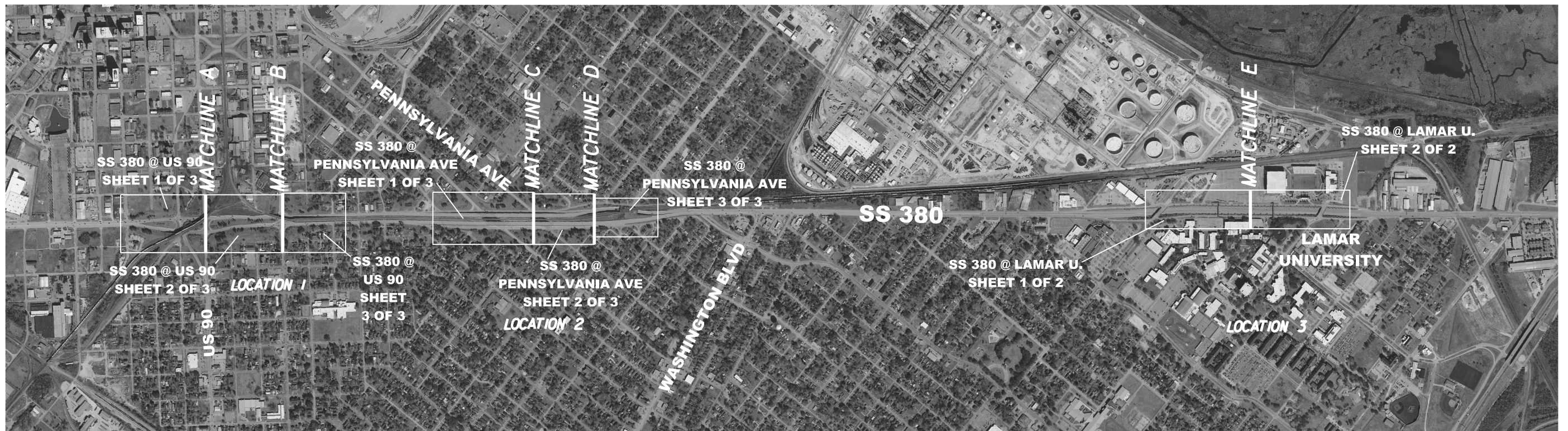








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LOCATIONS 1-3 - BEAUMONT

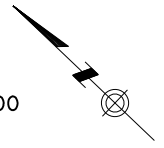
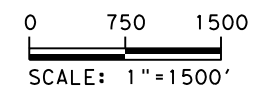


08/02/2021

**SS 380  
 BEAUMONT**

**PROJECT LAYOUT**

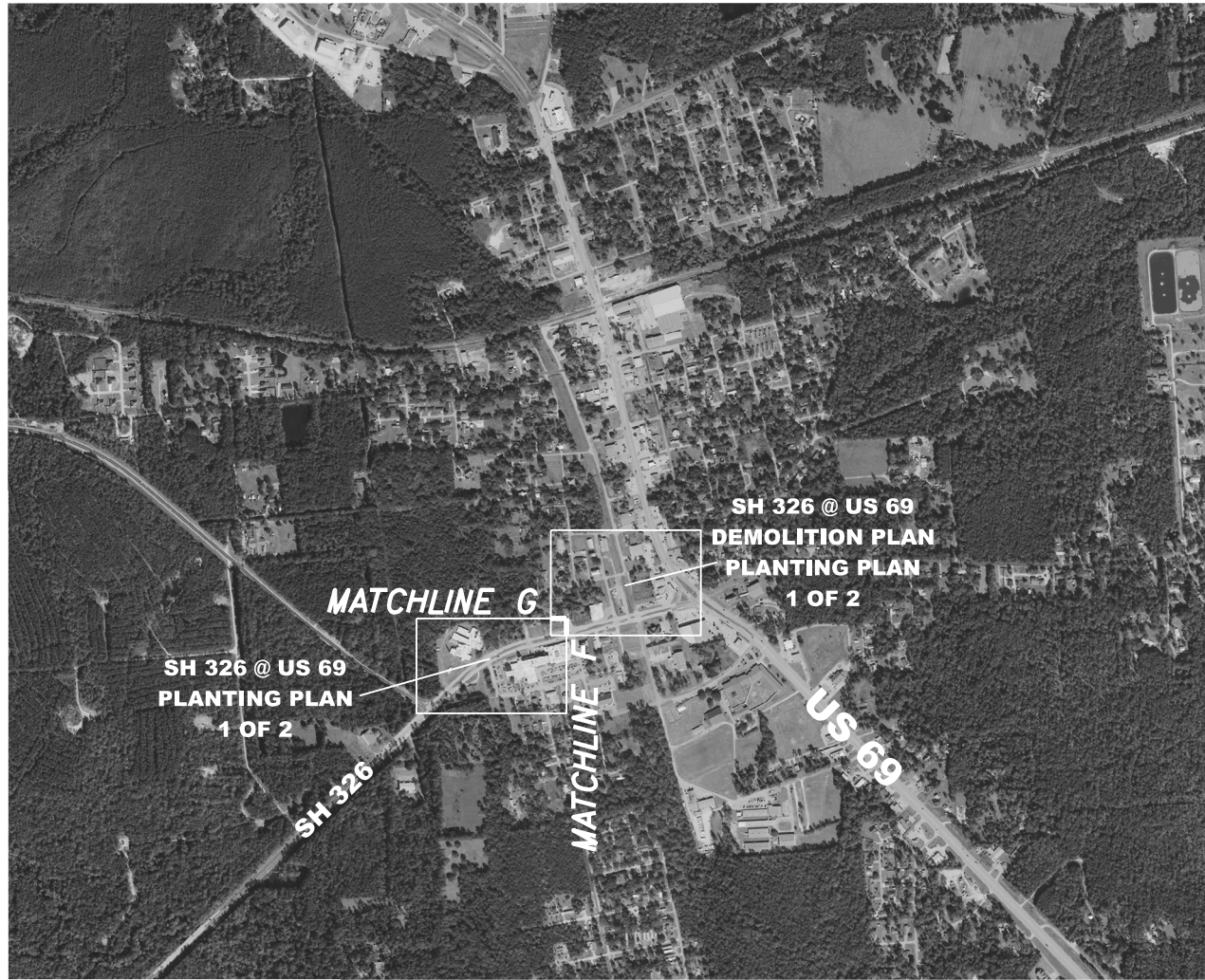
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 SHEET 1 OF 2



FEDERAL AID PROJECT NO.		SHEET NO.	
SEE TITLE SHEET		3	
STATE	DISTRICT	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.



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LOCATION 4 - KOUNTZE



LOCATION 5 - MAURICEVILLE



08/02/2021

**US 69 & SH 62  
 KOUNTZE &  
 MAURICEVILLE  
 PROJECT LAYOUT**

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 SHEET 2 OF 2

0 750 1500  
 SCALE: 1" = 1500'



FEDERAL AID PROJECT NO.		SHEET NO.	
SEE TITLE SHEET		4	
STATE	DISTRICT	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.



**GENERAL NOTES:**

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

Name Joe Seago  
Joe.Seago@txdot.gov

Name Kevin Grissom  
Kevin.Grissom@txdot.gov

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

All contractor questions will be reviewed by the Area Engineer or Assistant Area Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following Address:  
<https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/>

All questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

Locate boundary of planting areas and stake or mark locations of planting and prep areas for approval of the Engineer prior to commencing any digging or planting activities. See planting sheets for planting details, specifications, and spacing.

Plant material must be planted so as not to interfere with the sight lines of traffic signs, traffic signals or street lighting with consideration to future growth potential of the plant material. Plant material must not be placed where it may impede drainage in existing or proposed swales or channels. Field adjustments of planting locations may be approved or as directed by the Engineer.

Assume full responsibility for the preservation of all sod, shrubbery, and trees at the site during construction. Carefully preserve and replace, in their original position, all sod and shrubbery removed. Replace all Contractor damaged sod or shrubbery at the Contractor's own expense.

Flammable/combustible materials must be stored at a designated location as approved. Do not store flammable/combustible materials under or adjacent to Bridge class structures. Daily removal of these materials will be considered incidental work.

**Item 7 Legal Relations and Responsibilities**

Furnish all materials, labor and incidentals required to provide for traffic across the highway and for temporary ingress and egress to private property in accordance with article 7.5 of the standard specifications at no additional cost to the state. Maintain ingress and egress to the adjacent property at all times. Consider this work to be subsidiary to the various bid items of the contract.

The disturbed area in this project, all project locations in the contract, and the contractor project specific locations (PSLs), within 1 mile of the project limits, for the contract will further establish the authorization requirements for storm water discharges. When the total area disturbed in the contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the contractor NOI for PSLs on the row to the engineer.

No significant traffic generator events have been identified.

**Item 8 Prosecution and Progress**

Compute and charge working days in accordance with Section 8.3.1.4, "Standard Workweek".

Time charges end following the completion of tree planting. Time will be suspended during the 90-day maintenance period and 9-month establishment period.

Lane closures will be restricted to the hours between 9:00 am and 3:00 pm.

**HURRICANE**

In the event of the declaration of a hurricane watch, warning, other severe weather warning or national or state emergency that requires the roadways in the vicinity be used as evacuation routes, cease all work that requires the Contractor's, sub-contractors' or material suppliers' vehicles to enter the stream of traffic on these primary or secondary evacuation routes. This work includes material hauling and delivery, and mobilization or demobilization of equipment.

**Item 100 Preparing ROW**

Preparing ROW in the areas marked in the plans according to the following: Remove any stakes from previous plantings, Remove and replace dead trees or shrubs, Mow (one time before planting), Re-Mulch existing plants, Prune trees in accordance with Roadside Vegetation Management Manual, Chapter 4 (for Health of the Vegetation, Aesthetic Considerations and other Tree-Specific Reasons), and Prepare areas for further planting. At the SS 380 & Mauriceville locations, the purpose of new plantings is to naturalize/reforest Prep ROW area, reduce future maintenance, and enhance the aesthetics of the locations. Coordinate with the Engineer to ensure removal of all impediments necessary to accomplish these objectives.

**Item 160 Topsoil**

All slopes requiring topsoil will be tracked immediately upon final grading to prevent erosion. Tracking consists of operating a tracked vehicle or equipment up and down the slopes leaving track marks perpendicular to the direction of the slope. See EC(1) for Tracking details. Tracking slopes to prevent erosion will not be measured or paid for directly, but will be subsidiary to pertinent Items.

**Item 162 Sodding for Erosion Control**

Furnish and place Bermudagrass sod.

**Item 164 Seeding for Erosion Control**

Final grading and stabilization (seeding) shall be achieved as soon as possible and not scheduled only for the end of the project. Final grading and stabilization should be initiated as the overall work progresses.

Multiple mobilizations of the seeding crews will be expected to comply with the Construction General Permit of the Texas Pollution Elimination Discharge System requirements for re-vegetating disturbed soils.

**Item 168 Vegetative Watering**

The quantity of watering in the plans under this item is for proposed Broadcast Seeding at Locations 1 & 2, (Beaumont) on SS 380 and for proposed Block Sodding at Location 4, (Kountze) US 69 @ SH 326.

**Item 192 Landscape Planting**

Mow and trim the project area to be planted prior to planting. Consider this work subsidiary to Item 192. Prepare and submit planting pattern to Engineer for approval.

See Roadway Plans and Detail Sheets for planting layout. Layout changes should be submitted to Engineer for approval and or marked out in the field for Engineer approval.

See Planting and Establishment Sheets for plant Specifications. Submit proposed substitutions for planting type to Engineer for approval.

“Decorative Trees” & “Forest Mix” must conform to specifications shown in plans.

See Item 100 Prep ROW areas and requirements for existing planting areas described under planting and establishment sheets for treatment of existing shrubs and trees.

**Item 193 Landscape Establishment**

The quantity of watering in the plans under this item is to be used as needed at the direction of the Engineer following the 90-day maintenance period required under Item 192. Upon request of the Engineer, provide a log book showing daily water usage and receipts of water applied, in addition to metering the water equipment.

Water trees as directed by the Engineer. Each watering must be as described in “Vegetative Watering Schedule for Trees, Shrubs, Vines” (see sheet 38). Watering interval or quantity may be changed as directed by the Engineer (such as during periods of sufficient rainfall).

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

The quantity of Item 502 included in the project is intended to cover the period of time including the initial site preparation and planting.

The cost for any needed traffic control **during the 90-day Maintenance Period will be subsidiary to Item 192.**

The cost for any needed traffic control **during the Landscape Establishment period (Item 193) will be subsidiary to Item 193.**

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

No lane closures will be permitted on the US 69. Reference TCP (5-1) for shoulder closures on US 69. Reference TCP (1-1), (1-2), or (1-5) for traffic control on frontage roads or other roadways.

Construct all work zone signs, sign supports, and barricades from material other than wood unless approved otherwise by the Engineer. Metal posts, if used, are to be galvanized. Aluminum signs, if used, shall meet the following minimum thickness requirements:

<u>Square Feet</u>	<u>Minimum Thickness</u>
Less than 7.5	0.080 inches
7.5 to 15	0.100 inches
Greater than 15	0.125 inches

Use 42” cones as channelizing devices.

Adjoining projects may be in progress during the construction of this project. Coordinate and manage the sequence of construction and the traffic control plan with adjoining construction projects, if applicable, to minimize disruption to traffic in all phases of the work required by the Engineer.

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

The Contractor Force Account “SW3P Contingency” that has been established for this project is intended to be utilized in the event that such controls become necessary. The SW3P for this project will consist of the use of any temporary erosion control measures deemed necessary by the Engineer and as specified under this Item. This work will be paid for in accordance with Article 4.4., “Changes in the Work/”

Provide one SW3P Notification Board meeting the requirements shown in the plans. Notification Board is to be placed at location within the right-of-way but outside the clear zone as directed by the engineer. Consider this work to be subsidiary to the various bid items of the contract.

**Item 510 One-Way Traffic Control**

Provide all flaggers with two-way radio communication capability.

**County:** Jefferson

**Sheet:** 5B

**Highway:** VAR.

**Control:** 0920-00-147

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

Shadow vehicles with Truck Mounted Attenuators (TMA) and high intensity rotating, flashing, oscillating or strobe lights are required. Use one TMA preceding every stationary work zone. Therefore, 1 total shadow vehicles with TMA will be required for this type of work. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMA's needed for the project.





CONTROLLING PROJECT ID 0920-00-147

DISTRICT Beaumont  
HIGHWAY Various

COUNTY Jefferson

# Estimate & Quantity Sheet

CONTROL SECTION JOB				0920-00-147		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00138987			
COUNTY				Jefferson			
HIGHWAY				Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	100-6001	PREPARING ROW	AC	5.170		5.170	
	110-6003	EXCAVATION (SPECIAL)	CY	250.000		250.000	
	160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	2,802.000		2,802.000	
	162-6002	BLOCK SODDING	SY	5,399.000		5,399.000	
	164-6007	BROADCAST SEED (PERM) (URBAN) (CLAY)	SY	555.000		555.000	
	168-6001	VEGETATIVE WATERING	MG	201.000		201.000	
	169-6001	SOIL RETENTION BLANKETS (CL 1) (TY A)	SY	555.000		555.000	
	192-6004	PLANT MATERIAL (5-GAL)	EA	438.000		438.000	
	192-6012	MULCH	CY	810.000		810.000	
	192-6021	PLANT MATERIAL (5 GAL) (TREE)	EA	47.000		47.000	
	192-6023	PLANT MATERIAL (15 GAL) (TREE)	EA	881.000		881.000	
	192-6024	PLANT MATERIAL (30 GAL) (TREE)	EA	857.000		857.000	
	192-6025	PLANT MATERIAL (45 GAL) (TREE)	EA	26.000		26.000	
	192-6026	PLANT MATERIAL (65 GAL) (TREE)	EA	18.000		18.000	
	193-6001	PLANT MAINTENANCE	MO	9.000		9.000	
	193-6006	VEGETATIVE WATERING	MG	2,402.000		2,402.000	
	193-6009	PLANT REPLACEMENT (15 GAL)	EA	50.000		50.000	
	193-6010	PLANT REPLACEMENT (30 GAL)	EA	25.000		25.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	6.000		6.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	500.000		500.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	500.000		500.000	
	6185-6002	TMA (STATIONARY)	DAY	220.000		220.000	
	08	CONTRACTOR FORCE ACCOUNT WORK	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE (NON-PART)	LS	1.000		1.000	

## SUMMARY OF QUANTITIES

ITEM NUMBER	100 6001	110 6003	160 6003	162 6002	164 6007	168 6001	169 6001	192 6004	192 6012	192 6021	192 6023	192 6024	192 6025	192 6026
DESCRIPTION	PREPARING ROW	EXCAVATION (SPECIAL)	FURNISHING AND PLACING TOPSOIL (4")	BLOCK SODDING	BROADCAST SEED (PERM) (URBAN) (CLAY)	VEGETATIVE WATERING	SOIL RETENTION BLANKETS (CL 1) (TY A)	PLANT MATERIAL (5-GAL)	MULCH	PLANT MATERIAL (5 GAL) (TREE)	PLANT MATERIAL (15 GAL) (TREE)	PLANT MATERIAL (30 GAL) (TREE)	PLANT MATERIAL (45 GAL) (TREE)	PLANT MATERIAL (65 GAL) (TREE)
UNITS	AC	CY	SY	SY	SY	MG	SY	EA	CY	EA	EA	EA	EA	EA
LOCATION 1 - SS 380 @ US 90 (BEAUMONT)	2.58		210		210	7	210		238		301	302		
LOCATION 2 - SS380 @ PENNSYLVANIA AVE (BEAUMONT)	1.8		345		345	12	345		217		272	276		
LOCATION 3 - SS 380 @ LAMAR UNIVERSITY (BEAUMONT)	0.09								16		30	10		
LOCATION 4 - SH 326 @US 69 (KOUNTZE)	0.1	250	2247	5399		182			66		63	55		
LOCATION 5 - SH 12 @ SH 62 (MAURICEVILLE)	0.6							438	273	47	215	214	26	18
NOT SHOWN														
<b>PROJECT TOTALS</b>	<b>5.17</b>	<b>250</b>	<b>2802</b>	<b>5399</b>	<b>555</b>	<b>201</b>	<b>555</b>	<b>438</b>	<b>810</b>	<b>47</b>	<b>881</b>	<b>857</b>	<b>26</b>	<b>18</b>

ITEM NUMBER	193 6001	193 6006	193 6009	193 6010	506 6040	506 6043	6185 6002
DESCRIPTION	PLANT MAINTENANCE	VEGETATIVE WATERING	PLANT REPLACEMENT (15 GAL)	PLANT REPLACEMENT (30 GAL)	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)	TMA (STATIONARY)
UNITS	MO	MG	EA	EA	LF	LF	DAY
LOCATION 1 - SS 380 @ US 90 (BEAUMONT)		707					
LOCATION 2 - SS 380 @ LAMAR UNIVERSITY (BEAUMONT)		642					
LOCATION 3 - SS380 @ PENNSYLVANIA AVE (BEAUMONT)		56					
LOCATION 4 - SH 326 @US 69 (KOUNTZE)		120					
LOCATION 5 - SH 12 @ SH 62 (MAURICEVILLE)		877					
NOT SHOWN	9		50	25	500	500	220
<b>PROJECT TOTALS</b>	<b>9</b>	<b>2402</b>	<b>50</b>	<b>25</b>	<b>500</b>	<b>500</b>	<b>220</b>

ITEM NUMBER	500 6001	502 6001
DESCRIPTION	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING
UNITS	LS	MO
LOCATION 1 - SS 380 @ US 90 (BEAUMONT)		
LOCATION 2 - SS 380 @ LAMAR UNIVERSITY (BEAUMONT)		
LOCATION 3 - SS380 @ PENNSYLVANIA AVE (BEAUMONT)		
LOCATION 4 - SH 326 @US 59 (KOUNTZE)		
LOCATION 5 - SH 12 @ SH 62 (MAURICEVILLE)		
NOT SHOWN	1	6
<b>PROJECT TOTALS</b>	<b>1</b>	<b>6</b>



08/02/2021

### QUANTITY SUMMARY

CONT	SECT	JOB	HIGHWAY
Q920	00	147	VAR.
DIST	COUNTY		SHEET NO.
BMT	JEFFERSON		7

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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).

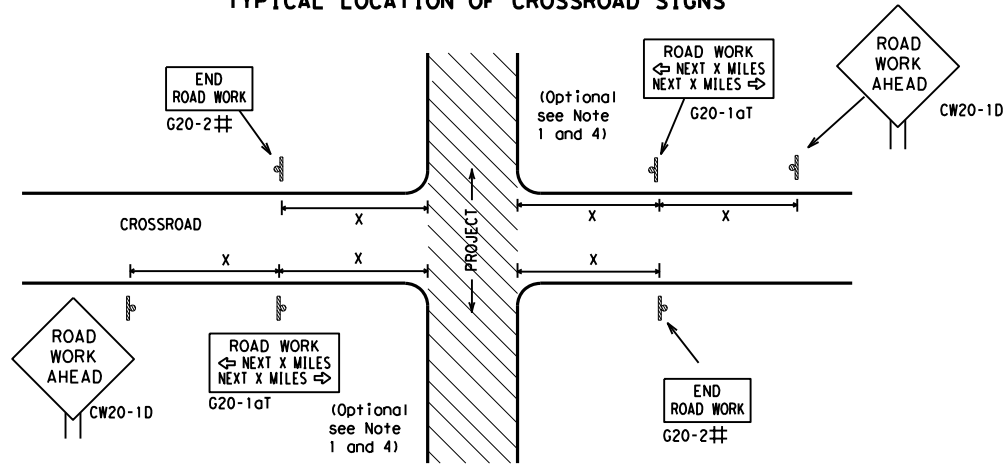
<p><b>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT</b>  <a href="http://www.txdot.gov">http://www.txdot.gov</a></p>
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD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

SHEET 1 OF 12

<span style="font-size: small; vertical-align: middle;">Texas Department of Transportation</span>		<span style="font-size: x-small;">Traffic Safety Division Standard</span>
<p><b>BARRICADE AND CONSTRUCTION          GENERAL NOTES          AND REQUIREMENTS</b></p> <p><b>BC (1) - 21</b></p>		
FILE:	bc-21.dgn	DN: TxDOT
© TxDOT	November 2002	ck: TxDOT
REVISIONS	CONT SECT	JOB HIGHWAY
4-03 7-13	0920 00	147 VAR.
9-07 8-14	DIST	COUNTY SHEET NO.
5-10 5-21	BMT	JEFFERSON 8

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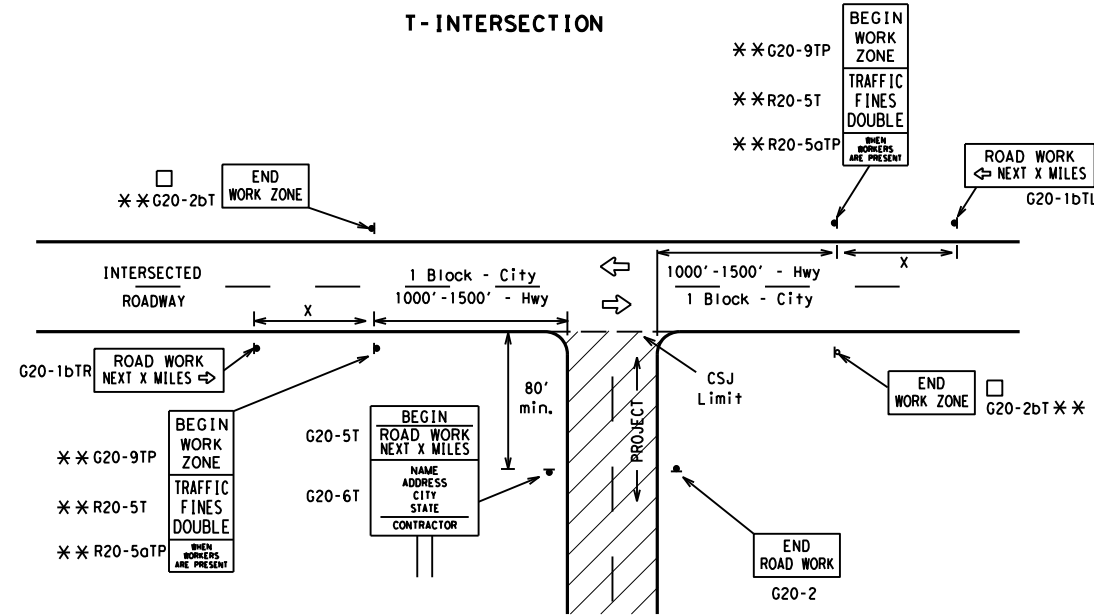
**TYPICAL LOCATION OF CROSSROAD SIGNS**



