

INDEX OF SHEETS

SEE SHEET NO. 2

STATE OF TEXAS DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT
F 2024(138)

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO. F 2024(138)	SHEET NO. 1
STATE TEXAS	DISTRICT BMT	COUNTY CHAMBERS
CONTROL 0739	SECTION 01	JOB 050 HIGHWAY NO. IH 10

FINAL PLANS

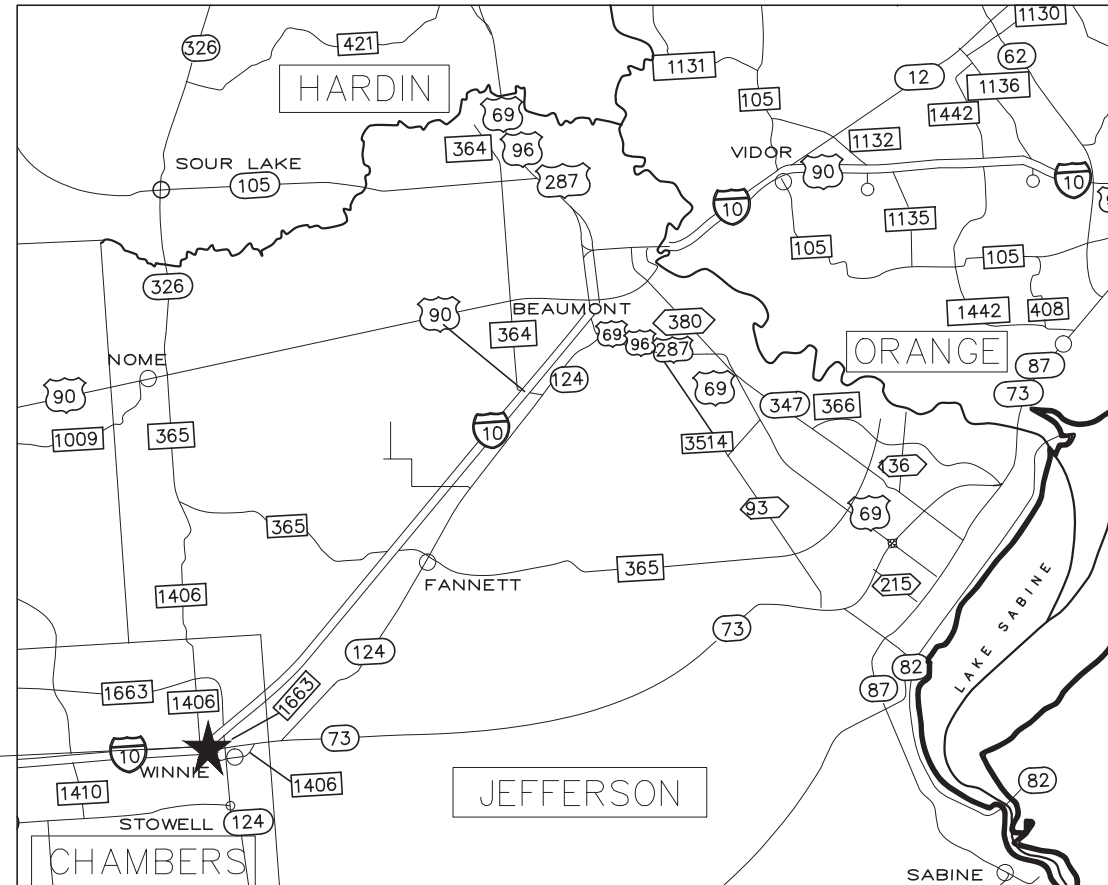
LETTING DATE: _____
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK WAS COMPLETED & ACCEPTED: _____
FINAL CONTRACT COST: \$ _____
CONTRACTOR : _____

LOCATION	COUNTY	ROADWAY LIMITS	LENGTH
1	CHAMBERS	IH 10 & SH 73	0.29 MILES
TOTAL			.29 MILES

DISTRICTWIDE LANDSCAPE

FOR THE CONSTRUCTION OF A LANDSCAPE AND SCENIC ENHANCEMENT PROJECT
CONSISTING OF LANDSCAPING

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



VICINITY MAP

0 MI 5 MI 10 MI



★ DENOTES PROJECT LOCATION

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



1

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, JULY 2022)

SUBMITTED FOR LETTING: 8/4/2023
 Submitted by: *[Signature]*
 DISTRICT DESIGN ENGINEER
 RECOMMENDED FOR LETTING: 8/4/2023
 Recommended by: *Lisa Collins*
 DISTRICT DIRECTOR OF TRANSPORTATION
 PLANNING AND DEVELOPMENT
 APPROVED FOR LETTING: 8/4/2023
 Approved by: *Martin N. Gibbs, P.E.*
 DISTRICT ENGINEER

INDEX OF SHEETS

SHEET NO. DESCRIPTION

GENERAL

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2	INDEX OF SHEETS
3-5	GENERAL NOTES
6	ESTIMATE & QUANTITY SHEET
7	SUMMARIES

ENVIRONMENTAL

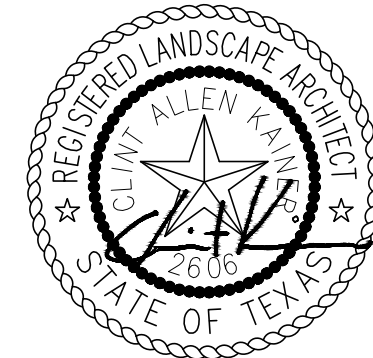
##	38-39	SW3P-I
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##	9	TCP (1-2)-18
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##	12-23	BC (1) - 21 THRU BC (12) - 21
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ROADWAY DETAILS

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26	IH 10 @ SH 73
27	IH 10 @ SH 73
28	PLANT SPECIFICATIONS
29	PLANTING, MAINTENANCE, AND ESTABLISHMENT TIME LINE
30	PLANTING DETAILS
31-32	PLANTING AND ESTABLISHMENT
33-34	LANDSCAPE TREATMENT (TYPE 3)
35-36	PRUNING
37	WILDFLOWER SPECIFICATIONS



08/24/2023

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

Clint Allen Kainer 08/24/2023
 CLINT ALLEN KAINER, RLA DATE

INDEX OF SHEETS



CONT	SECT	JOB	HIGHWAY
0739	01	050	IH 10
DIST		COUNTY	SHEET NO.
BMT		CHAMBERS	2

CK:
 DW:
 CK:
 DN:

POL

GENERAL NOTES:

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

Name Roberto M. Rodriguez, P.E.

Email Roberto.M.Rodriguez@txdot.gov

Name Nyemb Nyemb, P.E.

Email Nyemb.Nyemb@txdot.gov

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed

from the Notice to Contractors dashboard located at the following Address:

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

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

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

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 expence.

Item 6 Control of Materials

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.

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

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

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

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

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 7.2.4 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 the project, all project locations in the contract, and the contractor project specific locations (SPLs), within 1 mile of the project limits, for the contract wo;; further establish the authorization requirements for storm water discharges. When the total area disturbed in the contract and PSLs within 1 miles of the project limits exceeds 5 acres, provide a copy of the contractor NOI for PSLs on the ROW to the Engineer.

State contract mowers will mow the right of way during the growing season. The Contractor will be notified by the Engineer one week in advance of the anticipated time when mowers will be in the limits of the project. Clean the right of way to such a condition that allows the mowing contractors to safely mow.

No significant traffic generator events have been identified in the project limits.

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.

Highway: IH 10

Control: 0739-01-050

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 Right of Way

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 (minimum 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. On IH 10 & SH 73 plantings, 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.

When tree trimming or tree/brush removal is required from February 15 to September 30, the contractor will provide a qualified biologist with a Bachelor's Degree in biology and demonstrated bird nest survey experience to conduct nesting surveys before work can begin and until vegetation work is completed to ensure compliance with the Migratory Bird Treaty Act (MBTA). See EPIC sheet for details.

Item 168 Vegetative Watering

The quantity of watering in the plans under this item is for the initial tree installation and 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 applies, in addition to metering the water equipment.

Water plants a minimum of twice a week at a rate equal to the container size of the plant per plant each watering. Water the trees and shrubs at the given rate during the planting period and the 90-day maintenance period. Watering interval or quantity may be changed as directed by the Engineer (such as during periods of sufficient rainfall).

Highway: IH 10

Control: 0739-01-050

Item 192 Landscape Planting

Mow and trim the project area to be planted prior to planting. Consider this work subsidiary to Item 192. For other Item 192 mowing requirements refer to Sheet 36, Planting and Establishment, Item 192 Landscape Maintenance & 193 Establishment Requirements Chart.

See Roadway Plans and Details 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.

"Forest Mix", "Mass Planting Mix", and "Decorative Trees Mix" must conform to specifications shown in plans.

See Item 100 Prep ROW areas on IH 10 and SH 73 and requirements for existing planting areas described under planting and establishment sheets for treatment of existing shrubs and trees.

Item 193 Landscape Establishment

Provide 24 months of Plant Maintenance at each planting location.

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 applies, in addition to metering the water equipment.

Water trees as directed by the Engineer. Each watering must be as described above for Item 192. Watering interval or quantity may be changed as directed by the Engineer (such as during periods of sufficient rainfall).

For Item 193 mowing requirements refer to Sheet 36-37, Planting and Establishment, Item 192 Landscape Maintenance & 193 Establishment Requirements Chart.

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.**

Highway: IH 10

Control: 0739-01-050

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be used 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 IH 10 & SH 73. No vehicles not in active use will be permitted on the shoulder of IH 10. Reference TCP (5-1) for shoulder closures on IH 10 & SH 73. Reference TCP(1-1), (1-2), or (1-5) for traffic control on frontage roads.

Construct all work zone signs, sign supports, and barricades from material other than wood unless approved otherwise. Metal posts, if used, are to be galvanized. Aluminum signs, if used, will 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 a portion of this project. Plan and prosecute the sequence of construction and the traffic control plan with adjacent construction projects, if applicable. Manage construction of all phases to minimize disruption to traffic.

Provide all flaggers and pilot vehicle drivers with two-way radio communication capability.

Item 506 Temporary Erosion, Sedimentation, and Environmental Controls

It is not anticipated that any erosion, sedimentation, or environmental control devices will be needed on this project. The Contractor Force Account "SW3P Contingency" that has been established for this project is intended to be used 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 and as specified under this Item. This work will be paid for in accordance with Article 4.4., "Changes in the Work.

Highway: IH 10

Control: 0739-01-050

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

Shadow vehicles with TMA and high intensity rotating, flashing, oscillating or strobe lights are required. Use one TMA preceding every stationary work zone and two TMA's for mobile operations. 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.



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0739-01-050

DISTRICT Beaumont

COUNTY Chambers

HIGHWAY IH 10


CONTROL SECTION JOB				0739-01-050		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00195392			
COUNTY				Chambers			
HIGHWAY				IH 10			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	166-6001	FERTILIZER	AC	0.750		0.750	
	168-6001	VEGETATIVE WATERING	MG	1,159.000		1,159.000	
	180-6001	WILDFLOWER SEEDING	AC	0.750		0.750	
	192-6012	MULCH	CY	651.000		651.000	
	192-6023	PLANT MATERIAL (15 GAL) (TREE)	EA	162.000		162.000	
	192-6024	PLANT MATERIAL (30 GAL) (TREE)	EA	662.000		662.000	
	193-6001	PLANT MAINTENANCE	MO	24.000		24.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	6.000		6.000	
	751-6011	PRUNING	CYC	1.000		1.000	
	1022-6003	LANDSCAPE TREATMENT(TY 3)	EA	1.000		1.000	
	6185-6002	TMA (STATIONARY)	DAY	116.000		116.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

DK
DW
DK
DN

QUANTITY SUMMARY

BID CODE	166-6001	168-6001	180-6001	192-6012	192-6023	192-6024	193-6001	500-6001	502-6001	751-6011	1022-6003	6185-6002
DESCRIPTION	FERTILIZER	VEGETATIVE WATERING	WILDFLOWER SEEDING	MULCH	PLANT MATERIAL (15 GAL) (TREE)	PLANT MATERIAL (30 GAL) (TREE)	PLANT MAINTENANCE	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING	PRUNING	LANDSCAPE TREATMENT(TY 3)	TMA (STATIONARY)
UNIT	AC Acre	MG Thousand Gallons	AC Acre	CY Cubic Yard	EA Each	EA Each	MO Monthly	LS Lump Sum	MO Monthly	CY C Cycle	EA Each	DAY Day
PROJECT TOTALS	0.750	1,159.000	0.750	651.000	162.000	662.000	24.000	1.000	6.000	1.000	1.000	116.000

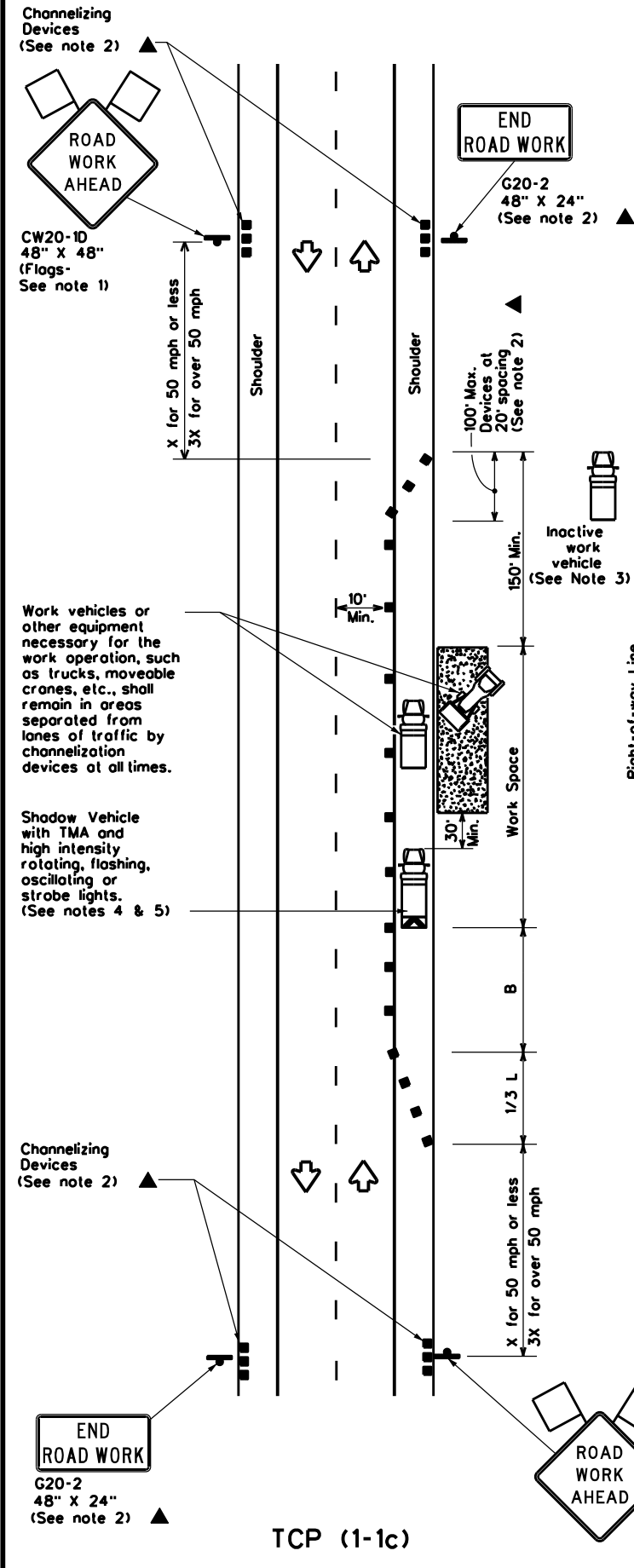
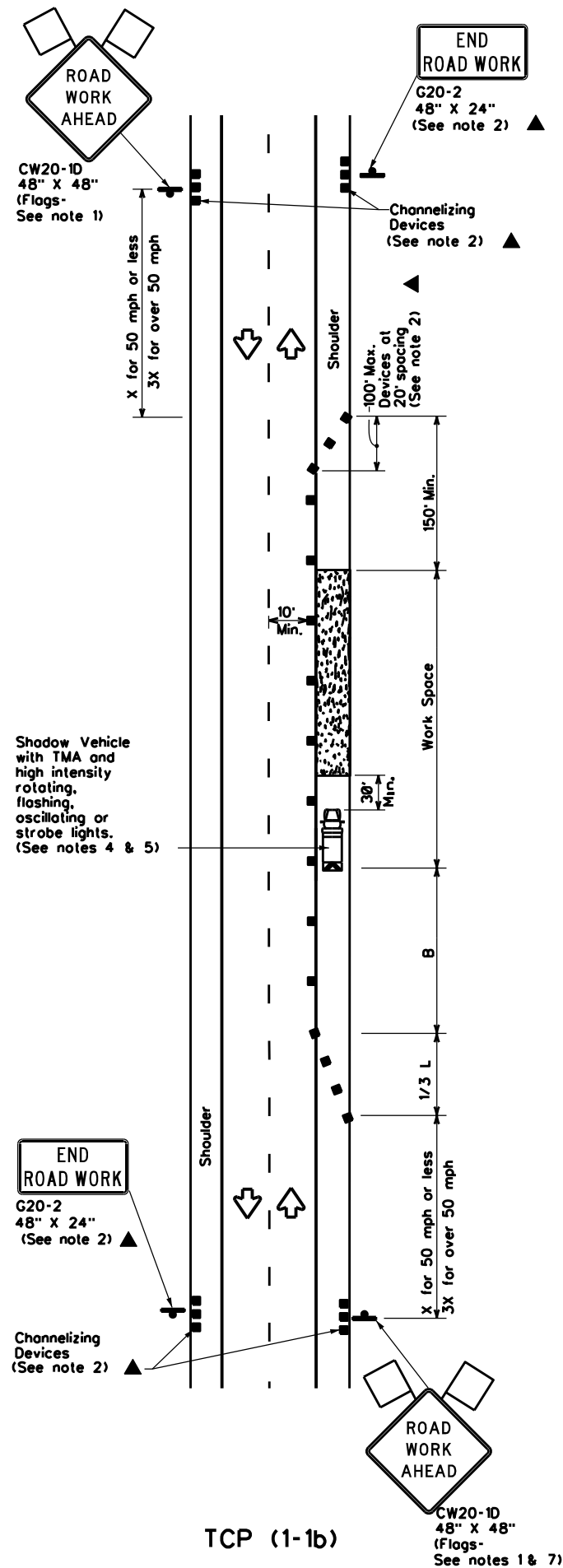
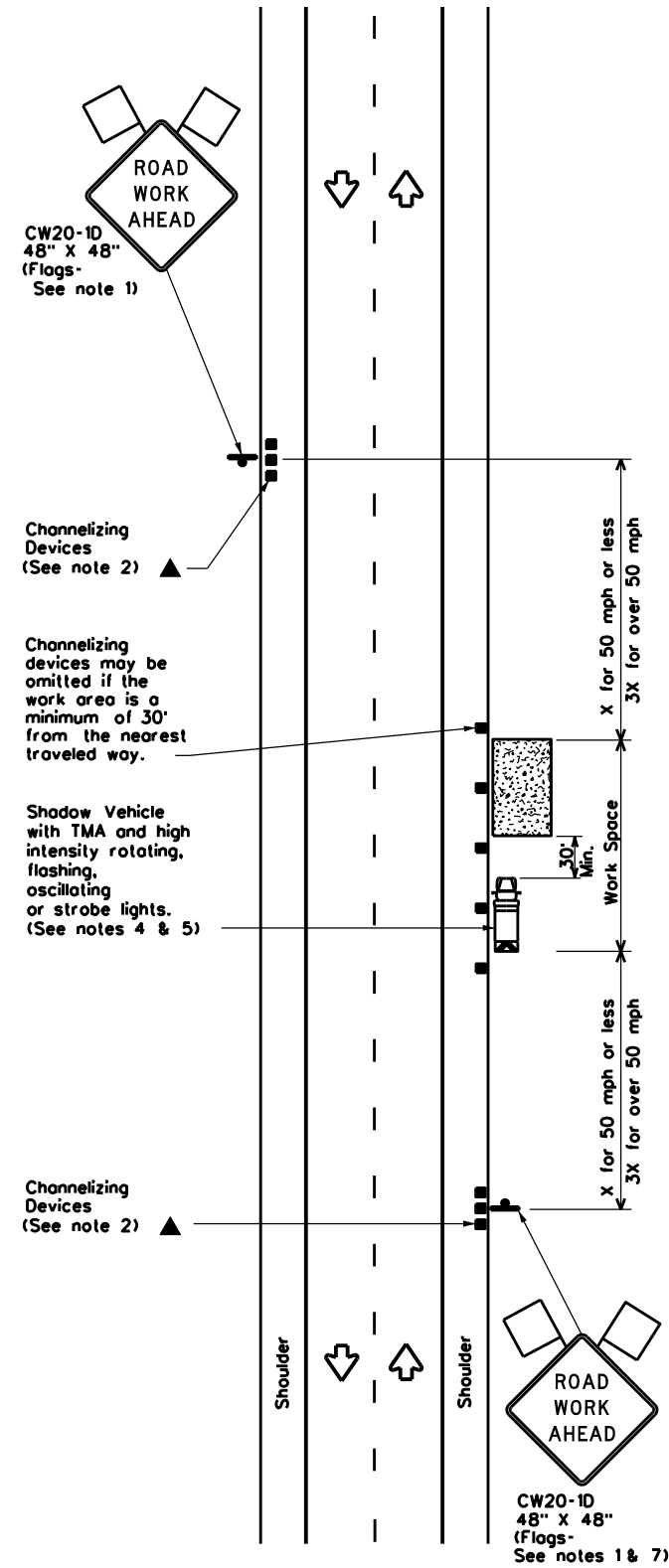
QUANTITY SUMMARY



CONT	SECT	JOB	HIGHWAY
0739	01	050	IH 10
DIST	COUNTY		SHEET NO.
BMT	CHAMBERS		7

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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	Minimum Desirable Taper Lengths "x" x			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L - 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'

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

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

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- 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**

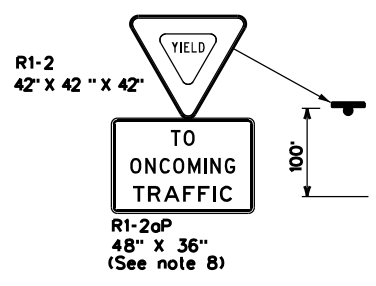
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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	BMT	CHAMBERS		8
1-97 2-18				

