FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	F 2025(134)	SH105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC / 1

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

SEE SHEET 2
FOR INDEX OF SHEETS
AND SHEET 3 FOR
PROJECT LOCATION MAP

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

Registered Accessibility Specialist (RAS) inspection Required

TDLR No. TABS2025000287

PROJECT NUMBER: F 2025(134)

SH 105
GRIMES COUNTY

FINAL PLANS

CONTRACTOR:

LETTING DATE:

DATE CONTRACTOR BEGAN WORK:

DATE WORK WAS COMPLETED:

DATE WORK WAS ACCEPTED:

FINAL CONTRACT COST: $

TOTAL LENGTH OF PROJECT = 1367.52 FT = 0.259 MILES, ETC.

**FOR THE CONSTRUCTION OF CURB RAMPS, SIDEWALK,
AND MISCELLANEOUS PEDESTRIAN ELEMENTS**

LOCATION NO.	HIGHWAY	CONTROL NO.	LIMITS	ADT	STATION		REFERENCE MARKERS		TOTAL LENGTH (FT)
					FROM	TO	BEGIN	END	
1	SH105	0315-04-087	FROM: 3RD STREET TO: 7TH STREET	2022: 9,150 2042: 16,836	11+59.21	25+93.00	RM 646+0.926 MI (43.017 MI)	RM 646+1.186 MI (43.277 MI)	1433.79'
1	SH105	0315-04-088	FROM: 7TH STREET TO: 9TH STREET	2022: 12,170 2042: 18,742	25+93.00	30+37.00	RM 646+1.186 MI (43.277 MI)	RM 646+1.305 MI (43.396 MI)	444.00'

THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

09/24/2024

Thomas E.T. Cochill

stv

TEXAS REGISTERED
ENGINEERING FIRM
F-1741

NO EXCEPTIONS
NO EQUATIONS
RAILROAD CROSSING: BNSF
RAILWAY COMPANY

TEXAS DEPARTMENT OF TRANSPORTATION®

SUBMITTED FOR LETTING: 9/25/2024
DocuSigned by: Jeff Miles
589D3E0B31FA4... DISTRICT DESIGN ENGINEER

RECOMMENDED FOR LETTING: 9/25/2024
DocuSigned by: James W. Robbins
66E162AEBE5B496... AREA ENGINEER

APPROVED FOR LETTING: 9/26/2024
DocuSigned by: Chad Bohne
60E5537715D24EA... DISTRICT ENGINEER

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2024 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 2023).

REV DATE: 2-12-2015
CSJ: XXX-XX-XXX

FILENAME: pw:\\stv-sw-pw.bentley.com:stv-sw-pw-01\Documents\Active Projects\TXDOT2000292.00\TXDOT2000292.00\BRY-Navasota-SH10508.00 Plans and Drawings\8.30 Cut Sheets\8.3.01 General\SH105_GNgg01.dgn

SHEET NO.		DESCRIPTION
		GENERAL
1		TITLE SHEET
2		INDEX OF SHEETS
3		PROJECT LOCATION
4		PROJECT LAYOUT
5		TYPICAL SECTIONS
6, 6A – 6C		GENERAL NOTES
7, 7A		ESTIMATE & QUANTITY SHEET
8 – 9		SUMMARIES
		TRAFFIC CONTROL PLAN
10		TCP NARRATIVE
11		DETOUR PLAN
12		DETOUR ENLARGEMENT
13		TRAFFIC CONTROL LAYOUT
14		ADDITIONAL DETAILS
13 – 26	*	BC(1)–21 TO BC(12)–21
27	*	TCP(1–1)–18
28	*	TCP(1–4)–18
29	*	TCP(2–1)–18
30	*	TCP(2–4)–18
31	*	TCP(3–1)–13
32	*	TCP(3–4)–13
33	*	TCP(S–1)–08A
34	*	TCP(S–2)–08A
35	*	TCP(S–2C)–10
36	*	TCP(S–3)–08
37 – 38	*	WZ (BTS–1)–13 , WZ (BTS–2)–13
39	*	WZ (RS)–22
		ROADWAY
40		HORIZONTAL AND VERTICAL CONTROL INDEX
41 – 43		HORIZONTAL AND VERTICAL CONTROL SHEET
44		ASPHALT REMOVAL PLAN
44 – 54		SH 105 PLAN
55		DRIVEWAY TABLE
56		DRIVEWAY DETAILS
57 – 60		MISCELLANEOUS DETAILS
61		MISC CONSTRUCTION DETAILS
62		ARMOR CURB SLOT
63 – 66	*	PED–18
67	*	CCCG–22
68	*	JS–14
69	*	TE(HMAC)–11
70 – 71	*	TRB–15(1), TRB–15(2)
		TRAFFIC ITEMS
72		PAVEMENT MARKING PLAN
73 – 74		SUMMARY OF SMALL SIGNS
75	*	SMD(GEN)–08
76 – 78	*	SMD(SLIP–1)–08 – SMD(SLIP–3)08
79	*	PM(1)–22
80	*	PM(3)–22
81	*	PM(4)–22A
82	*	ED(1)–14
83	*	ED(3)–14
84	*	ED(4)–14
85	*	TS–FD–12

SHEET NO.		DESCRIPTION
		ENVIRONMENTAL
86 – 95		SWP3 LAYOUT
96 – 97		STORMWATER POLLUTION PREVENTION PLAN (SWP3) (LESS THAN 1 ACRE)
98		ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS
99	*	TREE PROTECTION
100	*	EC(9)–16
		RAILROAD
101		CURB RAMP, SIDEWALK, AND PLANKING IMPROVEMENTS LAYOUT
102 – 103		RAILROAD REQUIREMENTS FOR NON–BRIDGE CONSTRUCTION PROJECTS
104		RAILROAD SCOPE OF WORK
105	*	RCD(1)–22

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

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

MMaderley,cm. 7/11/2024

MADERLEY MONSALVE, P.E. DATE

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

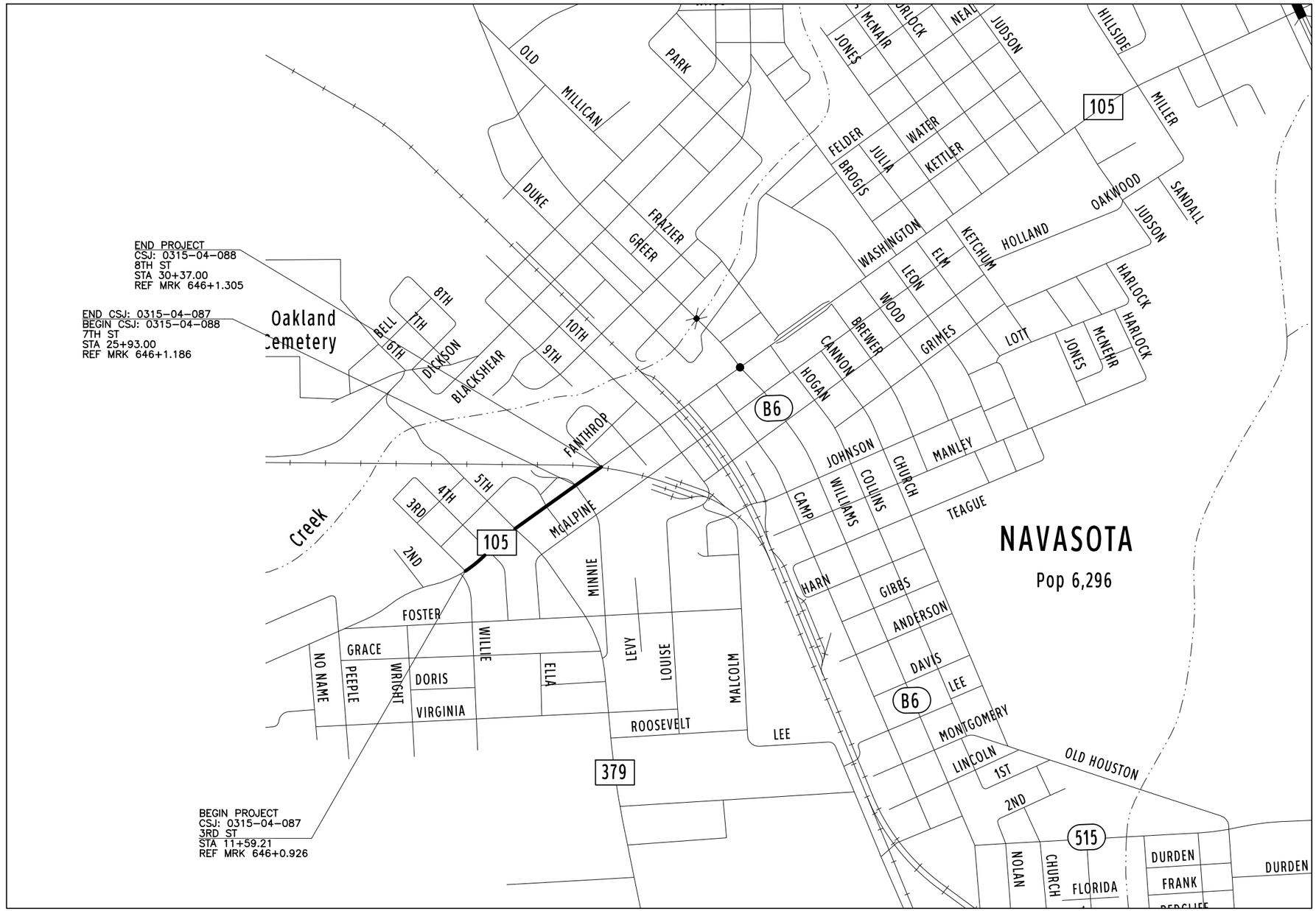
SH 105 PEDESTRIAN IMPROVEMENTS

INDEX OF SHEETS

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	2



NAVASOTA
GRIMES COUNTY

cpybw_ANSIB.tbl
cpydf_ANSIB.pltcfg
pw:/
6/30/2024 3:53:28 PM PinedoYI
pw:/

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED PROFESSIONAL ENGINEER

07/11/2024

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

PROJECT LOCATION

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
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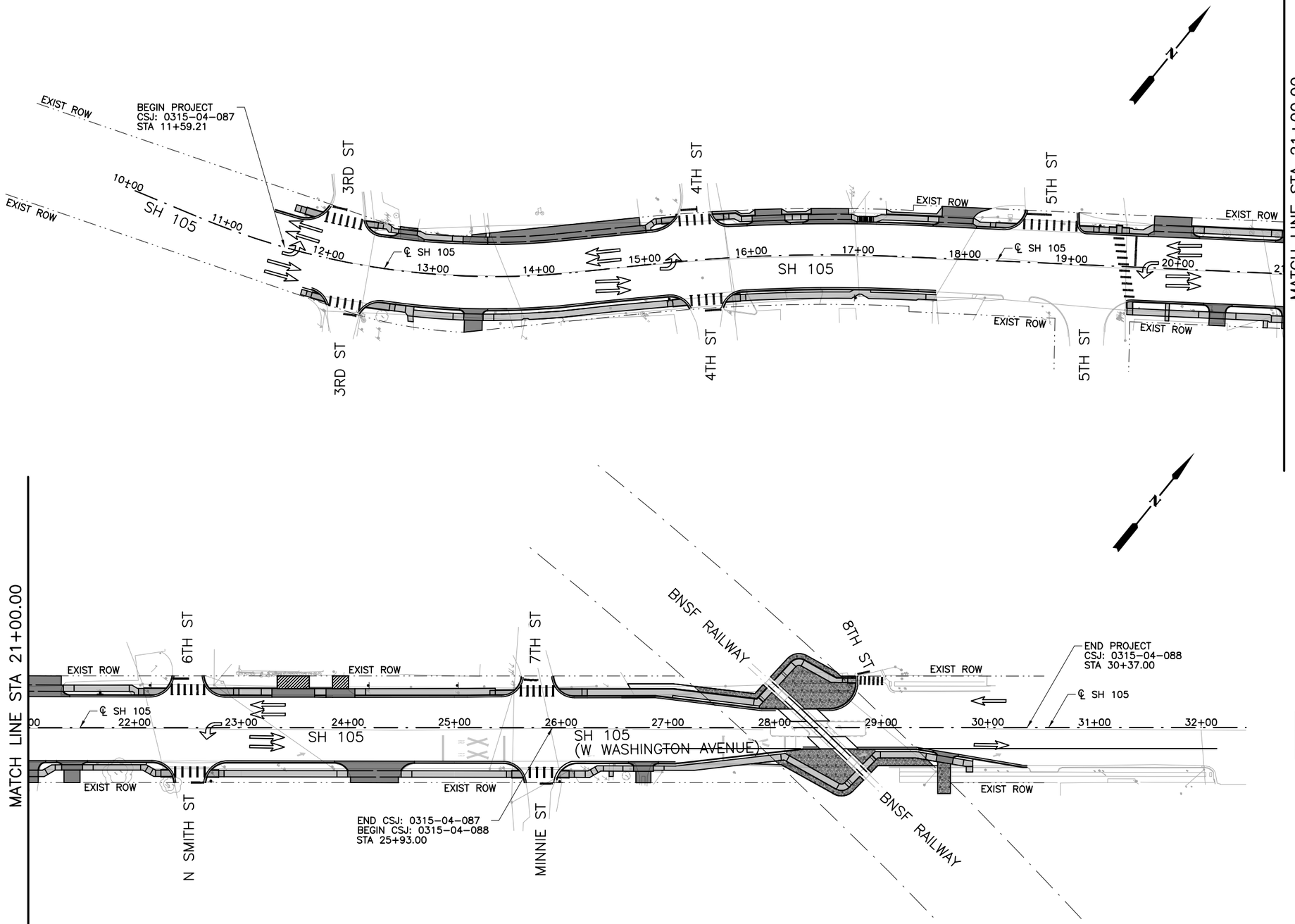


STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

07/11/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

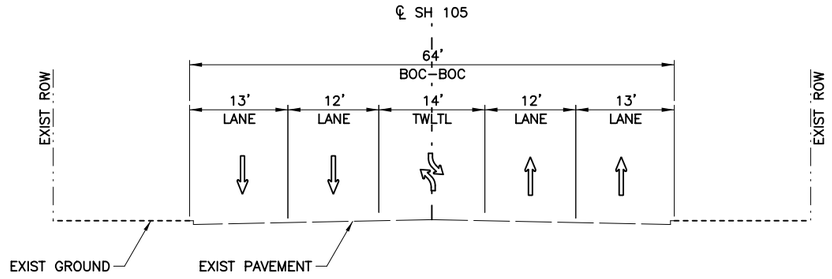
SH 105 PEDESTRIAN IMPROVEMENTS

PROJECT LAYOUT

SHEET 1 OF 1

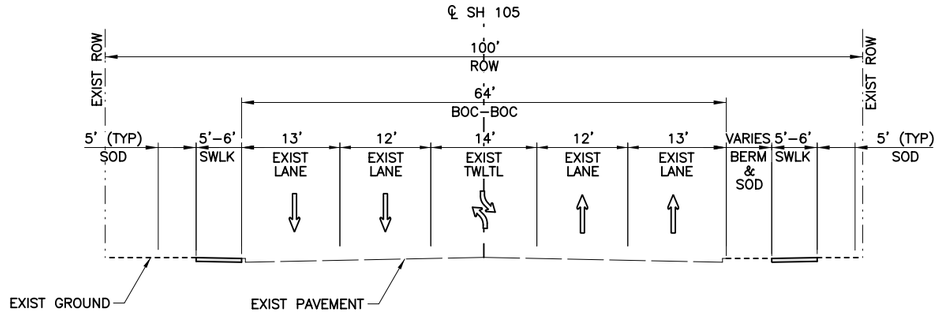
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	4



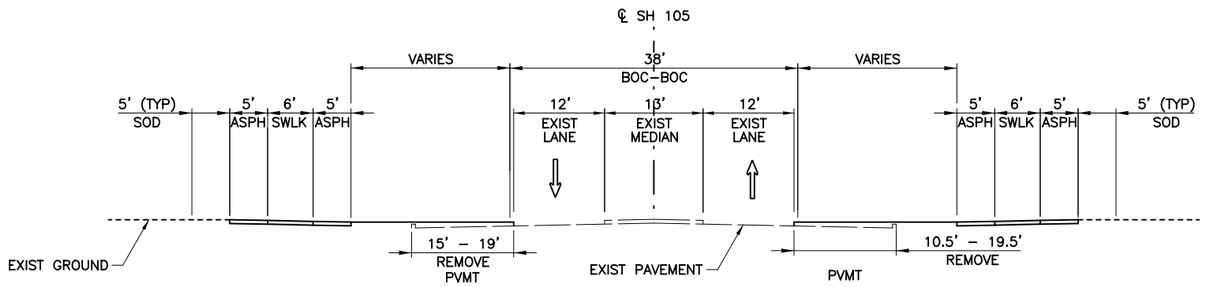
EXISTING TYPICAL SECTION

STA 11+59.21 TO STA 30+37.00



PROPOSED TYPICAL SECTION

STA 11+59.21 TO STA 27+67.28
STA 29+12.61 TO STA 30+37.00



PROPOSED TYPICAL SECTION AT RR

STA 27+67.28 TO STA 29+12.61

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

cmaderleyom.
07/11/2024

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

TYPICAL SECTIONS

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	5

GENERAL:

James Robbins, P.E., A.E., James.Robbins@txdot.gov
Joseph Greive, P.E., A.A.E., Joseph.Greive@txdot.gov

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

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

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

Send eligible shop plan submittals with PDF attachments directly to the reviewing office. If the shop drawings match a MTD currently approved set of shop drawings, submit that statement in writing with the submittal.

ITEM 5 "CONTROL OF THE WORK"

After award of the contract, when requested, TxDOT will provide CADD files to the selected Contractor. The recipient acknowledges that the electronic files may not contain all the information and may differ from the Bid Documents or Contract Documents for the construction of the Project. Electronic files are provided for information only and the TxDOT Bryan District shall not be responsible for differences between Electronic Files, the Bid Documents, and Contract Documents. The CADD files provided are a graphical representation of the project; the CADD data may not be 100% accurate and should not be used for dimensional control, shop drawings, or any other similar purpose. Any electronic files provided are strictly for the use of the Recipient in regard to the Project named above and shall not be used for any other purpose or provided by the Recipient to any other entity.

Sheet: 6
Highway: SH 105 Control: 0315-04-087, Etc.
County: Grimes

ITEM 6 "CONTROL OF MATERIALS"

The Buy America Material Classification Sheet is located at the below link
.https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html
for clarification on material categorization.

ITEM 7 "LEGAL RELATIONS AND RESPONSIBILITIES"

State contract mowers will mow the right of way during the growing season. The Contractor will be notified by the Engineer one week in advance of the anticipated time when mowers will be in the limits of the project. Clean the right of way to such a condition that allows the mowing contractors to safely mow.
In accordance with Item 7.2.5, Contractor equipment equipped with blue warning lights shall be wired so that operation of blue lights is independent of any other lights.

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

The following roadways are recognized hurricane evacuation routes in the Bryan District:

Primary Evacuation Routes: IH 45, US 77 (S of US 79), US 84 (E of IH 45), US 79, US 287, US 290, SH 6.

Secondary Evacuation Routes: US 190 (E of IH 45), SH 7, SH 21, SH 30 (SH 6 to IH 45), SH 36, SH 105 (E of SH 6).

Other routes may be designated.

No significant traffic generator events identified.

FOR WORK IN PROXIMITY TO THE RAILROAD;

Fiber optic cable systems may be buried on the Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. It is the Contractor's responsibility to

utilize the contact information provided below to determine if fiber optic cable is buried anywhere on the Railroad's premises to be used by the State. If it is, the Contractor will telephone the telecommunications company(ies) involved, arrange for a cable locator, and make arrangements for relocation or other protection of the fiber optic cable prior to beginning any work on the Railroad's premises.

It is the Contractor's responsibility to contact, five working days before any work is performed, the RR at the contact information listed below to determine if fiber optic or other type of cable is buried in the general location where work is to be performed. In the event such cable is present, the Contractor then calls the owner of the fiber optic or cable line to determine its exact location. The State shall indemnify and hold harmless the Railroad against any cost or claims arising out of damage to any cable, but only to the extent such damage is caused by negligence of the State and/or its Contractor.

For 24/7 support of all requests for fiber optic locates along BNSF rights of way:
email: tim.huya@bnsf.com
Call Center Phone: 1-877-315-0513

ITEM 8 "PROSECUTION AND PROGRESS"

By noon of each Wednesday, provide the Engineer a written outline of the daily work schedule for the following week. Include in the outline the times and places for proposed traffic control changes, lane and shoulder closures, and moving operations or other operations that affect traffic on the roadway. Unless otherwise authorized by the Engineer, prosecute the work on this project as narrated in the General Sequence of Work.
Some of these operations may be performed simultaneously.

Prepare Progress Schedule Bar Chart.

Work that interferes with traffic is required to be performed during off-peak hours, 7 pm until 6 am, unless approved by the Engineer.

Equipment and material may be pre-staged at approved locations. When staging equipment and materials, they shall be marked/protected by type 3 barricades or appropriate TCP standards (includes overnight).

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Highway: SH 105 Control: 0315-04-087, Etc.
County: Grimes

MILESTONE 1:

Milestone 1 is for construction of the asphalt transition and curb along SH 105 at the BNSF railroad crossing from (STA. 27+00 to STA 030+37)

The daily road-user cost for incentive and disincentive for Milestone 1 will be $(10,000) per day.

The contractor will have (5) working days for Substantial Completion of Work for Milestone 1.

Working day time charges for Milestone 1 will be computed and charged in accordance with Article 8.3.1.1 – "Five-Day Workweek".

The time charges for the purpose of computing incentive and disincentive for Milestone 1 will begin upon the completion of construction performed by BNSF Railroad.

The time charges for Milestone 1 will end when, in the opinion of the Engineer, the Contractor has completed the following items of work, which define the term "substantially complete":

1) Complete the asphalt transitions that connect to railroad planks.

2) Complete sufficient amount of the curb work within and adjacent to railroad right-of-way to provide a construction buffer and full lane of travel.

3) Remove road closure and detour when, in the opinion of the Engineer, SH 105 is suitable for two-way traffic.

The maximum number of working days for computing the incentive credit for Milestone 1 will be 2 days. The maximum credit allowable for early completion of Milestone 1 is $20,000.

Failure of Substantial Completion of Work for Milestone 1 within the established number of working days shown above will result in the assessment of disincentives using the daily road-user costs shown above for each working day more than those allowed for Milestone 1.

The 90 day convenience delayed start allowed after authorization under SP008-005 is for Contractor mobilization.

ITEM 132 "EMBANKMENT"

Provide Embankment material for areas outside the limits of the Pavement Structure with a plasticity index between 10 and 35.

ITEM 162 "SODDING FOR EROSION CONTROL"

Furnish and place Bermuda or St Augustine sod. Sodding must match existing species.

ITEM 166 "FERTILIZER"

Fertilize all areas of project that are being seeded or sodded.

ITEM 168 "VEGETATIVE WATERING"

Vegetative watering is required for all areas of the project that are being seeded or sodded.

ITEM 310 "PRIME COAT"

Cure MC-30 for up to 7 days before placing subsequent surface courses unless otherwise directed by the Engineer.

Cure RC 250 for up to 21 days before placing subsequent surface courses unless otherwise directed by the Engineer.

ITEM 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING"

During one-way operations, station flaggers at all county roads and any other locations, such as private businesses, that may have traffic entering the work area.

Removal of ground mounted temporary signs and supports as specified on standard sheet BC(5), shall include the immediate backfilling of support holes with Type B embankment material and the compaction of the backfill material. The signs must also be removed within two weeks once construction ends.

Relocation of existing signs to temporary mounts during construction is subsidiary to Item 502. Maintain all existing signs during construction that do not conflict with TCP, or as directed by the Engineer.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic

Sheet: 6B
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County: Grimes

Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Law enforcement assistance will be required for this project and is expected to be required for major traffic control changes and lane closures. Coordinate with local law enforcement and arrange for law enforcement as directed or agreed by the Engineer. Complete the daily tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Patrol vehicles must be clearly marked to correspond with the officer's agency and equipped with appropriate lights to identify them as law enforcement. For patrol vehicles not owned by a law enforcement agency, markings will be retroreflective and legible from 100 ft. from both sides and the rear of the vehicle. Lights will be high intensity and visible from all angles.

Cancel law enforcement personnel when the event is canceled. Cancellation, minimums or "show up" fees will not be paid when cancellation is made 12 hours prior to beginning of the event. Failure to cancel within 12 hours will not be cause for payment for cancellation, minimums, or "show up" time. Payment of actual "show up" time to the event site due to cancellation will be on a case-by-case basis at a maximum of 2 hours per officer.

Provide construction fencing as approved at all work locations to protect pedestrian or bicycle traffic. This material and its placement will be paid for under Item 506, Construction Perimeter Fence.

ITEM 503 "PORTABLE CHANGEABLE MESSAGE SIGN"

Furnish, install, and operate up to 2 Portable Changeable Message Signs (PCMS) for this project. The signs can be used both on the project and within a ten (10) mile radius of the project. Locations, messages, and durations of use will be specified by the Engineer. The primary uses will be to inform the public of special events, lane and road closures, and changes in traffic control. Signs will be paid for only when used as directed by the Engineer.

ITEM 505 "TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA)"

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan (TCP) for this project,

provide one _1__ shadow vehicle(s) with TMA for TCP (_1_-_1_)-_18__ as detailed on General Note _4__ of this standard sheet.

provide one _1__ shadow vehicle(s) with TMA for TCP (_1_-_4_)-_18__ as detailed on General Note _4__ of this standard sheet.

provide one _1__ shadow vehicle(s) with TMA for TCP (_2_-_1_)-_18__ as detailed on General Note _4__ of this standard sheet.

provide one _1__ shadow vehicle(s) with TMA for TCP (_2_-_4_)-_18__ as detailed on General Note _5__ of this standard sheet.

provide one _2__ shadow vehicle(s) with TMA for TCP (_3_-_1_)-_13__ as detailed on General Note _3__ of this standard sheet.

provide one _1__ shadow vehicle(s) with TMA for TCP (_3_-_4_)-_13__ as detailed on General Note _2__ of this standard sheet.

provide one _1__ shadow vehicle(s) with TMA for TCP (_S_-_1_)-_08A__ as detailed on General Note _4__ of this standard sheet.

provide one _1__ shadow vehicle(s) with TMA for TCP (_S_-_2_)-_08A__ as detailed on General Note _11__ of this standard sheet.

provide one _1__ shadow vehicle(s) with TMA for TCP (_S_-_3_)-_08__ as detailed on General Note _3__ of this standard sheet.

Therefore, _10_ total shadow vehicles with TMA will be required for this type of work. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

_58__ TMA(s) (days) are provided in the project estimate for stationary operations.

Sheet: 6C
Highway: SH 105 Control: 0315-04-087, Etc.
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_6__ TMA(s) (days) are provided in the project estimate for mobile operations.

ITEM 506 "TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS"

Prior to starting construction, review the SWP3 with the Engineer to confirm the type and placement of the devices. Device locations may be added, deleted, or modified by the Engineer.

ITEM 529 "CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER"

Provide steel reinforcement in all concrete curb, gutter, and combined curb and gutter in accordance with the plans and specifications.

ITEM 531 "SIDEWALKS"

Notify the Engineer and the District ADA Liaison/ Landscape Architect (Amanda.Soto@txdot.gov) 48 hours prior to forming and placing concrete in any unit for this item. Do not place concrete without an Inspector present. Failure to inform the Engineer and provide time to arrive on the job site may result in removing and replacing the item constructed under item 531 at the Contractor's expense.

ITEM 666 "REFLECTORIZED PAVEMENT MARKINGS"

All striping limits must be approved by the Engineer before striping operations may begin.

ITEM 677 "ELIMINATE EXISTING PAVEMENT MARKINGS AND MARKER"

Use flailing for removal on pavement surfaces that will be resurfaced, and water blasting on existing or final surfaces that will remain at the conclusion of the construction project, unless approved by the Engineer.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0315-04-087 **DISTRICT** Bryan **COUNTY** Grimes
HIGHWAY SH 105

			CONTROL SECTION JOB		**0315-04-087**		**0315-04-088**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00190497**		**A00190498**			
			COUNTY		**Grimes**		**Grimes**			
			HIGHWAY		**SH 105**		**SH 105**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	100-7003	PREP ROW (TREE REMOVE) (0"-12" DIA)		EA	4.000				4.000	
	100-7013	TREE PROTECTION (INSTALL)		EA	3.000				3.000	
	100-7015	TREE PROTECTION (REMOVE)		EA	3.000				3.000	
	104-7011	REMOV CONC (DRIVEWAYS)		SY	545.000		21.000		566.000	
	104-7018	REMOV CONC (CURB OR CURB & GUTTER)		LF	1,544.000		556.000		2,100.000	
	105-7002	RMV (2"-6") TRT/UNTRT BASE & ASPH PAV		SY	364.000		609.000		973.000	
	105-7052	RMV (0"-12") TRT/UNTRT BASE & ASPH PAV		SY	320.000		42.000		362.000	
	110-7001	EXCAV (ROADWAY)		CY	5.000		2.000		7.000	
	132-7005	EMBANK (FNL)(OC)(TY C)		CY	5.000		2.000		7.000	
	160-7002	FURN & PLACE TOPSOIL (4")		SY	1,240.000		216.000		1,456.000	
	161-7008	EROSION CONTROL COMPOST (VEH)		CY	1,307.000				1,307.000	
	162-7002	BLOCK SODDING		SY	1,240.000		216.000		1,456.000	
	164-7007	BROADCAST SEED (TEMP_WARM_COOL)		SY	1,240.000		216.000		1,456.000	
	168-7001	VEGETATIVE WATERING		TGL	36.000		8.400		44.400	
	193-7023	LANDSCAPE TREAT (TY I)		EA			4.000		4.000	
	310-7004	PRIME COAT (MC-30)		GAL	64.000		24.000		88.000	
	341-7044	D-GR HMA TY-D SAC-A PG64-22		TON	40.000		145.000		185.000	
	471-7003	GRATE & FRAME		EA	3.000				3.000	
	479-7004	ADJUSTING MANHOLES (UTILITY BOX)		EA	4.000		1.000		5.000	
	500-7001	MOBILIZATION		LS	1.000				1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING		MO	3.000				3.000	
	503-7002	PORTABLE CHANGEABLE MESSAGE SIGN		EA	1.000		1.000		2.000	
	505-7001	TMA (STATIONARY)		DAY	38.000		20.000		58.000	
	505-7003	TMA (MOBILE OPERATION)		DAY	3.000		3.000		6.000	
	506-7044	BIODEG EROSN CONT LOGS (INSTL) (12")		LF	609.000		230.000		839.000	
	506-7046	BIODEG EROSN CONT LOGS (REMOVE)		LF	609.000		230.000		839.000	
	527-7001	COLORED TEXTURED CONC (4")		SY	74.000		110.000		184.000	
	529-7009	CONC CURB & GUTTER (TY II)		LF	1,528.000		590.000		2,118.000	
	529-7018	CONC CURB & GUTTER (ARMOR CURB)		LF	14.000				14.000	
	530-7006	DRIVEWAYS (CONC)		SY	960.000		96.000		1,056.000	
	530-7010	DRIVEWAYS (ACP)		SY	60.000				60.000	
	531-7001	CONC SIDEWALKS (4")		SY	974.000		391.000		1,365.000	
	531-7016	CURB RAMPS (TY 2)		SY	14.000				14.000	
	531-7020	CURB RAMPS (TY 7)		SY	112.000		20.000		132.000	
	531-7021	CURB RAMPS (TY 10)		SY	89.000		17.000		106.000	
	531-7025	CONC SIDEWALKS (SPECIAL)		SY	8.000				8.000	
	644-7065	RELOCATE SM RD SN SUP&AM TY 10BWG		EA	8.000		1.000		9.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0315-04-087 **DISTRICT** Bryan **COUNTY** Grimes
HIGHWAY SH 105

									TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0315-04-087**		**0315-04-088**				
		PROJECT ID		**A00190497**		**A00190498**				
		COUNTY		**Grimes**		**Grimes**				
		HIGHWAY		**SH 105**		**SH 105**				
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL			
	666-7009	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF			95.000			95.000	
	666-7036	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	760.000		96.000			856.000	
	666-7081	REFL PAV MRK TY I (W)(RR XING)(100MIL)	EA			1.000			1.000	
	666-7184	RE PM TY II (W) 24" (SLD)	LF	760.000					760.000	
	666-7411	REFL PAV MRK TY I (W)6"(SLD)(100MIL)	LF			410.000			410.000	
	666-7420	REFL PAV MRK TY I (Y)6"(BRK)(100MIL)	LF			40.000			40.000	
	666-7423	REFL PAV MRK TY I (Y)6"(SLD)(100MIL)	LF			412.000			412.000	
	677-7001	ELIM EXT PM & MRKS (4")	LF			552.000			552.000	
	677-7002	ELIM EXT PM & MRKS (6")	LF			204.000			204.000	
	677-7004	ELIM EXT PM & MRKS (8")	LF			210.000			210.000	
	677-7008	ELIM EXT PM & MRKS (24")	LF			36.000			36.000	
	677-7009	ELIM EXT PM & MRKS (ARROW)	EA			1.000			1.000	
	677-7019	ELIM EXT PM & MRKS (RR XING)	EA			2.000			2.000	
	02	RAILROAD FLAGGING: RAILROAD FORCE ACCOUNT WORK (NON-PART)	LS	1.000					1.000	
	08	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000					1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000					1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000					1.000	

SUMMARY OF MOBILIZATION ITEMS

LOCATION	500 7001 MOBILIZATION	502 7001 BARRICADES, SIGNS AND TRAFFIC HANDLING
	LS	MO
CSJ 0315-04-087	1	4
CSJ 0315-04-087 TOTALS	**1**	**4**

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

LOCATION	503 7002 PORTABLE CHANGEABLE MESSAGE SIGN	505 7001 TMA (STATIONARY)	505 7003 TMA (MOBILE OPERATION)
	EA	DAY	DAY
CSJ 0315-04-087	1	38	3
CSJ 0315-04-087 TOTALS	**1**	**38**	**3**

SUMMARY OF REMOVAL ITEMS

LOCATION	100 7003 PREP ROW (TREE REMOVE) (0"-12" DIA)	104 7011 REMOV CONC (DRIVEWAYS)	104 7018 REMOV CONC (CURB OR CURB & GUTTER)	105 7002 RMV (2"-6") TRT/UNTRT BASE & ASPH PAV	105 7052 RMV (0"-12") TRT/UNTRT BASE & ASPH PAV
	EA	SY	LF	SY	SY
CSJ 0315-04-087					
SH 105					320
BEGIN TO STA 13+00			130	18	
STA 13+00 TO STA 15+00		270	205		
STA 15+00 TO STA 17+00		0	224	115	
STA 17+00 TO STA 19+00		62	171	79	
STA 19+00 TO STA 21+00	4	76	216	24	
STA 21+00 TO STA 23+00		29	226	68	
STA 23+00 TO STA 25+00		108	258	60	
STA 25+00 TO STA 25+93			114		
CSJ 0315-04-087 TOTALS	**4**	**545**	**1544**	**364**	**320**

SUMMARY OF EROSION CONTROL ITEMS

LOCATION	100 7013 TREE PROTECTION (INSTALL)	100 7015 TREE PROTECTION (REMOVE)	160 7002 FURN & PLACE TOPSOIL (4")	161 7006 EROSION CONTROL COMPOST (4")	162 7002 BLOCK SODDING	164 7007 BROADCAST SEED (TEMP_WARM _COOL)	*166 7001 FERTILIZER	168 7001 VEGETATIVE WATERING	506 7034 CONSTRUCTION PERIMETER FENCE	506 7044 BIODEG EROSN CONT LOGS (INSTL) (12")
	EA	EA	SY	SY	SY	SY	AC	TGL	LF	LF
CSJ 0315-04-087										
SH 105				11764					50	
BEGIN TO STA 13+00	1	1	101		101	101	0.03	4		45
STA 13+00 TO STA 15+00			177		177	177	0.04	5		85
STA 15+00 TO STA 17+00			125		125	125	0.03	4		55
STA 17+00 TO STA 19+00			81		81	81	0.02	2		65
STA 19+00 TO STA 21+00			216		216	216	0.05	6		35
STA 21+00 TO STA 23+00	2	2	178		178	178	0.04	5		155
STA 23+00 TO STA 25+00			253		253	253	0.06	7		129
STA 25+00 TO STA 25+93			109		109	109	0.03	4		40
CSJ 0315-04-087 TOTALS	**3**	**3**	**1240**	**11764**	**1240**	**1240**	**0.3**	**36**	**50**	**609**

* FOR CONTRACTORS INFORMATION ONLY, FERTILIZER TO BE SUBSIDIARY TO ITEM 162, SEE BASIS OF ESTIMATE FOR RATE

SUMMARY OF ROADWAY ITEMS

LOCATION	110 7001 EXCAV (ROADWAY)	132 7005 EMBANK (FNL) (OC) (TY C)	310 7004 PRIME COAT (MC-30)	*341 7044 D-GR HMA TY-D SAC-A PG64-22	471 7003 GRATE & FRAME	479 7004 ADJUSTING MANHOLES (UTILITY BOX)	527 7001 COLORED TEXTURED CONC (4")	529 7009 CONC CURB & GUTTER (TY II)	529 7018 CONC CURB & GUTTER (ARMOR CURB)	530 7006 DRIVEWAYS (CONC)	*530 7010 DRIVEWAYS (ACP)	531 7001 CONC SIDEWALKS (4")	531 7016 CURB RAMPS (TY 2)	531 7020 CURB RAMPS (TY 7)	531 7021 CURB RAMPS (TY 10)	531 7025 CONC SIDEWALKS (SPECIAL)
	CY	CY	GAL	TON	EA	EA	SY	LF	LF	SY	SY	SY	SY	SY	SY	SY
CSJ 0315-04-087																
SH 105	5	5	64	40												
BEGIN TO STA 13+00							3	130		27		60		37	18	
STA 13+00 TO STA 15+00						1		205		291		141				
STA 15+00 TO STA 17+00						1	30	224		115		139		43		
STA 17+00 TO STA 19+00					3	2	26	155	14	75		107			12	8
STA 19+00 TO STA 21+00						1	15	216		120		166	14		11	
STA 21+00 TO STA 23+00						1		226		151		113		21	35	
STA 23+00 TO STA 25+00						2		258		181	60	191				
STA 25+00 TO STA 25+93								114				53		11	13	
CSJ 0315-04-087 TOTALS	**5**	**5**	**64**	**40**	**3**	**8**	**74**	**1528**	**14**	**960**	**60**	**970**	**14**	**112**	**89**	**8**

* FOR CONTRACTORS INFORMATION ONLY, REFER TO BASIS OF ESTIMATE FOR RATES AND QUANTITIES.

SUMMARY OF SIGNING AND PAVEMENT MARKING ITEMS

LOCATION	644 7065 RELOCATE SM RD SN SUP&AM TY 10BWG	666 7036 REFL PAV MRK TY I (W)24" (SLD) (100MIL)	666 7184 RE PM TY II (W) 24" (SLD)
	EA	LF	LF
CSJ 0315-04-087			
SH 105			
BEGIN TO STA 13+00		135	135
STA 13+00 TO STA 15+00			
STA 15+00 TO STA 17+00	2	130	130
STA 17+00 TO STA 19+00		104	104
STA 19+00 TO STA 21+00	1	128	128
STA 21+00 TO STA 23+00	3	137	137
STA 23+00 TO STA 25+00	1		
STA 25+00 TO STA 25+93	1	126	126
CSJ 0315-04-087 TOTALS	**8**	**760**	**760**

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

SUMMARIES

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	8

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
LOCATION	503 7002	505 7001	505 7003
	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	EA	DAY	DAY
CSJ 0315-04-088	1	20	3
CSJ 0315-04-088 TOTALS	**1**	**20**	**3**

SUMMARY OF REMOVAL ITEMS				
LOCATION	104 7011	104 7018	105 7002	105 7052
	REMOV CONC (DRIVEWAYS)	REMOV CONC (CURB OR CURB & GUTTER)	RMV (2"-6") TRT/UNTRT BASE & ASPH PAV	RMV (0"-12") TRT/UNTRT BASE & ASPH PAV
	SY	LF	SY	SY
CSJ 0315-04-088				
SH 105			609	42
STA 25+93 TO STA 27+00	21	164		
STA 27+00 TO STA 29+00		262		
STA 29+00 TO STA 31+00		130		
CSJ 0315-04-088 TOTALS	**21**	**556**	**609**	**42**

SUMMARY OF EROSION CONTROL ITEMS							
LOCATION	160 7002	162 7002	164 7007	* 166 7001	168 7001	506 7044	506 7046
	FURN & PLACE TOPSOIL (4")	BLOCK SODDING	BROADCAST SEED (TEMP_WARM_COOL)	FERTILIZER	VEGETATIVE WATERING	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	SY	AC	TGL	LF	LF
CSJ 0315-04-088							
SH 105							
STA 25+93 TO STA 27+00	102	102	102	0.03	3.6	120	120
STA 27+00 TO STA 29+00	60	60	60	0.02	2.4	110	110
STA 29+00 TO STA 31+00	54	54	54	0.02	2.4		
CSJ 0315-04-088 TOTALS	**216**	**216**	**216**	**0.07**	**8.4**	**230**	**230**

* FOR CONTRACTORS INFORMATION ONLY, SEE BASIS OF ESTIMATE FOR RATE

SUMMARY OF ROADWAY ITEMS												
LOCATION	110 7001	132 7005	193 7023	310 7004	* 341 7044	479 7004	527 7001	529 7009	530 7006	531 7001	531 7020	531 7021
	EXCAV (ROADWAY)	EMBANK (FNL) (OC) (TY C)	LANDSCAPE TREAT (TY I)	PRIME COAT (MC-30)	D-GR HMA TY-D SAC-A PG64-22	ADJUSTING MANHOLES (UTILITY BOX)	COLORED TEXTURED CONC (4")	CONC CURB & GUTTER (TY II)	DRIVEWAYS (CONC)	CONC SIDEWALKS (4")	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
	CY	CY	EA	GAL	SY	EA	SY	LF	SY	SY	SY	SY
CSJ 0315-04-088												
SH 105	2	2		24	145							
STA 25+93 TO STA 27+00						1	28	155	38	93	11	17
STA 27+00 TO STA 29+00			4				63	321		251	9	
STA 29+00 TO STA 31+00							19	114	58	47		
CSJ 0315-04-088 TOTALS	**2**	**2**	**4**	**24**	**145**	**1**	**110**	**590**	**96**	**391**	**20**	**17**

* FOR CONTRACTORS INFORMATION ONLY, REFER TO BASIS OF ESTIMATE FOR RATES AND QUANTITIES.

SUMMARY OF PAVEMENT MARKING ITEMS													
LOCATION	644 7065	666 7009	666 7036	666 7081	666 7411	666 7420	666 7423	677 7001	677 7002	677 7004	677 7008	677 7009	677 7019
	RELOCATE SM RD SN SUP&AM TY 10BWG	REFL PAV MRK TY I (W)6" (DOT) (100MIL)	REFL PAV MRK TY I (W)24" (SLD) (100MIL)	REFL PAV MRK TY I (W)(RR XING) (100MIL)	REFL PAV MRK TY I (W)6"(SLD) (100MIL)	REFL PAV MRK TY I (Y)6"(BRK) (100MIL)	REFL PAV MRK TY I (Y)6"(SLD) (100MIL)	ELIM EXT PM & MRKS (4")	ELIM EXT PM & MRKS (6")	ELIM EXT PM & MRKS (8")	ELIM EXT PM & MRKS (24")	ELIM EXT PM & MRKS (ARROW)	ELIM EXT PM & MRKS (RR XING)
	EA	LF	LF	EA	LF	LF	LF	LF	LF	LF	LF	EA	EA
CSJ 0315-04-088													
SH 105													
STA 25+93 TO STA 31+00	1	95	96	1	410	40	412	552	204	210	36	1	2
CSJ 0315-04-088 TOTALS	**1**	**95**	**96**	**1**	**410**	**40**	**412**	**552**	**204**	**210**	**36**	**1**	**2**

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

SUMMARIES

SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	9

GENERAL NOTES

1. ADVANCE WARNING SIGNS SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF THE PROJECT. CONTRACTOR SHALL ADJUST LOCATION OF SIGNS IN ACCORDANCE WITH APPLICABLE BC STANDARDS AND THE LATEST TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
2. WORK SITE SHOULD BE CAREFULLY MONITORED TO ENSURE THAT TRAFFIC CONTROL MEASURES ARE OPERATING EFFECTIVELY AND THAT ALL DEVICES USED ARE CLEARLY VISIBLE, CLEAN AND IN GOOD CONDITIONS.
3. NOT TO INCLUDE ROAD CLOSURE, TRAFFIC MUST PASS THROUGH THE PROJECT DURING ALL HOURS, AND NO EQUIPMENT OR MATERIAL WILL BE LEFT IN A POSITION THAT, IN THE OPINION OF THE ENGINEER, SHALL CONSTITUTE A HAZARD OR ENDANGERS TRAFFIC.
4. THE CONTRACTOR SHALL MAINTAIN DRIVEWAY ACCESS AT ALL TIMES. COST ASSOCIATED WITH MAINTAINING DRIVEWAY ACCESS, SUCH AS FLAGGING, WILL BE CONSIDERED SUBSIDIARY TO ITEM 502, UNLESS SPECIFIED OTHERWISE.
5. IN AREAS WHERE EXISTING SIDEWALK IS BEING REPLACED, CONTRACTOR SHALL MAINTAIN A PEDESTRIAN PATHWAY. SIGNS AND BARRICADES INDICATING EXISTING SIDEWALK IS CLOSED SHALL BE UTILIZED.
6. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT AND OTHER MATERIALS DURING HAULING OPERATIONS. WHEN DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL CEASE ALL CONSTRUCTION OPERATIONS TO CLEAN THE ROADWAY, TO THE SATISFACTION OF THE ENGINEER.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE STANDARDS AND PRIOR TO ANY SOIL DISTURBING ACTIVITIES AND SHALL BE MAINTAINED THROUGHOUT THE PROJECT DURATION.
8. CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES THAT ARE TO REMAIN IN-PLACE. IF ANY STRUCTURE IS DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL REPLACE OR REPAIR AT NO EXPENSE TO THE DEPARTMENT.
9. EXISTING ABOVE GROUND UTILITIES ARE BASED ON SURVEY AND BOTH ABOVE GROUND AND UNDERGROUND UTILITY LOCATIONS CANNOT BE GUARANTEED BY THE ENGINEER. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ALL DAMAGES WHICH OCCUR AS A RESULT OF THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY ABOVE GROUND AND UNDERGROUND UTILITES.
10. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE THROUGHOUT THE CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL CORRECT DRAINAGE DEFICIENCIES THAT PRESENT A HAZARD TO THE TRAVELING PUBLIC OR PROPERTY AS DIRECTED BY THE ENGINEER.
11. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.
12. CONTRACTOR SHALL CONSTRUCT SIDEWALK, CURB RAMPS, DRIVEWAYS, HANDRAILS AND PEDESTRIAN PUSH BUTTONS IN ACCORDANCE WITH STANDARDS, LATEST TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), AND PROPOSED ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG).
13. CONTRACTOR SHALL MAINTAIN A 4' MIN CLEAR GROUND SPACE AT ANY OBSTRUCTION PRESENT WITHIN PEDESTRIAN SIDEWALK SECTIONS PER ADA REQUIREMENTS.
14. CONTRACTOR SHALL RELOCATE SIGNS WHERE SIGN PLAQUE IS WITHIN TXDOT RIGHT OF WAY. SIGNS SHALL BE ADJUSTED VERTICALLY IF THEY ARE CONSIDERED AN OBSTRUCTION IN VERTICAL PROTECTED ZONE.
15. NOT TO INCLUDE ROAD CLOSURE, CONTRACTOR SHALL OPEN LANES AT THE END OF EACH WORKDAY UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
16. ANY REQUEST TO ALTER THE SEQUENCE OF OPERATION OR TRAFFIC CONTROL PLAN WILL BE SUBMITTED TO THE ENGINEER FOR WRITTEN APPROVAL.
17. UPON COMPLETION OF THE FINAL GRADING, THE CONTRACTOR SHALL PLACE TEMPORARY SODDING THEN PLACE TOPSOIL AND FINAL SODDING WHEN CONSTRUCTION IS FINALIZED.

GENERAL SEQUENCE OF WORK NOTES

LIMITS OF CONSTRUCTION ON SH 105 FROM 3RD ST TO 8TH ST.

1. PLACE ADVANCED WARNING SIGNS AS SHOWN IN THE DETOUR SHEETS, THE STANDARDS AND AS DIRECTED BY THE ENGINEER. COORDINATE WITH RAILROAD AND THE ENGINEER TO DETERMINE TIMELINE FOR ROAD CLOSURE AND DETOUR.
2. PLACE TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN THE STANDARDS AND AS DIRECTED BY THE ENGINEER.
3. PLACE ROAD CLOSURE DEVICES AND SIGNS AS SHOWN IN THE DETOUR SHEETS AND AS DIRECTED BY THE ENGINEER.
4. BNSF RAILWAY SHALL INSTALL AND CONSTRUCT RAILROAD ELEMENTS PRIOR TO ANY TxDOT CONSTRUCTION.
5. CONTRACTOR SHALL CONSTRUCT AND INSTALL EXTENTS OF CONCRETE CURB AND ASPHALT TO MEET RAILROAD CROSSING AS SHOWN IN TRAFFIC CONTROL LAYOUT SHEET DURING ROAD CLOSURE AS DIRECTED BY THE ENGINEER. COORDINATE WITH RAILROAD FOR FLAGGING. SEE RAILROAD SOW SHEET FOR MORE INFORMATION.
6. REMOVE ROAD CLOSURE DEVICES AND SIGNS AND CONTINUE AS DIRECTED IN THE STANDARDS AND AS DIRECTED BY THE ENGINEER.
7. CONTRACTOR SHALL LIMIT WORK TO ONE SIDE OF THE ROAD AND NOT COVER MORE THAN THREE BLOCKS AT A TIME.
8. LOCATE ANY CONFLICTING EXISTING MANHOLE COVERS, GROUND BOXES, AND ADJUST TO FINAL GRADE AS NEEDED.
9. CONTRACTOR SHALL CONSTRUCT AND INSTALL CURB RAMPS, SIDEWALK, SIDE CURBS, CONCRETE CURB, DRAINAGE ELEMENTS, HANDRAIL, DRIVEWAYS AND REQUIRED COLORED TEXTURED CONCRETE AS SHOWN IN THE PLANS.
10. CONTRACTOR SHALL GRADE TO EXISTING GROUND WHILE ENSURING NO CHANGE TO EXISTING DRAINAGE PATTERNS.
11. AFTER CONSTRUCTION OF ALL PROPOSED ROADWAY ELEMENTS IS COMPLETE, PLACE FINAL STRIPING AS SHOWN IN THE PLANS. INCLUDING ANY STRIPING THAT WAS REMOVED DURING CONSTRUCTION.

NOTE – CONTRACTOR SHALL MANTAIN A MINIMUM 3:1 SAFETY SLOPES AT THE END OF EVERY WORKING DAY

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

cmadekley cm.
07/11/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

TRAFFIC CONTROL NARRATIVE

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	10

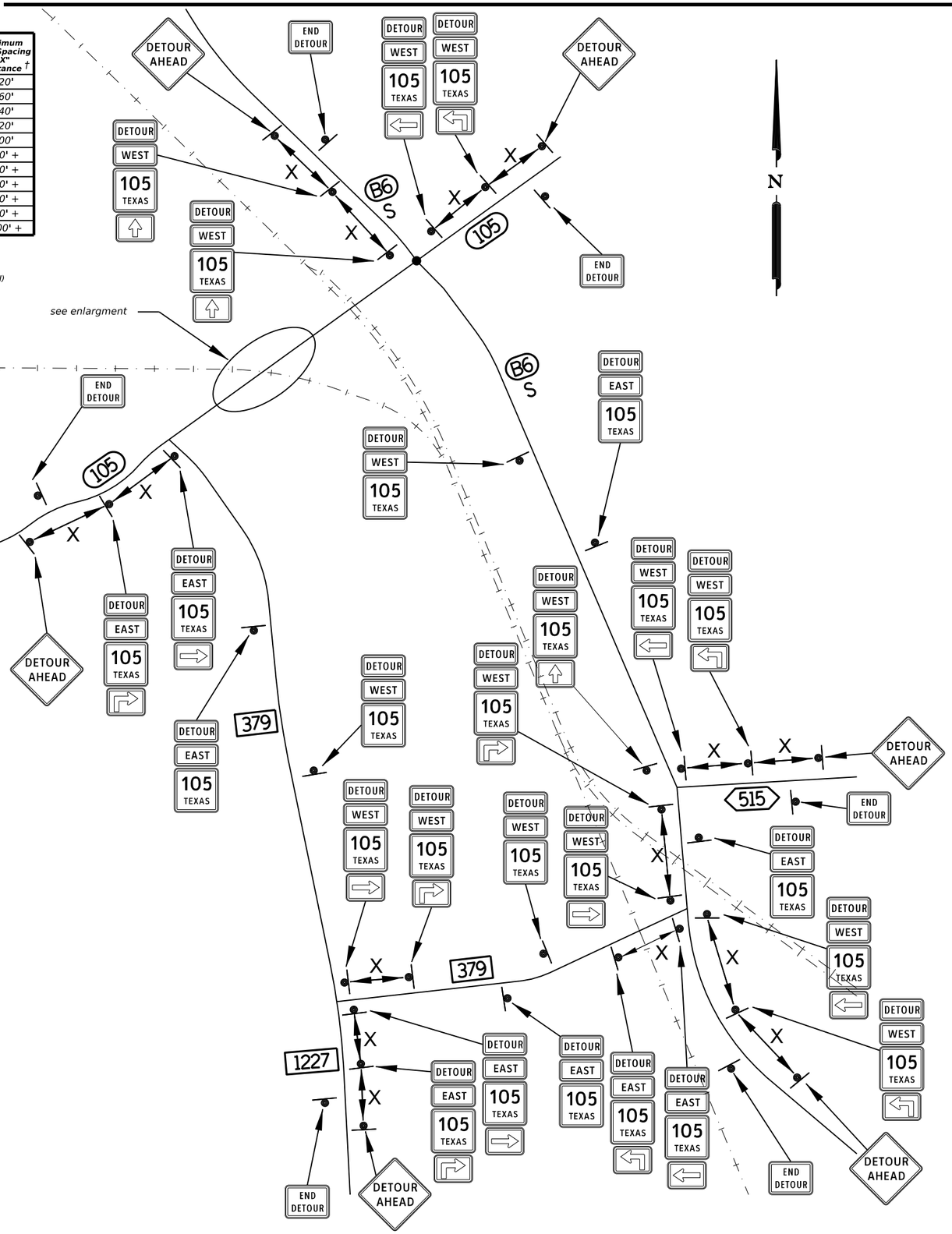
Posted Speed *	Formula	Minimum Desirable Taper Length * * 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance †
30	$L = \frac{WS}{60}$	150'	165'	180'	30'	60'	120'
35		205'	225'	245'	35'	70'	160'
40		265'	295'	320'	40'	80'	240'
45	$L = \frac{WS^2}{60}$	450'	495'	540'	45'	90'	320'
50		500'	550'	600'	50'	100'	400'
55		550'	605'	660'	55'	110'	500' +
60		600'	660'	720'	60'	120'	600' +
65		650'	715'	780'	65'	130'	700' +
70		700'	770'	840'	70'	140'	800' +
75		750'	825'	900'	75'	150'	900' +
80		800'	880'	960'	80'	160'	1000' +

* Conventional Roads Only

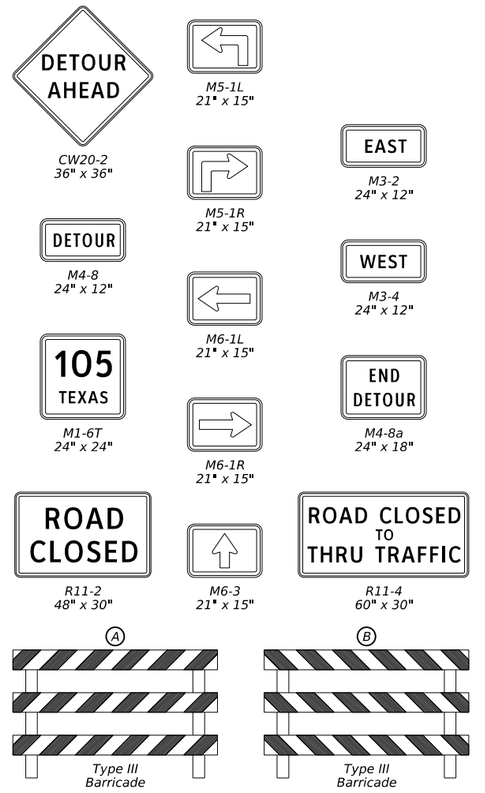
* * Taper lengths have been rounded off.
L = Length of Taper (ft.) W = Width of Offset (ft.) S = Posted Speed (MPH)

† Minimum distance from work area to first Advance Warning sign nearest the work area and/ordistnace between each additional sign

\+ Distance between signs should be increased as required to have 1500 feet advance warning. (See Section 6C.04.05)



Legend



NOTE:

1. All traffic control devices illustrated are required by the 2011 Texas MUTCD, figure 6H9 (TA-9).
2. Barricade standard BC sheets shall be used on this project.

Drawings Not To Scale

PRINT DATE	REVISION DATE
6/27/2024	

Texas Department of Transportation
Bryan District

DETOUR PLAN

9/30/2024

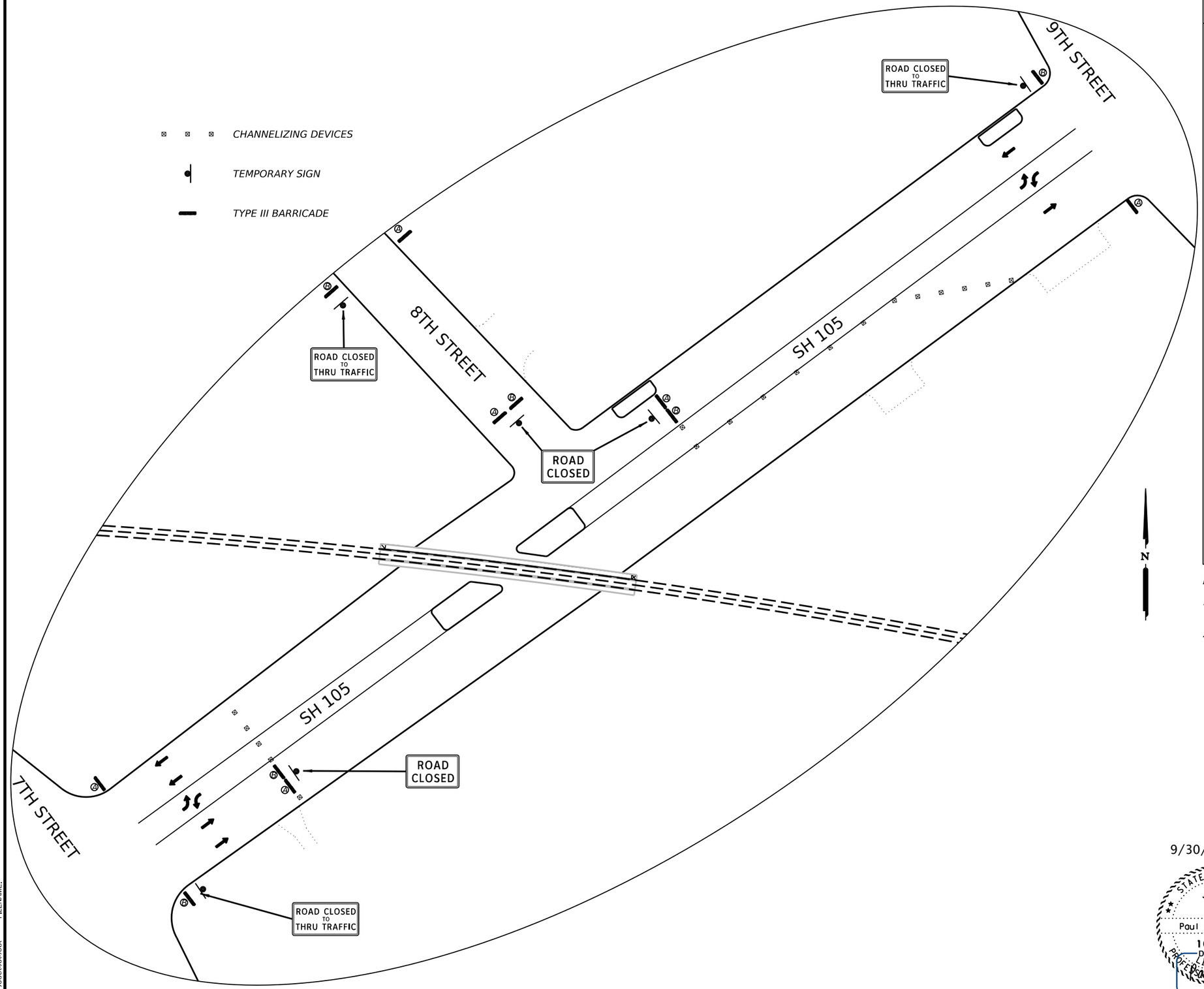
Paul W. Hammons
102096
Docusigned by:
9F1C90867F7C494...

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	11

REV DATE: 6/27/2024
CSJ: XXX-XX-XXX
FILENAME:



Legend

DETOUR AHEAD — CW20-2, 36" x 36"	M5-1L, 21" x 15"
	M5-1R, 21" x 15"
EAST — M3-2, 24" x 12"	
DETOUR — M4-8, 24" x 12"	
WEST — M3-4, 24" x 12"	
	M6-1L, 21" x 15"
105 TEXAS — M1-6T, 24" x 24"	
END DETOUR — M4-8a, 24" x 18"	
	M6-1R, 21" x 15"
ROAD CLOSED — R11-2, 48" x 30"	
	M6-3, 21" x 15"
ROAD CLOSED TO THRU TRAFFIC — R11-4, 60" x 30"	

(A) Type III Barricade

(B) Type III Barricade

NOTE:

1. *All traffic control devices illustrated are required by the 2011 Texas MUTCD, figure 6H9 (TA-9).*
2. *Barricade standard BC sheets shall be used on this project.*

Drawings Not To Scale

PRINT DATE	REVISION DATE
6/27/2024	

Texas Department of Transportation — Bryan District

DETOUR ENLARGEMENT

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

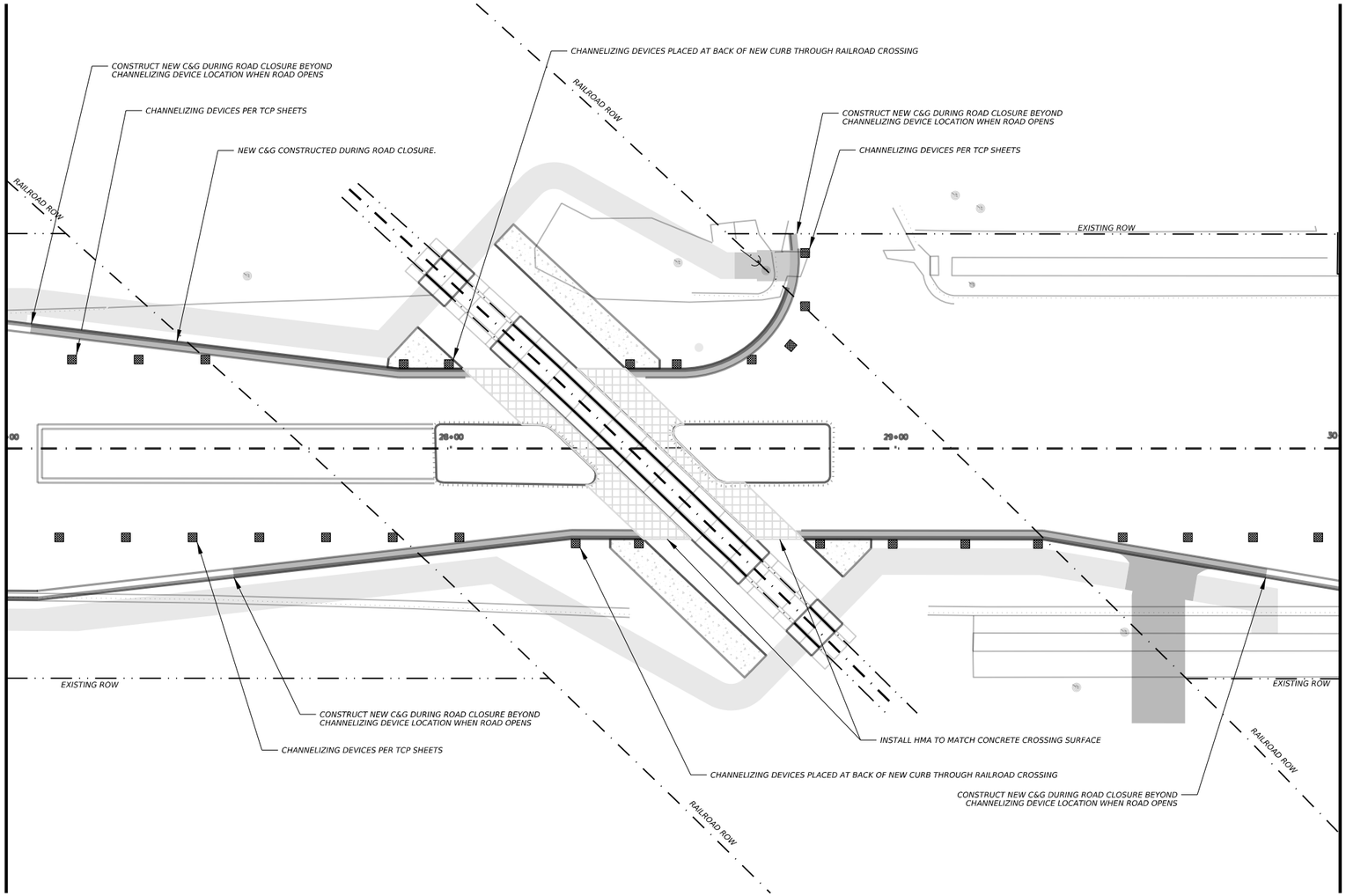
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	12

9/30/2024

STATE OF TEXAS
Paul W. Hammons
102096
DocuSigned by:
LICENSED PROFESSIONAL ENGINEER
Paul Hammons
9F1C90867F7C494...