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

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

**T-INTERSECTION**



**CSJ LIMITS AT T-INTERSECTION**

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

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

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

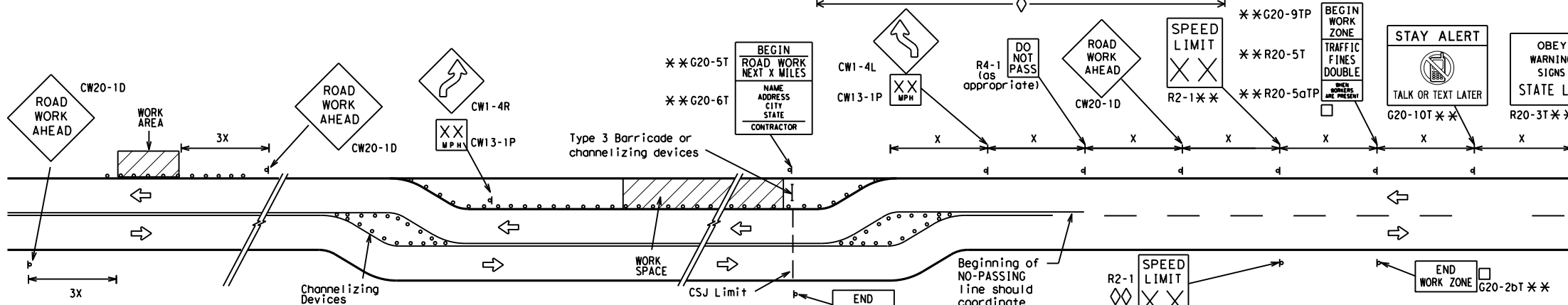
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

**GENERAL NOTES**

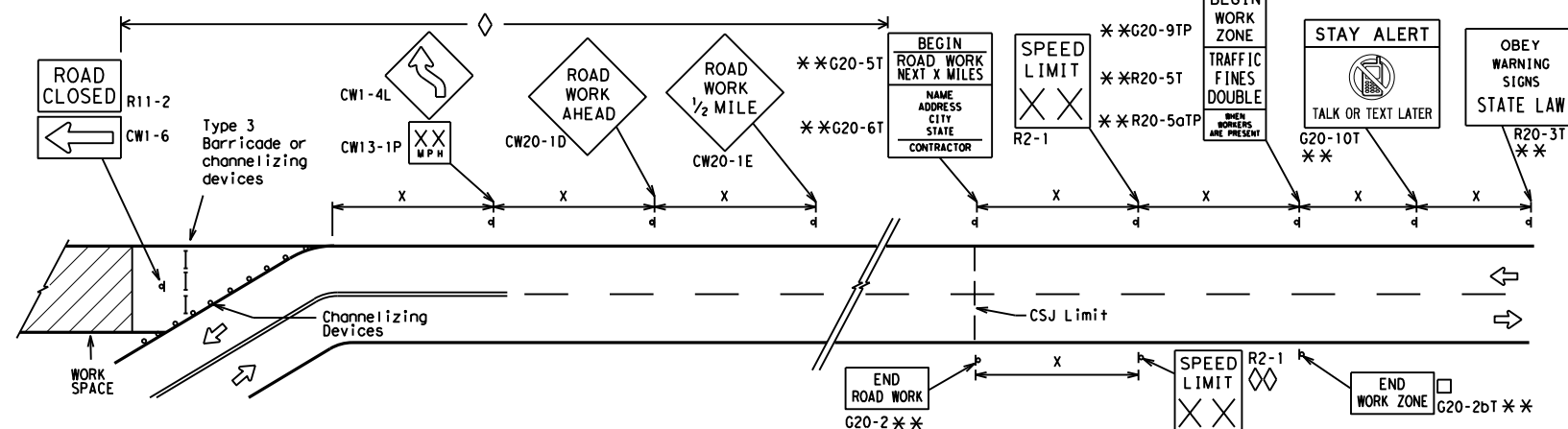
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

**WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS**



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

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



**NOTES**

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

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

SHEET 2 OF 12



**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**BC (2) - 21**

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# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

### SHORT TERM WORK ZONE SPEED LIMITS

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

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

## GENERAL NOTES

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

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

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SHEET 3 OF 12



## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

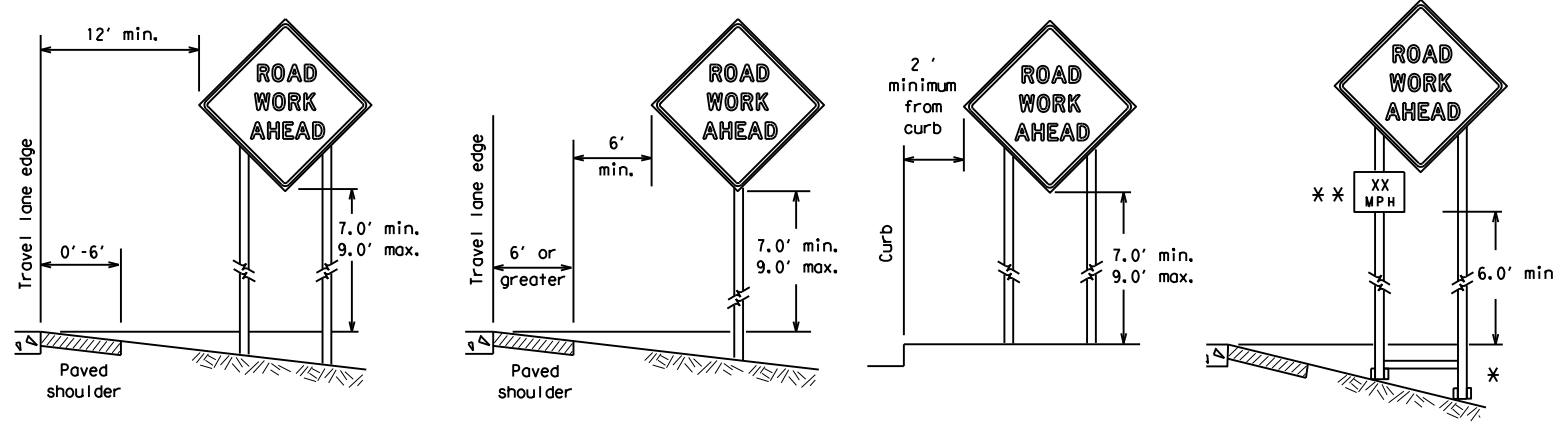
BC (3) - 21

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		BMT	JEFFERSON		10				



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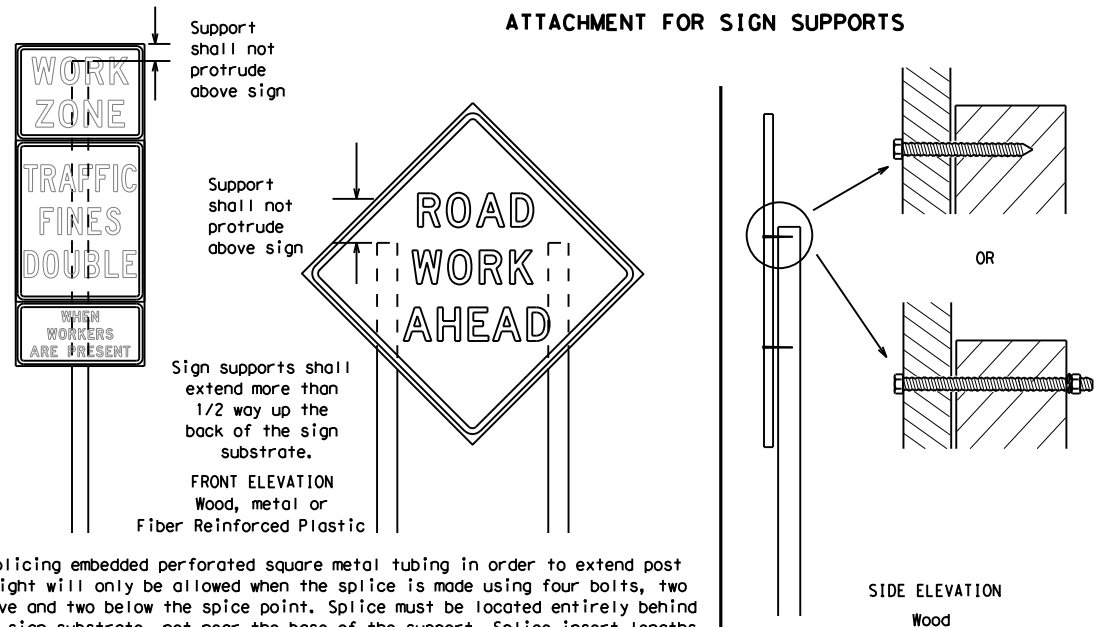
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



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

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

**ATTACHMENT FOR SIGN SUPPORTS**



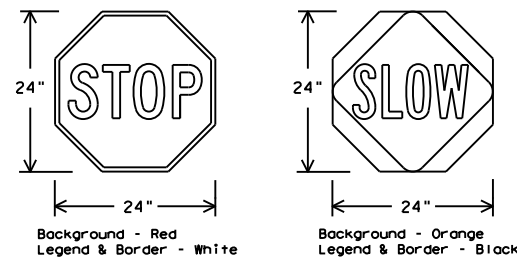
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

**STOP/SLOW PADDLES**

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



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

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

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

**GENERAL NOTES FOR WORK ZONE SIGNS**

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

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

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

**SIGN MOUNTING HEIGHT**

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

**SIZE OF SIGNS**

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

**SIGN SUBSTRATES**

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

**REFLECTIVE SHEETING**

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

**SIGN LETTERS**

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

**REMOVING OR COVERING**

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

**SIGN SUPPORT WEIGHTS**

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

**FLAGS ON SIGNS**

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

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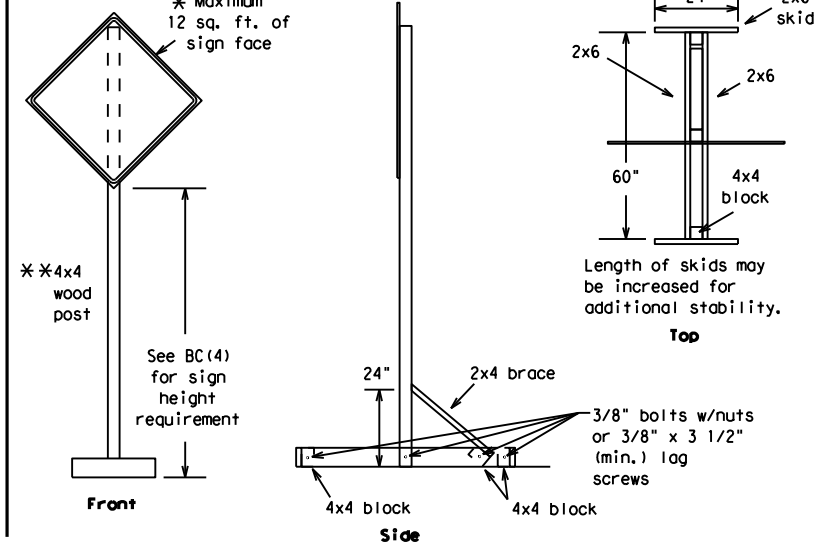
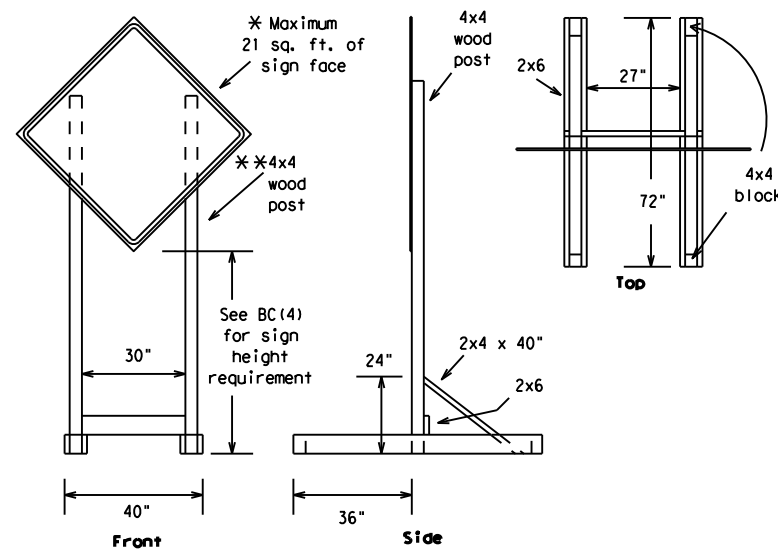
**BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES**

BC (4) - 21

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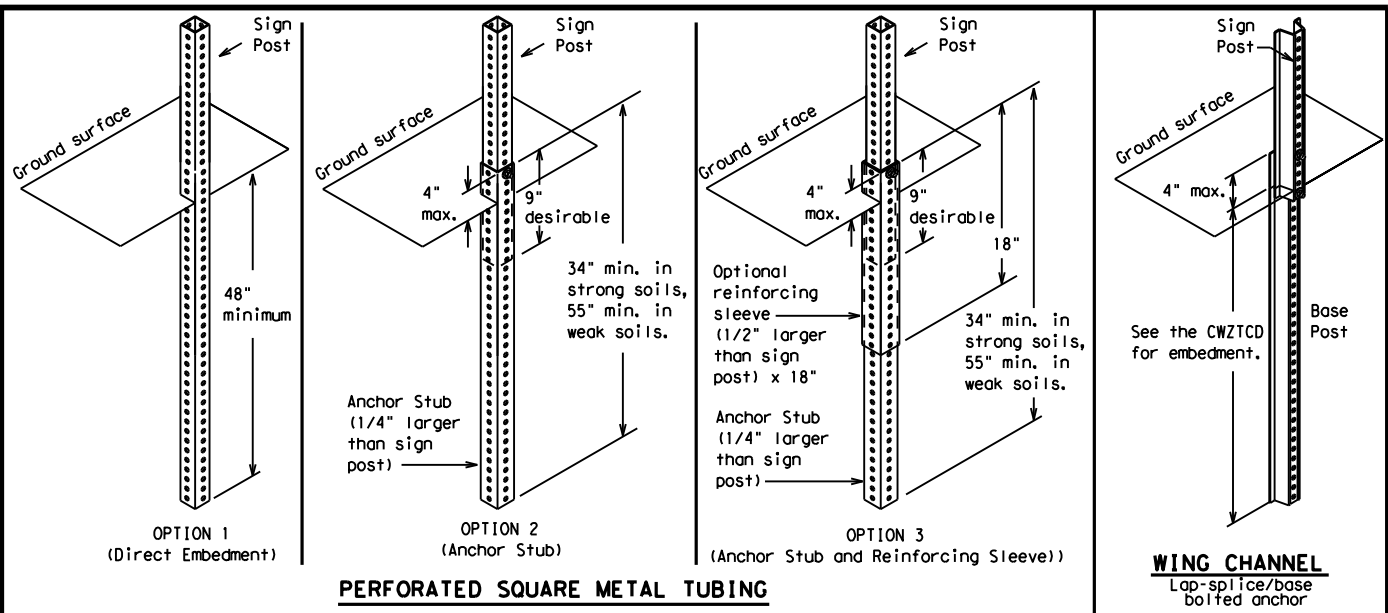
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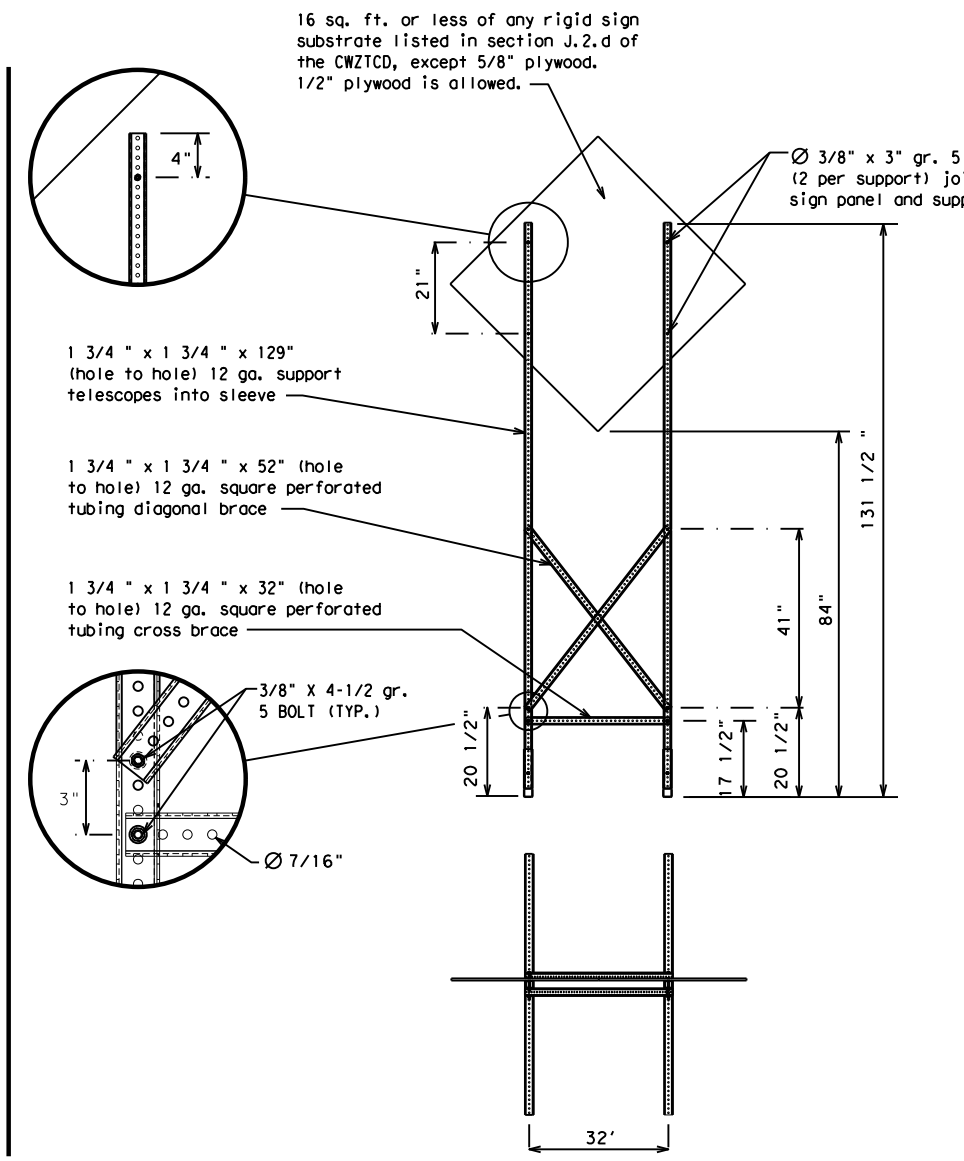
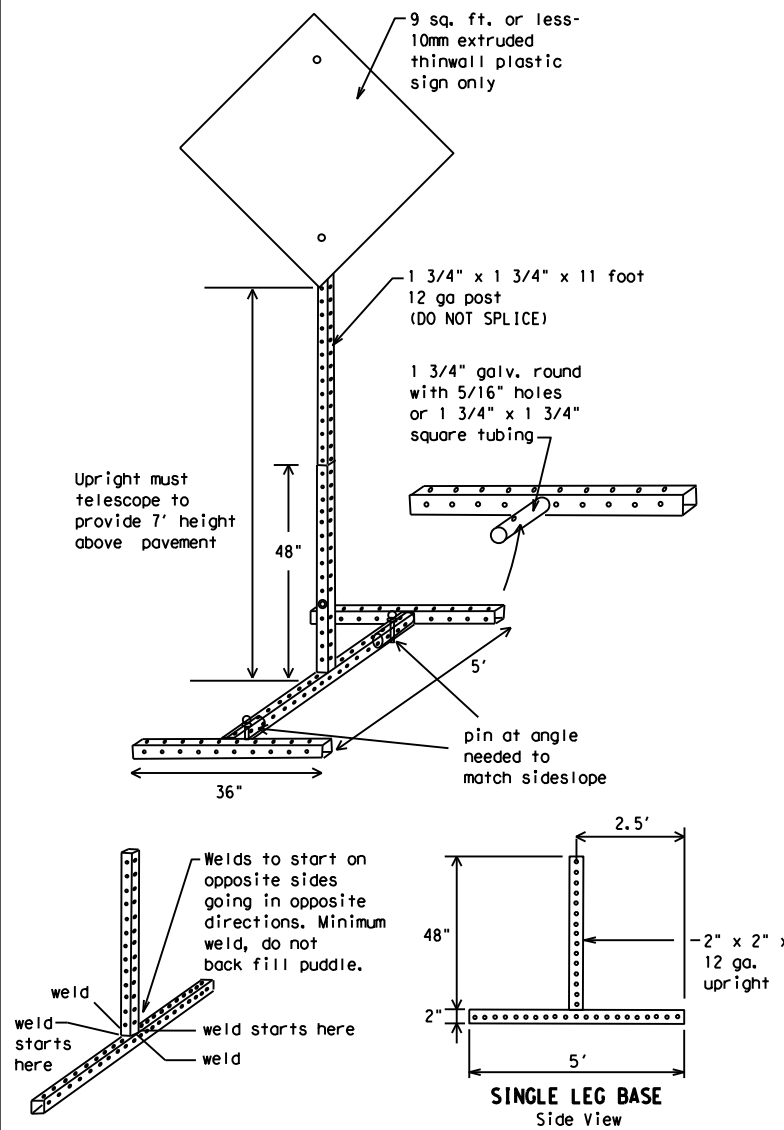
### SKID MOUNTED WOOD SIGN SUPPORTS

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



### GROUND MOUNTED SIGN SUPPORTS

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



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

### WEDGE ANCHORS

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

### OTHER DESIGNS

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

### GENERAL NOTES

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

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## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

### BC(5) - 21

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

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

## PORTABLE CHANGEABLE MESSAGE SIGNS

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

## Phase 1: Condition Lists

### Road/Lane/Ramp Closure List

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

### Other Condition List

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

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

## Phase 2: Possible Component Lists

### Action to Take/Effect on Travel List

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

### Location List

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

### Warning List

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

### \*\* Advance Notice List

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

\*\* See Application Guidelines Note 6.

