INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SUPPLEMENTAL INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO. F 2022(028)

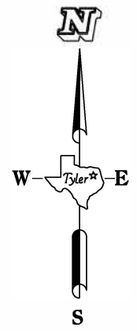
SMITH COUNTY
VA

VARIOUS LOCATIONS IN WHITEHOUSE

FOR THE CONSTRUCTION OF LANDSCAPE AND SCENIC ENHANCEMENT

CONSISTING OF LANDSCAPE DEVELOPMENT

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	F 2022(028)		1
STATE	DIST.	COUNTY	
TEXAS	TYLER	SMITH	
CONT.	SECT.	JOB	HIGHWAY NO.
0910	16	169	VA

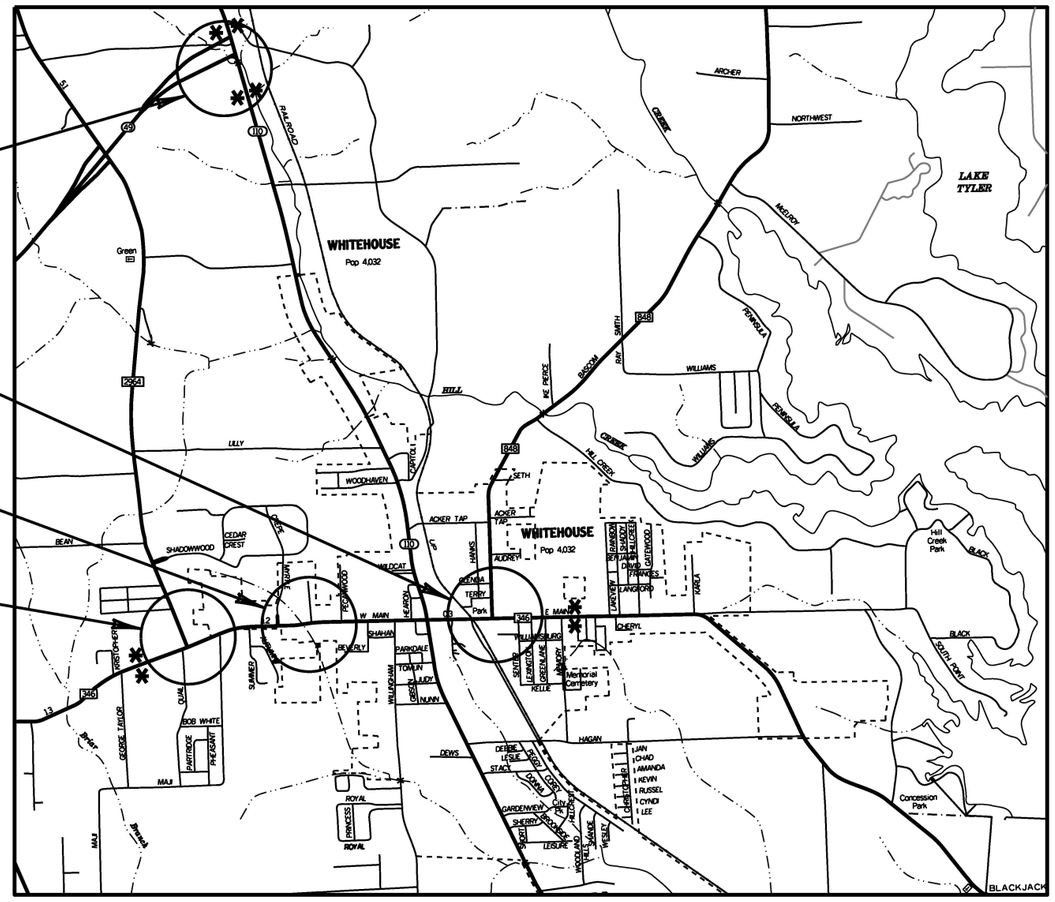


PROJECT LOCATION A
SH 110 at TOLL 49

PROJECT LOCATION D
FM 346 at FM 848

PROJECT LOCATION C
FM 346 near PECANWOOD

PROJECT LOCATION B
FM 346 at FM 2964



N. T. S.

NO R.R. CROSSINGS
NO EQUATIONS
NO EXCEPTIONS

✱ SIGN IN ACCORDANCE WITH STANDARD BC SHEETS AND PART 6 OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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 CONSTRUCTION PROJECTS (FORM FHWA 1273, MAY 1, 2012)

COUNTY SMITH PROJ. NO.
HWY. NO. VA LETTING DATE SEPTEMBER 2021
DATE ACCEPTED

FINAL PLANS

DATE CONTRACT LETTING: _____
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK COMPLETED & ACCEPTED: _____
CONTRACTOR: _____
USED ____ OF ____ ALLOTTED DAYS _____
FINAL CONTRACT COST : $ _____

FINAL AS BUILT PLANS

THE CONSTRUCTION WAS PERFORMED UNDER MY SUPERVISION IN ACCORDANCE WITH THE PLANS AND CONTRACT

DATE _____ AREA ENGINEER _____

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING: 6/28/2021

DocuSigned by: Gilbert Arteaga
DISTRICT DESIGN ENGINEER

APPROVED FOR LETTING: 6/28/2021

DocuSigned by: Simon M. Hill
DISTRICT ENGINEER

SUPPLEMENTAL INDEX OF SHEETS

REGISTERED LANDSCAPE ARCHITECT
JAMES L. GODWIN, JR.
3224
STATE OF TEXAS

07/21/2021

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

SUPPLEMENTAL INDEX OF SHEETS

 Texas Department of Transportation

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		2
STATE	DISTRICT	COUNTY	
TEXAS	TYL	SMITH	
CONTROL	SECTION	JOB	HIGHWAY NO.
0910	16	169	VA

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

PROJECT SPECIFIC NOTES:

Sweep within the project. Keep roadways and sidewalks free of sediment.

Construct all ramps, sidewalks, steps, curb ramps, handrails, pedestrian push buttons, and other pedestrian elements in accordance with Texas Accessibility Standards (TAS) issued by the Texas Department of Licensing and Regulation. Maintain one copy of TAS at the project site at all times.

GENERAL NOTES:

GENERAL.

Contractor questions on this project are to be addressed to the following individuals:

Paul D. Schneider, P.E. Paul.Schneider@txdot.gov

Travis Singleton, P.E. Travis.Singleton@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.

ITEM 4. SCOPE OF WORK

Preserve the integrity of all right of way monuments within project limits. Right of way monuments damaged or destroyed during construction must be replaced by a registered professional land surveyor (RPLS), at the Contractor's expense.

ITEM 5. CONTROL OF THE WORK

If utility lines need adjustments during construction operations, modify operations and continue the work in a manner that will allow others to make the utility adjustments. Additional working time may be allowed for delays caused by these utility adjustments.

Project Number: **Sheet 3**

County: Smith **Control:** 0910-16-169

Highway: VA

Utility locations shown on the plans are approximate. Contact TxDOT Tyler District for utility locates. Contact utilities in accordance with Article 5.6, "Cooperating With Utilities."

ITEM 7. LEGAL RELATIONS AND RESPONSIBILITIES

Concrete truck drivers and concrete pump operators are required to wash out only in designated areas specifically constructed for eliminating run-off. Dispose of materials in accordance with federal, state, and local requirements.

Maintain positive drainage for permanent and temporary work for the duration of the project. The Contractor will be responsible for any items associated with the temporary or interim drainage and all related maintenance. This work will be subsidiary to various bid items.

The total disturbed area for this project is 0.9 acres. The disturbed area in this project and the Contractor Project Specific Locations (PSL's) within 1 mile of the project limits for the Contract will further establish the authorization requirements for storm water discharges. 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. Obtain any required authorization from the TCEQ for any Contractor PSL for construction support activities on or off the ROW. When the total area disturbed for all projects in the Contract and PSLs within 1 mile of the project limits exceed 5 acres, before disturbance, provide a copy of the Contractor NOI for PSLs on the ROW and within 1 mile of the project limits to the Engineer and to any local government that operates a Municipal Separate Storm Sewer System (MSSS).

No significant traffic generator events identified.

ITEM 8. PROSECUTION AND PROGRESS

Prepare the progress schedule as a bar chart.

ITEM 9. MEASUREMENT & PAYMENT

In accordance with Article 9.1, "Measurement of Quantities," furnish the tare and maximum gross weights as well as the volume capacity of all vehicles, trucks, truck-tractors, trailers, semi-trailers, or combination of such vehicles used to deliver materials for this Contract. Also, furnish calculations supporting these weights and capacities. Provide all measurements required for pay a minimum of 2 days before the trucks are used.

ITEM 104. REMOVING CONCRETE

Blasting will not be permitted on this project.

ITEM 162. SODDING FOR EROSION CONTROL

Use Cynodon dactylon (Bermudagrass) or established adjacent species for block sod.

Blade and rake smooth the area before laying block sod. Refer to the plans and details for areas to receive the sod. Remove 1 in. of soil along paved edges and curb lines before laying sod and dress the slope to match all exposed edges after placing the sod. Fertilize the ground with a slow-release homogeneous coated fertilizer at a rate of 1 lb. per 9 sq. yd. before installation of the sod.

ITEM 166. FERTILIZER

Place fertilizer at the rate of 1 lb. per 9 sq. yd. on areas prepared for block sod.

ITEM 168. VEGETATIVE WATERING

Apply water to all newly placed sod or seeded areas the same day of installation. Maintain the sod or seeded areas in a completely watered condition. Do not allow sod or seeded areas to dry out so that water stress is evident.

ITEM 421. HYDRAULIC CEMENT CONCRETE

The Engineer will provide strength-testing equipment.

Air is not required on concrete cast-in-place elements on this project. If the Contractor proposes the use of an existing concrete design containing air, the Engineer must approve the design in writing prior to placement. If utilized, air testing will be performed in accordance with the specifications.

ITEM 432. RIPRAP

Locations and quantities may be varied as directed by the Engineer to accommodate field conditions.

ITEM 502. BARRICADES, SIGNS, AND TRAFFIC HANDLING

The traffic control plan for this Contract consists of: the installation and maintenance of warning signs and other traffic control devices shown on the plans; specification data, which may be included in the general notes; applicable provisions of the Texas Manual on Uniform Traffic Control Devices (TMUTCD); traffic control plan sheets included on the plans; standard BC sheets; Compliant Work Zone Traffic Control Device List, and Item 502 of the standard specifications.

Project Number: **Sheet 3A**

County: Smith **Control:** 0910-16-169

Highway: VA

Inspect and correct deficiencies each day throughout the duration of the Contract.

Provide at least one employee on call nights and weekends (or any other time that work is not in progress) for maintenance of signs and traffic control devices. This employee must have an address and telephone number near the project, as approved. Notify the Engineer in writing of the name, address, and telephone number of this employee. The Engineer will furnish this information to local law enforcement officials.

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee available to respond on the project for emergencies and for taking corrective measures within 30 minutes.

Sign all roads intersecting the project in accordance with current BC standards.

Refer to the traffic control plan sheets for traffic handling through the work area. Contractor may vary the signing arrangement and spacing as necessary to fit field conditions; however, any proposed changes in the traffic control plan must be approved before implementation.

When the sequence of work is shown on the plans, the Contractor may submit an alternate proposal for approval. Submit in writing all proposed variations and revisions.

High-visibility safety apparel is required for workers in accordance with the General Notes on current BC standards.

Place and maintain signs, channelizing devices, and flaggers to direct and route traffic at any location and for any period of time as may be required or directed.

When operations require a lane closure, provide cones, vertical panels, drums, signs, flaggers, and flashing arrow panels as necessary to route traffic around the closed lane as shown on the plans and as directed. Lane closures will be limited to one specific lane as directed.

Unless otherwise approved, lane closures for minor or major construction operations will not be allowed on Good Friday, Easter weekend, Memorial Day, Memorial Day weekend, July 4th, Labor Day, Labor Day weekend, Thanksgiving Day thru Sunday, Christmas Eve, Christmas Day, New Year's Eve, New Year's Day, or on any other high traffic days or holidays as determined.

Maintain existing roadside signs within this project's limits during this Contract. In order to accommodate the grading or other operations, temporarily relocate these signs in accordance with the TMUTCD as directed. This work will not be paid for directly, but will be subsidiary to Item 502.

Provide truck-mounted attenuators (TMA) as shown on the appropriate traffic control plan sheets. Provide a letter certifying that all TMA used on this project meet NCHRP 350 or AASHTO Manual for Assessing Safety Hardware (MASH) requirements.

Regulate all construction activities and equipment to minimize inconvenience to the traveling public. At points where it is necessary for trucks to stop, load, or unload, provide warning signs and flaggers to protect the traveling public.

The pavement must be entirely open to traffic each night. Remove or clearly barricade all material stockpiles, equipment left overnight, or any obstruction within 30 ft. of a travelway as approved.

The Contractor Force Account "Safety Contingency" is intended to be used for work zone enhancements that could not be foreseen in the project planning and design stage for the purpose of improving the effectiveness of the Traffic Control Plan. 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.

Prior to beginning work, the Contractor and Engineer must agree on the allowable length of lane closure.

All work required by these general notes, except as provided for by Item 502, will not be paid for directly, but will be subsidiary to Item 502 unless otherwise shown on the plans.

ITEM 506. TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS

Place countermeasures only after approved by the Engineer.

Remove dirt, silt, rocks, debris, and other foreign matter that accumulates in all structures due to project erosion and Contractor's operations. Keep stream channels open at all times. This work will not be paid for directly, but will be subsidiary to this Item.

ITEM 531. SIDEWALKS

An air-entraining admixture is not required.

Proposed curb ramps, sidewalks, curbs, and riprap should be doweled 8 in. minimum into existing, using 1/2 in. reinforcement placed on 12 in. centers.

Areas labeled with a "T" on the construction drawings allow the Contractor to transition to existing conditions. Slope and grade of all transitions must be approved by the Engineer.

Project Number: **Sheet 3B**

County: Smith **Control:** 0910-16-169

Highway: VA

The curb ramp locations shown on the plans have taken into account the geometric features of the intersection, traffic signals, and the pavement markings. If anything changes during construction, the location of curb ramps must be adjusted to ensure they meet TAS requirements.

Any approval, inspection, or checking of the Contractor's layout by the Engineer and the acceptance of all or any part of it will not relieve the Contractor of his responsibility to secure the proper dimensions, grades and elevations of the various parts of the work.

Construction of each curb ramp must be completed within seven (7) working days after start of construction process. Construction process of curb ramps should include: demolition of existing conditions, placement of concrete or brick, removal of lips, street surface patching in front of the curb or ramp, adjustment of counter slope within 24 in. of the bottom of the ramp or curb and gutter, street level landings, backfill, placement of topsoil, grading and sodding, and clean-up. All other related work such as adjustment of crosswalk, special heat-welds, asphalt overlays, and other work that does not affect accessibility must be completed per a schedule pre-approved by the Engineer.

ITEM 6185. TRUCK MOUNTED ATTENUATOR (TMA)

Shadow vehicles with truck mounted attenuator (TMA) are required on the traffic control plan and TCP standards for this project. The Contractor will be responsible for determining if one or more of these traffic control operations will be ongoing at the same time to determine the total number of TMAs needed for the project. Additional truck mounted attenuators (TMAs) may be required as deemed necessary by the Engineer.

ESTIMATE & QUANTITY SHEET

CONTROLLING PROJECT ID 0910-16-169 **DISTRICT** Tyler **COUNTY** Smith
HIGHWAY Various

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0910-16-169**			
		PROJECT ID		**A00180101**			
		COUNTY		**Smith**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	104-6021	REMOVING CONC (CURB)	LF	30.000		30.000	
	162-6002	BLOCK SODDING	SY	145.000		145.000	
	168-6001	VEGETATIVE WATERING	MG	5.000		5.000	
	170-6002	IRRIGATION SYSTEM (TY I)	LS	1.000		1.000	
	170-6003	IRRIGATION SYSTEM (TY II)	LS	1.000		1.000	
	170-6004	IRRIGATION SYSTEM (TY III)	LS	1.000		1.000	
	170-6005	IRRIGATION SYSTEM (TY IV)	LS	1.000		1.000	
	192-6002	PLANT MATERIAL (1-GAL)	EA	140.000		140.000	
	192-6004	PLANT MATERIAL (5-GAL)	EA	22.000		22.000	
	192-6015	LANDSCAPE EDGE	LF	446.000		446.000	
	192-6016	PLANT BED PREPARATION	SY	255.000		255.000	
	192-6024	PLANT MATERIAL (30 GAL) (TREE)	EA	18.000		18.000	
	192-6025	PLANT MATERIAL (45 GAL) (TREE)	EA	16.000		16.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	5.000		5.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	200.000		200.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	200.000		200.000	
	529-6002	CONC CURB (TY II)	LF	30.000		30.000	
	531-6001	CONC SIDEWALKS (4")	SY	14.000		14.000	
	531-6003	CONC SIDEWALKS (6")	SY	74.000		74.000	
	531-6035	CURB RAMPS	SY	22.000		22.000	
	624-6009	GROUND BOX TY D (162922)	EA	2.000		2.000	
	624-6028	REMOVE GROUND BOX	EA	2.000		2.000	
	668-6018	PREFAB PAV MRK TY B (W)(24")(SLD)	LF	15.000		15.000	
	668-6074	PREFAB PAV MRK TY C (W) (12") (SLD)	LF	161.000		161.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF	175.000		175.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	19.000		19.000	
	1002-6002	LANDSCAPE AMENITY (TY 1)	EA	2.000		2.000	
	1002-6003	LANDSCAPE AMENITY (TY 2)	EA	1.000		1.000	
	6185-6002	TMA (STATIONARY)	DAY	20.000		20.000	
	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	

ESTIMATE & QUANTITY SHEET

SUMMARY OF QUANTITIES

ITEM NUMBER	104	162	168	170	170	170	170	192	192	192	192	192	192	506	506	529	531
	6021	6002	6001	6002	6003	6004	6005	6002	6004	6015	6016	6024	6025	6040	6043	6002	6001
DESCRIPTION	REMOVING CONC (CURB)	BLOCK SODDING	VEGETATIVE WATERING	IRRIGATION SYSTEM (TY I)	IRRIGATION SYSTEM (TY II)	IRRIGATION SYSTEM (TY III)	IRRIGATION SYSTEM (TY IV)	PLANT MATERIAL (1-GAL)	PLANT MATERIAL (5-GAL)	LANDSCAPE EDGE	PLANT BED PREPARATION	PLANT MATERIAL (30 GAL) (TREE)	PLANT MATERIAL (45 GAL) (TREE)	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)	CONC CURB (TY II)	CONC SIDEWALKS (4")
UNITS	LF	SY	MG	LS	LS	LS	LS	EA	EA	LF	SY	EA	EA	LF	LF	LF	SY
SHEET TOTALS	**30**	**145**	**5**	**1**	**1**	**1**	**1**	**140**	**22**	**446**	**255**	**18**	**16**	**200**	**200**	**30**	**14**

SUMMARY OF QUANTITIES

ITEM NUMBER	531	531	624	624	668	668	677	677	1002	1002	6185
	6003	6035	6009	6028	6018	6074	6005	6007	6002	6003	6002
DESCRIPTION	CONC SIDEWALKS (6")	CURB RAMPS	GROUND BOX TY D (162922)	REMOVE GROUND BOX	PREFAB PAV MRK TY B (W)(24")(SLD)	PREFAB PAV MRK TY C (W) (12") (SLD)	ELIM EXT PAV MRK & MRKS (12")	ELIM EXT PAV MRK & MRKS (24")	LANDSCAPE AMENITY (TY 1)	LANDSCAPE AMENITY (TY 2)	TMA (STATIONARY)
UNITS	SY	SY	EA	EA	LF	LF	LF	LF	EA	EA	DAY
SHEET TOTALS	**74**	**22**	**2**	**2**	**15**	**161**	**175**	**19**	**2**	**1**	**20**

BASIS OF ESTIMATE

ITEM NUMBER	DESCRIPTION	RATE	QUANTITY	TOTAL	UNIT
500-6001	MOBILIZATION	LUMP SUM	1	1	LS
502-6001	BARRICADES, SIGNS, & TRAFFIC HANDLING	MONTH	5	5	MO
166 **	FERTILIZER	1 LB /9 SY	16	16	LB

** SUBSIDIARY TO ITEM 162

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SUMMARY OF QUANTITIES

Texas Department of Transportation

SHEET 1 OF 2

CONT	SECT	JOB	HWY
0910	16	169	VA
DISTRICT	COUNTY		SHEET
TYL	Smith		5

PLAN SHEET SUMMARY OF QUANTITIES

SHEET NUMBER	LOCATION	104 6021 REMOVING CONC (CURB) LF	162 6002 BLOCK SODDING SY	170 6002 IRRIGATION SYSTEM (TY I) LS	170 6003 IRRIGATION SYSTEM (TY II) LS	170 6004 IRRIGATION SYSTEM (TY III) LS	170 6005 IRRIGATION SYSTEM (TY IV) LS	192 6002 PLANT MATERIAL (1 GAL) EA	192 6004 PLANT MATERIAL (5 GAL) EA	192 6015 LANDSCAPE EDGE LF	192 6016 PLANT BED PREPARATION SY	192 6024 PLANT MATERIAL (30 GAL) (TREE) EA	192 6025 PLANT MATERIAL (45 GAL) (TREE) EA	529 6002 CONC CURB (TY II) LF
21	SH 110 @ TOLL 49 LAYOUT PLAN									184				
22	SH 110 @ TOLL 49 PLANTING PLAN		66					47			140	5	3	
23	SH 110 @ TOLL 49 IRRIGATION PLAN			1										
24	FM 346 @ FM 2964 LAYOUT PLAN									154				
25	FM 346 @ FM 2964 PLANTING PLAN		39					51	6		75	7		
26	FM 346 @ FM 2964 IRRIGATION PLAN				1									
27	FM 346 @ FM 2288 to PECANWOOD PLANTING PLAN											6	3	
28	FM 346 @ FM 2288 to PECANWOOD IRRIGATION PLAN					1								
29	FM 346 @ FM 848 PLANTING PLAN		40					42	16	108	40		10	
30	FM 346 @ FM 848 IRRIGATION PLAN						1							
37	LANDSCAPE AMENTITY PLAN													
40	FM 346 at FM 848	30												30
	SHEET TOTALS	**30**	**145**	**1**	**1**	**1**	**1**	**140**	**22**	**446**	**255**	**18**	**16**	**30**

PLAN SHEET SUMMARY OF QUANTITIES

SHEET NUMBER	LOCATION	531 6001 CONC SIDEWALKS (4") SY	531 6003 CONC SIDEWALKS (6") SY	531 6035 CURB RAMPS SY	624 6009 GROUND BOX TY D (162922) EA	624 6028 REMOVE GROUND BOX EA	668 6018 PREFAB PAV MRK TY B (W)(24")(SLD) LF	668 6074 PREFAB PAV MRK TY C (W) (12") (SLD) LF	677 6005 ELIM EXT PAV MRK & MRKS (12") LF	677 6007 ELIM EXT PAV MRK & MRKS (24") LF	1002 6002 LANDSCAPE AMENITY (TY 1) EA	1002 6003 LANDSCAPE AMENITY (TY 2) EA
21	SH 110 @ TOLL 49 LAYOUT PLAN											
22	SH 110 @ TOLL 49 PLANTING PLAN											
23	SH 110 @ TOLL 49 IRRIGATION PLAN											
24	FM 346 @ FM 2964 LAYOUT PLAN											
25	FM 346 @ FM 2964 PLANTING PLAN											
26	FM 346 @ FM 2964 IRRIGATION PLAN											
27	FM 346 @ FM 2288 to PECANWOOD PLANTING PLAN											
28	FM 346 @ FM 2288 to PECANWOOD IRRIGATION PLAN											
29	FM 346 @ FM 848 PLANTING PLAN											
30	FM 346 @ FM 848 IRRIGATION PLAN											
37	LANDSCAPE AMENTITY PLAN	14									2	1
40	FM 346 at FM 848		74	22	2	2	15	161	175	19		
	SHEET TOTALS	**14**	**74**	**22**	**2**	**2**	**15**	**161**	**175**	**19**	**2**	**1**

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SUMMARY OF QUANTITIES

Texas Department of Transportation

SHEET 2 OF 2

CONT	SECT	JOB	HWY
0910	16	169	VA
DISTRICT	COUNTY		SHEET
TYL	Smith		5A

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.

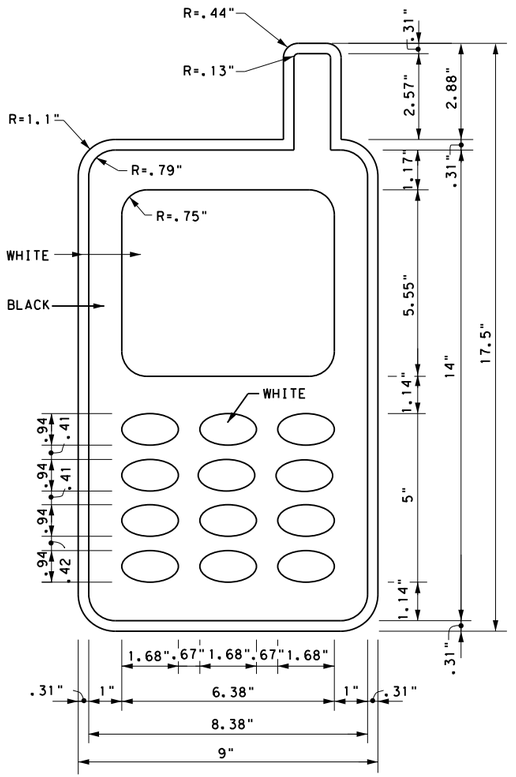
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

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
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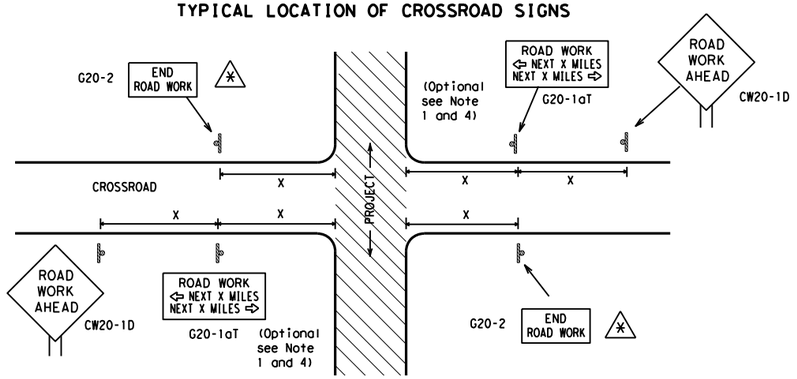
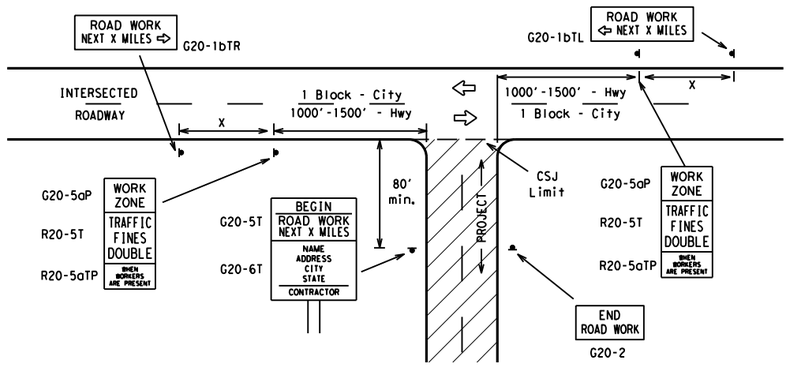
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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]

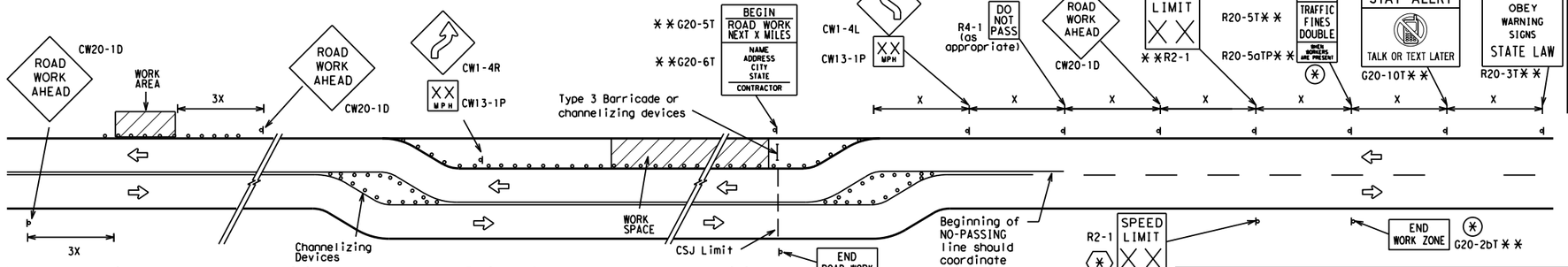
✱ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

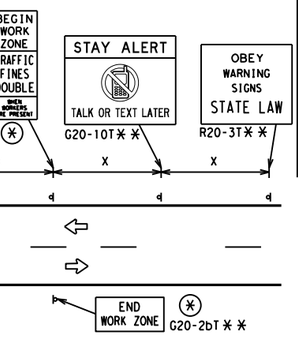
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may 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

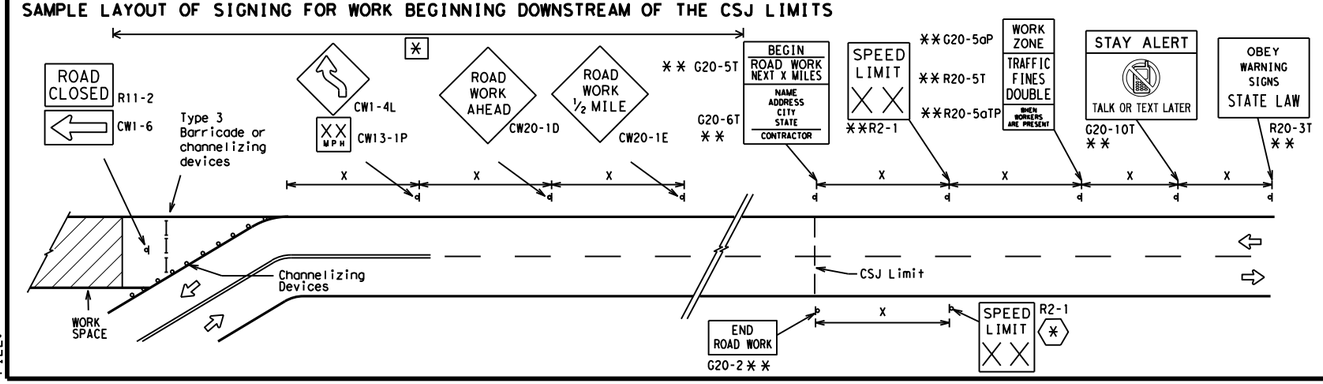


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)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

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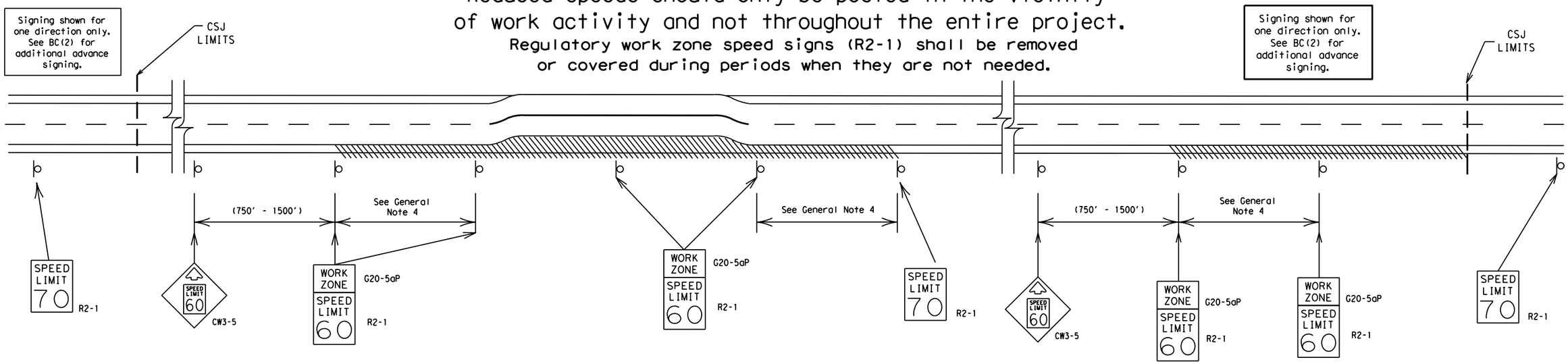
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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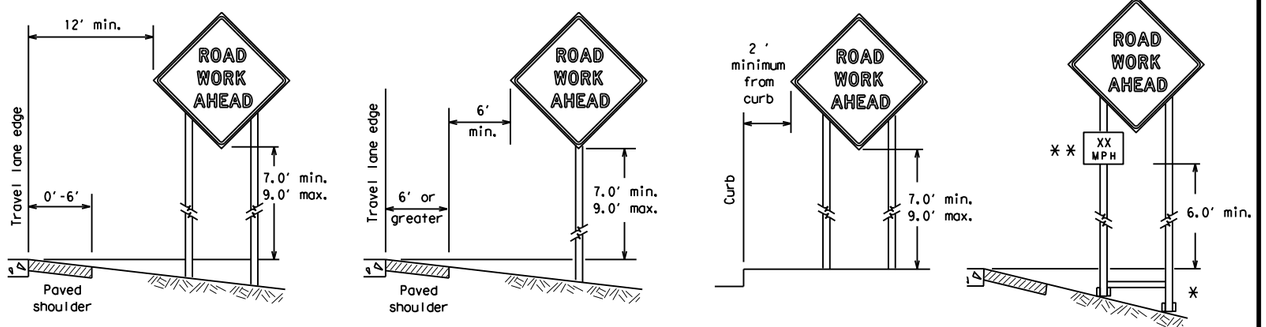
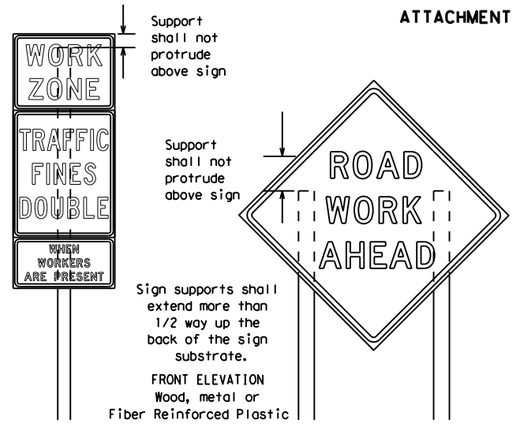
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

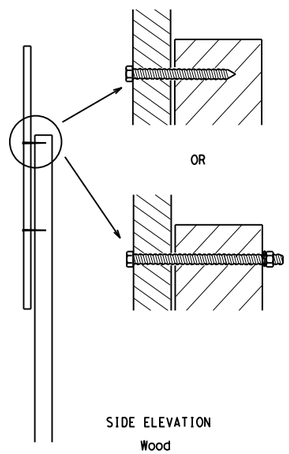


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





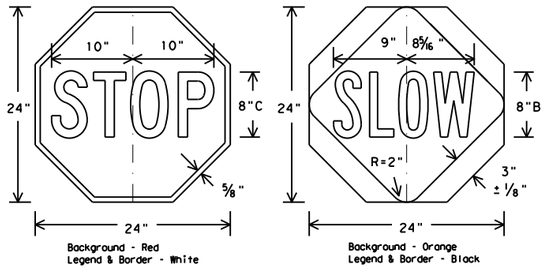
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the 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.

