 780'	On a tangent	410'
70		700', 770', 840'	On a tangent	475'
75		750', 825', 900'	On a tangent	540'
80		800', 880', 960'	On a tangent	615'

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

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

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



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

TCP (5-1) - 18

FILE: 1005-11-18.dgn	DATE: _____	BY: _____	CHK: _____	APP: _____
REVISED: February 2012	DATE: _____	BY: _____	CHK: _____	APP: _____
REVISIONS:	NO.	DATE	BY	REASON
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DATE:	BY:	CHK:	APP:	SHEET NO.
_____	_____	_____	_____	18

DISCUSS: The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by the Texas Department of Transportation for any damages resulting from its use.
 DATE: FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.


WORKER SAFETY NOTES:

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

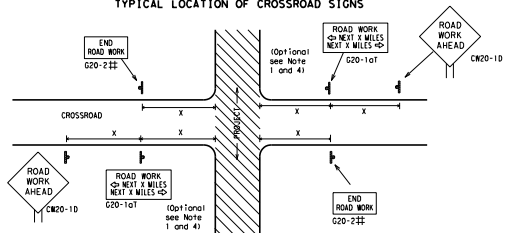
COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

		Traffic Safety Division Standard
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS		
BC (1) - 21		
FILE: SC-21.dgn	DATE: November 2002	ISSUED BY: [blank]
NO. 4-03	REV. 7-12	DATE: 4-03
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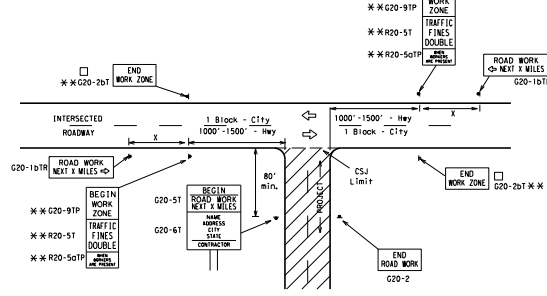
TYPICAL LOCATION OF CROSSROAD SIGNS



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1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a (G20-21) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" "ROAD WORK AHEAD" (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-21) 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 MUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES" (G20-10T) sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricade for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow (G20-10TL) and "ROAD WORK NEXT X MILES" right arrow (G20-10TR) 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 "x"
CW20 ¹	48" x 48"	48" x 48"	30	120
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	55	500 ²
CW3, CW4, CW5, CW6, CW-3, CW10, CW12			60	600 ²
			65	700 ²
	70	800 ²		
	75	900 ²		
	80	1000 ²		
	*	*	*	*

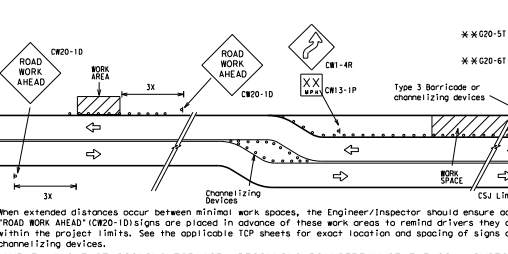
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (MUTCD) typical application diagrams or TDP Standard Sheets.

¹ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

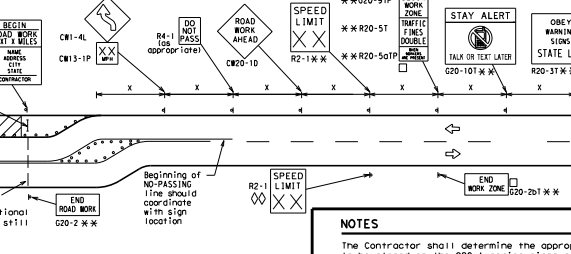
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may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

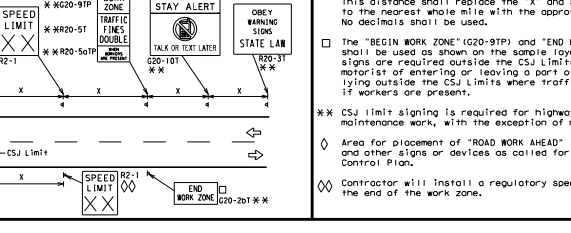


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TDP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

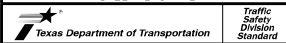


NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-10T) 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" (G20-21E) signs shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
- CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
- Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
- Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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