## APPLICATION GUIDELINES

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

## WORDING ALTERNATIVES

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

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

## FULL MATRIX PCMS SIGNS

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

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DATE: FILE:

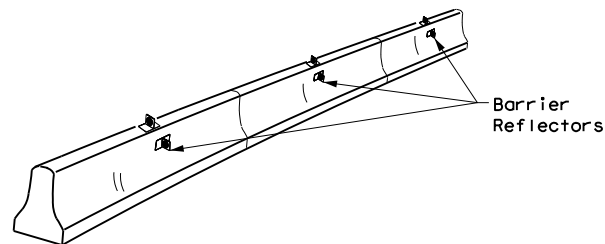
WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Canal	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking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

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

<h2>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</h2>			
<h3>BC (6) - 21</h3>			
FILE:	bc-21.dgn	DN:	TxDOT
© TxDOT	November 2002	CR:	TxDOT
REVISIONS	0920	OW:	TxDOT
9-07	8-14	CK:	TxDOT
7-13	5-21	CON:	SECT
		JOB:	HIGHWAY
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		VAR:	
		DIST:	COUNTY
		SHEET NO.:	
		BMT:	JEFFERSON
			13

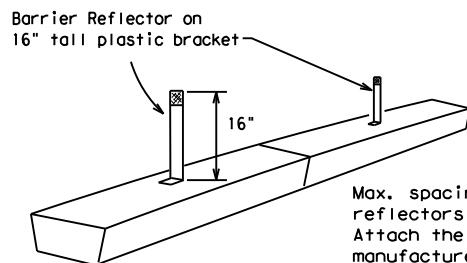
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



**CONCRETE TRAFFIC BARRIER (CTB)**

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

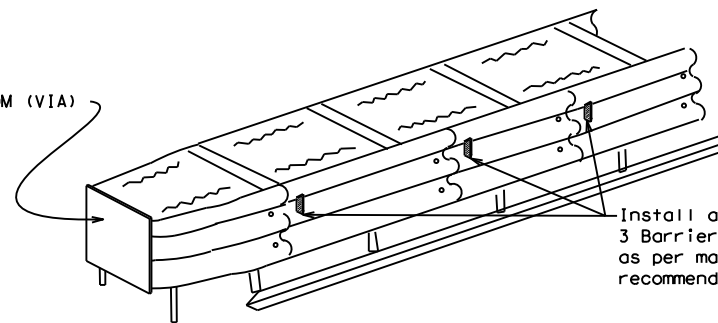


**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

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

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

**LOW PROFILE CONCRETE BARRIER (LPCB)**



**DELINEATION OF END TREATMENTS**

**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

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

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

**WARNING LIGHTS**

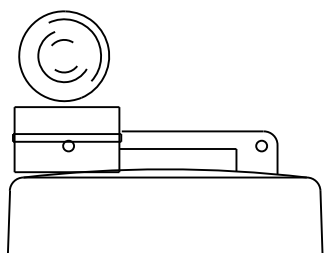
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

**WARNING LIGHTS MOUNTED ON PLASTIC DRUMS**

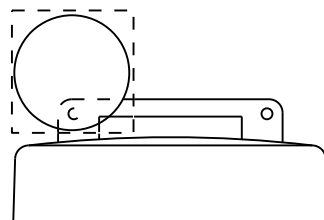
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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

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

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



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

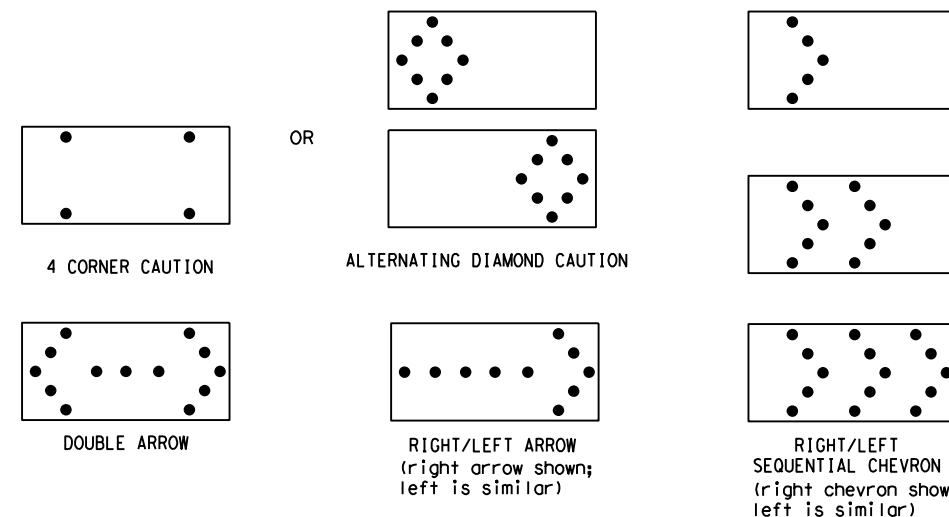


Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

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



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

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

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

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

**FLASHING ARROW BOARDS**

SHEET 7 OF 12

**TRUCK-MOUNTED ATTENUATORS**

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



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

**BC (7) -21**

FILE:	bc-21.dgn	DN:	TxDOT	CR:	TxDOT	OW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0920	00	147	VAR.				
9-07	8-14	DIST	COUNTY		SHEET NO.				
7-13	5-21	BMT	JEFFERSON		14				

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**GENERAL NOTES**

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

**GENERAL DESIGN REQUIREMENTS**

Pre-qualified plastic drums shall meet the following requirements:

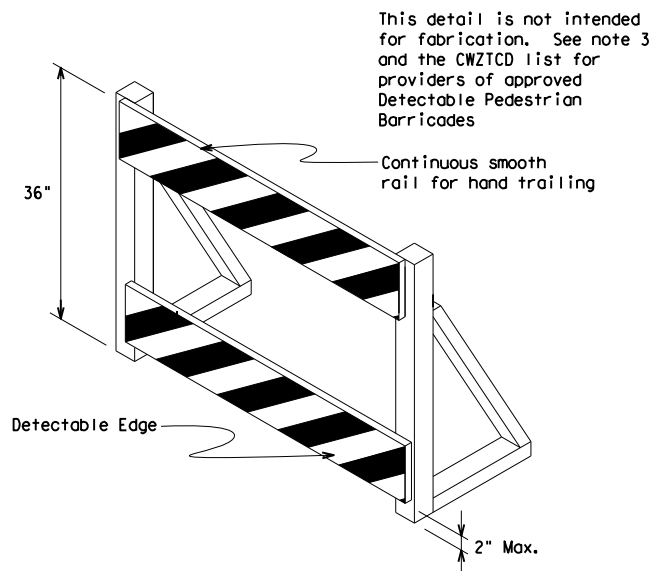
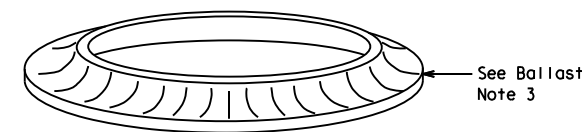
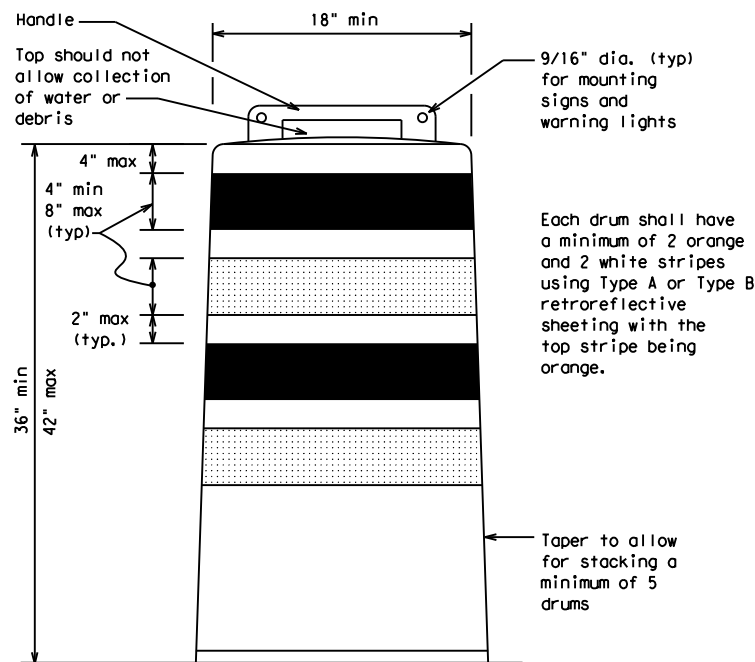
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

**RETROREFLECTIVE SHEETING**

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

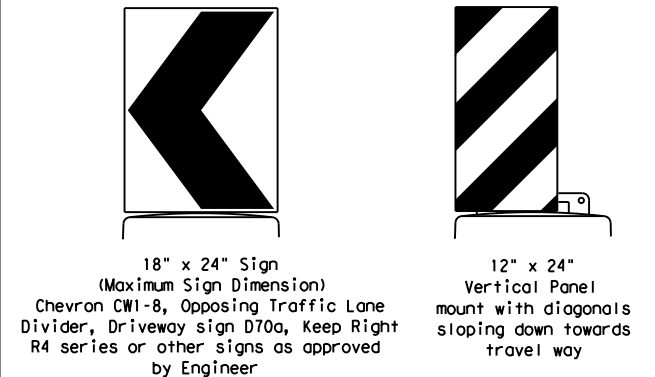
**BALLAST**

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



**DETECTABLE PEDESTRIAN BARRICADES**

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



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

**SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS**

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

SHEET 8 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (8) - 21**

FILE:	bc-21.dgn	DW:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT	
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY					
REVISIONS		0920	00	147	VAR.					
4-03	8-14			COUNTY		SHEET NO.				
9-07	5-21			JEFFERSON		15				
7-13										

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

**DRIVEABLE**



**PORTABLE**

**VERTICAL PANELS (VPs)**

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



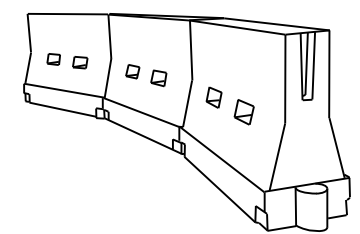
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

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



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

**CHEVRONS**



**LONGITUDINAL CHANNELIZING DEVICES (LCD)**

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

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

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

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

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

**GENERAL NOTES**

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

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

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

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

SHEET 9 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (9) - 21**

FILE: bc-21.dgn	DN: TxDOT	CR: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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**TYPE 3 BARRICADES**

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

Barricades shall NOT be used as a sign support.

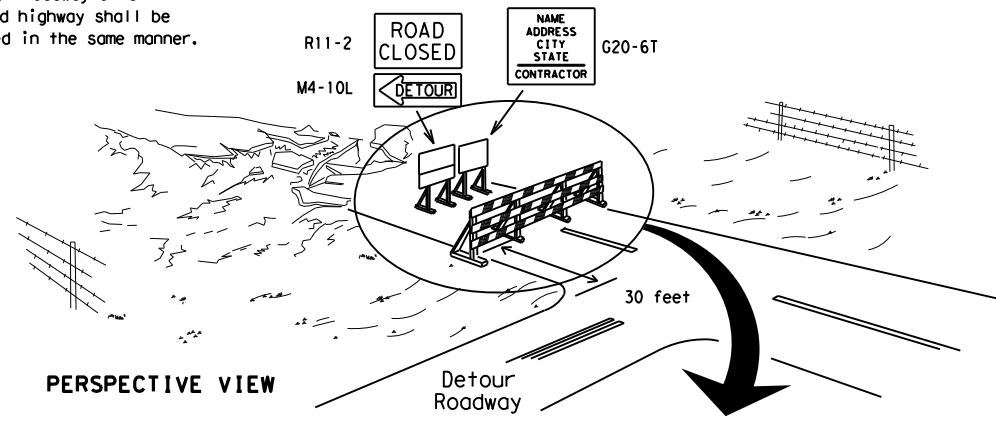


**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



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

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



PERSPECTIVE VIEW

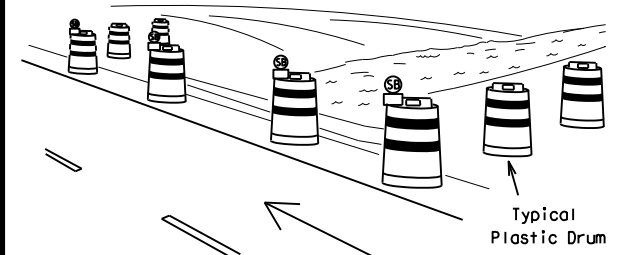
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.

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

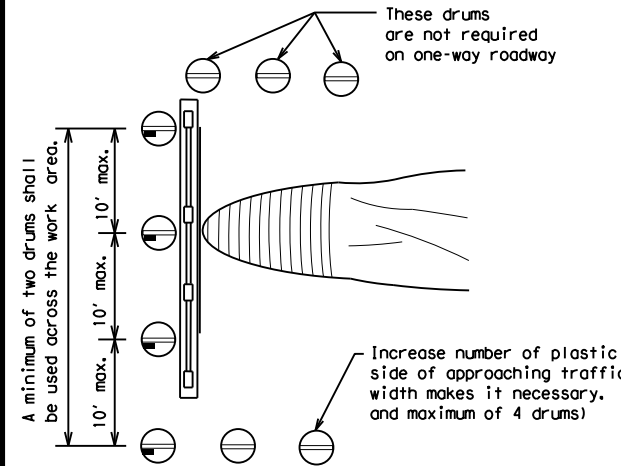


PLAN VIEW

**TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION**



PERSPECTIVE VIEW

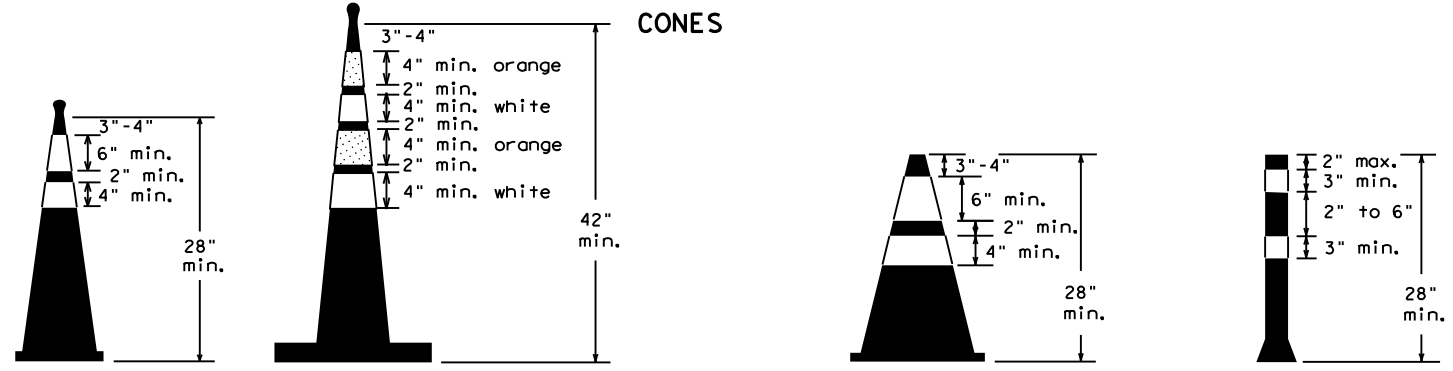


PLAN VIEW

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

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

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

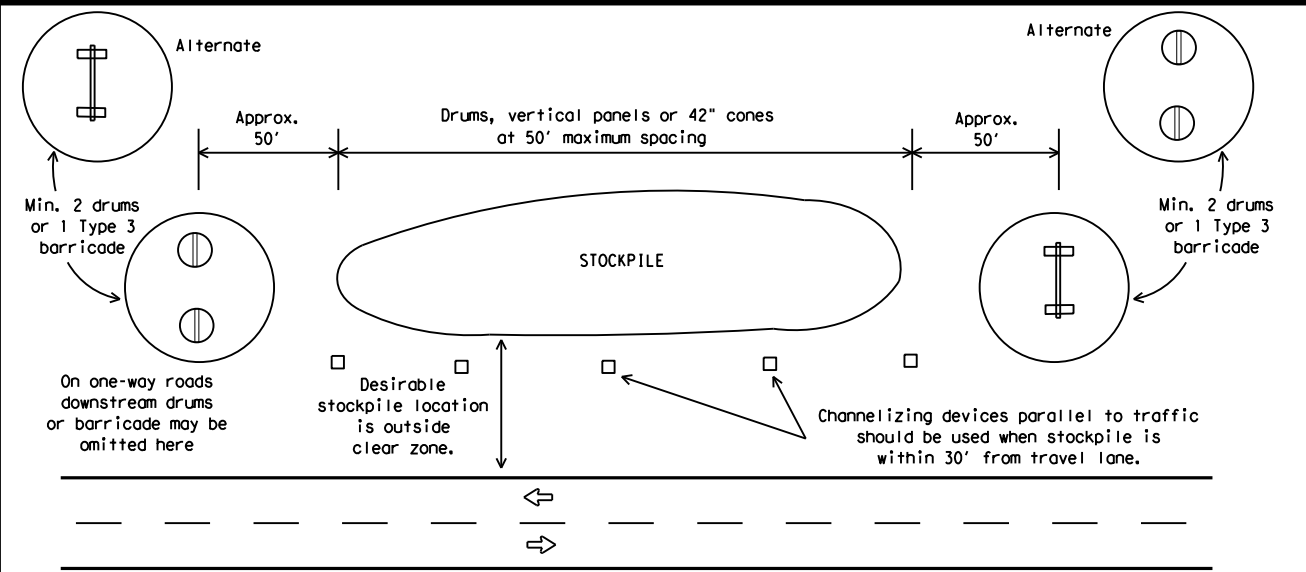


Two-Piece cones

One-Piece cones

Tubular Marker

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



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

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



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (10) - 21**

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DATE: FILE:

## WORK ZONE PAVEMENT MARKINGS

### GENERAL

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

### RAISED PAVEMENT MARKERS

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

### PREFABRICATED PAVEMENT MARKINGS

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

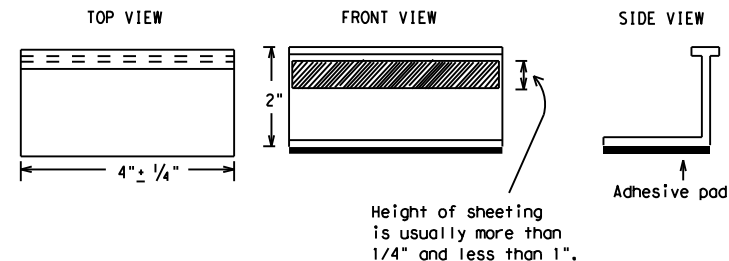
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

### REMOVAL OF PAVEMENT MARKINGS

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

## Temporary Flexible-Reflective Roadway Marker Tabs



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

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

### RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

SHEET 11 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

**BC(11)-21**

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2-98 9-07 5-21	BMT	JEFFERSON	18	
1-02 7-13				
11-02 8-14				

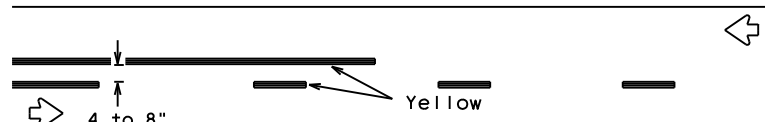
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## PAVEMENT MARKING PATTERNS

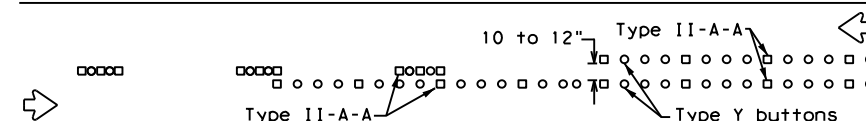


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

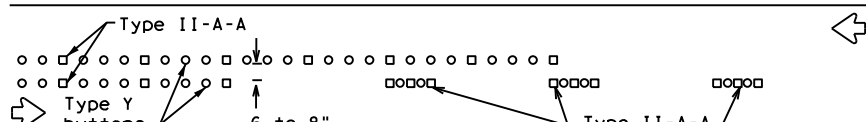


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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



RAISED PAVEMENT MARKERS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN B

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



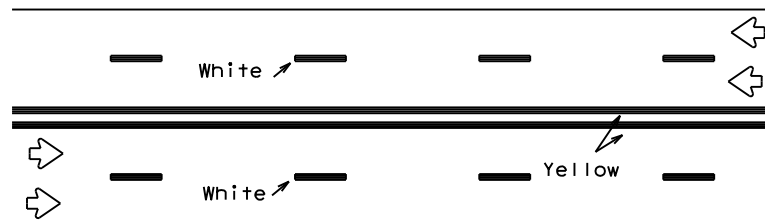
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



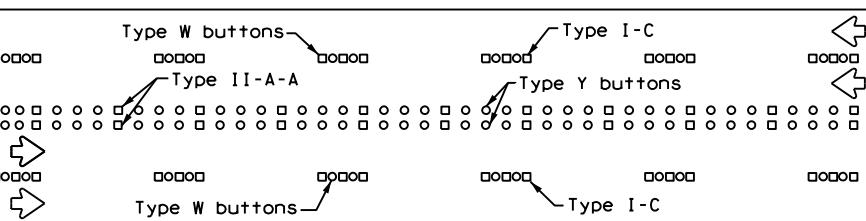
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



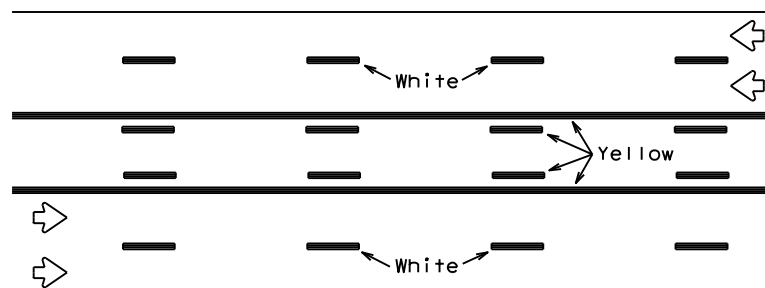
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



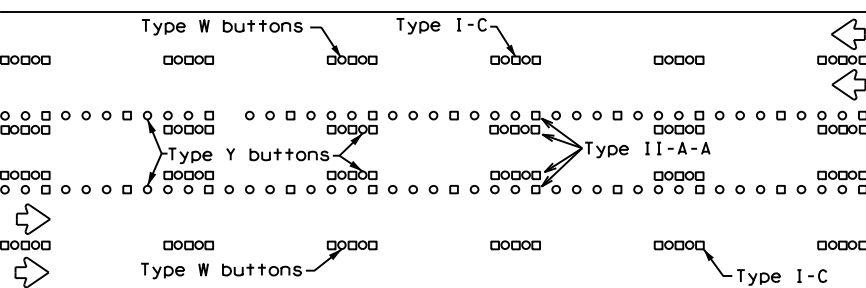
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



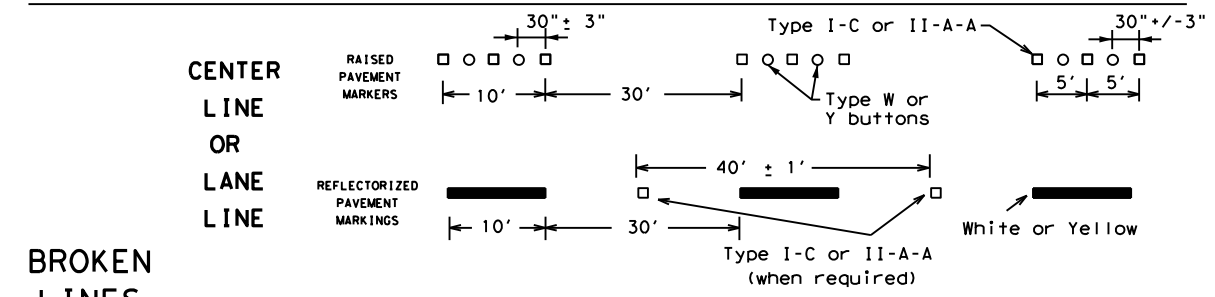
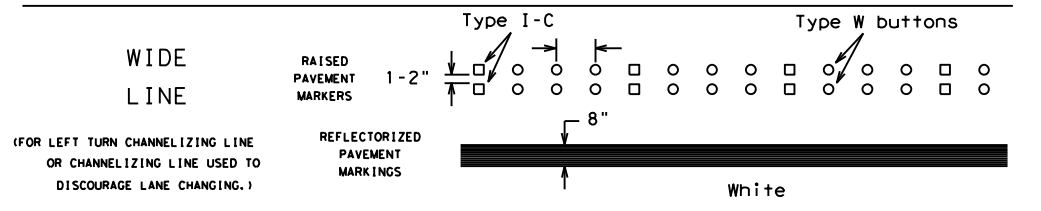
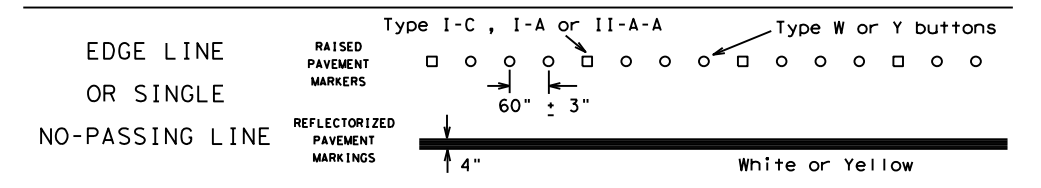
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

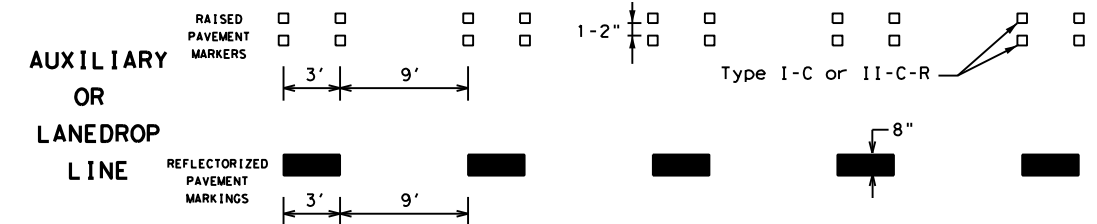
## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