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

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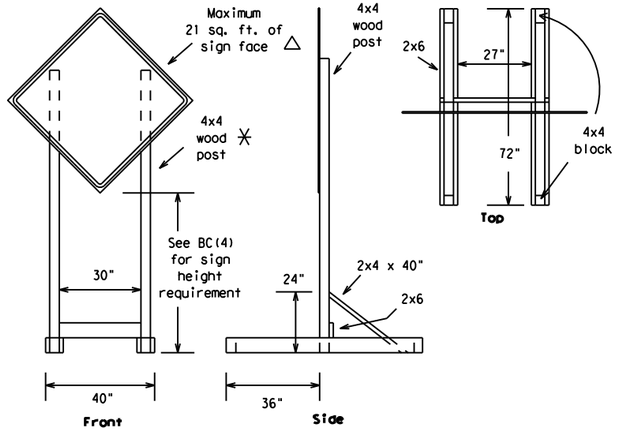
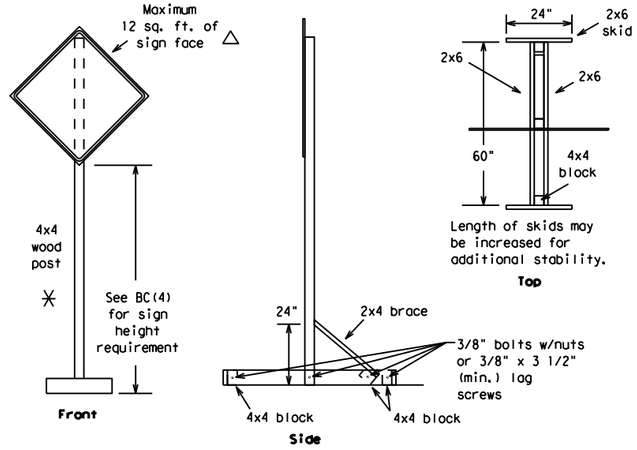
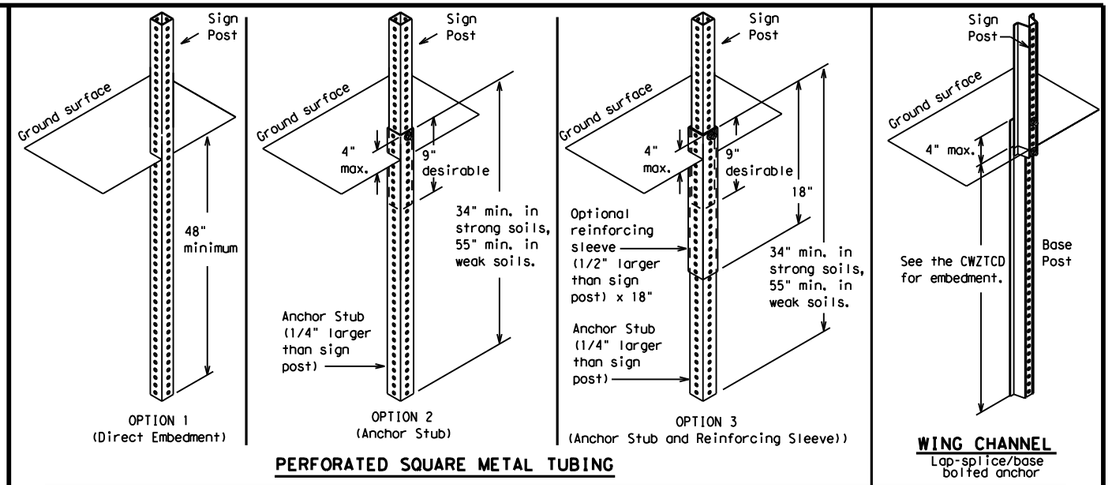




SKID MOUNTED WOOD SIGN SUPPORTS

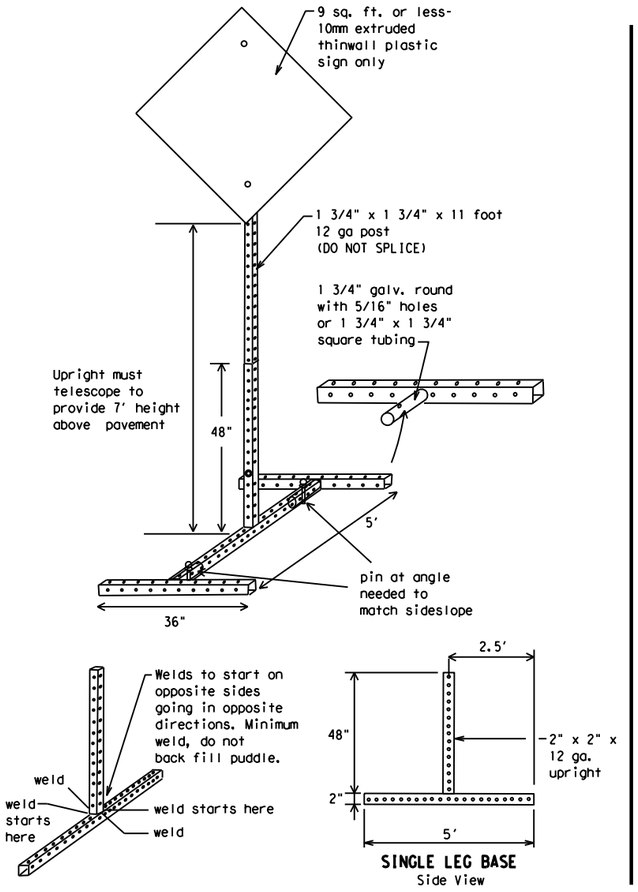
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

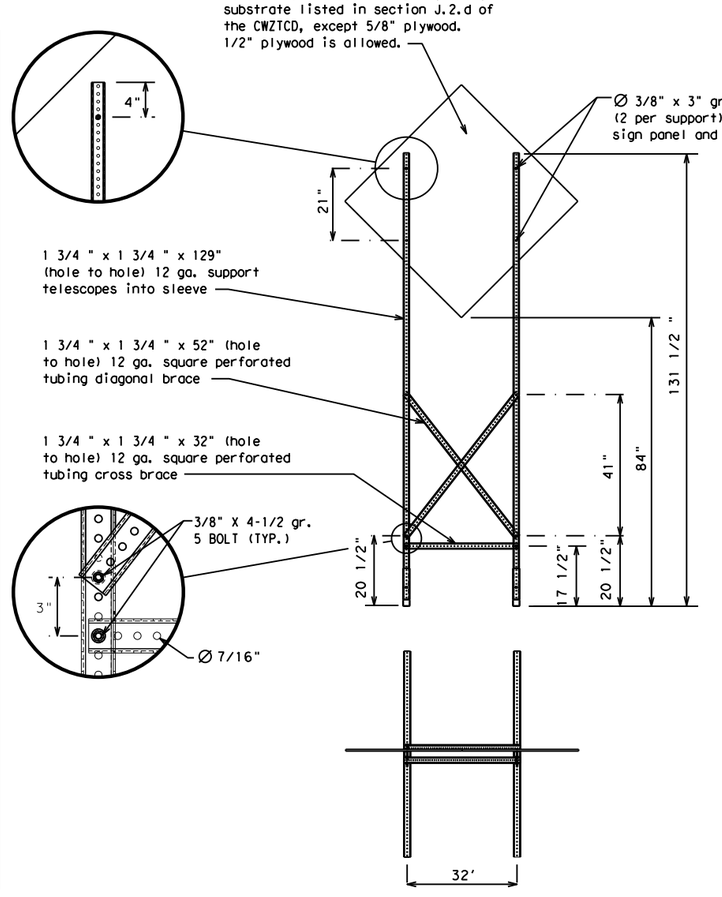


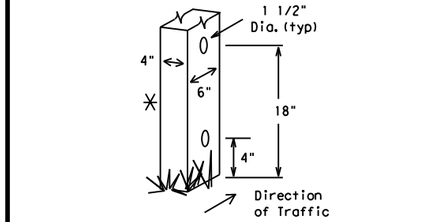
PERFORATED SQUARE METAL TUBING

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.

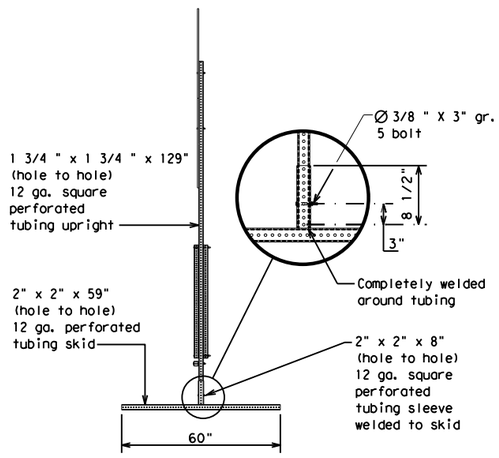






Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

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.

Texas Department of Transportation — Traffic Operations Division Standard

SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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

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

** 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

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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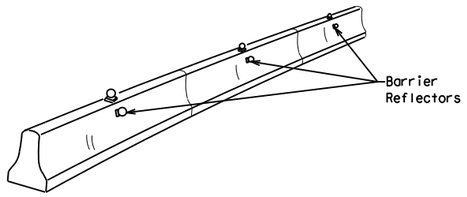
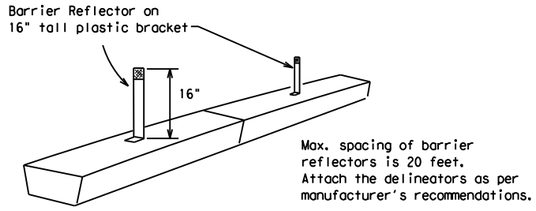
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

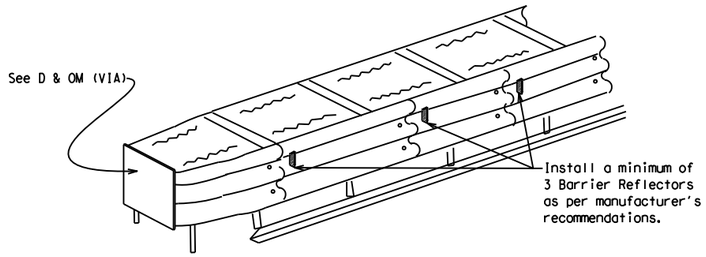


CONCRETE TRAFFIC BARRIER (CTB)

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)

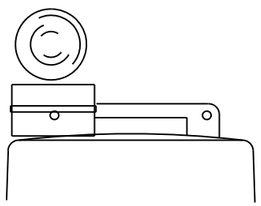


DELINEATION OF END TREATMENTS

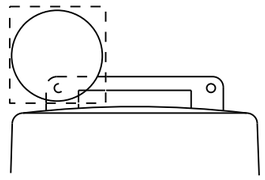
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

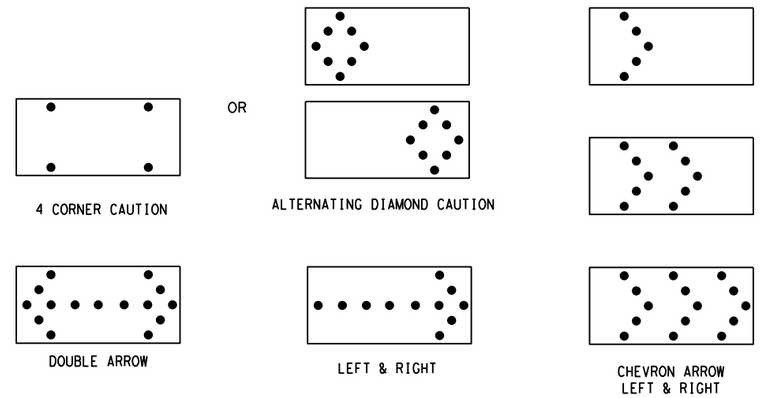
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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.

Texas Department of Transportation

Traffic Operations Division Standard

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 9-07 8-14 7-13	0910	16	169	VA
	DIST	COUNTY		SHEET NO.
	TYL	SMITH		12

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DATE:
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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:

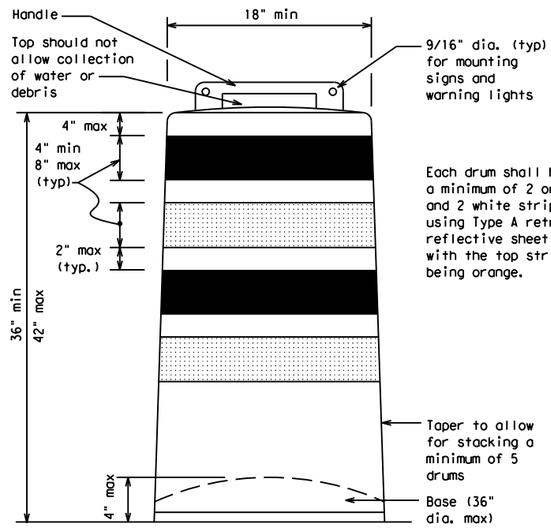
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

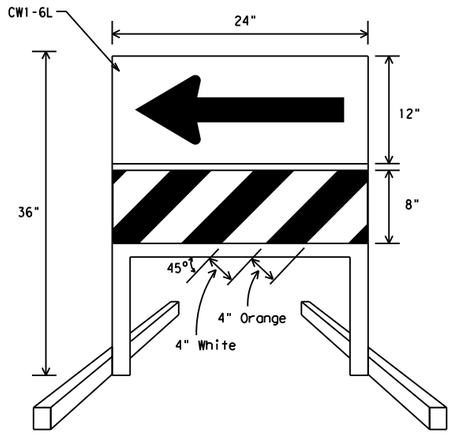
RETROREFLECTIVE SHEETING

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

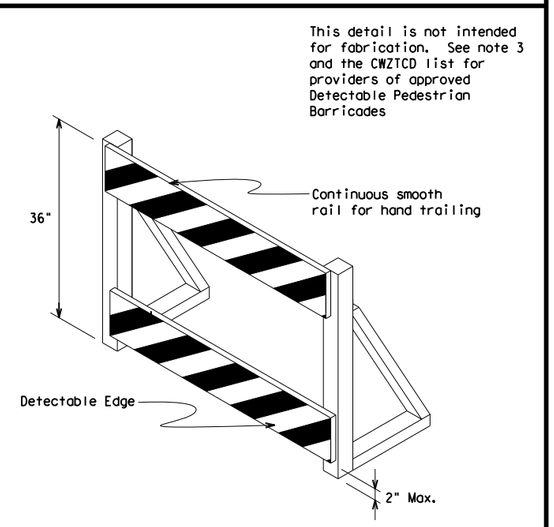
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other 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.





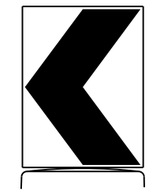
DIRECTION INDICATOR BARRICADE

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.

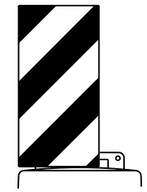


DETECTABLE PEDESTRIAN BARRICADES

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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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

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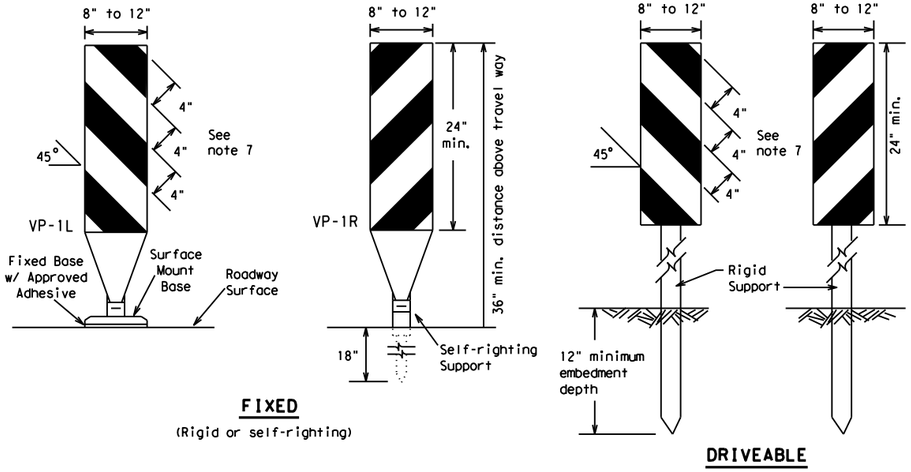
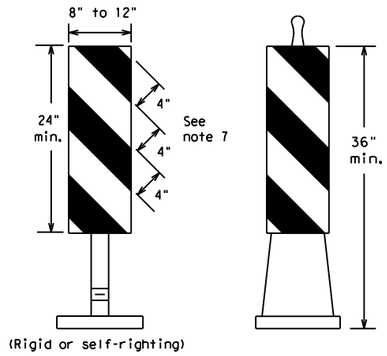


FIXED
(Rigid or self-righting)

DRIVEABLE

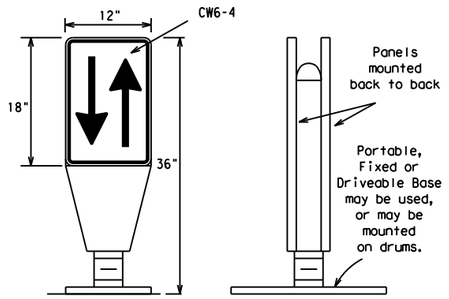


(Rigid or self-righting)

PORTABLE

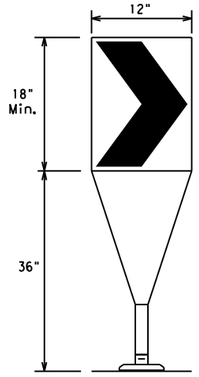
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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)



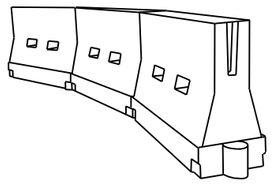
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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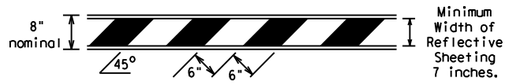
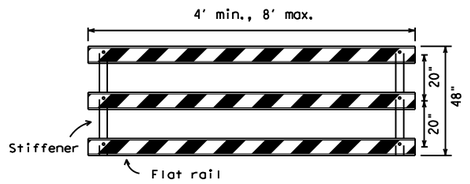
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



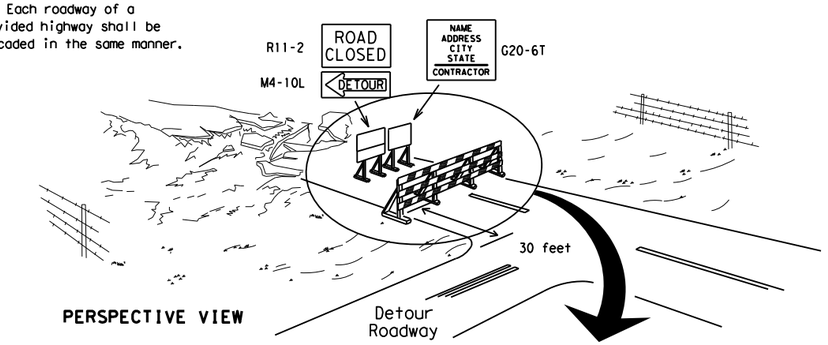
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

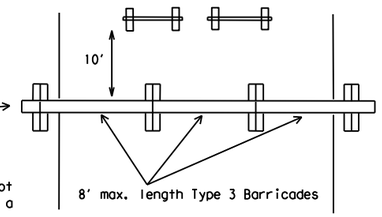
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

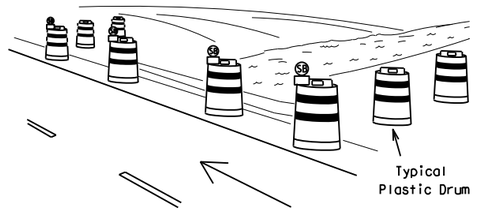
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

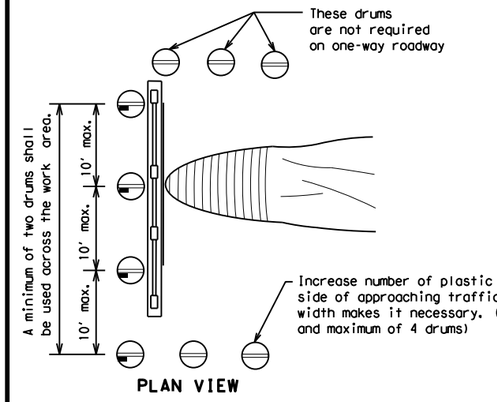
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

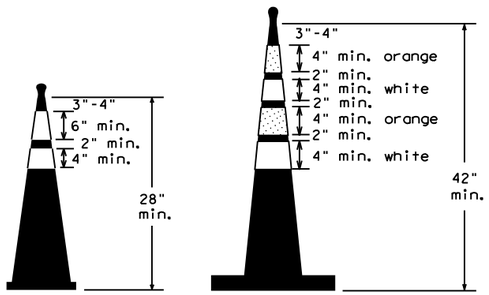
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



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

PLAN VIEW

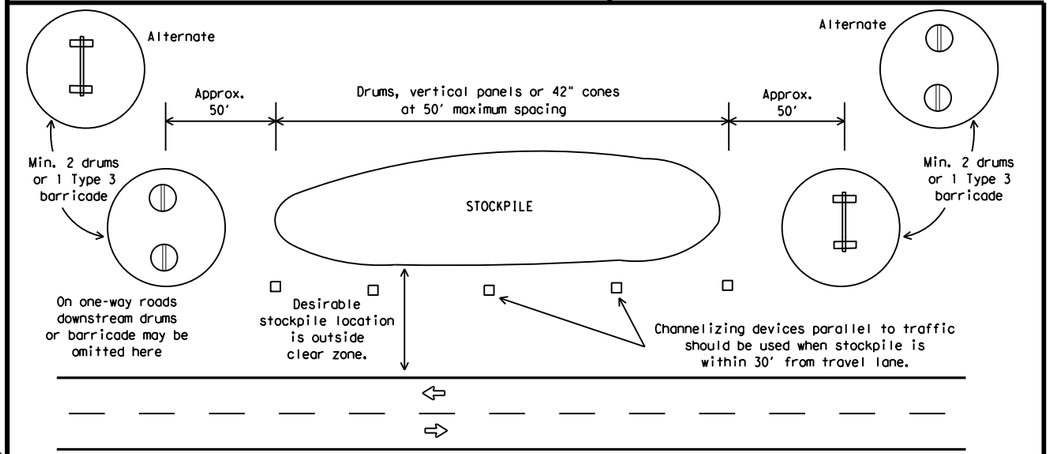
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

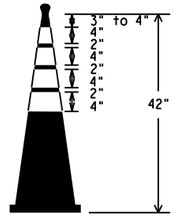
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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.

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BC(10)-14

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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.

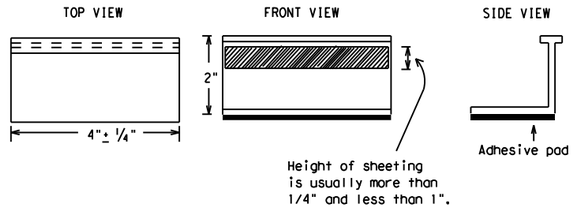
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

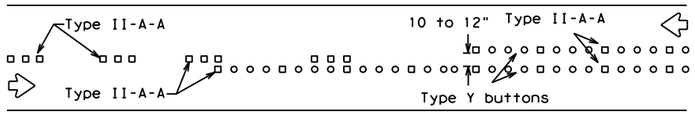
BC(11)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0910	16	169	VA
2-98 9-07	DIST	COUNTY		SHEET NO.
1-02 7-13	TYL	SMITH		16
11-02 8-14				

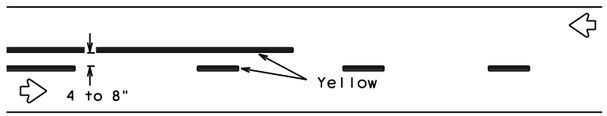
DATE:
FILE:

PAVEMENT MARKING PATTERNS

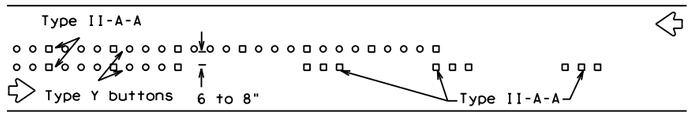
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



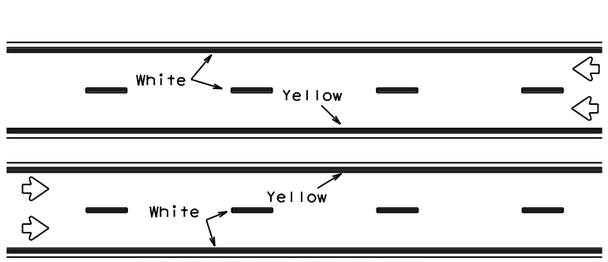
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



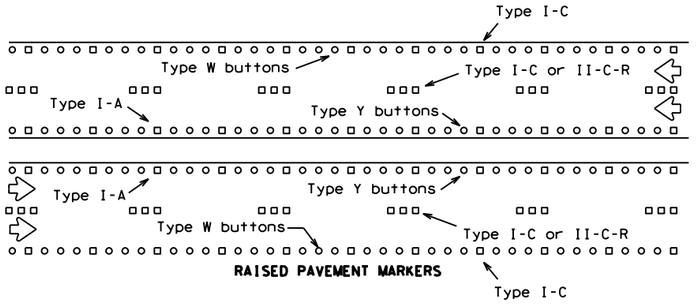
RAISED PAVEMENT MARKERS - PATTERN B

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



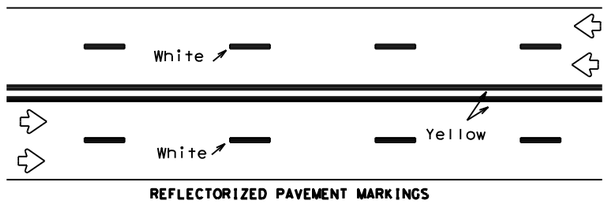
REFLECTORIZED PAVEMENT MARKINGS



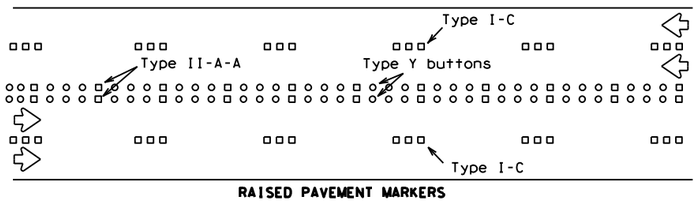
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



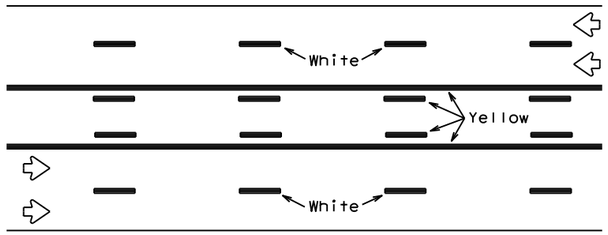
REFLECTORIZED PAVEMENT MARKINGS



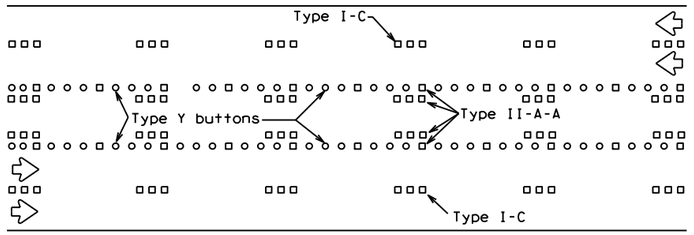
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

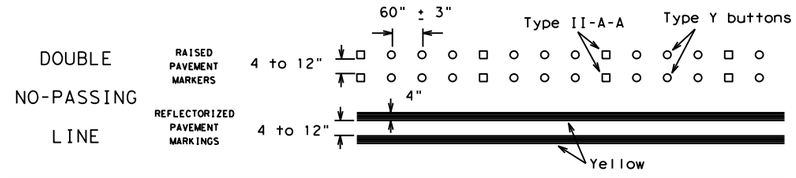
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