BARRICADE AND CONSTRUCTION PROJECT LIMIT

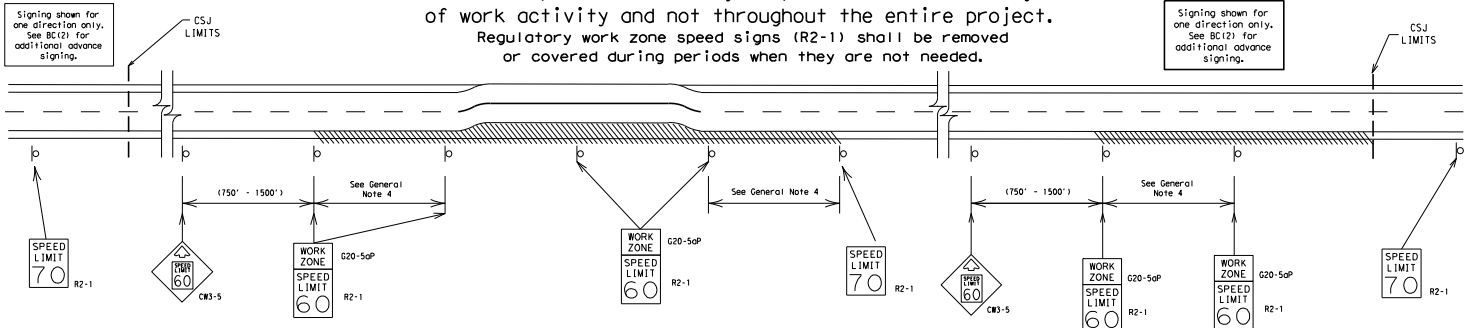
BC (2) - 21

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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

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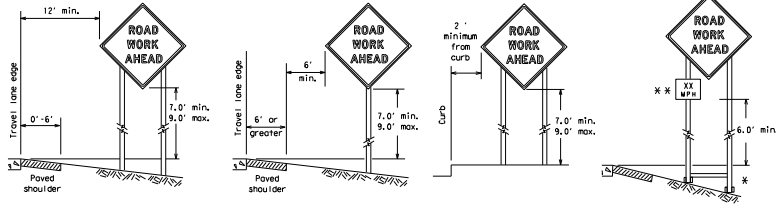
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) - 21

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DATE	11/01/02	NOVEMBER 2002	CONV	RECL	JOB	WSPHAW			
REV	1	DESCRIPTION	DATE	BY	CHK	APP	US377,ETC.		
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	7-13	5-21							
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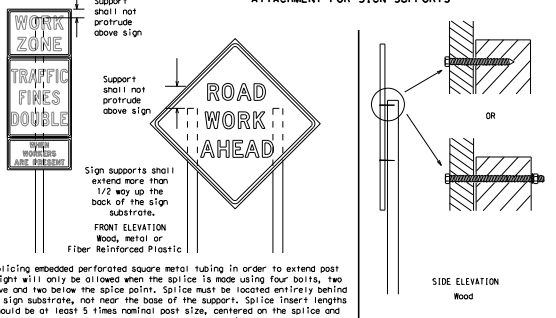
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* 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 shall be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS

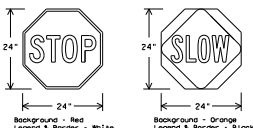


Attachment to wooden supports will be by bolts and nuts or screws. Use 1X001's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports.

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.

STOP/SLOW PADDLES

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



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

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LO20), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large outdoor signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMO Standard sheets. The signs shall meet the required mounting heights shown on the BC sheets or the SMO Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
4. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRs standard sheets or the CRZCD list. The signs shall meet the required mounting heights shown on the BC, or the SMO standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
5. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A₁ shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B₁ or Type C₁, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as fire 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 CWZCD 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 ropes, 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 skids.

FLAGS ON SIGNS

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

SHEET 4 OF 12

Texas Department of Transportation
Traffic Safety Division
Standards

**BARRICADE AND CONSTRUCTION
TEMPORARY SIGN NOTES**

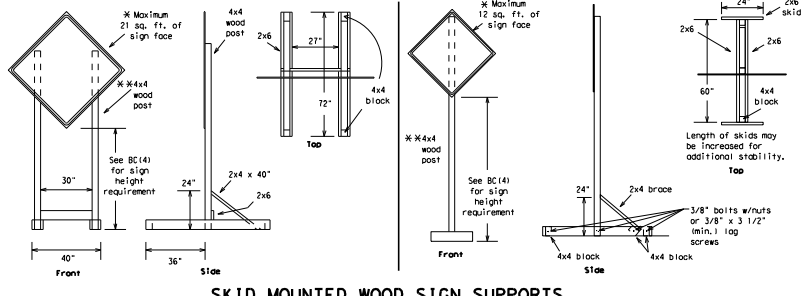
BC (4) - 21

FILE#	DATE	BY	CHKD	APP	REV	DATE	BY	CHKD	APP
14001	November 2002	09M	14001	09M	14001	09M	14001	09M	14001
4485	7/1	001	001	001	001	001	001	001	001
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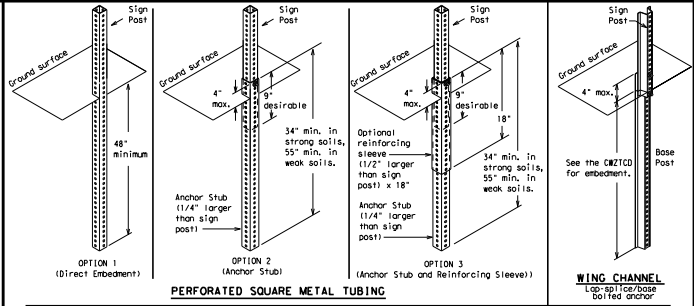
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or omissions resulting from its use.