### SOLID LINES

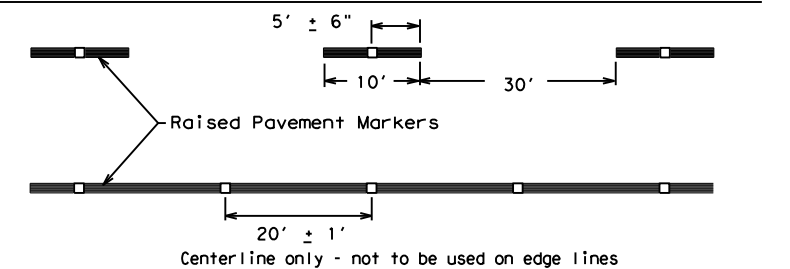


### BROKEN LINES



### REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

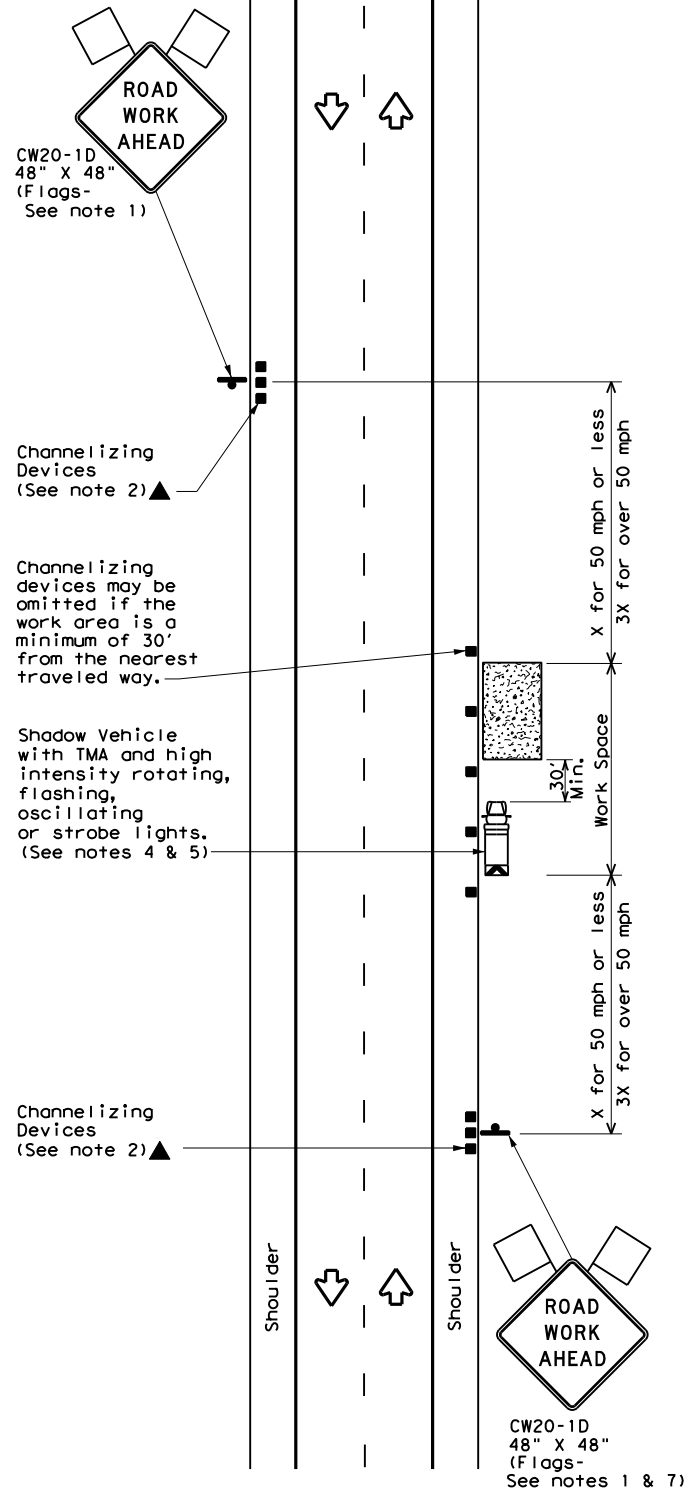
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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0920	00	147	VAR.
1-97 9-07 5-21	DIST	COUNTY	SHEET NO.	
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11-02 8-14				

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

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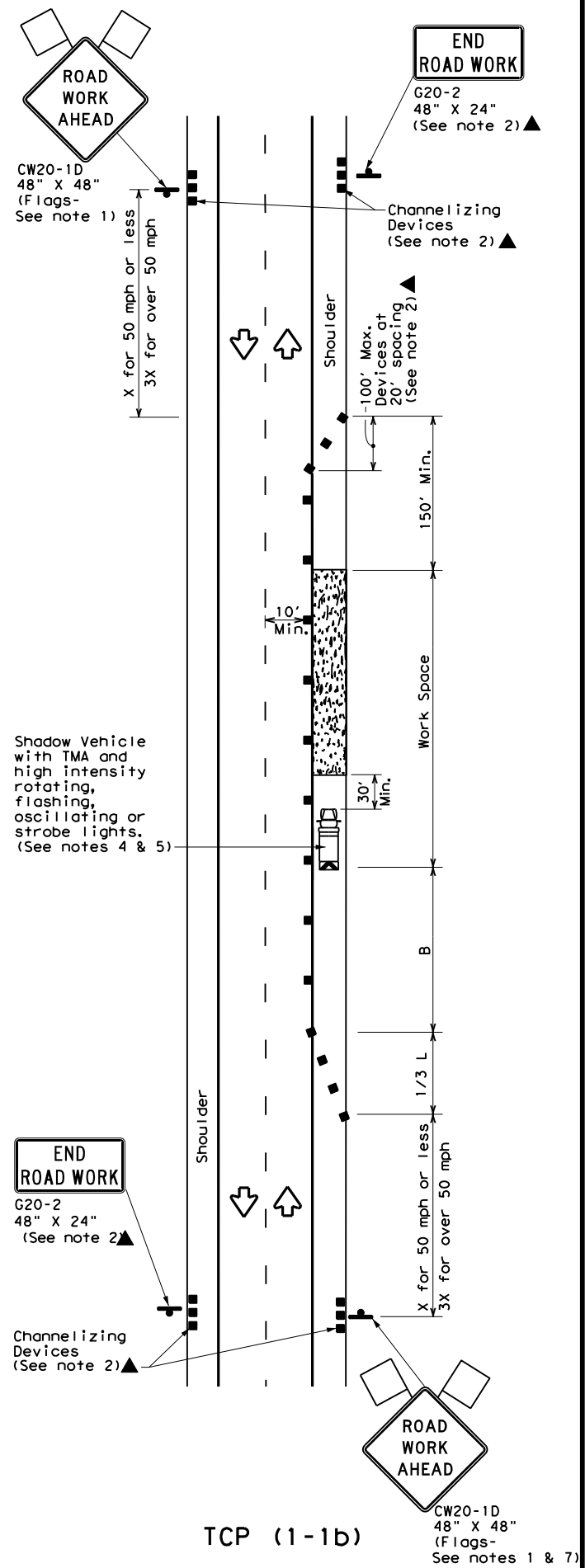
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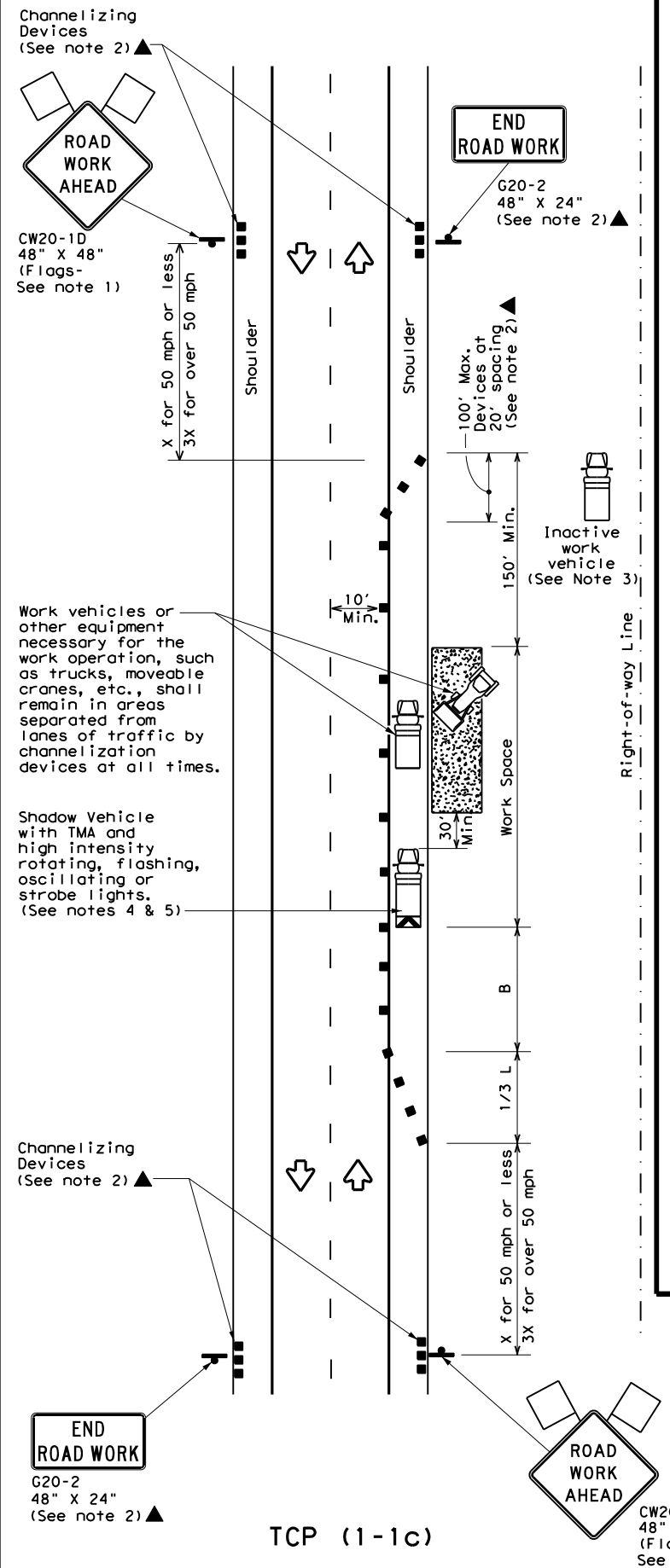
TCP (1-1a)

**WORK SPACE NEAR SHOULDER**  
Conventional Roads



TCP (1-1b)

**WORK SPACE ON SHOULDER**  
Conventional Roads



TCP (1-1c)

**WORK VEHICLES ON SHOULDER**  
Conventional Roads

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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated 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.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

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

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

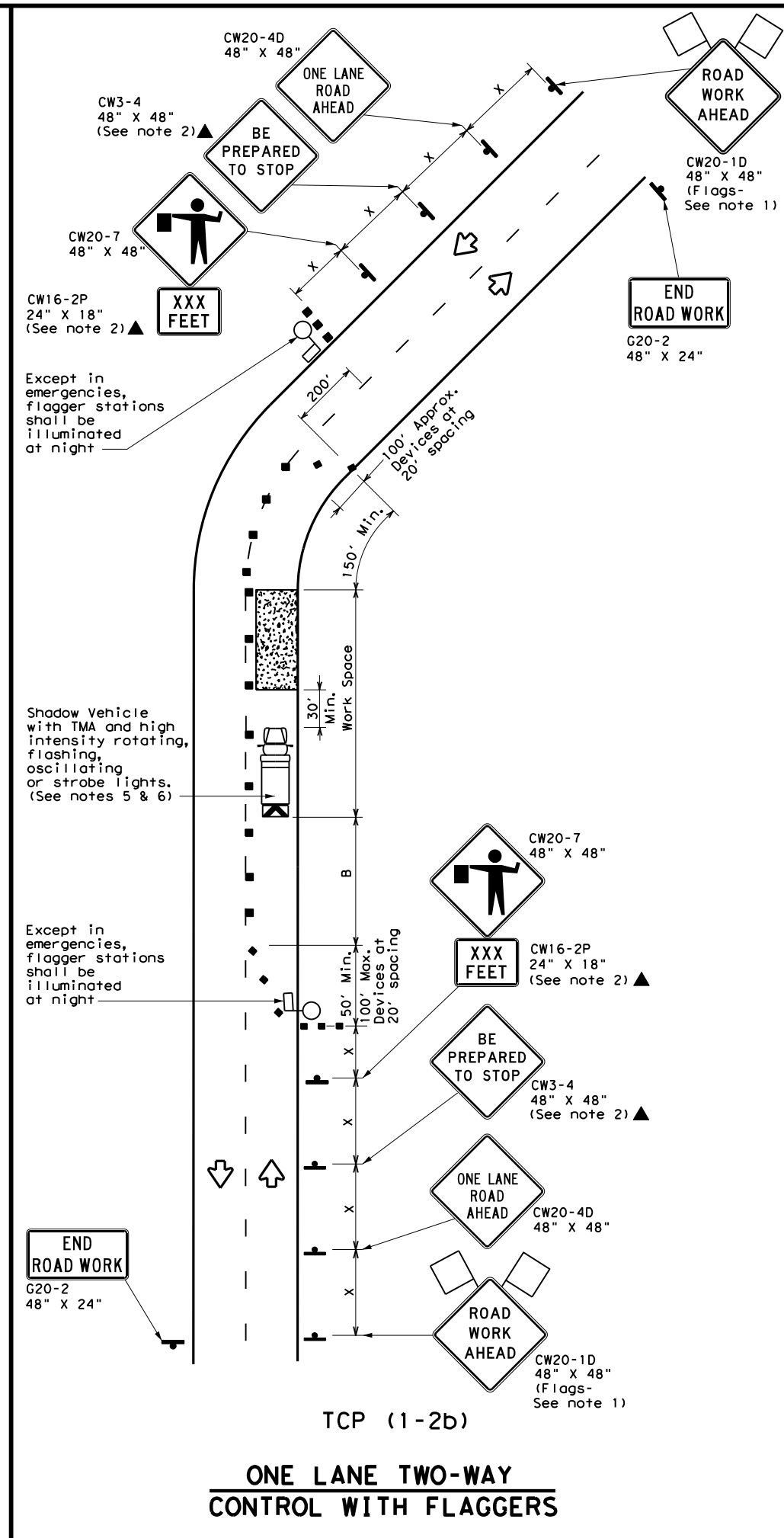
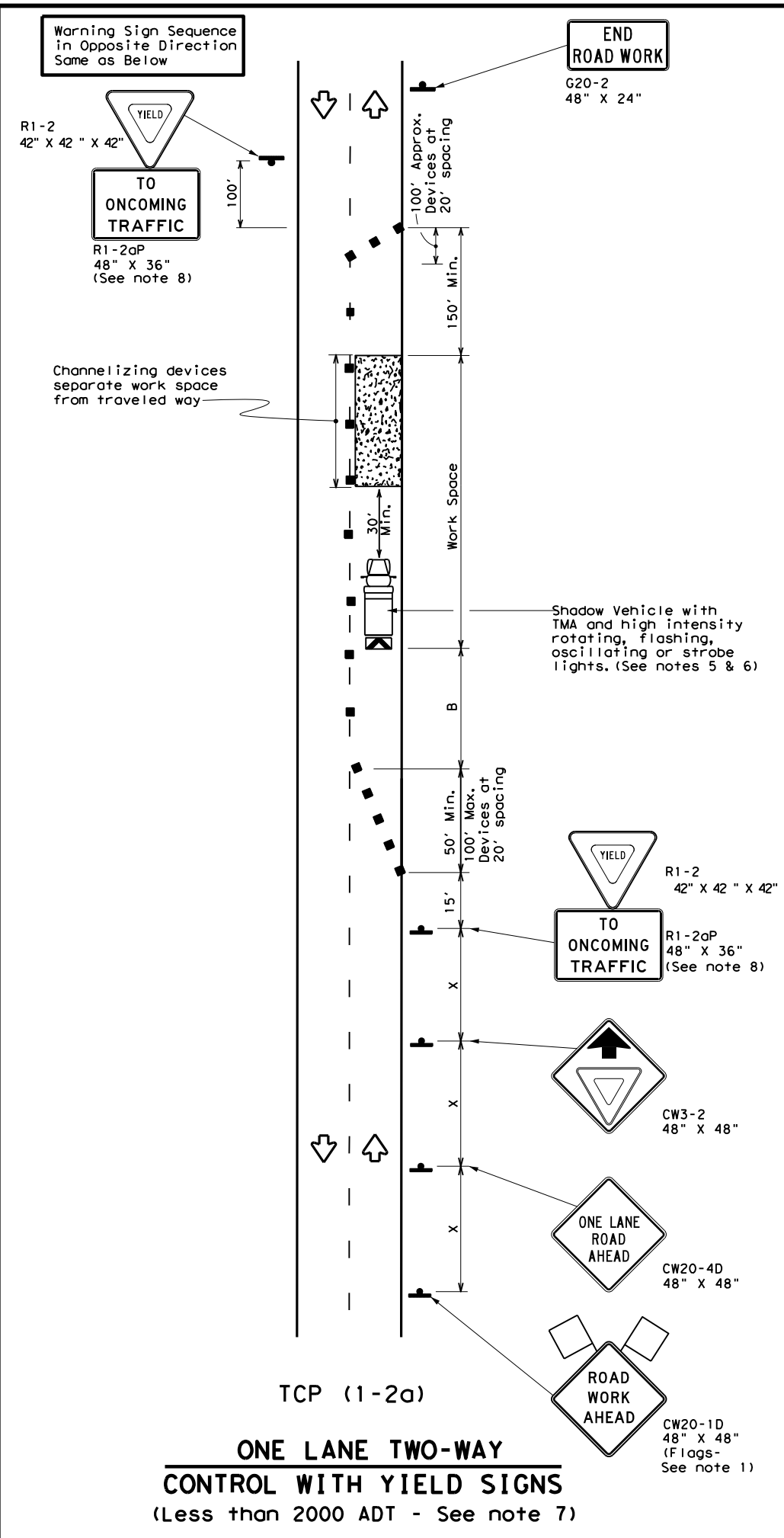
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2-94 4-98	DIST	COUNTY	SHEET NO.	
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DATE:  
FILE:



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DATE: FILE:



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

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

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

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

**GENERAL NOTES**

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "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 150 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 distance. 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 R1-2aP "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 Operations Division Standard

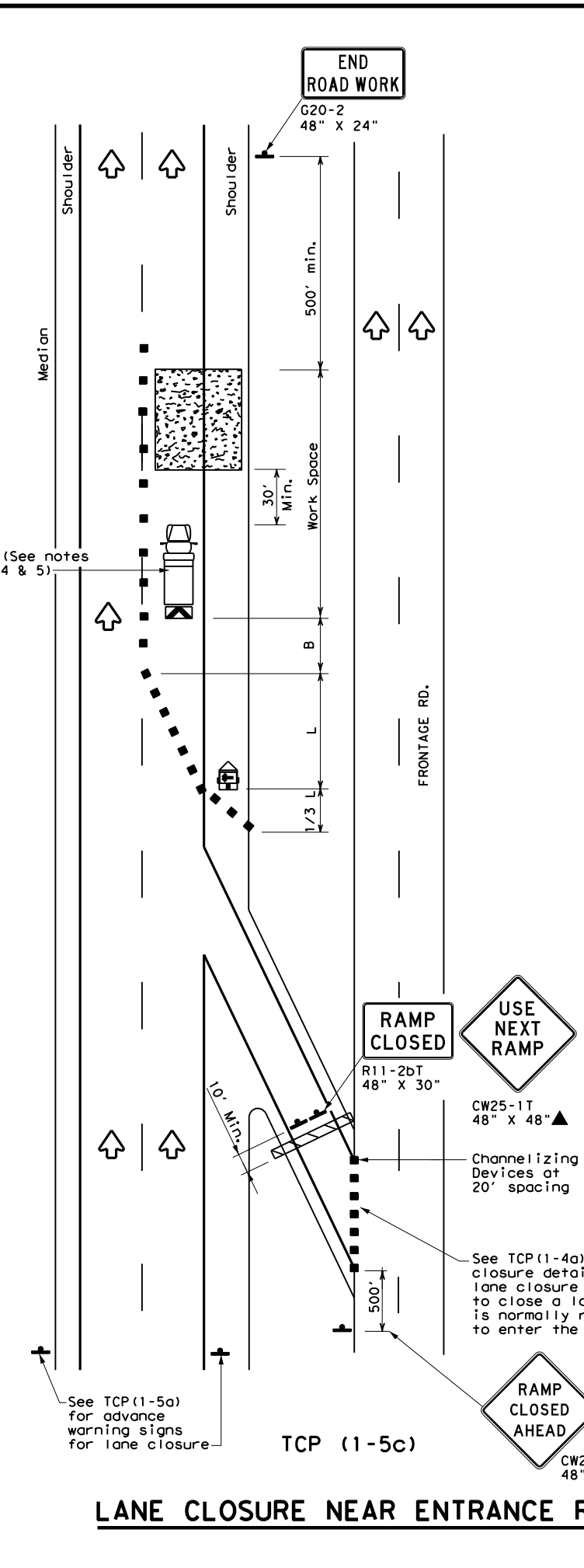
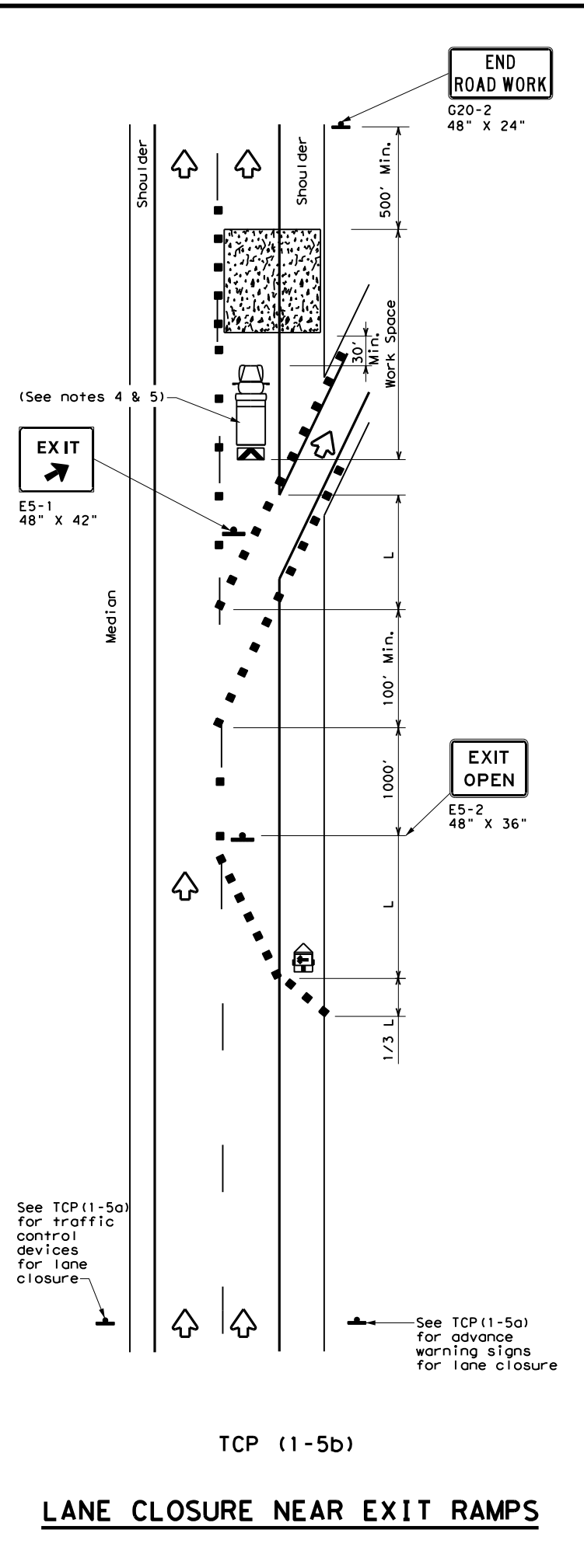
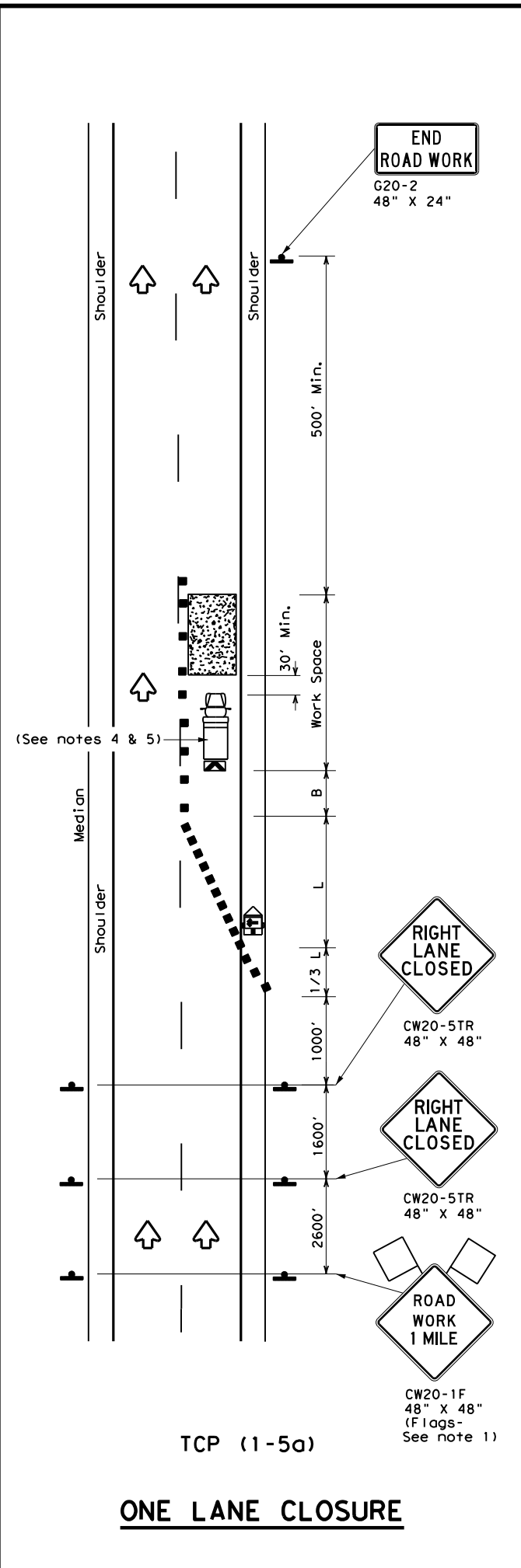
**TRAFFIC CONTROL PLAN**  
**ONE-LANE TWO-WAY**  
**TRAFFIC CONTROL**

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

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0920	00	147	VAR.
4-90 4-98	DIST	COUNTY	SHEET NO.	
2-94 2-12	BMT	JEFFERSON	21	
1-97 2-18				

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DATE:  
FILE:



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

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

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

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

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

Texas Department of Transportation  
Traffic Operations Division Standard

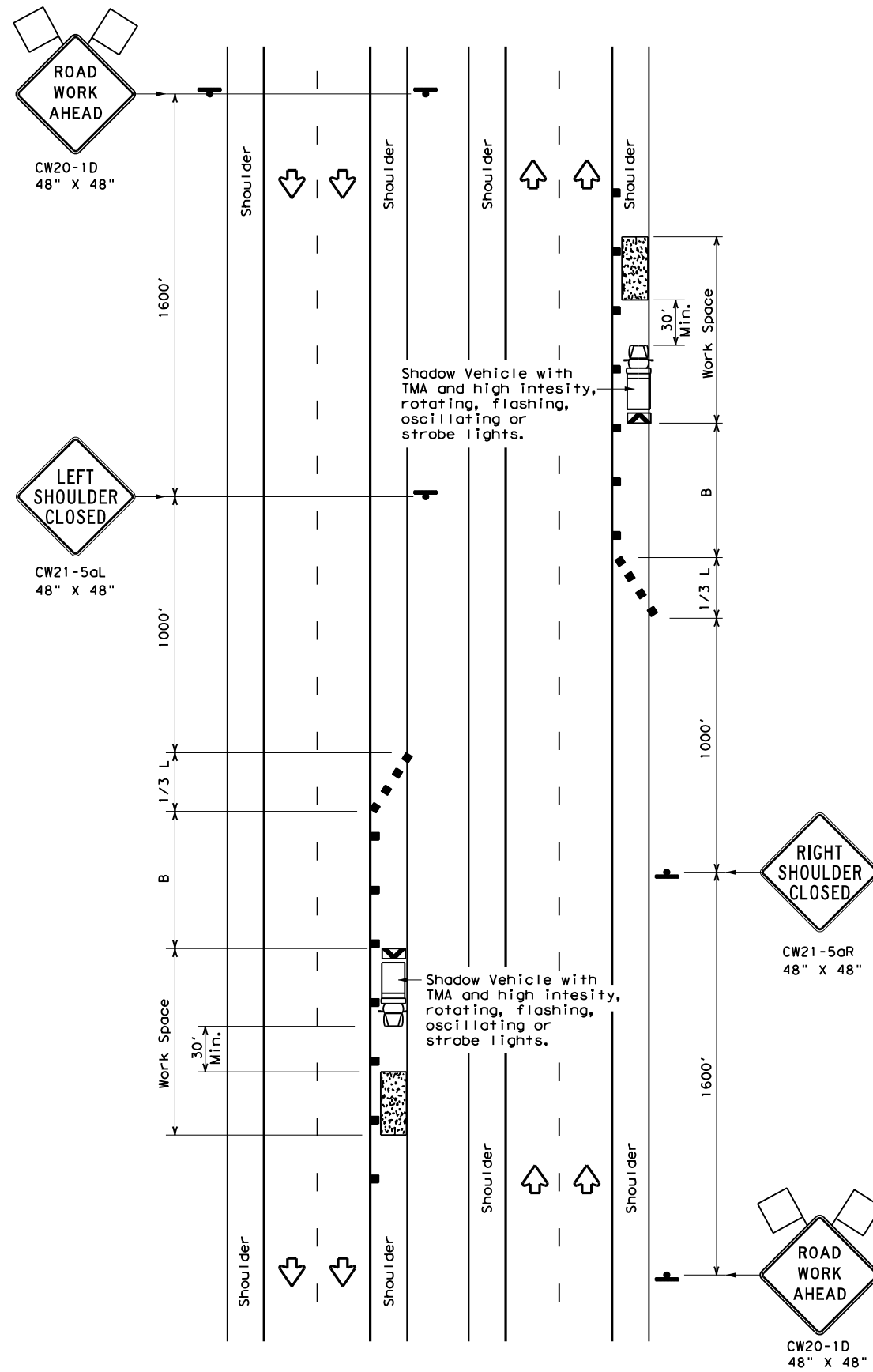
**TRAFFIC CONTROL PLAN  
LANE CLOSURES FOR  
DIVIDED HIGHWAYS**

**TCP (1-5) - 18**

FILE: tcp1-5-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
2-18	REVISIONS	0920 00	147	VAR.
	DIST	COUNTY	SHEET NO.	
	BMT	JEFFERSON	22	

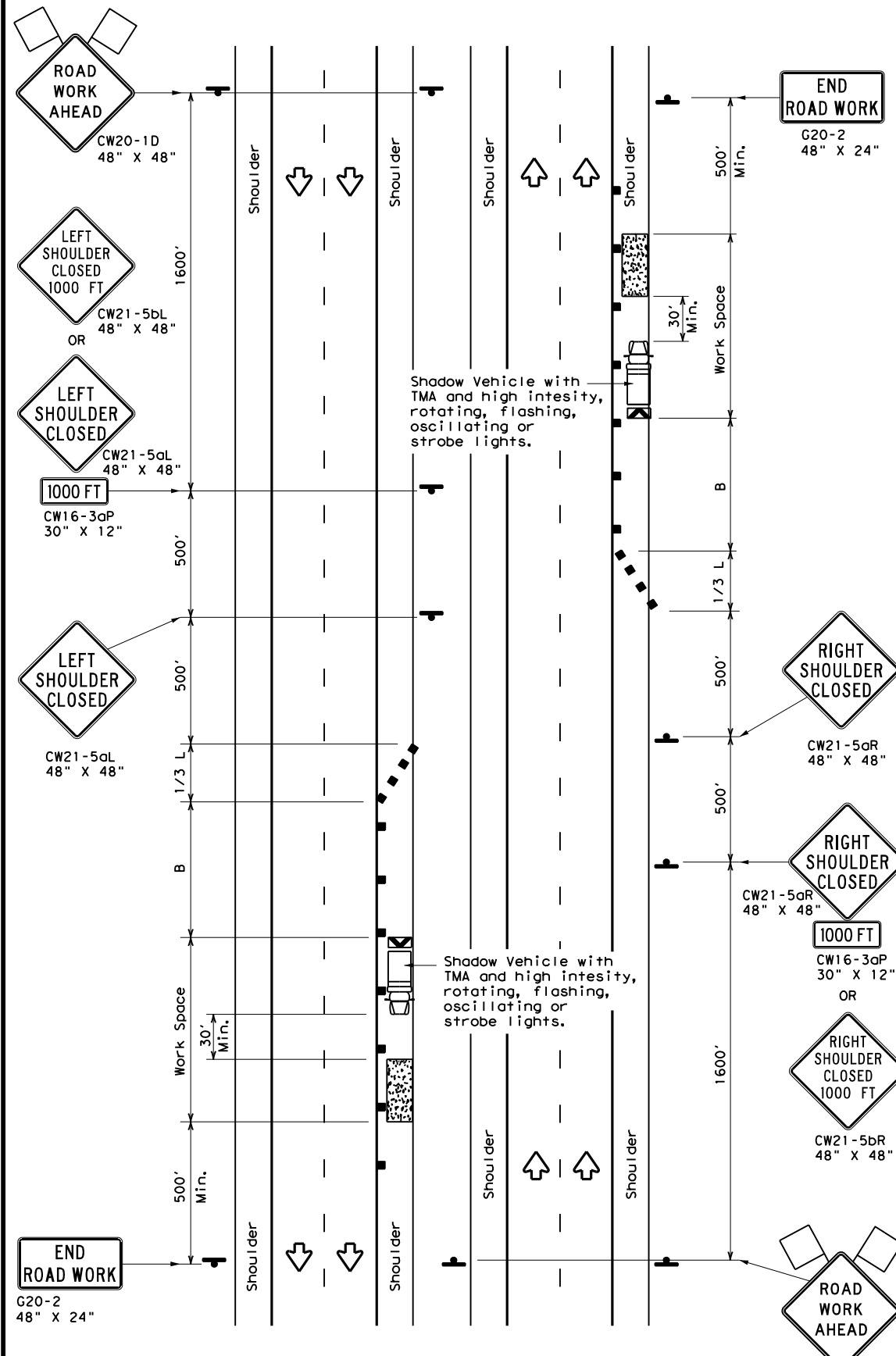
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DATE:  
FILE:



TCP (5-1a)

**WORK AREA ON SHOULDER**



TCP (5-1b)

**WORK AREA ON SHOULDER**

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

**GENERAL NOTES**

1. 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.
2. 28" tall or taller one-piece cones will be allowed only for Short Duration or Short Term stationary operations when workers are present to maintain the devices upright and in proper location. Intermediate Term stationary work areas should use Drums, Vertical Panels or 42" tall two-piece cones.



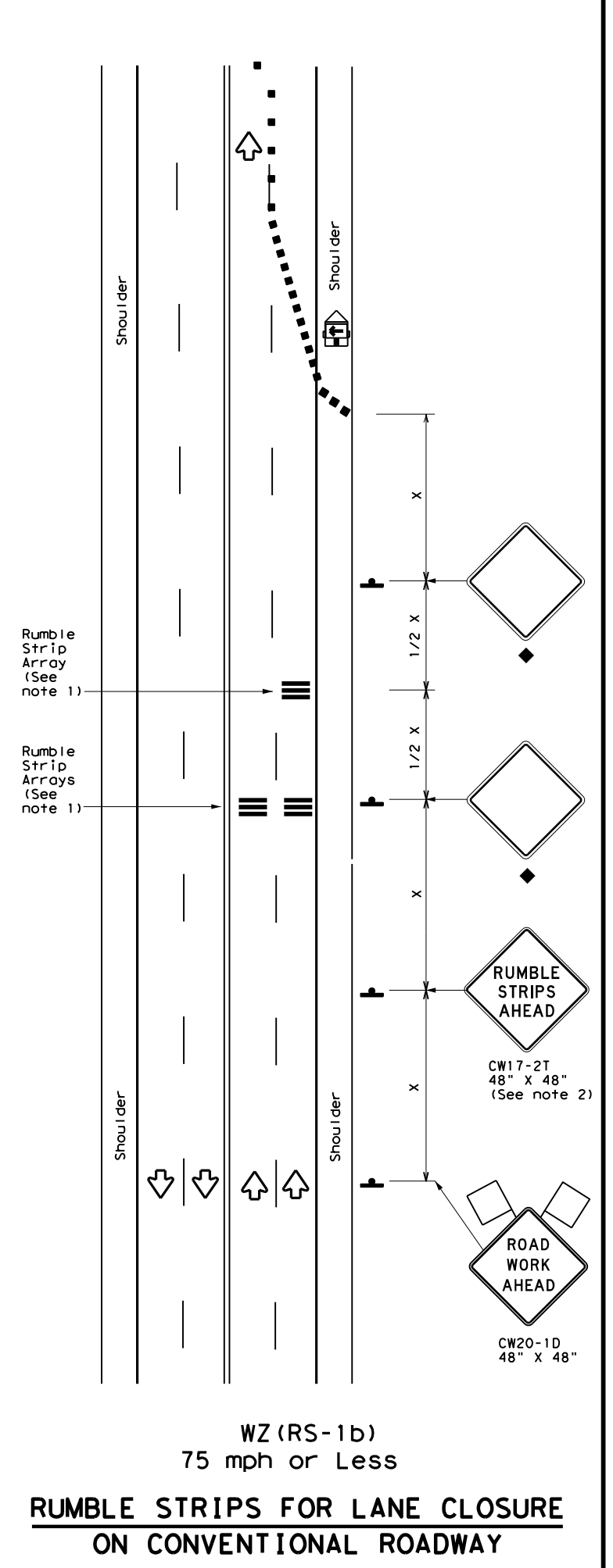
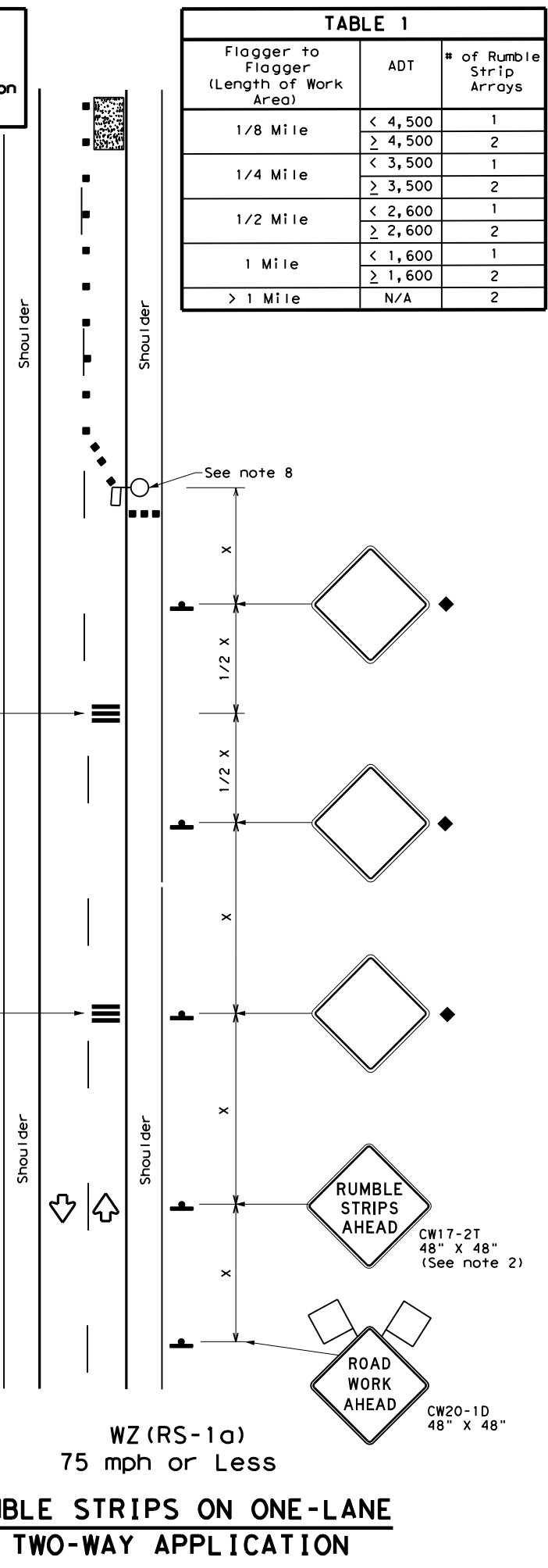
**TRAFFIC CONTROL PLAN  
 SHOULDER WORK FOR  
 FREEWAYS / EXPRESSWAYS**

**TCP (5-1) - 18**

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0920	00	147	VAR.
2-18	DIST	COUNTY	SHEET NO.	
	BMT	JEFFERSON	23	

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



GENERAL NOTES

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

Speed	Approximate distance between strips in an Array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
> 55 MPH	20'

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

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

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

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

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

Texas Department of Transportation  
 Traffic Operations Division Standard

## TEMPORARY RUMBLE STRIPS

### WZ (RS) - 16

FILE: wzrs16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0920	00	147	VAR.
2-14	DIST	COUNTY	SHEET NO.	
4-16	BMT	JEFFERSON	24	

DATE:  
FILE:



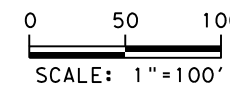
FILE: T:\DES\_LAND\Projects\BMT\BMT GR FY 2022\Plan Set\10. Miscellaneous\SS 380 @ US 90 1.DGN  
 DATE: 8/2/2021 12:47:14 PM



DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum	32	30 GAL. (TREE)
Possumhaw	32	
Texas Mountain Laurel	32	
Eastern Redbud	32	
<b>TOTAL: 128</b>		
Crape Myrtle 'Muskogee'	26	15 GAL. (TREE)
Crape Myrtle 'Natchez'	26	
Crape Myrtle 'Tuscarora'	26	
Little Gem Magnolia	24	
Wax Myrtle	24	
<b>TOTAL: 126</b>		

PREPARING ROW	
QUANTITY	UNITS
1.11	AC

LEGEND  
 PREPARING ROW



08/02/2021

**SS 380 @ US 90  
 BEAUMONT**

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SHEET 1 OF 3

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO. SEE TITLE SHEET	SHEET NO. <b>25</b>
STATE TEXAS	DISTRICT BMT	COUNTY JEFFERSON
CONTROL 0920	SECTION 00	JOB 147
		HIGHWAY NO. VAR.



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 DATE: 8/2/2021 12:48:53 PM

MATCHLINE A



MATCHLINE B

○ DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum	26	30 GAL. (TREE)
Possumhaw	26	
Texas Mountain Laurel	26	
Eastern Redbud	26	
<b>TOTAL: 104</b>		
Crape Myrtle 'Muskogee'	21	15 GAL. (TREE)
Crape Myrtle 'Natchez'	21	
Crape Myrtle 'Tuscarora'	21	
Little Gem Magnolia	21	
Wax Myrtle	21	
<b>TOTAL: 105</b>		



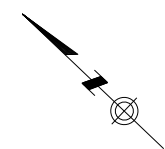
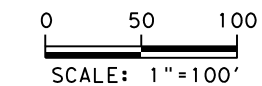
08/02/2021

**SS 380 @ US 90  
 BEAUMONT**

PREPARING ROW	
QUANTITY	UNITS
0.84	AC

LEGEND

PREPARING ROW



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 SHEET 2 OF 3

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO. SEE TITLE SHEET	SHEET NO. <b>26</b>
STATE TEXAS	DISTRICT BMT	COUNTY JEFFERSON
CONTROL 0920	SECTION 00	JOB 147
		HIGHWAY NO. VAR.



FILE: T:\DES\_LAND\Projects\BMT\BMT GR FY 2022\Plan Set\10. Miscellaneous\SS 380 @ US 90 3.DGN  
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MATCHLINE B



160-6003 FURNISHING AND PLACING TOPSOIL (4") (210 SY)  
 164-6007 BROADCAST SEED (PERM)(URBAN)(CLAY) (210 SY)  
 169-6001 SOIL RETENTION BLANKET (CL 1)(TY A) (210 SY)

**NOTES:**

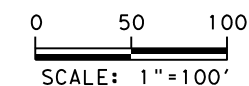
- PLACE TOPSOIL TO FILL AREAS OF EXISTING SLOPE FAILURE AND SMOOTH SLOPES IN AREAS MARKED ON PLAN, IN ACCORDANCE WITH ITEM 160. SEE SHEET 46\_\_ FOR REQUIRED SOIL STABILIZATION PRACTICES.
- AFTER PLANTING TREES (IF PROPOSED IN AREA WITH EXISTING SLOPE FAILURE) PLACE SOIL RETENTION BLANKETS OVER NEWLY PLACED TOPSOIL ACCORDING TO ITEM 169.

○ DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum	17	30 GAL.
Possumhaw	18	
Texas Mountain Laurel	17	
Eastern Redbud	18	
<b>TOTAL: 70</b>		
Crape Myrtle 'Muskogee'	14	15 GAL. (TREE)
Crape Myrtle 'Natchez'	14	
Crape Myrtle 'Tuscarora'	14	
Little Gem Magnolia	14	
Wax Myrtle	14	
<b>TOTAL: 70</b>		

PREPARING ROW	
QUANTITY	UNITS
0.63	AC

**LEGEND**

PREPARING ROW



08/02/2021

**SS 380 @ US 90  
BEAUMONT**

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SHEET 3 OF 3

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.	SHEET NO.
	SEE TITLE SHEET	27
STATE	DISTRICT	COUNTY
TEXAS	BMT	JEFFERSON
CONTROL	SECTION	JOB HIGHWAY NO.
0920	00	147 VAR.



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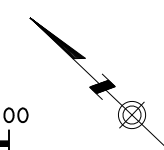
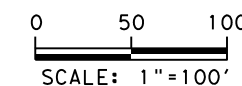
○ DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum	40	30 GAL. (TREE)
Possumhaw	40	
Texas Mountain Laurel	41	
Eastern Redbud	41	
<b>TOTAL: 162</b>		
Crape Myrtle 'Muskogee'	32	15 GAL. (TREE)
Crape Myrtle 'Natchez'	32	
Crape Myrtle 'Tuscarora'	32	
Little Gem Magnolia	32	
Wax Myrtle	32	
<b>TOTAL: 160</b>		

PREPARING ROW	
QUANTITY	UNITS
0.86	AC



08/02/2021

**LEGEND**  
 - - - - - PREPARING ROW



**SS 380 @  
 PENNSYLVANIA AVE  
 BEAUMONT**

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SHEET 1 OF 3			
FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.	SHEET NO.	
	SEE TITLE SHEET	28	
STATE	DISTRICT	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.



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 DATE: 8/2/2021 4:56:51 PM

MATCHLINE C

MATCHLINE D



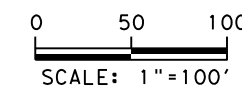
**NOTES:**

1. PLACE TOPSOIL TO FILL AREAS OF EXISTING SLOPE FAILURE AND SMOOTH SLOPES IN AREAS MARKED ON PLAN, IN ACCORDANCE WITH ITEM 160. SEE SHEET 46\_\_ FOR REQUIRED SOIL STABILIZATION PRACTICES.
2. AFTER PLANTING TREES (IF PROPOSED IN AREA WITH EXISTING SLOPE FAILURE) PLACE SOIL RETENTION BLANKETS OVER NEWLY PLACED TOPSOIL ACCORDING TO ITEM 169.

DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum	22	30 GAL. (TREE)
Possumhaw	23	
Texas Mountain Laurel	23	
Eastern Redbud	23	
<b>TOTAL: 91</b>		
Crape Myrtle 'Muskogee'	18	15 GAL. (TREE)
Crape Myrtle 'Natchez'	18	
Crape Myrtle 'Tuscarora'	18	
Little Gem Magnolia	18	
Wax Myrtle	18	
<b>TOTAL: 90</b>		

PREPARING ROW	
QUANTITY	UNITS
0.71	AC

**LEGEND**  
 PREPARING ROW



08/02/2021

**SS 380 @  
PENNSYLVANIA AVE  
BEAUMONT**

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SHEET 2 OF 3

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO. SEE TITLE SHEET	SHEET NO. <b>29</b>
STATE TEXAS	DISTRICT BMT	COUNTY JEFFERSON
CONTROL 0920	SECTION 00	JOB 147
		HIGHWAY NO. VAR.



FILE: T:\DES\_LAND\Projects\BMT\BMT GR FY 2022\Plan Set\10. Miscellaneous\SS 380 @ Pennsylvania Ave 3.DGN  
 DATE: 8/2/2021 4:57:42 PM

MATCHLINE D



DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum	5	30 GAL. (TREE)
Possumhaw	6	
Texas Mountain Laurel	6	
Eastern Redbud	6	
<b>TOTAL: 23</b>		
Crape Myrtle 'Muskogee'	4	15 GAL. (TREE)
Crape Myrtle 'Natchez'	4	
Crape Myrtle 'Tuscarora'	4	
Little Gem Magnolia	5	
Wax Myrtle	5	
<b>TOTAL: 22</b>		

PREPARING ROW	
QUANTITY	UNITS
0.23	AC

LEGEND  
 PREPARING ROW

0 50 100  
 SCALE: 1" = 100'



08/02/2021

**SS 380 @  
 PENNSYLVANIA AVE  
 BEAUMONT**

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SHEET 3 OF 3

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO. SEE TITLE SHEET	SHEET NO. <b>30</b>
STATE TEXAS	DISTRICT BMT	COUNTY JEFFERSON
CONTROL 0920	SECTION 00	JOB 147 HIGHWAY NO. VAR.



F:\DES\_LAND\Projects\BMT\BMT GR FY 2022\Plan Set\10. Miscellaneous\SS 380 @ LAMAR U 1.DGN  
 DATE: 8/2/2021 4:58:42 PM



MATCHLINE E

⊙ DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum		30 GAL. (TREE)
Possumhaw		
Texas Mountain Laurel		
Eastern Redbud		
<b>TOTAL: 0</b>		
Crape Myrtle 'Muskogee'	11	15 GAL. (TREE)
Crape Myrtle 'Natchez'	11	
Crape Myrtle 'Tuscarora'		
Little Gem Magnolia		
Wax Myrtle		
<b>TOTAL: 22</b>		

**NOTES:**

- IF EXISTING IRRIGATION SYSTEM IS DAMAGED DURING CONSTRUCTION, CONTRACTOR MUST REPAIR IT TO ENSURE IRRIGATION SYSTEM FUNCTIONS NORMALLY.

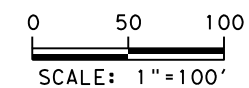


08/02/2021

PREPARING ROW	
QUANTITY	UNITS
0.03	AC

**LEGEND**

⊙ PREPARING ROW



**SS 380 @**  
**LAMAR UNIVERSITY**  
**BEAUMONT**

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SHEET 1 OF 2			SHEET NO. 31
FHWA DIVISION	FEDERAL AID PROJECT NO.	SEE TITLE SHEET	
STATE	DISTRICT	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.