REV DATE: 6/27/2024
CSJ: XXXX-XX-XXX
FILENAME:



FILENAME:

REV DATE: 6/28/2024
CSJ: XXXX-XX-XXX

9/30/2024

STATE OF TEXAS
Paul W. Hammons
102096
LICENSED
PROFESSIONAL ENGINEER
DocuSigned by:
Paul Hammons
9F1C90867F7C494...

PRINT DATE	REVISION DATE
6/28/2024	

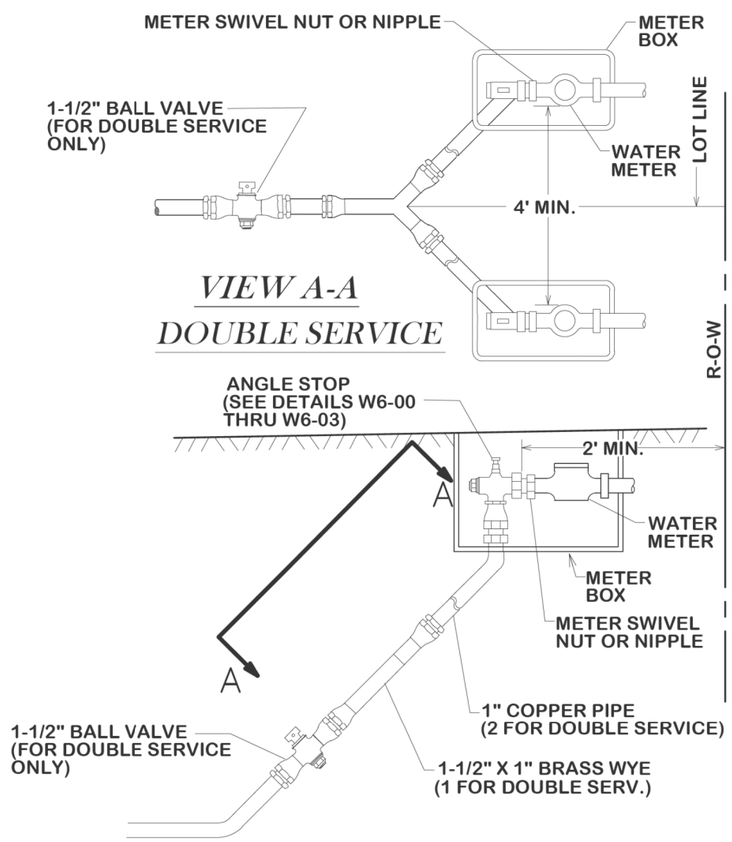
Texas Department of Transportation
Bryan District
©2024

TRAFFIC CONTROL LAYOUT

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	13



NOTES:

1. ALL CONNECTIONS TO BE COMPRESSION TYPE.
2. MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL.
3. ALL SERVICE WYES & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.
4. EXISTING METER BOXES ARE TO BE REMOVED. THE NEW METER BOXES SHALL BE OLD CASTLE.
5. ANGLE STOPS MAY BE USED FOR NEW CONSTRUCTION IF FINISHED ELEVATION IS KNOWN. THE STOP MUST BE INSTALLED 10"-12" BELOW THE FINISHED ELEVATION.
6. WHEN PRE-APPROVED BY THE CITY OF NAVASOTA, THE CONTRACTOR MAY INSTALL A DOUBLE SERVICE BRANCH WITH A MINIMUM 20" WIDTH METER BOX TO HOUSE BOTH METERS.

METER NUT SIZE
3/4" x 2.5" Long
3/4" x 3" Long
3/4" x 12" Long
1" x 2.625" Long
1" x 8.5" Long
1-1/2" Meter Nipple
1-1/2" Meter Bushing
2" Meter Nipple
2" Meter Bushing

CITY OF NAVASOTA ★ FOUNDED 1854 ★

WATER SERVICE RECONNECTION

DATE: JULY 2021

NAVASOTA! So much, so close.

DETAIL NO. **W6-04**

REV DATE: 6/28/2024
CSJ: XXX-XX-XXX
FILENAME:

PRINT DATE	REVISION DATE
6/28/2024	

Texas Department of Transportation
Bryan District

ADDITIONAL DETAILS

WATER METER

FED. RD. DIV. NO.	PROJECT NUMBER		HIGHWAY NUMBER
6			SH 105
STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	14

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

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

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	0315	04	087, ETC.	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	BRY	GRIMES		15

DATE: 6/30/2024
FILE: pw:/

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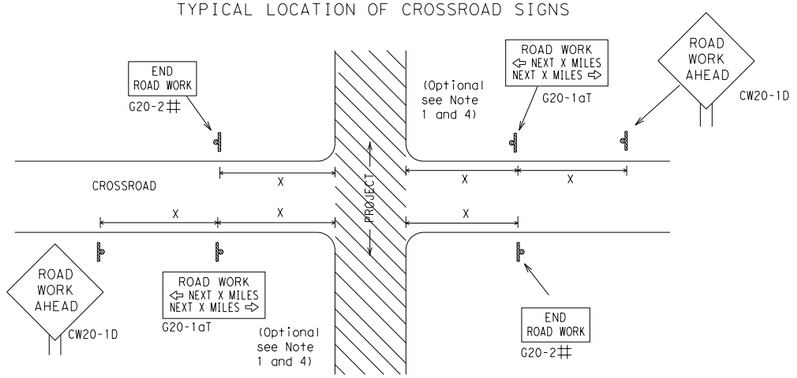
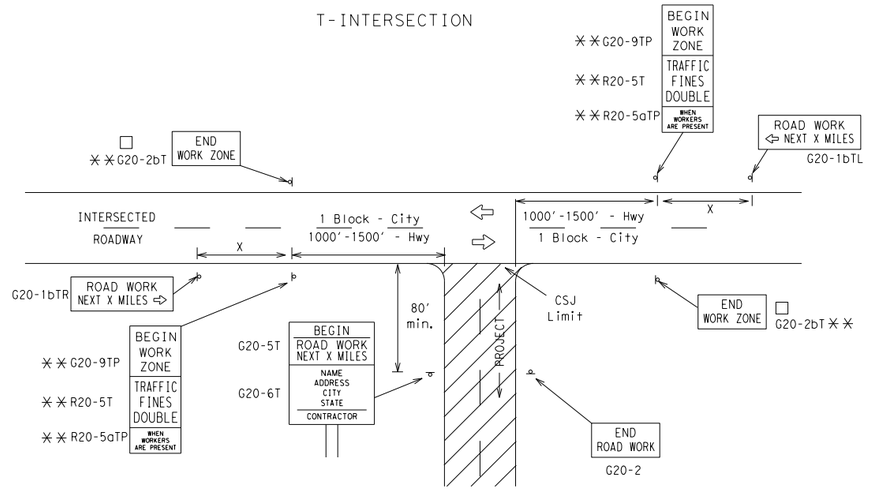
TYPICAL LOCATION OF CROSSROAD SIGNS



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 as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)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.

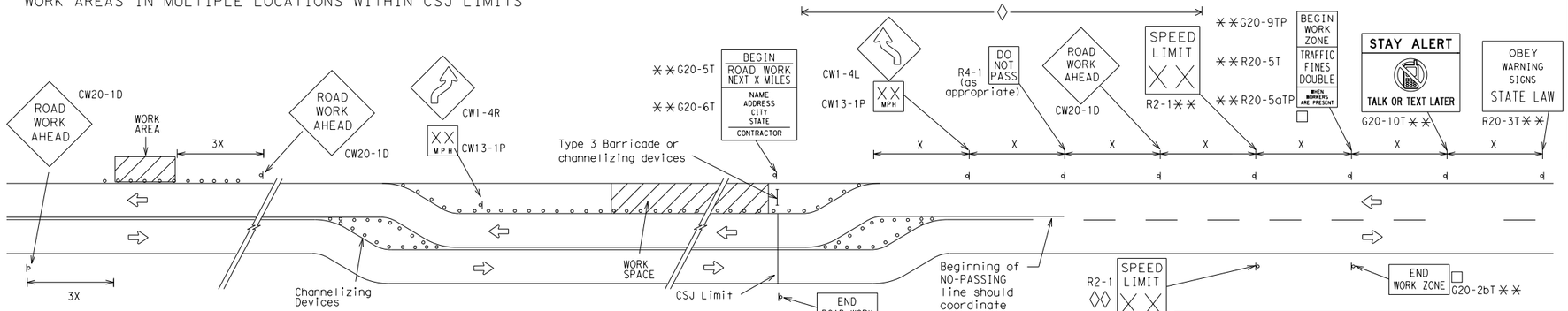
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

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 as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

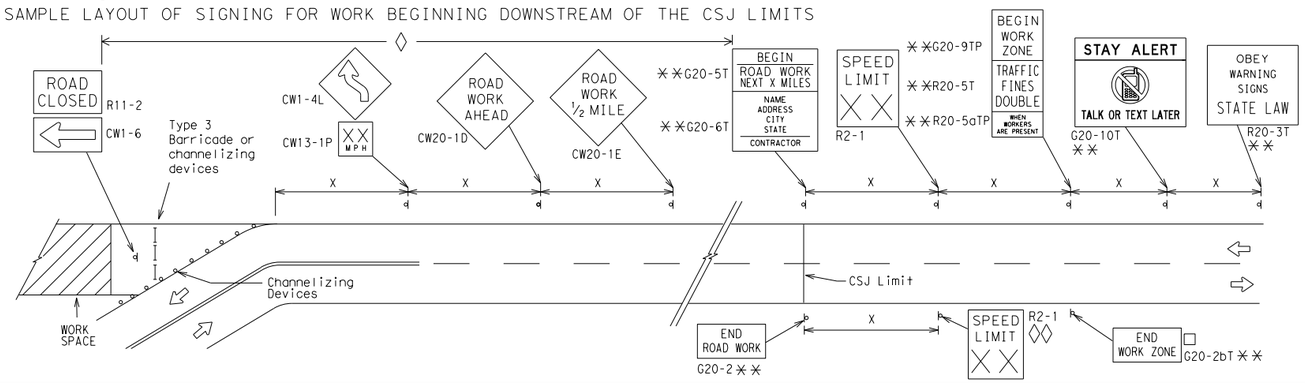
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

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



NOTES

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

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

✳✳ CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

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

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		16

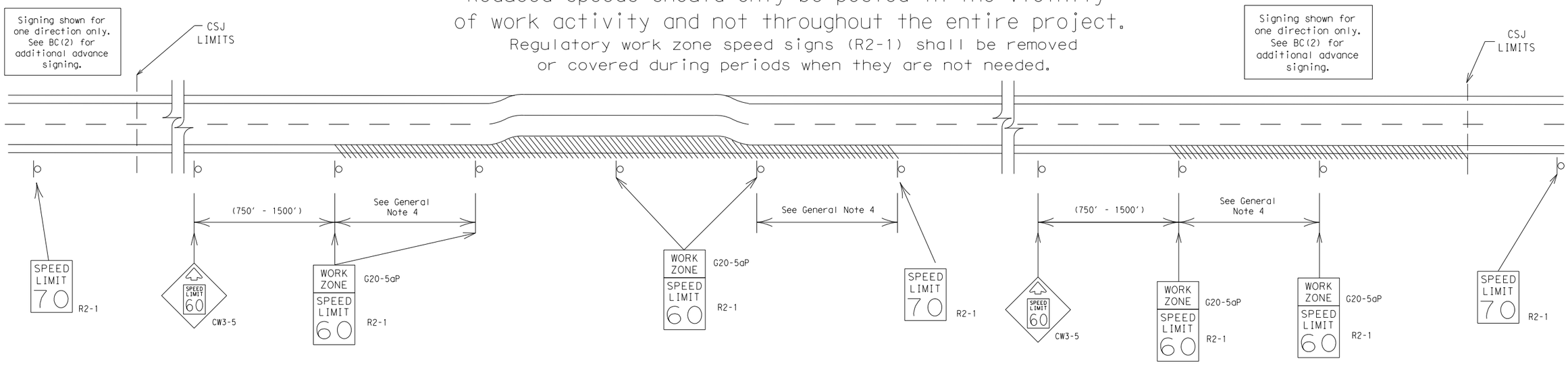
DATE: 6/30/2024
FILE: pw:/
pw:/

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		17

DATE: 6/30/2024
FILE: pw:/

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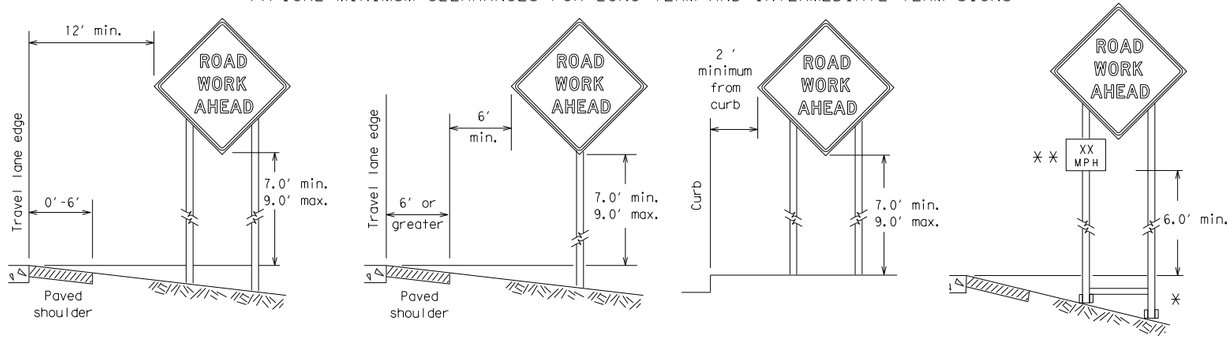
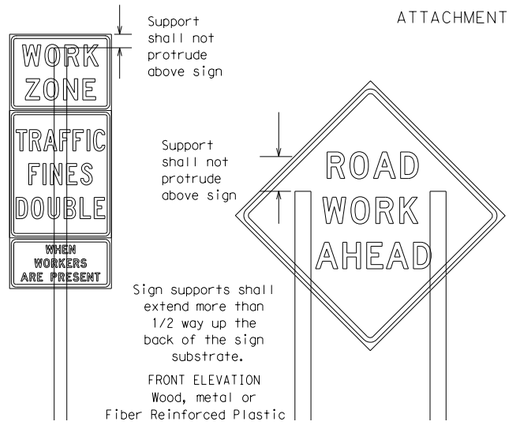
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

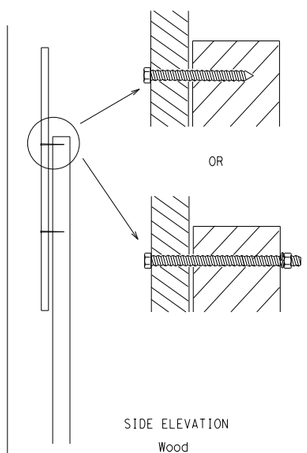


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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





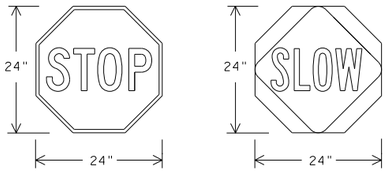
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6′ to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
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) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets.The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The 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.

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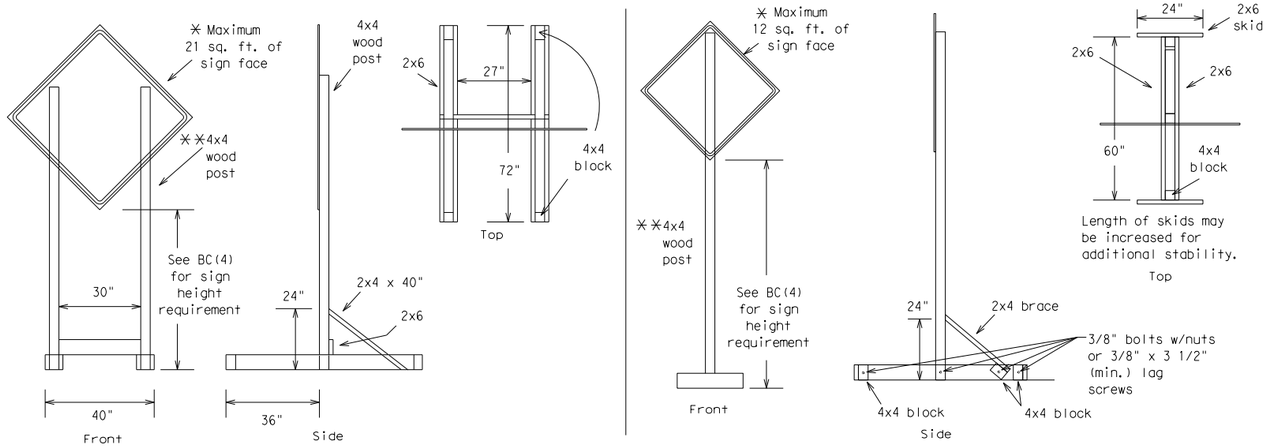
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

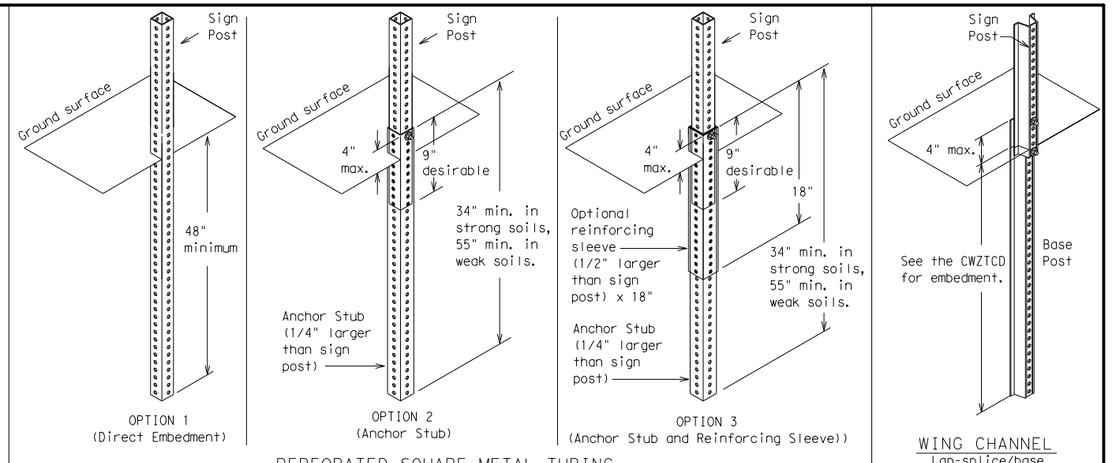
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		18

DATE: 6/30/2024
FILE: pw:/
pw:/



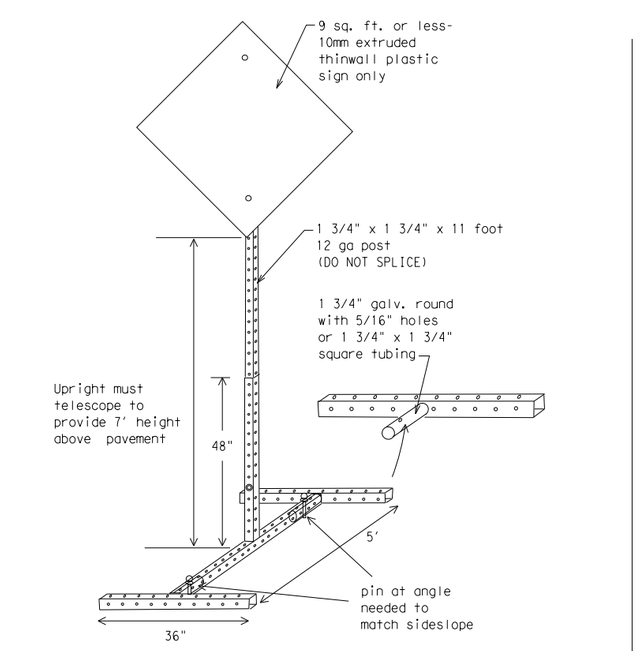
SKID MOUNTED WOOD SIGN SUPPORTS

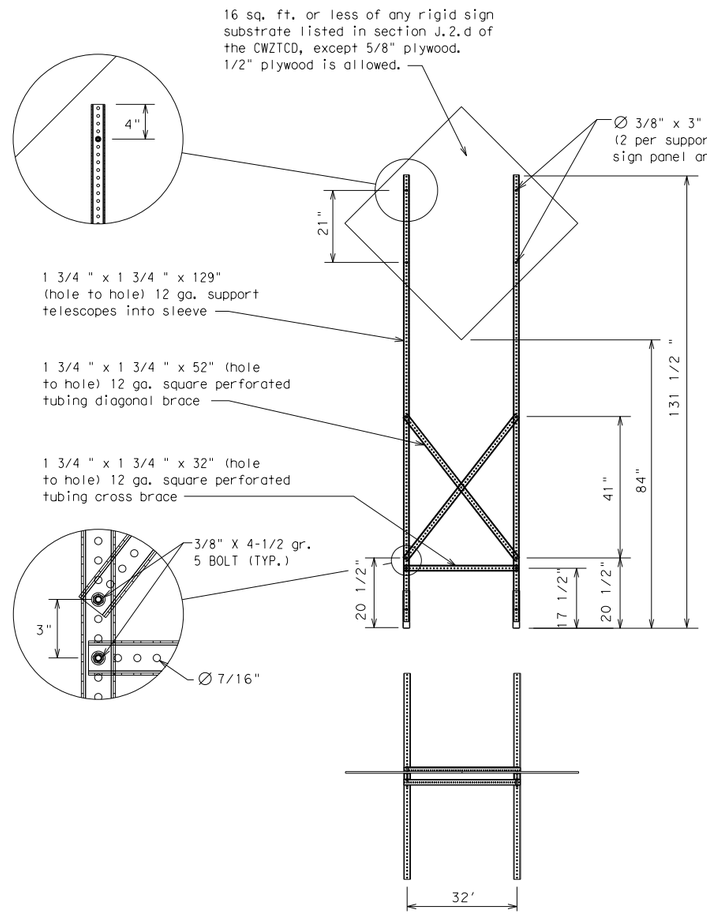
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

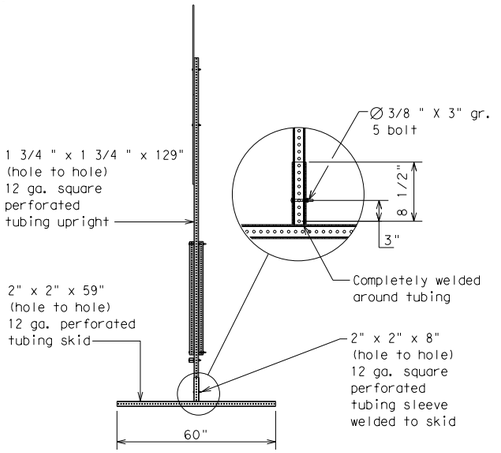


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		19

DATE: 6/30/2024
FILE: pw:/

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

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

⁂⁂ 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 Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		0315	04	087, ETC.	SH 105
9-07 8-14		DIST	COUNTY		SHEET NO.
7-13 5-21		BRY	GRIMES		20

100

DATE: 6/30/2024
FILE: pw:/

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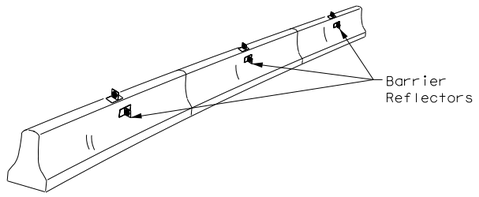
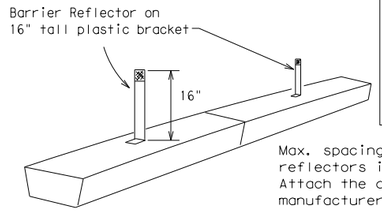
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

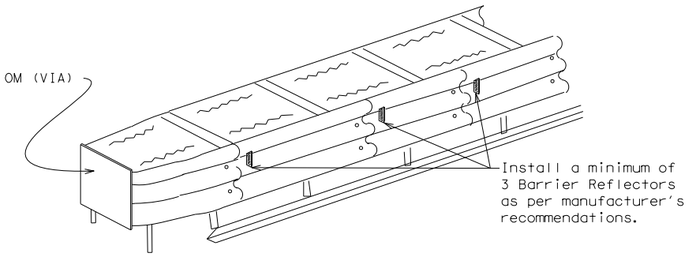


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

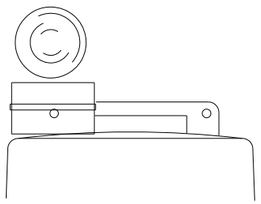


DELINEATION OF END TREATMENTS

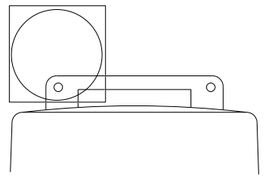
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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

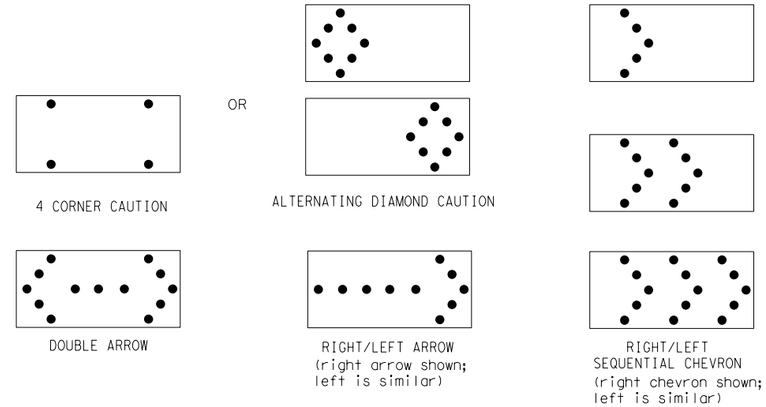
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

RIGHT/LEFT ARROW
(right arrow shown;
left is similar)

RIGHT/LEFT
SEQUENTIAL CHEVRON
(right chevron shown;
left is similar)

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 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 Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		21

DATE: 6/30/2024
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

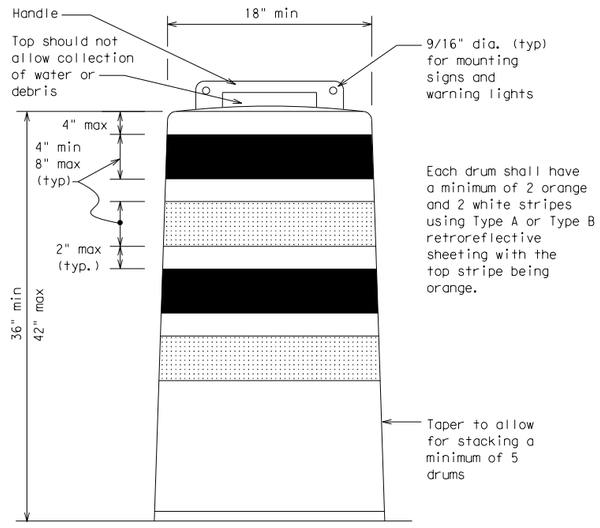
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

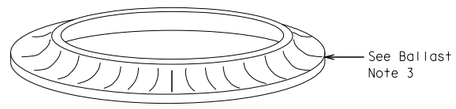
RETROREFLECTIVE SHEETING

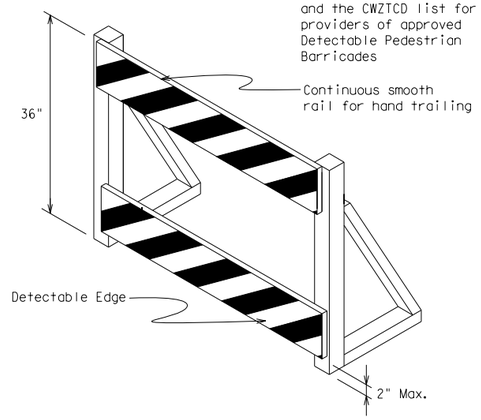
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

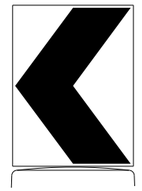




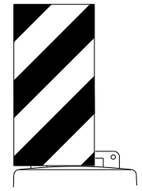


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	BRY	GRIMES		22
7-13				

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DATE: 6/30/2024
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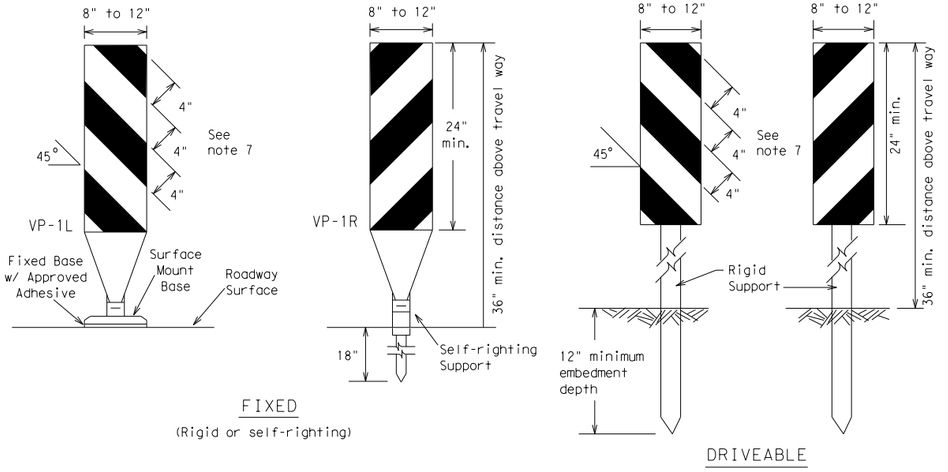
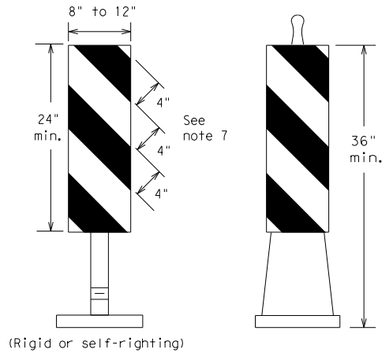


FIXED

(Rigid or self-righting)

DRIVEABLE

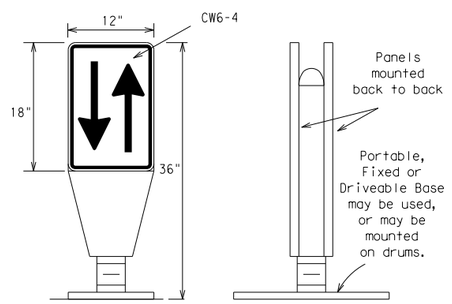


(Rigid or self-righting)

PORTABLE

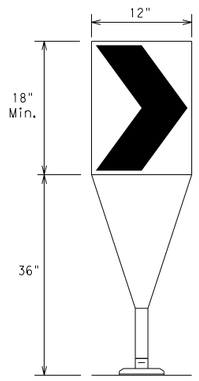
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use 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 or Type B 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.

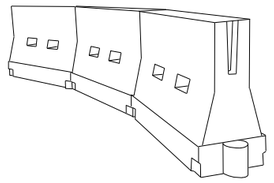
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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



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). Place reflective sheeting 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 Manual for Assessing Safety Hardware (MASH) 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

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.

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

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Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0315	04	087, ETC.	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		23

DATE: 6/30/2024
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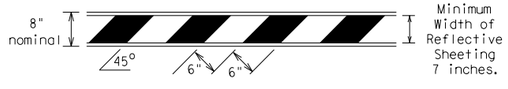
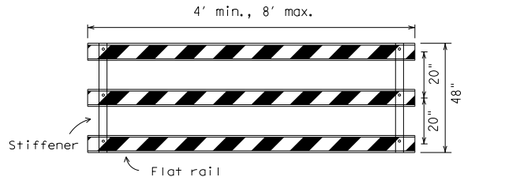
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



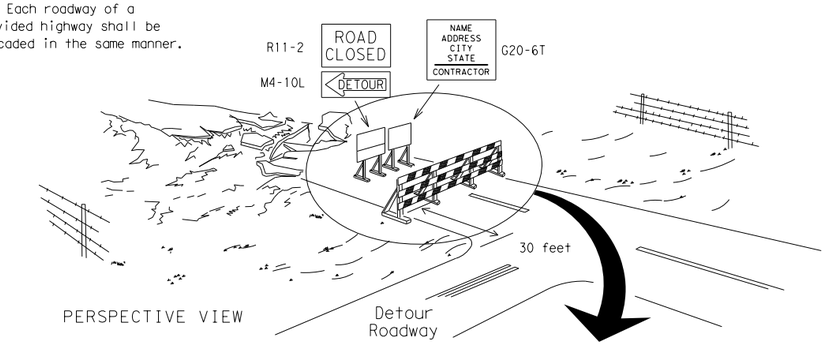
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

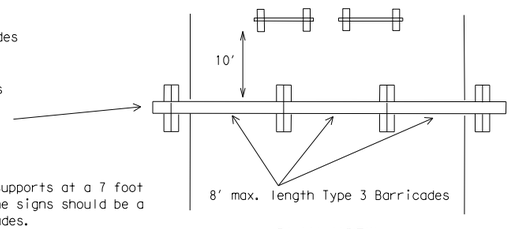
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

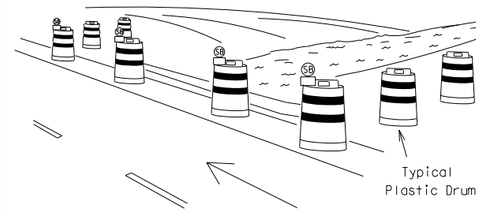
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

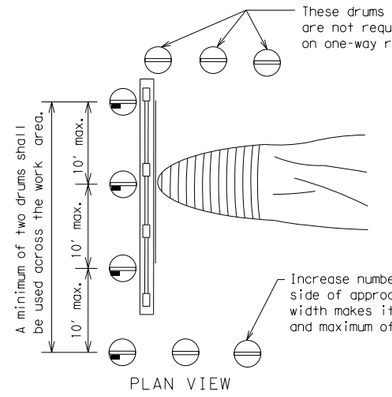
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

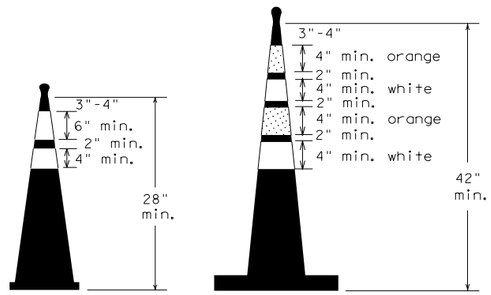
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



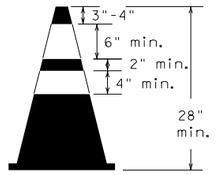
PLAN VIEW

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

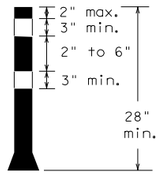
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

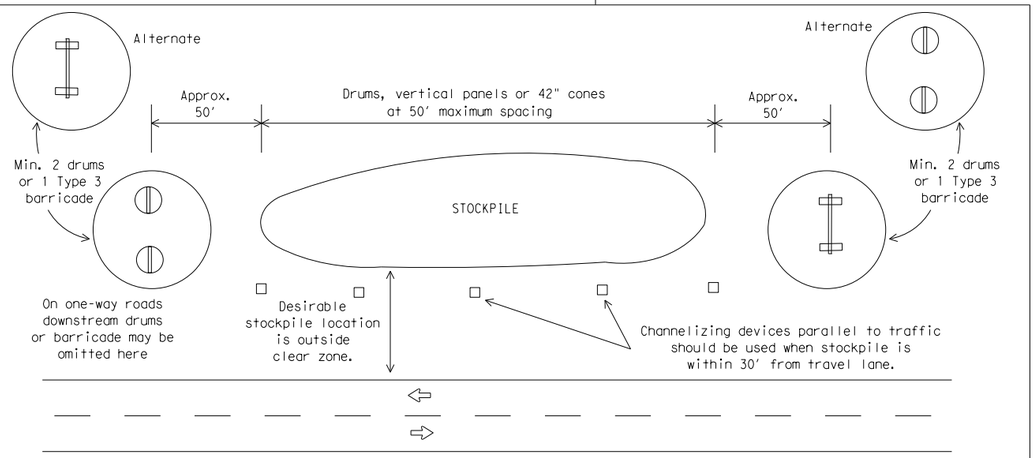


Tubular Marker

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

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

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined 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

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	BRY	GRIMES		24

DATE: 6/30/2024
FILE: pw:/

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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.

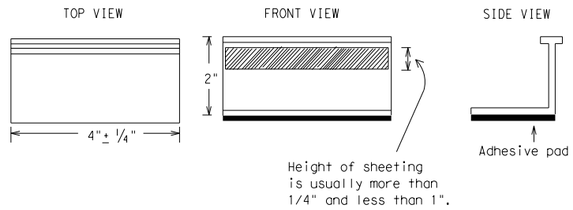
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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 Safety Division Standard

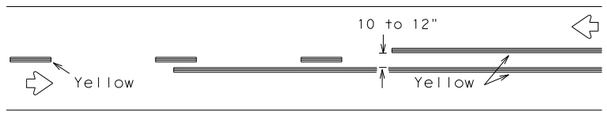
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

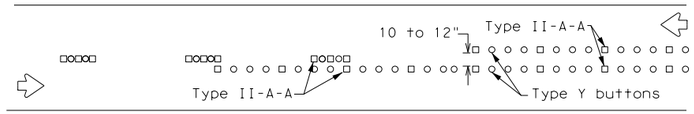
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21	0315	04	087, ETC.	SH 105
1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	BRY	GRIMES		25

105

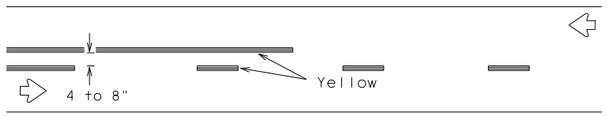
PAVEMENT MARKING PATTERNS



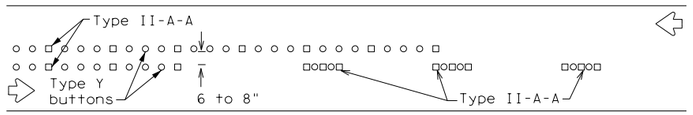
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



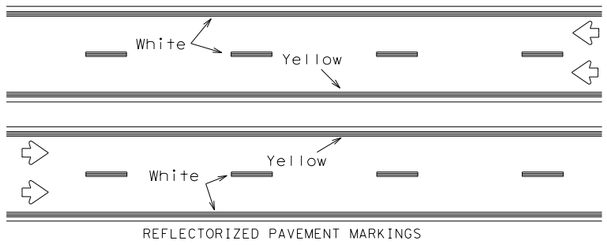
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



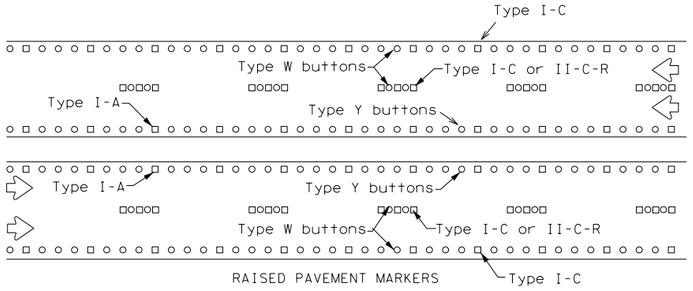
RAISED PAVEMENT MARKERS - PATTERN B

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



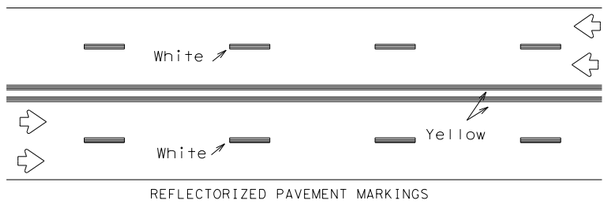
REFLECTORIZED PAVEMENT MARKINGS



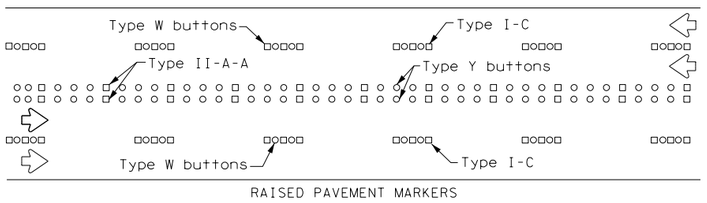
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



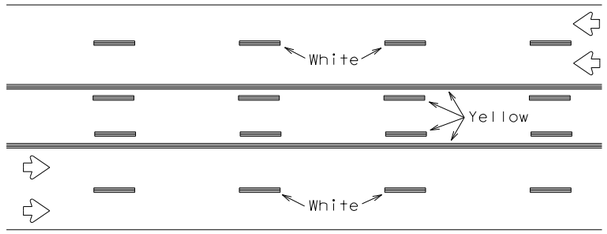
REFLECTORIZED PAVEMENT MARKINGS



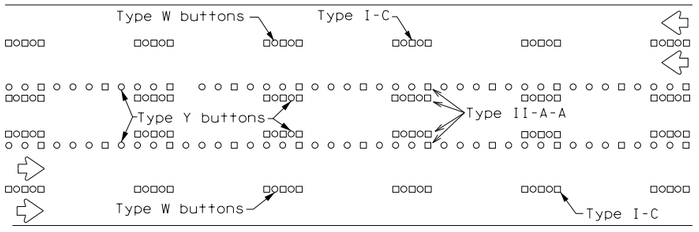
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

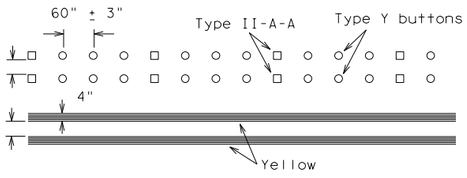
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

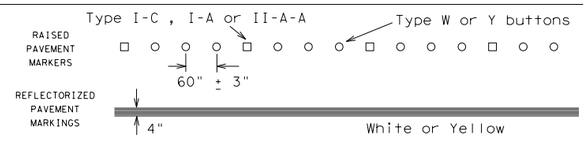
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

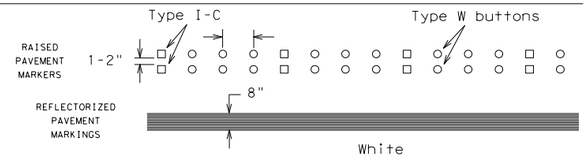


EDGE LINE OR SINGLE NO-PASSING LINE



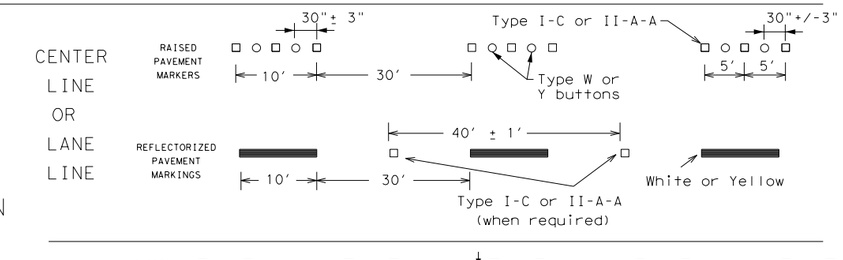
WIDE LINE

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

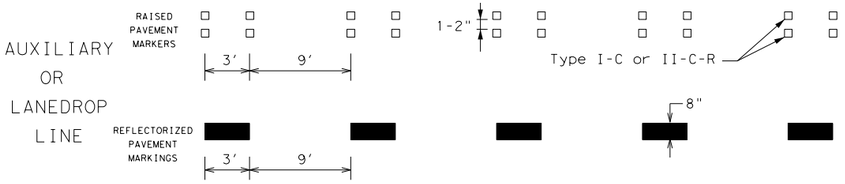


BROKEN LINES

CENTER LINE OR LANE LINE

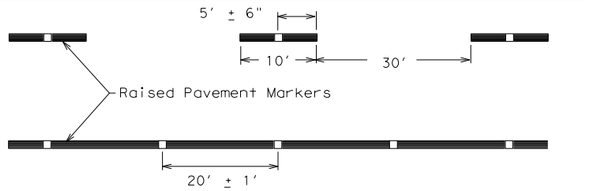


AUXILIARY OR LANEDROP LINE



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 Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0315	04	087, ETC.	SH 105
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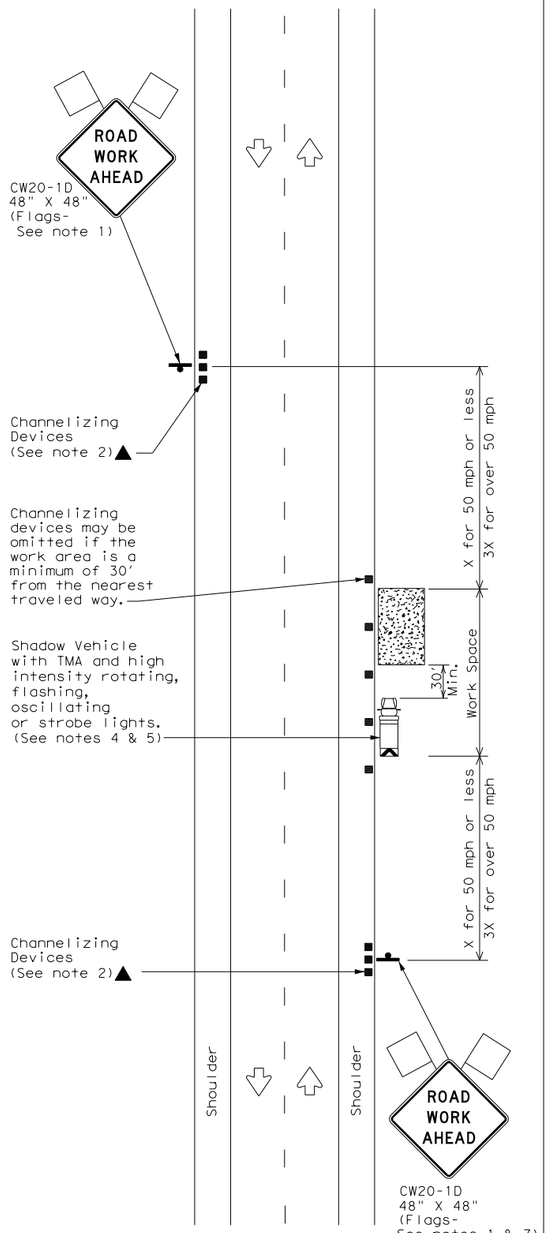
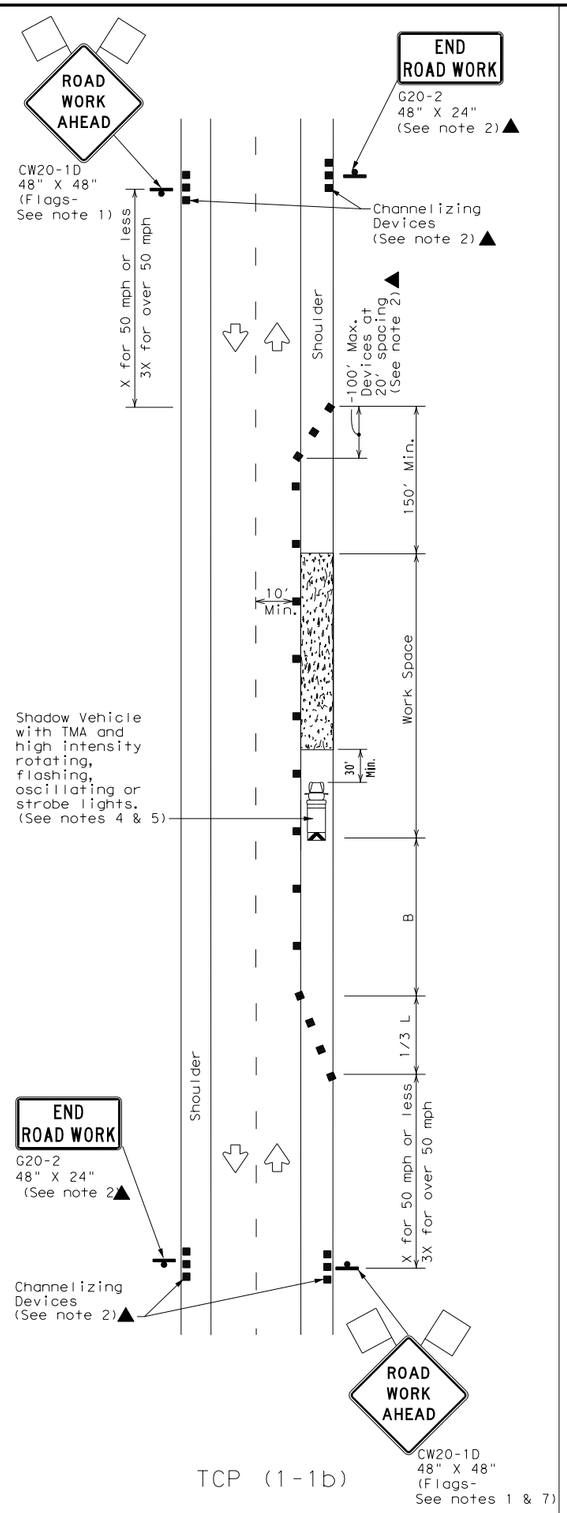


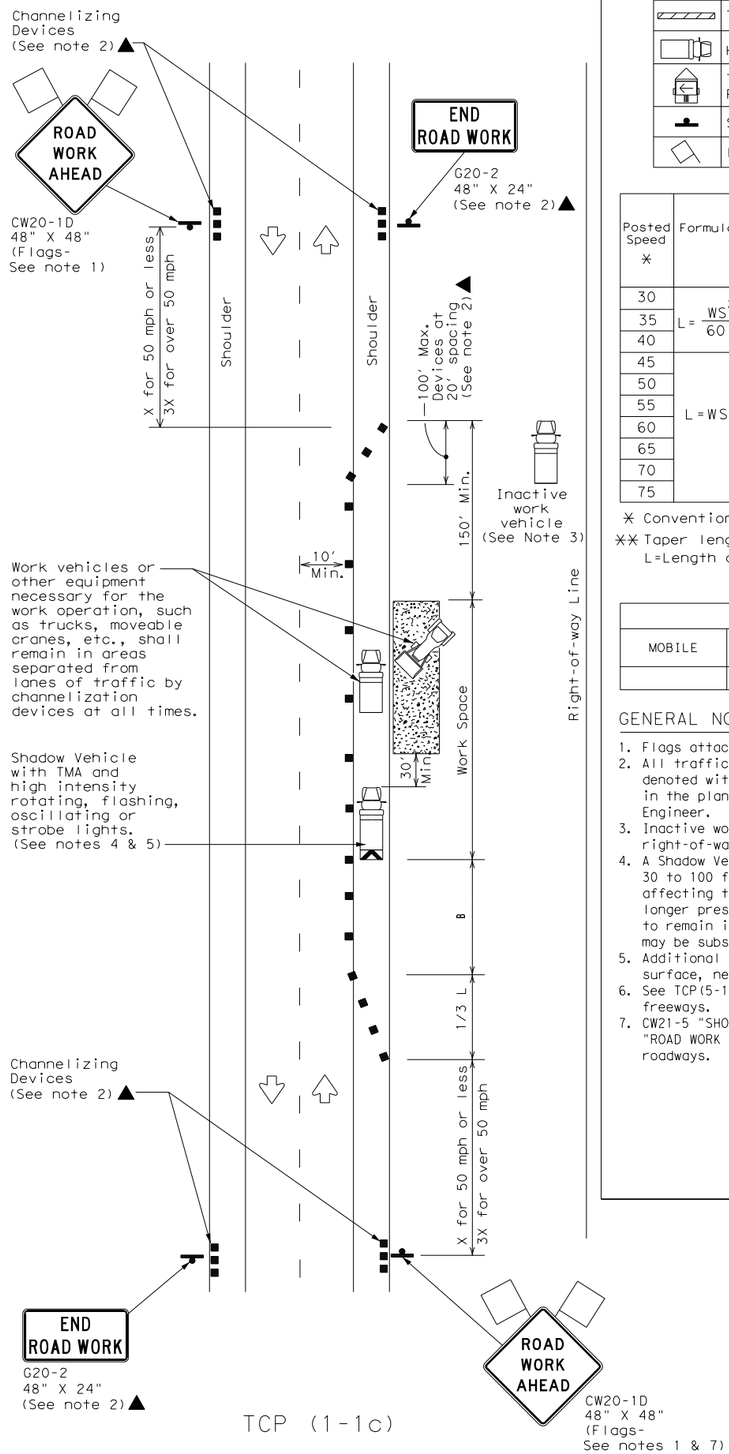
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. 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 wider work spaces.
6. See TCP(5-1)for shoulder work on divided highways, expressways and freeways.
7. 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(1-1)-18

FILE: tcp1-1-18.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	BRY	GRIMES		27
1-97 2-18				

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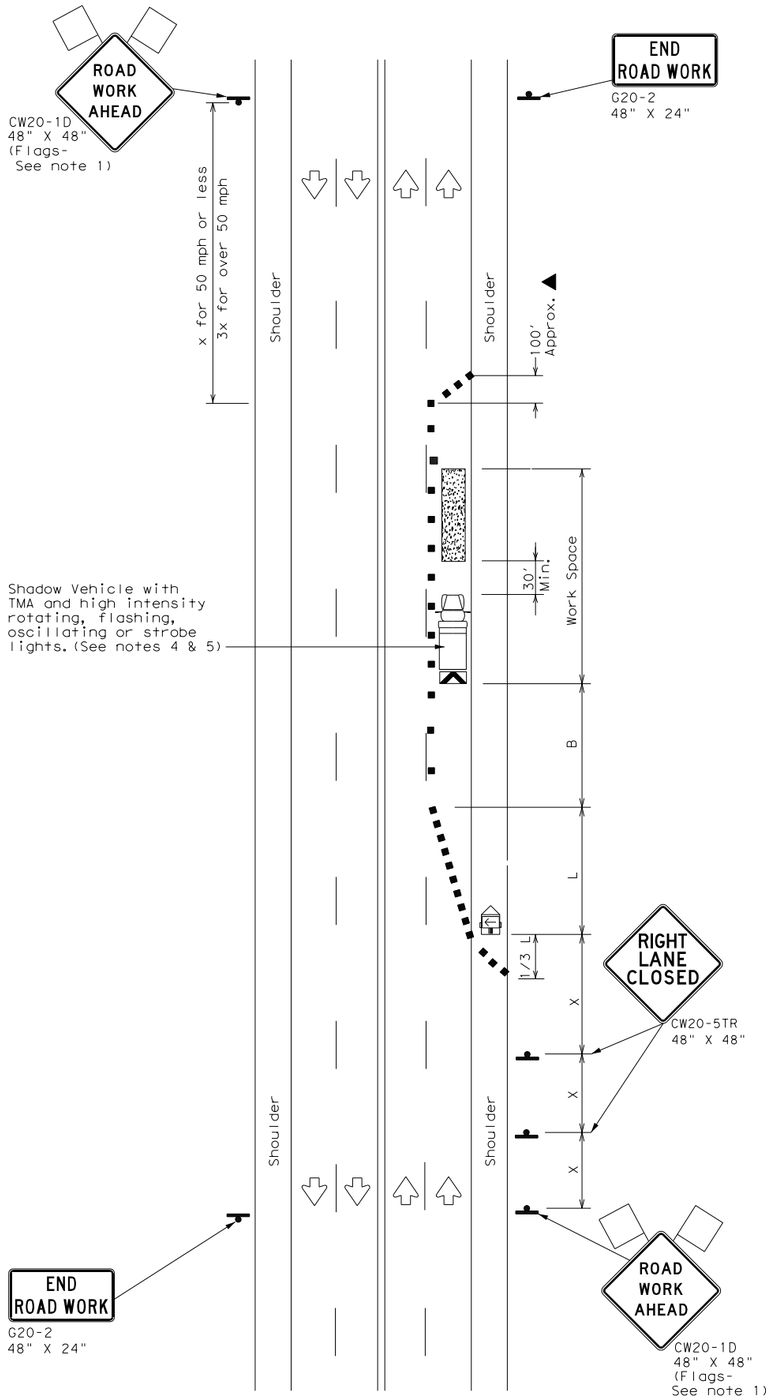
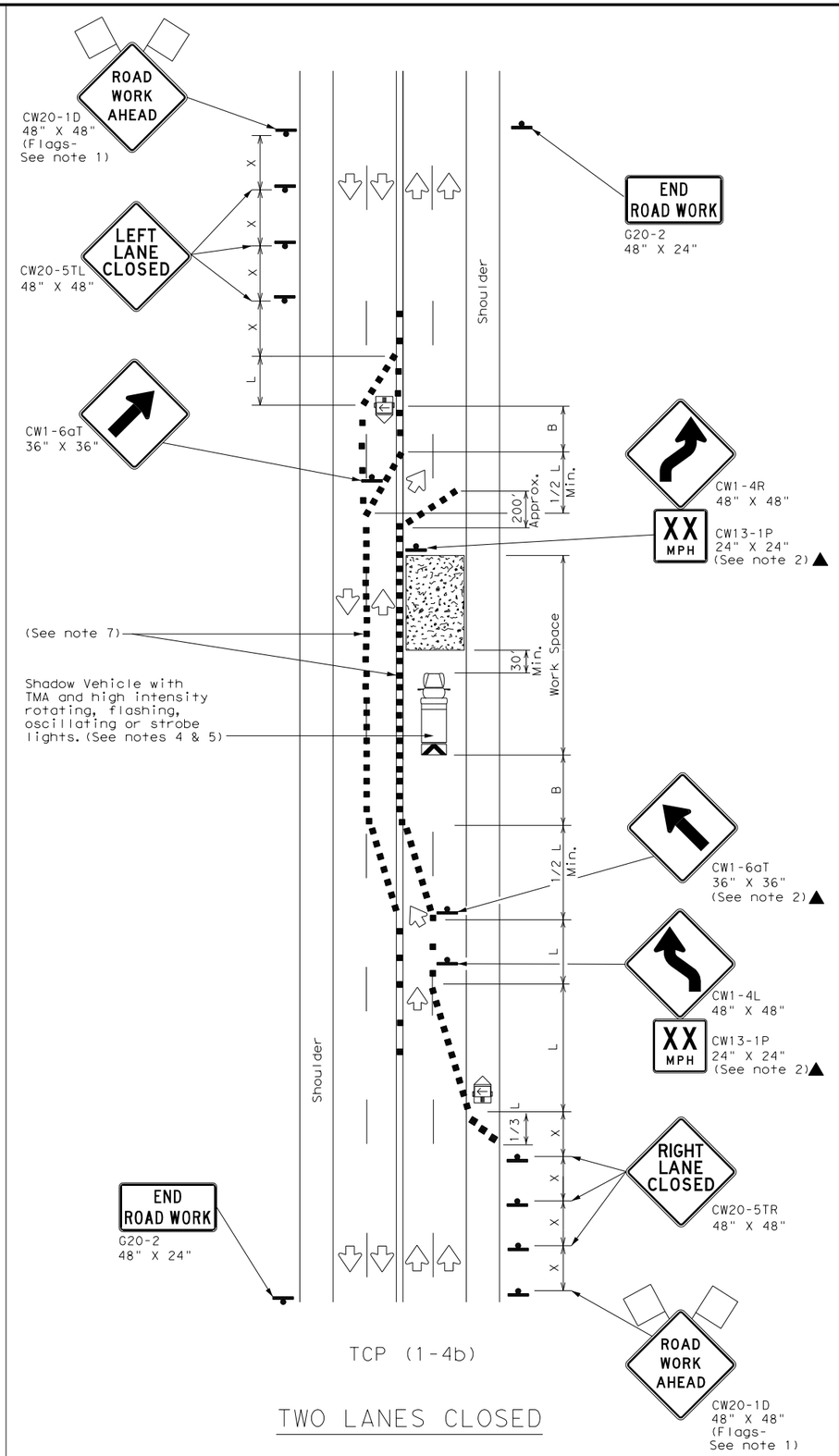


TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

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 CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. 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 wider work spaces.