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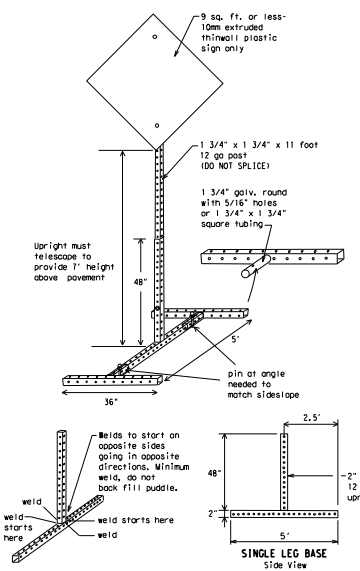


SKID MOUNTED WOOD SIGN SUPPORTS
 * LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

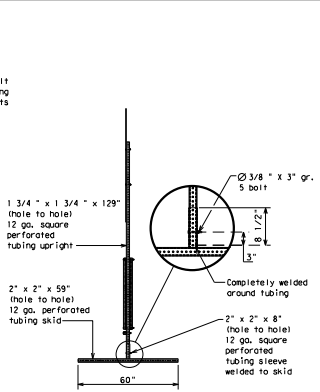
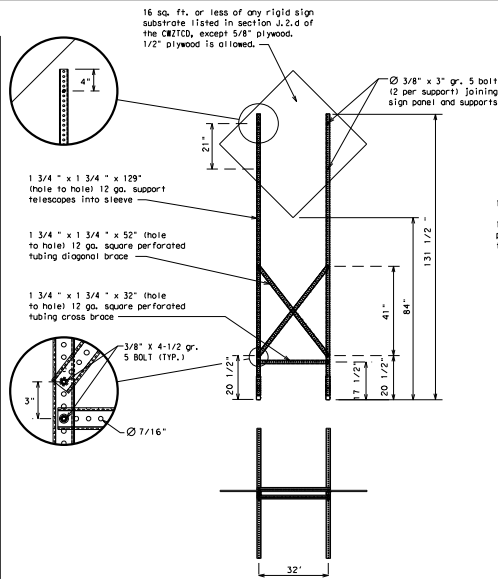


GROUND MOUNTED SIGN SUPPORTS

Refer to the CRZTCO 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. Use web address for "Traffic Engineering Standard Sheets" on BC(11).

OTHER DESIGNS
 MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CRZTCO 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 CRZTCO List.
 3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.
- * See BC(4) for definition of "Work Duration."
 * Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.
 See the CRZTCO 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

FILE:	bc-21.dgn	REV:	1x001	DATE:	11/07	BY:	1x001	CHK:	1x001	
DATE:	November 2002	CON:	BC(1)	JOB:	W04wv	REV:	11	001	ISSUE:	ETC.
DATE:	8-14	REV:	001	ISSUE:	001	DATE:	8-14	REV:	001	ISSUE:
DATE:	5-21	REV:	001	ISSUE:	001	DATE:	5-21	REV:	001	ISSUE:

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

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 phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED. NEXT use the term "RAMP".
- Always use the route or Interstate designation (I, US, SH, FM) along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line. Do not use the word "danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the table.
- PCMS character height should be at least 18 inches for trailer mounted units. They should be legible from at least 1/2 (1/2) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT
RIGHT X LANES CLOSED	RIGHT X LANES OPEN
CENTER LANE CLOSED	DAYTIME LANE CLOSURES
NIGHT LANE CLOSURES	1-XX SOUTH EXIT CLOSED
VARIOUS LANES CLOSED	EXIT XXX X MILE
EXIT CLOSED	RIGHT LN CLOSED
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI
XXXXXXX BLDV 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 XXXX RD EXIT
USE EXIT XXX	USE EXIT 1-XX NORTH
STAY ON US XXX SOUTH	USE 1-XX E TO 1-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
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
XXXXXX TO XXXXXX	RIGHT LANE EXIT
US XXX TO FM XXXX	USE CAUTION
	DRIVE SAFELY
	DRIVE WITH CARE
	WATCH FOR WORKERS