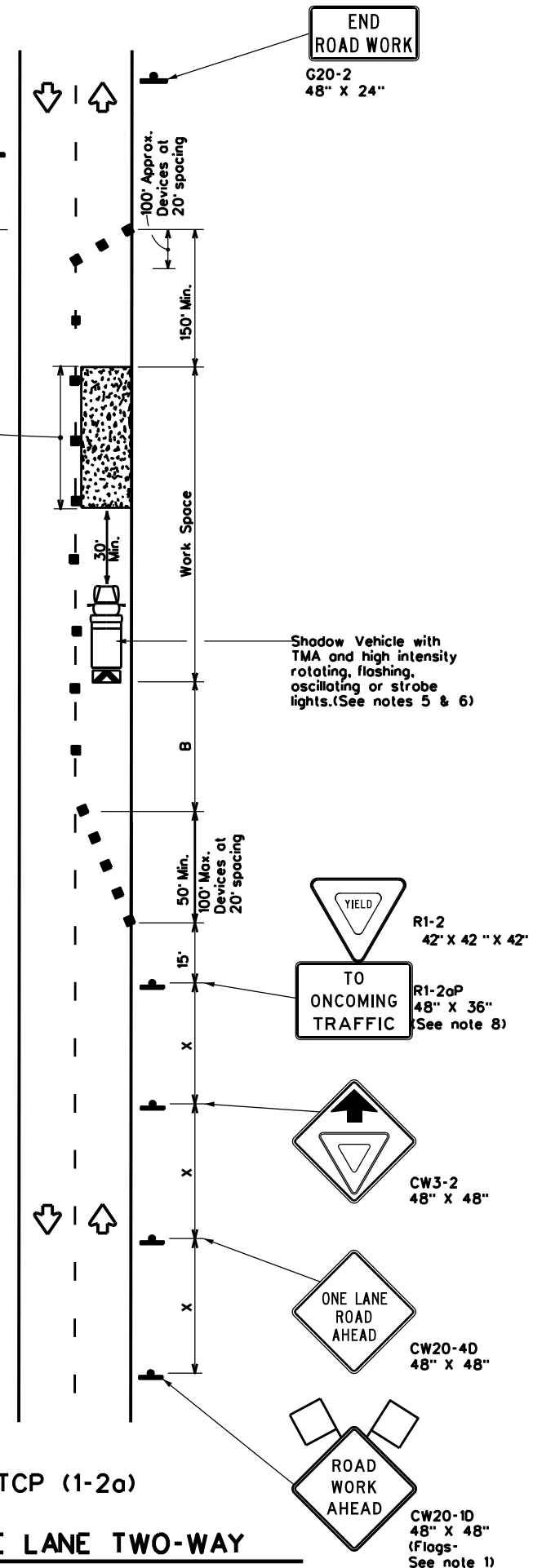
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Warning Sign Sequence in Opposite Direction Same as Below

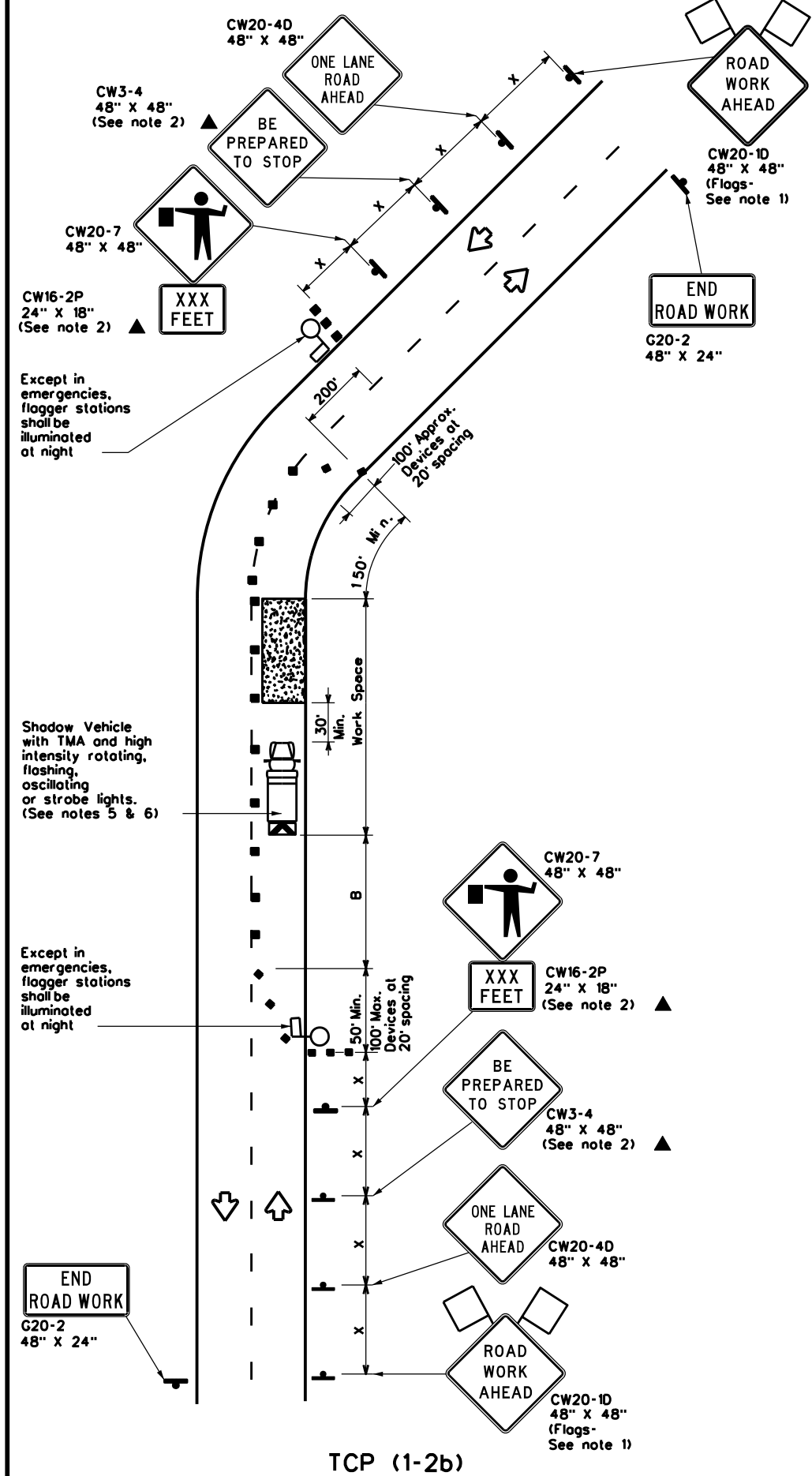


Channelizing devices separate work space from traveled way



TCP (1-2a)
ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)

END ROAD WORK
G20-2
48" X 24"



TCP (1-2b)
ONE LANE TWO-WAY CONTROL WITH FLAGGERS

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

Posted Speed x	Formula	Minimum Desirable Taper Lengths x x			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 ² 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L - WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

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

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

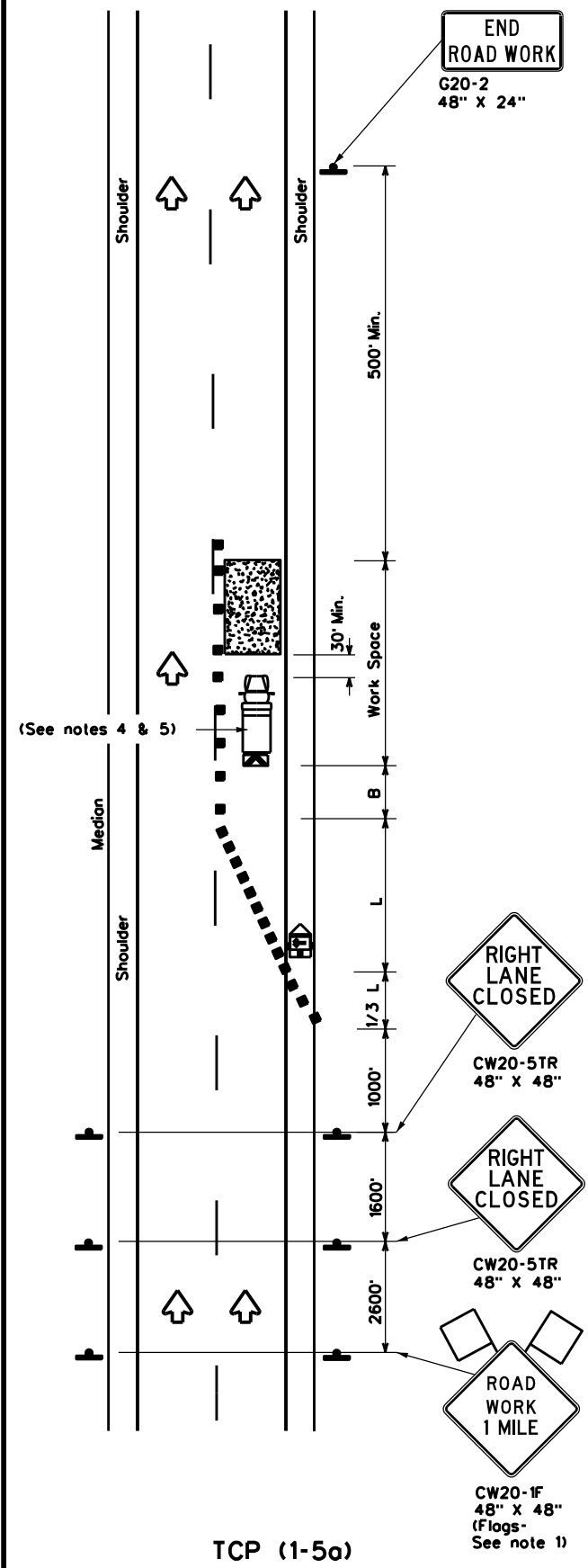
GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
 - Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- TCP (1-2a)**
- R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight 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 R1-2oP "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.

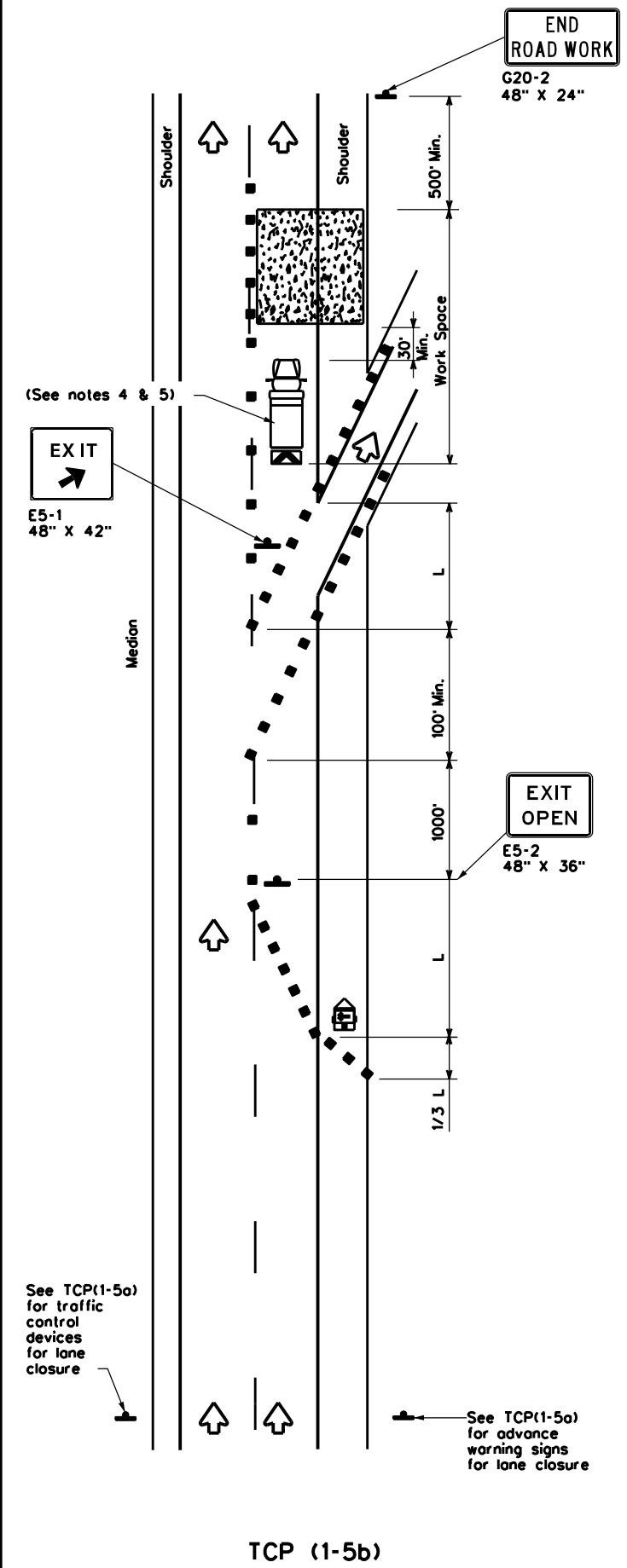
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TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL			
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© TxDOT December 1985	CON:	SECT:	JOB:
REVISIONS	0739	01	050
4-90 4-98			HIGHWAY
2-94 2-12			1H 10
1-97 2-18	DIST:	COUNTY:	SHEET NO.:
	BMT	CHAMBERS	09

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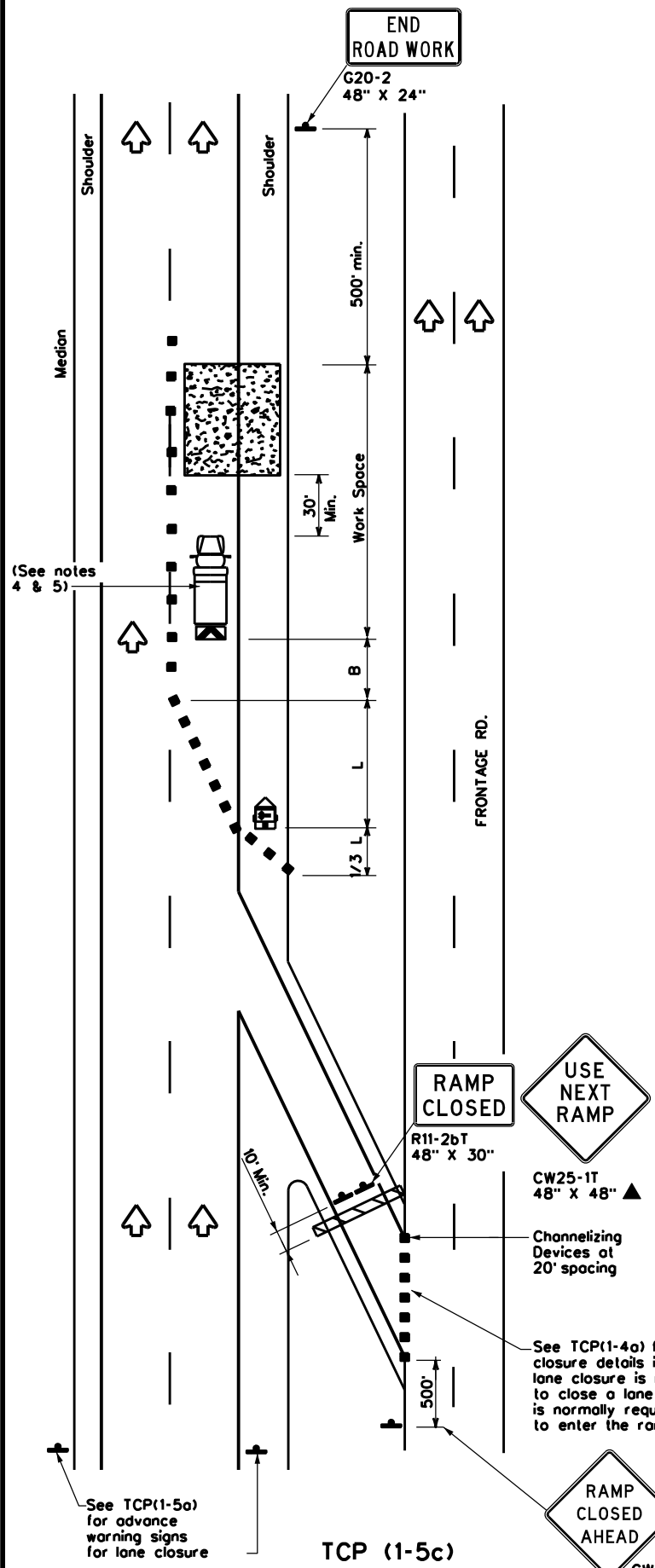
DATE: FILE:



TCP (1-5a) ONE LANE CLOSURE



TCP (1-5b) LANE CLOSURE NEAR EXIT RAMP



TCP (1-5c) LANE CLOSURE NEAR ENTRANCE RAMP

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

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

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

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

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



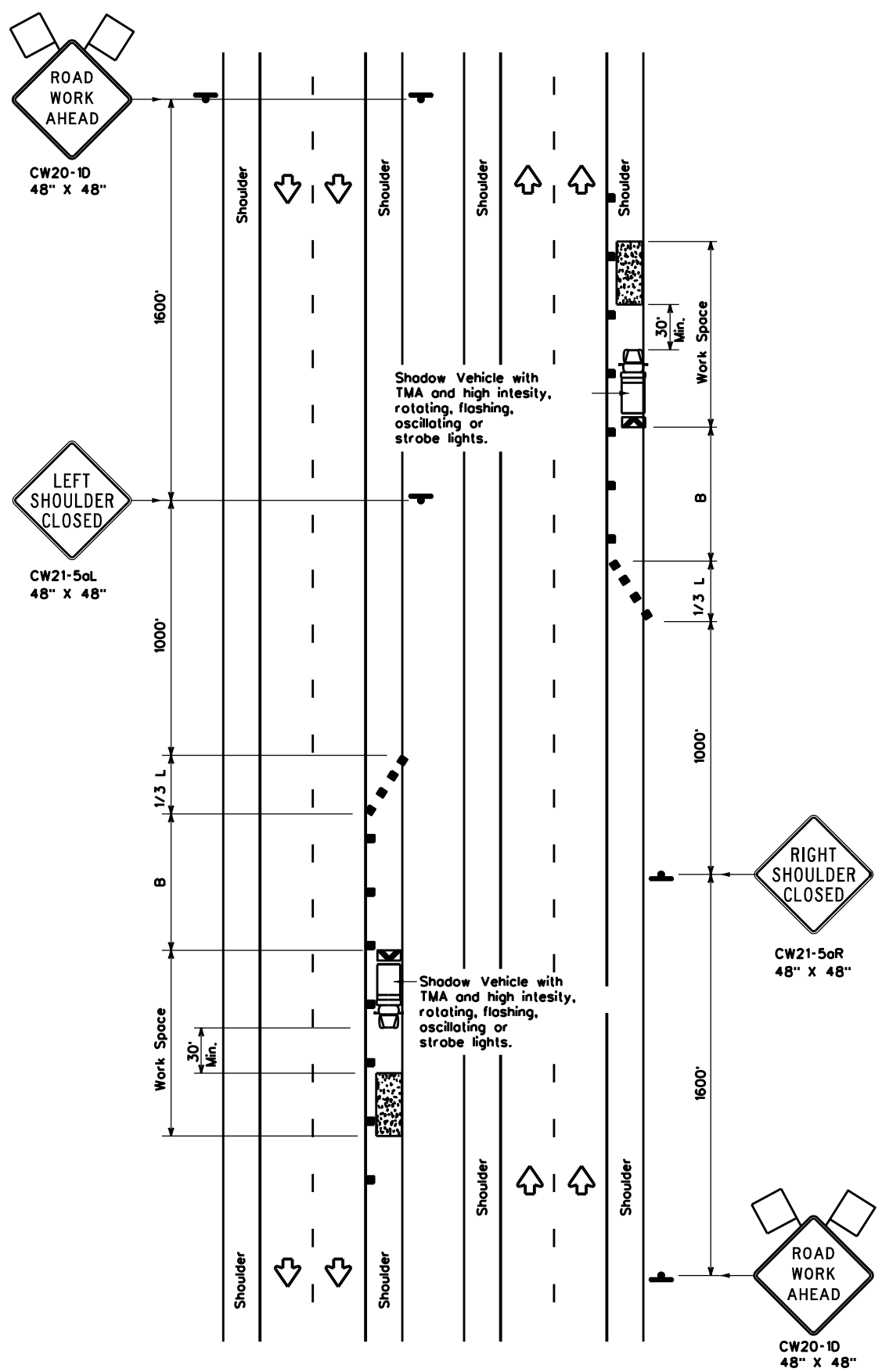
**TRAFFIC CONTROL PLAN
LANE CLOSURES FOR
DIVIDED HIGHWAYS**

TCP(1-5)-18

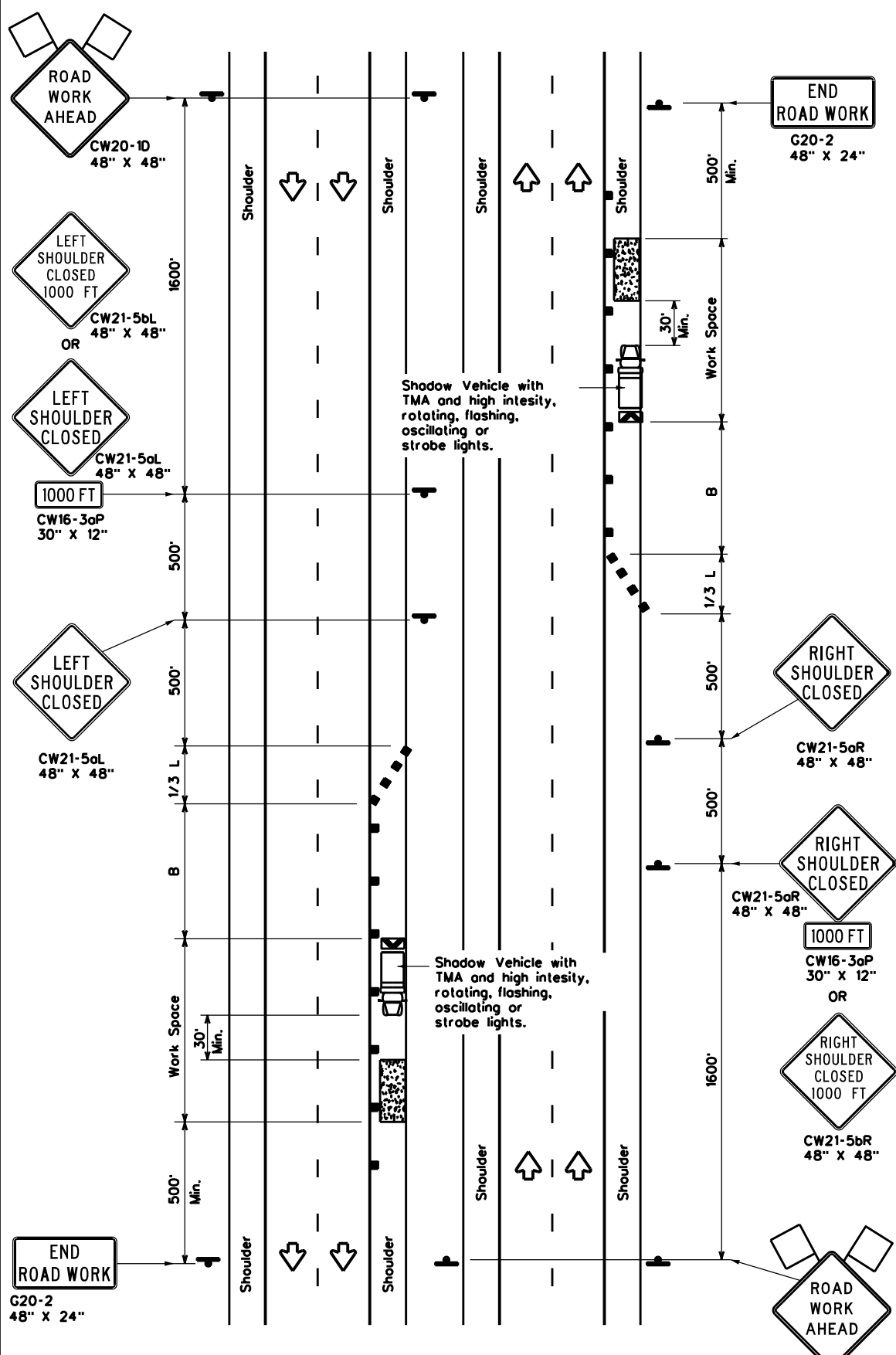
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© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY	SHEET NO.	
	BMT	CHAMBERS	10	

