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FED. RD. DIV. NO.	STATE PROJECT NO.		SHEET NO.
6	F 2022(059)		01
STATE	STATE DIST.	COUNTY	
TX	YKM	VICTORIA	
CONT.	SECT.	JOB	HIGHWAY NO.
2350	01	070	LP 463

INDEX OF SHEETS

SHEET NO. DESCRIPTION

SEE SHEET 2

STATE OF TEXAS
TEXAS DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

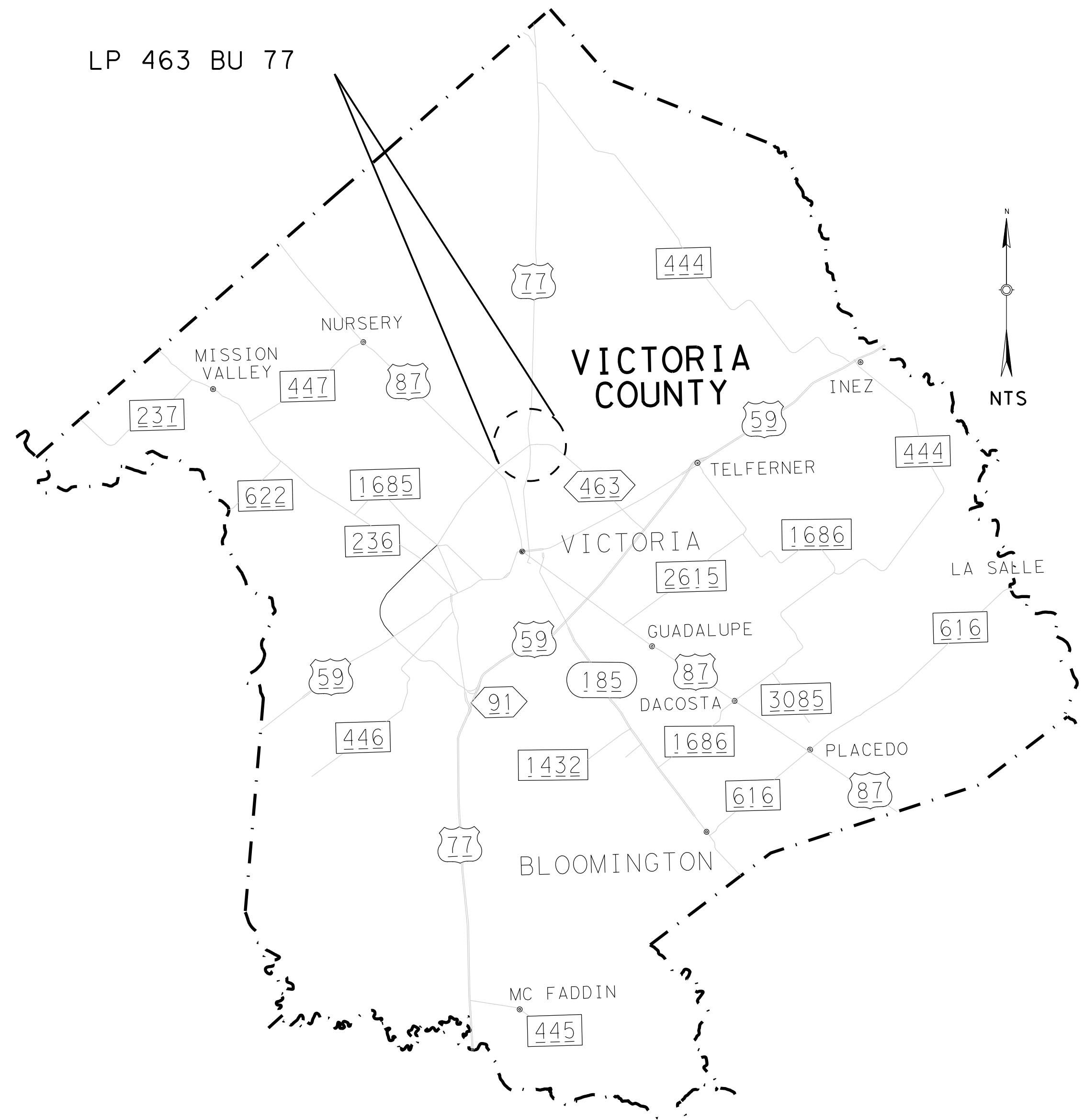
FOR THE CONSTRUCTION OF LANDSCAPE
AND SCENIC ENHANCEMENT CONSISTING OF
GREEN RIBBON LANDSCAPING

PROJECT NO: F 2022(059)
COUNTY: VICTORIA
LIMITS: From .02 Mi West of BU 77S
To .7 Mi East of BU 77S

FUNCTIONAL CLASS: URBAN FREEWAY
DESIGN SPEED: N/A
ADT: 21954 VPD (2019)
30736 VPD (2039)
PROJECT LENGTH: NO PROJECT LENGTH

CONTRACTOR: ____________________
DATE OF LETTING: ____________________
DATE WORK BEGAN: ____________________
DATE WORK COMPLETED: ____________________
DATE WORK ACCEPTED: ____________________
FINAL CONTRACT COST: ____________________

LIST OF APPROVED FIELD CHANGES:



CITY OF VICTORIA 8/4/2021
DATE

DocuSigned by:
Jesus A. Garza
9D0097E13231445...
CITY MANAGER

THIS IS TO CERTIFY THAT THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS, CONTRACT AND LISTED FIELD CHANGES.

AREA ENGINEER DATE

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
7/21/2021

SUBMITTED FOR LETTING: __________ 20__

PROJECT MANAGER 8/3/2021

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

8/3/2021
RECOMMENDED FOR LETTING: __________ 20__
DocuSigned by:
Jeffery Vinklarek
C5D872171F2F4F0...
DIRECTOR OF TRANSPORTATION, PLANNING & DEVELOPMENT

APPROVED FOR LETTING: __________ 20__
DocuSigned by:
Martin C. Horst, PE
894AD3321303...
DISTRICT ENGINEER

VICTORIA COUNTY
YOAKUM DISTRICT

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 (FROM 1273, MAY 2012)

Texas Department of Transportation

DATE: $DATE$ FILE: $FILE$ $TIME$

INDEX OF SHEETS

	SHEET NO.	DESCRIPTION
		GENERAL
	1	TITLE SHEET
	2	INDEX OF SHEETS
	3	PROJECT LOCATION SHEET
	4–5, 5A	GENERAL NOTES
	6	ESTIMATE & QUANTITY SHEET
	7	SUMMARY OF LANDSCAPE QUANTITIES
		TRAFFIC CONTROL PLAN
##	8	TCP(2-6)18
##	9	TCP(5-1)-18
##	10–21	BC (1) – 14 THRU BC (12) – 14
	21A	WZ(RS)-16
		ROADWAY DETAILS
	22–25	LP 463 @ BU 77
	26–31	PLANTING PLAN - BED
	32	PLANTING, MAINTENANCE, AND ESTABLISHMENT TIMELINE
	33	PLANT SPECIFICATIONS
	34	PLANTING DETAILS
	35–38	IRRIGATION PLAN
	39–41	IRRIGATION DETAILS AND MATERIALS
	42	STONE WALL DETAILS
	43–45	PLANTING AND ESTABLISHMENT
	46	PREPARING RIGHT OF WAY
		ENVIRONMENTAL
	47	SW3P
	48	EPIC

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

NAME _____ DATE 07/21/2021

LP 463
INDEX OF SHEETS

SHEET 1 OF 1

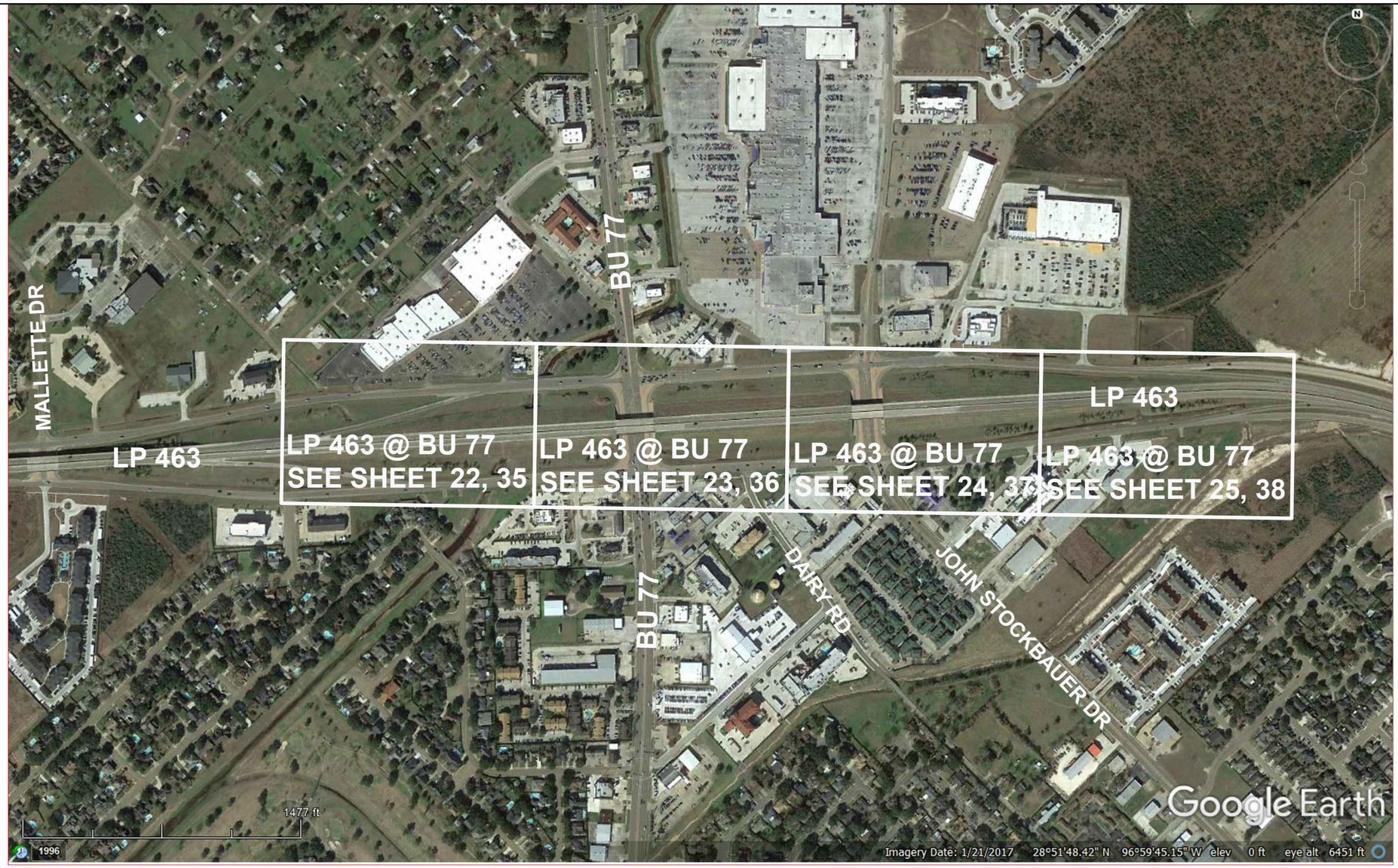
2021 Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			02
STATE	DIST.	COUNTY	
TEXAS	YKM	VICTORIA	
CONT.	SECT.	JOB	HIGHWAY NO.
2350	01	070	LP 463

DATE: $DATE$ $TIME$
FILE: $FILE$

DN: DW: CK: CK:

POL



REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 500' 1000'
SCALE: 1"=1,000'

PROJECT LOCATION SHEET

SHEET 1 OF 1

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FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			3
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

GENERAL NOTES:

Contractor questions on this project are to be addressed to the following individual(s):
Michael Brzozowski Michael.Brzozowski@txdot.gov
James Janak James.Janak@txdot.gov

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

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

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

Do not work on the roadway before sunrise or after sunset unless otherwise approved.

Leave all traffic lanes open to traffic at night, weekends and holidays unless otherwise approved.

Furnish a certified copy of the legal gross weight of each vehicle hauling materials by weight and certified measurements for all trucks hauling material by volume.

Unless otherwise approved, maintain a minimum safety clearance from the edge of the travelway for material stockpiled in proximity of traffic lanes based on the current average traffic count of the particular highway as follows:

0 - 1500 = 16 feet
Over 1500 = 30 feet

In the event the above requirements cannot be met, make arrangements to stockpile material off the right of way.

Do not store equipment or stockpile material in the median overnight unless otherwise approved.

The Department will provide the cylinder testing machine for this project. Deliver the test specimens to the engineer's curing facilities as directed.

Do not clean out concrete trucks within the right of way.

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.

Project Number: **Sheet: 4**

County: Victoria **Control: 2350-01-070**

Highway: LP 463

Plant material must be planted so as not to interfere with the sight lines of traffic signs, traffic signals or street lighting with consideration to future growth potential of the plant material.

Plant material must not be placed where it may impede drainage in existing or proposed swales or channels. Field adjustments of planting locations may be approved or as directed by the Engineer.

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

ITEM 7: LEGAL RELATIONS AND RESPONSIBILITIES

The Department has determined that a USACE Nationwide or Individual Permit is not necessary for the project since all work shall be conducted outside the USACE jurisdictional areas. Any impacts to these jurisdictional areas by the Contractor without a USACE permit will be the responsibility of the Contractor. If the Contractor deems it necessary to impact the USACE jurisdictional areas, then it becomes the Contractor's entire responsibility to consult with the USACE pertaining to the need for a Nationwide or Individual Permit. TXDOT will then hold the Contractor responsible for following all conditions of the approved permit.

No significant traffic generator events identified.

If the contractor proposes work beyond the TxDOT obtained permit limitations, the contractor is responsible for additional costs, delays, and obtaining new or revised permits prior to construction.

All temporary construction access work and materials will not be measured or paid for directly but will be subsidiary to pertinent items. Prior to the scheduling of a Pre-Construction Meeting, submit a Temporary Construction Access Plan to the Area Engineer and to District Environmental Staff for their approval. The Construction Plan should contain a description of the equipment, such as barges, structures, etc., which may occupy waters of the US including jurisdictional wetlands, and a detailed work schedule. No work of any kind will be allowed until the pre-construction meeting has been held.

Temporary construction waterway crossings have not been environmental cleared/permitted within Right of Way. Restrict construction operations in any water body to the necessary areas as shown on the plans or applicable permit, or as directed. All work must comply with the General Conditions of the appropriate USACE permit.

ITEM 8: PROSECUTION AND PROGRESS

Provide progress schedule as a Bar Chart.

ITEM 100: PREPARING RIGHT-OF-WAY

Dispose of trees from the right-of-way within 24 hours of removal.

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 applied, 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 90-day maintenance period. Watering interval or quantity may be changed as directed by the Engineer (such as during periods of sufficient rainfall).

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 43, Planting and Establishment, Item 192 Landscape Maintenance & 193 Establishment Requirements Chart.

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

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

“Forest Mix” and “Ornamental Planting Type A, B” must conform to specifications shown in plans.

See Item 100 Prep ROW areas on LP 463 and requirements for existing planting areas described under planting and establishment sheets for treatment of existing shrubs and trees.

Project Number: **Sheet: 5**

County: Victoria **Control: 2350-01-070**

Highway: LP 463

ITEM 193 LANDSCAPE ESTABLISHMENT

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

Water trees as directed by the Engineer. Each watering must be as described 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 40, Planting and Establishment, Item 192 Landscape Maintenance & 193 Establishment Requirements Chart.

ITEM 502: BARRICADES, SIGNS, AND TRAFFIC HANDLING

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

No lane or shoulder closure will be allowed on LP 463/US 77.

Use WZ(RS)-16 in conjunction with TCP(2-6).

The quantity of Item 502 is intended to cover the time period for item installation and the 90 day plant maintenance period.

Project access will only be allowed from the frontage roads of LP 463/US 77.

For lane or shoulder closure on the frontage roads, reference TCP(2-6) or TCP(5-1).

Provide suitable warning lights mounted high enough to be visible from all directions on all construction equipment, including pilot vehicles, and operate warning lights when the equipment is within the right of way. Equip other equipment such as trucks, trailers, autos, etc., with emergency flashers and use emergency flashers while within the work area.

Place plastic drums along the gutter line at curb ramp locations during non-working hours and barricades with "Sidewalk Closed" signs while ramps and/or sidewalks are under construction.

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

ITEM 506: TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS

1. See SW3P plan sheet for total disturbed acreage.

2. The disturbed area in this project, all project locations in the contract, and contractor project specific locations (PSLs), within one (1) mile of the project limits, for the contract will further establish the authorization requirements for storm water discharges.

3. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans.

4. Obtain any required authorization from the TCEQ for any contractor PSLs for construction activities on or off right-of-way (ROW).

5. When the total disturbed area for all projects in the contract and PSLs within one (1) mile of the project limits exceeds five (5) acres, provide a copy of the contractor NOI.

6. Provide a signed sketch detailing the location of any contractor's PSLs on ROW or within one (1) mile of the project.

ITEM 6185: TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA)

Shadow vehicle(s) with TMA are set up for stationary operations. The contractor will be responsible for determining if operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 2350-01-070 **DISTRICT** Yoakum **COUNTY** Victoria
HIGHWAY SL 463

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**2350-01-070**			
		PROJECT ID		**A00140207**			
		COUNTY		**Victoria**			
		HIGHWAY		**SL 463**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6001	PREPARING ROW	AC	1.400		1.400	
	161-6009	EROSION CONTROL COMPOST	CY	1,155.000		1,155.000	
	161-6012	GENERAL USE COMPOST	CY	575.000		575.000	
	170-6003	IRRIGATION SYSTEM (TY II)	LS	1.000		1.000	
	192-6007	PLANT MATERIAL (45-GAL)	EA	34.000		34.000	
	192-6015	LANDSCAPE EDGE	LF	272.000		272.000	
	192-6021	PLANT MATERIAL (5 GAL) (TREE)	EA	245.000		245.000	
	192-6023	PLANT MATERIAL (15 GAL) (TREE)	EA	393.000		393.000	
	192-6024	PLANT MATERIAL (30 GAL) (TREE)	EA	197.000		197.000	
	192-6030	PLANT MATERIAL (3 GAL) (SHRUB)	EA	560.000		560.000	
	192-6031	PLANT MATERIAL (5 GAL) (SHRUB)	EA	514.000		514.000	
	192-6065	PLANT BED PREP (TYPE III)	SY	10,395.000		10,395.000	
	192-6067	LANDSCAPE EDGE (TYPE I)	LF	812.000		812.000	
	192-6068	LANDSCAPE EDGE (TYPE II)	LF	432.000		432.000	
	193-6001	PLANT MAINTENANCE	MO	9.000		9.000	
	193-6004	PLANT REPLACEMENT (3-GAL)	EA	87.000		87.000	
	193-6005	PLANT REPLACEMENT (5-GAL)	EA	30.000		30.000	
	193-6007	IRRIGATION SYSTEM OPER AND MAINT	MO	9.000		9.000	
	193-6009	PLANT REPLACEMENT (15 GAL)	EA	25.000		25.000	
	193-6010	PLANT REPLACEMENT (30 GAL)	EA	19.000		19.000	
	423-6015	RETAINING WALL (SPECIAL)	SF	1,100.000		1,100.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	7.000		7.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	20.000		20.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	20.000		20.000	
	1006-6001	LANDSCAPE SOIL AMENDMENT (TYPE I)	SY	10,395.000		10,395.000	
	1006-6002	LANDSCAPE SOIL AMENDMENT (TYPE II)	SY	10,395.000		10,395.000	
	1022-6001	LANDSCAPE TREATMENT(TY 1)	EA	869.000		869.000	
	1022-6002	LANDSCAPE TREATMENT(TY 2)	EA	4,345.000		4,345.000	
	1022-6005	LANDSCAPE TREATMENT (TY 5)	EA	2,503.000		2,503.000	
	6185-6002	TMA (STATIONARY)	DAY	10.000		10.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

LANDSCAPE SUMMARY OF ITEMS

CATEGORY OF WORK	Barricades	Landscape														
BID CODE	502-6001	100-6001	161-6012	161-6009	170-6003	192-6068	192-6067	192-6030	192-6015	192-6023	192-6065	192-6021	192-6007	192-6031	192-6024	193-6010
DESCRIPTION	BARRICADES, SIGNS AND TRAFFIC HANDLING	PREPARING ROW	GENERAL USE COMPOST	EROSION CONTROL COMPOST	IRRIGATION SYSTEM (TY II)	LANDSCAPE EDGE (TYPE II)	LANDSCAPE EDGE (TYPE I)	PLANT MATERIAL (3 GAL) (SHRUB)	LANDSCAPE EDGE	PLANT MATERIAL (15 GAL) (TREE)	PLANT BED PREP (TYPE III)	PLANT MATERIAL (5 GAL) (TREE)	PLANT MATERIAL (45-GAL)	PLANT MATERIAL (5 GAL) (SHRUB)	PLANT MATERIAL (30 GAL) (TREE)	PLANT REPLACEMENT (30 GAL)
ALTERNATE BID GROUP																
PLAN SET LOCATION UNIT	MO Monthly	AC Acre	CY Cubic Yard	CY Cubic Yard	LS Lump Sum	LF Linear Feet	LF Linear Feet	EA Each	LF Linear Feet	EA Each	SY Square Yards	EA Each	EA Each	EA Each	EA Each	EA Each
	7.000	1.400	575.000	1,155.000	1.000	432.000	812.000	560.000	272.000	393.000	10,395.000	245.000	34.000	514.000	197.000	19.000
PROJECT TOTALS	**7.000**	**1.400**	**575.000**	**1,155.000**	**1.000**	**432.000**	**812.000**	**560.000**	**272.000**	**393.000**	**10,395.000**	**245.000**	**34.000**	**514.000**	**197.000**	**19.000**

CATEGORY OF WORK	Landscape											MOBILIZATION	Other/Miscellaneous		Work Zone
BID CODE	193-6001	193-6005	193-6004	193-6007	193-6009	423-6015	1006-6001	1006-6002	1022-6002	1022-6001	1022-6005	500-6001	506-6038	506-6039	6185-6002
DESCRIPTION	PLANT MAINTENANCE	PLANT REPLACEMENT (5-GAL)	PLANT REPLACEMENT (3-GAL)	IRRIGATION SYSTEM OPER AND MAINT	PLANT REPLACEMENT (15 GAL)	RETAINING WALL (SPECIAL)	LANDSCAPE SOIL AMENDMENT (TYPE I)	LANDSCAPE SOIL AMENDMENT (TYPE II)	LANDSCAPE TREATMENT(TY 2)	LANDSCAPE TREATMENT(TY 1)	LANDSCAPE TREATMENT (TY 5)	MOBILIZATION	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	TMA (STATIONARY)
ALTERNATE BID GROUP															
PLAN SET LOCATION UNIT	MO Monthly	EA Each	EA Each	MO Monthly	EA Each	SF Square Feet	SY Square Yards	SY Square Yards	EA Each	EA Each	EA Each	LS Lump Sum	LF Linear Feet	LF Linear Feet	DAY Day
	9.000	30.000	87.000	9.000	25.000	1,100.000	10,395.000	10,395.000	4,345.000	869.000	2,503.000	1.000	20.000	20.000	10.000
PROJECT TOTALS	**9.000**	**30.000**	**87.000**	**9.000**	**25.000**	**1,100.000**	**10,395.000**	**10,395.000**	**4,345.000**	**869.000**	**2,503.000**	**1.000**	**20.000**	**20.000**	**10.000**

SHEET 1 OF 1

SUMMARY OF LANDSCAPE QUANTITIES

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			07
STATE	STATE DIST. NO.	COUNTY	
TEXAS	YKM	VICTORIA	
CONT.	SECT.	JOB	HIGHWAY NO.
2350	01	070	LP 463

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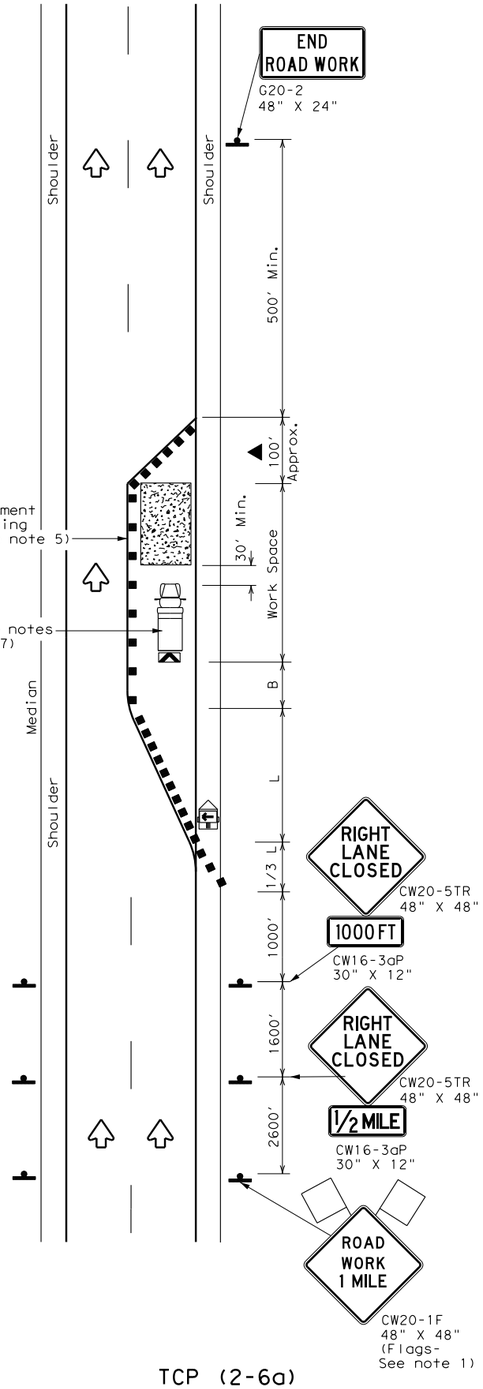
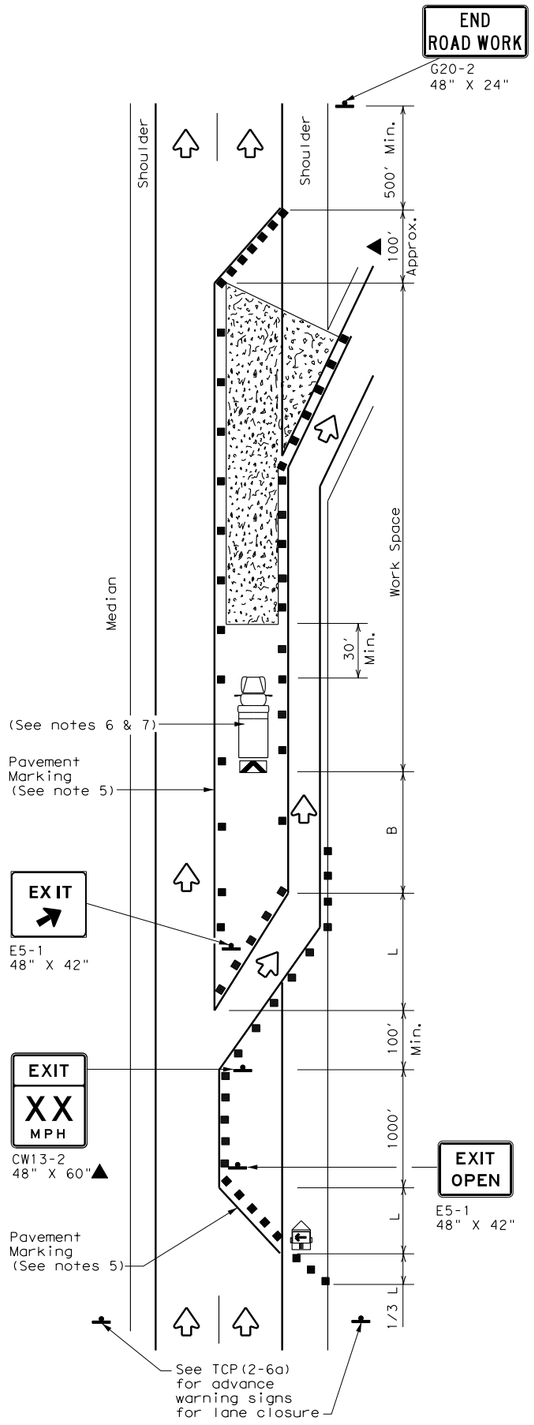