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
WATCH FOR WORKERS	

** 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 TUE AUG XX
TONIGHT XX PM-XX AM	

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the "Flagger Symbol" (0820-7) 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 8011, for the same size arrow.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCESS RD	Major	MAJ
Altitude	ALT	Mile	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MIN
Shoulder	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Control	CNTRL	North	NORTH
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PARKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DO NOT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHOULDR
Emergency	EMR	Slippery	SLIP
Emergency Vehicle	EMR VEH	South	SOUTH
Entrance	ENTR	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPRT	Street	ST
XXX Feet	XXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	TELEPHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FRWY BLD	Thursday	THURS
Friday	FRI	To Downtown	TO DOWNTN
Hazardous Driving	HZ DRIVING	Traffic	TRAF
Hazardous Material	HZMNT	Travelers	TRVLRS
High Occupancy	HOV	Tuesday	TUESDAY
Vehicle	VEH	Time Minutes	TIME MIN
Hour(s)	HRS, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHs
It Is	ITS	Warning	WARN
Interchange	INTCH	Weight	WGT
Left Lane	LEFT LN	Weight Limit	WT LMIT
Lower Level	LRV LEVEL	West	WEST
Maintenance	MAINT	Westbound	(route) W
		West Point	WEST POINT
		Will Not	WONT

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

SHEET 6 OF 12

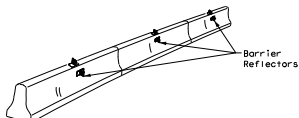


BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

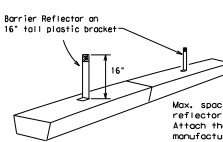
BC (6) - 21

FILED	NO. 71-001	REV. 1-007	REV. 7-001	REV. 1-001	REV. 1-001
REVISED	November 2002	096	1001	008	10000
9-07	8-14	6463	71	001	00373, ETC.
7-13	5-21	6151	COUNTY		SHEET NO.
		FTW	04476, ETC.		21

- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of EMS-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 MUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)



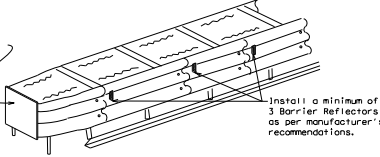
LOW PROFILE CONCRETE BARRIER (LPCB)

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 & M (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 CRITCO list for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
- Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (B)-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.

WARNING LIGHTS

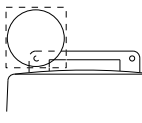
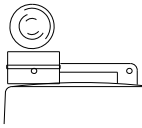
- Warning lights shall meet the requirements of the MUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A/Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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 B₁ or C₁ sheeting meeting the requirements of Departmental Material Specification 985-8300.
- 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.

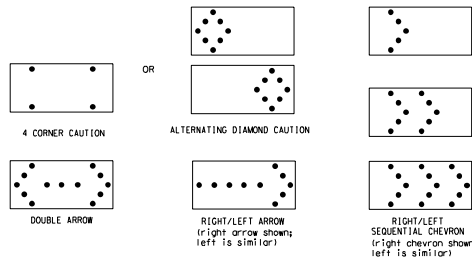
WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

- 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 CRITCO.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
- The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.



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

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



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
- The sequential arrow display is NOT ALLOWED.
- The Flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- A full matrix PDM 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 CRITCO for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CRITCO 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 on extended distance from the TMA.



Texas Safety Division Standard

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

BC (7) - 21

FILE:	REV:	DATE:	BY:	CHKD:	APP'D:	DESCRIPTION:
bc-21.dgn	01	11/01/02	...	...	...	...
01/10/01	November 2002	...	...	...	...	...
9-07	8-14	...	...	...	...	...
7-13	5-21	...	...	...	...	...

DISCLAIMER: This drawing 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 units. It is the user's responsibility to check all dimensions, including those in feet. DATE: FILE:

GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
- For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
- Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTD).
- 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

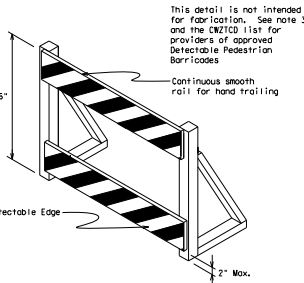
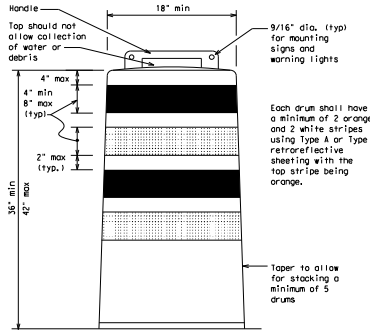
- Pre-qualified plastic drums shall meet the following requirements:
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
 - The body and base shall lock together in such a manner that the body separates from the base when impacted 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 ultraviolet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
 - Drum body shall have a maximum unbolasted 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 delimiting, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

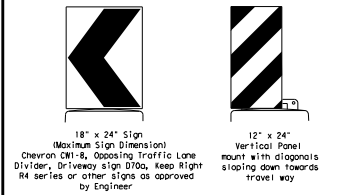
BALLAST

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



DETECTABLE PEDESTRIAN BARRICADES

- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to BC(8)-21 for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
- Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
- Logs, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
- Warning lights shall not be attached to detectable pedestrian barricades.
- Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.