TCP (1-4a)

6. 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 where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas 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(1-4)-18

FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		28

DATE: 6/30/2024
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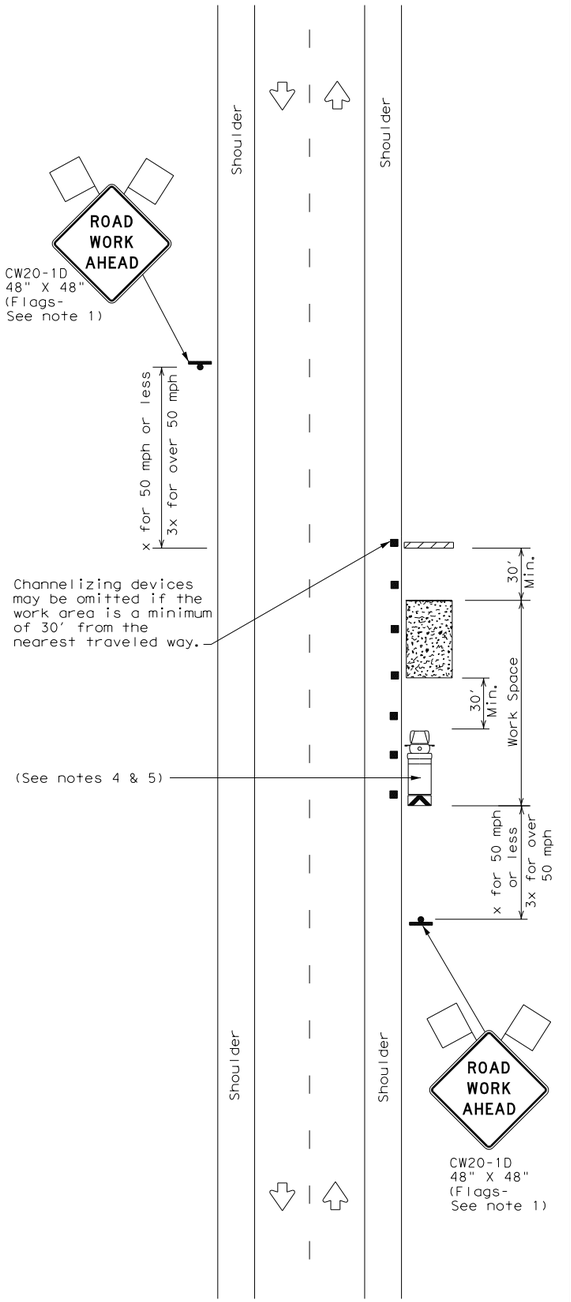
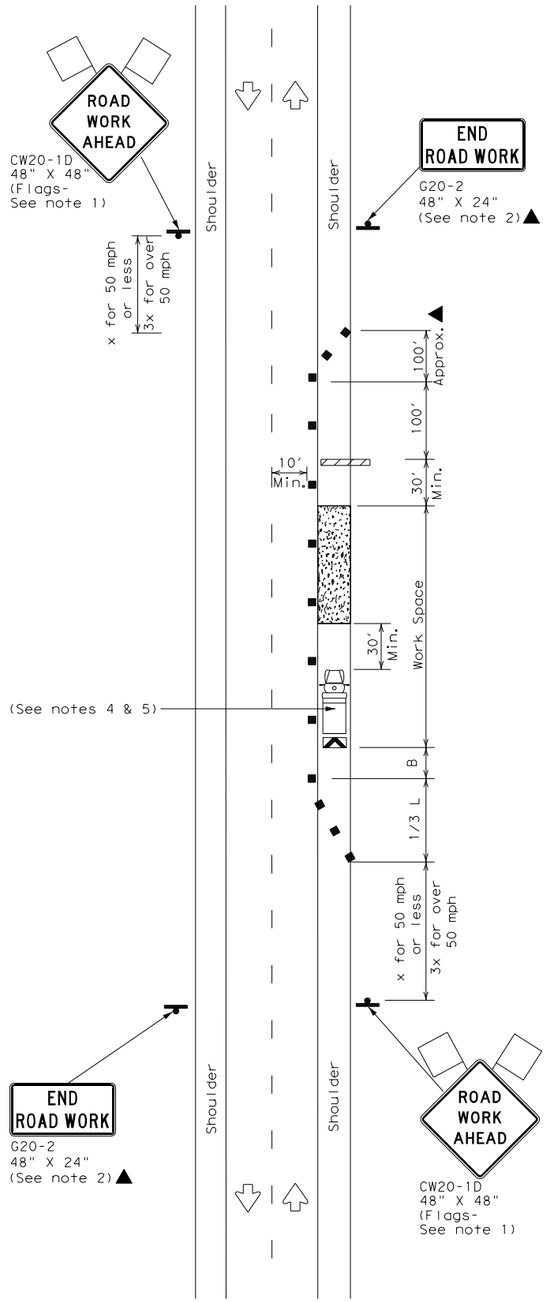
pw:/



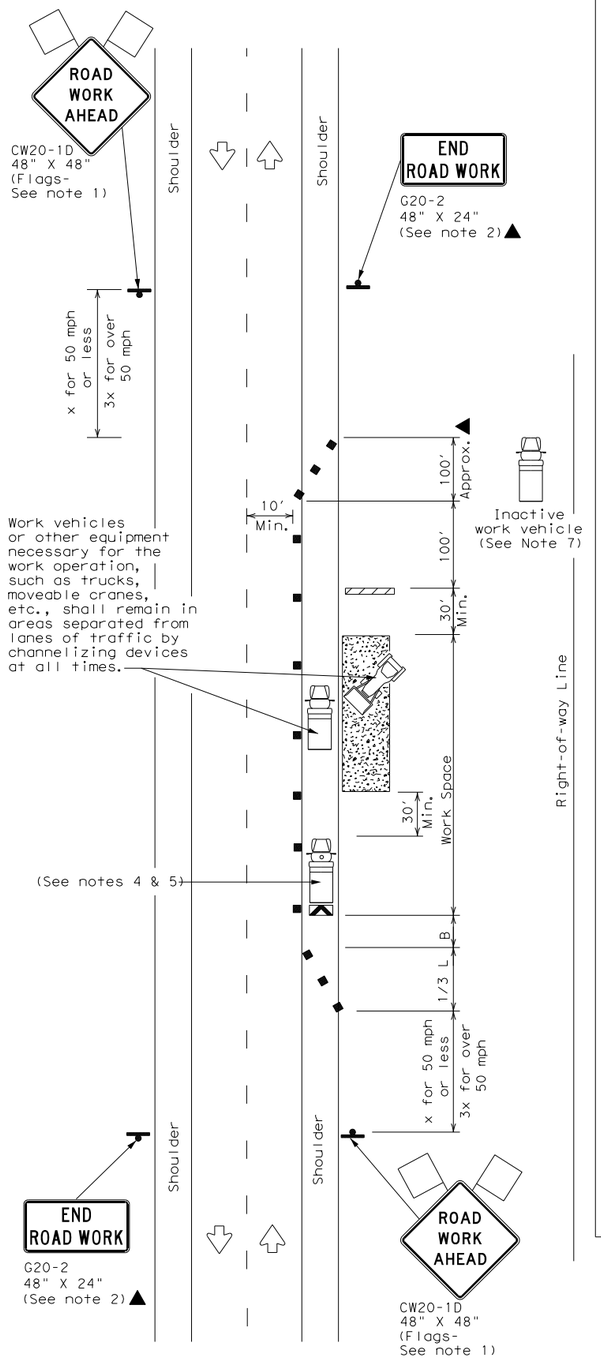
TCP (2-1a)

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		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

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		29

161

DATE: 6/30/2024
FILE: pw:/

pw:/

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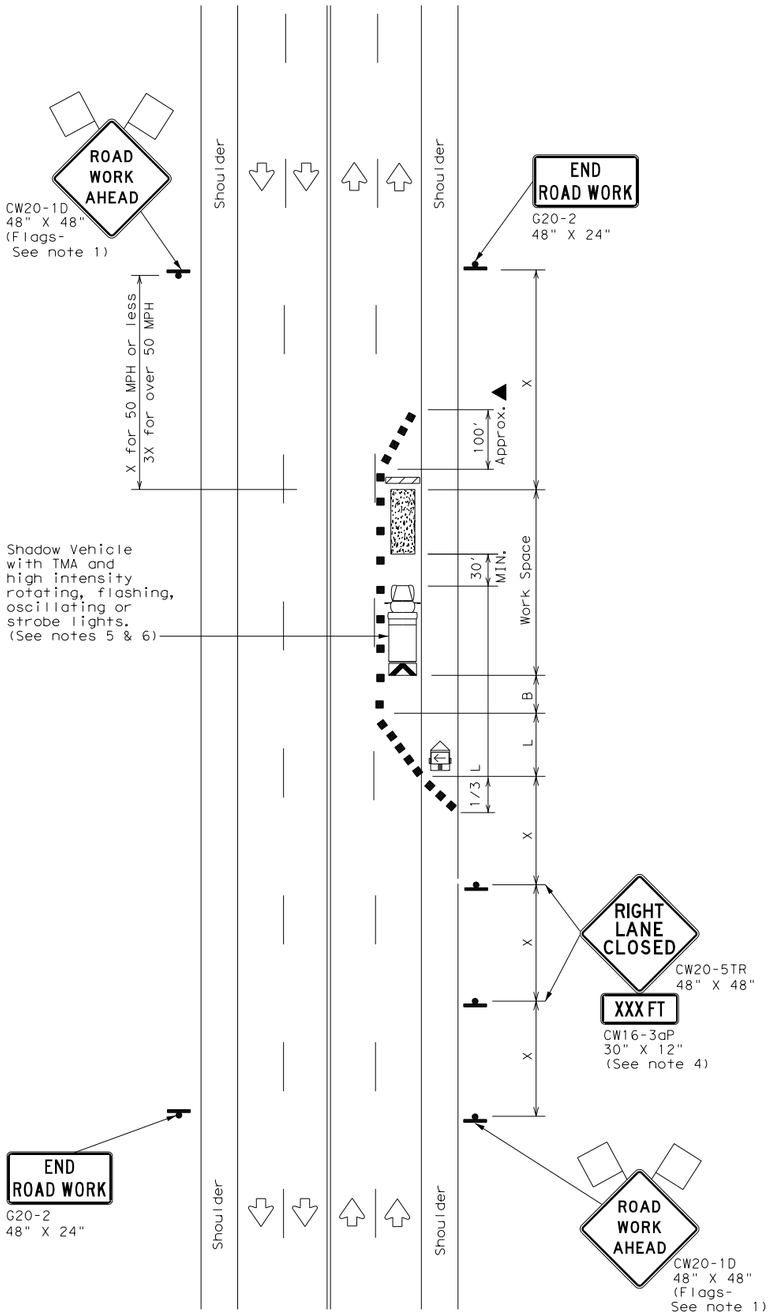
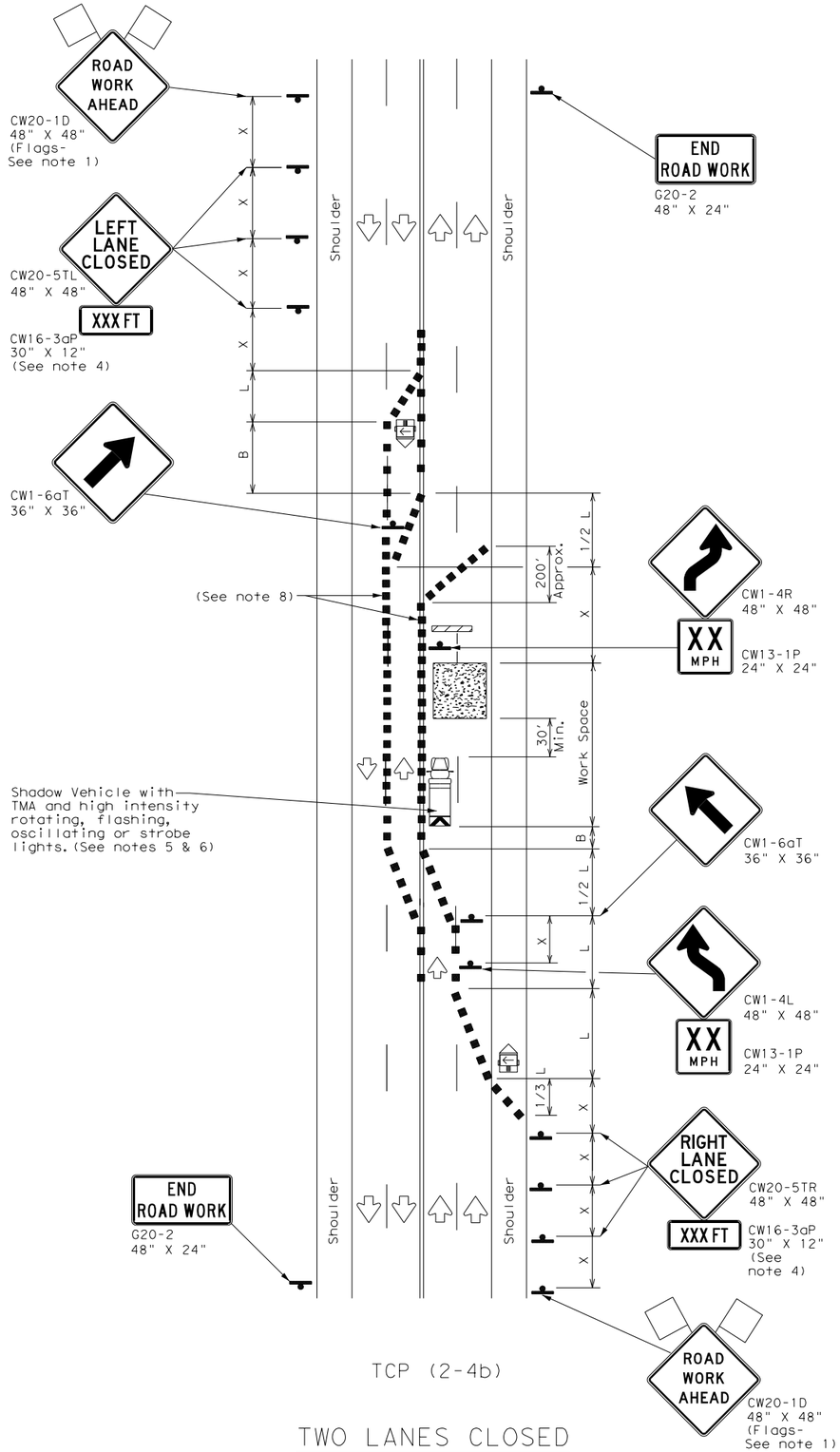


TCP (2-4a)

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

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1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	BRY	GRIMES		30

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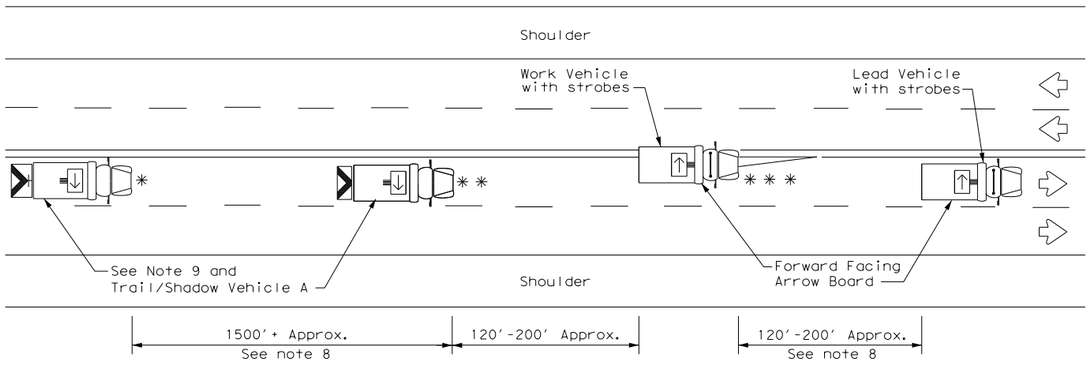
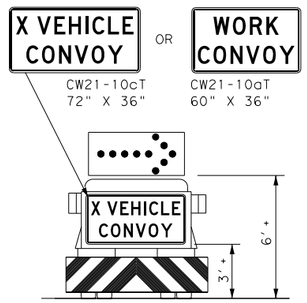


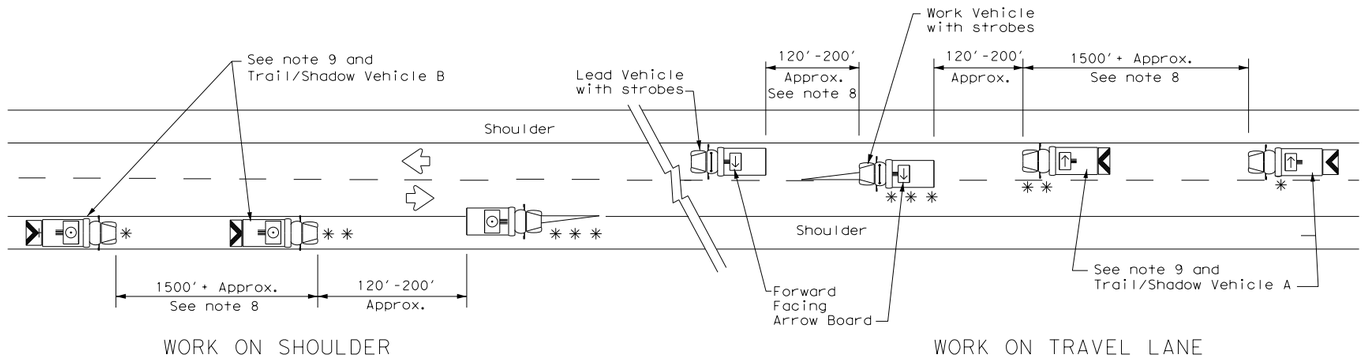
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

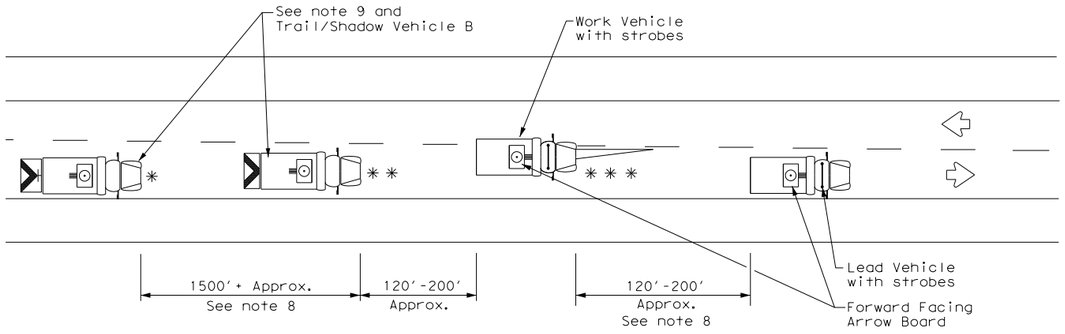


WORK ON SHOULDER

WORK ON TRAVEL LANE

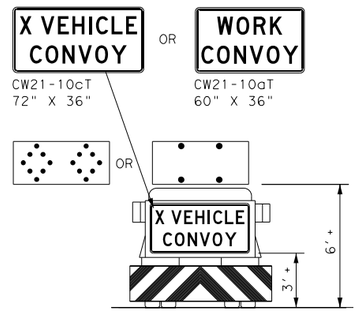
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

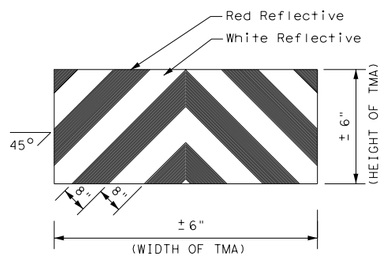
with Flashing Arrow Board in CAUTION display

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
* *	Shadow Vehicle		
* * *	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		31

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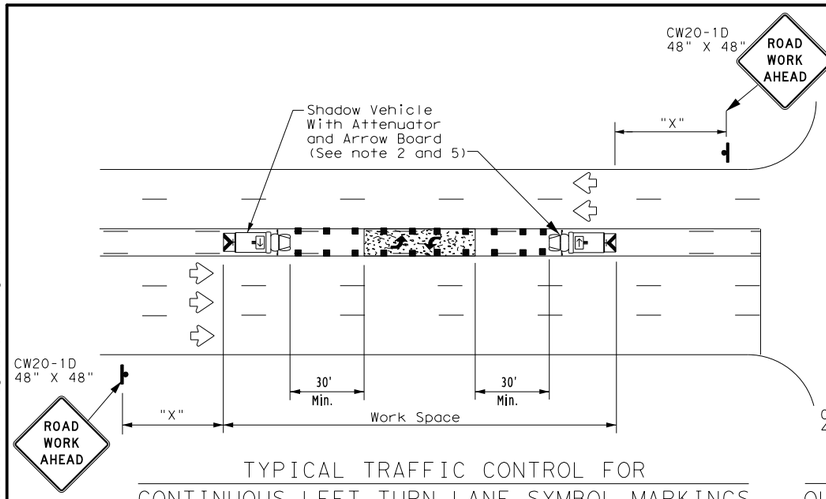
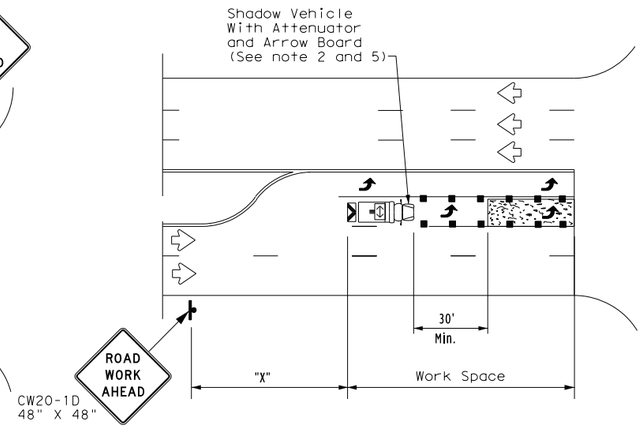
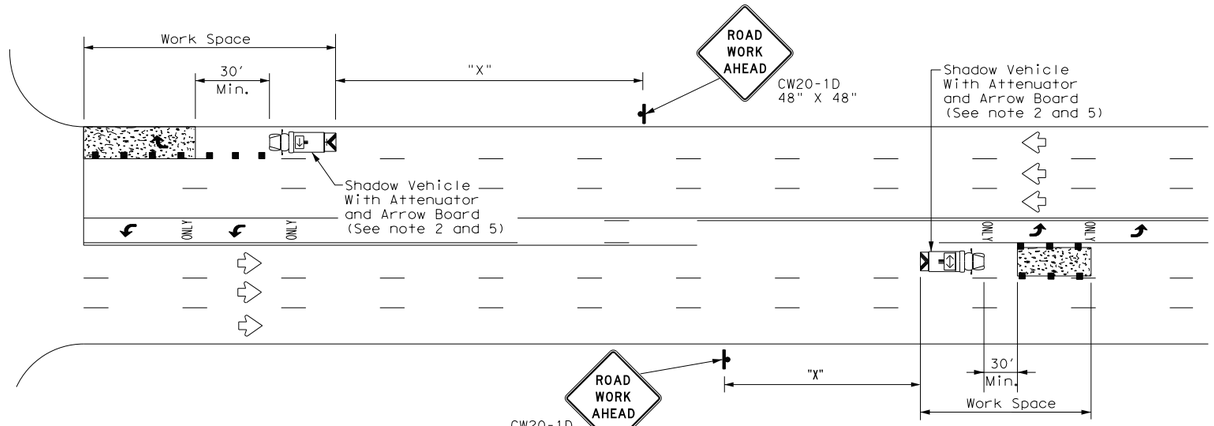


TYPICAL TRAFFIC CONTROL FOR
CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

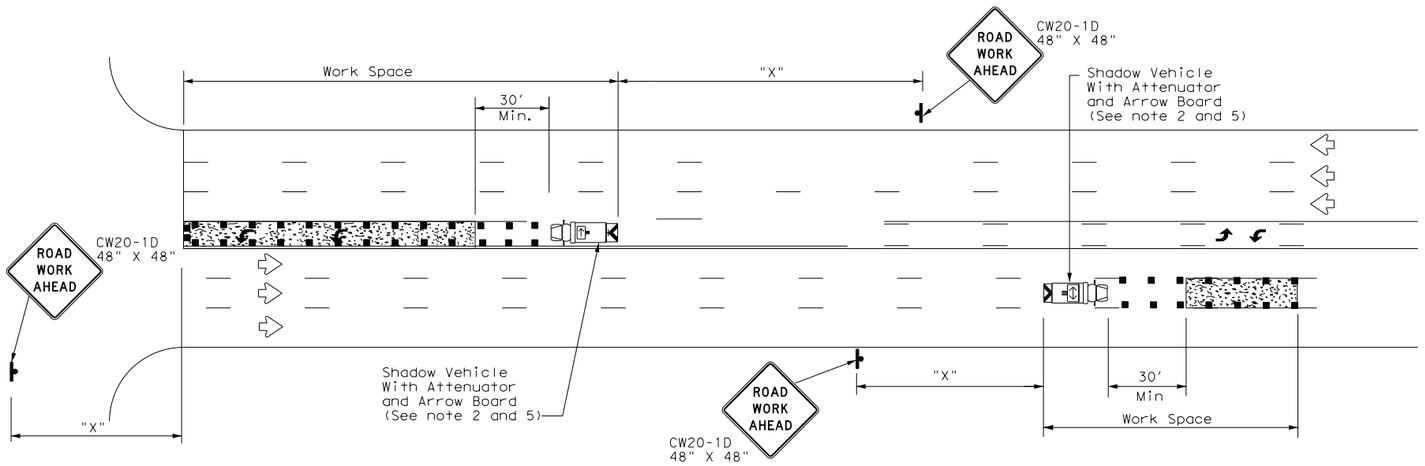


TYPICAL TRAFFIC CONTROL FOR
OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR
OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR
LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
CENTER LANE MARKINGS

LEGEND			
✳	Trail Vehicle	ARROW BOARD DISPLAY	
✳✳	Shadow Vehicle		
✳✳✳	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow	■ ■ ■	Channelizing Devices

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

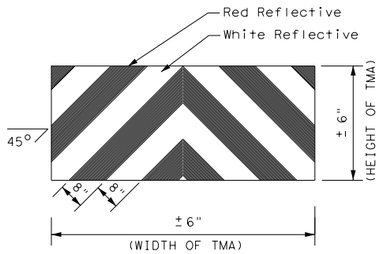
1. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.

2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.

3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.

4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.

5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS

TCP(3-4)-13

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©TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		32

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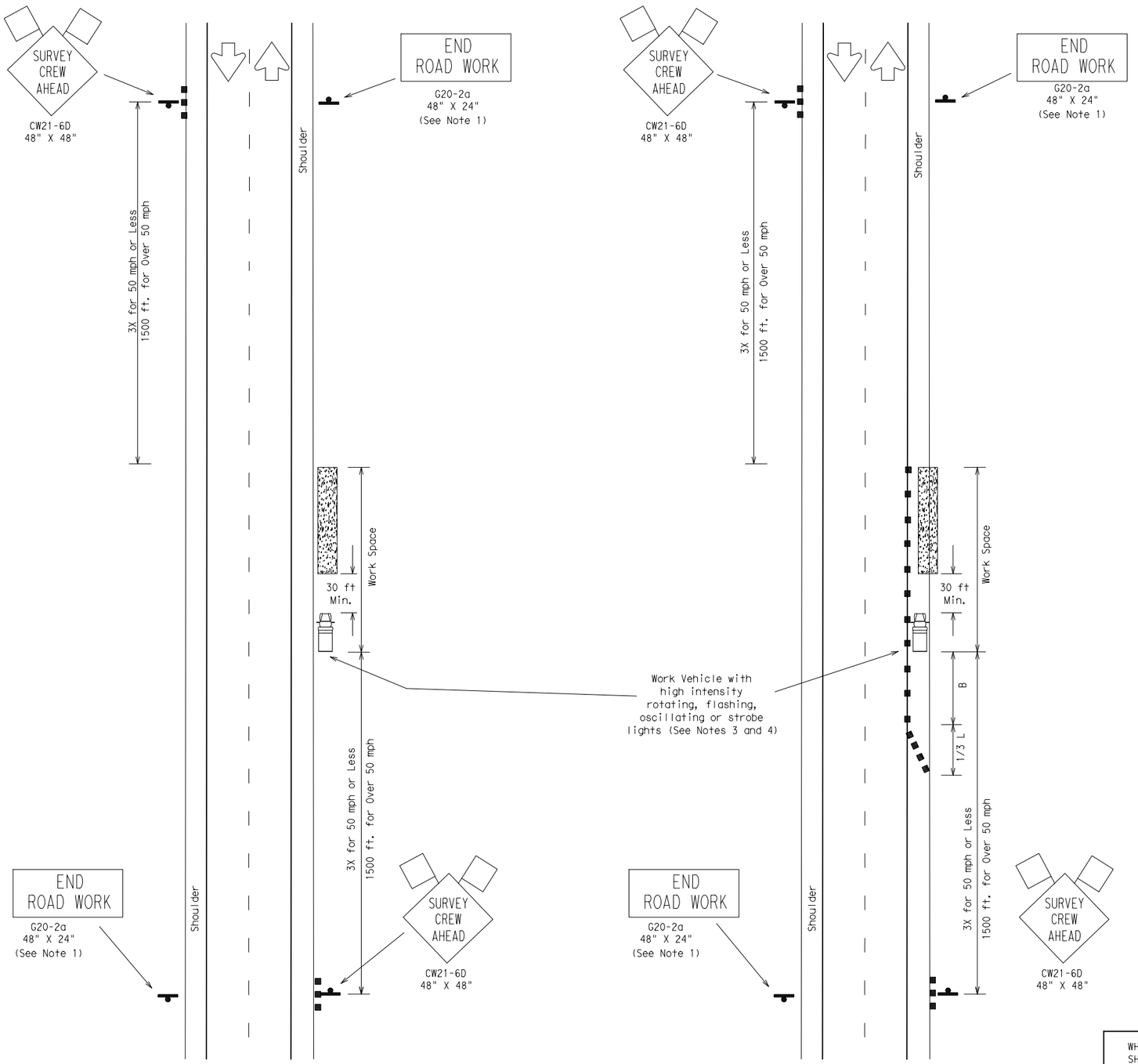

TCP (S-1a)
WORK OFF SHOULDER
OR PAVED SURFACE

TCP (S-1b)
WORK ON SHOULDER

Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:
SHORT DURATION - work that occupies a location up to 1 hour.
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:

1. The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
2. Channelizing devices on the shoulder taper and tangent section may be omitted for short duration (less than 1 hour) work.
3. If line-of-sight requirements for surveying operations will preclude the placement of the Work Vehicle to protect workers, the channelizing devices mentioned in Note 2 are required.
4. ⚠1 A Shadow Vehicle with a Truck Mounted Attenuator and flashing warning lights/arrow panel in caution mode may be used in lieu of the Work Vehicle to protect the work space.
5. The CW20-1D "ROAD WORK AHEAD" sign may be substituted for the CW21-6D "SURVEY CREW AHEAD" sign.
6. This plan may also be used for shoulder work or off shoulder work for multilane undivided roadways.
7. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

TCP(S-1a)

8. Cones may be placed at edge of pavement adjacent to the work space to enhance safety.

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

8-18-08 Revision
⚠1 Corrected misspelling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP(S-1)-08A

REVISIONS
8-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		33

DATE:
FILE:

DISCLAIMER:
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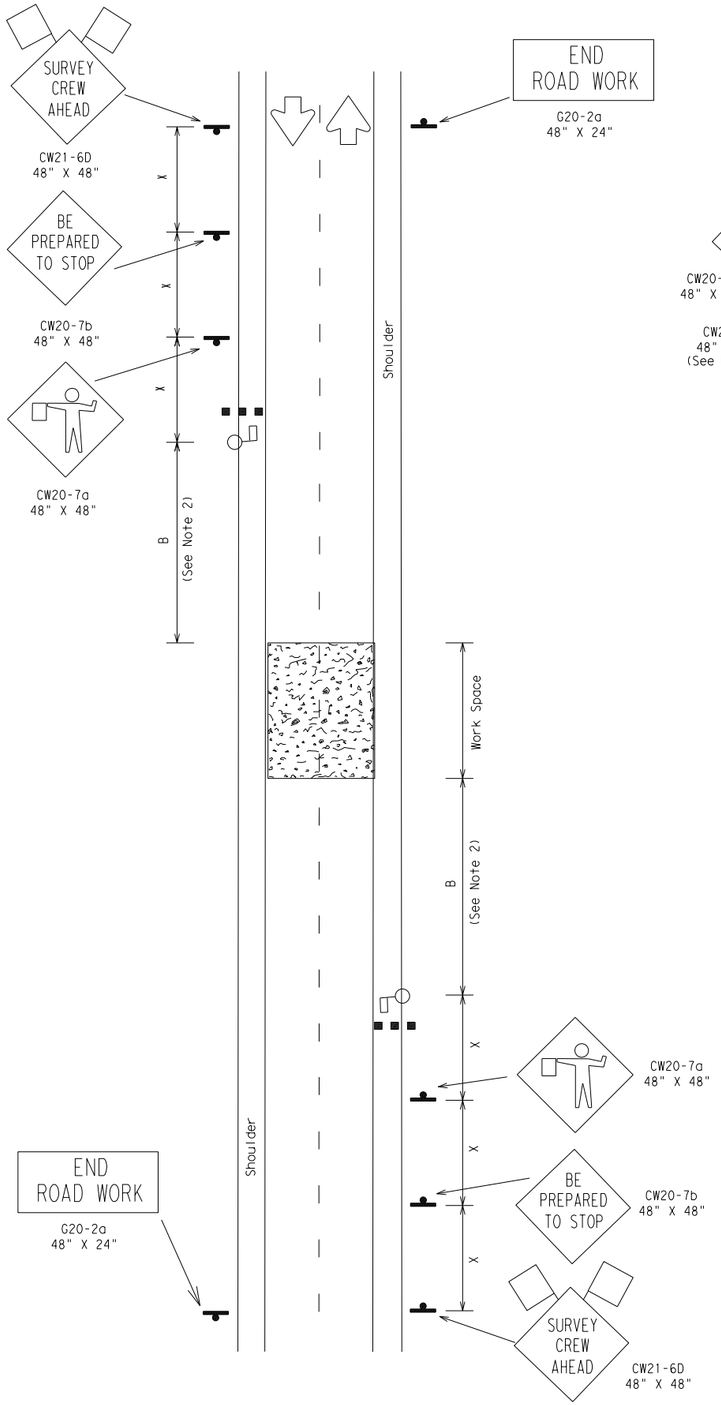
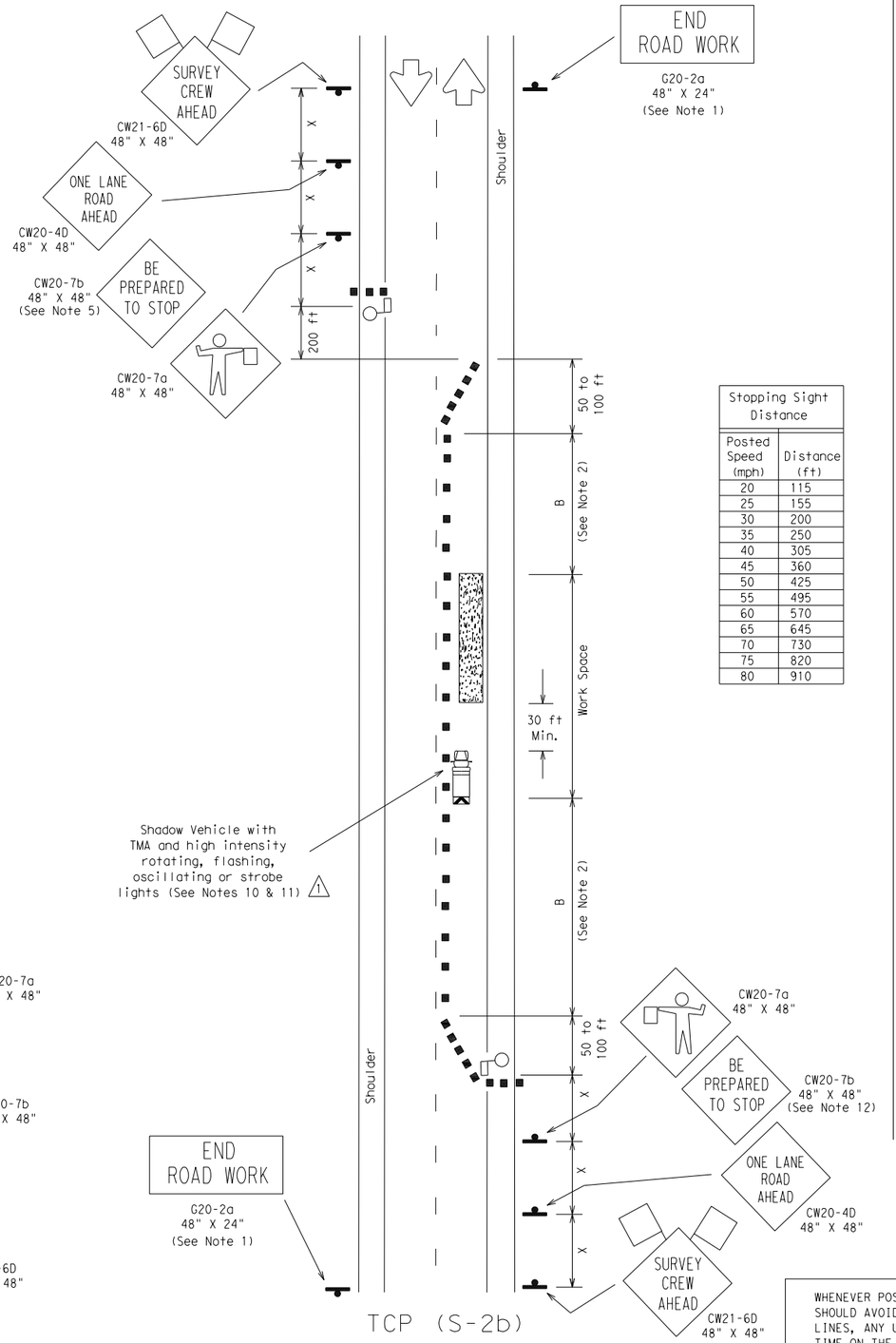
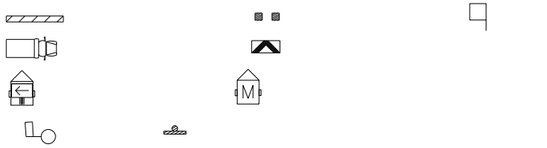


TCP (S-2a)
ROAD CLOSED FOR LESS THAN 20 MINUTES -
OFF PEAK TRAFFIC HOURS
WITH OR WITHOUT SHOULDERS



TCP (S-2b)
WORK IN ROADWAY
OFF PEAK TRAFFIC HOURS
WITH OR WITHOUT SHOULDERS

Stopping Sight Distance	
Posted Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910



Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:
SHORT DURATION - work that occupies a location up to 1 hour.
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:

1. The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
2. Adequate Stopping Sight Distance (see Stopping Sight Distance table) should be maintained from approaching traffic to the flagger or a queue of stopped vehicles. The Buffer Space "B" should be extended around curves or other obstacles, when necessary, to have adequate Stopping Sight Distance to the flagger station.
3. Flaggers should use two-way radios or other means of communication while flagging.
4. The length of the work space should be based on the ability of the flaggers to communicate.
5. CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" signs.
6. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

TCP(S-2a)

7. Road closures shall be less than 20 minutes. Closures less than 5 minutes are desirable.
8. Sign spacing should be increased if traffic repeatedly queues past the CW20-7b "BE PREPARED TO STOP" sign.
9. The surveying instrument should not be located on the paved surface.

TCP (S-2B)

10. For short duration work the Shadow Vehicle with a TMA may be replaced by another Work Vehicle with high intensity rotating, flashing or strobe lights.
11. Shadow Vehicles with a TMA are desirable when workers or equipment are in the work space. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Shadow Vehicle.
12. The CW20-7b "BE PREPARED TO STOP" sign is optional. When used, it should be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign.

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

8-18-08 Revision
1 Corrected referrence to notes.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

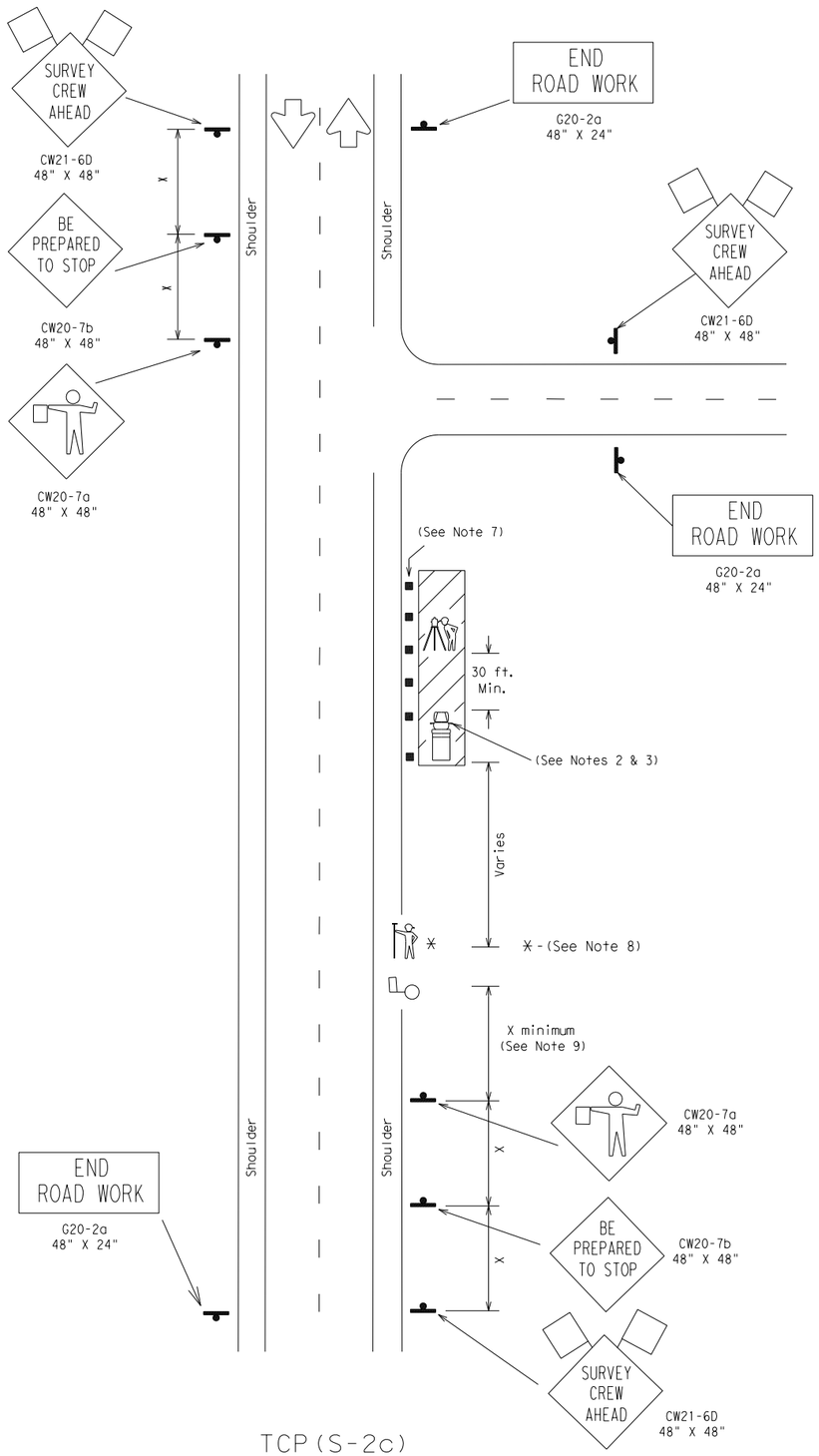
TCP(S-2)-08A

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
8-08

CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		34

DATE:
FILE:



TCP(S-2c)

Stopping Sight Distance	
Posted Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'	120'	90'
35		205'	225'	245'	35'	70'-90'	160'	120'
40		265'	295'	320'	40'	80'-100'	240'	155'
45	L=WS	450'	495'	540'	45'	90'-110'	320'	195'
50		500'	550'	600'	50'	100'-125'	400'	240'
55		550'	605'	660'	55'	110'-140'	500'	295'
60		600'	660'	720'	60'	120'-150'	600'	350'
65		650'	715'	780'	65'	130'-165'	700'	410'
70		700'	770'	840'	70'	140'-175'	800'	475'
75		750'	825'	900'	75'	150'-185'	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
	✓	✓		

DEFINITIONS:

MOBILE - work that moves continously or intermittently (stopping up to approximately 15 minutes).

SHORT DURATION - work that occupies a location up to 1 hour.

SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:

1. The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
2. Work Vehicle with high intensity rotating, flashing, oscillating or strobe lights should be used to protect work space.
3. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Heavy Work Vehicle.
4. CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" SIGNS.
5. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads may be omitted when approved by the Engineer.
6. The Surveying Instrument shall not be located on the paved surface.
7. Cones at edge of pavement adjacent to instrument person may be omitted when approved by the Engineer.
8. Rodman may only enter roadway when accompanied by flagger and as traffic allows.
9. The distance between the advance warning signs and the work should not exceed a two mile maximum.
10. Flaggers and Survey Crew should use two-way radios or other means of communication.
11. Survey Crew and Flaggers shall wear high-visibility apparel meeting the ANSI 107-2007 standard performance for Class 2 or Class 3 risk exposure.
12. Additional traffic control devices may be required to address local site conditions.
13. Stopping Sight Distance shall be maintained from approaching traffic to the flagger. See "Stopping Sight Distance" table.

SURVEY PARTIES SHOULD AVOID ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

This TCP is to cover two lane rural type roadways as determined by the Engineer. All other type roadways will be covered by other established Survey TCP'S.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP(S-2c)-10

REVISIONS

DATE:
FILE:

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		35

212A

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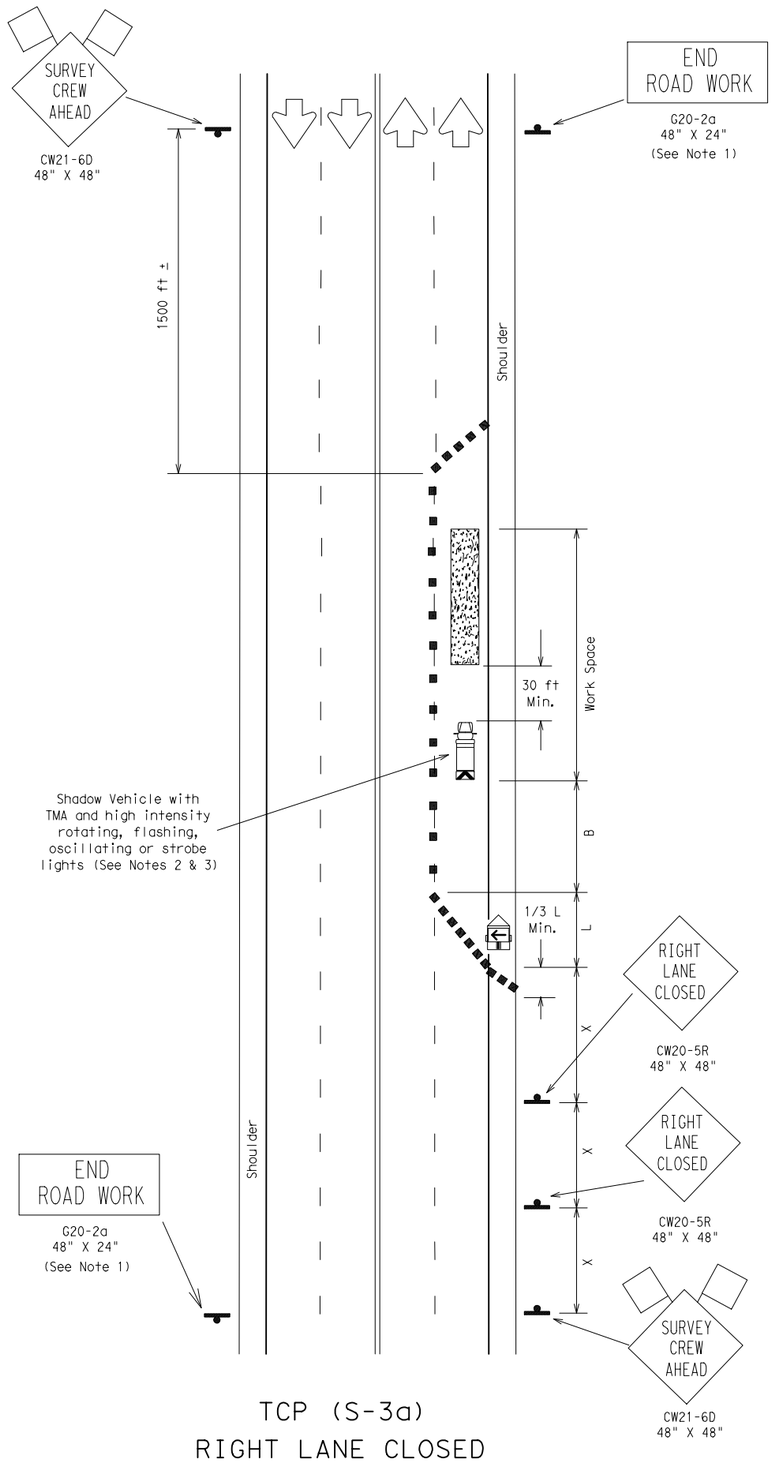
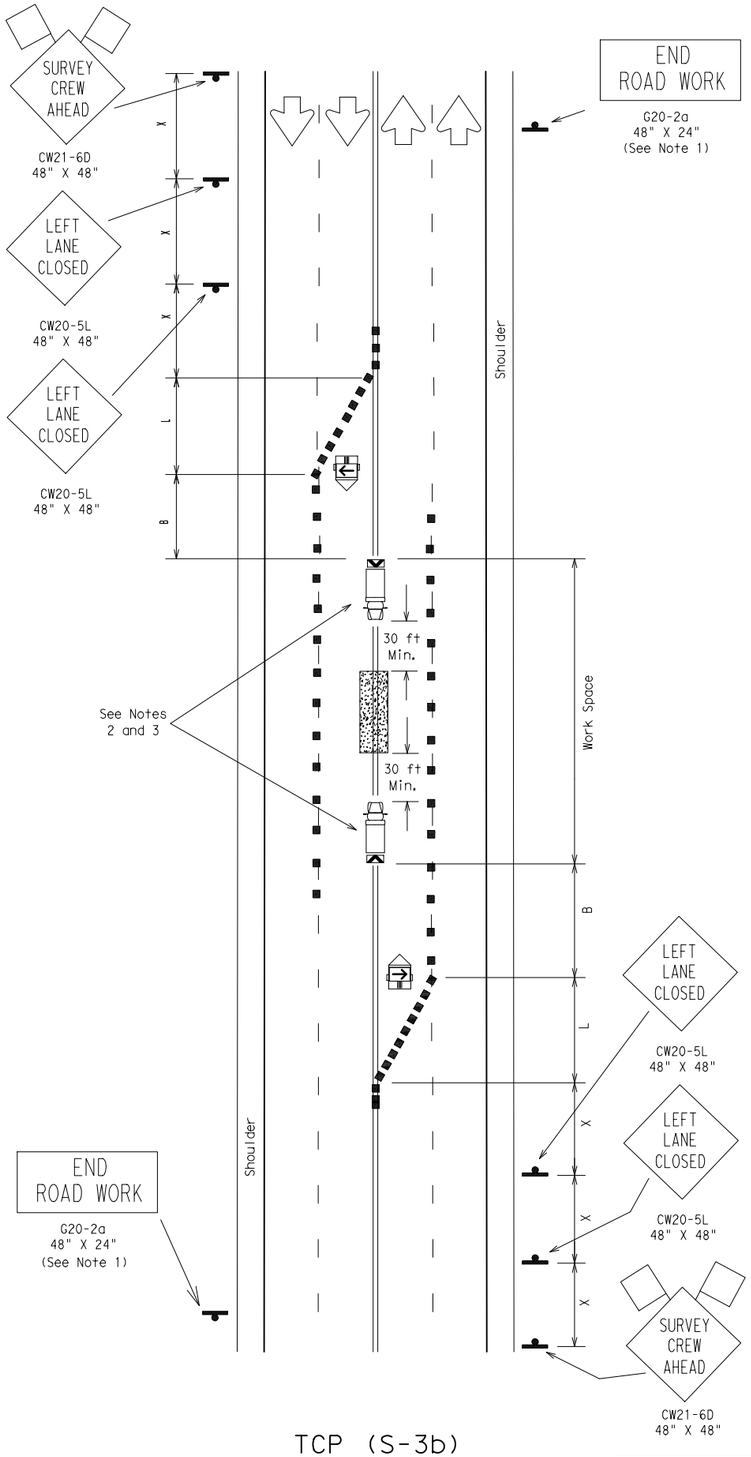


TCP (S-3a)
RIGHT LANE CLOSED
WITH OR WITHOUT SHOULDERS



TCP (S-3b)
WORK ON CENTERLINE

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:
SHORT DURATION - work that occupies a location up to 1 hour.
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:
1. The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
2. For short duration work the Shadow Vehicle with TMA may be replaced by another Work Vehicle with high intensity rotating, flashing or strobe lights.
3. Shadow Vehicles with a TMA are desirable when workers or equipment are in the work space. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Shadow Vehicle.
4. CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" signs.
5. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

TCP(S-3a)
6. If shoulders are not present, the 1/3L shoulder taper is to be omitted and four channelizing devices shall be placed in front of the arrow panel, perpendicular to traffic.

TCP(S-3b)
7. One CW20-5L "LEFT LANE CLOSED" sign in each direction may be omitted when the posted speed is less than 45mph and volume is less then 2000 ADT.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

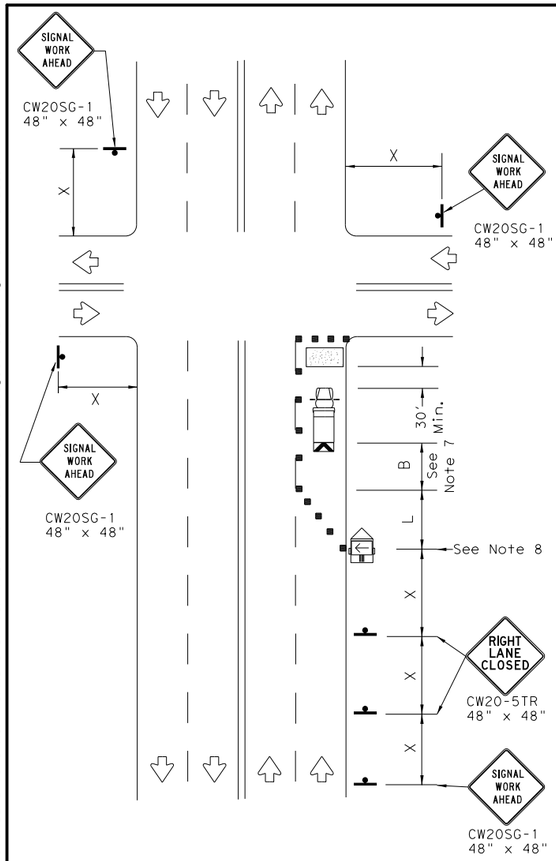
TCP(S-3)-08

REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

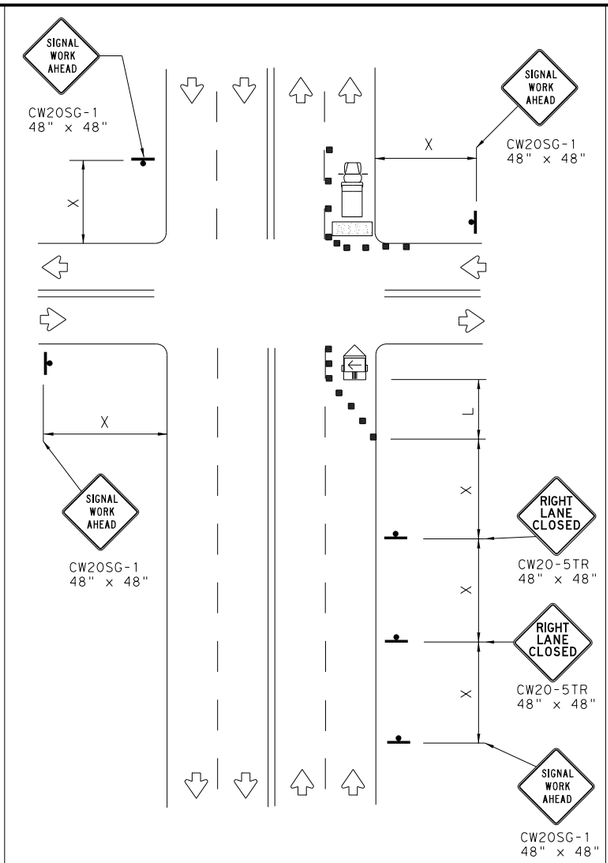
CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		36

DATE:
FILE:



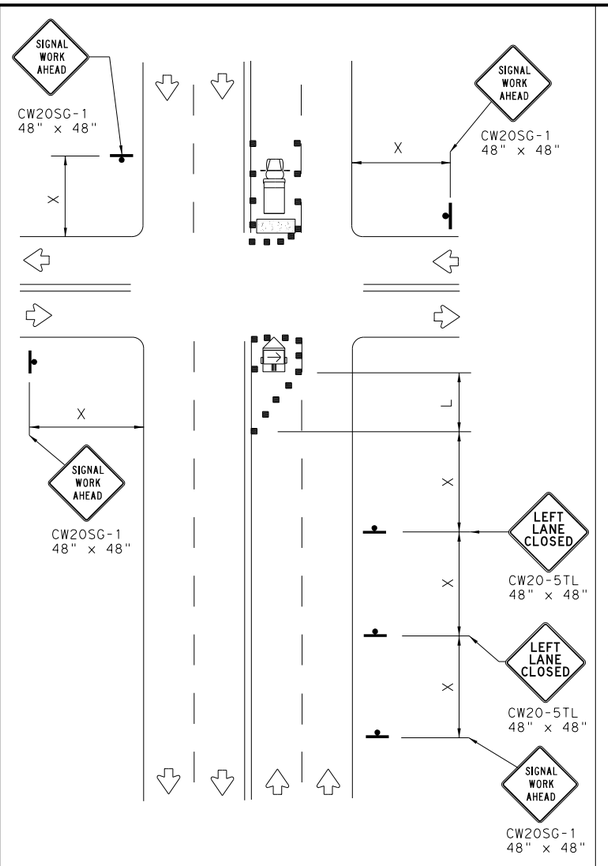
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

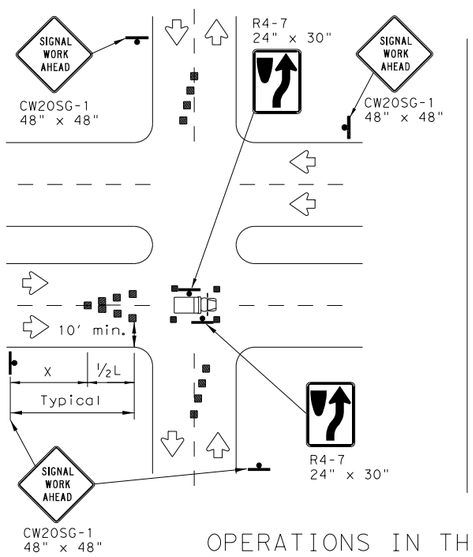
LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

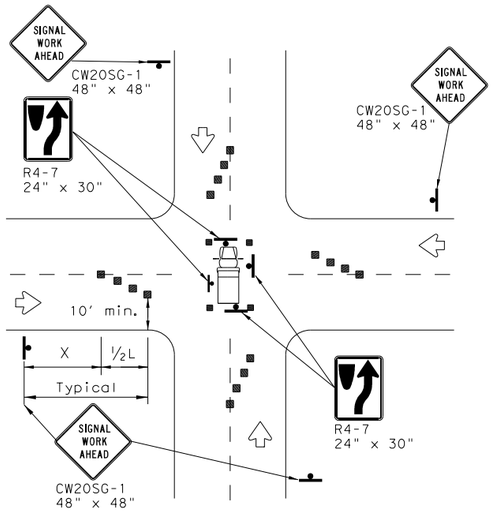
Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	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)

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.





OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	BRY	GRIMES		37

DATE: 6/30/2024
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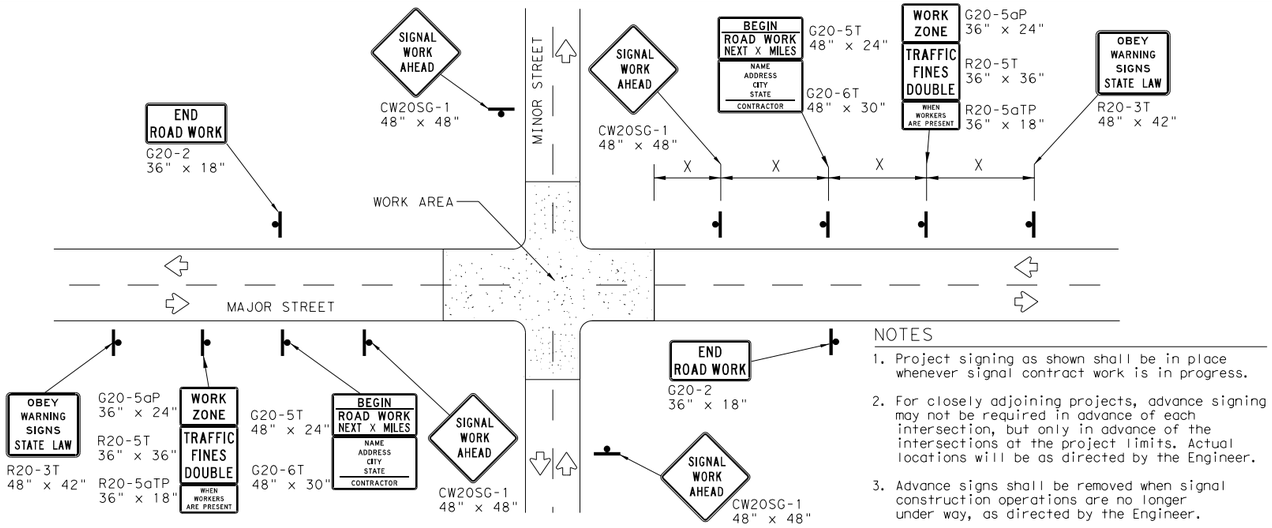
pw:/



TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. 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".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

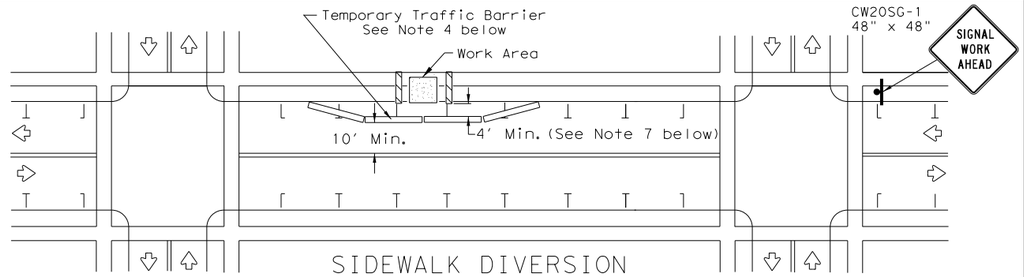
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support 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 fastners. 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.

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

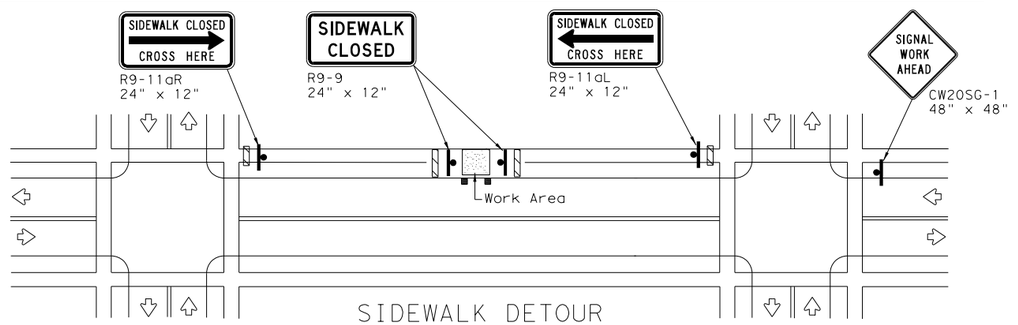
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
WHITE	BACKGROUND	TYPE A SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

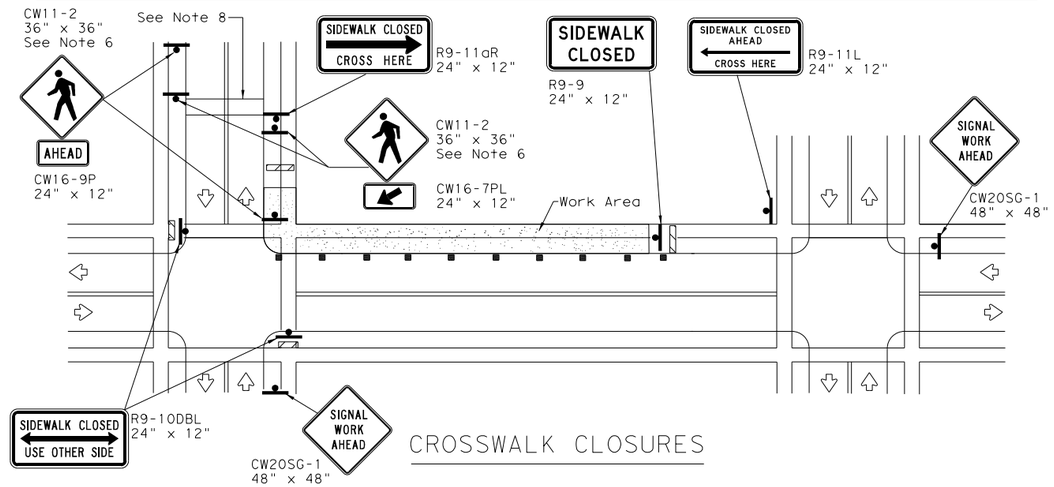
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

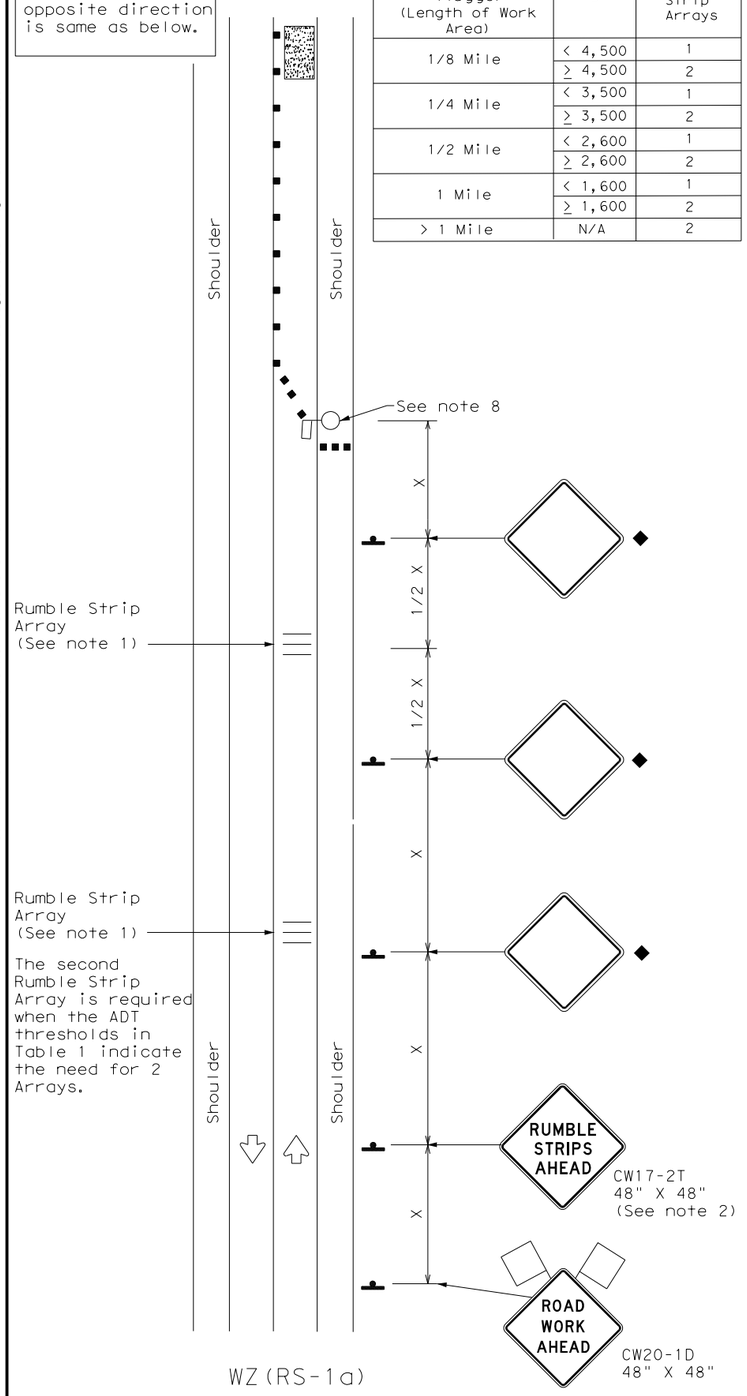
WZ(BTS-2)-13

FILE:	wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS		0315	04	087, ETC.	SH 105
2-98 10-99 7-13		DIST	COUNTY		SHEET NO.
4-98 3-03		BRY	GRIMES		38

DATE: 6/30/2024
FILE: pw:/

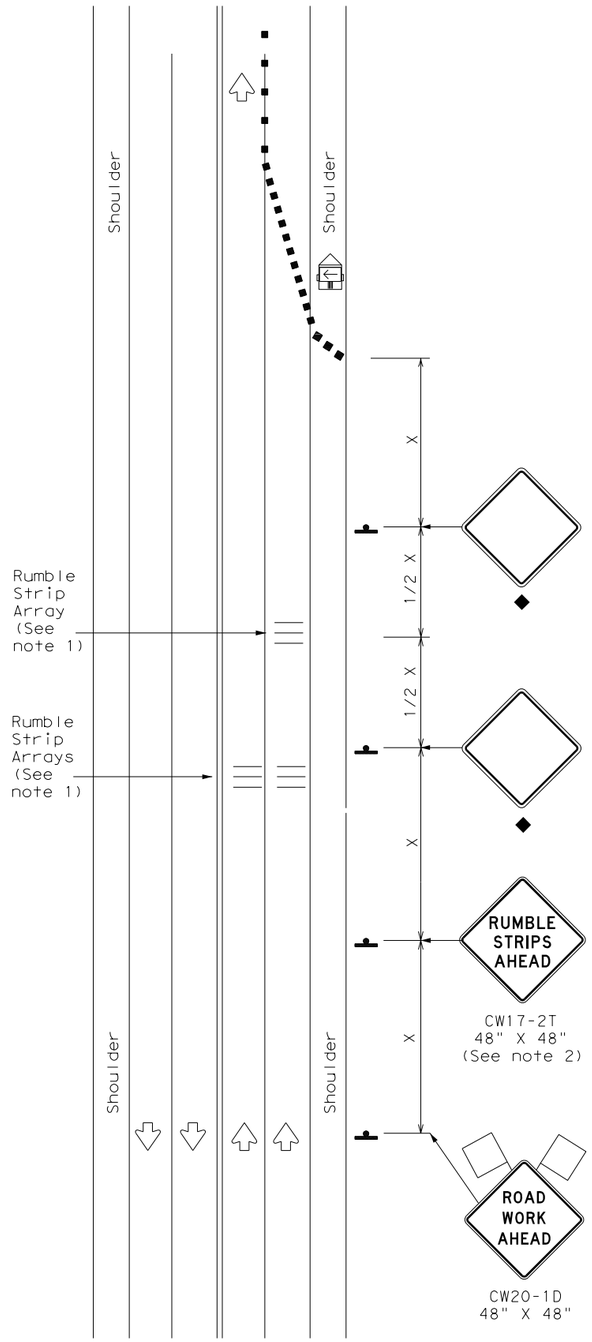
Warning sign and rumble strip sequence in opposite direction is same as below.