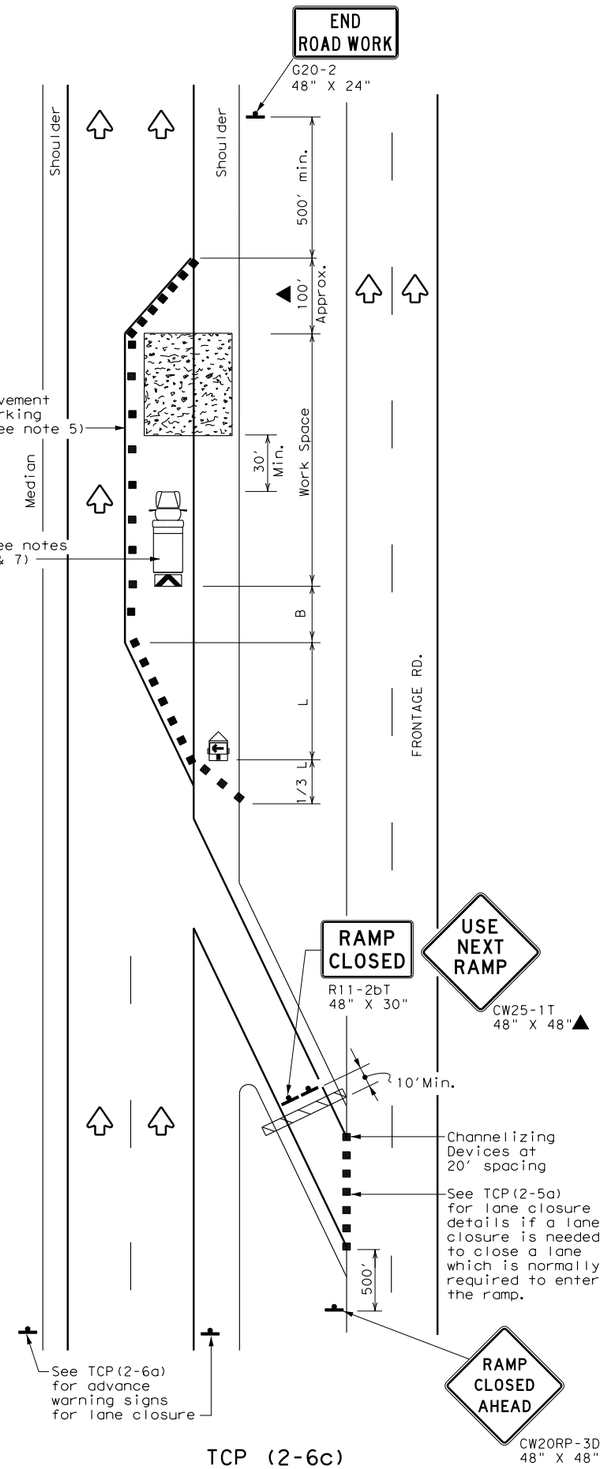
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. 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.
3. 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.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on Intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing,oscillating or strobe lights. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	2350	01	070	LP 463
	DIST	COUNTY		SHEET NO.
	YKM	VICTORIA		8

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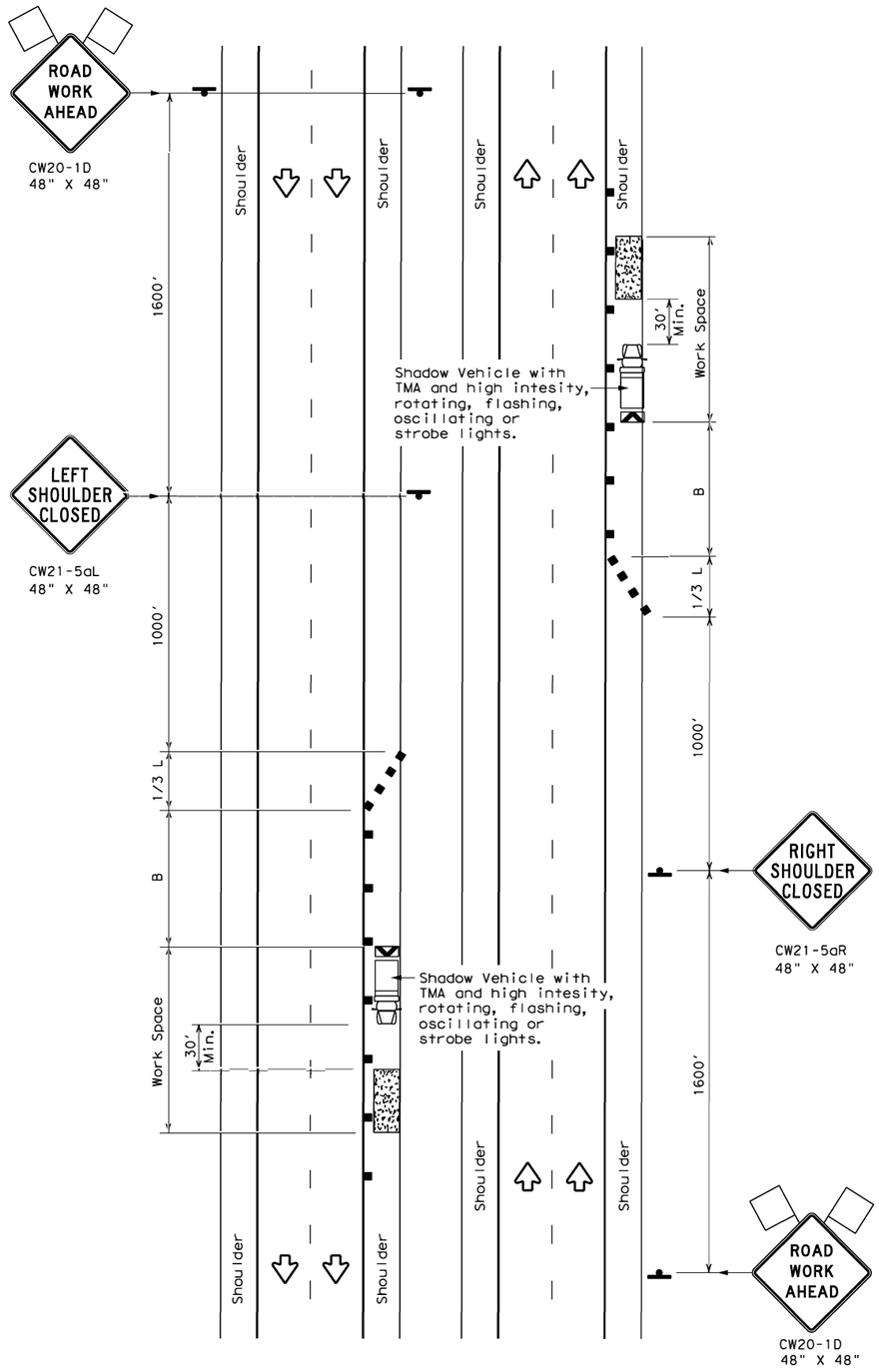
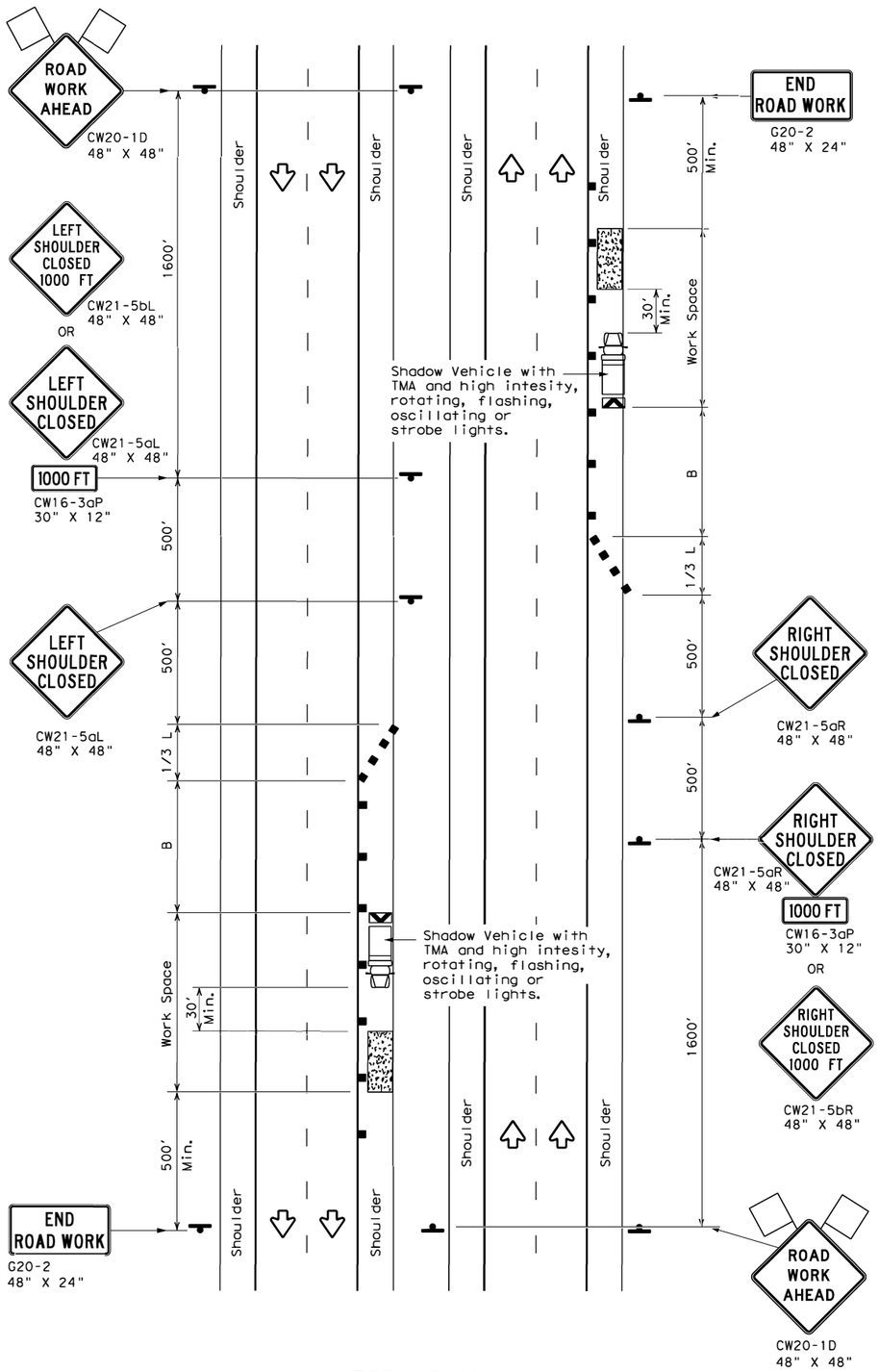


TCP (5-1a)

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	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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

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

TYPICAL USAGE

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

GENERAL NOTES

1. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30' to 100' in advance of the area of crew exposure without adversely effecting 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.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

TCP(5-1)-18

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
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REVISIONS	2350	01	070	LP 463
2-18	DIST	COUNTY		SHEET NO.
	YKM	VICTORIA		9

DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

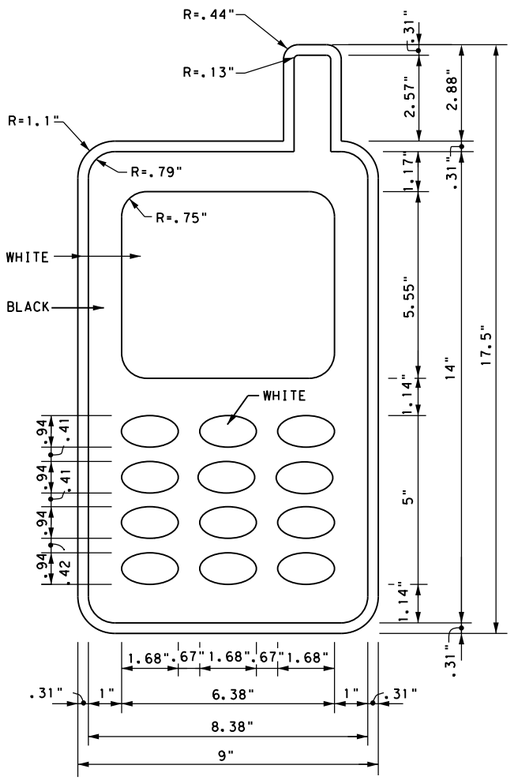
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

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 APPAREL 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.



3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow;
[STAY ALERT] Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange;
[TALK OR TEXT LATER] Font: C specified length;

SIGN DETAIL (G20-10T)

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

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

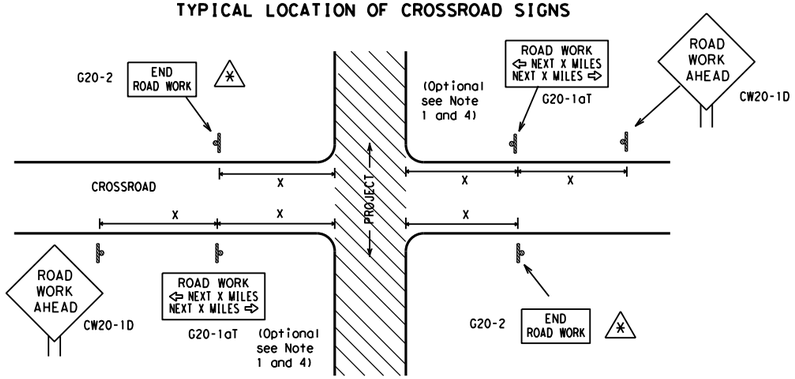
Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 5-10 8-14 9-07 7-13	2350	01	070	LP 463
	DIST	COUNTY		SHEET NO.
	YKM	VICTORIA		10

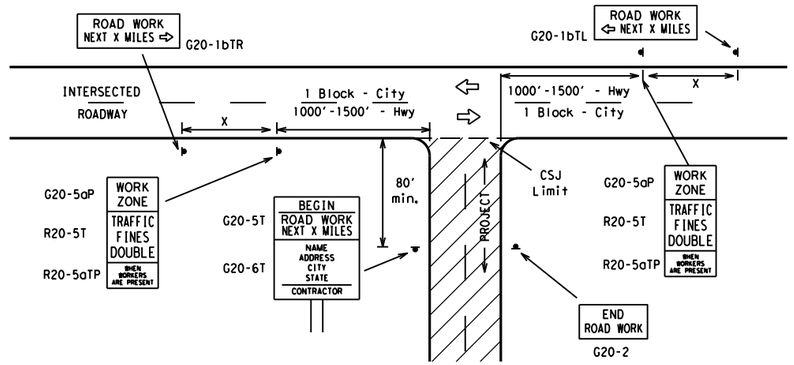
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

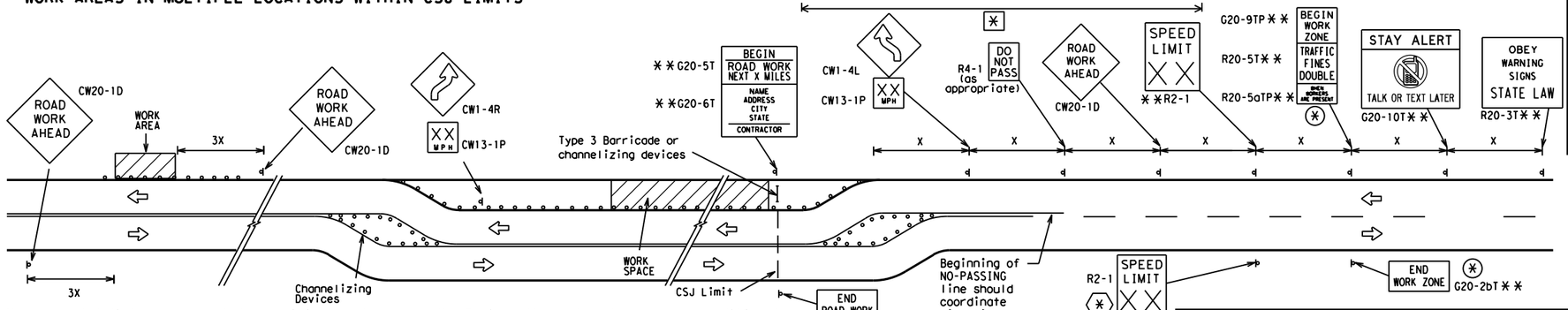
✱ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

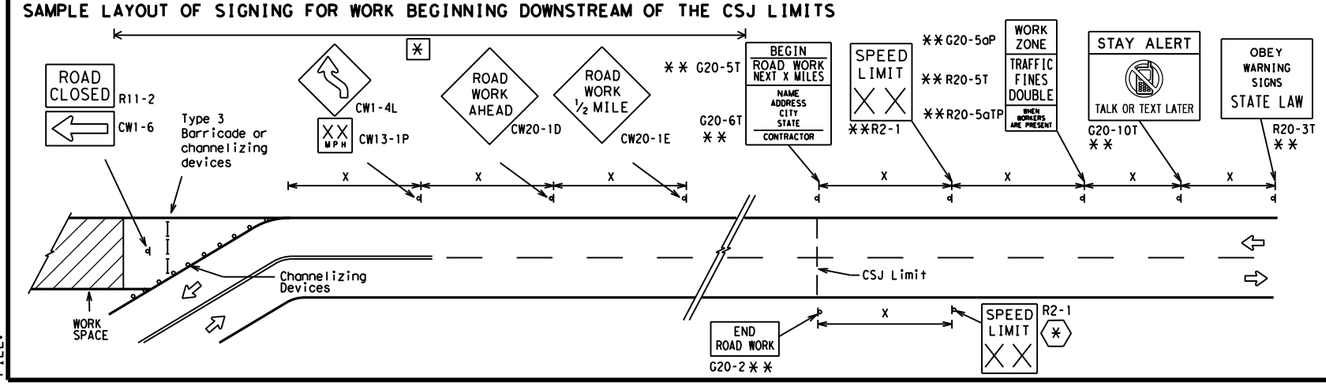
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

(✱) The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

✱✱ Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

[✱] Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

(✱) Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	2350	01	070	LP 463
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	YKM	VICTORIA		11

DATE:
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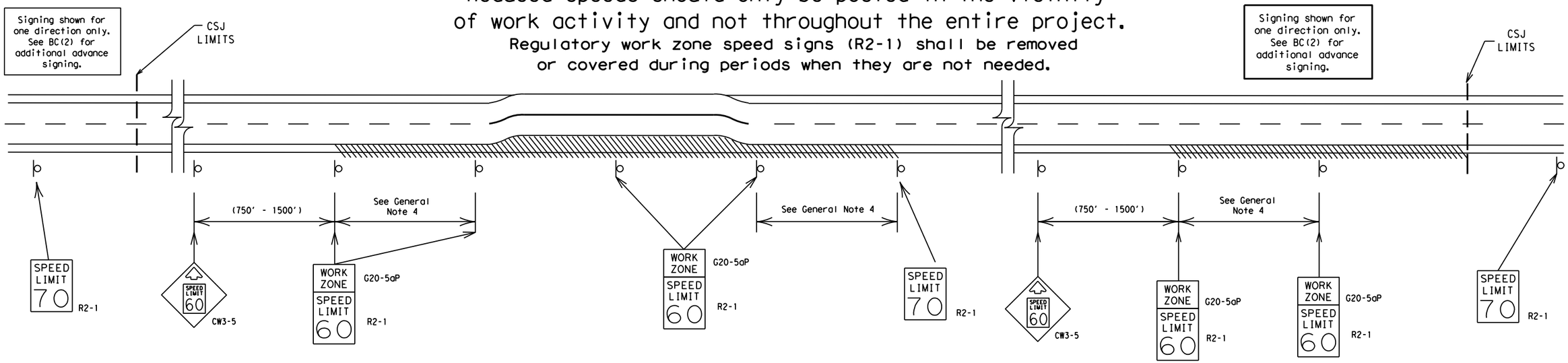
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13	2350	01	070	LP 463
	DIST	COUNTY		SHEET NO.
	YKM	VICTORIA		12

DATE:
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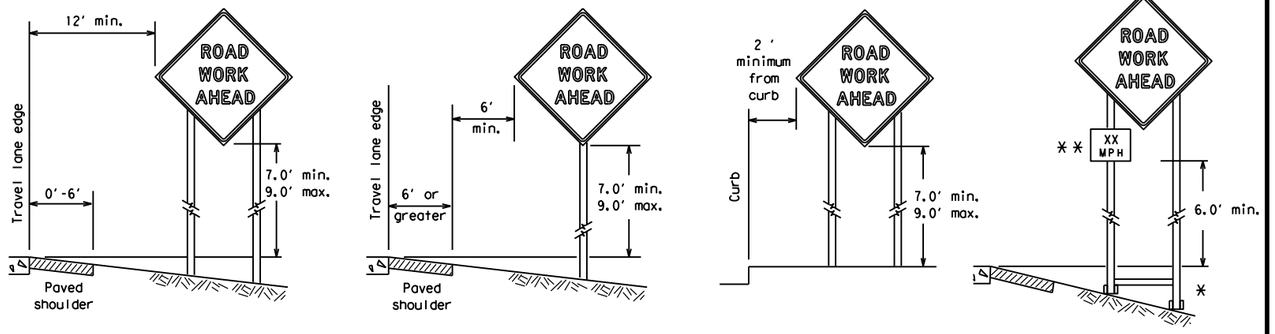
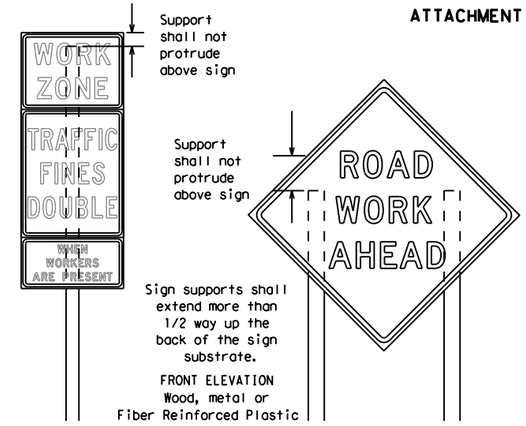
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



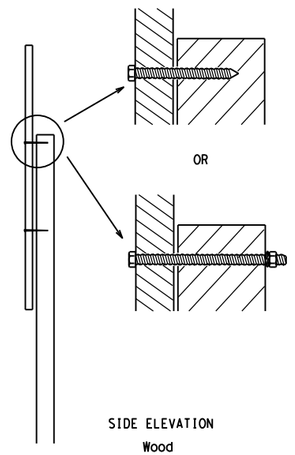
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** 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 spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

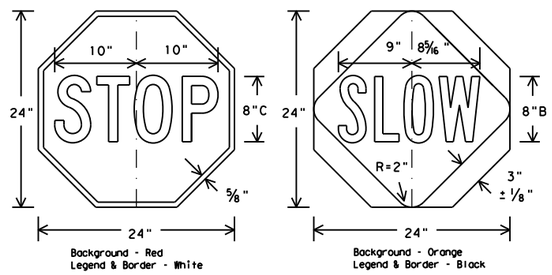


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

STOP/SLOW PADDLES

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



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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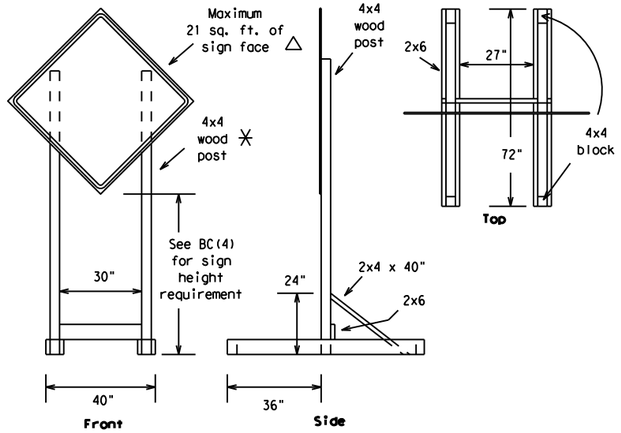
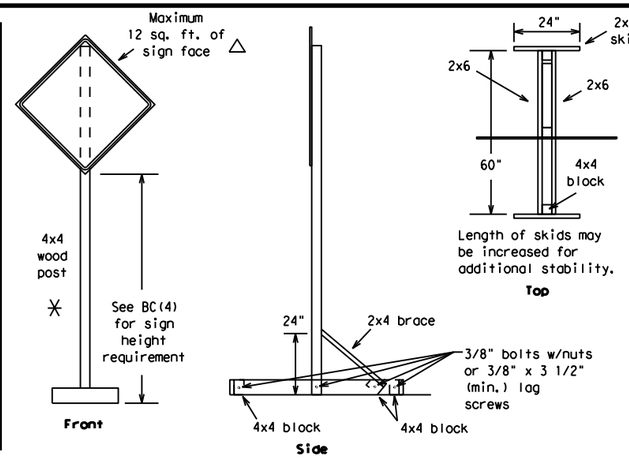
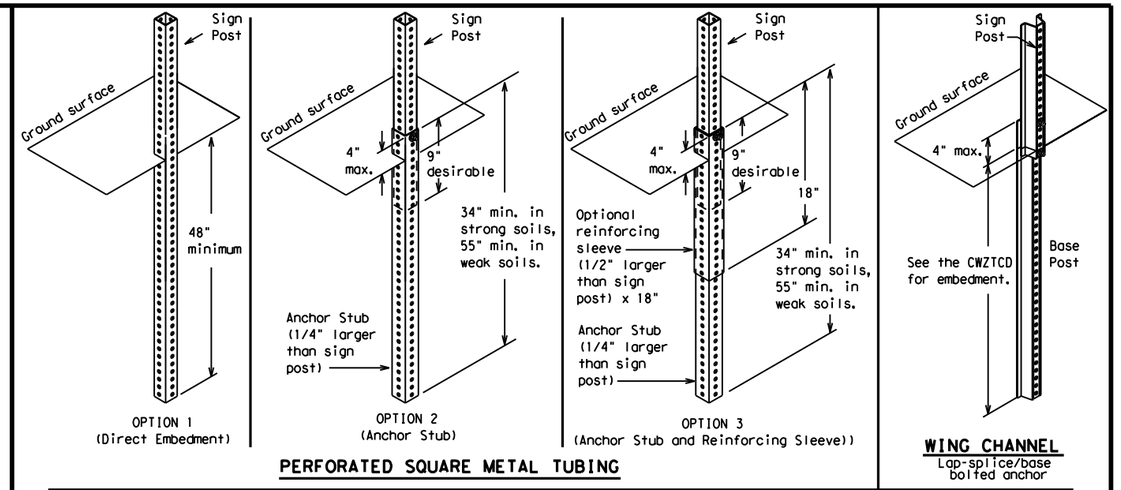