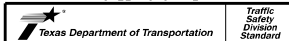


Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B₁ or Type C₁ 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 (nominal) nut and two washers, and one locking washer for each connection.
- Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
- R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12



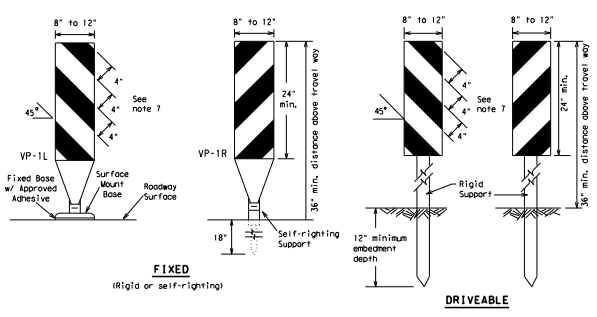
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 21

FILE	NO.	DATE	BY	CHKD	SECT	JOB	POST	NO.
1001	NOVEMBER	2002						
4-03	8-14	9-07	5-21					
103								23

DECLARATION: This proposal is submitted by the "Texas Engineering Practice Act". No part of any sign is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or omissions resulting from this use.

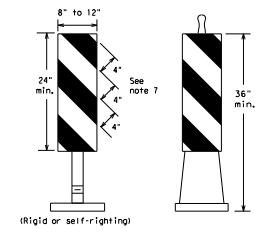
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FIXED
(Rigid or self-righting)

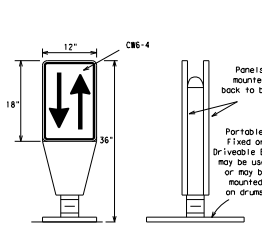
DRIVEABLE

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



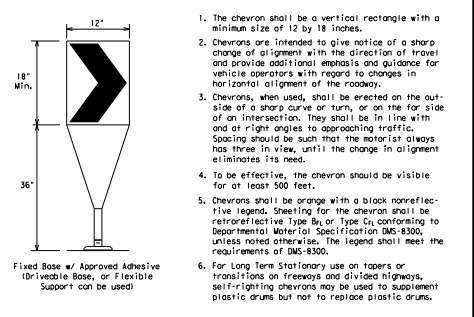
PORTABLE
(Rigid or self-righting)

VERTICAL PANELS (VPs)



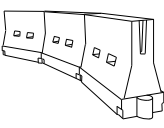
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
- The OTLD may be used in combination with 42° cones or VP's.
- Spacing between the OTLD shall not exceed 500 feet. 42° cones or VP's 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 B₁ or Type C₁ conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



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

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 CRZTCO 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(1) 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 CRZTCO list.
- Water ballasted systems used as barriers shall not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long 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" (CRZTCO).
- The Contractor shall maintain devices in a clean condition and replace damaged, non-reflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
- Pavement bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
- The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed	Formula	Minimum Desirable Taper Lengths (ft.)			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	12' Offset	15' Offset	On a Taper	On a Tangent
30	L = WS	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'	

*36 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

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 21

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2	7-13 5-21	276			DATE, ETC. 24

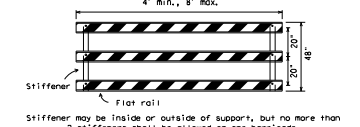
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TYPE 3 BARRICADES

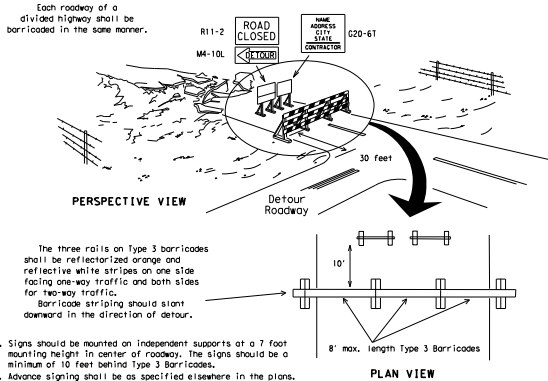
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions toward the center of roadway.
4. Striping of rolls, 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 rolls. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, consistency 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 roll's reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



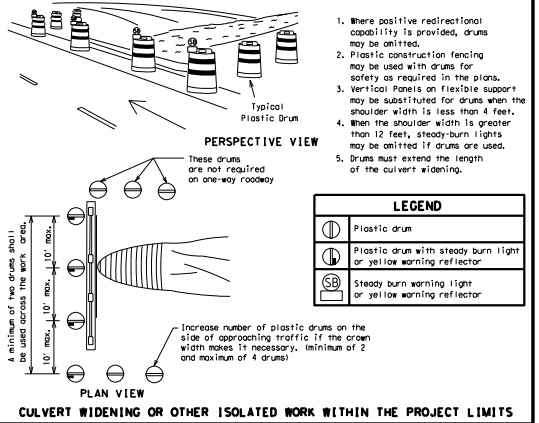
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION

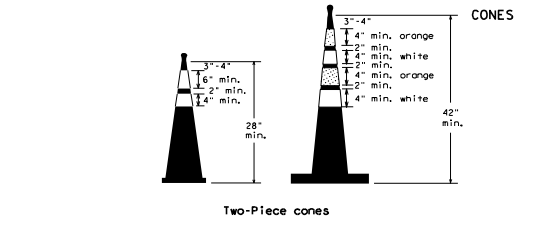
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 barricades.
2. Advance signing shall be as specified elsewhere in the plans.