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



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

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

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

* Conventional Roads Only

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

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

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

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

TABLE 2	
Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35' +

Texas Department of Transportation

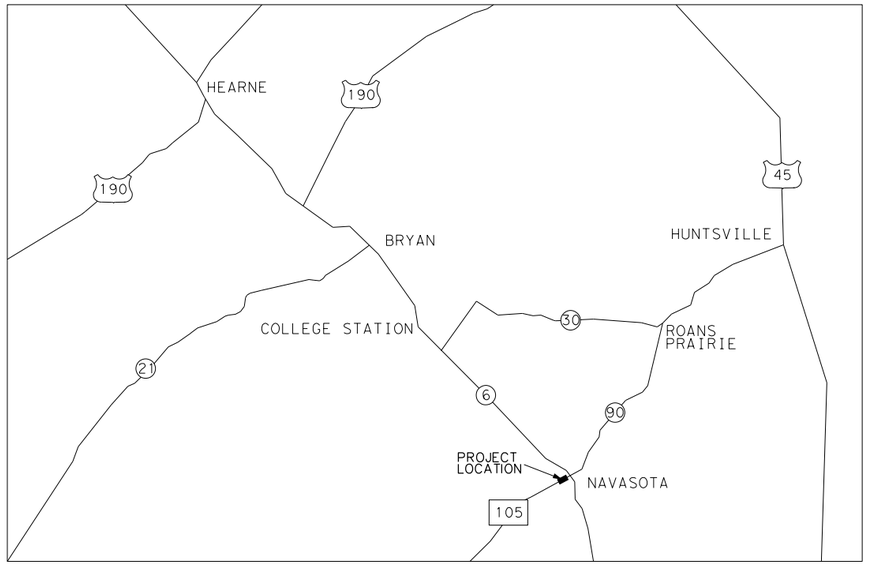
Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

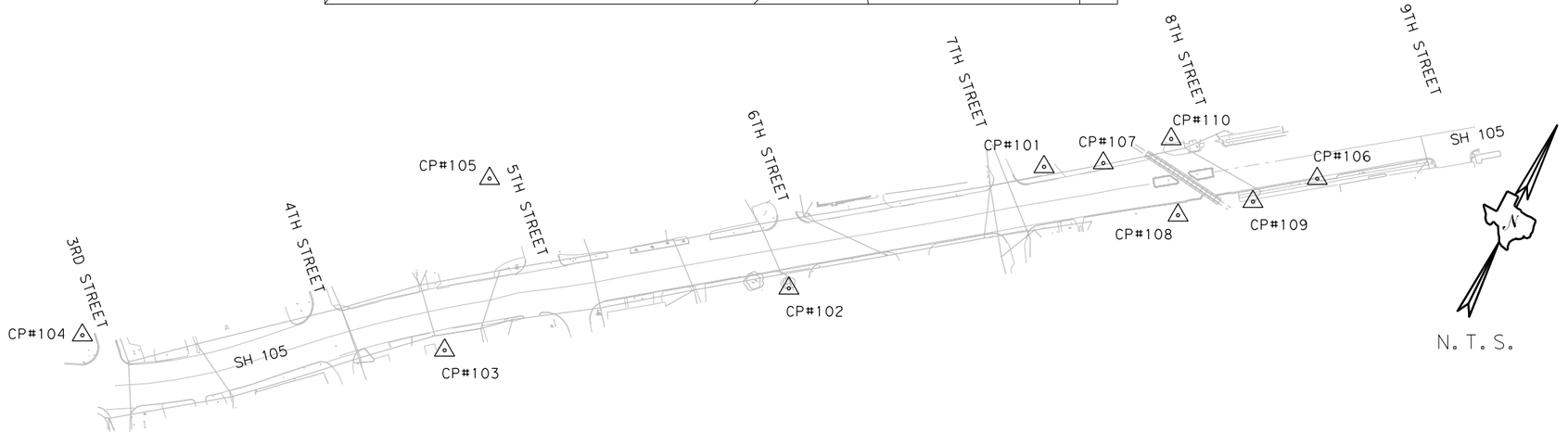
WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-14 1-22 4-16	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		39

DATE:
FILE:



N. T. S.



N. T. S.

CONTROL POINT	SURFACE COORDINATES		NAVD 88 ELEVATION	GRID COORDINATES		DESCRIPTION
	NORTHING	EASTING		NORTHING	EASTING	
CP#101	10,130,709.08	3,633,638.49	211.12	10,129,493.54	3,633,202.51	5/8-IR W/ RED CAP STAMPED "CP&Y TRAV. POINT"
CP#102	10,130,377.73	3,633,379.23	209.34	10,129,162.23	3,632,943.27	5/8-IR W/ RED CAP STAMPED "CP&Y TRAV. POINT"
CP#103	10,130,066.51	3,632,961.84	208.85	10,128,851.05	3,632,525.93	5/8-IR W/ RED CAP STAMPED "CP&Y TRAV. POINT"
CP#104	10,129,846.12	3,632,469.28	208.43	10,128,630.68	3,632,033.44	X CUT IN CONCRETE
CP#105	10,130,325.12	3,632,907.60	209.90	10,129,109.63	3,632,471.71	X CUT IN CONCRETE
CP#106	10,130,874.68	3,634,010.18	211.56	10,129,659.12	3,633,574.15	X CUT IN CONCRETE
CP#107	10,130,753.48	3,633,714.91	211.68	10,129,537.94	3,633,278.91	5/8-IR W/ RED CAP STAMPED "CP&Y TRAV. POINT"
CP#108	10,130,733.56	3,633,849.11	212.41	10,129,518.02	3,633,413.10	5/8-IR W/ RED CAP STAMPED "CP&Y TRAV. POINT"
CP#109	10,130,801.45	3,633,940.03	212.96	10,129,585.90	3,633,504.01	5/8-IR W/ RED CAP STAMPED "CP&Y TRAV. POINT"
CP#110	10,130,830.58	3,633,789.31	210.37	10,129,615.03	3,633,353.31	5/8-IR W/ RED CAP STAMPED "CP&Y TRAV. POINT"

NOTES:
HORIZONTAL COORDINATES SHOWN ARE IN U.S. SURVEY FEET, AND ARE BASED UPON THE TEXAS COORDINATE SYSTEM OF NAD '83 (HARN '93) TEXAS CENTRAL ZONE 4203, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00012. VALUES WERE DERIVED UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

ELEVATIONS ARE BASED UPON NAVD '88 DATUM (GEOID 2018) DERIVED FROM UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

LEGEND

△ 5/8" IRON ROD W/ RED PLASTIC CAP SET "CP&Y TRAV. POINT"

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS REGISTERED BRIAN K. KIDD 6496 PROFESSIONAL LAND SURVEYOR

BRIAN K. KIDD
RPLS NO. 6494

7/12/2024
DATE

NO.	REVISION	BY	DATE

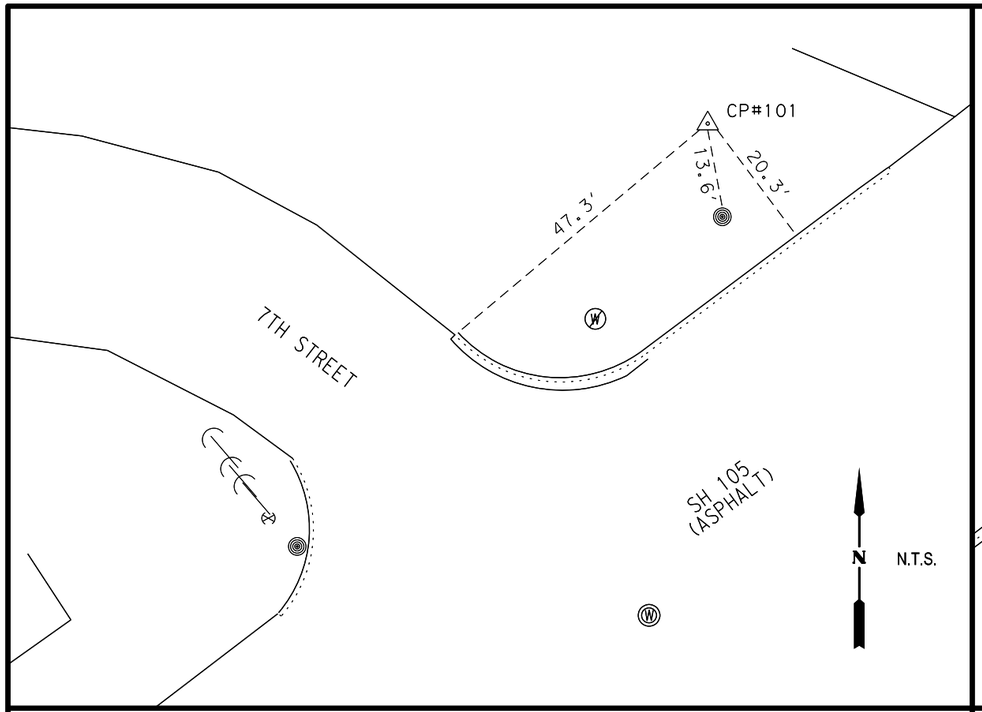
TBPELS FIRM REGISTRATION NUMBER F-1741

SH 105 IN NAVASOTA

HORIZONTAL AND VERTICAL CONTROL INDEX SHEET

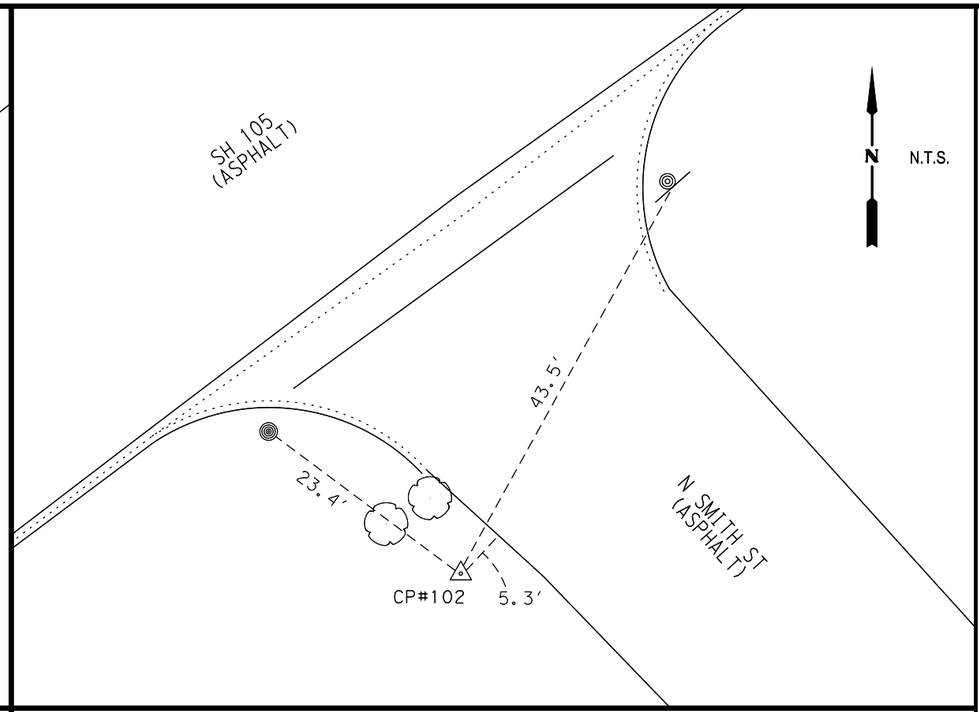
CSJ 0315-04-087, ETC. SHEET 1 OF 1

DESIGNED:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
CHECKED:	STV	6	TEXAS					105
DRAFTED:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CHECKED:	STV	BRY	GRIMES	0315	04	087		40



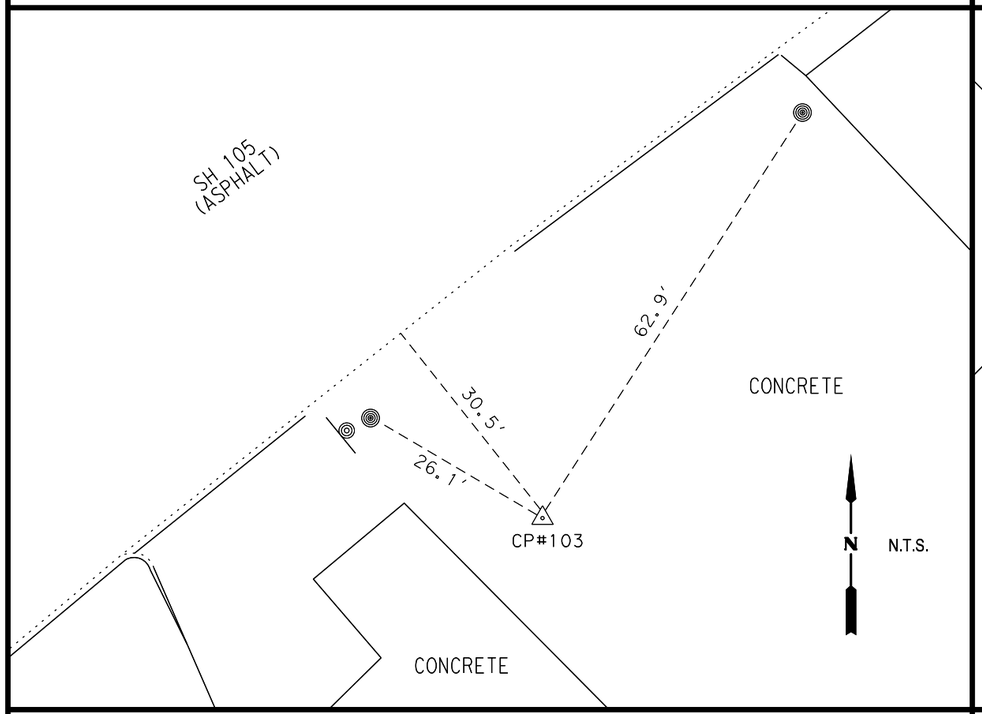
CP#101 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE NORTHWEST SIDE OF SH 105, +/- 13.6' NORTH OF A UTILITY POLE, +/- 47.3' NORTHEAST OF THE NORTHEAST EDGE OF ASPHALT OF 7TH STREET, AND +/-20.3' NORTHWEST OF THE NORTHWEST EDGE OF ASPHALT OF SH 105.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK



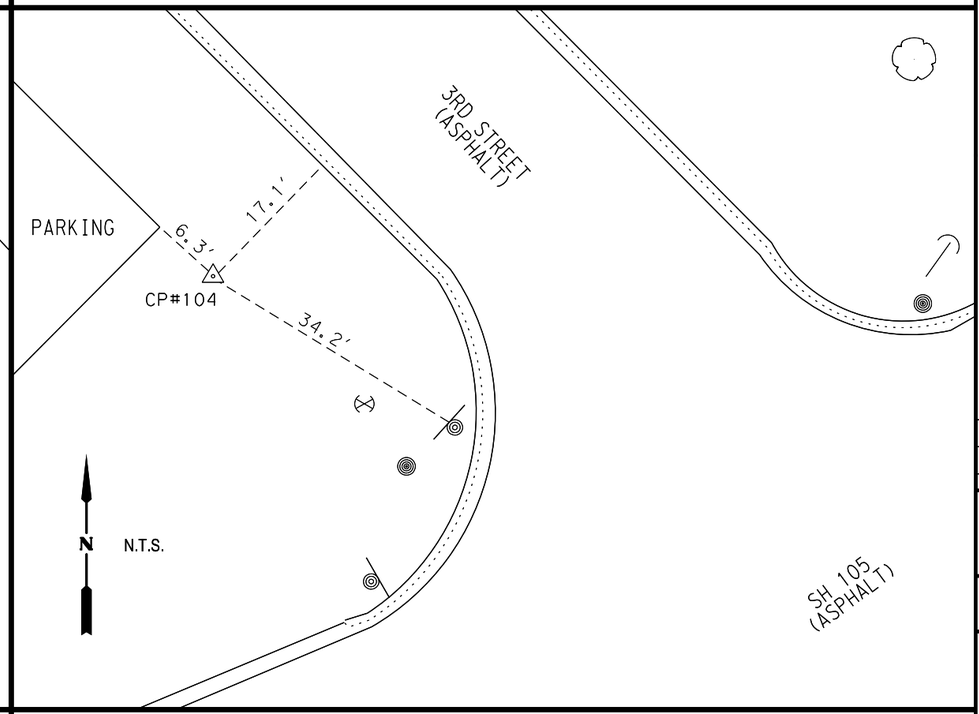
CP#102 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE SOUTHEAST SIDE OF SH 105, +/- 23.4' SOUTHEAST OF A UTILITY, +/- 23.4' SOUTHEAST OF A UTILITY POLE, AND +/-5.3' SOUTHWEST OF THE SOUTHWEST EDGE OF ASPHALT OF NORTH SMITH STREET.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK



CP#103 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE SOUTHEAST SIDE OF SH 105, +/- 26.1' SOUTHEAST OF A UTILITY POLE, +/- 62.9' SOUTHWEST OF A UTILITY, AND +/-30.5' SOUTHWEST OF THE SOUTHWEST EDGE OF ASPHALT OF SH 105.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK



CP#104 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE NORTHWEST SIDE OF SH 105, +/- 6.3' SOUTHEAST OF THE MOST EASTERLY EAST CORNER OF A PARKING LOT, +/- 34.2' NORTHWEST OF A TRAFFIC SIGN, AND +/-17.1' SOUTHWEST OF THE SOUTHWEST BACK OF CURB OF 3RD STREET.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK

NOTES:
HORIZONTAL COORDINATES SHOWN ARE IN U.S. SURVEY FEET, AND ARE BASED UPON THE TEXAS COORDINATE SYSTEM OF NAD '83 (HARN '93) TEXAS CENTRAL ZONE 4203, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00012. VALUES WERE DERIVED UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

ELEVATIONS ARE BASED UPON NAVD '88 DATUM (GEOID 2018) DERIVED FROM UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

LEGEND

△ 5/8" IRON ROD W/ RED PLASTIC CAP SET "CP&Y TRAV. POINT"

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
BRIAN K. KIDD
6496
PROFESSIONAL
LAND SURVEYOR

BRIAN K. KIDD
RPLS NO. 6494

7/12/2024
DATE

NO.	REVISION	BY	DATE

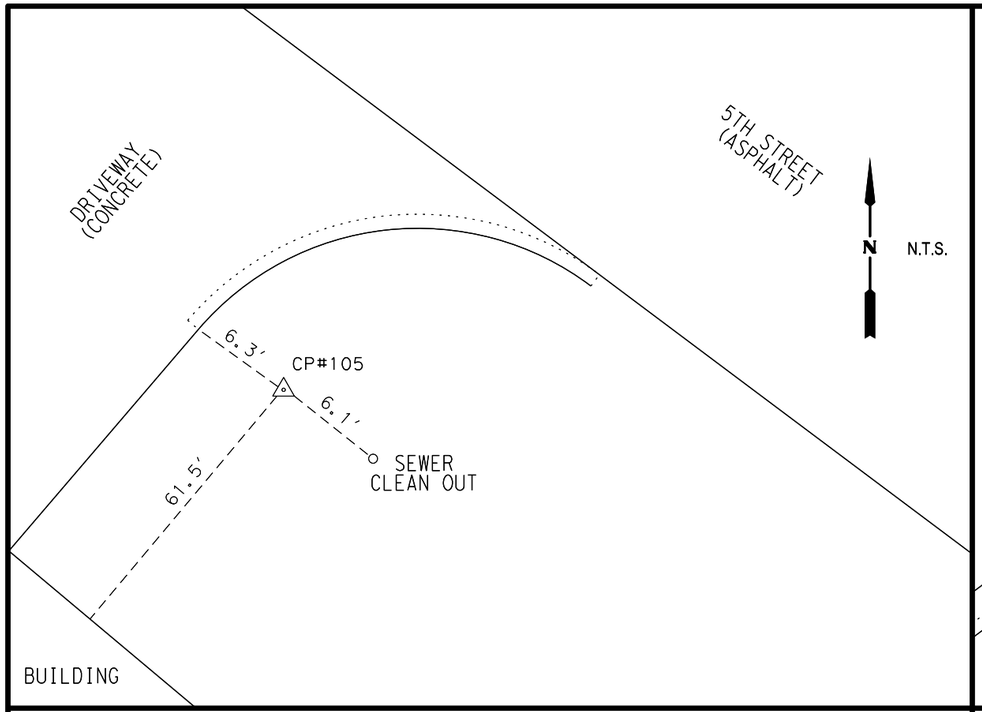
TBPELS FIRM
REGISTRATION NUMBER
F-1741

SH 105 IN NAVASOTA

HORIZONTAL/VERTICAL CONTROL

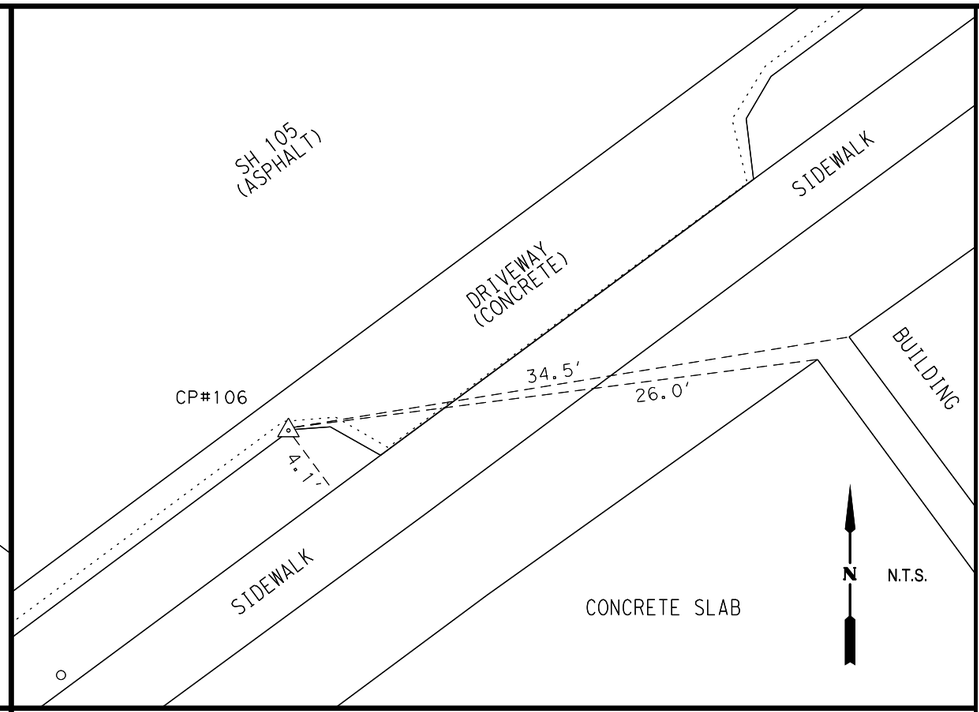
CSJ: 0315-04-087, ETC. **SHEET 1 OF 3**

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	6	TEXAS					SH 105
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	BRY	GRIMES	0315	04	087		41



CP#105 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE SOUTHWEST SIDE OF 5TH STREET, +/- 61.5' NORTHEAST OF A BUILDING, +/- 6.3' SOUTHEAST OF THE SOUTHEAST EDGE OF A DRIVEWAY , AND +/-6.1' NORTHWEST OF A SEWER CLEAN OUT.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK



CP#106 IS AN X CUT ON THE TOP OF CURB LOCATED IN GRIMES COUNTY, TX., ON THE SOUTHEAST SIDE OF SH 105, +/- 34.5' SOUTHWEST OF THE MOST WESTERLY WEST CORNER OF A BUILDING, +/- 26.0' SOUTHWEST OF THE NORTH CORNER OF A CONCRETE SLAB, AND +/-4.1' NORTHWEST OF THE NORTHWEST SIDE OF A SIDEWALK.

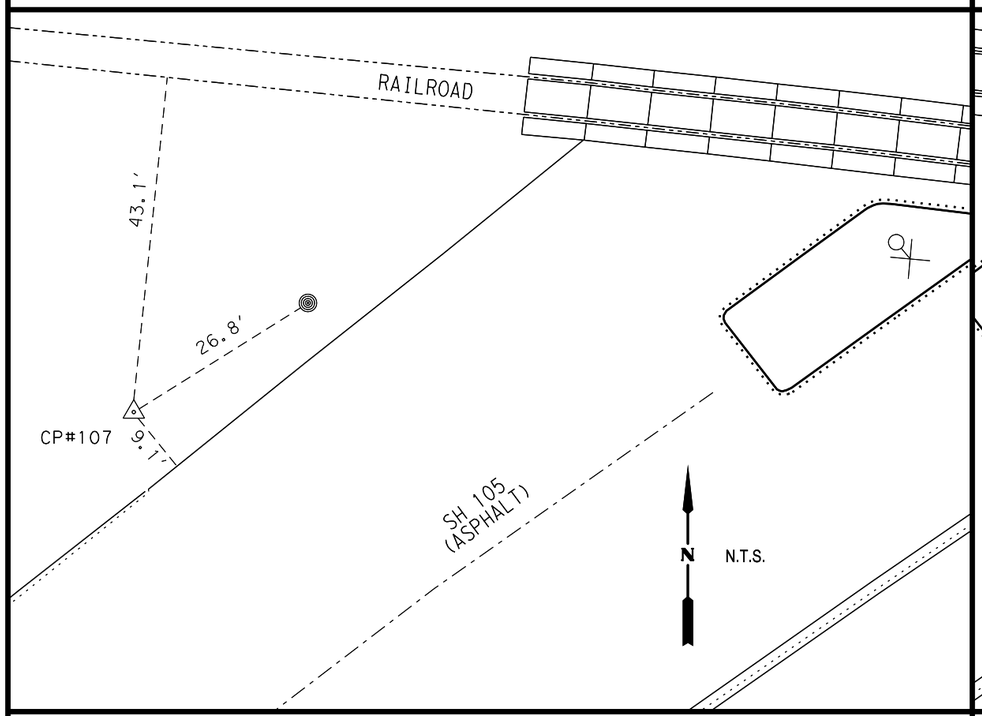
US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: X CUT WITH BOX
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK

NOTES:
HORIZONTAL COORDINATES SHOWN ARE IN U.S. SURVEY FEET, AND ARE BASED UPON THE TEXAS COORDINATE SYSTEM OF NAD '83 (HARN '93) TEXAS CENTRAL ZONE 4203, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00012. VALUES WERE DERIVED UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

ELEVATIONS ARE BASED UPON NAVD '88 DATUM (GEOID 2018) DERIVED FROM UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

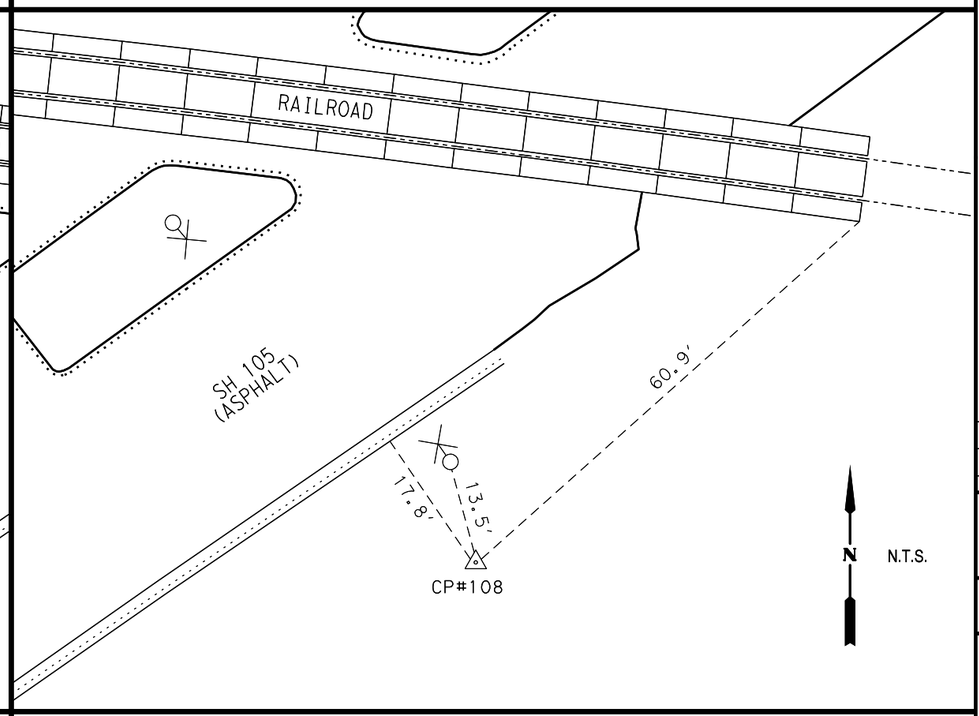
LEGEND

△ 5/8" IRON ROD W/ RED PLASTIC CAP SET "CP&Y TRAV. POINT"



CP#107 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE NORTHWEST SIDE OF SH 105, +/- 26.8' SOUTHWEST OF A UTILITY POLE, +/- 43.1' SOUTH OF THE SOUTH TRACK OF A RAILROAD, AND +/-9.1' NORTHWEST OF THE NORTHWEST EDGE OF ASPHALT OF SH 105.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK



CP#108 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE NORTHWEST SIDE OF SH 105, +/- 60.9' SOUTHWEST OF THE SOUTHEAST CORNER OF A RAILROAD CROSSING, +/- 13.5' SOUTHEAST OF A RAILROAD CROSSING SIGNAL, AND +/-17.8' SOUTHEAST OF THE SOUTHEAST BACK OF CURB OF SH 105.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
BRIAN K. KIDD
6496
PROFESSIONAL
LAND SURVEYOR

BRIAN K. KIDD
RPLS NO. 6494

7/12/2024
DATE

NO.	REVISION	BY	DATE

stv

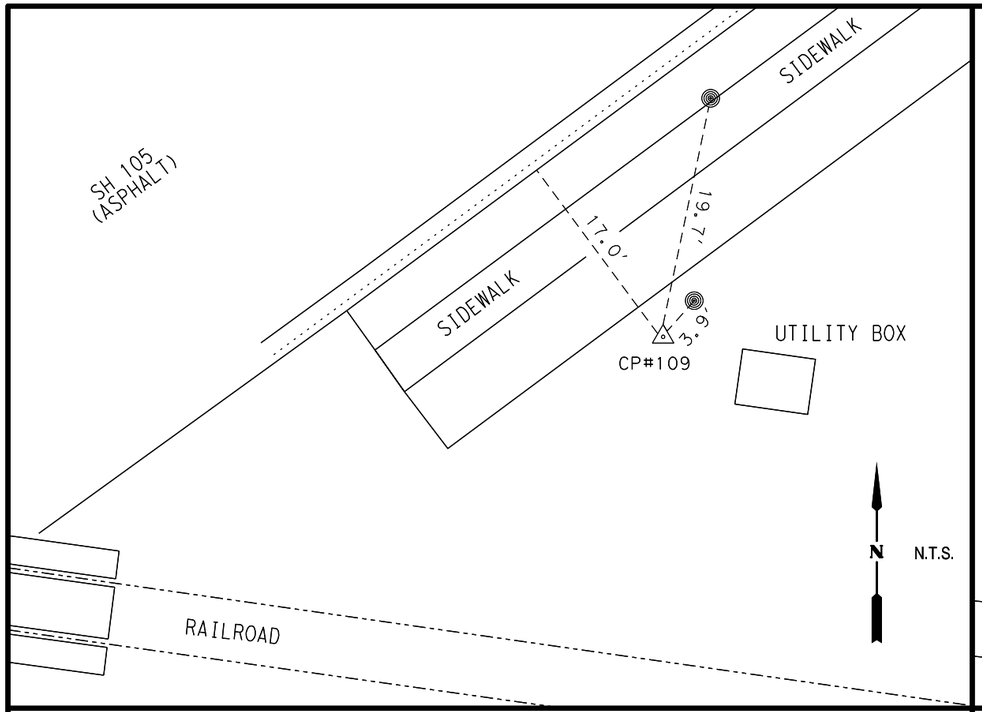
TBPELS FIRM
REGISTRATION NUMBER
F-1741

SH 105 IN NAVASOTA

HORIZONTAL/VERTICAL CONTROL

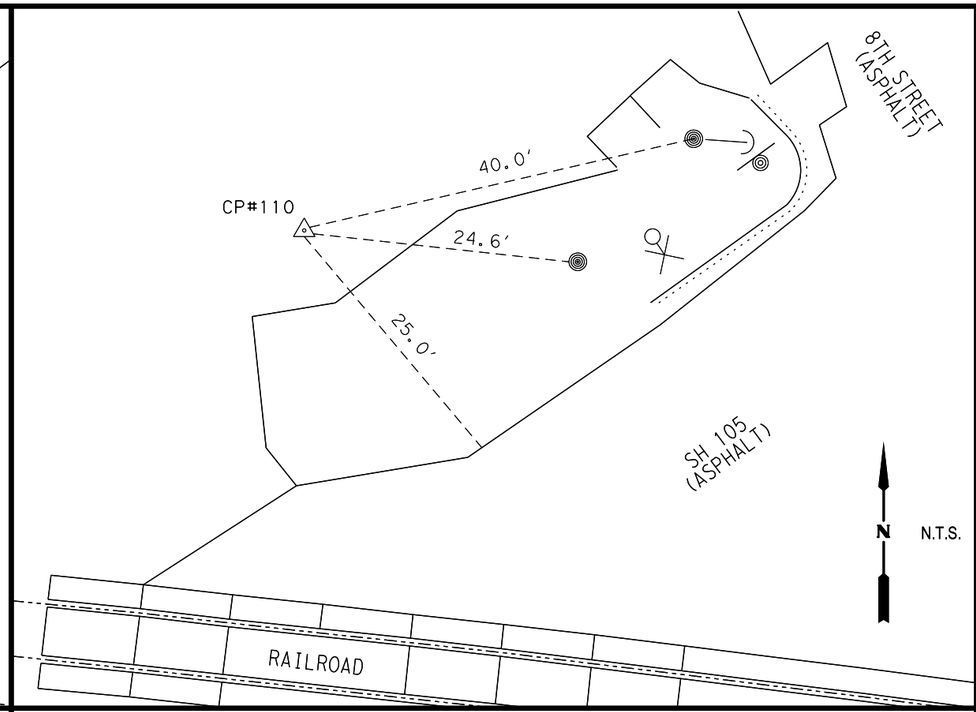
CSJ: 0315-04-087, ETC. **SHEET 2 OF 3**

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	6	TEXAS					SH 105
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	BRY	GRIMES	0315	04	087		42



CP#109 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE SOUTHEAST SIDE OF SH 105, +/- 19.7' SOUTHWEST OF A UTILITY POLE, +/- 3.9' SOUTHWEST OF A UTILITY, AND +/-17.0' SOUTHEAST OF THE SOUTHEAST EDGE OF ASPHALT OF SH 105.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK



CP#109 IS A 5/8-INCH IRON ROD WITH RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT" LOCATED IN GRIMES COUNTY, TX., ON THE NORTHWEST SIDE OF SH 105, +/- 40.0' SOUTHWEST OF A UTILITY POLE, +/- 24.6' NORTHWEST OF A UTILITY POLE, AND +/-25.0' NORTHWEST OF THE NORTHWEST EDGE OF ASPHALT OF SH 105.

US SURVEY FEET
DATA SET: APRIL 2023
MONUMENT: 5/8"-IR W/ RED PLASTIC CAP STAMPED "CP&Y TRAV. POINT"
SURFACE ADJUSTMENT FACTOR 1.00012
ELEVATIONS ARE NAVD 88 BASED UPON GEOID 2012B
TXDOT VRS NETWORK

NOTES:
HORIZONTAL COORDINATES SHOWN ARE IN U.S. SURVEY FEET, AND ARE BASED UPON THE TEXAS COORDINATE SYSTEM OF NAD '83 (HARN '93) TEXAS CENTRAL ZONE 4203, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00012. VALUES WERE DERIVED UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

ELEVATIONS ARE BASED UPON NAVD '88 DATUM (GEOID 2018) DERIVED FROM UTILIZING THE TXDOT STATE VIRTUAL REFERENCE STATION NETWORK IN APRIL, 2023.

LEGEND

△ 5/8" IRON ROD W/ RED PLASTIC CAP SET "CP&Y TRAV. POINT"

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
BRIAN K. KIDD
6496
PROFESSIONAL
LAND SURVEYOR

BRIAN K. KIDD
RPLS NO. 6494

7/12/2024
DATE

NO.	REVISION	BY	DATE

stv

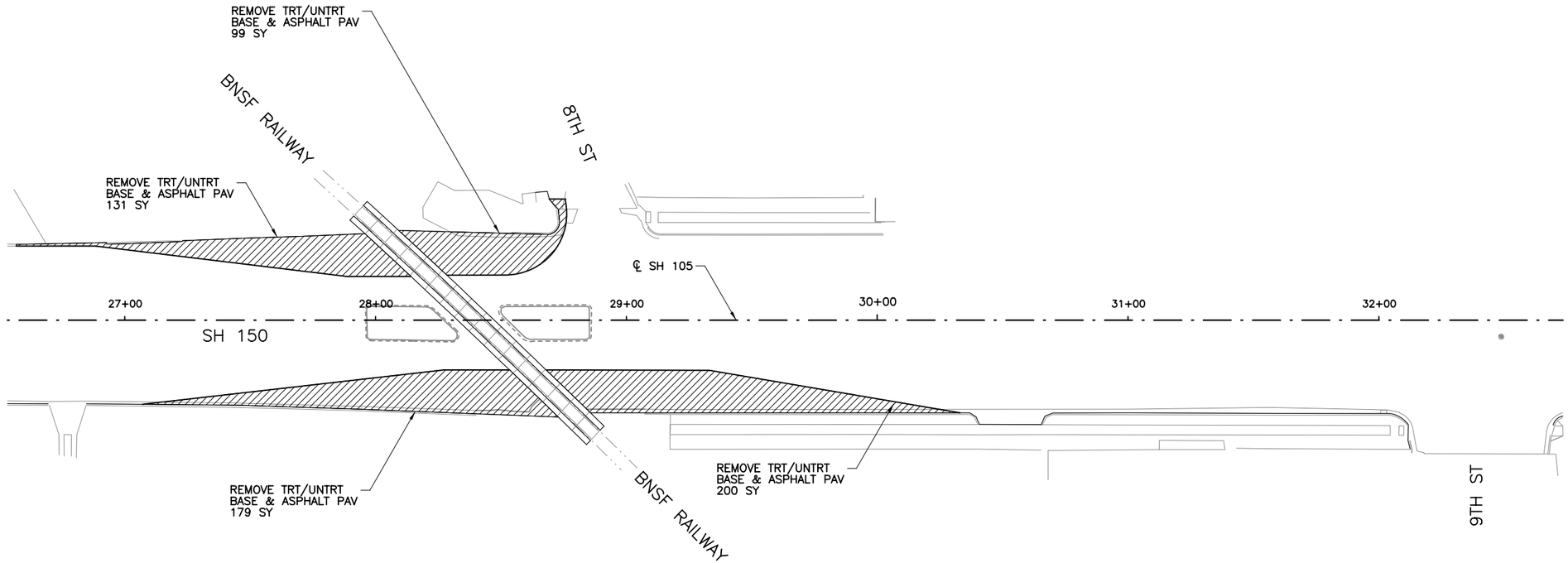
TBPELS FIRM
REGISTRATION NUMBER
F-1741

SH 105 IN NAVASOTA

HORIZONTAL/VERTICAL CONTROL

CSJ: 0315-04-087, ETC. **SHEET 3 OF 3**

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	6	TEXAS					SH 105
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	BRY	GRIMES	0315	04	087		43



STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

07/11/2024

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

ASPHALT REMOVAL PLAN

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER	
6		SH 105	
STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	44

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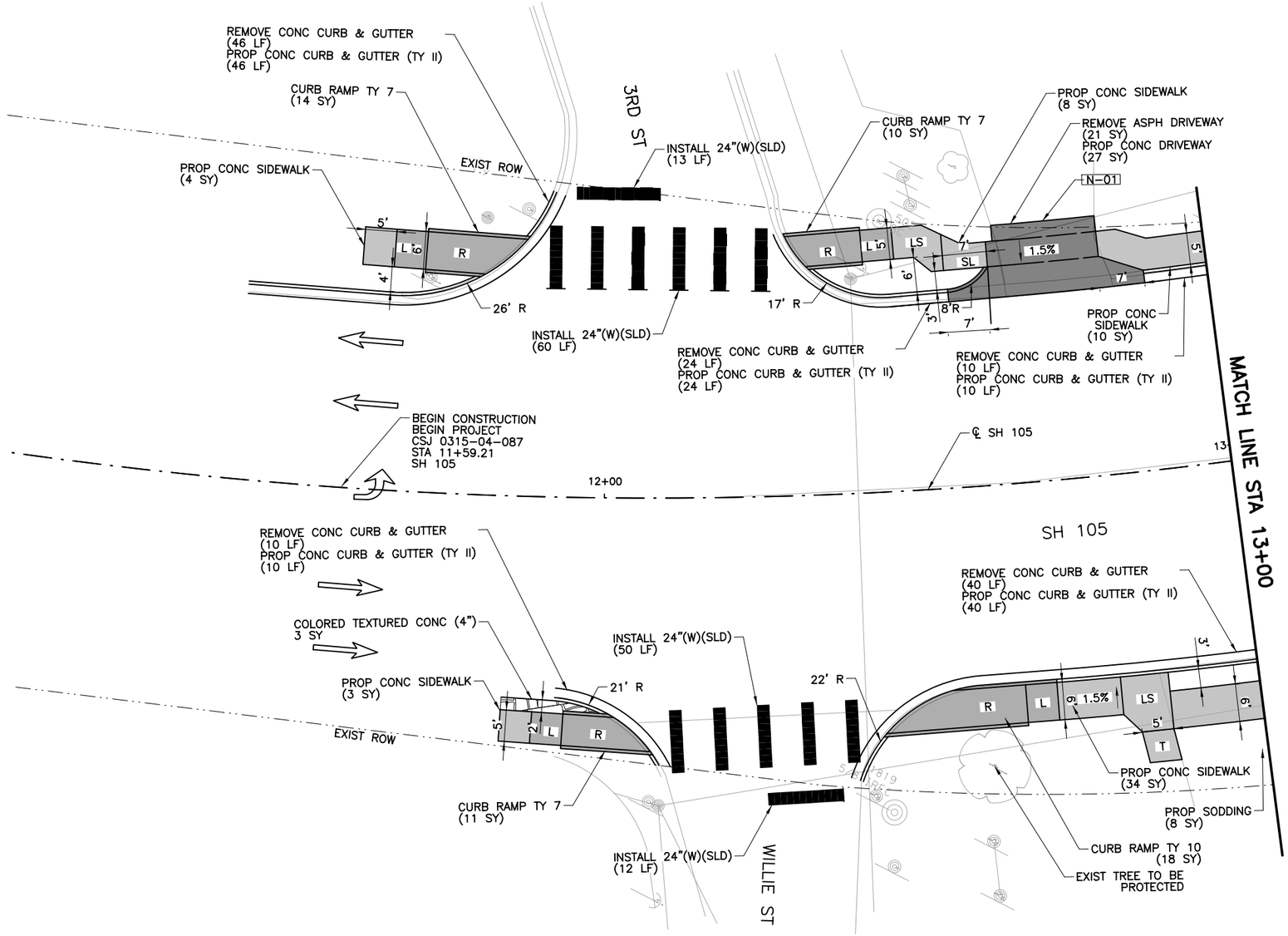

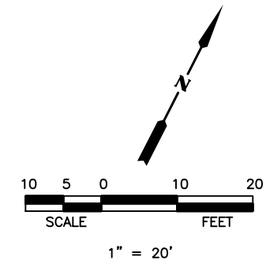

NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
3. REFER TO TXDOT PED-18 STANDARD FOR ADDITIONAL INFORMATION.
4. SAWCUT FOR CONCRETE OR ASPHALT TRANSITION FOR CURB AND/OR DRIVEWAY REPLACEMENT SHALL BE 2' FROM THE GUTTER LINE UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL REMOVE AND REPLACE GROUND BOXES WITHOUT DISRUPTING TRAFFIC SIGNAL FROM OPERATIONS.
6. CONTRACTOR SHALL VERIFY DIMENSIONS AND ELEVATIONS IN THE FIELD.
7. CONTRACTOR TO FIELD VERIFY CURB HEIGHTS USED FOR SIDEWALK CURB. SEE MISC CONSTRUCTION DETAILS FOR MORE INFORMATION REGARDING CONSTRUCTION.
8. SAWCUT SHALL BE SUBSIDIARY TO PAVEMENT REMOVAL.
9. STABILIZED BASE TO BE REMOVED ONLY IF NECESSARY WITHIN EXISTING ASPHALT PAVEMENT REMOVAL SECTIONS.
10. REFER TO TABLE 1 IN MISCELLANEOUS DETAILS FOR ASPH AND CONC TAPERS AT CURB RAMPS.
11. CONTRACTOR SHALL MATCH EXISTING STAMPED CONCRETE USED IN ADJACENT AREAS AND OBTAIN APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
12. ADJUSTMENT OF WATER VALVE BOX AND WATER METER MANHOLES TO BE PAID UNDER ITEM 0479 7004.

07/11/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	FENCE
F	FLARE
	FIRE HYDRANT
	GUY ANCHOR
IC	IRRIGATION CONTROL
L	LANDING
L1	LANDING (COMMON)
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)
	EXISTING RAILROAD CROSSING SIGN
	PROP DRIVEWAY
SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
	LIGHT POLE
	MAIL BOX
	MANHOLE
	PED RAIL
	PED SIGNAL POLE
	POWER/UTILITY POLE
	PIPELINE RISER
PBX	PULL BOX
R	RAMP
	RELOCATE SIGN
	SIGN
	SODDING
T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
W	WATER METER
	WATER VALVE
	RIPRAP (CONC)
	PROP SIDEWALK
	PROP ASPH PAV
S/N-#	DRIVEWAY ID

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 1 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 45

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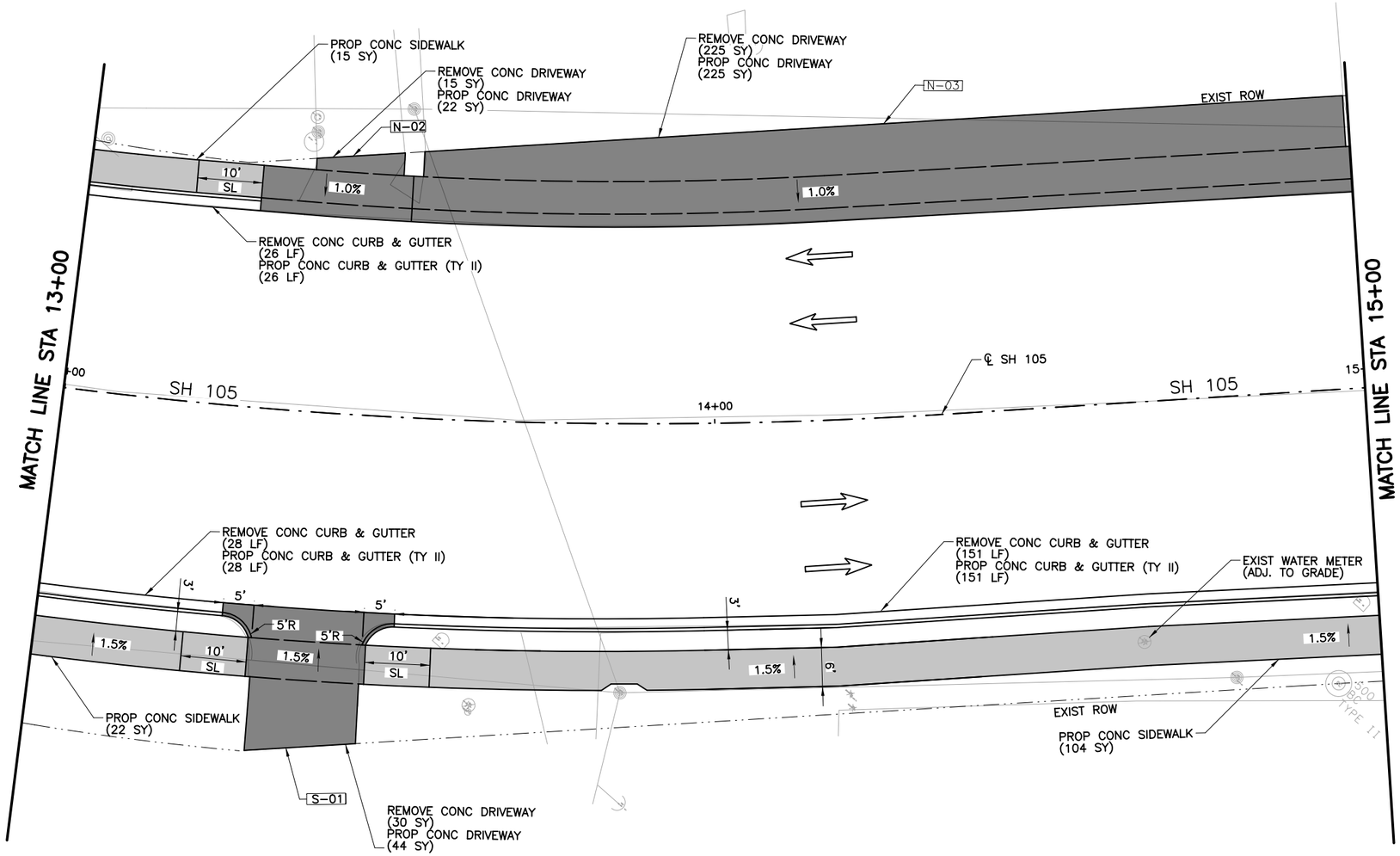

10 5 0 10 20
SCALE FEET

1" = 20'

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STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

07/11/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

LEGEND

	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK		LIGHT POLE		TRAFFIC ARROW
ER	EXISTING RAMP		MAIL BOX	T	TELEPHONE PEDESTAL
X	FENCE		MANHOLE		TRAFFIC SIGNAL CONTROLLER
F	FLARE		PED RAIL		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED SIGNAL POLE		TREE/SHRUBS
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
W	IRRIGATION CONTROL	X	PIPELINE RISER		WATER VALVE
L	LANDING	PBX	PULL BOX		RIPRAP (CONC)
L1	LANDING (COMMON)	R	RAMP		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		RELOCATE SIGN		PROP ASPH PAV
	EXISTING RAILROAD CROSSING SIGN		SIGN	S/N-#	DRIVEWAY ID
	PROP DRIVEWAY		SODDING		

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District
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SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 2 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER		HIGHWAY NUMBER
6			SH 105
STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	46

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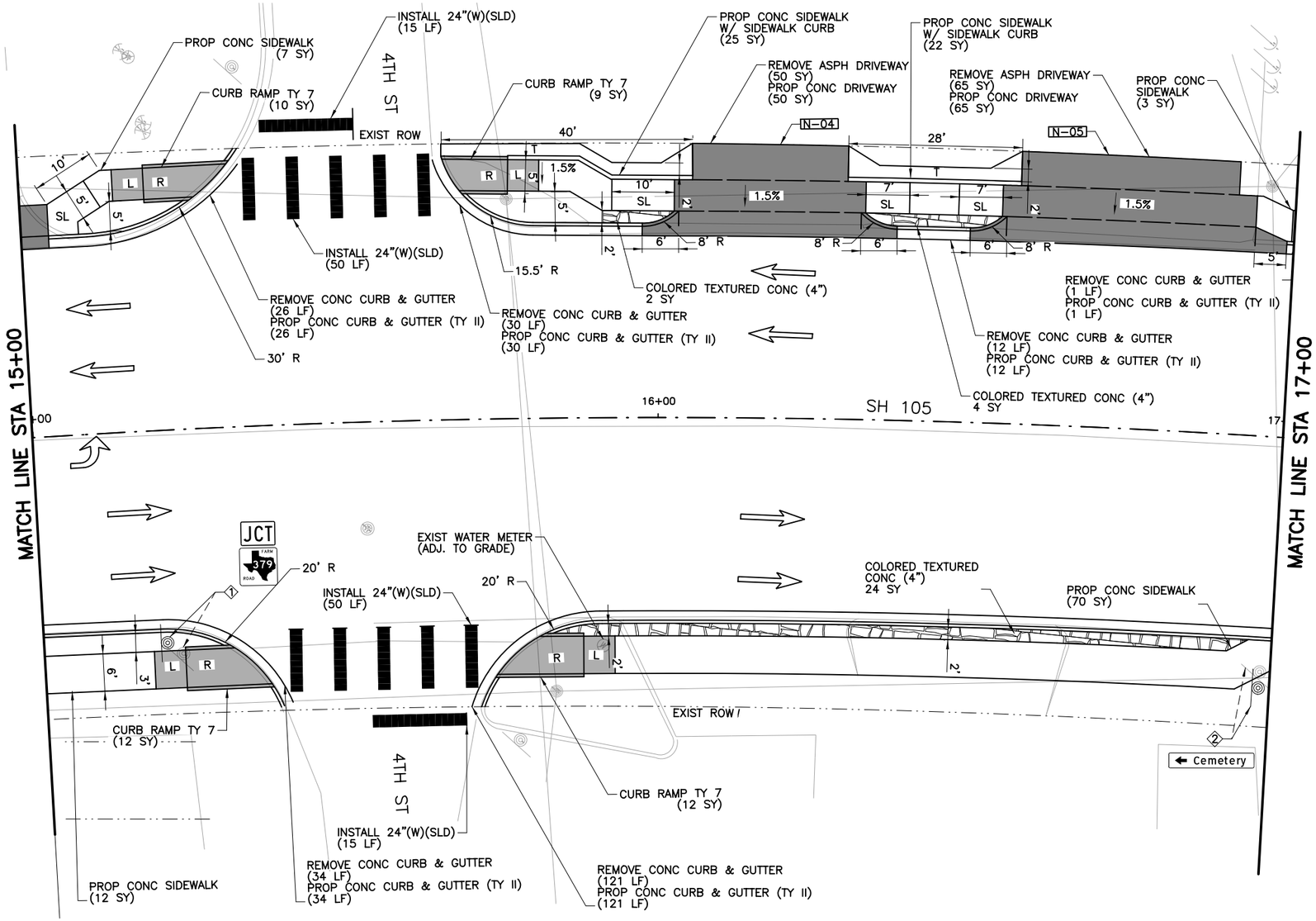

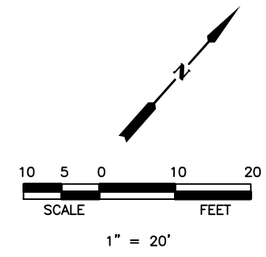

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STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

cmadderley@cm.
09/03/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK			TRAFFIC ARROW
ER	EXISTING RAMP	LIGHT POLE	T	TELEPHONE PEDESTAL
X	FENCE	MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE	MANHOLE		TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL		TREE/SHRUBS
GUY ANCHOR		PED SIGNAL POLE	W	WATER METER
IRRIGATION CONTROL		POWER/UTILITY POLE		WATER VALVE
L	LANDING	PIPELINE RISER		RIPRAP (CONC)
L1	LANDING (COMMON)	PBX PULL BOX		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)	R RAMP		PROP ASPH PAV
	EXISTING RAILROAD CROSSING SIGN	RELOCATE SIGN	S/N-#	DRIVEWAY ID
	PROP DRIVEWAY	SIGN		
		SODDING		

NO.	REVISION	BY	DATE

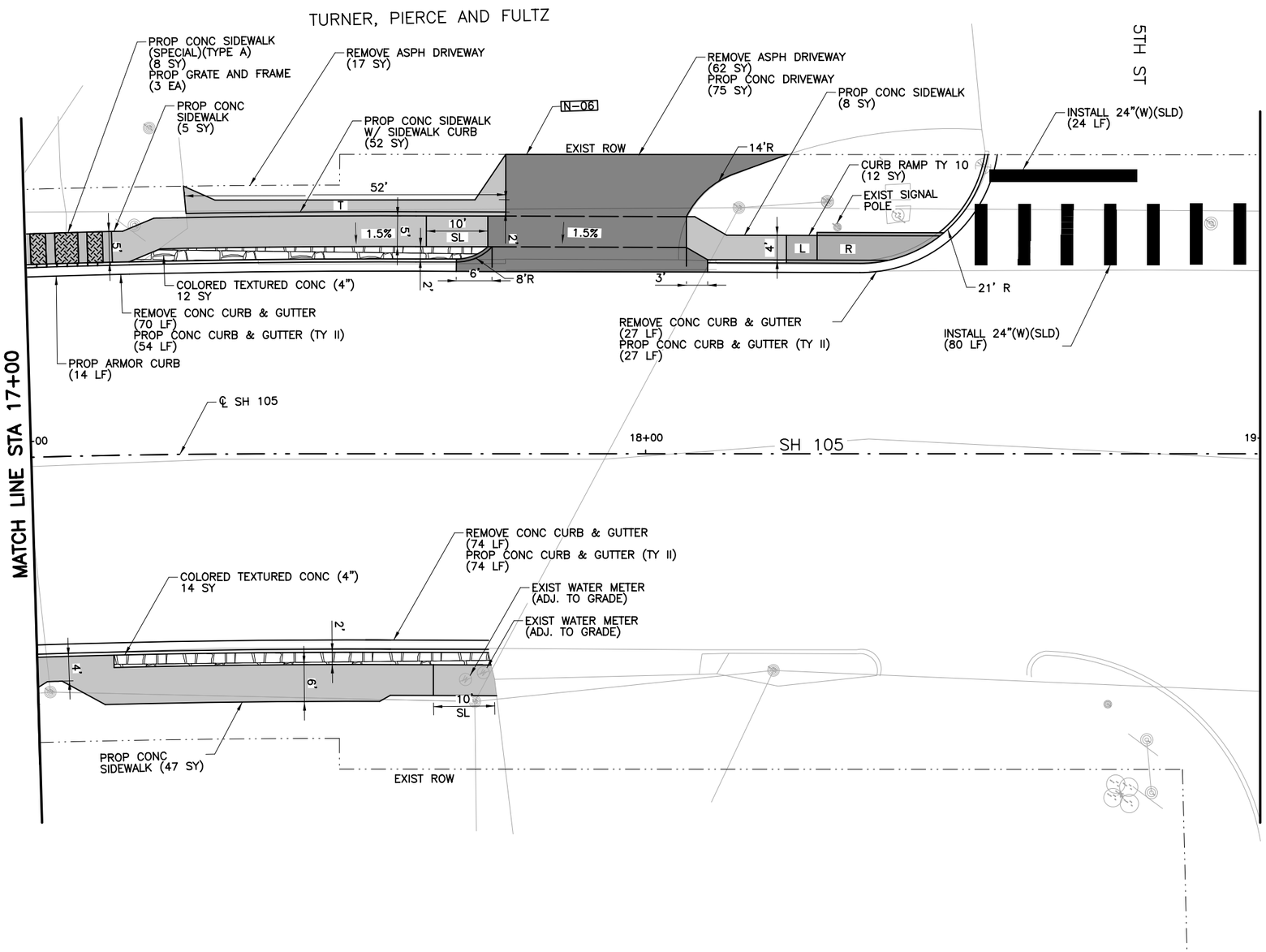
TEXAS REGISTERED ENGINEERING FIRM F-1741

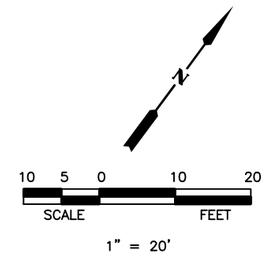
Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 3 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 47





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STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

09/03/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

LEGEND

	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK				TRAFFIC ARROW
ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
X	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE		MANHOLE		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GUY ANCHOR		PED SIGNAL POLE	W	WATER METER
W	IRRIGATION CONTROL		POWER/UTILITY POLE		WATER VALVE
L	LANDING		PIPELINE RISER		RIPRAP (CONC)
L1	LANDING (COMMON)	PBX	PULL BOX		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)	R	RAMP		PROP ASPH PAV
	EXISTING RAILROAD CROSSING SIGN		RELOCATE SIGN	S/N-#	DRIVEWAY ID
			SIGN		
	PROP DRIVEWAY		SODDING		

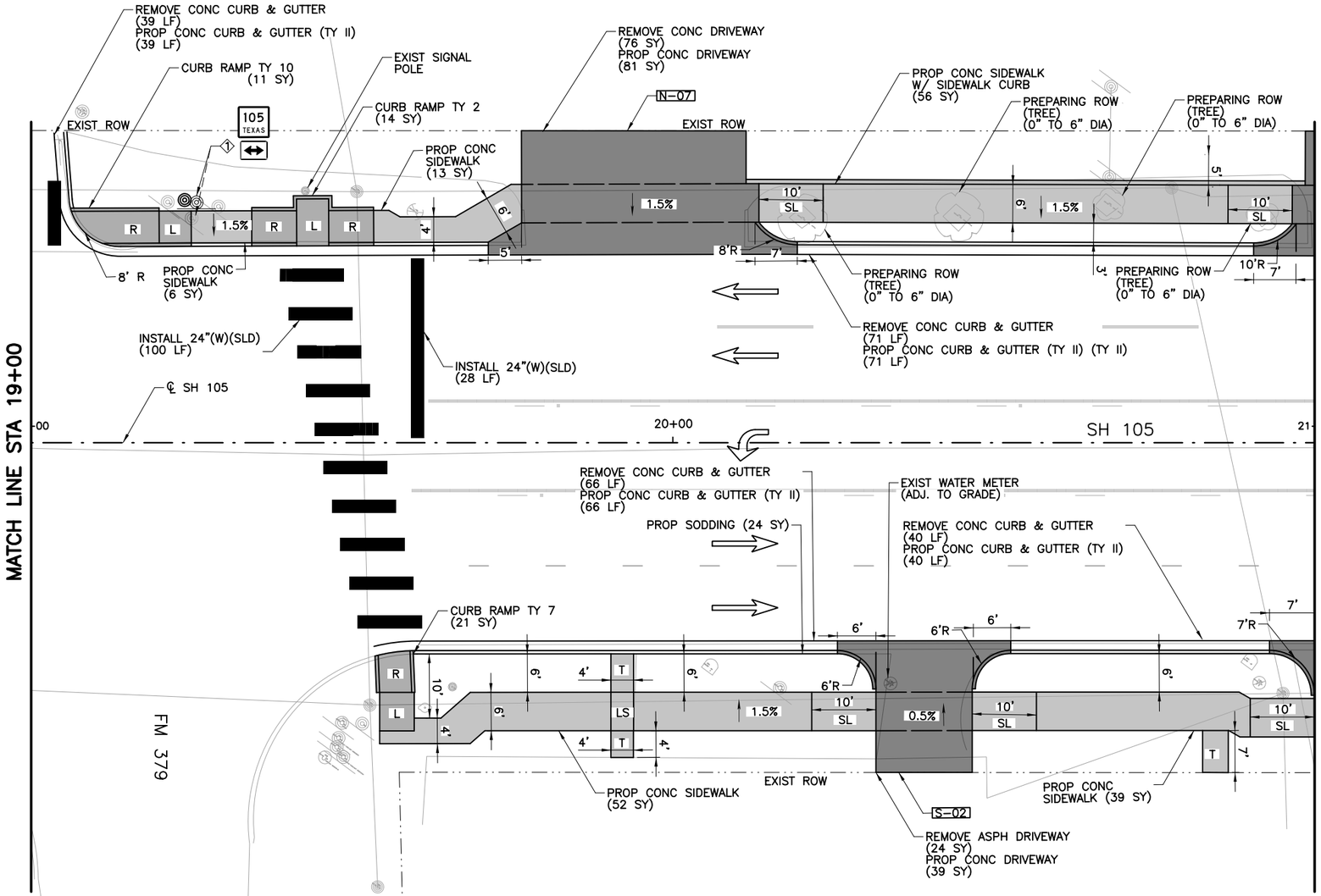
TEXAS REGISTERED ENGINEERING FIRM F-1741

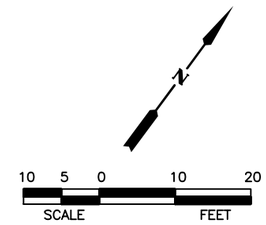
Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 4 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 48





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STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

09/03/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	FENCE
F	FLARE
	FIRE HYDRANT
	GUY ANCHOR
W	IRRIGATION CONTROL
L	LANDING
L1	LANDING (COMMON)
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)
	EXISTING RAILROAD CROSSING SIGN
	PROP DRIVEWAY
SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
	LIGHT POLE
	MAIL BOX
	MANHOLE
	PED RAIL
	PED SIGNAL POLE
	POWER/UTILITY POLE
X	PIPELINE RISER
PBX	PULL BOX
R	RAMP
	RELOCATE SIGN
	SIGN
	SODDING
T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
W	WATER METER
	WATER VALVE
	RIPRAP (CONC)
	PROP SIDEWALK
	PROP ASPH PAV
S/N-#	DRIVEWAY ID

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District
©2024

SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 5 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 49

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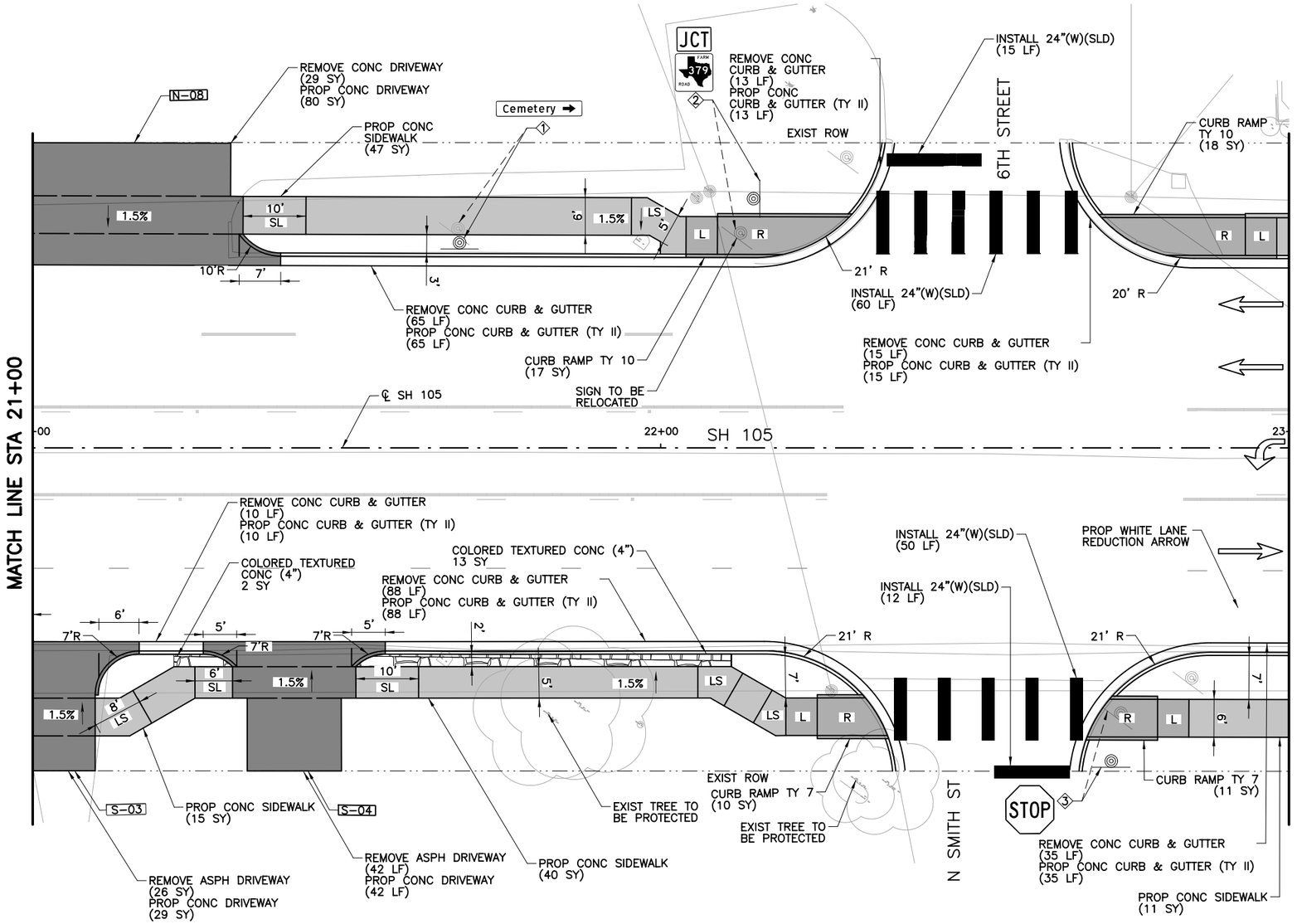

10 5 0 10 20
SCALE FEET
1" = 20'

NOTES:

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10. REFER TO TABLE 1 IN MISCELLANEOUS DETAILS FOR ASPH AND CONC TAPERS AT CURB RAMPS.
11. CONTRACTOR SHALL MATCH EXISTING STAMPED CONCRETE USED IN ADJACENT AREAS AND OBTAIN APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.
12. ADJUSTMENT OF WATER VALVE BOX AND WATER METER MANHOLES TO BE PAID UNDER ITEM 0479 7004.