SKID MOUNTED WOOD SIGN SUPPORTS

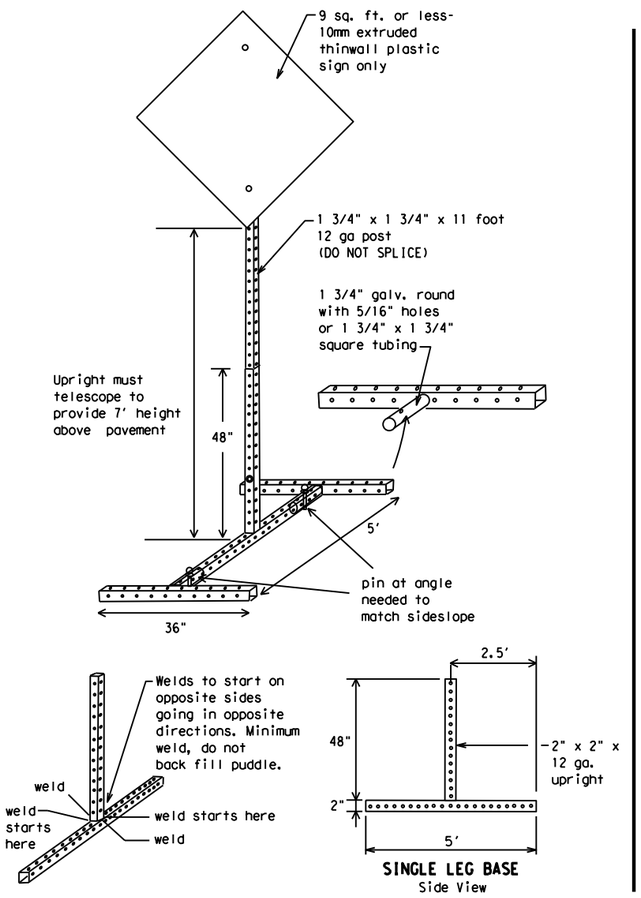
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

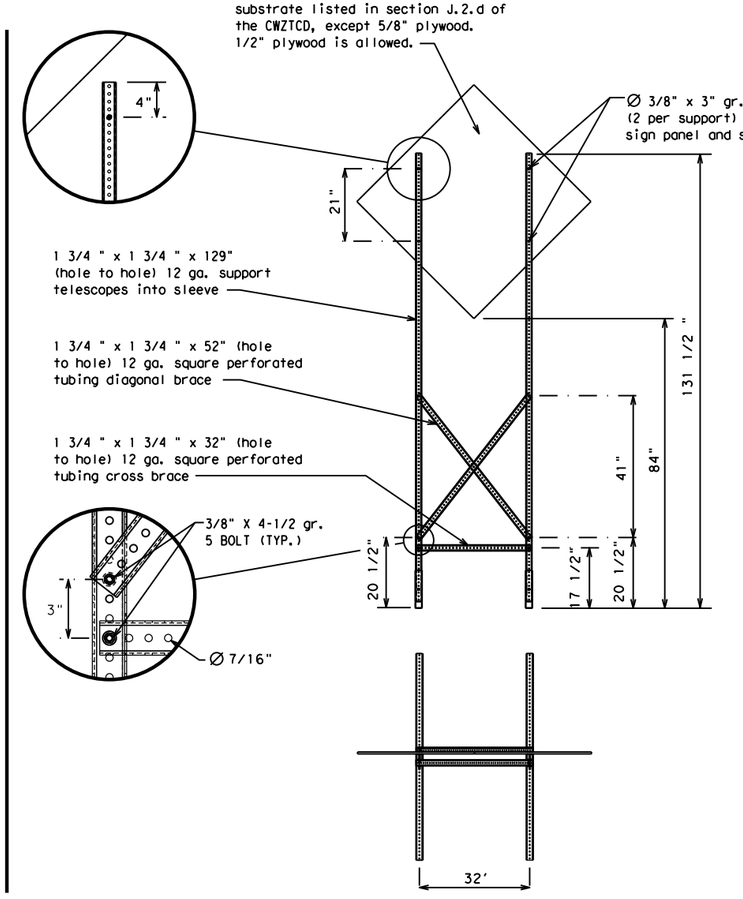


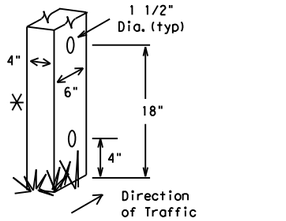
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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

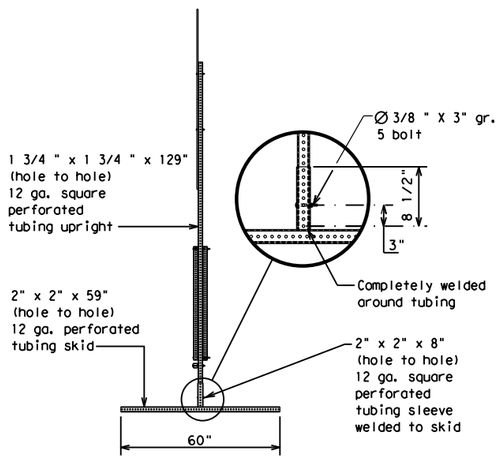






Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS



WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

* See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

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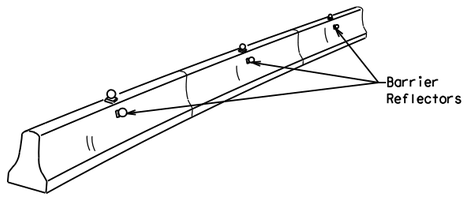
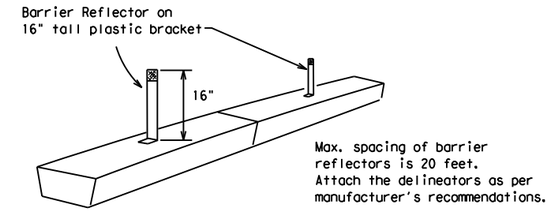
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

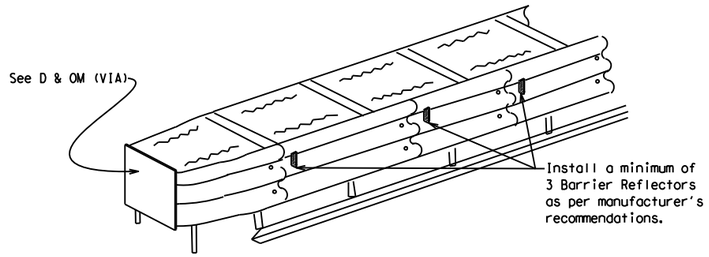


CONCRETE TRAFFIC BARRIER (CTB)

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



LOW PROFILE CONCRETE BARRIER (LPCB)

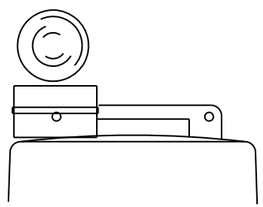


DELINEATION OF END TREATMENTS

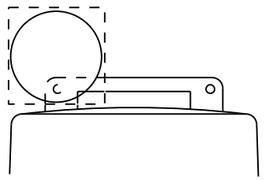
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

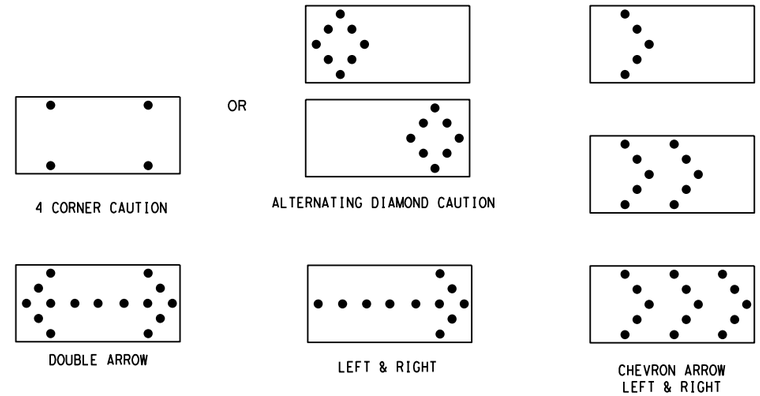
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

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

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	2350	01	070	LP 463
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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:

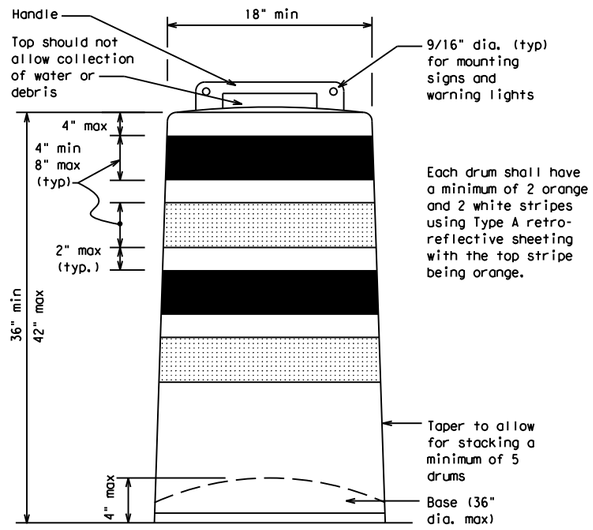
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

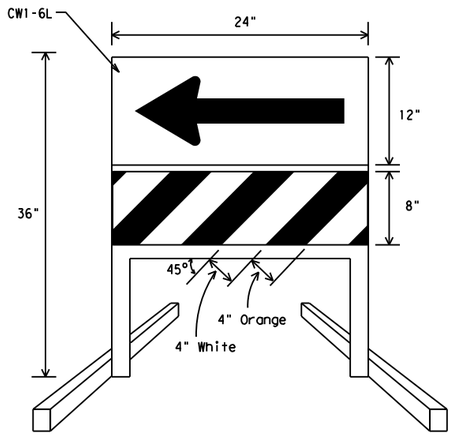
RETROREFLECTIVE SHEETING

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 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.





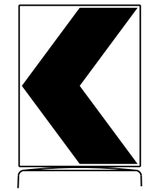
DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

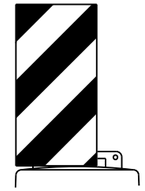
This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades

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.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
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 for Buildings and Facilities (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 may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A 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.

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Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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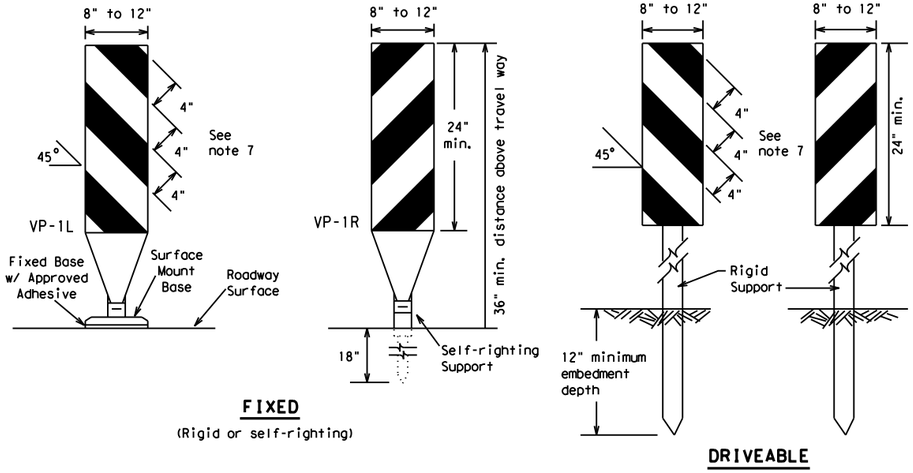
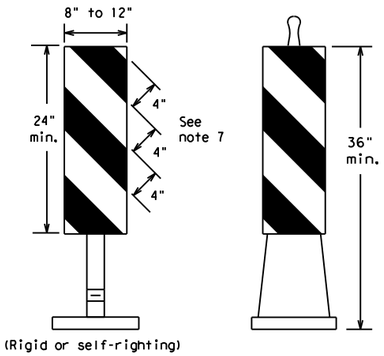


FIXED
(Rigid or self-righting)

DRIVEABLE

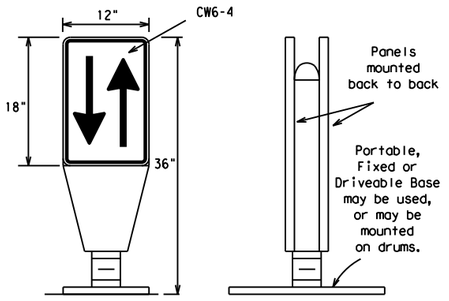


(Rigid or self-righting)

PORTABLE

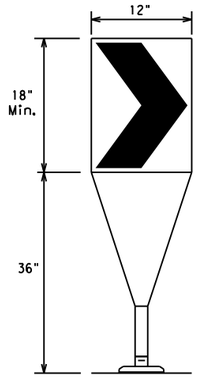
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



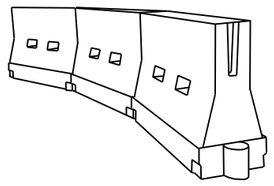
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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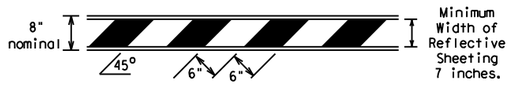
DATE:
FILE:

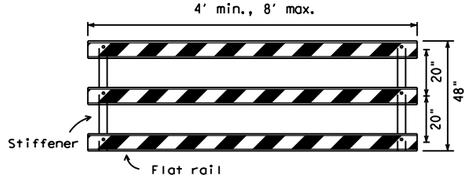
TYPE 3 BARRICADES

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 conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



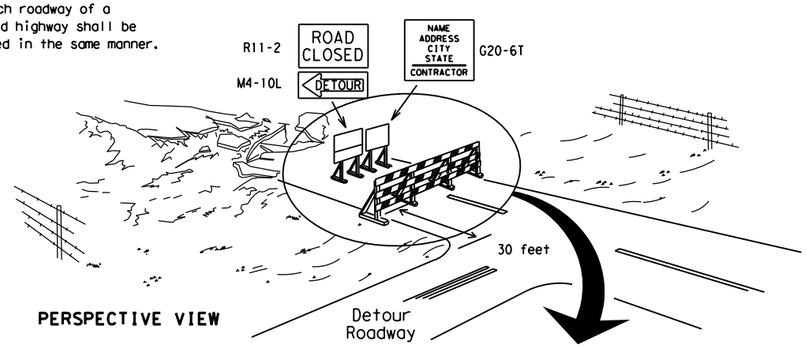
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

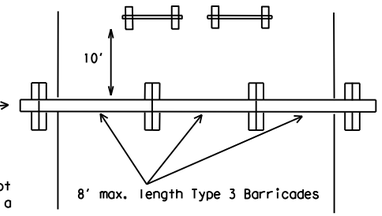
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

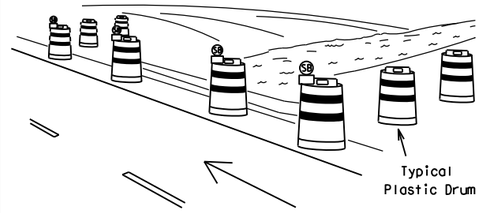
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

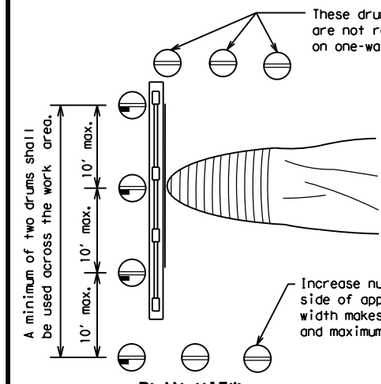
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

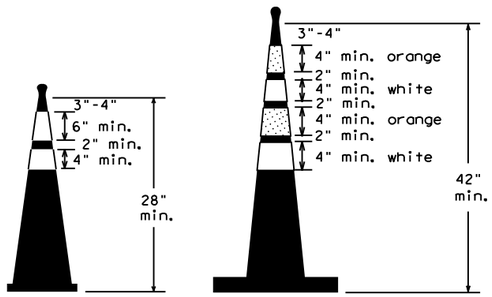
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

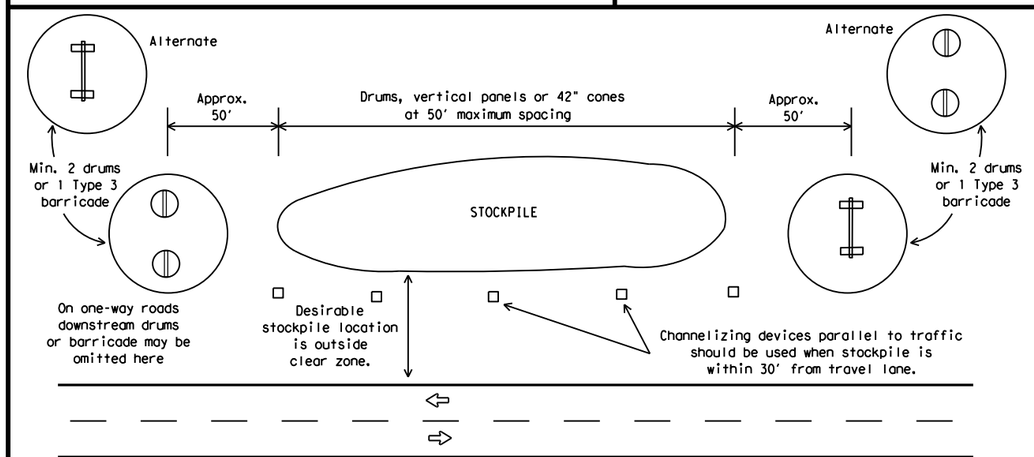
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

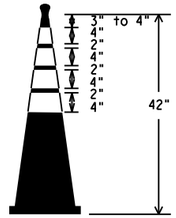
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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 used at night 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.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	2350	01	070	LP 463
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	YKM	VICTORIA		19

DATE:
FILE:

DATE:
FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

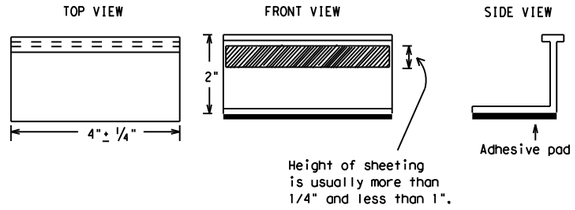
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

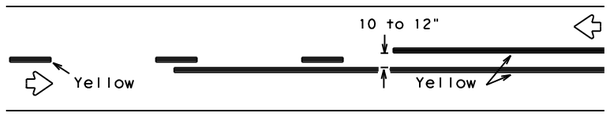
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

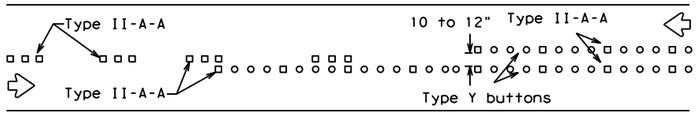
FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	2350	01	070	LP 463
2-98 9-07	DIST	COUNTY		SHEET NO.
1-02 7-13	YKM	VICTORIA		20
11-02 8-14				

DATE:
FILE:

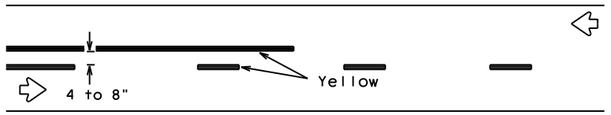
PAVEMENT MARKING PATTERNS



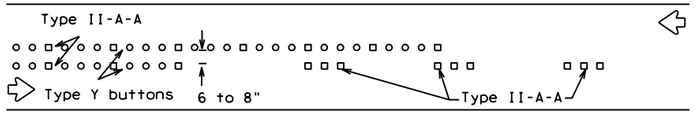
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



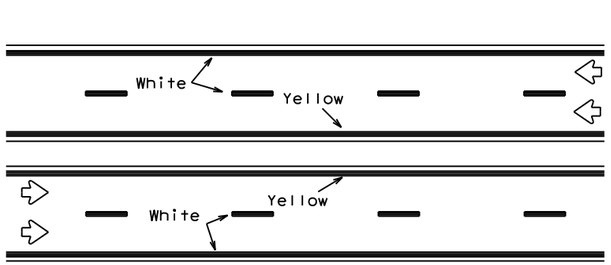
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



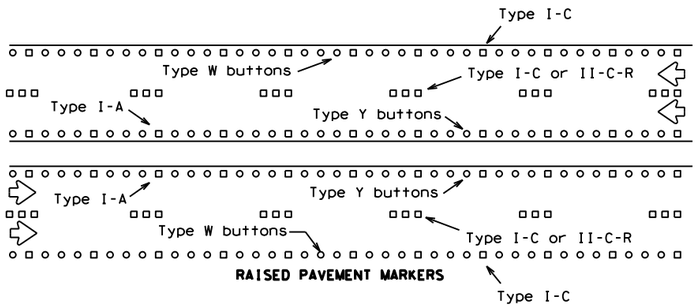
RAISED PAVEMENT MARKERS - PATTERN B

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

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



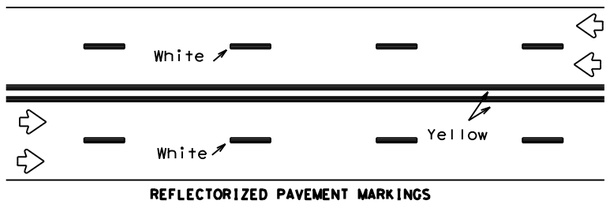
REFLECTORIZED PAVEMENT MARKINGS



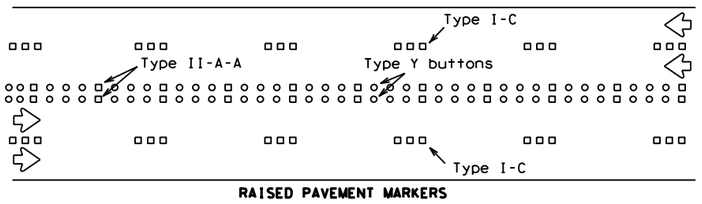
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



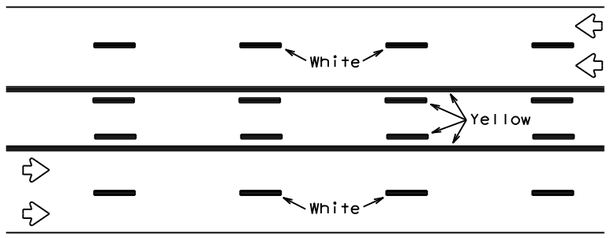
REFLECTORIZED PAVEMENT MARKINGS



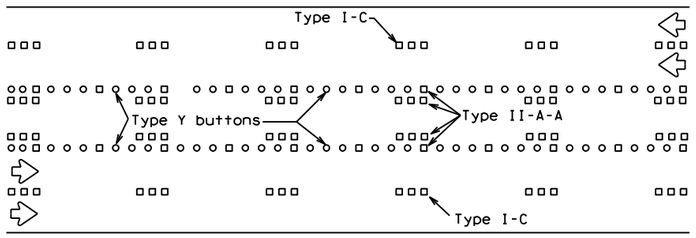
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

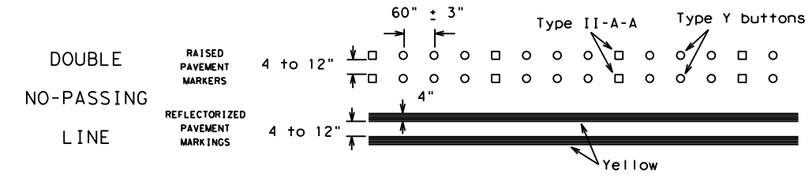
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

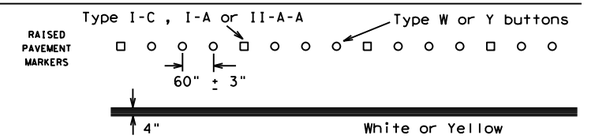
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