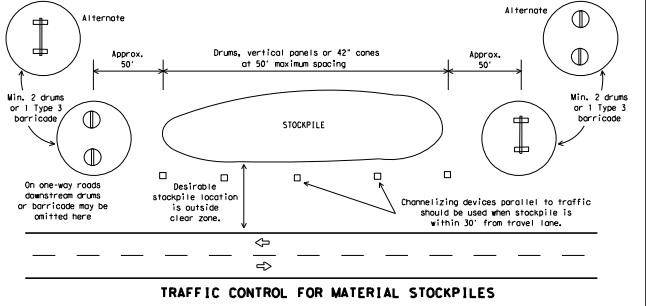
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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

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



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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown. In order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

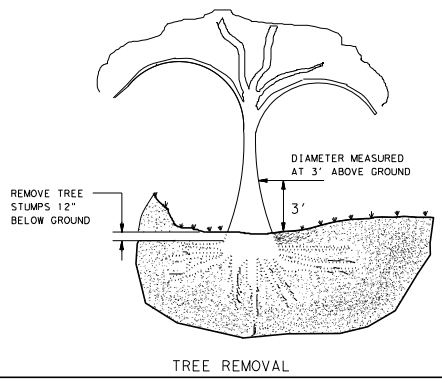
SHEET 10 OF 12

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

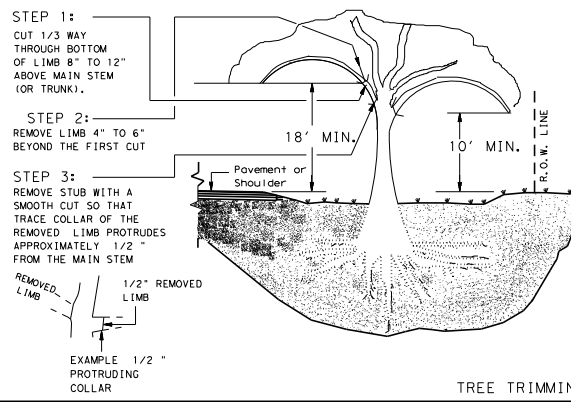
BC (10) - 21

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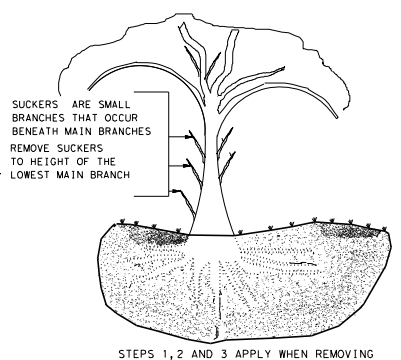
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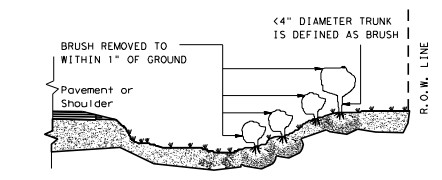
TREE REMOVAL



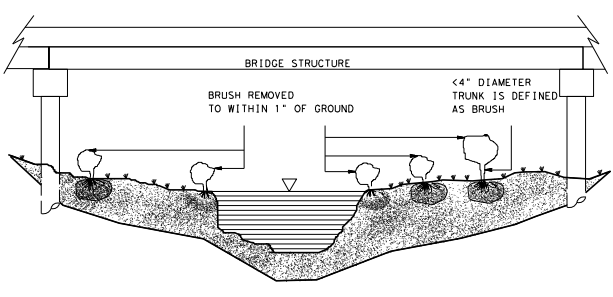
TREE TRIMMING



STEPS 1, 2 AND 3 APPLY WHEN REMOVING LIMBS 2" IN DIAMETER OR LARGER.