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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 x	Formula	Minimum Desirable Taper Lengths x x			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'

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

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

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2-18	DIST	COUNTY	SHEET NO.	
	BMT	CHAMBERS	11	

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

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SHEET 1 OF 12



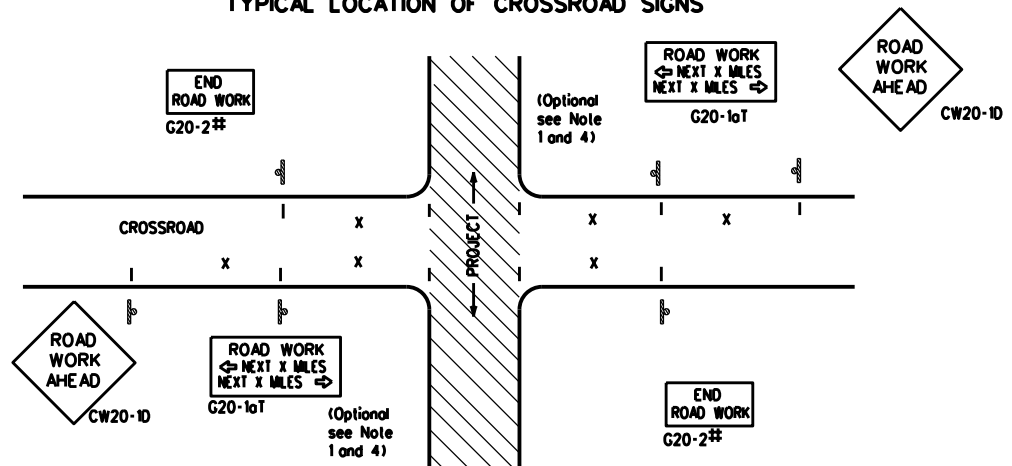
**BARRICADE AND CONSTRUCTION
 GENERAL NOTES
 AND REQUIREMENTS**

BC(1)-21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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4-03	7-13								
9-07	8-14								
5-10	5-21	DIST	COUNTY		SHEET NO.				
		BMT	CHAMBERS		12				

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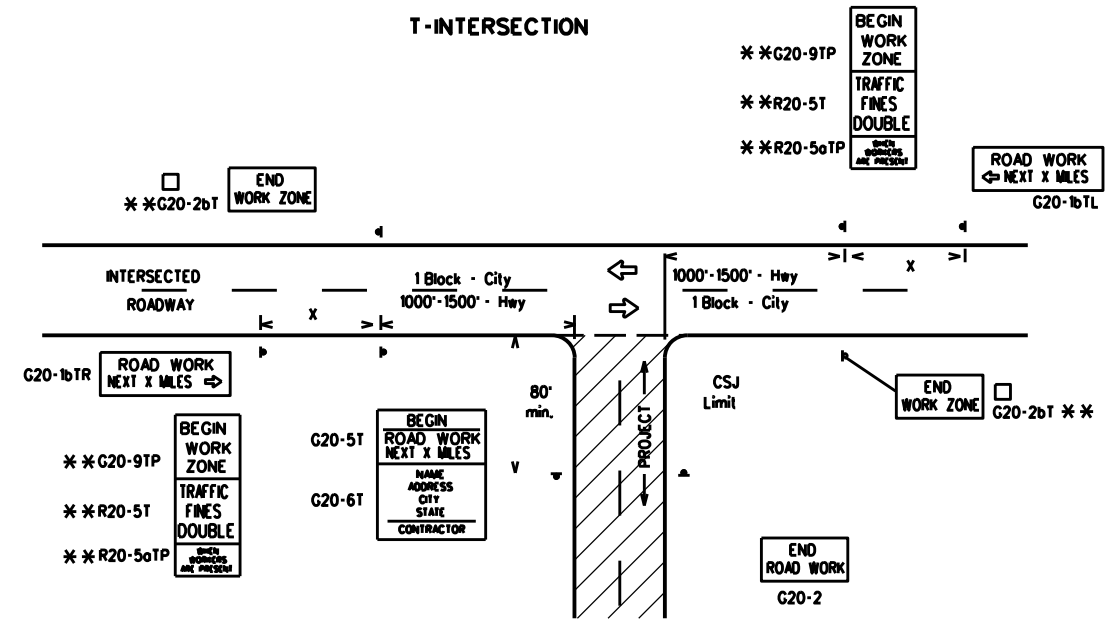
TYPICAL LOCATION OF CROSSROAD SIGNS



‡ 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 1.5.6

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

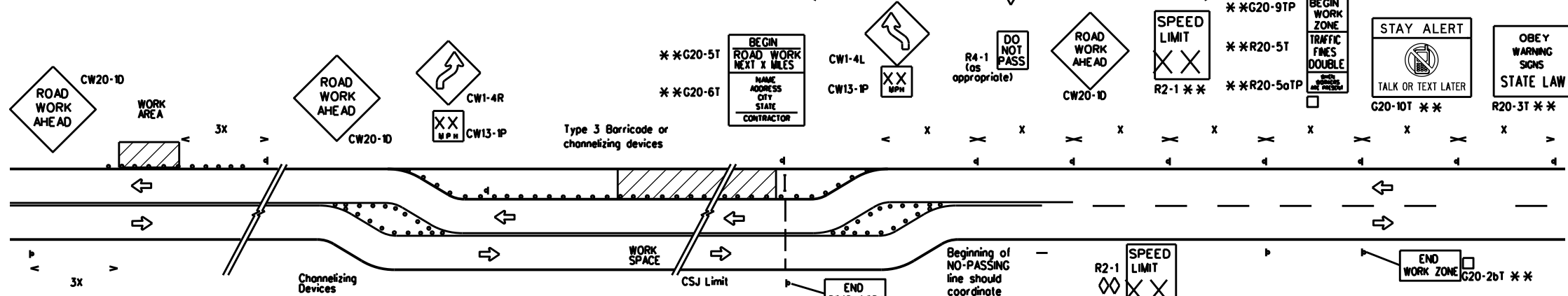
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

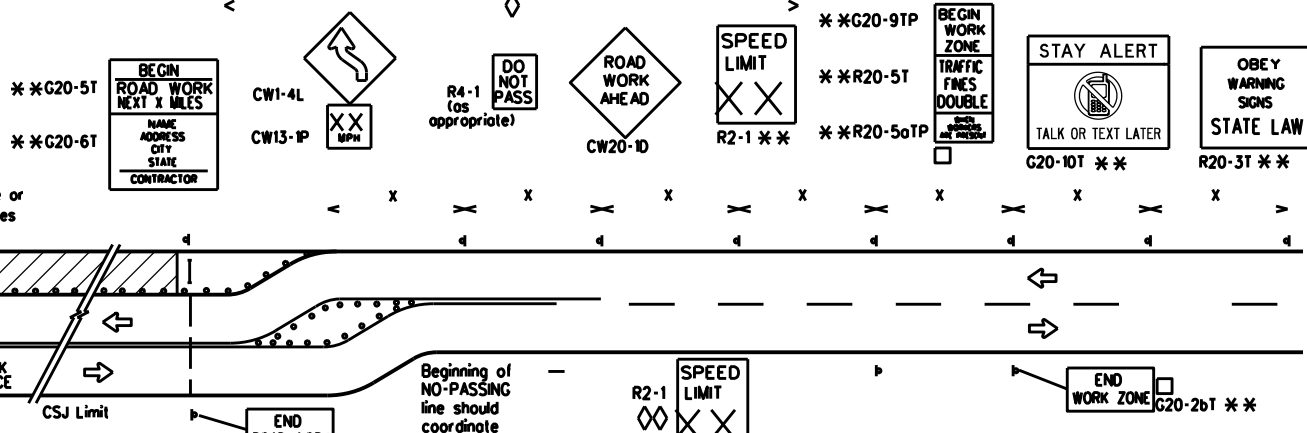
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

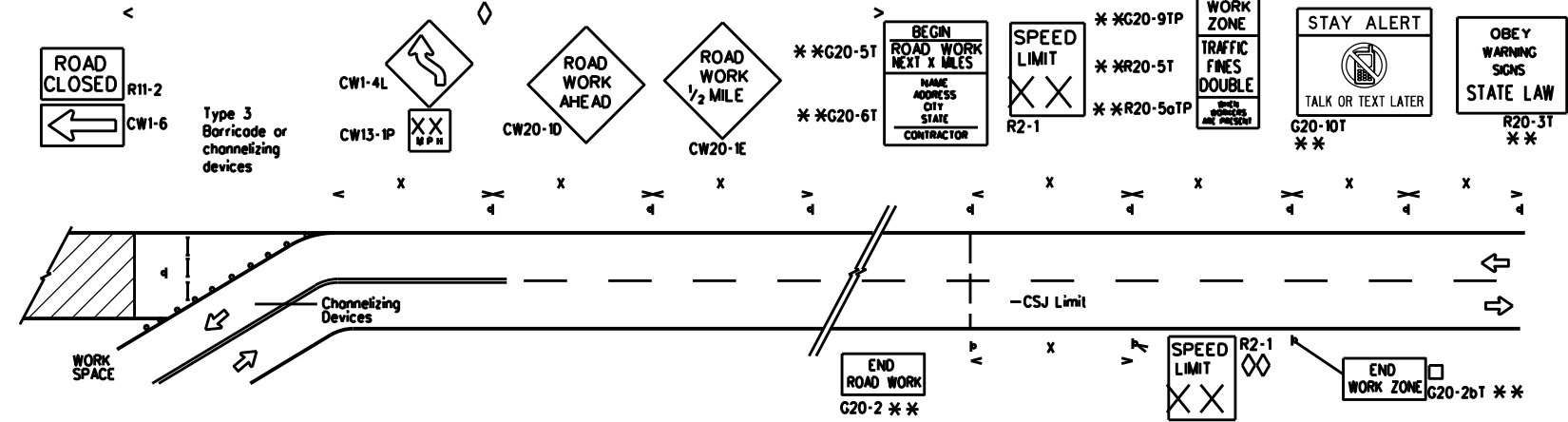
SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

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

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



LEGEND

	Type 3 Barricade
	Channelizing Devices
	Sign
	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

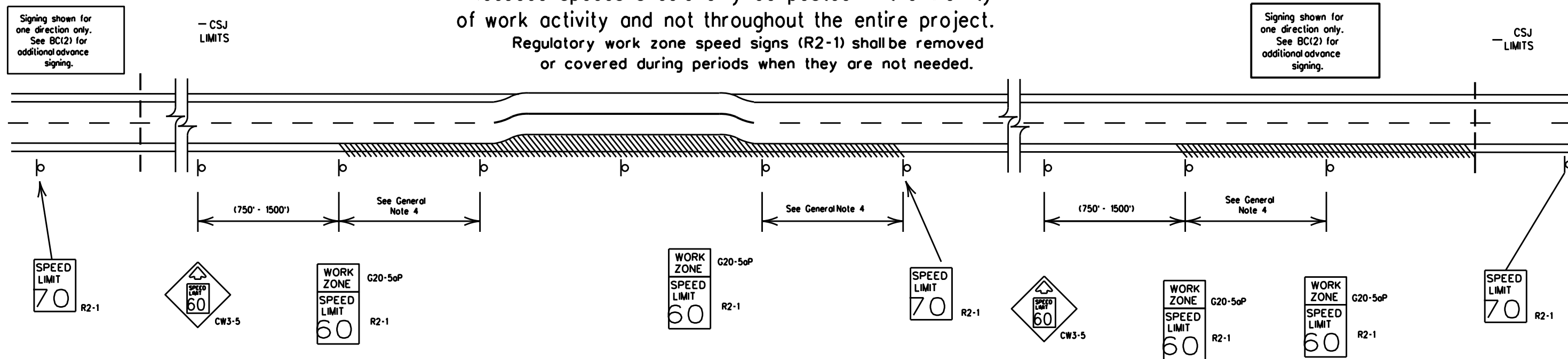
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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:
 - Low 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.

SHEET 3 OF 12



BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

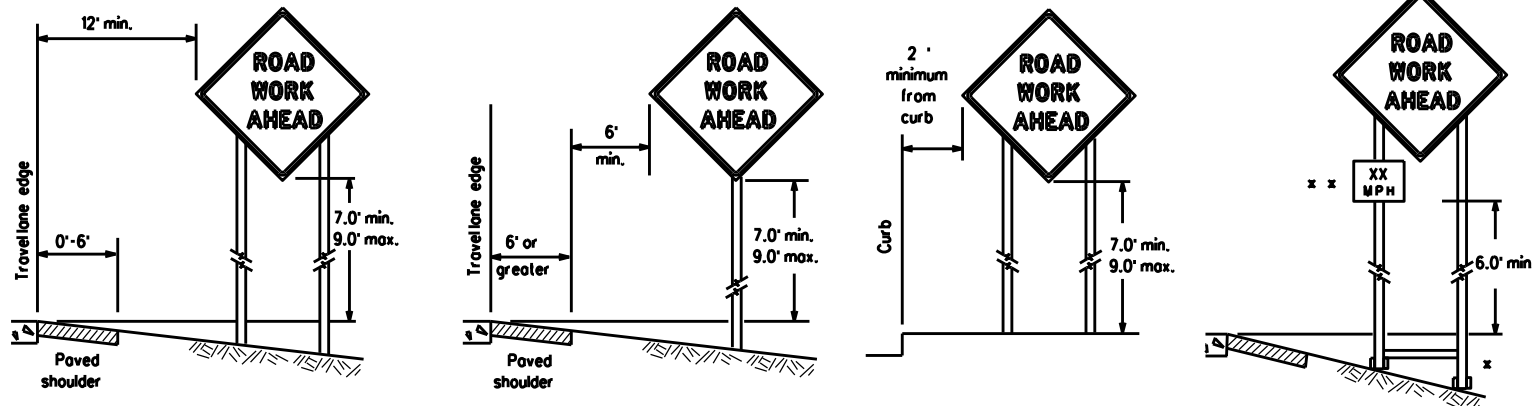
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9-07	8-14	DIST	COUNTY		SHEET NO.				
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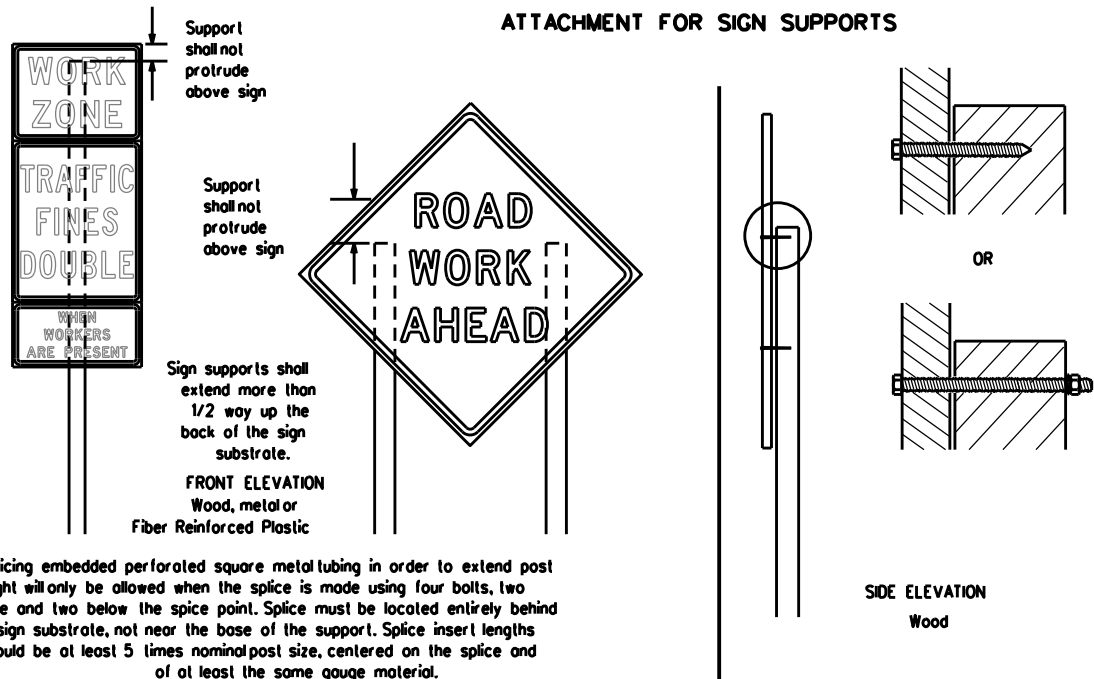
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

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

ATTACHMENT FOR SIGN SUPPORTS



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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

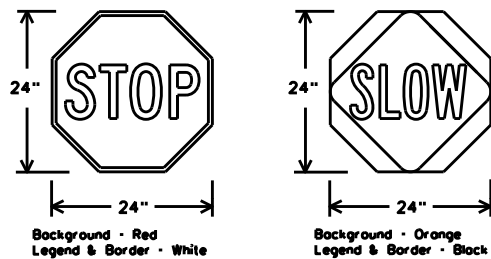
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not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

FLAGS ON SIGNS

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

SHEET 4 OF 12



BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

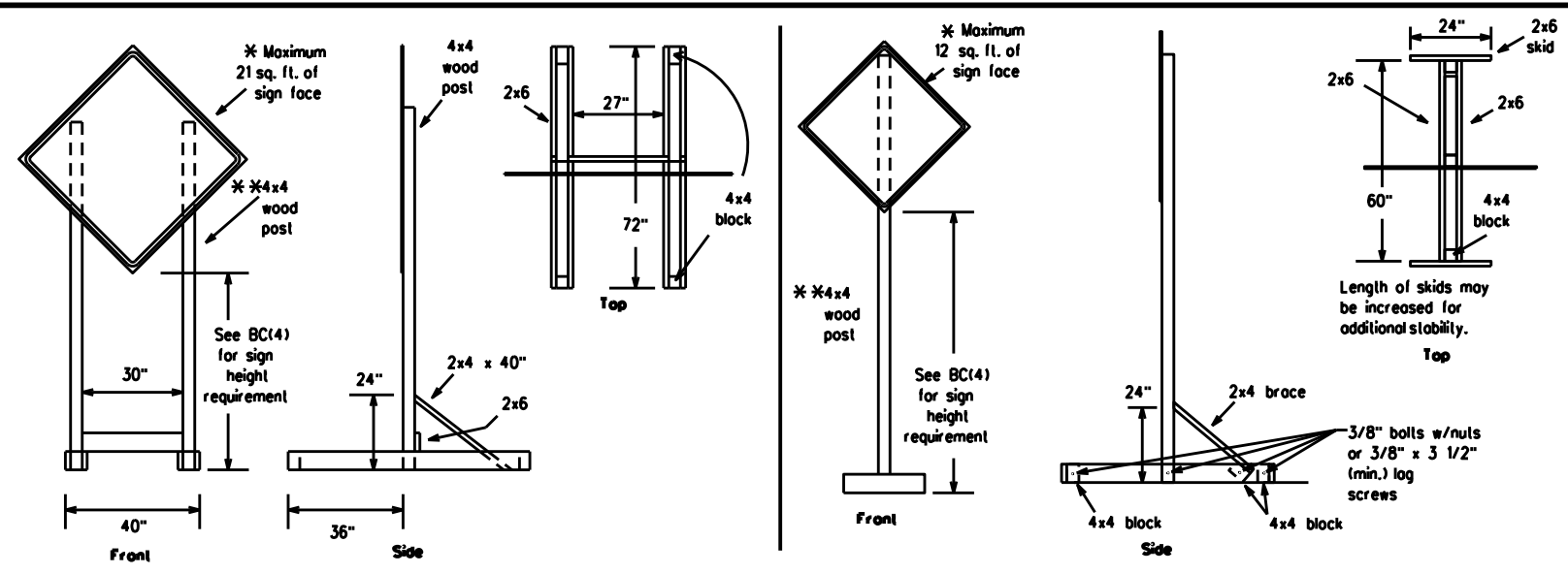
BC(4)-21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
	REVISIONS	0739	01	050	IH 10				
9-07	8-14								
	7-13								
		DIST	COUNTY	SHEET NO.					
		BMT	CHAMBERS	15					

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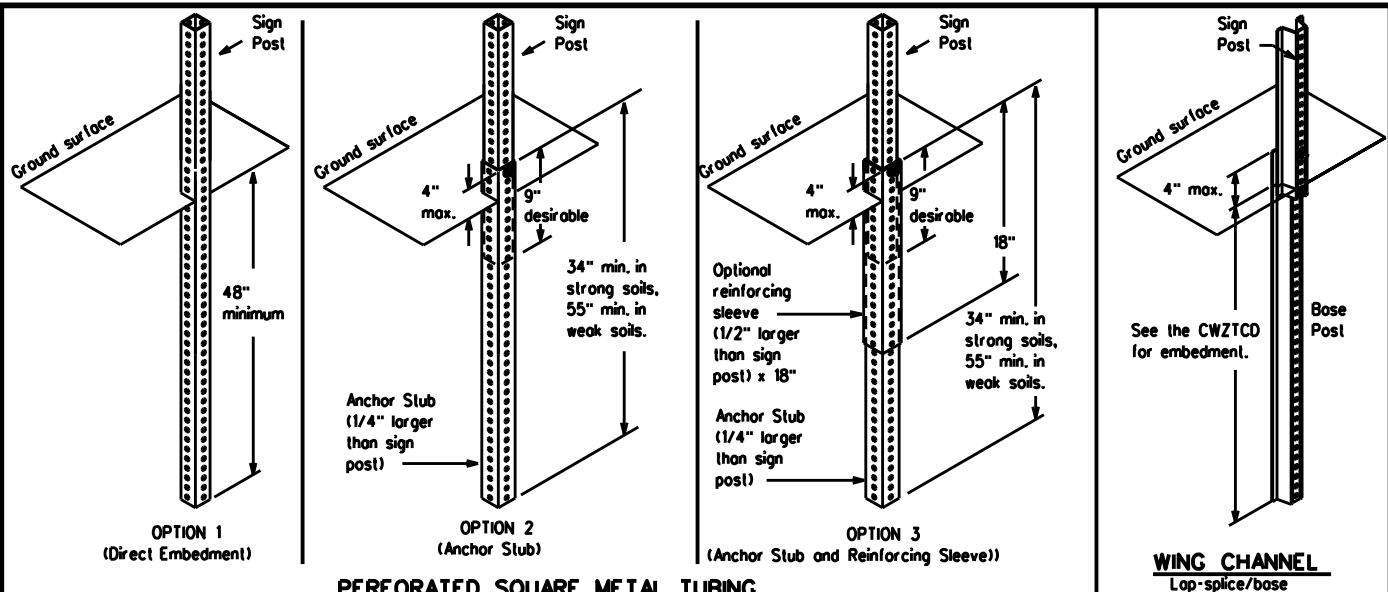
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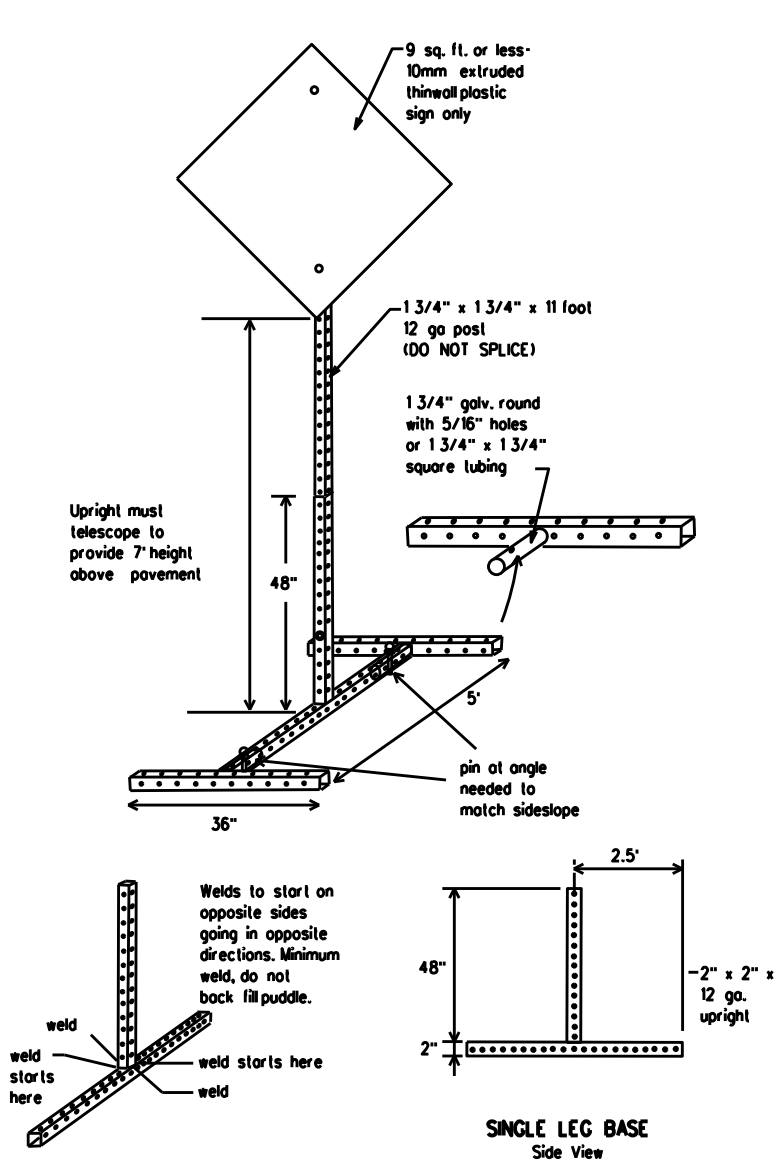
SKID MOUNTED WOOD SIGN SUPPORTS