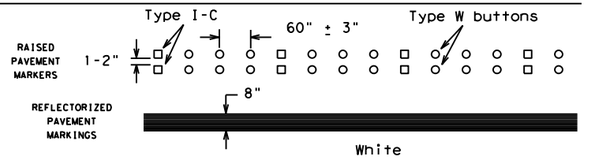


EDGE LINE OR SINGLE NO-PASSING LINE



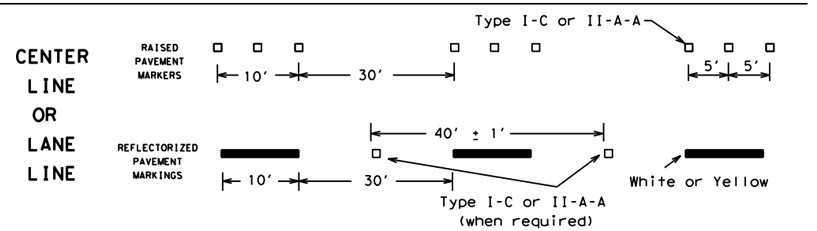
WIDE LINE

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

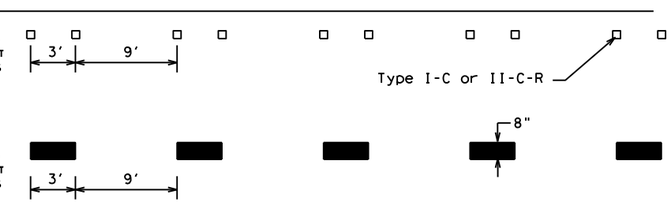


BROKEN LINES

CENTER LINE OR LANE LINE

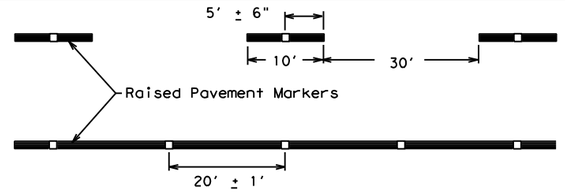


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

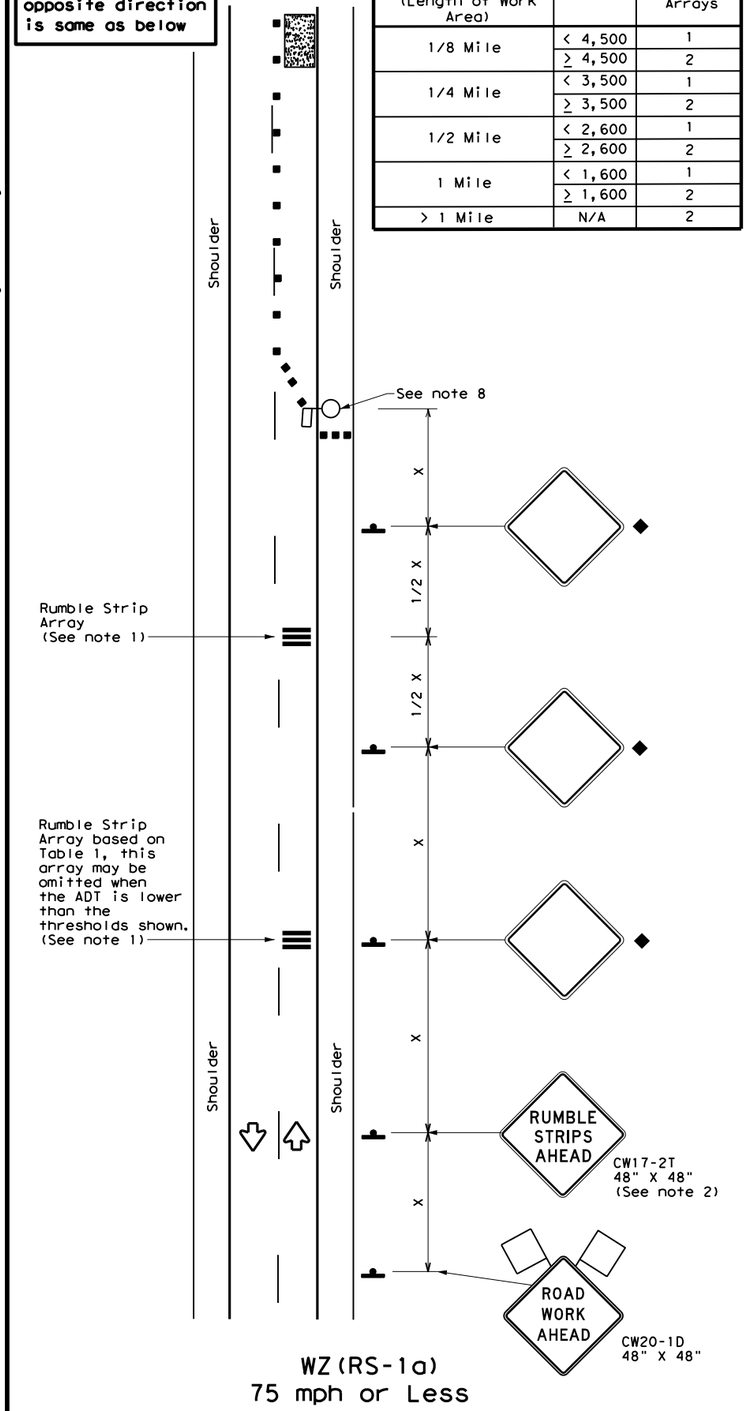
BC(12)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	2350	01	070	LP 463
1-97 9-07	DIST	COUNTY		SHEET NO.
2-98 7-13	YKM	VICTORIA		21
11-02 8-14				

DATE:
FILE:

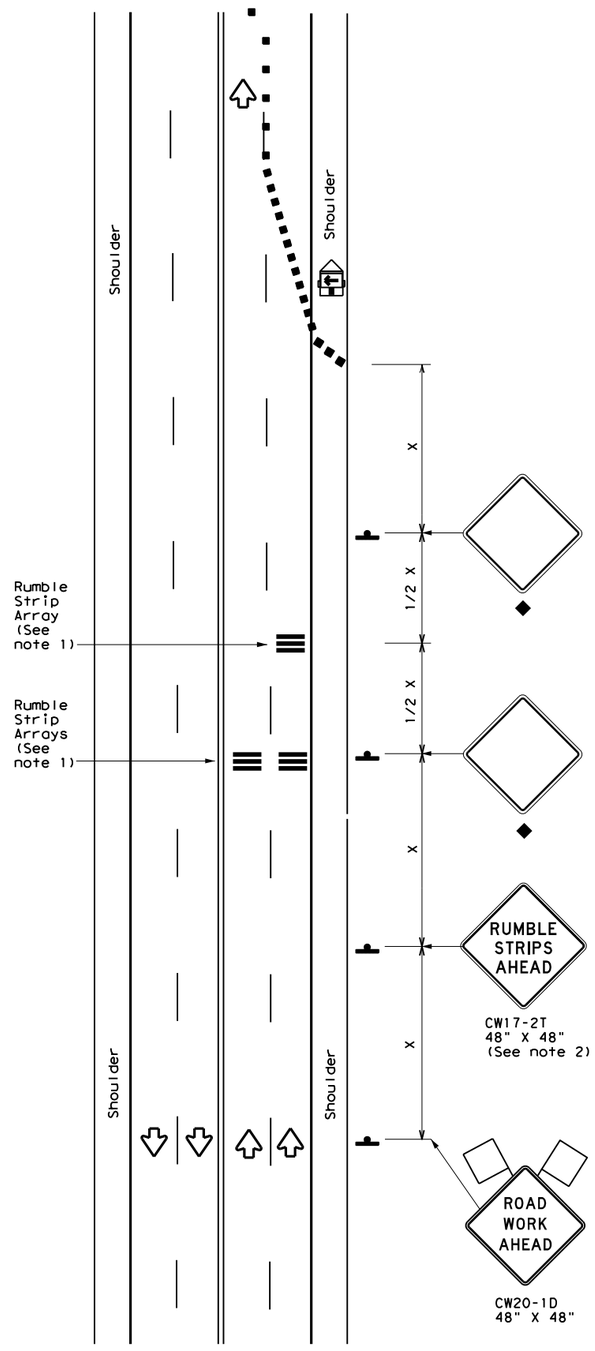
Warning sign and rumble strip sequence in opposite direction is same as below

TABLE 1		
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



WZ(RS-1a)
75 mph or Less

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)
75 mph or Less

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

1. 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.
2. 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.
3. Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
4. Removal of the Temporary Rumble Strips should be accomplished before removing the advance warning signs.
5. Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
6. Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
7. This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
8. The one-lane two-way application may utilize a flagger, an AFAD or a portable traffic signal.
9. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment.

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

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

* Conventional Roads Only

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

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

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

TABLE 2	
Speed	Approximate distance between strips in an Array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
> 55 MPH	20'

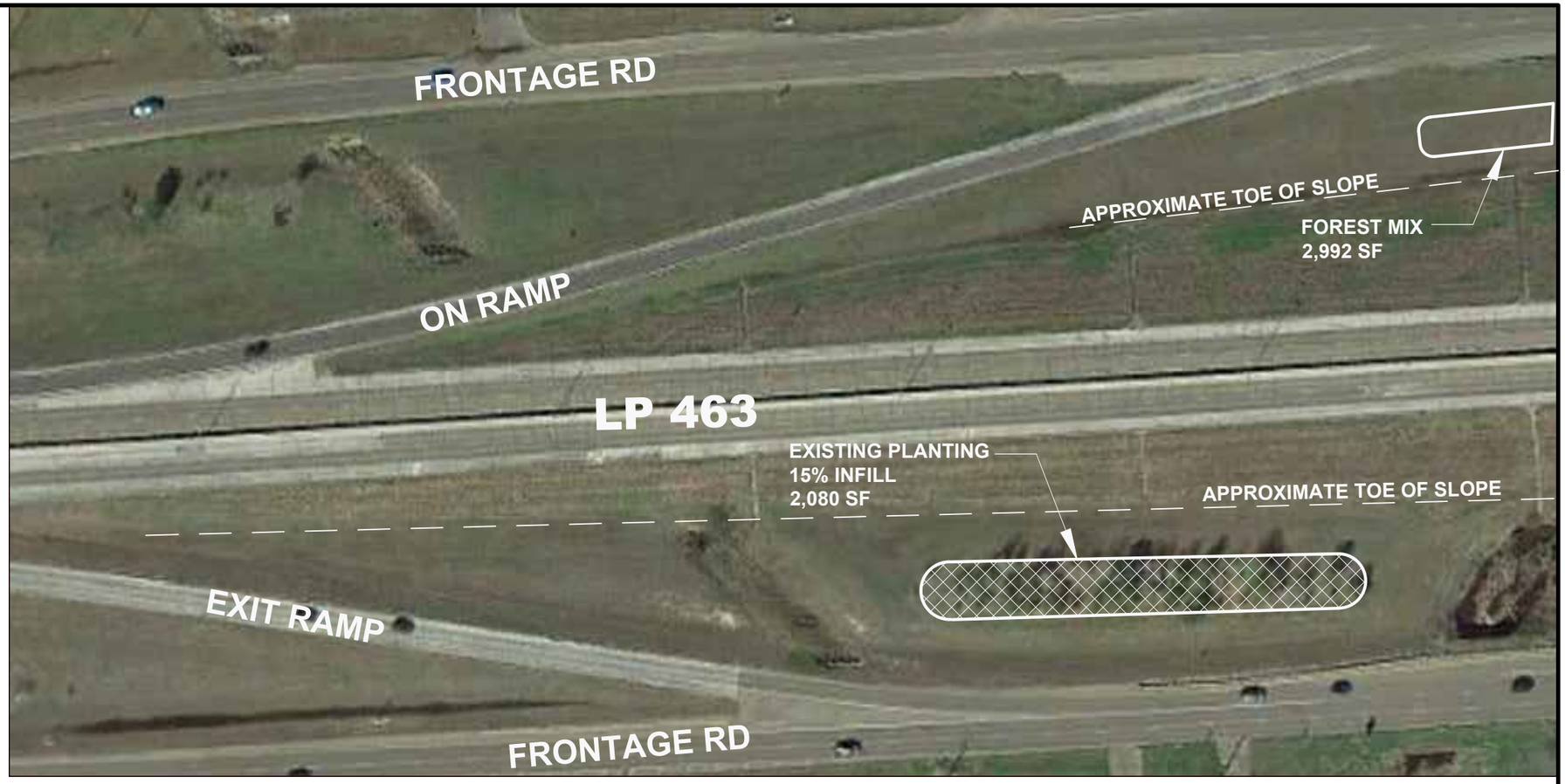
Texas Department of Transportation

Traffic Operations Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-16

FILE: wzrs16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	2350	01	070	LP 463
2-14	DIST	COUNTY		SHEET NO.
4-16	YKM	VICTORIA		21A



NOTES:
- NEW PLANTING AREAS – BED PREP (TYPE III) UNLESS OTHERWISE SHOWN ON PLANS
- PROVIDE CLEAR ZONES OF 30' FROM THE EDGE OF PAVEMENT, 15' BEHIND RAILING, AND 15' FROM EDGE OF OVERPASSES. 30' CLEAR ZONE APPLIES WITHIN 30' OF END OF GUARDRAIL.

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

FILE: $FILE$ $TIME$
DATE: $DATE$

FOREST MIX TREES

QV	Live Oak	8	30 GAL (TREE)
BC	Red Oak	4	
CE	Cedar Elm	4	
		16	
Pt	Pinus taeda	4	15 GAL (TREE)
KP	Bur Oak	4	
MG	Chinqupin Oak	4	
LT	Mountain Laurel	4	
PO	Sycamore	8	
BC	Bald Cypress 'Montezuma'	8	
		32	
SO	Shumard Oak	4	5 GAL (TREE)
BC	Red Oak	4	
CC	Texas Redbud	4	
AC	Fringe tree	4	
LI	Crape Myrtle 'Tuscarora'	4	
		20	

FOREST MIX/ SHRUBS

CF	Cotoneaster	5	5 GAL (SHRUBS/ GRASSES)
Ep	Elaeagnus	5	
Hs	Althaea	5	
Pc	Pyracantha	5	
Ca	American Beautyberry	5	
		25	

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 50' 100'
SCALE: 1"=100'

LP 463 @ BU 77

SCALE 1"=100'

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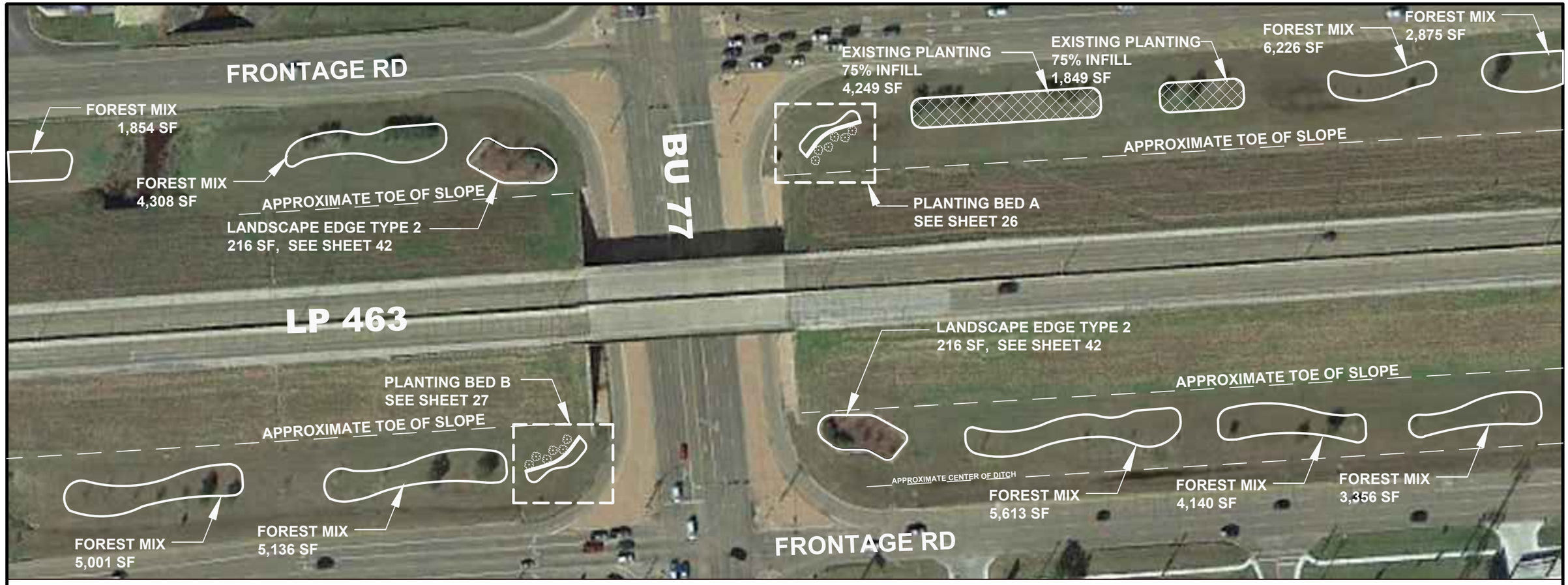
SHEET 1 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			22

STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463



NOTES:
- NEW PLANTING AREAS – BED PREP (TYPE III) UNLESS OTHERWISE SHOWN ON PLANS
- PROVIDE CLEAR ZONES OF 30' FROM THE EDGE OF PAVEMENT, 15' BEHIND RAILING, AND 15' FROM EDGE OF OVERPASSES. 30' CLEAR ZONE APPLIES WITHIN 30' OF END OF GUARDRAIL.

ORNAMENTAL PLANTING MIX B
SEE SHEETS SHEETS 26 & 27

FOREST MIX TREES			
QV	Live Oak	70	30 GAL (TREE)
BC	Red Oak	35	
CE	Cedar Elm	35	
		140	
Pt	Pinus taeda	35	15 GAL (TREE)
KP	Bur Oak	35	
MG	Chinqupin Oak	35	
LT	Mountain Laurel	35	
PO	Sycamore	70	
BC	Bald Cypress 'Montezuma'	70	
		280	
SO	Shumard Oak	35	5 GAL (TREE)
BC	Red Oak	35	
CC	Texas Redbud	35	
AC	Fringe tree	35	
LI	Crape Myrtle 'Tuscarora'	35	
		175	

FOREST MIX/ SHRUBS			
CF	Cotoneaster	42	5 GAL (SHRUBS/ GRASSES)
Ep	Elaeagnus	42	
Hs	Althaea	42	
Pc	Pyracantha	42	
Ca	American Beautyberry	42	
		210	

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS.
ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 50' 100'
SCALE: 1"=100'

LP 463 @
BU 77

SCALE 1"=100'

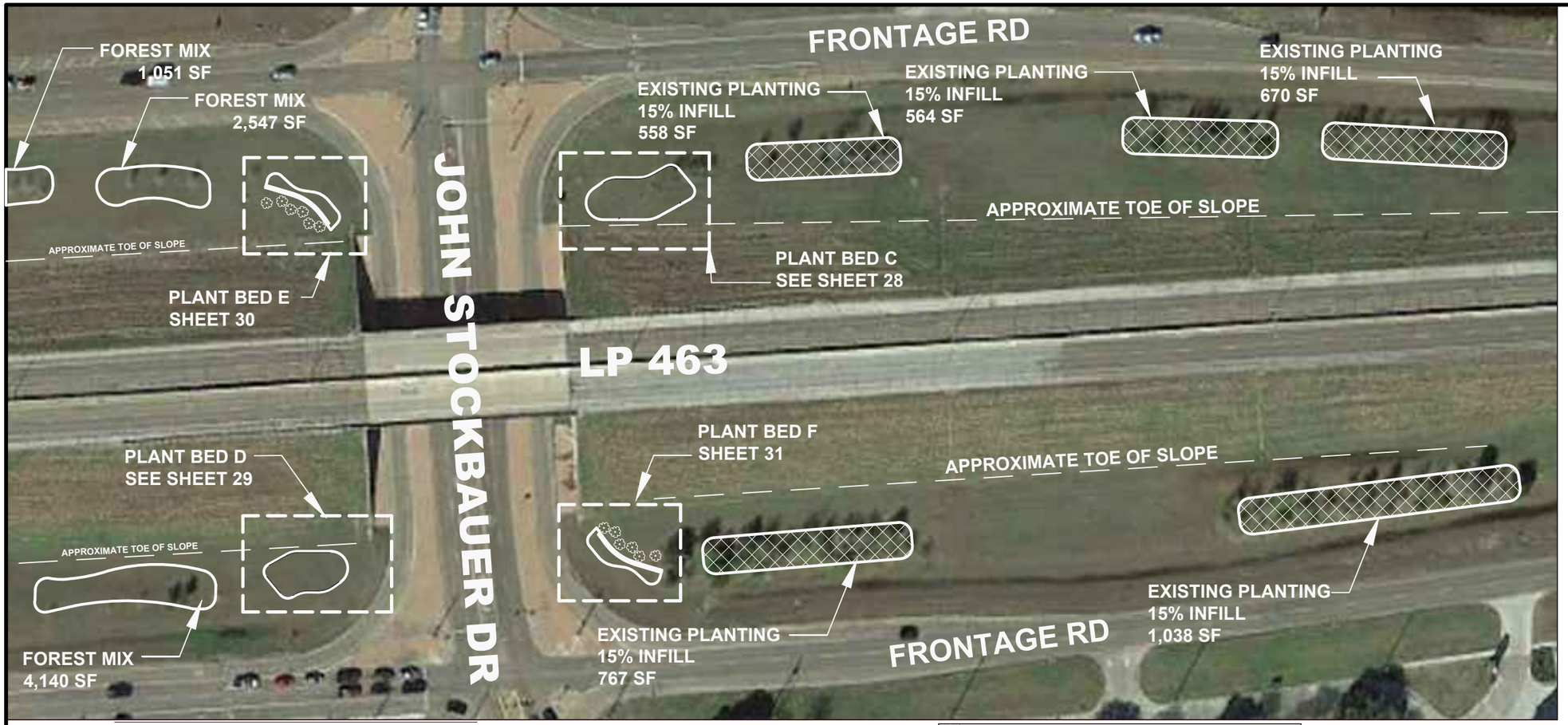
Texas Department of Transportation

SHEET 2 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			23

STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

FILE: $FILE$
DATE: $DATE$ $TIME$



ORNAMENTAL PLANTING MIX B
SEE SHEETS SHEETS 28, 29, 30 & 31

NOTES:
- NEW PLANTING AREAS – BED PREP (TYPE III) UNLESS OTHERWISE SHOWN ON PLANS
- PROVIDE CLEAR ZONES OF 30' FROM THE EDGE OF PAVEMENT, 15' BEHIND RAILING, AND 15' FROM EDGE OF OVERPASSES. 30' CLEAR ZONE APPLIES WITHIN 30' OF END OF GUARDRAIL.

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS.
ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

FILE: $FILE$ $TIME$
DATE: $DATE$

FOREST MIX TREES

QV	Live Oak	17	30 GAL (TREE)
BC	Red Oak	8	
CE	Cedar Elm	8	
		33	
Pt	Pinus taeda	8	15 GAL (TREE)
KP	Bur Oak	8	
MG	Chinqupin Oak	8	
LT	Mountain Laurel	8	
PO	Sycamore	16	
BC	Bald Cypress 'Montezuma'	17	
		65	
SO	Shumard Oak	8	5 GAL (TREE)
BC	Red Oak	8	
CC	Texas Redbud	8	
AC	Fringe tree	8	
LI	Crape Myrtle 'Tuscarora'	8	
		40	

FOREST MIX/ SHRUBS

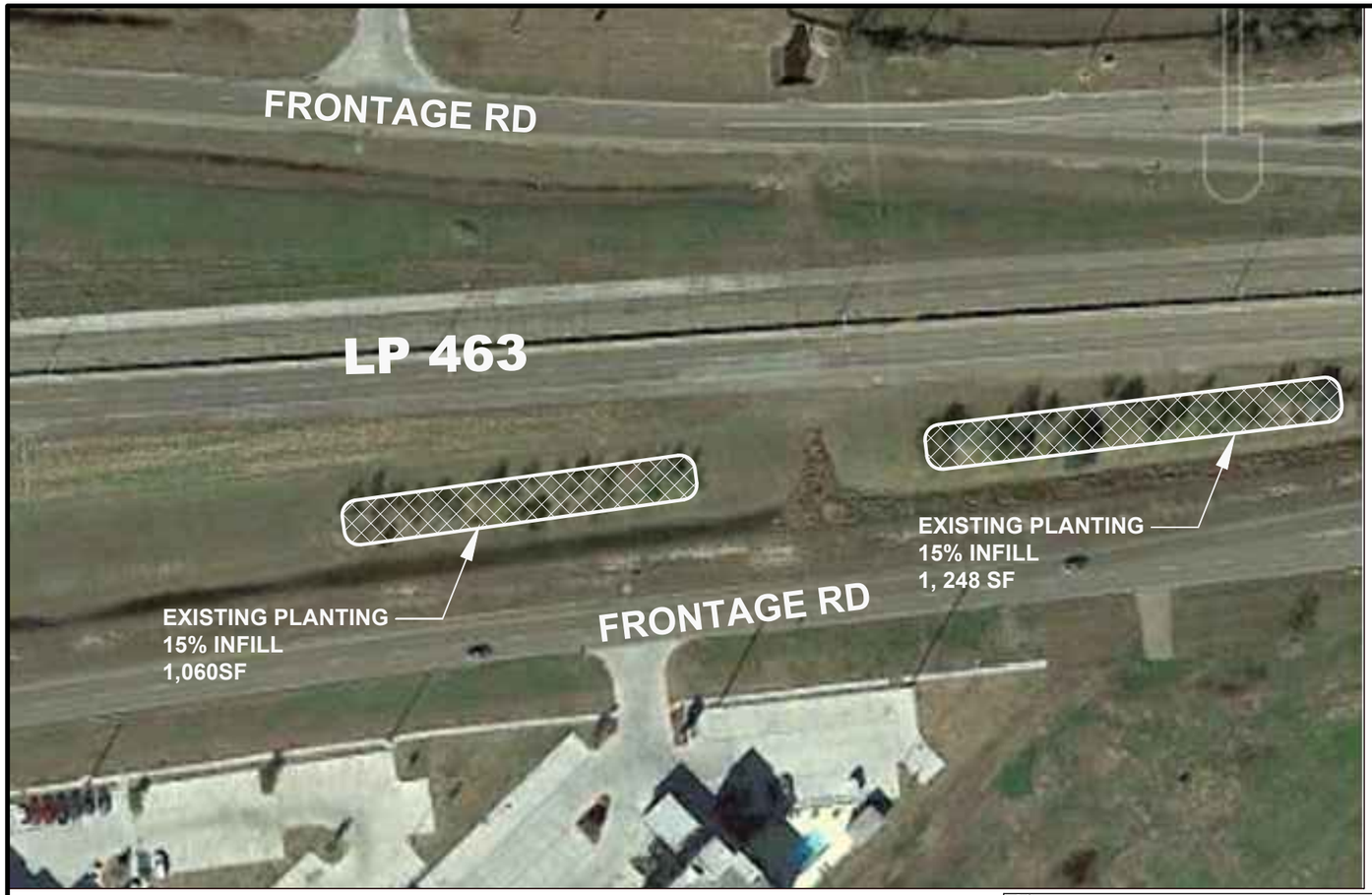
CF	Cotoneaster	10	5 GAL (SHRUBS/ GRASSES)
Ep	Elaeagnus	10	
Hs	Althaea	10	
Pc	Pyracantha	10	
Ca	American Beautyberry	10	
		40	

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 50' 100'
SCALE: 1"=100'

LP 463 @ BU 77
SCALE 1"=100'
©2021 Texas Department of Transportation
SHEET 3 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			24
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463



FOREST MIX TREES			
QV	Live Oak	4	30 GAL (TREE)
BC	Red Oak	2	
CE	Cedar Elm	2	
		8	
Pt	Pinus taeda	2	15 GAL (TREE)
KP	Bur Oak	2	
MG	Chinqupin Oak	2	
LT	Mountain Laurel	2	
PO	Sycamore	4	
BC	Bald Cypress 'Montezuma'	4	
		16	
SO	Shumard Oak	2	5 GAL (TREE)
BC	Red Oak	2	
CC	Texas Redbud	2	
AC	Fringe tree	2	
LI	Crape Myrtle 'Tuscarora'	2	
		10	

FOREST MIX/ SHRUBS			
CF	Cotoneaster	2	5 GAL (SHRUBS/ GRASSES)
Ep	Elaeagnus	2	
Hs	Althaea	2	
Pc	Pyracantha	2	
Ca	American Beautyberry	2	
		10	

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 50' 100'
SCALE: 1"=100'

LP 463 @ BU 77

SCALE 1"=100'

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SHEET 4 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			25
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

$FILE$
$DATE$
$TIME$
FILE:
DATE:

LP 463 FRONTAGE RD (WESTBOUND)

APPROXIMATE CENTER OF DITCH

EXISTING PAVERS

John Stockbauer Drive

ORNAMENTAL PLANT MIX TYPE B, 634 SF

LIGHTING BY OTHERS

STONE WALL 60 LF, SEE SHEET 42

LANDSCAPE EDGE TYPE 1 (CONCRETE MOW STRIP WITH FLAG STONE) 95 LF, SEE SHEET 42

LANDSCAPE EDGING (CONCRETE MOW STRIP) 68 LF

1 CHINESE FRINGE TREE 10'–0" O.C.

3 TEXAS MOUNTAIN LAUREL 10'–0" O.C.

APPROXIMATE TOE OF SLOPE

4'–0" APPROX.