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MATCHLINE E



⊙ DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum		30 GAL. (TREE)
Possumhaw		
Texas Mountain Laurel		
Eastern Redbud	10	
<b>TOTAL: 10</b>		
Crape Myrtle 'Muskogee'		15 GAL. (TREE)
Crape Myrtle 'Natchez'	8	
Crape Myrtle 'Tuscarora'		
Little Gem Magnolia		
Wax Myrtle		
<b>TOTAL: 8</b>		

**NOTES:**

- IF EXISTING IRRIGATION SYSTEM IS DAMAGED DURING CONSTRUCTION, CONTRACTOR MUST REPAIR IT TO ENSURE IRRIGATION SYSTEM FUNCTIONS NORMALLY.

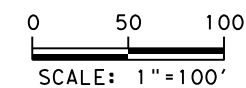


08/02/2021

PREPARING ROW	
QUANTITY	UNITS
0.03	AC

**LEGEND**

⊙ PREPARING ROW



**SS 380 @  
LAMAR UNIVERSITY  
BEAUMONT**

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SHEET 2 OF 2			SHEET NO. <b>32</b>
FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO. SEE TITLE SHEET	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.



FILE: T:\DES\_LAND\Projects\BMT\BMT GR FY 2022\Plan Set\10. Miscellaneous\US 69 Kountze DEMOLITION PLAN.dgn  
 DATE: 8/2/2021 12:58:44 PM



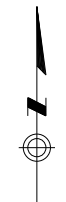
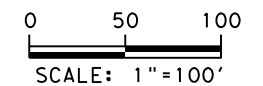
08/02/2021

**SH 326 @ US 69  
KOUNTZE  
DEMOLITION PLAN**

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SHEET 1 OF 1

**NOTES:**

1. EXCAVATE EXISTING PAVEMENT IN AREA MARKED ON PLAN TO A DEPTH OF 4". DISPOSE OF EXCAVATED MATERIAL ACCORDING TO ITEM 110.
2. PLACE TOPSOIL IN EXCAVATED AREA TO MATCH EXISTING GRADES.



FEDERAL AID PROJECT NO.		SHEET NO.	
SEE TITLE SHEET		33	
STATE	DISTRICT	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.



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 DATE: 8/2/2021 1:00:19 PM



MATCHLINE G

MATCHLINE F

DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum		30 GAL. (TREE)
Possumhaw		
Texas Mountain Laurel	4	
Eastern Redbud	4	
<b>TOTAL: 8</b>		
Crape Myrtle 'Muskogee'	4	15 GAL. (TREE)
Crape Myrtle 'Natchez'		
Crape Myrtle 'Tuscarora'	4	
Little Gem Magnolia		
Wax Myrtle		
<b>TOTAL: 8</b>		

PREPARING ROW	
QUANTITY	UNITS
0.06	AC

**LEGEND**

PREPARING ROW

0 50 100  
SCALE: 1"=100'



08/02/2021

**SH 326 @ US 69  
KOUNTZE**

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SHEET 1 OF 2

STATE	DISTRICT	COUNTY
TEXAS	BMT	JEFFERSON
CONTROL	SECTION	JOB
0920	00	147
		HIGHWAY NO.
		VAR.



FILE: T:\DES\_LAND\Projects\BMT\BMT GR FY 2022\Plan Set\10. Miscellaneous\US 69 Kountze PLANTING PLAN 2.dgn  
 DATE: 8/2/2021 1:01:56 PM



🌸 DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum		30 GAL. (TREE)
Possumhaw	7	
Texas Mountain Laurel	10	
Eastern Redbud	6	
<b>TOTAL: 23</b>		
Crape Myrtle 'Muskogee'	3	15 GAL. (TREE)
Crape Myrtle 'Natchez'	16	
Crape Myrtle 'Tuscarora'		
Little Gem Magnolia	6	
Wax Myrtle	6	
<b>TOTAL: 31</b>		

🌳 FOREST MIX TREES		
Common Name	Quantity	Size
Tulip Tree	24	15 GAL. (TREE)
<b>TOTAL: 24</b>		
Live Oak	24	30 GAL. (TREE)
<b>TOTAL: 24</b>		



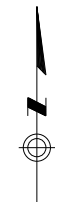
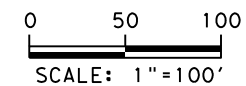
08/02/2021

**SH 326 @ US 69  
KOUNTZE**

PREPARING ROW	
QUANTITY	UNITS
0.04	AC

**LEGEND**

PREPARING ROW  
 BLOCK SODDING

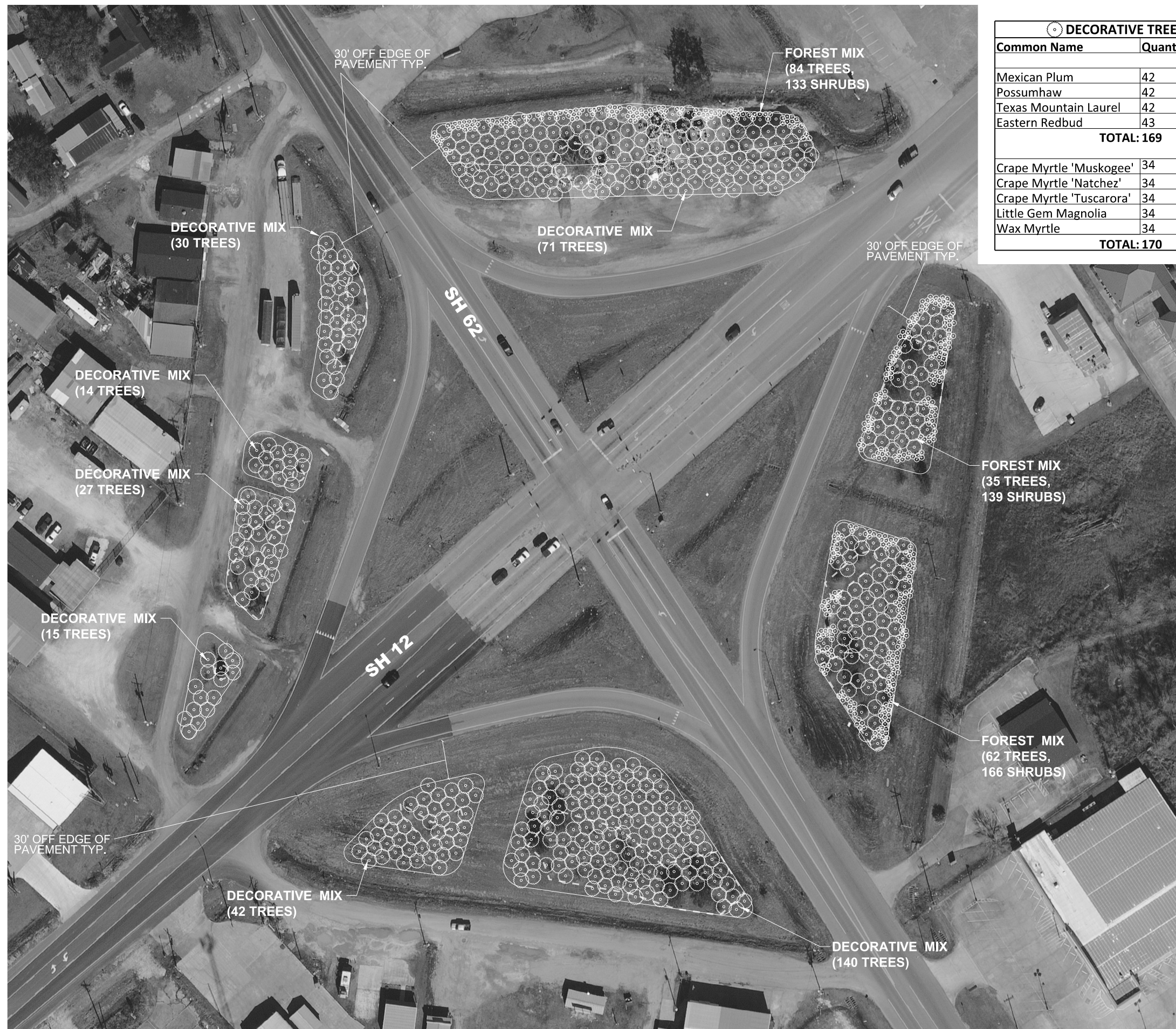


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FEDERAL AID PROJECT NO.		SHEET NO.	
SEE TITLE SHEET		35	
STATE	DISTRICT	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.



FILE: T:\DES\_LAND\Projects\BMT\BMT GR FY 2022\Plan Set\10. Miscellaneous\SH 12 @ SH 62 MAURICEVILLE.dgn  
 DATE: 8/2/2021 1:03:18 PM



DECORATIVE TREE MIX		
Common Name	Quantity	Size
Mexican Plum	42	30 GAL. (TREE)
Possumhaw	42	
Texas Mountain Laurel	42	
Eastern Redbud	43	
<b>TOTAL: 169</b>		
Crape Myrtle 'Muskogee'	34	15 GAL. (TREE)
Crape Myrtle 'Natchez'	34	
Crape Myrtle 'Tuscarora'	34	
Little Gem Magnolia	34	
Wax Myrtle	34	
<b>TOTAL: 170</b>		

FOREST MIX SHRUBS		
Common Name	Quantity	Size
Althaea	87	5 GAL.
American Beautyberry	87	
Cotoneaster	88	
Elaeagnus	88	
Pyracantha	88	
<b>TOTAL: 438</b>		

FOREST MIX TREES		
Common Name	Quantity	Size
Bald Cypress	12	5 GAL. (TREE)
Texas Redbud	12	
Red Maple	12	
Crape Myrtle 'Tuscarora'	11	
<b>TOTAL: 47</b>		
Golden Rain Tree	9	15 GAL. (TREE)
Loblolly Pine	9	
Southern Magnolia	9	
Sycamore	9	
Tulip Tree	9	
<b>TOTAL: 45</b>		
Bald Cypress	15	30 GAL. (TREE)
Live Oak	15	
Sycamore	15	
<b>TOTAL: 45</b>		
Bald Cypress	13	45 GAL. (TREE)
Cedar Elm	13	
<b>TOTAL: 26</b>		
Bald Cypress	9	65 GAL. (TREE)
Live Oak	9	
<b>TOTAL: 18</b>		



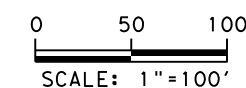
08/02/2021

**SH 12 @ SH 62  
MAURICEVILLE**

PREPARING ROW	
QUANTITY	UNITS
0.6	AC

**LEGEND**

PREPARING ROW



Texas Department of Transportation			
FEDERAL AID PROJECT NO.			SHEET NO.
SEE TITLE SHEET			<b>36</b>
STATE	DISTRICT	COUNTY	
TEXAS	BMT	JEFFERSON	
CONTROL	SECTION	JOB	HIGHWAY NO.
0920	00	147	VAR.

SHEET 1 OF 1





**DECORATIVE TREE MIX**

	Common Name	Botanical Name	Quantity	Size	Min. Caliper	Min. Height	Min. Spread	Notes
0192-6024	Mexican Plum	Prunus mexicana	184	30 GAL. (TREE)		6'	4'	Full branching, straight trunk, Specimen Quality
	Possumhaw	Ilex decidua	194					
	Texas Mountain Laurel	Calia secundiflora	201					
	Eastern Redbud	Cercis canadensis	209					
<b>TOTAL: 788</b>								
0192-6023	Crape Myrtle 'Muskogee'	Lagerstroemia indica	167	15 GAL. (TREE)	3/4"	5'	3'	Full branching, straight trunk, Specimen Quality, (must "NOT" require bamboo splint to stand upright)
	Crape Myrtle 'Natchez'	Lagerstroemia indica	184					
	Crape Myrtle 'Tuscarora'	Lagerstroemia indica	153					
	Little Gem Magnolia	Magnolia Grandiflora	154					
	Wax Myrtle	Myrica Cerifera	154					
<b>TOTAL: 812</b>								

**FOREST MIX**

	Common Name	Botanical Name	Quantity	Size	Min. Caliper	Min. Height	Min. Spread	Notes
192-6004	Althaea	Hibiscus syriacus	87	5 GAL. (SHRUB)		18"	18"	Full branching, SPECIMEN QUALITY (Roots, shoots and branching)
	American Beautyberry	Callicarpa americana	87					
	Cotoneaster	Cotoneaster franchetti	88					
	Elaeagnus	Elaeagnus pungens	88					
	Pyracantha	Pyracantha coccinea	88					
<b>TOTAL: 438</b>								
0192-6021	Bald Cypress	Taxodium distichum	12	5 GAL. (TREE)	3/4"	3'	2'	Full branching, straight trunk, Specimen Quality, (must "NOT" require bamboo splint to stand upright)
	Texas Redbud	Cercis canadensis	12					
	Red Maple	Acer rubrum	12					
	Crape Myrtle 'Tuscarora'	Lagerstroemia indica	11					
<b>TOTAL: 47</b>								
0192-6023	Golden Rain Tree	Koelreuteria paniculata	9	15 GAL. (TREE)	1-1/4"	7'	3'	Full branching, straight trunk, Specimen Quality, (must "NOT" require bamboo splint to stand upright)
	Loblolly Pine	Pinus taeda	9					
	Southern Magnolia	Magnolia grandiflora	9					
	Sycamore	Platanus occidentalis	9					
	Tulip Tree	Liriodendron tulipifera	33					
<b>TOTAL: 69</b>								
0192-6024	Bald Cypress	Taxodium distichum	15	30 GAL. (TREE)		6'-8'	4'-5'	Full branching, straight trunk, Specimen Quality
	Live Oak	Quercus virginiana	39					
	Sycamore	Platanus occidentalis	15					
<b>TOTAL: 69</b>								
0192-6025	Bald Cypress	Taxodium distichum	13	45 GAL. (TREE)		8'-10'	5'-6'	Full branching, straight trunk, Specimen Quality
	Cedar Elm	Ulmus crassifolia	13					
<b>TOTAL: 26</b>								
0192-6026	Bald Cypress	Taxodium distichum	9	65 GAL. (TREE)		12'-14'	6'-7'	Full branching, straight trunk, Specimen Quality
	Live Oak	Quercus virginiana	9					
<b>TOTAL: 18</b>								


PLANT SPECIFICATION NOTES:

- Reference Item 192 of the Texas Standard Specifications for Construction of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown.
- All plants to be nursery grown in containers unless otherwise shown on plans.
- Provide photographs of plant material when requested by Engineer.
- Properly handle and maintain plants during delivery, handling, storage, and planting. The Engineer may inspect any phase of work and may reject any plant material improperly handled and/or maintained.
- DELIVERY NOTICE. Provide 48 hour notice of proposed plant material delivery prior to arrival at project or storage area.
- DELIVERY TICKETS. For each plant material shipment, provide invoice showing the number, size, and name (common and botanical) of each of the species of plant material.
- WATERING PLAN(S). Prior to arrival at project or storage area, provide watering plan(s) of plants to be installed or stored. Watering plan(s) must be approved by Engineer prior to delivery to project or storage area.



08/02/2021

NTS

PLANT SPECIFICATIONS			
 Texas Department of Transportation			
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
6	SEE TITLE SHEET	38	
STATE	DIST.	COUNTY	
TEXAS	BMT	JEFFERSON	
CONT.	SECT.	JOB	HIGHWAY NO.
0920	00	147	VAR.



**VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES**

PHASE	ITEM DESCRIPTION	FREQUENCY	RATE / PLANT	
Item 192.3 Construction	Item 192.3.7. Watering is incidental to Item 192 and is not paid for separately UNLESS NOTED IN THE PLANS	Begin same day as planting then: 3 times per week with 1 day minimum between waterings See Initial Watering note	CNTR SIZE	WATER QTY
Item 192.3.15 Maintenance	Item 192.3.15.1. Watering is incidental to Item 192 and is not paid for separately		30 GAL = 16 gallons 15 GAL = 10 gallons 5 GAL = 4 gallons 3 GAL = 2 gallons 1 GAL = 2 gallons	
Item 193 Landscape Establishment (When Shown In Plans)	Item 193.3.3. Watering is incidental to Item 193 and is not paid for separately UNLESS NOTED IN THE PLANS	2 times per week with 2 days minimum between waterings	(1/2 X plant CNTR gallon size per plant for sizes not shown, one (1) gallon minimum)	See Initial Watering Note

**NOTES:**

Apply water over the rootball within the tree well only, unless otherwise shown on plans. Adjust rate and frequency to meet site conditions and weather as approved or directed by Engineer.

Plant material in poor condition due to the failure to apply the specified amount of water within the time allowed or overwatering will be replaced at Contractor's expense.

PROVIDE MONTHLY METER READINGS OF WATER APPLIED.

Prior to arrival at project or storage area, provide watering plan(s) of plants to be installed or stored. Watering plan(s) must be approved by Engineer prior to delivery to project or storage area.

**VEGETATIVE WATERING SCHEDULE FOR SODDED & SEEDED AREAS WITHOUT IRRIGATION SYSTEM:**

ITEM DESCRIPTION	PHASE	FREQUENCY	RATE
NON-IRRIGATED SOD & SEED	Construction/installation operations	SEE GENERAL NOTES (ITEM 168)	1/2 inch of water per week
	13 Week establishment period		

**NOTES:**

Apply vegetative watering for an establishment period of thirteen weeks following application of seed or installation of sod, at a rate of 1/2 inch of water depth per week (approximately 13,030 gallons per acre). During the first four weeks after seeding and sodding, apply water twice per week, on non consecutive days, each at half the weekly application rate. For the remainder of the establishment period, apply vegetative watering once per week during the months of January through June or September through December, at the weekly application rate; apply watering twice per week, on non-consecutive days during the months of July and August, each at one-half the weekly application rate.

**INITIAL WATERING AND ROOT STIMULATOR REQUIREMENTS**

PHASE	Item 192.3 Construction, Initial watering.
ITEM DESCRIPTION	Item 192.3.5. Plant Installation, Root stimulator material is incidental to Item 192 and is not paid for separately.
MATERIALS and SOLUTION	Two (2) ounces of root stimulator concentrate per one (1) gallon water. Root stimulator must be commercially available and labeled as an all organic/non-chemical liquid concentrate Bio-Stimulant and Root Stimulator. Use the following product or an approved equal: Super Seaweed, San Jacinto Environmental Supplies, 713-957-0909.
FREQUENCY and RATE	At the time of planting, provide initial watering at rate shown in Vegetative Watering Schedule this sheet. Use root stimulator solution for initial watering.



08/02/2021

NTS

**PLANTING DETAILS**

SHEET 2 OF 2



FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		40
STATE	DIST.	COUNTY	
TEXAS	BMT	JEFFERSON	
CONT.	SECT.	JOB	HIGHWAY NO.
0920	00	147	VAR.





**ITEM 100-6001 PREP RIGHT OF WAY**

BEGIN \*\* END

100-6001  
PREPARING ROW

AS SHOWN ON PLANTING, MAINTENANCE AND ESTABLISHMENT TIMELINE, SHEET 1 OF 1

**REQUIREMENTS FOR EXISTING LANDSCAPE AREAS**

**GENERAL**

1. PERFORM ALL REQUIREMENTS DESCRIBED ON THIS SHEET UNLESS OTHERWISE SHOWN.
2. WORK INCLUDES REDEFINING ALL EXISTING PLANTING AREAS AND 5' MOW AREAS ALONG PERIMETER OF EACH WITHIN PROJECT LIMITS EXCEPT: LANDSCAPES INSTALLED BY ADJACENT PROPERTY OWNERS.
3. WORK INCLUDES REDEFINING EXISTING PLANTING AREAS AND REMOVING TREES AND/OR SHRUBS WHICH MAY ACTUALLY REDUCE ORIGINAL BED SIZE AND ELIMINATE FURTHER MAINTENANCE OF AN AREA.
4. WORK INCLUDES PRUNING AND REMOVAL OF PLANT MATERIAL:
  - PRUNE IN ACCORDANCE WITH ANSI A300.
  - REMOVE PLANT MATERIAL STUMPS TO EXISTING GRADE.
  - CHIP AND EVENLY SPREAD PLANT DEBRIS ON SITE.
  - REMOVE ANY PLANT DEBRIS TOO LARGE TO CHIP FROM SITE.
  - DO NOT PRUNE OR REMOVE MORE PLANT MATERIAL THAN WHAT CAN BE CHIPPED OR REMOVED THE SAME DAY.
  - FILL ANY HOLES FROM DEAD PLANT REMOVAL WITH TOPSOIL, TOPSOIL IS INCIDENTAL.
5. EACH CYCLE INCLUDES COMPLETING THE SPECIFIED WORK FOR ALL LOCATIONS IDENTIFIED WITHIN THE PROJECT LIMITS.

**PLANT BED MAINTENANCE**

6. MAINTAIN AND/OR RESHAPE PLANT BEDS TO CONFORM TO ORIGINAL INSTALLATION (SEE PLANTING, MAINTENANCE AND ESTABLISHMENT LAYOUT SHEETS) SO THAT THE BED DOES NOT HINDER ROADWAY DRAINAGE, ESPECIALLY BEHIND SLOTTED BARRIER.

7. CHEMICALLY CONTROL WEEDS AND UNDESIRABLE GRASSES IN PLANT BEDS WITH ROUNDUP PROMAX.
  - PERFORM HERBICIDE APPLICATIONS UNDER SUPERVISION OF STATE LICENSED APPLICATOR.

**UNDESIRABLES**

8. CHEMICALLY TREAT AND REMOVE ALL JOHNSON GRASS WITHIN EXISTING PLANTING AREAS AND ALONG FENCES/WALLS ADJACENT TO 5' MOW AREAS WITH AN APPROVED HERBICIDE.
  - DO NOT REMOVE UNDESIRABLE PLANT UNTIL HERBICIDE MANUFACTURER'S RECOMMENDED TIME PERIOD FOR HERBICIDE ABSORPTION.
  - REPEAT AS REQUIRED FOR COMPLETE KILL.
  - HERBICIDE IS SUBSIDIARY TO ITEM 193-6002.
9. REMOVE INVASIVE AND/OR UNDESIRABLE TREES, SHRUBS AND VINES WITHIN EXISTING PLANTING AREAS AND ALONG FENCES/WALLS ADJACENT TO 5' MOW AREAS. CHEMICALLY TREAT STUMPS OF CUT INVASIVE AND/OR UNDESIRABLE PLANTS WITH PATHFINDER II BASAL BARK HERBICIDE, OR APPROVED EQUAL.
  - INVASIVE AND/OR UNDESIRABLE PLANTS INCLUDE, BUT ARE NOT LIMITED TO: WILLOW, TALLOW, BACCHARIS, MULBERRY, TRUMPET VINE, BIND WEED, JAPANESE HONEYSUCKLE, MORNING GLORY, VETCH, ETC.
  - REPEAT STUMP TREATMENT AS NECESSARY FOR COMPLETE KILL.
  - HERBICIDE IS SUBSIDIARY TO ITEM 193-6002.

**HERBICIDE**

10. CHEMICALLY TREAT ALL REDEFINED PLANTING AREAS WITH AN APPROVED HERBICIDE, AS NEEDED TO CONTROL UNDERSTORY GROWTH PRIOR TO MOWING AND TRIMMING.
  - DO NOT MOW AND/OR TRIM UNDERSTORY UNTIL AFTER HERBICIDE MANUFACTURERS RECOMMENDED ABSORPTION TIME.
  - DO NOT ALLOW HERBICIDE TO COME IN CONTACT WITH DESIRABLE VINES, SHRUBS, OR TREES, INCLUDING SEEDLINGS.
  - HERBICIDE IS SUBSIDIARY TO ITEM 193-6002.

**MOWING AND TRIMMING**

11. MOW 5' PERIMETER OF ALL REDEFINED PLANTING AREAS TO STANDARD HEIGHT (4"-7").
12. SCALP MOW/TRIM INSIDE ALL REDEFINED PLANTING AREAS INCLUDING BETWEEN TREES AFTER HERBICIDE MANUFACTURERS RECOMMENDED TIME PERIOD FOR HERBICIDE ABSORPTION.
  - TRIMMING WITH CORD TRIMMER IS ALLOWED INSIDE PLANTING (BED PREP / MULCH) AREAS IN BETWEEN TREES.
  - MANY EXISTING AND NEW DESIRABLE SEEDLING PLANTS EXIST IN PLANTING AREAS, EXTRA CAUTION IS NECESSARY TO PROTECT SEEDLINGS.
  - DO NOT TOUCH, SCRATCH, OR SCAR EXISTING AND NEW DESIRABLE PLANTS.
  - DO NOT TRIM WITHIN 6 INCHES OF ANY EXISTING AND NEW DESIRABLE PLANT. TALL GRASS MAY REMAIN AROUND DESIRABLE PLANT. HAND PULL UNDESIRABLE PLANTS WITHIN 6 INCHES OF DESIRABLE PLANT.
  - DAMAGED PLANTS WILL BE REPLACED, MAINTAINED, AND WARRANTED THROUGH DURATION OF CONTRACT AT CONTRACTOR'S EXPENSE.
  - DAMAGED PLANTS WILL BE REPLACED IMMEDIATELY, UNLESS OTHERWISE DIRECTED.