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED PROFESSIONAL ENGINEER

07/11/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%, CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES EXISTING SIDEWALK				TRAFFIC ARROW
ER EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
X FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F FLARE		MANHOLE		TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL		TREE/SHRUBS
GUY ANCHOR		PED SIGNAL POLE	W	WATER METER
IRRIGATION CONTROL		POWER/UTILITY POLE		WATER VALVE
L LANDING		PIPELINE RISER		RIPRAP (CONC)
L1 LANDING (COMMON)	PBX	PULL BOX		PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)	R	RAMP		PROP ASPH PAV
		RELOCATE SIGN	S/N-#	DRIVEWAY ID
EXISTING RAILROAD CROSSING SIGN		SIGN		
		SODDING		
PROP DRIVEWAY				

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TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District
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SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 6 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 50

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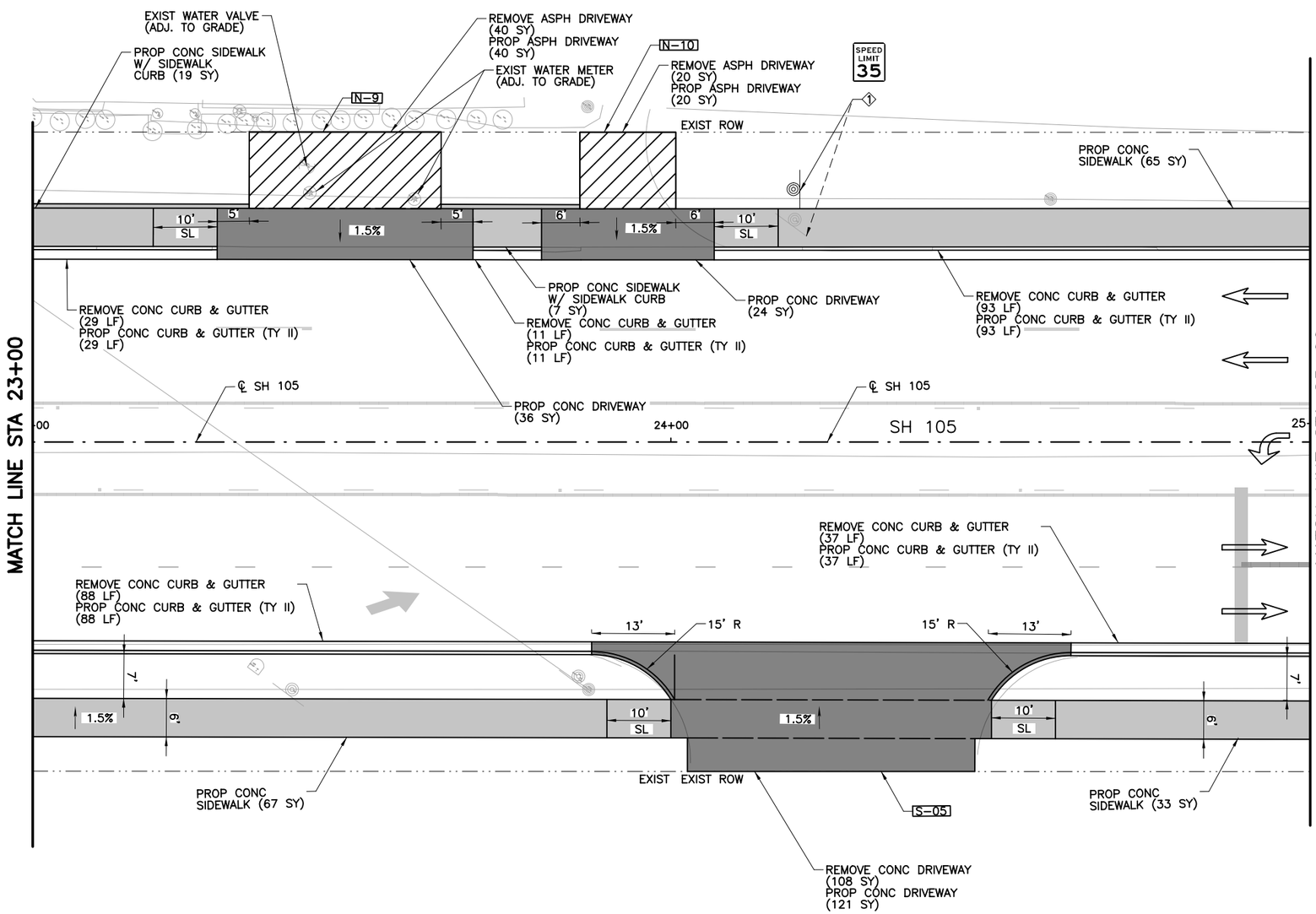

SHELL

N

10 5 0 10 20

SCALE FEET

1" = 20'

NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
3. REFER TO TXDOT PED-18 STANDARD FOR ADDITIONAL INFORMATION.
4. SAWCUT FOR CONCRETE OR ASPHALT TRANSITION FOR CURB AND/OR DRIVEWAY REPLACEMENT SHALL BE 2' FROM THE GUTTER LINE UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL REMOVE AND REPLACE GROUND BOXES WITHOUT DISRUPTING TRAFFIC SIGNAL FROM OPERATIONS.
6. CONTRACTOR SHALL VERIFY DIMENSIONS AND ELEVATIONS IN THE FIELD.
7. CONTRACTOR TO FIELD VERIFY CURB HEIGHTS USED FOR SIDEWALK CURB. SEE MISC CONSTRUCTION DETAILS FOR MORE INFORMATION REGARDING CONSTRUCTION.
8. SAWCUT SHALL BE SUBSIDIARY TO PAVEMENT REMOVAL.
9. STABILIZED BASE TO BE REMOVED ONLY IF NECESSARY WITHIN EXISTING ASPHALT PAVEMENT REMOVAL SECTIONS.
10. REFER TO TABLE 1 IN MISCELLANEOUS DETAILS FOR ASPH AND CONC TAPERS AT CURB RAMPS.
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STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED PROFESSIONAL ENGINEER

cmadderley.cm.
07/11/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW		SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%, CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK				TRAFFIC ARROW
ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
X	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE		MANHOLE		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GUY ANCHOR		PED SIGNAL POLE	W	WATER METER
W	IRRIGATION CONTROL		POWER/UTILITY POLE		WATER VALVE
L	LANDING	X	PIPELINE RISER		RIPRAP (CONC)
L1	LANDING (COMMON)	PBX	PULL BOX		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)	R	RAMP		PROP ASPH PAV
	EXISTING RAILROAD CROSSING SIGN		RELOCATE SIGN	S/N-#	DRIVEWAY ID
	PROP DRIVEWAY		SIGN		
			SODDING		

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TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 7 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 51

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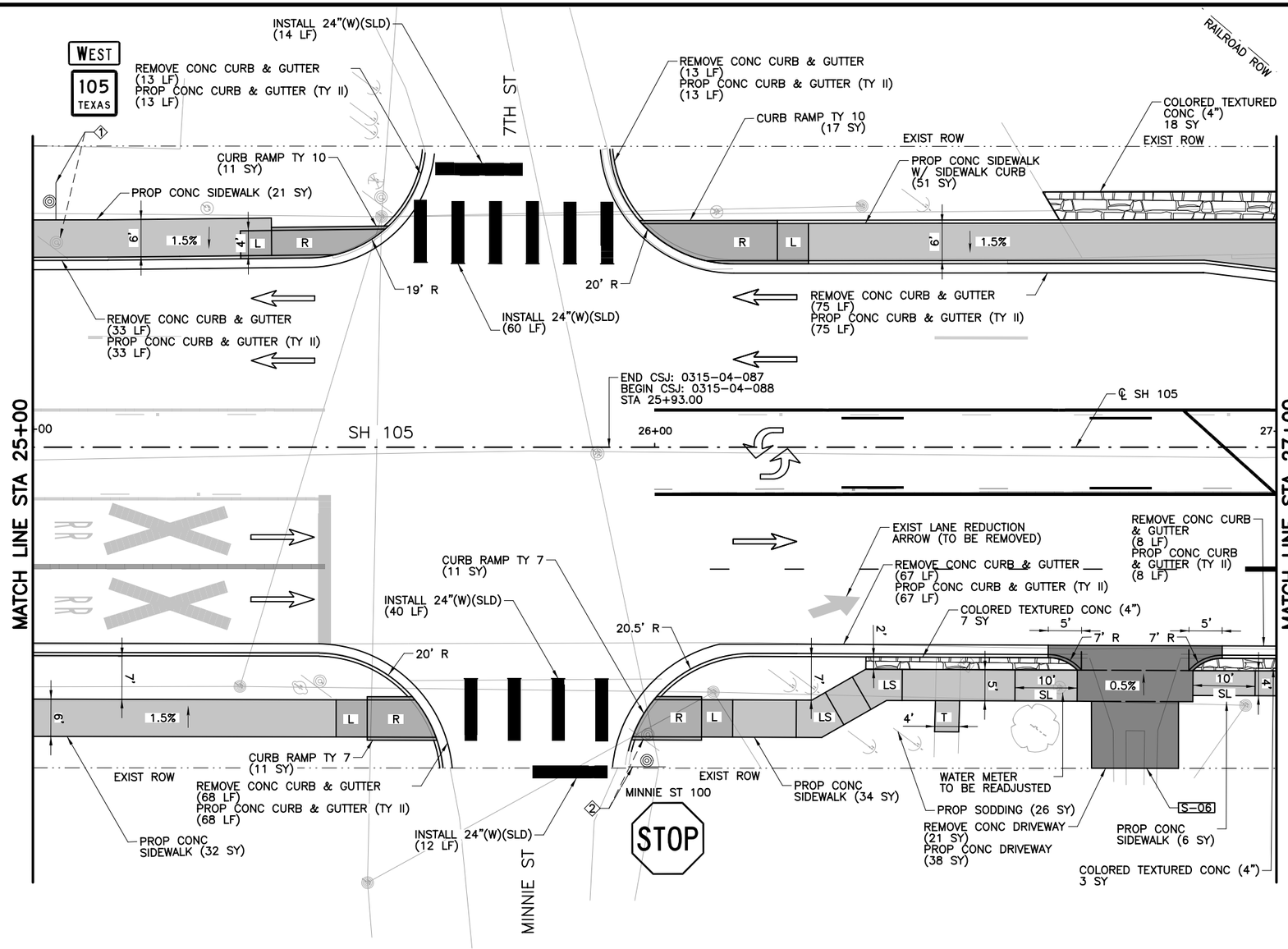

N

10 5 0 10 20

SCALE FEET

1" = 20'

NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
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STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

09/03/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW		SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK		LIGHT POLE		TRAFFIC ARROW
ER	EXISTING RAMP		MAIL BOX	T	TELEPHONE PEDESTAL
X	FENCE		MANHOLE		TRAFFIC SIGNAL CONTROLLER
F	FLARE		PED RAIL		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED SIGNAL POLE		TREE/SHRUBS
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
W	IRRIGATION CONTROL		PIPELINE RISER		WATER VALVE
L	LANDING	PBX	PULL BOX		RIPRAP (CONC)
L1	LANDING (COMMON)	R	RAMP		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		RELOCATE SIGN		PROP ASPH PAV
	EXISTING RAILROAD CROSSING SIGN		SIGN	S/N-#	DRIVEWAY ID
	PROP DRIVEWAY		SODDING		

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

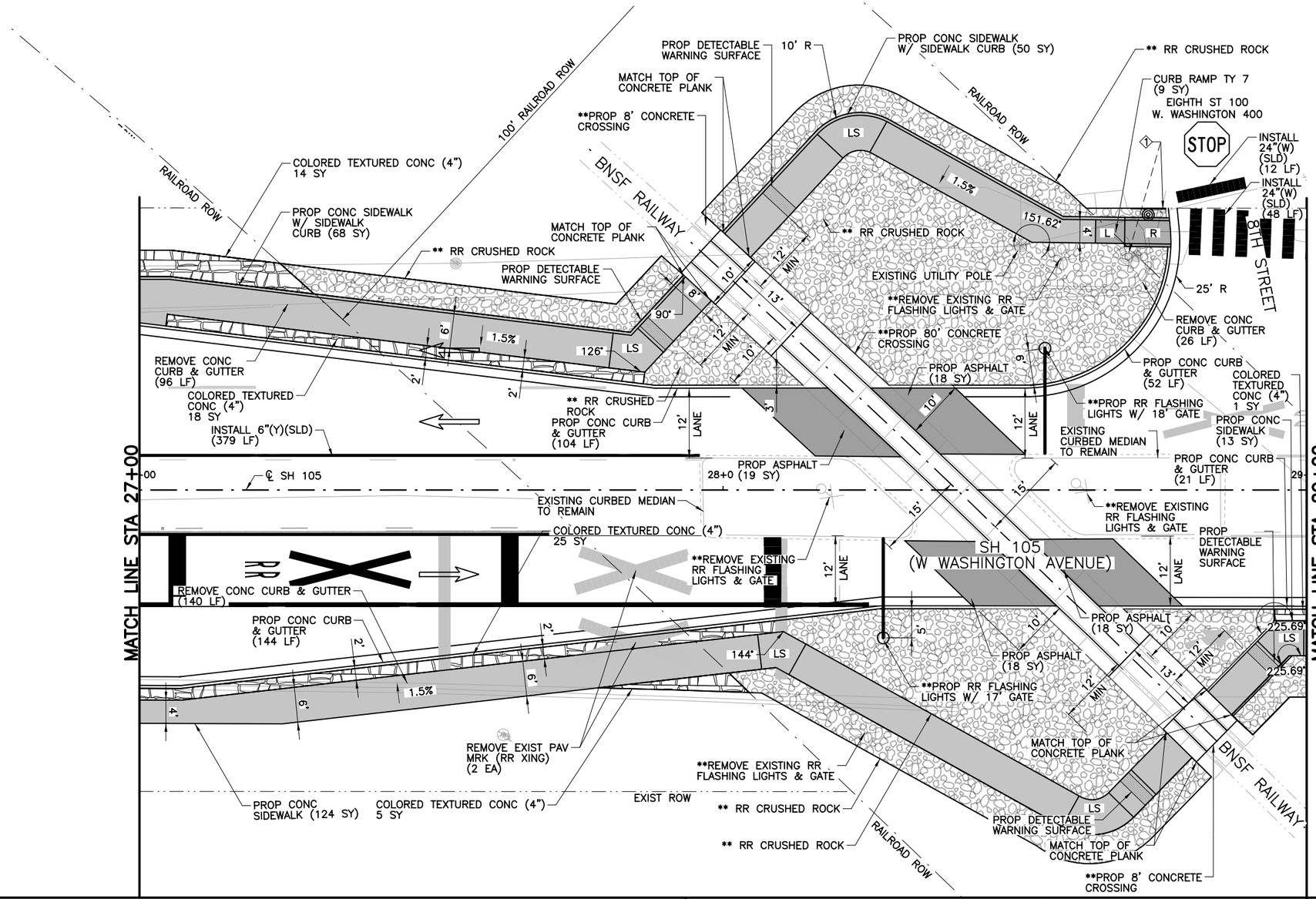
Texas Department of Transportation
Bryan District

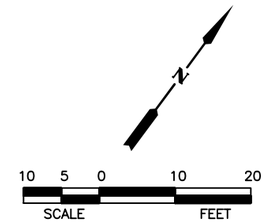
SH 105 PEDESTRIAN IMPROVEMENTS

SH 105 PLAN

SHEET 8 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 52





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STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

09/03/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

** WORK TO BE COMPLETED AND PAID BY BNSF RAILROAD

1. CONTRACTOR SHALL COORDINATE WITH BNSF RAILWAY BEFORE BEGINNING ANY OPERATIONS WITHIN BNSF RAILWAY ROW.
2. DO NOT CONSTRUCT TIE-IN TO RAILROAD WORK UNTIL AFTER BNSF HAS FINISHED CONSTRUCTION.
3. DETECTABLE WARNING SURFACE PAID FOR BY ITEM 0193 7023. REFER TO PED-18 FOR CONSTRUCTION.

LEGEND

EXIST ROW	SL LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
ES EXISTING SIDEWALK	
ER EXISTING RAMP	LIGHT POLE
X FENCE	MAIL BOX
F FLARE	MANHOLE
FIRE HYDRANT	PED RAIL
GUY ANCHOR	PED SIGNAL POLE
IRRIGATION CONTROL	POWER/UTILITY POLE
L LANDING	PIPELINE RISER
L1 LANDING (COMMON)	PULL BOX
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)	R RAMP
	RELOCATE SIGN
EXISTING RAILROAD CROSSING SIGN	SIGN
	SODDING
PROP DRIVEWAY	

T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
W	WATER METER
	WATER VALVE
	RIPRAP (CONC)
	PROP SIDEWALK
	PROP ASPH PAV
S/N-#	DRIVEWAY ID

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TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District
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SH 105 PEDESTRIAN IMPROVEMENTS
SH 105 PLAN

SHEET 9 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	53

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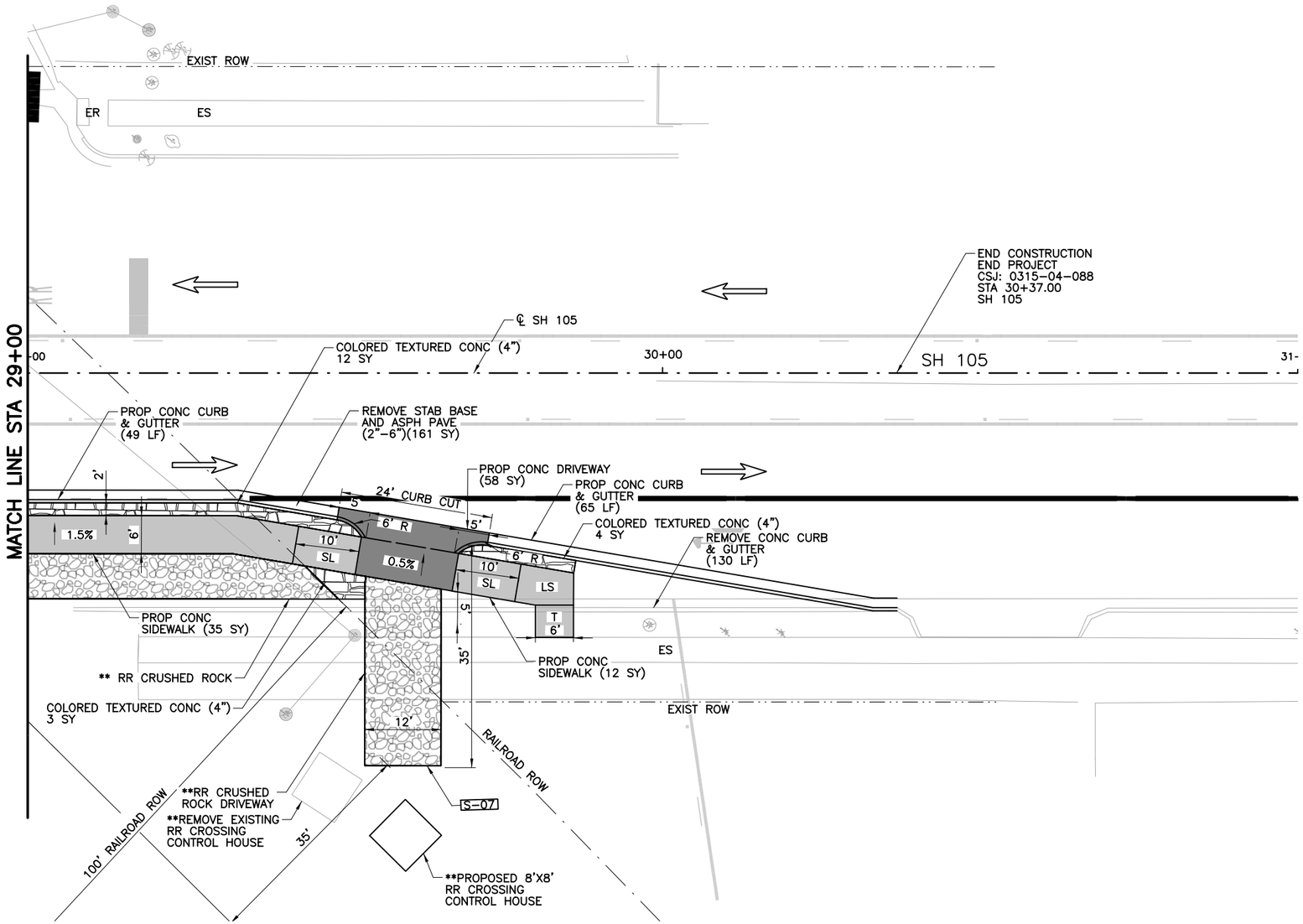

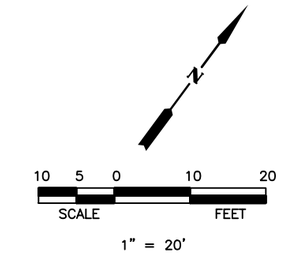

NOTES:

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12. ADJUSTMENT OF WATER VALVE BOX AND WATER METER MANHOLES TO BE PAID UNDER ITEM 0479 7004.

07/11/2024

NO.	REVISION	BY	DATE

SPECIAL NOTES & DETAILS

** WORK TO BE COMPLETED AND PAID BY BNSF RAILROAD

1. CONTRACTOR SHALL COORDINATE WITH BNSF RAILROAD.
2. DO NOT CONSTRUCT TIE-IN TO RAILROAD WORK UNTIL AFTER BNSF HAS FINISHED CONSTRUCTION.

LEGEND

EXIST ROW	
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	FENCE
F	FLARE
	FIRE HYDRANT
	GUY ANCHOR
IC	IRRIGATION CONTROL
L	LANDING
L1	LANDING (COMMON)
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)
	EXISTING RAILROAD CROSSING SIGN
	PROP DRIVEWAY
SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
	LIGHT POLE
	MAIL BOX
	MANHOLE
	PED RAIL
	PED SIGNAL POLE
	POWER/UTILITY POLE
	PIPELINE RISER
PBX	PULL BOX
R	RAMP
	RELOCATE SIGN
	SIGN
	SODDING
T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
W	WATER METER
	WATER VALVE
	RIPRAP (CONC)
	PROP SIDEWALK
	PROP ASPH PAV
S/N-#	DRIVEWAY ID
	PROP CRUSHED ROCK DRIVEWAY

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

SH 105 PLAN

SHEET 10 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER		HIGHWAY NUMBER
6			SH 105
STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	54

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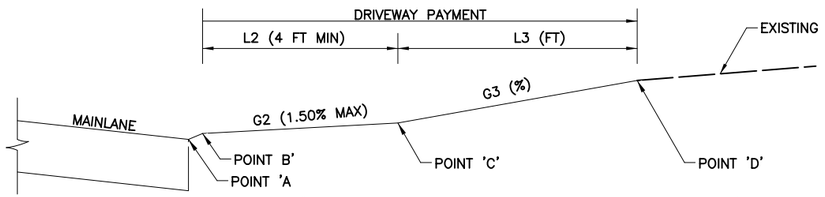
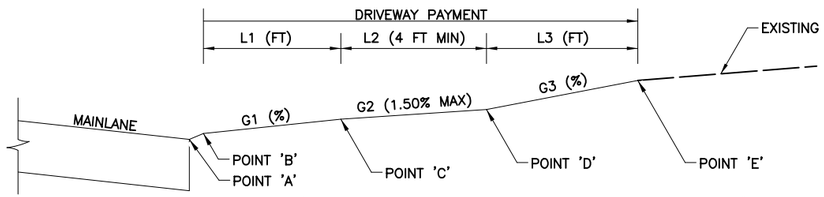
SH 105 DRIVEWAY TABLE (NORTH SIDE)											
DRIVEWAY ID	TYPE	ELEV A (FT)	L1 (FT)	G1	ELEV B (FT)	L2 (FT)	G2	ELEV C (FT)	L3 (FT)	G3	ELEV D (FT)
N–01	CONCRETE	207.04	3	16.00%	207.52	4	1.50%	207.58	2.5	11.07%	207.86
N–02	CONCRETE	–	–	–	207.55	5	1.00%	207.60	2	0.92%	207.62
N–03	CONCRETE	–	–	–	207.71	5	1.00%	207.76	7	0.26%	207.78
N–04	CONCRETE	208.10	2.5	4.00%	208.20	5	1.50%	208.28	5.7	3.04%	208.45
N–05	CONCRETE	208.28	2.8	5.10%	208.42	5	1.50%	208.50	5.3	5.10%	208.77
N–06	CONCRETE	208.70	2.5	5.00%	208.83	5	1.50%	208.90	10	2.48%	209.15
N–07	CONCRETE	208.93	3.8	3.00%	209.05	6	1.50%	209.14	8.3	4.75%	209.53
N–08	CONCRETE	209.06	3.9	3.00%	209.18	6	1.50%	209.27	8.5	6.84%	209.85
N–09	CONCRETE	–	–	–	209.88	6	1.50%	209.97	12	1.90%	210.20
N–10	CONCRETE	–	–	–	209.92	6	1.50%	210.01	12	1.74%	210.22

SH 105 DRIVEWAY TABLE (SOUTH SIDE)											
DRIVEWAY ID	TYPE	ELEV A (FT)	L1 (FT)	G1	ELEV B (FT)	L2 (FT)	G2	ELEV C (FT)	L3 (FT)	G3	ELEV D (FT)
S–01	CONCRETE	207.65	3	6.00%	207.83	6	1.50%	207.92	4	11.42%	208.38
S–02	CONCRETE	209.08	6.6	0.33%	209.11	6	0.50%	209.14	4.5	0.33%	209.15
S–03	CONCRETE	209.15	7.5	2.50%	209.34	6	1.50%	209.43	5.5	2.71%	209.58
S–04	CONCRETE	209.07	2.6	2.00%	209.13	5	1.50%	209.20	11.5	0.95%	209.31
S–05	CONCRETE	209.83	7.5	2.50%	210.02	6	1.50%	210.11	5.1	3.71%	210.30
S–06	CONCRETE	210.84	2.6	0.50%	210.86	5	0.50%	210.88	5	0.57%	210.91
S–07	CONCRETE	211.93	2.4	0.50%	211.95	6	0.50%	211.98	28	0.80%	212.20



DRIVEWAY PROFILE (SIDEWALK CROSSING ADJACENT TO CURB)
SCALE: NTS



DRIVEWAY PROFILE (SIDEWALK CROSSING OFFSET FROM CURB)
SCALE: NTS

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

07/11/2024

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

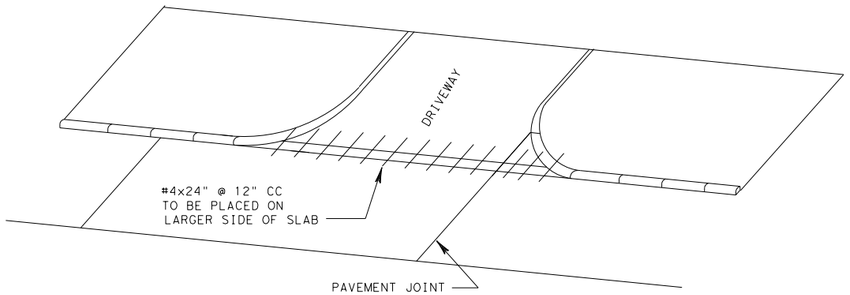
SH 105 PEDESTRIAN IMPROVEMENTS

DRIVEWAY TABLES

SHEET 1 OF 1

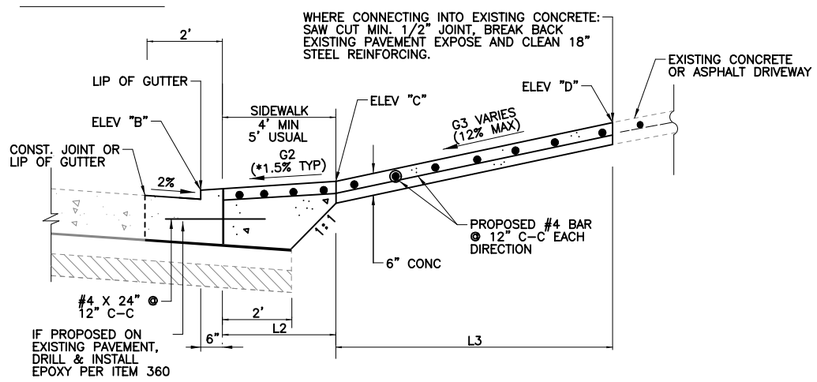
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	55



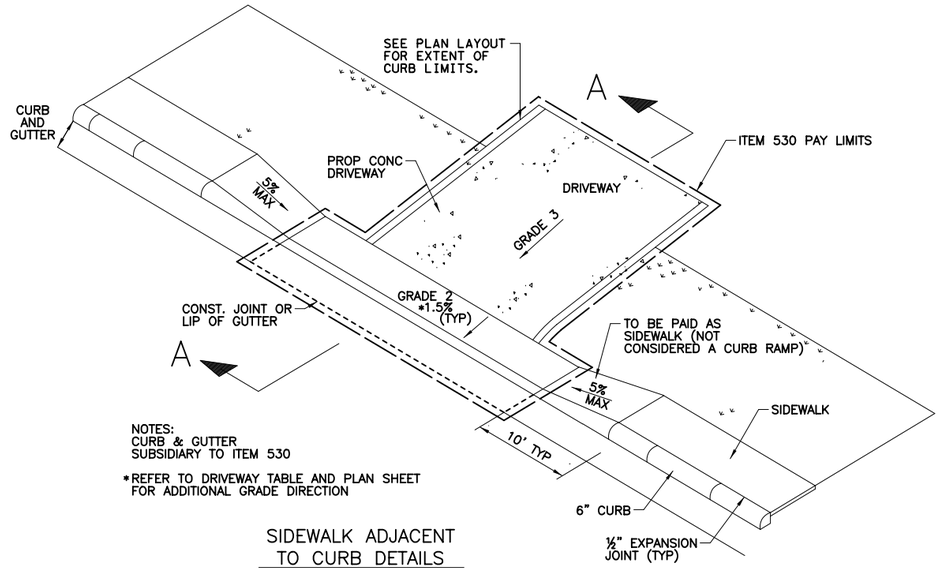
TIE BAR PLACEMENT

WITH JRCP



DRIVEWAY SLOPES W/ SIDEWALKS ADJACENT TO CURB

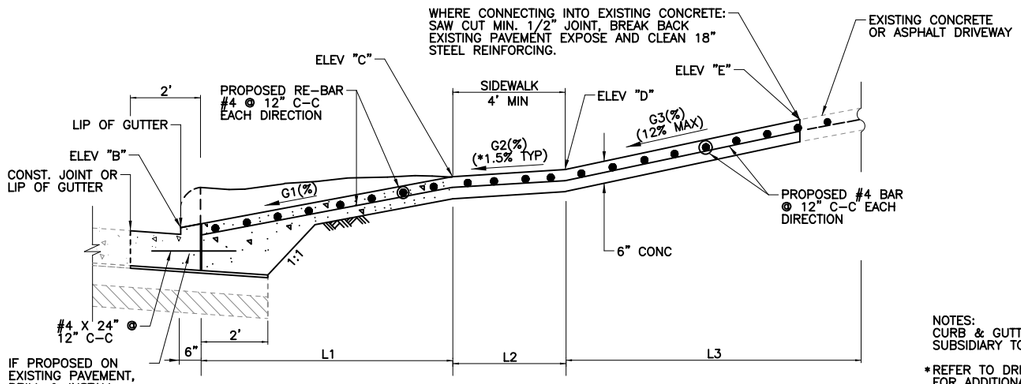
(SECTION A–A)



NOTES:
CURB & GUTTER
SUBSIDIARY TO ITEM 530

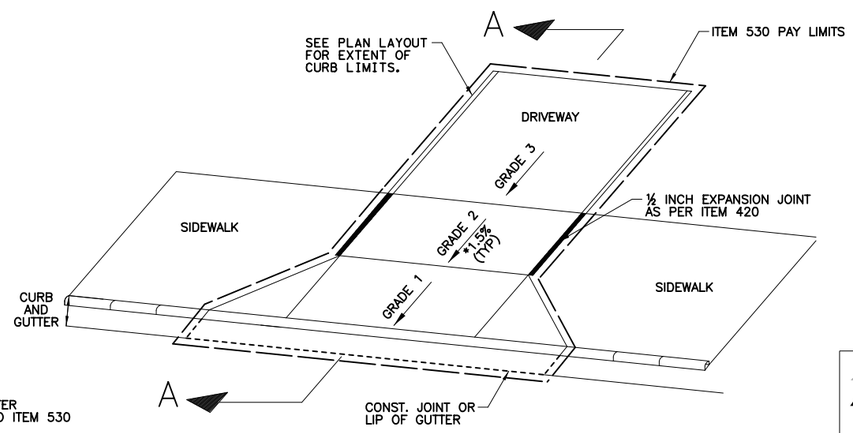
*REFER TO DRIVEWAY TABLE AND PLAN SHEET
FOR ADDITIONAL GRADE DIRECTION

SIDEWALK ADJACENT
TO CURB DETAILS



SLOPES W/ SIDEWALKS OFFSET FROM CURB

(SECTION A–A)



NOTES:
CURB & GUTTER
SUBSIDIARY TO ITEM 530

*REFER TO DRIVEWAY TABLE AND PLAN SHEET
FOR ADDITIONAL GRADE DIRECTION

SIDEWALK OFFSET FROM CURB DETAILS

NOTES:

cmaderley.cm. 07/11/2024

1. REFER TO PLAN SHEETS FOR SIDEWALK CROSS SLOPES.
2. REFER TO DRIVEWAY TABLE FOR LENGTH AND GRADES.
3. PROPOSED DRIVEWAY GRADES ARE APPROXIMATES CONTRACTOR TO FIELD VERIFY TIE POINTS.

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation
Houston District

DRIVEWAY DETAILS

DD

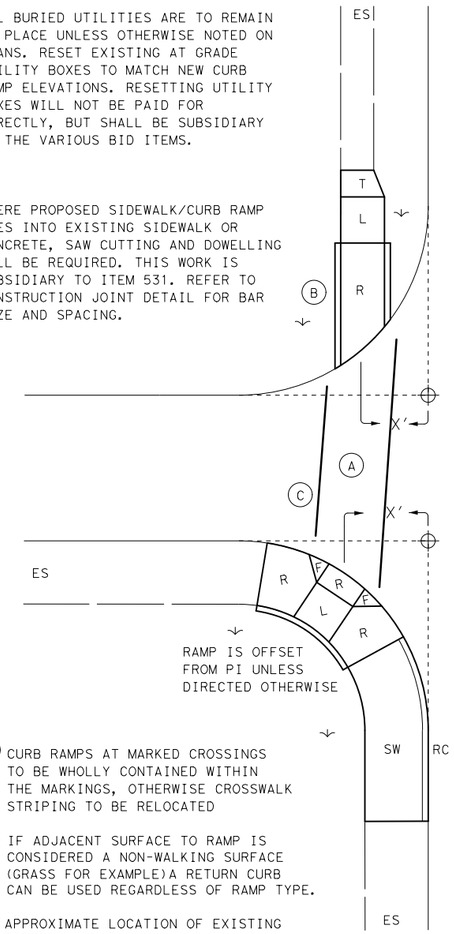
FILE: STDB-8b.dgn	DN:		CK:		DW:		CK:
©TxDOT SEPT. 2004	DIST	FED REG	PROJECT NO.				SHEET
REVISIONS	BRY	6	SEE TITTLE SHEETS				SH 105
9/09 ADDED NOTE FOR ITEM 360.	COUNTY			CONTROL	SECT	JOB	HIGHWAY
11/15 ADDED NOTE FOR PCTB	GRIMES			0315	04	087	56

STDB8B

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.

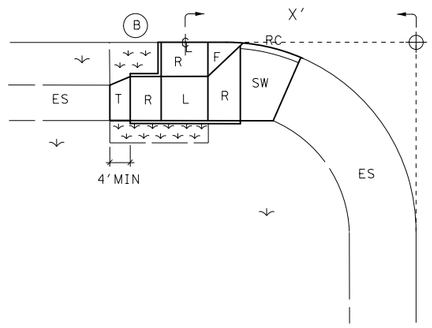


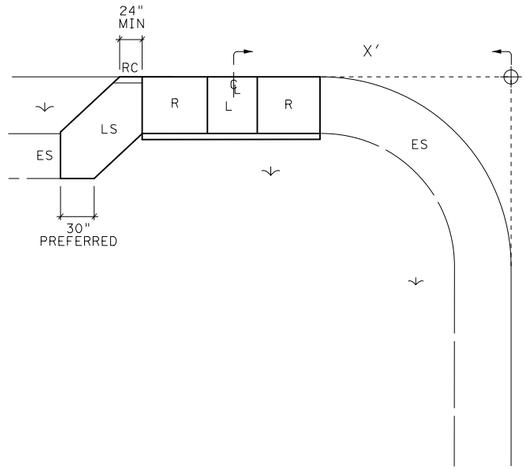
(A) CURB RAMPS AT MARKED CROSSINGS TO BE WHOLLY CONTAINED WITHIN THE MARKINGS, OTHERWISE CROSSWALK STRIPING TO BE RELOCATED

(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

= SIDEWALK (EXISTING)

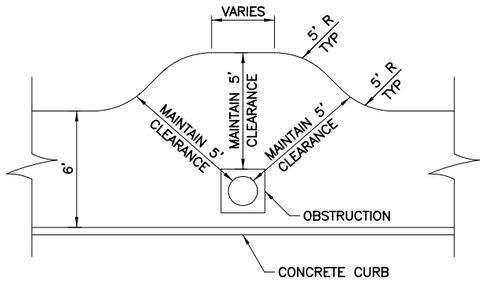
X' = LENGTH MEASURED FROM PI POINT (SEE INTERSECTION SHEETS FOR DIMENSION)

SW = SIDEWALK (NOT EXCEED 2% CROSS SLOPE)

LS = LEVEL SIDEWALK (NOT EXCEED 2% SLOPE IN ANY DIRECTION)

⊕ = PI POINT MEASURED FROM TANGENTIAL CURBLINE INTERSECTION

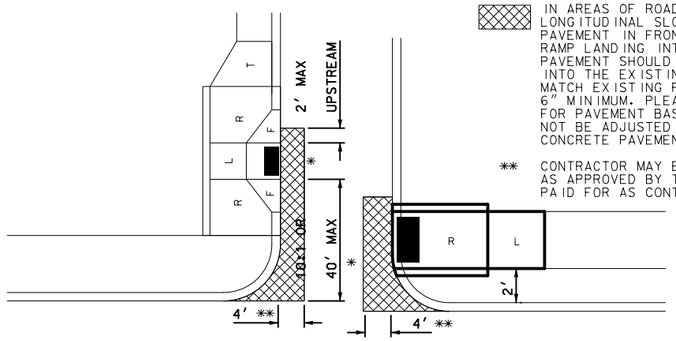
= EXISTING TURF



NOTE:
UTILIZE DETAIL AT OBSTRUCTION ENCROACHMENTS INTO THE PEDESTRIAN ACCESS ROUTE. A MINIMUM UNOBSTRUCTED CLEARANCE OF 4' SHOULD BE MAINTAINED AROUND THE OBSTRUCTION OR AS APPROVED BY THE ENGINEER. 5' OR MORE IS DESIREABLE.

OBSTRUCTION CONFLICT
NTS

CONCRETE ROADWAY OR CURB AND GUTTER SECTION *

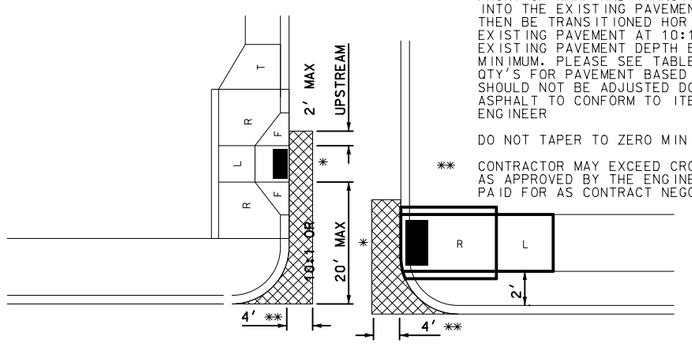


SAW CUT (NSPI)

IN AREAS OF ROADWAY CROSS SLOPES EXCEEDING 2% LONGITUDINAL SLOPE, SAW CUT AND EXCAVATE 4' OF PAVEMENT IN FRONT OF RAMP AND TRANSITION THE RAMP LANDING INTO THE EXISTING PAVEMENT. THE PAVEMENT SHOULD THEN BE TRANSITIONED HORIZONTALLY INTO THE EXISTING PAVEMENT AT 10:1. PAVEMENT SHOULD MATCH EXISTING PAVEMENT DEPTH BUT NOT LESS THAN 6" MINIMUM. PLEASE SEE TABLE 1 FOR CALCULATED QTY'S FOR PAVEMENT BASED ON RAMP TYPE. GUTTERLINES SHOULD NOT BE ADJUSTED DOWNWARD.
CONCRETE PAVEMENT TO CONFORM TO ITEM 360

** CONTRACTOR MAY EXCEED CROSS SLOPE TRANSITION DISTANCE AS APPROVED BY THE ENGINEER. PAYMENT BEYOND 4' IS PAID FOR AS CONTRACT NEGOTIATED UNIT RATES.

ASPHALT/SEALCOAT ROADWAY



* SAW CUT (NSPI)

IN AREAS OF ROADWAY CROSS SLOPES EXCEEDING 2% LONGITUDINAL SLOPE, EXCAVATE 2' OF PAVEMENT IN FRONT OF RAMP AND TRANSITION THE RAMP LANDING INTO THE EXISTING PAVEMENT. THE PAVEMENT SHOULD THEN BE TRANSITIONED HORIZONTALLY INTO THE EXISTING PAVEMENT AT 10:1. PAVEMENT SHOULD MATCH EXISTING PAVEMENT DEPTH BUT NOT LESS THAN 2" MINIMUM. PLEASE SEE TABLE 1 FOR CALCULATED PAYMENT QTY'S FOR PAVEMENT BASED ON RAMP TYPE. GUTTERLINES SHOULD NOT BE ADJUSTED DOWNWARD.
ASPHALT TO CONFORM TO ITEM 340 AS DIRECTED BY THE ENGINEER

DO NOT TAPER TO ZERO MINIMUM 1 1/2" DEPTH @ TIE-IN

** CONTRACTOR MAY EXCEED CROSS SLOPE TRANSITION DISTANCE AS APPROVED BY THE ENGINEER. PAYMENT BEYOND 4' IS PAID FOR AS CONTRACT NEGOTIATED UNIT RATES.

TABLE 1

RAMP TYPE	ASPHALT TAPER QTY	CONC TAPER QTY
	MAX (SY)	MAX (SY)
1	5.78	20.44
2	5.78	20.44
3	5.78	20.44
4	5.78	20.44
5	5.78	20.44
6	5.78	20.44
7	5.78	20.44
8	5.78	20.44
9	5.78	20.44
10	5.78	20.44
11	5.78	20.44
20	11.56	40.89
21	11.56	40.89
22	17.33	61.33

TRANSITIONS SHOWN IN TABLE 1 ARE FOR CONTRACTORS INFORMATION ONLY. TRANSITIONS ARE NOT PAID FOR SEPARATELY BUT ARE SUBSIDIARY TO ITEM 531 "CURB RAMP."

CURB RAMPS

ALL CURB RAMPS ARE TO BE 6" IN THICKNESS UNLESS OTHERWISE SHOWN

07/11/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

MISCELLANEOUS DETAILS

SHEET 1 OF 4

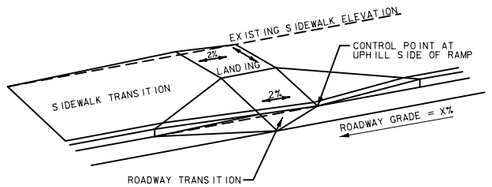
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105
STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES
CONTROL	SECTION	JOB / SHEET NO.
0315	04	087, ETC. / 57

cpybw_ANSIB.tbl
cpypdf_ANSIB.pltcfg
pw:/

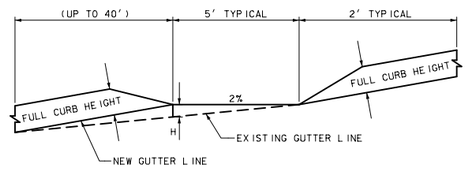
6/30/2024 4:01:14 PM PinedoYI

pw:/

ROADWAY TRANSITION



VARIABLE CURB ELEVATION



HORIZONTAL RAMP CONTROL

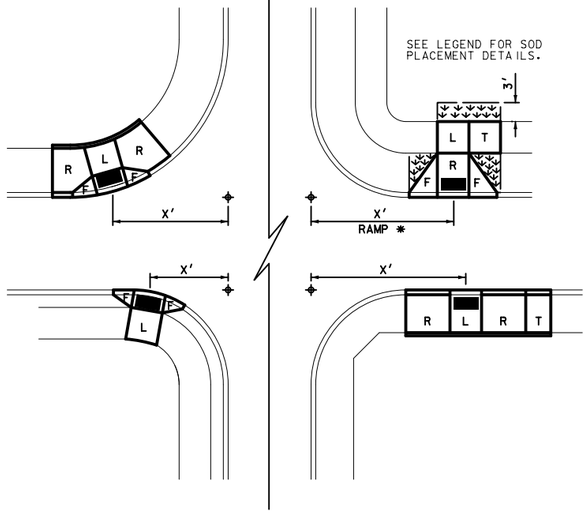
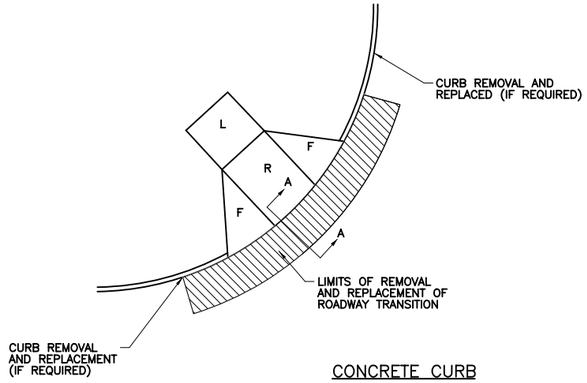


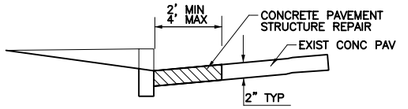
TABLE 2		
DIFFERENTIAL BETWEEN RAMP AND ROADWAY LONGITUDINAL SLOPE	H	
1%	0.04'	0.50"
2%	0.08'	1.00"
3%	0.12'	1.50"
4%	0.16'	2.00"
5%	0.20'	2.40"
6%	0.24'	2.90"

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

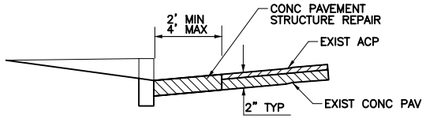
ROADWAY TRANSITION



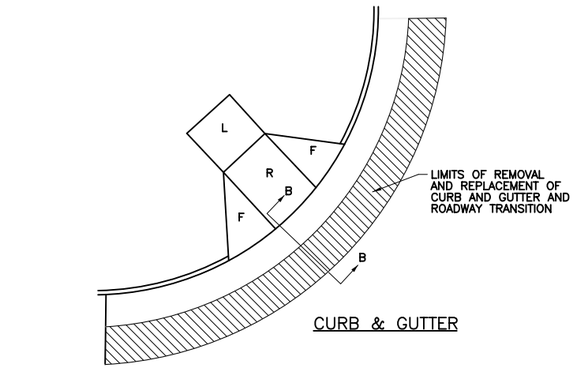
CONCRETE CURB



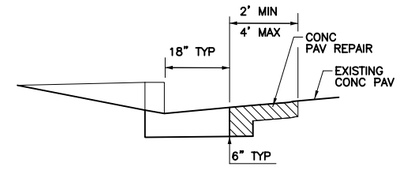
SECTION A–A



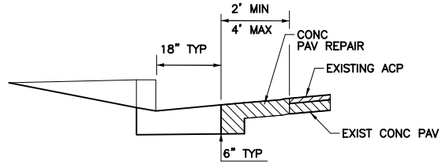
SECTION A–A ALT.



CURB & GUTTER



SECTION B–B



SECTION B–B ALT.

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.

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 (SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION)

L1 = SHARED LANDING (SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION)

LS = LEVEL SIDEWALK (SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION)(PAID AS SIDEWALK)

T = TRANSITION (PAID FOR UNDER CONC SIDEWALKS)

X' = LENGTH MEASURED FROM PI POINT

⌖ = PI POINT MEASURED FROM TANGENTIAL CURBLINE INTERSECTION

⌄ = BLOCK SOD; PLACED BEHIND CONSTRUCTION LIMITS NEIGHBORING ROW, PLACED FULL LIMITS BETWEEN BACK OF CURB AND CONSTRUCTION IF DIVORCED; OR AS SHOWN ON THE PLANS

(NSPI) = ITEM IS INCIDENTAL TO CURB RAMP/SIDEWALK CONSTRUCTION. (NO SEPERATE PAY ITEM)

NOTES

1. FLARE (F), RAMP (R), AND LANDING (L), DIRECTLY IN CONTACT WITH THE CURB RAMP ARE PAID FOR UNDER ITEM 531 "CURB RAMPS"
2. LEVEL SIDEWALK (LS) AND RAMPS (R) NOT DIRECTLY IN CONTACT WITH THE CURB RAMP ARE PAID FOR UNDER ITEM 531 "SIDEWALK"

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED PROFESSIONAL ENGINEER

07/11/2024

NO.	REVISION	BY	DATE

stv

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS

MISCELLANEOUS DETAILS

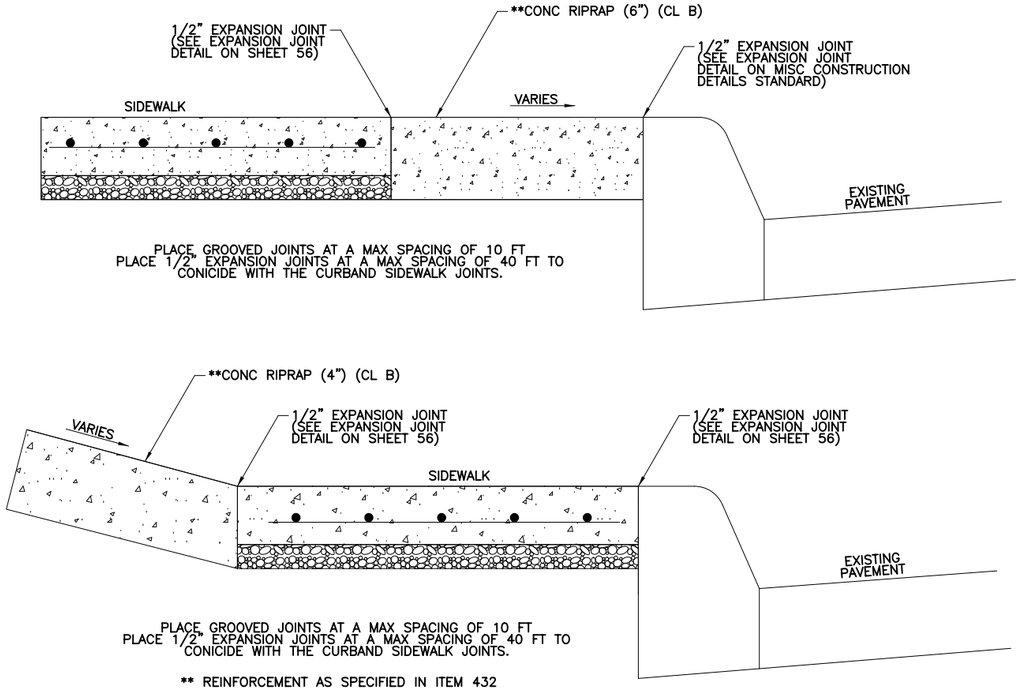
SHEET 2 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	58

RIPRAP DETAIL

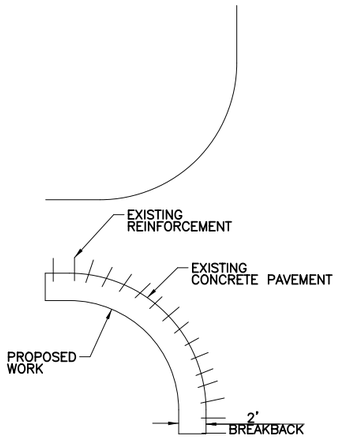
NOT TO SCALE

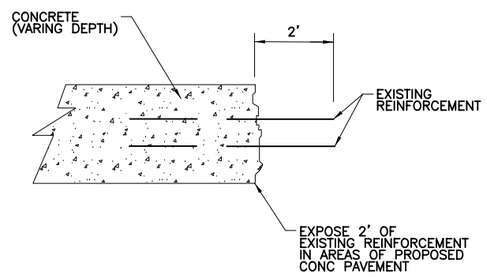


** REINFORCEMENT AS SPECIFIED IN ITEM 432

CONCRETE BREAKBACK DETAIL

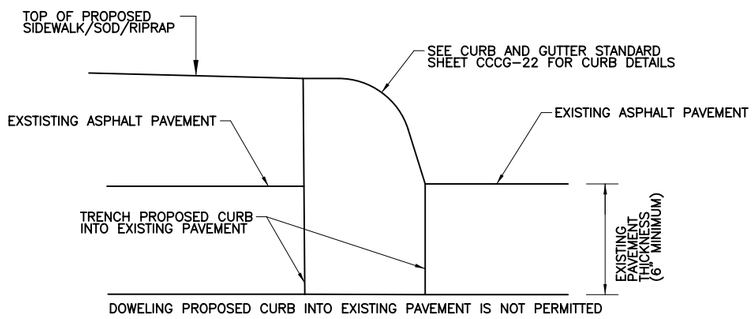
NOT TO SCALE





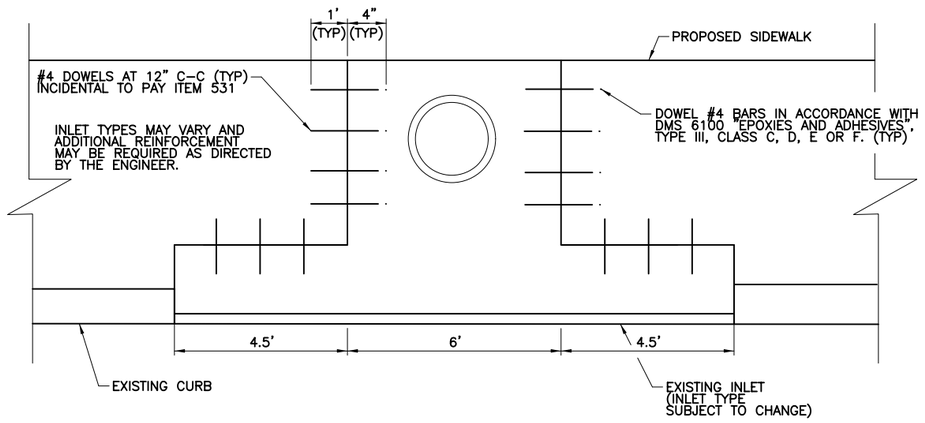
CURB TRENCH DETAIL

USE WHEN INSTALLING A CURB INTO EXISTING ASPHALT PAVEMENT



INLET DOWELING DETAIL

NOT TO SCALE



STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED PROFESSIONAL ENGINEER

cmaderley@cm.
07/11/2024

NO.	REVISION	BY	DATE

stv

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

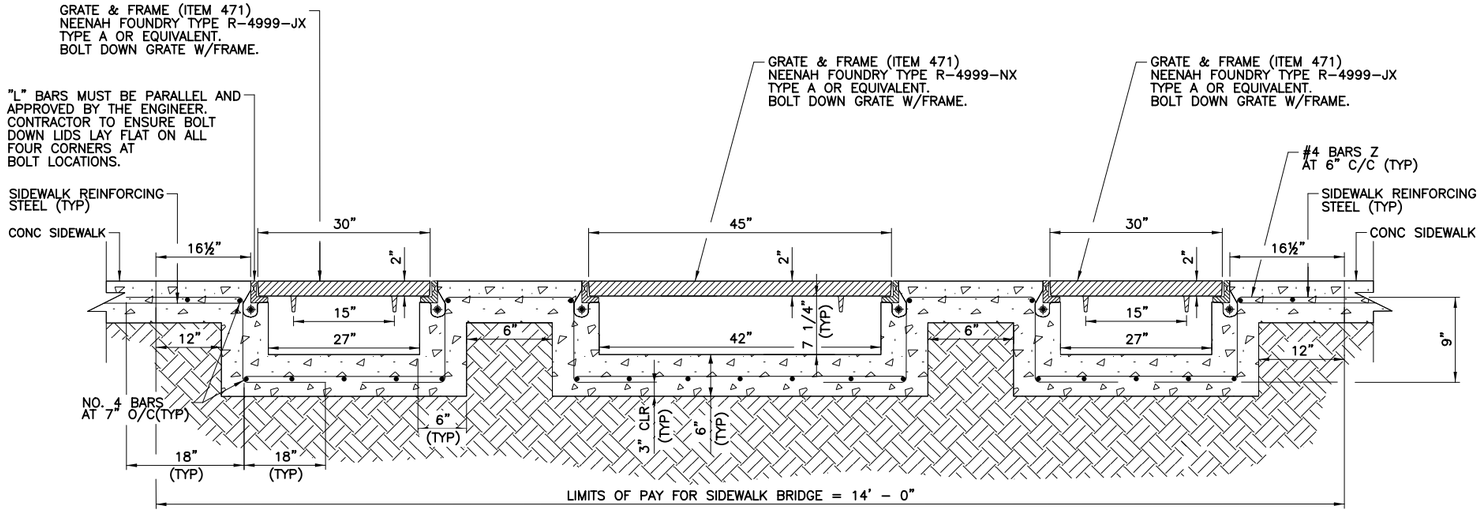
SH 105 PEDESTRIAN IMPROVEMENTS

MISCELLANEOUS DETAILS

SHEET 3 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	59

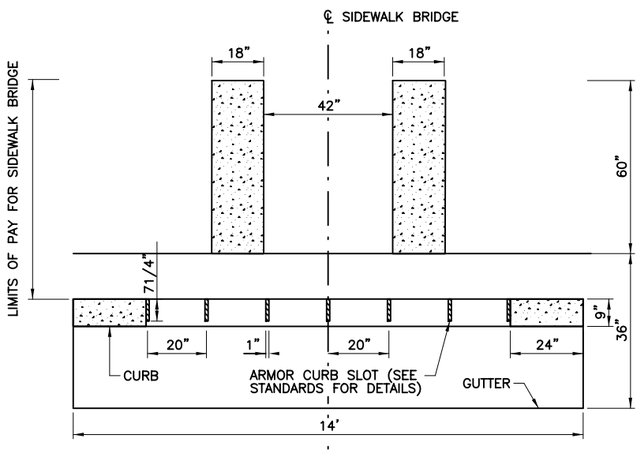


NOTE: GRATE AND FRAME MUST BE COATED WITH NON-RUST, SLIP-RESISTANT FINISH. COATING IS SUBSIDIARY TO ITEM 471.