2 CHINESE FRINGE TREES 10'–0" O.C.

EXISTING PAVERS

US 77/LP 463 (WEST BOUND)

	ORNAMENTAL PLANTING MIX B		
ML	Texas Mountain Laurel	3	45 GAL (TREES)
CF	Chinese Fringe Tree	3	
		6	
Ar	Artemisia – Powis Castle	8	3 GAL (SHRUBS)
La	Lantana 'Lemon Zest'	8	
Lc	Lantana 'Carnival'	8	
Rm	Rosemary 'upright'	8	
Sg	Salvia Greggii	8	
Ts	Texas sage 'Dwarf'	8	
Ty	Texas Yucca 'Red'	8	
Ts	Guara – Pink	8	
Ty	Saliva 'May Night'	8	
		72	

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS.
ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

N

0 20 40 60

SCALE: 1" = 20'

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KANNEL
2606
STATE OF TEXAS
07/21/2021

LP 463 @
BU 77
NE CORNER
PLANTING PLAN – BED A

SHEET 1 OF 6

Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			26
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

US 77/LP 463 (EAST BOUND)

EXISTING PAVERS

John Stockbauer Drive

APPROXIMATE TOE OF SLOPE

2 FRINGE TREES 10'–0" O.C.

3 TEXAS MOUNTAIN LAUREL 10'–0" O.C.

1 FRINGE TREE 10'–0" O.C.

LANDSCAPE EDGING (CONCRETE MOW STRIP) 68 LF SEE SHEET 42

668 SF ORNAMENTAL PLANT MIX TYPE B

STONE WALL 60 LF, SEE SHEET 42

LANDSCAPE EDGE – TYPE 1 (CONCRETE MOW STRIP WITH FLAG STONE) 95 LF, SEE SHEET 42

LIGHTS BY OTHERS

APPROXIMATE CENTER OF DITCH

EXISTING PAVERS

N

0 20 40 60

SCALE: 1" = 20'

LP 463 FRONTAGE RD (EASTBOUND)

	ORNAMENTAL PLANTING MIX B		
ML	Texas Mountain Laurel	3	45 GAL (TREES)
CF	Chinese Fringe Tree	3	
		6	
Ar	Artemisia – Powis Castle	8	3 GAL (SHRUBS)
La	Lantana 'Lemon Zest'	8	
Lc	Lantana 'Carnival'	8	
Rm	Rosemary 'upright'	8	
Sg	Salvia Greggii	8	
Ts	Texas sage 'Dwarf'	9	
Ty	Texas Yucca 'Red'	8	
Ts	Guara – Pink	8	
Ty	Saliva 'May Night'	8	
		73	

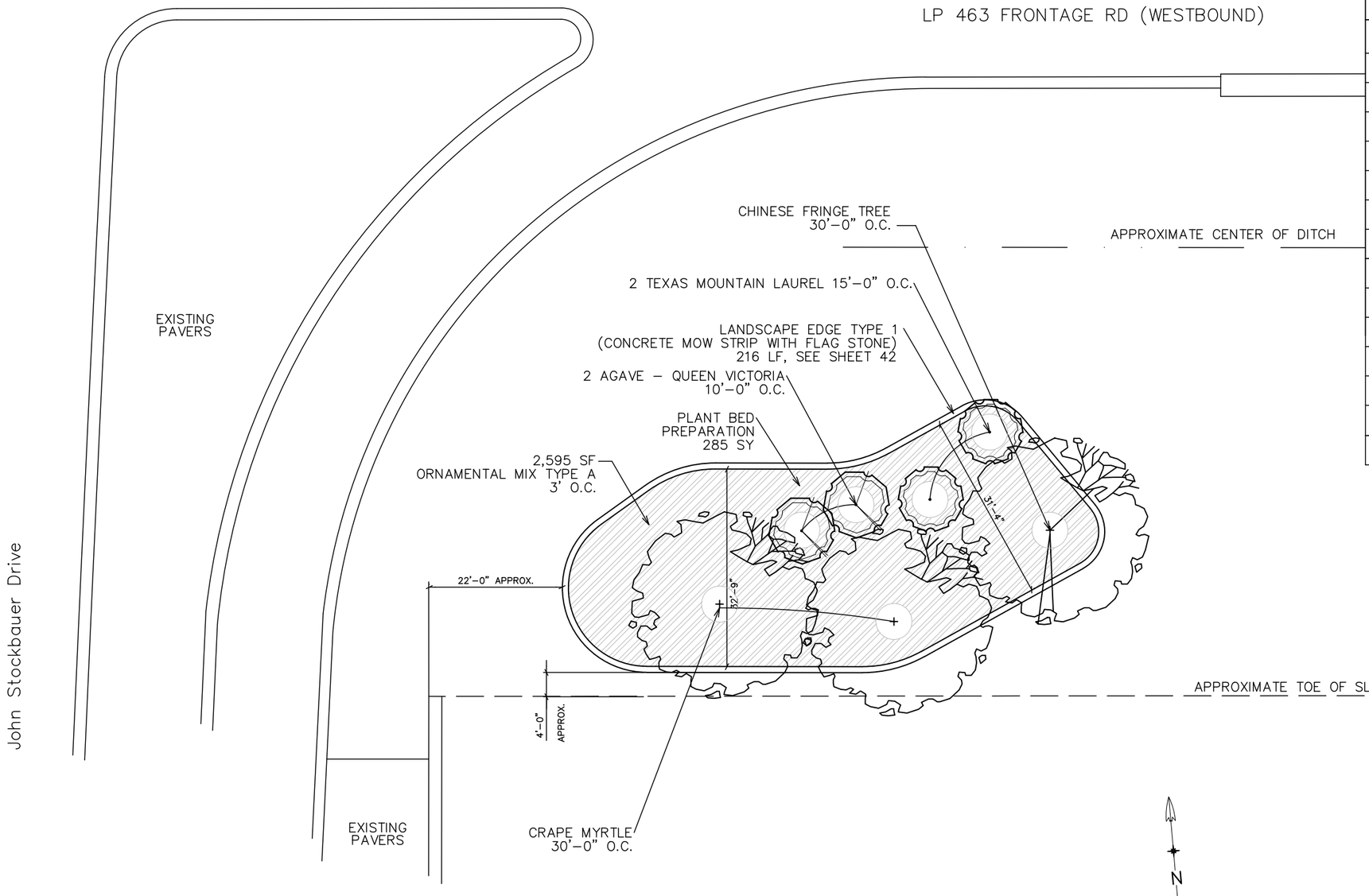
NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC REPRESENTATIONS OF PROPOSED WORK AREAS ONLY. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND STAKING LIMITS OF EACH BED PREPARATION AREA IN ACCORDANCE WITH PLANS. ADJUSTMENTS WILL BE MADE TO ACCOMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY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

REGISTERED LANDSCAPE ARCHITECT CLINT ALLEN KAINER 2606 STATE OF TEXAS
07/21/2021

LP 463 @
BU 77
SW CORNER
PLANTING PLAN – BED B

Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			27
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463



	ORNAMENTAL PLANTING MIX A		
ML	Texas Mountain Laurel	2	45 GAL (TREES)
CM	Crape Myrtle	2	
CF	Chinese Fringe Tree	1	
		5	
Bb	Bottle Brush 'little John Dwarf	25	5 GAL (SHRUBS)
Es	Esperanza 'Gold star'	12	
Pp	Prickly Pear 'Spineless'	12	
Ts	Texas sage 'Dwarf'	25	
Ty	Texas Yucca 'Red'	25	
Pb	Pride of Barbados 'Orange'	12	
Ag	Agave 'Queen Victoria'	2	
		113	
Fl	Flax Lilly Varigated	25	3 GAL (SHRUBS)
La	Lantana 'Lemon Zest'	25	
Lc	Lantana 'Carnival'	12	
Ar	Artemisia – Powis Castle	25	
Rm	Rosemary 'upright'	25	
Sg	Salvia Greggii	25	
		137	

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

LP 463 @ JOHN STOCKBAUER DRIVE NE CORNER PLANTING PLAN – BED C

Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			28
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

LP 463 (WEST BOUND)

EXISTING PAVERS

John Stockbauer Drive

2 CRAPE MYRTLE
30'–0" O.C.

4'–0"
APPROX.

APPROXIMATE TOE OF SLOPE

1 CHINESE FRINGE TREE
30'–0" O.C.

APPROX.
22'–0"

32'–9"

37'–4"

1,777SF ORNAMENTAL
MIX TYPE A
3' O.C.

2 AGAVE – QUEEN VICTORIA
10'–0" O.C

2 TEXAS MOUNTAIN LAUREL TREE
15'–0"

PLANT BED PREP
285 SY

LANDSCAPE EDGE TYPE 1
(CONCRETE MOW STRIP WITH FLAG STONE)
216 LF, SEE SHEET 42

APPROXIMATE CENTER OF DITCH

EXISTING PAVERS

LP 463 FRONTAGE RD (EAST BOUND)

ORNAMENTAL PLANTING MIX A			
ML	Texas Mountain Laurel	2	45 GAL (TREES)
CM	Crape Myrtle	2	
CF	Chinese Fringe Tree	1	
		5	
Bb	Bottle Brush 'little John Dwarf	24	5 GAL (SHRUBS)
Es	Esperanza 'Gold star'	12	
Pp	Prickly Pear 'Spineless'	12	
Ts	Texas sage 'Dwarf'	24	
Ty	Texas Yucca 'Red'	24	
Pb	Pride of Barbados 'Orange'	12	
Ag	Agave 'Queen Victoria'	2	
		110	
Fl	Flax Lilly Varigated	24	3 GAL (SHRUBS)
La	Lantana 'Lemon Zest'	24	
Lc	Lantana 'Carnival'	12	
Ar	Artemisia – Powis Castle	24	
Rm	Rosemary 'upright'	24	
Sg	Salvia Greggii	24	
		132	

0 20 40 60

SCALE: 1" = 20'

N

LP 463 @
JOHN STOCKBAUER DRIVE
NW CORNER
PLANTING PLAN – BED D

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS. ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

SHEET 4 OF 6

Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			29
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

US 77 FRONTAGE RD (WESTBOUND)

APPROXIMATE CENTER OF DITCH

APPROXIMATE TOE OF SLOPE

LIGHTING BY OTHERS

ORNAMENTAL MIX TYPE B

LOW STONE WALL 60 LF, SEE SHEET 42

LANDSCAPE EDGE (TYPE 1) 95 LF, SEE SHEET 42

LANDSCAPE EDGING (CONCRETE MOW STRIP) 68 LF, SEE SHEET 42

1 CHINESE FRINGE TREE 10'–0" O.C.

3 TEXAS MOUNTAIN LAUREL 10'–0" O.C.

2 CHINESE FRINGE TREES 10'–0" O.C.

APPROX. 22'–6"

APPROX. 5'–0"

EXISTING PAVERS

EXISTING PAVERS

LP 463 (WEST BOUND)

ORNAMENTAL PLANTING MIX B			
ML	Texas Mountain Laurel	3	45 GAL (TREES)
CF	Chinese Fringe Tree	3	
		6	
Ar	Artemisia – Powis Castle	8	3 GAL (SHRUBS)
La	Lantana 'Lemon Zest'	8	
Lc	Lantana 'Carnival'	8	
Rm	Rosemary 'upright'	8	
Sg	Salvia Greggii	8	
Ts	Texas sage 'Dwarf'	9	
Ty	Texas Yucca 'Red'	8	
Ts	Guara – Pink	8	
Ty	Saliva 'May Night'	8	
		73	

N

0 20 40 60

SCALE: 1" = 20'

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS.
ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

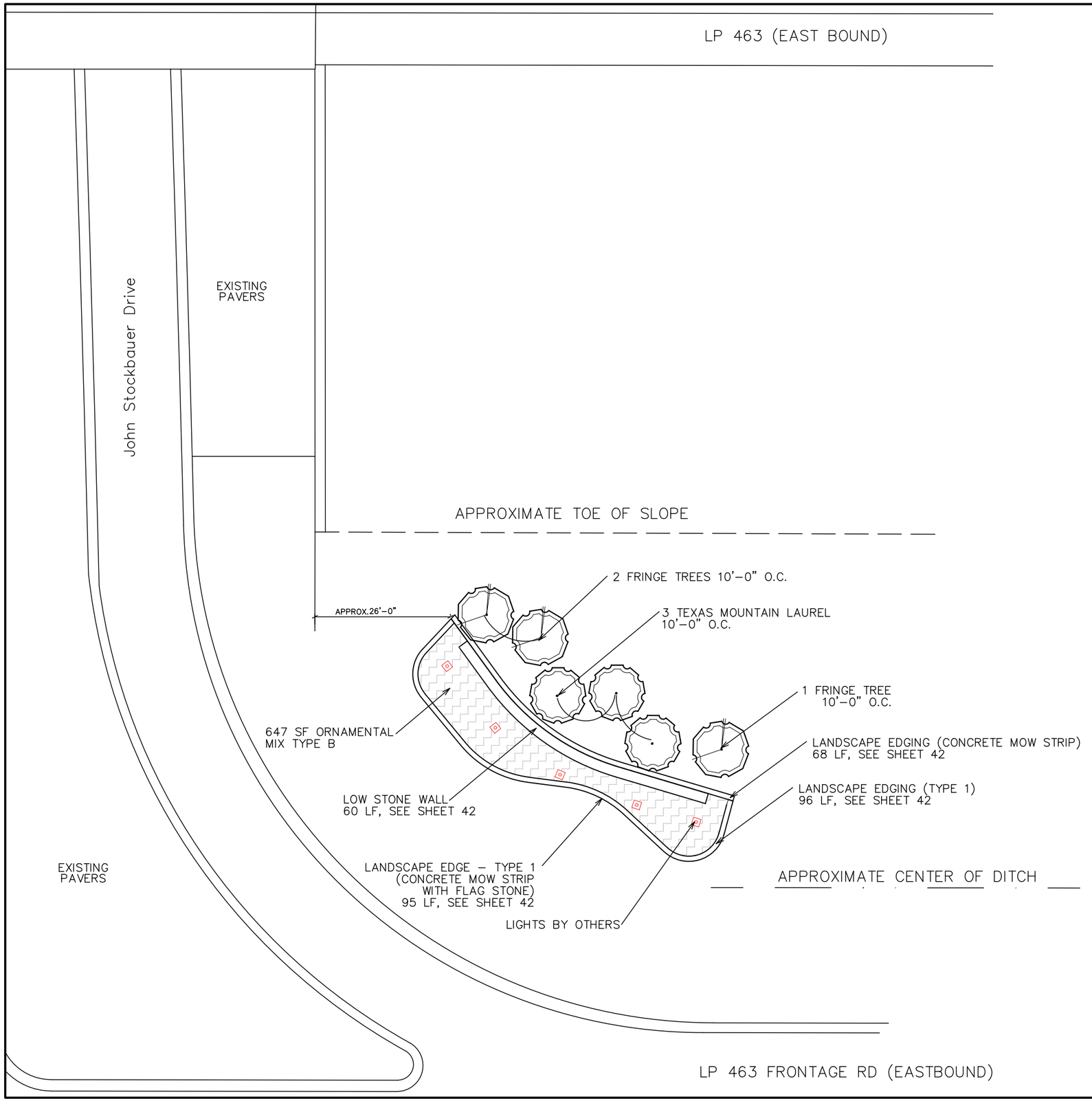
REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

LP 463 @
JOHN STOCKBAUER DRIVE
NW CORNER
PLANTING BED – E

Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			30

STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463



ORNAMENTAL PLANTING MIX B			
ML	Texas Mountain Laurel	3	45 GAL (TREES)
CF	Chinese Fringe Tree	3	
		6	
Ar	Artemisia – Powis Castle	8	3 GAL (SHRUBS)
La	Lantana 'Lemon Zest'	8	
Lc	Lantana 'Carnival'	8	
Rm	Rosemary 'upright'	8	
Sg	Salvia Greggii	8	
Ts	Texas sage 'Dwarf'	9	
Ty	Texas Yucca 'Red'	8	
Ts	Guara – Pink	8	
Ty	Saliva 'May Night'	8	
		73	

NOTE:
SITE LOCATION SHEETS ARE DIAGRAMATIC 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 ACCOMODATE SITE CONDITIONS.
ALL LOCATIONS WILL BE APPROVED PRIOR TO ANY BED PREPARATION WORK.

0 20 40 60

SCALE: 1" = 20'

N

LP 463 @
JOHN STOCKBAUER DRIVE
SE CORNER
PLANTING BED – F

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KANGE
2606
STATE OF TEXAS
07/21/2021

Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			31
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

● CONSTRUCTION PHASE (WORKING DAYS) ITEMS 100, 168, 170, 192, 193, 423, 500, 502, 506, and 6185 – SEE PLANS AND SPECIFICATIONS FOR REQUIREMENTS

2021 APR	MAY	JUN	JUL	AUG	2022 SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	2023 SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	2024 SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
									●	●	●	●	*ITEM 192				193–6001 SEE "PLANTING AND ESTABLISHMENT" SHEETS FOR REQUIREMENTS																					
									BEGIN		** END																											
									100–6001 PREPARING ROW																														

* 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:
1. TIMELINE IS FOR CONTRACTOR'S INFORMATION ONLY, ACTUAL DATES MAY CHANGE AS DIRECTED.
2. SEE "PLANTING AND ESTABLISHMENT" SHEETS FOR ADDITIONAL REQUIREMENTS AND INFORMATION NOT SHOWN ON THIS SHEET.
3. 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.
4. 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.
5. 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.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

PLANTING, MAINTENANCE AND ESTABLISHMENT TIMELINE

SHEET 1 OF 1

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FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			32

STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

PLANT SPECIFICATIONS

(PLANT MATERIAL MUST CONFORM TO ALL SPECIFICATIONS)

Botanical Name	ABBRV	Common Name	Color	Quantity	MINIMUM SPECIFICATIONS				
					Root Condition	Caliper	Height	Spread	Remarks
FOREST MIX/ INFILL MIX									
Quercus rubra	Qr	Red Oak		49	30 GAL (TREE)	2"	6'–8'	4'–5'	Full Branching, Straight trunk, Specimen Quality, (Must "NOT" require bamboo splint to stand upright)
Ulmus crassifolia	Uc	Cedar Elm		49					
Quercis Virginiana	QV	Live Oak		99					
Taxodium distichum 'Montezuma'	BC	Bald Cypress		**98**	15 GAL (TREE)	1–1/4"	7'	3'	Full branching, straight–trunk, SPECIMEN QUALITY (Must "NOT" require bamboo splint to stand upright)
Pinus taeda	Pt	Loblolly Pine		49					
Quercus macrocarpa	Qu	Bur Oak		49					
Quercus muehlenbergii	Qu	Chinqupin Oak		49					
Dermatophyllum secundiflorum	Ds	Texas Mountain Laurel		49					
Platanus occidentalis	Po	Sycamore		98					
Quercus shumardii	Qs	Shumard Red Oak		49	5 GAL (TREE)	3/4"	3'	2'	Full branching, straight–trunk, SPECIMEN QUALITY (Must "NOT" require bamboo splint to stand upright)
Quercus rubra	Qr	Red Oak		49					
Cercis canadensis	Cc	Red Bud		49					
Chionanthus retusus	Cf	Chinese fringetree		49					
Crape Myrtle 'Natchez'	Cm	Crape Myrtle		49					
Contoneaster	Co	Cotoneaster		59	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Elaeagnus	El	Elaeagnus		59	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Althaea Officinalis	Ao	Althaea		59	CONTAINER	5 GAL	18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,		
Pyrancantha	Pr	Pyracantha		59	CONTAINER	5 GAL	18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,		
Callicarpa americana	Ca	American Beautyberry		59	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Agave 'Queen Victoria'	Ag	Agave		4	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
ORNAMENTAL PLANTING TREES									
Dermatophyllum secundiflorum	Ds	Texas Mountain Laurel		16	45 GAL (TREE)	2 ½"	8'–10'	5'–6'	Full Branching, Straight trunk, Specimen Quality, (Must "NOT" require bamboo splint to stand upright)
Chionanthus retusus	Cf	Chinese fringetree		12					
Crape Myrtle 'Zuni'	Cz	Crape Myrtle		6					
ORNAMENTAL PLANTING (TYPE A)									
Bottle Brush 'little John Dwarf	Bb	Bottle Brush 'little John Dwarf		49	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Esperanza 'Gold star'	Es	Esperanza 'Gold star'		24	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Prickly Pear 'Spineless'	Pp	Prickly Pear 'Spineless'		24	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Texas sage 'Dwarf'	Ts	Texas sage 'Dwarf'		49	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Texas Yucca 'Red'	Ty	Texas Yucca 'Red'		49	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Pride of Barbados 'Orange'	Pb	Pride of Barbados 'Orange'		24	CONTAINER	5 GAL	FULL POT, WELL ROOTED 36" O.C.		
Flax Lilly Varigated	Fl	Flax Lilly Varigated		49	CONTAINER	3 GAL	FULL POT, WELL ROOTED 36" O.C.		
Lantana 'Lemon Zest'	La	Lantana 'Lemon Zest'		49	CONTAINER	3 GAL	FULL POT, WELL ROOTED 36" O.C.		
Lantana 'Carnival'	Lc	Lantana 'Carnival'		24	CONTAINER	3 GAL	FULL POT, WELL ROOTED 36" O.C.		
Rosemary 'upright'	Rm	Rosemary 'upright'		49	CONTAINER	3 GAL	FULL POT, WELL ROOTED 36" O.C.		
Salvia Greggii	Sg	Salvia Greggii		49	CONTAINER	3 GAL	FULL POT, WELL ROOTED 36" O.C.		
Artemisia – Powis Castle	Ar	Artemisia – Powis Castle		49	CONTAINER	3 GAL	FULL POT, WELL ROOTED 36" O.C.		
ORNAMENTAL PLANTING (TYPE B)									
Artemisia – Powis Castle	Ar	Artemisia – Powis Castle		32	CONTAINER	3 GAL			18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,
Lantana 'Lemon Zest'	La	Lantana 'Lemon Zest'		32	CONTAINER	3 GAL			18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,
Lantana 'Carnival'	Lc	Lantana 'Carnival'		32	CONTAINER	3 GAL			18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,
Rosemary 'upright'	Rm	Rosemary 'upright'		32	CONTAINER	3 GAL			18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,
Salvia Greggii	Sg	Salvia Greggii		32	CONTAINER	3 GAL			FULL POT, WELL ROOTED 36" O.C.
Texas sage 'Dwarf'	Ts	Texas sage 'Dwarf'		32	CONTAINER	3 GAL			FULL POT, WELL ROOTED 36" O.C.
Texas Yucca 'Red'	Ty	Texas Yucca 'Red'		32	CONTAINER	3 GAL			18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,
Guara – Pink	Ts	Guara – Pink		32	CONTAINER	3 GAL			18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,
Saliva 'May Night'	Ty	Saliva 'May Night'		32	CONTAINER	3 GAL			18" HT, 18" SPR, FULL ROUNDED FORM 30" OC,

PLANT SPECIFICATION NOTES:

1. 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.
2. All plants to be nursery grown in containers unless otherwise shown on plans.
3. Provide photographs of plant material when requested by Engineer.
4. 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.
5. DELIVERY NOTICE. Provide 48 hour notice of proposed plant material delivery prior to arrival at project or storage area.
6. 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.
7. 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.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS

07/21/2021

NTS

PLANT SPECIFICATIONS

SHEET 1 OF 1

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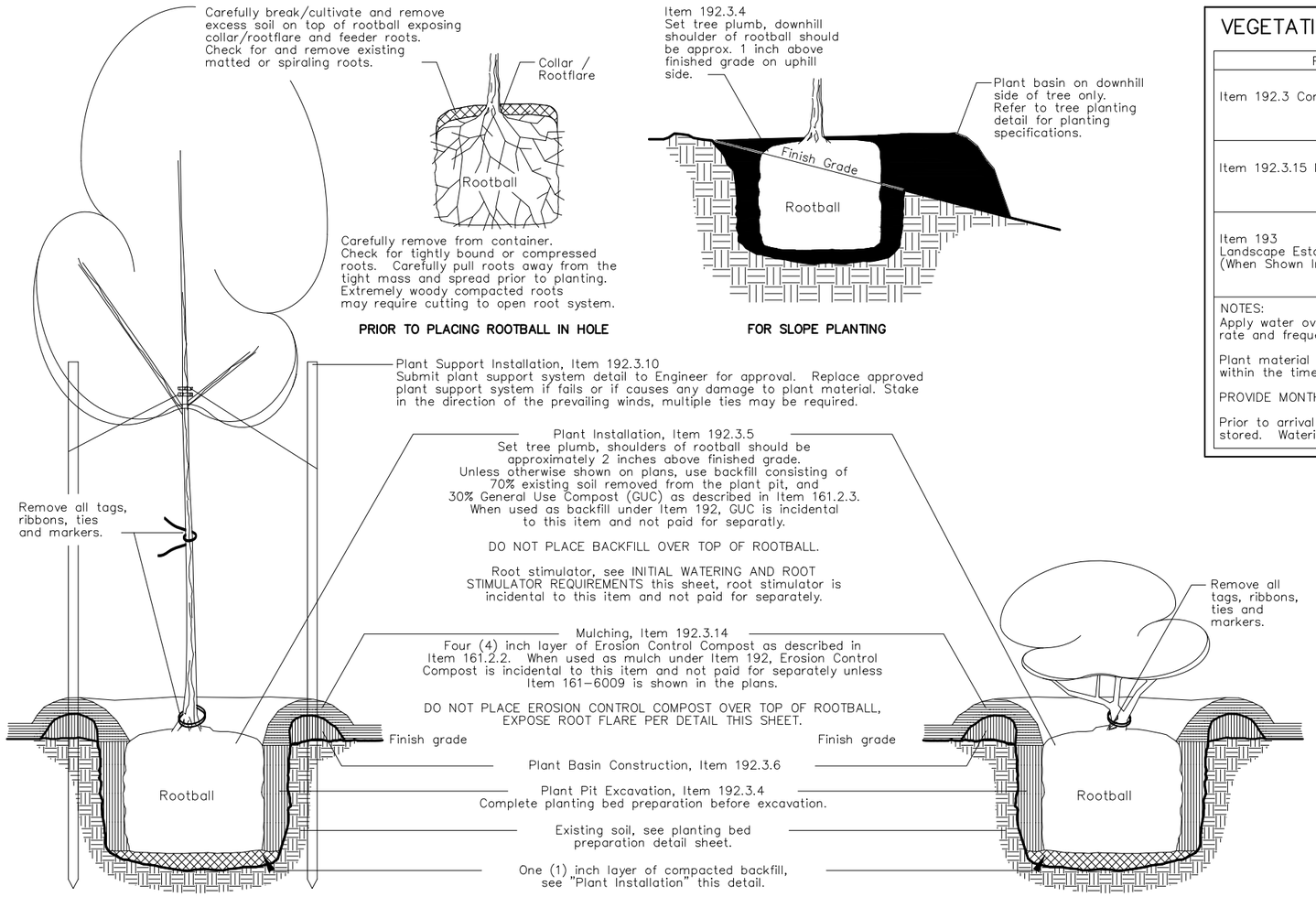
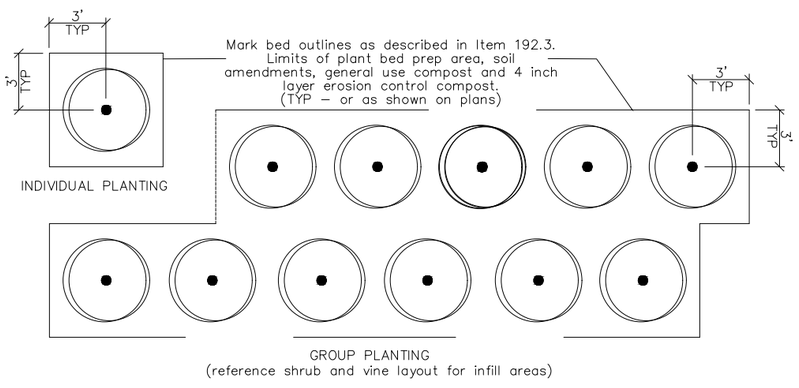
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			33
STATE	DIST.	COUNTY	
TEXAS	YKM	VICTORIA	
CONT.	SECT.	JOB	HIGHWAY NO.
2350	01	070	LP 463



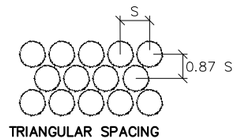
TREE PLANTING DETAIL

SHRUB AND VINE PLANTING DETAIL

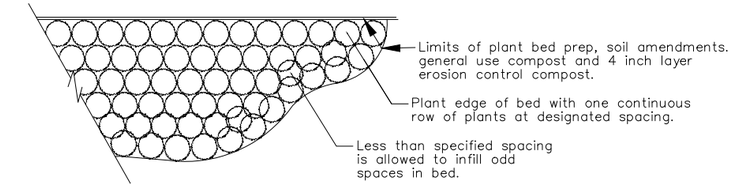


TREE PLACEMENT WITHIN PLANTING BED PREP AREA, LAYOUT AND SPACING SHOWN ON PLANS

S= Spacing as indicated on the plans. Square or triangular spacing will be shown by the placement of the plants on the drawing and/or be called out in the plant label.