**PRUNING AND REMOVALS**

13. PRUNE ALL PLANTS OF ANY SIZE, HEIGHT, AND DIAMETER IN THE FOLLOWING CONDITIONS:
  - WITHIN SIGHT CLEARANCE AREAS FOR TRAFFIC AND SIGNAGE, SEE PLANT MAINTENANCE, SHEET 2 AND 3 OF 3 (PRUNING RELATED TO ANY SIGNS APPLY TO EXISTING SIGNS AND ANY NEW SIGNS INSTALLED FOR DURATION OF CONTRACT).
  - WITH VERTICAL CLEARANCE ISSUES OVER ANY ROADWAYS AND ACCESS ROUTES (18' MIN.), 7'-10' WIDTH BED PREP AREA PERIMETER (9' MIN.) AND SIDEWALKS (9' MIN.), SEE PLANT MAINTENANCE SHEET 3 OF 3.
  - PRUNE ALL SUCKER GROWTH AND/OR NEW LIMBS TO MAINTAIN CLEAR TRUNK IN ACCORDANCE WITH PRUNING AND TRIMMING TREES AND SHRUBS, SHEET 1 OF 1, TREE LIMBING detail.
  - PRUNE DEAD, DYING OR DAMAGED BRANCHES/LIMBS (INCLUDES FREEZE AND/OR DROUGHT DAMAGE TO ANY EXISTING PLANT MATERIAL).
14. REMOVE ALL PLANTS OF ANY SIZE, HEIGHT, AND DIAMETER NOT CONFORMING TO PLANT MAINTENANCE, SHEET 2 OF 3, AND:
  - REMOVE DEAD, DYING AND NON-VIABLE PLANTS WITH PERMANENT STRUCTURAL DAMAGE.
  - REMOVE INVASIVE OR UNDESIRABLE PLANTS AS DESCRIBED ON THIS SHEET.
  - REMOVE LEANING TREES MORE THAN APPROX. 8" OFF CENTER MEASURED AT A HEIGHT OF APPROX. 5' (SEE LEANING TREE REMOVAL IMAGE THIS SHEET).
  - REMOVE ANY EXISTING STUMPS TO GRADE.
  - REMOVE OLEANDERS, CRAPE MYRTLE, WAX MYRTLE, ETC. (LARGE SHRUBS) 54' IN FRONT OF AND 12' BEHIND ANY GROUND MOUNTED SIGN (SMALL AND LARGE) UNLESS OTHERWISE NOTED ON PLANS, TREAT STUMPS AS DESCRIBED IN NOTE #9.
  - REMOVE CRAPE MYRTLE, WAX MYRTLE, ETC. (MULTI-STEMMED TREE) LOCATED ON 8' LINE OF EDGE, BACK-OF-CURB, RAILINGS AND ADJACENT TO SIGN.
  - REMOVE ALL VINES FROM TREES AND SHRUBS AND VINES THAT HAVE FALLEN FROM SUPPORT STRUCTURE(S).
  - REMOVE ALL VINES FROM RETAINING AND SOUND WALLS ADJACENT TO PLANTING AREAS UNLESS OTHERWISE NOTED ON PLANS.

**STAKES AND STRAPS**

15. REMOVE ALL EXISTING STAKES, STRAPS, GUY WIRES, CABLES, AND TAGS FROM SITE.

**IRRIGATION SYSTEMS**

16. REMOVE ANY EXISTING IRRIGATION SYSTEM NOT IN USE TO GRADE WITHIN EXISTING/ORIGINAL PLANTING AREAS.
  - RECEIVE TXDOT APPROVAL PRIOR TO ANY REMOVALS.
  - CAP AND SEAL ALL CUT IRRIGATION LINES AND PIPES.
  - REMOVED IRRIGATION SYSTEM BECOMES THE PROPERTY OF THE CONTRACTOR AND WILL BE DISPOSED OF APPROPRIATELY - REMOVAL IS SUBSIDIARY TO ITEM 170.

**OTHER**

17. REMOVE ALL LITTER AND DEBRIS (ROCKS, TIRES, CONCRETE, LUMBER, TRASH, BANDIT SIGNS, SHOPPING CARTS, TEMPORARY SHELTER, ETC.) LOCATED WITHIN PLANTING AREAS.
18. TREAT ALL FIRE ANT COLONIES WITHIN PLANTING AREAS.
19. TREAT EXISTING PLANTS DISPLAYING EVIDENCE OF INSECT, FUNGAL, BACTERIAL, OR OTHER NEGATIVE INDICATIONS.
  - USE APPROVED AND APPROPRIATE METHODS AND PRODUCTS FOR TREATMENTS.
20. REMOVE SILT FENCE, EROSION CONTROL LOGS, AND STAKING ASSOCIATED WITH ANY PLANTING AREA UNLESS DIRECTED OTHERWISE.
21. ACCESS TO SOME AREAS IS CONSTRAINED. NO ADDITIONAL COMPENSATION IS ALLOWED FOR LIMITED ACCESS.
22. REFERENCE ITEM 5.10 INSPECTION OF THE TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES 2014. AT ANY TIME DURING ALL PHASES OF THE CONTRACT, ANY MATERIALS OR WORK PERFORMED NOT IN ACCORDANCE WITH PLANS AND SPECIFICATIONS WILL BE REPLACED AND/OR REWORKED UNTIL IN COMPLIANCE.
23. ANY ADJUSTMENTS DUE TO THE FAILURE TO COMPLY WITH PLANS AND SPECIFICATIONS SHOWN WILL BE AT CONTRACTOR'S EXPENSE.
24. ENGINEER OR LANDSCAPE ARCHITECT MUST APPROVE COMPLETED WORK PRIOR TO ACCEPTANCE AND PAYMENT.

CLEAR ZONE (Tree Setbacks)	
Dimensions are minimum requirements and are not limited to the items listed, adjustments will be made to accommodate site conditions.	
DO NOT PLANT WITHIN SIGHT TRIANGLE	
46'	Travel Lane (shoulder section) with slopes greater than or equal to 5:1
30'	Travel Lane (shoulder section) with slope less than 5:1, Direct Connector, Highmast Lighting, Overhead Transmission Line, CTMS, AVI, Camera, Sensor, Antenna, and/or Other Warning Devices
18'	Ramp, Overhead Distribution Line
15'	Bridge Overhang, Concrete Barrier, Curb, Ground Boxes, Guard Rail, Culvert/Inlet, Manhole, Retaining Wall, Ditch, Right-of-way Line, Riprap, Fence, Large and Small Sign (See PLANT MAINTENANCE Sheet 2 of 3 for sight triangles)



**LEANING TREE REMOVAL**



08/02/2021

**PREPARING RIGHT OF WAY**



FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		42
STATE	DIST.	COUNTY	
TEXAS	BMT	JEFFERSON	
CONT.	SECT.	JOB	HIGHWAY NO.
0920	00	147	VAR.



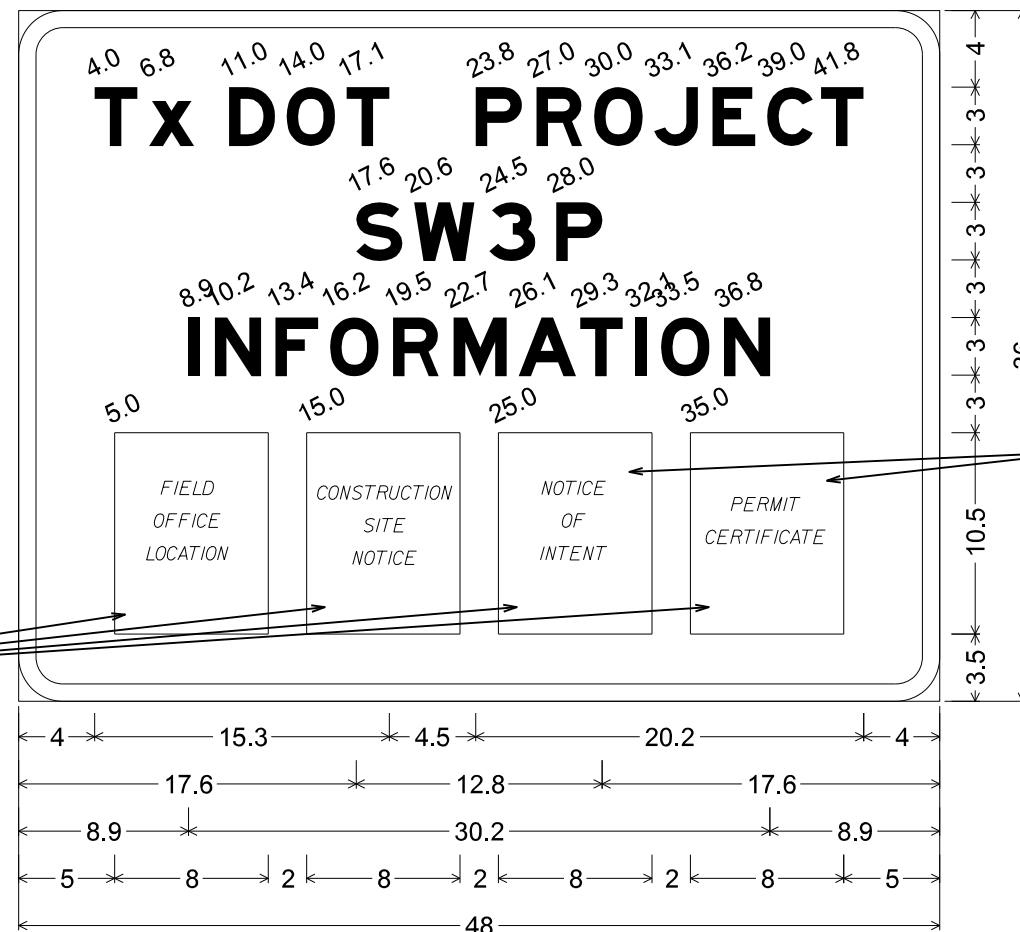
**NOTES:**

For projects disturbing 5 or more acres, each SW3P Notification Board will include laminated copies of the Field Office Location, Construction Site Notice, Notice of Intent, and Permit Certificate.

For projects disturbing between 1 and 5 acres, each SW3P Notification Board will include laminated copies of the Field Office Location and Construction Site Notice centered on the board.

Notification Boards are to be constructed from chloroplast and placed at a location within the right-of-way but outside the clear zone as directed by the Engineer. This work will not be paid for directly, but will be considered subsidiary to other items.

8' x 10.5' WHITE ON BLUE  
TEXT SIZE = 0.5"



2.3" Radius, 0.9" Border, White on Blue;  
[TxDOT PROJECT] E Mod; [SW3P] E Mod; [INFORMATION] E Mod;



**BEAUMONT DISTRICT**  
**SW3P**  
**NOTIFICATION BOARD**  
**DETAIL**  
**(SW3P-B)**

REVISIONS	FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.	SHEET NO.
			43
	STATE	DISTRICT	COUNTY
	TEXAS	BMT	JEFFERSON
	CONTROL	SECTION	JOB HIGHWAY NO.
	0920	00	147 VAR.





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DATE: \$DATES \$TIME\$  
 FILE: \$FILES

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

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

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

1. TxDOT - Beaumont District  
 2. Cities of Beaumont, Kountze, and Mauriceville.
- No Action Required     Required Action

Action No.

- Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
- Comply with the SW3P and revise when necessary to control pollution or as required by the Engineer.
- Comply with TCEQ Permit 150000 as this project is estimated to disturb greater than 5 acres of soil. TxDOT will file for an NOI first under TCEQ Permit 150000 as the Primary Operator. Contractor will be supplied a copy of the NOI and TCEQ Authorization Certificate. Contractor must use the TxDOT information to complete their own NOI per SP 506-003/ SP 007-004. Contractor files a NOI as the Primary Operator for Day-to-Day Operational Control and provides copies of their NOI, TCEQ Authorization Certificate, and Contractor Site Notice to the District. To ensure the Permit reflects a single construction site, the Regulated Entity Number (RN) must be the same for TxDOT and the Contractor. Contact the Beaumont District Construction Office with questions regarding TCEQ Permit 150000.
- Take measures to prevent construction materials and debris including, but not limited to wastewater (i.e., cooling liquid, etc.) associated with concrete removal from entering any inlets, ditches, or waterways.

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

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

The Contractor must adhere to all of the terms and conditions, including Regional conditions for the State of Texas, associated with the following permit(s):

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

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

- Maintain a neat and clean worksite next to the water and do not allow any debris to fall into the water.
- Comply with "Work In or Near Waters/Wetlands Regulatory Requirements and Best Management Practices" section found in the Beaumont District Environmental Field Guide.

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

Best Management Practices:

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

**III. CULTURAL RESOURCES**

- No Action Required     Required Action

Action No.

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

**IV. VEGETATION RESOURCES**

- No Action Required     Required Action

Action No.

- Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.
- Comply with "Vegetation and Habitat Impacts: Regulatory Requirements and Best Management Practices" section found in the Beaumont District Environmental Field Guide.

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

- No Action Required     Required Action

Action No.

- If any animal enters the work area, do not harm, harass, or attempt to handle; let the animal leave on its own.
- If caves or sinkholes are discovered on site, cease work in the area and contact the TxDOT Inspector or DEQC for guidance.
- Comply with "Wildlife: Regulatory Requirements and Best Management Practices" section found in the Beaumont District Environmental Field Guide.
- Contractor shall maintain compliance with the Migratory Bird Treaty Act (MBTA) and (TPW) Code Section 64.002. For compliance with MBTA and TPW Code, bridge demolition, clearing of vegetation, and tree trimming activities are to be scheduled from October 1 to February 14 (outside of migratory bird nesting season). Contractor is responsible for securing a qualified biologist to conduct a nest survey for any bridge demolition, tree trimming, or vegetation clearing that occurs during migratory bird nesting season. The qualified biologist must submit a survey protocol for approval by District environmental staff prior to construction. A nesting survey will remain valid up to five days. Any activity not completed within 5 days of a nesting survey will require another survey. Migratory bird nesting season is from February 15 to September 30. No removal of active nests is allowed during migratory bird nesting season; therefore, any structure or vegetation containing an active nest may not be disturbed, cleared, or trimmed. No removal of inactive nests is allowed during migratory bird nesting season except by an approved, qualified biologist. Contractor is responsible for ensuring all nests on bridge structures are removed prior to the start of nesting season. The full TxDOT MBTA guidance may be found here: <https://ftp.txdot.gov/pub/txdot-info/env/toolkit/350-01-gui.pdf>
- Maintenance Enhancement Maintenance Program BMPs from the Maintenance EA Best Management Practices Summary Report shall be reviewed and implemented where appropriate.

**LIST OF ABBREVIATIONS**

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

**VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES**

- No Action Required     Required Action

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

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

Contact the Engineer if any of the following are detected:

- \* Dead or distressed vegetation (not identified as normal)
- \* Trash piles, drums, canister, barrels, etc.
- \* Undesirable smells or odors
- \* Evidence of leaching or seepage of substances
- \* Any other evidence indicating possible hazardous materials or contamination discovered on site.

List below any bridge class structure(s), not including box culverts, being replaced, rehabilitated, removed, extended or modified as part of this project, or state "None", if applicable.

If "None", then no further action is required. Otherwise TxDOT is responsible for completing asbestos assessment/inspection and evaluation for presence of lead.

Provide results below:

Structure Location	PSN	Element	Lead	Asbestos
NONE				

If Asbestos is present, then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary.

If Asbestos is not present, then TxDOT is still required to notify DSHS prior to any scheduled demolition.

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

Hazardous Materials or Contamination Issues Specific to this Project:

Action No.

- Comply with TxDOT Standard Specification 7.12 and Special Provision 006-012 if evidence of hazardous materials or contamination is noted during construction.
- Notify TxDOT Inspector or DEQC of any hazardous materials spills including fuel, hydraulic fluid, etc.

**VII. OTHER ENVIRONMENTAL ISSUES**

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

- No Action Required     Required Action

Action No.

- Comply with "General Construction" section found in the Beaumont District Environmental Field Guide.

**Beaumont District Standard**

## ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

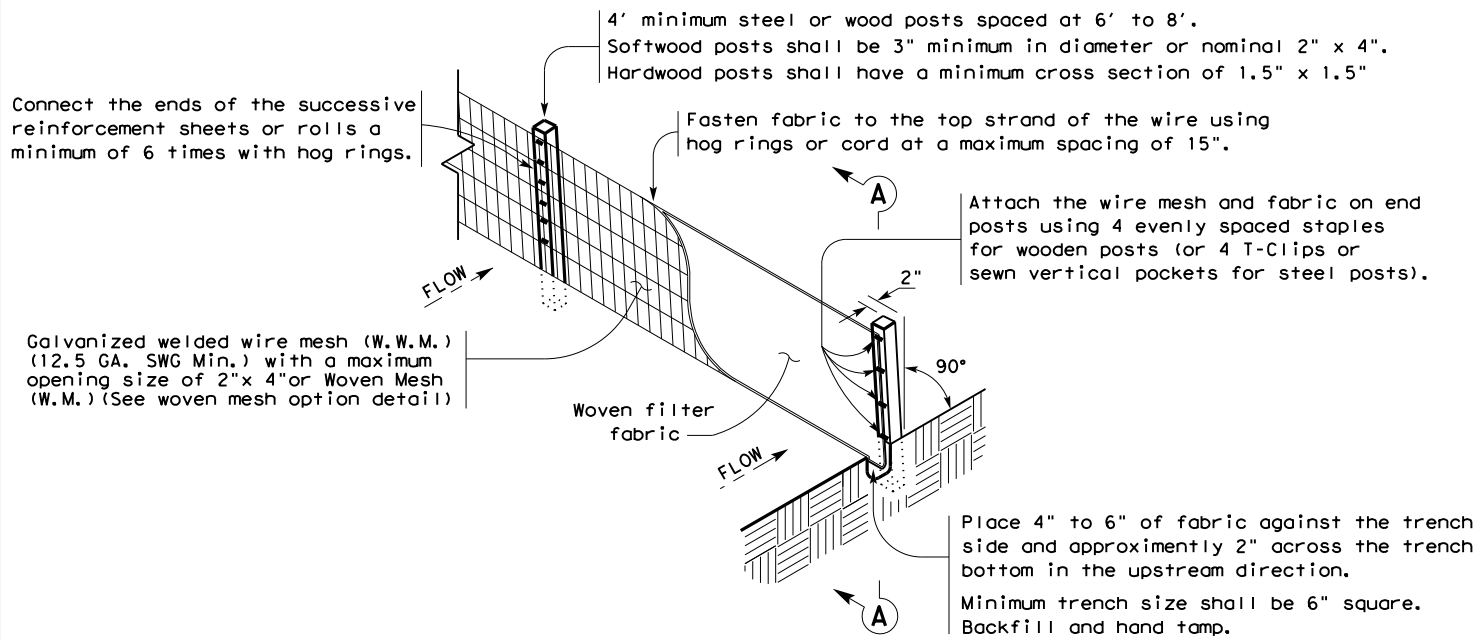
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 ©TxDOT February 2019    CONT: 0920    SECT: 00    JOB: 147    HIGHWAY: VAR.  
 DIST:    COUNTY:    SHEET NO.:  
 BMT    JEFFERSON    45

APPROVED BY    DATE: 8/10/2021  
**DISTRICT ENVIRONMENTAL DEPARTMENT**

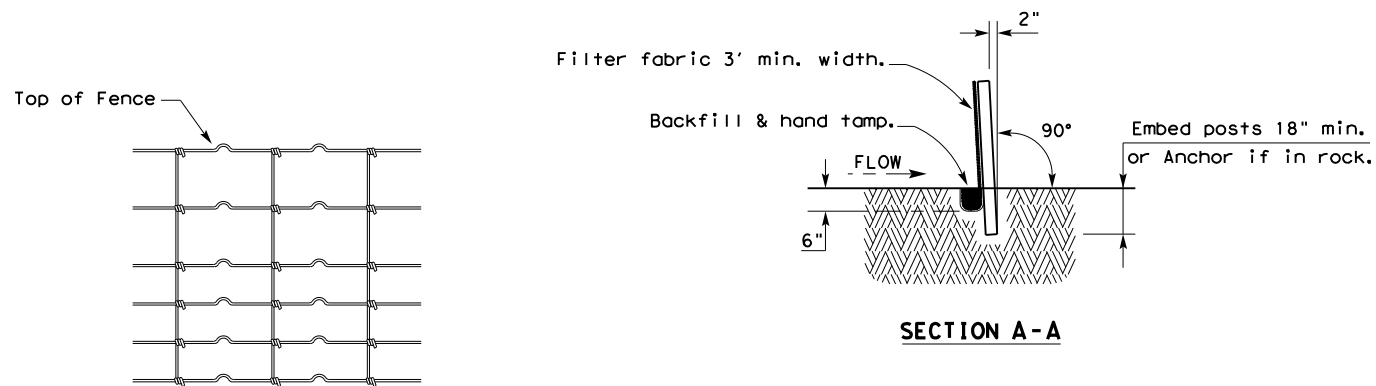
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DATE  
FILE



**TEMPORARY SEDIMENT CONTROL FENCE**

SCF



**HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL**

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

**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

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

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

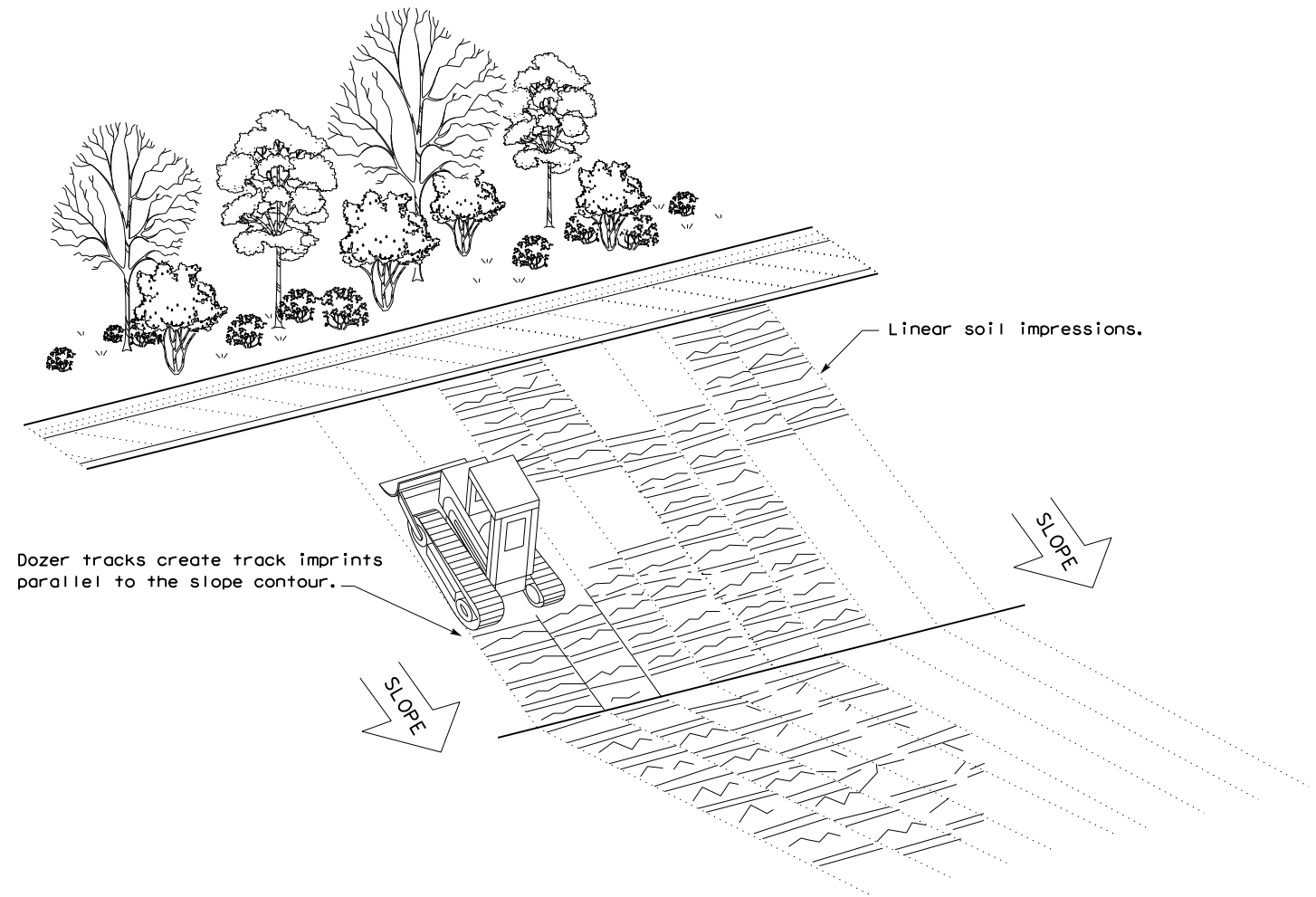
**LEGEND**

Sediment Control Fence

SCF

**GENERAL NOTES**

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



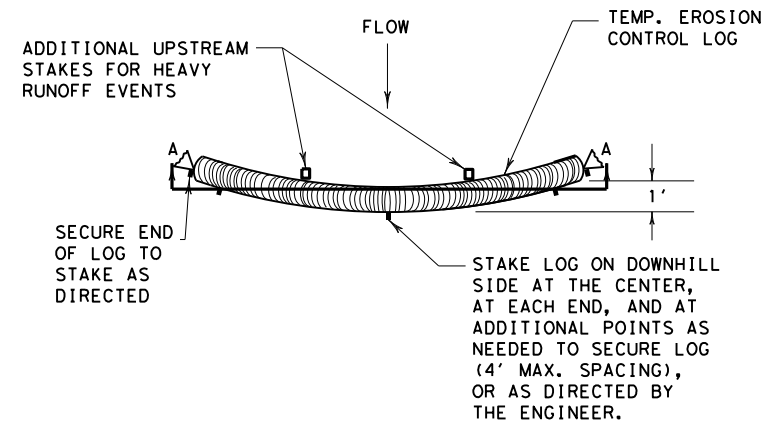
**VERTICAL TRACKING**

				Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE &amp; VERTICAL TRACKING</b> <b>EC(1)-16</b>					
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0920	00	147	VAR.	
	DIST	COUNTY		SHEET NO.	
	BMT	JEFFERSON		46	