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



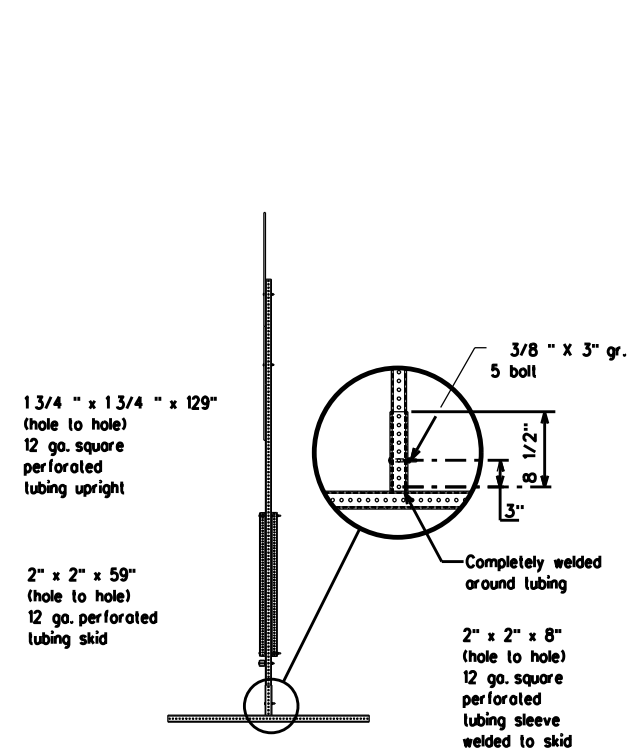
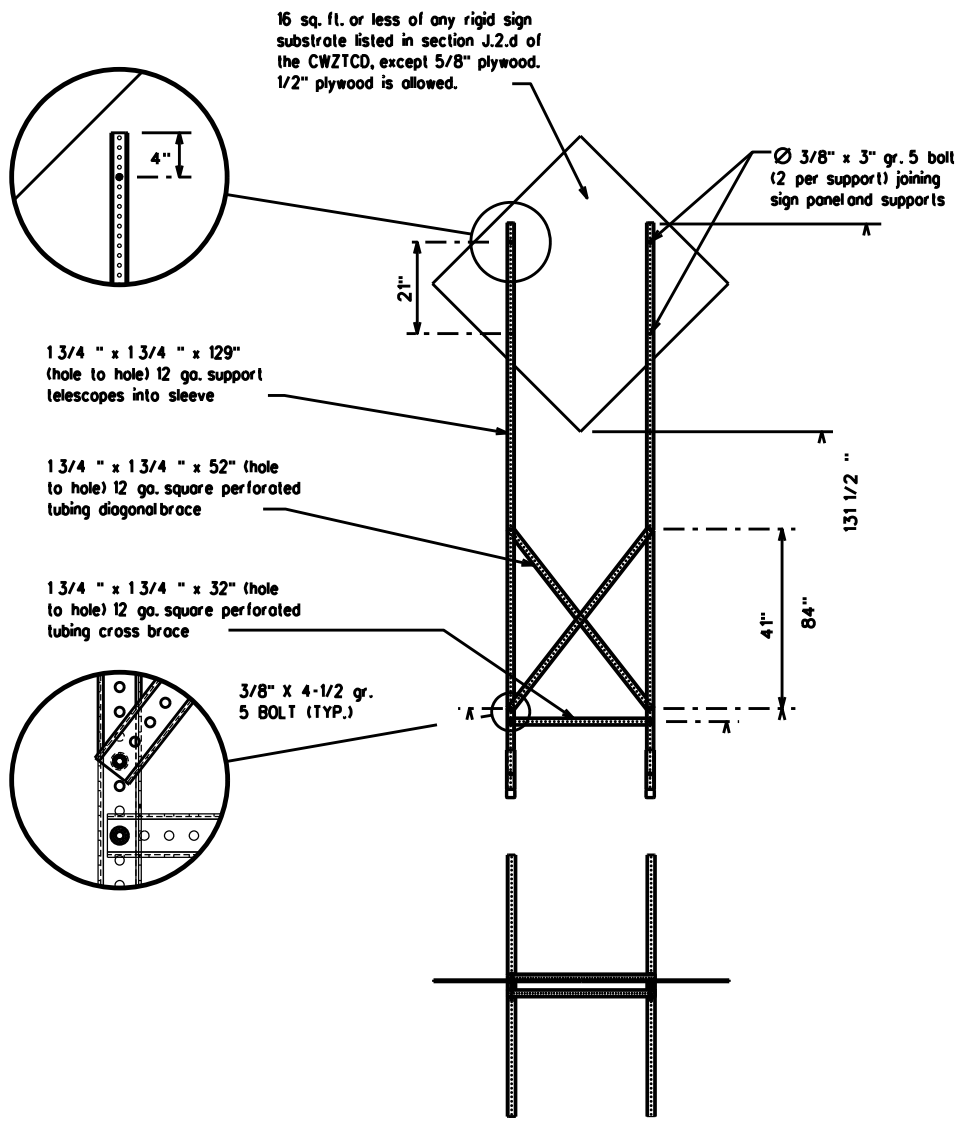
GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTC 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 CWZTC LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

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

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

SHEET 5 OF 12



BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0739	01	050	IH 10				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	BMT	CHAMBERS	16					

DATE: FILE:

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 T MUTCD.
- PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXXX TO XXXXXXXX
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 symbols signs, such as the "Flogger 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 symbols 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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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 DWN TN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRV LRS
High Occupancy	HOV	Tuesday	TUES
Vehicle Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
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	West Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

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

DATE:
FILE:



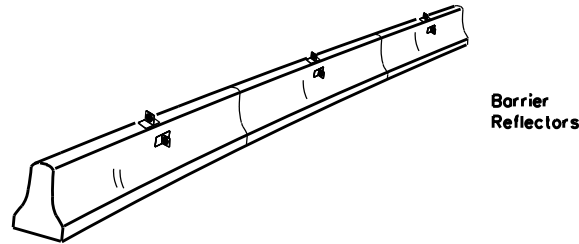
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	BMT	CHAMBERS	17	

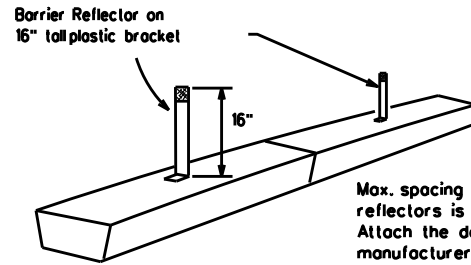
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors 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.



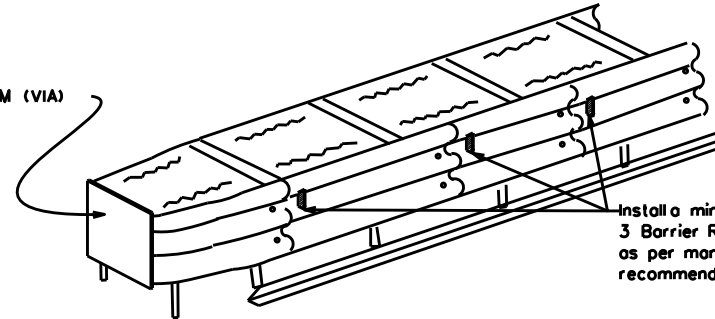
LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

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

See D & OM (VIA)



DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

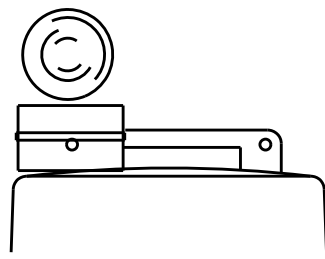
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

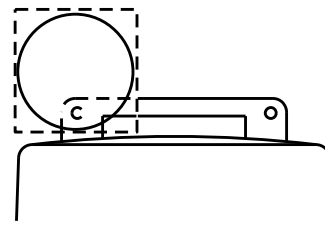
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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

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

- A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
- The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCO.
- 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.



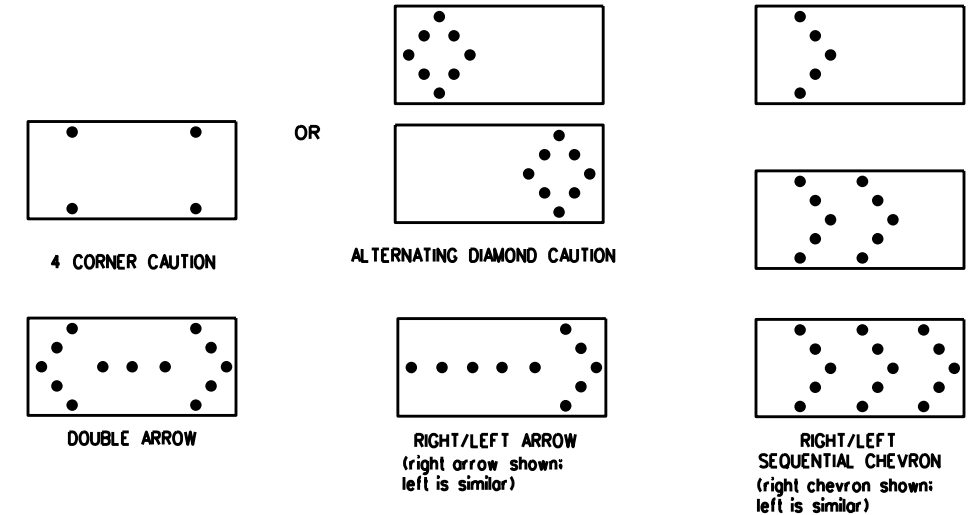
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



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

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

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 CWZTCO for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCO for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
- The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is on extended distance from the TMA.

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

BC(7)-21

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

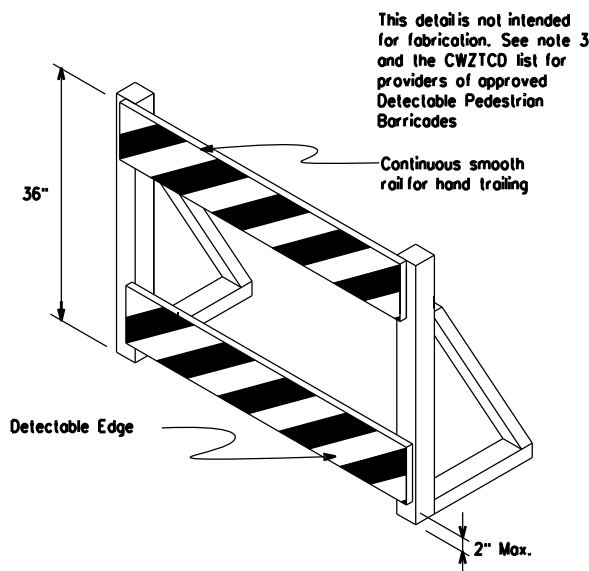
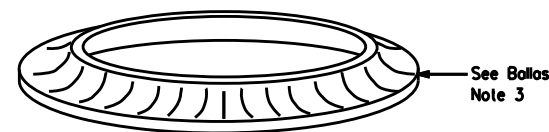
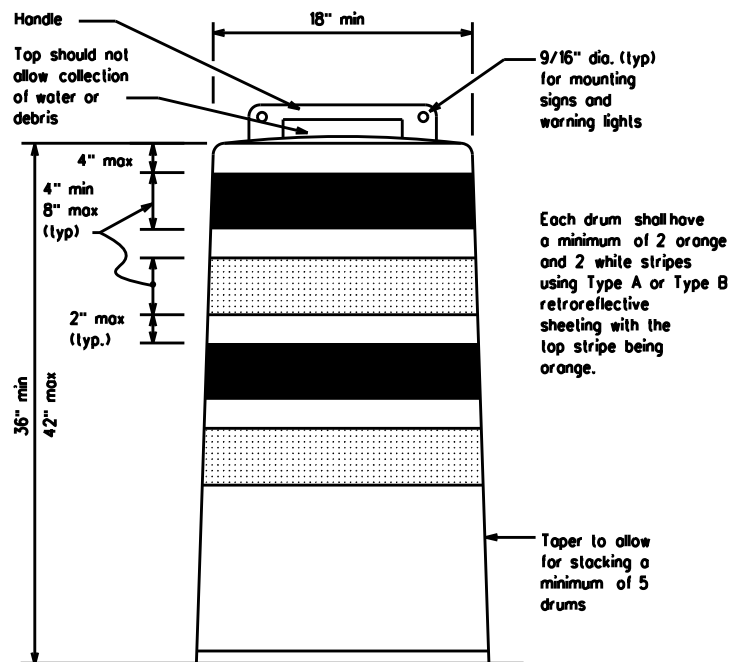
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

RETROREFLECTIVE SHEETING

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

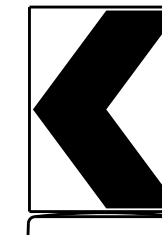
BALLAST

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

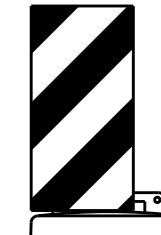


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

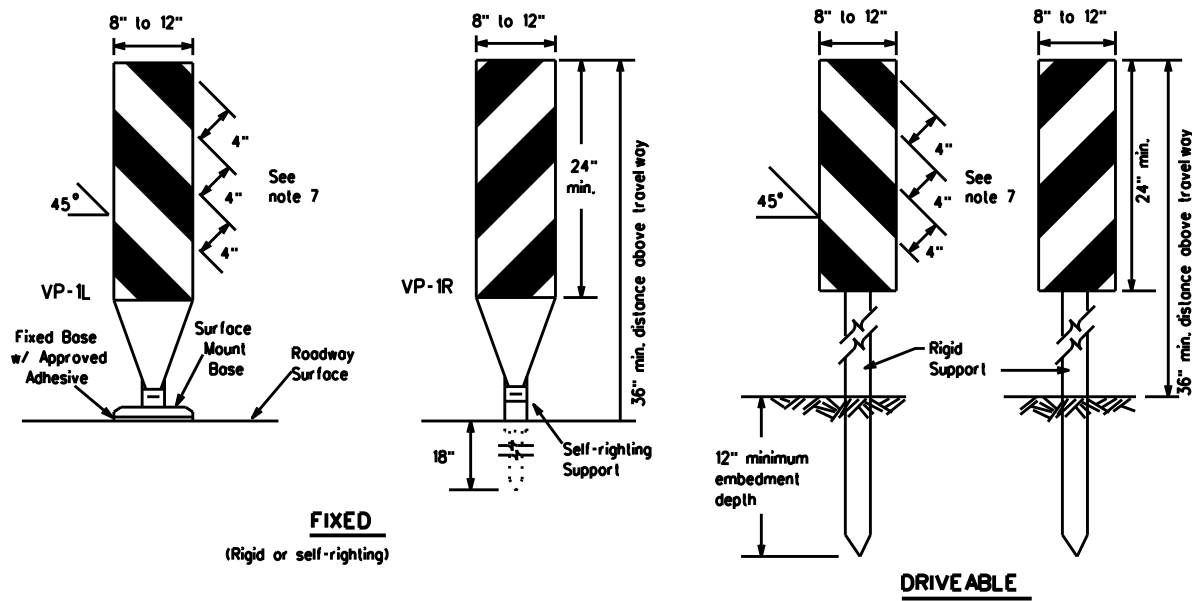
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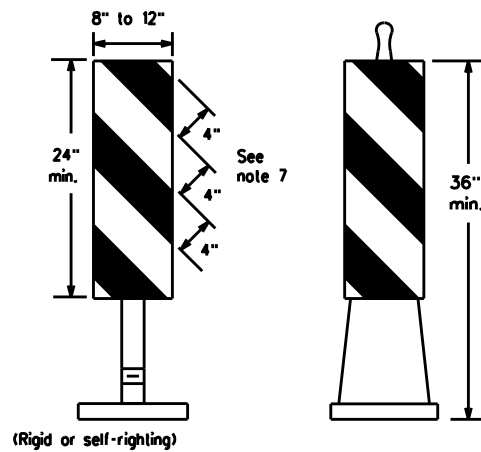
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FIXED
(Rigid or self-righting)

DRIVEABLE

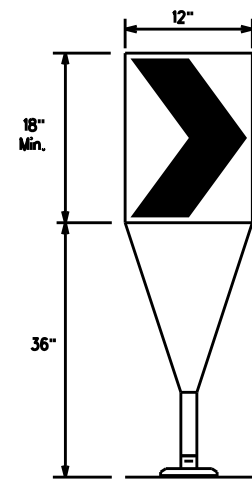


(Rigid or self-righting)

PORTABLE

VERTICAL PANELS (VPs)

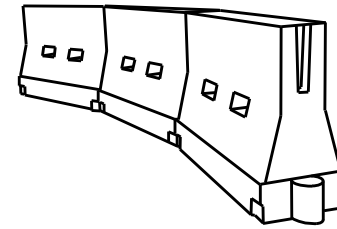
- Vertical Panels (VPs) are normally used to channelize traffic or divide opposing lanes of traffic.
- VPs may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required.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



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

- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
- Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- For Long Term Stationary use on 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 cones and the top of the unit shall not be less than 32 inches in height.

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

GENERAL NOTES

- Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
- Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall 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 x x			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

x x 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



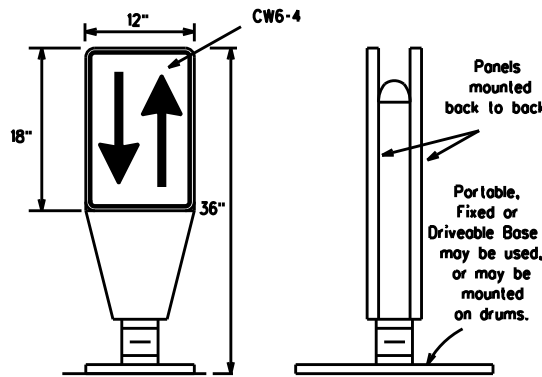
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

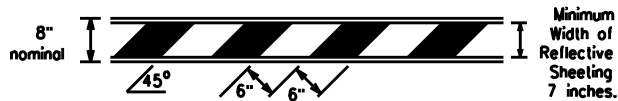


- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base 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 or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

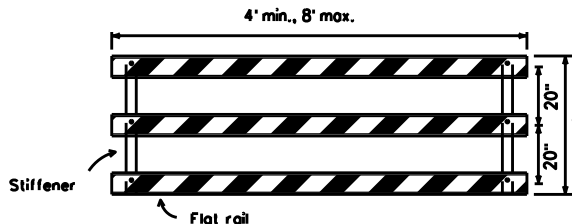
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



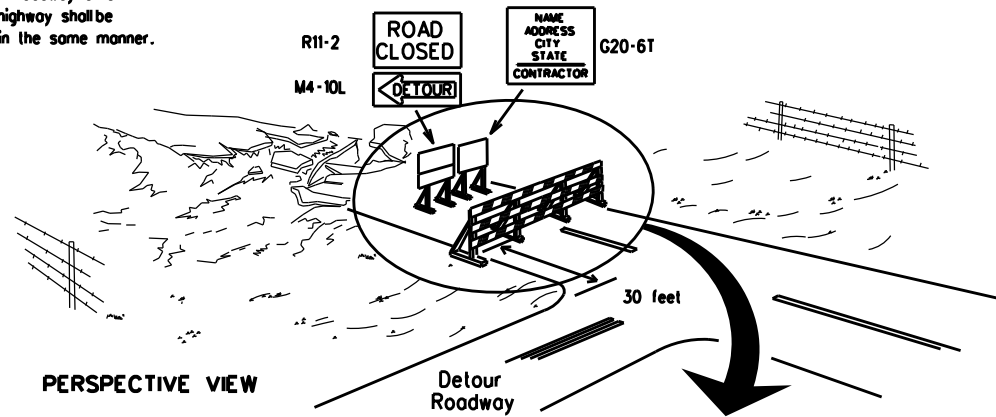
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

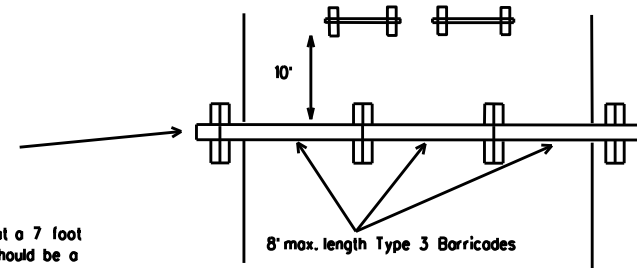
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

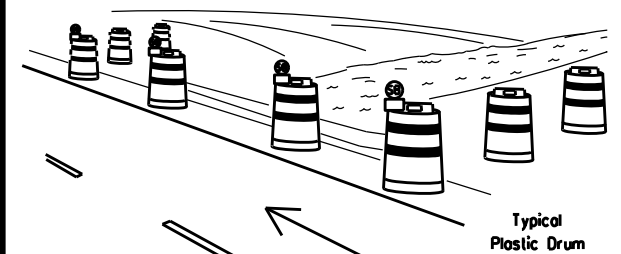
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

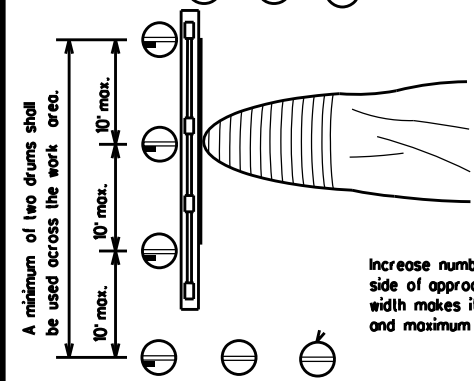
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