TRIANGULAR SPACING



SHRUB AND VINE PLACEMENT WITHIN PLANTING BED PREP AREA LAYOUT AND SPACING SHOWN ON PLANS

VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES

PHASE	ITEM DESCRIPTION	FREQUENCY	RATE / PLANT
Item 192.3 Construction	Item 192.3.7. Watering is incidental to Item 192 and is not paid for seperately **UNLESS NOTED IN THE PLANS**	Begin same day as planting then: 3 times per week with 1 day minimum between waterings **See Initial Watering note**	**CNTR SIZE / WATER QTY** 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 seperately		
Item 193 Landscape Establishment (When Shown In Plans)	Item 193.3.3. Watering is incidental to Item 193 and is not paid for seperately UNLESS NOTED IN THE PLANS	2 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 seperately.
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:
1. 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.
2. Reference Item 192.3, mark plant locations and bed outlines.
3. 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.
4. 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.
5. 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.
6. 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.
7. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractors expense.

07/21/2021

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PLANTING DETAILS

SHEET 1 OF 1

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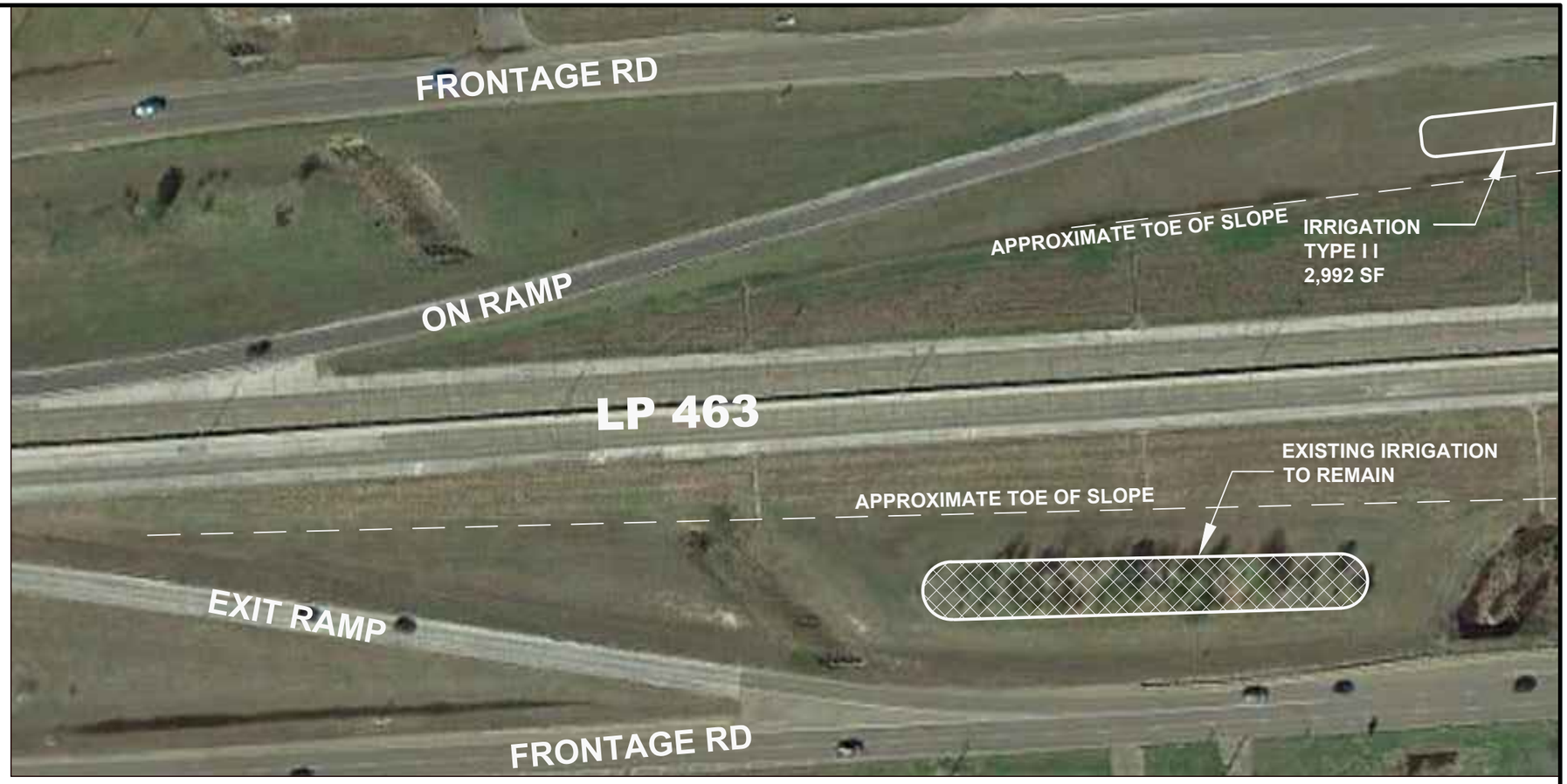
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			34
STATE	DIST.	COUNTY	
TEXAS	YKM	VICTORIA	
CONT.	SECT.	JOB	HIGHWAY NO.
2350	10	070	LP 463



NOTES AND ADDITIONAL REQUIREMENTS FOR ITEM 170–6003.
ALL NEW PLANTING AREAS WILL REQUIRE IRRIGATION.

1. SEE IRRIGATION DETAIL SHEETS FOR ADDITIONAL REQUIREMENTS.
2. REPAIR AND FLUSH ENTIRE SYSTEMS FROM CONNECTION AT WATER METERS TO ALL EMISSION DEVICES.
3. SYSTEMS PROVIDE TREE, SHRUB, AND GROUNDCOVER IRRIGATION FOR ALL NEW PLANTING.
4. REPAIR AND SERVICE THE BACKFLOW PREVENTERS.
5. ADD OR REPLACE MISSING BACKFLOW PREVENTERS, VALVES, WIRES, EMISSION DEVICES, ETC. SUBMIT MATERIAL INFORMATION FOR APPROVAL BY CITY AND TXDOT LANDSCAPE ARCHITECT PRIOR TO WORK.
6. ADJUST ALL IRRIGATION TO ADJUSTED TO FINISH GRADE.
7. ADJUST EXISTING IRRIGATION AT PLANTING AREAS TO ACCOMMODATE NEW WALL AND EDGING.
8. ENSURE NEW PLANTS ARE IRRIGATED PROPERLY.
9. REPAIR ALL LEAKS AND REPLACE BROKEN COMPONENTS.
10. REPLACE ALL EXISTING WIRE CONNECTION NUTS TO WATERPROOF CONNECTIONS. SUMBIT MATERIAL INFO FOR APPROVAL BY CITY AND TXDOT LANDSCAPE PRIOR TO WORK.
11. REPLACE ALL BATTERIES WITH NEW BATTERIES.
12. TAG, NUMBER, AND LABEL ALL VALVES WITH INDUSTRY–STANDARD MATERIALS.
13. DEVELOP, SEAL AND PROVIDE IRRIGATION SYSTEM AS–BUILT DRAWINGS ON 11x17 SHEETS. SEALED BY LICENSED IRRIGATOR. PROJECT PLANS CAN BE USED FOR THIS PURPOSE. REMOVE EXISTING LANDSCAPE ARCHITECT SEAL FROM SHEETS. LOCATE HEADS, BOXES, VALVES, CONTROLLERS, METERS, BACKFLOW DEVICES, ADUSTED LATERALS AND MAINLINES, ETC. WHERE POSSIBLE, SHOW EXISTING BORES, MAINLINES, ETC.

NOTE:
Planting and irrigation site location sheets are diagramatic representations of proposed work areas only.
Contractor is responsible for locating and staking limits of each work area in accordance with the plans.
Adjustments will be made to accomodate site conditions.
All locations will be approved prior to any work.

FILE: $FILE$
DATE: $DATE$ $TIME$

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

N

0 50' 100'
SCALE: 1"=100'

LP 463 @ BU 77

IRRIGATION PLAN

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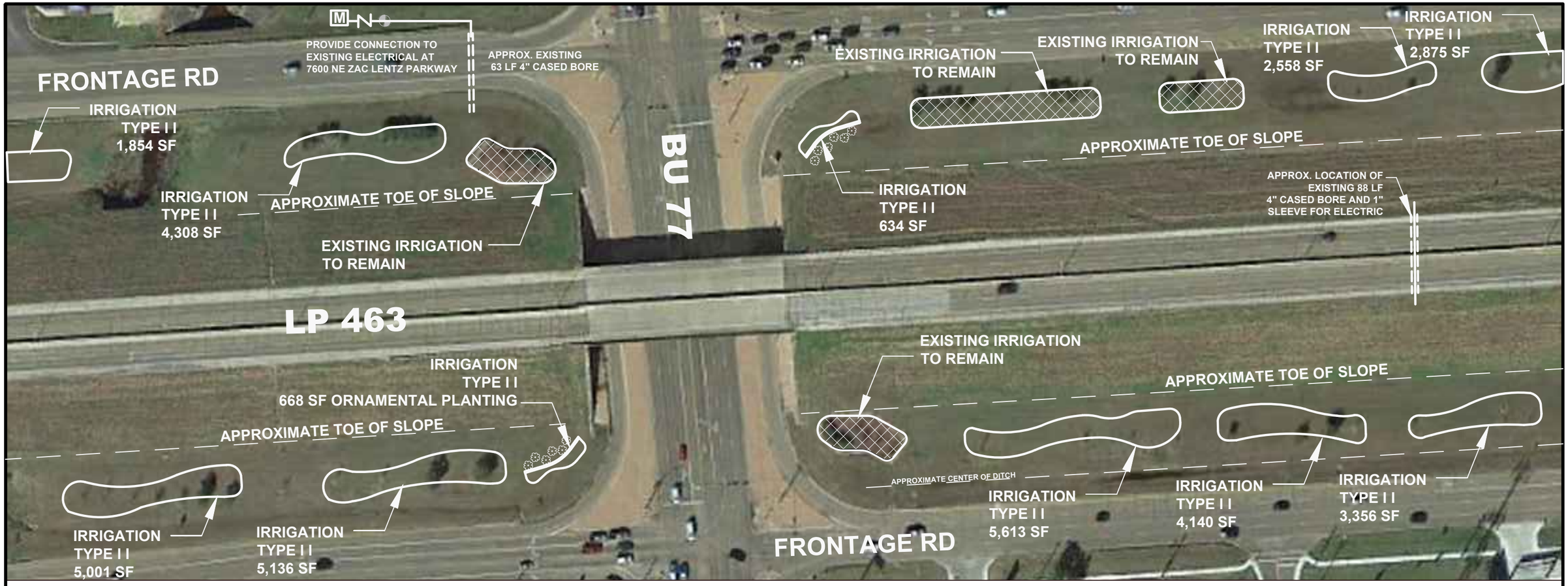
SHEET 1 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			35
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463



NOTES:

- ALL MAINLINES ARE 2" PIPES UNLESS STATED OTHERWISE.
- ALL SECTION VALVES SHALL BE MIN. 3' INSIDE EDGE OF PLANTING BED.

NOTE:
Planting and irrigation site location sheets are diagramatic representations of proposed work areas only.
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REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 50' 100'
SCALE: 1"=100'

LP 463 @ BU 77
IRRIGATION PLAN

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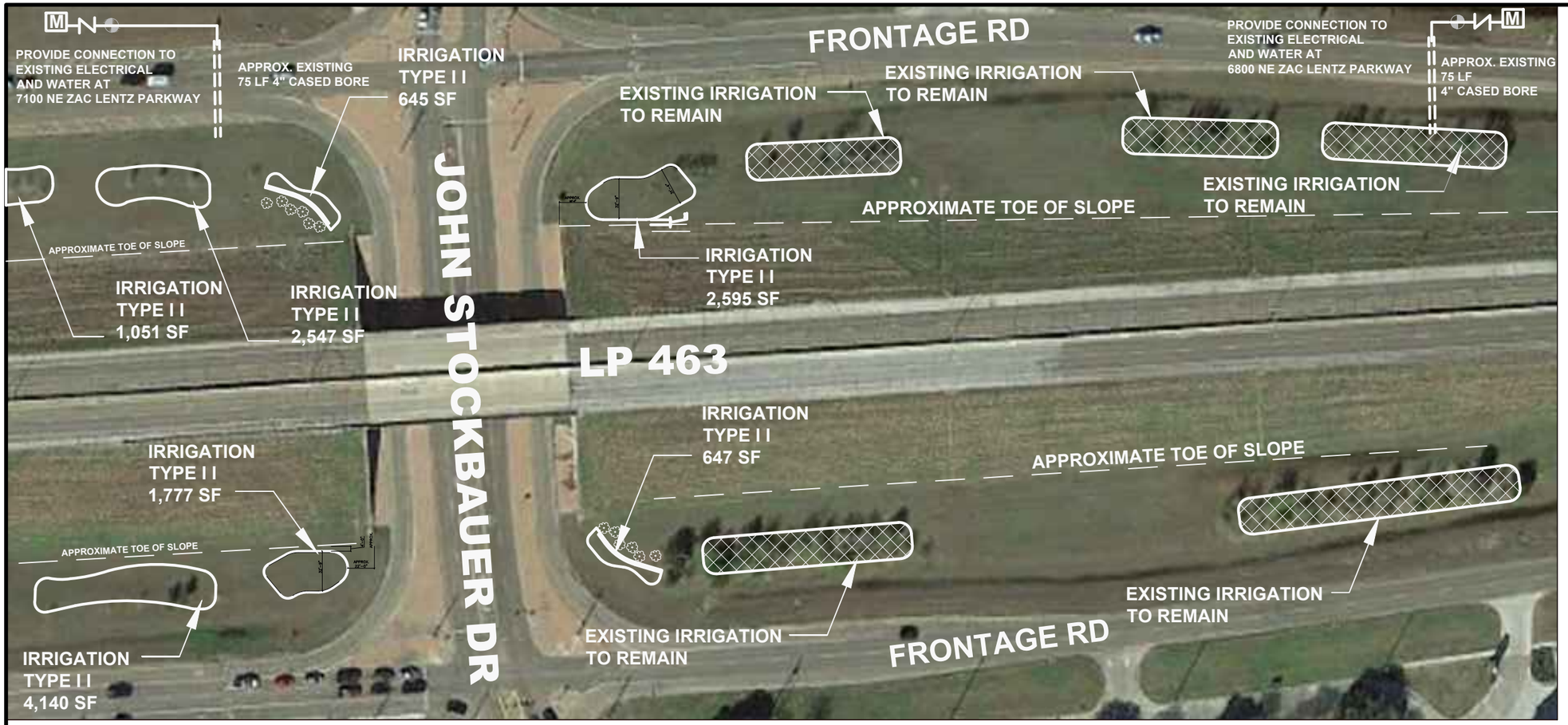
SHEET 2 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			36

STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

FILE: $FILE$ $TIME$
DATE: $DATE$



NOTES:

- ALL MAINLINES ARE 2" PIPES UNLESS STATED OTHERWISE.
- ALL SECTION VALVES SHALL BE MIN. 3' INSIDE EDGE OF PLANTING BED.

NOTE:
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All locations will be approved prior to any work.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 50' 100'
SCALE: 1"=100'

LP 463 @ BU 77

IRRIGATION PLAN

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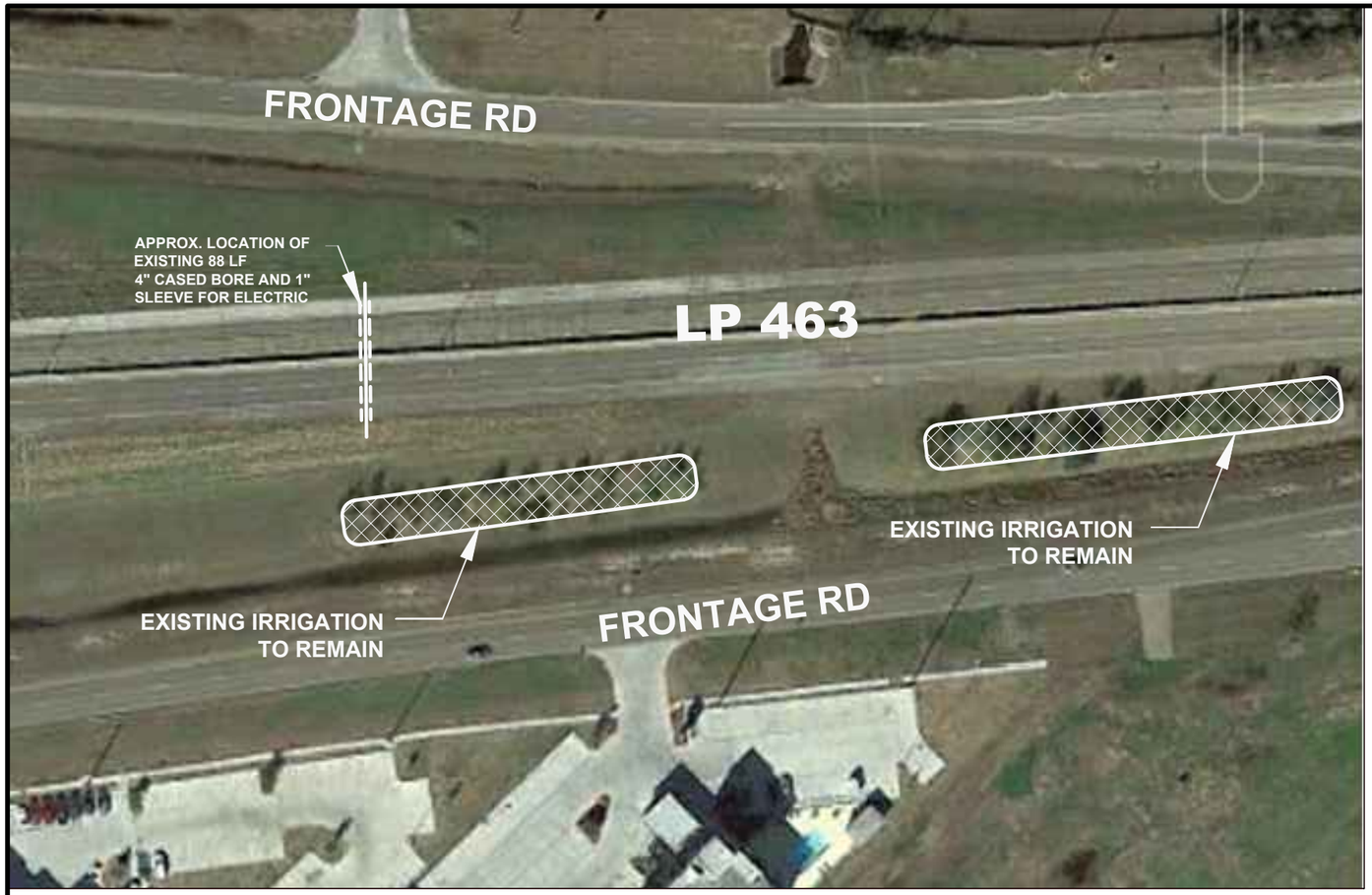
SHEET 3 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			37
STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

FILE: $FILE$ $TIME$
DATE: $DATE$



NOTES:

- ALL MAINLINES ARE 2" PIPES UNLESS STATED OTHERWISE.
- ALL SECTION VALVES SHALL BE MIN. 3' INSIDE EDGE OF PLANTING BED.

NOTE:
Planting and irrigation site location sheets are diagramatic representations of proposed work areas only.
Contractor is responsible for locating and staking limits of each work area in accordance with the plans.
Adjustments will be made to accomodate site conditions.
All locations will be approved prior to any work.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

0 50' 100'
SCALE: 1"=100'

LP 463 @ BU 77

IRRIGATION PLAN

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SHEET 4 OF 4

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			38

STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

FILE: $FILE$ $TIME$
DATE: $DATE$

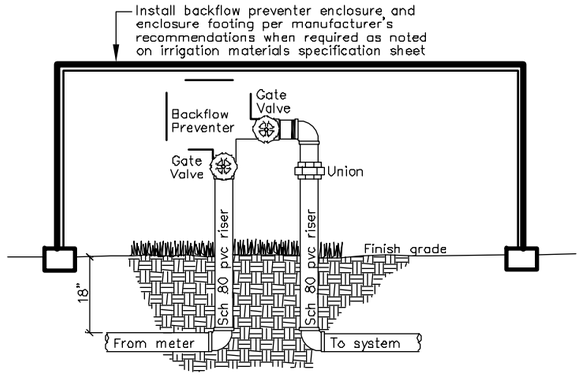
TYPE OF WORK	REQUIREMENTS
170-6003 IRRIGATION SYSTEM (TY II) LS	**FOR ALL IRRIGATION SYSTEM TYPES, THE DESIGN, FURNISH, INSTALLATION, REMOVAL, AND MAINTENANCE OF IRRIGATION SYSTEMS IS INCIDENTAL TO ITEM 170 AND WILL NOT BE PAID FOR SEPARATELY UNLESS OTHERWISE SHOWN.**
✓	Design, furnish, and install irrigation system in accordance with Item 170 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014, plans, details, and notes. Design is incidental to this item and not paid for separately.
✓	Provide shop drawings with layout, details, and specifications for approval prior to work.
✓	Provide as-built drawings at completion of irrigation system. As-built drawings must be sealed by Licensed Irrigator. See additional notes this sheet for requirements.

IRRIGATION SYSTEM NOTES

GENERAL
1. Reference Item 170 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements not shown.
2. Locate and stake all underground conduits and utilities associated with but not limited to: CTMS, CTMS power supply, lighting, signal wires and detectors, gas, electrical, telephone, fiber optics, etc.
3. 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 as directed by engineer.
4. The drawings are diagramatic of the work to be performed. Changes may be required due to varying conditions or as directed by the engineer.
5. Conduct a complete inventory and analysis of site conditions, incidental construction such as boring, mainline adjustment, sidewalk removal and replacement, utility adjustments, etc. will not be paid for seperately unless shown on plans.
6. See IRRIGATION DETAILS AND MATERIALS SHEET 3 of 3 for materials specifications, sizes, and requirements.
7. 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.
8. Any adjustments due to the failure to comply with plans and specifications shown will be at contractors expense.