BRUSH REMOVAL



BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL

GENERAL NOTES:

TREE TRIMMING

1. TRIM AND REMOVE ALL TREE LIMBS ON THE PAVEMENT SIDE OF THE TRUNK 18' ABOVE THE PAVEMENT OR BRIDGE DECK ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.
2. TRIM AND REMOVE ALL TREE LIMBS BETWEEN THE TRUNK AND R.O.W. LINE 10' ABOVE NATURAL GROUND, TERRAIN OR OTHER STRUCTURE ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.
3. FOR TREES MARKED FOR REMOVAL, THE DIAMETER OF TREES ARE DETERMINED BY MEASUREMENT OF THE TRUNK CIRCUMFERENCE 3' ABOVE THE GROUND. TREES WITH TRUNKS OF LESS THAN 4" DIAMETER ARE CONSIDERED TO BE BRUSH. TREES WITH MULTIPLE TRUNKS AT THE POINT OF MEASUREMENT ARE MEASURED AND PAID FOR SEPARATELY.
4. MEASUREMENTS FOR PAYMENT OF TREE DIAMETERS ARE DIVIDED INTO THE RANGES SHOWN IN TABLE 1.

PAY ITEM	RANGE FOR PAY ITEMS			
	TRUNK DIAMETER *		TRUNK CIRCUMFERENCE	
	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO
752 6005	4	12	12 1/2	37 1/2
752 6006	12	18	37 1/2	56 1/2
752 6007	18	24	56 1/2	75 1/2
752 6008	24	30	75 1/2	94
752 6009	30	36	94	113
752 6010	36	42	113	132
752 6011	42	48	132	151
752 6012	48	60	151	188 1/2
752 6013	60	72	188 1/2	226
752 6019	72	84	226	264
	84	GREATER THAN 84	264	NOT APPLICABLE

*SEE GENERAL NOTE #3.

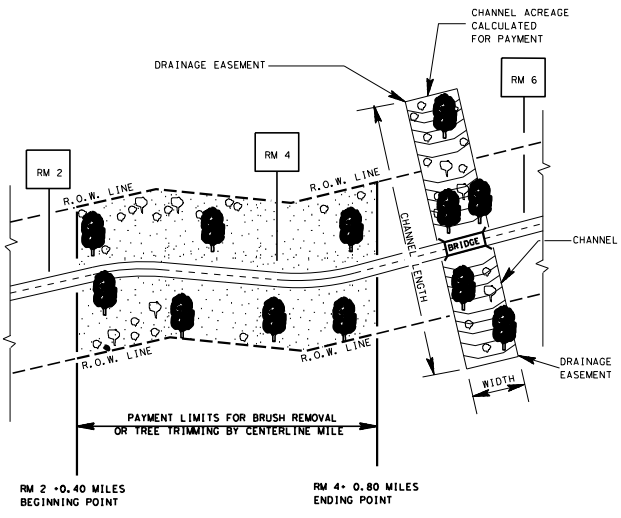
Maintenance Division Standard

TREE AND BRUSH REMOVAL

TRB-15(1)

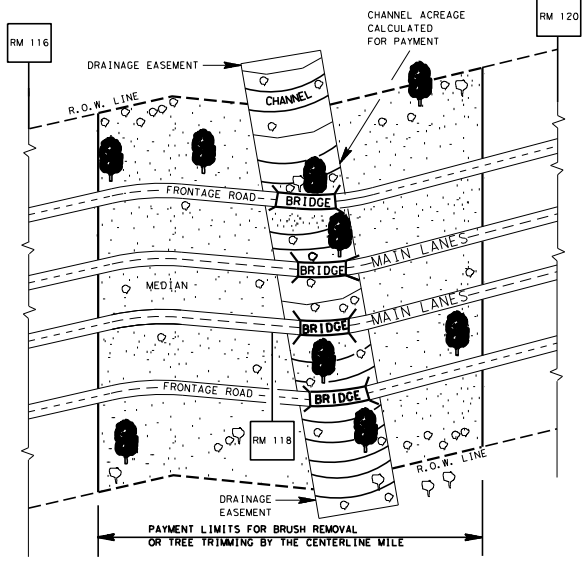
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01001 MARCH 2015	0001			
REVISIONS	NO.	DATE	BY	DESCRIPTION
PROJECT NO.	COUNTY	CITY	SHEET NO.	

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BRUSH REMOVED TO WITHIN 1" OF GROUND <4" DIAMETER TRUNK IS DEFINED AS BRUSH UNLESS OTHERWISE DIRECTED

EXAMPLE: UNDIVIDED HIGHWAY



BRUSH REMOVED TO WITHIN 1" OF GROUND <4" DIAMETER TRUNK IS DEFINED AS BRUSH UNLESS OTHERWISE DIRECTED

EXAMPLE: DIVIDED HIGHWAY WITH FRONTAGE ROADS

GENERAL NOTES:

TREE TRIMMING AND BRUSH REMOVAL

1. PAYMENT BY THE CENTERLINE MILE IS MADE TO THE NEAREST 1/100 (0.01) MILE.
2. LIMITS OF WORK ARE SHOWN AS DISTANCES FROM REFERENCE MARKERS (RM).
3. PAY ITEMS BY THE CENTERLINE MILE INCLUDE ALL TREE TRIMMING OR BRUSH REMOVAL IN THE RIGHT OF WAY ON BOTH SIDES OF THE HIGHWAY. FOR DIVIDED HIGHWAYS, THE MEDIAN IS INCLUDED. FOR HIGHWAYS WITH FRONTAGE ROADS, THE AREAS BETWEEN THE FRONTAGE ROADS AND MAIN LANES, AND THE AREAS OUTSIDE OF THE FRONTAGE ROADS ARE INCLUDED.
4. BRUSH REMOVAL AND TREE TRIMMING UNDER BRIDGES, IN AND ALONG CHANNELS AND EASEMENTS ARE PAID FOR BY THE ACRE FOR AREAS DESIGNATED ON THE PLANS.