SIDEWALK (SPECIAL)(TYPE A)

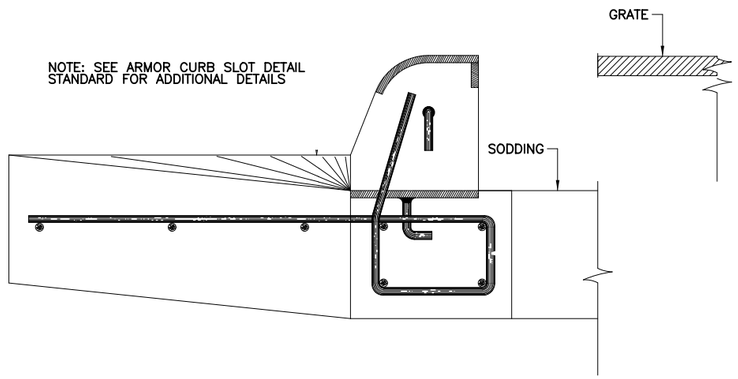
(SIDEWALK BRIDGE) ITEM 531-6032

(NTS)



CONCRETE SIDEWALK DRAIN DETAIL

(NTS)



ARMOR CURB SLOT DETAIL

(NTS)

MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

07/11/2024

NO.	REVISION	BY	DATE

stv

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation

Bryan District

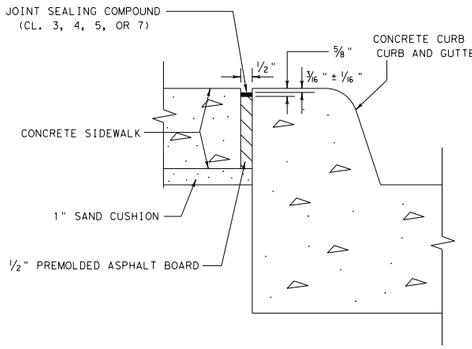
SH 105 PEDESTRIAN IMPROVEMENTS

MISCELLANEOUS DETAILS

SHEET 4 OF 4

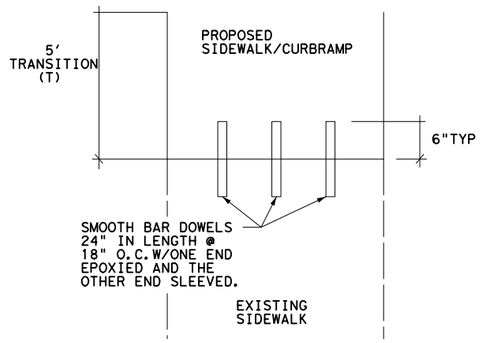
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	60



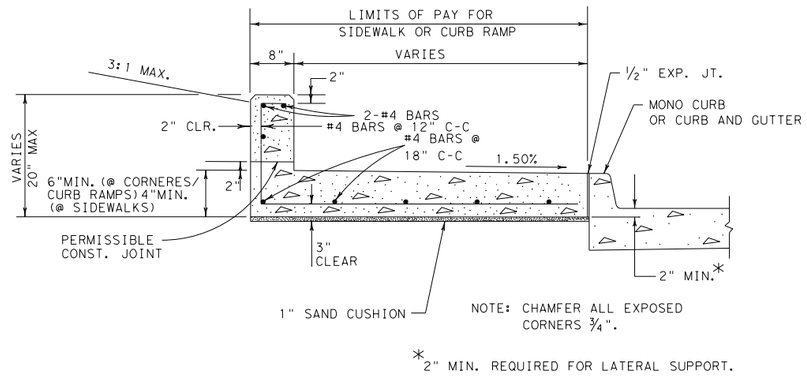
1/2" EXPANSION JOINT

(SIDEWALK ADJACENT TO CURB) NTS



CONSTRUCTION JOINT

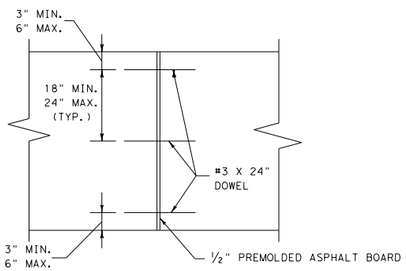
PLAN VIEW



*2" MIN. REQUIRED FOR LATERAL SUPPORT.

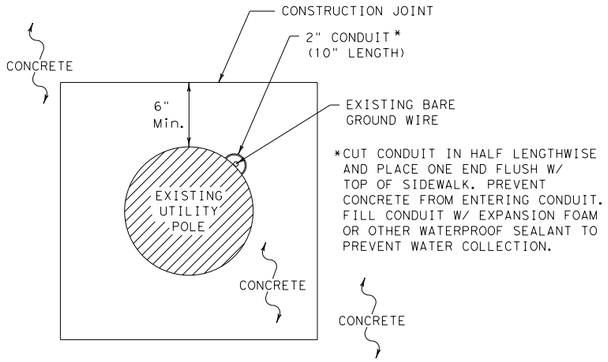
CONC SIDEWALK OR RAMP w/ SIDE CURB

SIDE CURB SUBSIDIARY TO ITEM 531, SIDEWALK OR CURB RAMP NTS



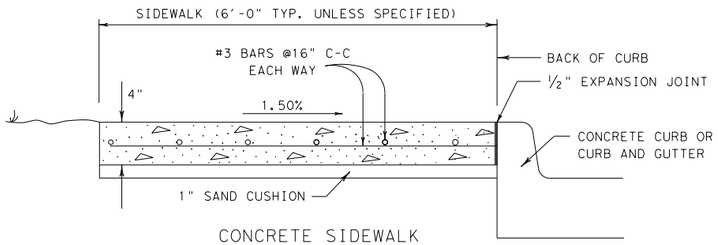
TRANSVERSE EXPANSION JOINT

NTS



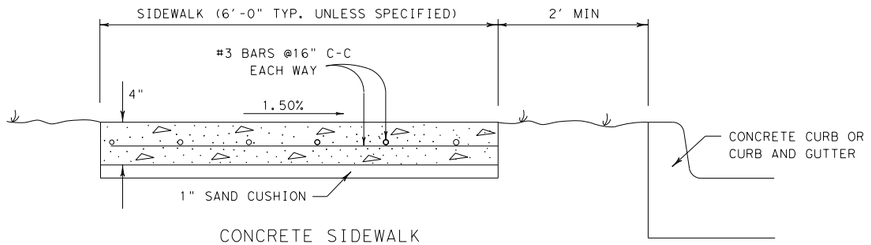
BARE GROUND WIRE PROTECTION

SUBSIDIARY TO ITEM 531,
SIDEWALK OR CURB RAMP NTS



CONCRETE SIDEWALK

(ADJACENT TO CURB)



CONCRETE SIDEWALK

(REMOTE FROM CURB)

CONCRETE SIDEWALK DETAIL

NTS

DATE:6/30/2024
FILE:pw://

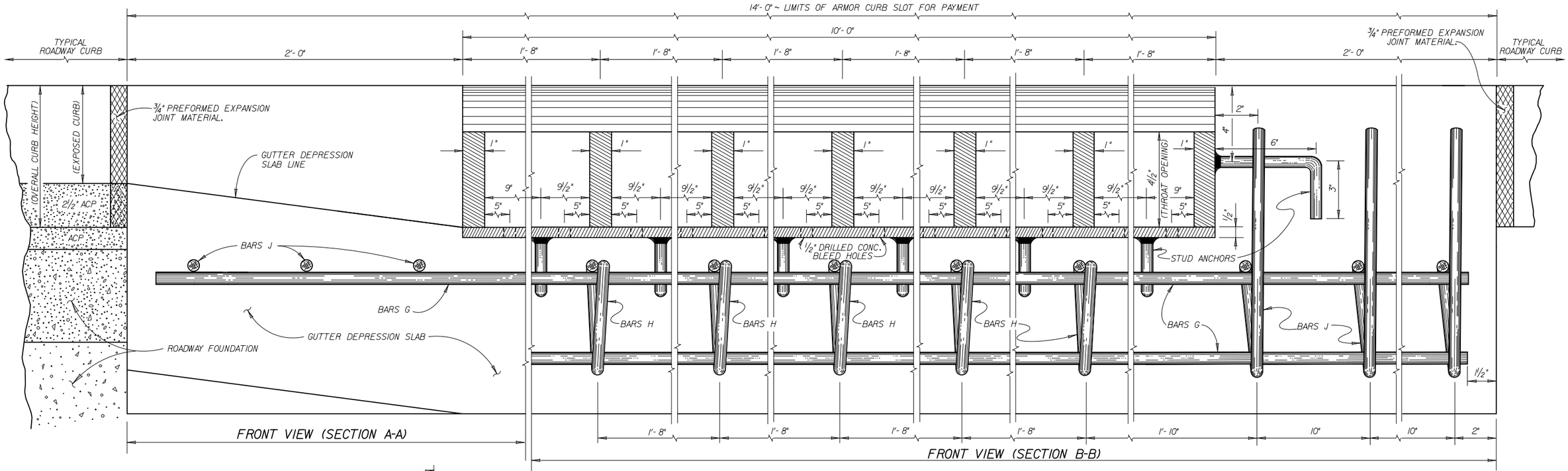
STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

cmaderley@cm.
07/11/2024

MISC CONSTRUCTION DETAILS

®2023
Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105
DIST	COUNTY		SHEET NO.
BRY	GRIMES		61



ESTIMATED QUANTITIES
FOR REINFORCING STEEL

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'- 9"	64
H	5	#4	1'- 8"	4'- 6"	15
J	6	#4	8"	5'- 0"	20
TOTAL WEIGHT *				LBS.	99
CONCRETE FOR FOUNDATION *				C.Y.	0.47
CONCRETE FOR GUTTER DEPRESSION *				C.Y.	0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT		
STUD ANCHORS (1/2"DIA.)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

GENERAL NOTES:

ALL CONCRETE SHALL BE CL."A".

ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.

ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.

ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED.

ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.

THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED PROFESSIONAL ENGINEER
07/11/2024

ARMOR CURB SLOT
WITH CONCRETE FOUNDATION

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	(SEE TITLE SHEET)		62
STATE	STATE DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONT.	SECT.	JOB	HIGHWAY NO.
0315	04	087	SH 105

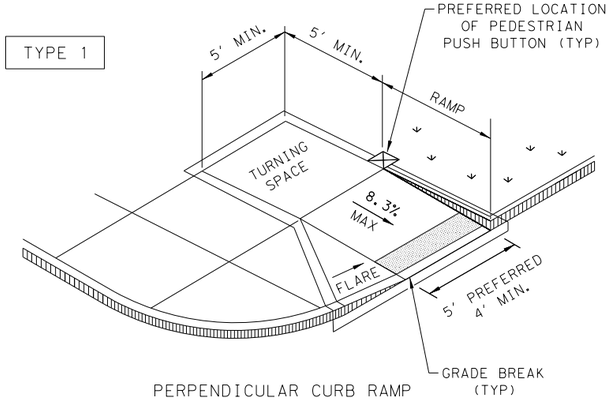
10/95
REV.07/01

STRUCTURE DESIGN
/BRIDGE/STDS/ARMORCURB.DGN

DATE: 6/30/2024
FILE: pw:/

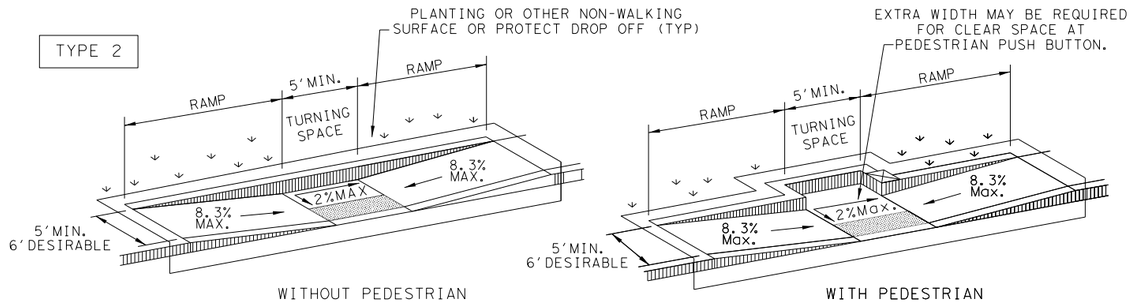
pw:/

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

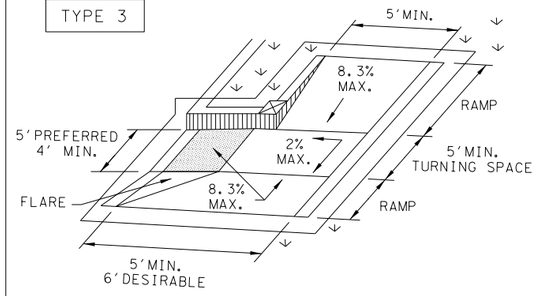


WITHOUT PEDESTRIAN PUSH BUTTON

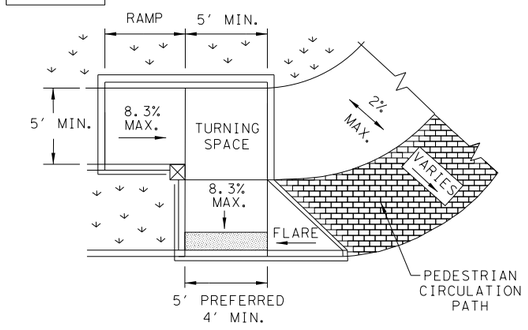
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

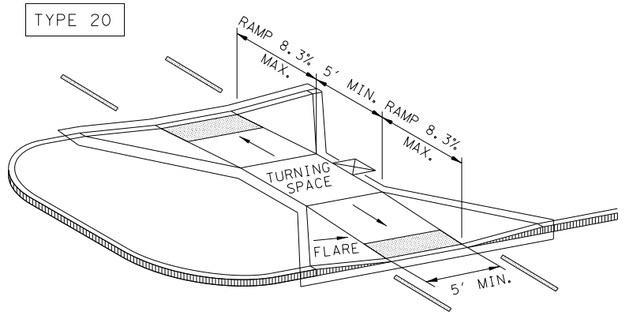


TYPE 6



COMBINATION CURB RAMPS

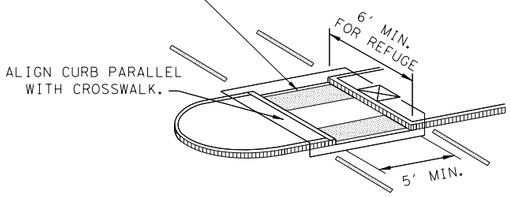
TYPE 20



CURB RAMPS AT MEDIAN ISLANDS

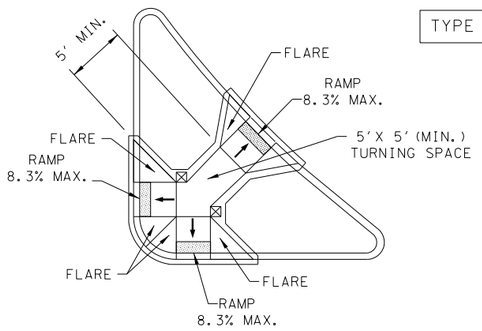
INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

TYPE 21



NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

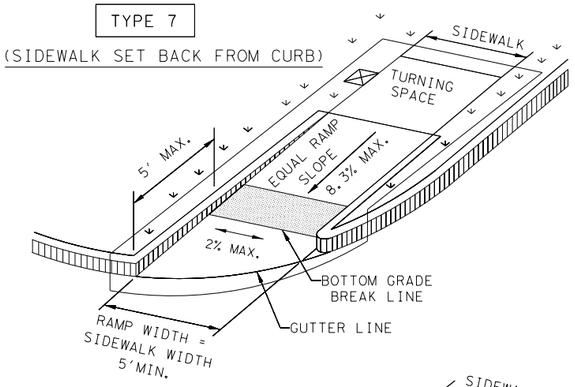
TYPE 22



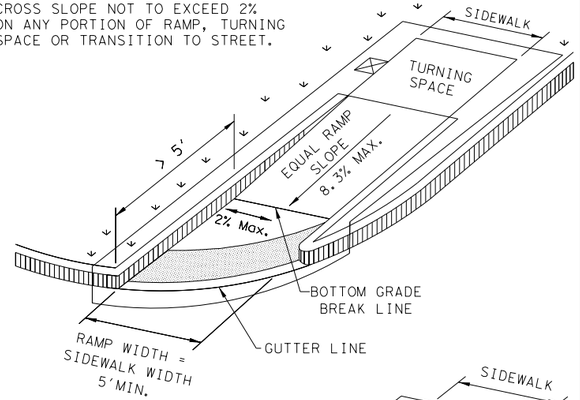
COMBINATION ISLAND RAMPS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

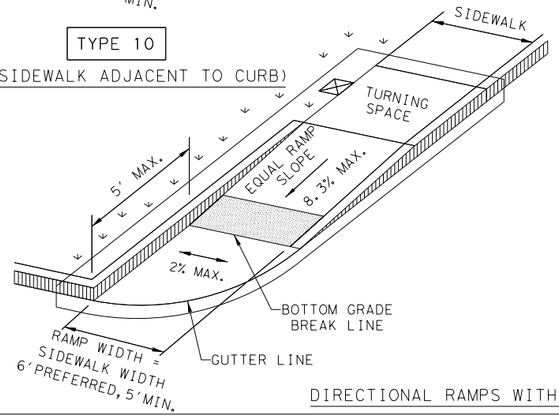


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

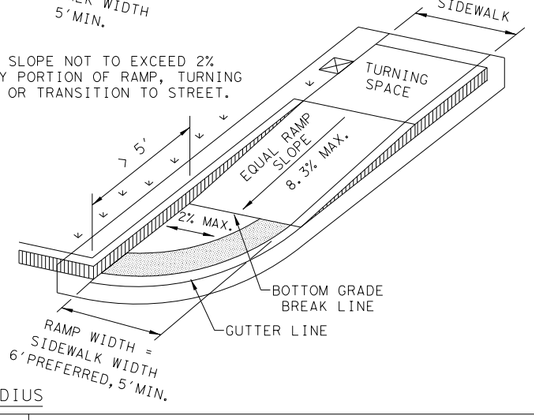


TYPE 10

(SIDEWALK ADJACENT TO CURB)

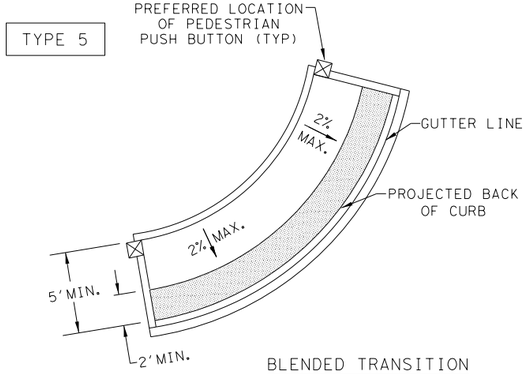


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



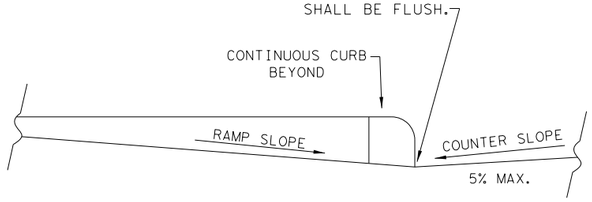
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

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

SHEET 1 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
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012	BRY	GRIMES		63
REVISED 01,2018				

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

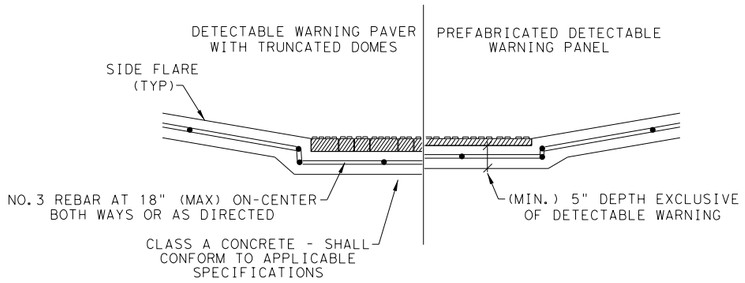
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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

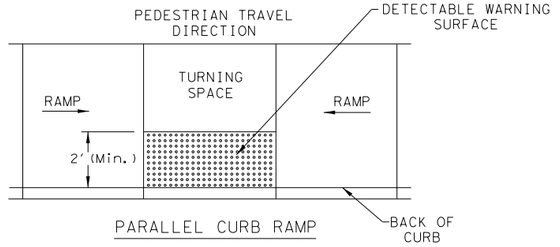
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items 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

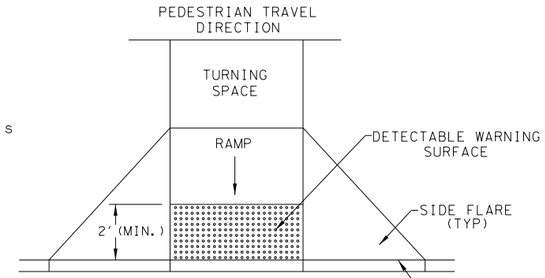
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



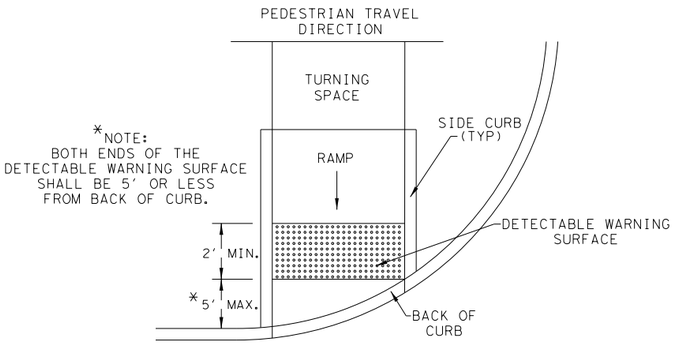
PARALLEL CURB RAMP

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

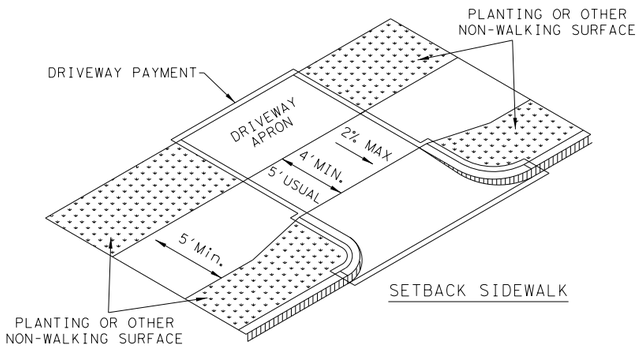
PED-18

FILE: ped18	DN: TxDOT		DW: VP		CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0315	04	087, ETC.		SH 105	
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.	
	BRY	GRIMES			64	

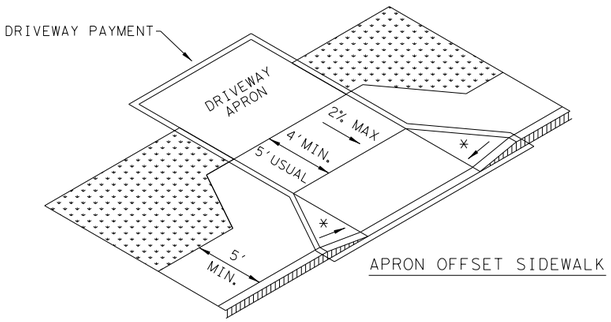
DATE: 6/30/2024
FILE: pw:/

pw:/

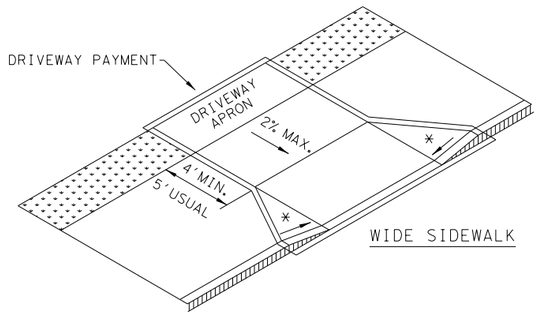
SIDEWALK TREATMENT AT DRIVEWAYS



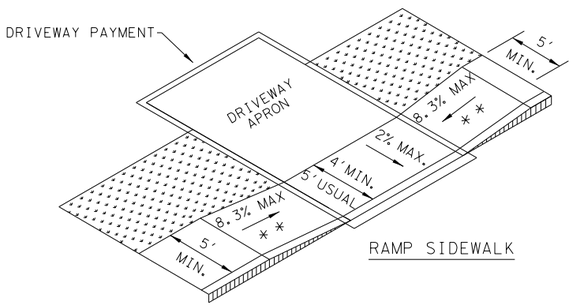
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

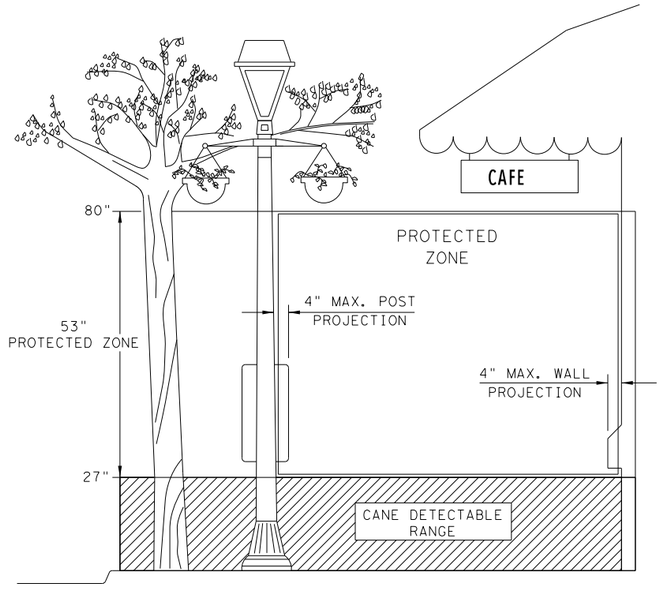


RAMP SIDEWALK

NOTES:

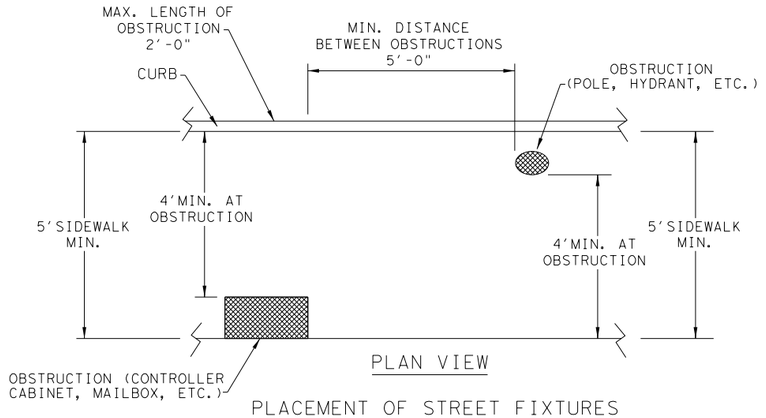
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * 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

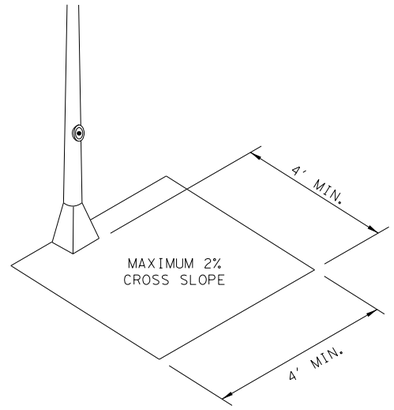
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



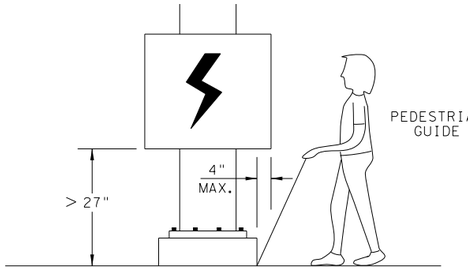
PLAN VIEW

PLACEMENT OF STREET FIXTURES

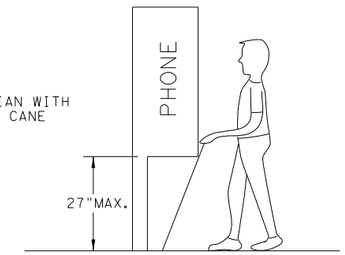
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



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
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0315	04	087, ETC.		SH 105
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	BRY	GRIMES			65

DATE: 6/30/2024
FILE: pw:/

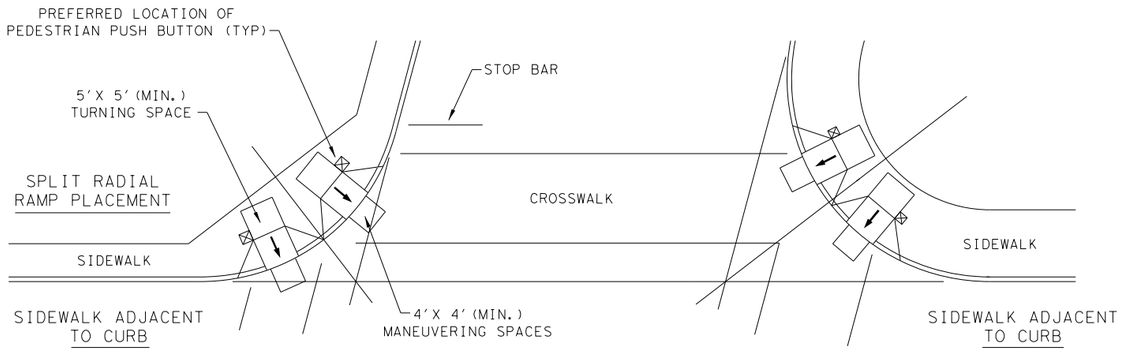
pw:/

DATE: 6/30/2024
FILE: pw:/

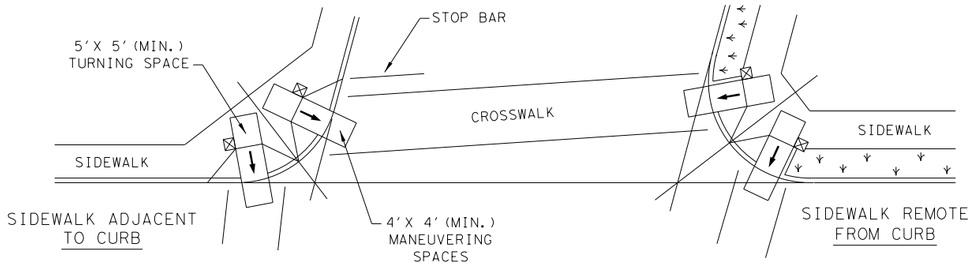
pw:/

TYPICAL CROSSING LAYOUTS

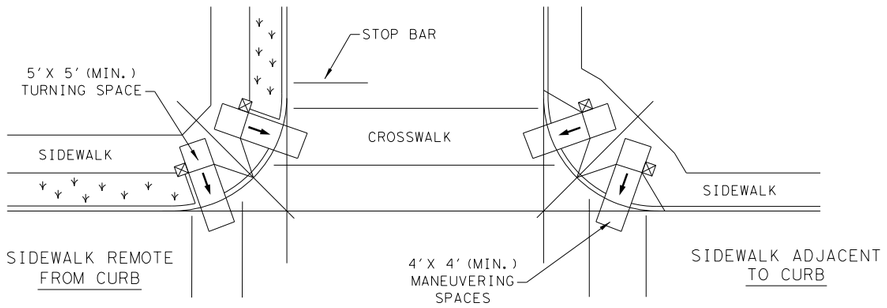
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



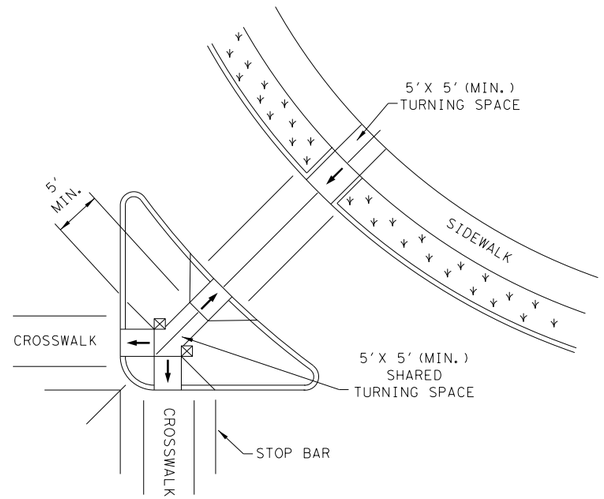
SKEWED INTERSECTION WITH "LARGE" RADIUS



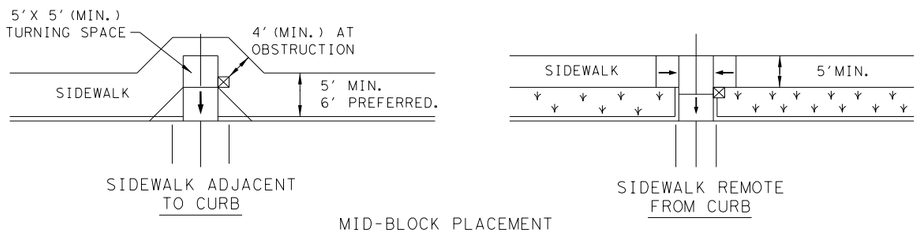
SKEWED INTERSECTION WITH "SMALL" RADIUS



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

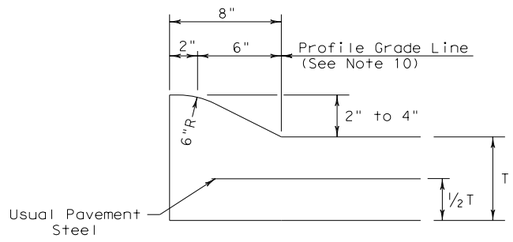
Texas Department of Transportation

Design Division Standard

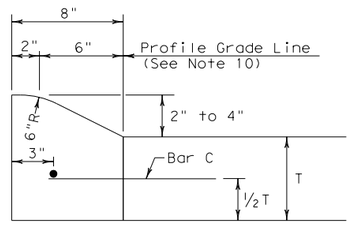
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

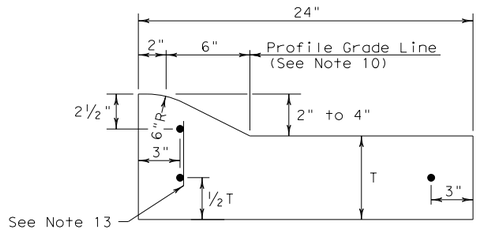
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0315	04	087, ETC.		SH 105
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	BRY	GRIMES			66



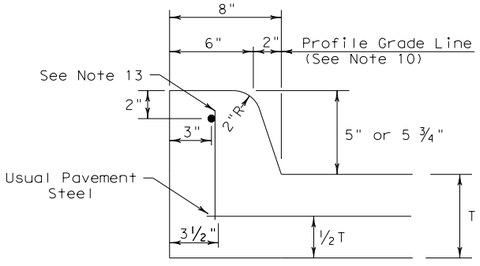
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



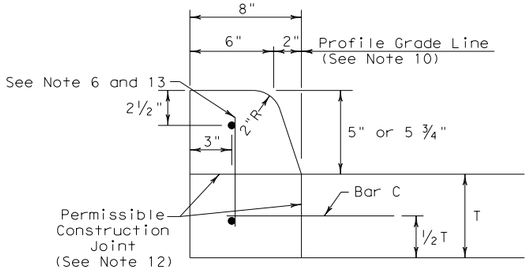
TYPE I CURB
2" - 4" HEIGHT



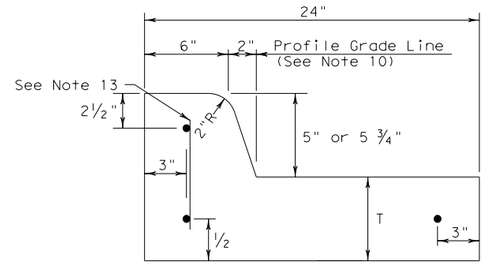
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



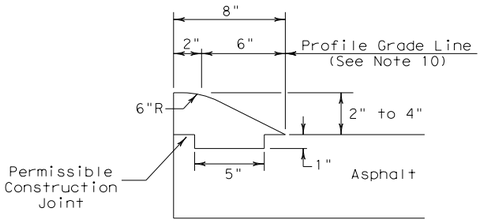
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



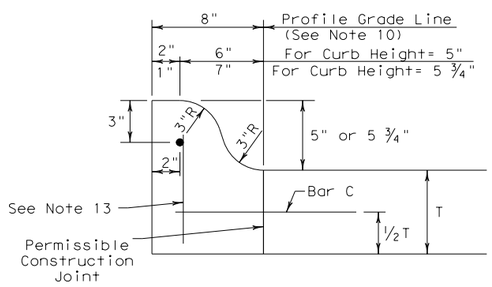
TYPE II CURB
5" - 5 ¾" HEIGHT



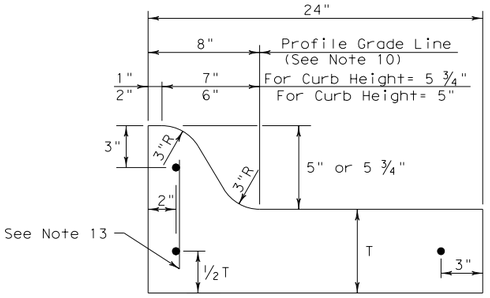
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



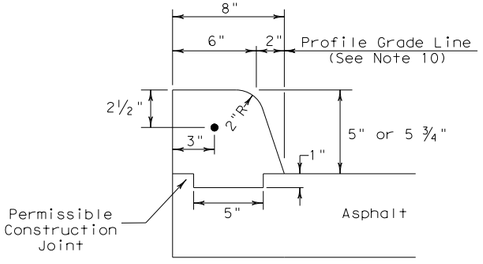
TYPE III CURB (KEYED)
2" - 4" HEIGHT



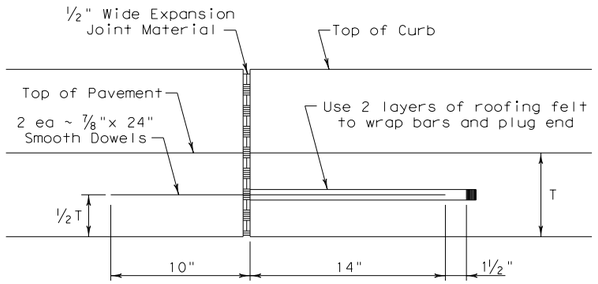
TYPE IIa CURB
5" - 5 ¾" HEIGHT



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

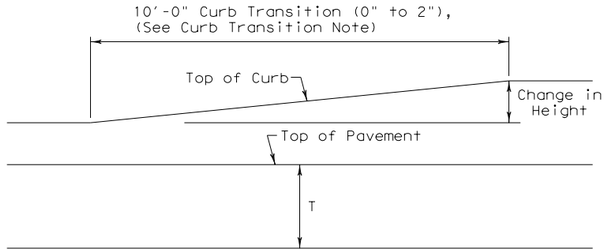


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

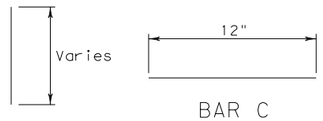
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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 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 placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

Texas Department of Transportation

Design Division Standard

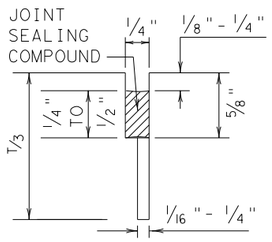
CONCRETE CURB AND CURB AND GUTTER

CCCG-22

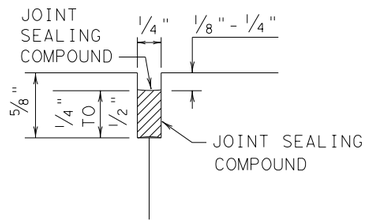
FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		67

DATE: 6/30/2024
FILE: pw:/
pw:/

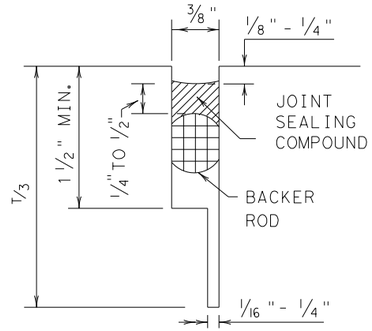
METHOD B: JOINT SEALING COMPOUND



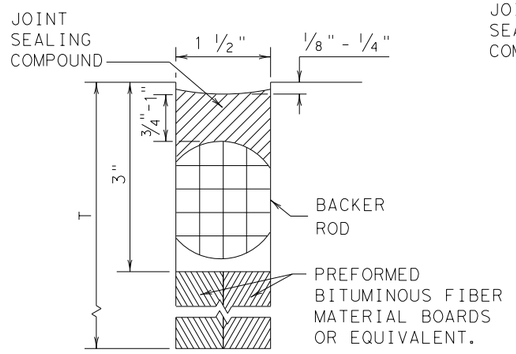
LONGITUDINAL SAWED
CONTRACTION JOINT



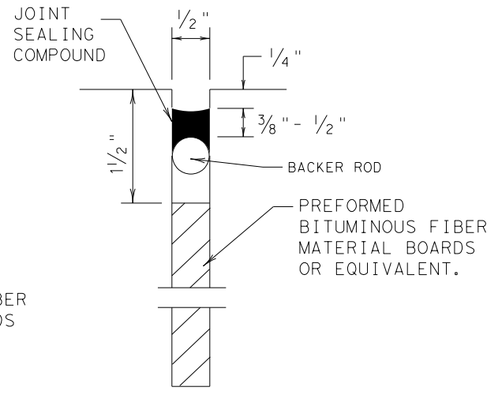
LONGITUDINAL OR TRANSVERSE
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT

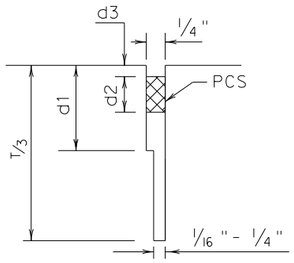


TRANSVERSE FORMED
EXPANSION JOINT

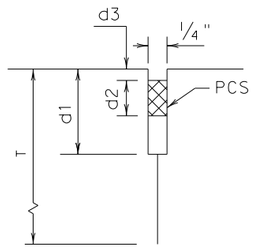


FORMED
ISOLATION JOINT

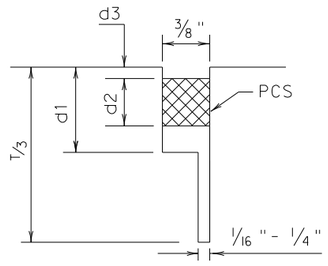
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



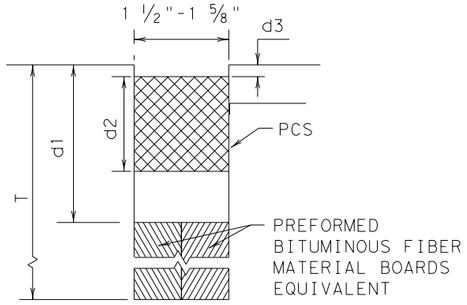
LONGITUDINAL SAWED
CONTRACTION JOINT



LONGITUDINAL
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT



TRANSVERSE FORMED
EXPANSION JOINT

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
4. DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
5. REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
6. FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
7. FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
8. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
9. ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

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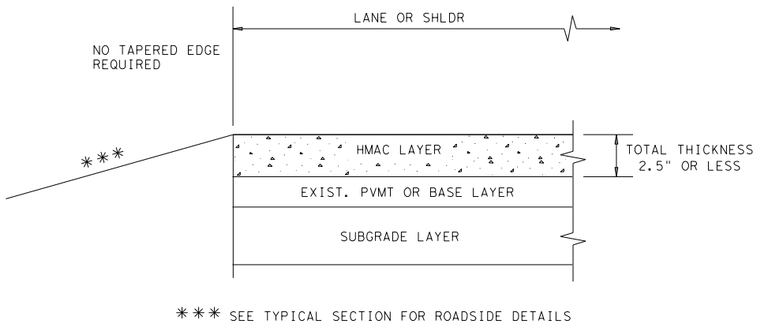
CONCRETE PAVING DETAILS

JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		68

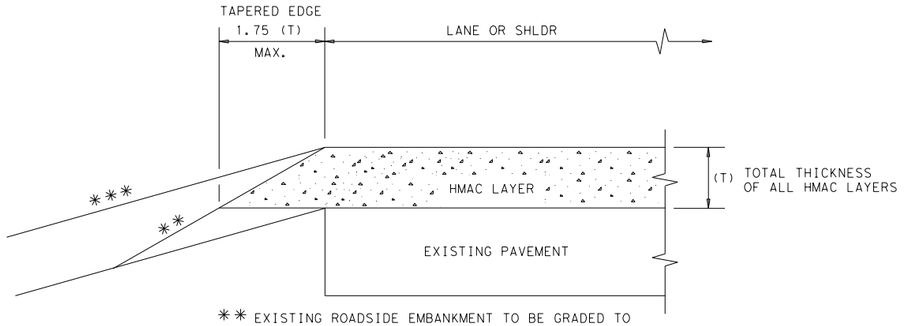
DATE: 6/30/2024
FILE: pw:/
pw:/



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 1

THIN HMAC SURFACES OR HMAC OVERLAY
WITH THICKNESS OF 2.5" OR LESS

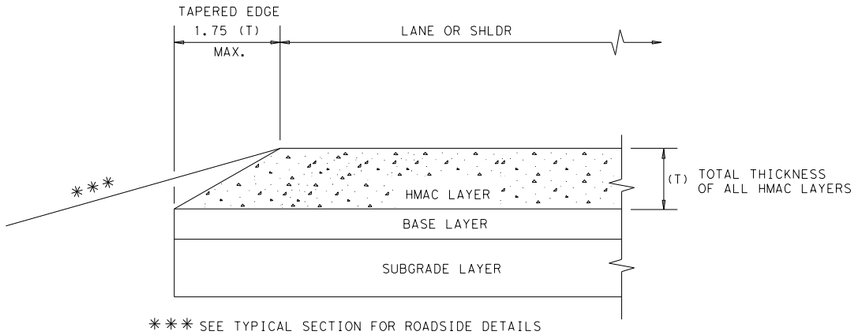


** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2

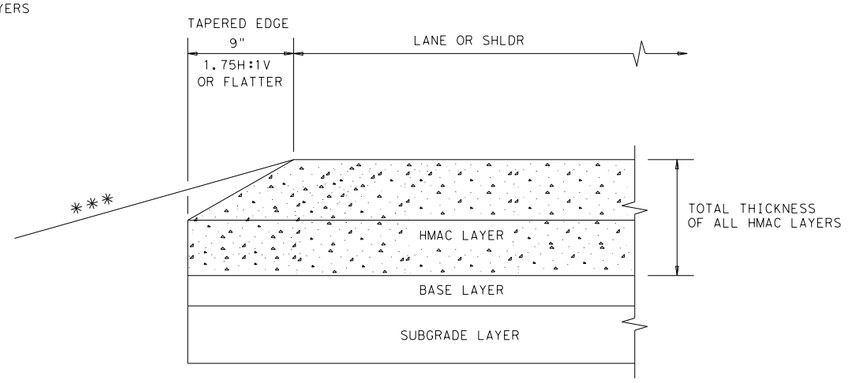
OVERLAY OF EXISTING PAVEMENT
HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3

NEW OR RECONSTRUCTED PAVEMENT
HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4

NEW OR RECONSTRUCTED PAVEMENT
HMAC THICKNESS 5" OR GREATER

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

(NOT TO SCALE)

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TAPERED EDGE DETAILS
HMAC PAVEMENT

TE(HMAC)-11

FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:		
©TxDOT January 2011	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0315	04	087, ETC.		SH 105	
	DIST	COUNTY			SHEET NO.	
	BRY	GRIMES			69	

DATE: 6/30/2024
FILE: pw:/
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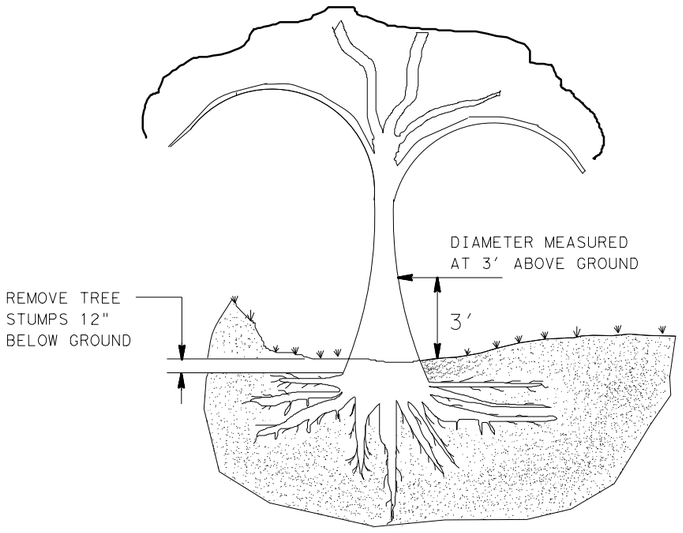
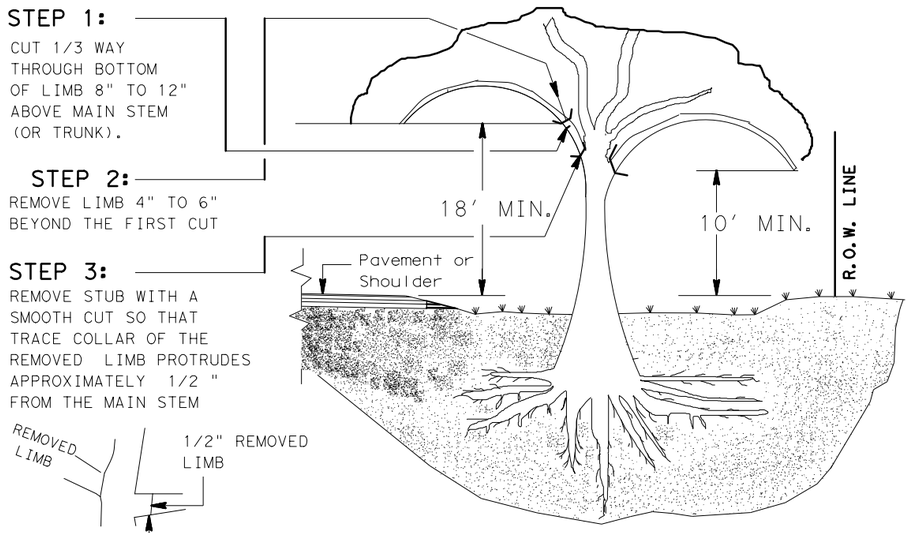
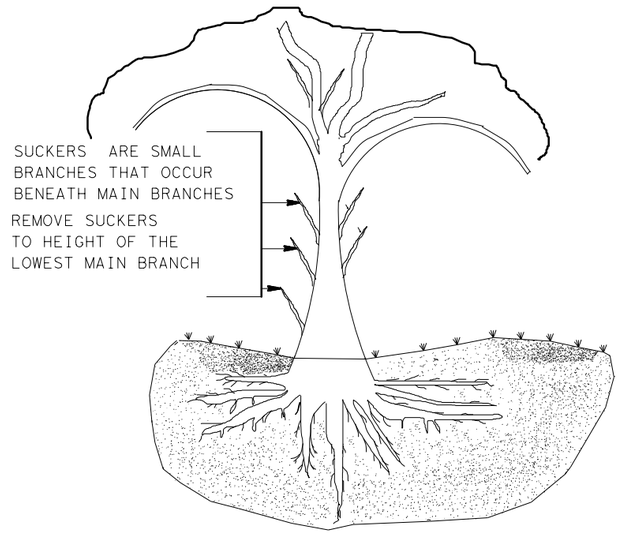


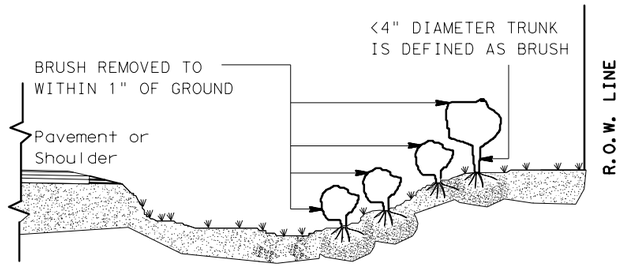
TREE REMOVAL



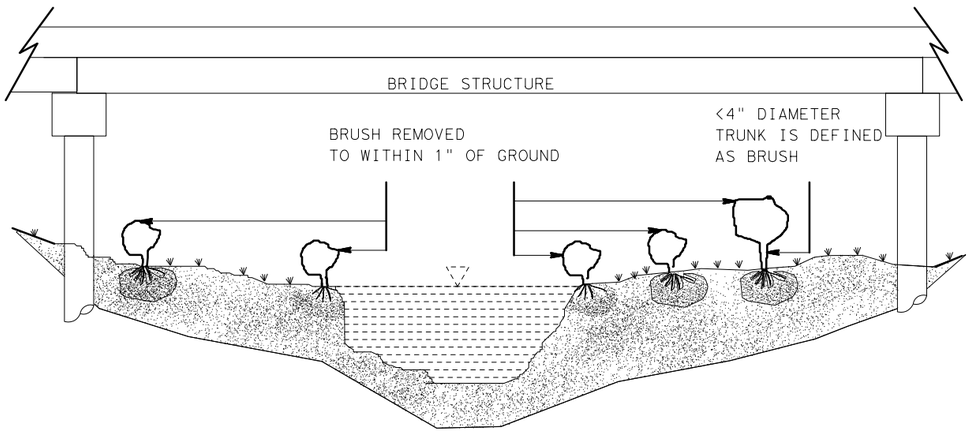
TREE TRIMMING



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



BRUSH REMOVAL



BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL

GENERAL NOTES:

TREE TRIMMING

1. TRIM AND REMOVE ALL TREE LIMBS ON THE PAVEMENT SIDE OF THE TRUNK 18' ABOVE THE PAVEMENT OR BRIDGE DECK ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

2. TRIM AND REMOVE ALL TREE LIMBS BETWEEN THE TRUNK AND R.O.W. LINE 10' ABOVE NATURAL GROUND, TERRAIN OR OTHER STRUCTURE ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

TREE REMOVAL

3. FOR TREES MARKED FOR REMOVAL, THE DIAMETER OF TREES ARE DETERMINED BY MEASUREMENT OF THE TRUNK CIRCUMFERENCE 3' ABOVE THE GROUND. TREES WITH TRUNKS OF LESS THAN 4" DIAMETER ARE CONSIDERED TO BE BRUSH. TREES WITH MULTIPLE TRUNKS AT THE POINT OF MEASUREMENT ARE MEASURED AND PAID FOR SEPARATELY.

4. MEASUREMENTS FOR PAYMENT OF TREE DIAMETERS ARE DIVIDED INTO THE RANGES SHOWN IN TABLE 1.

TABLE 1
TREE TRUNK SIZE FOR TREE REMOVAL PAYMENT

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

*SEE GENERAL NOTE #3.

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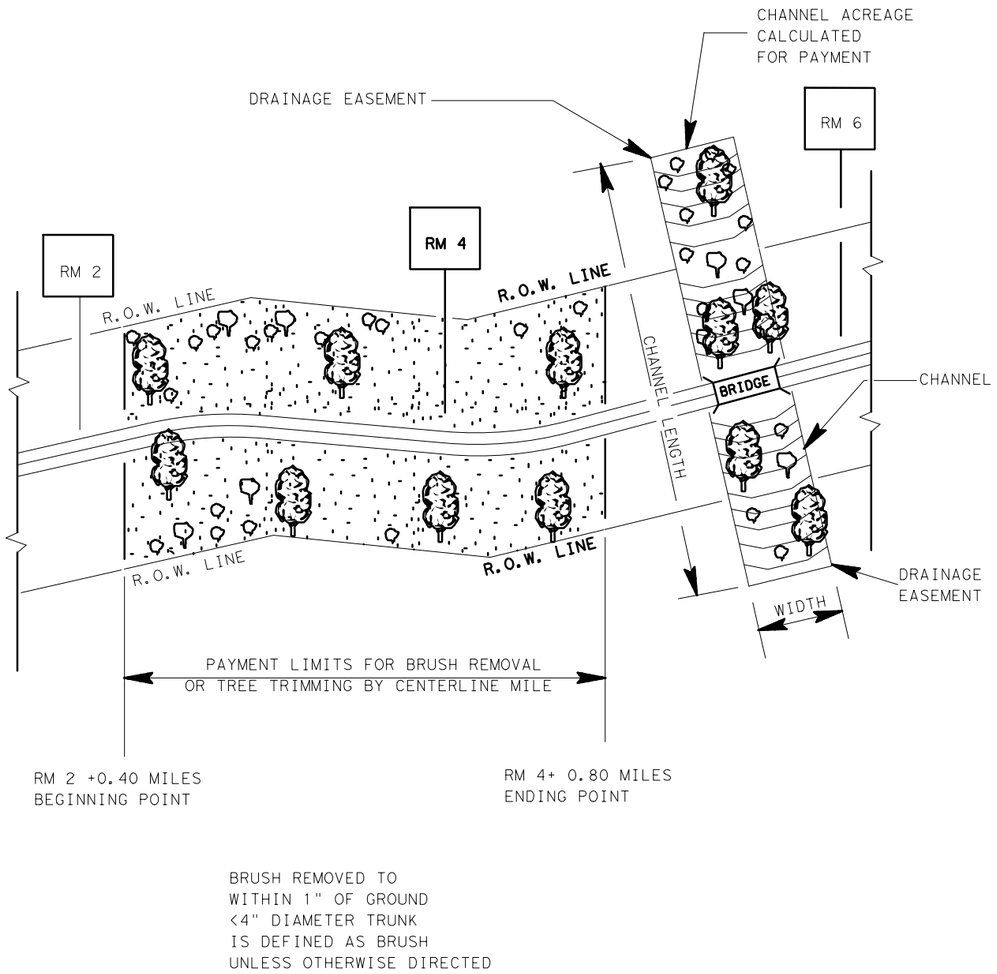
TREE AND BRUSH REMOVAL

TRB-15(1)

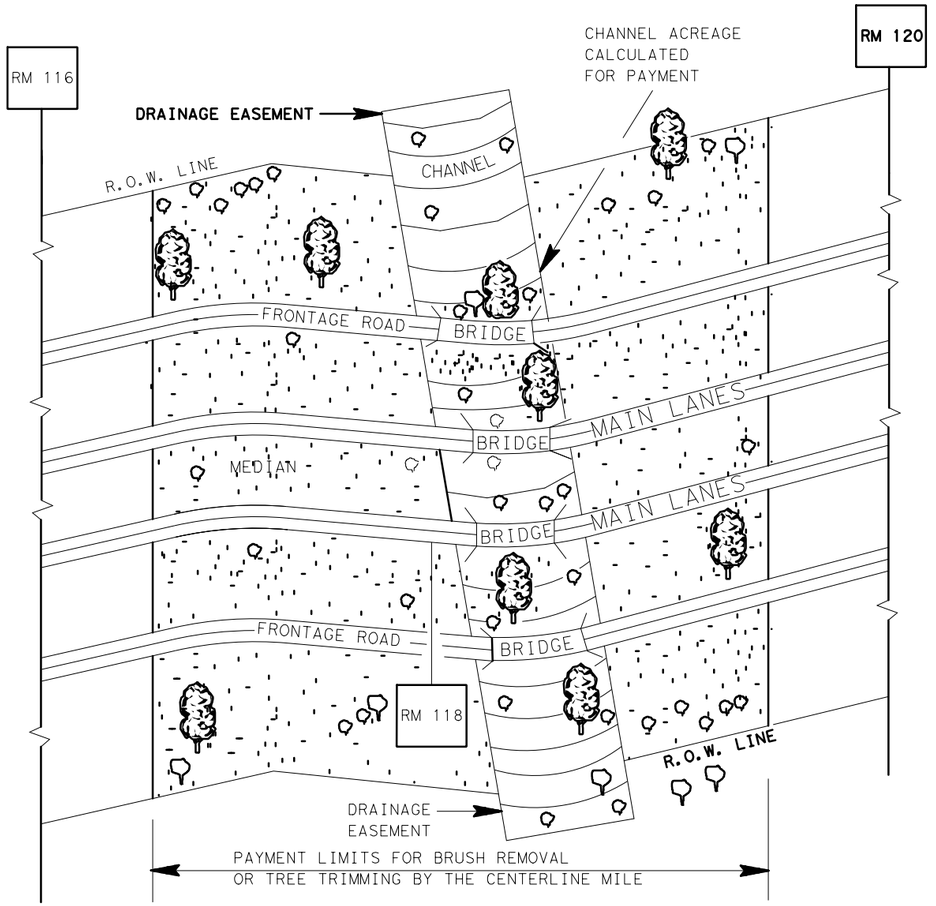
FILE:	DN: JEO	CK: LJB	DW: JEO	CK:
© TxDOT MARCH 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
Revised table 1 to 2014 Specification	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		70

6/30/2024
pw:/
pw:/

LEVELS DISPLAYED
1



EXAMPLE: UNDIVIDED HIGHWAY



EXAMPLE: DIVIDED HIGHWAY WITH FRONTAGE ROADS

GENERAL NOTES:

TREE TRIMMING AND BRUSH REMOVAL

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

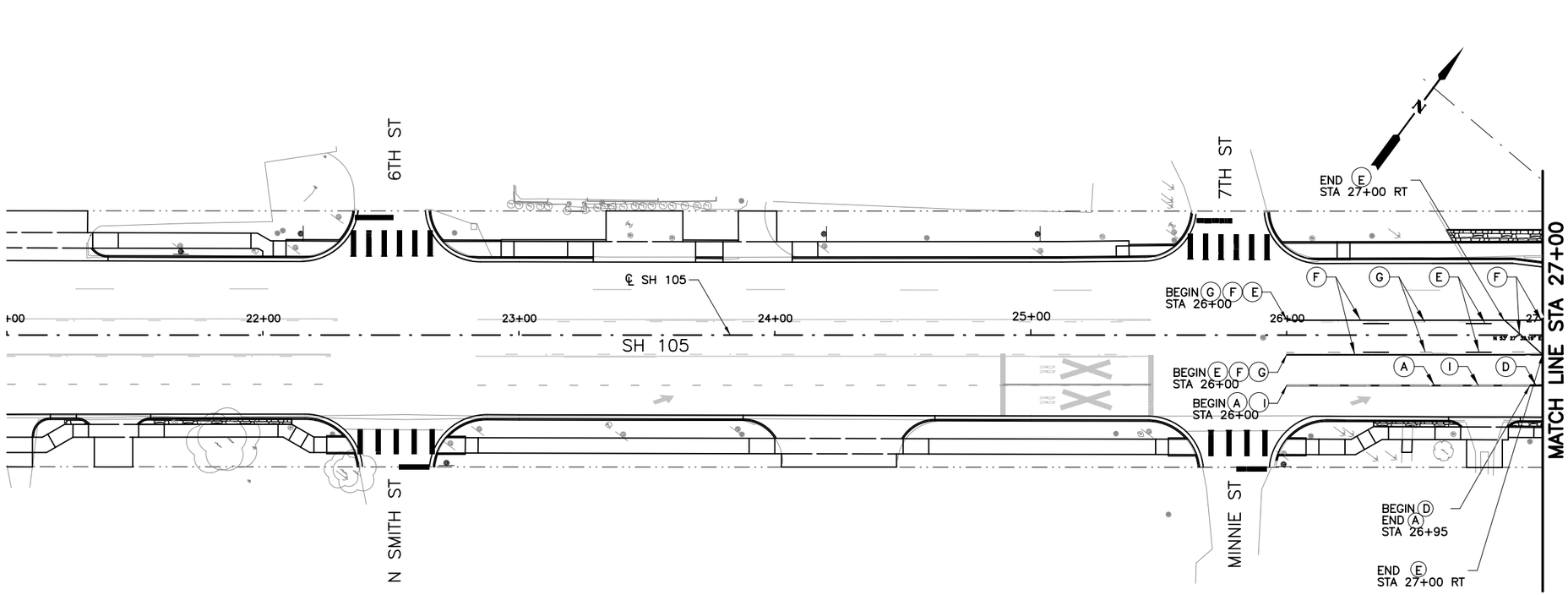
Texas Department of Transportation
Maintenance Division
Standard Plans