CONSTRUCTION METHODS
1. Locate and stake irrigation system and related work in the field. Locate all irrigation valves, mainlines, dripline, etc., for approval by the engineer prior to installation. Any adjustments to work performed prior to approval will be incidental.
2. Obtain all permits, licenses, tests, and approvals. Pay any fees and deposits and install or arrange for all water meters and taps for installation and operation as applicable. Deposits will not be refunded by TxDOT.
3. Install water meter(s). WATER METERS WILL BE PLACED IN NAME OF THE CONTRACTOR THROUGHOUT ENTIRE CONTRACT. The contractor will pay for monthly water charges. Ensure water meter(s) remain operational and turned on for duration of the contract. Upon completion of the contract transfer water meter(s) into name of entity provided by the engineer.
4. Install backflow preventer(s). BACKFLOW PREVENTERS WILL BE PLACED IN NAME OF THE CONTRACTOR THROUGHOUT ENTIRE CONTRACT. Pay all charges, fees, tests, and coordination for any backflow preventer(s) testing at installation or annual inspection required by local entity for duration of the contract. Upon completion of the contract transfer backflow preventer(s) into name of entity provided by the engineer.
5. Excavation and Trenching Item 170.3.2. Exercise care when excavating near trees. No mechanical trenching is permitted below the canopy of existing trees. Adjust trench path, bore, and/or excavate by hand to avoid damage to existing tree root system. Keep trench bottom clean and smooth with all organic debris and sharp objects removed.
6. Boring Item 170.3.3. Stake boring and sleeve locations for engineer's approval. Bore pit will be minimum of 5 feet from edge of base material or pavement unless otherwise approved by engineer. The size of the bore will not exceed the diameter of the encasement by more than 1 inch. Cover or fill bore pit during non-scheduled work hours.
7. Encasement 170.3.5 Depth is minimum 36 inches below roadway pavement surface. All encasement is continuous and will extend the full width of the pavement and 5' on each side thereof. Encasement is incidental to irrigation system. Install encasement same day as boring.
8. Pipe and Valve Assembly 170.3.6. Do not install pipe when air temperature is below 40 degrees fahrenheit. Cut pipe in a manner that will ensure a square cut. Remove burs prior to installation for a clean, smooth unobstructed flow. Install pipe to an even grade and support pipe continuously on bottom of trench. Snake pipe in trench to allow for contraction and expansion.
9. Sprinkler Heads and Drip Tubing 170.3.7. See note 10 before installing dripline.
10. Closing and Flushing of PVC Pipe 170.3.10. Thoroughly flush all water lines before installing dripline.
11. Hydrostatic Tests 170.3.11. Engineer must be present.
12. Backfill and Compaction 170.3.12. Backfill to correct soil settlement is incidental.

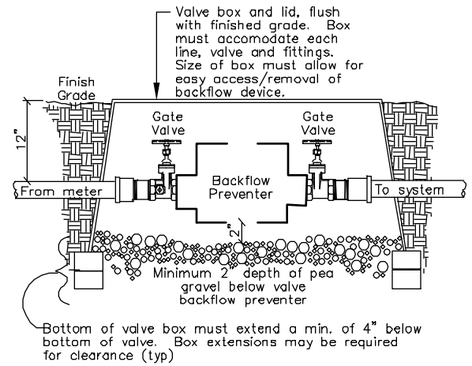
GUARANTEE AND ACCEPTANCE
1. Maintenance period. Inspect irrigation system concurrently with, and subject to the same maintenance requirement period under Items 192 and 193. During the installation and maintenance perid perform the following activities as a minimum and to the satisfaction of the engineer:
   A) Install and maintain the controller program to ensure the proper distribution of water (includes replacement of any batteries).
   B) Inspect, repair, and/or replace any equipment that is found defective, damaged or stolen.
   C) Make any adjustments that may become necessary to ensure the proper delivery of water to the plant material.
2. As-built drawings. Furnish the engineer a set of as-built drawings on reproducible 11x17 sheets upon completion of the installation of the irrigation system. The as-built drawings will be verified that they are a true record of the project conditions. Show all valve locations on drawings by triangulation from a fixed object. Show actual location of main and lateral lines from a fixed object. As-built drawings must be sealed by Licensed Irrigator.
3. Operating and maintenance data. Provide instructions covering full operation, care and maintenance of the equipment, including a schedule showing time each valve is open to provide determined amount of water, and instruct personnel designated by engineer in proper operation of the system.



BACKFLOW PREVENTER ABOVE GROUND INSTALLATION

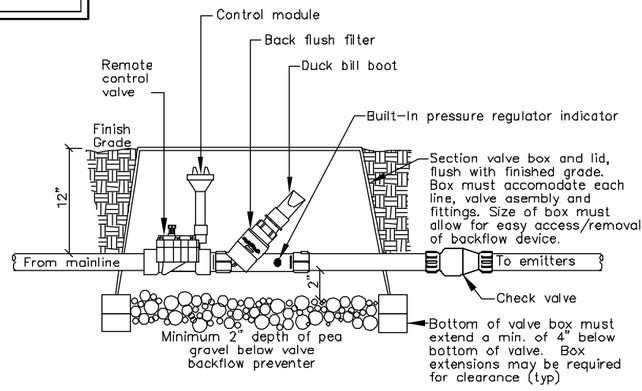
Type shall meet local code. Local code will have precedence over this detail.

OR

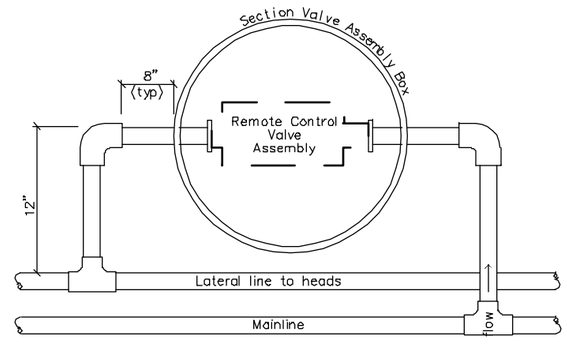


BACKFLOW PREVENTER IN GROUND INSTALLATION

Type shall meet local code. Local code will have precedence over this detail.



SECTION – PIPING TO/FROM REMOTE CONTROL VALVE ASSEMBLY



PLAN – PIPING TO/FROM REMOTE CONTROL VALVE ASSEMBLY

REMOTE CONTROL VALVE ASSEMBLY

05/05/2021

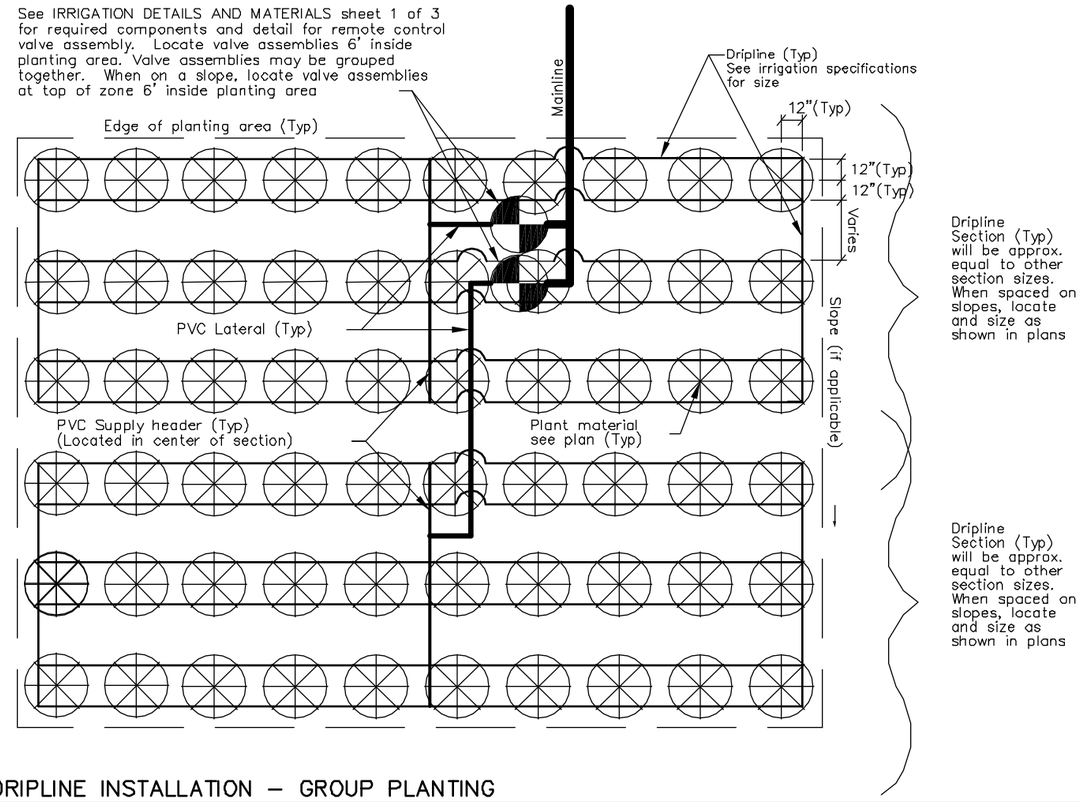
IRRIGATION DETAILS AND MATERIALS

SHEET 1 OF 3

Details not to scale

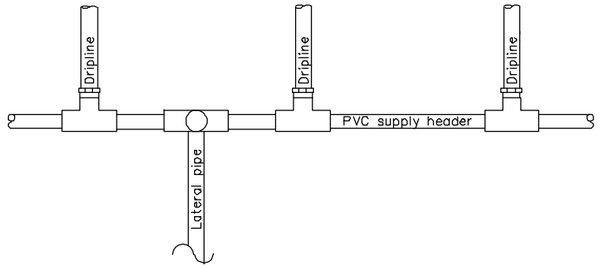
Texas Department of Transportation

FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
	6	TEXAS				39
REVISED:	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
2014 specs.	13	VICTORIA	2350	01	070	LP 463

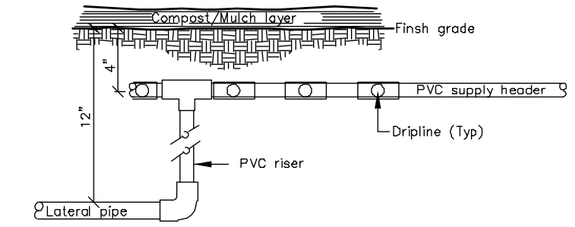


DRIPLINE INSTALLATION – GROUP PLANTING

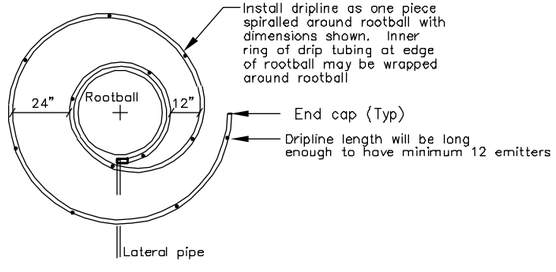
Note: When dripline sections are installed on slopes, schedule controller such that lower sections on slope are operating for shorter lengths of time. Contact engineer and landscape architect for setting length of timed dripline section operation. Total number of emitters and laterals will not allow for section GPM (gallons per minute) to exceed 20 GPM



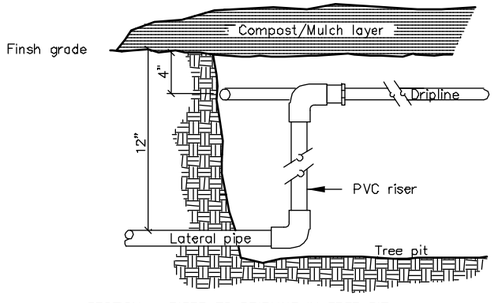
PLAN – RISER/SUPPLY HEADER TO DRIP TUBING



SECTION – RISER/SUPPLY HEADER TO DRIP TUBING



PLAN – RISER TO DRIPLINE IN TREE PIT



SECTION – RISER TO DRIPLINE IN TREE PIT

DRIPLINE INSTALLATION – INDIVIDUAL PLANTING

Note: Total number of emitters and laterals will not allow for section GPM (gallons per minute) to exceed 20 GPM

05/05/2021

IRRIGATION DETAILS AND MATERIALS

SHEET 2 OF 3

Details not to scale

Texas Department of Transportation

FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
	6	TEXAS				40
REVISED:	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
2014 specs.	13	VICTORIA	2350	01	070	LP 463

IRRIGATION MATERIALS SPECIFICATIONS

DESCRIPTION	* EXAMPLE OR EQUAL	SIZE	REMARKS
TAP/METER	LOCAL CODE	1 1/2 inch minimum	LOCAL CODE MAY REQUIRE LARGER METER
BACKFLOW PREVENTER	APPROVED BY LOCAL CODE	1 inch	
BACKFLOW PREVENTER ENCLOSURE REQUIRED FOR THE FOLLOWING IRRIGATION SYSTEM TYPES: ☒TYPE I ☐TYPE III ☒TYPE II ☐TYPE IV Enclosure will be approved by the engineer. Enclosure will be manufactured specifically for purpose of protecting backflow preventor. Enclosure will be vandal-resistant, lockable with the ability to be anchored to the ground. Enclosure will be completely removable. Enclosure size will provide access and clearance on all sides of backflow preventer. Locking Locking mechanism will be approved by the engineer. Provide locks and keys. All locks will use same keys unless otherwise directed by the engineer. Keys will match master key provided by engineer or landscape architect. Locks may be integrated into enclosure.	APPROVED BY ENGINEER	APPROVED BY ENGINEER	PROVIDE FOUR(4) KEYS TO ENGINEER IF ENCLOSURE IS REQUIRED
VALVE APPURTENANCES: INCLUDES: BACK FLUSH FILTER and PRESSURE REGULATOR CHECK VALVE DUCK BILL BOOT CLOSE NIPPLES (1")	RAINBIRD XCZ-100-PRF-BF RAINBIRD PRF 100 BFF RAINBIRD CV100 RAINBIRD DBB	1 inch	
NELSON CONTROL VALVE WITH CONTROL MODULE Programmable actuator with lithium battery	NELSON 8015 ACTUATOR, LITHIUM BATTERY, VALVE		
BORING		4 inch	OVERCUTTING WILL NOT BE ALLOWED
PVC SCH 40 ENCASEMENT PIPE FOR SLEEVES AND BORES Pressure rated with slip type solvent welded joints		4 inch	REFERENCE ITEM 170.2.C
PVC SCH 80 above ground at backflow device		2 inch	PIPE RATED FOR DIRECT SUNLIGHT EXPOSURE
PVC SCH 40 MAINLINE Pressure rated with twin gasket couplings and fittings or slip type solvent welded joints		2 inch	
PVC SCH 40 LATERALS AND HEADERS		3/4 inch	
PVC SCH 80 ABOVE GROUND PIPE			PIPE RATED FOR DIRECT SUNLIGHT EXPOSURE
BURIED RISERS AND SWING-JOINT COMPONENTS SCH 80			
PVC FITTINGS All fittings incorporated into system will be of the same type, size and class material as the pipe			
Dripline with COPPER SHIELD for Sub-Surface Irrigation	RAINBIRD DRIPLINE XFS-06-24	0.6 GAL./HR, 24 inch DRIPPER SPACING	
DRIPLINE FITTINGS Use fittings specifically manufactured for all dripline connections, no bending/crimping allowed.			
CONTROL WIRE All low voltage control wire will be color coded. Wire sizes will conform to the controller manufacturer specifications for maximum distances for specific wire sizes. All wire will be specifically manufactured for direct burial. All wire connections and splices will be made in ground boxes. The splice will be completely waterproof and will be completely encapsulated within a King Safety Sealed Irrigation Connector/Splice enclusure or an approved equal			
SOLVENT CEMENT Solvent cement will be the type recommended by the pipe manufacturer			
VALVE BOXES Boxes for section valves, below-ground backflow preventors, and quick coupling valves will be as shown on detail sheet			
VALVE BOX RISERS			

IRRIGATION SYSTEM NOTES:
1. Reference IRRIGATION DETAILS AND MATERIALS sheets 1,2 and 3 for details and requirements.
2. Reference to manufacturer's trade name or catalog number is for the purpose of identificatin only, contractor is permitted to furnish like materials of other manufacturer's provided they are of equal quality and comply with specifications for this project.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
05/05/2021

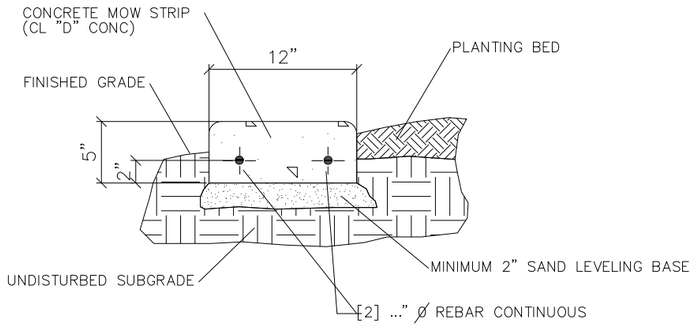
IRRIGATION DETAILS AND MATERIALS

SHEET 3 OF 3

Texas Department of Transportation

FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
	6	TEXAS				41
REVISED:	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
2014 specs.	13	VICTORIA	2350	01	070	LP 463

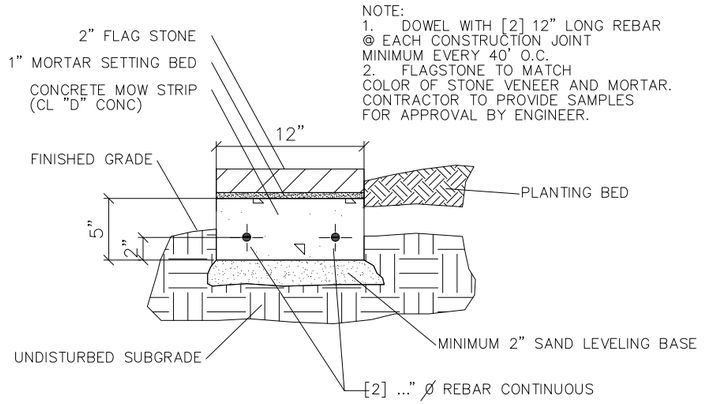
NOTE:
DOWEL WITH [2] 12" LONG REBAR
@ EACH CONSTRUCTION JOINT
MINIMUM EVERY 40' O.C.



B LANDSCAPE EDGING (CONCRETE MOW STRIP)

NTS

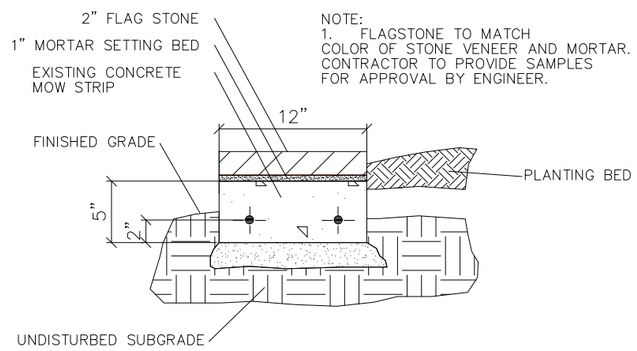
NOTE:
1. DOWEL WITH [2] 12" LONG REBAR
@ EACH CONSTRUCTION JOINT
MINIMUM EVERY 40' O.C.
2. FLAGSTONE TO MATCH
COLOR OF STONE VENEER AND MORTAR.
CONTRACTOR TO PROVIDE SAMPLES
FOR APPROVAL BY ENGINEER.



C LANDSCAPE EDGING TYPE 1
(CONCRETE MOW STRIP WITH FLAGSTONE)

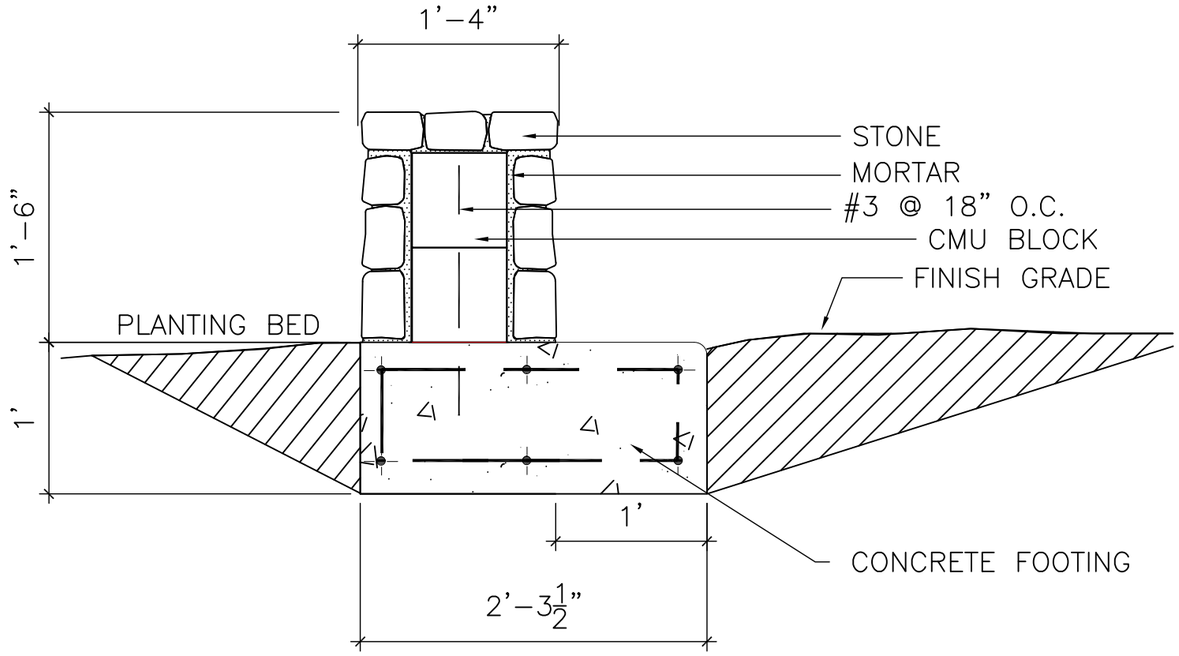
NTS

NOTE:
1. FLAGSTONE TO MATCH
COLOR OF STONE VENEER AND MORTAR.
CONTRACTOR TO PROVIDE SAMPLES
FOR APPROVAL BY ENGINEER.



D LANDSCAPE EDGING TYPE 2
(FLAGSTONE ON EXISTING CONCRETE MOW STRIP)

NTS



A STONE WALL SECTION

NTS

GENERAL NOTES

1. SEE SHEET 26-31 FOR WALL LOCATION.
2. GRADE PLANTING BED TO DRAIN AWAY FROM WALLS.
3. TOP OF WALL SHOULD BE EQUAL IN ELEVATION.
4. ALL EXCAVATION IS SUPPLEMENTAL TO THE WALL ITEM.
5. REBAR TO BE 2" MIN. FROM EDGE OF CONCRETE (TYPICAL)
6. MORTAR TO BE $\frac{1}{2}$" (TYPICAL). COLOR - CREAM
7. STONE VENEER PROVIDED BY KIRBY STONE CO. OR APPROVED EQUAL.
   SAND STONE-LIGHT AUTUMN BLEND,
   LIGHT COLOR ONLY TOP AND BOTTOM CUT.
   3 $\frac{1}{2}$ DEEP. 4",6",8" MINGLE HEIGHT.
8. SUBMIT SAMPLES OF ARCHITECTURAL STONE AND
   MORTAR FOR APPROVAL BY ENGINEER.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KANER
2606
STATE OF TEXAS
07/21/2021

LP 463
STONE WALL DETAILS

SHEET 1 OF 1

Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			42

STATE	DISTRICT	COUNTY	
TEXAS	YKM	VICTORIA	
CONTROL	SECTION	JOB	HIGHWAY NO.
2350	01	070	LP 463

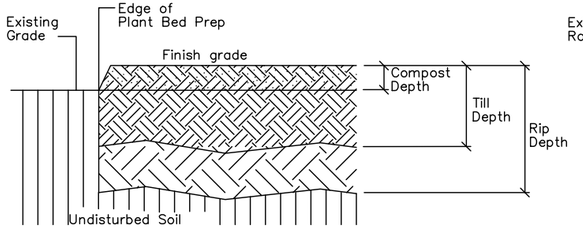
TYPE OF WORK

ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

192–6064 PLANT BED PREP (TYPE II) SY	192–6065 PLANT BED PREP (TYPE III) SY	192–6066 PLANT BED PREP (TYPE IV) SY	Reference Item 161, 192 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. Reference Special Specification Item 1006.		
✓	✓		161–6012 GENERAL USE COMPOST CY	APPLICATION RATE Item 161.2.3. General Use Compost. Apply 2" uniform layer over bed preparation area.	Item 161.2. Materials. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days). Lab analysis performed by an STA–certified lab must be dated within 30 days before delivery of the compost.
✓	✓	✓	1006–6001 LANDSCAPE SOIL AMENDMENT (TYPE I) SY	APPLICATION RATE Apply 0.30 lbs/SY. Each application is paid for separately. See timeline for multiple applications.	Use a non–chemical fertilizer with the following requirements: (1)Is OMRI Listed or certified by Washington State Department of Agriculture meeting USDA National Organic Program Rules, provide current certification. (2)Is registered with Texas State Chemist as a commercial fertilizer. (3)Meets USEPA guidelines for unrestricted use. (4)Derived from the following biological source: processed poultry manure. (5)Contains 3.0% nitrogen and 2.2% of nitrogen is water insoluble, 4% phosphate, 3% soluble potash, 10% calcium. (6)Use the following product or an approved equal: Plant Vigor 3–4–3 Plus 10% Calcium manufactured by Natural Resources Group, Inc., Tomball, Texas 800–279–9567.
✓	✓	✓	1006–6002 LANDSCAPE SOIL AMENDMENT (TYPE II) SY	APPLICATION RATE Apply 0.25 lbs/SY. Each application is paid for separately. See timeline for multiple applications.	Humate containing 2.25% iron in the raw material and greater than 45% humic acid, dextrose 2.5% to 5% on weight basis. Pelletized humate without added binders and pass #16 mesh. Use the following product or an approved equal: San Jacinto Humate, San Jacinto Environmental Supplies, 713–957–0909.
✓	✓	✓	1006–6005 LANDSCAPE SOIL AMENDMENT (TYPE V) SY	APPLICATION RATE Apply 0.30 lbs/SY. Each application is paid for separately. See timeline for multiple applications.	Use a non–chemical fertilizer with the following requirements: (1)Is OMRI Listed or certified by Washington State Department of Agriculture meeting USDA National Organic Program Rules, provide current certification. (2)Is registered with Texas State Chemist as a commercial fertilizer. (3)Meets USEPA guidelines for unrestricted use. (4)Derived from the following biological source: worm castings. (5)Contains 0.02% humic acid derived from humate, 1.0% nitrogen and 0.9% of nitrogen is water insoluble, 0.5% phosphate, 0.2% soluble potash, 1.0% calcium, 0.02% iron. (6)Use the following product or an approved equal: Black Castings manufactured by Vermi–Technology Unlimited available from Earth's Outlet 866–504–1139. Each treated tree and woody shrub equals one square yard of Landscape Soil Amendment (Type V).
✓	✓	✓	1022–6001 LANDSCAPE TREATMENT (TY 1) EA	See PLANTING AND ESTABLISHMENT SHEET 3 of 6 For Requirements	
			1022–6002 LANDSCAPE TREATMENT (TY 2) EA	See PLANTING AND ESTABLISHMENT SHEET 3 of 6 For Requirements	
✓	✓		ROTOR TILLING Incidental to Item 192 Plant Bed Preparation. Scalp mow prior to till.	ROTOR TILL DEPTH After application of compost and amendments and rip/trench (when required), rotor till to a depth of 8 inches (+/– 2").	
	✓	✓	HERBICIDE and MOWING Incidental to Item 192 Plant Bed Preparation. Scalp mow 15 days after final herbicide treatment.	APPLICATION RATE Prior to all other work, apply two applications of an approved herbicide with 15 days between the applications. Apply herbicide during weather conditions and at a rate per manufacturer's recommendations.	