Typical Plastic Drum
These drums are not required on one-way roadway



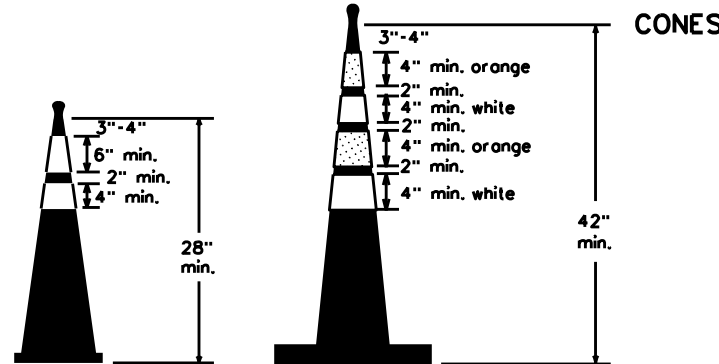
PLAN VIEW

Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

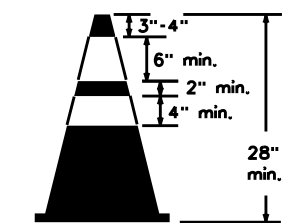
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
	Steady burn warning light or yellow warning reflector

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

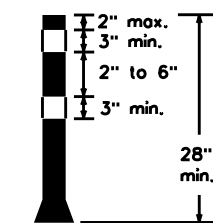
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Two-Piece cones



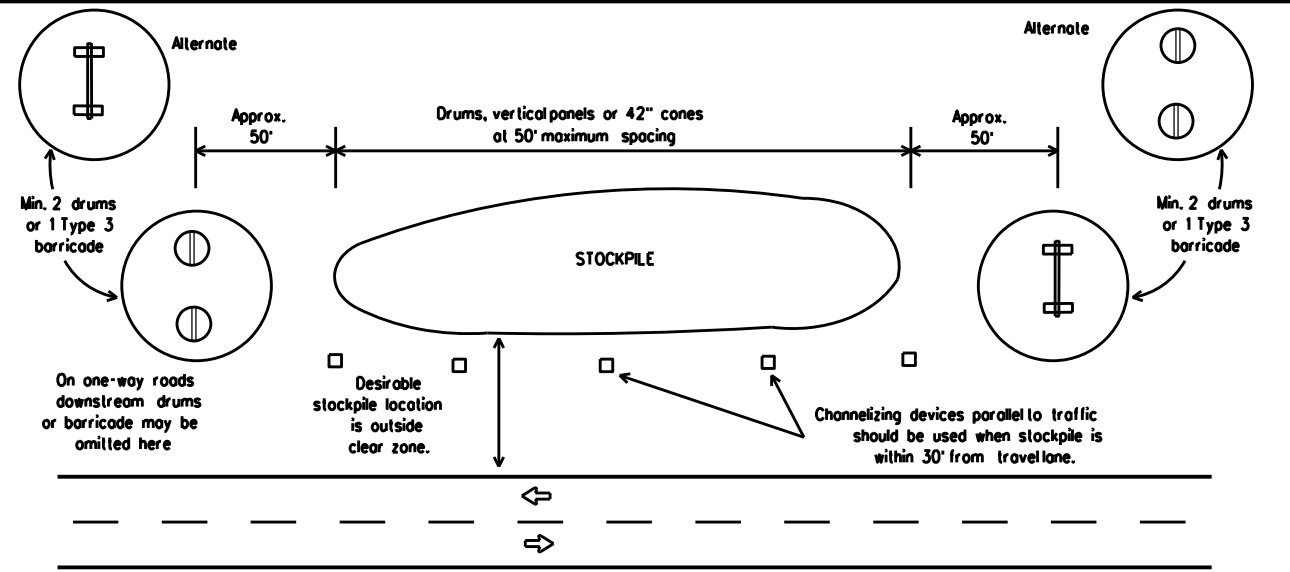
One-Piece cones



Tubular Marker

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

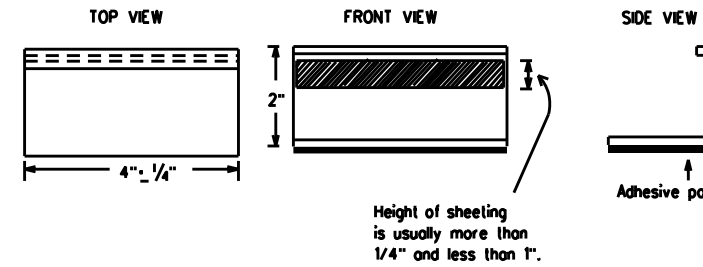
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

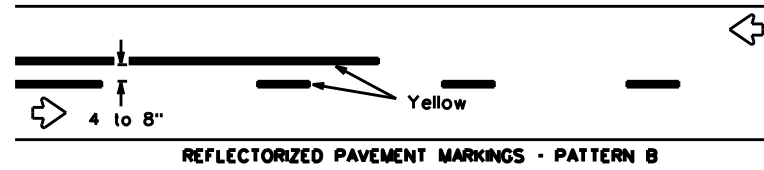
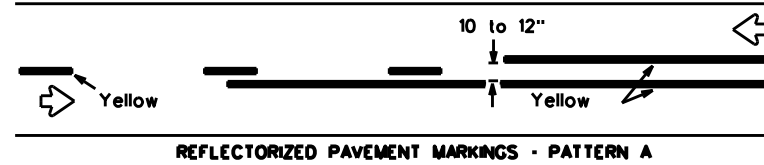
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0739	01	050	IH 10
2-98 9-07 5-21	DIST	COUNTY	SHEET NO.	
1-02 7-13	BMT	CHAMBERS	22	
11-02 8-14				

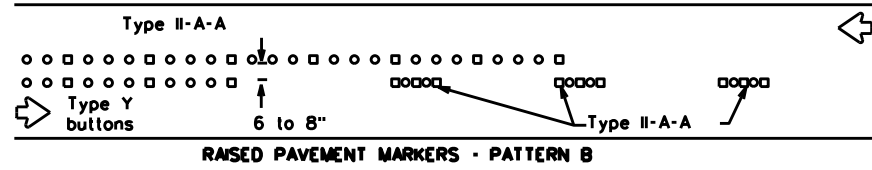
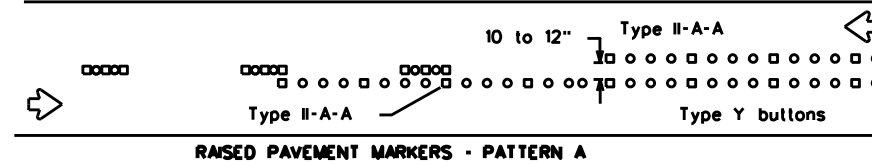
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

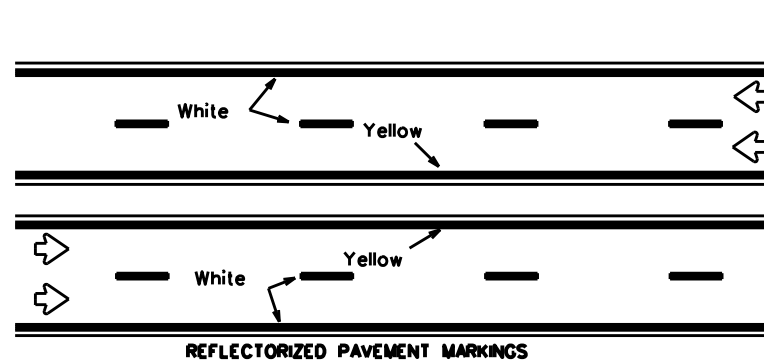
PAVEMENT MARKING PATTERNS



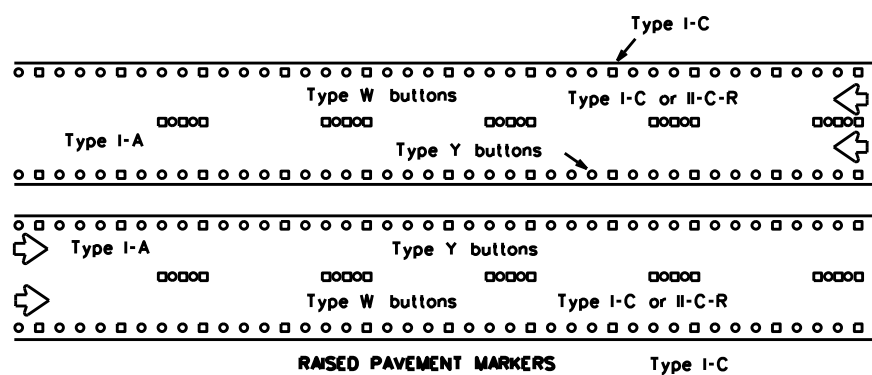
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectORIZED pavement markings.



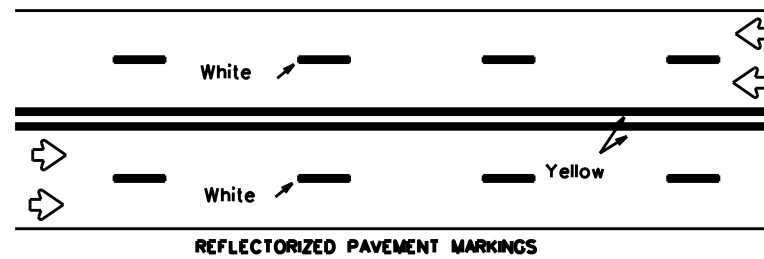
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



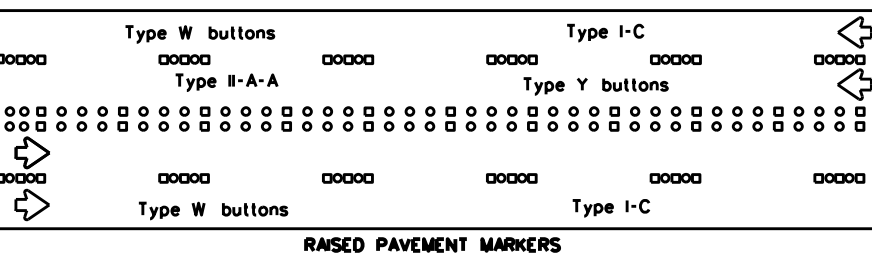
Prefabricated markings may be substituted for reflectORIZED pavement markings.



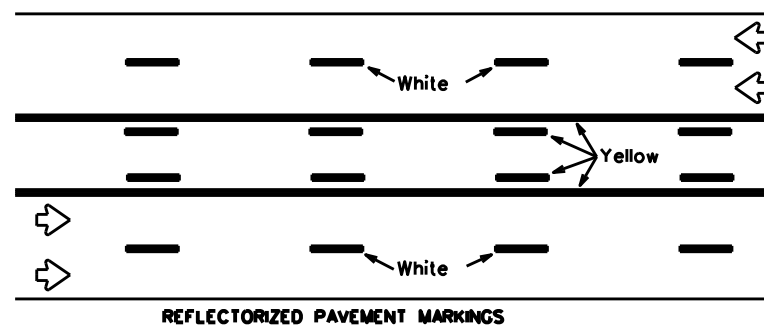
EDGE & LANE LINES FOR DIVIDED HIGHWAY



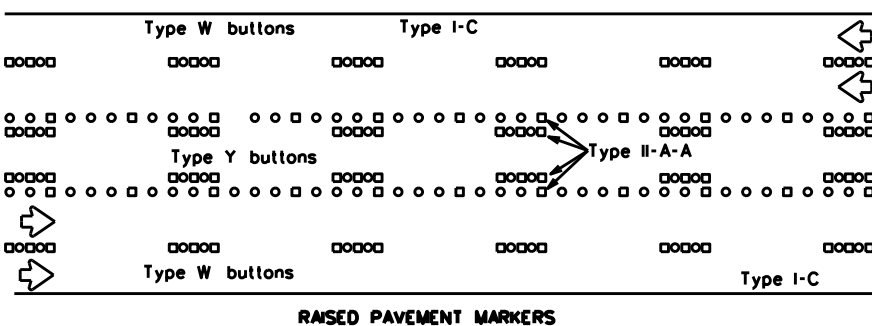
Prefabricated markings may be substituted for reflectORIZED pavement markings.



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS

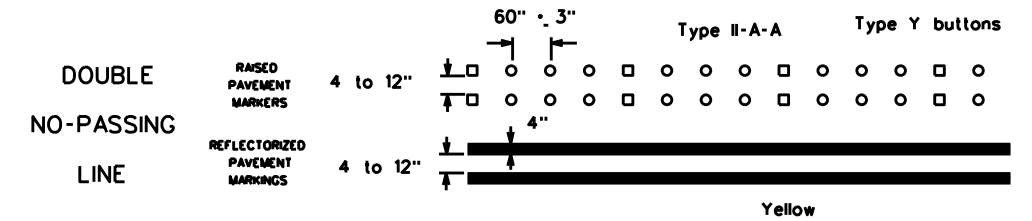


Prefabricated markings may be substituted for reflectORIZED pavement markings.

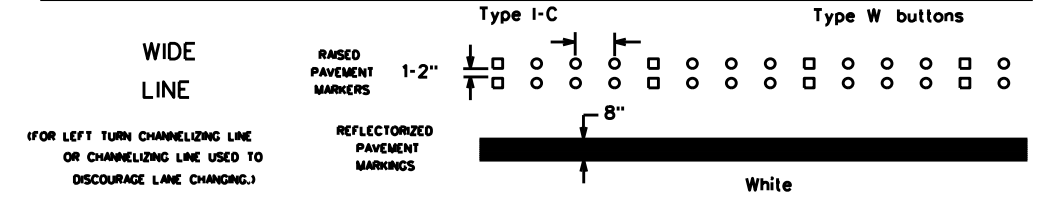
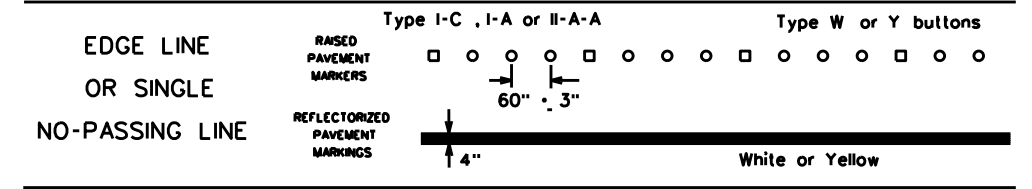


TWO-WAY LEFT TURN LANE

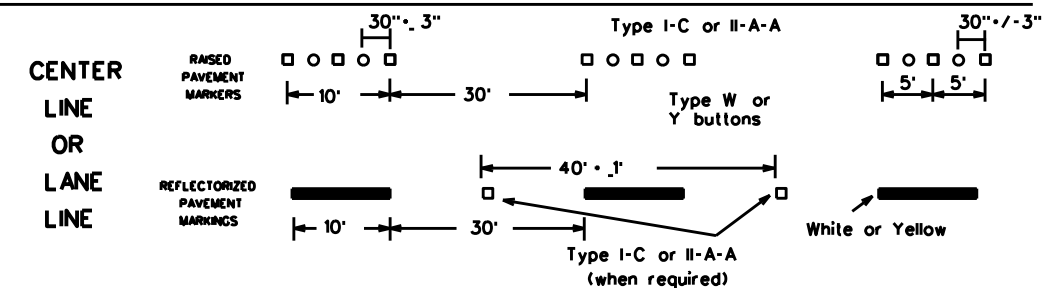
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



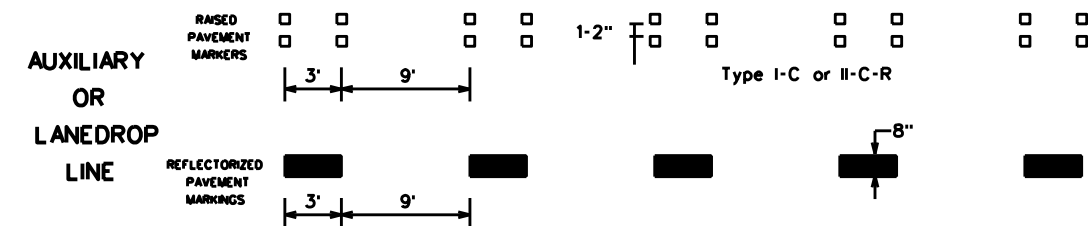
SOLID LINES



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

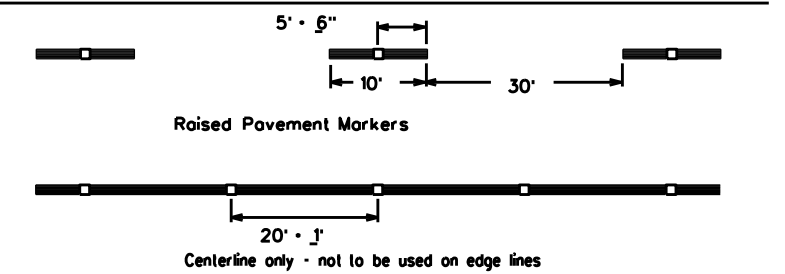


BROKEN LINES



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0739	01	050	IH 10
1-97 9-07 5-21	DIST	COUNTY	SHEET NO.	
2-98 7-13	BMT	CHAMBERS	23	
11-02 8-14				

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DATE: FILE:

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

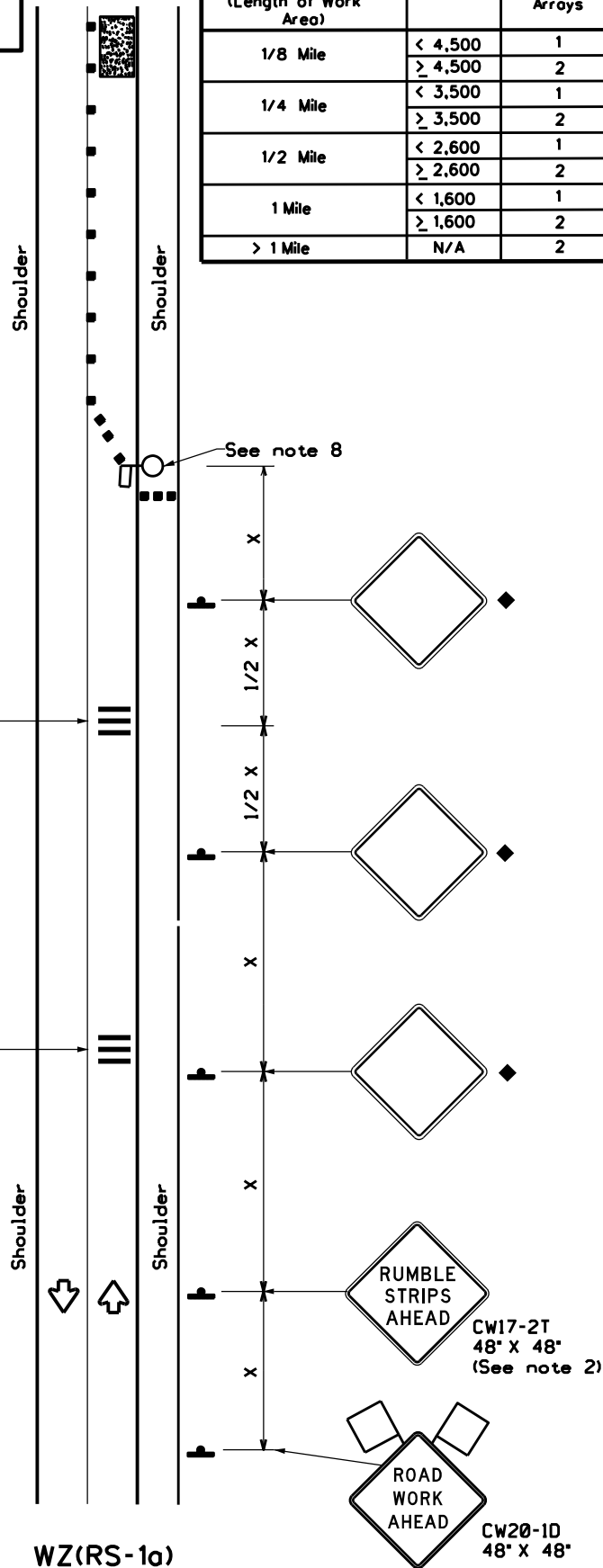
Warning sign and rumble strip sequence in opposite direction is same as below.

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

Rumble Strip Array (See note 1)

Rumble Strip Array (See note 1)

The second Rumble Strip Array is required when the ADT thresholds in Table 1 indicate the need for 2 Arrays.

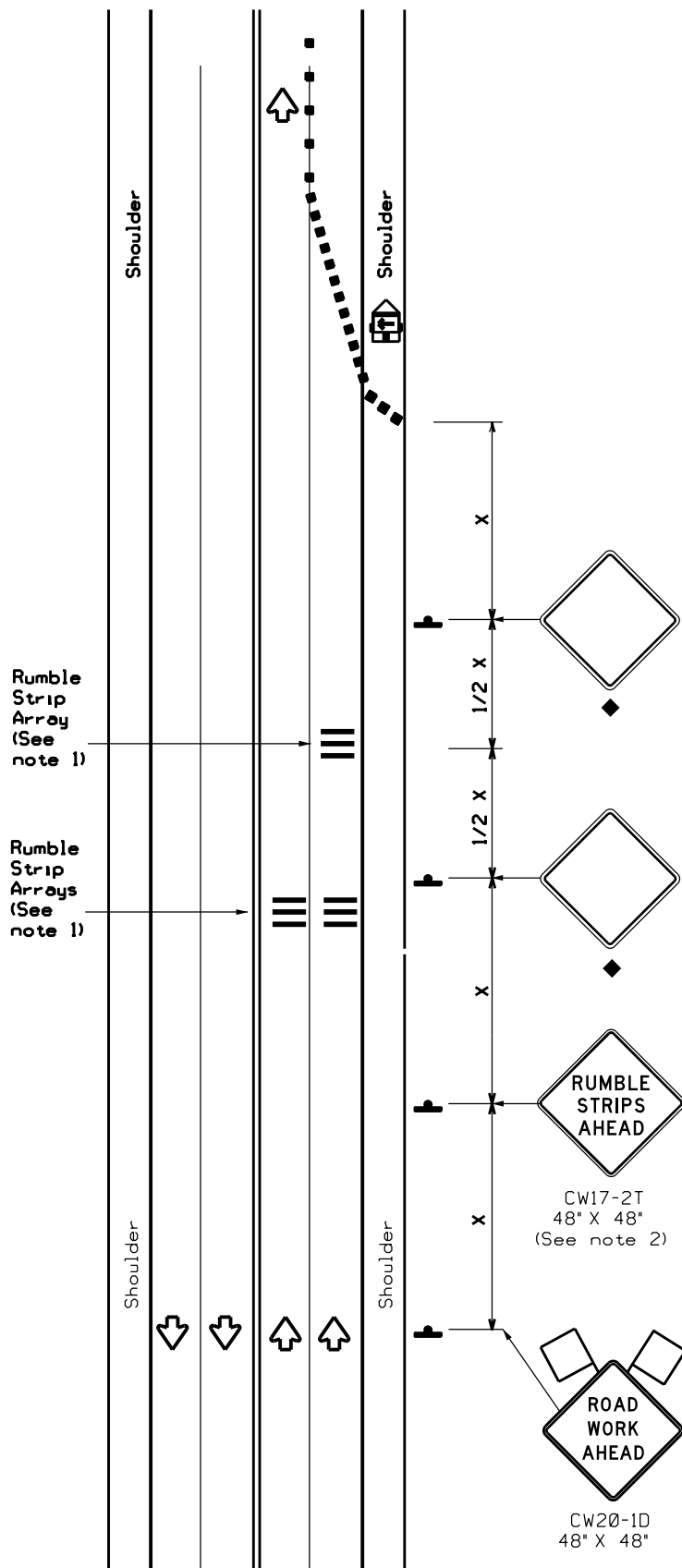


WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION

Rumble Strip Array (See note 1)

Rumble Strip Arrays (See note 1)



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

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.
- Remove Temporary Rumble Strips before removing the advanced warning signs.
- Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
- Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
- This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
- The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
- Replace defective Temporary Rumble Strips as directed by the Engineer.
- Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

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

LEGEND

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

Posted Speed "x"	Formula	Minimum Desirable Taper Lengths "x"			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 ² / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40	L = WS	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75	750'	825'	900'	75'	150'	900'	540'	

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

TYPICAL USAGE

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

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

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

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0739	01	050	IH 10
2-14 1-22	DIST	COUNTY	SHEET NO.	
4-16	BMT	CHAMBERS	24	

NOTE:
SEE SHEET 28 FOR NOTES AND QUANTITIES.