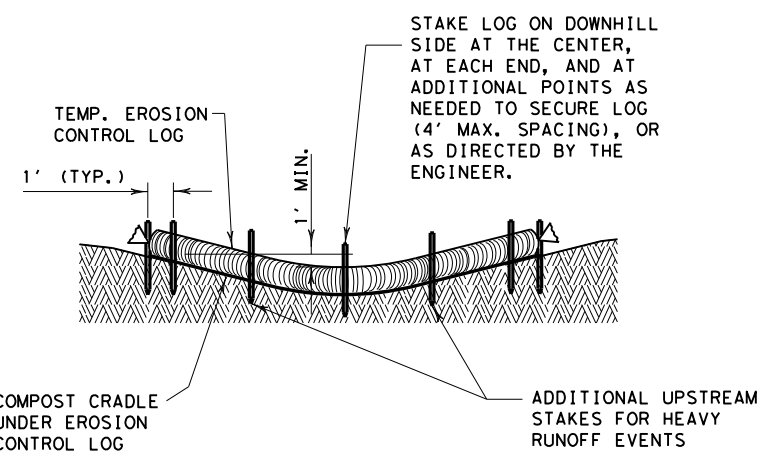


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PLAN VIEW

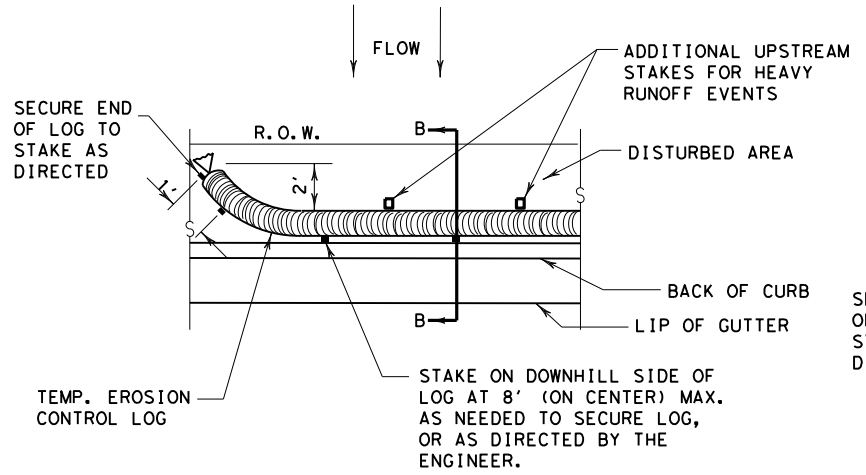


SECTION A-A  
EROSION CONTROL LOG DAM

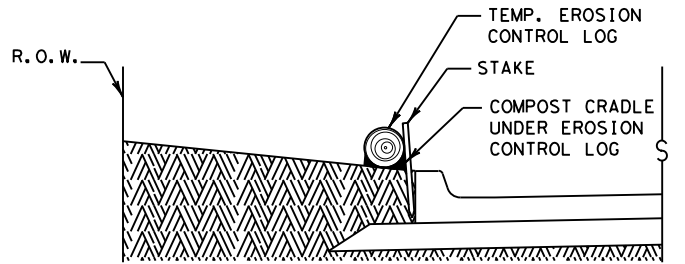
CL-D

LEGEND

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

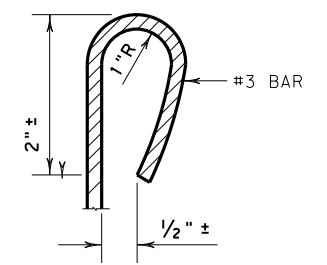


PLAN VIEW

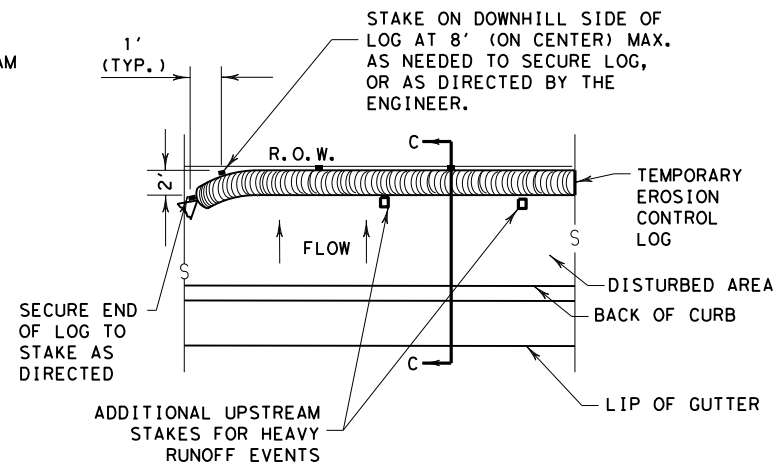


SECTION B-B  
EROSION CONTROL LOG AT BACK OF CURB

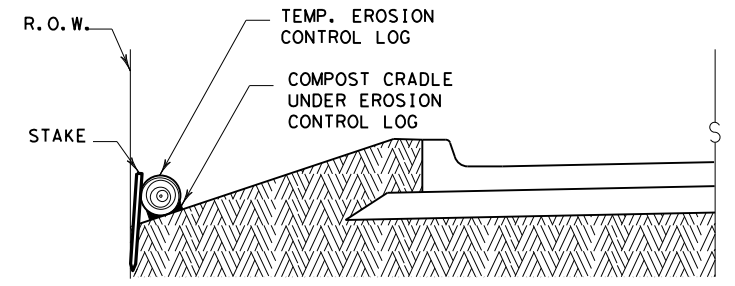
CL-BOC



REBAR STAKE DETAIL



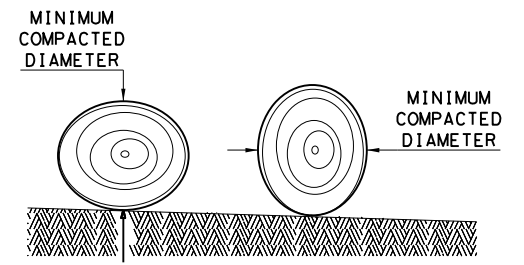
PLAN VIEW



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

**SEDIMENT BASIN & TRAP USAGE GUIDELINES**

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

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

Control logs should be placed in the following locations:

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

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

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

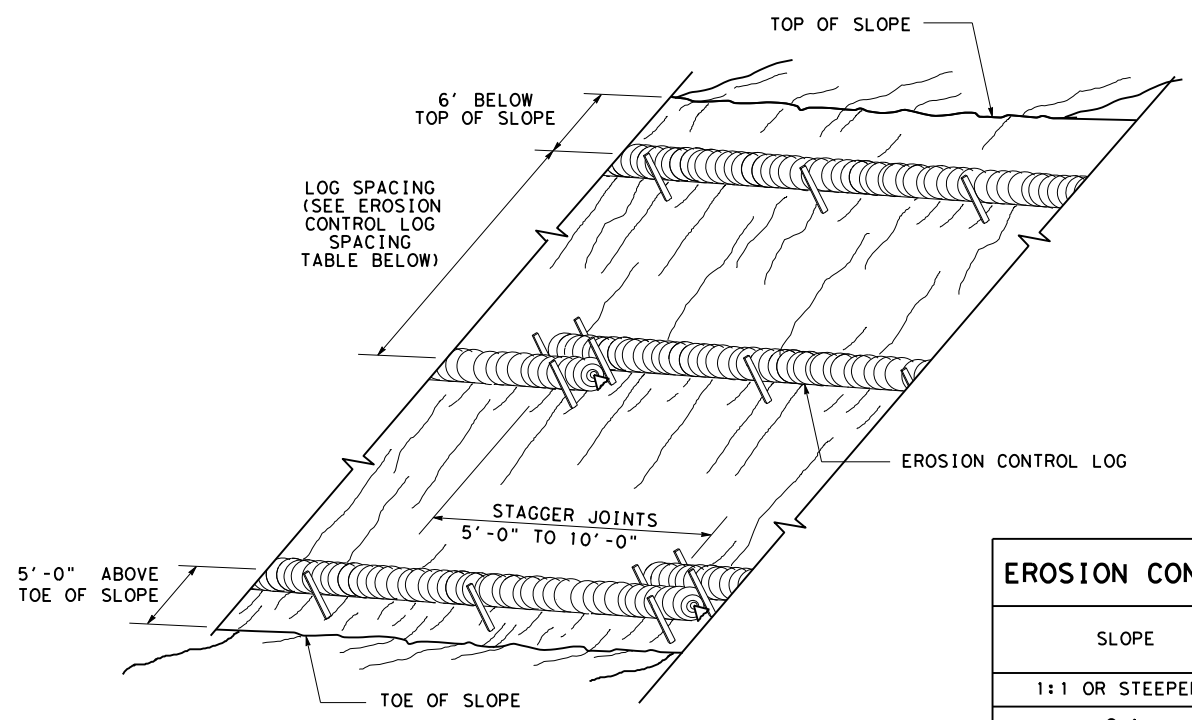
**GENERAL NOTES:**

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

SHEET 1 OF 3

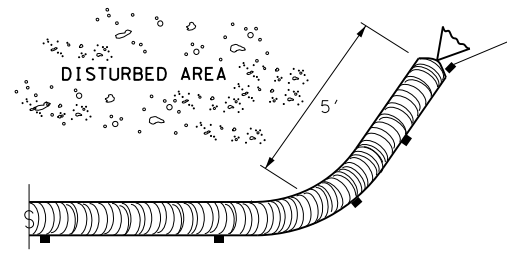
		<i>Design Division Standard</i>	
<p><b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b></p> <p><b>EROSION CONTROL LOG</b></p> <p><b>EC (9) - 16</b></p>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0920	00	147
	DIST	COUNTY	SHEET NO.
	BMT	JEFFERSON	47

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

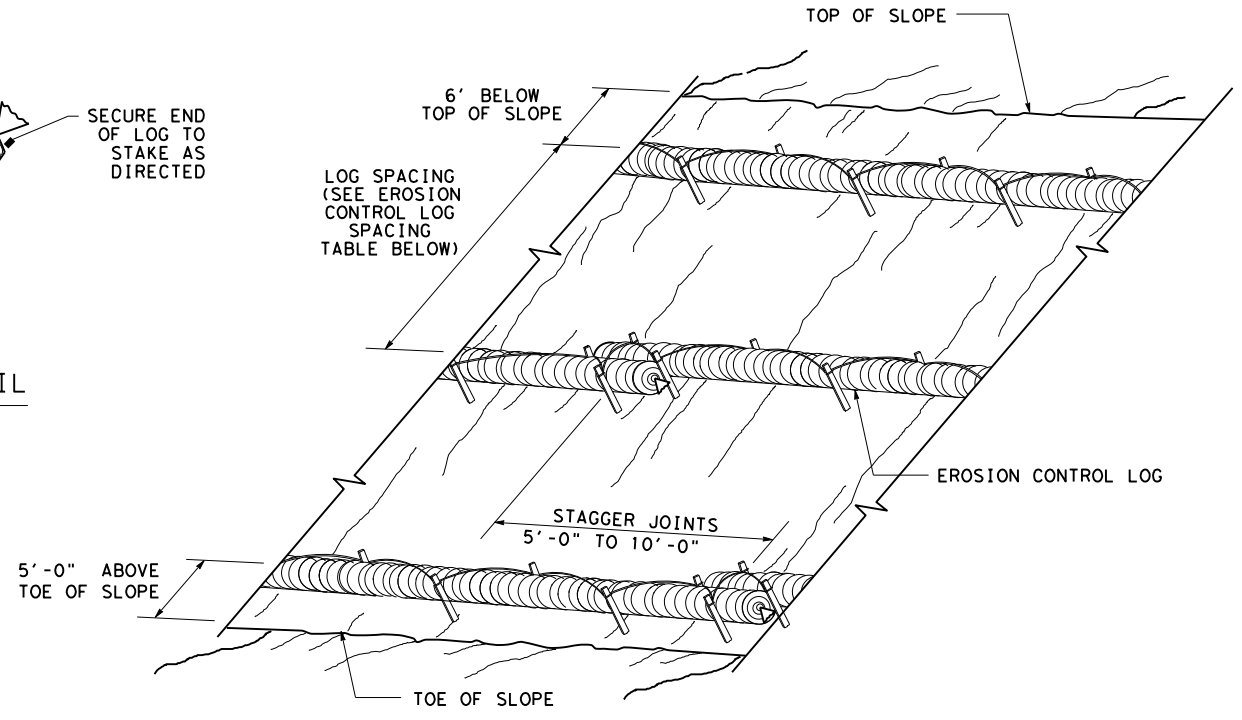
CL-SST



**END SECTION RAP DETAIL**

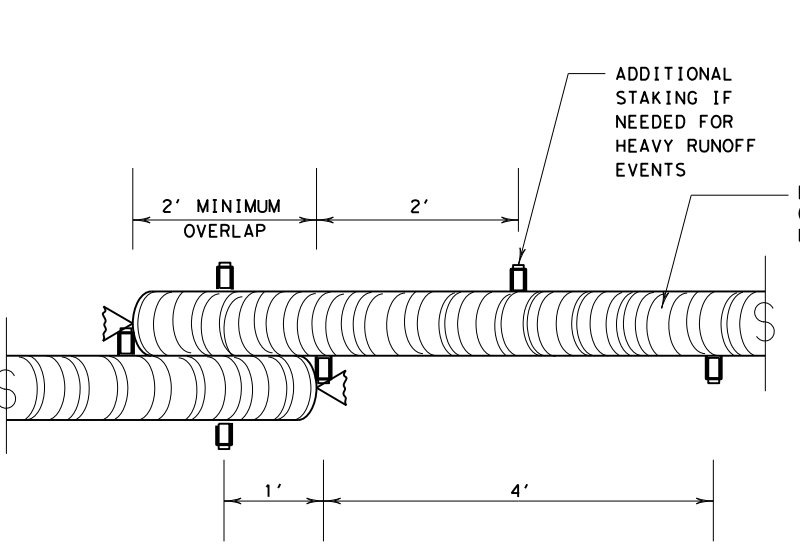
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



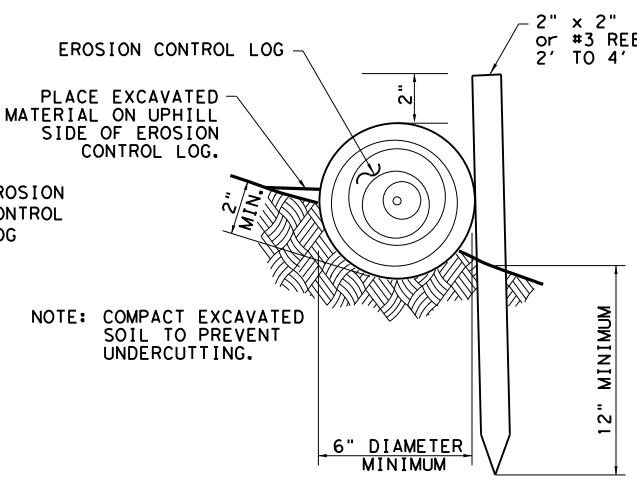
**EROSION CONTROL LOGS ON SLOPES  
STAKE AND LASHING ANCHORING**

CL-SSL

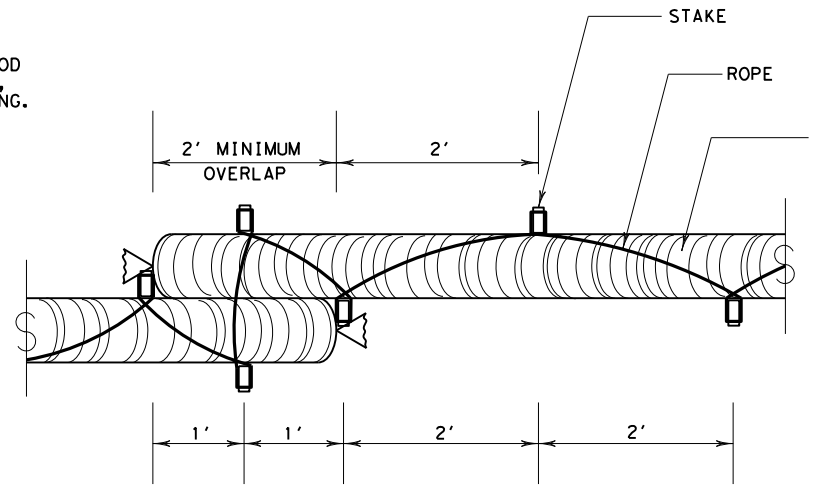


**STAKE AND TRENCHING ANCHORING DETAIL**

CL-SST

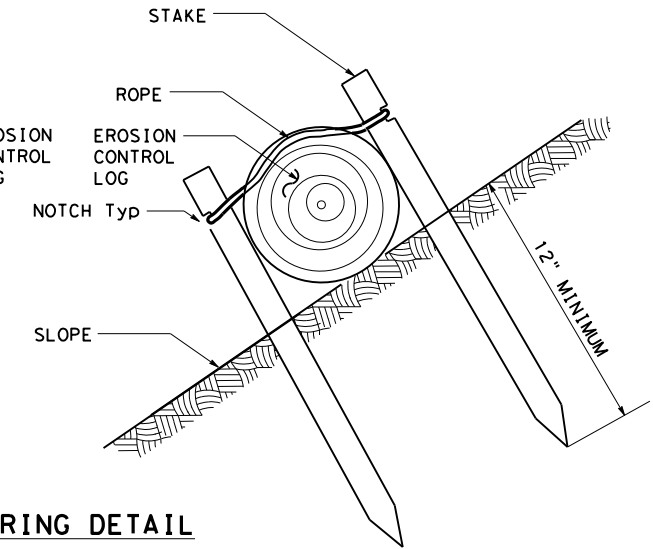


NOTE: COMPACT EXCAVATED SOIL TO PREVENT UNDERCUTTING.



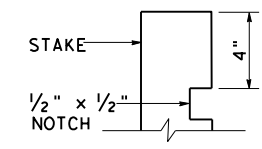
**STAKE AND LASHING ANCHORING DETAIL**

CL-SSL



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

**TRENCH DEPTH TABLE**



**STAKE NOTCH DETAIL**

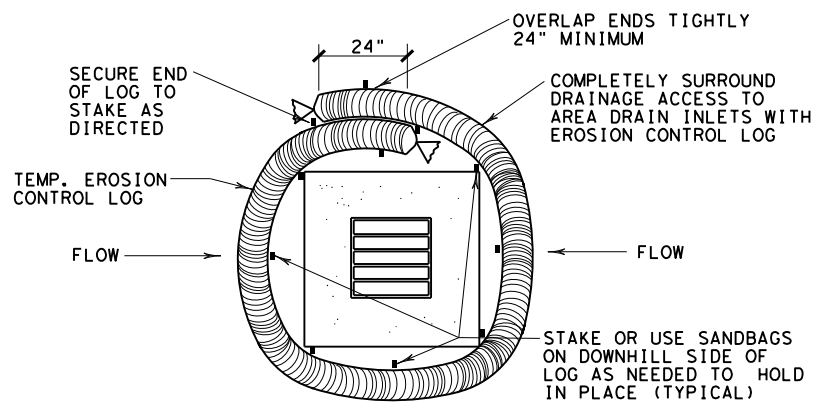
SHEET 2 OF 3

		Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16</b>			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0920	00	147
DIST	COUNTY	SHEET NO.	
BMT	JEFFERSON	48	



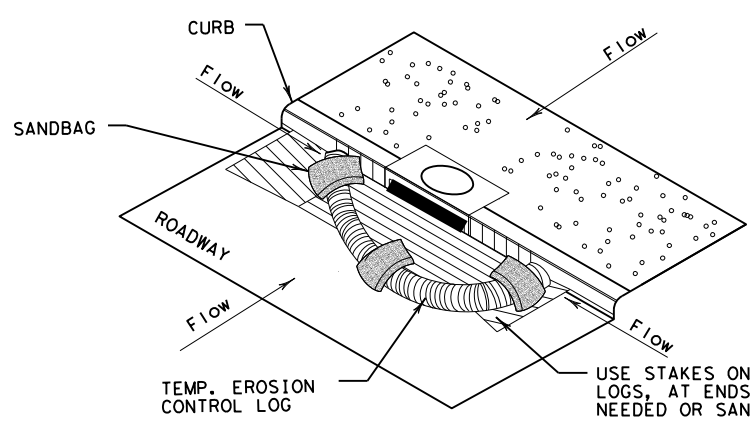
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DATE: 8/2/2021  
 FILE: T:\DESIGN\Projects\BMT\BMT GR FY 2022\P10101 Set\Environmental\ec916.dgn



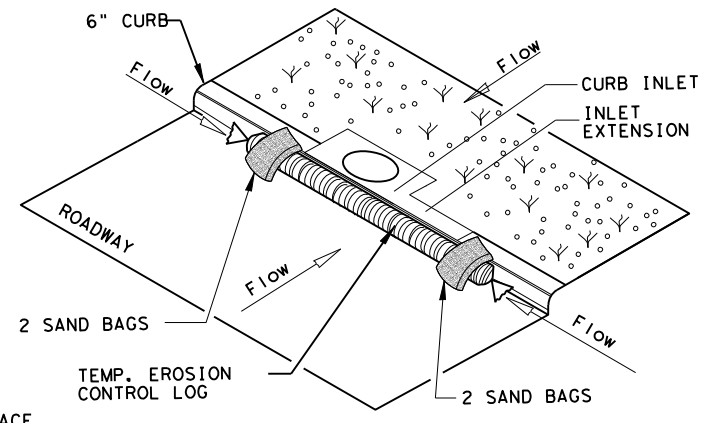
**EROSION CONTROL LOG AT DROP INLET**

CL-DI



**EROSION CONTROL LOG AT CURB INLET**

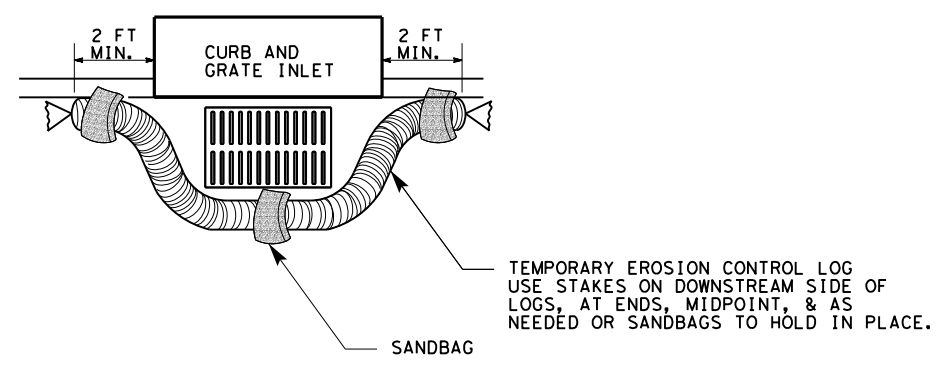
CL-CI



**EROSION CONTROL LOG AT CURB INLET**

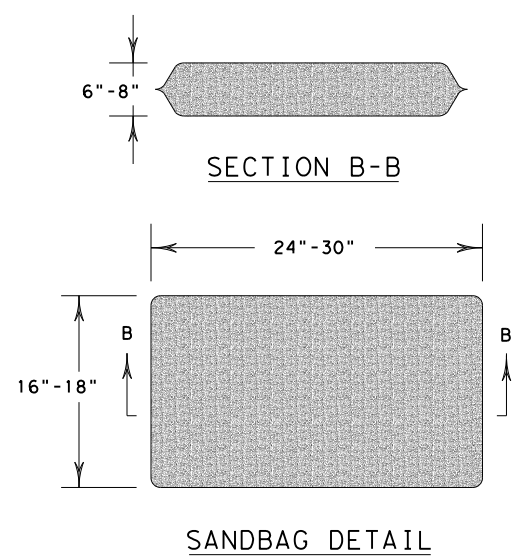
CL-CI

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



**EROSION CONTROL LOG AT CURB & GRADE INLET**

CL-GI



SHEET 3 OF 3

		<i>Design Division Standard</i>	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>EROSION CONTROL LOG</b> <b>EC (9) - 16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0920	00	147
DIST	COUNTY		SHEET NO.
BMT	JEFFERSON		49