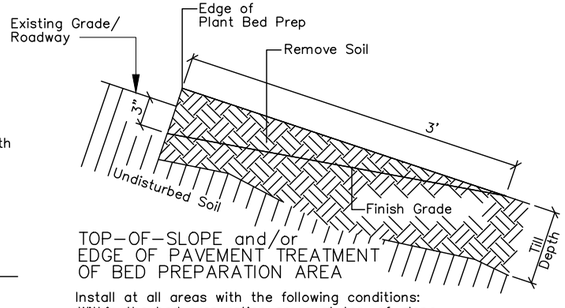
BED PREPARATION NOTES:

1. 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.
2. Reference Item 192.3 mark plant locations and bed outlines.
3. 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.
4. 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 the project. Remove stakes when directed by Engineer.
5. Repair any damage within right of way caused by Contractor at no additional expense to the Department.
6. Provide a 1000 SF "mock up" of soil amendment, general use compost, and bed preparation complete and in place within an approved area for approval by engineer.
7. Pick–up litter prior to scalp mow and bed preparation.
8. All concrete, steel, trash, and other debris uncovered during bed preparation work which the Engineer determines as detrimental to the project will become the responsibility of the Contractor and disposed of in an approved manner. Debris removal will occur daily and will be incidental to bed preparation and will not be paid for separately.
9. 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.
10. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractors expense.
11. Clean and clear bed prep areas and nearby inlets of existing tall vegetation and any piles or layers of dead grass and weeds caused by drought or mowing operations by others.



PLANTING BED PREPARATION SECTION

SEE ITEMS AND REQUIREMENTS THIS SHEET FOR DIMENSIONS, RATES, AND SPECIFICATIONS
(See Top–of–Slope detail this sheet when applicable)



TOP–OF–SLOPE and/or EDGE OF PAVEMENT TREATMENT OF BED PREPARATION AREA

Install at all areas with the following conditions:
Within the bed preparation areas at top–of–slope (adjacent to shoulder sections and areas with slotted barrier/curb) and/or at edge of roadway, remove tilled or untilled (TYPE IV) soil as shown. Evenly distribute removed soil in a thin layer over adjacent existing tilled or untilled (TYPE IV) soil being careful not to create a mound. This work is incidental to Item 192 Plant Bed Prep Preparation.

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS

07/21/2021

NTS

PLANTING AND ESTABLISHMENT

SHEET 1 OF 3

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FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			43
STATE	DIST.	COUNTY	
TEXAS		VICTORIA	
CONT.	SECT.	JOB	HIGHWAY NO.
2350	01	070	LP 463

USE COMPOST TEA OR EXTRACT AS SHOWN ON THIS SHEET

COMPOST EXTRACT

ITEM 1022–6001 LANDSCAPE TREATMENT (TY 1) and
ITEM 1022–6002 LANDSCAPE TREATMENT (TY 2) requirements.

MATERIALS REQUIREMENTS

Compost for use in liquid compost/extract must contain the following (per gram dry weight of compost):
1. Test within range of Soil Food Web standards using a full bio–assay to include the following:
   a) 15–25 micrograms of active bacteria,
   b) 100– 3000 micrograms total bacterial biomass,
   c) 15–25 micrograms active fungal biomass,
   d) 100–300 micrograms total fungal biomass,
   e) 10,000 each of flagellates and amoebae,
   f) 20–100 ciliates, and
   g) 20 to 30 beneficial nematodes.
2. Meet the Solvita Compost Maturity test of 6.0 or higher.

Liquid compost/extract must contain the following (per gram dry weight):
1. 150–3000 micrograms total bacterial biomass,
2. 2–20 micrograms total fungal biomass,
3. 1000 each of flagellates and amoebae,
4. 20–50 ciliates, and
5. 2–10 beneficial nematodes.

Liquid compost must be verified, with time and date, for content to have minimum activity and meet minimum standards as specified above using a 100x and 400x microscope with camera attachment by a Soil Foodweb Certified Advisor or their representative. This verification must be within 30 minutes of material leaving premises on the day of manufacture. Picture will be kept on file for each 500 gallons manufactured.

Liquid compost/extract additives include the following:
1. Mycorrhizal fungi endo/ecto blend sourced with a minimum potency of 100,000 propagules per pound with NO Tricoderma included in the innoculum.
2. Humate, low sodium, naturally processed 70% humate that has been liquefied to 12% humic–fulvic as available from Mesa Verde Resources at 877–418–8776 or approved equal.
3. Fulvic acid derived from natural shale ore as available from Sustainable Growth Texas at 936–232–5738 or approved equal.
4. Soluable kelp seaweed, dehydrated liquid extract made from the seaplant Ascophyllum nodosom as available from Sustainable Growth Texas at 936–232–5738, or approved equal.
5. Naturally derived blackstrap non–sulfured molasses (for foliar application only).

Liquid compost/extract with additives solution must sit on air for 3–4 hours and monitored every 1/2 hour with a Dissolved Oxygen Meter to assure the material does not drop below 6ppm oxygen content during full activation period.

EQUIPMENT REQUIREMENTS

For each batch use a delivery tank verified for overall cleanliness, to be free of residue, soil, compost or stains. Tank shall then be rinsed with clean non–chlorinated or non–chloramines treated well water before filling with Liquid Compost. All equipment used for application of liquid compost must have never been used or will not be used with any non organic conventional inorganic fertilizers or chemical herbicides or pesticides, owner must submit written verification to this.

Tank shall be equipped with two, 2 inch quick coupler type fittings capable of coupling, without leaks. All lines and fittings should have quick couplers at every junction. Ninety (90) degree bend fittings should be avoided for quick clean out and verification of cleanliness.

Delivery tank must be equipped with an operating circulation pump of a low velocity, high volume pump of diaphragm or centrifugal design.

Injectors capable of penetrating four (4) inches into soil and/or root balls as manufactured by LESCO Deeproot Feeder at 713–466–6730 or approved equal.

Delivery tank must be equipped with an operating aeration system.

Dissolved oxygen meter.

TRANSPORT, STORAGE AND APPLICATION REQUIREMENTS

Liquid compost/extract with additives solution must be circulated for five (5) minutes per five hundred (500) gallons of material every three (3) hours. Liquid compost/extract with additives solution must be continuously aerated from time of manufacture through complete application. All solution must be applied within 24 hours, or new material must be sourced. Materials not applied within 24 hours is not allowed.

CONSTRUCTION METHODS AND APPLICATION RATES

1022–6001 LANDSCAPE TREATMENT (TY 1) EA
Installation date: Install root injection 14 calendar days minimum to 30 calendar days maximum after plant installation.
Limits/measurement: Each injected tree and woody shrub.
Inject 1/2 gallon liquid compost/extract with additives solution four (4) inches into the root zone and/or rootball of each tree and woody shrub only. Mix additives with liquid compost/extract using the following rates:
1. Mycorrhizal fungi endo/ecto blend: 30 lbs per 500 gallons of liquid compost/extract,
2. Humate: 30 lbs per 500 gallons of liquid compost/extract,
3. Fulvic acid: 32 oz per 500 gallons of liquid compost/extract,
4. Soluable kelp seaweed: 2 lbs per 500 gallons of liquid compost/extract.

1022–6002 LANDSCAPE TREATMENT (TY 2) EA
Installation date: Install first foliar application 30 calendar days minimum to 60 calendars days maximum after root injection described on this sheet. Additional foliar applications as described on following sheets.
Limits/measurement: Each sprayed tree and woody shrub. Spray foliar application over all trees and woody shrubs.
Solution must be sprayed targeting the full surface of the plant including leaves (top and bottom), limbs and trunk.
Spray foliar application at the following rates:
1. Liquid compost/extract: 500 gallons per acre,
2. Humate: 2 lbs per acre,
3. Fulvic acid: 32 oz per acre,
4. Soluable kelp seaweed: 2 lbs per acre,
5. Blackstrap molasses: 16 oz per acre.

Soil Foodweb Certified Advisor:

Sustainable Growth Texas
103 Sherbrook Circle
Conroe, TX 77385
936–232–5738
sustainablegrowthtexas.com

Soil Foodweb Oregon, LLC
728 SW Wake Robin Ave.
Corvallis, Oregon 97333–1612
541–752–5066
soilfoodweb.com

Soil Foodweb New York, Inc.
555–7 Hallock Ave.
Port Jefferson Station, NY 11776
631–474–8848
soilfoodwebny.com

COMPOST TEA

ITEM 1022–6001 LANDSCAPE TREATMENT (TY 1) and
ITEM 1022–6002 LANDSCAPE TREATMENT (TY 2) requirements.

MATERIALS REQUIREMENTS

Compost for use in liquid compost tea must contain the following (per gram dry weight of compost):
Test within range of Soil Food Web standards using a full bio–assay to include the following:
   a) 15–25 micrograms of active bacteria,
   b) 100– 300 micrograms total bacterial biomass,
   c) 15–25 micrograms active fungal biomass,
   d) 100–300 micrograms total fungal biomass,
   e) 10,000 each of flagellates and amoebae,
   f) Less than 50 ciliates, and
   g) No root feeding nematodes present.

Actively aerated compost tea must contain the following per milliliter as applied (measured after having passed through the actual application apparatus):
1. Meet the minimum desired ranges by Soil Food Web for:
   a. Active bacteria 10–150
   b. Total bacteria 150–3000
   c. Active Fungi 2–10
   d. Total Fungi 2–20
   e. Flagellages and amoebae 2000 combined
   f. Ciliates 50 or less
   g. No root feeding nematodes present

Tea is to be tested from application device a minimum once per month during each application cycle. Each batch of actively aerated compost tea must be qualitatively assessed using light microscope methods as established by Soil Food Web. Photographs of microscopy must be kept on file with a qualitative assay report.

If the following additives are used in tea brewing to meet the minimum biological standards, the aditives must meet these standards.
   a) Fish Hydrolysate – certified organic manufacturers documentation verifying no oil extraction has occurred.
   b) Kelp – must be certified organic soluble extract.
   c) Humic Acid – certified organic water extracted.
   d) Molasses – certified organic blackstrap molasses.

Actively aerated compost tea must maintain dissolved oxygen level above 6 mg/l until application. Use a dissolved oxygen meter to monitor.

EQUIPMENT REQUIREMENTS

For each batch use a delivery tank verified for overall cleanliness, to be free of residue, soil, compost or stains. Tank shall then be rinsed with clean non–chlorinated or non–chloramines treated well water before filling with Liquid Compost Tea. All equipment used for application of liquid compost must have never been used or will not be used with any non organic conventional inorganic fertilizers or chemical herbicides or pesticides, owner must submit written verification to this nature.

Application pump must be high volume (greater than 3.0 gpm) and low pressure (less than 60 psi). Application pump must be a diaphragm type pump. Foliar application device must be capable of adequately covering front and backs of leaves. Foliar application device shall be Gunjet AA18–AL or approved equal.

Delivery tank must be equipped with an operating aeration system capable of maintaining 6 mg/l oxygen content.

Injectors capable of penetrating four (4) inches into soil and/or root balls as manufactured by LESCO Deeproot Feeder at 713–466–6730 or approved equal.

Dissolved oxygen meter.

TRANSPORT, STORAGE AND APPLICATION REQUIREMENTS

Actively aerated compost tea must be continuously aerated from time of manufacture through complete application. Materials not applied within 24 hours are not allowed.

CONSTRUCTION METHODS AND APPLICATION RATES

1022–6001 LANDSCAPE TREATMENT (TY 1) EA
Installation date: Install root injection 14 calendar days minimum to 30 calendar days maximum after plant installation.
Limits/measurement: Each injected tree and woody shrub. Inject all trees and woody shrubs.
Inject 1/2 gallon liquid compost tea with additives solution four (4) inches into the root zone and/or rootball of each tree and woody shrub only. Mix additives with compost tea using the following rates:
1. 8 ox/ Fish Hydrolysate per gallon.

1022–6002 LANDSCAPE TREATMENT (TY 2) EA
Installation date: Install first foliar application 30 calendar days minimum to 60 calendar maximum after root injection described on this sheet. Additional foliar applications as described on following sheets.
Limits/measurement: Each sprayed tree or woody shrub. Spray foliar application over all trees and woody shrubs.
Solution must be sprayed targeting the full surface of the plant including leaves (top and bottom), limbs and trunk.
Spray foliar application at the following rate:
1. Liquid compost tea: 500 gallons per acre.

Soil Foodweb Certified Advisor:

Sustainable Growth Texas
103 Sherbrook Circle
Conroe, TX 77385
936–232–5738
sustainablegrowthtexas.com

Soil Foodweb New York, Inc.
555–7 Hallock Ave.
Port Jefferson Station, NY 11776
631–474–8848
soilfoodwebny.com

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728 SW Wake Robin Ave.
Corvallis, Oregon 97333–1612
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oregonfoodweb.com

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

NTS

PLANTING AND ESTABLISHMENT

SHEET 2 OF 3

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FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			44
STATE	DIST.	COUNTY	
TEXAS		VICTORIA	
CONT.	SECT.	JOB	HIGHWAY NO.
2350	01	070	LP 463

ITEM 192 LANDSCAPE MAINTENANCE & 193 ESTABLISHMENT REQUIREMENTS

After completion of the Item 192 maintenance period, as shown in the plans and approved by the Engineer, begin Item 193 establishment activities and continue for the duration of time shown in the plans.
Reference Item 193 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.
All establishment work is paid for separately in accordance with Item 193 unless otherwise shown on plans.
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 (Days) – (1 – 365 = Month 1 thru 12
366 – 726 = Month 13 thru 24)

0(366) 30(396) 60(426) 90(456) 120(486) 150(516) 180(546) 210(576) 240(606) 270(636) 300(666) 330(696) 365

DESCRIPTION OF WORK	1 Thru 7	8 Thru 15	16 Thru 22	23 Thru 30	31 Thru 37	38 Thru 45	46 Thru 52	53 Thru 60	61 Thru 67	68 Thru 75	76 Thru 82	83 Thru 90	91 Thru 97	98 Thru 105	106 Thru 112	113 Thru 120	121 Thru 127	128 Thru 135	136 Thru 142	143 Thru 150	151 Thru 157	158 Thru 165	166 Thru 172	173 Thru 180	181 Thru 187	188 Thru 195	196 Thru 202	203 Thru 210	211 Thru 217	218 Thru 225	226 Thru 232	233 Thru 240	241 Thru 247	248 Thru 255	256 Thru 262	263 Thru 270	271 Thru 277	278 Thru 285	286 Thru 292	293 Thru 300	301 Thru 307	308 Thru 315	316 Thru 322	323 Thru 330	331 Thru 338	339 Thru 346	347 Thru 354	355 Thru 365
193.3.1.1. PRUNING (Includes palm plant material and dead, diseased, or damaged palm fronds.)				✓				✓				✓				✓				✓				✓				✓				✓				✓				✓				✓				✓
193.3.1.2. INSECT, DISEASE, AND ANIMAL CONTROL (Exterminate all active ant colonies in bed preparation areas)		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
193.3.1.4. MULCHING, PLANT BASIN, AND PLANT BED 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 below, maintain per Item 193.3.1.4) WEED CONTROL REQUIREMENT ☑ Maintain weed-free per Item 193.3.1.4. Cord trimmers are not allowed. Replace damaged plants per Item 193.3.2. INVASIVE VINES MUST BE CHEMICALLY TREATED, NOT MANUALLY REMOVED. ☐ Maintain grasses and weeds at 24" maximum height. Eradicate all vines regardless of height, VINES MUST BE CHEMICALLY TREATED, NOT MANUALLY REMOVED. Eradicate invasive shrubs and trees as directed. Method must be either a spot-treatment chemical application such as a wick applicator or manual hand pulling of weeds. Hand-pull previously treated dead plants over 24" tall.		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
193.3.1.5. MOWING, TRIMMING, AND EDGING Mow 6' width around outside edge of planting 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	LAST WEEK OF MARCH, APRIL, MAY, JUNE, JULY, AUGUST, SEPTEMBER AND OCTOBER																																															
193.3.1.6. STAKING, GUYING, AND BRACING OF PLANTS (Remove plant stakes and all appurtenances within last 30 days of this schedule, unless otherwise directed by Engineer)		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
193.3.2. PLANT REPLACEMENT *				✓				✓				✓				✓				✓				✓				✓				✓				✓				✓				✓				✓
193.3.3. VEGETATIVE WATERING (See PLANTING AND ESTABLISHMENT SHEET 1 of 2, VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
193.3.4. IRRIGATION SYSTEM OPERATION AND MAINTENANCE		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
																																									✓							
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)		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓

* Remove any materials damaged by actions described in Item 7.17.
Removal and disposal of damaged materials is incidental to Item 193.

✓ = Work required during defined period of timeline.
All work must be completed for entire project.

NOTES:
1. 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.
2. Any adjustments due to the failure to comply with plans and specifications shown will be at Contractors expense.

CLINT ALLEN KAINER
2606
07/21/2021

NTS

PLANTING AND ESTABLISHMENT

SHEET 3 OF 3

Texas Department of Transportation

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ITEM 100-6001 PREP RIGHT OF WAY

BEGIN ** END

100-6001
PREPARING ROW

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

REQUIREMENTS FOR ALL EXISTING LANDSCAPE AREAS

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

PLANT BED MAINTENANCE
6. MAINTAIN AND/OR RESHAPE PLANT BEDS TO CONFORM TO ORIGINAL INSTALLATION (SEE PLANTING, MAINTENANCE AND ESTABLISHMENT LAYOUT SHEETS) SO THAT THE BED DOES NOT HINDER ROADWAY DRAINAGE, ESPECIALLY BEHIND SLOTTED BARRIER.
7. CHEMICALLY CONTROL WEEDS AND UNDESIRABLE GRASSES IN PLANT BEDS WITH ROUNDUP PROMAX.
   - PERFORM HERBICIDE APPLICATIONS UNDER SUPERVISION OF STATE LICENSED APPLICATOR.

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

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

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

PRUNING AND REMOVALS
13. PRUNE ALL PLANTS OF ANY SIZE, HEIGHT, AND DIAMETER IN THE FOLLOWING CONDITIONS:
   - WITHIN SIGHT CLEARANCE AREAS FOR TRAFFIC AND SIGNAGE, SEE PLANT MAINTENANCE, SHEET 2 AND 3 OF 3 (PRUNING RELATED TO ANY SIGNS APPLY TO EXISTING SIGNS AND ANY NEW SIGNS INSTALLED FOR DURATION OF CONTRACT).
   - WITH VERTICAL CLEARANCE ISSUES OVER ANY ROADWAYS AND ACCESS ROUTES (18' MIN.), 7'-10' WIDTH BED PREP AREA PERIMETER (9' MIN.) AND SIDEWALKS (9' MIN.), SEE PLANT MAINTENANCE SHEET 3 OF 3.
   - PRUNE ALL SUCKER GROWTH AND/OR NEW LIMBS TO MAINTAIN CLEAR TRUNK IN ACCORDANCE WITH PRUNING AND TRIMMING TREES AND SHRUBS, SHEET 1 OF 1, TREE LIMBING detail.
   - PRUNE DEAD, DYING OR DAMAGED BRANCHES/LIMBS (INCLUDES FREEZE AND/OR DROUGHT DAMAGE TO ANY EXISTING PLANT MATERIAL).
14. REMOVE ALL PLANTS OF ANY SIZE, HEIGHT, AND DIAMETER NOT CONFORMING TO PLANT MAINTENANCE, 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. TREAT STUMPS AS DESCRIBED IN NOTE #9.
   - REMOVE ALL VINES FROM TREES AND SHRUBS AND VINES THAT HAVE FALLEN FROM SUPPORT STRUCTURE(S).
   - REMOVE ALL VINES FROM RETAINING AND SOUND WALLS ADJACENT TO PLANTING AREAS UNLESS OTHERWISE NOTED ON PLANS.

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

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

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

CLEAR ZONE (Tree Setbacks)

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

LEANING TREE REMOVAL

REGISTERED LANDSCAPE ARCHITECT
CLINT ALLEN KAINER
2606
STATE OF TEXAS
07/21/2021

PREPARING RIGHT OF WAY

SHEET 1 OF 1

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SITE DESCRIPTION

PROJECT LIMITS: *FROM .2 Miles west of BU 77*
TO .2 Miles east John Stockbauer Drive
LATTITUDE: 32.83260555 LONGITUDE: -97.21613987

PROJECT DESCRIPTION: *Installation of Landscape and Irrigation within right-of-way of LP 463 at BU 77 and John Stockbauer Drive.*

MAJOR SOIL DISTURBING ACTIVITIES: *Major soil disturbing activities may include but are not limited to: Right-of-way preparation for planting beds areas. EOC erossion control mulch will be use in planting areas.*

Storm Water Pollution Prevention Plans (SW3P) are a part of a project's construction plans and the construction plans contain information that supplements a project SW3P; project plans provide information on changes in elevations, the locations where dirt has been removed and where dirt has been added, on construction sequencing and scheduling and other data that may be important to a full understanding of TCEQ storm water requirements and the project SW3P.

TOTAL PROJECT AREA: *Approximately 22 acres.*

TOTAL AREA TO BE DISTURBED: *Approximately 1.54 acres.*

EXISTING CONDITION OF SOIL & VEGETATIVE
COVER AND % OF EXISTING VEGETATIVE COVER: *The existing soils are established brown, loamy, clayey soils that are moderately well drained. Vegetation is uniformally established thick grass covering approximately 75% of the surface area and existing trees to remain covering approximately 15% of the area.*

NAME OF RECEIVING WATERS: *All runoff associated with this project drains into the Guadalupe River stream segment No. 1803, which eventually flows into the San Antonio Bay.*

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- ___ TEMPORARY SEEDING
- ✓ PERMANENT PLANTING, SODDING, OR SEEDING
- ✓ MULCHING
- ___ SOIL RETENTION BLANKET
- ___ BUFFER ZONES
- ___ OTHER

NOTE:

STRUCTURAL PRACTICES:

- ✓ SILT FENCES
- ___ HAY BALES
- ___ SANDBAGS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ ROCK FILTER DAMS
- ___ PAVED FLUMES/RIPRAP
- ___ ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS/BASINS
- ___ GABIONS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- ___ CURBS AND GUTTERS
- ___ STORM SEWERS
- ___ VELOCITY CONTROL DEVICES
- ___ BIODEGRADABLE EROSION CONTROL LOGS

OTHER:

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:
The order of activities will be as follows:

1. *Place necessary SWP3 devices and construction signs provided by the plans at specific work areas being completed.*
2. *Complete proposed construction while ensuring that distrubed areas are contained by SWP3 devices.*
3. *Remove SWP3 devices after construction is completed and ensure all disturbed soil areas are stabilized. Remove construction signs.*

STORM WATER MANAGEMENT: *Install erosion control logs as required by TxDOT project manager and per standard.*

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: *All erosion and sediment controls will be maintained in good working order. If a repair is necessary, it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The areas adjacent to creeks and drainage ways shall have priority followed by devices protecting storm sewer inlets. Sediment must be removed from control measures when the design capacity is reduced by 50 percent. If sediment escapes the construction site, off site accumulation of sediment must be removed at a frequency to minimize off-site impacts.*

INSPECTION: *An inspection will be performed by a TxDOT inspector at least every 7 calendar days. An Inspection and Maintenance Report will be made per each inspection. Based on the inspection results, the controls shall be revised per the inspection report.*

WASTE MATERIALS: *The contractor shall adequately store all construction waste materials to prevent these materials from becoming pollutants and to minimize pollutant discharges from the storage locations. No construction waste material will be buried on site. Litter and construction chemicals shall be properly contained and prevented from becoming a pollutant in storm water discharge.*

Potential pollutants will primarily be from the sediments leaving the project right-of-way. Principal sources of pollution will be disturbed soil from grading, litter and debris from construction activities, routine operations.

The contractor will maintain a clean, orderly construction site. Construction waste including trash, rubble, scrap and vegetation shall be disposed of in lidded dumpsters or in a manner approved by the Project Engineer. Disposal methods must meet Federal, State, and Local waste management guidelines. No construction waste will be buried or burned on site. Spoils disposal, material storage, and material resulting from the destruction of existing roads and structures shall be stored in areas approved by the Project Engineer and protected from runoff. All waterways shall be cleared of temporary embankment, temporary bridges, matting, false work piling, debris, or other obstructions placed during construction operations, that are not part of the finished work, as soon as practicable. All excess soil generated by the construction will be collected and disposed of by the contractor. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, water body, or stream bed.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): *At a minimum, any product in the following categories are considered to be hazardous: Paints, Acids for cleaning masonry surfaces, Cleaning Solvents, Asphalt Products, Chemical Additives for soil stabilization, or Concrete Curing Compounds and additives. In event of a spill which may be hazardous, the Spill Coordinator should be contacted immediately.*

SANITARY WASTE: *All sanitary waste will be collected from the portable units as necessary or as required by local regulation by a licensed sanitary waste management contractor.*

OFFSITE VEHICLE TRACKING:

- ___ HAUL ROADS DAMPENED FOR DUST CONTROL
- ✓ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- ✓ EXCESS DIRT ON ROAD REMOVED DAILY
- ✓ STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS: *Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, waterbody or streambed.*

On and off site project specific locations including borrow pits and equipment staging areas are under the control of the contractor. The contractor will be obligated to comply with the requirements of the construction general permit.

All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.

TxDOT STORM WATER POLLUTION PREVENTION PLAN (SW3P)

Texas Department of Transportation

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Rev: 04/16/13

DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1. City of Victoria

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

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

1.

2.

3.

4.

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

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

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

☐ No Action Required ☒ Required Action

BIRD BMPs

1. Prior to construction, perform daytime surveys for nestsincluding under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.
2. Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season.
3. Avoid the removal of unoccupied, inactive nests, as practicable.
4. Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
5. Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

VI. GENERAL NOTES

THE DEPARTMENT HAS DETERMINED THAT A USACE NATIONWIDE OR INDIVIDUAL PERMIT IS NOT NECESSARY FOR THE PROJECT SINCE ALL WORK SHALL BE CONDUCTED OUTSIDE THE USACE JURISDICTIONAL AREAS. ANY IMPACTS TO THESE JURISDICTIONAL AREAS BY THE CONTRACTOR WITHOUT A USACE PERMIT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. IF THE CONTRACTOR DEEMS IT NECESSARY TO IMPACT THE USACE JURISDICTIONAL AREAS, THEN IT BECOMES THE CONTRACTOR'S ENTIRE RESPONSIBILITY TO CONSULT WITH THE USACE PERTAINING TO THE NEED FOR A NATIONWIDE OR INDIVIDUAL PERMIT. TXDOT WILL THEN HOLD THE CONTRACTOR RESPONSIBLE FOR FOLLOWING ALL CONDITIONS OF THE APPROVED PERMIT.

LIST OF ABBREVIATIONS

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

VII. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:

* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

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

☐ Yes ☒ No

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

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

☐ Yes ☐ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VIII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS	2350	01	070	LP 463	
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.	
05-07-14 ADDED NOTE SECTION IV.	YKM	VICTORIA		48	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.					