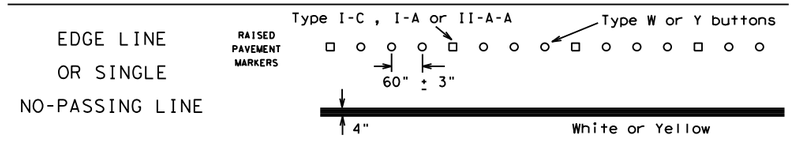
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

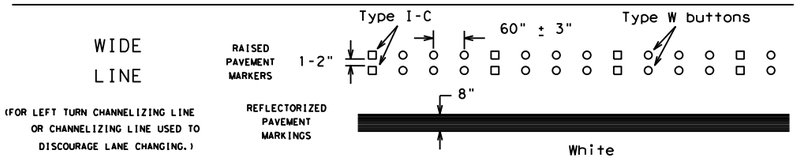


EDGE LINE OR SINGLE NO-PASSING LINE



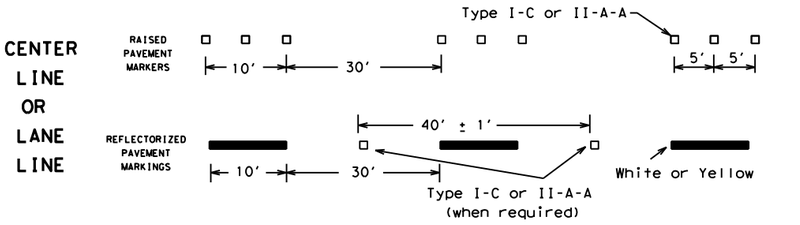
WIDE LINE

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

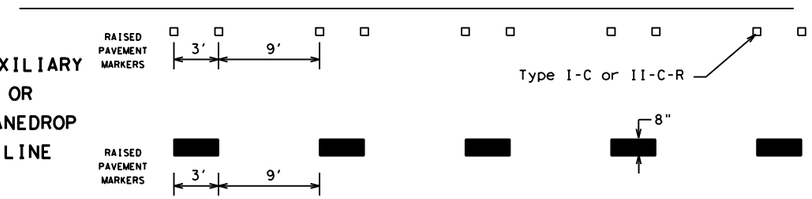


BROKEN LINES

CENTER LINE OR LANE LINE

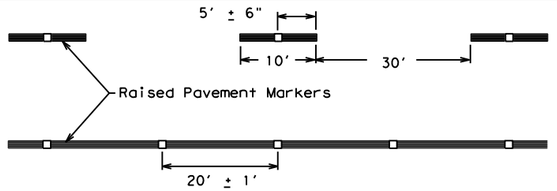


AUXILIARY OR LANEDROP LINE



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	0910	16	169	VA
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2-98 7-13	TYL	SMITH		17
11-02 8-14				

DATE:
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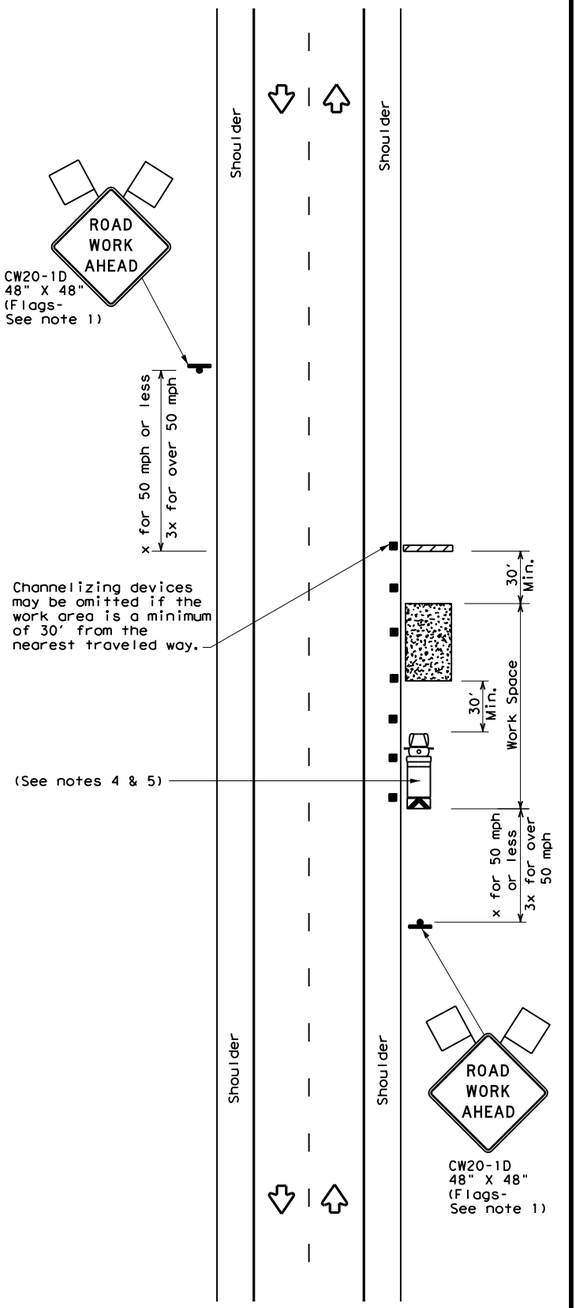
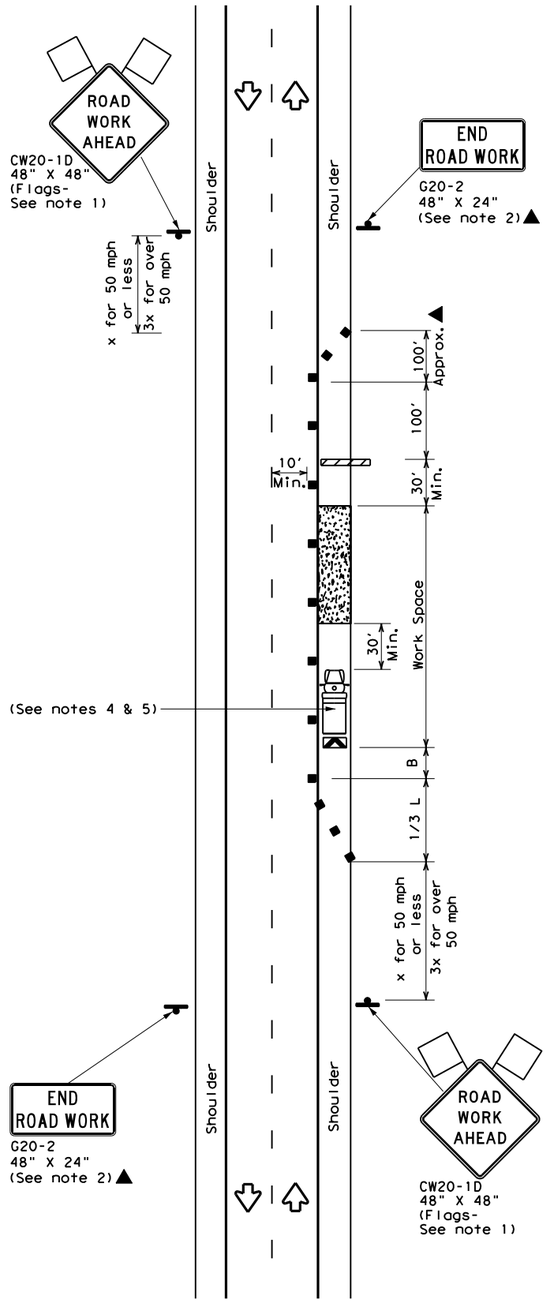


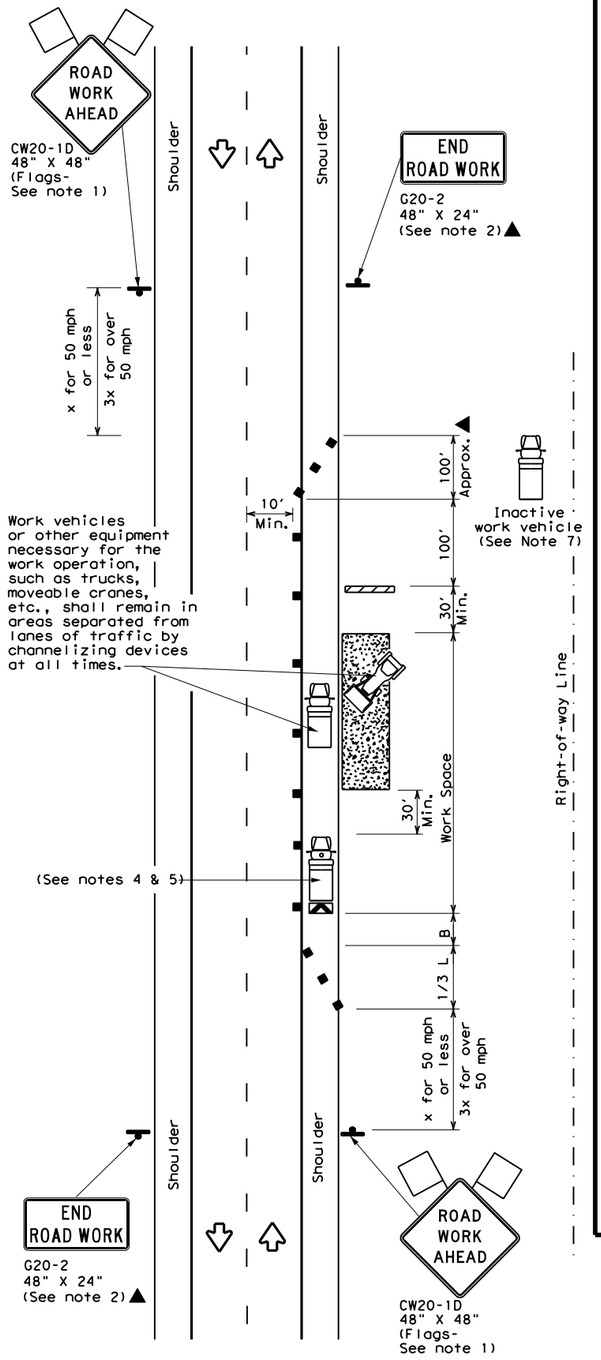
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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 in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. 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.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	TYL	SMITH		18
1-97 2-18				

DATE:
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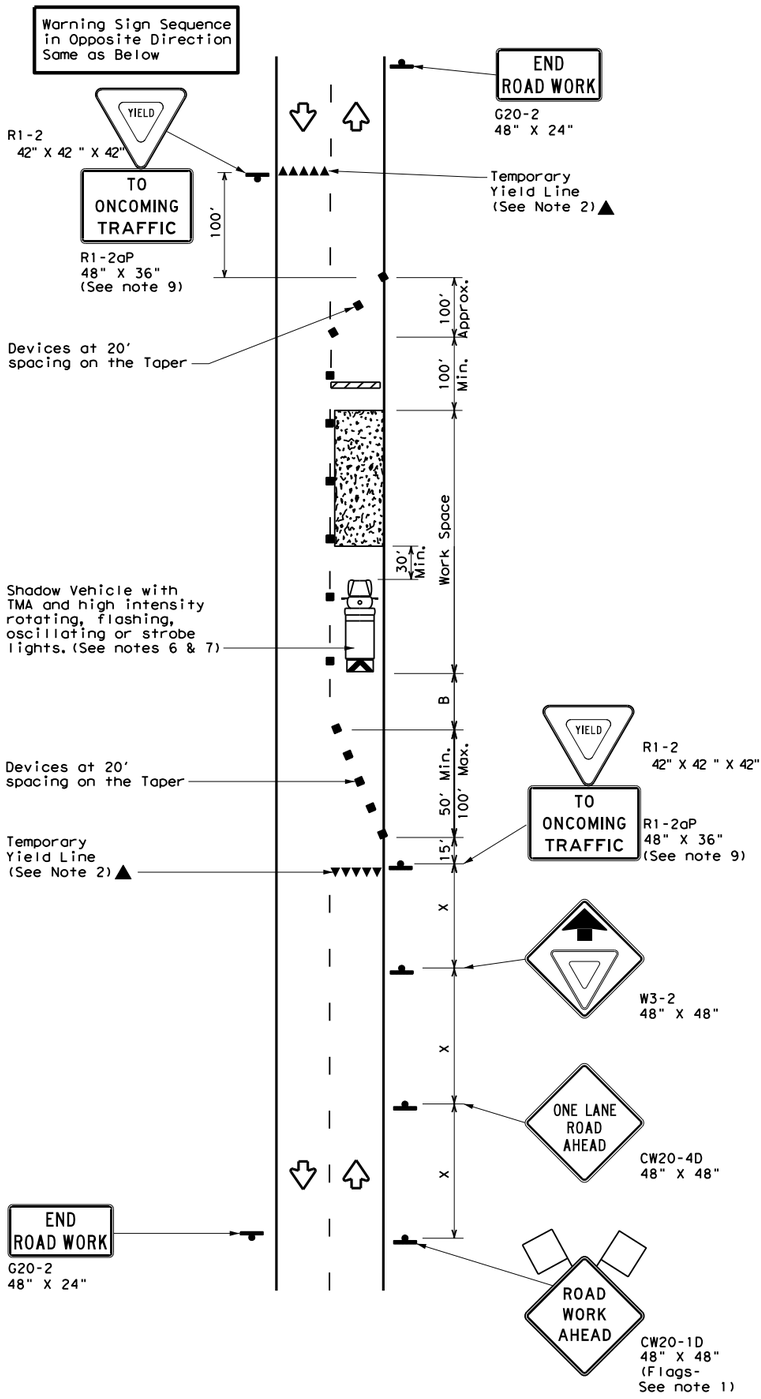
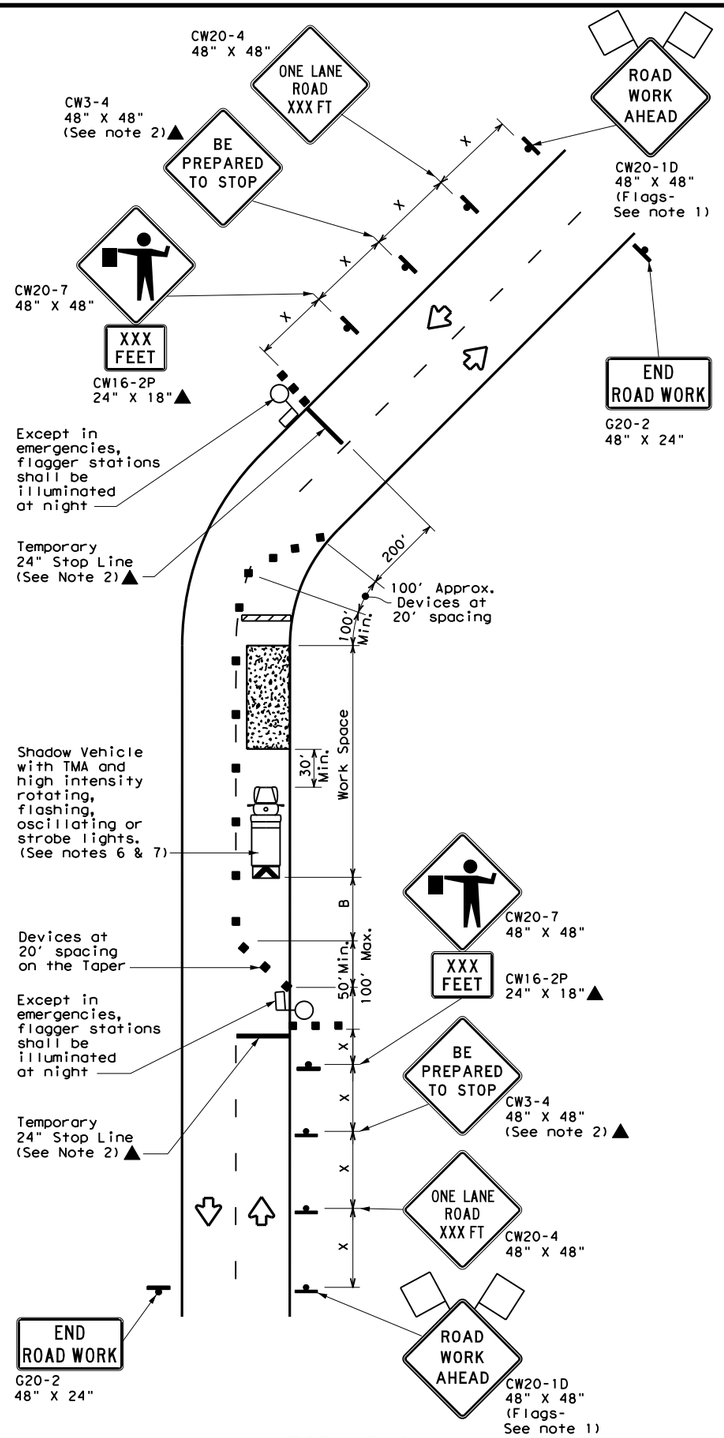


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* 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. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. 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 off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0910	16	169	VA
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	TYL	SMITH		19
4-98 2-18				

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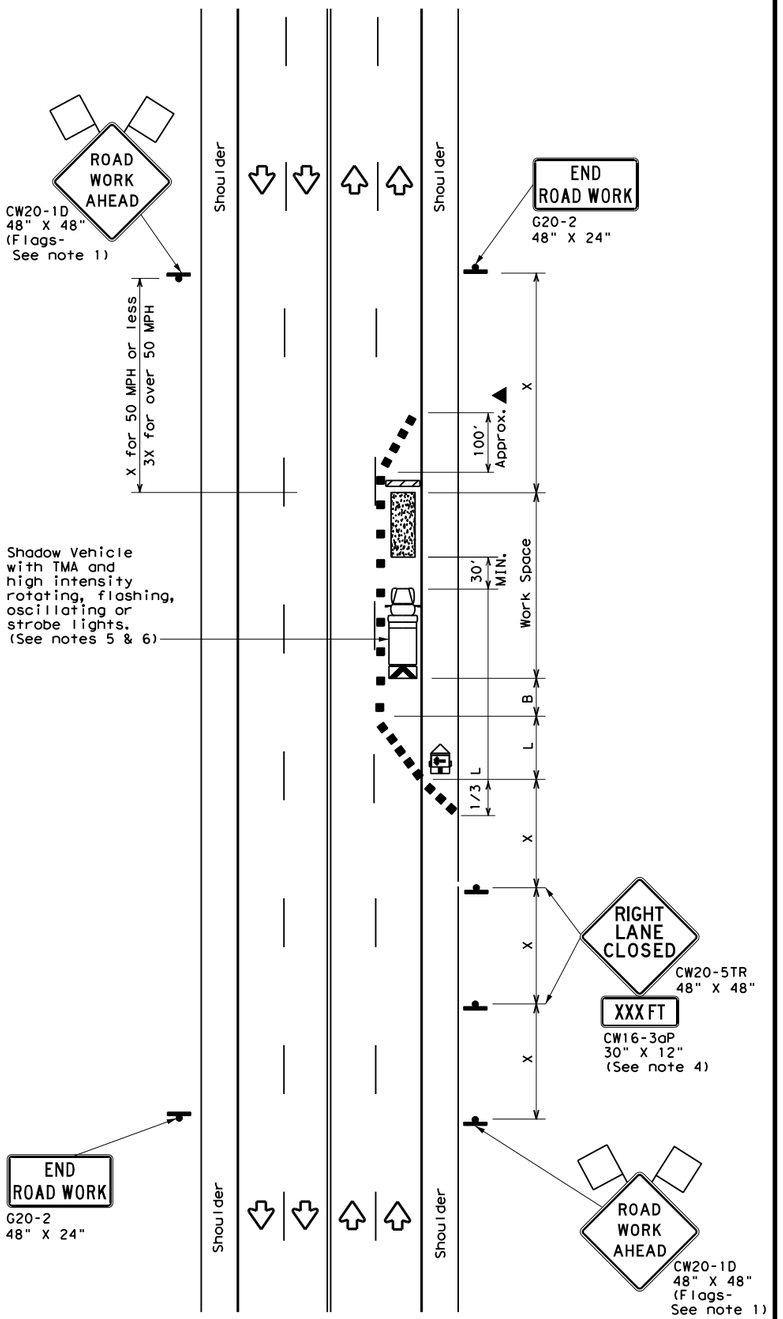
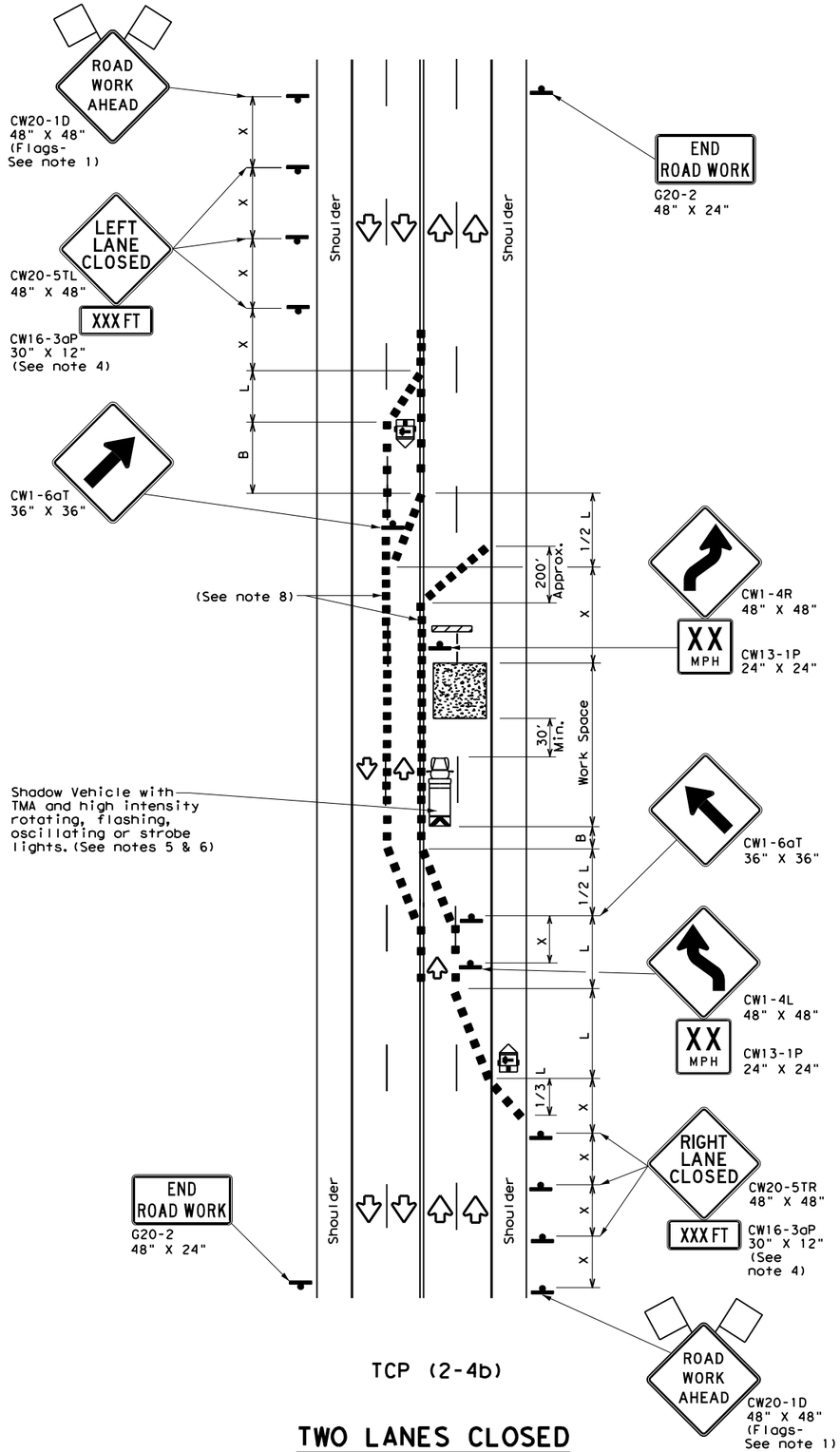


TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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. The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. 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.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

7. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED"signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-4b)

8. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

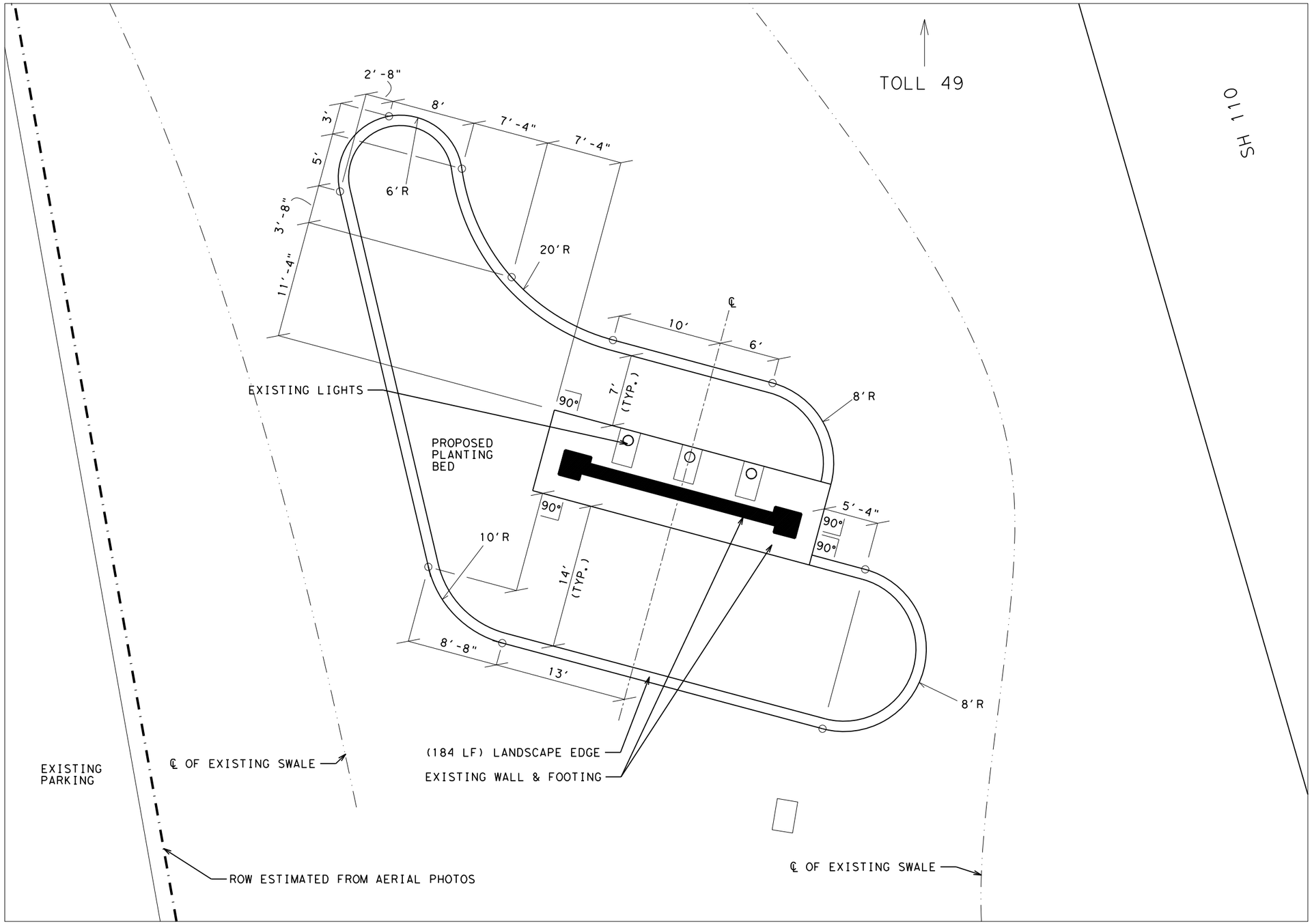
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0910	16	169	VA
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	TYL	SMITH		20



NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

SH 110 @ TOLL 49
LAYOUT PLAN
LOCATION A

SCALE: 1" = 10'

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		21

DATE: 6/17/2021 2:56:53 PM
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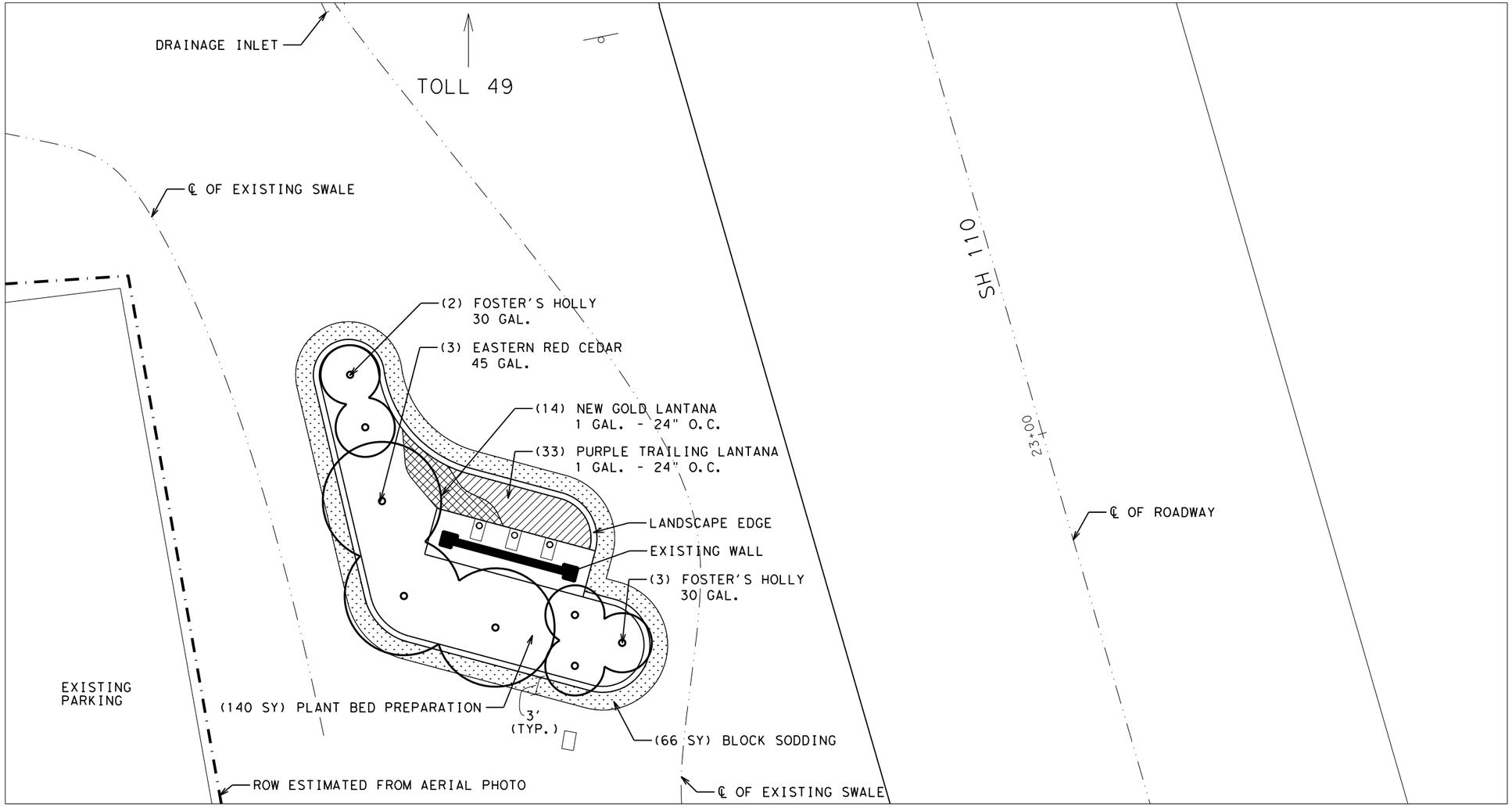

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW

PLANT SPECIFICATIONS

	Common Name	Botanical Name	Quantity	Size	Min. Caliper	Min. Height	Min. Spread	Spacing	Notes
0192-6002	New Gold Lantana	Lantana x hybrida	14	1 GAL.		6"	6"	30" O.C.	'New Gold'
	Purple Trailing Lantana	Lantana montevidensis	33	1 GAL.		8"	6"	24" O.C.	
		TOTAL:	**47**						
0192-6024	Foster's Holly	Ilex x attenuata	5	30 GAL	2"	7'	4'	9' O.C.	'Fosteri #2'
		TOTAL:	**5**						
0192-6025	Eastern Red Cedar	Juniperus virginiana	3	45 GAL.	2.5"	10'	6'	16' O.C.	
		TOTAL:	**3**						