TREE AND BRUSH REMOVAL
TRB-15(2)

NOT TO SCALE	DATE	BY	CHKD	APP'D	SHEET NO. 2
FILE: TRB-15(2).DGN	5/13/2004	LJB	FTM	JEO	21
© TxDOT APRIL 2015					
REVISED: 5/13/2004	LJB	FTM			21
REVISED: 9/24/2004	LJB				
REVISED: APRIL 2015	JEO				

LEVELS DISPLAYED	
1	

Certificate Of Completion

Envelope Id: 3C2619A81EEE4619A2EB146B0F7B0DC9

Status: Completed

Subject: Complete with DocuSign: 646577001_Erath.pdf

Source Envelope:

Document Pages: 30

Signatures: 4

Envelope Originator:

Certificate Pages: 2

Initials: 0

Deena Corley

AutoNav: Enabled

125 E. 11th Street

Envelopeld Stamping: Enabled

Austin, TX 78701

Time Zone: (UTC-06:00) Central Time (US & Canada)

DCORLE-C@txdot.gov

IP Address: 204.64.21.251

Record Tracking

Status: Original

Holder: Deena Corley

Location: DocuSign

6/27/2024 3:24:52 PM

DCORLE-C@txdot.gov

Security Appliance Status: Connected

Pool: StateLocal

Storage Appliance Status: Connected

Pool: Texas Department of Transportation

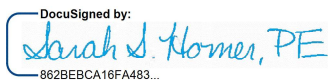
Location: DocuSign

Signer Events

Signature

Timestamp

Sarah Horner

DocuSigned by:

 862BEBCA16FA483...

Sent: 6/27/2024 3:30:03 PM

Sarah.Horner@txdot.gov

Viewed: 6/27/2024 3:31:39 PM

Area Engineer

Signed: 6/27/2024 3:31:49 PM

Texas Department of Transportation

Signature Adoption: Uploaded Signature Image

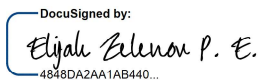
Security Level: Email, Account Authentication (Optional)

Using IP Address: 204.64.21.234

Electronic Record and Signature Disclosure:

Not Offered via DocuSign

Elijah Zelenov P. E.

DocuSigned by:

 4848DA2AA11AB440...

Sent: 6/27/2024 3:31:56 PM

Elijah.S.Zelenov@txdot.gov

Viewed: 6/27/2024 4:13:18 PM

DME

Signed: 6/27/2024 4:13:26 PM

Texas Department of Transportation

Signature Adoption: Pre-selected Style

Security Level: Email, Account Authentication (Optional)

Using IP Address: 166.137.171.60

Signed using mobile

Electronic Record and Signature Disclosure:

Not Offered via DocuSign

Janet Crawford

DocuSigned by:

 1FDBBDF41B5F486...

Sent: 6/27/2024 4:13:33 PM

janet.crawford@txdot.gov

Viewed: 6/27/2024 4:21:40 PM

Area Engineer

Signed: 6/27/2024 4:21:53 PM

Texas Department of Transportation

Signature Adoption: Pre-selected Style

Security Level: Email, Account Authentication (Optional)

Using IP Address: 204.64.21.247

Electronic Record and Signature Disclosure:

Not Offered via DocuSign

In Person Signer Events

Signature

Timestamp

Editor Delivery Events

Status

Timestamp

Agent Delivery Events

Status

Timestamp

Intermediary Delivery Events

Status

Timestamp

Certified Delivery Events

Status

Timestamp

Carbon Copy Events	Status	Timestamp
Gina Johannessen Gina.Johannessen@txdot.gov Construction Recordkeeper Texas Department of Transportation Security Level: Email, Account Authentication (Optional)	COPIED	Sent: 6/27/2024 4:22:01 PM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		

Witness Events	Signature	Timestamp
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Notary Events	Signature	Timestamp
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Envelope Summary Events	Status	Timestamps
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Envelope Sent	Hashed/Encrypted	6/27/2024 3:30:03 PM
Certified Delivered	Security Checked	6/27/2024 4:21:40 PM
Signing Complete	Security Checked	6/27/2024 4:21:53 PM
Completed	Security Checked	6/27/2024 4:22:01 PM

Payment Events	Status	Timestamps
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