Area TYPE A - 92,130 SF
192-6023/ 6024 TREES TYPE A (20' O.C.)
193-6001 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 2

Area B - 30,225 SF
192 INFILL TYPE B CRAPE MYRTLE
193-6002 PLANT MAINTENANCE
1022-6033 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

Area C - 24,334 SF
192 INFILL TYPE C
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

Area D - 69,467 SF
192 INFILL TYPE D
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

Area TYPE B
10,457 SF
6 Trees

Area TYPE D
10,046 SF
6 Infill Trees

Area TYPE A
25,403 SF
64 Trees

Area TYPE A
20,819 SF
52 Trees

Area TYPE A
25,412 SF
64 TREES

Area TYPE B
19,768 SF
12 Infill Trees

Area TYPE D
3,603 SF

Area TYPE D
29,999 SF
19 Infill Trees

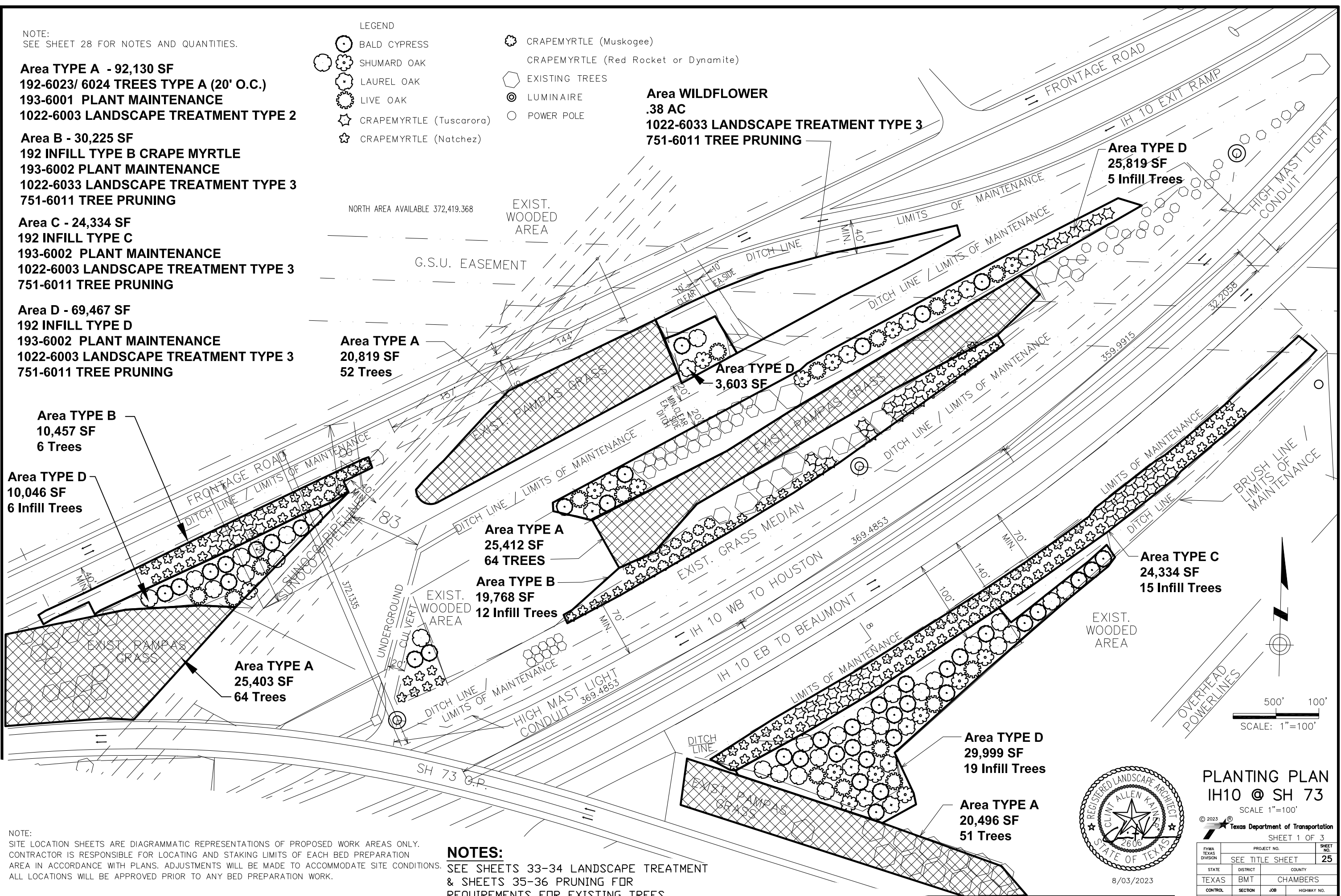
Area TYPE A
20,496 SF
51 Trees

Area TYPE D
25,819 SF
5 Infill Trees

Area TYPE C
24,334 SF
15 Infill Trees

- LEGEND
- BALD CYPRESS
 - SHUMARD OAK
 - LAUREL OAK
 - LIVE OAK
 - CRAPEMYRTLE (Tuscarora)
 - CRAPEMYRTLE (Natchez)
 - CRAPEMYRTLE (Muskogee)
 - CRAPEMYRTLE (Red Rocket or Dynamite)
 - EXISTING TREES
 - LUMINAIRE
 - POWER POLE

Area WILDFLOWER
.38 AC
1022-6033 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING



NOTE:
SITE LOCATION SHEETS ARE DIAGRAMMATIC REPRESENTATIONS OF PROPOSED WORK AREAS ONLY. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND STAKING LIMITS OF EACH BED PREPARATION AREA IN ACCORDANCE WITH PLANS. ADJUSTMENTS WILL BE MADE TO ACCOMMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

NOTES:
SEE SHEETS 33-34 LANDSCAPE TREATMENT & SHEETS 35-36 PRUNING FOR REQUIREMENTS FOR EXISTING TREES.



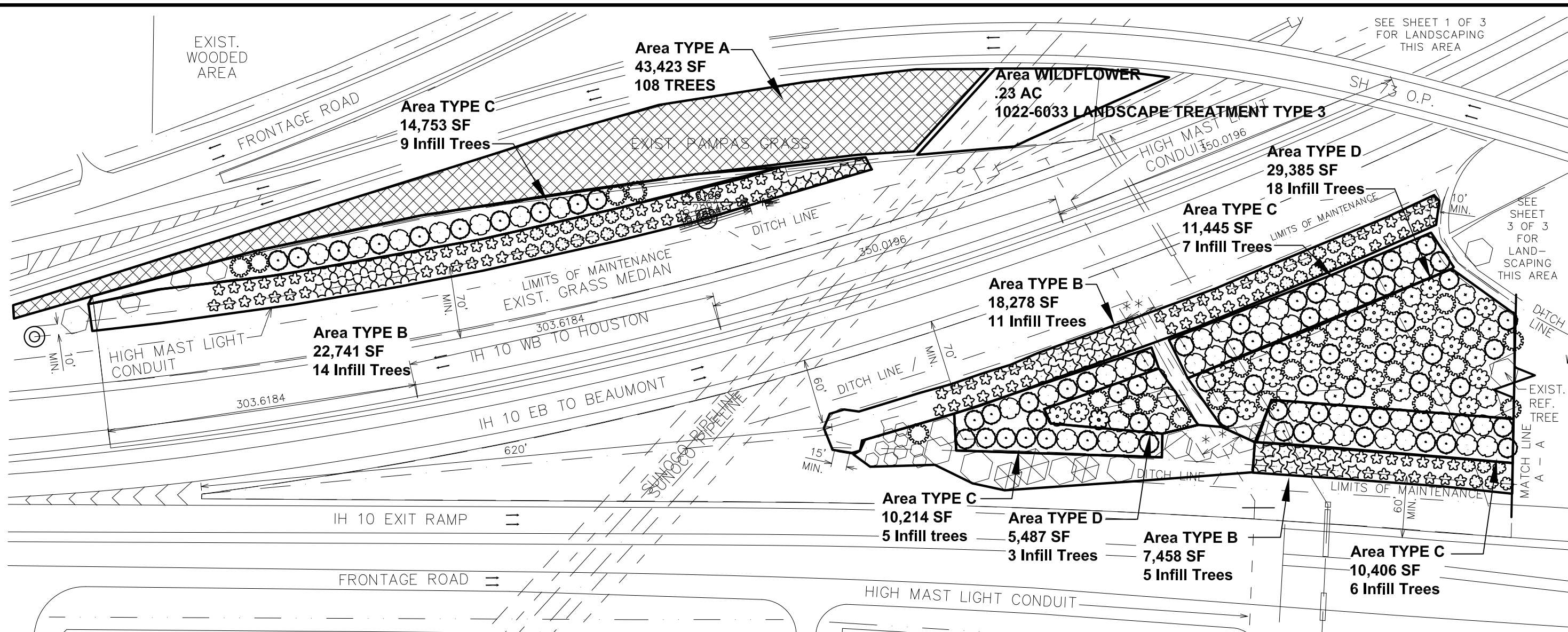
8/03/2023

PLANTING PLAN
IH10 @ SH 73

SCALE 1"=100'
 SHEET 1 OF 3

FHWA TEXAS DIVISION		PROJECT NO. SEE TITLE SHEET		SHEET NO. 25	
STATE	DISTRICT	COUNTY			
TEXAS	BMT	CHAMBERS			
CONTROL	SECTION	JOB	HIGHWAY NO.		
0739	01	050	IH 10		

SEE SHEET 1 OF 3 FOR LANDSCAPING THIS AREA



* MINIMUM OFFSET FROM HIGH MAST LIGHT CONDUIT IS 10' FOR CRAPE MYRTLES AND 20' FOR ALL OTHER TREES.

NOTE: SEE SHEET 28 FOR NOTES AND QUANTITIES.

LEGEND

- BALD CYPRESS
- SHUMARD OAK
- LAUREL OAK
- LIVE OAK
- LUMINAIRE
- POWER POLE
- CRAPEMYRTLE (Tuscarora)
- CRAPEMYRTLE (Natchez)
- CRAPEMYRTLE (Muskogee)
- CRAPEMYRTLE (Red Rocket or Dynamite)
- EXISTING TREES

Area TYPE A - 43,423 SF
192 TREES TYPE A (20' O.C.)
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3

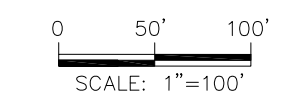
Area B - 48,477 SF
192 INFILL TYPE B CRAPE MYRTLE
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

Area C - 36,412 SF
192 INFILL TYPE C
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

Area D - 34,872 SF
192 INFILL TYPE D
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

NOTES:
 SEE SHEETS 33-34 LANDSCAPE TREATMENT & SHEETS 35-36 PRUNING FOR REQUIREMENTS FOR EXISTING TREES.

NOTE: SITE LOCATION SHEETS ARE DIAGRAMMATIC REPRESENTATIONS OF PROPOSED WORK AREAS ONLY. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND STAKING LIMITS OF EACH BED PREPARATION AREA IN ACCORDANCE WITH PLANS. ADJUSTMENTS WILL BE MADE TO ACCOMMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

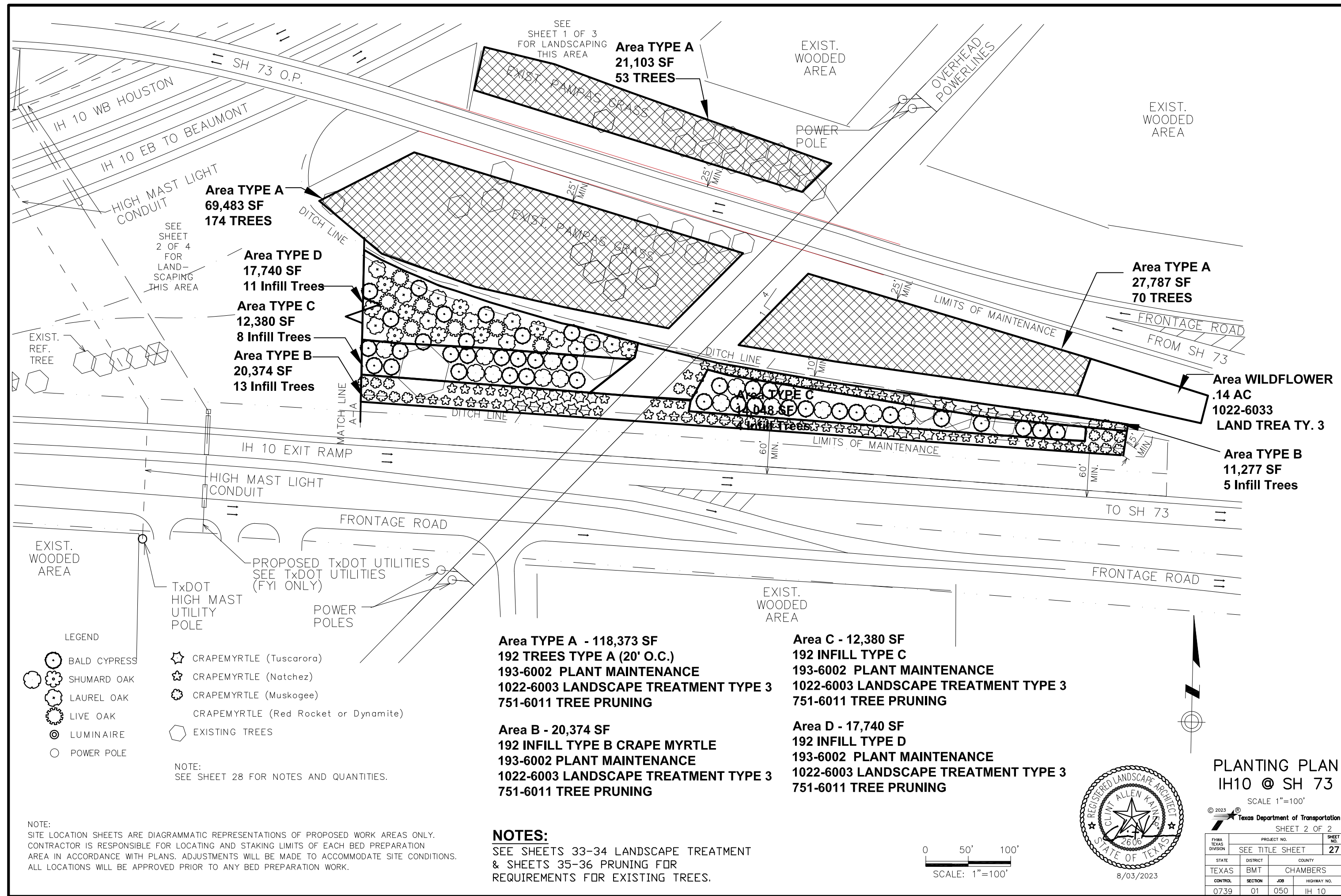


PLANTING PLAN
IH10 @ SH 73

SCALE 1"=100'
 Texas Department of Transportation
 SHEET 2 OF 3

FHWA TEXAS DIVISION	PROJECT NO.	SHEET NO.
SEE TITLE SHEET		26
STATE	DISTRICT	COUNTY
TEXAS	BMT	CHAMBERS
CONTROL	SECTION	JOB
0739	01	050
		HIGHWAY NO.
		IH 10

8/03/2023



Area TYPE A
69,483 SF
174 TREES

Area TYPE D
17,740 SF
11 Infill Trees

Area TYPE C
12,380 SF
8 Infill Trees

Area TYPE B
20,374 SF
13 Infill Trees

Area TYPE A
21,103 SF
53 TREES

Area TYPE A
27,787 SF
70 TREES

Area WILDFLOWER
.14 AC
1022-6033
LAND TREA TY. 3

Area TYPE B
11,277 SF
5 Infill Trees

Area TYPE A - 118,373 SF
192 TREES TYPE A (20' O.C.)
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

Area C - 12,380 SF
192 INFILL TYPE C
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

Area B - 20,374 SF
192 INFILL TYPE B CRAPE MYRTLE
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

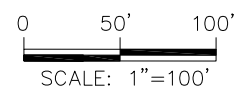
Area D - 17,740 SF
192 INFILL TYPE D
193-6002 PLANT MAINTENANCE
1022-6003 LANDSCAPE TREATMENT TYPE 3
751-6011 TREE PRUNING

- LEGEND**
- BALD CYPRESS
 - SHUMARD OAK
 - LAUREL OAK
 - LIVE OAK
 - LUMINAIRE
 - POWER POLE
 - CRAPEMYRTLE (Tuscarora)
 - CRAPEMYRTLE (Natchez)
 - CRAPEMYRTLE (Muskogee)
 - CRAPEMYRTLE (Red Rocket or Dynamite)
 - EXISTING TREES

NOTE:
SEE SHEET 28 FOR NOTES AND QUANTITIES.

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMMATIC REPRESENTATIONS OF PROPOSED WORK AREAS ONLY. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND STAKING LIMITS OF EACH BED PREPARATION AREA IN ACCORDANCE WITH PLANS. ADJUSTMENTS WILL BE MADE TO ACCOMMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

NOTES:
SEE SHEETS 33-34 LANDSCAPE TREATMENT & SHEETS 35-36 PRUNING FOR REQUIREMENTS FOR EXISTING TREES.



PLANTING PLAN
IH10 @ SH 73

SCALE 1"=100'
Texas Department of Transportation
PROJECT NO. SHEET NO. 27

STATE		DISTRICT		COUNTY	
TEXAS		BMT		CHAMBERS	
CONTROL	SECTION	JOB	HIGHWAY NO.		
0739	01	050	IH 10		

PLANT SPECIFICATIONS (PLANT MATERIAL MUST CONFORM TO ALL SPECIFICATIONS)

SHEET QUANTITIES			
DESCRIPTION	UNIT	EST. QNTY.	MINIMUM SPECIFICATIONS/ DESCRIPTION
PLANT MATERIAL (30 GAL) (TREE)			20' OC OR AS DIRECTED
Bald Cypress	EA	115	MIN.: 2" CAL., 6'-8' HT. 4'-5' SPREAD
Shumard Oak	EA	31	
Laurel Oak	EA	16	
Live Oak	EA	80	
Crape Myrtle Natchez	EA	17	
Crape Myrtle Muskogee	EA	17	
Cedar Elm	EA	65	
Loblolly pine	EA	97	
Sycamore	EA	97	
Chinquapin Oak	EA	32	
Bur Oak	EA	32	
Red Oak	EA	65	
PLANT MATERIAL (15 GAL) (TREE)			
Crape myrtle (tuscarora)	EA	17	
Crape Myrtle NATCHEZ	EA	65	
Crape myrtle (Red Rocket)	EA	17	
Red Bud	EA	65	

NOTES:

MOW THE AREAS TO BE PLANTED PRIOR TO PLANTING.

CONTRACTOR SHALL LOCATE BOUNDARY OF PLANTING AREAS AND STAKE OR MARK LOCATIONS OF PLANTING / PREP. AREAS FOR APPROVAL OF THE ENGINEER PRIOR TO COMMENCING ANY DIGGING OR PLANTING ACTIVITIES. SEE PLANTING SHEET(S) FOR PLANTING DETAILS, SPECIFICATIONS, AND SPACING.

PLANT MATERIALS SHALL BE PLANTED SO AS NOT TO INTERFERE WITH THE SIGHT LINES OF TRAFFIC SIGNS, TRAFFIC LIGHTS OR STREET LIGHTING WITH CONSIDERATION TO FUTURE GROWTH POTENTIAL OF THE PLANT MATERIAL. DO NOT PLANT TREES ON OVERPASS EMBANKMENT.

PLANT MATERIAL SHALL NOT BE PLACED WHERE IT MAY IMPEDE DRAINAGE IN EXISTING OR PROPOSED SWALES OR CHANNELS. FIELD ADJUSTMENTS OF PLANTING LOCATIONS MAY BE MADE WITH APPROVAL OF OR AS DIRECTED BY THE ENGINEER.

WATERING SCHEDULE AND PAYMENT BASIS:

ITEM 168 – WATER TREES A MINIMUM OF TWICE A WEEK AT 15 GAL PER TREE EACH WATERING. THIS SHALL BE DURING THE PLANTING PERIOD AND 90 DAY GUARANTEE. WATERING INTERVAL OR QUANTITY MAY BE CHANGED AS DIRECTED BY THE ENGINEER (SUCH AS DURING PERIODS OF SUFFICIENT RAINFALL).

ITEM 193 – WATER TREES AS DIRECTED BY THE ENGINEER. EACH WATERING SHALL BE 15 GAL PER TREE.

THE APPROXIMATE LOCATION OF THE UNDERGROUND HIGH MAST LIGHT CONDUIT AND THE SUNOCO PIPELINE ARE SHOWN ON THE LAYOUT. AT LEAST 72 HOURS PRIOR TO BEGINNING PLANTING AT THIS LOCATION, CONTACT THE FOLLOWING INDIVIDUALS TO HAVE THE LINES LOCATED:

HIGH MAST LIGHT CONDUIT: ALTON HORN (TXDOT) (409) 898-5734


SUNOCO PIPELINE: DAWN FISCHER (409) 287-5001

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.