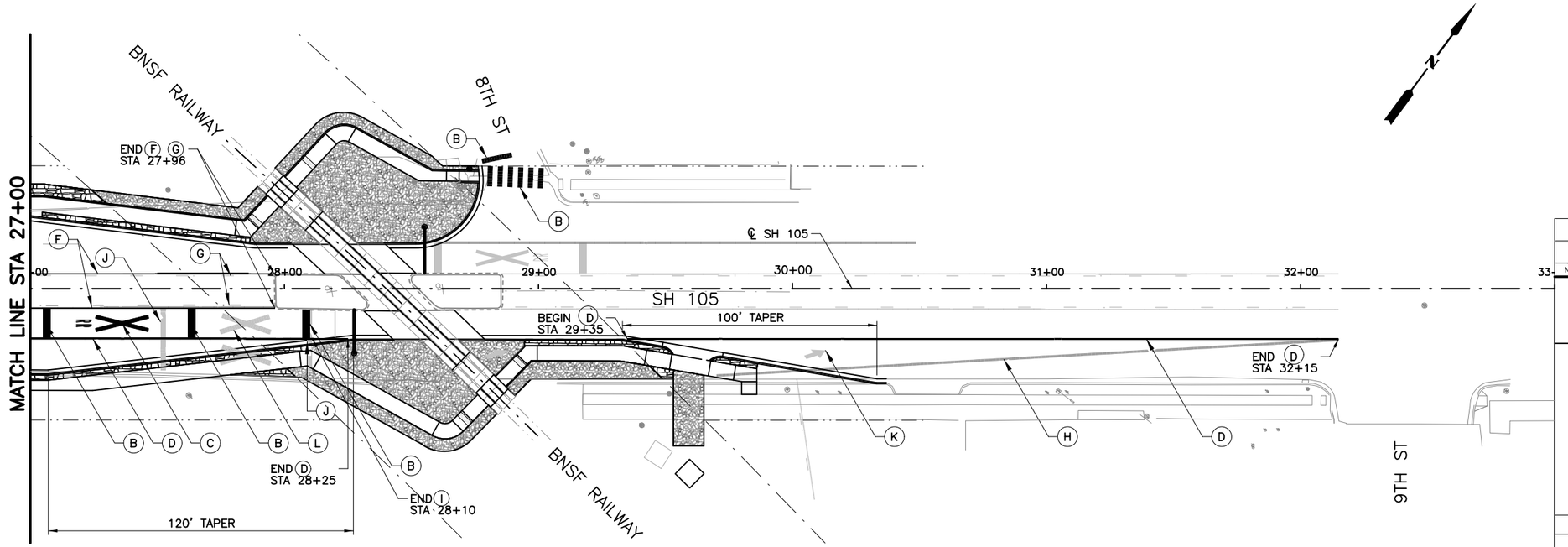
TREE AND BRUSH REMOVAL

TRB-15(2)

SHEET 2 OF 2

FILE: TRB-15(2).DGN	DRAWN: JEO MODIFIED:	CHECKED: DW: LJB	DW: -	CK: -	NEG NO.:		
© TxDOT APRIL 2015		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		⊕	SHEET
REVISED: 5/13/2004	LJB	BRY	TEXAS				71
REVISED: 9/24/2004	LJB	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
REVISED: APRIL 2015	JEO	GRIMES		0315	04	087, ETC.	SH 105





25 12.5 0 25 50
SCALE FEET

LEGEND

- (A) REFL PAV MRK TY I (W) 6" (DOT)(100 MIL)
- (B) REFL PAV MRK TY I (W) 24" (SLD)(100 MIL)
- (C) REFL PAV MRK TY I (W) (RR XING)(100 MIL)
- (D) REFL PAV MRK TY I (W) 6" (SLD)(100 MIL)
- (E) REFL PAV MRK TY I (Y) 6" (BRK)(100 MIL)
- (F) REFL PAV MRK TY I (Y) 6" (SLD)(100 MIL)
- (G) ELIM EXT PM & MRKS (4")
- (H) ELIM EXT PM & MRKS (6")
- (I) ELIM EXT PM & MRKS (8")
- (J) ELIM EXT PM & MRKS (24")
- (K) ELIM EXT PM & MRKS (ARROW)
- (L) ELIM EXT PM & MRKS (RR XING)

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

09/20/2024

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District
© 2024

SH 105 PEDESTRIAN IMPROVEMENTS
PAVEMENT MARKING PLAN

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	72

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9/20/2024 4:24:47 PM Pinedoyl
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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
3	1	M2-1	JCT				10BWG	1	SA	P	TO BE RELOCATED	
3	1	M1-6F	FARM 379 ROAD									
3	2	D3-3aTL	← Cemetery				10BWG	1	SA	T	TO BE RELOCATED	
5	1	M1-6T	105 TEXAS				10BWG	1	SA		TO BE RELOCATED	
5	1	M6-4	↔							P		
6	1	D3-3aTR	Cemetery →				10BWG	1	SA	T	TO BE RELOCATED	
6	2	M2-1	JCT				10BWG	1	SA	P	TO BE RELOCATED	
6	2	M1-6F	FARM 379 ROAD									
6	3	R1-1	STOP				10BWG	1	SA	P	TO BE RELOCATED	
7	1	R2-1	SPEED LIMIT 35				10BWG	1	SA	P	TO BE RELOCATED	
8	1	M3-4	WEST				10BWG	1	SA	P	TO BE RELOCATED	
8	1	M1-6T	105 TEXAS									
8	2	D3-1G	MINNIE ST 100 ⌐90°				10BWG	1	SA	P	TO BE RELOCATED	
8	2	R1-1	STOP									

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
4-16	DIST	COUNTY		SHEET NO.
8-16	BRY	GRIMES		73

18

6/30/2024
pw:/

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION PREFABRICATED	MOUNTING DESIGNATION 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	P = "Plain" T = "T" U = "U"		TY N TY S
9	1	D3-1G	EIGHTH ST 100 90° W. WASHINGTON 400				10BWG	1	SA	P	TO BE RELOCATED	
9	1	D3-1G										
9	1	R1-1	STOP									

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
4-16	DIST	COUNTY		SHEET NO.
8-16	BRY	GRIMES		74

18

6/30/2024
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DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

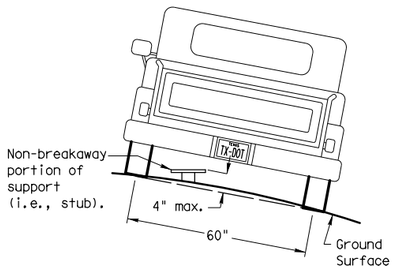
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

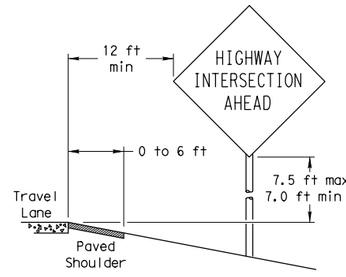
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

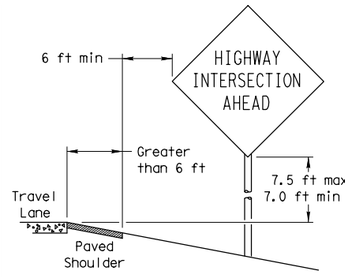
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

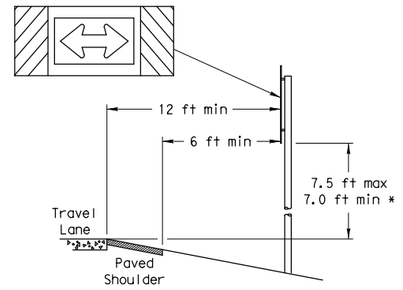
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



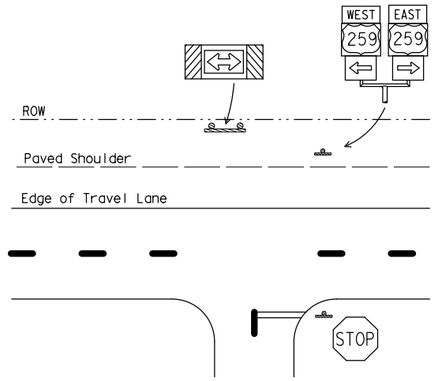
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

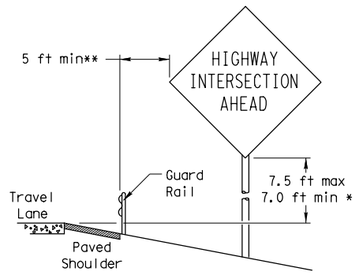
T-INTERSECTION



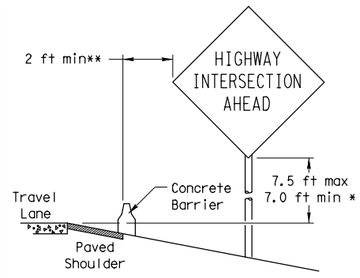
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

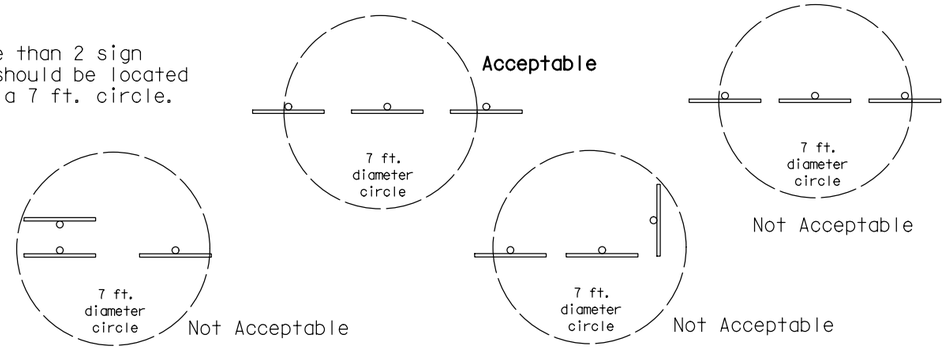
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

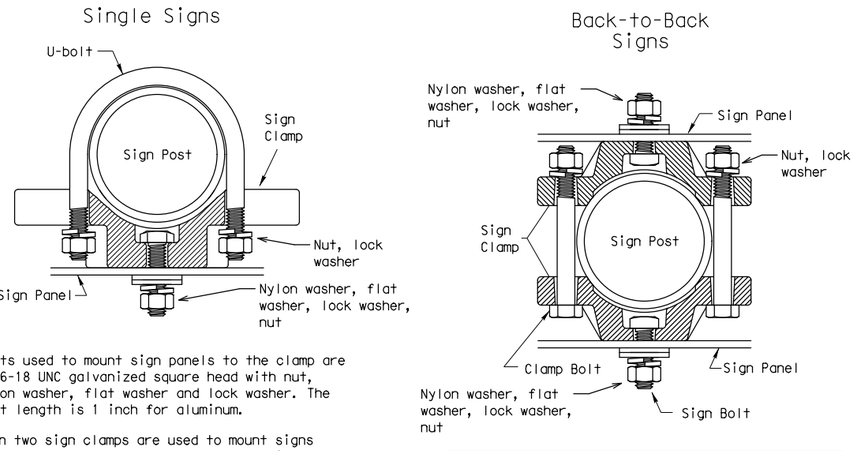
See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL



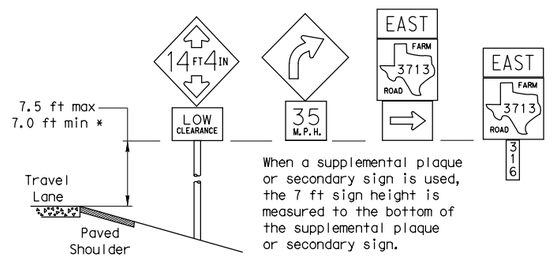
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

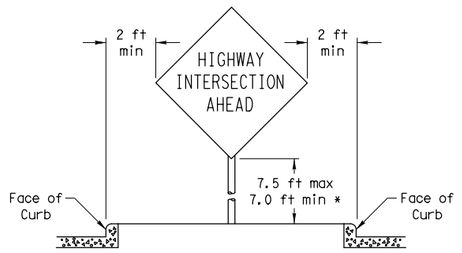
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



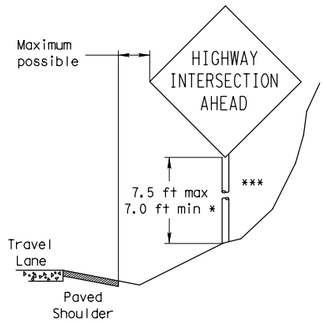
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

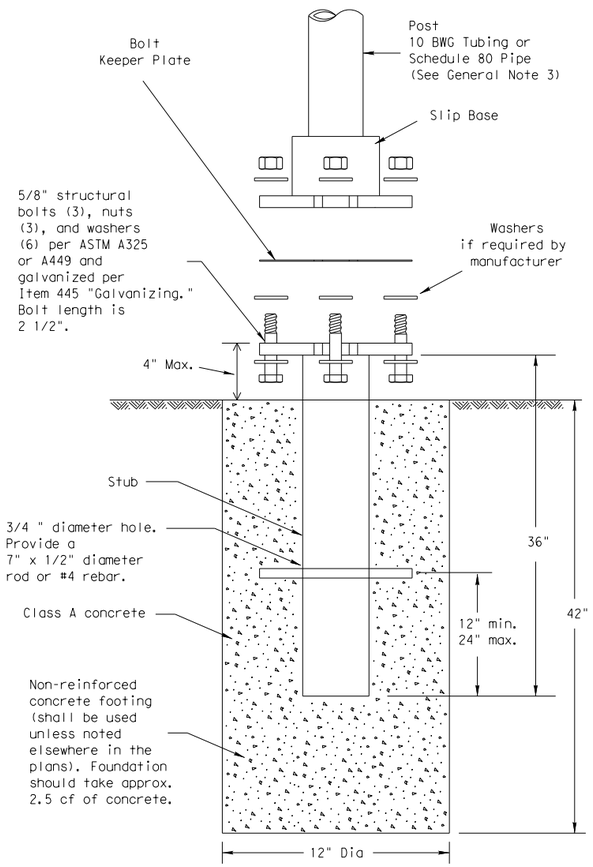
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		75

DATE: 6/30/2024
FILE: pw:/

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

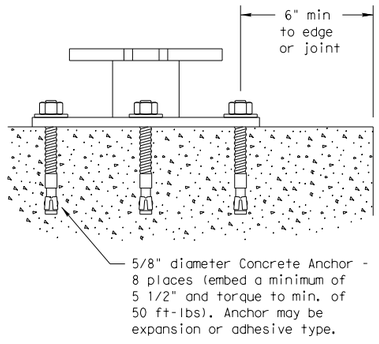
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	76

DATE: 6/30/2024
FILE: pw:/

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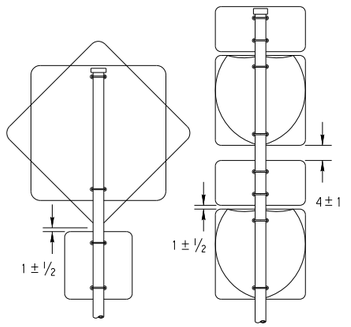
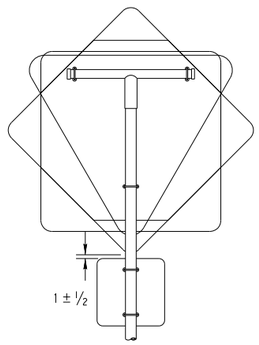
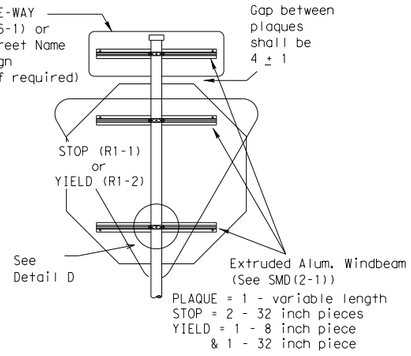


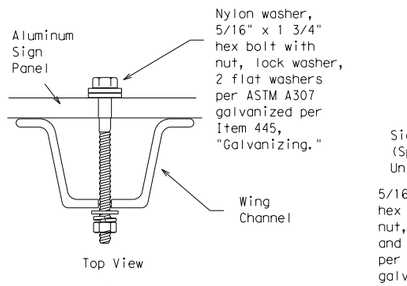
SM RD SGN ASSM TY XXXXX(1)XX(P)



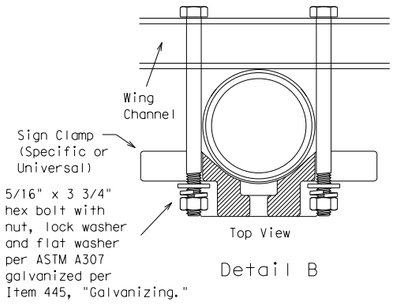
SM RD SGN ASSM TY XXXXX(1)XX(T)



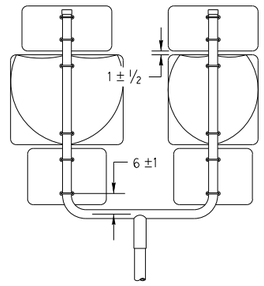
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



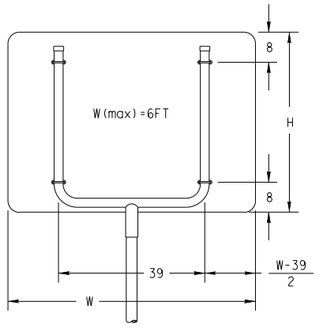
Detail A



Detail B



SM RD SGN ASSM TY XXXXX(1)XX(U)



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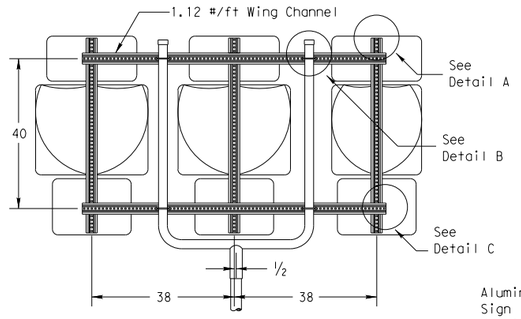
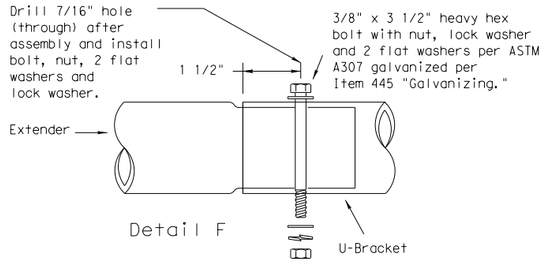
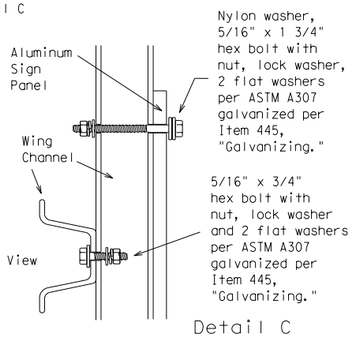


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

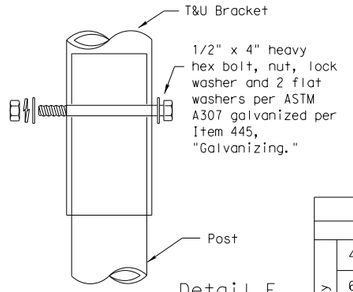


Detail F

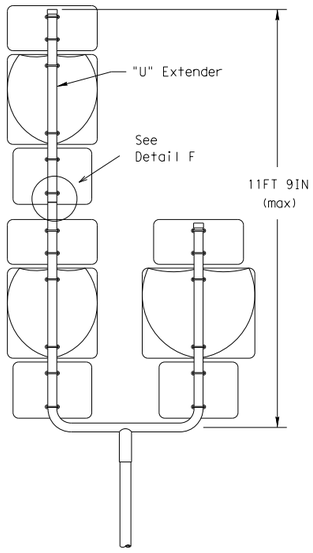
Splices shall only be allowed behind the sign substrate.



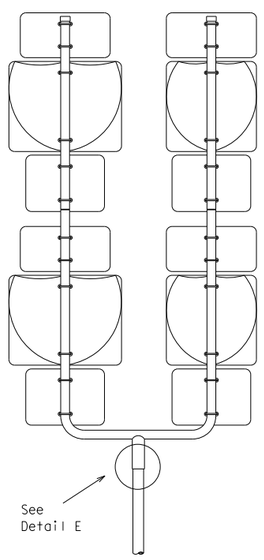
Detail C



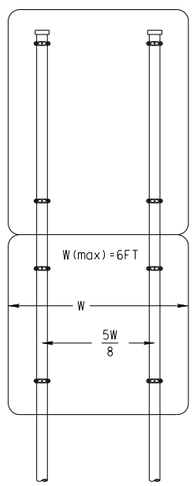
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

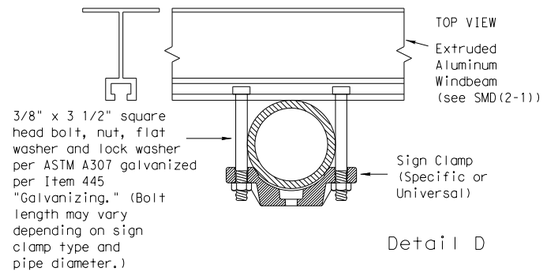


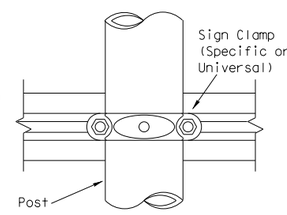
SM RD SGN ASSM TY S80(1)XX(U-2EXT)



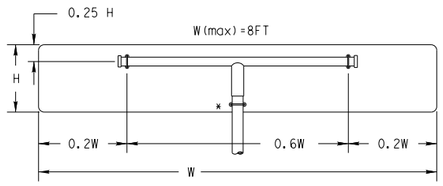
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW





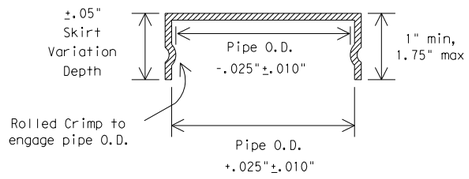
Detail D



SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

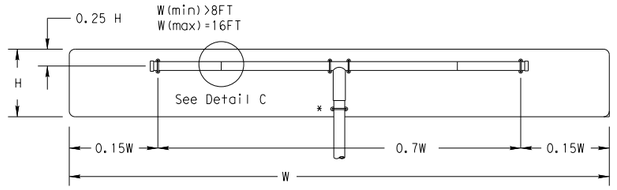
SMD(SLIP-2)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		77

26C

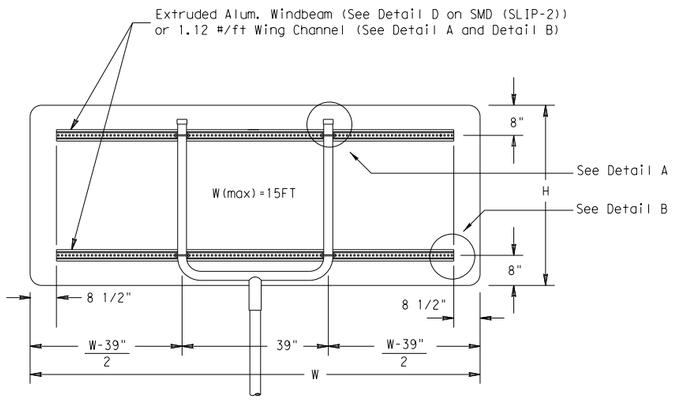
DATE: 6/30/2024
FILE: pw:/

pw:/

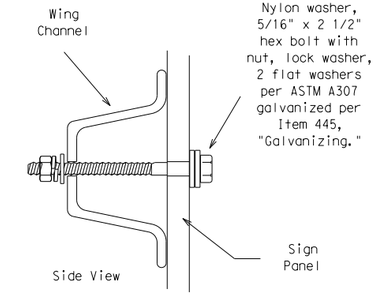


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

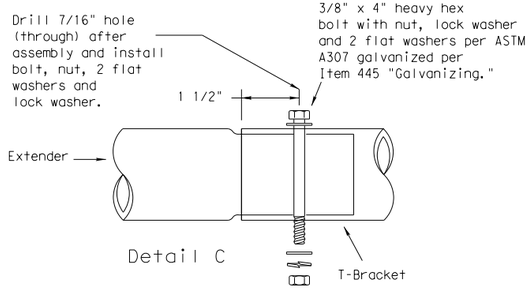
(* - See Note 12)



SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

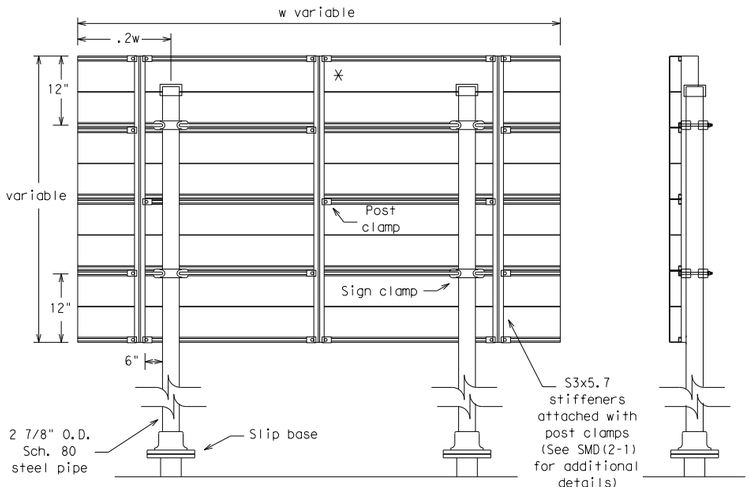


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

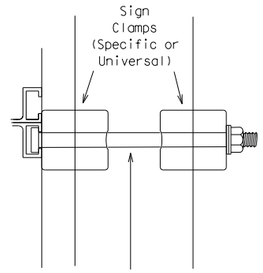


Typical Sign Mount

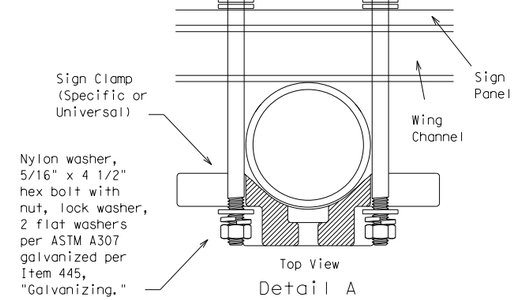
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

See Detail E
for clamp installation

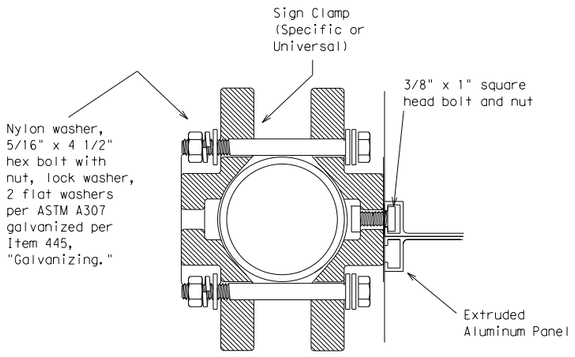


Detail E

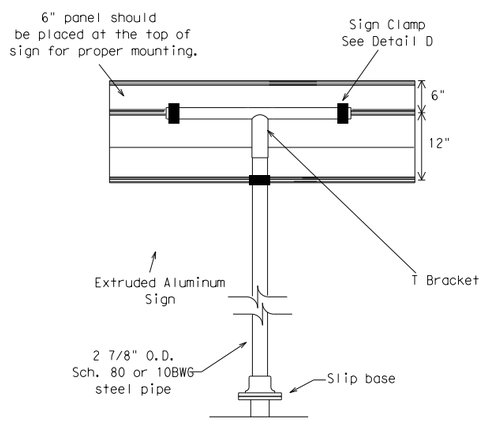


Top View

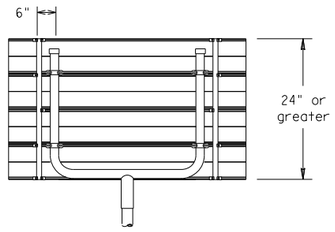
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

REVISIONS
9-08

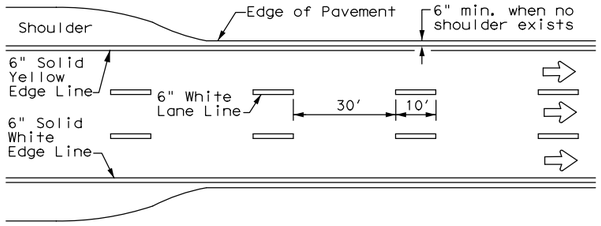
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105

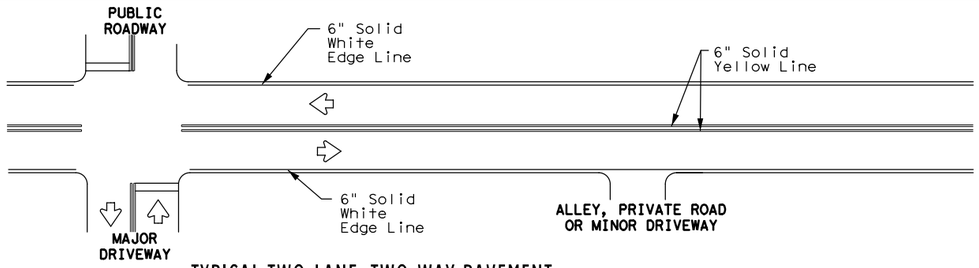
DIST	COUNTY	SHEET NO.
BRY	GRIMES	78

26D

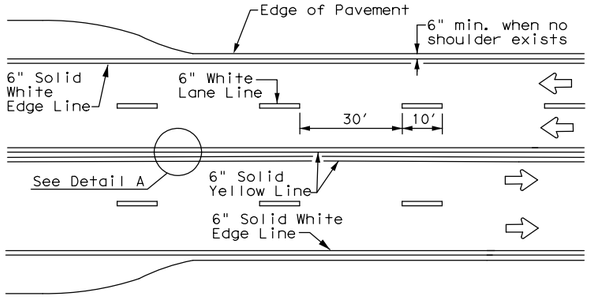
DATE: 6/30/2024
FILE: pw:/
pw:/



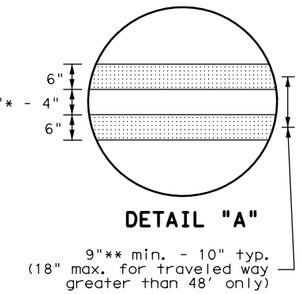
EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS

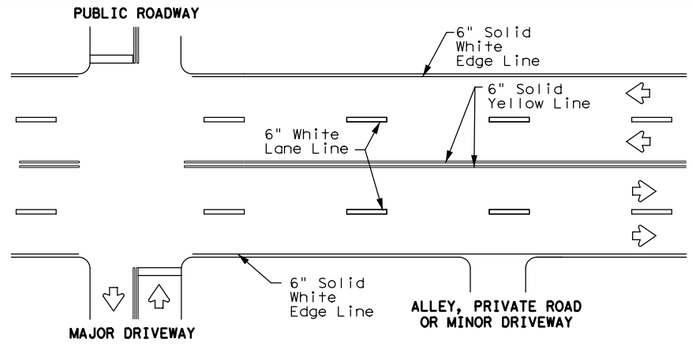


CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

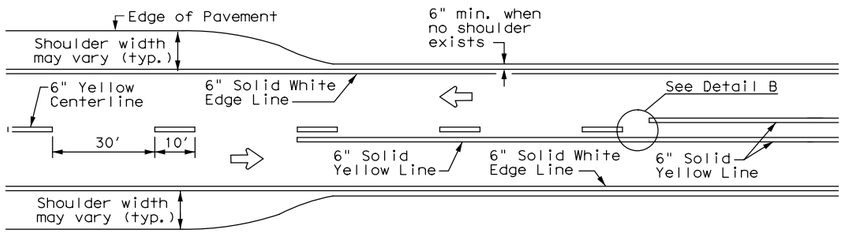


* 2" minimum for restripe projects when approved by the Engineer.

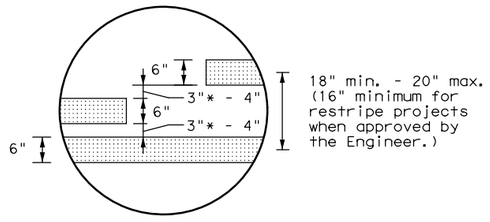
** 8" minimum for restripe projects when approved by the Engineer.



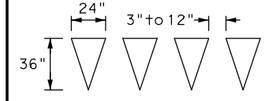
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

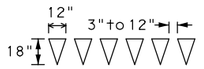


* 2" minimum for restripe projects when approved by the Engineer.

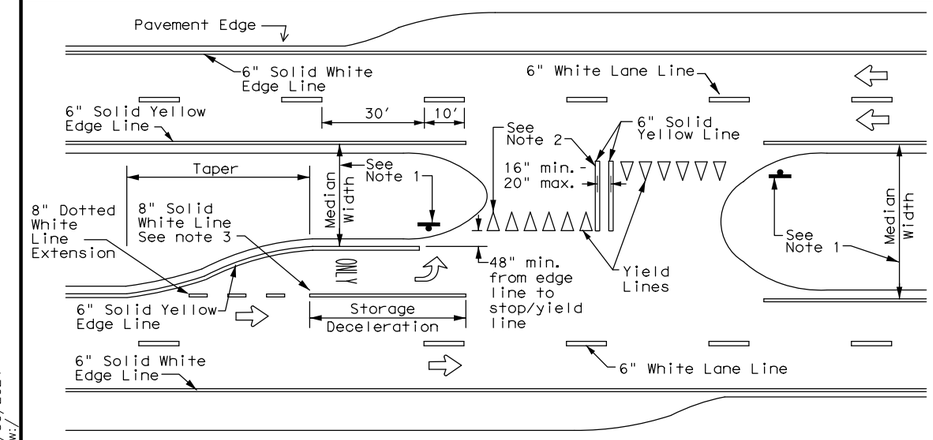


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

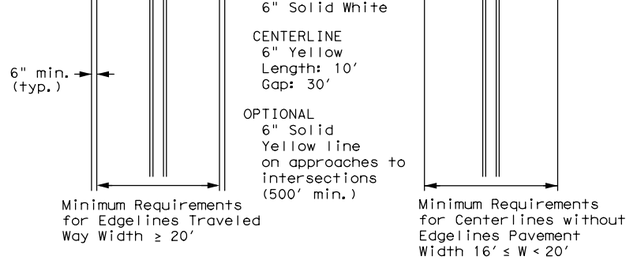
GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.

2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths
for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20 8-95 3-03 12-22 5-00 2-12	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		79

22A

DATE: 6/30/2024
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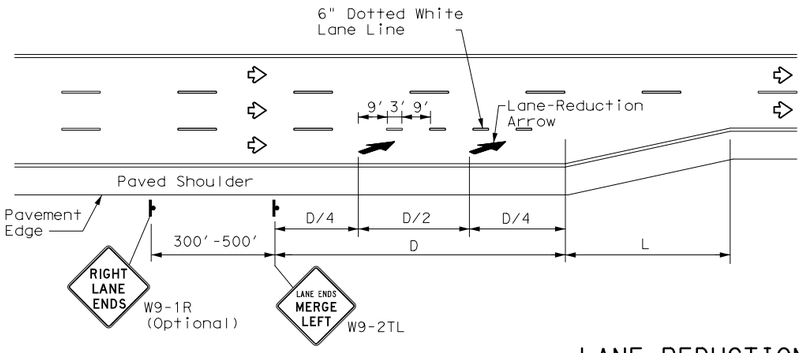
pw:/

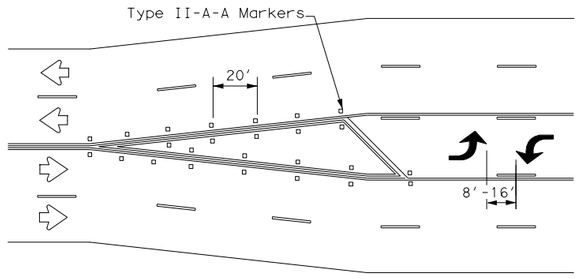


LANE REDUCTION

NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

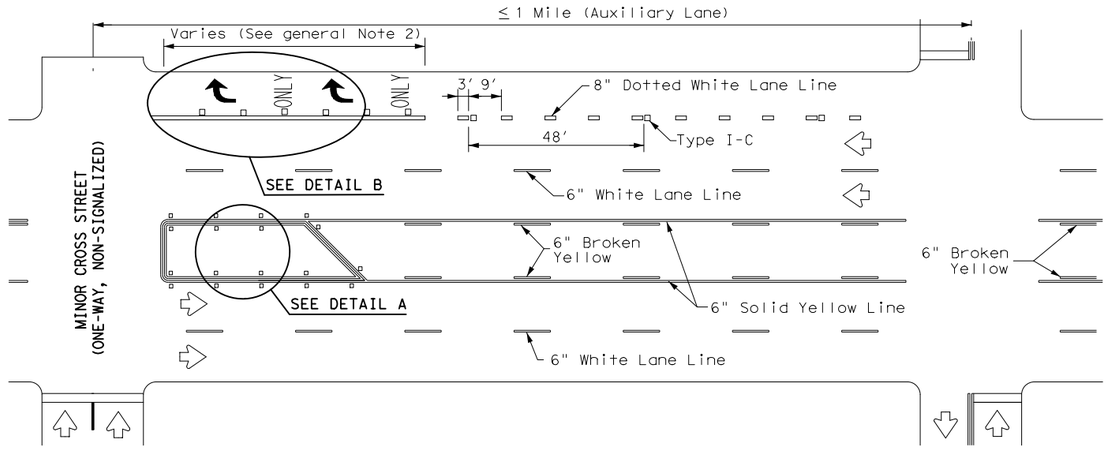
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

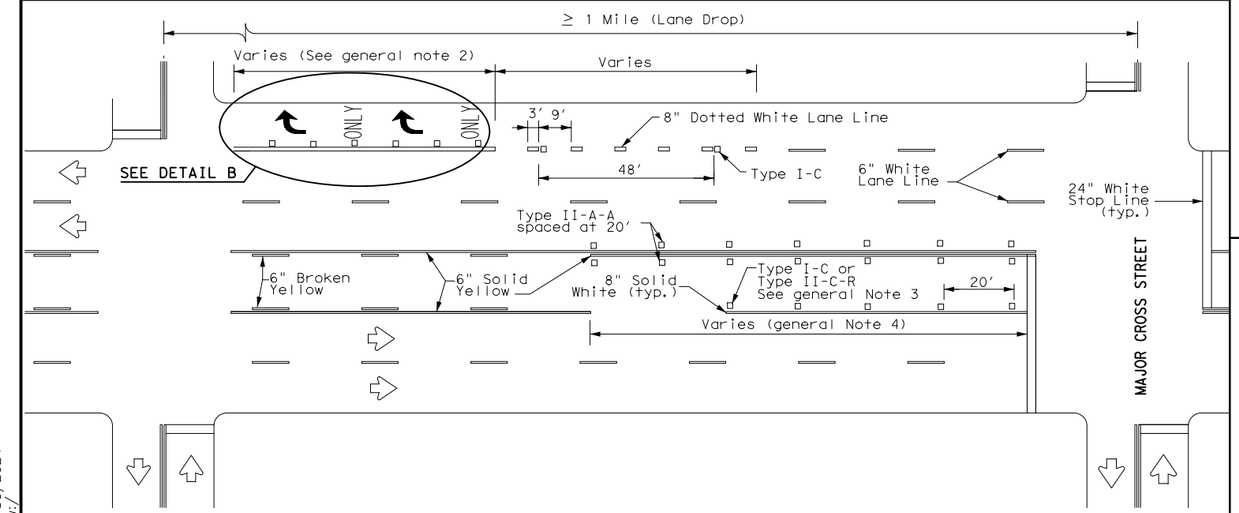
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

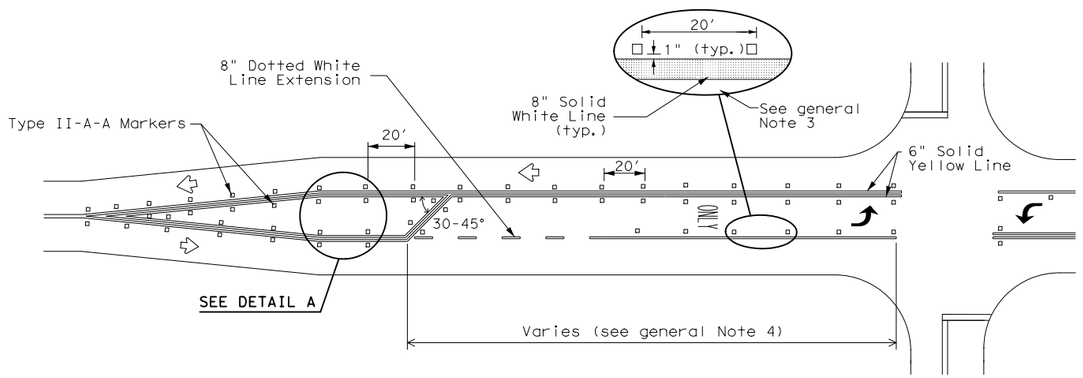
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



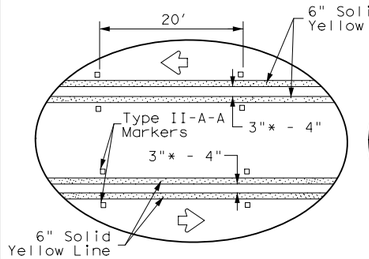
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



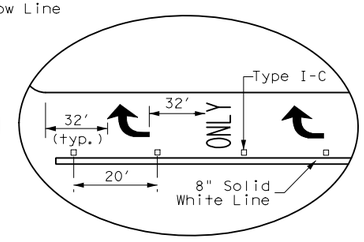
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		80

22C

DATE: 6/30/2024
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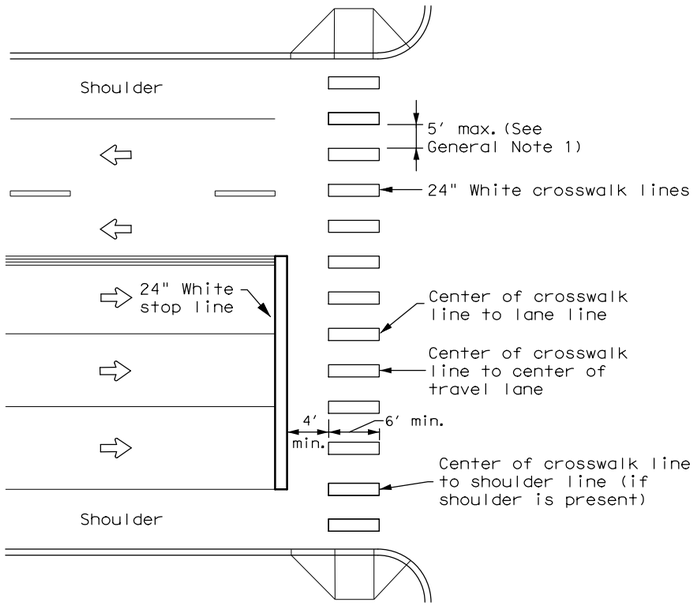


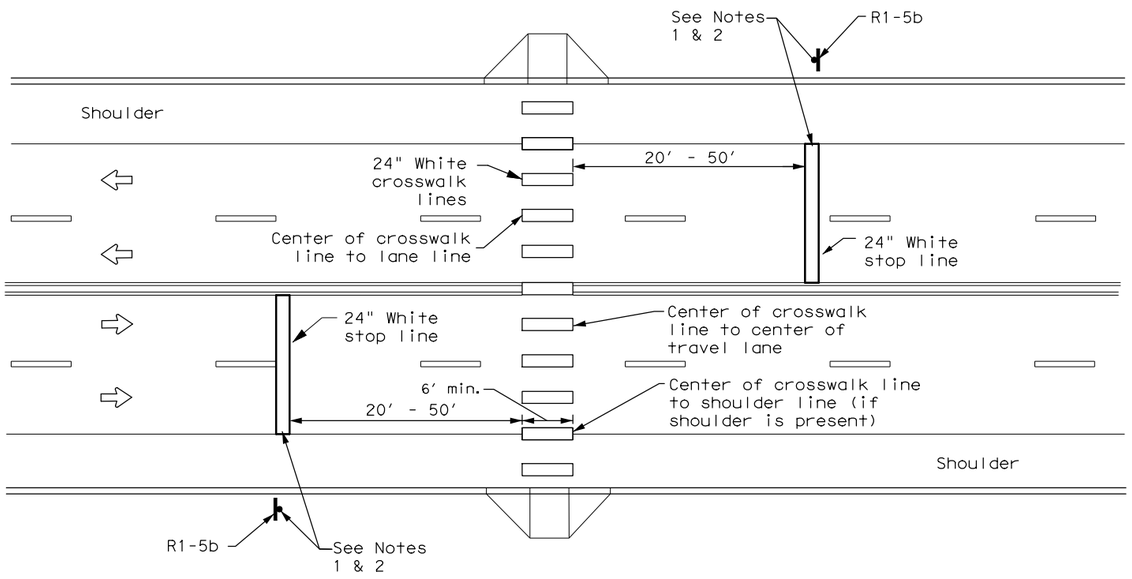
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6′ wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY
LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
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REVISIONS	0315	04	087, ETC.	SH 105
6-20	DIST	COUNTY		SHEET NO.
6-22	BRY	GRIMES		81
12-22				
22D				

DATE: 6/30/2024
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GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
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REVISIONS		0315	04	087, ETC.	SH 105
		DIST	COUNTY		SHEET NO.
		BRY	GRIMES		82

DATE: 6/30/2024
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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.
12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

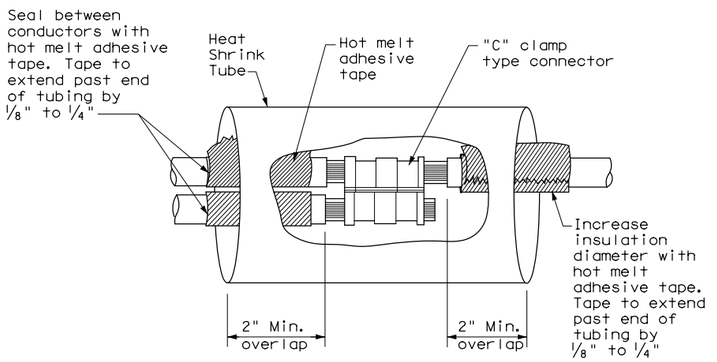
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

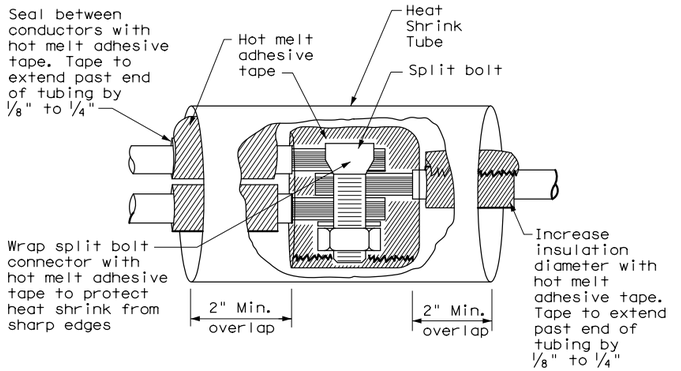
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

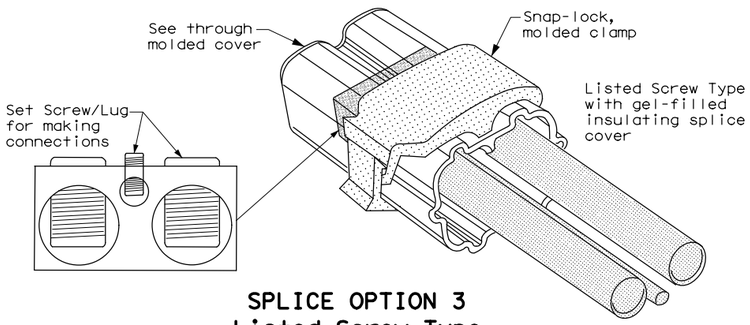
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

FILE:	ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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		BRY	GRIMES		83

DATE: 6/30/2024
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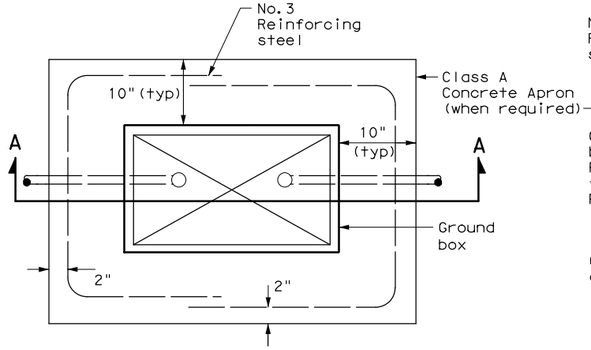
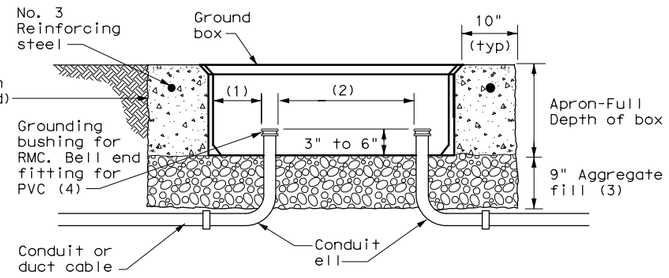


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

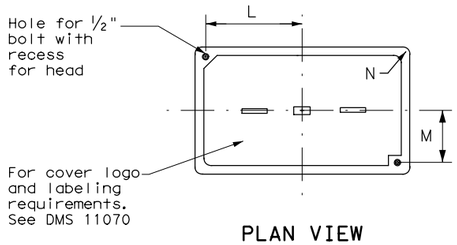
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

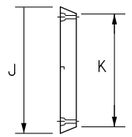
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



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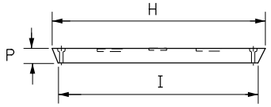

SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		84

DATE: 6/30/2024
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pw:/

71D

FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft 10	15	40	ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

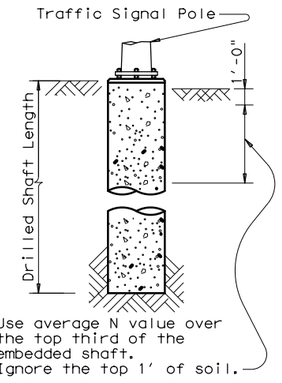
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET) 24-A	30-A	36-A	36-B	42-A
TOTAL DRILLED SHAFT LENGTHS								

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'



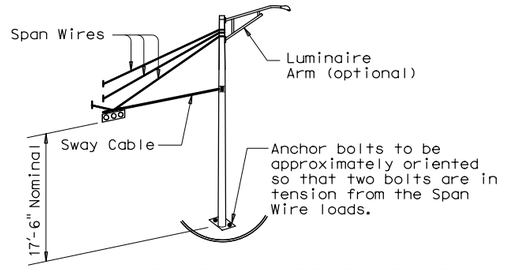
Use average N value over the top third of the embedded shaft. Ignore the top 1' of soil.

ANCHOR BOLT & TEMPLATE SIZES

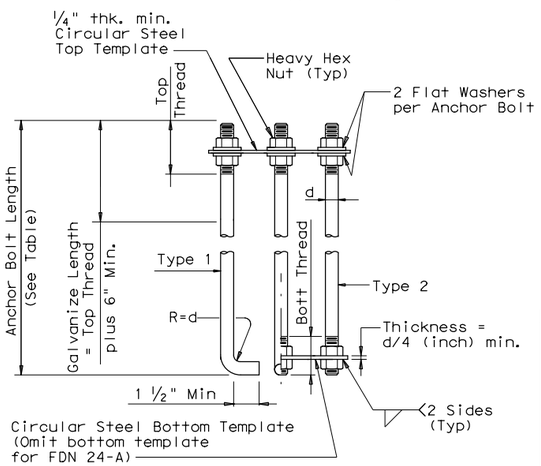
BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

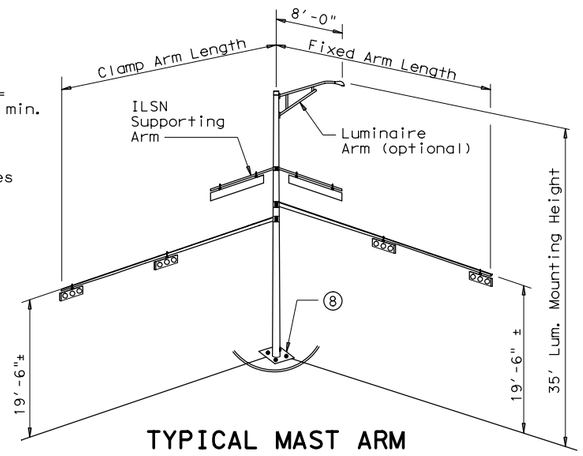


TYPICAL STRAIN POLE ASSEMBLY



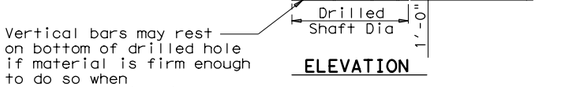
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY



TYPICAL MAST ARM ASSEMBLY

⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TOP VIEW

ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB

REVISIONS
5-96
11-99
1-12

CONT	SECT	JOB	HIGHWAY
0315	04	087, ETC.	SH 105

DIST	COUNTY	SHEET NO.
BRY	GRIMES	85

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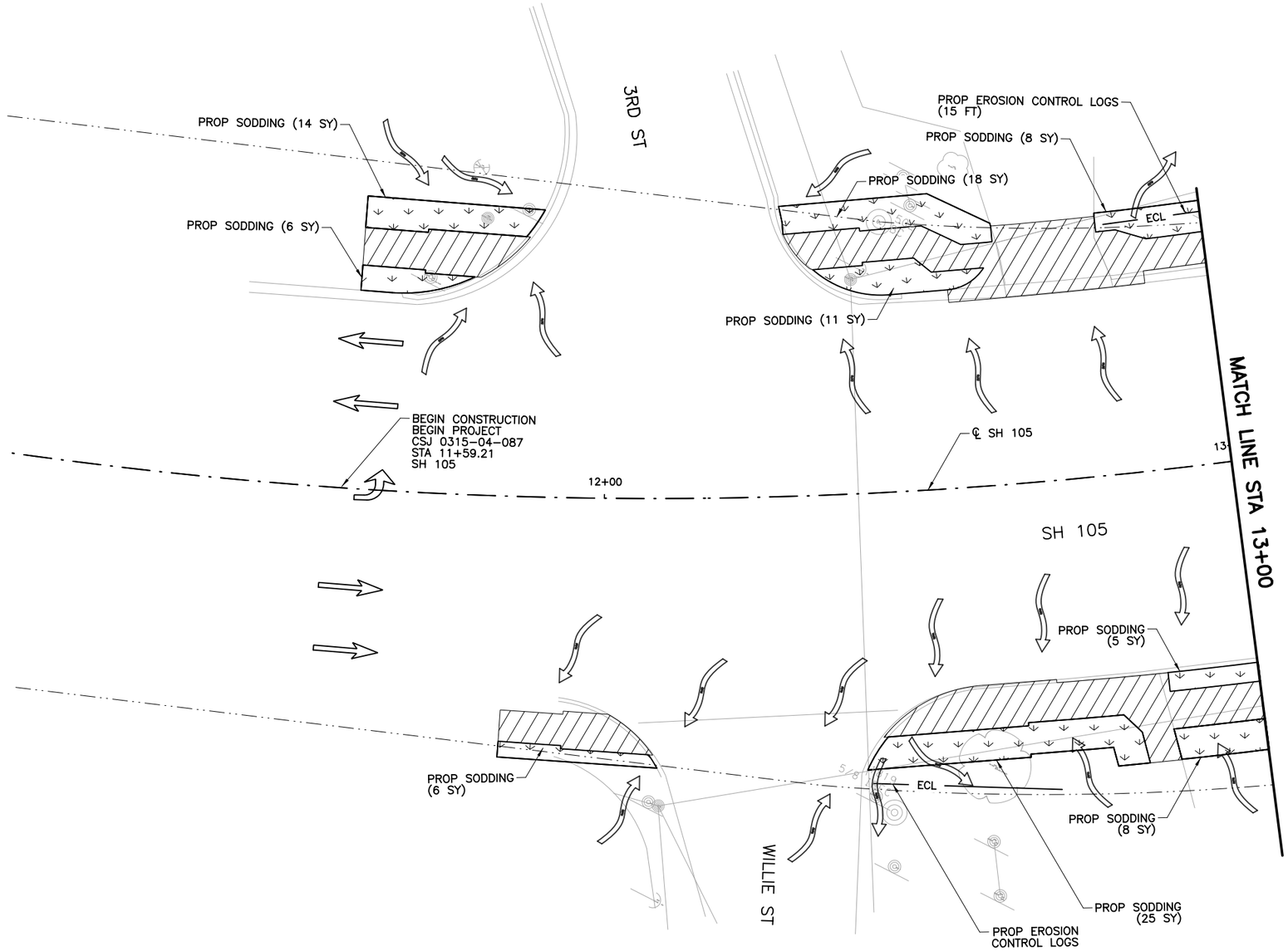

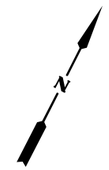

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SCALE FEET

LEGEND

- SODDING
- PROP WORK AREA
- ECL — EROSION CONTROL LOGS
- FLOW ARROW

NOTE:

CONTRACTOR TO AVOID PUTTING EROSION CONTROL LOGS ALONG UPSTREAM SIDE OF EXISTING FLOWLINE.