162-6002	Bermuda Grass	Cynodon dactylon	66 SY

0 5 10 15 20

SCALE: 1" = 20'

N

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

SH 110 @ TOLL 49
PLANTING PLAN
LOCATION A

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		22

DATE: 6/17/2021 2:57:05 PM
FILE: T:\DES_LAND\Projects\TYL\Whitehouse GCAA\2019\Master Design Files\Plan Sheets\SH 110 @ SH 49_Planting Plan_WhitehouseGCAA19.dgn

DN: | CK: | DW: | CK:

DRAINAGE INLET

TOLL 49

SH 110

EXISTING WATER MAIN

℄ OF EXISTING SWALE

CONTRACTOR TO TAP INTO EXISTING WATER MAIN (APPROXIMATE LOCATION)

23+00

EXISTING WALL

3/4"

3/4"

3/4"

1"

1"

M

R

C

4" BORE/SLEEVE (APPROX. 92 LF) (SUBSIDIARY TO IRRIGATION SYSTEM (TY I))

EXISTING PARKING

I
I"
3 GPM

℄ OF EXISTING SWALE

IRRIGATION SYSTEM (TY I)

RDWY ℄

ROW ESTIMATED FROM AERIAL PHOTO

24+00

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- I = ZONE
- I" = VALVE SIZE
- 3 GPM = GALLONS PER MINUTE
- M — WATER METER
- Z — BACKFLOW PREVENTOR
- VALVE
- C — CONTROLLER
- R — RAIN/FREEZE SENSOR
- BEGIN DRIP TUBING
- IRRIGATION LATERAL
- IRRIGATION MAIN
- IRRIGATION LATERAL TO TREE DRIPLINE

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

SH 110 @ TOLL 49
IRRIGATION PLAN
LOCATION A

0 5 10 15 20

SCALE: 1" = 20'

N

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		23

DATE: 6/17/2021 2:57:14 PM
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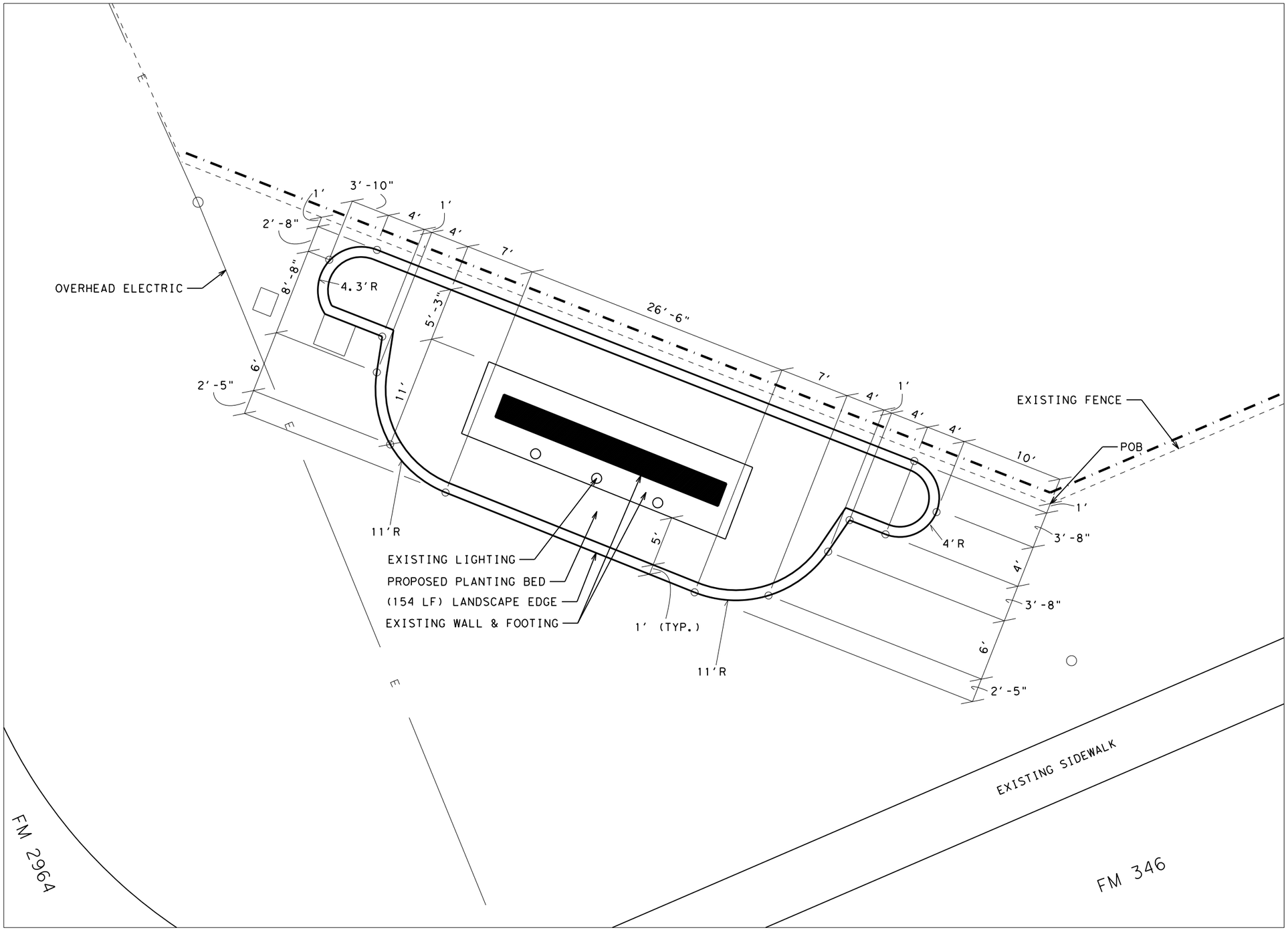

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW

0 5 10

SCALE: 1" = 10'

N

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

FM 346 @ FM 2964
LAYOUT PLAN
LOCATION B

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		24

DATE: 6/17/2021 2:57:22 PM
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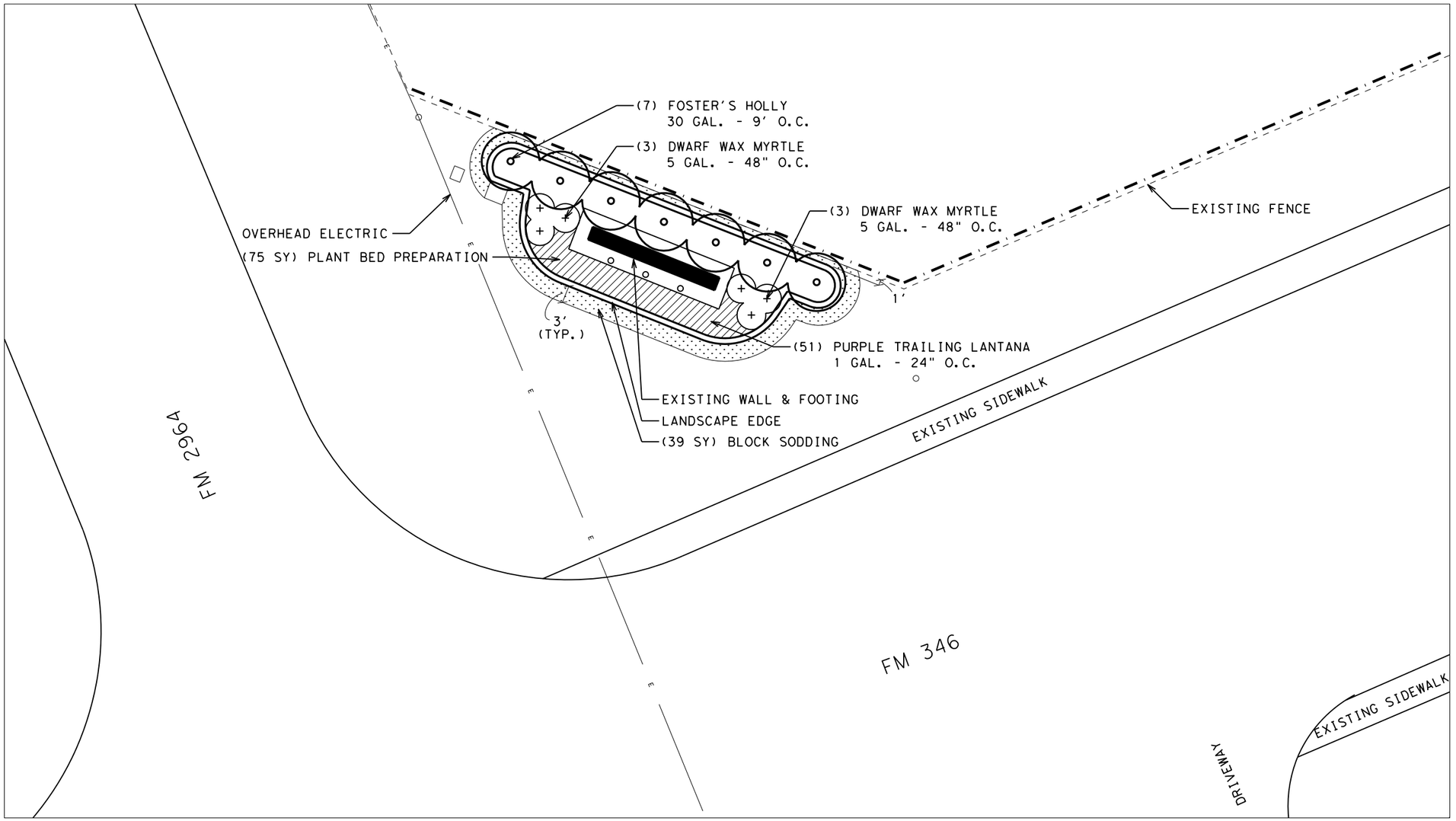

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW

PLANT SPECIFICATIONS

	Common Name	Botanical Name	Quantity	Size	Min. Caliper	Min. Height	Min. Spread	Spacing	Notes
0192-6002	Purple Trailing Lantana	Lantana montevidensis	51	1 GAL.		8"	6"	24" O.C.	
		TOTAL: 51							
0192-6004	Dwarf Wax Myrtle	Myrica cerifera	6	5 GAL.		12"	12"	48" O.C.	'Don's Dwarf'
		TOTAL: 6							
0192-6024	Foster's Holly	Ilex x attenuata	7	30 GAL	2"	7'	4'	9' O.C.	'Fosteri #2'
		TOTAL: 7							

162-6002	Bermuda Grass	Cynodon dactylon	39 SY

0 5 10 15 20

SCALE: 1" = 20'

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

FM 346 @ FM 2964
PLANTING PLAN
LOCATION B

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		25

DATE: 6/17/2021 2:57:30 PM
FILE: T:\DES_LAND\Projects\TYL\Whitehouse GCAA\2019\Master Design Files\Plan Sheets\FM 346 @ FM 2964_Planting Plan_WhitehouseGCAA19.dgn

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

EXISTING FENCE

OVERHEAD ELECTRIC

R C

EXISTING LIGHTING

EXISTING WALL & FOOTING

I
I"
3 GPM

IRRIGATION SYSTEM
(TY II)

EXISTING SIDEWALK

4" BORE/SLEEVE (APPROX. 90 LF)
(SUBSIDIARY TO IRRIGATION SYSTEM
(TY II))

FM 2964

FM 346

EXISTING SIDEWALK

M

CONTRACTOR TO TAP INTO EXISTING WATER MAIN
(APPROXIMATE LOCATION)

DRIVEWAY

EXISTING SIDEWALK

OVERHEAD ELECTRIC

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW
- I = ZONE
- I" = VALVE SIZE
- 3 GPM = GALLONS PER MINUTE
- M — WATER METER
- BACKFLOW PREVENTOR
- VALVE
- C — CONTROLLER
- R — RAIN/FREEZE SENSOR
- BEGIN DRIP TUBING
- IRRIGATION LATERAL
- IRRIGATION MAIN
- IRRIGATION LATERAL TO TREE DRIPLINE

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

FM 346 @ FM 2964
IRRIGATION PLAN
LOCATION B

0 5 10 15 20

SCALE: 1" = 20'

N

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		26

DATE: 6/17/2021 2:57:38 PM
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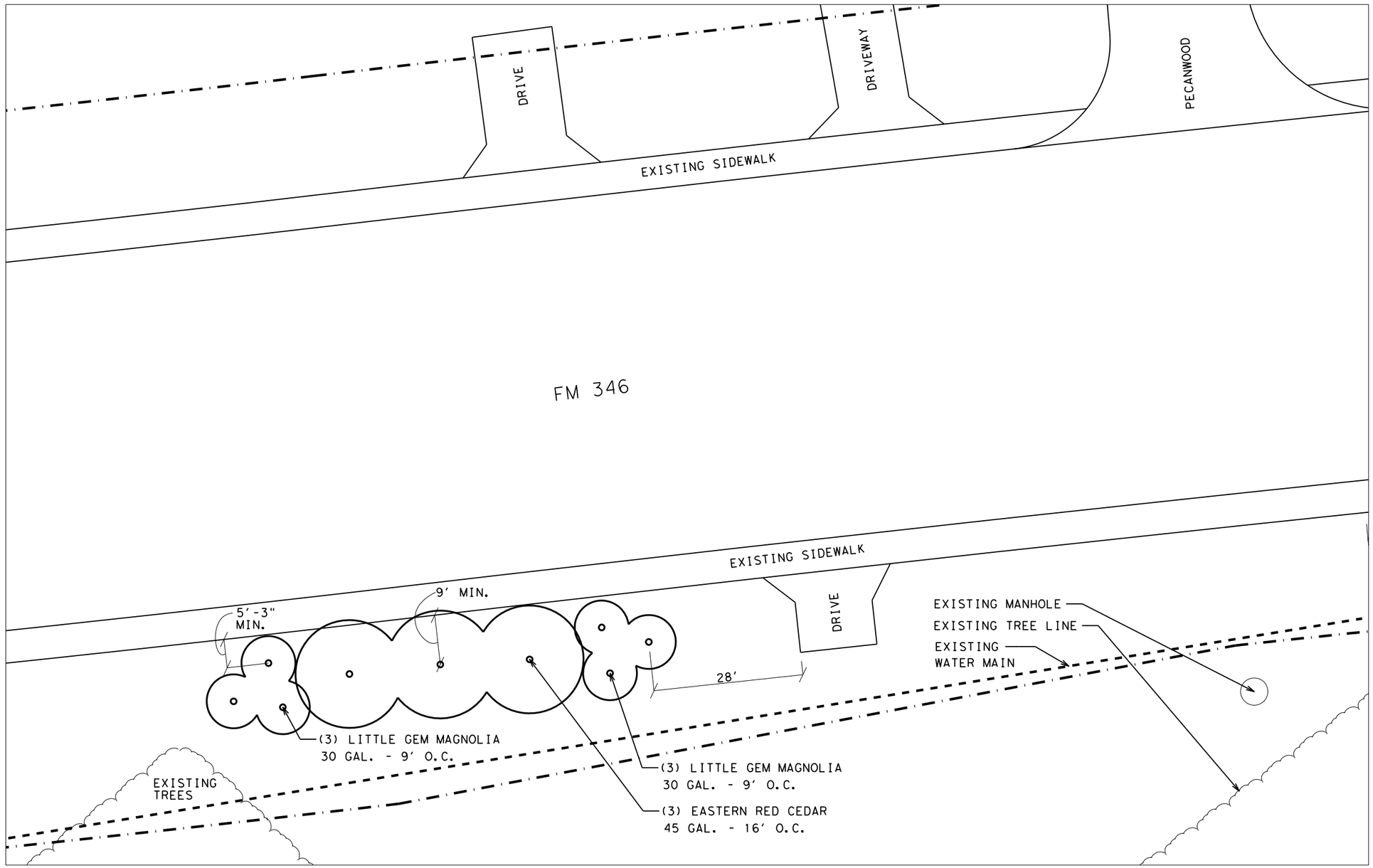

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW

PLANT SPECIFICATIONS

	Common Name	Botanical Name	Quantity	Size	Min. Caliper	Min. Height	Min. Spread	Spacing	Notes
0192-6024	Little Gem Magnolia	Magnolia grandiflora	6	30 GAL	2"	7'	4'	9' O.C.	'Little Gem'
TOTAL: 6									
0192-6025	Eastern Red Cedar	Juniperus virginiana	3	45 GAL.	2.5"	10'	6'	16' O.C.	
TOTAL: 3									

0 5 10 15 20

SCALE: 1" = 20'

N

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

FM 346 @ FM 2288
TO PECANWOOD
PLANTING PLAN
LOCATION C

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		27

DATE: 6/17/2021 2:57:47 PM
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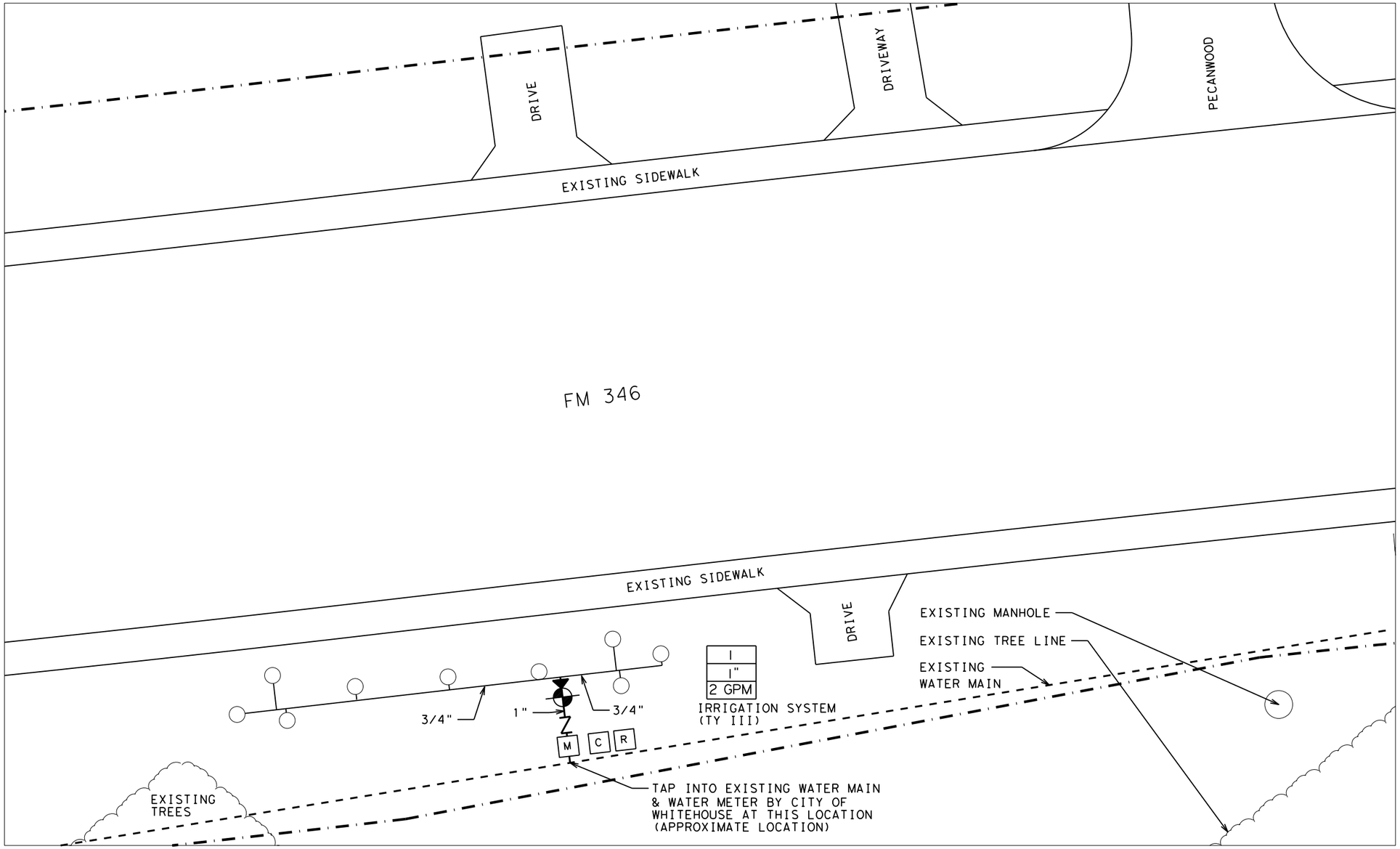

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW
- I = ZONE
- I" = VALVE SIZE
- 3 GPM = GALLONS PER MINUTE
- M = WATER METER
- Z = BACKFLOW PREVENTOR
- VALVE
- C = CONTROLLER
- R = RAIN/FREEZE SENSOR
- BEGIN DRIP TUBING
- IRRIGATION LATERAL
- IRRIGATION MAIN
- IRRIGATION LATERAL TO TREE DRIPLINE

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE
FM 346 @ FM 2288
TO PECANWOOD
IRRIGATION PLAN
LOCATION C

0 5 10 15 20
SCALE: 1" = 20'

N

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		28

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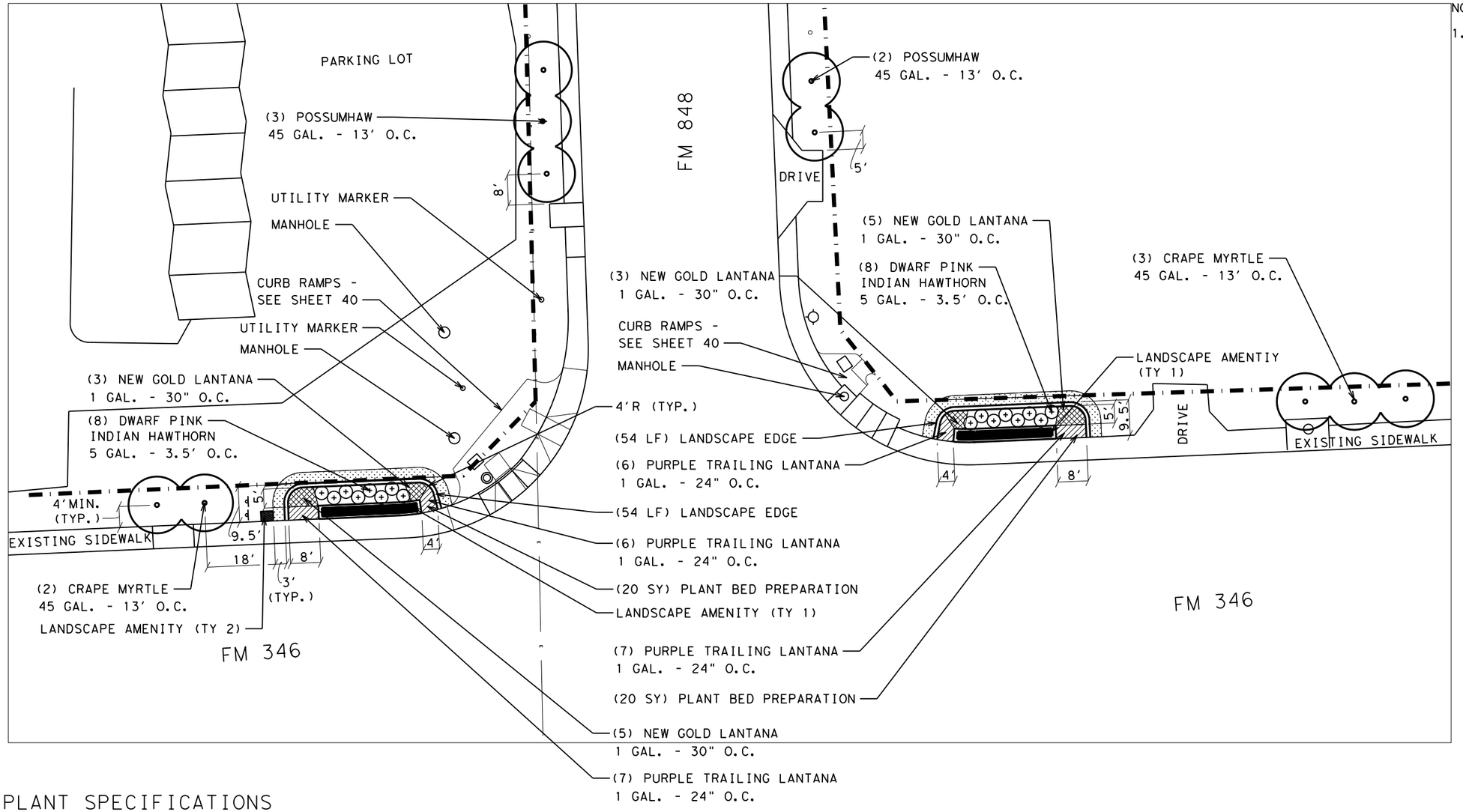


NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

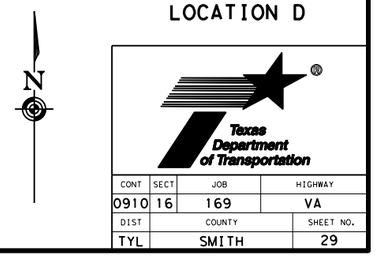
- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW
- TRAFFIC SIGNAL POLE
- FIRE HYDRANT

PLANT SPECIFICATIONS

	Common Name	Botanical Name	Quantity	Size	Min. Caliper	Min. Height	Min. Spread	Spacing	Notes
0192-6002	New Gold Lantana	Lantana x hybrida	16	1 GAL.		6"	6"	30" O.C.	'New Gold'
	Purple Trailing Lantana	Lantana montevidensis	26	1 GAL.		8"	6"	24" O.C.	
		TOTAL:	**42**						
0192-6004	Dwarf Pink Indian Hawthorn	Rhaphiolepis indica	16	5 GAL.		12"	12"	3.5' O.C.	'Dwarf Pink'
		TOTAL:	**16**						
0192-6025	Crape Myrtle	Lagerstroemia indica	5	45 GAL.		10'	8'	13' O.C.	'Natchez'
	Possumhaw	Ilex decidua	5	45 GAL.		10'	8'	13' O.C.	
		TOTAL:	**10**						

162-6002	Bermuda Grass	Cynodon dactylon	40 SY

SCALE: 1" = 30'



06/17/2021

WHITEHOUSE

FM 346 @ FM 848

PLANTING PLAN

LOCATION D

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		29

DATE: 6/17/2021 2:58:03 PM
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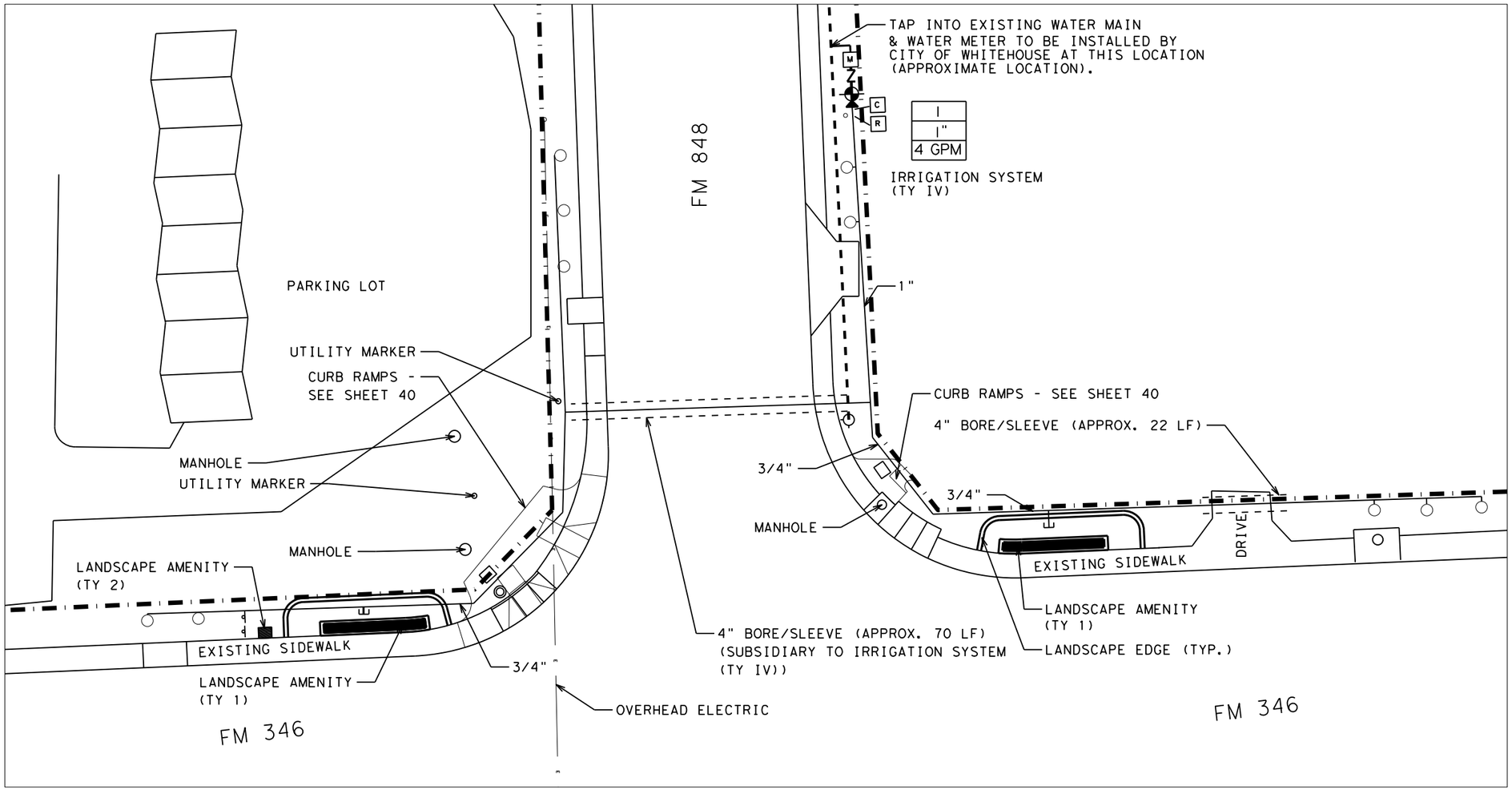

NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

LEGEND

- POWER/LIGHT POLE
- SIGN
- GROUND BOX
- ROW
- TRAFFIC SIGNAL POLE
- FIRE HYDRANT
- I = ZONE
- I" = VALVE SIZE
- 3 GPM = GALLONS PER MINUTE
- M WATER METER
- Z BACKFLOW PREVENTOR
- VALVE
- C CONTROLLER
- R RAIN/FREEZE SENSOR
- BEGIN DRIP TUBING
- IRRIGATION LATERAL
- IRRIGATION MAIN
- IRRIGATION LATERAL TO TREE DRIP CIRCLE

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

0 15 30
SCALE: 1" = 30'

N

WHITEHOUSE
FM 346 @ FM 848
IRRIGATION PLAN
LOCATION D

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		30

DATE: 6/17/2021 2:58:11 PM
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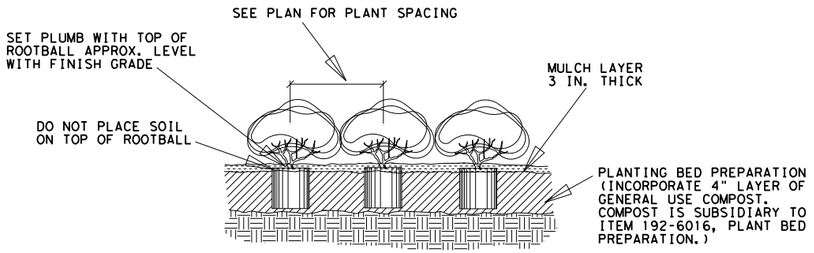
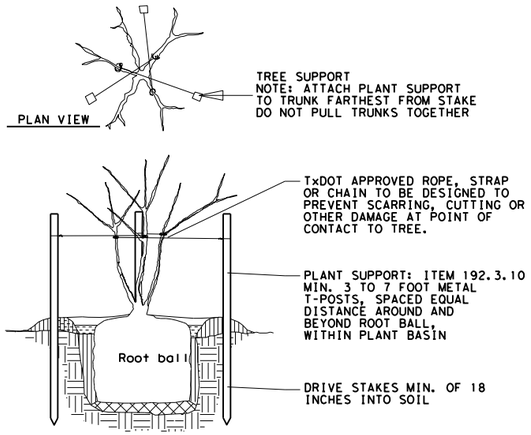


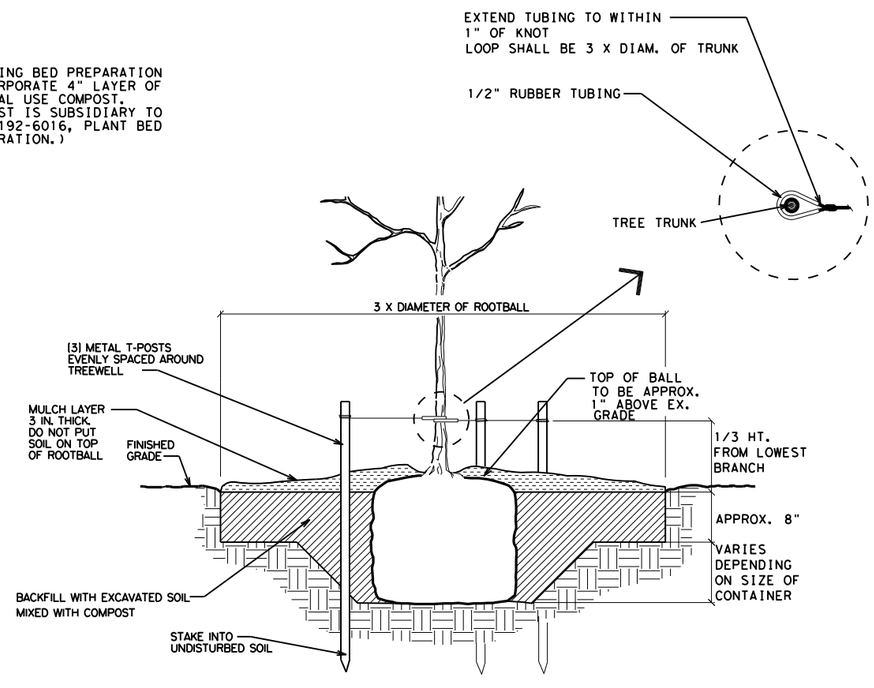
SHRUB PLANTING IN MASS BEDS

NTS



TREE SUPPORT - MULTI-TRUNKED

NTS



TREE PLANTING AND STAKING

NTS

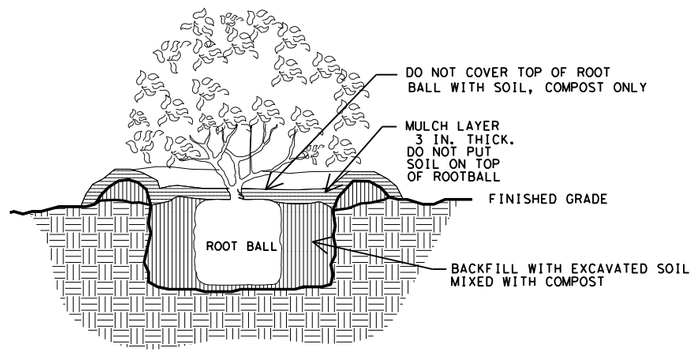
PLANTING BED PREPARATION

PERFORM PLANTING BED OPERATIONS IN THE FOLLOWING ORDER:

1. STAKE BED PREPARATION AREAS OR OTHERWISE DESIGNATE THE PROPER LOCATIONS ACCORDING TO THE PLANS. OBTAIN APPROVAL OF FINAL LOCATIONS BEFORE CONTINUING WORK UNDER THIS ITEM.
2. AFTER UNDERGROUND UTILITIES ARE LOCATED AND MARKED, TILL THE BED PREPARATION AREAS TO A DEPTH OF TWELVE (12) INCHES. TAKE SPECIAL PRECAUTION TO AVOID ANY UNDERGROUND UTILITIES WITHIN THE PROJECT AREAS AND DO NOT ALTER EXISTING DRAINAGE PATTERNS.
3. ADD 4" GENERAL USE COMPOST. (GENERAL USE COMPOST IS SUBSIDIARY TO ITEM 192-6016, PLANT BED PREPARATION.)
4. TILL/DISC SOIL TO A SMOOTH CONSISTENCY TO A DEPTH OF TWELVE (12) INCHES.
5. AFTER PLANTING MULCH BEDS WITH HARDWOOD MULCH TO A DEPTH OF 3".