NTS

PLANT SPECIFICATIONS			
SHEET 1 OF 1			
 Texas Department of Transportation			
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● CONSTRUCTION PHASE (WORKING DAYS) ITEMS 100, 168, 170, 192, 193, 423, 500, 502, 506, and 6185 – SEE PLANS AND SPECIFICATIONS FOR REQUIREMENTS

2024			2025			2026			2027																																
APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN															
						●	●	●	●	●	●	*ITEM 192															193-6001 SEE "PLANTING AND ESTABLISHMENT" SHEETS FOR REQUIREMENTS														
						BEGIN	** END																																		
						1022-6003 LANDSCAPE TREATMENT (TYPE 3)																																			
						BEGIN 751-6011** END PRUNING (CYCLE)																																			

* START TIME FOR SP 192-001 WILL BE ADJUSTED TO MATCH END OF CONSTRUCTION PHASE TO AVOID ANY BREAK IN MAINTENANCE AND/OR ESTABLISHMENT OF PLANT MATERIAL.
ALL OTHER ITEMS OF WORK WILL REMAIN AS SCHEDULED

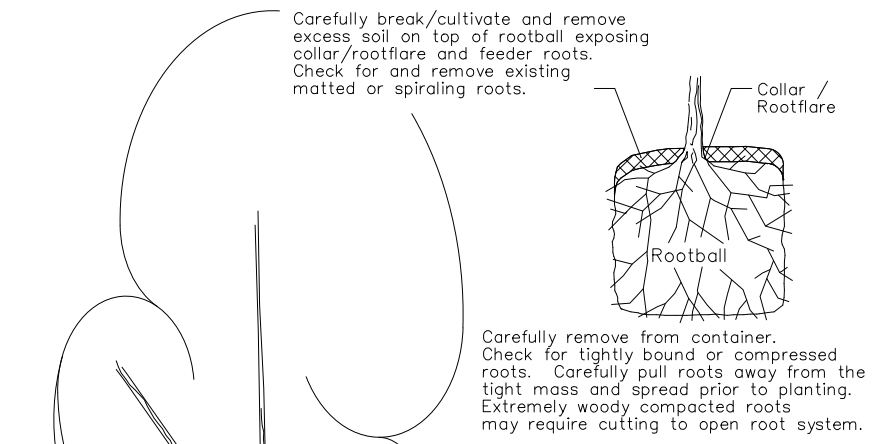
- NOTES:
- TIMELINE IS FOR CONTRACTOR'S INFORMATION ONLY, ACTUAL DATES MAY CHANGE AS DIRECTED.
 - SEE "PLANTING AND ESTABLISHMENT" SHEETS FOR ADDITIONAL REQUIREMENTS AND INFORMATION NOT SHOWN ON THIS SHEET.
 - CONTRACTOR WILL PROVIDE ENGINEER AND LANDSCAPE ARCHITECT SUFFICIENT TIME TO REVIEW AND APPROVE ALL PROPOSED WORK LOCATIONS AND ITEMS PRIOR TO INSTALLATION. WORK COMPLETED PRIOR TO APPROVAL WILL NOT BE PAID.
 - REFERENCE ITEM 5.7; INSPECTION OR LACK OF INSPECTION WILL NOT RELIEVE THE CONTRACTOR FROM OBLIGATION TO PROVIDE MATERIALS OR PERFORM THE WORK IN ACCORDANCE WITH THE CONTRACT.
 - AT ANY TIME DURING CONTRACT, THE ENGINEER AND LANDSCAPE ARCHITECT MAY REMOVE INSTALLED ITEMS IN ORDER TO INSPECT COVERED WORK AND MATERIALS. CONTRACTOR IS RESPONSIBLE FOR RE-INSTALLING REMOVED ITEMS PER DETAILS. RE-INSTALLING INSPECTED ITEMS IS INCIDENTAL AND WILL NOT BE PAID FOR SEPARATELY.



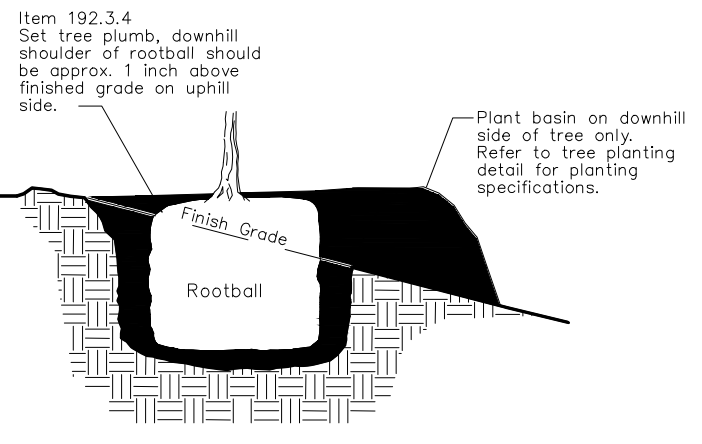
PLANTING, MAINTENANCE AND ESTABLISHMENT TIMELINE

SHEET 1 OF 1

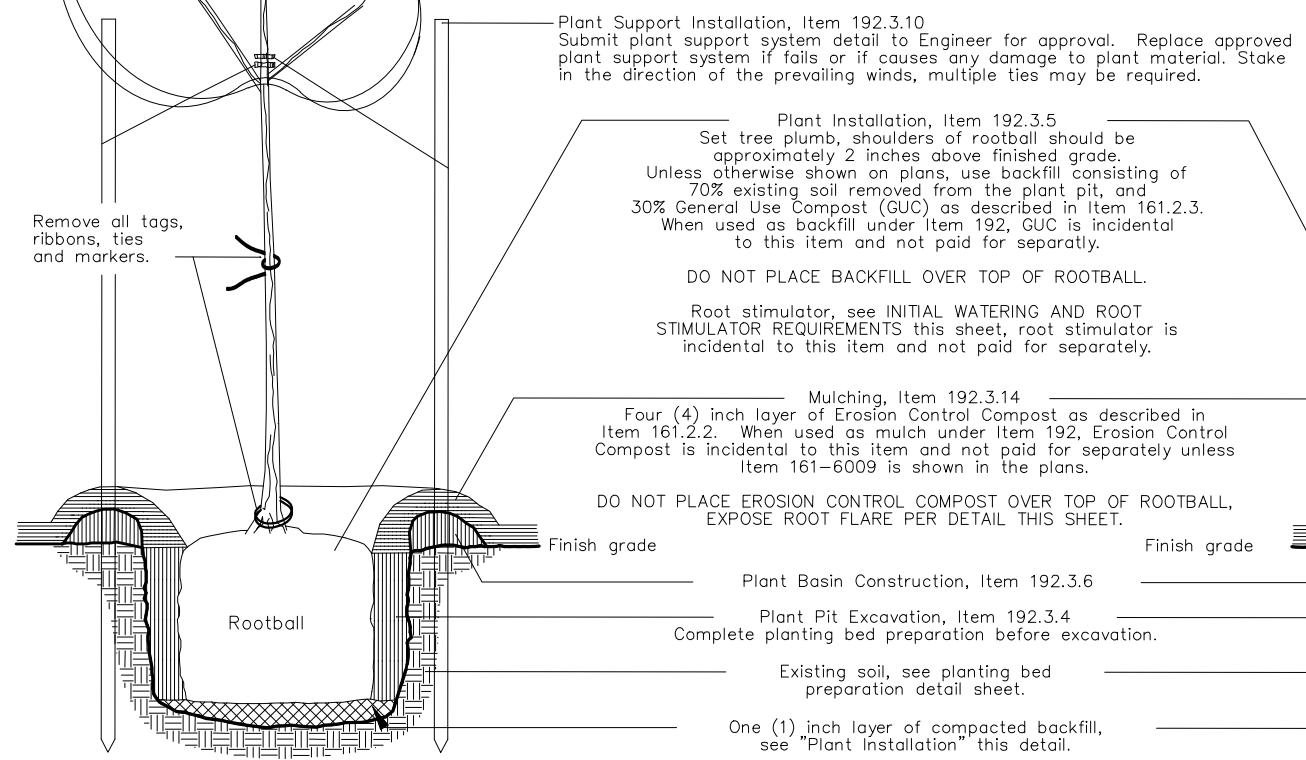
FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.	SHEET NO.	
	SEE TITLE SHEET	29	
STATE	DISTRICT	COUNTY	
TEXAS	BMT	CHAMBERS	
CONTROL	SECTION	JOB	HIGHWAY NO.
0739	01	050	IH 10



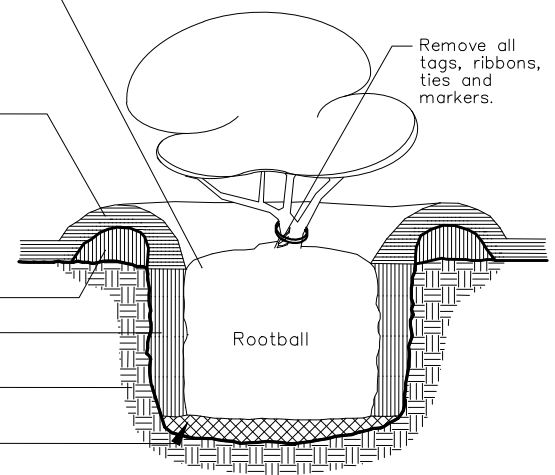
PRIOR TO PLACING ROOTBALL IN HOLE



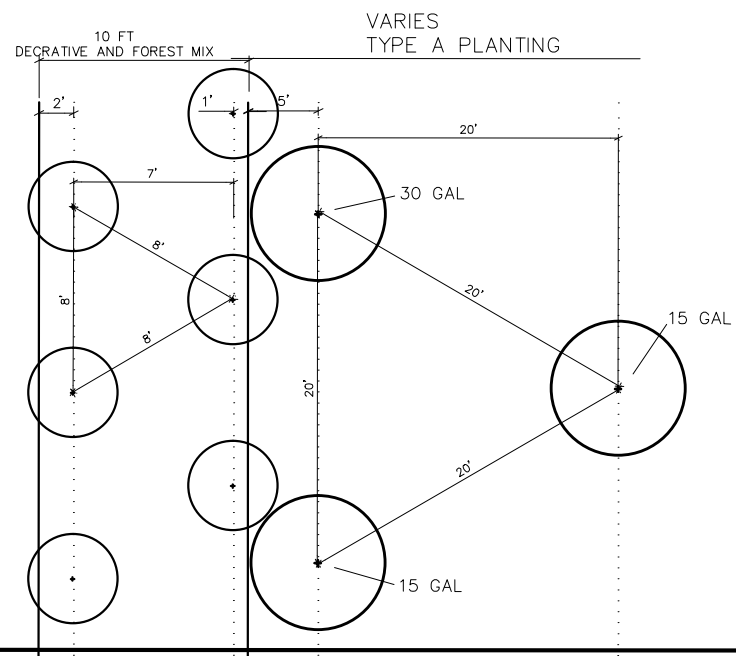
FOR SLOPE PLANTING



TREE PLANTING DETAIL



SHRUB AND VINE PLANTING DETAIL



- LAYOUT NOTES:
- PLANT QUANTITIES ARE BASED ON A TRIANGULAR SPACING. USE THE FOLLOWING SPACINGS FOR EACH CORRESPONDING AREA: (O.C. = ON CENTER)
CANOPY - 20' O.C.
UNDERSTORY - 8' O.C.
 - PLACE LIKE SPECIES IN GROUPS SPACED THROUGHOUT THE PLANTING AREA WITH NO LESS THAN 6 (OR THE MINIMUM NUMBER PER BED) AND NO MORE THAN 10 PLANTS PER GROUP. STAKE LOCATIONS AND SPECIES FOR APPROVAL BY DISTRICT LANDSCAPE ARCHITECT, BEFORE PLANTING.
 - AS MUCH AS POSSIBLE, PLACE EACH GROUP OF PLANTS IN LOCATIONS SUITED TO THE GROWING CONDITIONS OF THAT PARTICULAR SPECIES.
 - PLACE DECIDUOUS SPECIES OF UNDERSTORY TREES ONLY ON INSIDE ROWS OF UNDERSTORY ZONE.
 - DO NOT PERFORM PLANTING BED PREPARATION OR INSTALL PLANTS DIRECTLY UNDER THE CANOPY OF EXISTING TREES WITHIN PLANTING BEDS.
 - VARY LAYOUT OF CANOPY TREES TO EVENLY DISTRIBUTE 30 GAL AND 15 GAL PLANTS THROUGHOUT THE PLANTING BEDS.

VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES			
FOR VEGETATIVE WATERING FOR PALMS ONLY SEE PLANTING AND ESTABLISHMENT SHEET 2 of 2			
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: 2 times per week for the first 4 months and once a week for the last 5 months with 1 day minimum between waterings	CNTR SIZE WATER QTY 30 GAL = 16 gallons 15 GAL = 10 gallons 5 GAL = 4 gallons 3 GAL = 2 gallons 1 GAL = 2 gallons (1/2 X plant CNTR gallon size per plant for sizes not shown, one (1) gallon minimum) See Initial Watering Note
Item 192.3.15 Maintenance	Item 192.3.15.1. Watering is incidental to Item 192 and is not paid for separately	See Initial Watering note	
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	1 times per week with 2 days minimum between waterings	

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.

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.

- NOTES:
- Reference Item 192 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014 for specifications, dimensions, volumes, and measurements not shown.
 - Reference Item 192.3, mark plant locations and bed outlines.
 - Verify that all planting meets the following clear zone minimum distance requirements from the edge of the travel lane:
Trees: 30' unless protected by a barrier,
Shrubs: 15' unless protected by a barrier,
Engineer has final authority over all clear zone related issues.
 - Locate and stake all underground conduits and utilities associated with but not limited to: CTMS, CTMS power supply, lighting, signal wires and detectors, gas, electric, telephone, fiber optics, etc.
 - Locate and stake existing ground boxes, inlets, culverts, manholes, etc. within the project area with a 4' wooden stake painted orange. Maintain the stakes in place for duration of contract. Remove stakes when directed by Engineer.
 - 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 the plans and specifications will be replaced and/or reworked until in compliance.
 - Any adjustments due to the failure to comply with plans and specifications shown will be at Contractors expense.



CLEAR ZONES (TREE SETBACKS)	
Dimensions are min. 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 (with slopes greater than or equal to 5:1)
32'	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
10'	Bridge Overhand, Concrete Barrier, Curb, Ground Boxes, Guard Rail, Culvert/ Inlet, Duct, Manhole, retaining Wall, Ditch, Right-of-way Line, rigrap, Fence, Large and Small Sign

NTS

PLANTING DETAILS

SHEET 1 OF 1

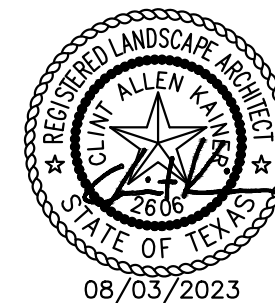
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	30
STATE	DIST.	COUNTY
TEXAS		CHAMBERS
CONT.	SECT.	JOB
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		IH 10

PROJECT CONDITIONS DURING INSTALLATION AND SUSPENSION

During project installation and suspension periods, project site conditions are Contractor's responsibility. Contractor will maintain project site conditions as shown on plans. All project site maintenance work is incidental and is not paid for separately unless otherwise shown on plans. Reference pertinent items of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. Notify Engineer prior to each site visit, determination of the completeness of work will be done in the presence of the Engineer same day as work activity.

DESCRIPTION OF WORK	TIMELINE
	From BEGINNING OF PROJECT CONSTRUCTION OR SUSPENSION thru END OF CONSTRUCTION/INSTALLATION
WATERING <small>(See PLANTING DETAILS SHEET 1 of 1, VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES)</small>	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 2 OF 2.
MOWING, TRIMMING, AND EDGING (From back of curb, retaining wall, barrier, and riprap to bed preparation areas, otherwise 6' width around outside edge of bed preparation areas, around and between planting bed preparation areas, including areas around any structures within the outer limits adjacent to the roadway). DO NOT MOW, TRIM, OR EDGE WITHIN 3' of ANY TREE	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 2 OF 2.
PLANT BASIN, BED, AND WORKSITE MAINTENANCE (Includes keeping all inlets within or near the bed preparation areas free of compost. Maintain bed preparation areas as shown below and reshape beds every 30 days or as site conditions and weather require. If no requirement is selected, maintain per Item 192.3.15.3) WEED CONTROL REQUIREMENT <input checked="" type="checkbox"/> See PLANTING AND ESTABLISHMENT SHEET 2 of 2 For Requirements	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 2 OF 2.
PLANT SUPPORTS See PLANTING AND ESTABLISHMENT SHEET 2 of 3 For Requirements	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 2 OF 2.
PRUNING (Includes palm plant material and dead, diseased, or damaged palm fronds.)	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 2 OF 2.
INSECT, DISEASE, AND ANIMAL INSPECTION AND TREATMENT (Exterminate all active ant colonies in bed preparation areas)	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 2 OF 2.
LITTER AND DEBRIS COLLECTION AND DISPOSAL (Includes planting bed preparation areas and designated mowing limits. In addition, keep all inlets within or near planting bed preparation areas free of debris and litter)	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4.
TREE TRUNK WRAP AND PROTECTION GUARD REMOVAL AND DISPOSAL (Not applicable)	
PLANT REPLACEMENT *	FOLLOW SAME REQUIREMENTS AND FREQUENCY SHOWN ON PLANTING AND ESTABLISHMENT SHEET 3 OF 4.

* Remove any materials damaged by actions described in Item 7.17. Removal and disposal of damaged materials is incidental to Item 192. Contractor may be reimbursed for plant replacement in accordance with Item 7.17.1. Theft is not a reimbursable repair.



NTS

PLANTING AND ESTABLISHMENT

SHEET 1 OF 2

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ITEM 1022-6003 LANDSCAPE TREATMENT (TY3) – EA

BEGIN ** END

1022-6003
LANDSCAPE TREATMENT(TY3)
ALL LOCATIONS ONCE

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 within project limits in accordance with PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheets 1-4 except:
landscape installed by adjacent property owners.
3. Work will be limited to the redefined planting areas and adjacent 5'- 7' perimeter mow edge.
4. Work includes removing trees and/or shrubs which may actually reduce the original planting area size and eliminate further maintenance of an area.
5. Work includes pruning and removal of plant material:
 - Prune in accordance with ANSI A300.
 - Remove plant material stumps to existing grade.
 - Chip and evenly distribute 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 unless otherwise approved by Engineer.
 - Fill any holes from removal of dead plant material with topsoil, topsoil is incidental.
6. EACH CYCLE INCLUDES COMPLETING THE SPECIFIED WORK FOR ALL LOCATIONS IDENTIFIED WITHIN THE PROJECT LIMITS ONCE.

PLANT BED MAINTENANCE

7. Maintain and/or reshape planting areas to conform to original installation (see PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT sheets) so that planting areas do not hinder roadway drainage, especially behind slotted barrier.
8. Chemically control weeds and undesirable grasses in planting areas with ROUNDUP PROMAX. or approved equal.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.

UNDESIRABLES

9. Chemically treat and remove all PAMPAS GRASS & JOHNSON GRASS within all new planting beds and redefined/ existing planting areas, adjacent 5'- 7' perimeter areas and along fences/walls/structures adjacent to perimeter area with an approved herbicide.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - 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 1022-6003.
10. Remove invasive and/or undesirable trees, shrubs and vines within redefined planting areas, adjacent 5'- 7' perimeter areas and along fences/walls/structures adjacent to perimeter area.
 - Chemically treat stumps of cut invasive and/or undesirable plants with PATHFINDER II BASAL BARK HERBICIDE, or approved equal.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - 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 1022-6003.

HERBICIDE

11. Chemically treat all redefined planting areas with an approved herbicide as needed to control understory growth prior to mowing and trimming.
 - Perform herbicide applications under supervision of STATE LICENSED APPLICATOR.
 - Do not mow and/or trim understory until after herbicide manufacturer's recommended absorption time.
 - Do not allow herbicide to come in contact with desirable vines, shrubs, or trees, including seedlings.
 - Herbicide is subsidiary to ITEM 1022-6003.

MOWING AND TRIMMING

12. Mow 5'- 7' perimeter of all redefined planting areas to standard height (4"-7").
13. Scalp mow/trim within all redefined planting areas, including between trees after herbicide manufacturer's recommended time period for herbicide absorption.
 - Trimming with cord trimmer is allowed within planting 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 12" inches of any existing and new desirable plant. Tall grass may remain around desirable plant. Hand pull undesirable plants within 12" inches of desirable plant.
 - Damaged plants will be replaced, maintained, and warrantied through duration of contract at Contractor's expense.
 - Damaged plants will be replaced immediately, unless otherwise directed.

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
32'	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
10'	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 PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheet 3 of 4 for sight triangles)



LEANING TREE REMOVAL



LANDSCAPE TREATMENT (TY 3)			
SHEET 1 OF 2			
Texas Department of Transportation			
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6	SEE TITLE SHEET		33
STATE	DIST.	COUNTY	
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CONT.	SECT.	JOB	HIGHWAY NO.
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NTS

ITEM 1022-6003 LANDSCAPE TREATMENT (TY3) – EA

BEGIN ** END

1022-6003
LANDSCAPE TREATMENT(TY3)
ALL LOCATIONS ONCE

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

REQUIREMENTS FOR EXISTING LANDSCAPE AREAS

GENERAL

PRUNING AND REMOVALS

14. 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 3, 4 AND 5 OF 6 (pruning related to signage applies to both existing and any new signs installed for the duration of contract.
- With vertical clearance issues over any roadways and access routes (19' Min.), 8'- 10' width planting area perimeter (9' Min.) and sidewalks (9' Min.), see PLANT MAINTENANCE, Sheet 3 and 4 OF 6.
- Prune all sucker growth and/or new limbs to maintain clear trunk in accordance with PLANT MAINTENANCE, Sheet 2 of 6.
- Prune dead, dying or damaged branches/limbs (includes freeze and/or drought damage to any existing plant material).

15. Remove all plants of any size, height, and diameter not conforming to PLANT MAINTENANCE, Sheet 4 and 5 of 6, 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 all pampas grass within planting areas unless otherwise noted on plans.
- Remove oleanders, crape myrtle, wax myrtle, etc. (large shrubs) 75' in front of and 25' behind any ground mounted sign (small and large) unless otherwise noted on plans, treat stumps as described in note #10.
- Remove crape myrtle, wax myrtle, etc. (multi-stemmed tree) located < 10' from travel lane and along entire edge of sign site triangle.
- Remove all vines from trees and shrubs and vines that have fallen from installed support structure(s).
- Remove all vines from barriers, fences, retaining walls, sign structures, sound walls, etc. adjacent to planting areas unless otherwise noted on plans.

STAKES AND STRAPS

16. Remove all existing stakes, straps, guy wires, cables, and tags from site.

IRRIGATION SYSTEMS

17. Remove any existing irrigation system not in use to grade within redefined 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 incidental.

OTHER

- 18. Remove all litter and debris (rocks, tires, concrete, lumber, trash, bandit signs, etc.) located within planting areas.
- 19. Treat all fire ant colonies within planting areas.
- 20. Treat existing plants displaying evidence of insect, fungal, bacterial, or other negative indications – use appropriate methods and products for treatments.
- 21. Remove silt fence, erosion control logs, and staking associated with any planting area unless directed otherwise.
- 22. Access to some areas is constrained. No additional compensation is allowed for limited access.
- 23. 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 with no additional compensation.

24. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractor's expense.

25. Engineer, Landscape Architect or Vegetation Specialist 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
32'	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
10'	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 PLANTING, ESTABLISHMENT AND MAINTENANCE LAYOUT, Sheet 3 of 4 for sight triangles)



LEANING TREE REMOVAL

NTS



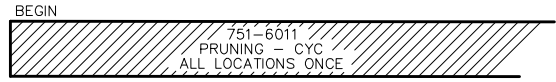
LANDSCAPE TREATMENT (TY 3)

SHEET 2 OF 2



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6	SEE TITLE SHEET		34
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ITEM 751-6011 PRUNING - CYC (SEE ITEM 1, ABBREVIATIONS AND DEFINITIONS, 3.43. CYCLE)



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

PRUNING REQUIREMENTS FOR LIMBING-UP OF EXISTING LANDSCAPE AREAS

GENERAL

- All requirements described under ITEM 751-6011 for existing areas apply.
- Work areas shown in plans must be identified by Contractor in the field and approved by Engineer prior to beginning any work.
- Work includes pruning (limbing-up) of existing trees.
 - Prune in accordance with ANSI A300.
 - Chip and evenly spread plant debris on site.
 - Remove any plant debris too large to chip from site.
 - Do not prune more plant material than what can be chipped or removed the same day unless otherwise directed.
- Each cycle includes completing the specified work for all locations identified within the project limits once.