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138622
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Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SWP3 LAYOUT

SHEET 1 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	86

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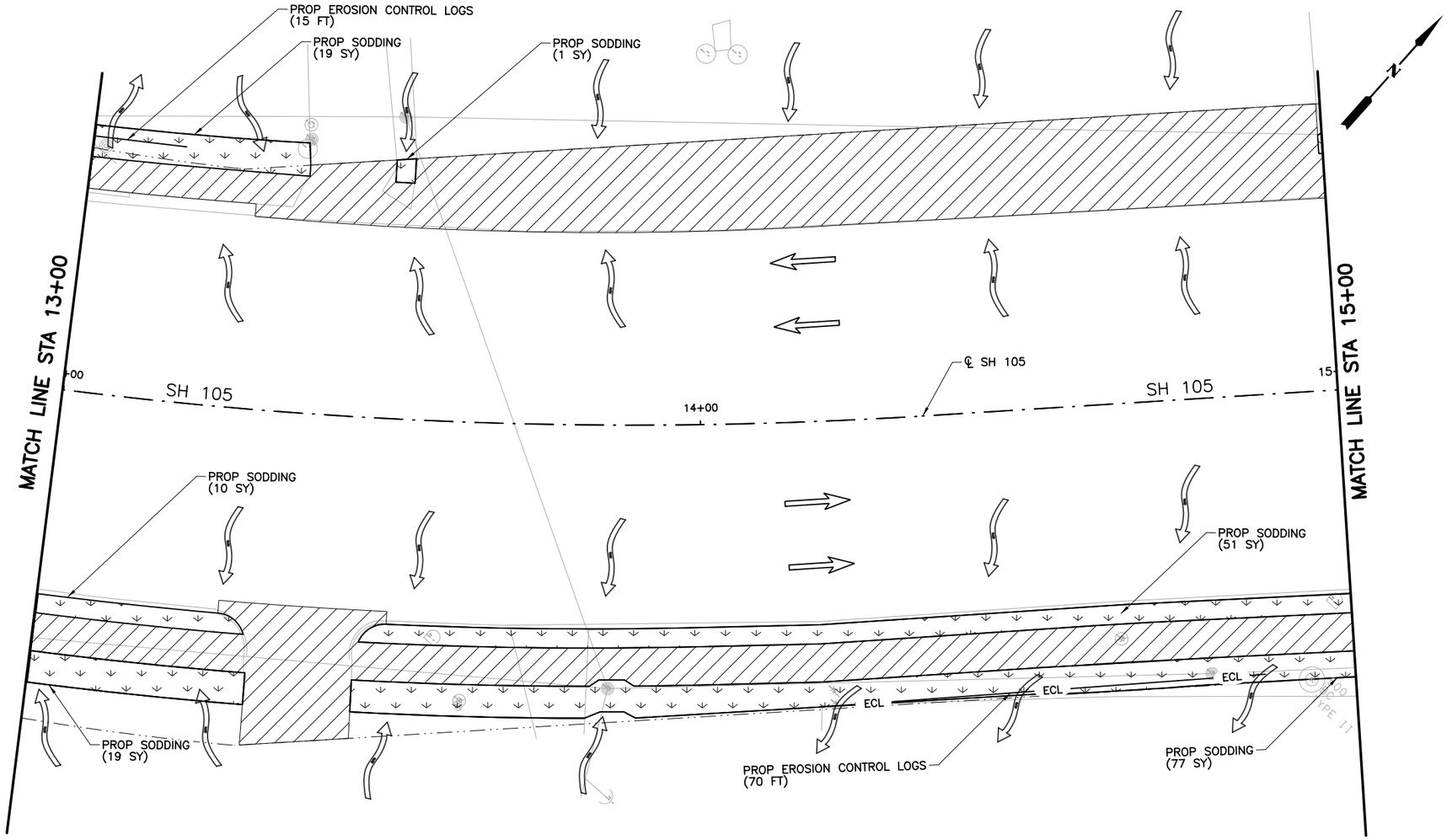

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SH 105 PEDESTRIAN IMPROVEMENTS
SWP3 LAYOUT

SHEET 2 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
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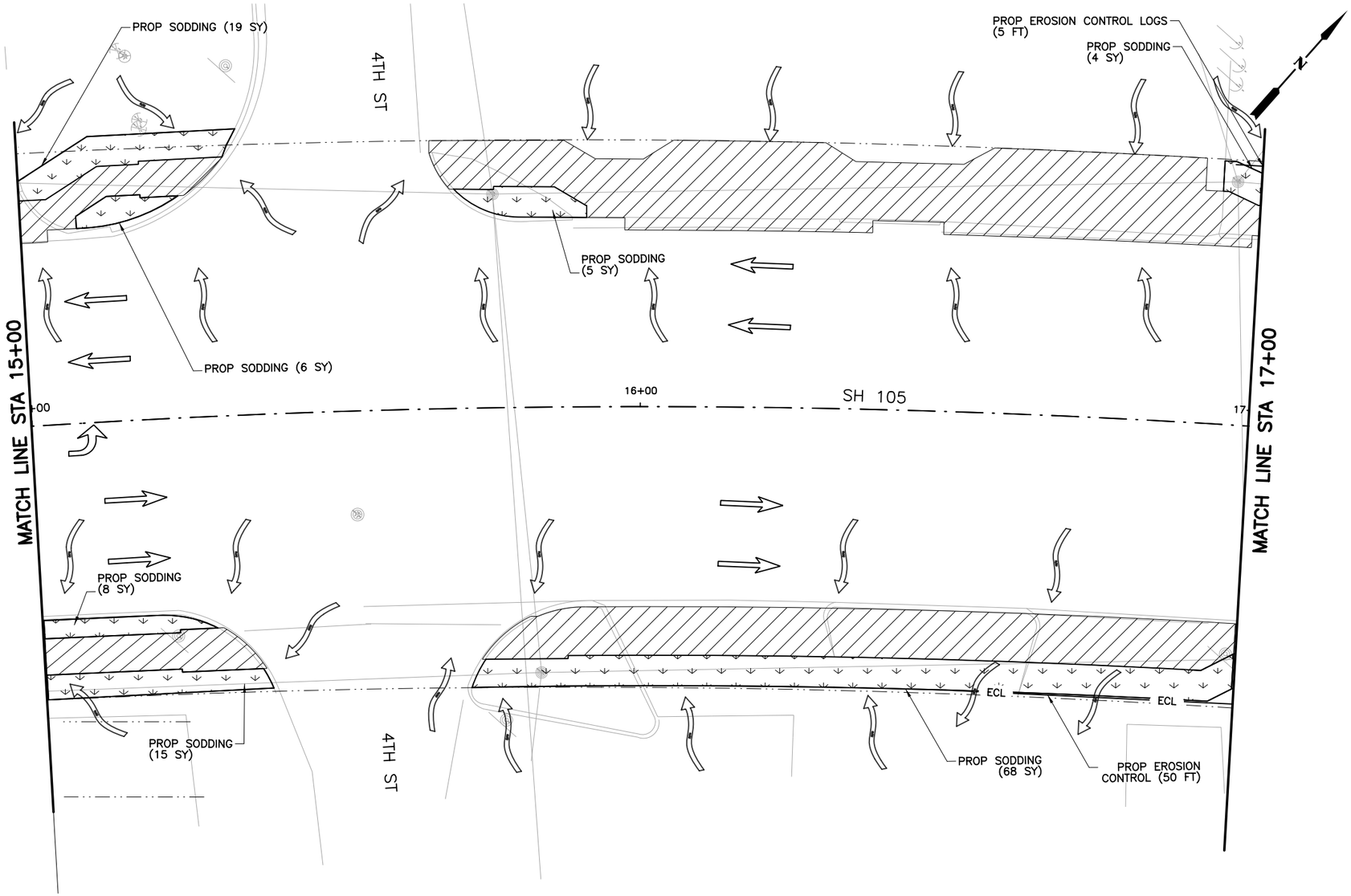

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6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
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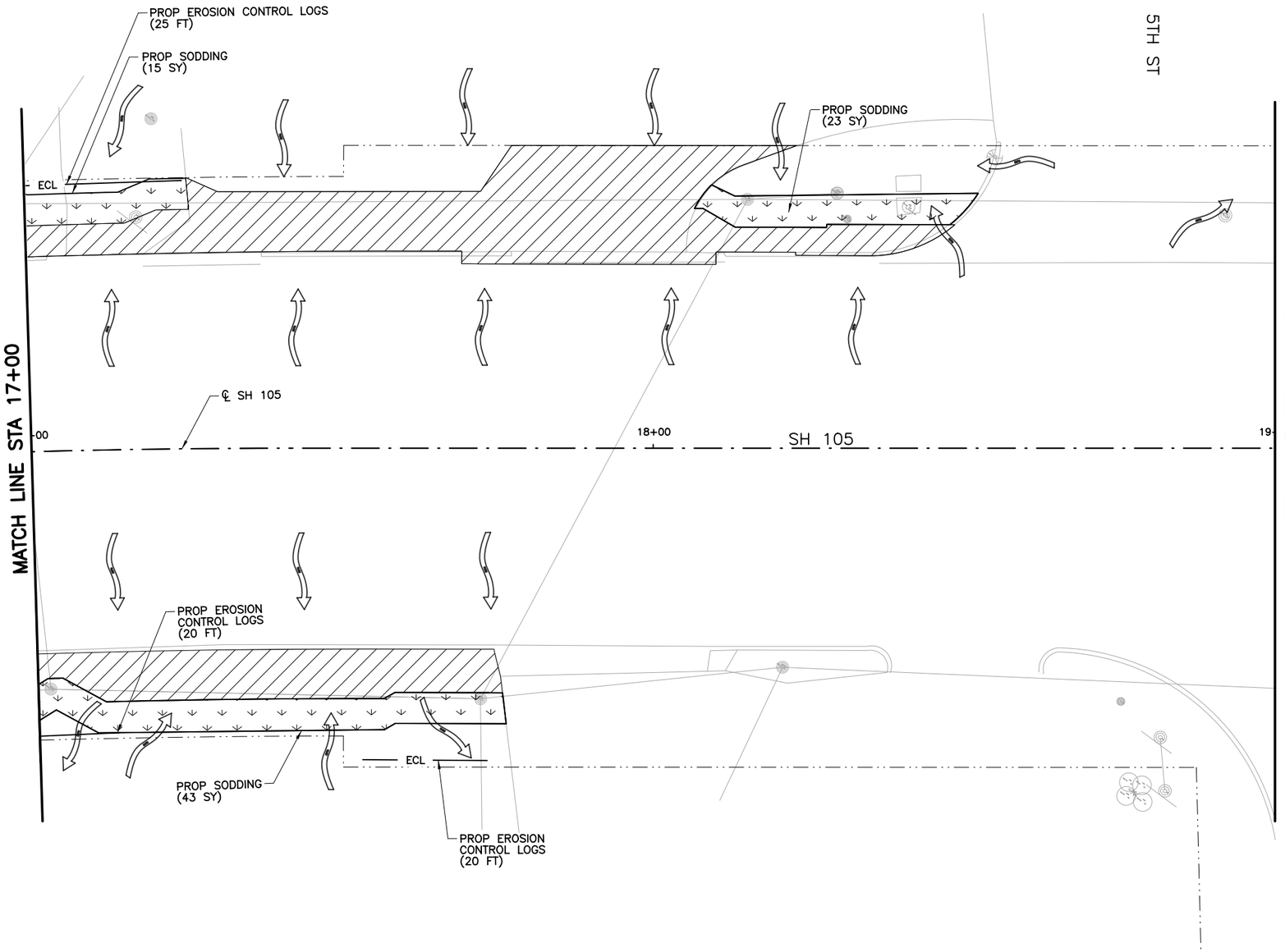

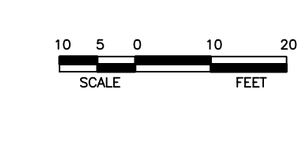

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SWP3 LAYOUT

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FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
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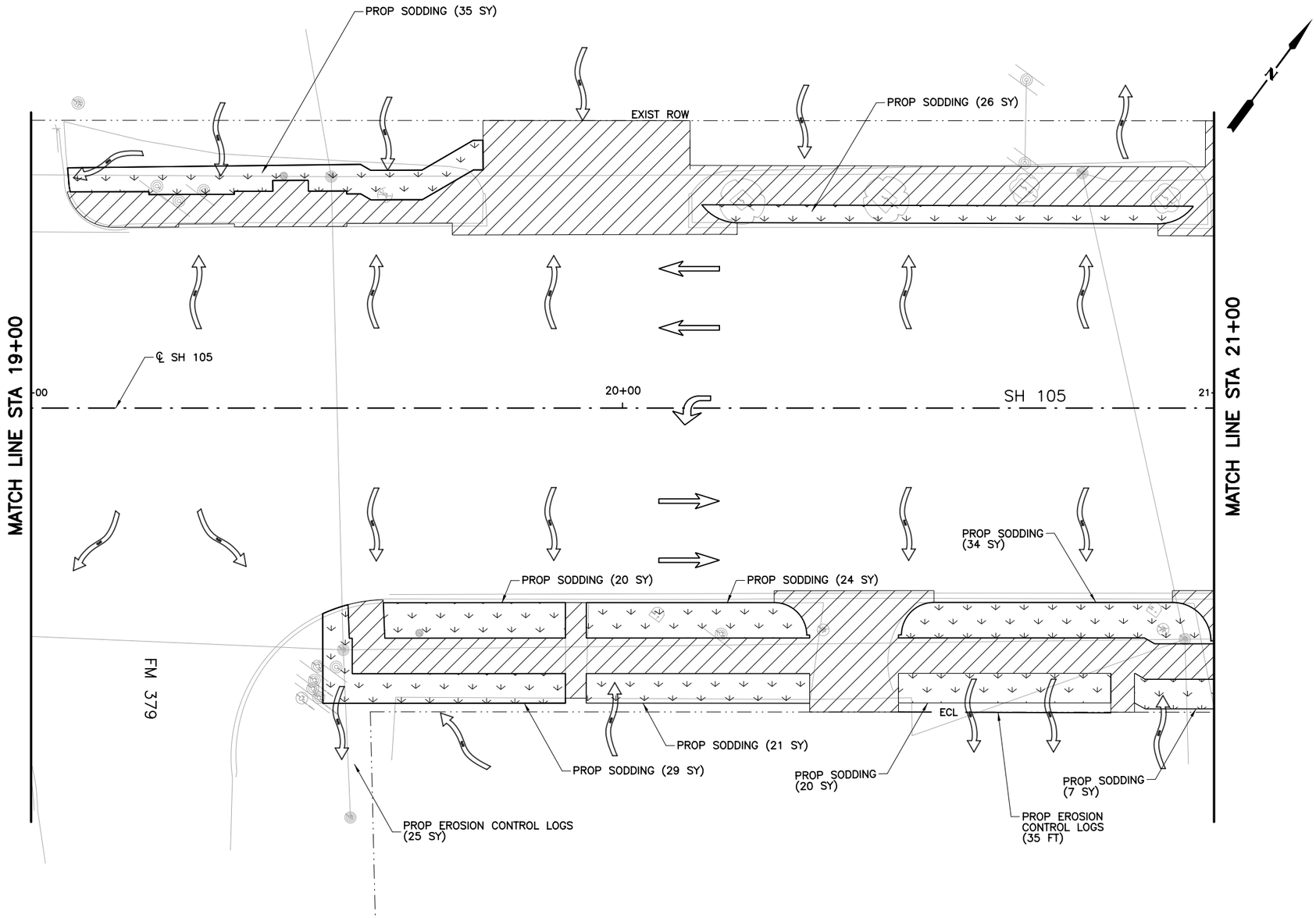

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6		SH 105

STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
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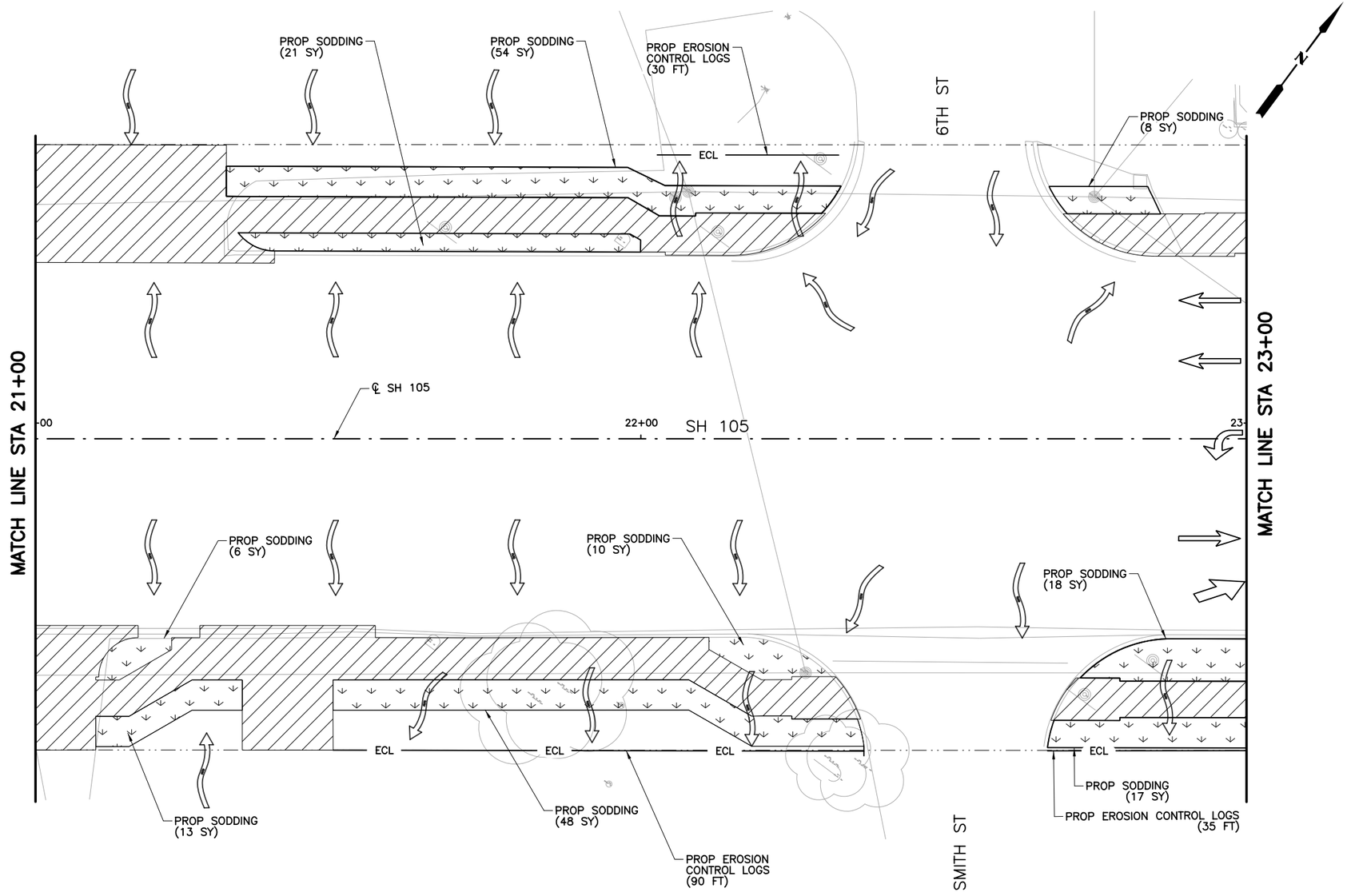

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SHEET 6 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
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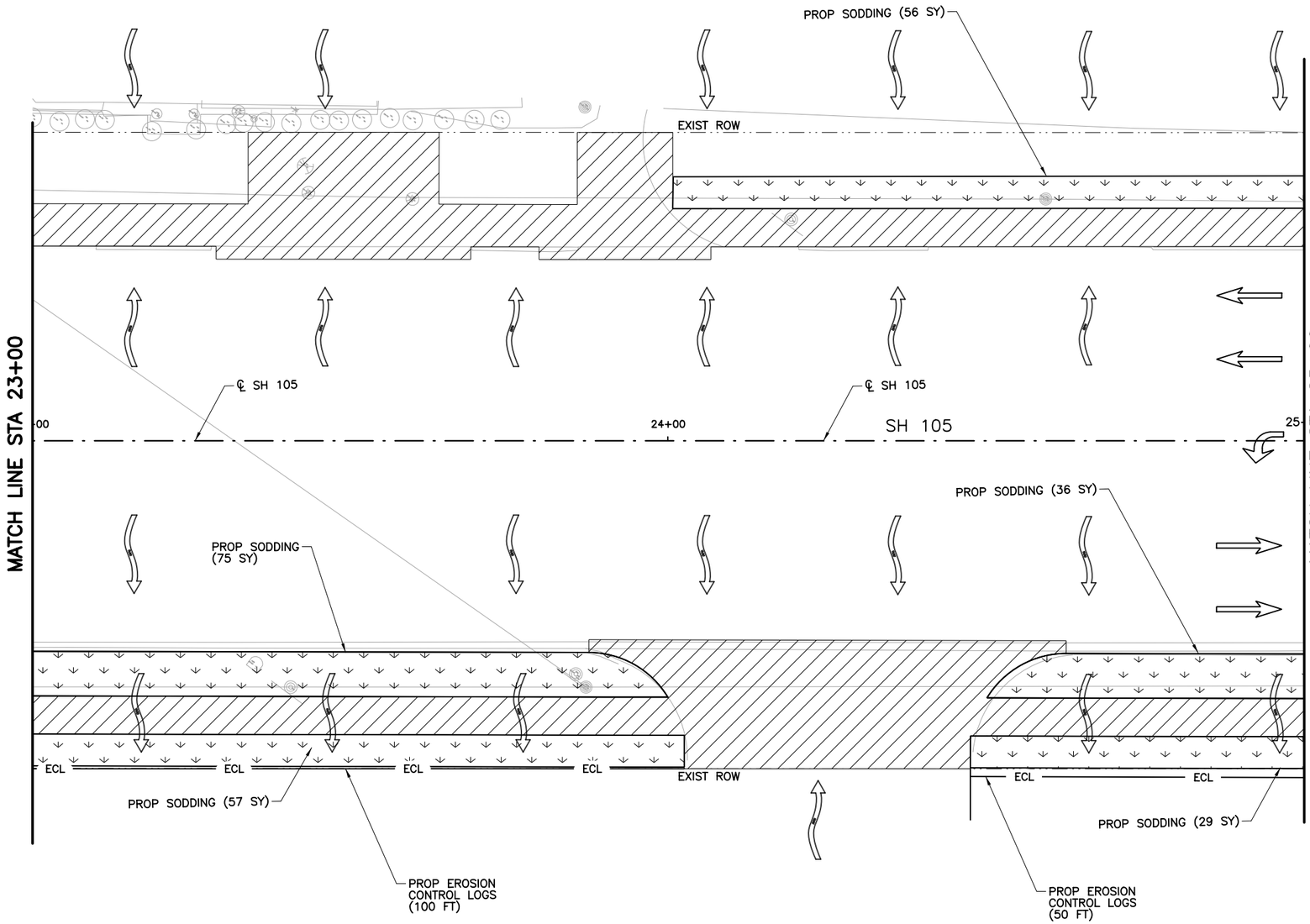

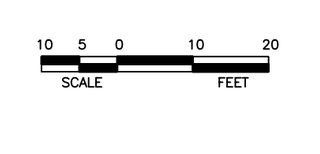

LEGEND

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Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SWP3 LAYOUT

SHEET 7 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY
TEXAS	BRY	GRIMES

CONTROL	SECTION	JOB	SHEET NO.
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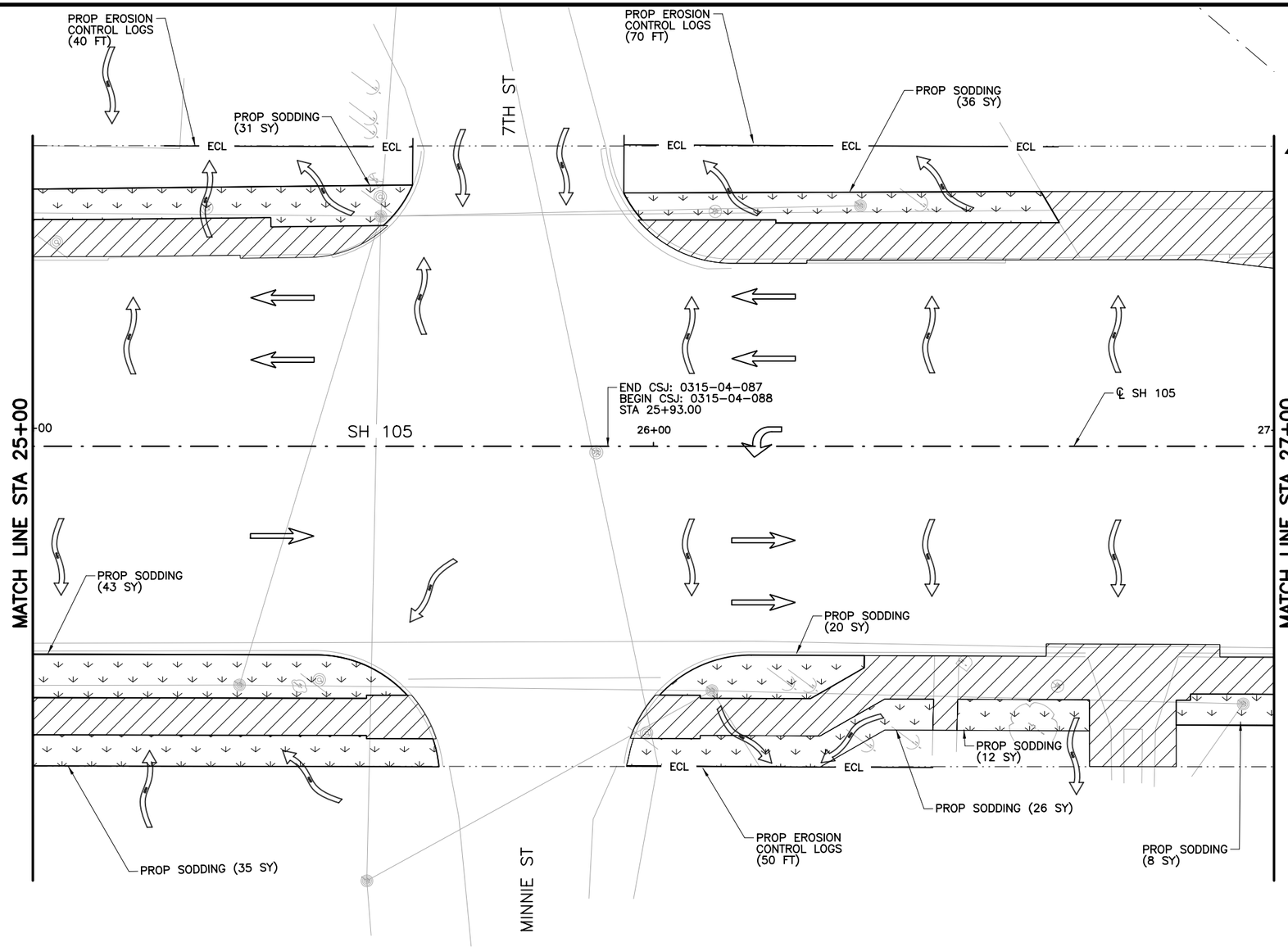

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SCALE FEET

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LEGEND

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Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SWP3 LAYOUT

SHEET 8 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
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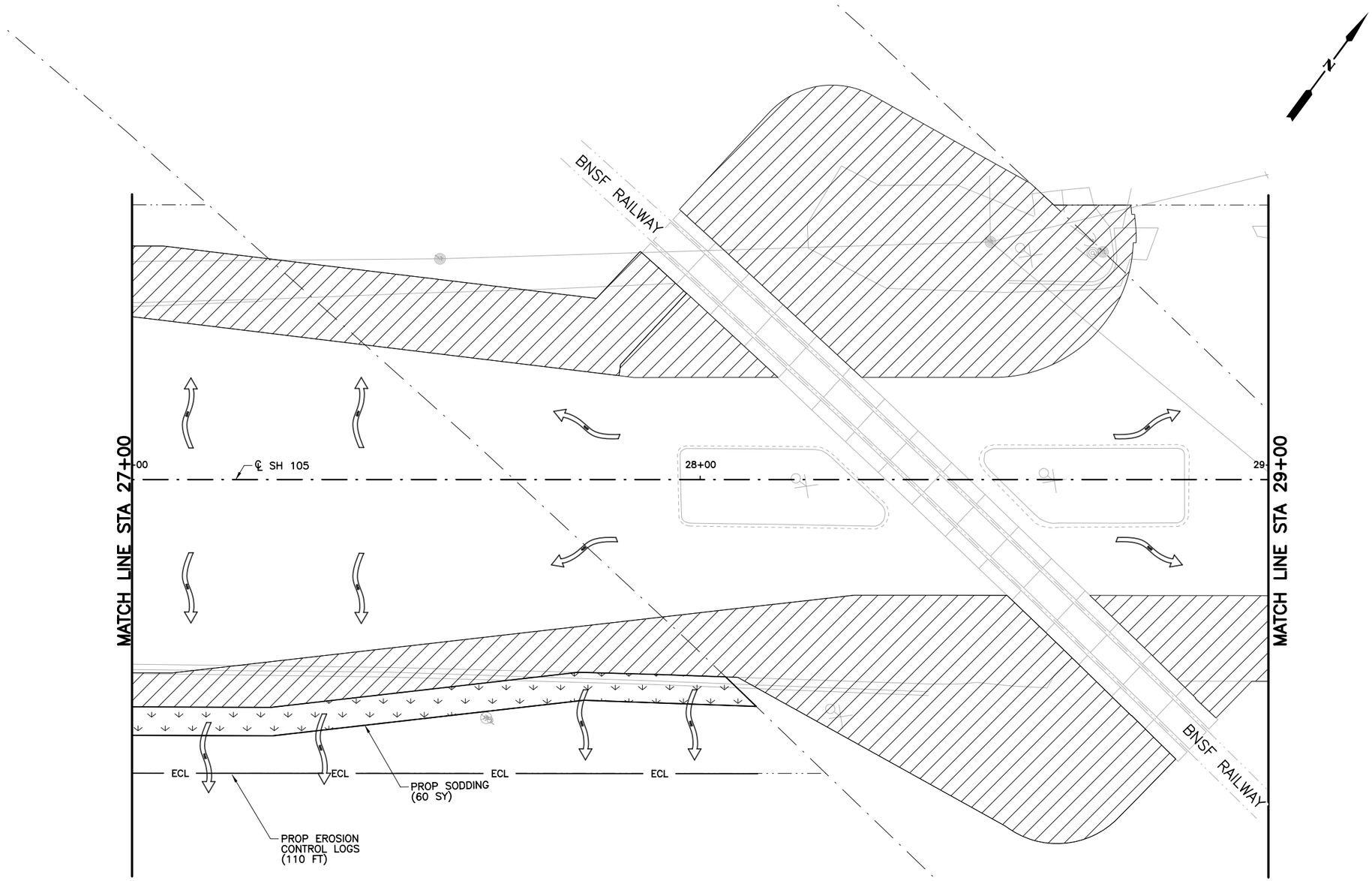

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SCALE FEET

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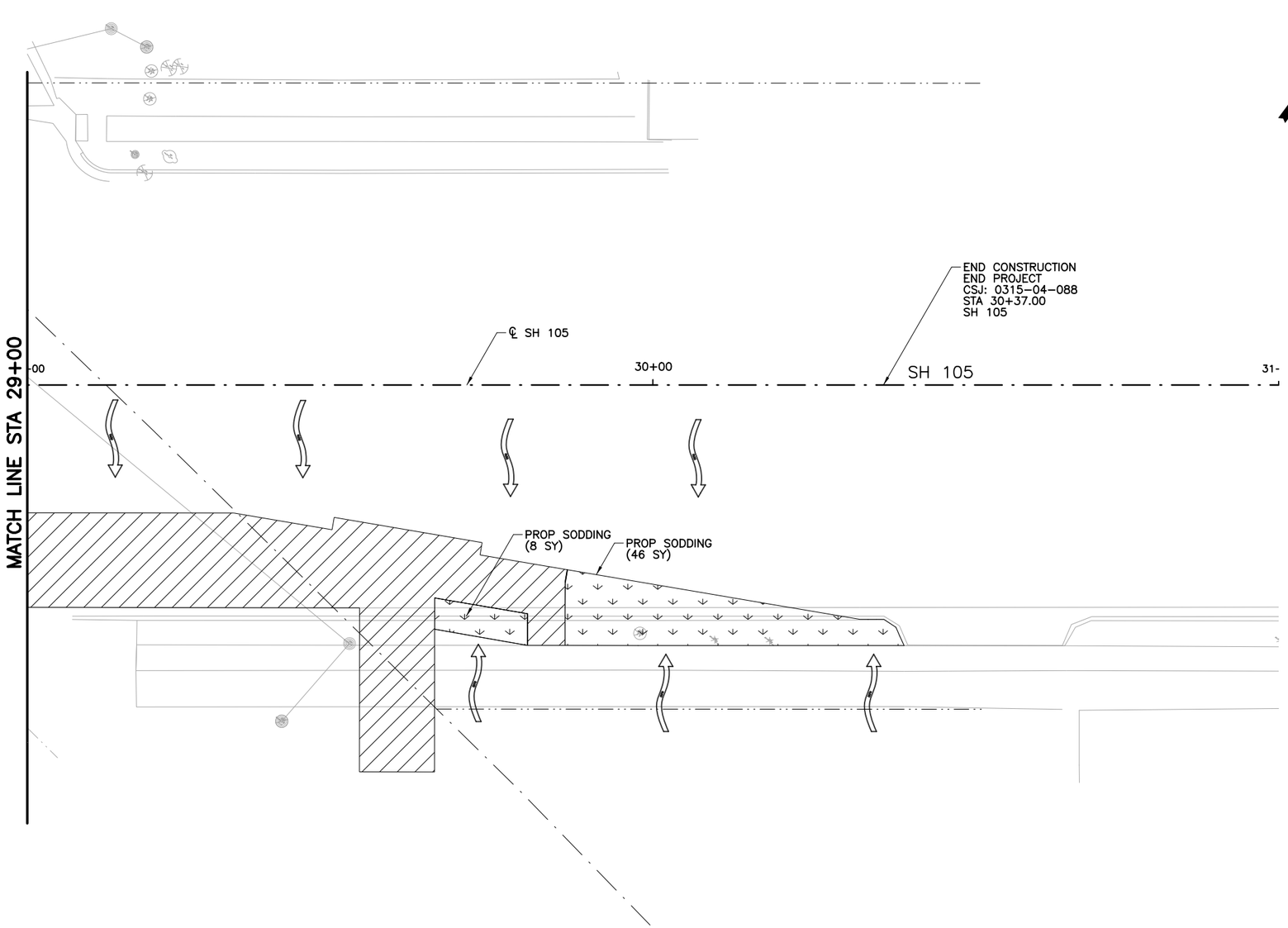
SH 105 PEDESTRIAN IMPROVEMENTS
SWP3 LAYOUT

SHEET 9 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	94



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SCALE FEET

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LEGEND

- SODDING
- PROP WORK AREA
- ECL EROSION CONTROL LOGS
- FLOW ARROW

NOTE:

CONTRACTOR TO AVOID PUTTING EROSION CONTROL LOGS ALONG UPSTREAM SIDE OF EXISTING FLOWLINE.

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

cmadderley@cm.
07/12/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

Texas Department of Transportation
Bryan District

SH 105 PEDESTRIAN IMPROVEMENTS
SWP3 LAYOUT

SHEET 10 OF 10

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6		SH 105

STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	95

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STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

For projects with less than one acre of soil disturbing activity and that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
CSJ: 0315-04-087, etc.

1.2 PROJECT LIMITS:
From: Third Street

To: Nineth Street

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 30.3833328 ,(Long) -96.0967625

END: (Lat) 30.3864945 ,(Long) -96.0915612

1.4 TOTAL PROJECT AREA (Acres): 4.333

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.906

1.6 NATURE OF CONSTRUCTION ACTIVITY:
For the construction of curb ramps, sidewalks, and miscellaneous pedestrian elements.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Wilson Clay Loam, 0 to 1 percent slopes	100% Clay, Moderately well drained, high rate of runoff, moderate erosion potential.

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

☐ PSLs determined during preconstruction meeting
☐ PSLs determined during construction
☒ No PSLs planned for construction

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

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

Tributaries	Classified Waterbody

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

☒ Development of plans and specifications
☒ Perform SWP3 inspections
☒ Maintain SWP3 records and update to reflect daily operations
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

☒ Day To Day Operational Control
☒ Maintain schedule of major construction activities
☒ Install, maintain and modify BMPs
☐ Other: _____
☐ Other: _____
☐ Other: _____

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

07/12/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			96
STATE	STATE DIST.	COUNTY	
TEXAS	BRY	GRIMES	
CONT.	SECT.	JOB	HIGHWAY NO.
0315	04	087, ETC.	SH 105

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED
PROFESSIONAL ENGINEER

07/12/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			97
STATE	STATE DIST.	COUNTY	
TEXAS	BRY	GRIMES	
CONT.	SECT.	JOB	HIGHWAY NO.
0315	04	087, ETC.	SH 105

During the planning phase of project development the following environmental permits, issues and commitments have been developed during coordination with resource agencies, local governmental entities and the general public. Any change orders and/or deviations from the final design must be reported to the Engineer prior to the commencement of construction activities. As additional environmental clearances may be required.

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.

☒ Required Action ☐ No Action Required

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.

Refer to 2014 TxDOT Standard Specification Items:
7.7.2 Texas Pollutant Discharge Elimination System (TPDES) Permits and Storm Water Pollution Prevention PLans (SWP3)
506 Temporary Erosion, Sedimentation and Environmental Controls
734 Litter Removal
735 Debris Removal
738 Cleaning and Sweeping Highways

II. WORK IN OR NEAR STREAMS, WATER BODIES 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 locations of waters of the US.

Information regarding the USACE Nationwide Permit Program can be found at:
http://www.swf.usace.army.mil/Missions/Regulatory/Permitting/GeneralPermits.aspx

Refer to 2014 TxDOT Standard Specification Items:
7.7.3 Work in Waters of the United States
7.7.6 Project Specific Locations
496 Removing Structures
506 Temporary Erosion, Sedimentation and Environmental Controls
506.4.3.4 Restricted Activities and Required Precautions

III. CULTURAL RESOURCES

Refer to 2014 TxDOT Standard Specification Item 7.7.1 Cultural Resources, in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) immediately cease work in the vicinity and contact the Engineer.

☐ Required Action ☒ No Action Required

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.

☐ Required Action ☒ No Action Required

Action No.

1. Tree removal to be done in accordance with Migratory Bird Treaty Act.

Refer to 2014 TxDOT Standard Specification Items:
160 Topsoil
161 Compost
162 Sodding for Erosion Control
164 Seeding for Erosion Control
166 Fertilizer
168 Vegetative Watering
169 Soil Retention Blankets
170 Irrigation System
180 Wildflower Seeding
192 Landscape Planting
193 Landscape Establishment
506 Temporary Erosion, Sedimentation, and Environmental Controls
730 Roadside Mowing
751 Landscape Maintenance
752 Tree and Brush Removal

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

☒ Required Action ☐ No Action Required

Action No.

1. Do not kill snakes or other animals.
2. Do not destroy nests on structures within the project limits.

   Temporarily prevent the building of nests on any structures that require work within the project limits during the construction timeframe.

   This can be accomplished by application of bird repellant gel, netting, or removal by hand every 3-4 days.

   The nesting/breeding season for migratory birds is March 1 - September 1.

Under the Migratory Bird Treaty Act (MBTA), it is unlawful by any means or manner, to pursue, hunt, take, capture, [or] kill any migratory birds except as permitted by regulation (16 U.S.C. 703-704). Neither the statute nor its implementing regulations (Title 50, Code of Federal Regulations, Parts 10, 13, 21) exempt unintentional take of migratory birds. The unauthorized take (e.g. killing, capturing, or collecting) of migratory birds is a strict liability criminal offense that does not require knowledge or specific intent on the part of the offender. Even when engaged in an otherwise lawful activity for which the intent is not the killing of migratory birds, a violation may be committed.

3. If caves or sinkholes are discovered, cease work in the immediate area to verify the presence or absence of wildlife.
4. BMPs for T and E species will be discussed at the preconstruction meeting.

The Bryan District Environmental Section can be contacted at (979) 778-9766 to assist with the removal of wildlife that will not leave on their own with gentle persuasion.

Refer to 2014 TxDOT Standard Specification Item:
7.7.6 Project Specific Locations

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 appropiate 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 Engineerimmediately. The Contractor shall be responsiblefor the proper containment and cleanup of all product spills.

Contact the Engineer if any of the follwing 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 notifiy 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 discoverd on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ Required Action ☐ No Action Required

Action No.

1. The Clean Water Act, in part, requires that any spill of oil that could enter a waterway, as defined by the Act, and that violates applicable water quality standards or causes a film or sheen on water require reporting to the TCEQ and local authorities.
   Contact the Bryan District Environmental Section at 979-778-9766.

   If potentially hazardous material and/or contaminated media (i.e. soil, groudwater, surface water, sediment, building materials) are unexpectedly encountered during construction, immediately cease work in the vicinity and contact the Engineer.

   Refer to 2014 TxDOT Standard Specification Items:
   6.10 Hazardous Materials
   7.12 Responsibility for Hazardous Materials

VII. OTHER ENVIRONMENTAL ISSUES

☐ Required Action ☒ No Action Required

Action No.

1.

Refer to 2014 TxDOT Standard Specification Items:
7.7.6 Project Specific Locations
751 Landscape Maintenance

02/12/2015

Contacts:

Mr. John D. Moravec
Environmental Coordinator
Texas Department of Transportation
Bryan District
2591 N. Earl Rudder Freeway
Bryan, TX 77803
Phone: (979) 778-9766
Fax: (979) 778-9702
e-mail: John.Moravec@txdot.gov

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER		HIGHWAY NUMBER
6			SH 105
STATE	DISTRICT	COUNTY	
TEXAS	BRY	GRIMES	
CONTROL	SECTION	JOB	SHEET NO.
0315	04	087, ETC.	98

GENERAL TREE PROTECTION NOTES:

1. Protect and ensure the continued good health of existing trees identified on the plans or directed by the Engineer. Protective measures include providing, installing, maintaining and removing protective fences, bound wood planking, compost, berm pruning, boring, and watering.
2. Install tree protection before any heavy equipment arrives on the site and remains in place for the duration of the project.

PROTECTIVE FENCE

1. Critical Root Zone (CRZ)= 1 foot radius per 1 caliper inch of trunk diameter.
2. Place protective fence at the edge of the critical root zone of trees to be protected. Use 4 feet high orange plastic mesh or approved equivalent supported on steel T-posts. Use steel T-posts minimum of 6 feet long, spaced at intervals sufficient to keep fence pulled tight. Stretch smooth galvanized wire from post to post across the top of fence and draw tight. Attach plastic mesh to posts and top wire with aluminum tie wire or nylon ties.
3. No excavation, grading, filling, soil compaction, parking, or equipment storage is allowed within the fenced area.
4. When a construction zone overlaps the root zone due to lack of space, place fence within 2 feet of construction zone.
5. Install protective compost filter berm at base of protective fence as shown in detail and described in these notes under "Root Zone Protection". Compost filter berm functions as a protective filter from runoff associated with construction activities such as: concrete wash, erosion, fill, chemicals, cement and lime work and other activities.

VEGETATIVE WATERING FOR TREE PROTECTION

1. Water trees at a rate of 30 gallons per week for every week during construction activities. Watering is paid for separately under Item 168-6001 Vegetative Watering.

TRUNK PROTECTION

1. Where protective fence is located closer than 6 feet from a tree trunk from any direction, protect the tree trunk with bound wood planking. Wood planks may be construction grade lumber a minimum of 1 inch by 6 inch nominal. Band planks together with rope, band, or strap of sufficient gauge and quality to keep protective planking in place around tree trunk for the duration of the project. Install wood planks of sufficient length to protect the trunk to a height of 10 feet, or the height of the lowest major branching, whichever is less. Do not use nails, screws or other damaging attachment methods.

ROOT ZONE PROTECTION

1. Cover entire area of critical root zone with 4" depth of erosion control compost. Erosion control compost is paid for separately under Item 161-6009 Erosion Control Compost. See standard specification for compost requirements.
2. Install protective compost filter berm at base of protective fence along entire edge of critical root zone as shown on detail this sheet. Dimensions of compost filter berm are 1 foot tall, and 2 feet wide at base. Use erosion control compost for berm paid for under Item 161-6009 Erosion Control Compost. Maintain berm throughout project.
3. Vehicular traffic, stockpiling or storage of materials, parking of equipment and refueling equipment is prohibited in protected areas.

BORING, TRENCHING, GRADING, AND PRUNING

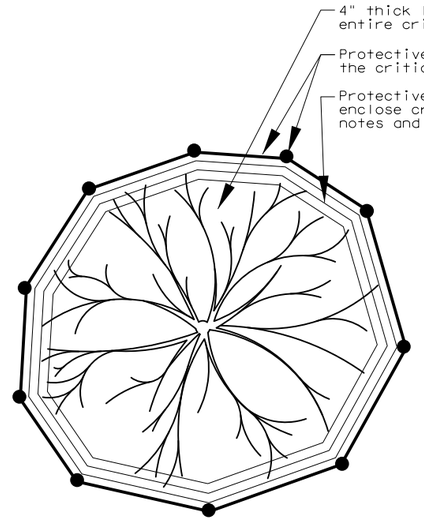
1. Where shown in plans, underground utilities crossing under protected areas will be bored beneath critical root zones. Avoid boring directly beneath root flare. Bore depth is 4 feet below existing grade.
2. No trenching, excavating, filling, or compaction is allowed within the critical root zone except as specifically identified in the plans and approved by the Engineer.
3. When existing grade must be cut within the critical root zone, contact the Engineer prior to beginning work. Before grading or excavation work, saw cut roots to the depth of the proposed disturbance along the edge of the proposed disturbance before excavation is begun.
4. Prune flush with soil any roots exposed by construction. Backfill root areas with good quality topsoil as soon as possible. If exposed root areas are not to be backfilled within two days, then cover with a minimum of six inches of erosion control compost. Erosion compost is paid for separately under Item 161-6009 Erosion Control Compost.
5. When grading within the critical root zone, use hand or small equipment and alter grade no more than two inches. No soil disturbance is allowed on the root flare under any circumstances.
6. Perform any pruning to provide clearance for structures, vehicular traffic, and construction equipment before construction damage might occur. Prune any limb damage within two hours of occurrence and according with ANSI A300-1995 standard.

MAINTENANCE OF TREE PROTECTION MATERIALS

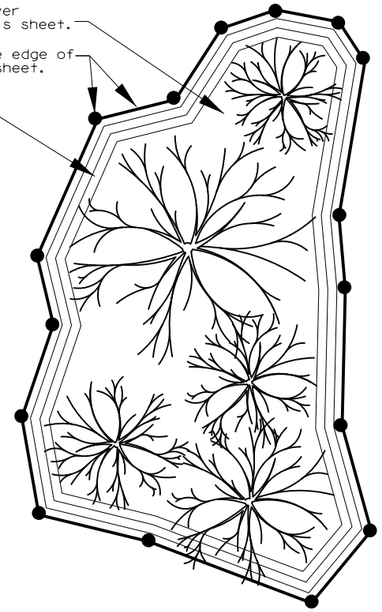
1. Maintain all tree protection materials throughout entire length of project. Repair damaged or affected tree protection materials. Additional erosion control compost may be required during the project and will be paid for separately.

REMOVAL OF TREE PROTECTION MATERIALS

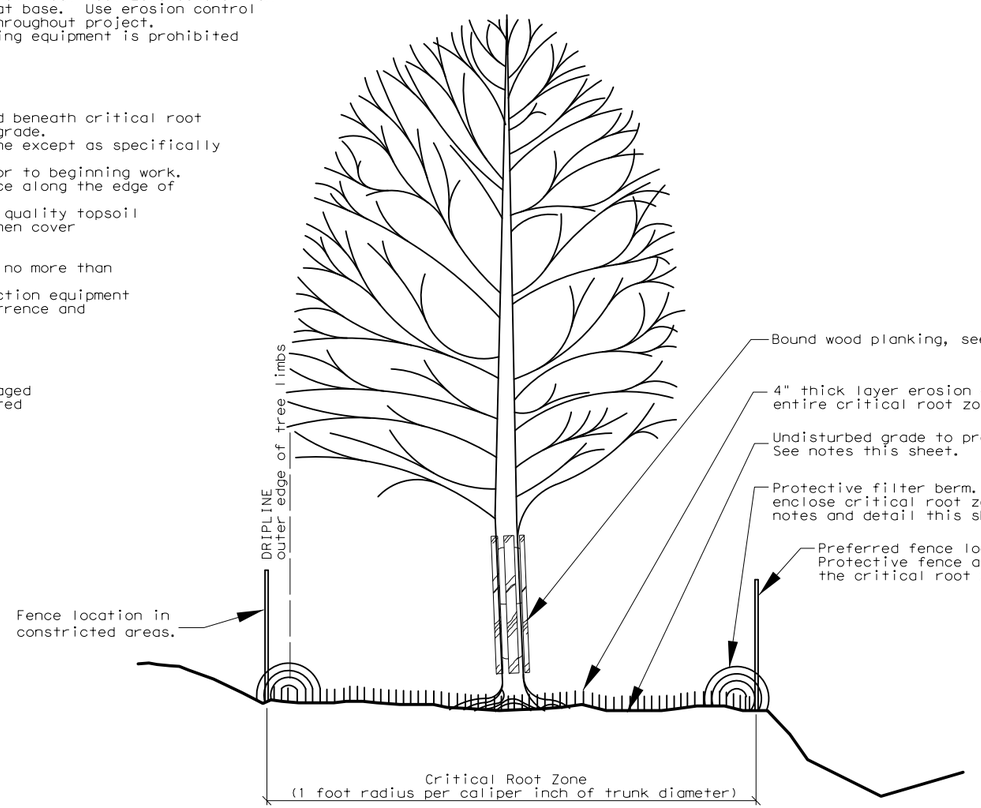
1. Remove and dispose of all protective fencing and trunk protection at end of project.



PLAN VIEW OF INDIVIDUAL TREE AND PROTECTIVE FENCE



PLAN VIEW OF TREE GROUP AND PROTECTIVE FENCE



TYPICAL TREE PROTECTION

REQUIRED ITEMS:

- Item 1004-6001 Tree Protection EA
- Item 1004-6002 Tree Protection AC
- Item 161-6009 Erosion Control Compost CY
- Item 168-6001 Vegetative Watering MG

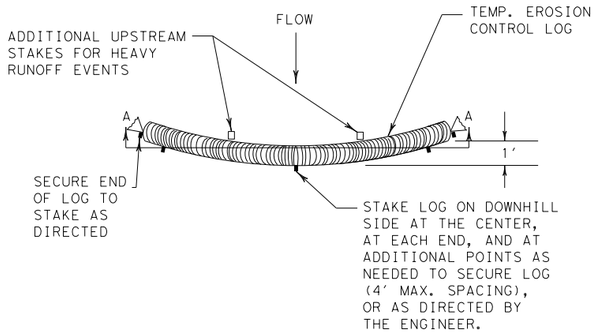
Texas Department of Transportation

TREE PROTECTION

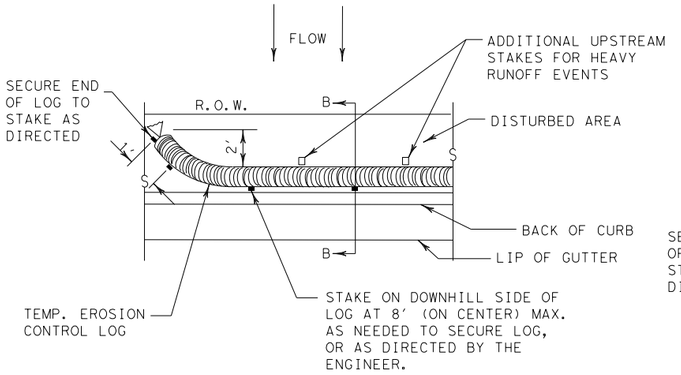
SHEET 1 OF 1

Details not to scale

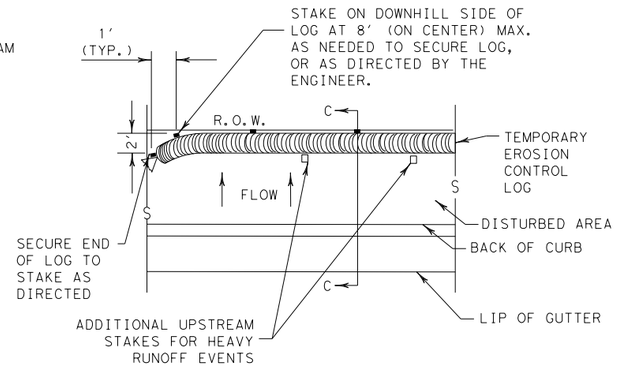
FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
		TEXAS				99
REVISED: FEB 2015 FOR 2014 SPECS	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	12	GRIMES	0315	04	087,ETC.	SH 105



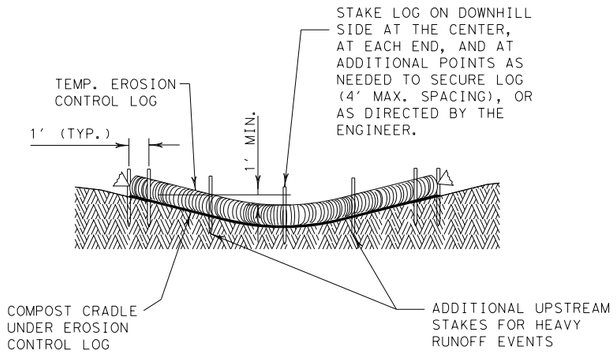
PLAN VIEW



PLAN VIEW



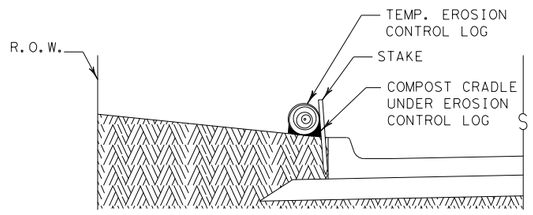
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

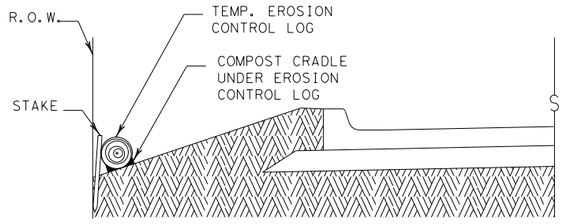
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



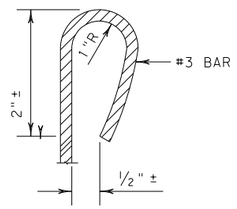
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

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



REBAR STAKE DETAIL

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.

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.

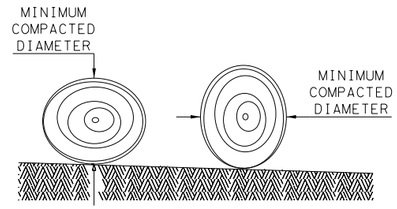
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

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.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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		0315	04	087, ETC.		SH 105	
		DIST		COUNTY			SHEET NO.
		BRY		GRIMES			100

DATE: 7/12/2024
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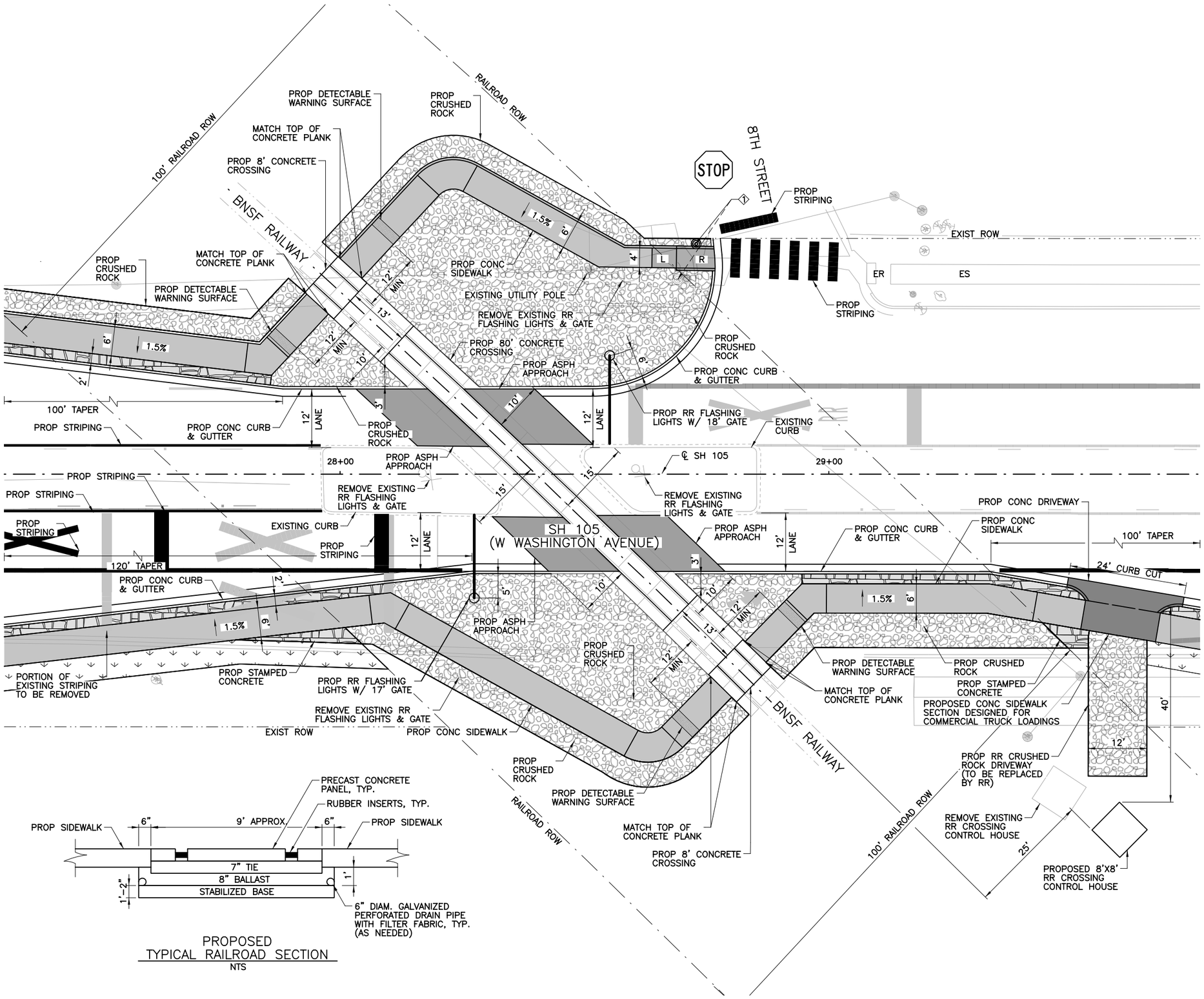

PROPOSED
TYPICAL RAILROAD SECTION
NTS

10 5 0 10 20
SCALE HORIZ. FEET

LEGEND

	PROPOSED SIDEWALK
	PROPOSED CRUSHED ROCK
	PROPOSED STAMPED CONCRETE
	PROPOSED CONCRETE RIPRAP
	PROPOSED SODDING
PROP	PROPOSED
ROW	RIGHT-OF-WAY
CONC	CONCRETE
RR	RAILROAD
R	RAMP
L	LANDING
T	TRANSITION
ER	EXISTING RAMP
ES	EXISTING SIDEWALK

NOTES:

1. BNSF TO VERIFY EXISTING CONCRETE PLANK IS ADA COMPLIANT PER PROWAG SECTION R302.7.4 FLANGEWAY GAPS.

STATE OF TEXAS
MADERLEY MONSALVE
138622
LICENSED PROFESSIONAL ENGINEER

07/12/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

BNSF CONROE SUBDIVISION, LS 7502
RR MP 27.869, DOT 024283T

BRYAN DISTRICT PEDESTRIAN IMPROVEMENTS

SH 105
CURB RAMP, SIDEWALK, AND PLANKING IMPROVEMENTS LAYOUT

SHEET 1 OF 1

Designed:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	6	TEXAS	SEE TITLE SHEET			SH 105
Drawn:	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	BRY	GRIMES	0315	04	087, ETC.	101

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PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

A. Complete the railroad course "Orientation for Contractor's Safety", and maintain current registration prior to working on railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."

B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:
A. 15' - 0" (BNSF)(UPRR)and 14'-0" (KCS) horizontal from centerline of track
B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		102

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3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractors's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
   1. Pre-construction meetings.
   2. Pile driving/drilling of caissons or drilled shafts.
   3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
   4. Erection of precast concrete or steel bridge superstructure.
   5. Placement of waterproofing (prior to placing ballast on bridge deck).
   6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.

D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

   UPRR 1-800-336-9193
   7:00 AM to 9:00 PM CST Monday-Friday except holidays,
   staffed 24 hrs/day for emergencies
   48 hrs notice required

   BNSF 1-800-533-2891
   24 hour number
   5 working days notice required

   KCS 1-800-344-8377
   Texas One Call, a 24 hour number
   48 hrs notice required, excluding weekends and holidays

   If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0315	04	087, ETC.	SH 105
	DIST	COUNTY		SHEET NO.
	BRY	GRIMES		103

7/12/2024
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I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☐ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 024283T
Crossing Type: AT GRADE
RR Company Operating Track at Crossing: BNSF
RR Company Owning Track at Crossing: BNSF
RR MP: 27.870
RR Subdivision: Conroe
City: Navasota
County: Grimes
CSJ at this Crossing: 0315-04-088
Latitude: 30.385900
Longitude: -96.092556

Scope of Work, including any TCP, to be performed by State Contractor:

Construct SH 105 sidewalk and install detectable warning surface as shown on plans. TxDOT contractor is responsible for coordinating construction with BNSF, based on the railroad's availability.

Scope of Work to be performed by Railroad Company:

Install concrete crossings during a 3-day road closure. Install perforated drain pipes and rubber inserts as needed. Place crushed rock driveway for proposed railroad crossing control house.

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 7

On this project, night or weekend flagging is:

☑ Expected
☐ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) TxDOT will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☐ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☑ **BNSF** BNSFinfo@railpros.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☑ Required.
☐ Not Required

Railroad Point of Contact: Tim Huya, Tim.Huya@bnsf.com, (817)352-2902

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits

☐ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other:	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☐ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☑ Required: Contractor to obtain
- ☐ BNSF: Tim Huya, Tim.Huya@bnsf.com, (817)352-2902
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads:

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

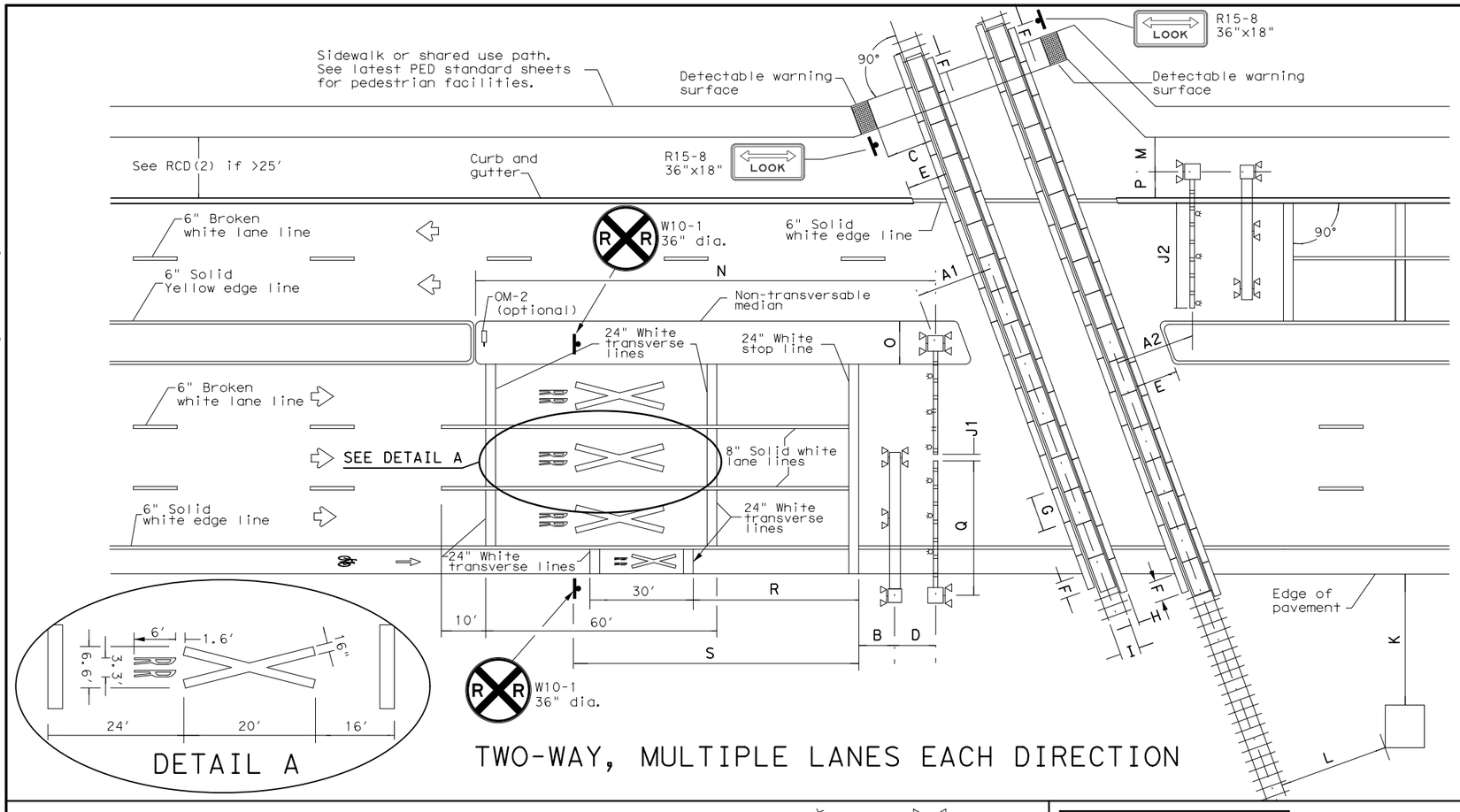
In Case of Railroad Emergency
Call: BNSF RAILROAD EMERGENCY
Railroad Emergency Line at: 800-832-5452
Location: DOT 024283T
RR Milepost: 27.870
Subdivision: Conroe

RRD Review Only
Initials:
Date: 8/2/2024

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS 4/2024		0315	04	088		SH 105	
		DIST	COUNTY			SHEET NO.	
		BRY	GRIMES			104	



NOTES

A1: Center of RR mast to center of rail: 12′ minimum, 15′ typical.

A2: Tip of gate to center of rail: 12′ minimum, 15′ typical.

B: Center of mast (cantilever, gate, or mast flasher) of nearest active traffic control device to stop line: 8′ (NOTE: Stop line may be moved as needed, but should be at least 8′ back from gates, if present).

C: Near edge of detectable warning surface to nearest rail: 12′ minimum.

D: Center of gate mast to center of cantilever mast: 6′ typical. NOTE: Cantilever may be located in front or behind gates.

E: Edge of median or curb to nearest rail: 10′ typical. NOTE: Design median edge to be parallel with rail.

F: Edge of planking panel from edge of roadway pavement: 3′ minimum; edge of sidewalk: 1′ minimum (for BNSF). NOTE: Field panels need not be in line with gauge panels.

G: Length of panels along rail: 8′ typical.

H: Width of field panel: 2′ typical (check with railroad company).

I: Distance between rails: 4′- 8′1/2".

J1: Tip of gate to tip of gate: 2′ maximum.

J2: 90% of traveled roadway to be covered by gate.

K: Nearest edge of RR cabinet from edge of pavement: 30′ typical. NOTE: Cabinet not required to be parallel to edge of pavement.

L: Nearest edge of RR cabinet from nearest rail: 25′ typical.

M: Center of RR mast to edge of sidewalk: 6′ minimum.

N: Center of gate mast to leading edge of non-traversable median: 100′ minimum to qualify as a Quiet Zone SSM. NOTE: 60′will suffice if there is a street intersection within the 100′ and all street intersections within 60′ are closed.

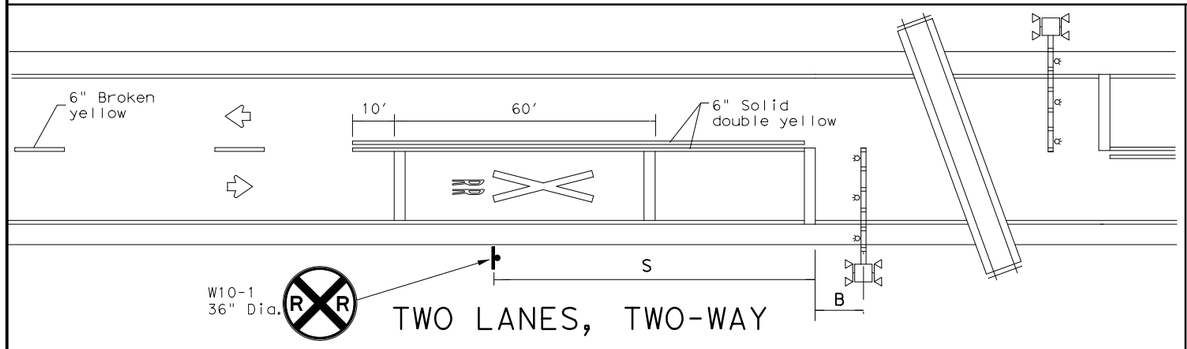
O: Width of median for RR gate assembly: 8′-6" minimum, 10′ typical when using median gates. NOTE: Center of gate mast minimum 4′-3" from face of curb.

P: Center of RR mast to face of curb: 5′-3" minimum.
Center of RR mast to edge of pavement (with shoulder): 7′ minimum.
Center of RR mast to edge of pavement (no shoulder): 9′-3" minimum.
NOTE: Final location determined by the railroad company.

Q: Gate length: 28′ or less typical, but railroad company may allow up to 32′ under special circumstances.

R: Stop line to first RR Crossing transverse line (bike lane): 50′ typical.

S: Stop line to GRADE CROSSING ADVANCE WARNING (W10-1) sign and adjacent RR Crossing pavement markings. See Table 1. See RCD(2) for other signs.



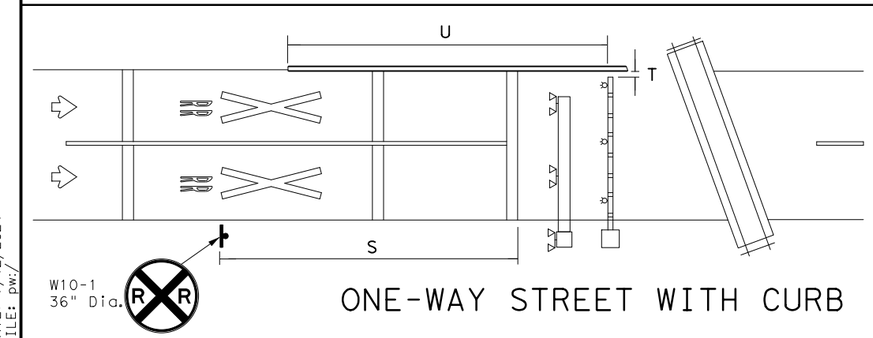
TWO LANES, TWO-WAY

TABLE 1	
Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

LEGEND	
	Sign
	Object Marker
	Traffic Flow
	Cantilever
	Gate Assembly
	Mast Flasher Pair

GENERAL NOTES

1. Medians and curbs must be non-traversable to qualify as a Quiet Zone Supplementary Safety Measure (SSM). Non-traversable curbs in Quiet Zones are 6" tall minimum and used on roadways where speed does not exceed 40 mph.
2. Raised pavement markers may be used to supplement striping. See PM(2) and PM(3) standard sheets.
3. Medians preferred whenever possible to prevent vehicles from driving around gates.
4. Longitudinal edge striping may be continued thru crossing as needed. Illumination may also be considered for nighttime visibility.
5. See SMD standard sheets for sign mounting details.
6. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.

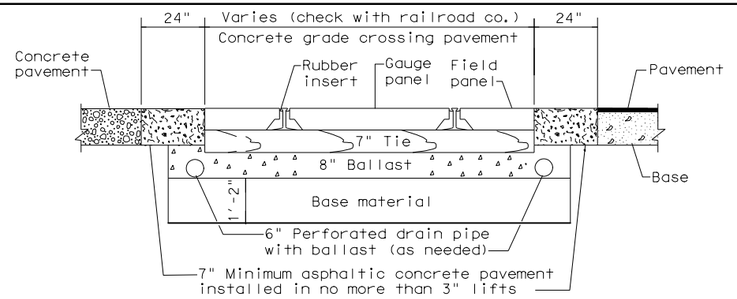


ONE-WAY STREET WITH CURB

NOTES

T: Tip of gate to edge of curb: 1′ maximum for Quiet Zone SSM, 90% of traveled way covered by gates for all other locations.

U: Non-traversable curb length from gate: 100′ minimum for a Quiet Zone SSM, 10′ minimum for all other locations.



CROSSING SURFACE CROSS SECTION

Texas Department of Transportation

Traffic Safety Division Standard

RAILROAD CROSSING DETAILS SIGNING, STRIPING, AND DEVICE PLACEMENT RCD(1)-22

FILE: rcd1-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0315	04	087, ETC.	SH 105
2-16	DIST	COUNTY		SHEET NO.
11-22	BRY	GRIMES		105

14

DATE: 7/12/2024
FILE: pw:/

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