GENERAL 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 THAT HAVE BEEN MODIFIED OR NOT SHOWN.
2. PROVIDE PLANTS NURSERY-GROWN IN CONTAINERS.
3. REJECTION OF PLANTS IN ACCORDANCE WITH ITEM 192.2.2.
4. STAKE LOCATION OF TREES IN THE FIELD IN ACCORDANCE WITH ITEM 192.3.3.
5. PROVIDE FOR THE SAFE TRANSPORTATION OF PLANTS TO THE PROJECT SITE AND THE CONDITION OF PLANTS UPON ARRIVAL.
6. DO NOT STORE PLANT MATERIAL ON HARD SURFACES OR LEAVE EXPOSED TO THE SUN.
7. PROTECT THE PLANT ROOT BALLS AND WATER REGULARLY UNTIL PLANTING.
8. IF PLANTS ARE LEFT IN STORAGE OVER THE WEEKEND OR HOLIDAY, PROVIDE A MEANS OF PERIODICALLY WATERING AND INSPECTION OF CONTAINER MOISTURE.
9. PROVIDE PLANTS THAT ARE HARDY, SYMMETRICAL, TIGHT KNIT, AND SO TRAINED OR FAVORED IN DEVELOPMENT AND APPEARANCE AS TO BE SUPERIOR IN FORM, NUMBER OF BRANCHES, AND COMPACTNESS. PLANTS SHALL BE SOUND, HEALTHY AND VIGOROUS, WELL BRANCHED, DENSELY FOLIATED WHEN IN LEAF, AND SHALL HAVE HEALTHY, WELL DEVELOPED ROOT SYSTEMS.
10. ALL TREE PLANTINGS ARE TO BE MULCHED AFTER PLANTING TO THE DEPTH INDICATED IN THE DETAILS. PROVIDE HARDWOOD MULCH WITH A MINIMUM 3/8 "(NOT OVER 25% BY VOLUME) OF FINE PARTICLES AND DUST. PROVIDE MULCH FREE OF ANY PLASTIC, GLASS, METALS AND OTHER CONTAMINANTS (STICKS, STONES, CLAY, OR OTHER FOREIGN MATTER).
11. BLOCK SODDING ITEM 162-6002 TO BE INSTALLED AS A 3' WIDE BAND AROUND OUTSIDE EDGE OF PLANTING BEDS (UNLESS OTHERWISE SHOWN ON PLANS).



SHRUB AND GROUNDCOVER PLANTING

NTS

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

PLANTING AND ESTABLISHMENT

PLANTING DETAILS

SHEET 1 OF 3

©2021 Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		31

DATE: 6/17/2021 2:58:25 PM
FILE: T:\DES_LAND\Projects\TYL\Whitehouse GCAA2019\Master Design Files\Plan Sheets\planting details.dgn

WATERING SCHEDULE FOR AREAS WITH IRRIGATION SYSTEM:

ITEM DESCRIPTION	PHASE	FREQUENCY / RATE
GROUNDCOVER PERENNIALS, & SHRUBS	Construction/installation operations, Item 192.3	See Charts on Irrigation Detail Sheet 2 of 2
	90-day Maintenance period, Item 192.3	
TREES	Construction/installation operations, Item 192.3	See Charts on Irrigation Detail Sheet 2 of 2
	90-day Maintenance period, Item 192.3	

NOTES:

Provide water necessary to meet the quality and schedule shown above. Water required for construction/installation operations & 90-day Maintenance period is subsidiary to Item 192 and will not be paid for separately.

Water required for 120-day (4 month) Establishment period is subsidiary to Item 193.

Rate and frequency may be adjusted to meet site conditions and weather as approved or directed by engineer.

Refer to Item 168.2 for water quality information.

At the time of installation all plants are to be watered manually the same day as planting at a rate and frequency shown above.

Stressed plant material will be rejected according to Item 192.2.2 and replaced.

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

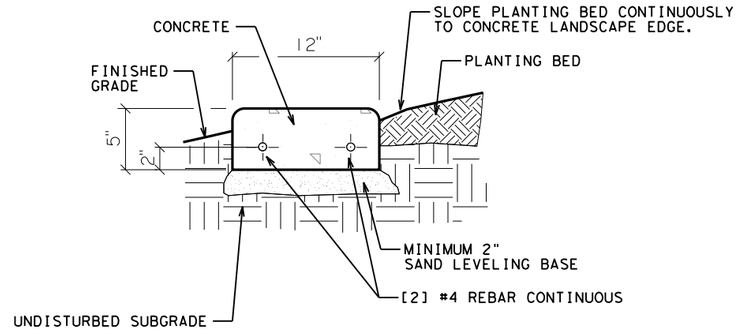
ITEM DESCRIPTION	PHASE	FREQUENCY	RATE
NON-IRRIGATED SOD & SEED	Construction/installation operations		
	13 Week establisment period	SEE GENERAL NOTES (ITEM 168)	1/2 inch of water per week

NOTES:

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

NOTES:

1. DOWEL WITH [2] 12" LONG REBAR @ EACH CONSTRUCTION JOINT MINIMUM EVERY 40' O.C.
2. LEVELING BASE SUBSIDARY TO ITEM 192. PRICE SHOULD INCLUDE EXCAVATION, LEVELING BASE, CONCRETE, AND STEEL.



LANDSCAPE EDGE

NTS

PLANT SPECIFICATIONS

Item	Common Name	Botanical Name	Quantity	Size	Min. Caliper	Min. Height	Min. Spread	Spacing	Notes
0192-6002	New Gold Lantana	Lantana x hybrida	30	1 GAL.		12"	10"	30" O.C.	'New Gold'
	Purple Trailing Lantana	Lantana montevidensis	110	1 GAL.		8"	6"	24" O.C.	
		TOTAL: 140							
0192-6004	Dwarf Wax Myrtle	Myrica cerifera	6	5 GAL.		12"	12"	48" O.C.	'Don's Dwarf'
	Dwarf Pink Indian Hawthorn	Rhaphiolepis indica	16	5 GAL.		12"	12"	3.5' O.C.	'Dwarf Pink'
		TOTAL: 22							
0192-6024	Foster's Holly	Ilex x attenuata	12	30 GAL	2"	7'	4'	9' O.C.	'Fosteri #2'
	Little Gem Magnolia	Magnolia grandiflora	6	30 GAL	2"	7'	4'	9' O.C.	'Little Gem'
		TOTAL: 18							
0192-6025	Eastern Red Cedar	Juniperus virginiana	6	45 GAL.	2.5"	10'	6'	16' O.C.	
	Crape Myrtle	Lagerstroemia indica	5	45 GAL.	2.5"	10'	6'	13' O.C.	'Natchez'
	Possumhaw	Ilex decidua	5	45 GAL.	2.5"	10'	6'	13' O.C.	
		TOTAL: 16							
162-6002	Bermuda Grass	Cynodon dactylon	145 SY						

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE

PLANTING AND ESTABLISHMENT
PLANTING SPECIFICATIONS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		32

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ITEM 192 LANDSCAPE PLANTING MAINTENANCE REQUIREMENTS

After completion of the project installation, as shown in the plans and approved by the engineer, begin maintenance activities for a period of 90 calendar days as described in ITEM 192.3.15.
Payment in accordance with ITEM 192.5. is subject to completion of all scheduled maintenance activities, timeline may also be suspended for failure to complete scheduled maintenance activities.
All maintenance work is incidental and is not paid for separately unless otherwise shown on plans.
Reference Item 170 and 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.
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) 0 30 60 90											
	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
192.3.15.1. **WATERING** (See PLANTING AND ESTABLISHMENT SHEET 1 OF 6, VEGETATIVE WATERING SCHEDULE FOR TREES, SHRUBS, VINES) and/or (See PLANTING AND ESTABLISHMENT SHEET 2 OF 6 VEGETATIVE WATERING SCHEDULE FOR PALMS ONLY)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
192.3.15.2. **MOWING, TRIMMING, AND EDGING** (From back of curb, retaining wall, barrier, and riprap to bed preparation areas, otherwise 6' width around outside edge of bed preparation areas, around and between planting bed preparation areas, including areas around any structures within the outer limits adjacent to the roadway) DO NOT MOW, TRIM, OR EDGE WITHIN 3' of ANY TREE				✓				✓				✓
192.3.15.3. **PLANT BASIN, BED, AND WORKSITE MAINTENANCE** (Includes keeping all inlets within or near the bed preparation areas free of compost. Maintain bed preparation areas as shown below and reshape beds every 30 days or as site conditions and weather require. If no requirement is selected, maintain per Item 192.3.15.3)												
WEED CONTROL REQUIREMENT												
☑ Maintain weed-free per Item 192.3.15.3. Cord trimmers are not allowed. Replace damaged plants per Item 192.15.9. 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.												
192.3.15.4. **PLANT SUPPORTS** (Remove plant stakes and all appurtenances within last 10 days of this schedule unless this Item 192 maintenance period is followed by Item 193 establishment period, unless otherwise directed by engineer)		✓		✓		✓		✓		✓		✓
192.3.15.5. **PRUNING** (Includes palm plant material and dead, diseased, or damaged palm fronds.)		✓				✓				✓		
192.3.15.6. **INSECT, DISEASE, AND ANIMAL INSPECTION AND TREATMENT** (Exterminate all active ant colonies in bed preparation areas)		✓		✓		✓		✓		✓		✓
192.3.15.7. **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)		✓		✓		✓		✓		✓		✓
192.3.15.8. **TREE TRUNK WRAP AND PROTECTION GUARD REMOVAL AND DISPOSAL** (Not applicable)												
192.3.15.9. **PLANT REPLACEMENT***				✓				✓				✓

* Remove any materials damaged by actions described in Item 7.18.1. Removal and disposal of damaged materials is incidental to Item 192. Contract er may be reimbursed for plant replacement in accordance with Item 7.18.1. Theft is not a reimbursable repair.

✓ = 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.

REGISTERED LANDSCAPE ARCHITECT ☆ HILARY GARNISH ☆ 3401 ☆ STATE OF TEXAS

06/17/2021

Texas Department of Transportation

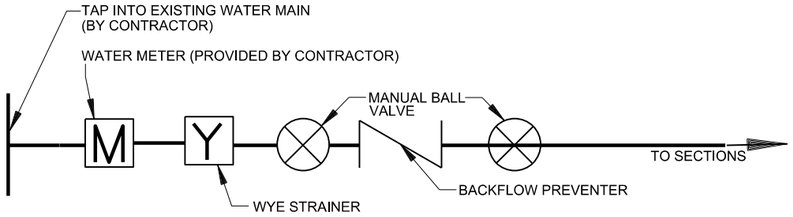
PLANTING AND ESTABLISHMENT

SHEET 3 OF 3

MAINTENANCE

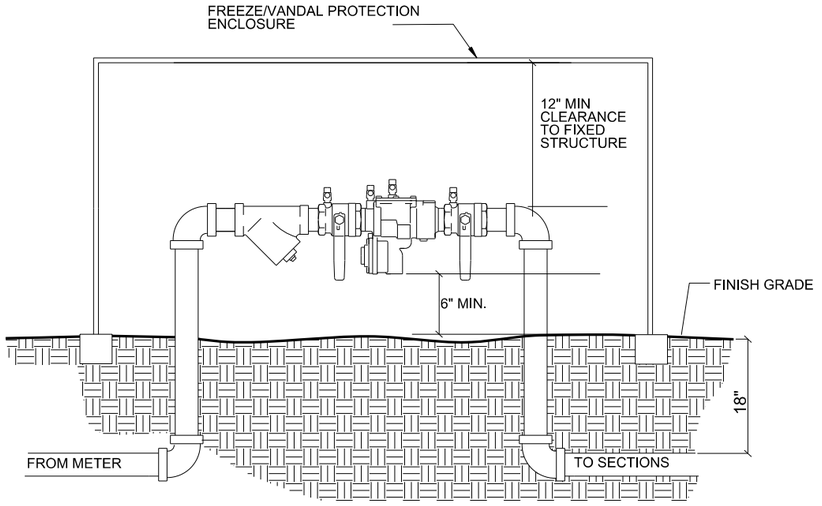
FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
	6	TEXAS	SEE TITLE SHEET			33
REVISIONS: FEB 2015 for 2014 specs	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	10	SMITH	0910	16	169	VA

STD K-4



1 TYPICAL METER ASSEMBLY

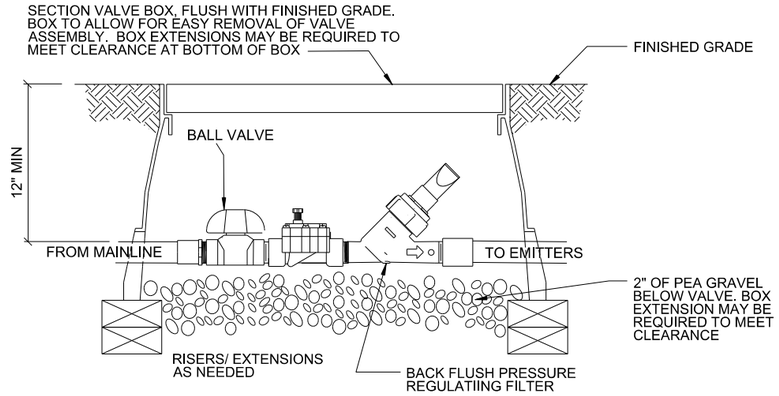
NTS



NOTE: TYPE OF BACKFLOW PREVENTER PER LOCAL CODE.
LOCAL CODE SHALL HAVE PRECEDENT OVER THIS DETAIL.

3 RPZ BACKFLOW PREVENTER

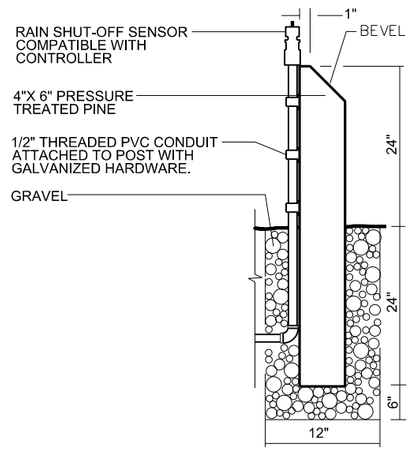
NTS



2 REMOTE CONTROL VALVE ASSEMBLY (DRIP)

NOTE: VALVES ASSEMBLY SHALL BE LOCATED NEAR THE DESIGNATED PLANTING BED AREA AS APPROVED BY ENGINEER.

NTS



PLACE RAIN SENSOR POST AS DIRECTED IN FIELD BY LANDSCAPE ARCHITECT. DO NOT EXCEED MAXIMUM WIRE DISTANCE LIMITS FROM CONTROLLER TO SENSOR.

4 RAIN/FREEZE SENSOR

SECTION

NTS

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE IRRIGATION DETAILS

SHEET 1 OF 2

Texas Department of Transportation ® 2020

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		34

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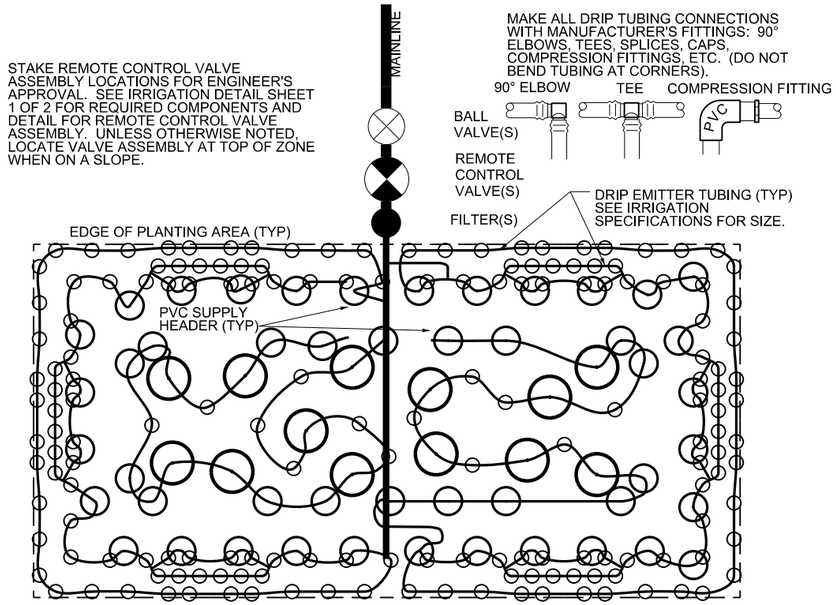
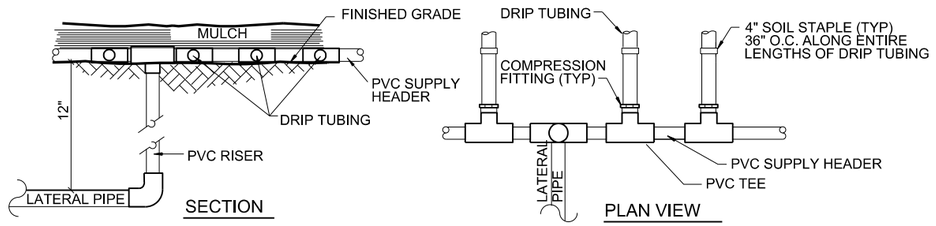


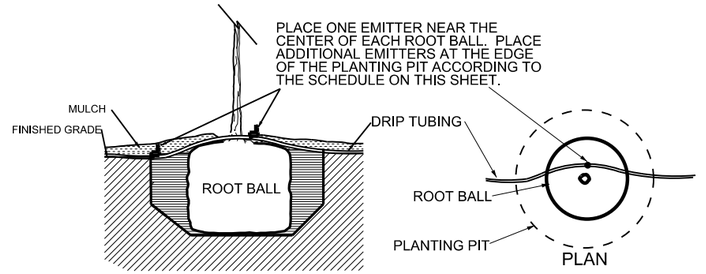
1 DRIP TUBING LAYOUT WITH REMOTE CONTROL VALVE ASSEMBLY

NTS



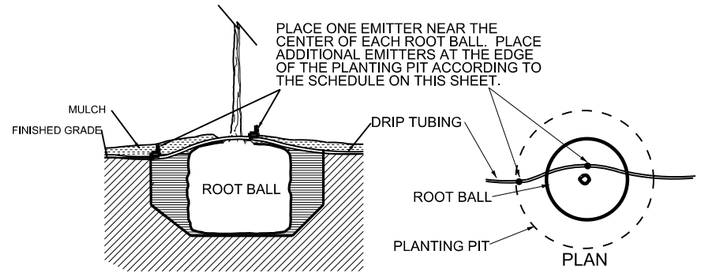
2 RISER DETAIL FOR SUPPLY HEADER TO DRIP TUBING IN BEDS

NTS



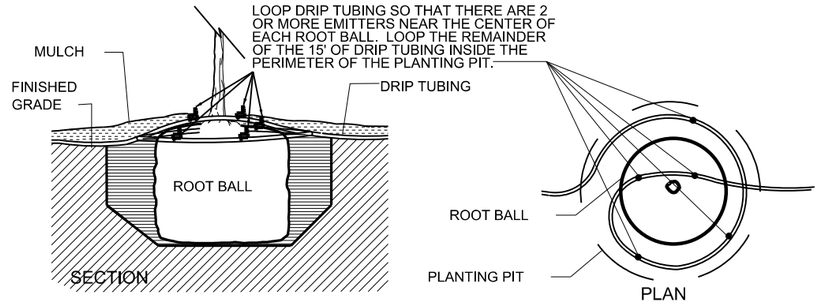
3 INDIVIDUAL EMITTER PLACEMENT - 1 GAL. CONTAINER

NTS



4 INDIVIDUAL EMITTER PLACEMENT - 5 GAL. CONTAINER

NTS



5 DRIP TUBING PLACEMENT - 30 & 45 GAL. CONTAINER

NTS

EMITTER PLACEMENT SCHEDULE

PLANT CONTAINER SIZE	EMITTER	
	QTY	NOMINAL FLOW
#30 & #45 CONTAINER	5	2 GPH
#5 CONTAINER	2	2 GPH
#1 CONTAINER	1	2 GPH

IRRIGATION SCHEDULE *

WEEK AFTER PLANTING	IRRIGATION INTERVAL	RUN TIME
1 THRU 6	2 DAYS	120 MINUTES
7 THRU 12	3 DAYS	120 MINUTES
13 THRU 104	4 DAYS	120 MINUTES
105 THRU 156	AS NEEDED	AS NEEDED

* IRRIGATION SCHEDULE IS SUGGESTED BASELINE STARTING SCHEDULE. BE RESPONSIBLE FOR MONITORING PLANT MATERIAL TO ENSURE IT RECEIVES ADEQUATE MOISTURE FOR THRIVING GROWTH AND ADJUST SCHEDULE ACCORDINGLY.

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE IRRIGATION DETAILS

SHEET 2 OF 2

Texas Department of Transportation ® 2020

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		35

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GENERAL IRRIGATION NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REFERENCING ITEM 170 OF THE TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES 2014 FOR SPECIFICATIONS, DIMENSIONS, VOLUMES AND MEASUREMENTS THAT HAVE BEEN MODIFIED OR NOT SHOWN.
2. THE CONTACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, LICENSES, TESTS, AND/OR APPROVALS, PAYING ANY FEES AND DEPOSITS.
3. BACKFLOW PREVENTER SHALL BE INSTALLED BY LICENSED PUMBER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHARGES, FEES, TESTS, AND COORDINATION FOR ANY BACKFLOW PREVENTER TESTING, AT INSTALLATION OR ANNUAL INSPECTION, REQUIRED BY LOCAL ENTITY THROUGH ALL PHASES OF THE CONTRACT.
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. CONTRACTOR SHALL VERIFY LOCATION OF ANY UNDERGROUND UTILITIES WITH APPROPRIATE AGENCIES. UNDERGROUND UTILITIES (IF SHOWN) ON THE PLANS ARE APPROXIMATE.
6. SEE IRRIGATION DETAILS AND MATERIALS CHART FOR MATERIALS SPECIFICATIONS, SIZES, AND REQUIREMENTS.
7. LATERALS ARE TO 3/4" UNLESS OTHERWISE NOTED.
8. TWO WIRE SYSTEM INSTALLATION EXPERIENCE REQUIRED.

CONSTRUCTION METHODS:

1. THE CONTRACTOR SHALL INVESTIGATE THE SITE CONDITIONS AFFECTING THE WORK AND SHALL FURNISH OFFSETS, FITTINGS, AND SLEEVES AS MAY BE REQUIRED TO MEET SITE CONDITIONS.
2. ALL IRRIGATION VALVES, MAINLINES, QUICK COUPLER VALVES, DRIPLINE, ETC., SHALL BE LOCATED FOR APPROVAL BY THE ENGINEER PRIOR TO INSTALLATION.
3. DEVIATIONS IN THE PIPING AS SHOWN ON THE PLANS SHALL BE PERMITTED WITH APPROVAL, IN WRITING, FROM THE ENGINEER.
4. CARE SHALL BE EXERCISED WHEN EXCAVATING NEAR TREES. NO MECHANICAL TRENCHING SHALL BE PERMITTED BELOW THE CANOPY OF EXISTING TREES. CONTRACTOR SHALL ADJUST TRENCH PATH AND/OR EXCAVATE BY HAND TO AVOID DAMAGE TO EXISTING TREE ROOT SYSTEM.
5. ANY UNDERGROUND UTILITIES, HIGH MAST WIRING, AND CTMS WIRING SHOWN ON PLANS ARE APPROXIMATE LOCATIONS ONLY AND SHALL NOT RELIEVE CONTRACTOR'S RESPONSIBILITY OF COORDINATING WITH APPROPRIATE AUTHORITIES TO LOCATE UNDERGROUND UTILITIES, WIRING AND ANY STRUCTURE.
6. DIG TRENCHES STRAIGHT AND SUPPORT PIPE CONTINUOUSLY ON BOTTOM OF TRENCH. INSTALL PIPE TO AN EVEN GRADE. TRENCH BOTTOM SHALL BE CLEAN AND SMOOTH WITH ALL ORGANIC DEBRIS AND SHARP OBJECTS REMOVED. PIPE SHALL BE SNAKED IN TRENCH, TO ALLOW FOR EXPANSION AND CONTRACTION. FOR PUBLIC SAFETY, PLASTIC CONSTRUCTION FENCING, MINIMUM 4 FEET HIGH, SHALL BE USED AROUND OPEN EXCAVATIONS.
7. BORING AND SLEEVE REQUIREMENTS. BORING AND SLEEVE LOCATIONS SHALL BE STAKED FOR ENGINEER'S APPROVAL. BORING DEPTH SHALL BE AT 24" BELOW PAVEMENT. ALL BORINGS AND SLEEVES SHALL BE CONTINUOUS AND SHALL EXTEND THE FULL WIDTH OF THE PAVEMENT AND 4 FEET ON EACH SIDE THEREOF. BORING AND SLEEVES SHALL BE INCIDENTAL TO IRRIGATION SYSTEM. BORE ENCASEMENT PIPE MUST BE INSTALLED SAME DAY AS BORING.
8. PVC CASING(S) FOR BORES AND SLEEVES SHALL CONSIST OF SCH 80 SMOOTH WALL PIPE WITH WELDED JOINTS AND SEAMS, AND SHALL BE CONTINUOUS. THE SIZE OF BORE SHALL NOT EXCEED THE DIAMETER OF CASING(S) REQUIRED BY THE PLANS BY MORE THAN 1 INCH.
9. PIPE SHALL NOT BE INSTALLED WHEN AIR TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT. PLASTIC PIPE SHALL BE CUT IN A MANNER THAT WILL INSURE A SQUARE CUT. BURRS AT CUT ENDS SHALL BE REMOVED PRIOR TO INSTALLATION SO THAT A SMOOTH UNOBSTRUCTED FLOW WILL BE OBTAINED.
10. ALL WATER LINES, VALVES, AND SPRINKLER BODIES SHALL BE THOROUGHLY FLUSHED BEFORE INSTALLING DRIPLINE OR SPRINKLER NOZZLES.
11. CONTROL WIRE AND WIRE CONNECTIONS SHALL BE AS DESCRIBED ON IRRIGATION MATERIALS SPECIFICATIONS CHART. ALL WIRE CONNECTIONS AND SPLICES SHALL BE MADE IN GROUND BOXES.
12. COMPACTION OF THE PIPE TRENCHES MUST BE SUFFICIENT TO LIMIT SHORT TERM SETTLING OF THE BACKFILL TO NO MORE THAN 1 INCH. THE CONTRACTOR SHALL CORRECT SETTLING GREATER THAN THIS WITHOUT ADDITIONAL COMPENSATION.

GUARANTEE AND ACCEPTANCE:

1. MAINTENANCE PERIOD. THE IRRIGATION SYSTEM SHALL BE INSPECTED CONCURRENTLY WITH, AND SUBJECT TO THE SAME ESTABLISHMENT/MAINTENANCE REQUIREMENT PERIODS UNDER ITEMS 192 AND 193 (IF USED). DURING THE INSTALLATION, ESTABLISHMENT, AND MAINTENANCE, CONTRACTOR SHALL PERFORM THE FOLLOWING ACTIVITIES AS A MINIMUM AND TO THE SATISFACTION OF THE ENGINEER:
   A) INSTALL AND MAINTAIN THE CONTROLLER PROGRAM TO INSURE THE PROPER DISTRIBUTION OF WATER (INCLUDES REPLACEMENT OF ANY BATTERIES).
   B) INSPECT, REPAIR, AND/OR REPLACE ANY EQUIPMENT THAT IS FOUND DEFECTIVE OR MAY BE DAMAGED BY OTHER MAINTENANCE.
   C) MAKE ANY ADJUSTMENTS THAT MAY BECOME NECESSARY TO ENSURE THE PROPER DELIVERY OF WATER TO THE PLANT MATERIAL.
2. AS-BUILT DRAWINGS. UPON COMPLETION OF THE REQUIRED MAINTENANCE PERIOD, THE ENGINEER WILL MAKE AN INSPECTION OF THE PROJECT. THE CONTRACTOR SHALL FURNISH THE ENGINEER A SET OF AS-BUILT DRAWINGS ON REPRODUCIBLE 11X17 FILM BASE SHEETS. THE ENGINEER WILL CHECK BASE SHEETS TO BE SURE THEY ARE A TRUE RECORD OF THE PROJECT CONDITIONS AND WILL DIRECT THE CONTRACTOR TO CORRECT ANY ERRORS THAT ARE FOUND. THE DRAWINGS SHALL SHOW ALL VALVE LOCATIONS BY TRIANGULATION FROM A FIXED OBJECT AND ANY CHANGE TO SPRINKLER HEAD LOCATION FROM A FIXED OBJECT AND ANY CHANGE TO SPRINKLER HEAD LOCATION AND REROUTING OF MAIN AND LATERAL LINES (CHANGES OF THIS NATURE SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION).
3. OPERATING AND MAINTENANCE DATA. THE CONTRACTOR SHALL PROVIDE INSTRUCTIONS COVERING FULL OPERATION, CARE AND MAINTENANCE OF THE EQUIPMENT, INCLUDING A SCHEDULE SHOWING LENGTH OF TIME EACH VALVE IS TO BE OPEN TO PROVIDE DETERMINED AMOUNT OF WATER, AND INSTRUCT THE STATE'S DESIGNATED PERSONNEL IN PROPER OPERATION OF THE SYSTEM.
4. TEST. TESTING OF THE SYSTEM FOR LEAKAGE SHALL BE IN ACCORDANCE WITH ITEM 170. THE CONTRACTOR SHALL ALSO TEST AND ASSURE THE PROPER ELECTRICAL WORKING ORDER OF THE SYSTEM TO THE SATISFACTION OF THE ENGINEER.

IRRIGATION MATERIALS SPECIFICATIONS

DESCRIPTION	* EXAMPLE OR EQUAL	SIZE	APPROXIMATE QUANTITIES FOR INFORMATIONAL PURPOSE ONLY			
			IRRIGATION SYSTEM (TY I) (SH 110 @ SH 49) LOCATION A	IRRIGATION SYSTEM (TY II) (FM 346 @ FM 2964) LOCATION B	IRRIGATION SYSTEM (TY III) (FM 346 @ FM 2288 TO PECANWOOD) LOCATION C	IRRIGATION SYSTEM (TY IV) (FM 346 @ FM 848) LOCATION D
WATER METER (PROVIDED & INSTALLED BY CITY OF WHITEHOUSE)	PER LOCAL CODE	1"			1	1
WATER METER (PROVIDED & INSTALLED BY CONTRACTOR)	PER LOCAL CODE	1"	1	1		
DRIPLINE TUBING	RAINBIRD XF SERIES BLANK TUBING XFD500		AS NEEDED	AS NEEDED	AS NEEDED	AS NEEDED
POINT SOURCE DRIP EMITTERS	HUNTER HE-20-B					
REMOTE CONTROL VALVE	RAIN BIRD XCZ-PRB-100-COM	1 INCH	1	1	1	1
RAIN SENSOR	HUNTER WIRELESS RAIN/FREEZE SENSOR WRF-CLIK	N/A	1	1	1	1
CONTROLLER SPECIFICATION	HUNTER NODE		1	1	1	1
BACKFLOW PREVENTER	RPZ BACKFLOW ASSEMBLY (MEETING LOCAL COMPLIANCE STANDARDS)	1"	1	1	1	1
WYE STRAINER		1"	1	1	1	1
PVC SCH 40 MAINLINE PRESSURE RATED WITH TWIN GASKET COUPLINGS AND FITTINGS OR SLIP TYPE SOLVENT WELDED JOINTS		1 INCH	AS NEEDED	AS NEEDED	AS NEEDED	AS NEEDED
PVC CLASS 200 LATERALS		¾ INCH	AS NEEDED	AS NEEDED	AS NEEDED	AS NEEDED
ABOVE GROUND PIPE INCLUDING BURIED RISERS AND SWING-JOINT COMPONENTS SHALL BE PVC SCH 80 PIPE RATED FOR DIRECT SUNLIGHT EXPOSURE			AS NEEDED			
FITTINGS ALL FITTINGS INCORPORATED INTO SYSTEM SHALL BE OF THE SAME TYPE, SIZE AND CLASS MATERIAL AS THE PIPE			AS NEEDED			
CONTROL WIRE ALL LOW VOLTAGE CONTROL WIRE SHALL BE COLOR CODED. WIRE SIZES SHALL CONFORM TO THE CONTROLLER MANUFACTURER SPECIFICATIONS FOR MAXIMUM DISTANCES FOR SPECIFIC WIRE SIZES. ALL WIRE SHALL BE SPECIFICALLY MANUFACTURED FOR DIRECT BURIAL. ALL WIRE CONNECTIONS AND SPLICES SHALL BE MADE IN GROUND BOXES. THE SPLICE SHALL BE COMPLETELY WATERPROOF AND SHALL BE COMPLETELY ENCAPSULATED WITHIN A KING SAFETY SEALED IRRIGATION CONNECTOR/SPLICE ENCLUSURE OR AN APPROVED EQUAL		14 GA.	AS NEEDED			
SOLVENT CEMENT SOLVENT CEMENT SHALL BE THE TYPE RECOMMENDED BY THE PIPE MANUFACTURER			AS NEEDED			
VALVE BOXES BOXES FOR SECTION VALVES, BELOW-GROUND BACKFLOW PREVENTORS, AND QUICK COUPLING VALVES SHALL BE AS SHOWN ON DETAIL SHEET		BOX SIZE SHALL BE MIN. 10" AND ALLOW FOR EASY REMOVAL OF VALVE, ETC. LIDS TO HAVE SNAP LOCKS. TO PREVENT VANDALISM.	QUANTITY AS REQUIRED FOR SECTION VALVES, BELOW GROUND BACKFLOW PREVENTORS, QUICK COUPLING VALVES AND ANY ACCESSORIES			
VALVE BOX RISERS		BOX RISER SHALL EXTEND BELOW VALVES AS SHOWN ON DETAIL SHEET	QUANTITY AS REQUIRED FOR SECTION VALVES, BELOW GROUND BACKFLOW PREVENTORS, QUICK COUPLING VALVES AND ANY ACCESSORIES			

* REFERENCE TO MANUFACTURER'S TRADE NAME OR CATALOG NUMBER IS FOR THE PURPOSE OF IDENTIFICATION ONLY, CONTRACTOR SHALL BE PERMITTED TO FURNISH LIKE MATERIALS OF OTHER MANUFACTURERS PROVIDED THEY ARE OF EQUAL QUALITY AND COMPLY WITH SPECIFICATIONS FOR THIS PROJECT AND ARE APPROVED BY THE ENGINEER.

REGISTERED LANDSCAPE ARCHITECT
HILARY GARNISH
3401
STATE OF TEXAS

06/17/2021

WHITEHOUSE IRRIGATION SPECIFICATIONS

SHEET 1 OF 1

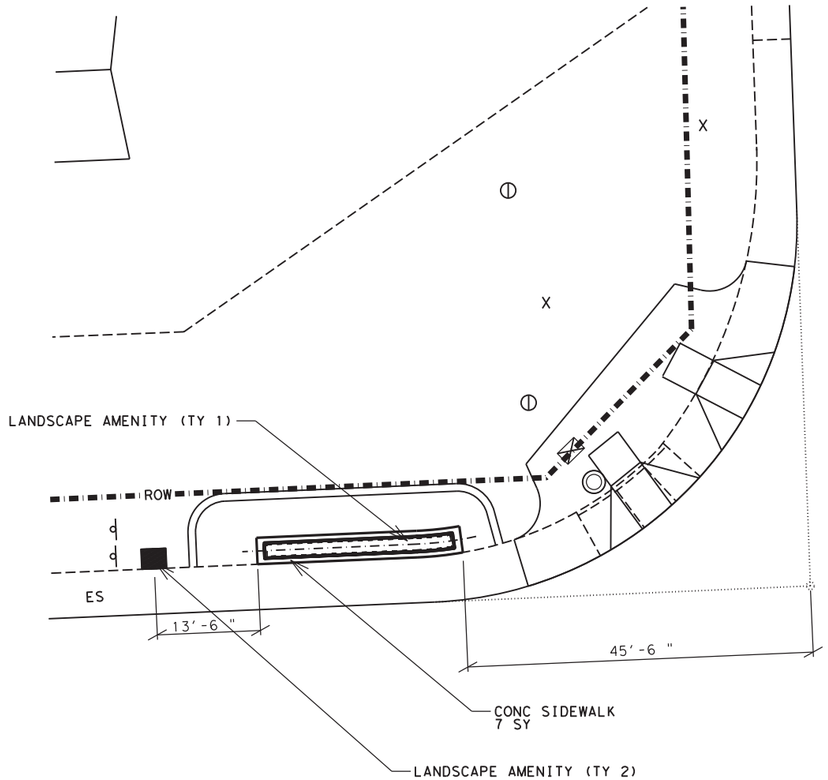
Texas Department of Transportation

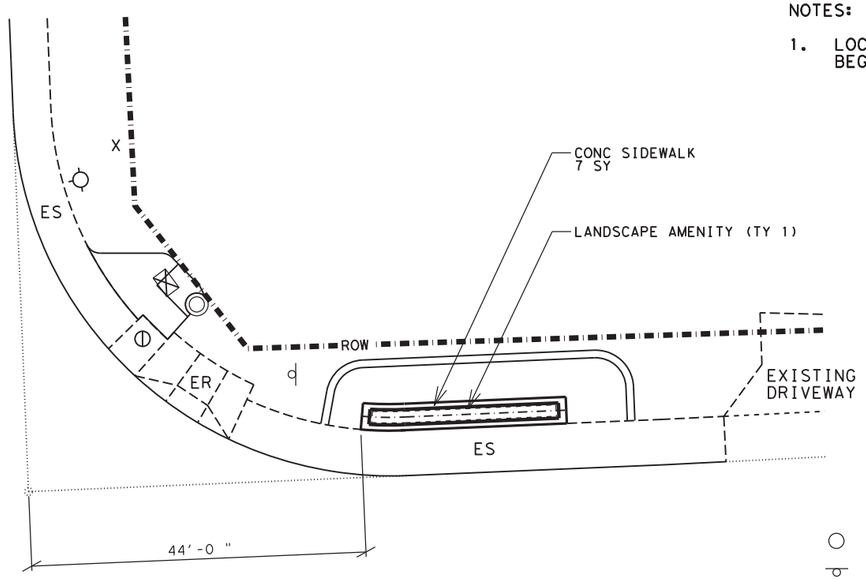
CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		36

DN: JG CK: JG DW: JG CK: JG

DESIGN DIVISION - LANDSCAPE ARCHITECTURE SECTION

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





NOTES:

1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION.

N

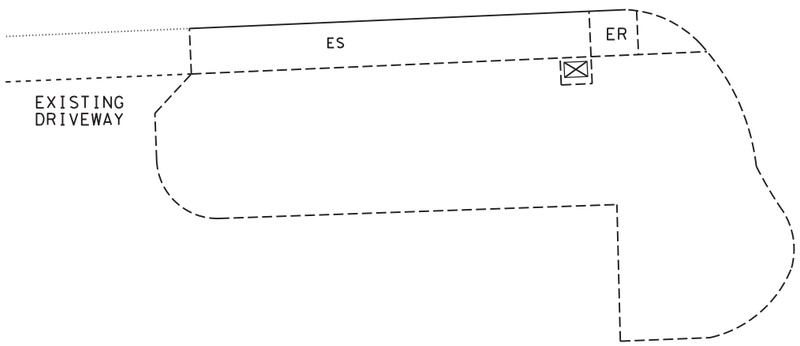
LEGEND

○	POWER/LIGHT POLE
⊸	SIGN
⊠	GROUND BOX
▭ ○	CURB INLET
ROW	ROW
◎	TRAFFIC SIGNAL POLE
⊸	FIRE HYDRANT
Ⓘ	MANHOLE
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
PR	PROPOSED RAMP
X	EXISTING UTILITY MARKER
LS	LEVEL SIDEWALK

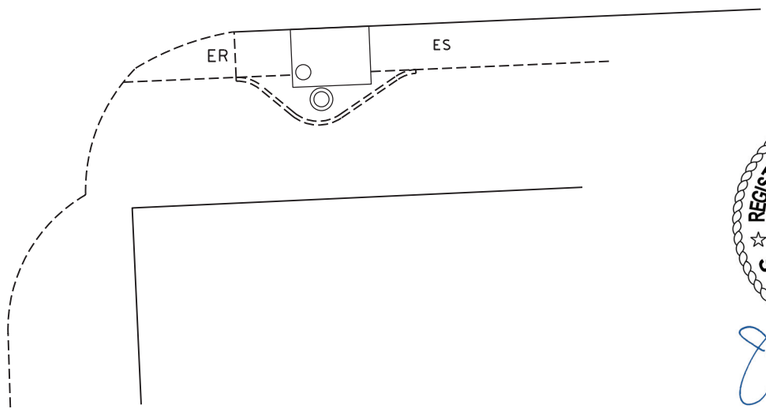
0 5 10 20 40

SCALE: 1" = 20'-0"

FM 346



EXISTING
DRIVEWAY



REGISTERED LANDSCAPE ARCHITECT
JAMES L. GODWIN, JR.
3224
STATE OF TEXAS

04/01/2021

WHITEHOUSE

FM 346 @ FM 848

LANDSCAPE AMENITY PLAN

SHEET 1 OF 1

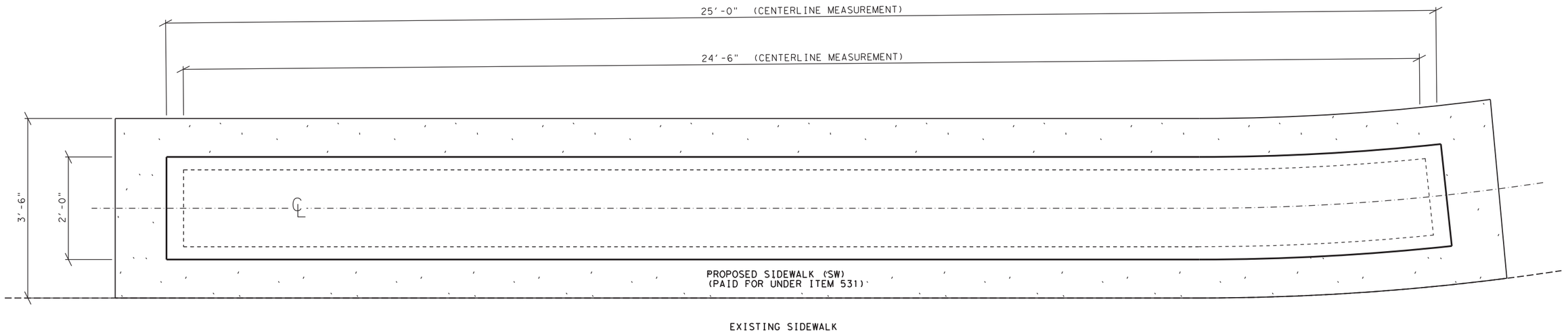
Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		37

DESIGN DIVISION - LANDSCAPE ARCHITECTURE SECTION

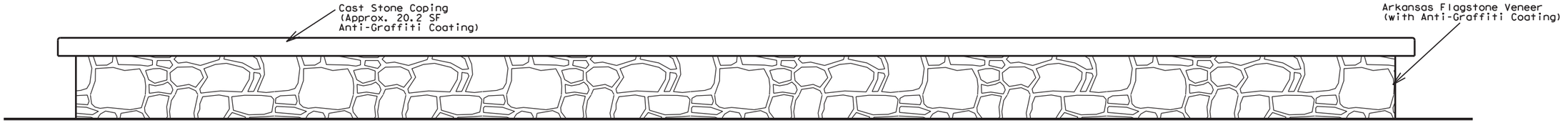
DATE: $DATE$ $TIME$
FILE: $FILE$

DN:	CK:	DW:	CK:
JG	JG	JG	JG



LANDSCAPE AMENITY (TY 1)

PLAN VIEW SCALE: 1" = 2'-0"



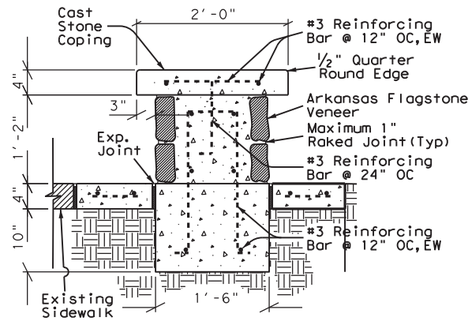
FRONT VIEW

SCALE: 1" = 2'-0"

Note: There are two seat walls. They mirror one another.

	SCHEDULE OF MATERIALS AND FINISHES (FOR CONTRACTOR'S INFORMATION ONLY)				
	ITEM	DESCRIPTION	APPROX. QTY	SPEC or FINISH	EXAMPLE
	531	Conc Sidewalk	7 SY		
(1)	1002	Concrete	3.5 CY		
(1)	1002	Stone Veneer	67 SF	Arkansas Flagstone, max 5" depth, tan mortar. Approved by the City of Whitehouse	
(1)	1002	Cast Stone Coping	0.7 CY	Smooth Tan Concrete Finish, Mortar Color to be Tan; Provide Shop Drawings for Jointing, Reinforcing, and Wall Connection Device.	AHI Supply, Inc. www.ahi-supply.com or EternaStone www.eternastone.com
(1)	1002	Anti-Graffiti Coating	122 SF		

(1) Subsidiary to Item 1002 Landscape Amenity.



SECTION A-A

SCALE: 1"=2'-0"

REGISTERED LANDSCAPE ARCHITECT
JAMES L. GODWIN, JR.
3224
STATE OF TEXAS

04/01/2021

WHITEHOUSE

FM 346 @ FM 848

LANDSCAPE AMENITY DETAILS

SHEET 1 OF 2

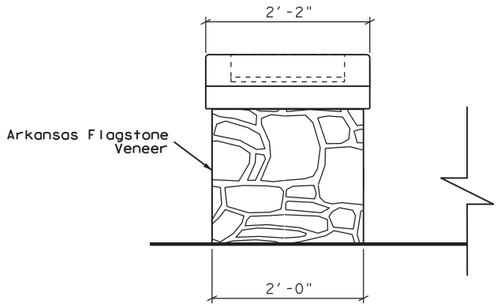
Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		38

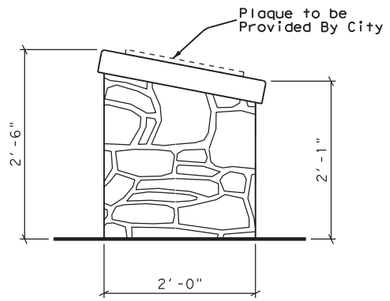
DN: JG | CK: JG | DW: JG | CK: JG

DESIGN DIVISION - LANDSCAPE ARCHITECTURE SECTION

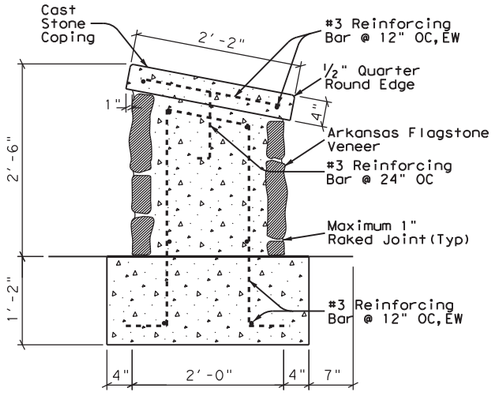
DATE: $DATE$ $TIME$
FILE: $FILE$



FRONT VIEW



SIDE VIEW



SIDE SECTION

SCALE: 1"=2'-0"

LANDSCAPE AMENITY (TY 2)

SCALE: 1" = 2'-0"

REGISTERED LANDSCAPE ARCHITECT
JAMES L. GODWIN, JR.
3224
STATE OF TEXAS

04/02/2021

WHITEHOUSE

FM 346 @ FM 848

LANDSCAPE AMENITY DETAILS

SHEET 2 OF 2

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		39

CK:	JG
CK:	JG
DN:	JG
CK:	JG
DN:	JG

2 TYPE 1
CR = 22 SY
SW = 63 SY
RC = 30 LF

SW/LS = 11 SY

FM 848

ADD PAVEMENT MARKING
(ITEM 668-6018)
15 LF

REMOVE PAVEMENT
MARKING
19 LF

REMOVE EXISTING GROUND BOX
INSTALL GROUND BOX
TY D (162922)

TYPE 1
CURB RAMP

TYPE 1
CURB RAMP

REMOVE EXISTING GROUND BOX
INSTALL GROUND BOX
TY D (162922)

EXISTING
DRIVEWAY

ADD PAVEMENT MARKING
(ITEM 668-6074)
161 LF

REMOVE PAVEMENT MARKING
175 LF

R5'-0"

24'-6"

20'-0"

ITEM	DESC	ITEM DESCRIPTION	UNIT	QTY
104	6021	REMOVING CONC (CURB)	LF	30
529	6002	CONC CURB (TY II)	LF	30
531	6003	CONC SIDEWALKS (6")	SY	74
531	6035	CURB RAMPS	SY	22
624	6009	GROUND BOX TY D (162922)	EA	2
624	6028	REMOVE GROUND BOX	EA	2
668	6018	PREFAB PAV MRK TY B (W)(24")(SLD)	LF	15
668	6074	PREFAB PAV MRK TY C (W) (12") (SLD)	LF	161
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF	175
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	19

NOTES:
1. LOCATE ALL UTILITIES BEFORE BEGINNING CONSTRUCTION. SEE GENERAL NOTES.
2. ADDITIONAL INFORMATION ON SHEET 41, SPECIAL DETAILS.

LEGEND

○	POWER/LIGHT POLE
⊖	SIGN
⊠	GROUND BOX
▭○	CURB INLET
ROW	ROW
◎	TRAFFIC SIGNAL POLE
⊕	FIRE HYDRANT
Ⓘ	MANHOLE
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	EXISTING UTILITY MARKER
RC	REPLACE CURB/REPLACE CURB & GUTTER
F	FLARE
L	LANDING/TURNING SPACE
R	RAMP
SW	SIDEWALK (531-6003)
LS	LEVEL SIDEWALK (531-6003)
CR	CURB RAMP (531-6035)

FM 346

EXISTING
DRIVEWAY

EXISTING
DRIVEWAY

0 5 10 20 40
SCALE: 1" = 20'-0"

N

REGISTERED LANDSCAPE ARCHITECT
JAMES L. GODWIN, JR.
3224
STATE OF TEXAS

05/13/2021

WHITEHOUSE

FM 346 @ FM 848

PEDESTRIAN
ACCESS

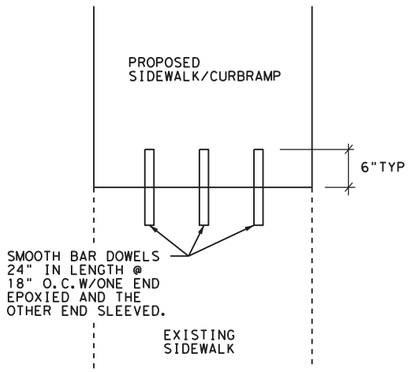
SHEET 1 OF 1

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		40

DESIGN DIVISION - LANDSCAPE ARCHITECTURE SECTION

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

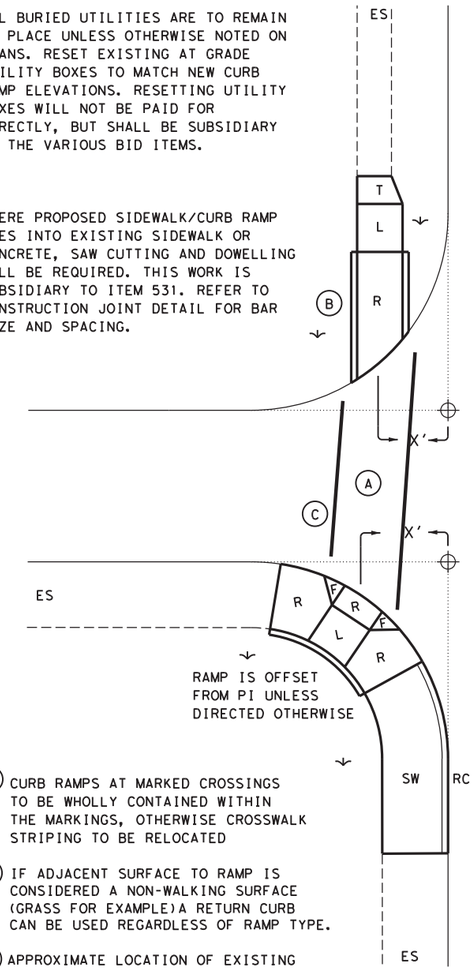


CONSTRUCTION JOINT
PLAN VIEW

NOTES

1. ALL BURIED UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED ON PLANS. RESET EXISTING AT GRADE UTILITY BOXES TO MATCH NEW CURB RAMP ELEVATIONS. RESETTING UTILITY BOXES WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.

2. WHERE PROPOSED SIDEWALK/CURB RAMP TIES INTO EXISTING SIDEWALK OR CONCRETE, SAW CUTTING AND DOWELLING WILL BE REQUIRED. THIS WORK IS SUBSIDIARY TO ITEM 531. REFER TO CONSTRUCTION JOINT DETAIL FOR BAR SIZE AND SPACING.

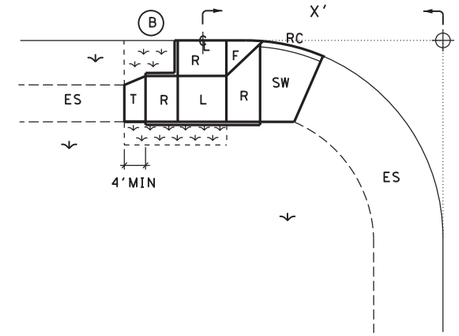


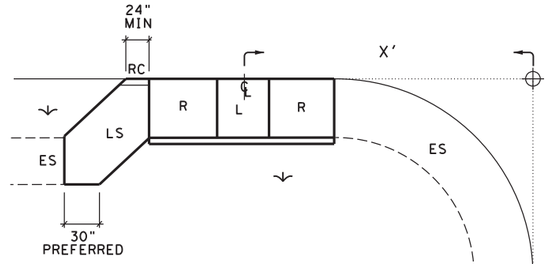
(A) CURB RAMPS AT MARKED CROSSINGS TO BE WHOLLY CONTAINED WITHIN THE MARKINGS, OTHERWISE CROSSWALK STRIPING TO BE RELOCATED

(B) IF ADJACENT SURFACE TO RAMP IS CONSIDERED A NON-WALKING SURFACE (GRASS FOR EXAMPLE) A RETURN CURB CAN BE USED REGARDLESS OF RAMP TYPE.

(C) APPROXIMATE LOCATION OF EXISTING CROSSWALK MARKINGS.

NOTE: BLOCK SOD PLACED ADJACENT TO RAMP AND/OR SIDEWALK WORK LIMITS AS REQUIRED TO RETURN SITE TO PRE-CONSTRUCTION CONDITION





SAMPLE CURB RAMP PLACEMENT
(HORIZONTAL CONTROL)

LEGEND

F = FLARE (10:1 OR LESS)
R = RAMP (CROSS SLOPE NOT TO EXCEED 2%: LONGITUDINAL NOT TO EXCEED 8.33% OR 12:1)
L = LANDING (NOT TO EXCEED 2% SLOPE IN ANY DIRECTION)
T = TRANSITION (PAID FOR UNDER CONC SIDEWALK)
RC = REPLACE CURB/CURB & GUTTER
ES = SIDEWALK (EXISTING)
X' = LENGTH MEASURED FROM PI POINT (SEE INTERSECTION SHEETS FOR DIMENSION)
SW = SIDEWALK (NOT EXCEED 2% CROSS SLOPE)
LS = LEVEL SIDEWALK (NOT EXCEED 2% SLOPE IN ANY DIRECTION)
⊕ = PI POINT MEASURED FROM TANGENTIAL CURBLINE INTERSECTION
↜ = EXISTING TURF

04/01/2021

SPECIAL DETAILS

N. T. S.

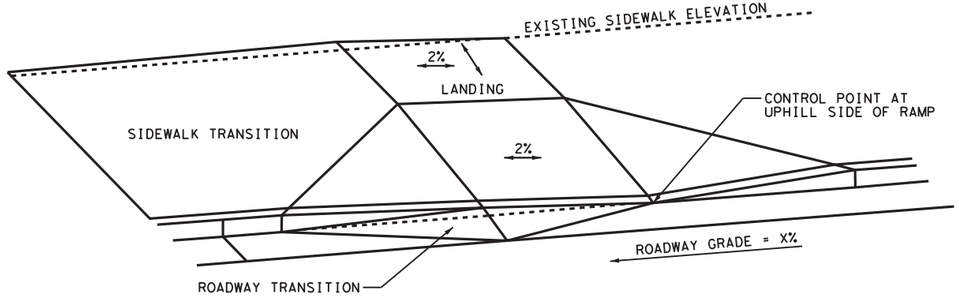
 Texas Department of Transportation

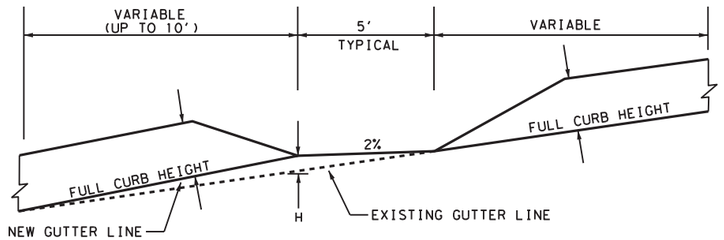
SHEET 1 OF 1

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		41
STATE	DISTRICT	COUNTY	
TEXAS	TYL	SMITH	
CONTROL	SECTION	JOB	HIGHWAY NO.
0910	16	169	VA

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

ROADWAY TRANSITION





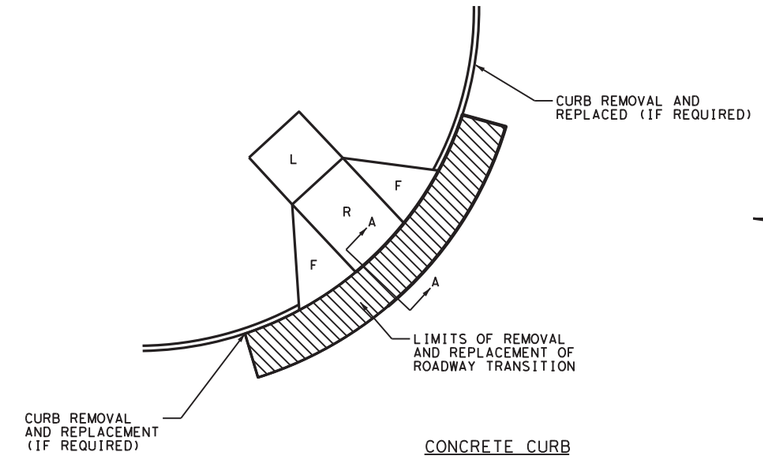
CURB ELEVATION
N.T.S.

GRADE DIFFERENTIAL BETWEEN CURB RAMP CROSS SLOPE AND ROADWAY GRADE	*H
1%	0.04' (1/2")
2%	0.08' (1")
3%	0.12' (1 1/2")
4%	0.16' (2")
5%	0.20' (2 1/2")

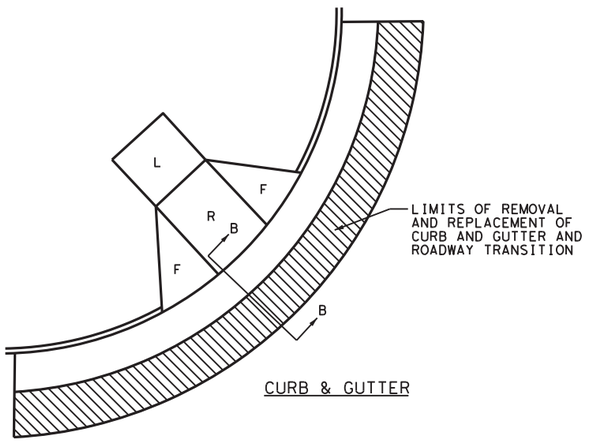
*H = DIFFERENCE IN ELEVATION BETWEEN THE NEW GUTTER LINE AND EXISTING GUTTER LINE

NOTES:

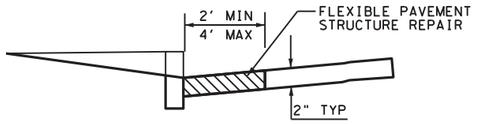
1. UTILIZE ROADWAY TRANSITION TO TIE CROSS SLOPE OF NEWLY CONSTRUCTED CURB RAMP TO THE EXISTING ROADWAY GRADE. ROADWAY TRANSITIONS SHOULD NOT EXTEND MORE THAN 4 FEET INTO ROADWAY.
2. FOR CURB SECTION, REMOVE A 2 FOOT WIDE (MIN.) BY 2 INCH DEEP SECTION OF PAVEMENT THE LENGTH OF THE TRANSITION PRIOR TO CONSTRUCTION.
3. FOR CURB AND GUTTER SECTION, REMOVE CURB, GUTTER AND IF NECESSARY A SECTION OF PAVEMENT (24 INCHES MIN.) BEYOND THE GUTTER BY 6 INCHES DEEP. CONSTRUCT TRANSITION IN THE GUTTER SECTION AS SHOWN.
4. CONSTRUCT FULL HEIGHT CURB AND CURB RAMP FLARES (IF REQUIRED) BASED ON NEW GUTTER LINE ELEVATIONS.
5. CONSTRUCT TRANSITION FROM BOTTOM OF CURB RAMP TO ROADWAY WITH HOT-MIX ASPHALT CONCRETE AS PER PLANS AND SPECIFICATION OR AS DIRECTED.
6. TRAFFIC SIGNAL LOOP DETECTORS MAY EXIST WITHIN THE ROADWAY CONSTRUCTION TRANSITION ZONE. MAINTAIN OPERATION OF LOOP DETECTORS THROUGHOUT CONSTRUCTION. REPAIR OR REPLACE ANY LOOP DETECTORS DAMAGED DURING CONSTRUCTION OPERATIONS.



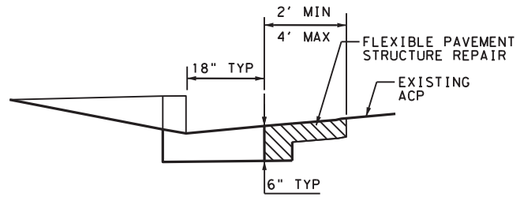
CONCRETE CURB



CURB & GUTTER



SECTION A-A



SECTION B-B

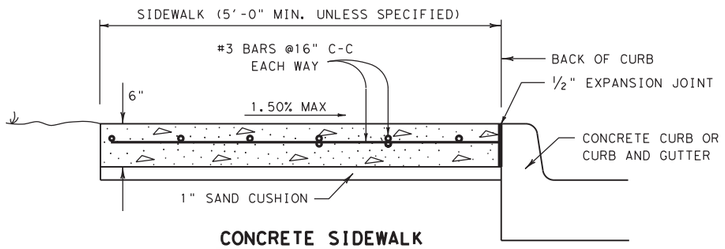
04/02/2021

ROADWAY TRANSITION DETAILS

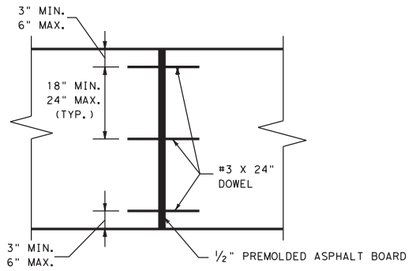
SHEET 1 OF 1

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		42
STATE	DISTRICT	COUNTY	
TEXAS	TYL	SMITH	
CONTROL	SECTION	JOB	HIGHWAY NO.
0910	16	169	VA

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



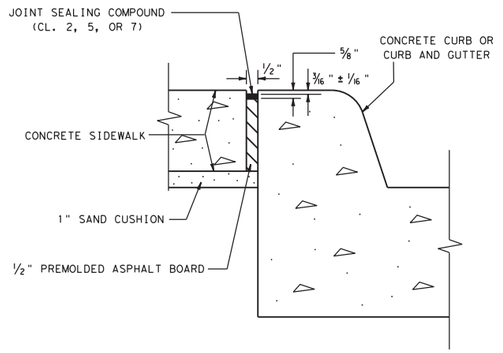
CONCRETE SIDEWALK
(ADJACENT TO CURB)



TRANSVERSE EXPANSION JOINT
NTS

CONCRETE SIDEWALK DETAIL

NTS



½" EXPANSION JOINT

(SIDEWALK ADJACENT TO CURB) NTS

SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS AND CURB RAMPS.

LONGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALK MAY MATCH THAT OF ROADWAY.

04/01/2021

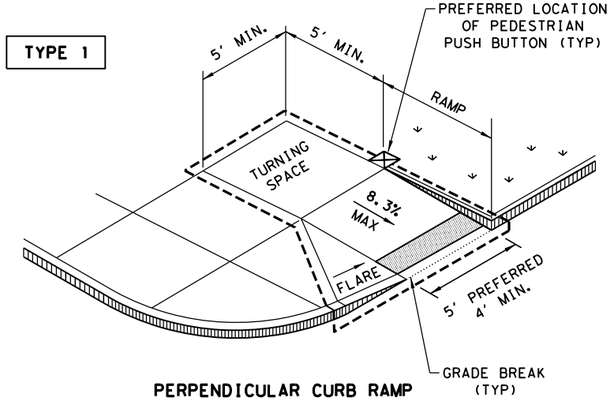
Texas Department of Transportation

MISC CONSTRUCTION DETAILS

ORIGINAL DRAWING	FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		43
REVISIONS:	STATE	DIST.	COUNTY	
	TEXAS	TYL	SMITH	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0910	16	169	VA

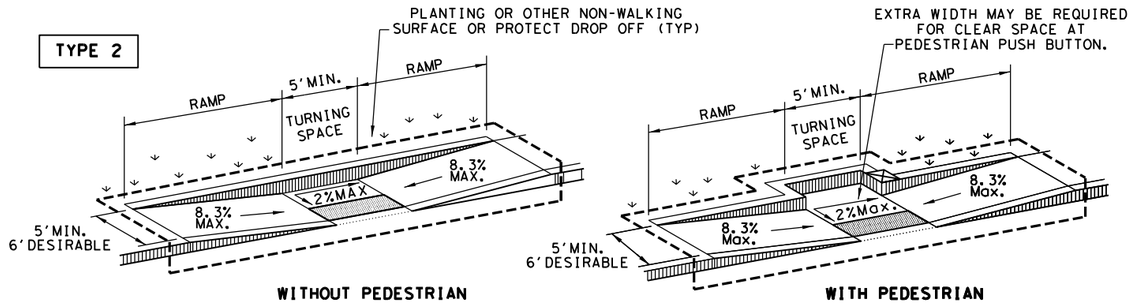
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

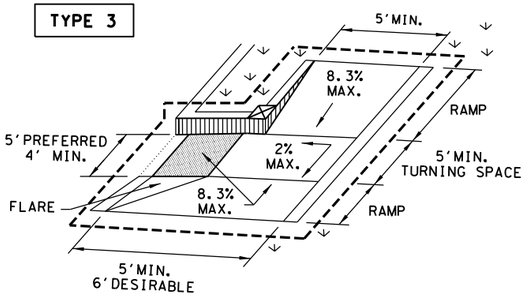


WITHOUT PEDESTRIAN PUSH BUTTON

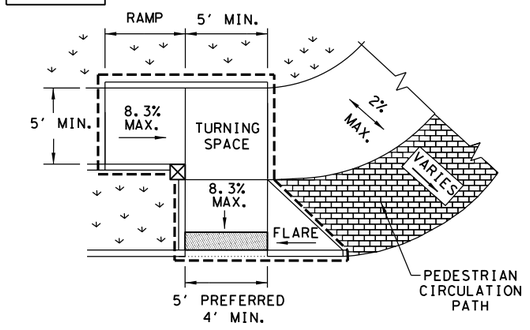
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

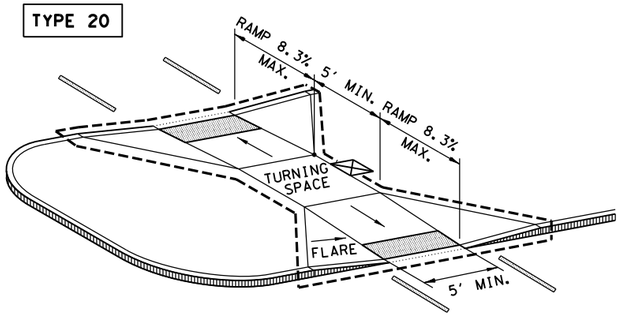


TYPE 6



COMBINATION CURB RAMPS

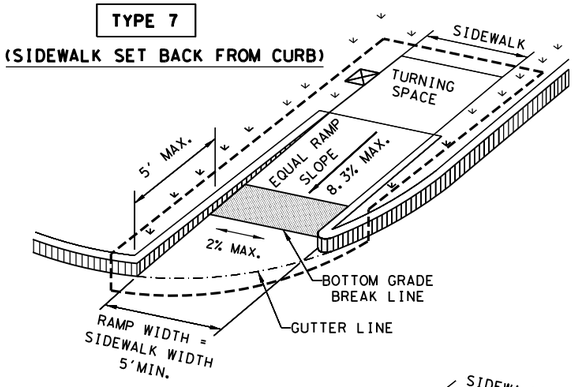
TYPE 20



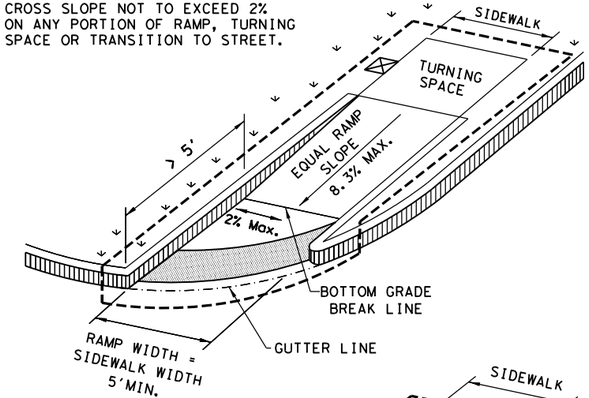
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

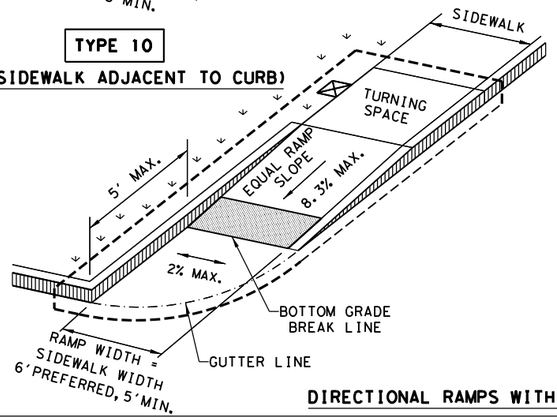


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

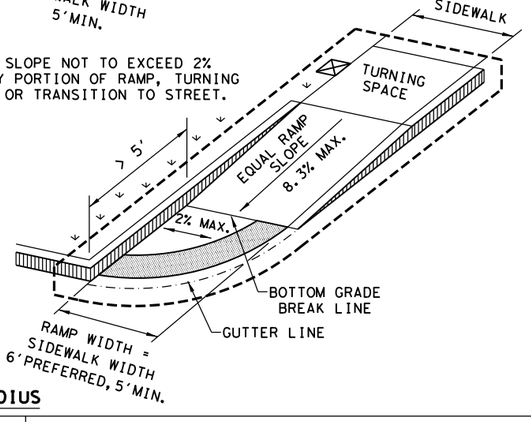


TYPE 10

(SIDEWALK ADJACENT TO CURB)

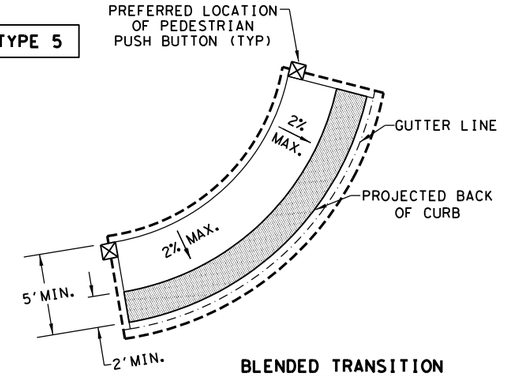


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

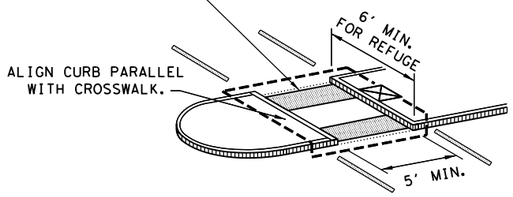
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

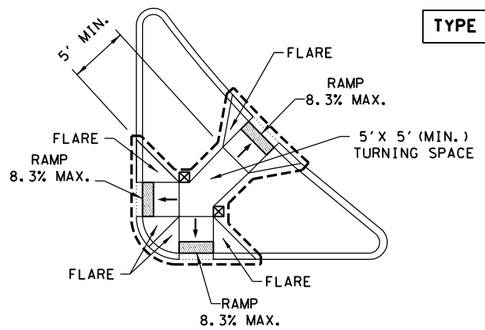
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



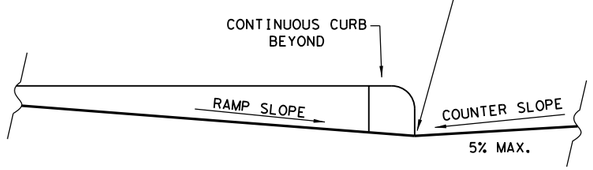
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0910	16	169	VA
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	TYL	SMITH		44

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

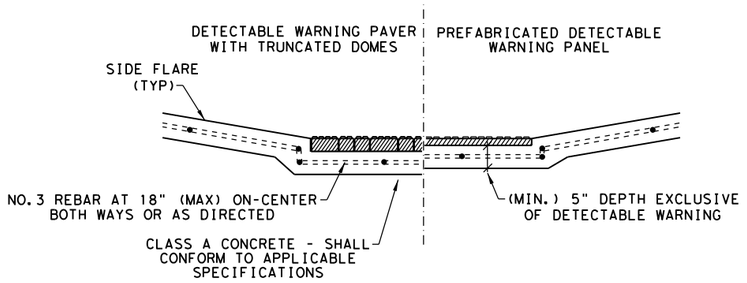
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

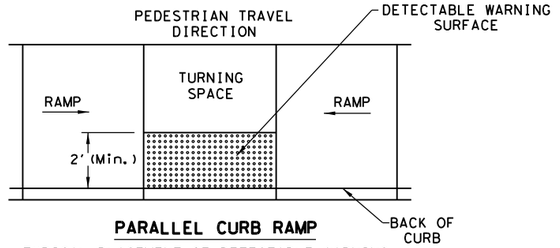
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

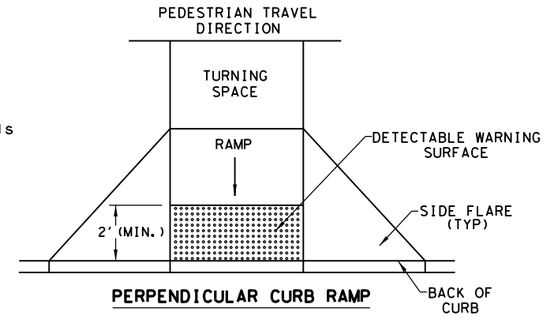


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

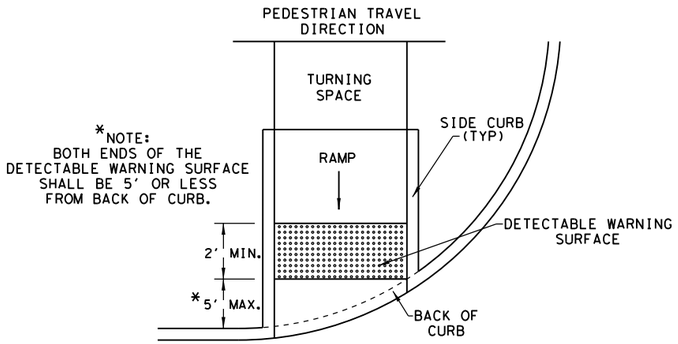
DETECTABLE WARNING SURFACE DETAILS



PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation

Design Division Standard

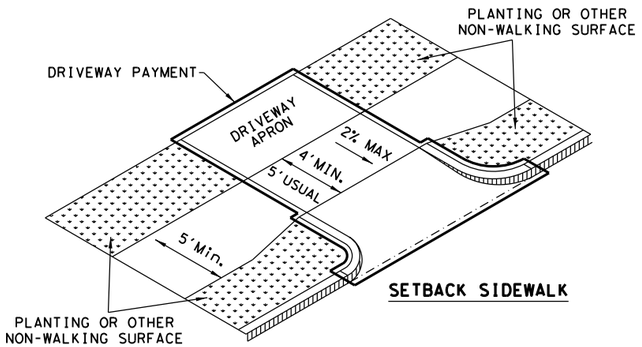
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

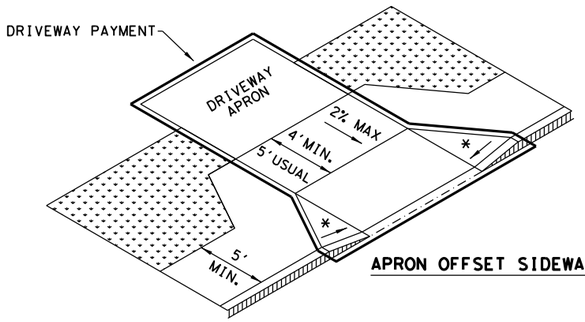
FILE: ped18	DN: TxDOT		DW: VP		CK: KM		CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0910	16	169		VA		
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.		
	TYL	SMITH			45		

DATE:
FILE:

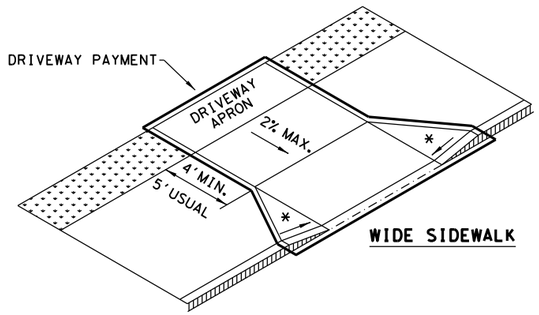
SIDEWALK TREATMENT AT DRIVEWAYS



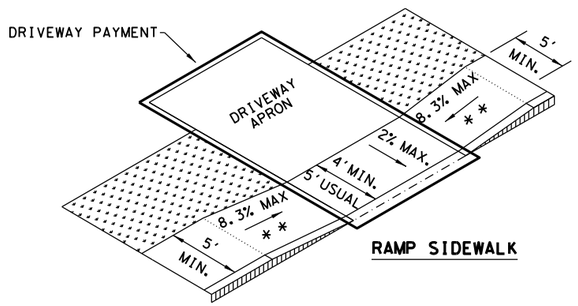
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

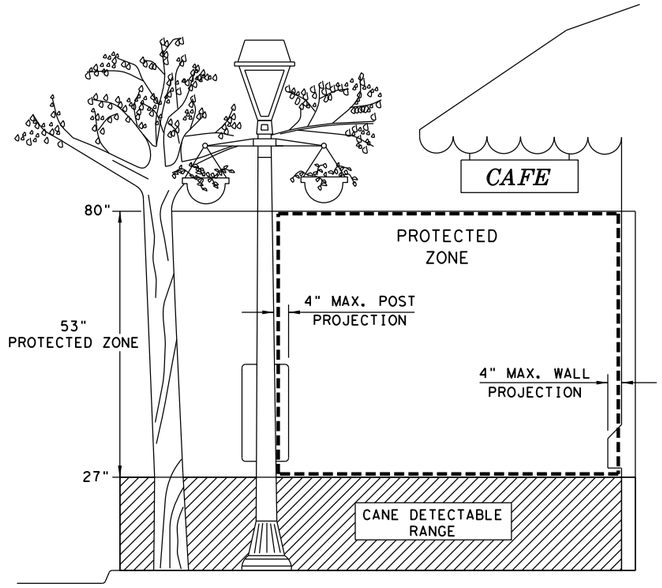


RAMP SIDEWALK

NOTES:

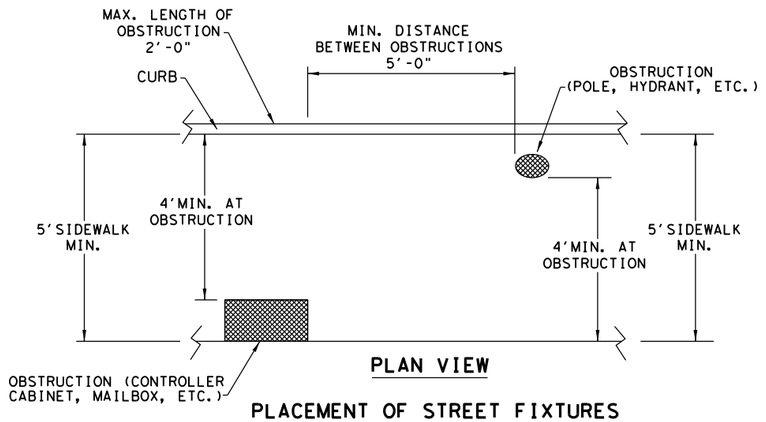
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.



PROTECTED ZONE

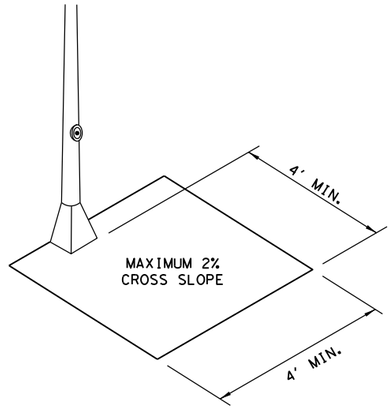
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



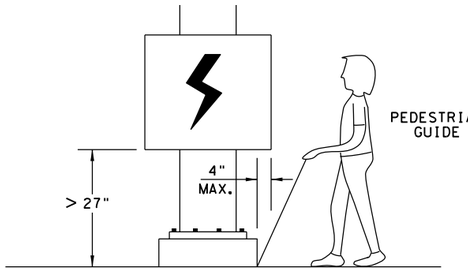
PLAN VIEW

PLACEMENT OF STREET FIXTURES

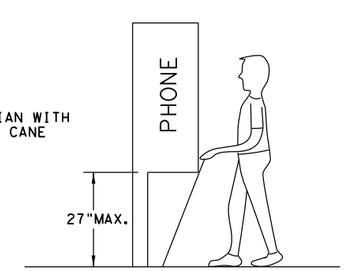
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
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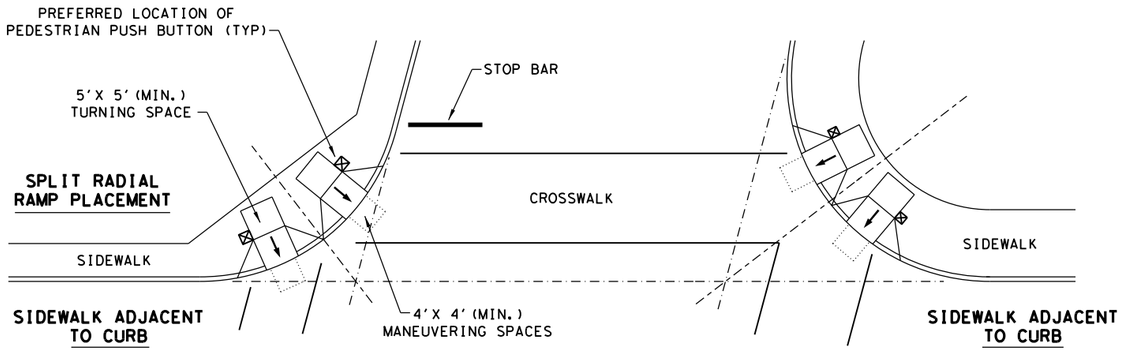
REVISIONS	0910	16	169		VA
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	TYL	SMITH			46

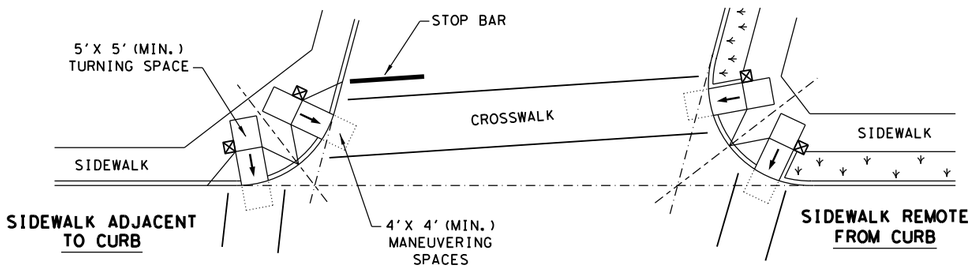
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

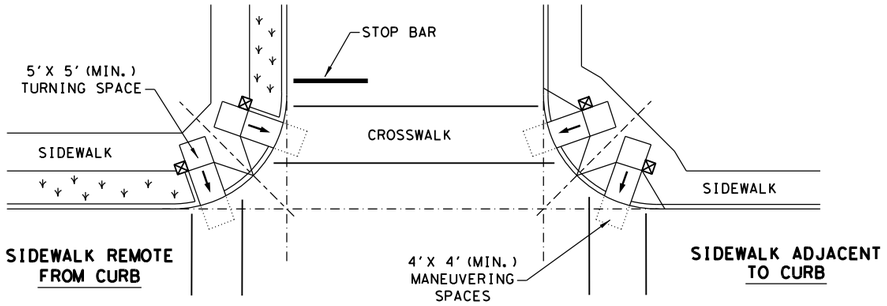
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



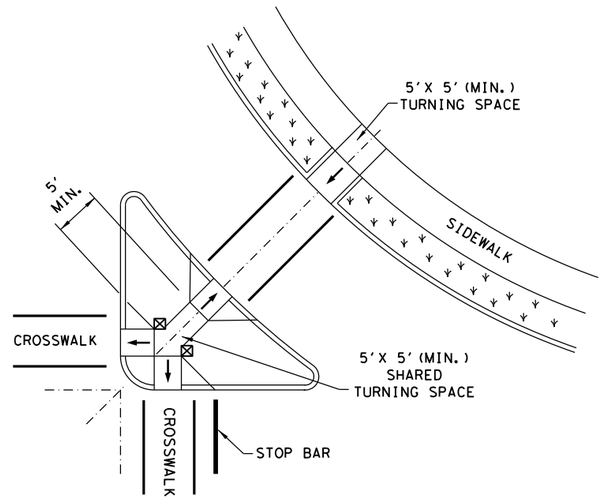
SKEWED INTERSECTION WITH "LARGE" RADIUS



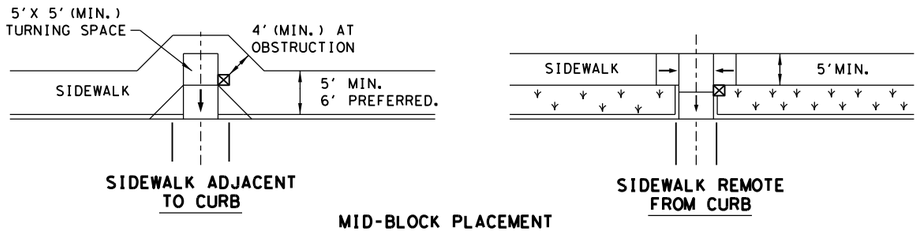
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ⊠

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
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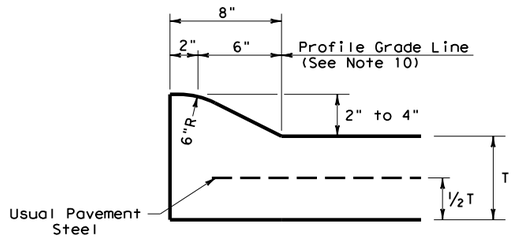
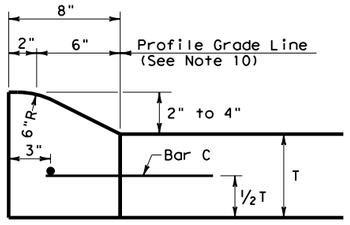
REVISIONS	0910	16	169	VA
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	TYL	SMITH		47

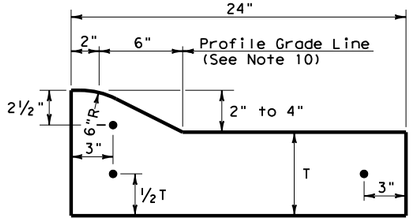
DATE:
FILE:



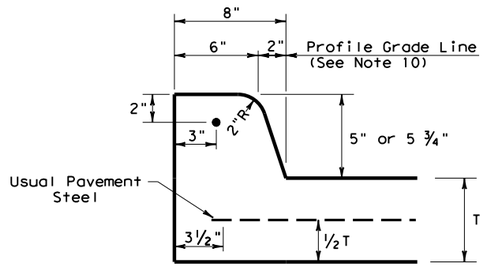
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



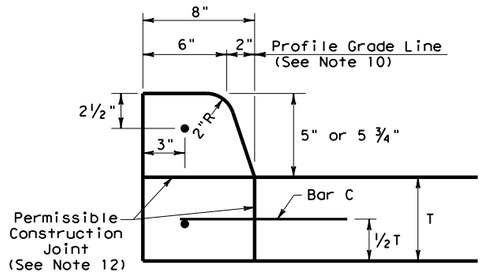
TYPE I CURB
2" - 4" HEIGHT



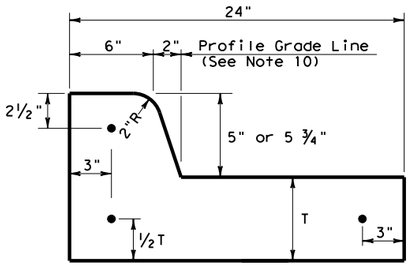
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



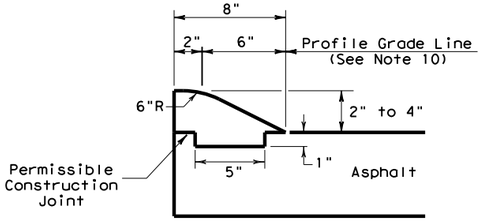
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



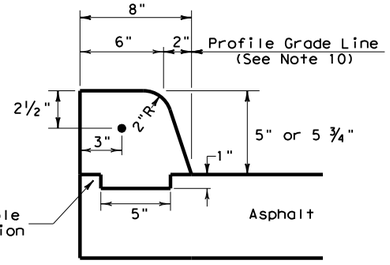
TYPE II CURB
5" - 5 ¾" HEIGHT



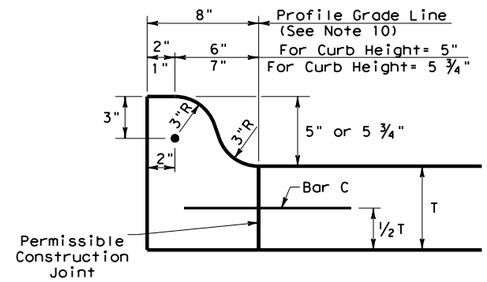
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



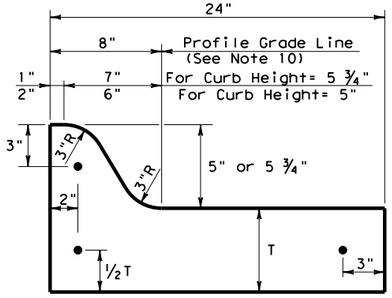
TYPE III CURB (KEYED)
2" - 4" HEIGHT



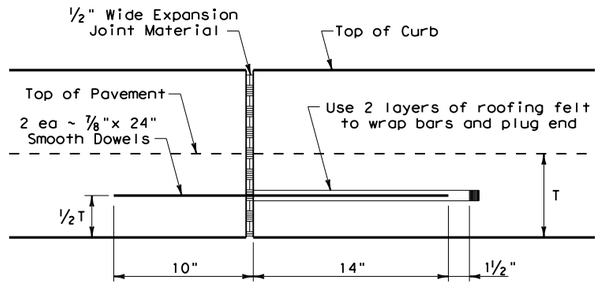
TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



TYPE IIa CURB
5" - 5 ¾" HEIGHT

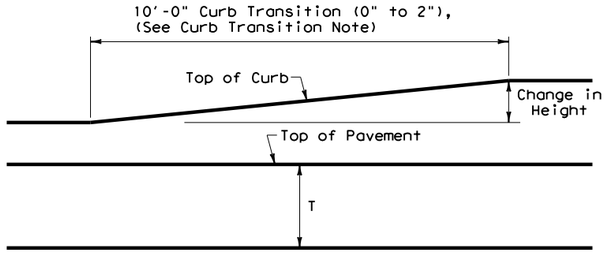


TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

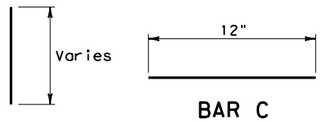
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and the grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B used as needed to support curb reinforcing steel during concrete placement.



BAR B

BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-21

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: SS	CK: KM
© TxDOT: FEBRUARY 2021 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0910	16	169	VA
	DIST	COUNTY		SHEET NO.
	TYL	SMITH		48

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 WHITEHOUSE

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.

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

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☐ 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

Action No.

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IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

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

☒ No Action Required ☐ Required Action

Action No.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

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.

VII. 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 12-12-2011 (DS)	0910	16	169	VA	
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	TYL	SMITH		49	

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

A. GENERAL SITE DATA

1. PROJECT LIMITS:
FROM VARIOUS LOCATIONS IN
TO WHITEHOUSE

PROJECT LOCATION:
BEGIN PROJECT: N/A
END PROJECT: N/A
PROJECT COORDINATES:
BEG. LATITUDE: N/A BEG. LONGITUDE: N/A
END LATITUDE: N/A END LONGITUDE: N/A

2. PROJECT SITE MAPS:
* PROJECT LOCATION MAP: **TITLE SHEET**
* DRAINAGE PATTERNS: **N/A**
* SLOPES ANTICIPATED AFTER MAJOR GRADINGS OR AREAS OF SOIL DISTURBANCE: **N/A**
* LOCATION OF EROSION AND SEDIMENT CONTROLS: **N/A**
* SURFACE WATERS AND DISCHARGE LOCATIONS: **N/A, NONE**
* PROJECT SPECIFIC LOCATIONS: TO BE SPECIFIED BY THE PROJECT FIELD OFFICE DURING CONSTRUCTION AND LOCATED IN THE PROJECT SW3P FILE. REFERENCE ITEM #10 BELOW

3. PROJECT DESCRIPTION: **LANDSCAPE DEVELOPMENT LANDSCAPING, WHITEHOUSE GCAA**

4. MAJOR SOIL DISTURBING ACTIVITIES: **CONSTRUCTING PLANTING BEDS, BED EDGING, SEAT WALLS & FOOTINGS, IRRIGATION SYSTEMS, & TRENCHING.**

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:
-Owentown loamy fine sand, occasionally flooded (Ow)
-Pickton loamy fine sand, 2 to 5 percent slopes (PkC)
-Redsprings very gravelly sandy loam, 8 to 25 percent slopes(RdE)
-Redsprings very gravelly sandy loam, 2 to 5 percent slopes (RdC)

85% VEGETATIVE COVER.

6. TOTAL PROJECT AREA: **1.54 AC**

7. TOTAL AREA TO BE DISTURBED: **0.09 AC**

8. WEIGHTED RUNOFF COEFFICIENT
BEFORE CONSTRUCTION: **0.2**
AFTER CONSTRUCTION: **0.2**

9. NAME OF RECEIVING WATERS: (SEGMENT NUMBER OF RECEIVING WATERS)

HILL CREEK, BLACKHAWK CREEK, LAKE TYLER/LAKE TYLER EAST (0613)

10. PROJECT SW3P FILE: FOR PROJECTS DISTURBING ONE ACRE OR MORE, TXDOT WILL MAINTAIN AN SW3P FILE WITH ALL PERTINENT ENVIRONMENTAL DOCUMENTS, CORRESPONDENCE, ETC. AT THE PROJECT FIELD OFFICE. IF NO FIELD OFFICE IS AVAILABLE THEN THE SW3P FILE SHALL BE KEPT IN THE INSPECTOR'S TRUCK.

B. EROSION AND SEDIMENT CONTROLS

1. SOIL STABILIZATION PRACTICES:

___ TEMPORARY SEEDING
_X_ PERMANENT PLANTING, SODDING, OR SEEDING
_X_ MULCHING
___ SOIL RETENTION BLANKET
___ BUFFER ZONES
_X_ PRESERVATION OF NATURAL RESOURCES

OTHER: VEGETATIVE BUFFERS

2. STRUCTURAL PRACTICES:

___ SILT FENCES
___ ROCK FILTER DAMS
___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
___ DIVERSION DIKE AND SWALE COMBINATIONS
___ PIPE SLOPE DRAINS
___ PAVED FLUMES
___ ROCK BEDDING AT CONSTRUCTION EXIT
___ TIMBER MATTING AT CONSTRUCTION EXIT
___ CHANNEL LINERS
___ SEDIMENT TRAPS
___ SEDIMENT BASINS
___ STORM INLET SEDIMENT TRAP
___ STONE OUTLET STRUCTURES
___ CURBS AND GUTTERS
___ STORM SEWERS
___ VELOCITY CONTROL DEVICES

OTHER: TEMPORARY EROSION CONTROL LOGS

3. STORM WATER MANAGEMENT:

STORM WATER DRAINAGE WILL BE PROVIDED BY
GRASS-LINED SWALES & EXISTING DITCHES AND STORMWATER SYSTEMS.
THIS SYSTEM WILL CARRY THE DRAINAGE WITHIN THE RIGHT-OF-WAY TO
PROJECT SITE WHICH DRAINS TO NATURAL FACILITIES

4. STORM WATER MANAGEMENT ACTIVITIES: (SEQUENCE OF CONSTRUCTION)

1. **STABILIZE AREA FOR POTENTIAL RUNOFF.**
2. **INSTALL IRRIGATION SYSTEM, INCLUDING TRENCHING & BORING.**
3. **PLANT PLANT MATERIAL.**
4. **CONSTRUCT SEAT WALLS AND PEDESTAL.**
5. **CONSTRUCT CURB RAMPS AND SIDEWALK.**
6. **SOD DISTURBED AREAS ACCORDING TO PLANS.**

5. NON-STORM WATER DISCHARGES:
FILTER NON-STORM WATER DISCHARGES, OR HOLD RETENTION BASINS, BEFORE BEING ALLOWED TO MIX WITH STORM WATER. THESE DISCHARGES CONSIST OF NON-POLLUTED GROUND WATER, SPRING WATER, FOUNDATION AND/OR FOOTING DRAIN WATER; AND WATER USED FOR DUST CONTROL, PAVEMENT WASHING AND VEHICLE WASHWATER CONTAINING NO DETERGENTS.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:
MAINTENANCE WILL BE PERFORMED AS INDICATED ON FIELD INSPECTION AND MAINTENANCE REPORT FORM 2118.

2. INSPECTION:
INSPECTION WILL BE PERFORMED AS INDICATED ON FIELD INSPECTION AND MAINTENANCE REPORT FORM 2118.

3. WASTE MATERIALS:
ALL WASTE MATERIALS WILL BE COLLECTED, STORED AND DISPOSED OF IN A LIDDED DUMPSTER IN A LEGAL AND PROPER MANNER. NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE.

4. HAZARDOUS WASTE (INCLUDING SPILL REPORTING):
AT A MINIMUM, ANY PRODUCTS 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 THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS, THE SPILL COORDINATOR MUST BE CONTACTED IMMEDIATELY.

5. 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
_X_ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
_X_ 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 SEDIMENT FROM ENTERING RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WATERBODY OR STREAMBED.

CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED TO MINIMIZE THE RUNOFF OF POLLUTANTS.

REGISTERED LANDSCAPE ARCHITECT
JAMES L. GODWIN, JR.
3224
STATE OF TEXAS

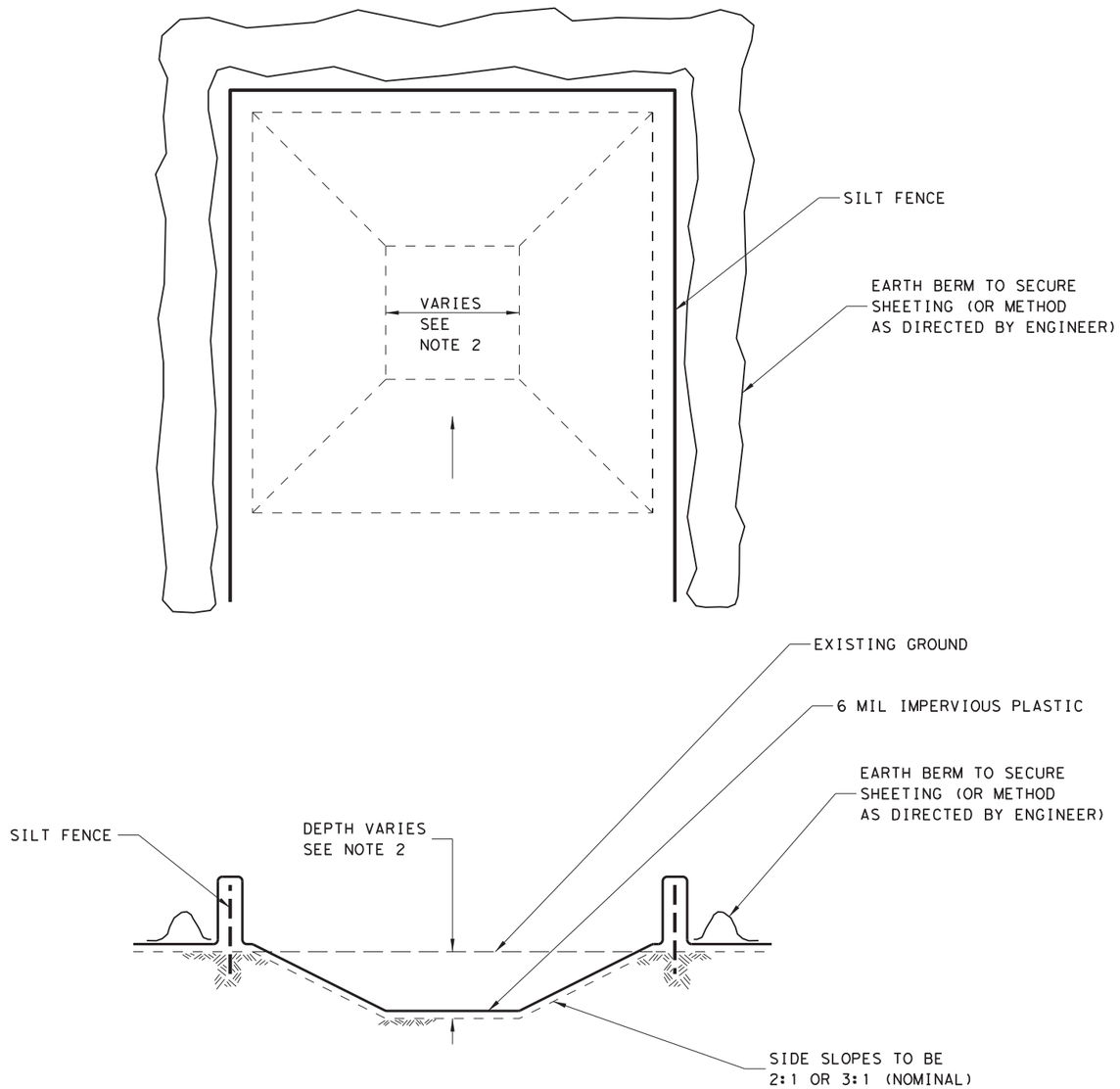
06/17/2021

VA
STORM WATER POLLUTION PREVENTION PLAN (SW3P)

Texas Department of Transportation

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		50



CONCRETE WASHOUT AREA

NOT TO SCALE
(SEE NOTE 2)

NOTES

1. CONCRETE WASHOUT AREA(S) SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE. THE CONCRETE WASHOUT AREA SHALL BE ENTIRELY SELF-CONTAINED.

2. THE CONTRACTOR SHALL SUBMIT THE DESIGN, LOCATION AND SIZING OF OF THE CONCRETE WASHOUT AREA(S) WITH THE PROJECT'S EROSION AND SEDIMENTATION CONTROL PLAN AND SHALL BE APPROVED BY THE ENGINEER.

LOCATION: WASHOUT AREA(S) ARE TO BE LOCATED AT LEAST 50 FEET FROM ANY STREAM, WETLAND, STORM DRAINS, OR OTHER SENSITIVE RESOURCE. THE FLOOD CONTINGENCY PLAN MUST ADDRESS THE CONCRETE WASHOUT IF THE WASHOUT IS TO BE LOCATED WITHIN THE FLOODPLAN.

SIZE: THE WASHOUT MUST HAVE SUFFICIENT VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS INCLUDING, BUT NOT LIMITED TO, OPERATIONS ASSOCIATED WITH GROUT AND MORTAR.

3. SURFACE DISCHARGE IS UNACCEPTABLE, THERFORE EARTH BERM OR OTHER CONTROL MEASURES, AS APPROVED BY THE ENGINEER, SHOULD BE USED AROUND THE PERIMETER OF THE CONCRETE WASHOUT AREA FOR CONTAINMENT.

4. SIGNS SHOULD BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CONCRETE AREA(S) AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS. WASHOUT AREA(S) SHOULD BE FLAGGED WITH SAFETY FENCING OR OTHER APPROVED METHOD.

5. CONCRETE WASH-OUT AREAS SHALL BE LINED WITH IMPERVIOUS PLASTIC WITH A MINIMUM THICKNESS OF 6 MILS AND BE REPLACED IF DAMAGED DURING CLEAN-OUT OF HARDENED CONCRETE FROM THE WASH-OUT AREA.

6. WASHOUT AREA(S) ARE TO BE INSPECTED AT LEAST ONCE A WEEK FOR STRUCTURAL INTEGRITY, ADEQUATE HOLDING CAPACITY AND CHECKED FOR LEAKS, TEARS, OR OVERFLOWS. (AS DIRECTED BY THE CONSTRUCTION SITE ENVIRONMENTAL INSPECTION REPORT) WASHOUT AREA(S) SHOULD BE CHECKED AFTER HEAVY RAINS.

7. HARDENED CONCRETE WASTE SHOULD BE REMOVED AND DISPOSED OF WHEN THE WASTE HAS ACCUMULATED TO HALF OF THE CONCRETE WASHOUT'S HEIGHT. THE WASTE CAN BE STORED AT AN UPLAND LOCATION, AS APPROVED BY THE ENGINEER. ALL CONCRETE WASTE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH ALL APPLICABLE LAWS, REGULATIONS, AND GUIDELINES.

8. PAYMENT FOR THIS ITEM IS TO BE INCLUDED UNDER THE GENERAL COST OF THE WORK FOR THE PROJECT, INCLUDING SITE RESTORATION.

REGISTERED LANDSCAPE ARCHITECT
JAMES L. GODWIN, JR.
3224
STATE OF TEXAS

04/01/2021

MISCELLANEOUS DETAILS

Texas Department of Transportation
SHEET OF

CONT	SECT	JOB	HIGHWAY
0910	16	169	VA
DIST	COUNTY		SHEET NO.
TYL	SMITH		51

DATE: $DATE$ $TIME$
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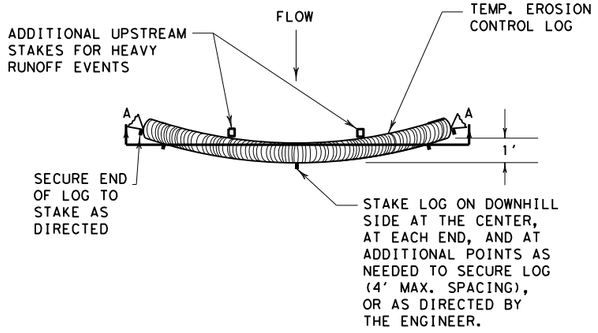
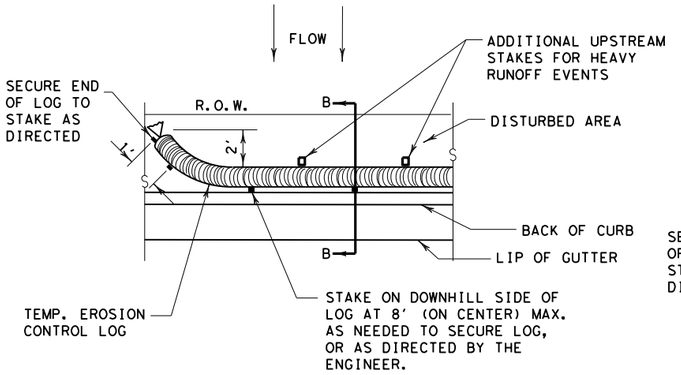


PLAN VIEW



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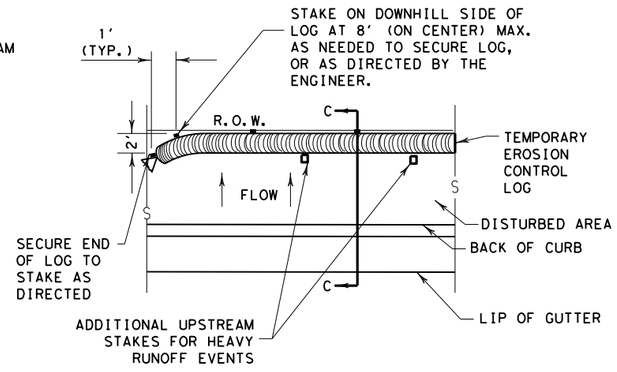

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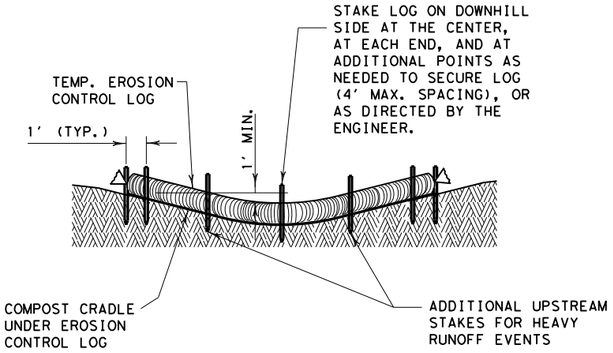
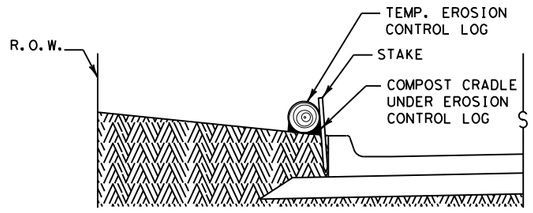


SECTION A-A

EROSION CONTROL LOG DAM

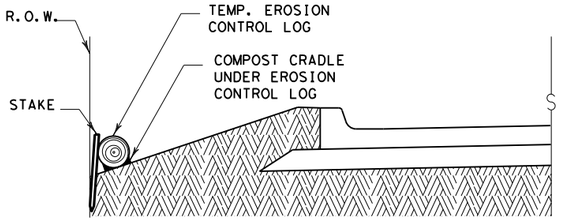
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

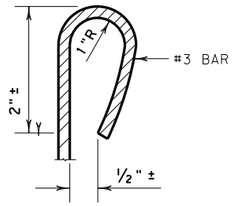
CL-BOC



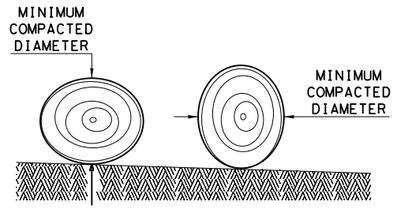
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

GENERAL NOTES:

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

LEGEND

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

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

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

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

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

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

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916		DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0910	16	169		VA	
		DIST		COUNTY			SHEET NO.
		TYL		SMITH			52

DATE:
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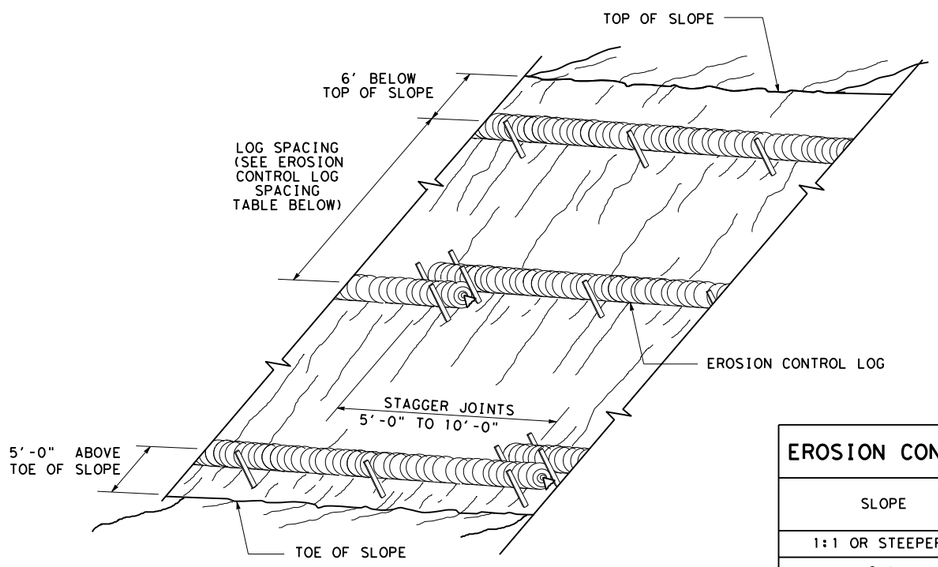
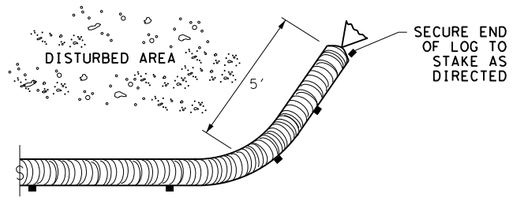


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

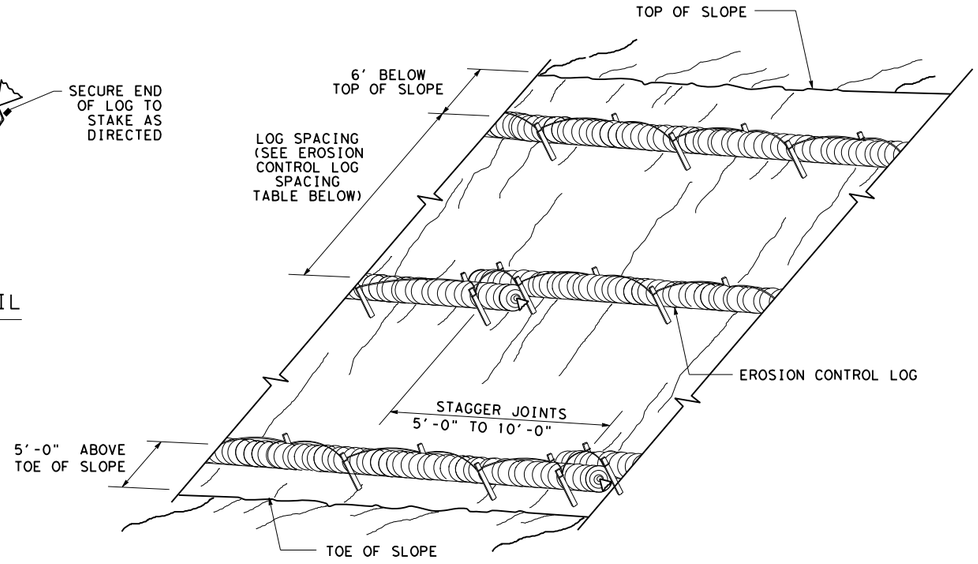
CL-SST



END SECTION RAP DETAIL

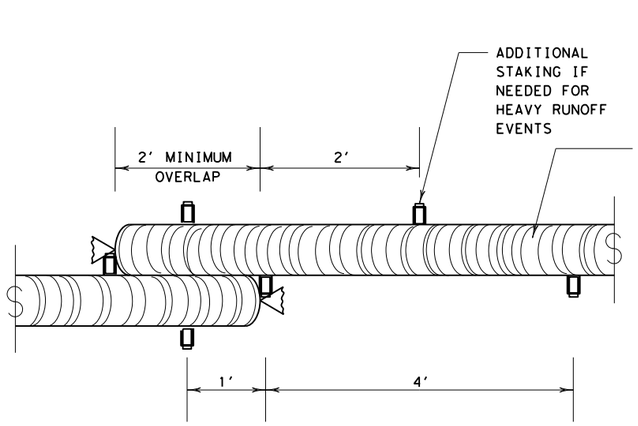
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

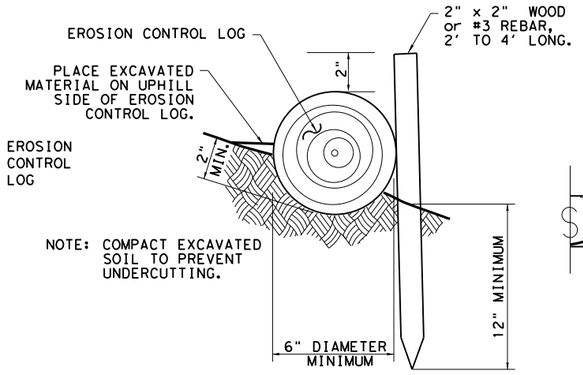
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

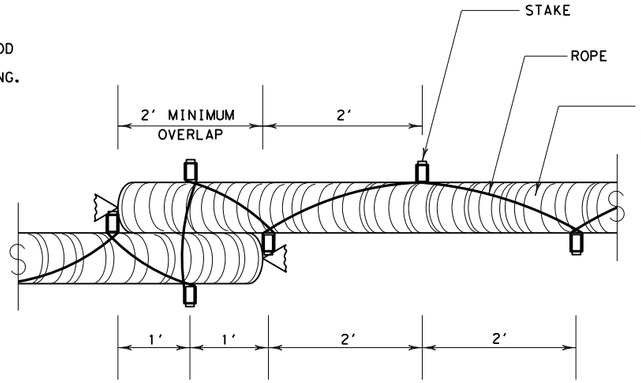


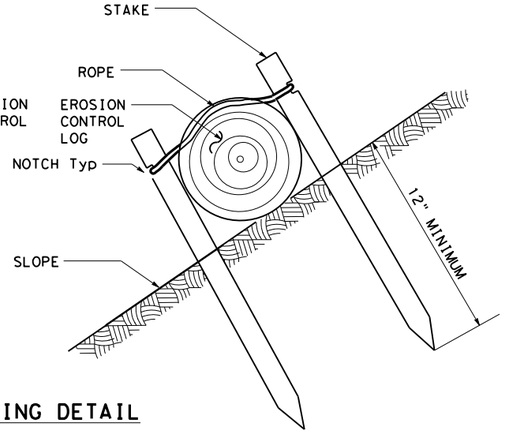


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

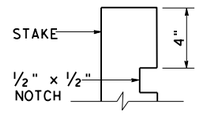
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



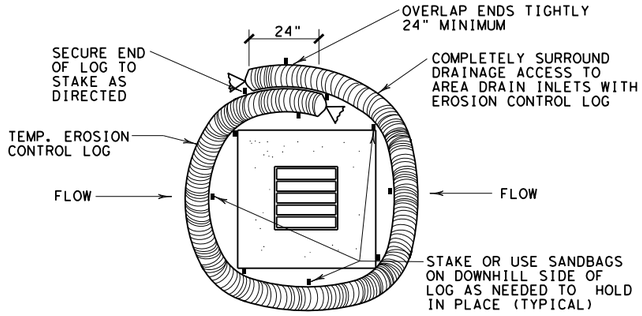
STAKE NOTCH DETAIL

Texas Department of Transportation | Design Division Standard

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

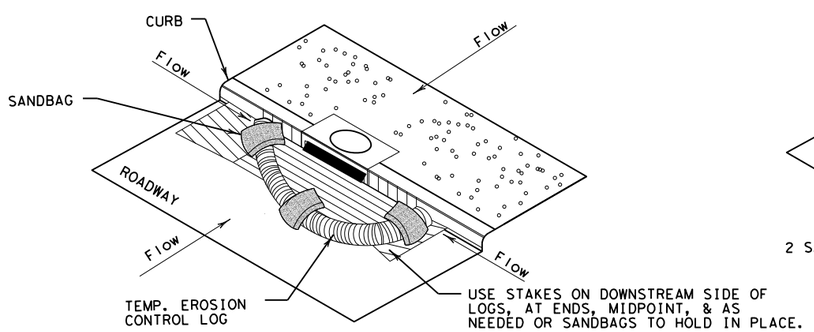
FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0910	16	169		VA	
	DIST	COUNTY				SHEET NO.
	TYL	SMITH				53

DATE:
FILE:



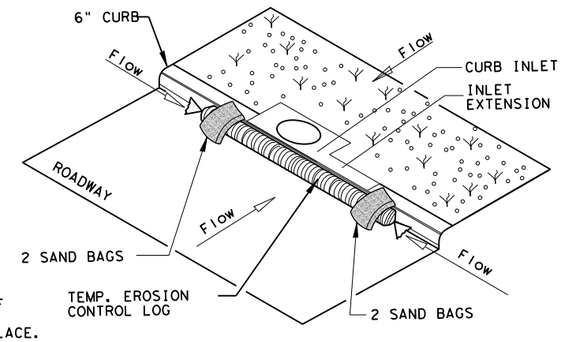
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

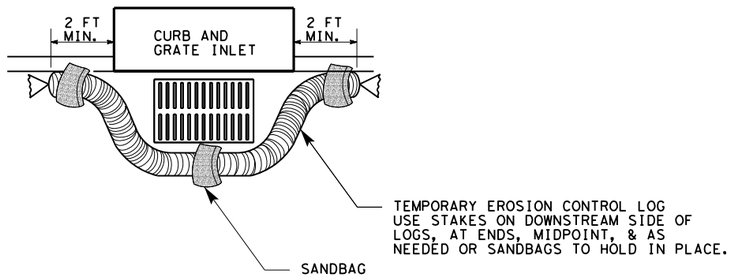
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

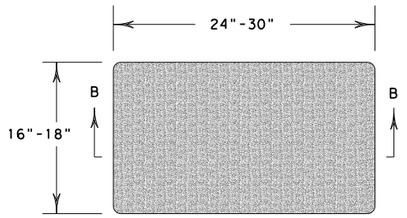
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
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REVISIONS	0910	16	169	VA
	DIST	COUNTY		SHEET NO.
	TYL	SMITH		54