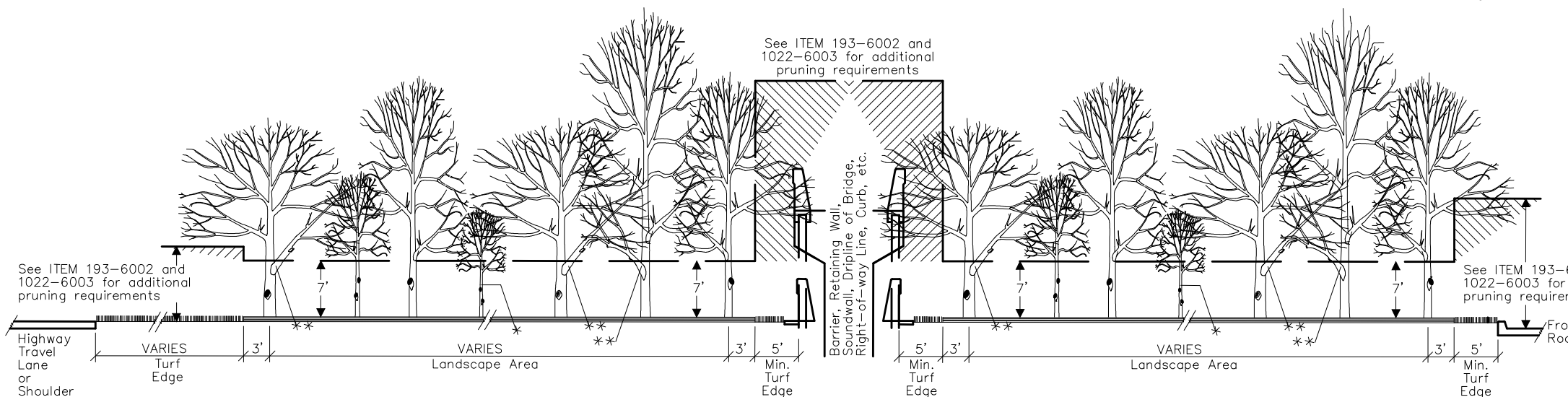
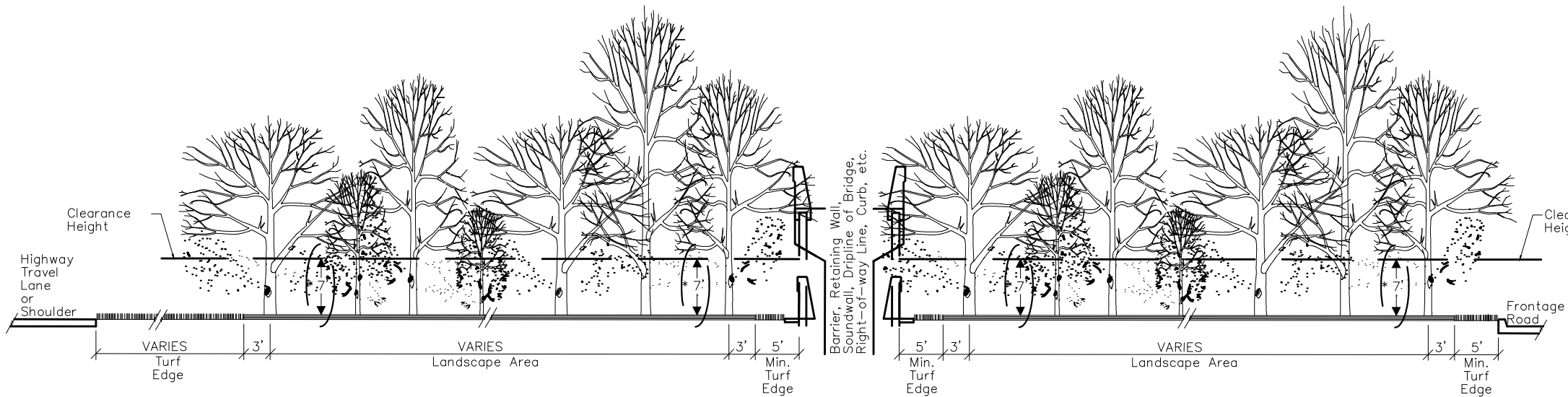
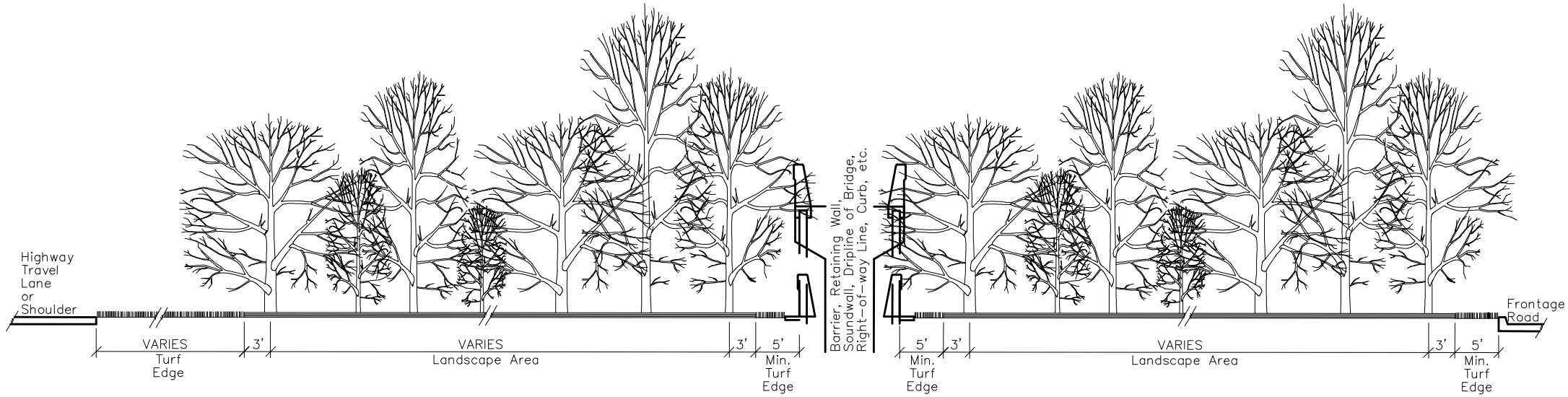
PRUNING

- Prune all trees located within existing landscape areas identified in plans with the following exceptions:
 - Detention Pond - Prune first 3 rows or 24' along top and bottom edge of slope.
 - Interchanges (identified in plans) - trim first 5 rows or 38' along perimeter edge.
- Prune all trees in accordance with details shown.
- Prune / remove lower limbs of each tree $\geq 16'$ to a height of 7' with the following exception:
 - * Trees $< 16'$ to 1/2 the height of the tree.
 - ** Major limbs anchored below the clearance height may remain as shown. Remove all other branches hanging below the clearance height.
- Do not prune the following plant species: Wax Myrtle, Esperanze, Oleander, Vitex, or Yaupon unless otherwise shown on plans.
- District Landscape Architect or Vegetation Specialist must approve completed work prior acceptance and payment.

EXISTING

CURB

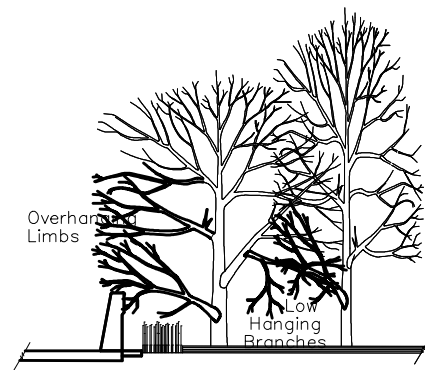
FOUNDATION



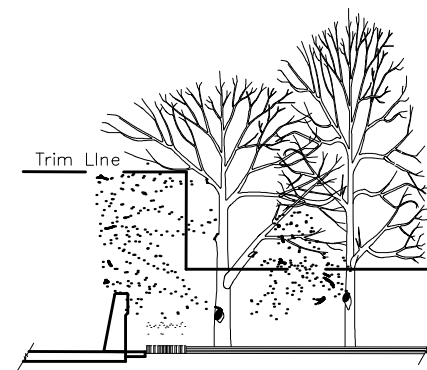
TREE LIMBING UP

NTS

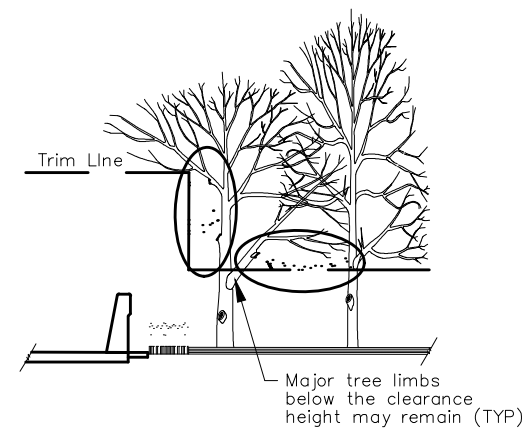
PRUNING		
SHEET 1 OF 2		
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	35
STATE	DIST.	COUNTY
TEXAS	BMT	CHAMBERS
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EXISTING CONDITION



BRANCHES / LIMBS TO BE REMOVED

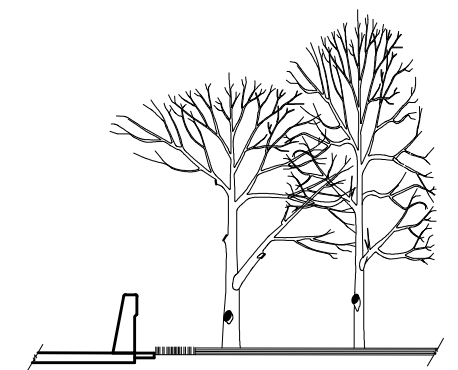


IMPROPERLY PRUNED TREES

Cut limbs at a major fork in the branch or, if the entire branch is encroaching into the area to be cleared, remove the branch at the trunk.

Do not leave a stub beyond the branch collar or cut through the branch collar when making pruning cuts.

The branch collar is generally visible, but if it is not, make the final cut approximately 1/2" from the parent branch or trunk, perpendicular to the branch or limb being removed.

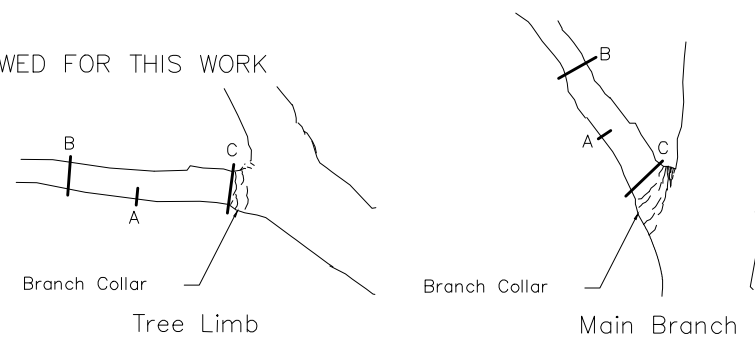


PROPERLY PRUNED TREES

BRANCH / LIMB REMOVAL

FLAILING EQUIPMENT IS NOT ALLOWED FOR THIS WORK

- A - STEP 1
Cut 1/3 way through bottom of limb 8-12" above main stem or trunk
- B - STEP 2
Remove limb 4-6" beyond the first cut
- C - STEP 3
Remove stub with a smooth cut just beyond the branch collar of the removed limb



PRUNING CUTS - LIMBS 2" IN DIAMETER AND GREATER



NTS

PRUNING			
SHEET 2 OF 2			
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
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STATE	DIST.	COUNTY	
TEXAS	BMT	CHAMBERS	
CONT.	SECT.	JOB	HIGHWAY NO.
0739	01	050	IH 10

TYPE OF WORK

ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

Reference Item 166,168 and 180, of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown.

WILDFLOWER SEEDING (Only use ITEMS shown in plans)

180-6001 WILDFLOWER SEEDING AC	<p>ITEM 180.2. MATERIALS</p> <p>ANNUAL WINECUP.....1.00 LB PLS/AC CUTLEAF DAISY.....1.00 LB PLS/AC INDIAN BLANKET.....2.00 LB PLS/AC PARTRIDGE PEA.....1.00 LB PLS/AC PLAINS COREOPSIS.....2.00 LB PLS/AC PRICKLY POPPY.....1.00 LB PLS/AC TEXAS BLUEBONNET.....1.00 LB PLS/AC</p> <p>Planting date: OCTOBER 1 – DECEMBER 1 Unless otherwise directed by District Vegetation Manager.</p> <p>Scalp mow seeding areas shown on plans one month prior to seeding.</p> <p>Mow wildflowers at the standard mowing height (5”-7”) annually in following ITEM 180.2. CONSTRUCTION</p> <p>months:</p> <p>JANUARY JUNE AUGUST OCTOBER</p>	<p>PLS (Pure Live Seed) Provide documentation of PLS requirements per Item 180.2.</p> <p>DRILL SEEDING method to be used in all areas unless otherwise noted in the plans.</p> <p>BROADCAST SEEDING method may be used when site conditions prevent drill seeding method. Broadcast seeding areas must be approved by Vegetation Manager.</p>
166-6001 FERTILIZER AC	<p>ITEM 166.3. CONSTRUCTION</p> <p>Apply fertilizer uniformly. RATE: 4000 lbs/acre</p>	<p>Use a NON-CHEMICAL fertilizer which meets all the following criteria: (1) BRAND NAME must be registered with the Texas State Chemist as a commercial fertilizer. (2) Meets USEPA guidelines for unrestricted use. (3) Derived from biological sources such as, but not limited to: sewage sludge, manures, vegetation, etc. (4) In granular form and essentially dust free.</p> <p>Submit proof of registration and nutrient source to Engineer.</p> <p>Use the following products or an approved equal(see note this sheet): Sigma, SIGMA AgriScience, 281-851-6749 Sustanite-standard grade, Automation Nation, Inc., 713-675-4999 Milorganite, MMSD, 800-287-9645 Agricultural Organic P/L, Ag Org, INC., 713-523-4396</p>
168-6001 VEGETATIVE WATERING MG	<p>ITEM 168.3 CONSTRUCTION</p> <p>Onetime application after seeding. RATE: 6000 gallons/acre.</p>	

SEQUENCE OF WORK

EX. SEED/SOD CONDITION	NEW BED PREP CONDITION
1. Scalp mow 2. Fertilizer 3. Wildflower seeding 4. Vegetative watering	1. Wildflower seeding 2. Vegetative watering



NTS

WILDFLOWER SEEDING

SHEET 1 OF 1

Texas Department of Transportation

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TEXAS		CHAMBERS
CONT.	SECT.	JOB
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		HIGHWAY NO.
		IH 10

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

0739-01-050

1.2 PROJECT LIMITS:

From: IH 10 @ SH 73

To: _____

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 29.8273616, (Long) -94.3946467

END: (Lat) 29.8314759, (Long) -94.3861625

1.4 TOTAL PROJECT AREA (Acres): 65

1.5 TOTAL AREA TO BE DISTURBED (Acres): 12.6

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Install Landscaping and Scenic Enhancements

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Orcadia-Urban land complex	OsuB - 0 to 2% slopes, somewhat poorly drained
Leton loam	LetA - 0 to 1% slopes, occasionally flooded, frequently ponded
Orcadia-Anahuac complex	OriA - 0 to 1% slopes, somewhat poorly drained

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

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

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

Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

Other: _____

Other: _____

Other: _____

1.11 RECEIVING WATERS:

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

Tributaries	Classified Waterbody
Spindletop Bayou	0702: Intercostal Waterway Tidal - Impaired: Bacteria in water, Dioxin in edible tissue, PCBs in edible tissue
Mayhaw Bayou, 0701-E: South Fork Taylor Bayou	0701: Taylor Bayou/North Fork Taylor Bayou Above Tidal - Impaired: Depressed dissolved oxygen in water

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

Other: _____

Other: _____

Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

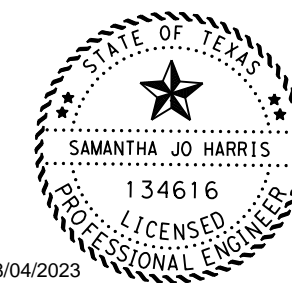
Other: _____

Other: _____

Other: _____

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

MS4 Entity



[Signature] P.E.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



Sheet 1 of 2

Texas Department of Transportation

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STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

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

T / P

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To
Grass: 15-30' perimeter around project area	N/A	N/A

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

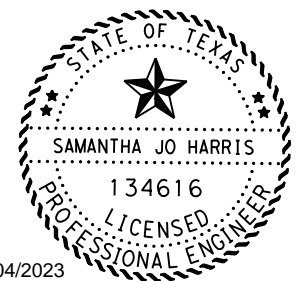
- Fire hydrant flushings
- Irrigation drainage
- Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- Potable water sources
- Springs
- Uncontaminated groundwater
- Water used to wash vehicles or control dust
- Other allowable non-stormwater discharges as allowed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

2.8 DEWATERING:

2.9 INSPECTIONS:

2.10 MAINTENANCE:

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



S. Harris P.E.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

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NOTES:

For projects disturbing 5 or more acres, place laminated copies of the TxDOT and Contractor Construction Site Notices and the TxDOT and Contractor Notices of Intent on the SW3P Notification Board.

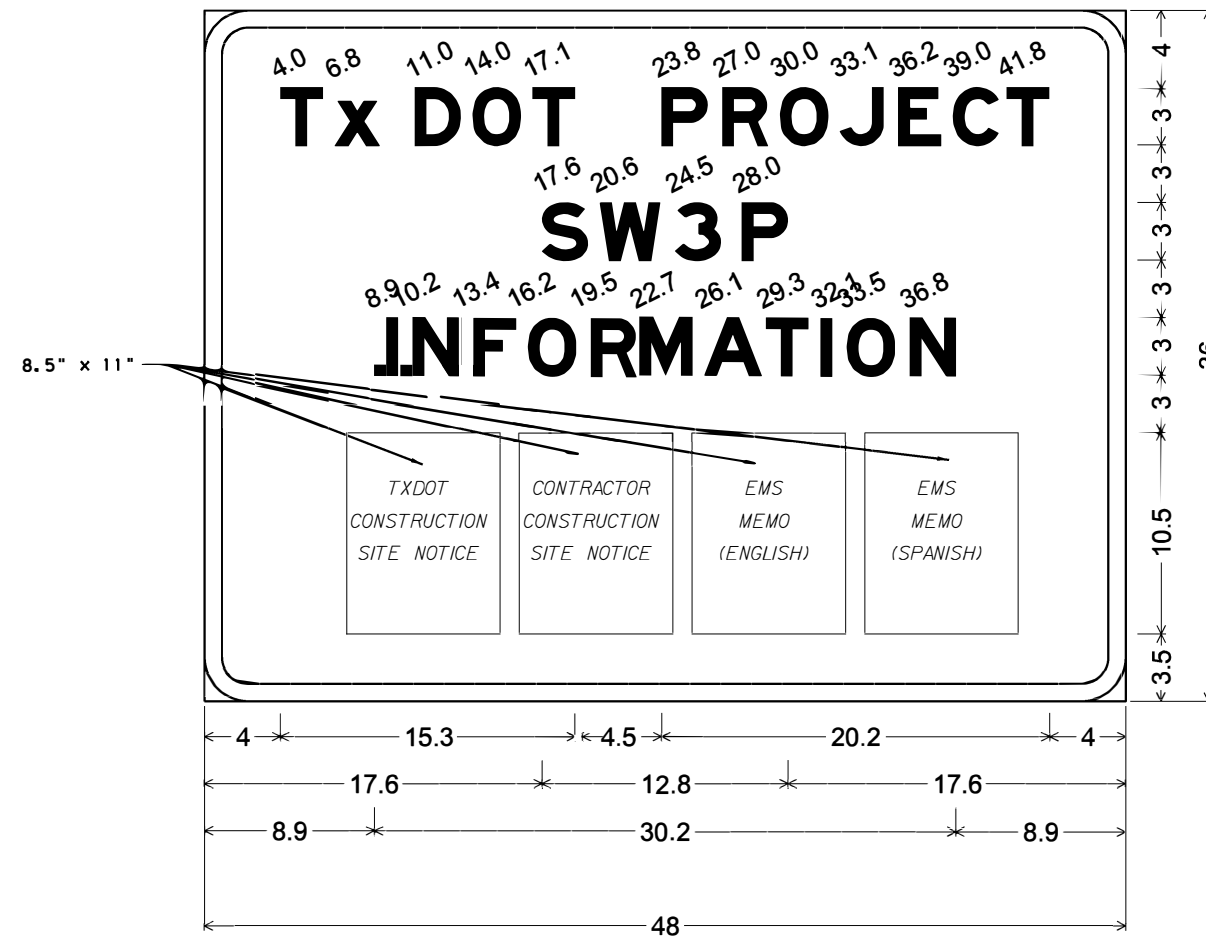
For projects disturbing between 1 and 5 acres, place laminated copies of the TxDOT and Contractor Construction Site Notices on the SW3P Notification Board.

For projects with an Individual Permit with the US Army Corp of Engineer, place a laminated copy of the Permit Certificate on the Notification Board.

Center all postings.

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.

CSN - Construction Site Notice, Large for projects greater than 5 acres, Small for projects greater than 1 and less than 5 acres.



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 © 2022	FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
		40		40
	STATE	DISTRICT	COUNTY	
	TEXAS	BMT	CHAMBERS	
	CONTROL	SECTION	JOB	HIGHWAY NO.
	0739	01	050	IH 10

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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
 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 more than five acres. 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:

- | | | |
|--|--|--|
| Erosion | Sedimentation | Post-Construction TSS |
| <input type="checkbox"/> Temporary Vegetation | <input type="checkbox"/> Silt Fence | <input type="checkbox"/> Vegetative Filter Strips |
| <input type="checkbox"/> Blankets/Mulching | <input type="checkbox"/> Rock Berm | <input type="checkbox"/> Retention/Irrigation Systems |
| <input type="checkbox"/> Mulch | <input type="checkbox"/> Triangular Filter Dike | <input type="checkbox"/> Extended Detention Basin |
| <input type="checkbox"/> Sodding | <input type="checkbox"/> Sand Bog 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.

- No vegetation removal or trimming of any kind is allowed. Exceptions are allowed for mowed and maintained grass and vegetation that is considered landscaping.

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. Avoid unnecessary impacts to dens if found.
- If caves or sinkholes are discovered on site, cease work in the area and contact the TxDOT Inspector or DEOC 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 Texas Parks and Wildlife (TPW) Code Section 64.002. The full MBTA guidance may be found here: <https://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/350-01-gui.pdf>
- Resource specific BMPs (Section I) from the "Updated Best Management Practices (BMPs) for TxDOT Maintenance Activities" guidance under the TxDOT Maintenance Program EA shall be reviewed and implemented where appropriate. The maintenance EA BMPs may be found here: <https://ftp.txdot.gov/pub/txdot-info/env/080-01-bmp.pdf>

LIST OF ABBREVIATIONS

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CCP: Construction General Permit	SWP: 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 labeling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spills 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 data(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 DEOC 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.



ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC

Jared Simpson
 APPROVED BY DATE
 8/10/2023
 DISTRICT ENVIRONMENTAL DEPARTMENT

FILE: epic.dgn	DN: TxDOT	CK: AM	DW: VP	CK: AR
© TxDOT February 2019	CONT	SECT	JOB	HIGHWAY
	0739	01	050	IH 10
	DIST	COUNTY	SHEET NO.	
	BMT	CHAMBERS	41	

DATE: FILE: