

**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX OF SHEETS

**STATE OF TEXAS  
DEPARTMENT OF TRANSPORTATION**

**PLANS OF PROPOSED  
STATE HIGHWAY IMPROVEMENT**

FEDERAL AID PROJECT NO. F 2024(764)

**SH 6  
McLENNAN COUNTY, ETC.**

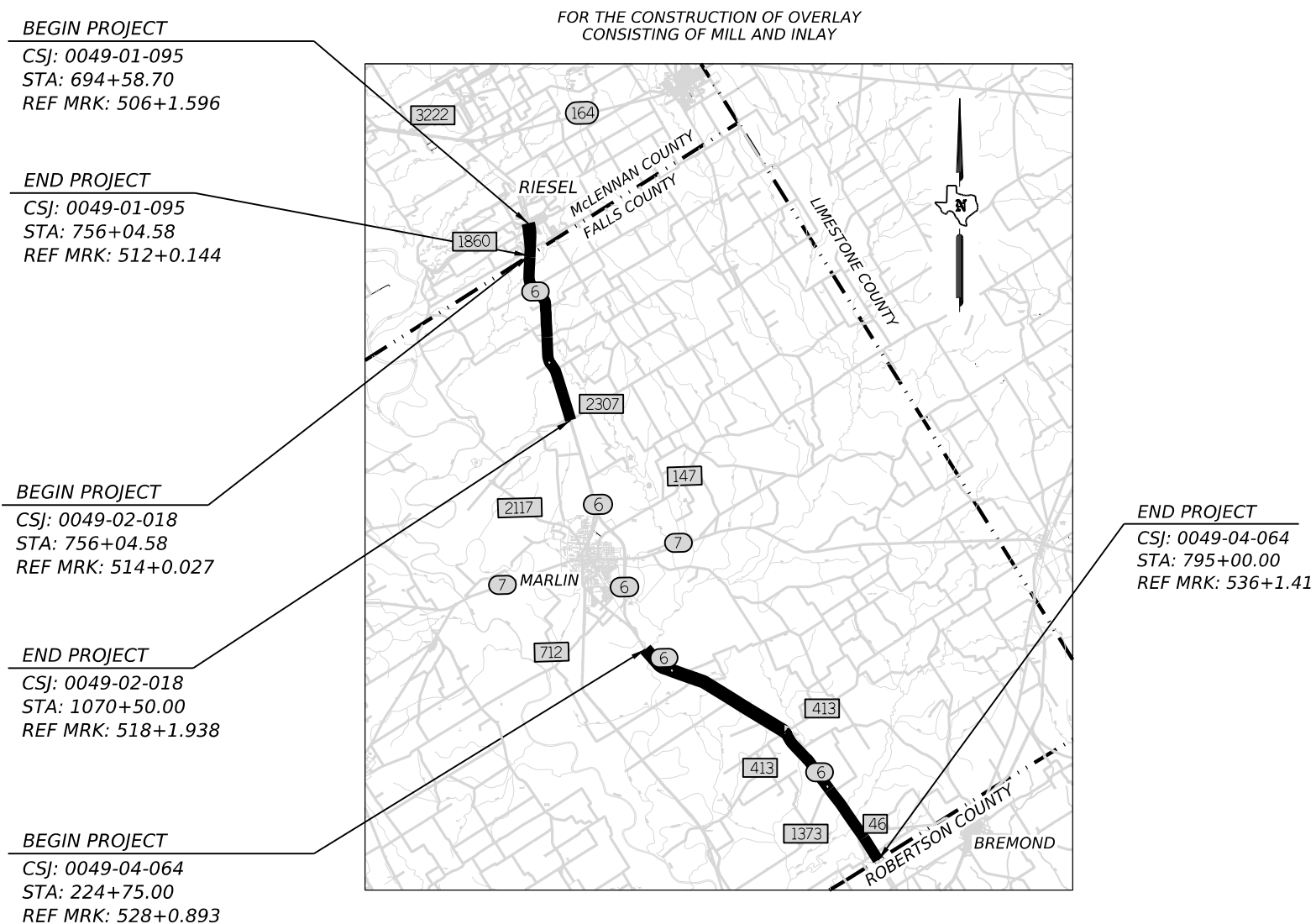
FEDERAL AID PROJECT NO. F 2024(764)			
CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST	COUNTY		SHEET NO.
WAC	McLENNAN,ETC.		1

DESIGN SPEED = MEET OR EXCEED EXISTING CONDITION  
CSJ: 0049-01-095  
A.D.T. (2021)= 12,939  
A.D.T. (2041)=18,115

DESIGN SPEED = MEET OR EXCEED EXISTING CONDITION  
CSJ: 0049-02-018  
A.D.T. (2021)= 13,021  
A.D.T. (2041)=18,367

DESIGN SPEED = MEET OR EXCEED EXISTING CONDITION  
CSJ: 0049-04-064  
A.D.T. (2021)= 10,805  
A.D.T. (2041)=15,127

CSJ	DESCRIPTION LIMITS	LENGTHS					
		BRIDGE LENGTH [FT]	BRIDGE LENGTH [MI]	ROADWAY LENGTH [FT]	ROADWAY LENGTH [MI]	TOTAL LENGTH [FT]	TOTAL LENGTH [MI]
0049-01-095	FM 1860 TO FALLS COUNTY LINE	0.00	0.000	6,145.88	1.164	6,145.88	1.164
0049-02-018	McLENNAN COUNTY LINE TO FM 2307	85.00	0.016	31,360.42	5.939	31,445.42	5.956
0049-04-064	BIG CREEK BRIDGE TO ROBERTSON COUNTY LINE	2,240.00	0.424	54,785.00	10.376	57,025.00	10.800
TOTAL		2,325.00	0.44	92,291.30	17.479	94,616.30	17.920



SCALE: 1" = 5 MILES  
EQUATIONS: NONE  
EXCEPTIONS: NONE  
RAILROAD CROSSINGS: NONE

SUBMITTED FOR LETTING:  
ATKINS (DESIGN CONSULTANT)

*Thomas T. Le*

THOMAS T. LE, P.E.  
PROJECT MANAGER

11/28/2023

DATE



11801 DOMAIN BLVD, SUITE 500  
AUSTIN, TEXAS 78758  
(512) 327-6840



RECOMMENDED FOR LETTING: 11/29/2023

DocuSigned by:  
*ATKINS*  
6D9791C615CF49B... AREA ENGINEER

RECOMMENDED FOR LETTING: 11/29/2023

DocuSigned by:  
*Stanley Swiatek*  
9AD8C743F95E4E3... DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 11/29/2023

DocuSigned by:  
*Stanley Swiatek*  
B69BD796DD564C9... DISTRICT ENGINEER

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 2023)

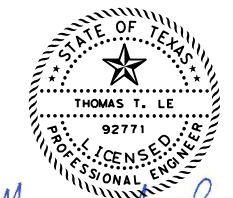
**INDEX OF SHEETS**

SHEET	DESCRIPTION
<b>GENERAL</b>	
1	TITLE SHEET
2	INDEX OF SHEETS
3	TYPICAL SECTIONS (CSJ: 0049-01-095)
4 - 5	TYPICAL SECTIONS (CSJ: 0049-02-018)
6 - 8	TYPICAL SECTIONS (CSJ: 0049-04-064)
9, 9A-9F	GENERAL NOTES
10, 10A	ESTIMATE & QUANTITY
11 - 13	SUMMARY OF QUANTITIES
<b>TRAFFIC CONTROL</b>	
14	SEQUENCE OF CONSTRUCTION NARRATIVE
<b>TRAFFIC CONTROL STANDARDS</b>	
15 - 26	## BC(1)-21 TO BC(12)-21
27	## TCP(1-5)-18
28	## TCP(2-6)-18
29	## TCP(3-2)-13
30	## TCP(3-3)-14
31	## TCP(3-5)-18
32	## TCP(5-1)-18
33	## TCP(6-1)-12
34	## TCP(6-2)-12
35	## TCP(6-3)-12
36	## TCP(6-4)-12
37	## TCP(6-5)-12
38	## TCP(6-7)-12
39	## TCP(6-8)-14
40	## WZ(STPM)-23
41	## WZ(RS)-22
42	## WZ(UL)-13
<b>ROADWAY</b>	
43 - 47	SH 6 CSJ: 0049-01-095 PLAN LAYOUT
48 - 61	SH 6 CSJ: 0049-02-018 PLAN LAYOUT
62 - 85	SH 6 CSJ: 0049-04-064 PLAN LAYOUT
86 - 87	SUPERELEVATION DATA
88	MISCELLANEOUS ROADWAY DETAILS
<b>ROADWAY STANDARDS</b>	
89	## BED-14
90	## GF(31)-19
91	## GF(31)DAT-19
92	## GF(31)LS-19
93	## GF(31)MS-19
94	## GF(31)T101-19
95 - 96	## GF(31)TR TL3-20
97	## MBGF(SR)-19
98	## SGT(11S)31-18
99	## SGT(12S)31-18
100	## SGT(15)31-20

SHEET	DESCRIPTION
<b>TRAFFIC STANDARDS</b>	
101	## D&OM(1)-20
102	## D&OM(2)-20
103	## D&OM(6)-20
104	## D&OM(VIA)-20
105	## PM(1)-22
106	## PM(2)-22
107	## PM(3)-22
108	## FPM(1)-22
109	## FPM(2)-22
110	## FPM(3)-22
111	## FPM(5)-22
112	## RS(1)-23
112A	## RS(5)-23
<b>RAILROAD</b>	
113	RAILROAD SCOPE OF WORK
<b>BRIDGE</b>	
114	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (SH 6 OVER SANDY CREEK)
115	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (NB SH 6 OVER BIG CREEK)
116	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (SB SH 6 OVER BIG CREEK)
117	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (SH 6 OVER HOG BRANCH)
118	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (SH 6 OVER LITTLE BRAZOS RIVER)
119	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (SH 6 OVER FM 413)
120	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (SH 6 OVER FISH CREEK)
121	LAYOUT FOR CLEANING AND SEALING EXISTING JOINTS (SH 6 OVER COPPERAS CREEK)
122 - 123	CLEANING AND SEALING EXISTING BRIDGE JOINTS
<b>ENVIRONMENTAL</b>	
124	EPIC
125 - 126	STORMWATER POLLUTION PREVENTION PLAN (SWP3) (LESS THAN 1 ACRE)
<b>ENVIRONMENTAL STANDARDS</b>	
127	## EC(1)-16
128 - 137	## TA-BMP (WACO DIST. STD.)

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

*Thomas T. Le* P.E. 12/22/2023  
DATE



*Thomas T. Le*  
12/22/2023

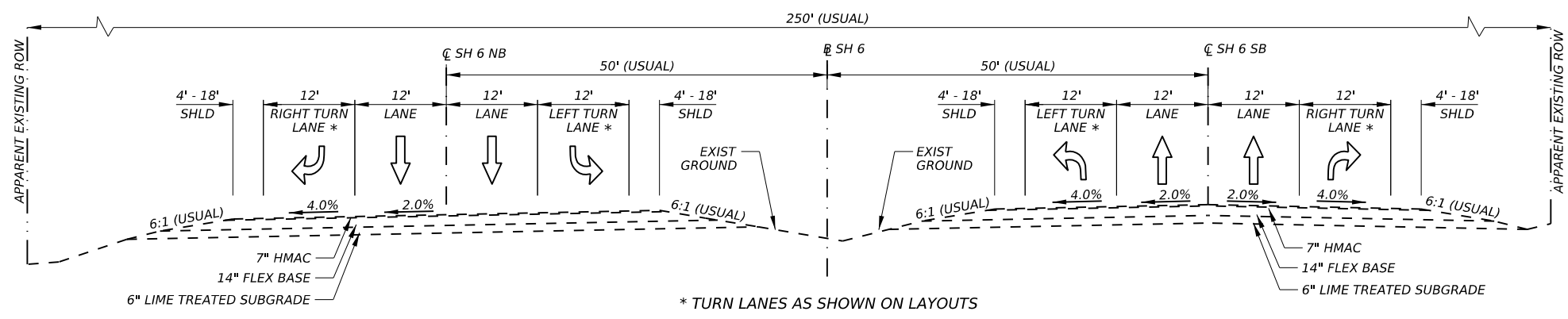
REV. NO	DATE	REVISION	BY



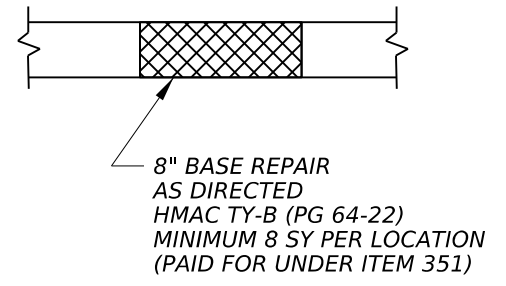
SH 6  
  
INDEX OF SHEETS

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	2	

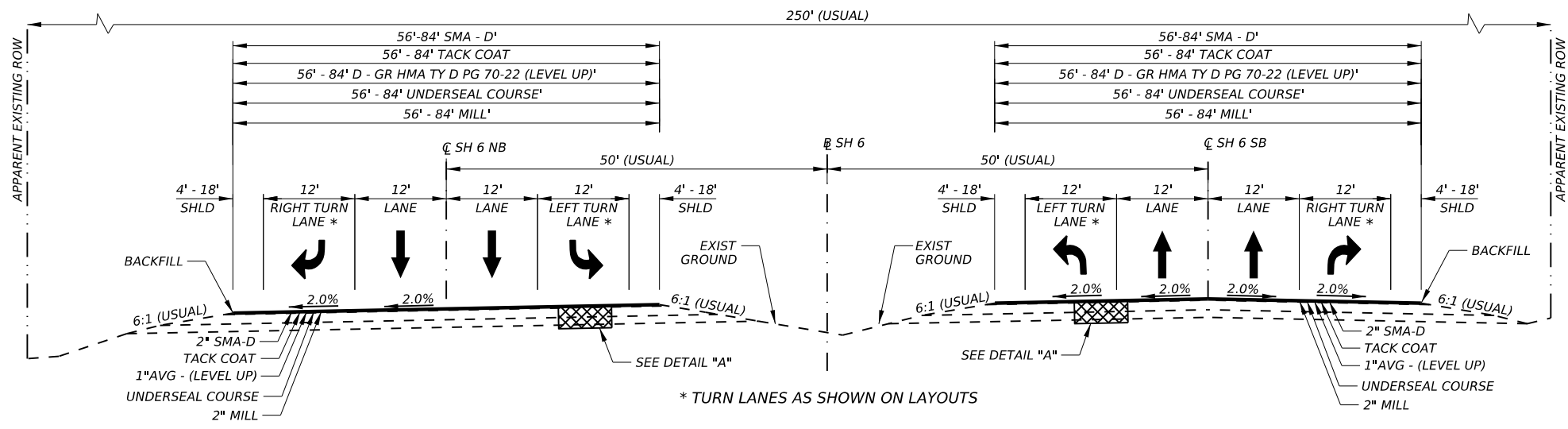
CK:  
DW:  
CK:  
DW:



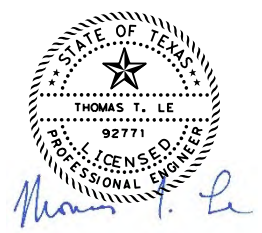
**EXISTING TYPICAL SECTION**  
STA 694+58.70 TO STA 756+04.58



**DETAIL "A"**  
FLEXIBLE PAVEMENT REPAIR



**PROPOSED TYPICAL SECTION**  
STA 694+58.70 TO STA 756+04.58



11/28/2023

REV. NO.	DATE	REVISION	BY



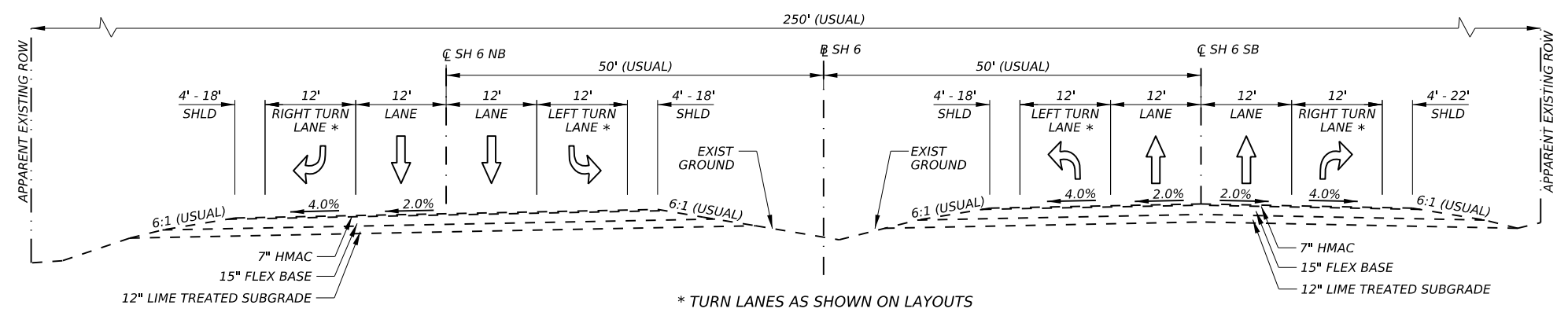
SH 6

TYPICAL SECTIONS  
(CSJ 0049-01-095)

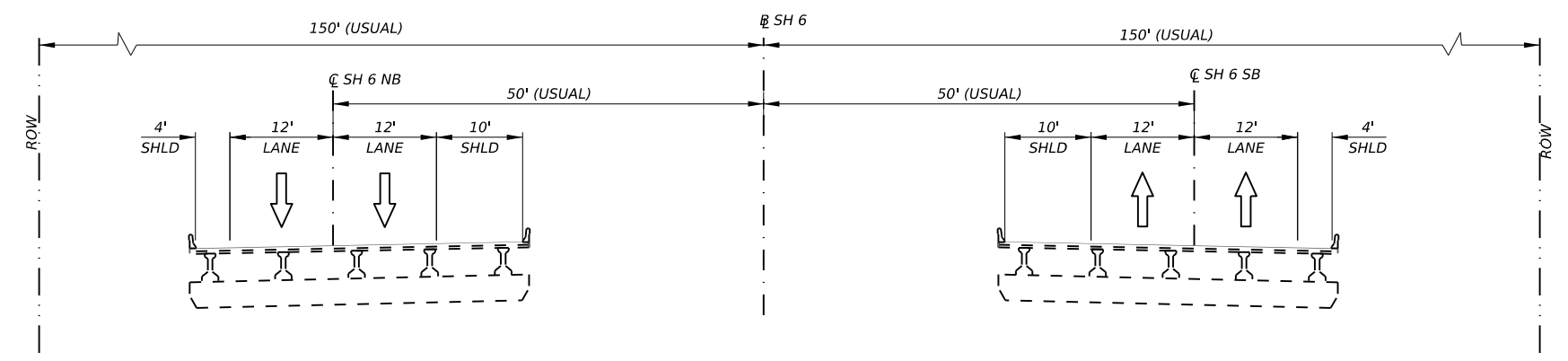
SHEET 1 OF 1			
CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	3

DATE: 11/28/2023 4:18:04 PM  
FILE: ...SH6 McLennan Typical

CK:  
DW:  
CK:  
DW:



**EXISTING TYPICAL SECTION**  
 STA 756+04.58 TO STA 778+81.00  
 STA 779+66.00 TO STA 1070+50.00



**EXISTING TYPICAL SECTION**  
 STA 778+81.00 TO STA 779+66.00



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6

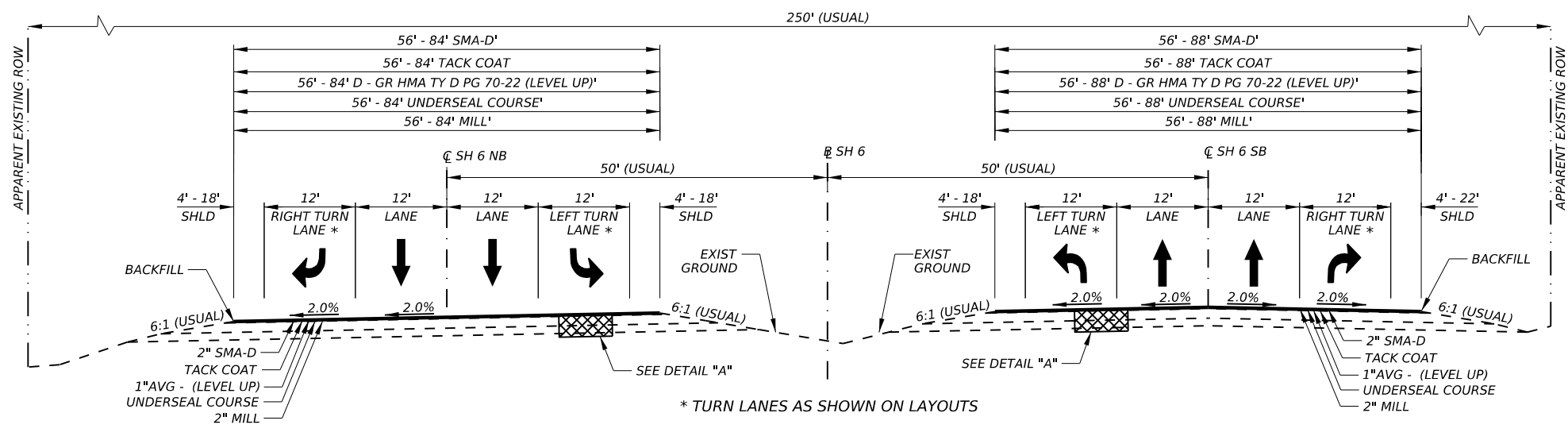
**TYPICAL SECTIONS**  
 (CSJ 0049-02-018)

SHEET 1 OF 2

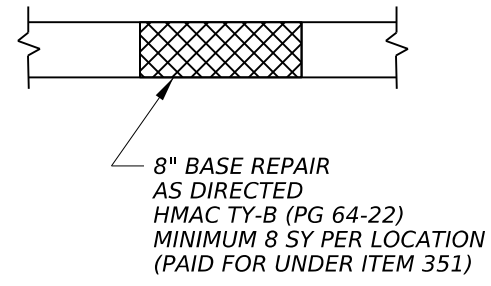
CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	4	

DATE: 11/28/2023 4:18:26 PM  
 FILE: ...SH6 - Fall North Typical.dgn

CK:  
DW:  
CK:  
DW:



**PROPOSED TYPICAL SECTION**  
 STA 756+04.58 TO STA 778+81.00  
 STA 779+66.00 TO STA 1070+50.00



**DETAIL "A"**  
 FLEXIBLE PAVEMENT REPAIR



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6

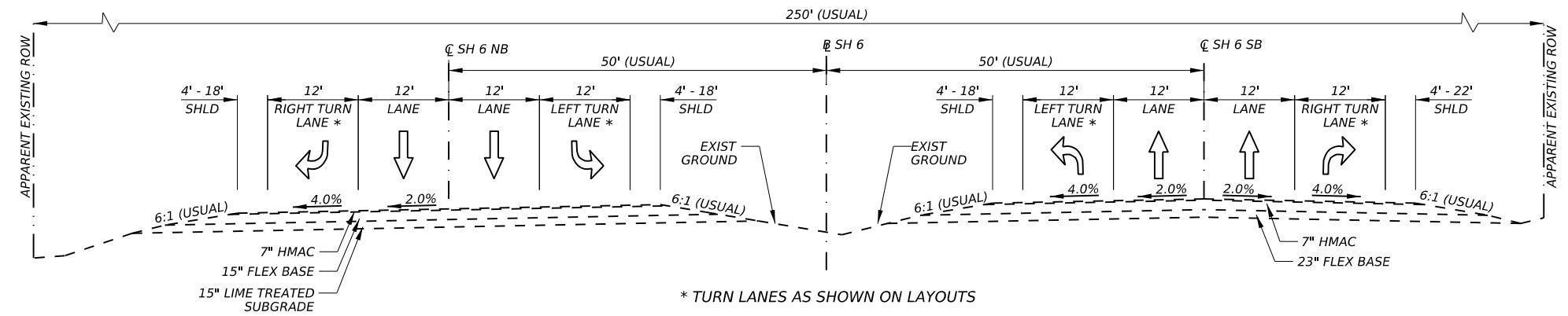
TYPICAL SECTIONS  
 (CSJ 0049-02-018)

SHEET 2 OF 2

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	5

DATE: 11/28/2023 4:18:26 PM  
 FILE: ...SH6 - Fall North Typical.dgn

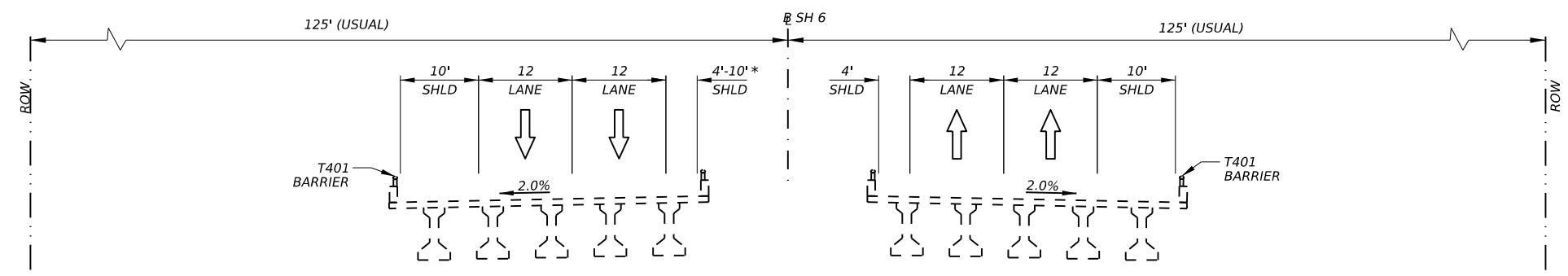
CK:  
DW:  
CK:  
DW:



\* TURN LANES AS SHOWN ON LAYOUTS

**EXISTING TYPICAL SECTION**

- STA 224+75.00 TO STA 227+15.58
- STA 238+35.53 TO STA 338+24.71 (SB BRIDGE)
- STA 238+35.53 TO STA 338+41.94 (NB BRIDGE)
- STA 339+55.51 (SB BRIDGE) TO STA 504+15.00
- STA 339+71.16 (NB BRIDGE) TO STA 504+15.00
- STA 506+45.00 TO STA 558+33.20 (SB BRIDGE)
- STA 506+45.00 TO STA 558+06.30 (NB BRIDGE)
- STA 559+83.20 (SB BRIDGE) TO STA 683+00.00
- STA 559+56.30 (NB BRIDGE) TO STA 683+00.00
- STA 685+10.00 TO STA 711+80.00
- STA 715+80.00 TO STA 795+00.00



**EXISTING TYPICAL SECTION**

- STA 227+15.58 TO STA 238+35.53 (\* 10' SHLDR)
- STA 338+ 24.71 TO STA 339+55.51 (SB)
- STA 504+15.00 TO STA 506+45.00
- STA 558+33.20 TO STA 559+83.20 (SB)
- STA 558+06.30 TO STA 559+56.30 (NB)
- STA 683+00.00 TO STA 685+10.00



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6

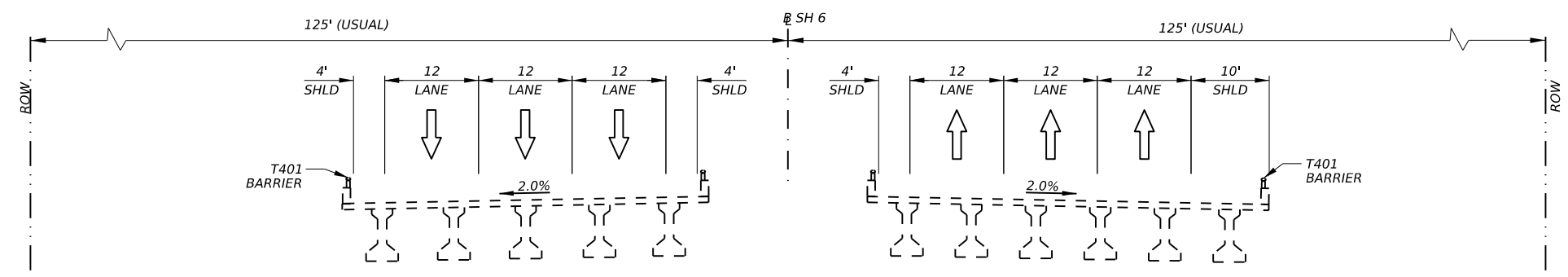
TYPICAL SECTIONS  
(CSJ 0049-04-064)

SHEET 1 OF 3

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	6	

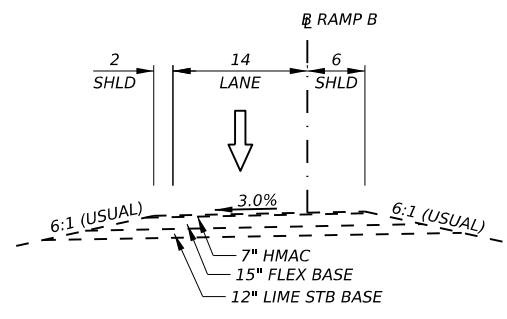
DATE: 11/28/2023 4:18:50 PM  
FILE: ...SH6 - Falls South Typical.dgn

CK: DW: CK: DW: CK: DW:



**EXISTING TYPICAL SECTION**

STA 338+41.94 TO STA 339+71.16 (NB)  
 STA 711+80.00 TO STA 715+80.00



**EXISTING RAMP TYPICAL SECTION**



*Thomas T. Le*

11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6

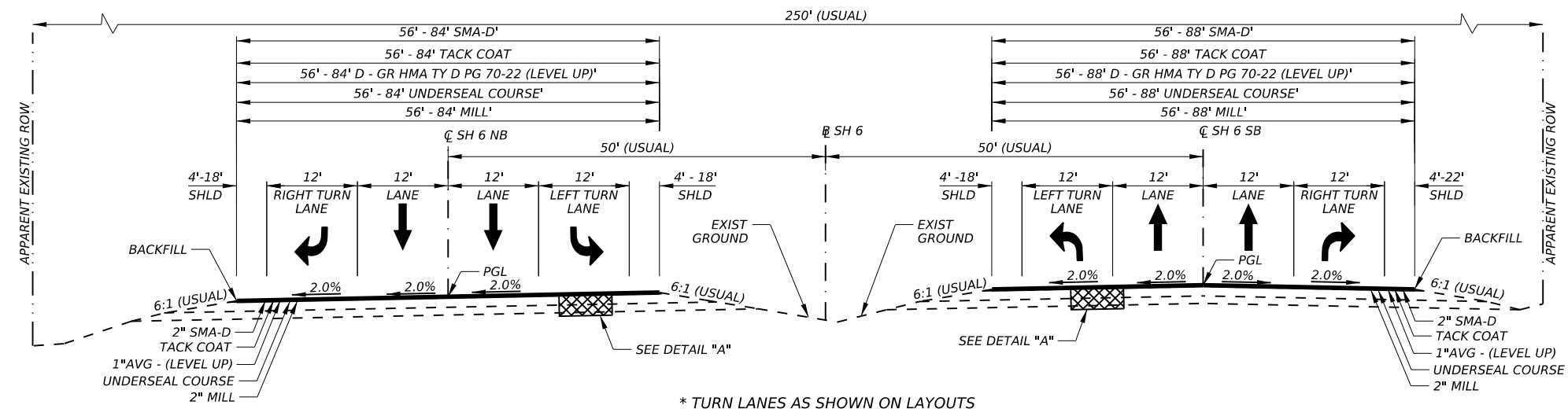
TYPICAL SECTIONS  
 (CSJ 0049-04-064)

SHEET 2 OF 3

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	7	

DATE: 11/28/2023 4:18:51 PM  
 FILE: ...SH6 - Falls South Typical.dgn

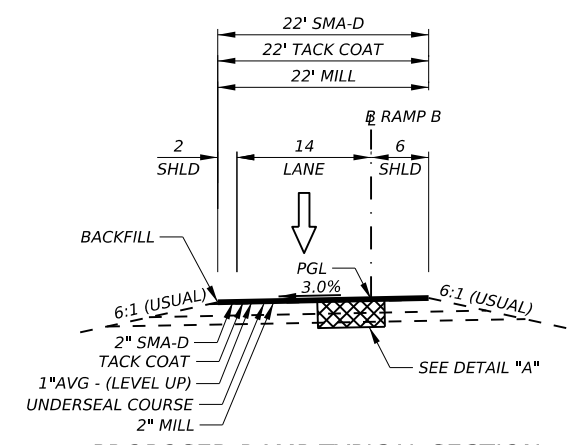
CK:  
DW:  
CK:  
DW:



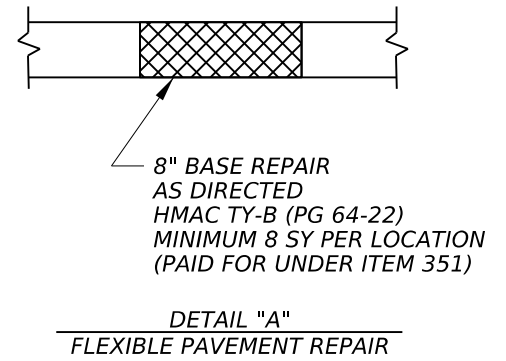
\* TURN LANES AS SHOWN ON LAYOUTS

**PROPOSED TYPICAL SECTION**

- STA 224+75.00 TO STA 227+15.58
- STA 238+35.53 TO STA 338+24.71 (SB BRIDGE)
- STA 238+35.53 TO STA 338+41.94 (NB BRIDGE)
- STA 339+55.51 (SB BRIDGE) TO STA 504+15.00
- STA 339+71.16 (NB BRIDGE) TO STA 504+15.00
- STA 506+45.00 TO STA 558+33.20 (SB BRIDGE)
- STA 506+45.00 TO STA 558+06.30 (NB BRIDGE)
- STA 559+83.20 (SB BRIDGE) TO STA 683+00.00
- STA 559+56.30 (NB BRIDGE) TO STA 683+00.00
- STA 685+10.00 TO STA 711+80.00
- STA 715+80.00 TO STA 795+00.00



**PROPOSED RAMP TYPICAL SECTION**



11/28/2023

REV. NO	DATE	REVISION	BY



SH 6

TYPICAL SECTIONS  
(CSJ 0049-04-064)

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	8	

DATE: 11/28/2023 4:18:51 PM  
FILE: ...SH6 - Falls South Typical.dgn



**BASIS OF ESTIMATE TABLES**

<b>Table 1: Basis of Estimate for Asphalt Pavements</b>				
Item	Description	Rate	Basis	Quantities
3080	<b>STONE-MATRIX ASPHALT (SMA)</b>			
	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	220 LB / SY	932,640 SY	102,590 TON
3076	<b>DENSE-GRADED HOT MIX ASPHALT</b>			
	TY-D PG 70-22 (LEVEL- UP	110 LB / SY / IN	932,640 SY	51,297 TON
*ALL HOT MIX ITEMS	TACK COAT	0.1 GAL/SY/LIFT OF HMAC	932,640 SY	93,264 GAL

\*Tack Rate for all interlayer tack use

<b>Table 2: Basis of Estimate for Interlayer Material</b>				
Item	Description	Rate	Basis	Quantities
3085	<b>UNDERSEAL COURSE</b>	<b>0.25 GAL / SY</b>	<b>932,640 SY</b>	<b>233,166 GAL</b>
	FOR CONTRACTORS INFORMATION			
	SPRAY APPLIED MEMBRANE	0.20 GAL / SY	932,640 SY	186,528 GAL
	TRAIL	0.20 GAL / SY	932,640 SY	186,528 GAL
	ASPH (AC-15P, AC-20XP, AC10-2TR, AC-12-5TR)	0.25 GAL / SY	932,640 SY	233,166 GAL
	AGGR (TY-PD GR-5 OR TY-PL GR-5) (SAC-B)	1 CY / 150 SY	962,640 SY	6,218 CY

**GENERAL**

The construction, operation and maintenance of the proposed project will be consistent with the state implementation plan as prepared by the Texas Commission on Environmental Quality.

The disturbed area for this project, as shown on the plans is 0.24 acres. However, the Total Disturbed Area (TDA) will establish the required authorization for storm water discharges. The TDA of this project will be determined by the sum of the disturbed area in all project locations in the contract, and all disturbed area on all Project-Specific Locations (PSL) located in the project limits and/or within 1 mile of the project limits. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction site as shown on the plans, according to the TDA of the project. The Contractor will obtain any required authorization from the TCEQ for the discharge of storm water from any PSL for construction support activities on or off of the project row according to the TDA of the project. When the TDA for the project exceeds 1 acre, provide a copy of the appropriate application of permit (NOI, or Construction Site Notice) to the Engineer, for any PSL located in the project limits or within 1 mile of the project limits. Follow the directives and adhere to all requirements set forth in the TCEQ, Texas Pollution Discharge Elimination System, Construction General Permit (TPDES, CGP).

There is a high probability that an environmentally sensitive area could be encountered on the Contractor designated Project-Specific Locations (PSL) for this project (haul roads, equipment staging areas, borrow pits, disposal sites, field offices, storage areas, parking areas, etc.). Item 7.6 "Project-Specific Locations", provides a listing of regulatory agencies that may need to be contacted regarding this project.

Contractor questions on this project are to be emailed to the Waco District at the following address:

Bill Compton - [Wacoprebid@txdot.gov](mailto:Wacoprebid@txdot.gov), 254-867-2770, 100 S. Loop Dr., Waco, TX  
Carmen Chau - [Wacoprebid@txdot.gov](mailto:Wacoprebid@txdot.gov), 254-867-2794, 100 S. Loop Dr., Waco, TX

Or Via phone or in person to the following individual(s):  
Area Engineer's: Clayton Zacha, P.E. - 254-772-2890  
Assistant Area Engineer's: Mohab Samuel, P.E. - 254-772-2890

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

Paper copies of cross-sections may be produced by using the provided .pdf file located on the above FTP Website at the bidders' expense and at copying companies. This data is for non-construction purposes only and it is the responsibility of the prospective bidder to validate the enclosed data with appropriate plans, specifications and estimate for the project(s).

### **GENERAL NOTES**

#### **ITEM 5: CONTROL OF THE WORK**

Provide the Engineer with a weekly work schedule of planned activities including anticipated quantities of materials to be placed daily (CY of each concrete placement, tons of HMAC to be placed daily, etc.). Schedules will be provided for the following week as part of each week's project meetings or by 5PM on Thursday as approved by the Engineer. Failure to provide notifications are required here may be deemed as insufficient notice per item 5.10.

Provide the Engineer Daily by 3PM the planned activities for the following day including location, quantities of materials to be placed, etc. in a format acceptable to the Engineer.

Submit all fabrication and shop drawings per TxDOT's online shop drawing submittal system and copy the Area Engineer on the email submittal, unless otherwise directed.

Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way on this project. For signal, illumination, surveillance, and communications & control maintained by TxDOT, call the TxDOT Traffic Signal Office

(254)867-2808 for locates a minimum of 48 hours in advance of excavation. For irrigation systems, call TxDOT Landscape Office (254)867-2726 for locates a minimum of 48 hours in advance of excavation. If city or town owned irrigation facilities are present, call the appropriate department of the local city or town a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages when utilities are damaged due to Contractor's negligence including, but not limited to, repair or replacement at the Contractor's expense.

#### **ITEM 6: CONTROL OF MATERIALS**

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

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

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

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

References to manufacturer's trade name or catalog numbers are for the purpose of identification only and the Contractor will be permitted to furnish like materials of other manufacturers provided they are of equal quality and comply with specifications for this project.

#### **ITEM 7: LEGAL RELATIONS AND RESPONSIBILITIES**

No significant traffic generator events identified.

If utilizing private property for waste disposal sites, field office sites, equipment storage sites or for any other purpose involved with this project, provide to the Engineer written proof of the property owner's approval of the use of this property. This proof may be in the form of a letter or agreement signed by the property owner or other documents acceptable to the Engineer. Provide such proof prior to occupying the site.

Personal vehicles of the Contractor's employees will not be parked within the right of way at any time including any section closed to public traffic, unless the vehicle is being utilized for construction procedures. However, the Contractor's employees may park on the right of way at the sites where the Contractor has his office, equipment and materials storage yard.

**Law Enforcement Personnel.**

As approved by the Engineer, provide uniformed off duty police officers and squad cars during the following activities:

- Lane closures on controlled access facilities or 4 lane divided facilities with speed limits above 55mph,
- ramp closures,
- Roadway Closures,
- Support of phase construction traffic switches,
- nighttime work, or
- other situations that indicate a need for additional traffic control to protect the traveling public or the construction workforce.

Law Enforcement Personnel must have jurisdictional authority to act in the area of the project.

Law Enforcement Personnel will be paid when use is approved by the Engineer. The Contractor retains the right to have law enforcement personnel on sight at their own cost and discretion when note approved by the Engineer.

Submit charge summary and invoices using the Department form 318. Provide documentation such as payroll, log sheets with signatures and badge number, or invoices from the government entity providing the officers for reimbursement.

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. Windows / Windshields may not be blocked.

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site. A minimum number of hours is not guaranteed. Payment is for work performed.

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.

**ITEM 8: PROSECUTION AND PROGRESS**

This Project will be a Standard Workweek in accordance with Article 8.3.1.4.

Meet weekly or at intervals as agreed upon with the Engineer to notify him or her of planned work for the upcoming 3-week period.

For this project, provide a Bar Chart progress schedule.

Prior to submission of the Baseline Schedule Submittal, conduct a Schedule Workshop with the Engineer to provide the Engineer with an overview of the schedule, its basic work sequence, production assumptions and other items as may be pertinent to assist the Engineer in their detailed review of the schedule. The goal of this meeting is to have collaborative dialogue about the schedule and expedite the Engineer review and acceptance of the baseline schedule.

**ITEM 134: BACKFILLING PAVEMENT EDGES**

Start backfilling pavement edges within 7 days of starting the surface course.

Use Type "A" or "B" material to backfill pavement edges as shown in plans. Type "A" or "B" material will consist of suitable material that when compacted will support the pavement edge. Rap is considered suitable Type "A" or "B" material.

Emulsion will be placed at a 50/50 solution of water to emulsion over disturbed edge backfill area. Emulsion rate=0.15 Gal/SY residual. This work, materials and equipment will be subsidiary to Item 134.

**ITEM 351: FLEXIBLE PAVEMENT STRUCTURE REPAIR**

For this project, a laydown machine will be required during the construction & placement of this item.

Locations and Quantities will vary as directed. The minimum area to be repaired will be 8 SY.

**ITEM 354: PLANING AND TEXTURING PAVEMENT**

Saw existing asphalt along neat lines where portions are to be left in place temporarily or permanently. Sawing is not paid for directly but is subsidiary to this item.

To remove dirt and debris, and assure reclaimable material is not contaminated per the specification, blade or otherwise make a neat cut along the existing pavement edge to a depth approx. 1" below the milling limits. This work will be required prior to milling operation and is subsidiary to this item.

Take possession of recycled asphalt pavement from the project and recycle the material.

Patch pavement cut to excessive depth by equipment failure with an approved epoxy material. Re-plane patched area to an acceptable approved ride quality. Payment for these corrections is subsidiary to this item.

**ITEM 500: MOBILIZATION**

Material On Hand (MOH) will not be used in calculating partial payments for Mobilization.

**ITEM 502: BARRICADES, SIGNS, AND TRAFFIC HANDLING**

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

Install traffic marking signs prior to sealcoat application and remove within three days after placement of traffic markings.

Access will be provided to all business and residences at all times. Where turning radii are limited during phased construction at intersections, provide all weather surfaces such as RAP or base in turning movements to accommodate and to protect the traffic from edge drop-offs. Materials, labor, maintenance and removal for these temporary accesses and radii will not be paid for directly but will be considered subsidiary to the various bid items.

When excavation is required next to a pavement lane carrying traffic and the widening is not completed by the end of the workday, backfill against the edge of the pavement with at least a 3:1 slope using an acceptable material to support vehicular traffic. Carefully remove and dispose of this material when work resumes. Backfilling pavement edges, and the materials required for the work will be subsidiary to this item.

Place Barricade / long term traffic control signs with driven post / sleeve mount options for all projects with more than 9 months of project barricades. e in ground mount for project limits signs / long term signs. Upon sign removal, pull sleeve or drive to below ground line.

Place barricades and signs in locations that do not obstruct the sight distance of drivers entering the highway from driveways or side streets.

Provide rectangular shape (CW12-2P) Temporary Clearance Signs on all bridges where the existing vertical clearance has changed. Install Signs to the satisfaction of the

Engineer prior to opening to traffic. Plywood sign blanks will have minimum dimensions of 84" X 12". Work performed and materials are subsidiary to this item.

The Contractor Responsible Person(s) (CRP) for Work Zone Traffic Controls will inspect and ensure any deficiencies are corrected each and every day throughout the duration of this contract. Any misaligned or damaged traffic control devices will be repaired as soon as practical after deficiency is discovered.

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee(s) available to respond on the project for emergencies and for taking corrective measures within One (1) Hour.

**Short Term Lane Closure Allowances:**

Provide written proposed lane closure information by 1:00 pm on the business day prior to the proposed closures. Do not close lanes when this requirement is not met.

Traffic Control Plans with Lane Closures causing backups of 20 minutes or greater in duration will be modified to reduce delays to less than 20 minutes.

Lane Closure and Pilot Car Operations will be implemented to prevent conflicts with activities including school drop-off / dismissal, large employer shift changes, etc.

Lane Closures and Pilot Car Operations will not be allowed in nighttime work hours without approval of the Engineer.

**ITEM 504: FIELD OFFICE**

Furnish one Asphalt Mix Control Laboratory (Type D) for this project.

**ITEM 506: TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS**

The Storm Water Pollution Prevention Plan (SWP3) consists of temporary erosion control measures needed and provided for under this Item. The disturbed area is less than one acre and use of erosion control measures is not anticipated. If physical conditions encountered at the job site require necessary controls, BMP installation, maintenance, and removal will be paid as extra work on a force account basis per Articles 4.4 and 9.7

Take all practicable precautions to prevent debris from being discharged into the Waters of Texas or a designated wetland. Install Best Management Practices before demolition begins and maintain them during the demolition. Remove any debris or construction material that escapes containment devices and are discharged into the restricted areas before the next rain event or within 24 hours of the discharge.

Leave all right of way areas undisturbed until actual construction is to be performed in said areas.

No soil disturbing activities will begin on any section of TxDOT ROW without adequate sedimentation controls first being installed and functioning at adjacent drainage outfalls. Begin and continuously prosecute the repairs, additions and maintenance of erosion and sedimentation control devices within seven days after the Contractor receives each Form 2118, Field Inspection and Maintenance Report, from the Engineer. Failure of the Contractor to fulfill either of the above requirements places TxDOT in potential non-compliance with permit requirements and may result in withholding estimates or stopping work or both until all environmental permit requirements are fulfilled.

Concrete Washouts are required per the CGP. The Concrete Washout Area(s) structural controls must consist of temporary berms, temporary shallow pits, and/or temporary storage tanks to prevent contaminated runoff and must be lined as to prevent contamination of underlying soil. Ensure pits properly maintained including removal of concrete as not to allow overflow. The location(s) of washout area will be approved by the Engineer. When washout pits are no longer needed, they will be removed, and area will be restored to original condition. This work, materials and labor will not be measured or paid for directly but will be subsidiary to Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls."

Cleaning and sweeping of open roadways due to material spillage or loss from Contractor equipment or tires will be the responsibility of the Contractor at no cost to TxDOT. This work will not be charged as Item 738, "Cleaning and Sweeping Highways". Cleaning and sweeping of roadways will be completed as directed, including multiple times per day, if necessary, to maintain acceptable roadways for the traveling public and to meet environmental regulations. Construction activities will cease when material deposited on the roadway is not properly removed or when equipment is not available as needed. Adequate construction exits will be planned, constructed, and maintained by the Contractor per Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls".

#### **ITEM 540: METAL BEAM GUARD FENCE**

Furnish steel posts throughout the project except as specifically noted in the plans.

Wooden block out will not be allowed.

#### **ITEMS 542 & 544: REMOVING METAL BEAM GUARD FENCE & GUARDRAIL END TREATMENTS**

W-Beam elements, steel posts, and composite material block-outs deemed salvageable will remain the property of the State and will be dismantled and returned to the TxDOT

Maintenance yard within fifty (50) miles of project as directed. All other guard fence, and SGT's deemed non-salvageable will become the property of the Contractor.

#### **ITEM 544: GUARDRAIL END TREATMENTS**

The use of wooden block-outs will not be allowed.

#### **ITEM 585: RIDE QUALITY FOR PAVEMENT SURFACES**

Use Surface Test Type A on all intersections and driveways.

Use Surface Test Type B pay adjustment schedule 1 on the travel lanes.

The Contractor will ensure satisfactory profile results in the intermediate paving layers (mixture) to eliminate corrective action for excessive deviations in the final surface layers.

Milling will not be allowed as a corrective action for excessive deviations in the surface layer.

#### **ITEM 658: DELINEATOR AND OBJECT MARKER ASSEMBLIES**

All flexible and GF2 delineators will have a tubular body.

The delineator assembly BRF Class A (D-SW) and (D-SY) are to be single delineators (Class I) attached to a flat, plastic bracket to facilitate the mounting of the delineator on top of the bridge rail at the locations shown on the plans. Submit a sample for approval before ordering materials.

#### **ITEM 662: WORK ZONE PAVEMENT MARKINGS**

Paint and beads may be used for non-removable pavement markings.

#### **ITEM 666: RETROREFLECTORIZED PAVEMENT MARKINGS**

The Contractor will layout the proposed striping in accordance with TxDOT Traffic Control Plan Standards and latest version Texas Manual on Uniform Traffic Control Devices (TMUTCD) and project striping layout sheets. The Engineer will verify proposed striping layout prior to the beginning of striping operations.

The Contractor will locate the beginning and ending points of No Pass Zones.

**ITEM 672: RAISED PAVEMENT MARKERS**

Existing raised pavement markers to be replaced will be removed at the same time that the new markers are placed (i.e., remove and replace in one operation). Existing raised pavement markers replaced by new markers will be removed in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers". Immediately fill the damaged area in the pavement due to the removal of existing markers with an approved bituminous material. This removal and backfill work will not be paid for directly, but will be subsidiary to Item 672, "Raised Pavement Markers".

**ITEM 3076: DENSE-GRADED HOT-MIX ASPHALT**

Use aggregate that meets the Surface Aggregate Classification (SAC) requirement of Class B.

Maximum stripping of 0% is required.

RAP from Contractor owned sources may be used if the RAP is fractionated.

**ITEM 3080: STONE-MATRIX ASPHALT**

RAP from Contractor owned sources may be used if the RAP is fractionated.

Use aggregate that meets the Surface Aggregate Classification (SAC) requirement of Class A.

No Recycled Asphalt Shingles (RAS) will be allowed.

**ITEM 3096: ASPHALTS, OILS, AND EMULSIONS**

Latex additives or modifiers will not be allowed on this project.

**ITEM 6001: PORTABLE CHANGEABLE MESSAGE SIGN**

This project will require "full matrix" type portable changeable message signs.

Ensure that the Contractor's Responsible Person for traffic control can revise messages within thirty (30) minutes of notification.

Furnish 6 portable changeable message signs. The portable changeable message sign(s) will be used for all lane closures and freeway closures as shown on the traffic control plan standard sheets.

Supply portable changeable message sign(s) in accordance with the Traffic Control Plan standard sheets and Article 6f.55 of the Texas Manual on Uniform Traffic Control Devices for Streets and Highways Part VI.

**ITEM 6185: TRUCK MOUNTED ATTENUATORS**

The TMA/TA used for installation/removal of traffic control for a work area will be subsidiary to the TMA/TA used to perform the work.

The total number of truck mounted attenuators (TMA) required when utilizing the traffic control standards are shown in the tables below.

TCP 1 Series	Scenario	Required TMA	
(1-1)-18 / (1-2)-18		1	
(1-3)-18	A   B	1	2
(1-4)-18 / (1-5)-18		1	

TCP 2 Series	Scenario	Required TMA	
(2-2)-18 / (2-4)-18 / (2-5)-18 / (2-6)-18	All	1	
(2-3)-18	A   B	1	2

TCP 3 Series	Scenario	Required TMA
(3-2)-13	All	3
(3-3)-14	A	B
(3-3)-14 (3-4)-13	C   3   D	2
(3-4)-13	All	1, unless working inside a twtlt, then 2.
(3-5)-18	All	1

TCP 6 Series	Scenario	Required TMA	
(6-1)-12	A   B	1	2
(6-2)-12 / (6-3)-12	All	1	
(6-4)-12	A   B	1	2
(6-5)-12	A   B	1	2
(6-6)-12 / (6-7)-12	All	1 Per Lane	
(6-8)-14	All	1	

Shadow vehicles equipped for truck mounted attenuators (TMA) for stationary operations will be paid for by the day and must be available for use at any time as determined by the Engineer.

Mobile operations will be paid for by the hour, per specifications. For mobile operations, payment will be made only while the TMA is in use.

For mobile operations requiring multiple TMA's, judgement may be applied in lower speed, urban / in town traffic environments to reduce the numbers of TMA in use where the added TMA may pose a hazard for traffic entering and exiting driveways, side streets, etc.

The Contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMA needed for the project for those times per plan requirements. Additional TMAs used that are not specified in the plans in which the Contractor expects compensation will require prior approval from the Engineer.

**This page was intentionally left blank.**



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0049-01-095

DISTRICT Waco  
HIGHWAY SH 6

COUNTY Falls, McLennan

CONTROL SECTION JOB				0049-01-095		0049-02-018		0049-04-064		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00129142		A00129095		A00129092			
COUNTY				McLennan		Falls		Falls			
HIGHWAY				SH 6		SH 6		SH 6			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	104-6054	REMOVING CONCRETE(MOW STRIP)	LF			625.000		4,125.000		4,750.000	
	134-6001	BACKFILL (TY A)	STA	122.800		626.000		1,183.300		1,932.100	
	351-6004	FLEXIBLE PAVEMENT STRUCTURE REPAIR(8")	SY	1,000.000		2,000.000		2,000.000		5,000.000	
	354-6220	PLANE ASPH CONC PAV (0" TO 2" MICRO)	SY	63,098.000		306,141.000		563,401.000		932,640.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY			52.600		351.500		404.100	
	438-6002	CLEANING AND SEALING EXIST JOINTS(CL3)	LF			152.000		972.000		1,124.000	
	438-6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF			152.000		1,455.700		1,607.700	
	479-6001	ADJUSTING MANHOLES	EA	2.000						2.000	
	500-6001	MOBILIZATION	LS	0.070		0.610		0.320		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	8.000						8.000	
	533-6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	24,408.000		118,853.000		220,456.000		363,717.000	
	540-6002	MTL W-BEAM GD FEN (STEEL POST)	LF			625.000		4,285.000		4,910.000	
	540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA			4.000		25.000		29.000	
	540-6014	SHORT RADIUS	LF					65.000		65.000	
	540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA					2.000		2.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF			625.000		4,125.000		4,750.000	
	542-6004	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	EA			4.000		25.000		29.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA			4.000		26.000		30.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA			4.000		25.000		29.000	
	658-6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA			7.000		49.000		56.000	
	662-6005	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	LF	3,070.000		15,930.000		28,760.000		47,760.000	
	662-6008	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	LF	12,185.000		61,958.000		115,526.000		189,669.000	
	662-6012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	LF	1,017.000		10,471.000		18,939.000		30,427.000	
	662-6037	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	LF	12,223.000		56,895.000		113,890.000		183,008.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	1,229.000		6,333.000		11,525.000		19,087.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	307.000		1,429.000		2,855.000		4,591.000	
	666-6030	REFL PAV MRK TY I (W)8"(DOT)(100MIL)	LF	225.000		2,643.000		4,728.000		7,596.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	1,017.000		10,471.000		18,939.000		30,427.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	140.000		214.000		701.000		1,055.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	3,070.000		15,930.000		28,760.000		47,760.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	12,185.000		61,958.000		115,526.000		189,669.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	12,223.000		56,895.000		113,890.000		183,008.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	2.000		45.000		80.000		127.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	2.000		45.000		53.000		100.000	
	668-6092	PREFAB PAV MRK TY C (W) (36")(YLD TRI)	EA	44.000		410.000		409.000		863.000	
	672-6007	REFL PAV MRKR TY I-C	EA	95.000		777.000		1,405.000		2,277.000	
	3076-6043	D-GR HMA TY-D PG70-22 (LEVEL-UP)	TON	3,472.000		16,838.000		30,987.000		51,297.000	

DISTRICT	COUNTY	CCSJ	SHEET
Waco	McLennan	0049-01-095	10





# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0049-01-095

DISTRICT Waco  
HIGHWAY SH 6

COUNTY Falls, McLennan

CONTROL SECTION JOB				0049-01-095		0049-02-018		0049-04-064		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00129142		A00129095		A00129092			
COUNTY				McLennan		Falls		Falls			
HIGHWAY				SH 6		SH 6		SH 6			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	3080-6007	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	TON	6,941.000		33,675.000		61,974.000		102,590.000	
	3080-6029	TACK COAT	GAL	6,310.000		30,612.000		56,342.000		93,264.000	
	3085-6001	UNDERSEAL COURSE	GAL	15,775.000		76,538.000		140,853.000		233,166.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000		2.000		6.000	
	6056-6001	PREFORMED IN-LANE(TRANS) RUMBLE STRIP	LF	80.000						80.000	
	6185-6002	TMA (STATIONARY)	DAY	90.000		90.000		90.000		270.000	
	6185-6003	TMA (MOBILE OPERATION)	HR			1,080.000		720.000		1,800.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000						1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000						1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000						1.000	



SUMMARY OF ROADWAY ITEMS

LOCATION	104 6054	134 6001	351 6004	354 6220	432 6045	479 6001	540 6002	540 6006	540 6014	540 6016	542 6001	542 6004	544 6001	544 6003	658 6062	3076 6043	3080 6007	3080 6029	3085 6001	6056 6001
	REMOVING CONCRETE (MOW STRIP)	BACKFILL (TY A)	FLEXIBLE PAVEMENT STRUCTURE REPAIR(8")	PLANE ASPH CONC PAV (0" TO 2" MICRO)	RIPRAP (MOW STRIP)(4 IN)	ADJUSTING MANHOLES	MTL W-BEAM GD FEN (STEEL POST)	MTL BEAM GD FEN TRANS (THRIE-BEA M)	SHORT RADIUS	DOWNSTRE AM ANCHOR TERMINAL SECTION	REMOVE METAL BEAM GUARD FENCE	RM MTL BM GD FENCE TRANS (THRIE-BEA M)	GUARDRAIL END TREATMENT (INSTALL)	GUARDRAIL END TREATMENT (REMOVE)	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(B I)	D-GR HMA TY-D PG70-22 (LEVEL-UP)	STONE-MTRX -ASPH SMA-D SAC-A PG76-22	TACK COAT	UNDERSEAL COURSE	PREFORMED IN-LANE(TR ANS) RUMBLE STRIP
	LF	STA	SY	SY	CY	EA	LF	EA	LF	EA	LF	EA	EA	EA	EA	TON	TON	GAL	GAL	LF
SH 6 CSJ 0049-01-095																				
PLAN SHEET 1 OF 5		20.8		12946												712	1424	1295	3237	80
PLAN SHEET 2 OF 5		24.0		12064		2										664	1327	1206	3016	
PLAN SHEET 3 OF 5		24.0		11846												652	1303	1185	2962	
PLAN SHEET 4 OF 5		48.0		23669												1302	2604	2367	5917	
PLAN SHEET 5 OF 5		6.0		2573												142	283	257	643	
PROJECT LIMITS			1000																	
CSJ 0049-01-095 TOTAL	0	122.8	1000	63098	0	2	0	0	0	0	0	0	0	0	0	3472	6941	6310	15775	80
SH 6 CSJ 0049-02-018																				
PLAN SHEET 1 OF 14	300	47.0		21584	25.6		300	2			300	2	2	2	3	1187	2374	2158	5396	
PLAN SHEET 2 OF 14	325	47.0		22694	27.0		325	2			325	2	2	2	4	1248	2496	2269	5674	
PLAN SHEET 3 OF 14		48.0		23225												1277	2555	2323	5806	
PLAN SHEET 4 OF 14		48.0		22872												1258	2516	2287	5718	
PLAN SHEET 5 OF 14		48.0		23104												1271	2541	2310	5776	
PLAN SHEET 6 OF 14		48.0		22891												1259	2518	2289	5723	
PLAN SHEET 7 OF 14		48.0		24521												1349	2697	2452	6130	
PLAN SHEET 8 OF 14		48.0		22738												1251	2501	2274	5685	
PLAN SHEET 9 OF 14		48.0		23210												1277	2553	2321	5803	
PLAN SHEET 10 OF 14		48.0		24962												1373	2746	2496	6241	
PLAN SHEET 11 OF 14		48.0		22944												1262	2524	2294	5736	
PLAN SHEET 12 OF 14		48.0		23310												1282	2564	2331	5828	
PLAN SHEET 13 OF 14		48.0		23423												1288	2577	2342	5856	
PLAN SHEET 14 OF 14		4.0		4663												256	513	466	1166	
PROJECT LIMITS			2000																	
CSJ 0049-02-018 TOTAL	625	626.0	2000	306141	52.6	0	625	4	0	0	625	4	4	4	7	16838	33675	30612	76538	0
SH 6 CSJ 0049-04-064																				
PLAN SHEET 1 OF 24	575	42.5		19962	49.8		575	4			575	4	4	4	6	1098	2196	1996	4991	
PLAN SHEET 2 OF 24		48.0		22666												1247	2493	2267	5667	
PLAN SHEET 3 OF 24		48.0		25789												1418	2837	2579	6447	
PLAN SHEET 4 OF 24		48.0		23590												1297	2595	2359	5898	
PLAN SHEET 5 OF 24	675	45.0		21944	47.3		675	4			675	4	4	4	7	1207	2414	2194	5486	
PLAN SHEET 6 OF 24		48.0		24385	6.7											1341	2682	2439	6096	
PLAN SHEET 7 OF 24		48.0		20868												1148	2295	2087	5217	
PLAN SHEET 8 OF 24		48.0		23418												1288	2576	2342	5855	
PLAN SHEET 9 OF 24		48.0		23139												1273	2545	2314	5785	
PLAN SHEET 10 OF 24		48.0		21849												1202	2403	2185	5462	
PLAN SHEET 11 OF 24		48.0		24208	16.9		160		65	2			1	5	1331	2663	2421	6052		
PLAN SHEET 12 OF 24	625	77.7		31486	51.7		625	4			625	4	4	4	7	1732	3463	3149	7872	
PLAN SHEET 13 OF 24		71.0		27807												1529	3059	2781	6952	
PLAN SHEET 14 OF 24	305.5	45.0		23649	24.0		305.5	2			305.5	2	2	2	3	1301	2601	2365	5912	
PLAN SHEET 15 OF 24	319.5	48.0		23828	27.8		319.5	2			319.5	2	2	2	4	1311	2621	2383	5957	
PLAN SHEET 16 OF 24		48.0		23943												1317	2634	2394	5986	
PLAN SHEET 17 OF 24		48.0		20656												1136	2272	2066	5164	
PLAN SHEET 18 OF 24		48.0		25581												1407	2814	2558	6395	
PLAN SHEET 19 OF 24		48.0		23017												1266	2532	2302	5754	
PLAN SHEET 20 OF 24	625	48.0		22063	53.0		625	4			625	4	4	4	7	1213	2427	2206	5516	
PLAN SHEET 21 OF 24	1000	48.0		25642	74.3		1000	5			1000	5	5	5	10	1410	2821	2564	6411	
PLAN SHEET 22 OF 24		48.0		21932												1206	2413	2193	5483	
PLAN SHEET 23 OF 24		48.0		23053												1268	2536	2305	5763	
PLAN SHEET 24 OF 24		38.1		18926												1041	2082	1893	4732	
PROJECT LIMITS			2000																	
CSJ 0049-04-064 TOTAL	4125	1183.3	2000	563401	351.5	0	4285	25	65	2	4125	25	26	25	49	30987	61974	56342	140853	0
PROJECT TOTALS	4750	1932.1	5000	932640	404.1	2	4910	29	65	2	4750	29	30	29	56	51297	102590	93264	233166	80

REV. NO	DATE	REVISION	BY



SH 6  
SUMMARY OF  
QUANTITIES  
(ROADWAY)

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN,ETC.	12



DATE: 11/28/2023 11:28:13 PM  
FILE: ...1\_General\SH 6\_SQ\_02.dgn

CK  
DW  
CK  
DW

SUMMARY OF PAVEMENT MARKING ITEMS											
LOCATION	533 6003	666 6030	666 6036	666 6048	668 6077	668 6085	668 6092	666 6306	666 6309	666 6321	672 6007
	RUMBLE STRIPS (SHOULDER) ASPHALT	REFL PAV MRK TY I (W)8"(DOT) (100MIL)	REFL PAV MRK TY I (W)8"(SLD) (100MIL)	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (36") (YLD TRI)	RE PM W/RET REQ TY I (W)6"(BRK) (100MIL)	RE PM W/RET REQ TY I (W)6"(SLD) (100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD) (100MIL)	REFL PAV MRKR TY I-C
	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA
SH 6 CSJ 0049-01-095											
PLAN SHEET 1 OF 5	4671			126				510	2155	2516	6
PLAN SHEET 2 OF 5	4548							600	2245	2303	8
PLAN SHEET 3 OF 5	4651						16	600	2452	2199	8
PLAN SHEET 4 OF 5	9318	225	1017	14	2	2	28	1200	4723	4595	71
PLAN SHEET 5 OF 5	1220							160	610	610	2
CSJ 0049-01-095 TOTAL	24408	225	1017	140	2	2	44	3070	12185	12223	95
SH 6 CSJ 0049-02-018											
PLAN SHEET 1 OF 14	9003	189	617		3	3	28	1150	4587	4416	49
PLAN SHEET 2 OF 14	9430	153	712		3	3	28	1200	4800	4630	54
PLAN SHEET 3 OF 14	9328	192	721	35	3	3	24	1200	4726	4602	55
PLAN SHEET 4 OF 14	6358	141	739	15	3	3	28	1200	4749	1609	55
PLAN SHEET 5 OF 14	9349	180	734	20	3	3	28	1200	4719	4630	55
PLAN SHEET 6 OF 14	9324	177	716	12	3	3	28	1200	4739	4585	54
PLAN SHEET 7 OF 14	9177	339	965	52	5	5	28	1200	4587	4590	70
PLAN SHEET 8 OF 14	9328	111	719	15	3	3	28	1200	4728	4600	53
PLAN SHEET 9 OF 14	9341	234	752	10	3	3	26	1200	4741	4600	57
PLAN SHEET 10 OF 14	9117	207	1045	25	4	4	56	1200	4702	4415	72
PLAN SHEET 11 OF 14	9380	183	808		4	4	24	1200	4800	4580	59
PLAN SHEET 12 OF 14	9404	270	761		3	3	28	1200	4800	4604	59
PLAN SHEET 13 OF 14	9357	267	943	15	4	4	28	1200	4740	4617	68
PLAN SHEET 14 OF 14	957		239	15	1	1	28	380	540	417	17
CSJ 0049-02-018 TOTAL	118853	2643	10471	214	45	45	410	15930	61958	56895	777
SH 6 CSJ 0049-04-064											
PLAN SHEET 1 OF 24	3816	126	135		1	1	22	1160	4250	4046	24
PLAN SHEET 2 OF 24	9580	252	200		2	1		1200	4780	4800	30
PLAN SHEET 3 OF 24	9124	234	1677	70	5	3	26	1200	4509	4615	104
PLAN SHEET 4 OF 24	9238	291	1044	30	5	3	28	1200	4638	4600	73
PLAN SHEET 5 OF 24	8850	201	514	35	2	2		1200	4570	4800	45
PLAN SHEET 6 OF 24	9206	261	962	40	5	3	28	1200	4650	4556	69
PLAN SHEET 7 OF 24	9600	111						1200	4800	4800	17
PLAN SHEET 8 OF 24	9257	153	975	25	5	3	28	1200	4678	4579	67
PLAN SHEET 9 OF 24	9104	171	656	28	3	2	28	1200	4519	4585	51
PLAN SHEET 10 OF 24	9562	123						1200	4781	4781	18
PLAN SHEET 11 OF 24	9600	138	1080	25	5	3	28	1450	4800	4800	75
PLAN SHEET 12 OF 24	8345	96	1440	75	4	1		1200	4665	4600	89
PLAN SHEET 13 OF 24	15064	87	1600	72	1	1		1200	7500	7564	97
PLAN SHEET 14 OF 24	11586	387	435	20	5	3	29	1200	6335	5251	45
PLAN SHEET 15 OF 24	8659	279	948	45	5	3	28	1200	4667	4592	68
PLAN SHEET 16 OF 24	9238	261	980	26	6	3	30	1200	4646	4592	69
PLAN SHEET 17 OF 24	9600	81						1200	4800	4800	17
PLAN SHEET 18 OF 24	8946	405	1388	60	8	6	30	1200	4366	4580	93
PLAN SHEET 19 OF 24	9385	177	664		3	2	26	1200	4800	4585	52
PLAN SHEET 20 OF 24	8533	114	511		2	2	28	1200	4800	4573	43
PLAN SHEET 21 OF 24	7952	627	1070	45	6	4	28	1200	4882	4670	82
PLAN SHEET 22 OF 24	9430	153	350	80	3	3		1200	4630	4800	36
PLAN SHEET 23 OF 24	9470		1090		2	2	12	1200	4800	4670	70
PLAN SHEET 24 OF 24	7311		1220	25	2	2	10	950	3660	3651	73
CSJ 0049-04-064 TOTAL	220456	4728	18939	701	80	53	409	28760	115526	113890	1405
PROJECT TOTALS	363717	7596	30427	1055	127	100	863	47760	189669	183008	2277

SUMMARY OF BRIDGE ITEMS		
LOCATION	438 6002	438 6004
	CLEANING AND SEALING EXIST JOINTS(CL3)	CLEANING AND SEALING EXIST JOINTS(CL7)
	LF	LF
SH 6 CSJ 0049-02-018		
SH 6 OVER SANDY CREEK	152.0	152.0
CSJ 0049-02-018 TOTAL	152.0	152.0
SH 6 CSJ 0049-04-064		
SH 6 OVER BIG CREEK	164.0	542.0
SH 6 OVER HOG BRANCH	164.0	170.3
SH 6 OVER FM 413	152.0	152.0
SH 6 OVER FISH CREEK	152.0	157.4
SH 6 OVER LITTLE BRAZOS RIVER	152.0	152.0
SH 6 OVER COPPERAS CREEK	188.0	282.0
CSJ 0049-04-064 TOTAL	972.0	1455.7
PROJECT TOTALS	1124.0	1607.7

DATE: 11/28/2023 11:29:08 PM  
FILE: ...1\_General\SH 6\_SOQ\_03.dgn

REV. NO	DATE	REVISION	BY
 AtkinsRéalis <small>TBPE REG. # F-474</small>			
 Texas Department of Transportation			
SH 6  <b>SUMMARY OF QUANTITIES</b> (PAVEMENT MARKINGS & BRIDGE)			
SHEET 3 OF 3			
CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST	COUNTY		SHEET NO.
WAC	McLENNAN,ETC.		13

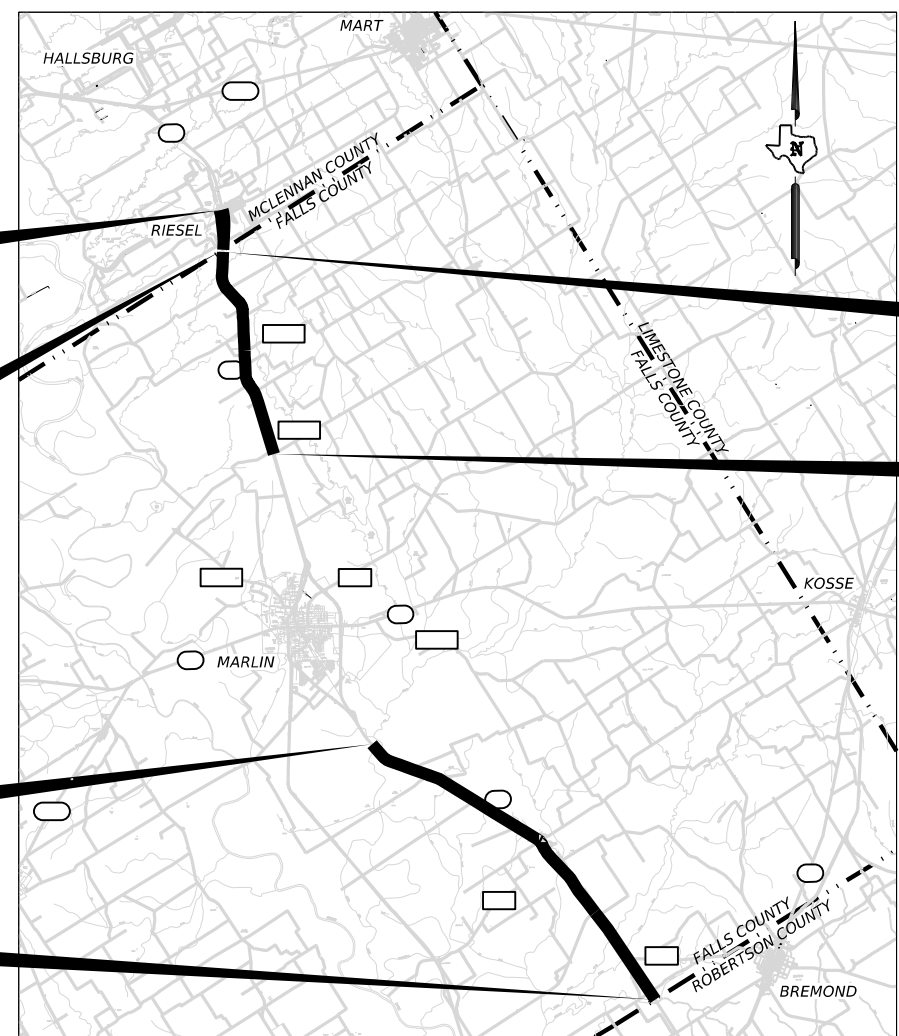
CK  
DW  
CK  
DW

**BEGIN PROJECT**  
CSJ: 0049-01-095  
SH 6  
STA 694+58.70  
REF MRKR: 506+1.596

**END PROJECT**  
CSJ: 0049-01-095  
SH 6  
STA 756+04.58  
REF MRKR: 512+0.144

**BEGIN PROJECT**  
CSJ: 0049-04-064  
SH 6  
STA 224+75.00  
REF MRKR: 528+0.893

**END PROJECT**  
CSJ: 0049-04-064  
SH 6  
STA 795+00.00  
REF MRKR: 536+1.41



SCALE: 1 in. = 5 mi.

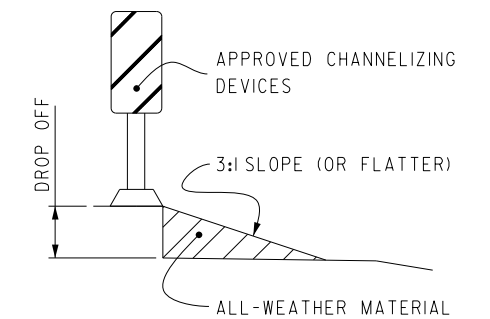
**VICINITY MAP**

**BEGIN PROJECT**  
CSJ: 0049-02-018  
SH 6  
STA 756+04.58  
REF MRKR: 514+0.027

**END PROJECT**  
CSJ: 0049-02-018  
SH 6  
STA 1070+50.00  
REF MRKR: 518+1.938

**GENERAL**

- A. INSTALL ALL SIGNS, BARRICADES AND TRAFFIC CONTROL DEVICES AS SHOWN AND IN ACCORDANCE WITH THE STANDARD BC SHEETS AND AS DIRECTED.
- B. ADDITIONAL SIGNS, BARRICADES OR TRAFFIC CONTROL DEVICES OTHER THAN THOSE SPECIFIED MAY BE REQUIRED FOR THE SAFE MOVEMENT OF TRAFFIC THROUGH THE PROJECT. PAYMENT FOR ALL SUCH SIGNS, BARRICADES OR TRAFFIC CONTROL DEVICES WILL BE CONSIDERED SUBSIDIARY TO THE ITEM "BARRICADES, SIGNS AND TRAFFIC HANDLING".
- C. WORK SITES 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 REPAIR.
- D. THE CONTRACTOR WILL PROVIDE SAFE ACCESS TO AND FROM ALL PRIVATE PROPERTY AT ALL TIMES AND IN ALL WEATHER CONDITIONS.
- E. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A DETAILED SCHEDULE OF WORK PRIOR TO THE BEGINNING OF CONSTRUCTION WHICH GENERALLY CONFORMS TO THE SEQUENCE SHOWN ON THE TCP SEQUENCE OF OPERATION BELOW.
- F. COMPLETE ALL WORK ON PROJECT AS SHOWN ON THE VARIOUS PLAN SHEETS AND IN COMPLIANCE WITH THE GENERAL NOTES OF THIS CONTRACT.
- G. ANY REQUEST TO ALTER THE SEQUENCE OF OPERATION OR TRAFFIC CONTROL PLAN WILL BE SUBMITTED TO THE ENGINEER FOR WRITTEN APPROVAL.



**PAV EDGE DROP-OFF DETAIL**

- 1. LESS THAN 2 INCHES: CW 8-II SIGNS ARE REQUIRED.
- 2. GREATER THAN 2 INCHES BUT LESS THAN 24 INCHES: VERTICAL PANELS AND EITHER CW 8-9a OR CW 8-II SIGNS ARE REQUIRED.
- 3. GREATER THAN 24 INCHES: POSITIVE BARRIER REQUIRED.
- 4. THE SAFETY SLOPE WILL BE CONSTRUCTED WITH AN ALL-WEATHER MATERIAL SUCH AS RAP, WHICH IS CLEAN AND FREE OF DEBRIS AND LARGE ROCKS.

**SEQUENCE OF CONSTRUCTION**

- A. LANE CLOSURES WILL BE LIMITED TO ONE LANE PER DIRECTION AT A TIME.
- B. FINISH PROPOSED WORK IN EACH WORK AREA BEFORE PROCEEDING TO PERFORM WORK IN ANOTHER WORK AREA. AT A MINIMUM, ALL SAFETY END TREATMENT AND MBGF WILL BE COMPLETE AND IN PLACE. OBTAIN APPROVAL BEFORE PROCEEDING TO BEGIN WORK IN ANOTHER WORK AREA.
- C. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A DETAILED SCHEDULE OF WORK TO THE AREA ENGINEER PRIOR TO THE BEGINNING OF CONSTRUCTION, WHICH GENERALLY CONFORMS TO THE FOLLOWING SEQUENCE:
  - 1. PROVIDE AND INSTALL ALL SIGNS, BARRICADES, AND TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE TRAFFIC CONTROL STANDARDS.
  - 2. PROVIDE AND INSTALL ALL SWP3 DEVICES IN ACCORDANCE WITH THE APPLICABLE STANDARDS.
  - 3. CLEAN AND REPAIR BRIDGE JOINTS. (SEE BRIDGE LAYOUT DETAILS FOR CLEANING AND SEALING EXPANSION JOINTS ON SHEET I14 THRU SHEET I23).
  - 4. PERFORM MILLING OF EXISTING ASPHALTIC CONCRETE PAVEMENT IN ACCORDANCE WITH PLAN SPECIFICATIONS AND PERFORM FULL DEPTH FLEXIBLE PAVEMENT STRUCTURE REPAIRS. MILLED SURFACE MUST BE OVERLAYED WITHIN ONE WEEK OF MILLING. FURNISH AND PLACE TEMPORARY PAVEMENT MARKINGS. TEMPORARY PAVEMENT MARKING MUST BE PLACED PRIOR TO OPENING TRAFFIC.
  - 5. CONSTRUCT TACK COAT IN ACCORDANCE WITH PLAN SPECIFICATIONS. CONSTRUCT SMA-D AND PLACE TABS.
  - 6. FURNISH AND PLACE TEMPORARY PAVEMENT MARKINGS.
  - 7. PLACE PERMANENT PAVEMENT MARKERS.
  - 8. INSTALL ALL MBGF AS SHOWN IN PLANS.
  - 9. FINAL CLEAN UP.

**REQUIRED SIGNS**

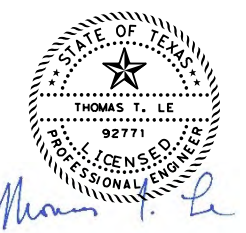
- 1. SIGNS R20-3T, G20-10T, G20-9TP, R20-5T, R20-5aTP, G20-5T, G20-6T, G20-2 AND G20-2bT WILL BE REQUIRED AT PROJECT LIMITS.
- 2. SIGNS G20-5T WILL BE REQUIRED AT ALL ENTRANCE RAMPS.

**SIGNAGE LEGEND**

G20-5T	48X24	BEGIN ROAD WORK NEXT X MILES
G20-6T	48X30	NAME, ADDRESS, CITY, STATE, CONTRACTOR
G20-9TP	24X24	BEGIN WORK ZONE
G20-2bT	36X18	END WORK ZONE
R20-3T	48X42	OBEY WARNING SIGNS STATE LAW
CW20-ID	36X36	ROAD WORK AHEAD
R20-5T	24X30	TRAFFIC FINES DOUBLE
R20-5aTP	36X18	WHEN WORKERS ARE PRESENT
R2-1	30X36	SPEED LIMIT 60
G20-10T	60X48	STAY ALERT TALK OR TEXT LATER
G20-2	48X24	END ROAD WORK

**NOTES:**

- 1. ALL TRAFFIC CONTROL DEVICES WILL CONFORM WITH THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" (TMUTCD), AND WILL BE MAINTAINED AS DIRECTED. ADDITIONAL GUIDELINES FOR TRAFFIC CONTROL DEVICES MAY BE FOUND IN THE TMUTCD.
- 2. FOR CHANNELING DEVICE PLACEMENT AND SPACING FOR ALL PHASES, REFER TO THE TCP STANDARDS.
- 3. THE CONTRACTOR SHALL PHASE THE MILLING AND OVERLAY OPERATIONS IN A MANNER SO AS TO PROVIDE POSITIVE DRAINAGE AND AVOID PONDING ON THE TRAVELWAY.
- 4. THE SPEED LIMIT FOR THE CONSTRUCTION WORK ZONE SHALL BE 65 MPH.



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6

**SEQUENCE OF CONSTRUCTION NARRATIVE**

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	14	

DATE: 11/28/2023 4:40:39 PM  
FILE: ...Plan Set12\_TCPISH 6 McLennan

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

DATE: 11/28/2023 1:33:13 PM  
 FILE: ...\\2\_TCP\TCP\_STD\bc-21.dgn

**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).

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

SHEET 1 OF 12



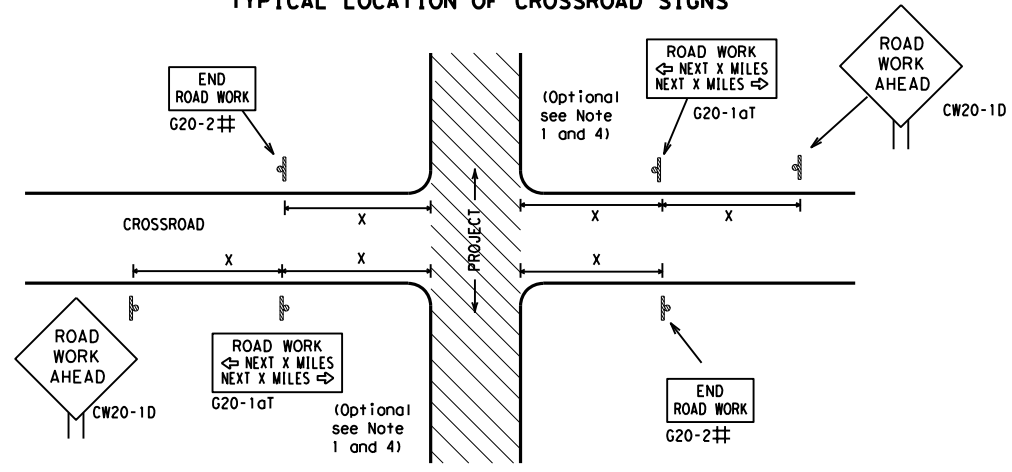
**BARRICADE AND CONSTRUCTION  
GENERAL NOTES  
AND REQUIREMENTS**

**BC (1) -21**

FILE:	bc-21.dgn	DN:	TxDOT	CR:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0049	01	095, ETC.		SH 6			
4-03	7-13								
9-07	8-14								
5-10	5-21	DIST	COUNTY		SHEET NO.				
		WAC	McLENNAN, ETC.		15				

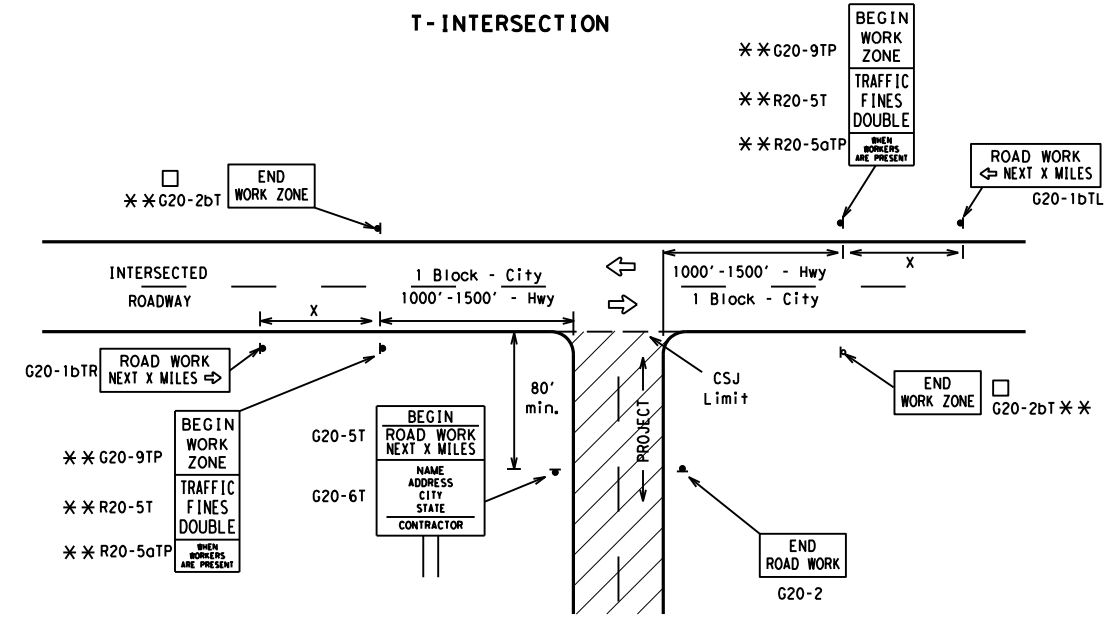
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

**TYPICAL LOCATION OF CROSSROAD SIGNS**



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

**T-INTERSECTION**



**CSJ LIMITS AT T-INTERSECTION**

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

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

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

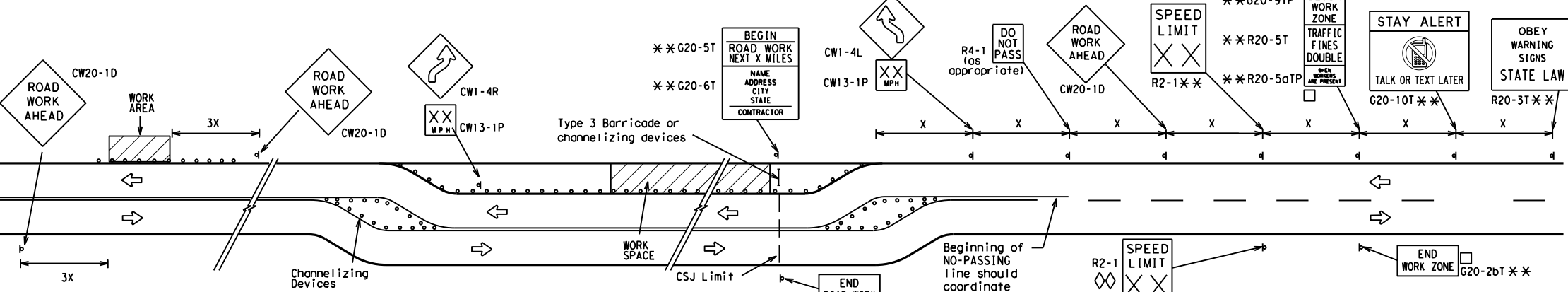
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

**GENERAL NOTES**

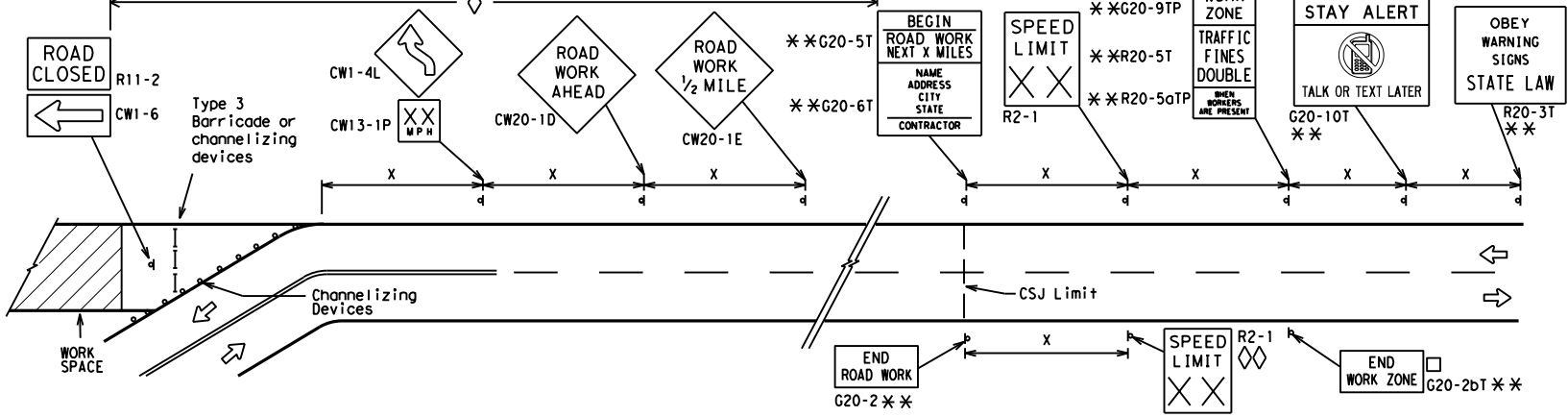
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

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

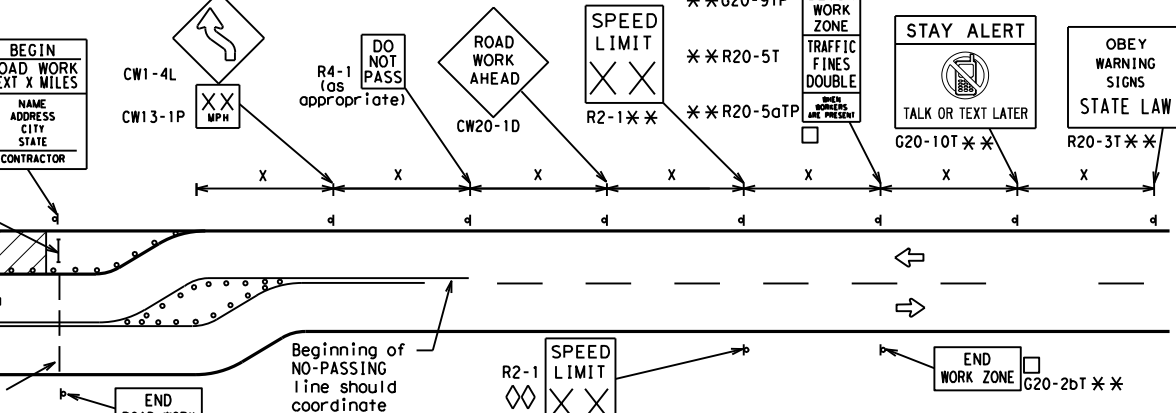


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



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



**NOTES**

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

**LEGEND**

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

SHEET 2 OF 12

**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**BC(2)-21**

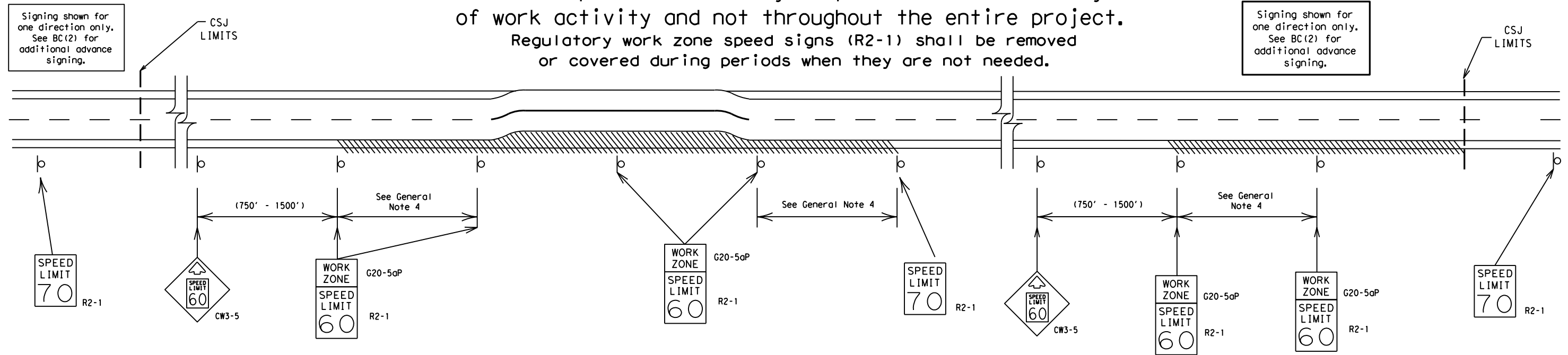
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049 01	095, ETC.	SH 6	
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	WAC	McLENNAN, ETC.	16	

DATE: 11/28/2023 1:33:14 PM  
 FILE: ...2\_TCP\_STD\_bc-21.dgn

# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

### SHORT TERM WORK ZONE SPEED LIMITS

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

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

## GENERAL NOTES

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

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

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

DATE: 11/28/2023 1:33:14 PM  
FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

SHEET 3 OF 12



## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

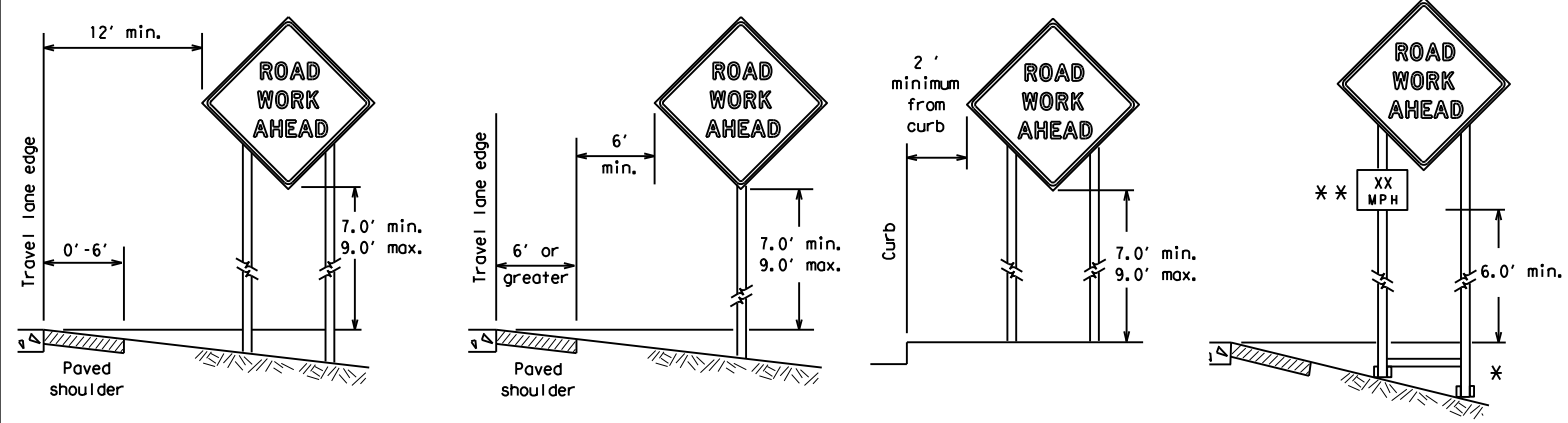
BC (3) - 21

FILE:	bc-21.dgn	DW:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0049	01	095, ETC.	SH 6				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	WAC	McLENNAN, ETC.	17					



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.

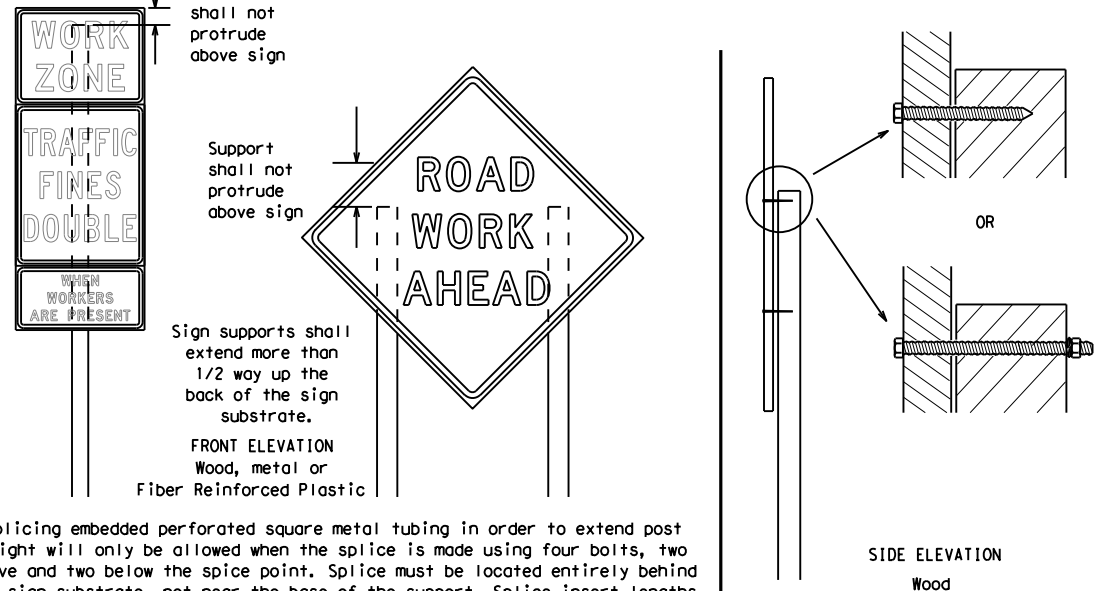
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



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

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

**ATTACHMENT FOR SIGN SUPPORTS**



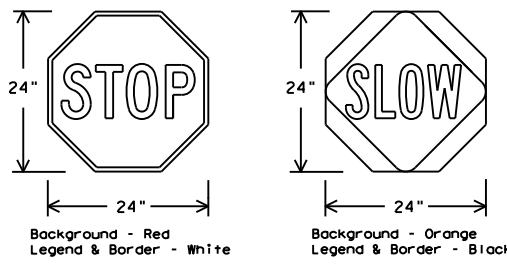
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

**STOP/SLOW PADDLES**

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



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

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

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

**GENERAL NOTES FOR WORK ZONE SIGNS**

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

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

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

**SIGN MOUNTING HEIGHT**

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

**SIZE OF SIGNS**

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

**SIGN SUBSTRATES**

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

**REFLECTIVE SHEETING**

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

**SIGN LETTERS**

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

**REMOVING OR COVERING**

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

**SIGN SUPPORT WEIGHTS**

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

**FLAGS ON SIGNS**

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

SHEET 4 OF 12



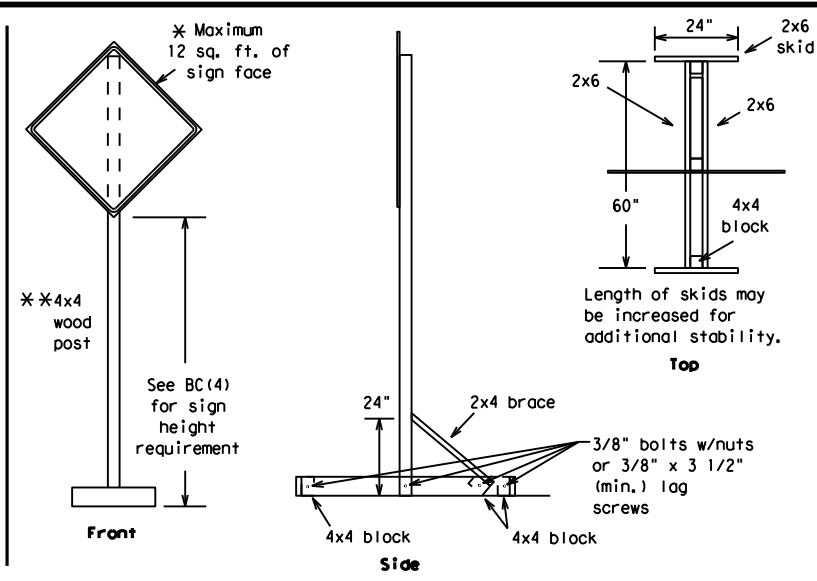
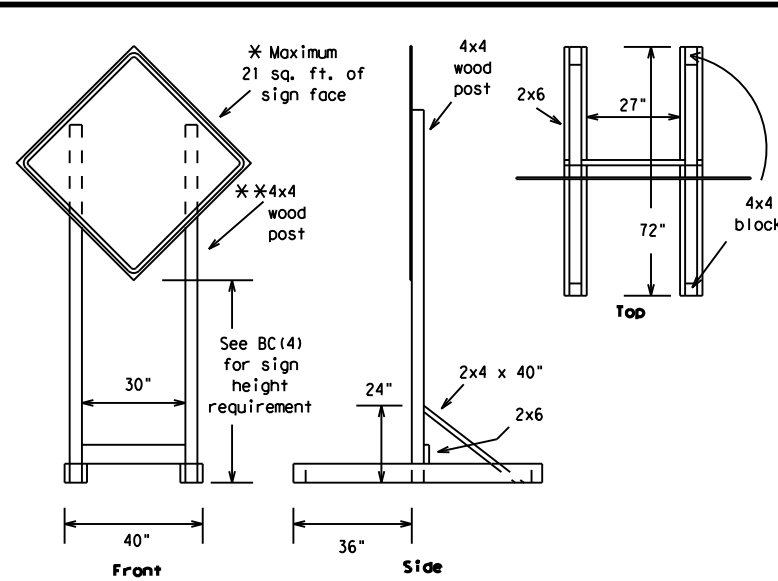
**BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES**

BC (4) - 21

FILE:	bc-21.dgn	DN:	TxDOT	CR:	TxDOT	OW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0049	01	095, ETC.		SH 6			
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	WAC	McLENNAN, ETC.	18					

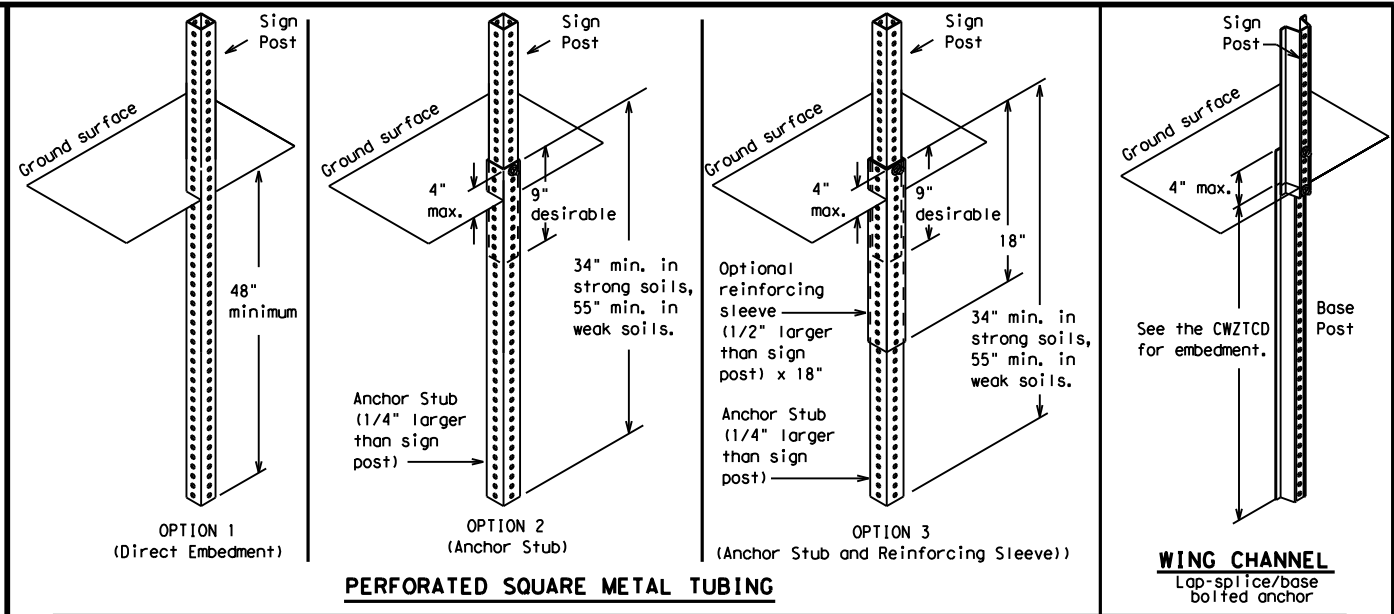
DATE: 11/28/2023 1:33:14 PM  
FILE: ...2...TCP\TCP\_STD\bc-21.dgn

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.



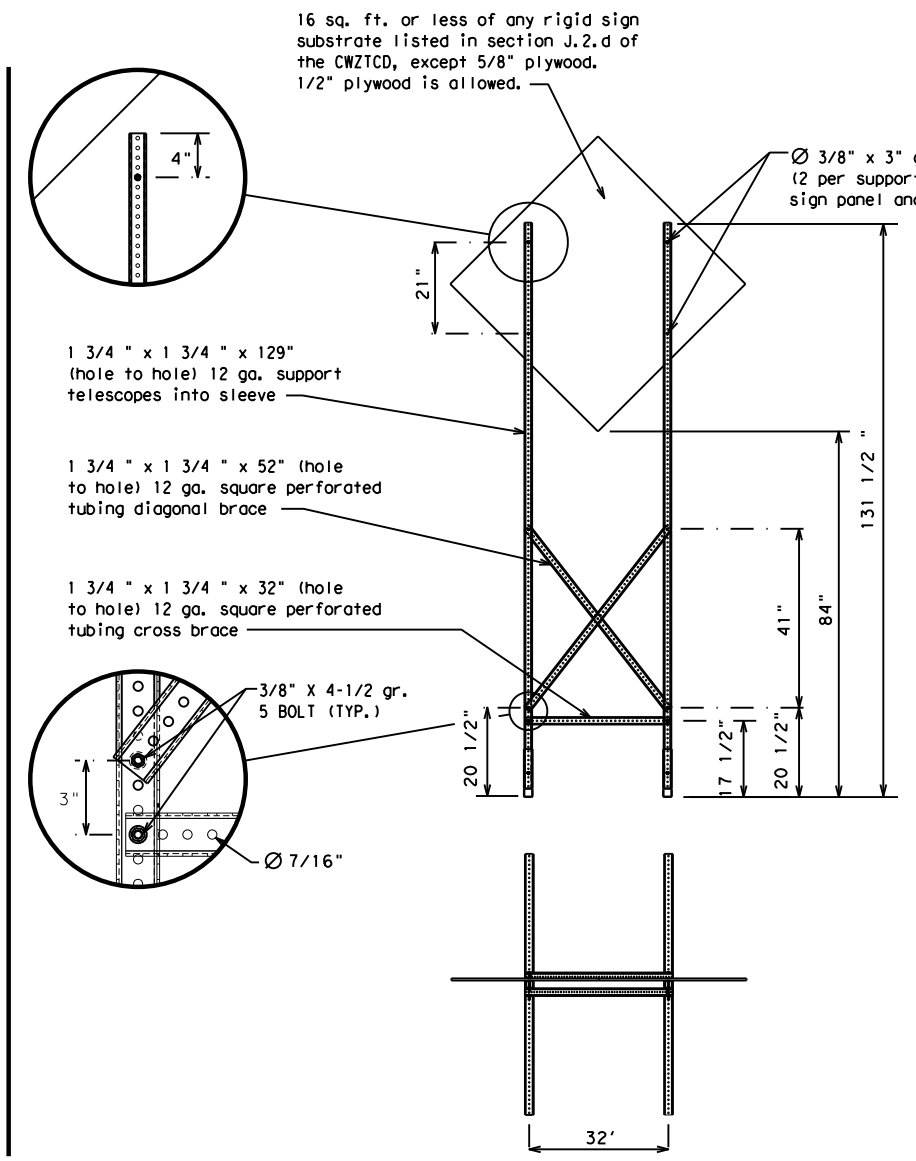
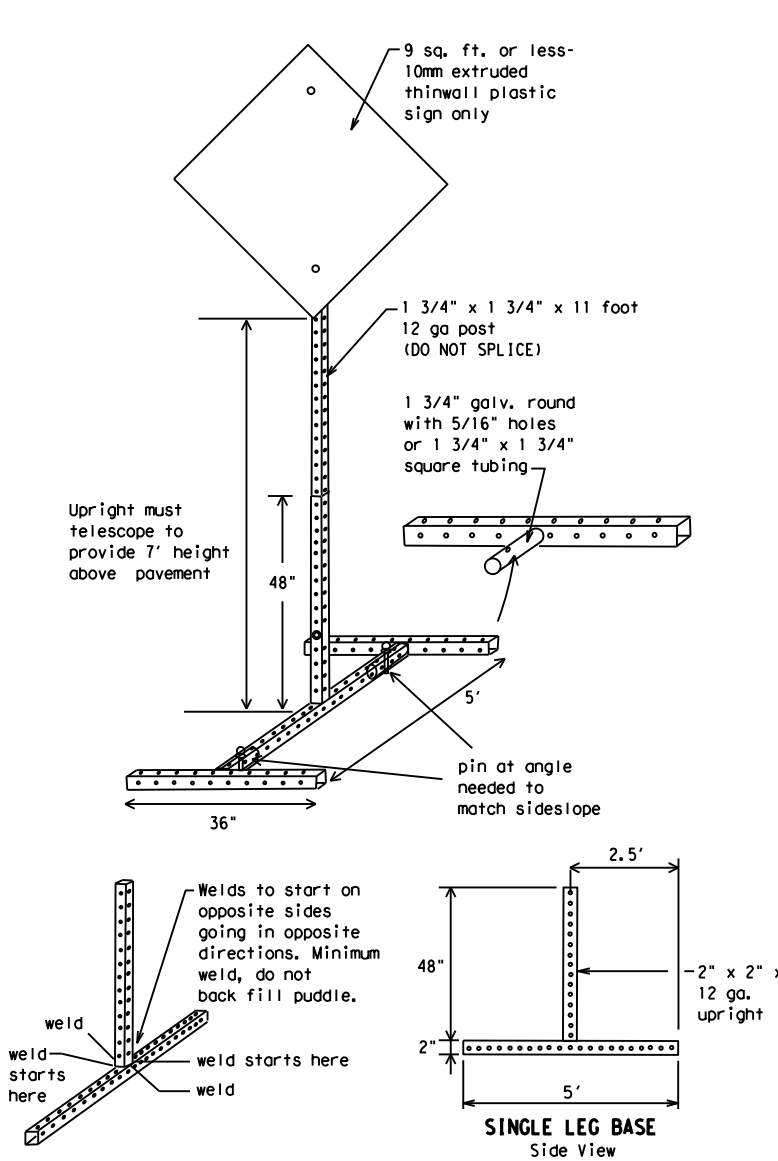
### SKID MOUNTED WOOD SIGN SUPPORTS

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



### GROUND MOUNTED SIGN SUPPORTS

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



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

### WEDGE ANCHORS

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

### OTHER DESIGNS

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

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

SHEET 5 OF 12



## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CR:	TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS	0049	01	095, ETC.	SH	6				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	WAC	McLENNAN, ETC.	19					

DATE: 11/28/2023 1:33:14 PM  
FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

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

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

## PORTABLE CHANGEABLE MESSAGE SIGNS

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

## Phase 1: Condition Lists

### Road/Lane/Ramp Closure List

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

### Warning List

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

### \*\* Advance Notice List

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

\*\* See Application Guidelines Note 6.

## APPLICATION GUIDELINES

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

## WORDING ALTERNATIVES

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

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

## FULL MATRIX PCMS SIGNS

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

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

DATE: 11/28/2023 1:33:15 PM  
FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

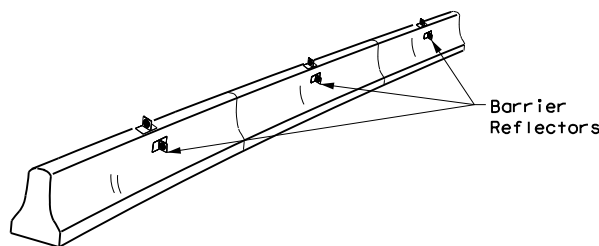
WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Canal	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking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

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

<h3>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</h3>			
<h2>BC (6) - 21</h2>			
FILE:	bc-21.dgn	DN:	TxDOT
© TxDOT	November 2002	CK:	TxDOT
REVISIONS	0049 01	DW:	TxDOT
9-07	8-14	JOB	HIGHWAY
7-13	5-21	CONTRACT	095, ETC.
		DIST	SH 6
		COUNTY	WAC
		SHEET NO.	20

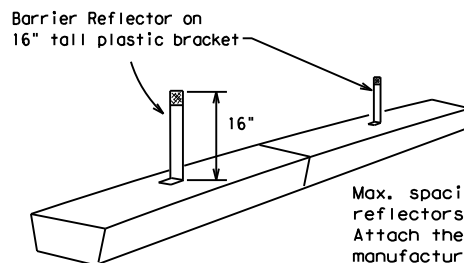
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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



**CONCRETE TRAFFIC BARRIER (CTB)**

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

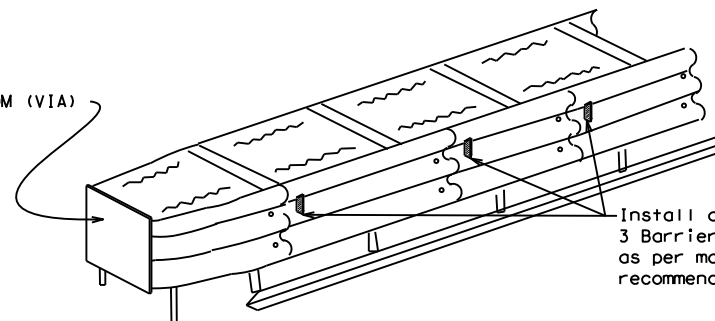


**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

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

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

**LOW PROFILE CONCRETE BARRIER (LPCB)**



**DELINEATION OF END TREATMENTS**

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

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

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

**WARNING LIGHTS**

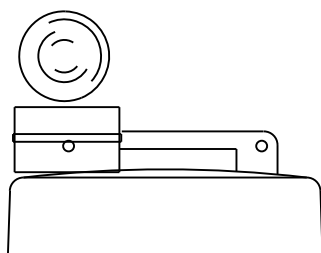
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

**WARNING LIGHTS MOUNTED ON PLASTIC DRUMS**

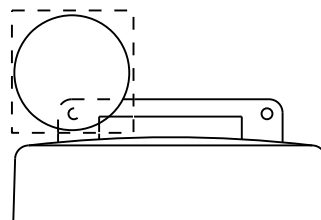
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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

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

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



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

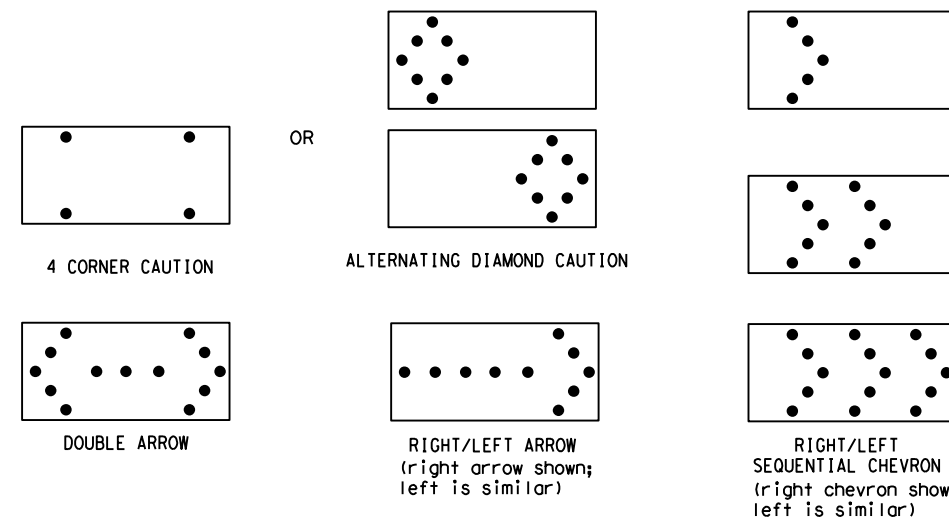


Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

DATE: 11/28/2023 1:33:15 PM  
 FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

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

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



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

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

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

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

**FLASHING ARROW BOARDS**

SHEET 7 OF 12

**TRUCK-MOUNTED ATTENUATORS**

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



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

**BC (7) -21**

FILE:	bc-21.dgn	DN:	TxDOT	CR:	TxDOT	OW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0049	01	095, ETC.		SH 6			
9-07	8-14	DIST	COUNTY		SHEET NO.				
7-13	5-21	WAC	McLENNAN, ETC.		21				

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

DATE: 11/28/2023 1:33:15 PM  
 FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

**GENERAL NOTES**

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

**GENERAL DESIGN REQUIREMENTS**

Pre-qualified plastic drums shall meet the following requirements:

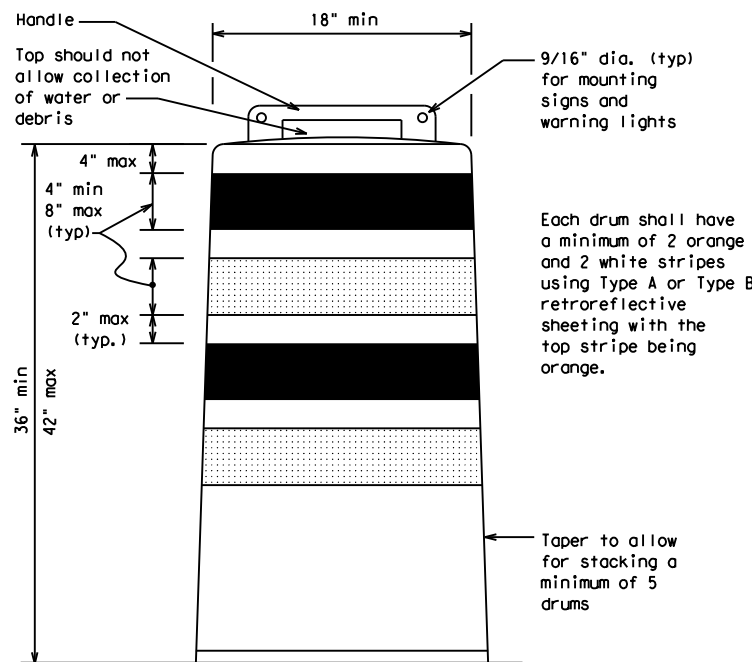
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

**RETROREFLECTIVE SHEETING**

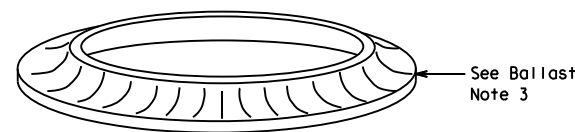
- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
- The sheeting shall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

**BALLAST**

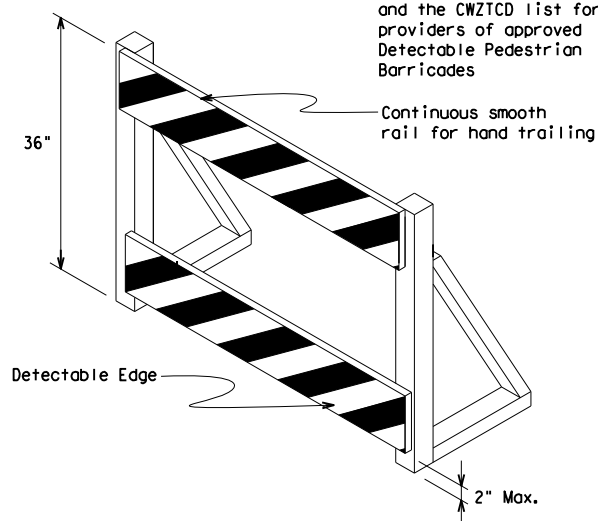
- Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other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



Each drum shall have a minimum of 2 orange and 2 white stripes using Type A or Type B retroreflective sheeting with the top stripe being orange.

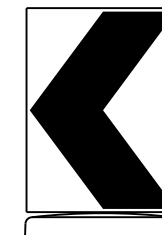


This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades

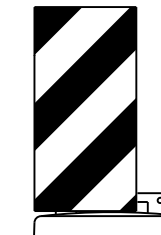


**DETECTABLE PEDESTRIAN BARRICADES**

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



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**

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

SHEET 8 OF 12

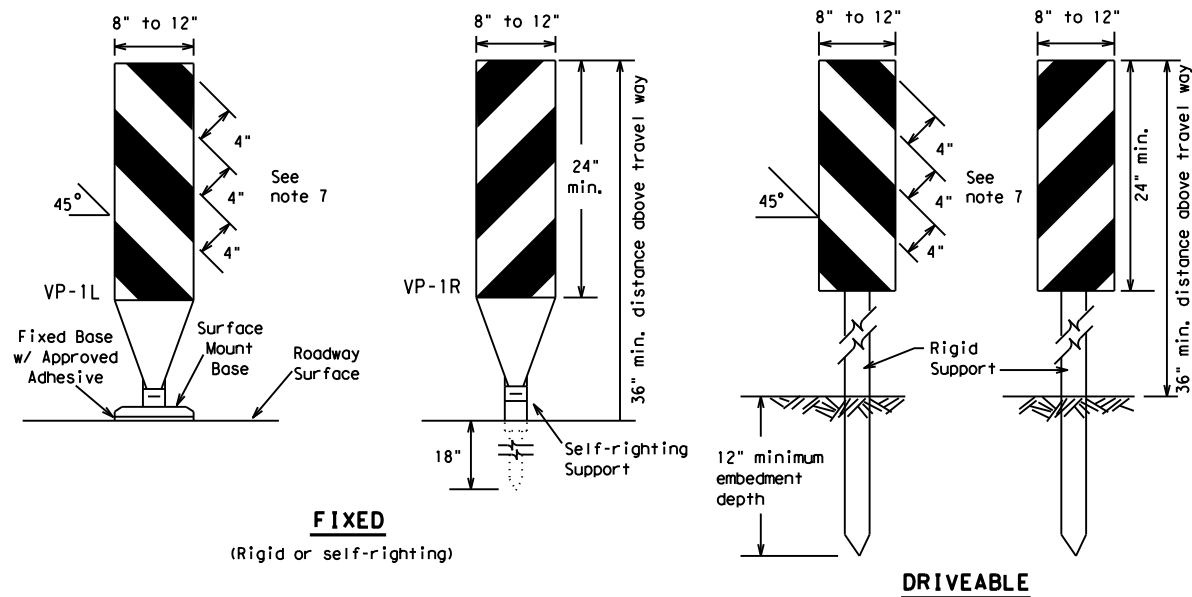


**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (8) - 21**

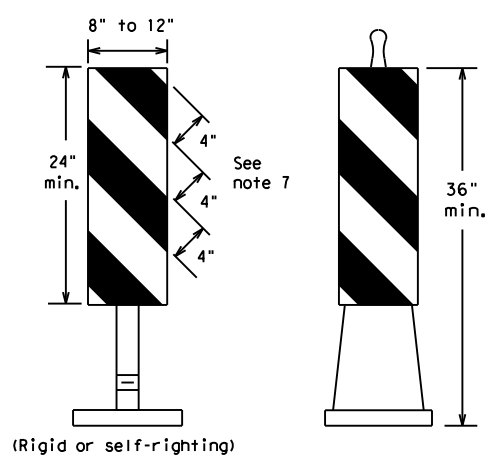
FILE:	bc-21.dgn	DN:	TxDOT	CR:	TxDOT	OW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0049	01	095, ETC.		SH 6			
4-03	8-14			DIST	COUNTY	SHEET NO.			
9-07	5-21			WAC	McLENNAN, ETC.	22			
7-13									

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.



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

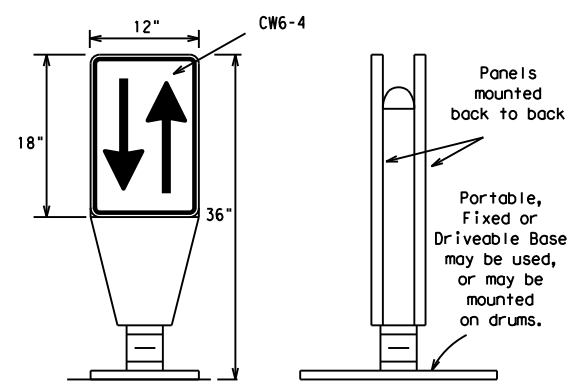
**DRIVEABLE**



**PORTABLE**

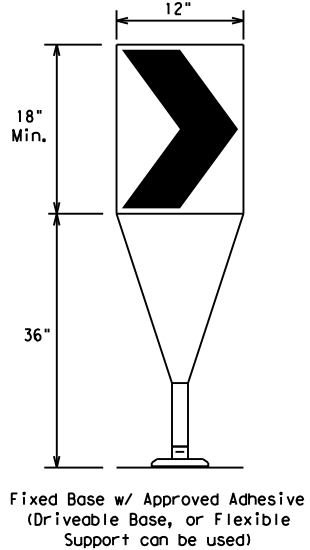
**VERTICAL PANELS (VPs)**

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



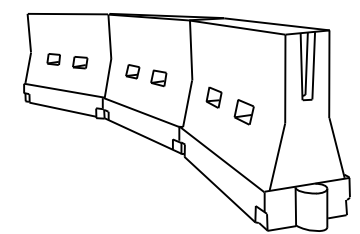
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

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



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

**CHEVRONS**



**LONGITUDINAL CHANNELIZING DEVICES (LCD)**

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

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

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

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

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

**GENERAL NOTES**

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

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

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

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

SHEET 9 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (9) - 21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	WAC	McLENNAN, ETC.	23	

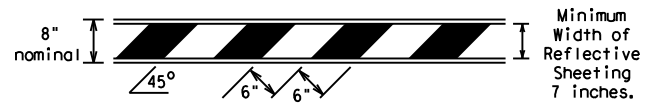
DATE: 11/28/2023 1:33:15 PM  
FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

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.

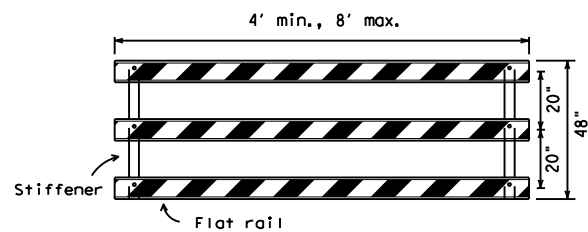
**TYPE 3 BARRICADES**

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.



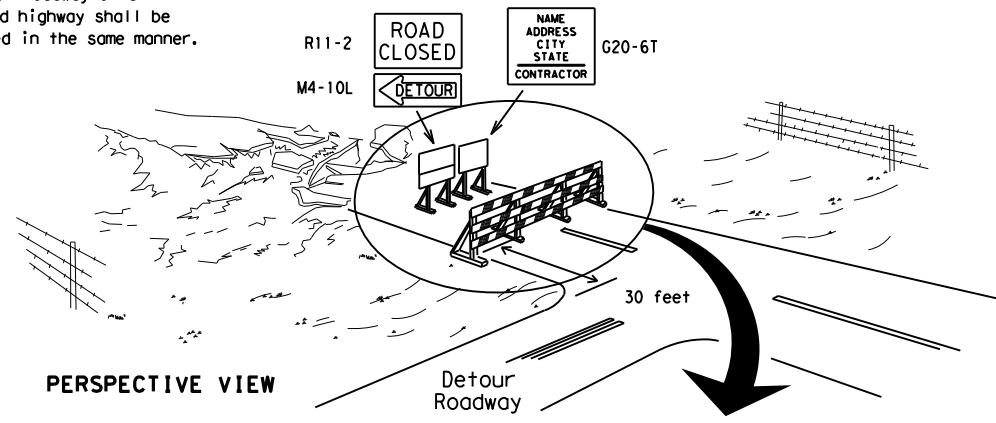
**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



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

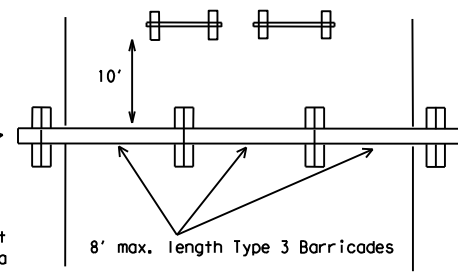
**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

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



PERSPECTIVE VIEW

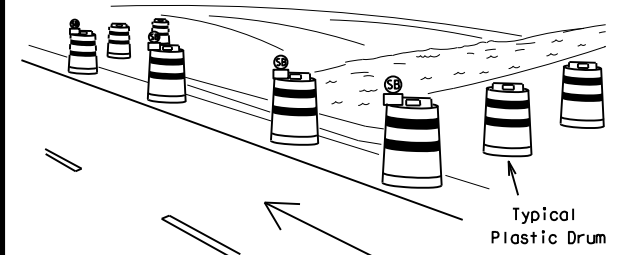
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



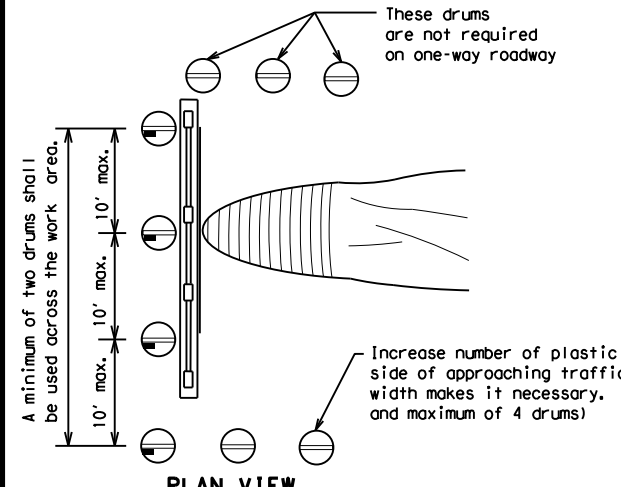
PLAN VIEW

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

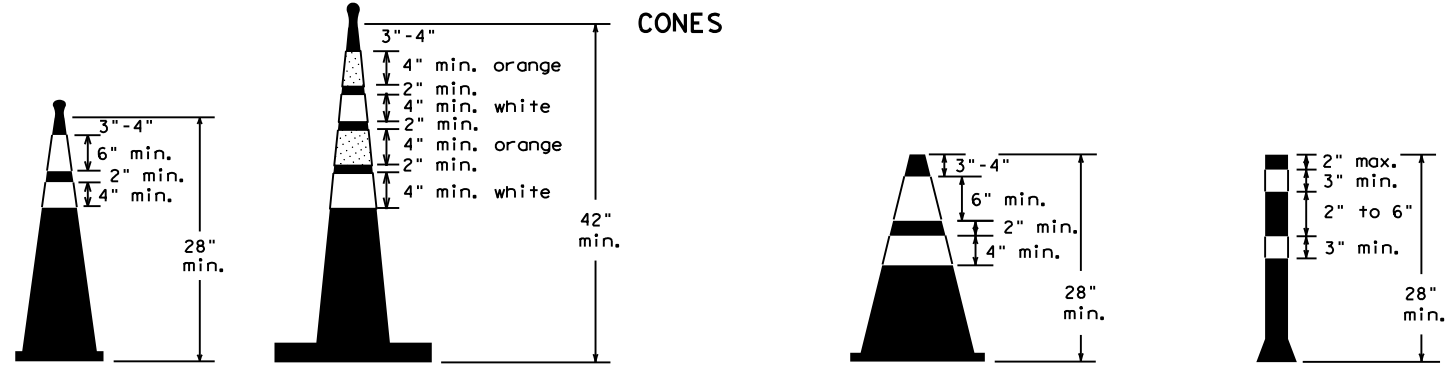


PLAN VIEW

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

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

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

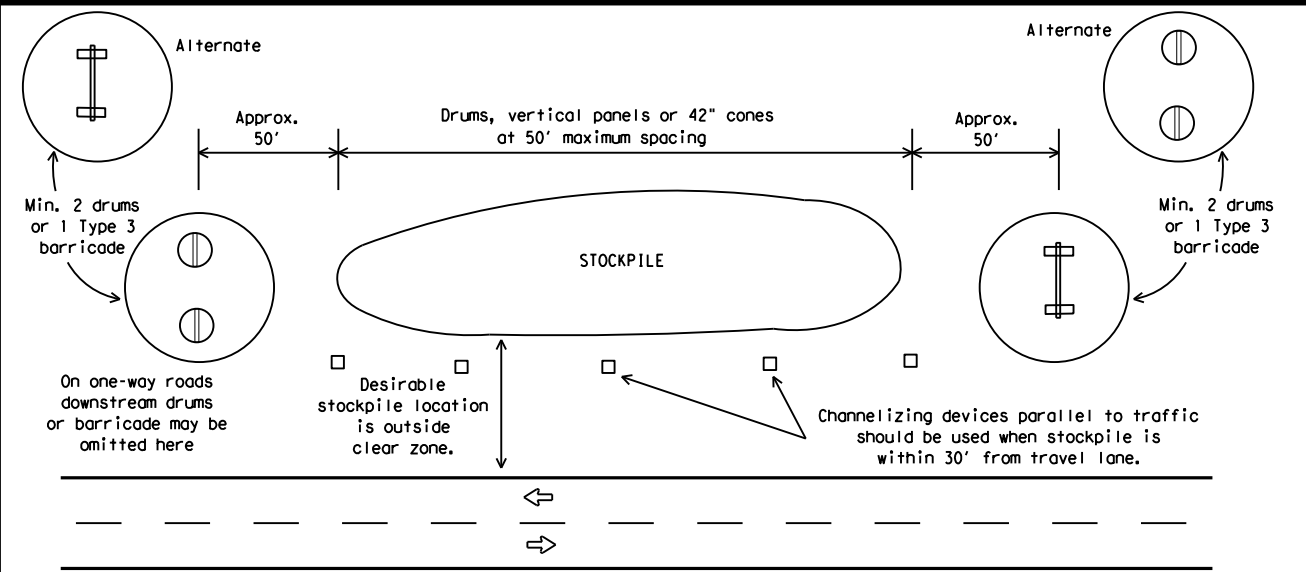


Two-Piece cones

One-Piece cones

Tubular Marker

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



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

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

**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (10) - 21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CR: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	WAC	McLENNAN, ETC.	24	

DATE: 11/28/2023 1:33:15 PM  
 FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

## WORK ZONE PAVEMENT MARKINGS

### GENERAL

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

### RAISED PAVEMENT MARKERS

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

### PREFABRICATED PAVEMENT MARKINGS

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

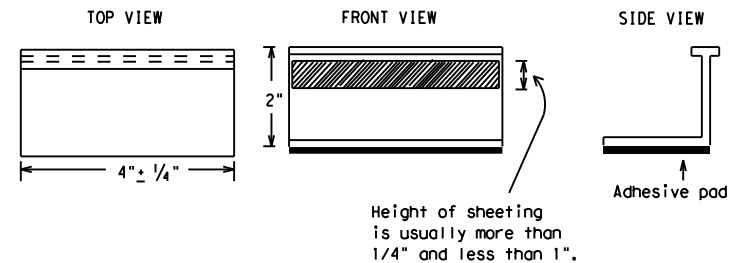
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

### REMOVAL OF PAVEMENT MARKINGS

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

## Temporary Flexible-Reflective Roadway Marker Tabs



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

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

### RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

SHEET 11 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

**BC(11)-21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS		0049	01	095, ETC.
2-98	9-07	5-21		SH 6
1-02	7-13			
11-02	8-14			
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	25	

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

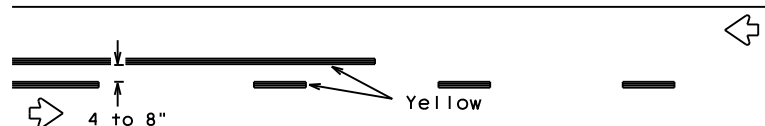
DATE: 11/28/2023 1:33:16 PM  
FILE: ...\\2\_TCP\TCP\_STD\bc-21.dgn



## PAVEMENT MARKING PATTERNS

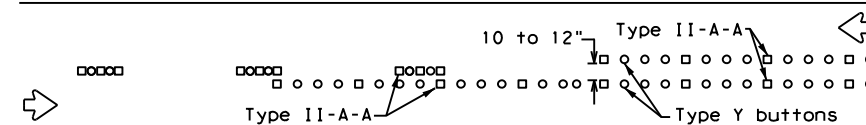


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

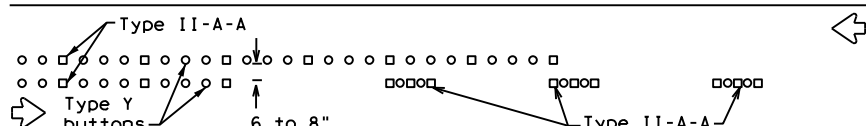


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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

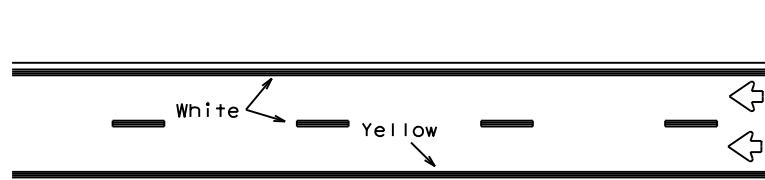


RAISED PAVEMENT MARKERS - PATTERN A



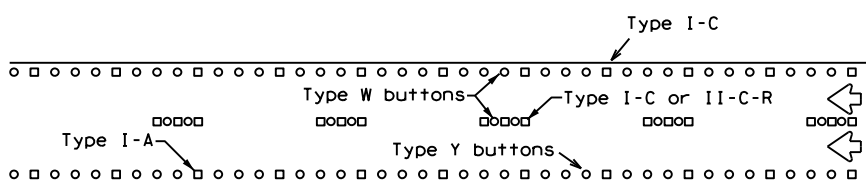
RAISED PAVEMENT MARKERS - PATTERN B

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



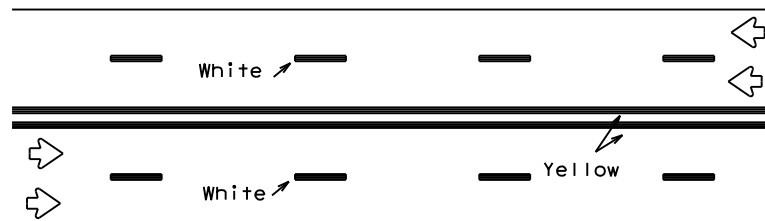
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



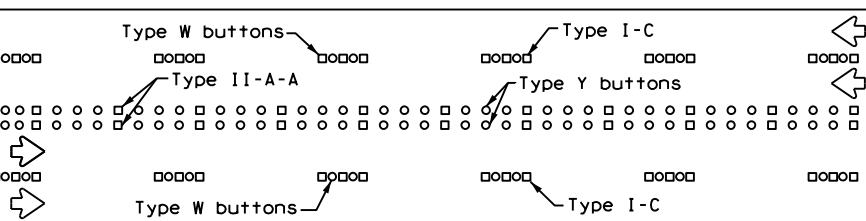
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



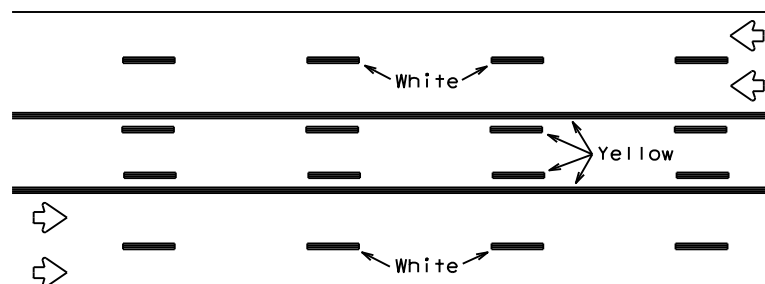
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



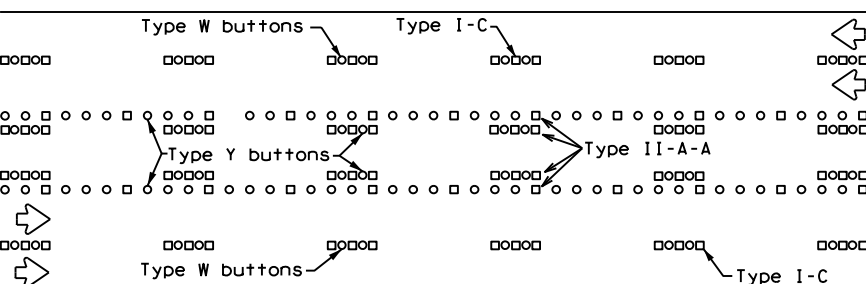
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

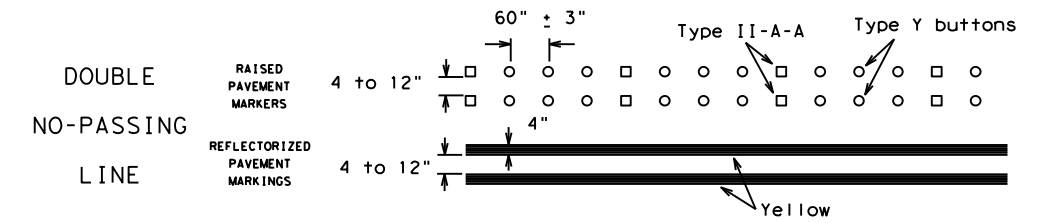
Prefabricated markings may be substituted for reflectorized pavement markings.



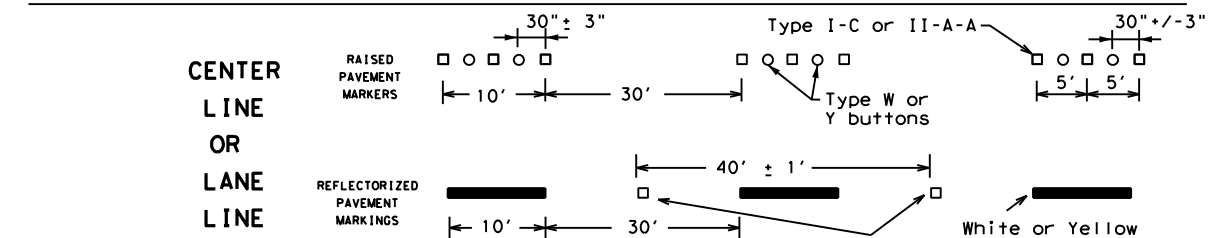
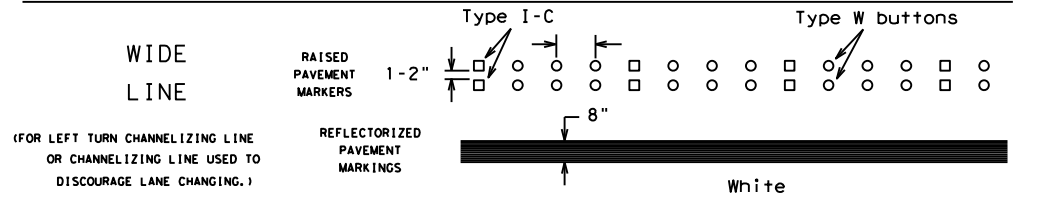
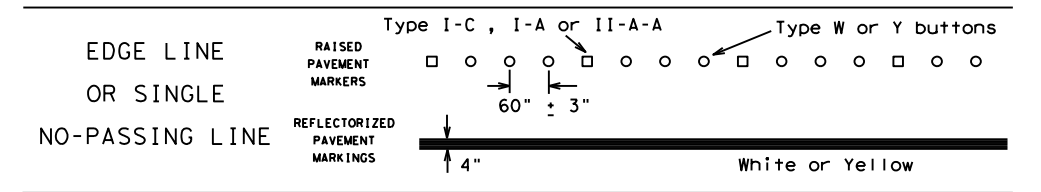
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

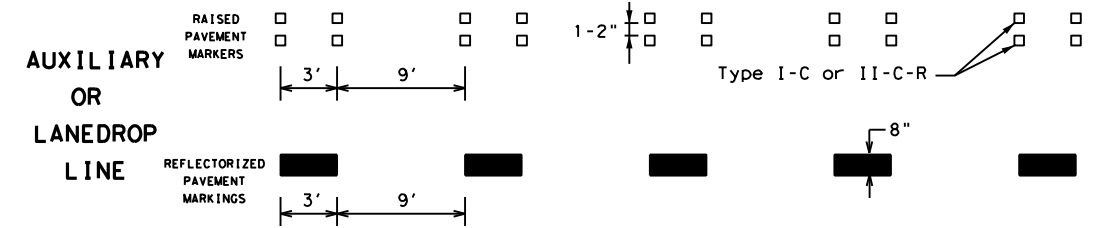
## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



### SOLID LINES

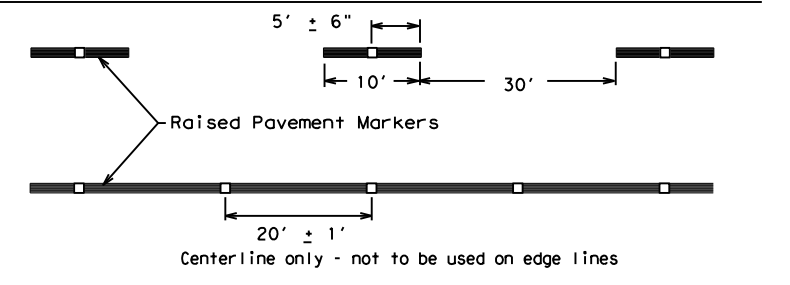


### BROKEN LINES



### REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12

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

DATE: 11/28/2023 1:33:16 PM  
FILE: ...2\_TCP\TCP\_STD\bc-21.dgn

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

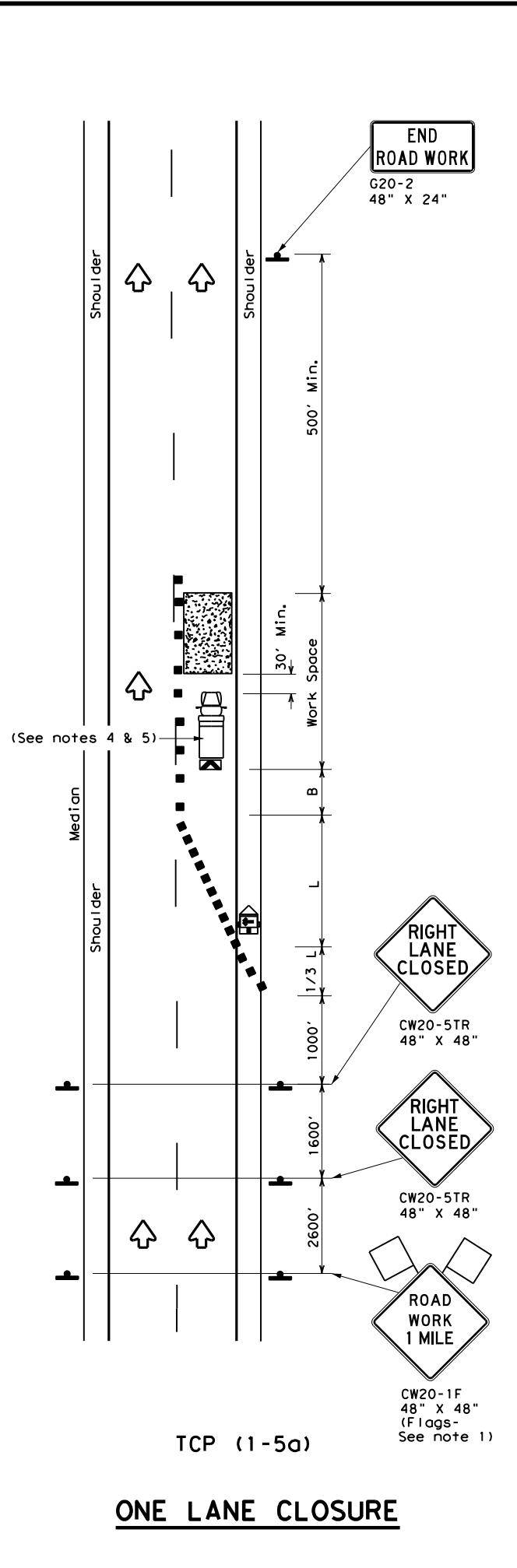
## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

### BC (12) - 21

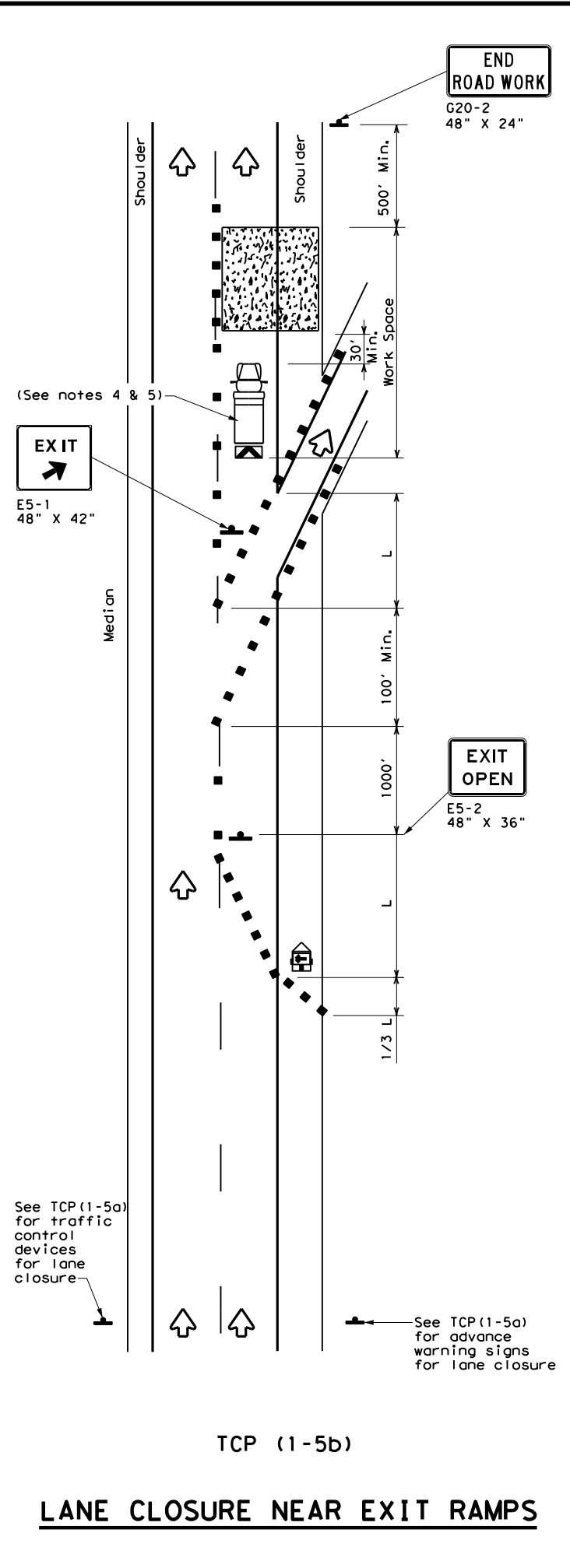
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
1-97 9-07 5-21	DIST	COUNTY	SHEET NO.	
2-98 7-13	WAC	McLENNAN, ETC.	26	
11-02 8-14				

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

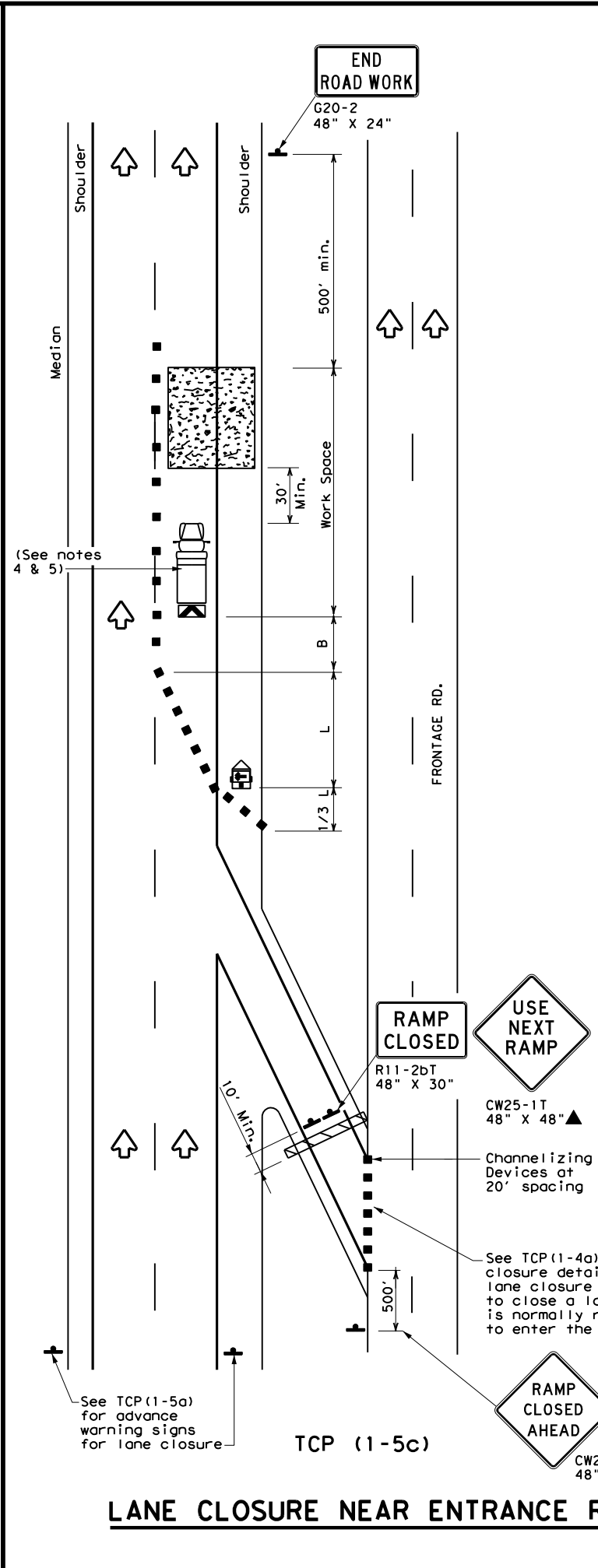
DATE: 11/28/2023 1:33:33 PM  
 FILE: ...2\_TCP\TCP\_STD.tcp1-5-18.dgn



**ONE LANE CLOSURE**



**LANE CLOSURE NEAR EXIT RAMP**



**LANE CLOSURE NEAR ENTRANCE RAMP**

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

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

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

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

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

Texas Department of Transportation  
 Traffic Operations Division Standard

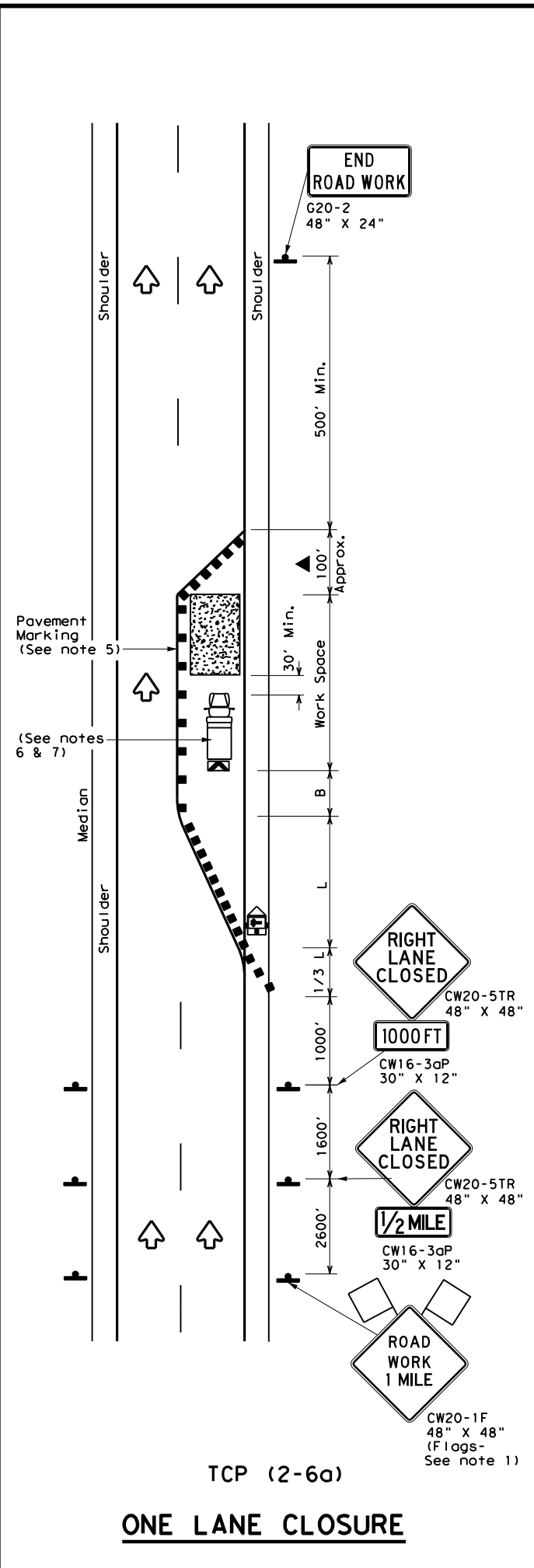
**TRAFFIC CONTROL PLAN  
 LANE CLOSURES FOR  
 DIVIDED HIGHWAYS**

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

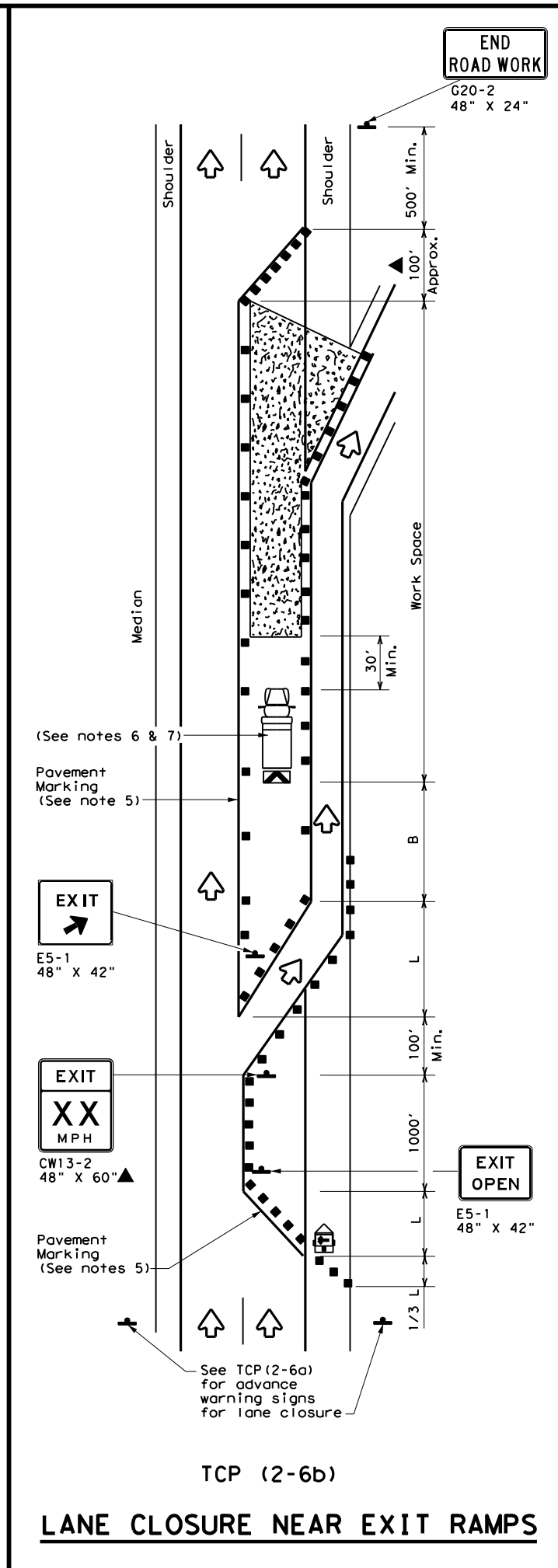
FILE: tcp1-5-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
2-18	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	27	

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

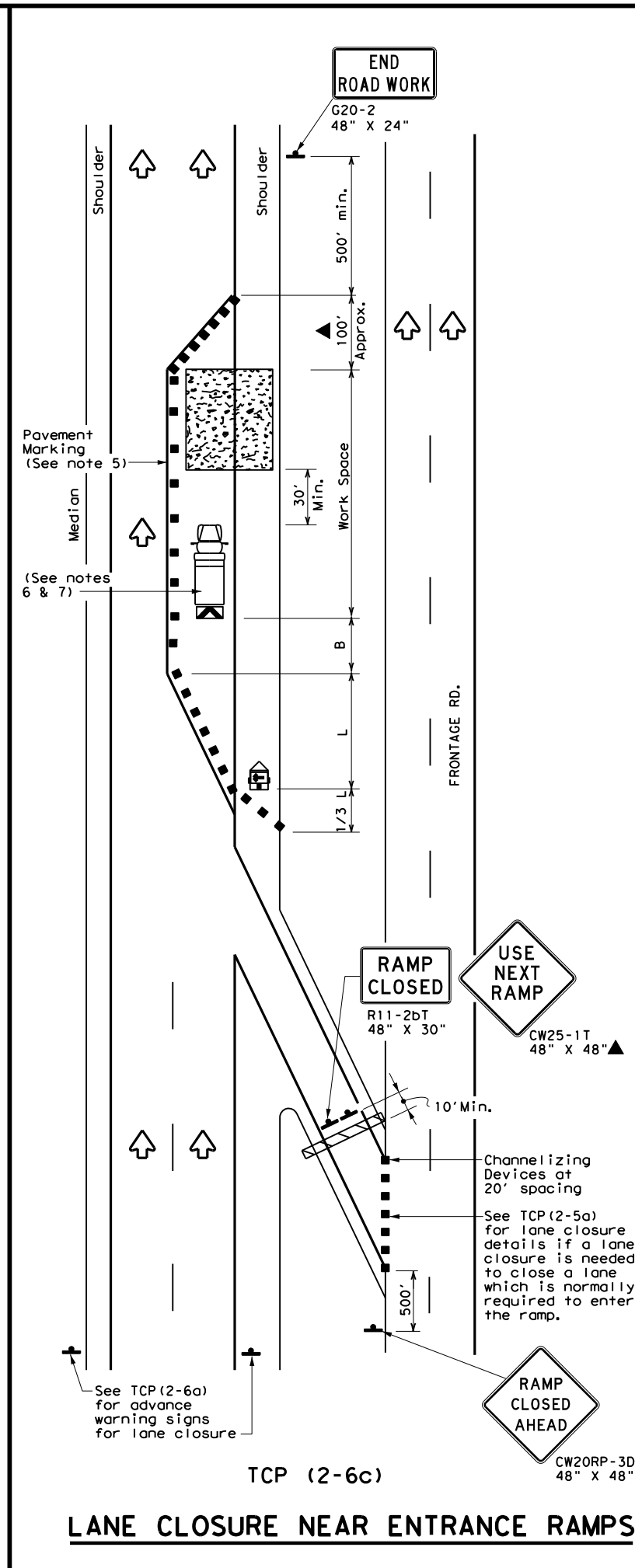
DATE: 11/28/2023 1:33:50 PM  
 FILE: ...2\_TCP\TCP\_STD\tcp2-6-18.dgn



TCP (2-6a)  
**ONE LANE CLOSURE**



TCP (2-6b)  
**LANE CLOSURE NEAR EXIT RAMP**



TCP (2-6c)  
**LANE CLOSURE NEAR ENTRANCE RAMP**

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

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

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

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

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

Texas Department of Transportation  
 Traffic Operations Division Standard

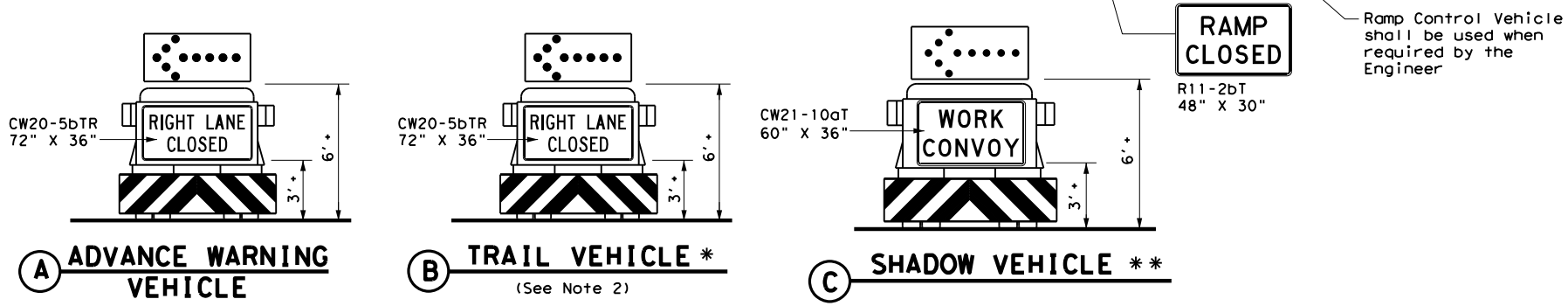
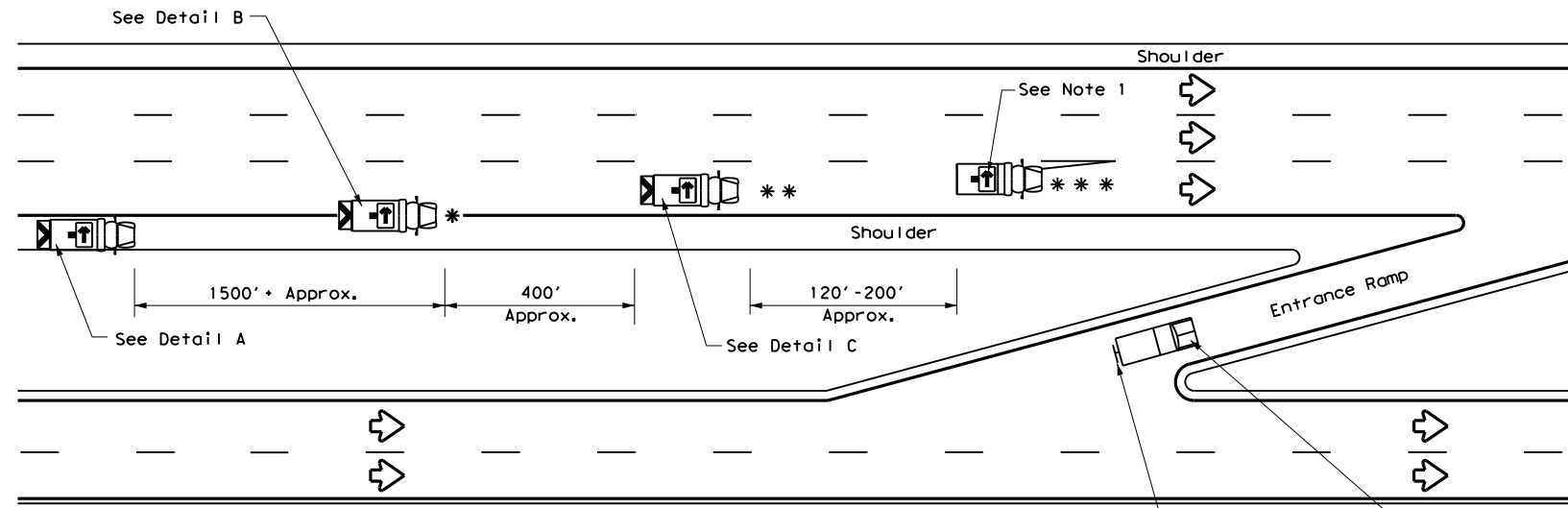
## TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

### TCP (2-6) - 18

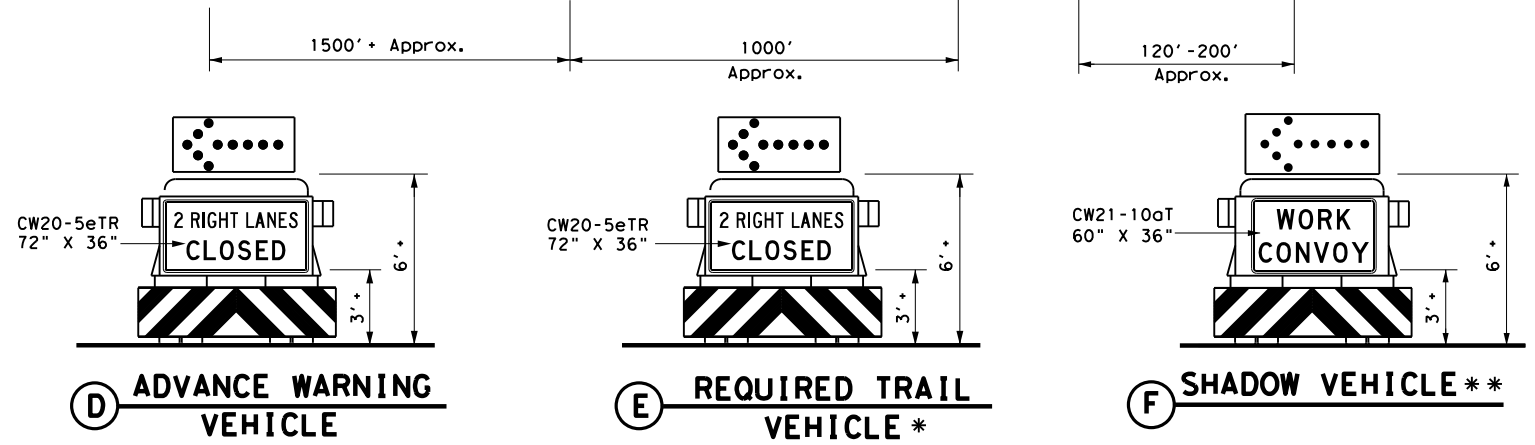
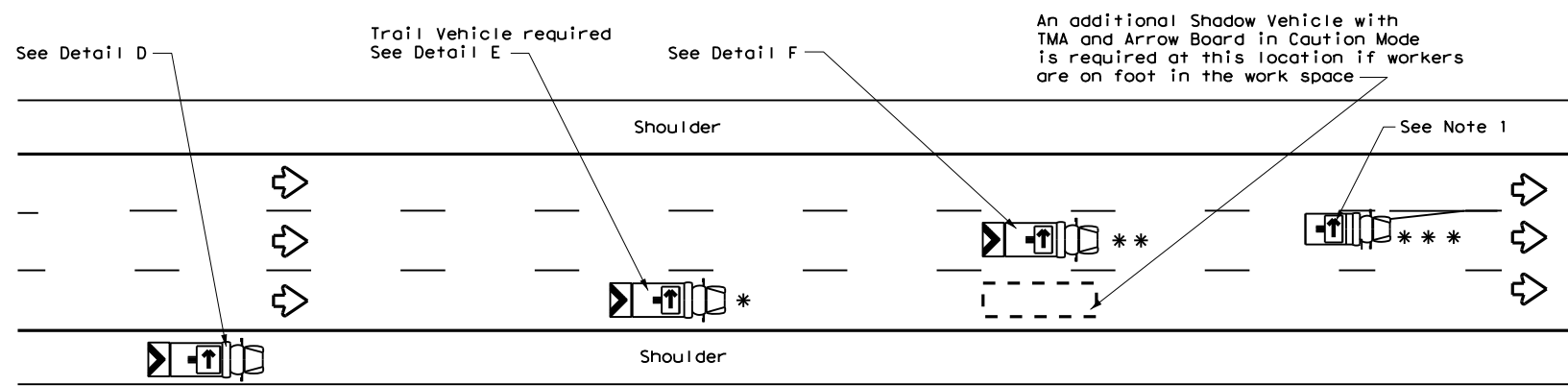
FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	WAC	McLENNAN, ETC.	28	
1-97 2-18				

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

DATE: 11/28/2023 1:34:05 PM  
 FILE: ...2\_TCP\TCP\_STD\tdp3-2.dgn



**RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)**



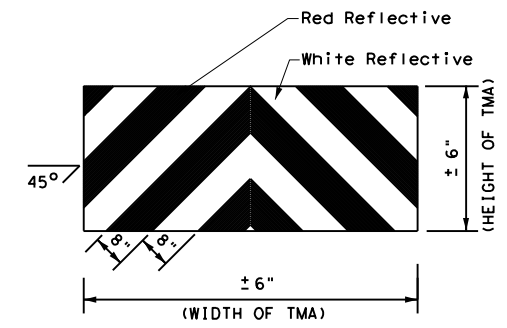
**INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)**

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
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**GENERAL NOTES**

- ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
- For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
- 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.
- The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
- Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
- 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 may vary according to terrain, work activity and other factors.
- Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
- The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board, must be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
- Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
- The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
- Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
- The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



**STRIPING FOR TMA**

Texas Department of Transportation  
Traffic Operations Division Standard

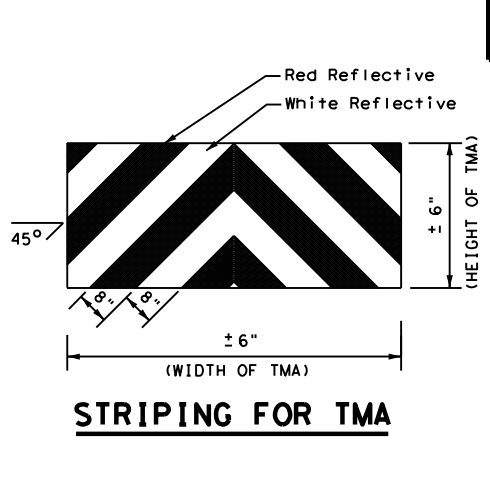
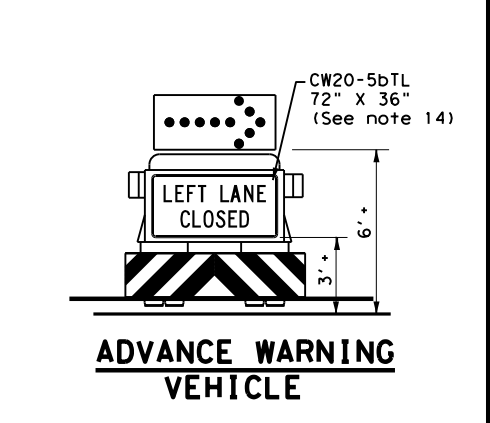
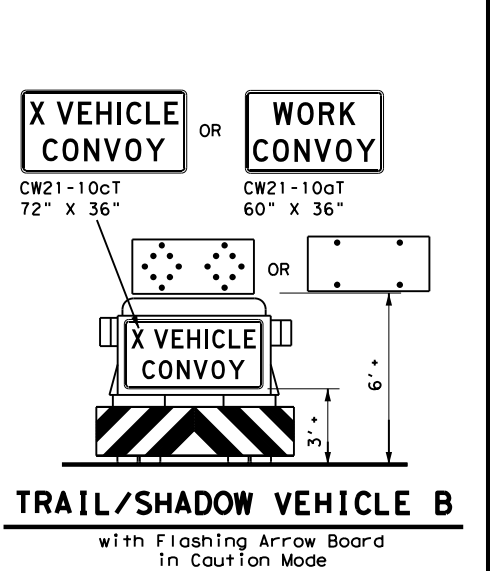
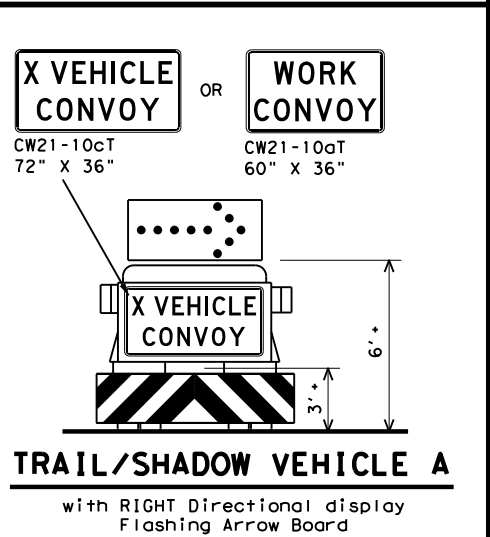
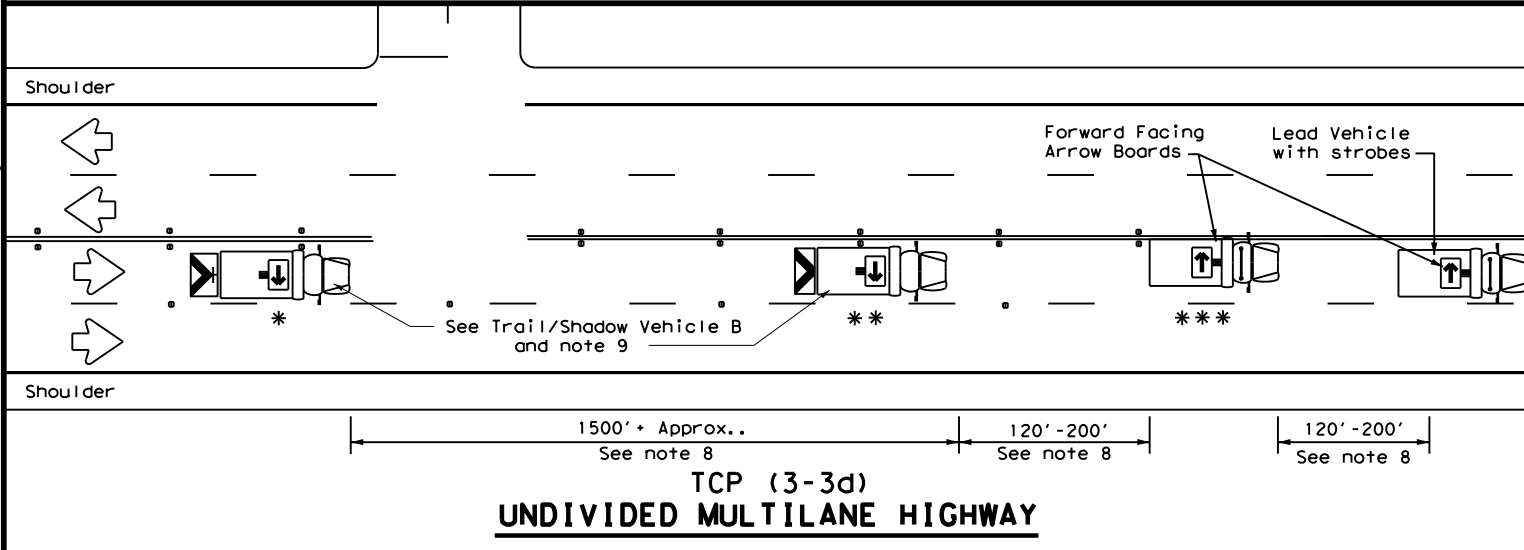
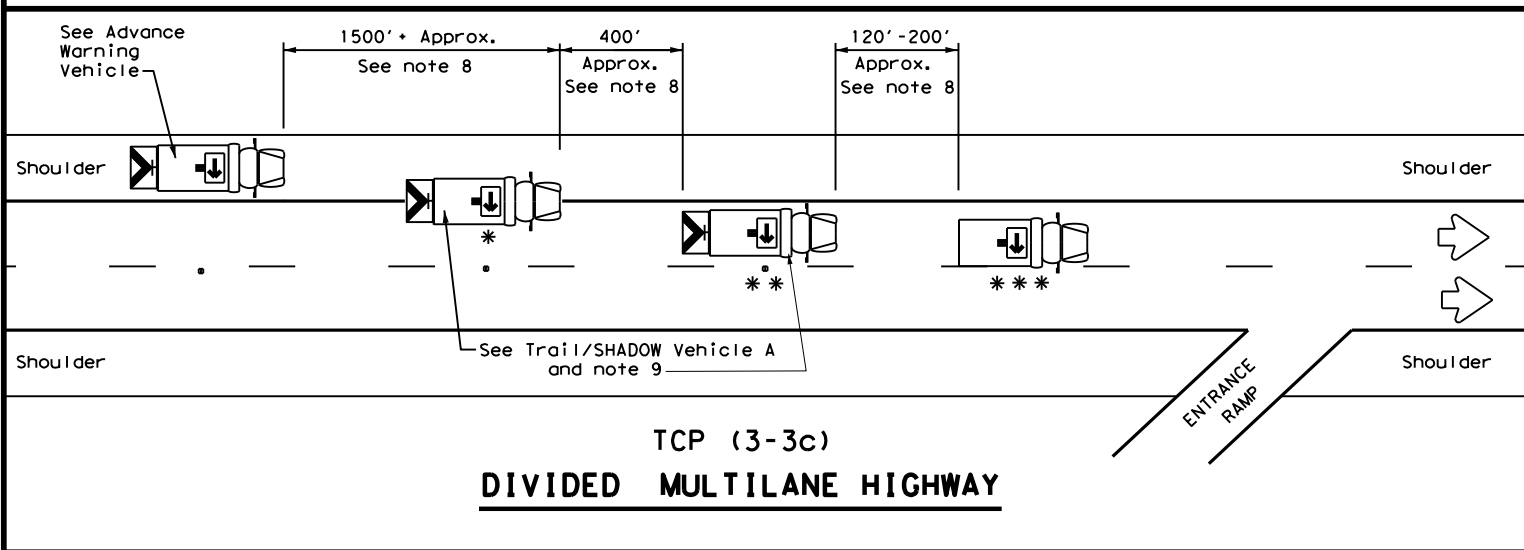
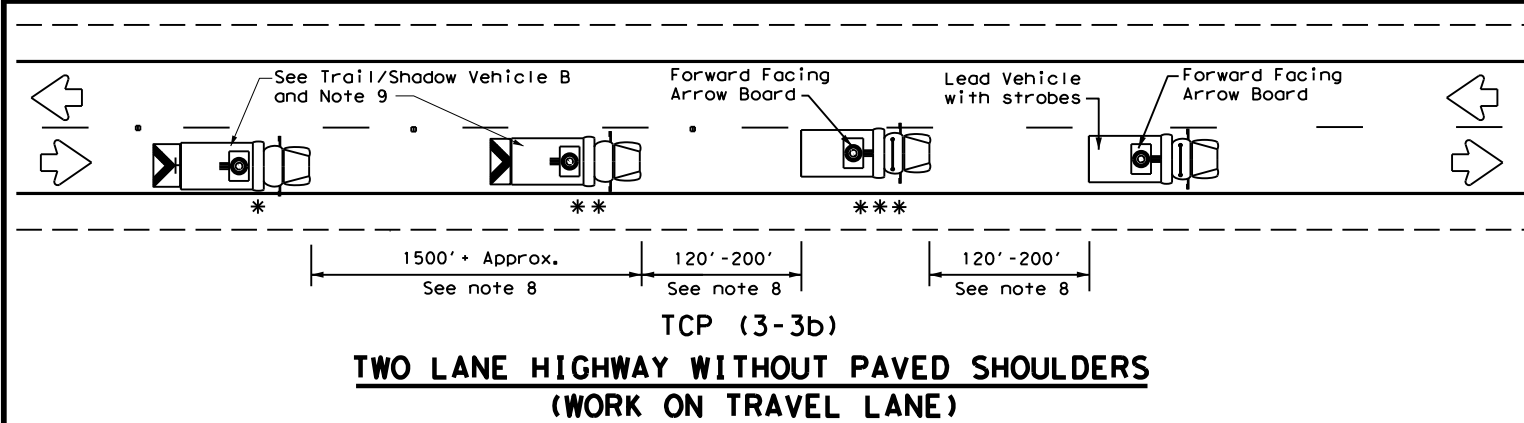
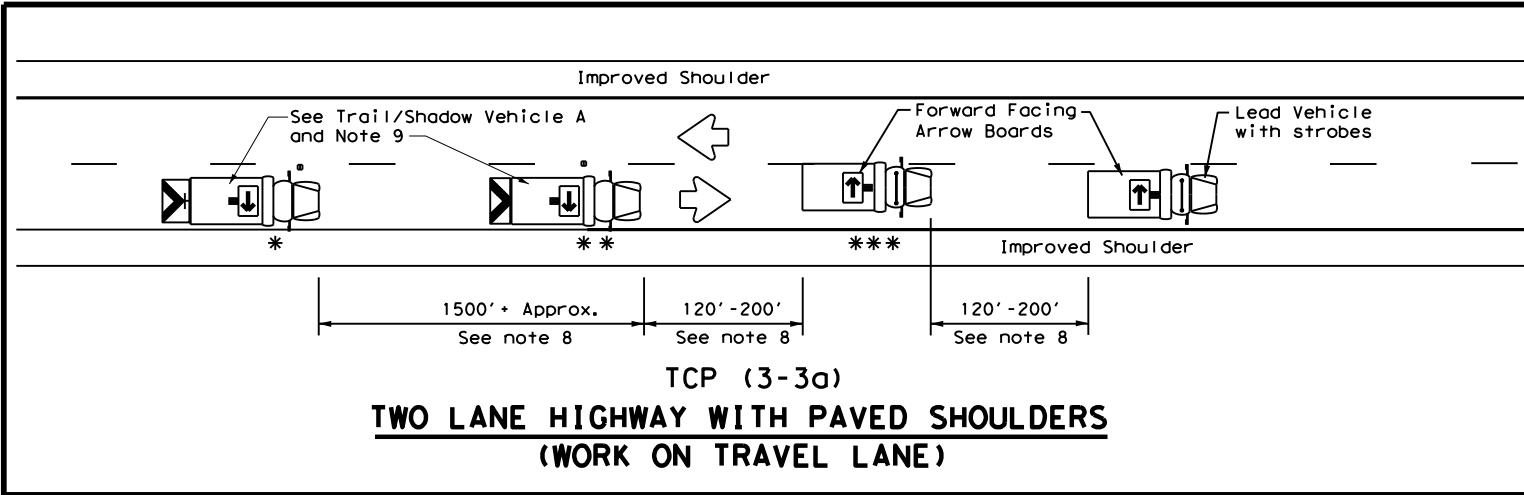
## TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

### TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	WAC	McLENNAN, ETC.	29	
1-97				

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

DATE: 11/28/2023 1:34:21 PM  
 FILE: ...2\_TCP\TCP\_STD\TCP3-3.dgn



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
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**GENERAL NOTES**

- TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. 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.
- 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.
- The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
- 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.
- 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.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
- Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the 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.
- 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.
- For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
- A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
- For divided highways with three or four lanes in each direction, use TCP(3-2).
- Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
- The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
- 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.

Texas Department of Transportation

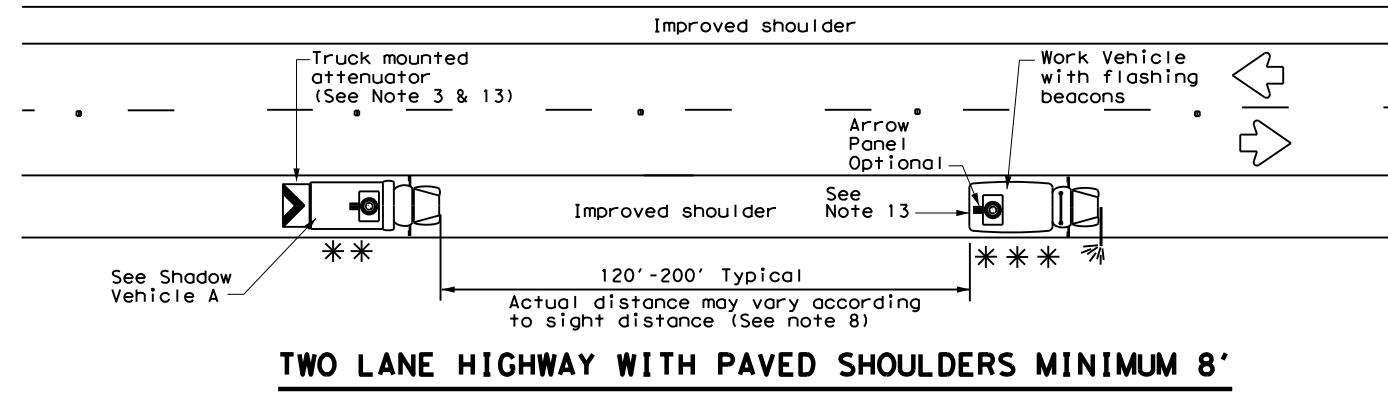
Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN  
 MOBILE OPERATIONS  
 RAISED PAVEMENT  
 MARKER INSTALLATION/  
 REMOVAL  
 TCP (3-3) - 14**

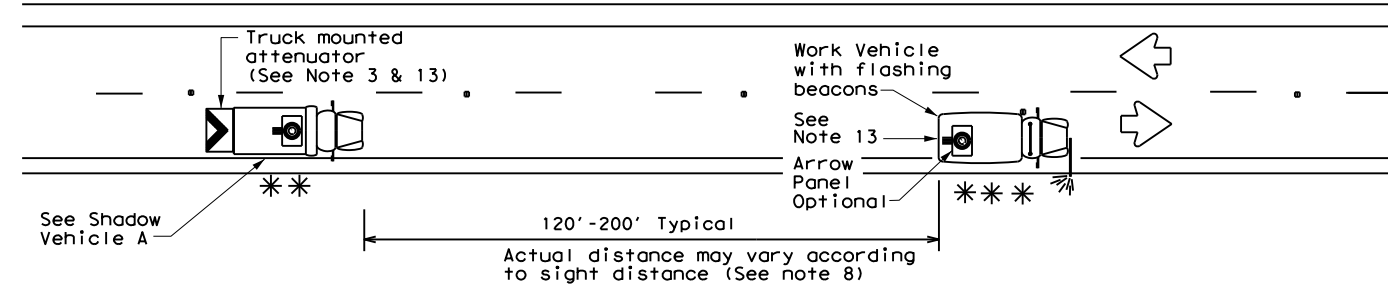
FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049 01	095, ETC.	SH	6
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	WAC	McLENNAN, ETC.	30	
1-97 7-14				

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

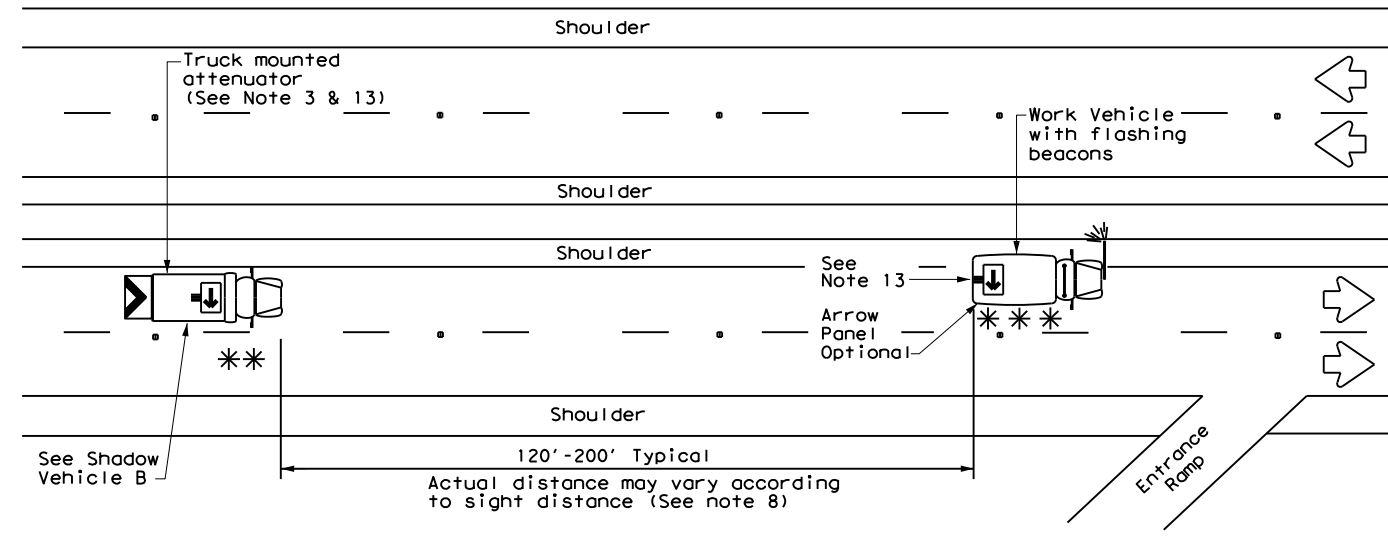
DATE: 11/28/2023 1:34:37 PM  
 FILE: ...2\_TCP\TCP\_STD\tcp3-5-18.dgn



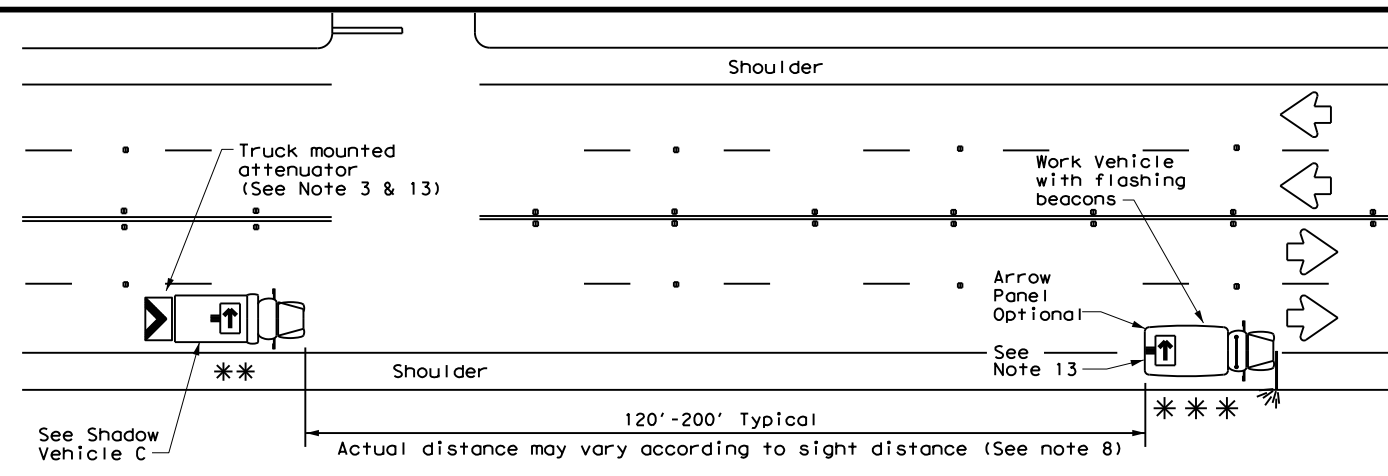
**TWO LANE HIGHWAY WITH PAVED SHOULDERS MINIMUM 8'**



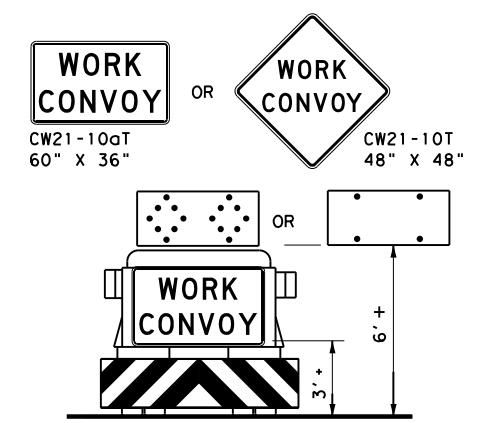
**TWO LANE HIGHWAY WITH NO SHOULDER OR NARROW SHOULDER**



**MULTILANE HIGHWAY**

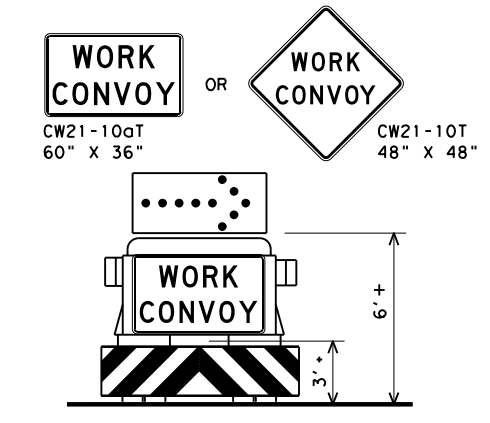


**MULTILANE HIGHWAY**



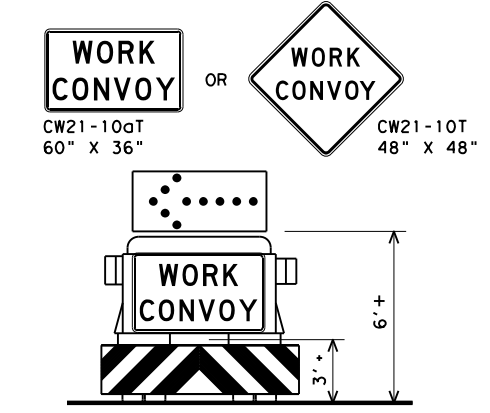
**SHADOW VEHICLE A**

with Flashing Arrow Board in Caution Mode



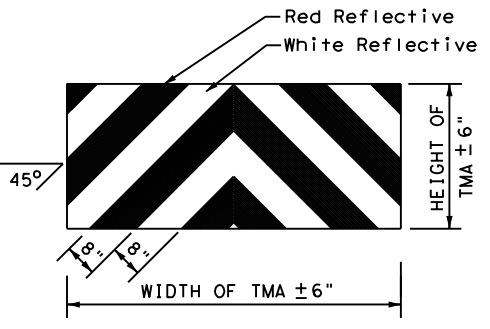
**TYPICAL SHADOW VEHICLE B**

with RIGHT Directional display Flashing Arrow Board



**TYPICAL SHADOW VEHICLE C**

with LEFT Directional display Flashing Arrow Board



**STRIPING FOR TMA**

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

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

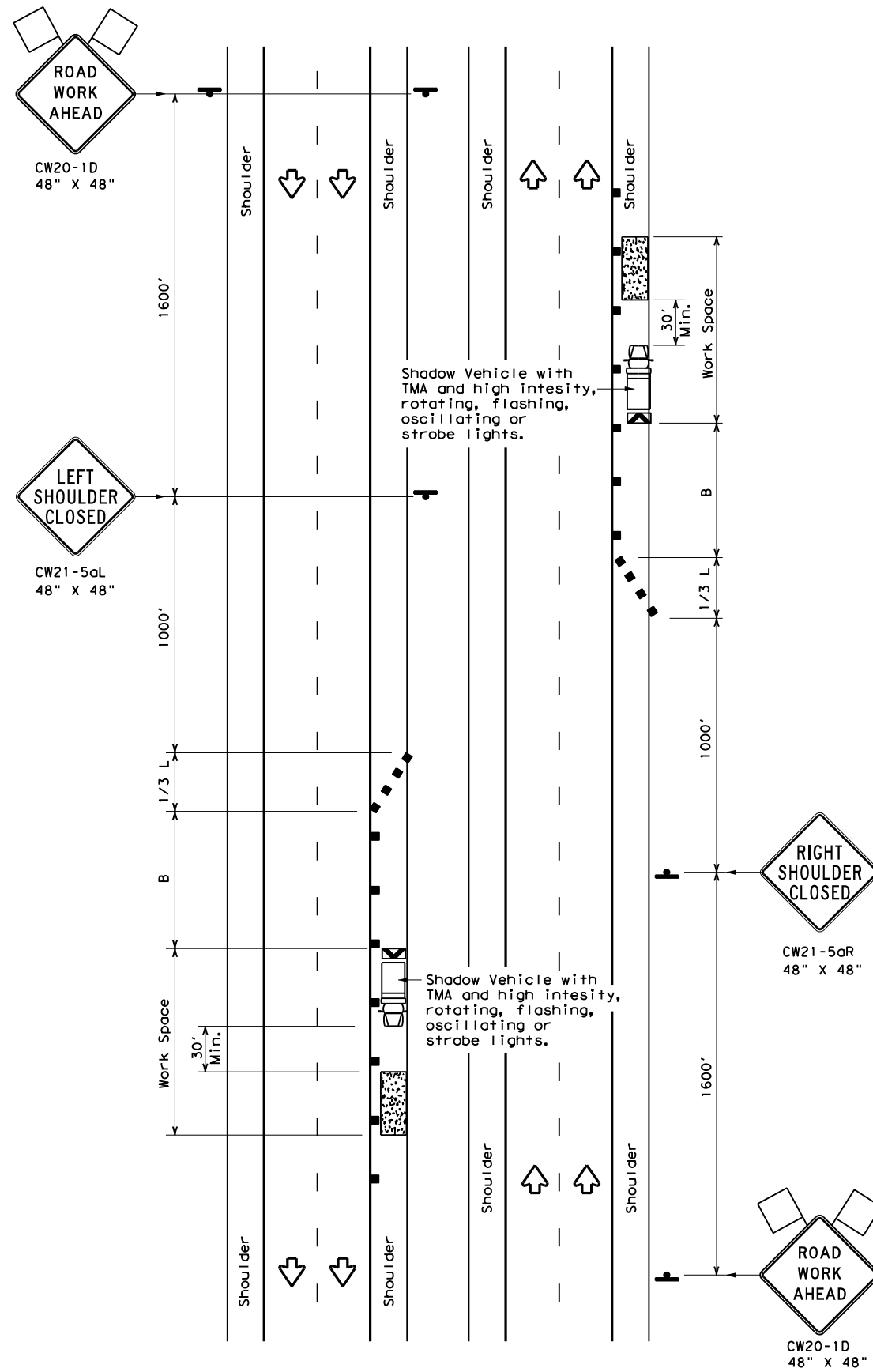
**GENERAL NOTES**

- All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
- 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.
- The use of truck mounted attenuators (TMA) on the Shadow Vehicle is required.
- Striping on the back panel of all TMAs shall be 8" red reflective sheeting with white background, 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.
- Flashing Arrow Panels shall be Type B or Type C as per BC Standards. The panel operation shall be controlled from inside the vehicle.
- Each vehicle shall have two-way radio communication capability.
- When the work convoy must change lanes, the Shadow Vehicle should change lanes first to protect the Work Vehicle.
- Spacing between Shadow and Work Vehicle will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the Shadow Vehicle in time to slow down and/or change lanes as they approach the Work Convoy.
- Use of an arrow panel on the Work Vehicle is optional except as provided in note 13, but may be required by the Engineer. If an arrow panel is not used, dual flashing beacons, mounted as high and as widely separated as practicable at the rear of the Work Vehicle shall be required.
- On two-lane two-way roadways, the Work and Shadow Vehicles should pull over periodically to allow motor vehicle traffic to pass.
- Work and Shadow Vehicles should stay on the shoulder of highways having 8' or wider shoulders when possible.
- A Trail Vehicle may be added to the operation when approved by the Engineer. See TCP (3) series standards.
- The shadow vehicle may be omitted on conventional roadways when a TMA or TA and arrow panel is mounted to the herbicide vehicle. A separate shadow vehicle will be required on expressways and Freeways.

		<b>Traffic Operations Division Standard</b>	
<b>TRAFFIC CONTROL PLAN</b> <b>MOBILE OPERATIONS</b> <b>HERBICIDE TRUCK OPERATIONS</b> <b>TCP (3-5) - 18</b>			
FILE: tcp3-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT July 2015	CONT	SECT	JOB
REVISIONS	0049	01	095, ETC.
4-18	DIST	COUNTY	SHEET NO.
	WAC	McLENNAN, ETC.	31

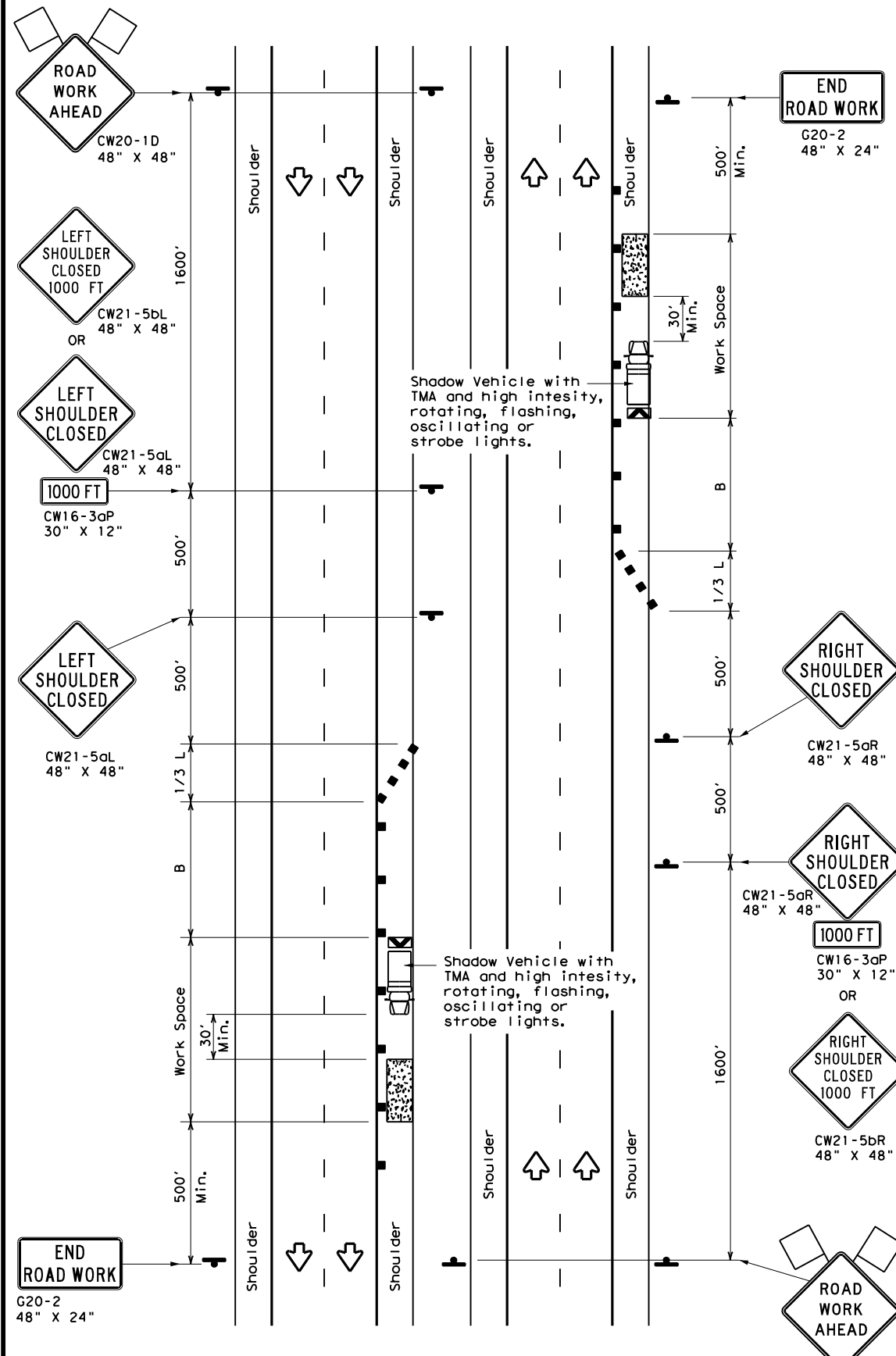
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023 1:34:52 PM  
 FILE: ...2\_TCP\TCP\_STD\_tcp5-1-18.dgn



TCP (5-1a)

**WORK AREA ON SHOULDER**



TCP (5-1b)

**WORK AREA ON SHOULDER**

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

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

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

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

**GENERAL NOTES**

1. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the performance or quality of the work. Type 3 barricades or drums may be substituted when workers on foot are no longer present when approved by the Engineer.
2. 28" tall or taller one-piece cones will be allowed only for Short Duration or Short Term stationary operations when workers are present to maintain the devices upright and in proper location. Intermediate Term stationary work areas should use Drums, Vertical Panels or 42" tall two-piece cones.



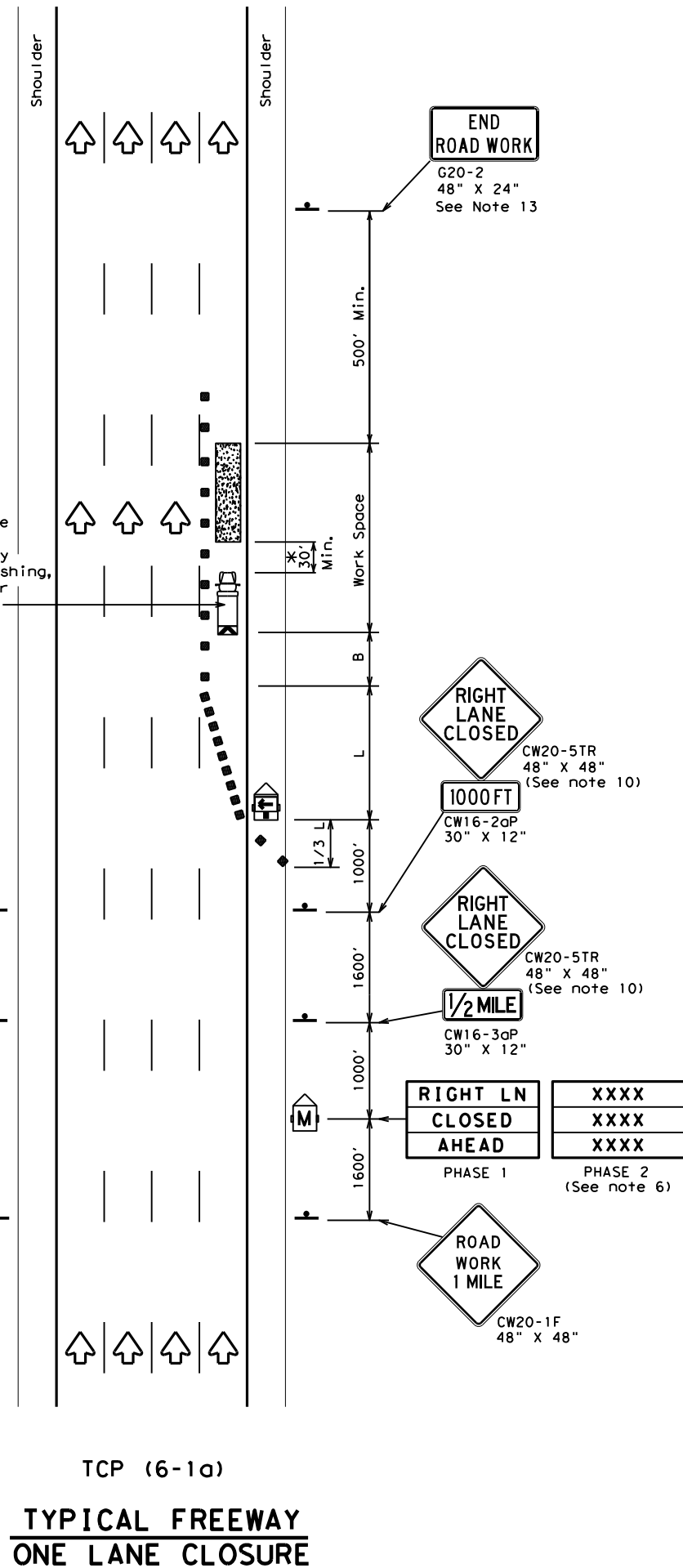
**TRAFFIC CONTROL PLAN  
 SHOULDER WORK FOR  
 FREEWAYS / EXPRESSWAYS**

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

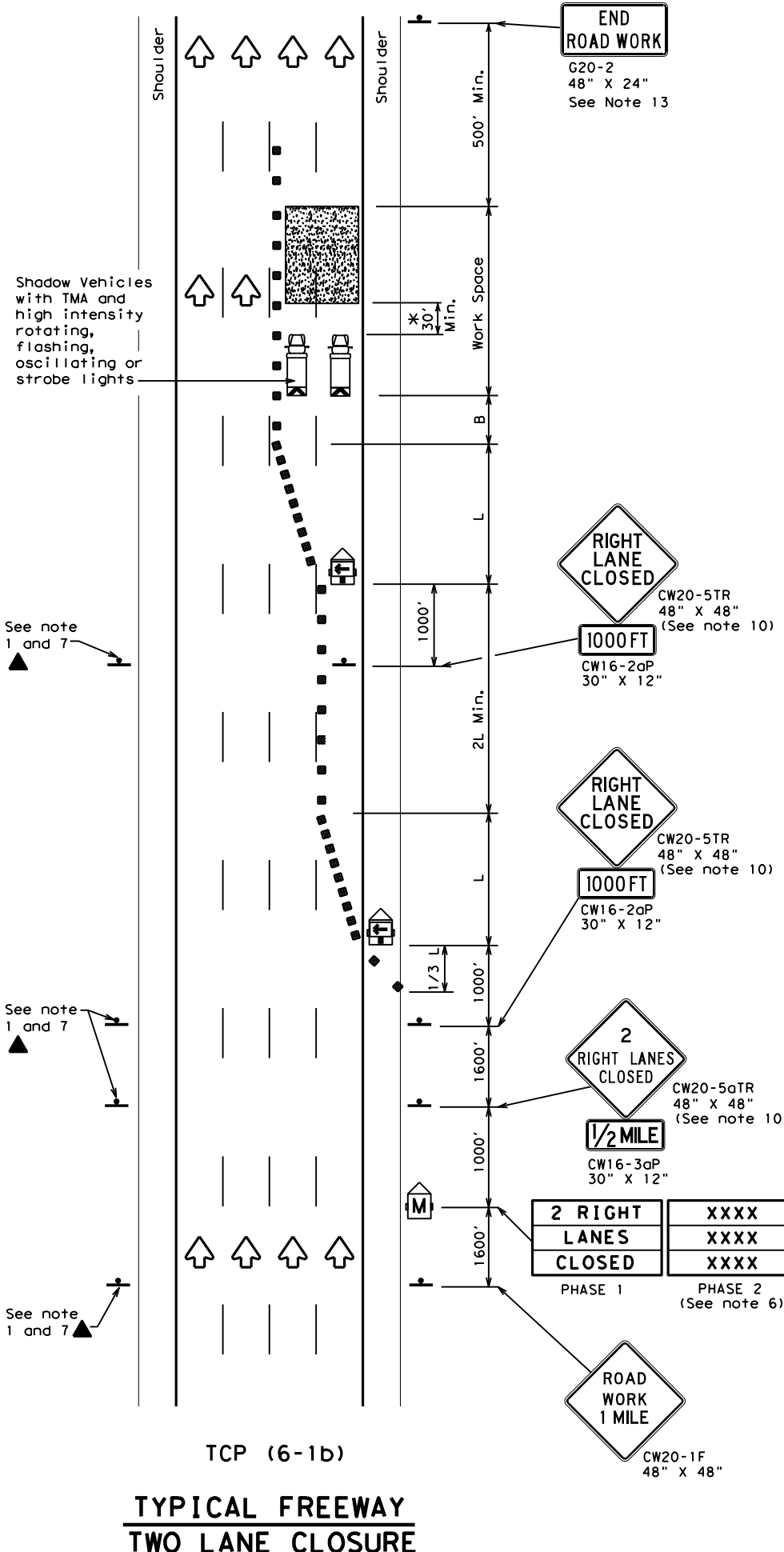
FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
2-18	REVISIONS	0049 01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	32	

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

DATE: 11/28/2023 1:35:10 PM  
 FILE: ...2\_TCP\TCP\_STD.tcp6-1.dgn



TCP (6-1a)  
**TYPICAL FREEWAY  
 ONE LANE CLOSURE**



TCP (6-1b)  
**TYPICAL FREEWAY  
 TWO LANE CLOSURE**

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 "L"			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80	800'	880'	960'	80'	160'	615'	

\*\* 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**

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- Drums or 42" cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
- All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
- The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
- Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
- Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
- Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
- The number of closed lanes may be increased provided the spacing of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMUTCD.
- Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
- Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions in the SHSD for Texas with distances on the sign face rather than mounted on a plaque below the sign may be used.
- When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
- For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
- The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

\* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Texas Department of Transportation  
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN  
 FREEWAY LANE CLOSURES**

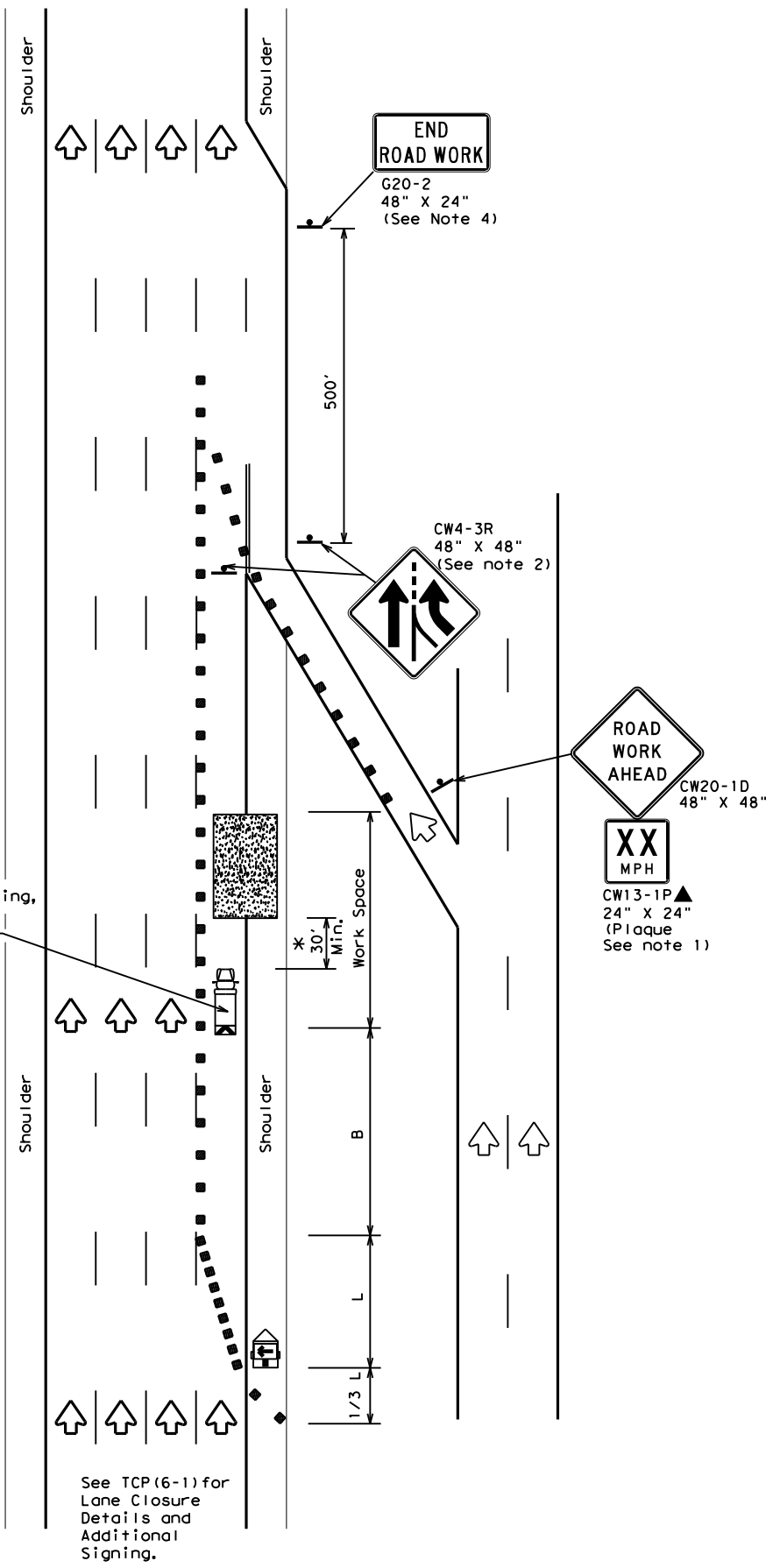
**TCP (6-1) - 12**

FILE:	tcp6-1.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY				
8-12	REVISIONS	0049	01	095, ETC.	SH 6				
		DIST	COUNTY	SHEET NO.					
		WAC	McLENNAN, ETC.	33					

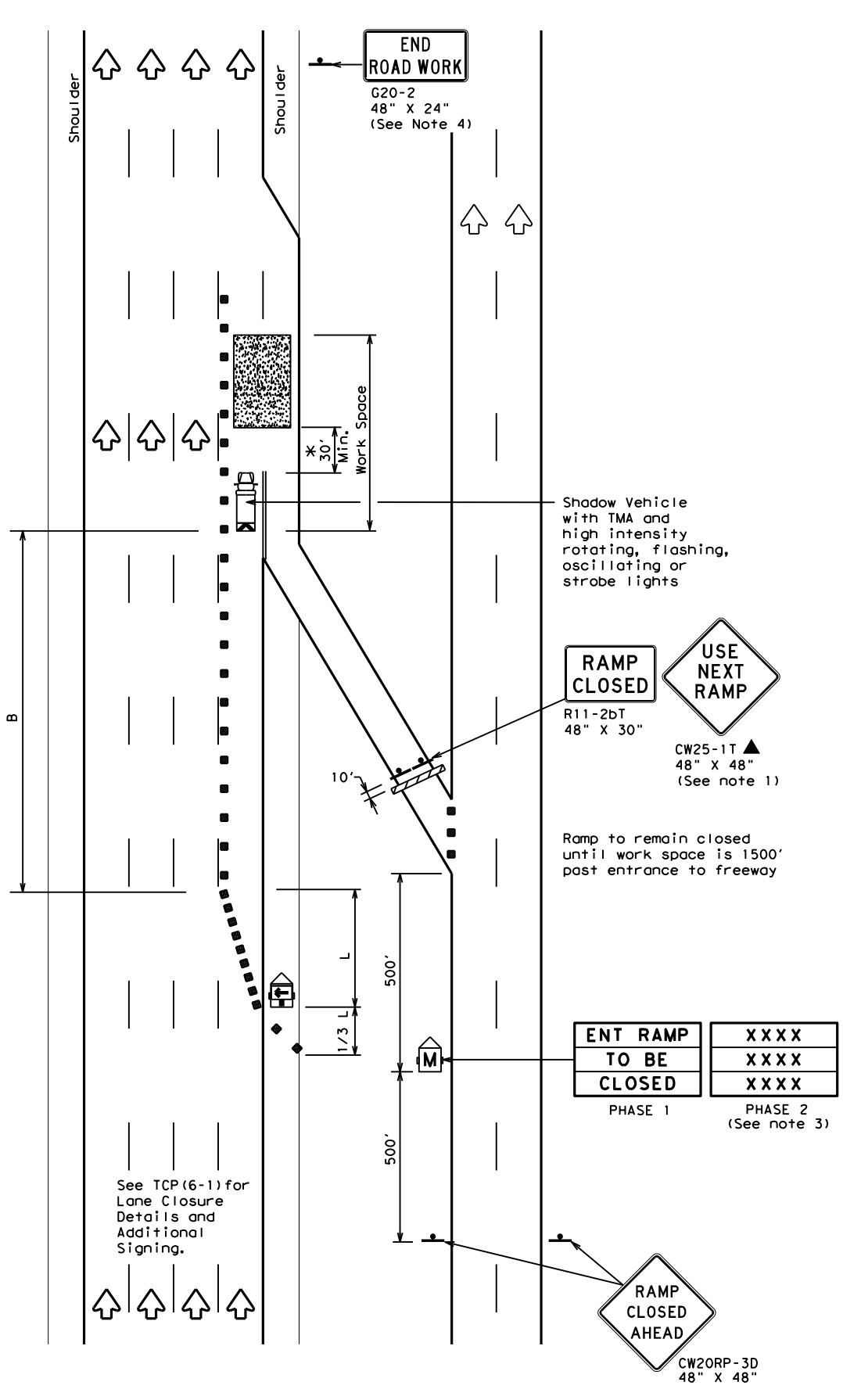


DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023 1:35:26 PM  
 FILE: ...2\_TCP\TCP\_STD\TCP6-2.dgn



TCP (6-2a)  
**ENTRANCE RAMP OPEN**  
**WORK WITHIN 500' OF RAMP**



TCP (6-2b)  
**ENTRANCE RAMP CLOSED**

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 "L"			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

\*\* 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**

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- ADDED LANE Symbol (CW4-3) sign may be omitted when sign between ramp and mainlane can be seen from both roadways.
- See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
- The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

\*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.



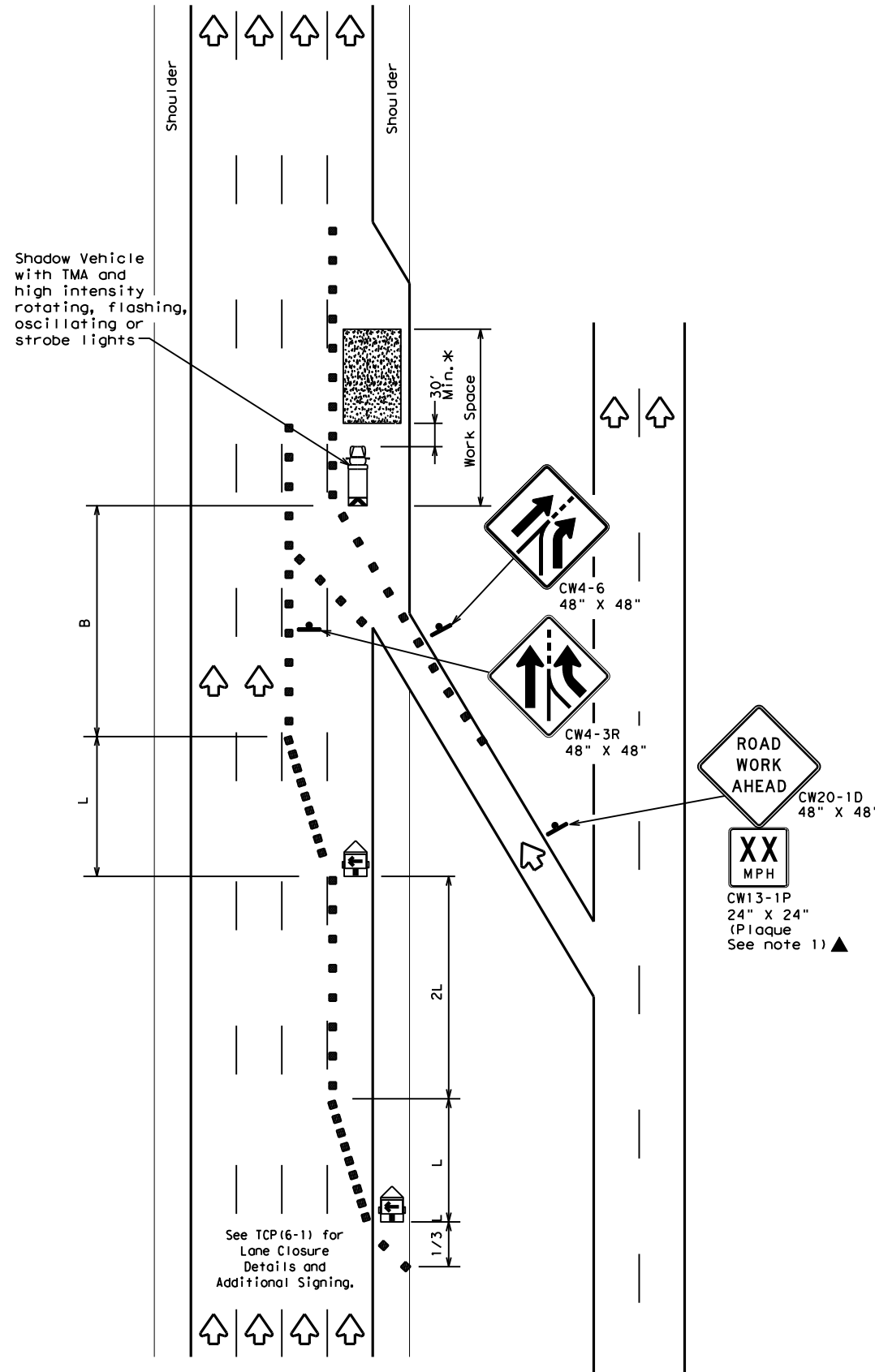
**TRAFFIC CONTROL PLAN**  
**WORK AREA NEAR RAMP**

**TCP (6-2) - 12**

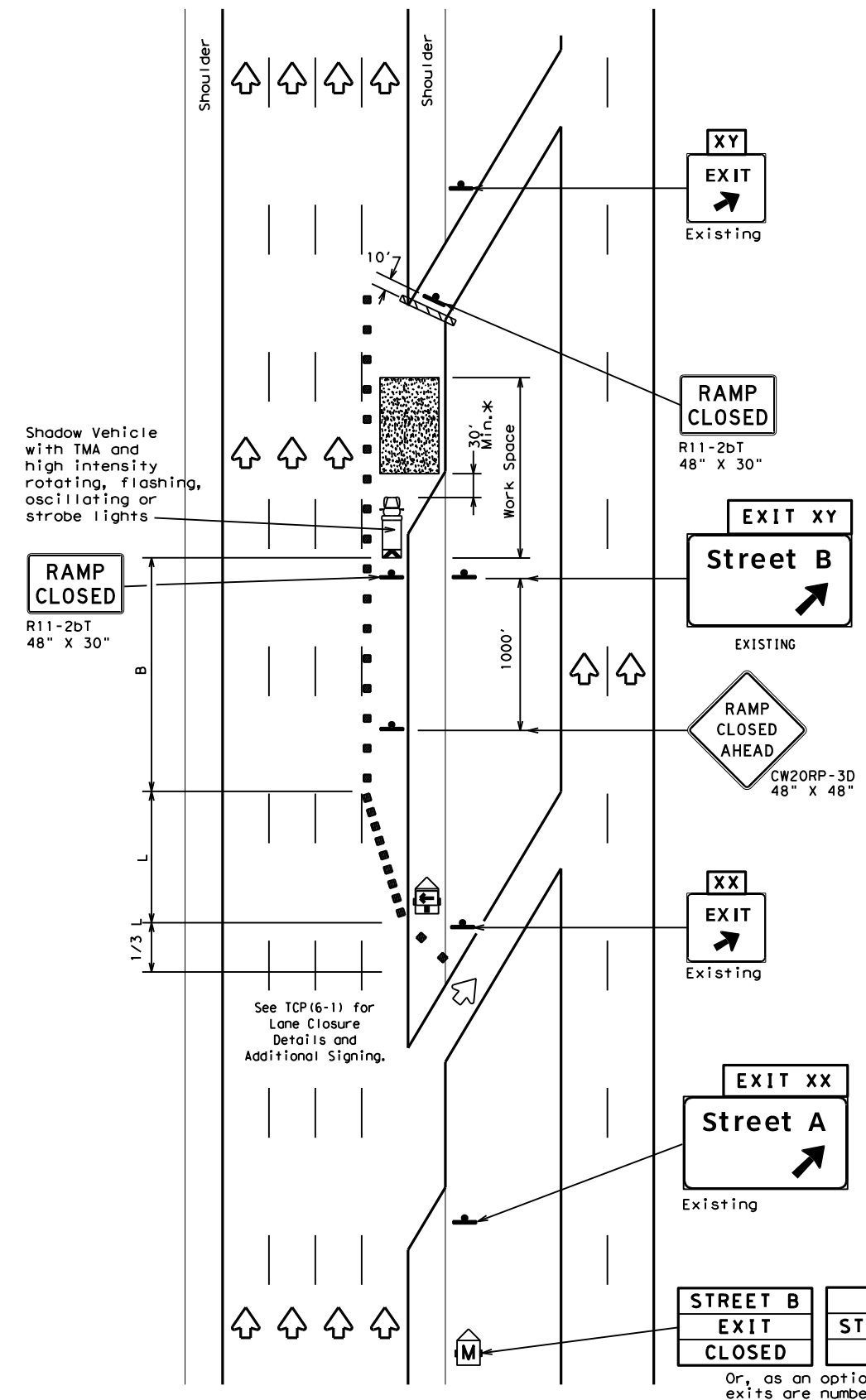
FILE:	tcp6-2.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
©TxDOT	February 1994	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0049	01	095, ETC.		SH 6			
1-97	8-98	DIST		COUNTY	SHEET NO.				
4-98	8-12	WAC		McLENNAN, ETC.	34				

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

DATE: 11/28/2023 1:35:42 PM  
 FILE: ...2\_TCP\TCP\_STD\TCP6-3.dgn



TCP (6-3a)  
**ENTRANCE RAMP OPEN**



TCP (6-3b)  
**EXIT RAMP CLOSED**  
**TRAFFIC EXITS PRIOR TO CLOSED RAMP**

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

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

\*\* 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.

\*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation  
 Traffic Operations Division Standard

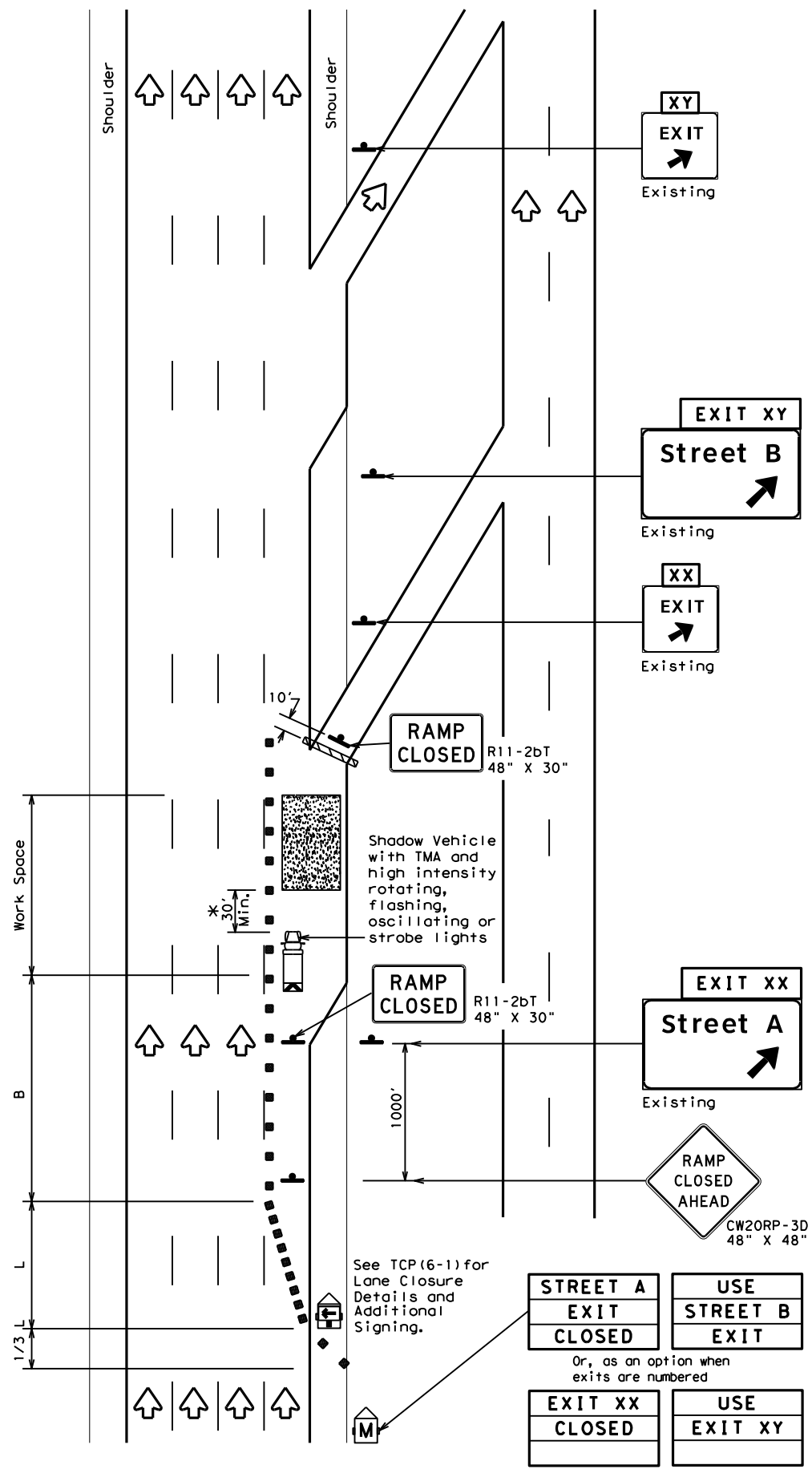
**TRAFFIC CONTROL PLAN**  
**WORK AREA BEYOND RAMP**

**TCP (6-3) - 12**

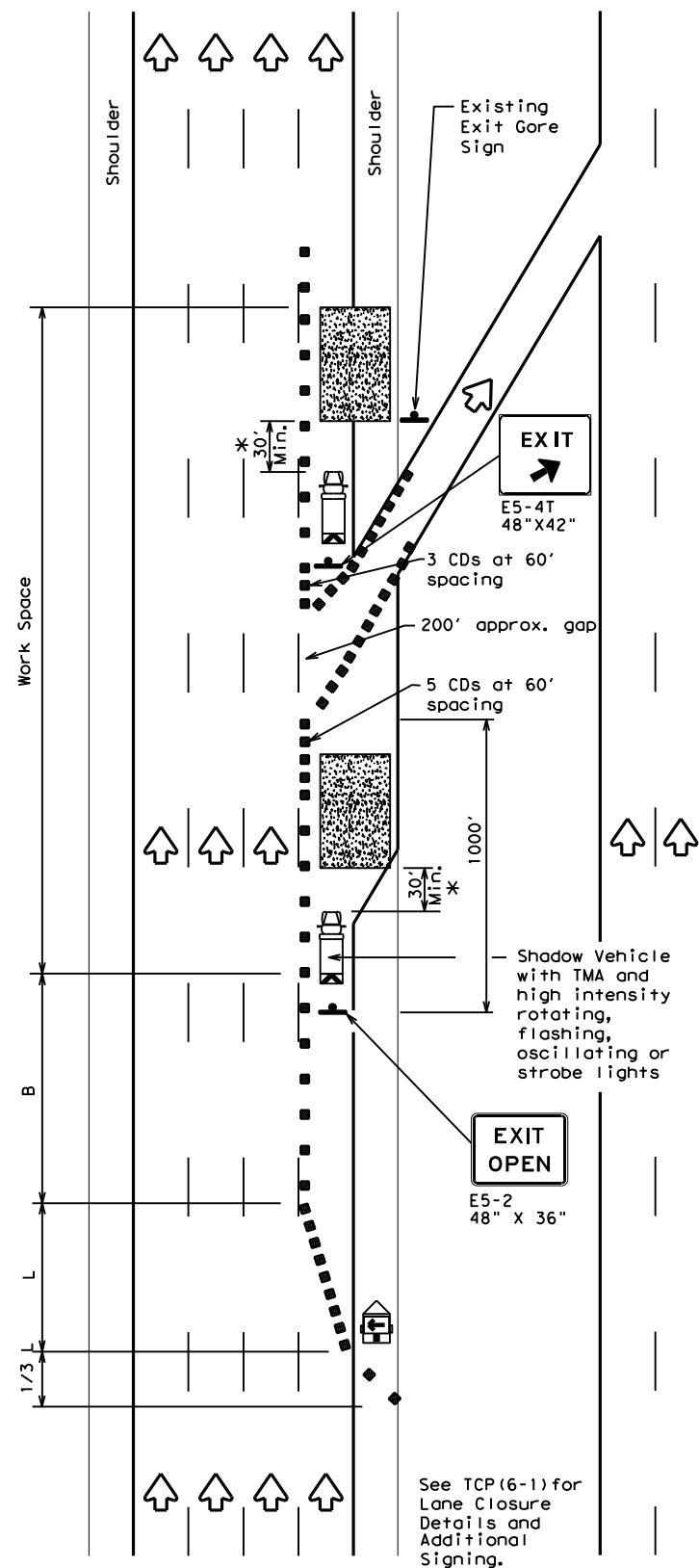
FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	WAC	McLENNAN, ETC.	35	

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

DATE: 11/28/2023 1:36:00 PM  
 FILE: ...2\_TCP\TCP\_STD\tcp6-4.dgn



TCP (6-4a)



TCP (6-4b)

**EXIT RAMP OPEN**

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	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 "L"			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

\*\*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**

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- See BC Standards for sign details.

\*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.



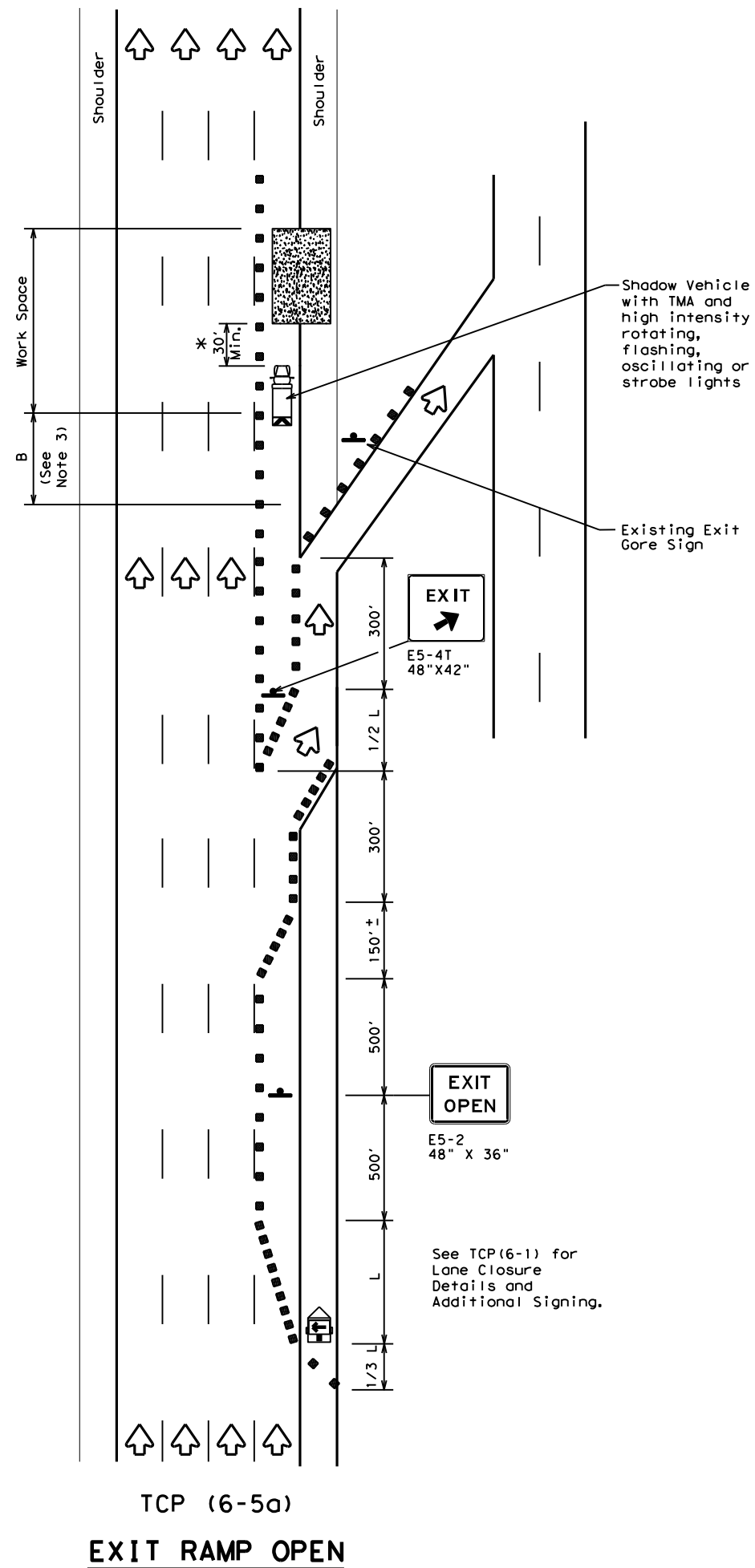
**TRAFFIC CONTROL PLAN  
 WORK AREA AT EXIT RAMP**

**TCP (6-4) - 12**

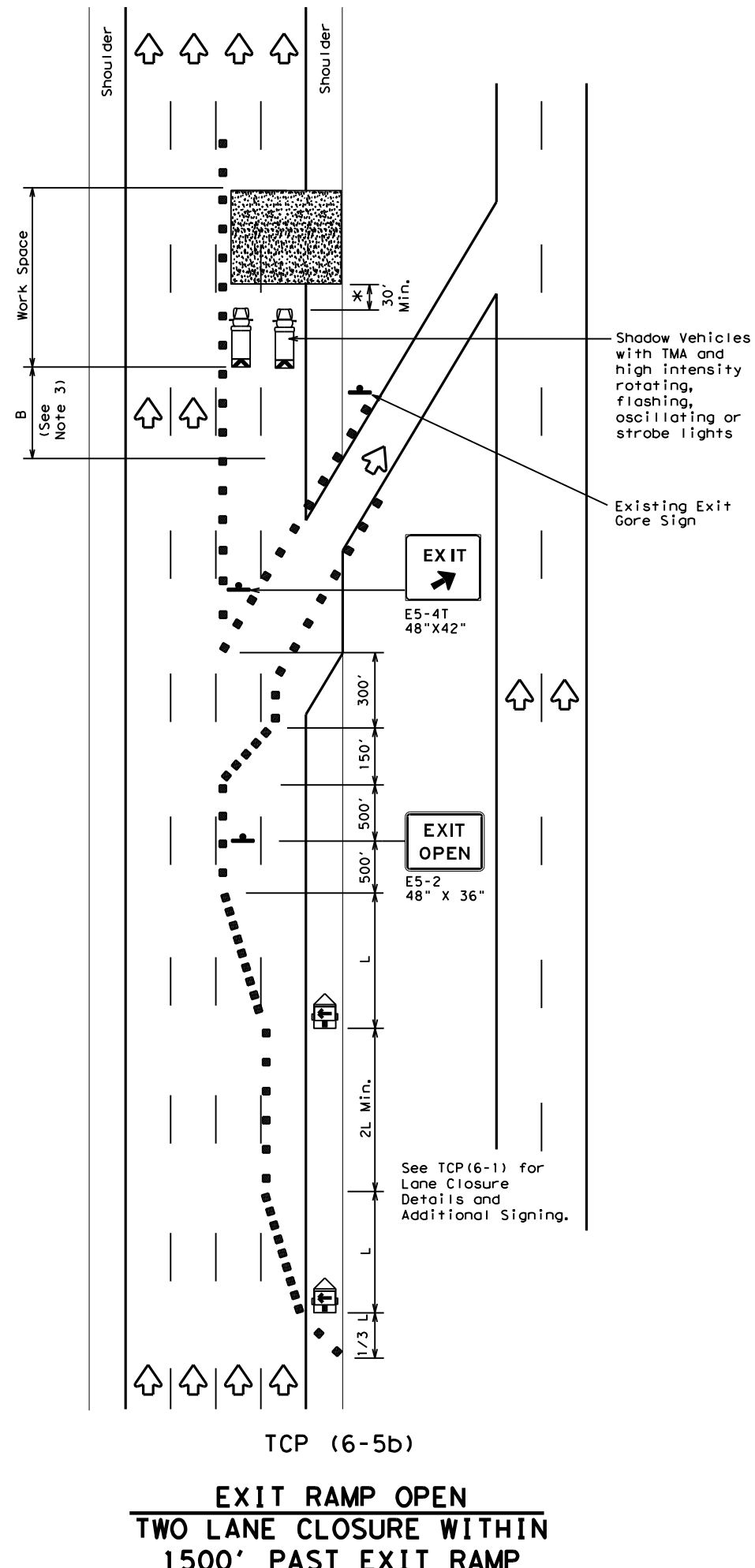
FILE: tcp6-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049 01	095, ETC.	SH 6	
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	WAC	McLENNAN, ETC.	36	

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

DATE: 11/28/2023 1:36:15 PM  
 FILE: ...2\_TCP\TCP\_STD\tcp6-5.dgn



TCP (6-5a)  
**EXIT RAMP OPEN**



TCP (6-5b)  
**EXIT RAMP OPEN  
 TWO LANE CLOSURE WITHIN  
 1500' PAST EXIT RAMP**

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

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

\* \* \* 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**

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- See BC standards for sign details.
- If adequate longitudinal buffer length "B" does not exist between the work space and the exit ramp, consideration should be given to closing the ramp.

\*A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation  
 Traffic Operations Division Standard

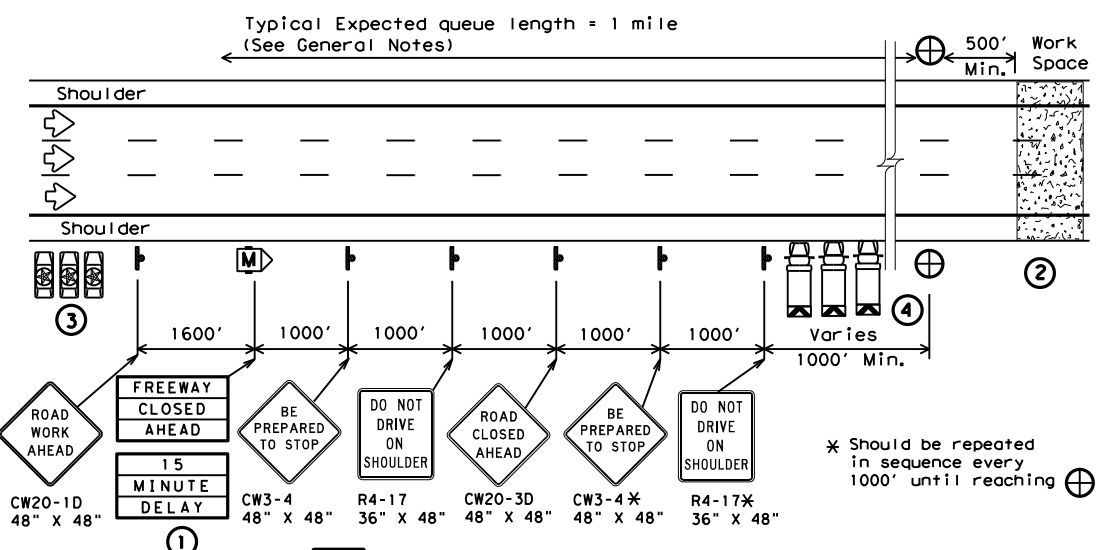
**TRAFFIC CONTROL PLAN  
 WORK AREA BEYOND EXIT RAMP**

**TCP (6-5) - 12**

FILE: tcp6-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	WAC	McLENNAN, ETC.	37	

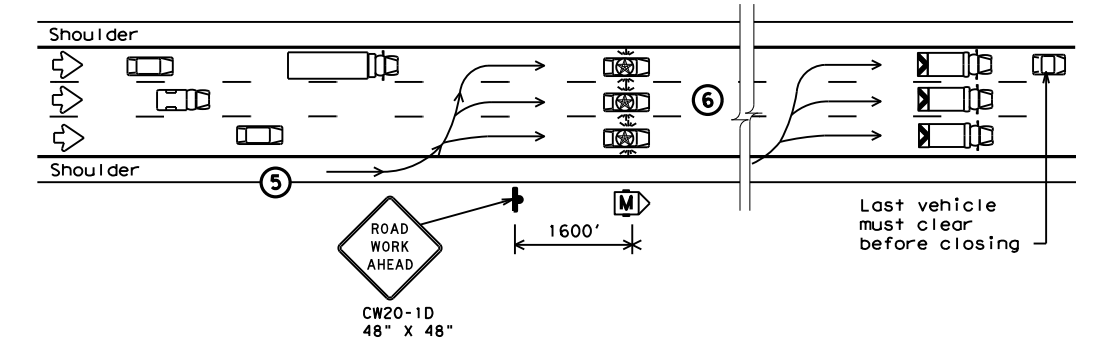
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023 1:36:31 PM  
 FILE: ...2\_TCP\TCP\_STD\tcp6-7.dgn



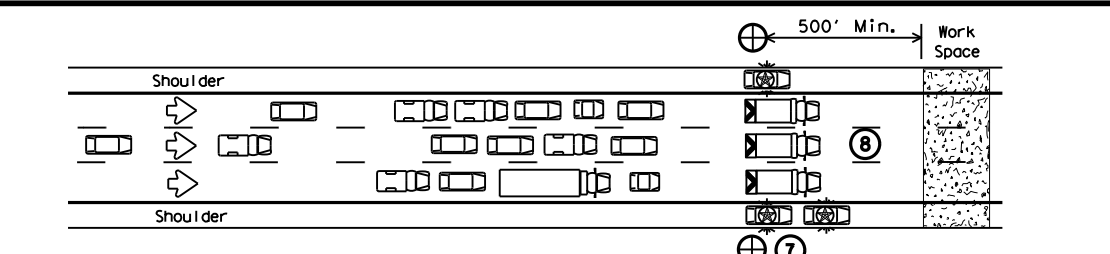
### 1 STARTING POSITION

- ① Traffic control devices should be installed or located near their intended position prior to beginning temporary roadway closure sequence. Duplicate signs should be erected on the median side of the roadway when median width permits. Warning signs should not be placed on the paved shoulders that will be used by the WARNING LEOV, or where movement of the LEOVs or barrier vehicles will be impeded.
- ② Prior to beginning the roadway closure sequence, all equipment, materials, personnel, and other items necessary to complete the work should be gathered near the work area. Entrance ramps located in the area where a queue is expected to build should be closed.
- ③ There should be one LEOV for every lane to be controlled, plus a minimum of one to warn traffic approaching a queue. An additional lead law enforcement officer is desirable to remain with the Engineer's or Contractor's point of contact (POC) during the operation in order to improve communication with all LEOVs involved.
- ④ One barrier vehicle with a Truck Mounted Attenuator and amber or blue and amber high intensity flashing/oscillating/strobe lighting shall be used for each lane to be closed.



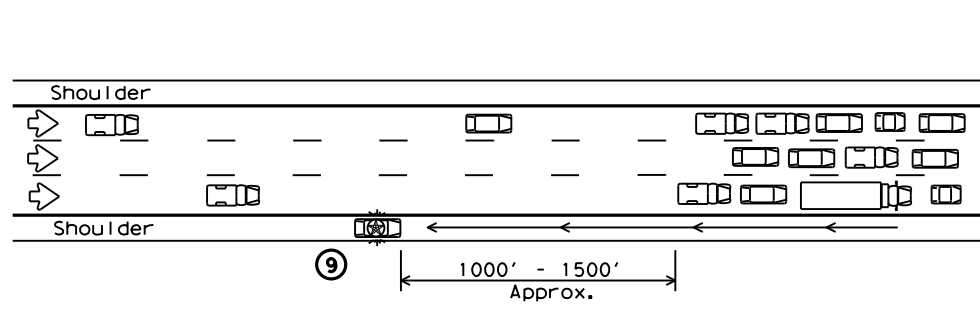
### 2 REDUCING SPEED OPERATION

- ⑤ Starting position of the LEOVs should be in advance of the most distant warning signs.
- ⑥ Once the LEOVs have achieved an abreast blocking formation while traveling toward the CP, emergency lights and headlights should be turned "ON". The LEOVs should maintain formation, not allow traffic to pass, and begin to decelerate. The LEOVs should continue to decelerate, giving the barrier vehicles opportunity to be staged upstream of the work space after traffic has cleared. The LEOVs should then continue to decelerate slowly until bringing traffic to a stop near the barrier vehicles.



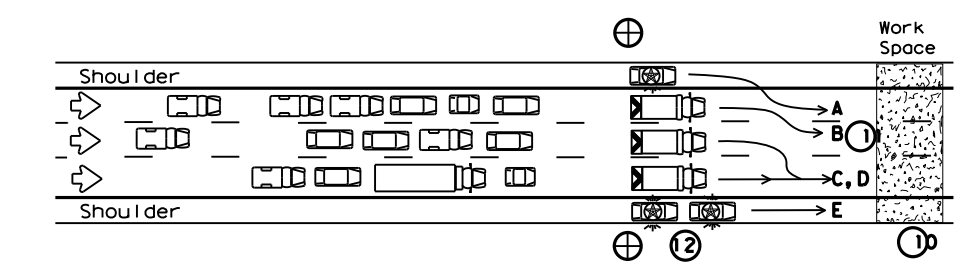
### 3 ALL TRAFFIC STOPPED AT CP

- ⑦ Once traffic is stopped the LEOVs should park on the shoulders with emergency lighting "ON" in order to provide law enforcement presence at the closure and keep shoulders blocked ahead of the work space. They should stay in radio contact with the WARNING LEOV.
- ⑧ The barrier vehicles should be parked, one in each lane, the parking brake set, with the high visibility flashing/oscillating/strobe lighting "ON," and the transmission in gear.



### 4 WARNING THE TRAFFIC QUEUE

- ⑨ The WARNING LEOV should proceed to the right shoulder of the roadway, with emergency lights on approximately 1000' in advance of the traffic queue (stopped traffic) as the queue develops. When determined that limited sight distance situations (crest of hills, sharp roadway curvature, etc.) may occur to motorists approaching the queue, the WARNING LEOV may proceed 1/4 mile or more in advance of the queue.



### 5 RELEASING STOPPED TRAFFIC

- ⑩ All equipment, materials, personnel, and other items should be removed from the roadway and maintain an adequate clear zone.
- ⑪ When the roadway is clear for traffic, the LEOV should proceed forward from the left shoulder followed by the barrier vehicles, from left to right, as shown alphabetically in the plan view.
- ⑫ The LEOV or LEOVs on the right shoulder may remain on the shoulder until satisfied that traffic is moving satisfactorily before merging or proceeding.
- ⑬ LEOVs and barrier vehicles should re-group at their respective starting positions if necessary.

LEGEND			
■	Channelizing Devices	⊕	Control Position (CP)
M	Portable Changeable Message Sign (PCMS)	⊠	Barrier Vehicle with Truck Mounted Attenuator
Ⓣ	Law Enforcement Officer's Vehicle (LEOV)	←	Traffic Flow

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

### GENERAL NOTES

1. All traffic control devices shall conform with the latest edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Additional guidelines for traffic control devices may be found in the TMUTCD. Signs conflicting with the roadway closure sequence should be completely removed or covered. Additional traffic control devices may be required for closure of access roads, cross streets, exit and entrance ramps as directed by the Engineer.
2. Law enforcement officers and all workers involved should review and understand all procedures before the roadway closure sequence begins. Pre-work meetings may be held for this purpose. Local emergency services and media should have advance notification of roadway closure, expected dates and approximate times of closures.
3. Law enforcement officers shall be in uniform and have jurisdiction in the locale of the work area. An additional WARNING Law Enforcement Officer's Vehicle (LEOV) may be used on the median side of the roadway where median shoulder width permits (See sequence #9).
4. The roadway closure should be during off-peak hours, as shown in the plans, or as directed by the Engineer.
5. Work should be limited to approximately 15 minutes maximum duration unless otherwise directed by the Engineer based on existing roadway conditions. If the work is not complete within 15 minutes, or if the end of the traffic queue extends past the most distant advance warning signs, the work area should be cleared of all equipment, materials, personnel, and other items, and the roadway reopened. When the queue has dissipated and the traffic flow appears normal the roadway closure sequence may be repeated.
6. For traffic volumes greater than 1000 Passenger Cars Per Hour Per Lane (PCPHPL), or for roadway closures that exceed 15 minutes, see details elsewhere in the plan.
7. If traffic queues beyond the advance warning signs during one road closure sequence, the advance warning should be extended prior to repeating the road closure sequence. When possible, PCMS signs should be located in advance of the last available exit prior to the closure to allow motorists the choice of an alternate route.

THIS PLAN IS INTENDED TO BE USED AT LOCATIONS/TIMES WHEN TRAFFIC VOLUMES ARE LESS THAN 1000 PASSENGER CARS PER HOUR PER LANE.

**Texas Department of Transportation**  
Traffic Operations Division Standard

## TRAFFIC CONTROL PLAN

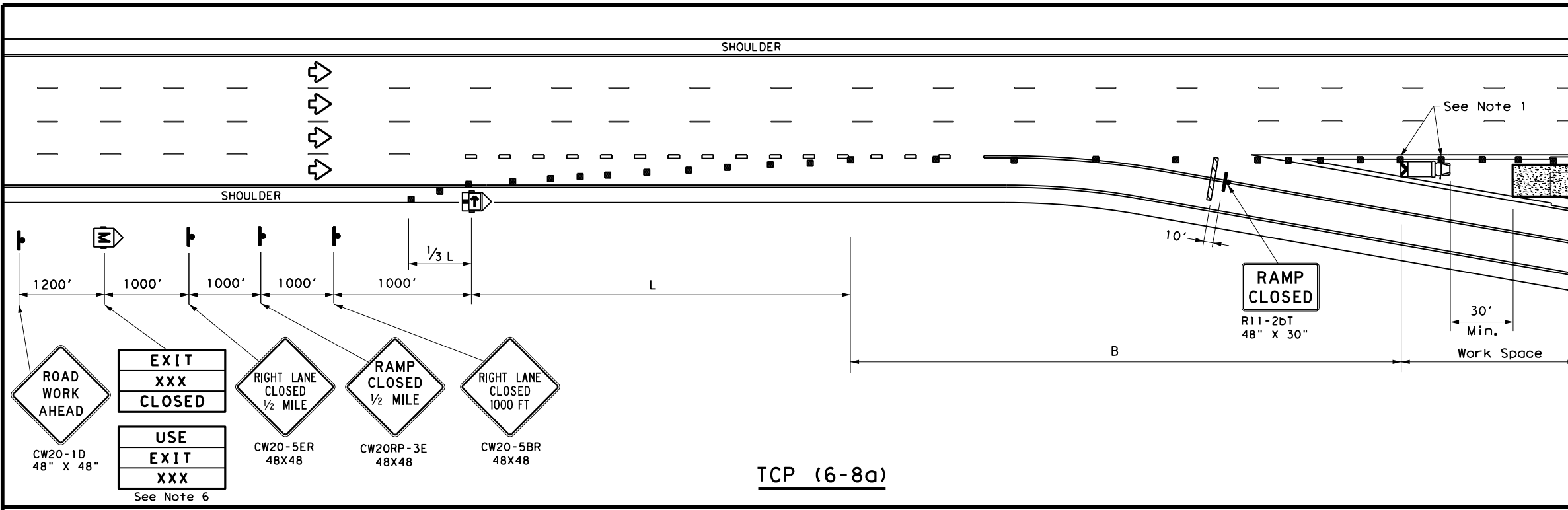
### SHORT DURATION FREEWAY CLOSURE SEQUENCE

# TCP (6-7) - 12

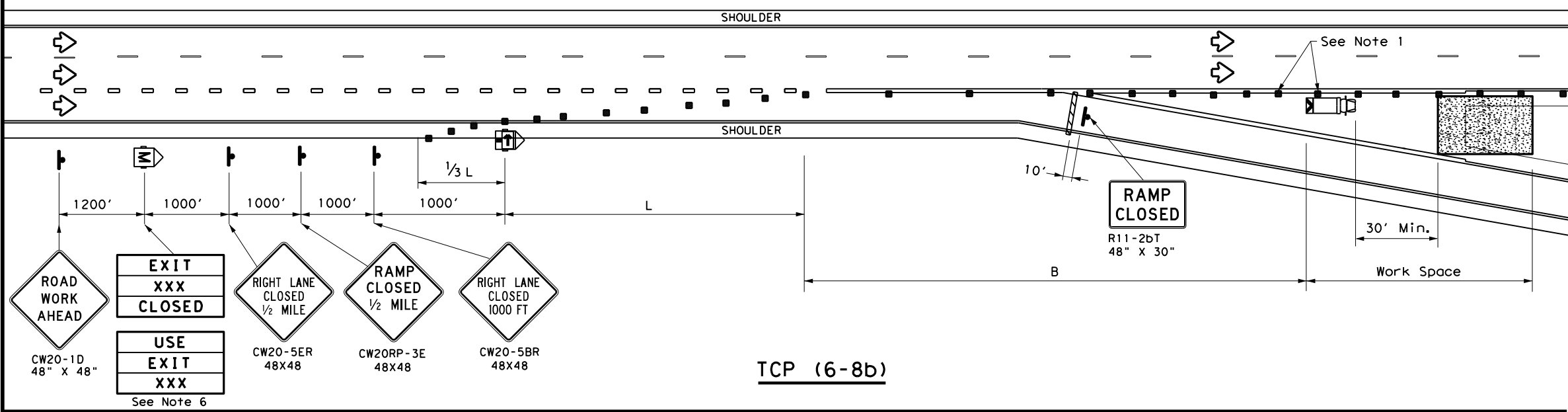
FILE: tcp6-7.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049 01	095, ETC.		SH 6
1-97 8-12	DIST	COUNTY	SHEET NO.	
4-98	WAC	McLENNAN, ETC.	38	

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

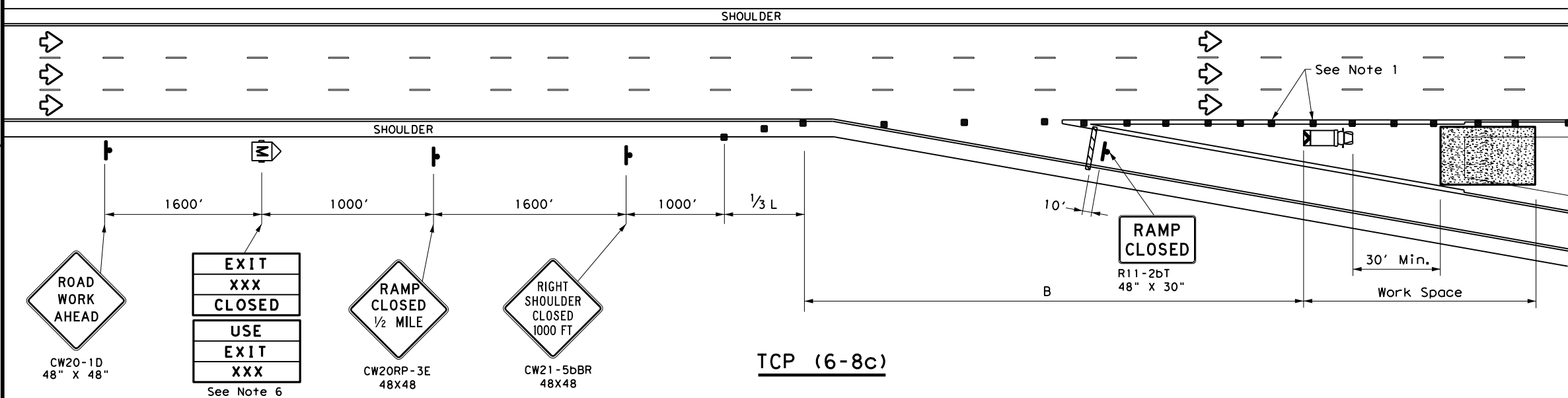
DATE: 11/28/2023 1:36:48 PM  
 FILE: ...2\_TCP\TCP\_STD\TCP6-8.dgn



TCP (6-8a)



TCP (6-8b)



TCP (6-8c)

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	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 "L" **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

\*\* 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**
- Place channelizing devices in the gore at 20' spacing.
  - See the Standard Highway Sign Design for Texas (SHSD) for sign details.
  - The PCMS may be omitted when a permanent DMS sign is available in an appropriate location to display a similar message as called for on the PCMS.
  - When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) for traffic control details.
  - Truck mounted attenuator is required.
  - The PCMS may be omitted if replaced with a "RAMP CLOSED" AHEAD (CW20RP-3D) Sign.
  - Roadway ADT should be greater than 10,000.



**WORK IN EXIT GORE FOR ADT GREATER THAN 10,000**

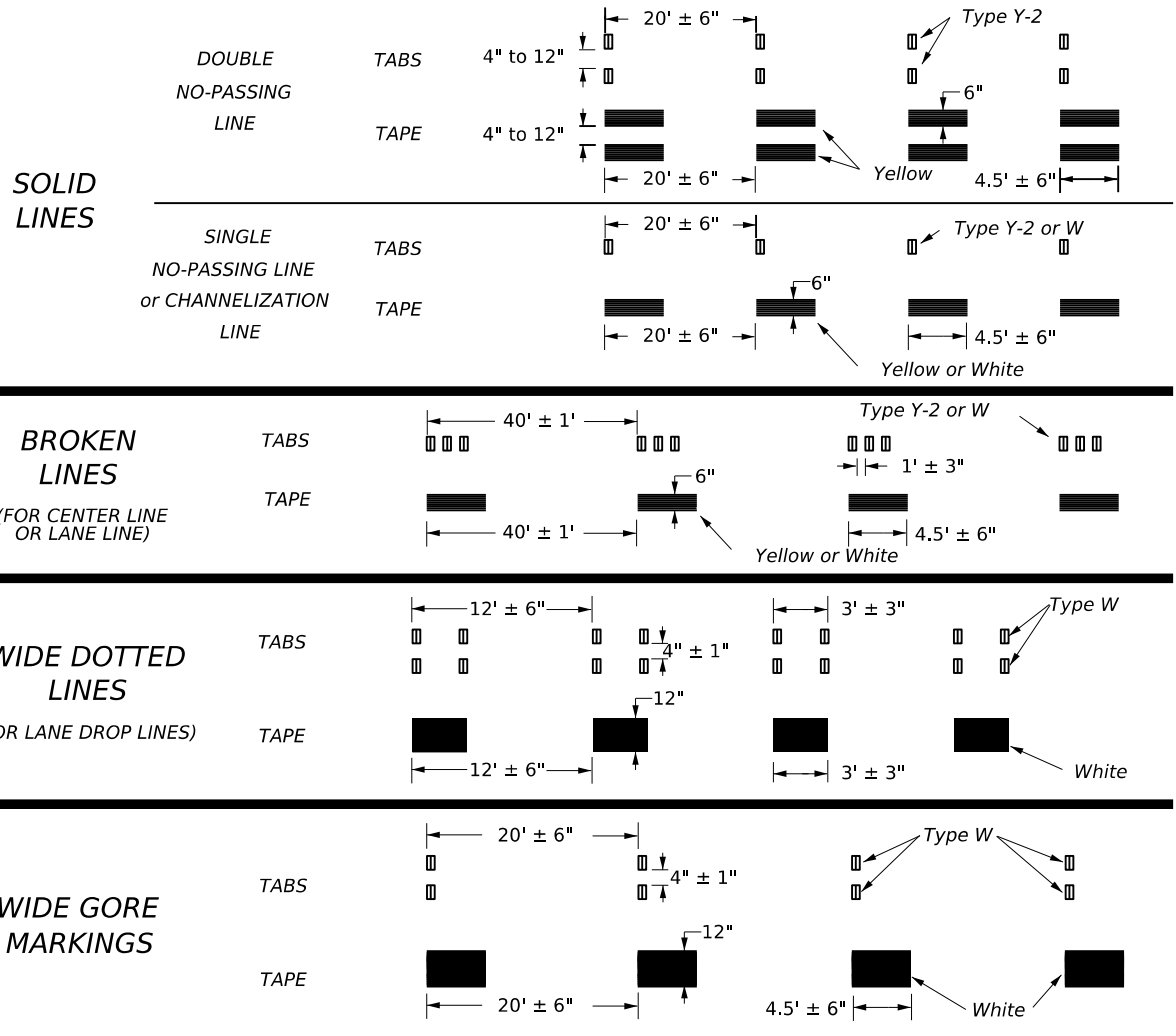
**TCP (6-8) - 14**

FILE: tcp6-8.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	39	

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

DATE: 11/28/2023 1:37:03 PM  
 FILE: ...2\_TCP(TCP\_STDWZ(STPM)-23.dgn

## WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



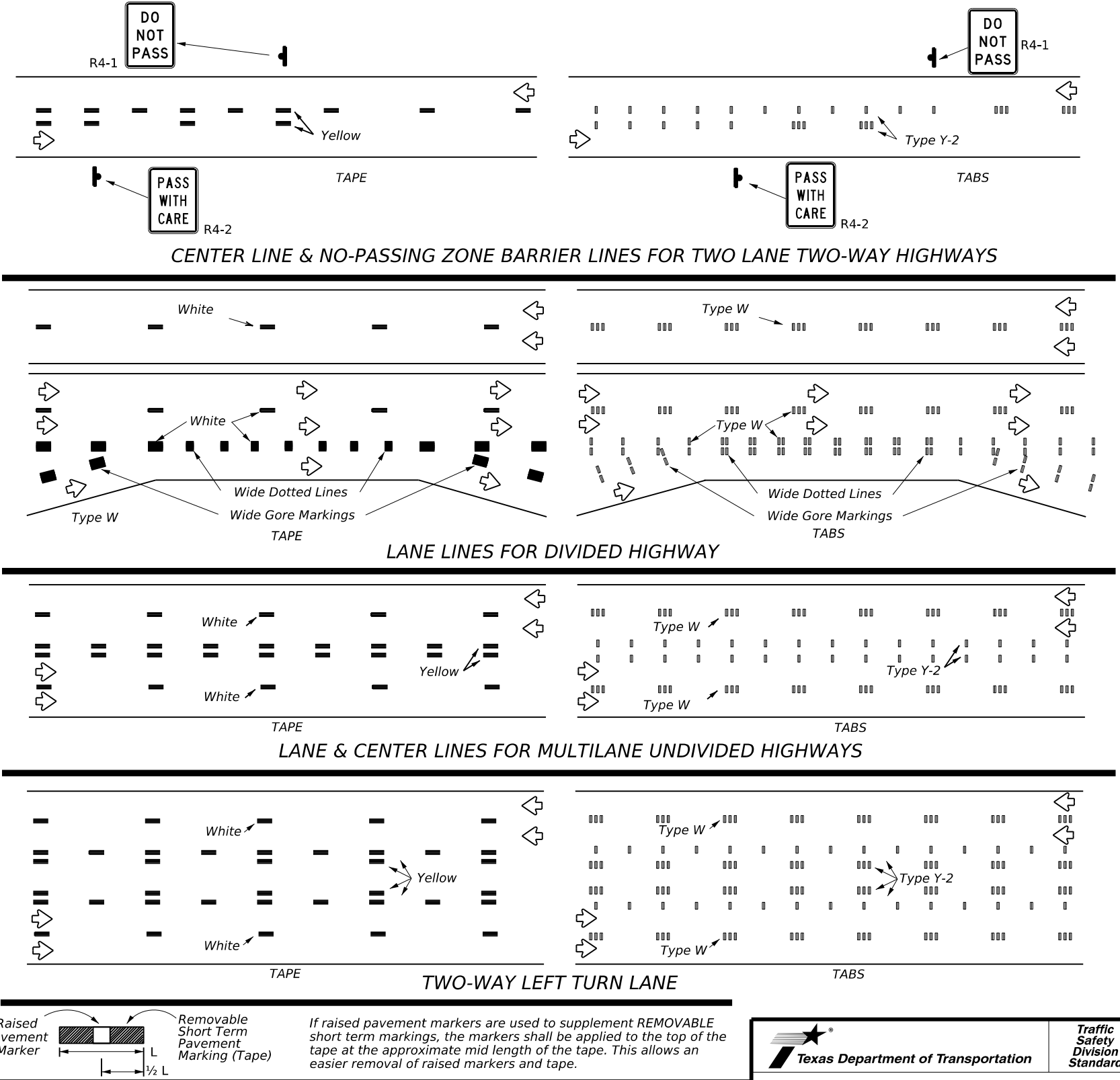
### NOTES:

- Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
- Short term pavement markings shall NOT be used to simulate edge lines.
- Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
- Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
- No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
- For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
- For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
- For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

### TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

- Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
- Tabs shall meet requirements of Departmental Material Specification DMS-8242.
- When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
- No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

## WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



### PREFABRICATED PAVEMENT MARKINGS

- Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
- Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Construction-Grade Prefabricated Pavement Markings."

### RAISED PAVEMENT MARKERS

- All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

### DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

- DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

[http://www.txdot.gov/business/contractors\\_consultants/material\\_specifications/default.htm](http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm)



## WORK ZONE SHORT TERM PAVEMENT MARKINGS

### WZ(STPM)-23

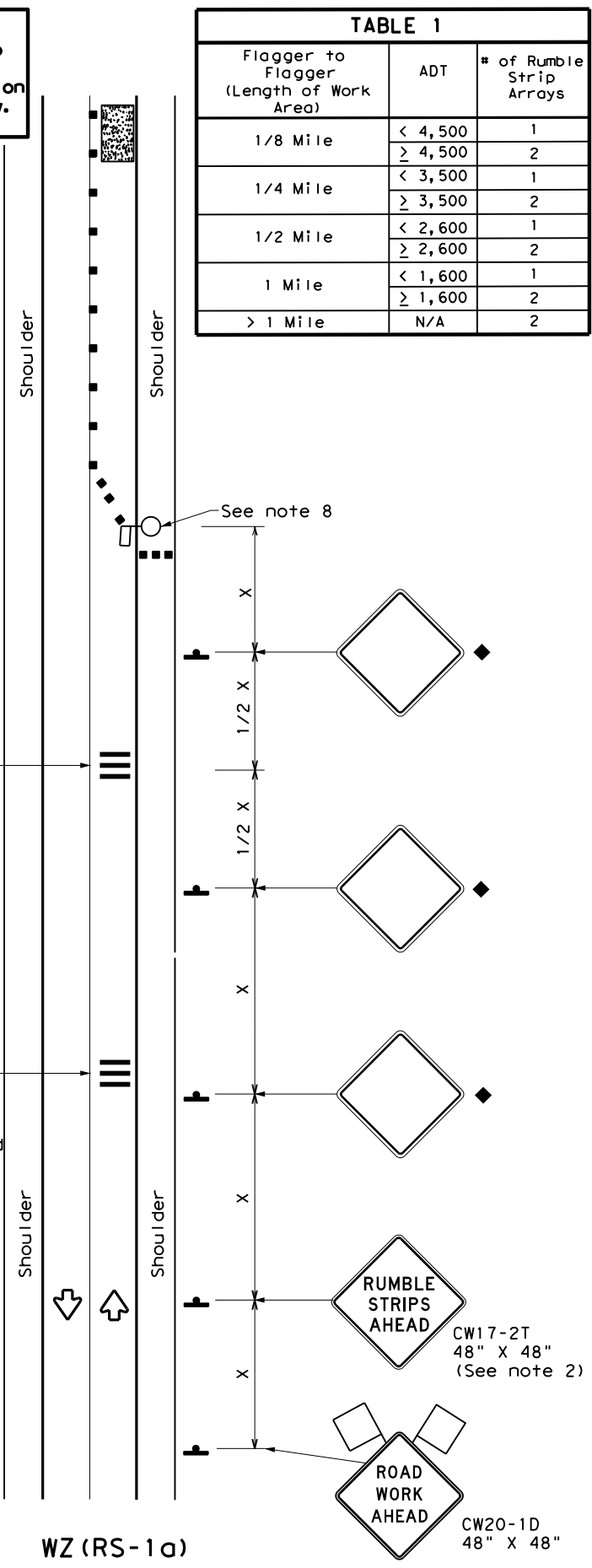
FILE: wzsstpm-23.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2023	CONTRACT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095,ETC.	SH 6
4-92 7-13	DIST	COUNTY	SHEET NO.	
1-97 2-23	WAC	MCLENNAN,ETC.	40	
3-03				

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

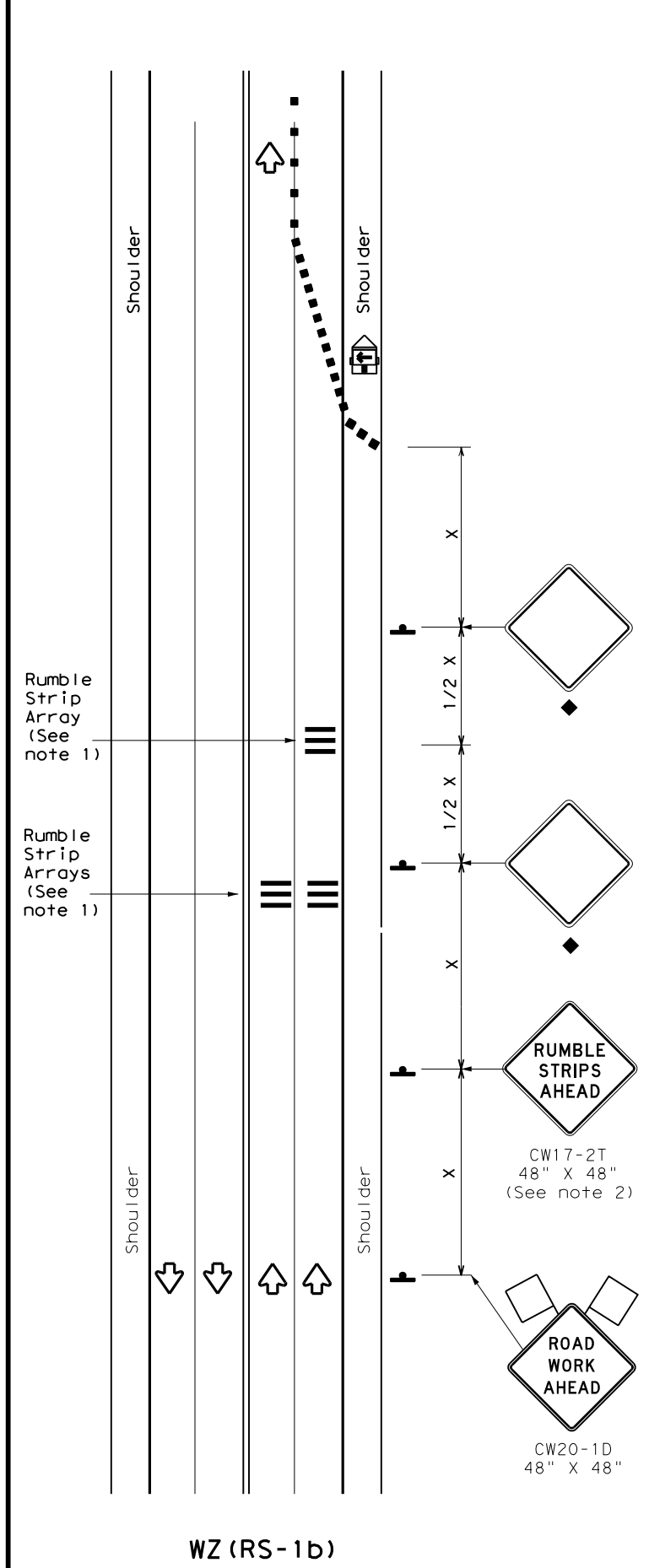
DATE: 11/28/2023 1:37:21 PM  
 FILE: ...2\_TCP\TCP\_STD\wzrs22.dgn

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

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



**RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION**



**RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY**

**GENERAL NOTES**

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

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

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS/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)

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.

Texas Department of Transportation  
 Traffic Safety Division Standard

## TEMPORARY RUMBLE STRIPS

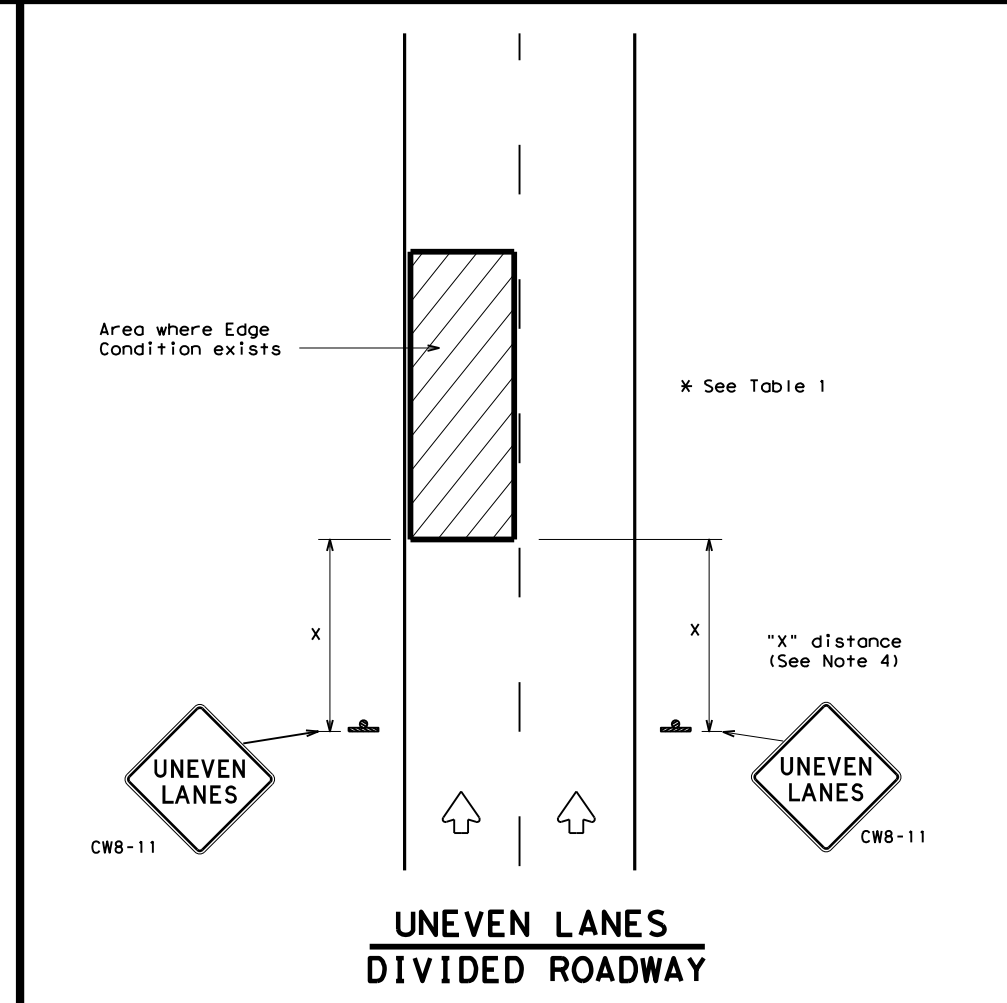
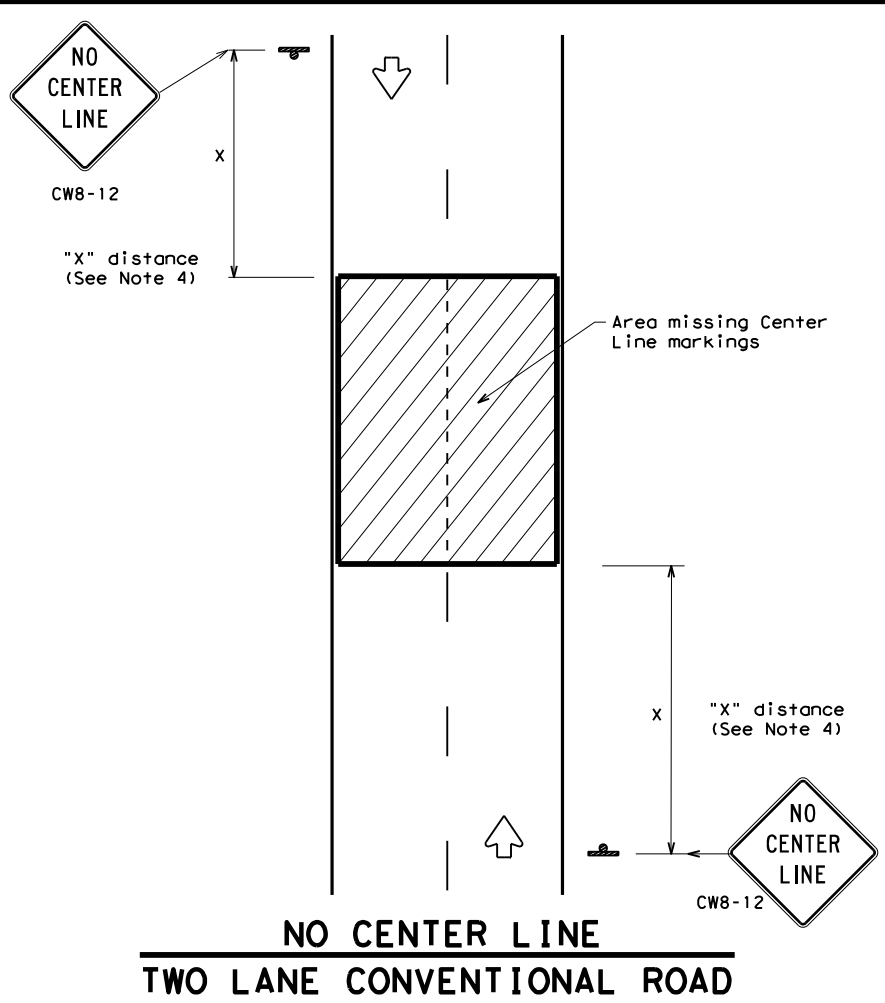
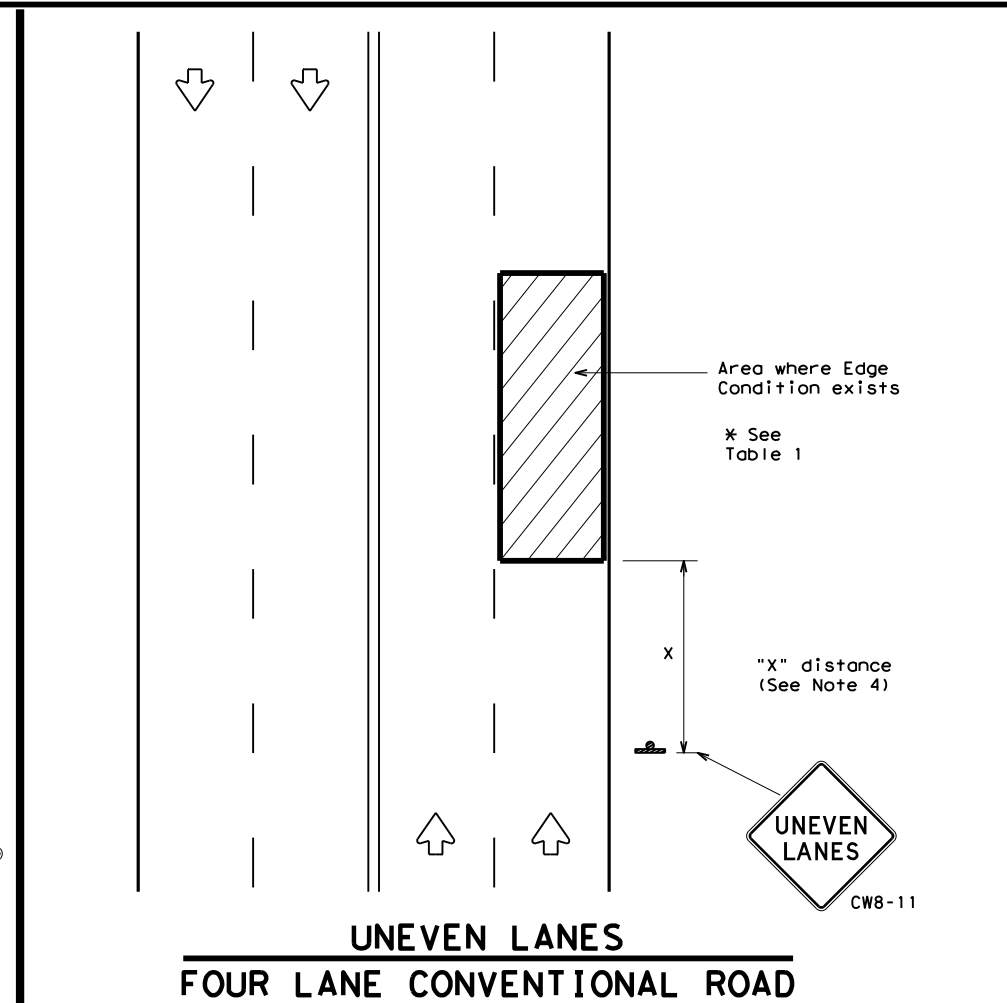
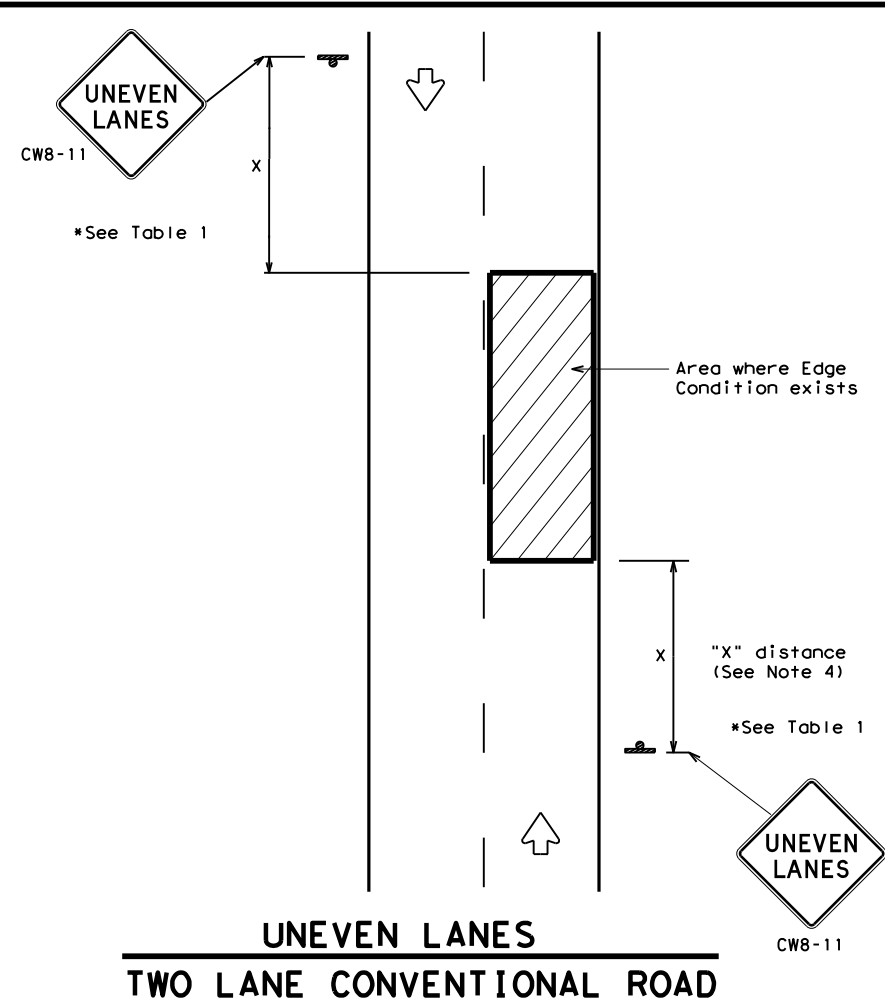
### WZ (RS) - 22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
2-14 1-22	DIST	COUNTY	SHEET NO.	
4-16	WAC	McLENNAN, ETC.	41	



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

DATE: 11/28/2023 1:37:38 PM  
 FILE: ...2\_TCP\TCP\_STD\WZUL-13.dgn



DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B <sub>FL</sub> OR TYPE C <sub>FL</sub> SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

**GENERAL NOTES**

- If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
- UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
- NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
- Signs shall be spaced at the distances recommended as per BC standards.
- Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
- Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
- Short term markings shall not be used to simulate edge lines.
- All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

Edge Condition	Edge Height (D)	* Warning Devices
①	Less than or equal to: 1/4" (maximum-planing) 1/2" (typical-overlay)	Sign: CW8-11
②	Less than or equal to 3"	Sign: CW8-11
③	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

**TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.**

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation  
 Traffic Operations Division Standard




## SIGNING FOR UNEVEN LANES

### WZ (UL) - 13

FILE: WZUL-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
8-95 2-98 7-13	DIST	COUNTY	SHEET NO.	
1-97 3-03	WAC	McLENNAN, ETC.	42	

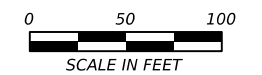
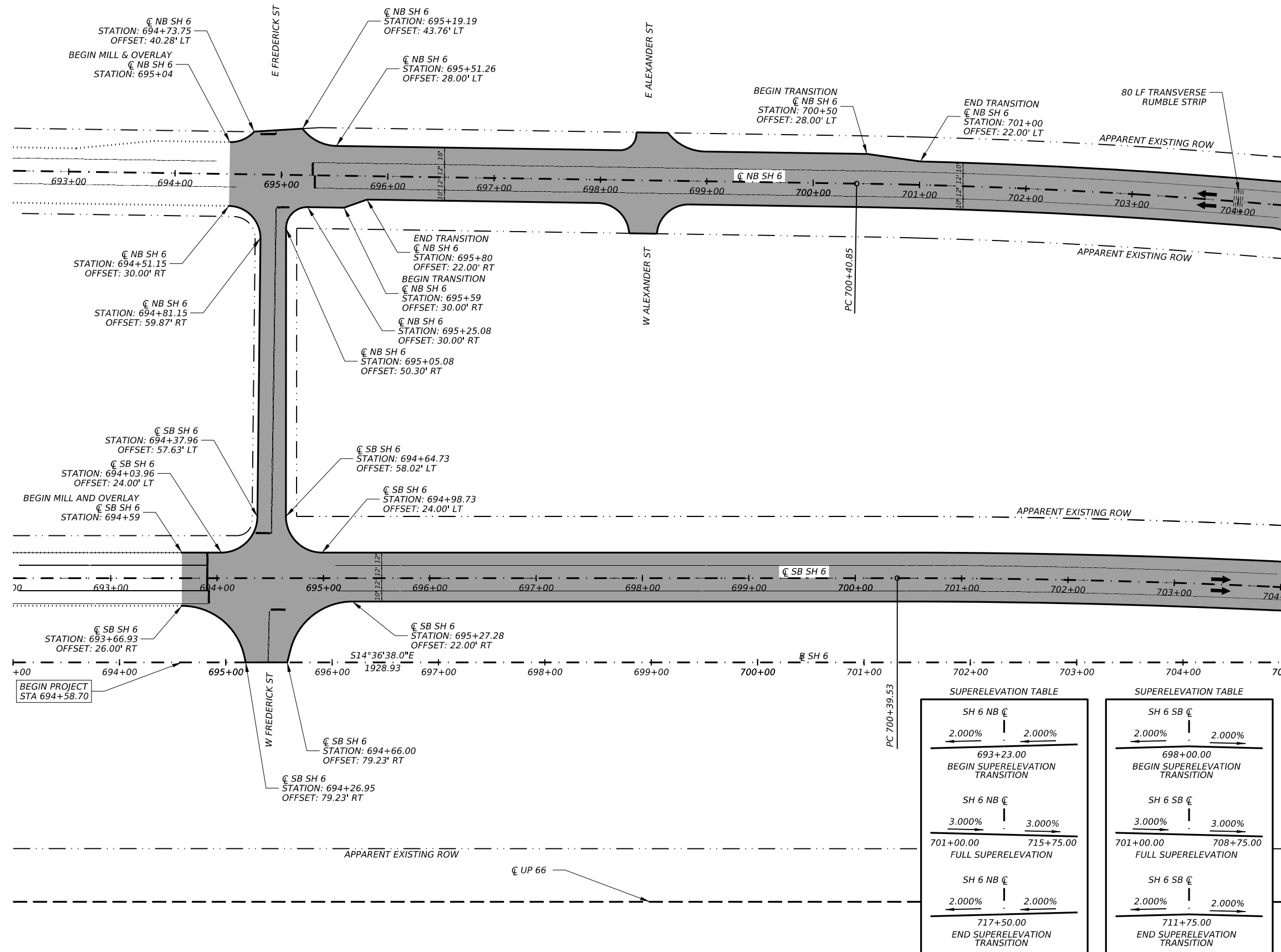
CK:  
DW:  
CK:  
DW:

### LEGEND

-  MILL AND OVERLAY
-  BRIDGE
-  TRAFFIC DIRECTION

### NOTES:

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-01-095  
**PLAN LAYOUT**  
BEGIN PROJECT TO 705+00.00

SHEET 1 OF 5

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	43

DATE: 11/28/2023 11:31:00 PM  
FILE: ...IBL CL - Plan 11.dgn



CK: DW: CK: DW:

**SUPERELEVATION TABLE**

SH 6 NB $\zeta$	
2.000%	2.000%
719+25.00 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB $\zeta$	
2.800%	2.800%
725+75.00	730+50.00
FULL SUPERELEVATION	
TRANSITION TO NEXT SUPERELEVATION	

**SUPERELEVATION TABLE**

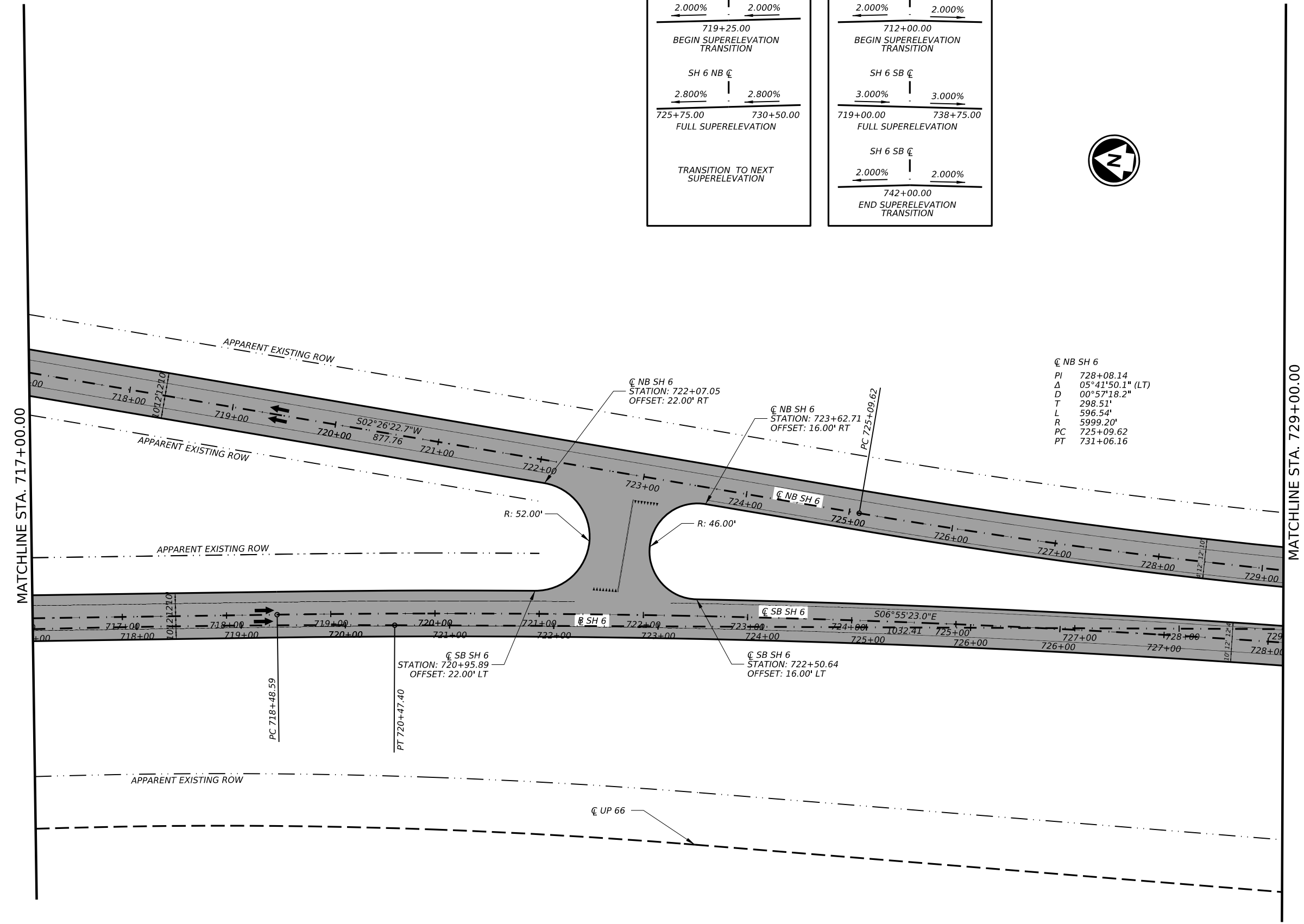
SH 6 SB $\zeta$	
2.000%	2.000%
712+00.00 BEGIN SUPERELEVATION TRANSITION	
SH 6 SB $\zeta$	
3.000%	3.000%
719+00.00	738+75.00
FULL SUPERELEVATION	
SH 6 SB $\zeta$	
2.000%	2.000%
742+00.00 END SUPERELEVATION TRANSITION	



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:**
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



**$\zeta$  NB SH 6**

PI	728+08.14
$\Delta$	$05^{\circ}41'50.1''$ (LT)
D	$00^{\circ}57'18.2''$
T	298.51'
L	596.54'
R	5999.20'
PC	725+09.62
PT	731+06.16



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-01-095  
**PLAN LAYOUT**  
STA: 717+00.00 TO 729+00.00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	45	

DATE: 11/28/2023 11:31:34 PM  
FILE: ...IBL CL - Plan 13.dgn

CK: DW: CK: DW:

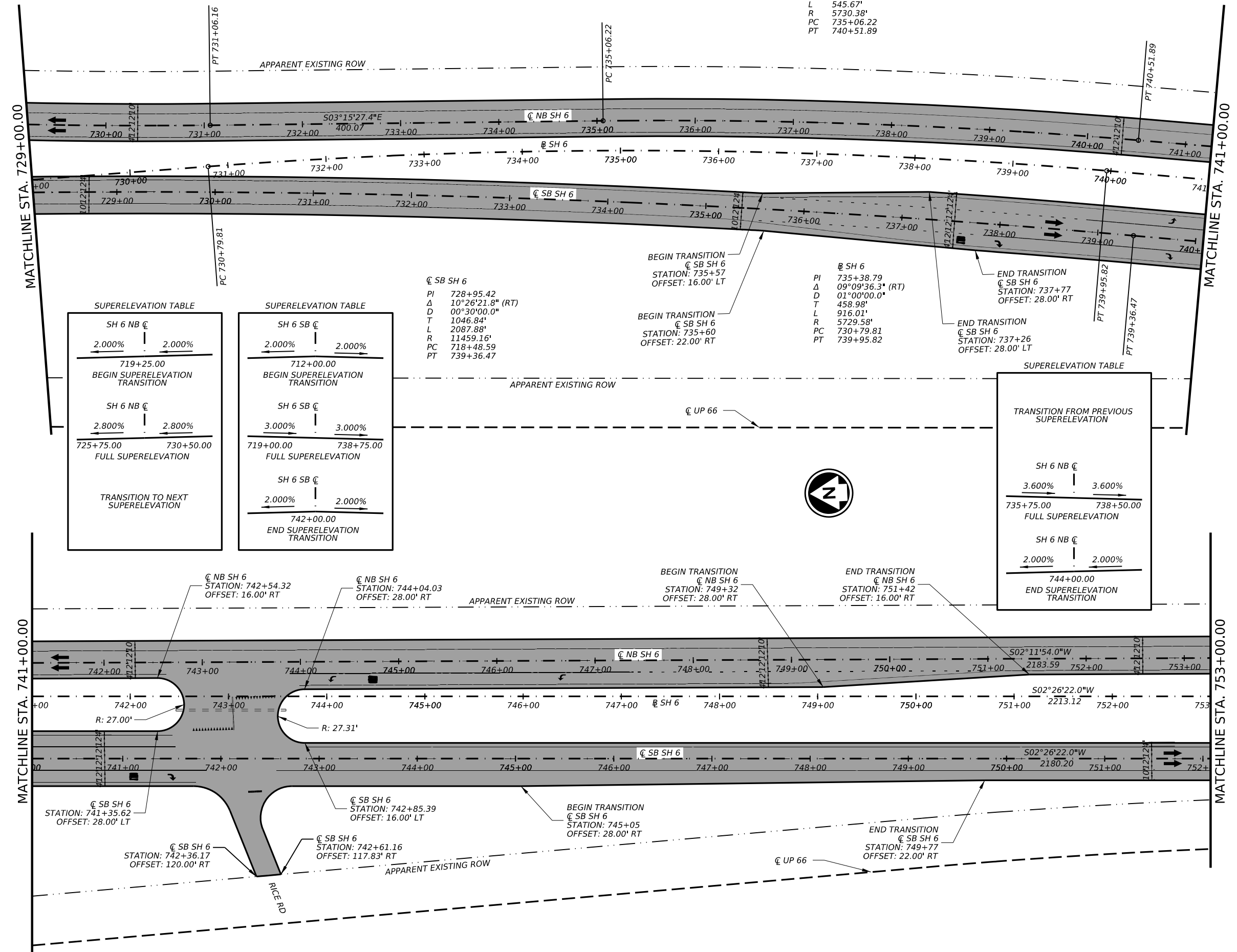
C NB SH 6  
 PI 737+79.26  
 Δ 05°27'21.4" (RT)  
 D 00°59'59.5"  
 T 273.04'  
 L 545.67'  
 R 5730.38'  
 PC 735+06.22  
 PT 740+51.89



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



SUPERELEVATION TABLE

SH 6 NB C	
2.000%	2.000%
719+25.00 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB C	
2.800%	2.800%
725+75.00 FULL SUPERELEVATION	
730+50.00 FULL SUPERELEVATION	
TRANSITION TO NEXT SUPERELEVATION	

SUPERELEVATION TABLE

SH 6 SB C	
2.000%	2.000%
712+00.00 BEGIN SUPERELEVATION TRANSITION	
SH 6 SB C	
3.000%	3.000%
719+00.00 FULL SUPERELEVATION	
738+75.00 FULL SUPERELEVATION	
SH 6 SB C	
2.000%	2.000%
742+00.00 END SUPERELEVATION TRANSITION	

SUPERELEVATION TABLE

TRANSITION FROM PREVIOUS SUPERELEVATION	
SH 6 NB C	
3.600%	3.600%
735+75.00 FULL SUPERELEVATION	
738+50.00 FULL SUPERELEVATION	
SH 6 NB C	
2.000%	2.000%
744+00.00 END SUPERELEVATION TRANSITION	



STATE OF TEXAS  
 THOMAS T. LE  
 92771  
 LICENSED PROFESSIONAL ENGINEER  
 11/28/2023

REV. NO.	DATE	REVISION	BY



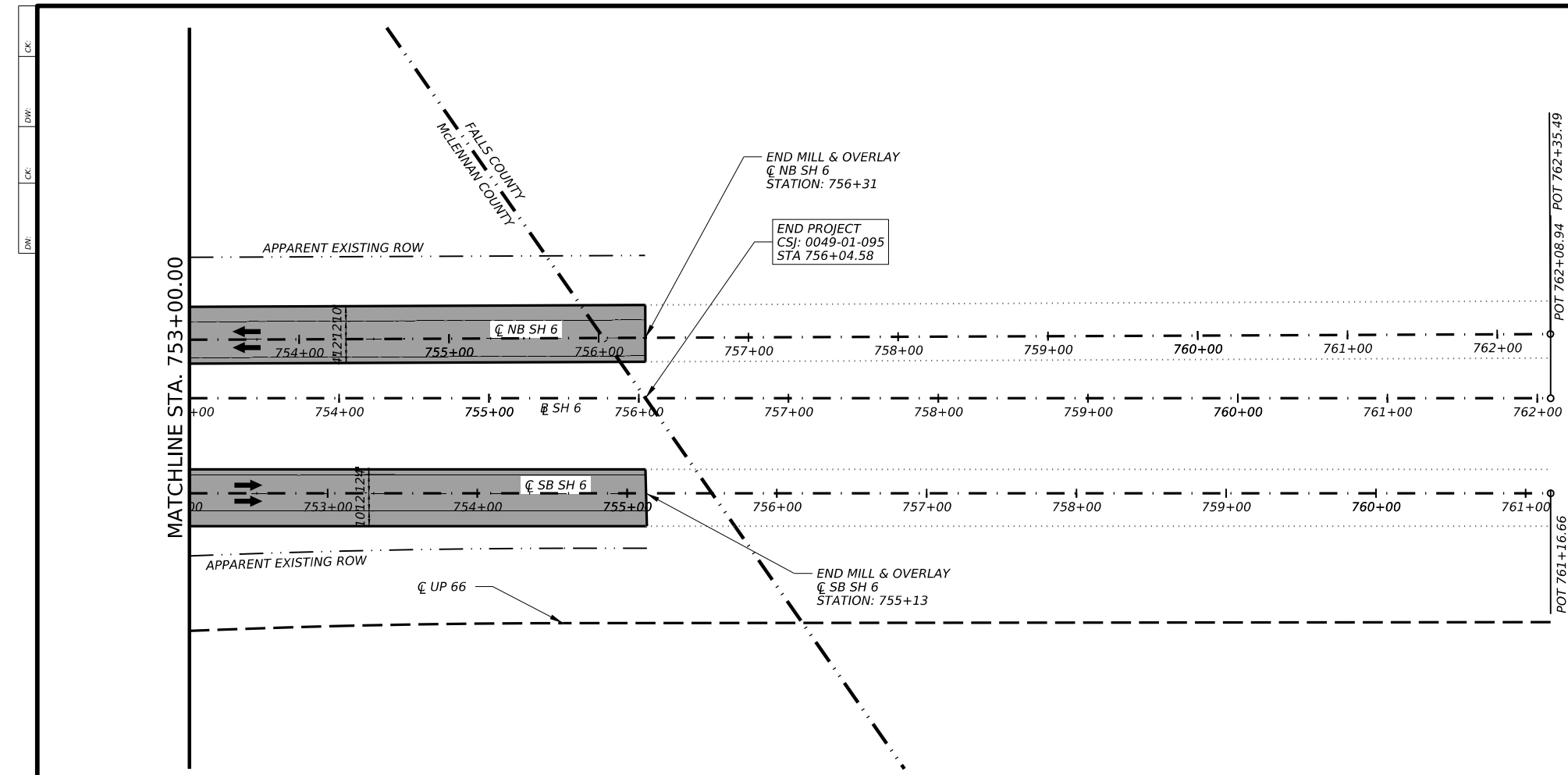
SH 6  
CSJ: 0049-01-095

PLAN LAYOUT  
STA: 729+00.00 TO 753+00.00

SHEET 4 OF 5

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	46	

DATE: 11/28/2023 11:31:51 PM  
FILE: ...IBL CL - Plan 14.dgn



### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

#### NOTES:

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO	DATE	REVISION	BY



SH 6  
CSJ: 0049-01-095

PLAN LAYOUT  
STA: 753+00.00  
TO END PROJECT

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN,ETC.	47

DATE: 11/28/2023 11:32:08 PM  
FILE: ...IBL CL-- Plan 15.dgn

CK:  
DW:  
CK:  
DW:

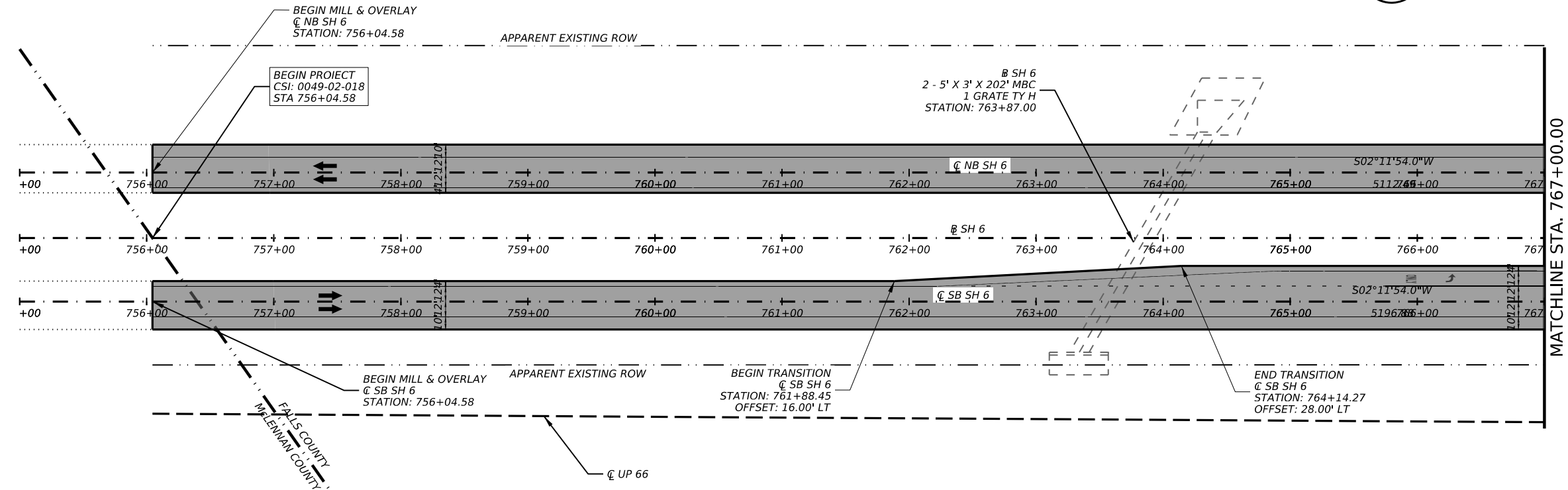


**LEGEND**

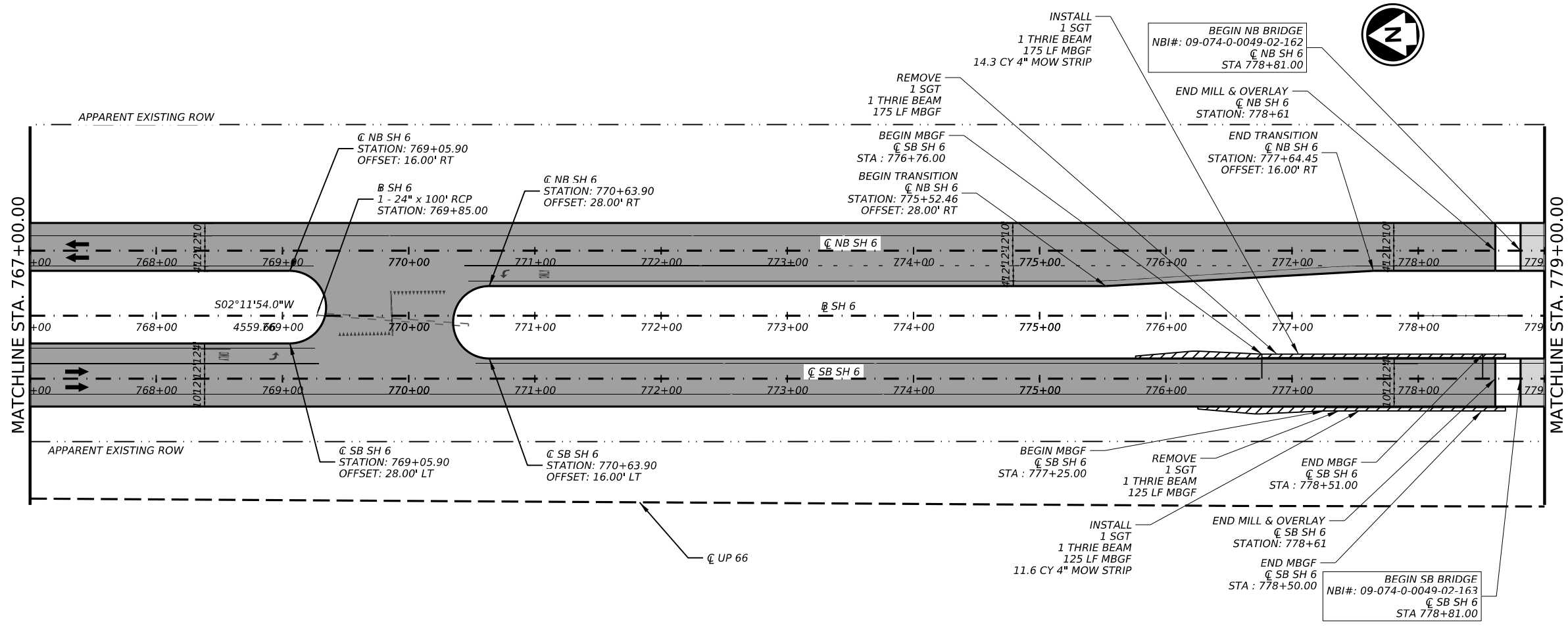
- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

**NOTES:**

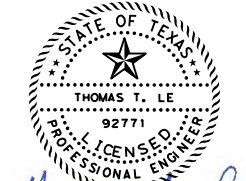
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



MATCHLINE STA. 767+00.00



MATCHLINE STA. 779+00.00



*Thomas T. Le*  
11/28/2023

REV. NO	DATE	REVISION	BY



SH 6  
CSJ: 0049-02-018

**PLAN LAYOUT  
BEGIN PROJECT TO 779+00.00**

SHEET 1 OF 14

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	48

DATE: 11/28/2023 5:23:21 PM  
FILE: ...IBL CL - Plan 01.dgn

CK:  
DW:  
CK:  
DW:

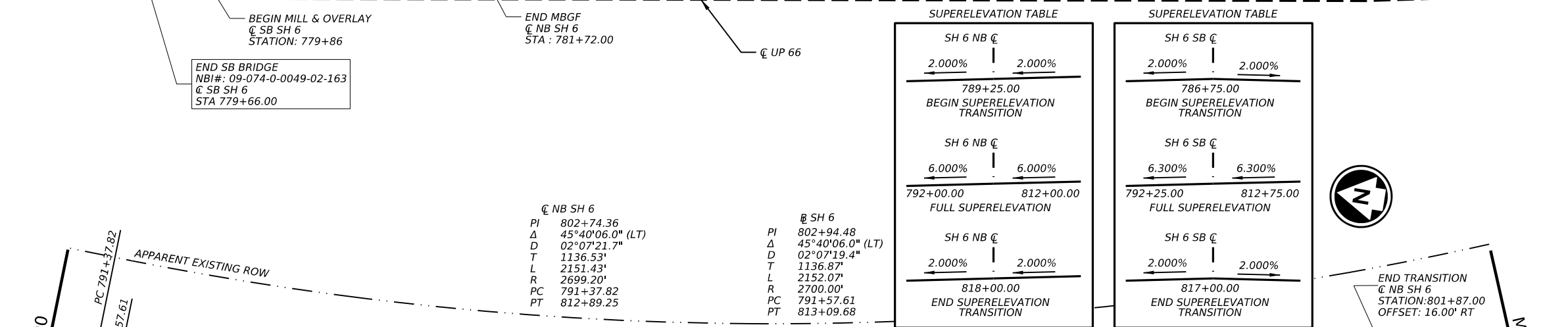
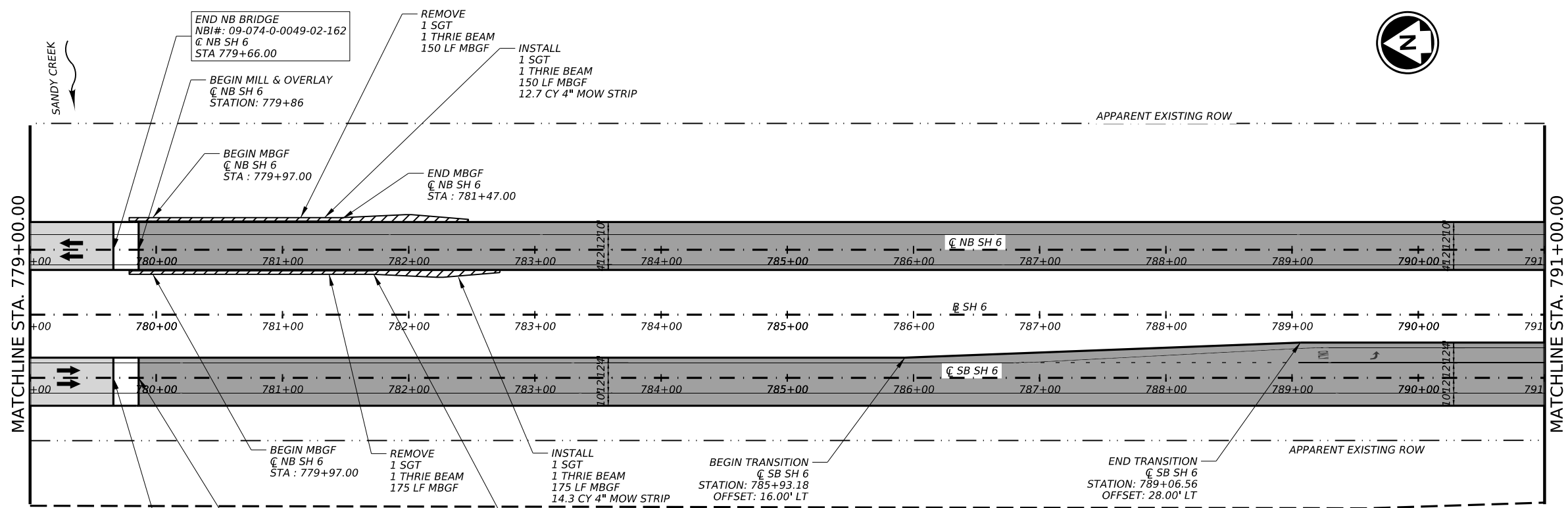


### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

### NOTES:

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



SUPERELEVATION TABLE		SUPERELEVATION TABLE	
SH 6 NB C	2.000%	SH 6 SB C	2.000%
789+25.00 BEGIN SUPERELEVATION TRANSITION		786+75.00 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB C	6.000%	SH 6 SB C	6.300%
792+00.00      812+00.00 FULL SUPERELEVATION		792+25.00      812+75.00 FULL SUPERELEVATION	
SH 6 NB C	2.000%	SH 6 SB C	2.000%
818+00.00 END SUPERELEVATION TRANSITION		817+00.00 END SUPERELEVATION TRANSITION	

<b>⊙ NB SH 6</b> PI 802+74.36 Δ 45°40'06.0" (LT) D 02°07'21.7" T 1136.53' L 2151.43' R 2699.20' PC 791+37.82 PT 812+89.25	<b>⊙ SH 6</b> PI 802+94.48 Δ 45°40'06.0" (LT) D 02°07'19.4" T 1136.87' L 2152.07' R 2700.00' PC 791+57.61 PT 813+09.68
---	--



STATE OF TEXAS  
 THOMAS T. LE  
 92771  
 LICENSED PROFESSIONAL ENGINEER  
 11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
 CSJ: 0049-02-018  
 PLAN LAYOUT  
 STA: 779+00.00 TO 803+00.00

SHEET 2 OF 14

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	49	

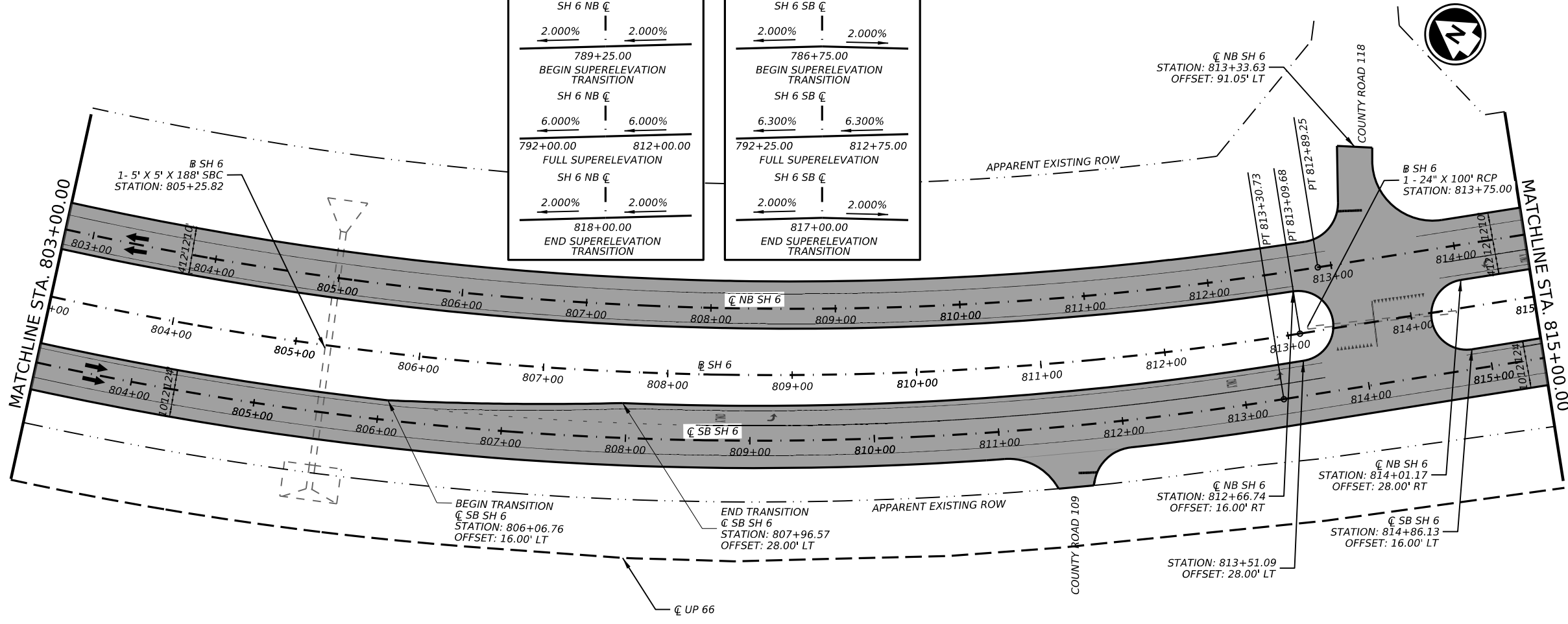
DATE: 11/28/2023 5:23:38 PM  
 FILE: ...IBL CL - - Plan 02.dgn

<b>⊙ SB SH 6</b> PI 803+15.53 Δ 45°40'06.0" (LT) D 02°07'19.4" T 1136.87' L 2152.07' R 2700.00' PC 791+78.66 PT 813+30.73
---



CK:  
DW:  
CK:  
DW:

SUPERELEVATION TABLE	
SH 6 NB $\zeta$	SH 6 SB $\zeta$
2.000%   2.000%	2.000%   2.000%
789+25.00 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB $\zeta$	SH 6 SB $\zeta$
6.000%   6.000%	6.300%   6.300%
792+00.00   812+00.00 FULL SUPERELEVATION	
SH 6 NB $\zeta$	SH 6 SB $\zeta$
2.000%   2.000%	2.000%   2.000%
818+00.00 END SUPERELEVATION TRANSITION	



### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-02-018

PLAN LAYOUT  
STA: 803+00.00 TO 827+00.00

SHEET 3 OF 14

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	50

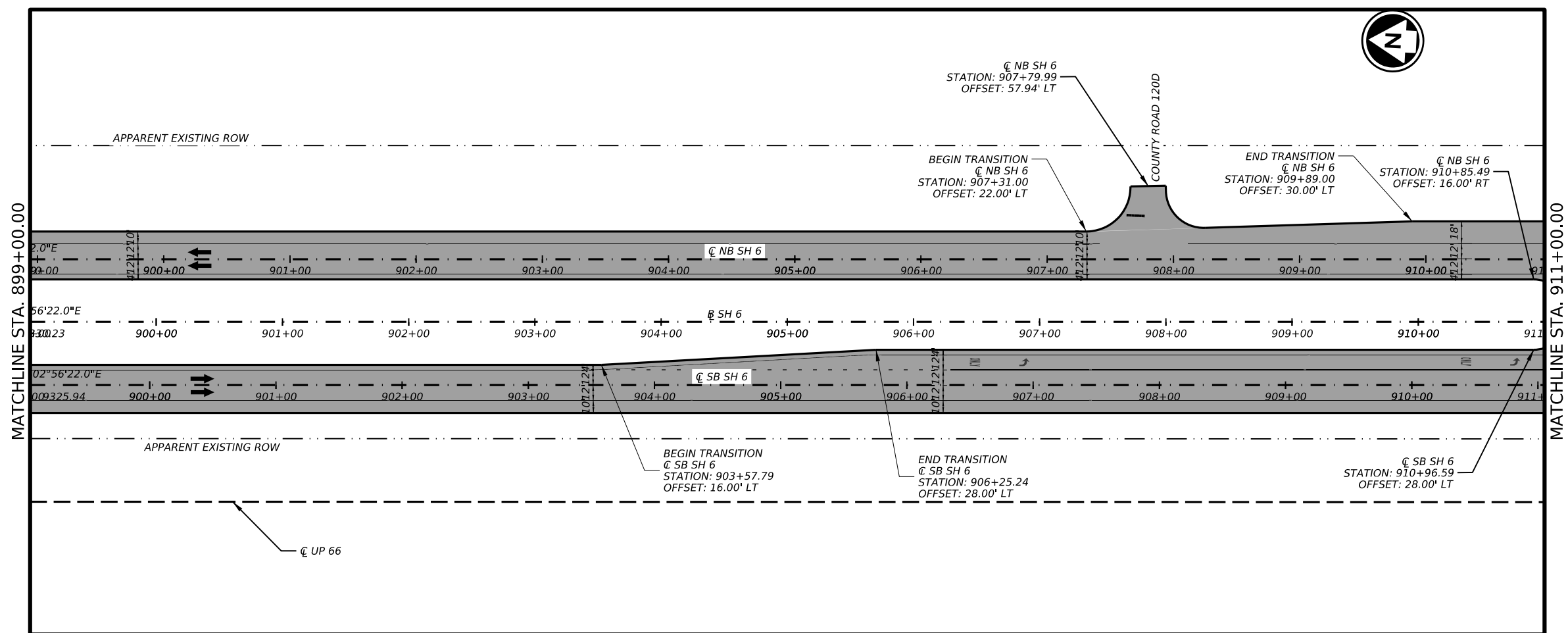
DATE: 11/28/2023 5:23:51 PM  
FILE: ...IBL CL - Plan 03.dgn







CK:  
DW:  
CK:  
DW:



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

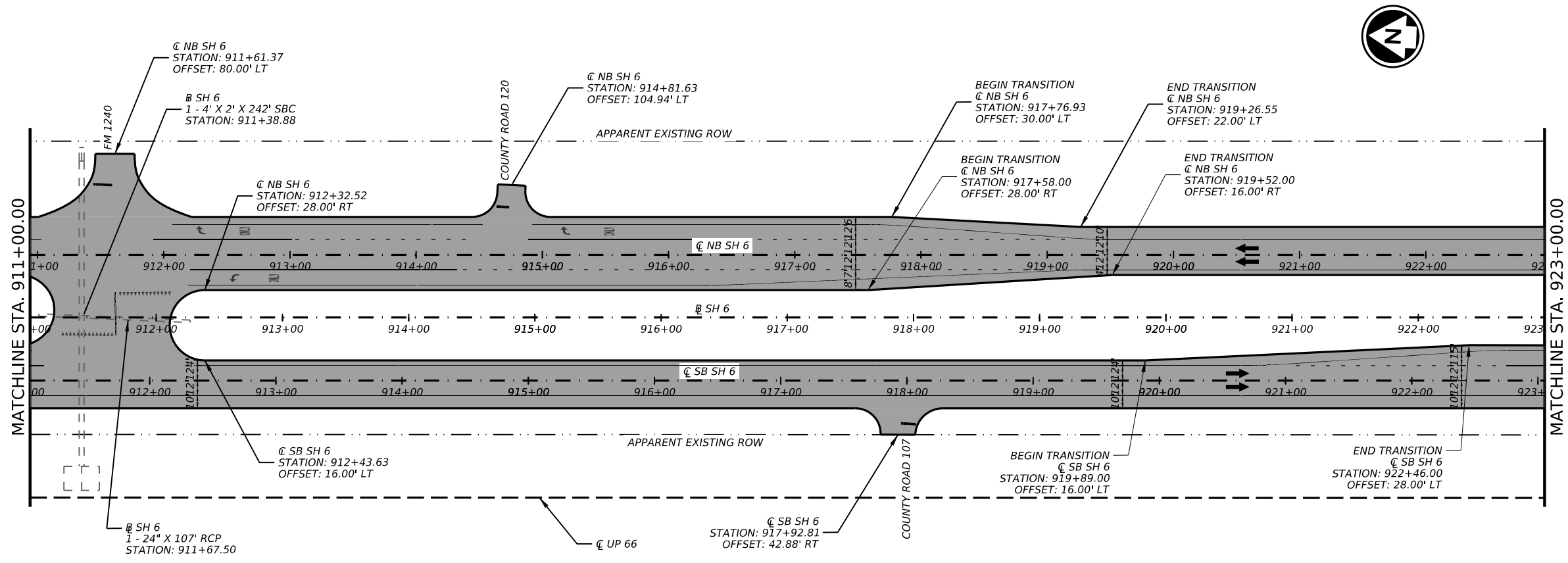
- NOTES:
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



THOMAS T. LE  
92771  
PROFESSIONAL ENGINEER

*Thomas T. Le*

11/28/2023



REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-02-018  
**PLAN LAYOUT**  
STA: 899+00.00 TO 923+00.00

SHEET 7 OF 14

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	54

DATE: 11/28/2023 5:24:45 PM  
FILE: ...IBL CL - - Plan 07.dgn

CK: DW: CK: DW:

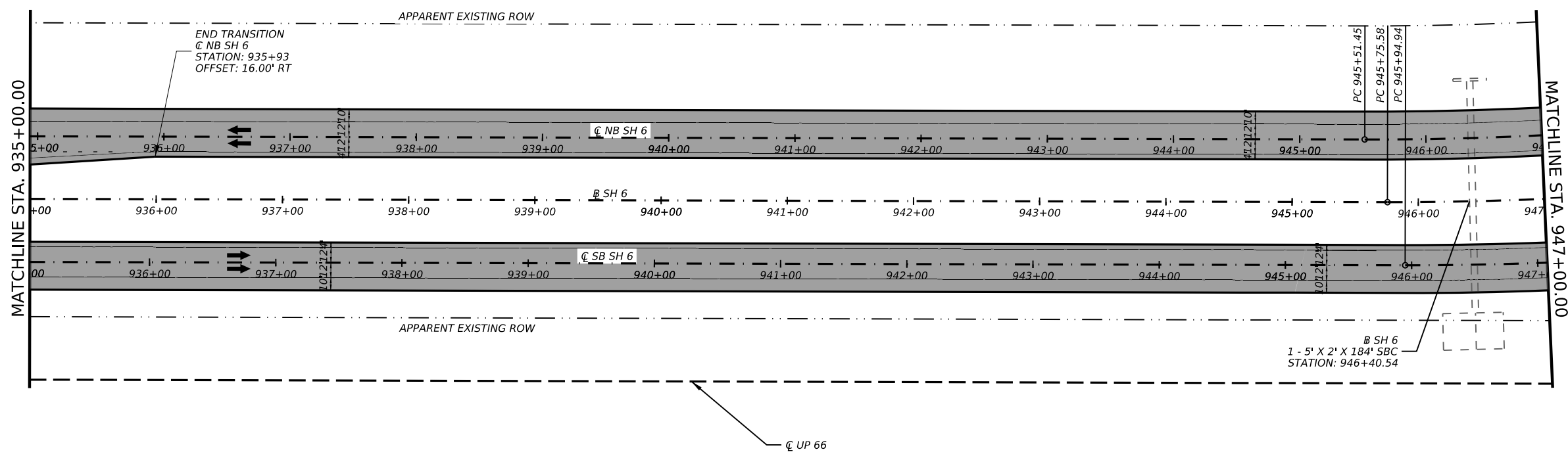
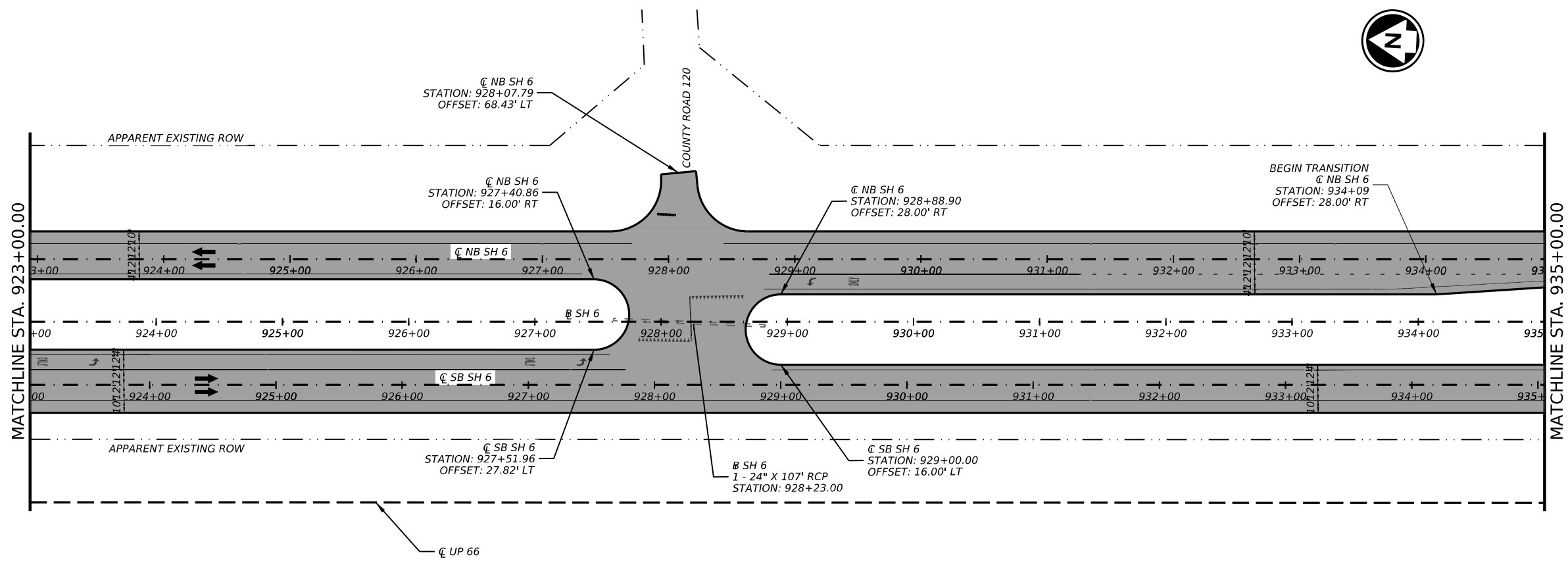


**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

**NOTES:**

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



THOMAS T. LE  
92771  
PROFESSIONAL ENGINEER

*Thomas T. Le*

11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-02-018  
**PLAN LAYOUT**  
STA: 923+00.00 TO 947+00.00




SHEET 8 OF 14

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	55

DATE: 11/28/2023 5:24:58 PM  
FILE: ...IBL CL - Plan 08.dgn

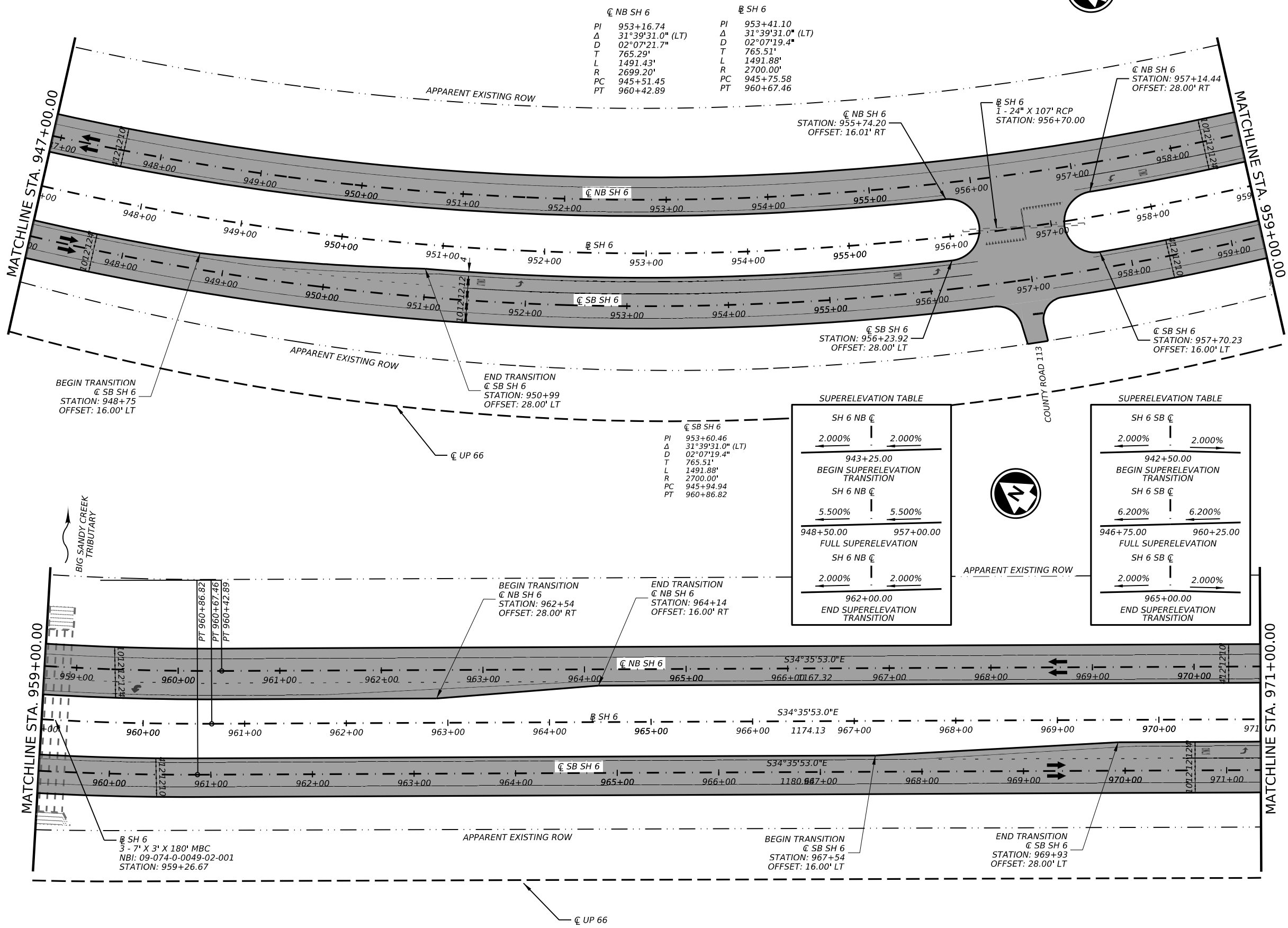
CK: DW: CK: DW:

### LEGEND

-  MILL AND OVERLAY
-  BRIDGE
-  TRAFFIC DIRECTION

### NOTES:

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



☉ NB SH 6		☉ SH 6	
PI	953+16.74	PI	953+41.10
Δ	31°39'31.0" (LT)	Δ	31°39'31.0" (LT)
D	02°07'21.7"	D	02°07'19.4"
T	765.29'	T	765.51'
L	1491.43'	L	1491.88'
R	2699.20'	R	2700.00'
PC	945+51.45	PC	945+75.58
PT	960+42.89	PT	960+67.46

☉ SB SH 6	
PI	953+60.46
Δ	31°39'31.0" (LT)
D	02°07'19.4"
T	765.51'
L	1491.88'
R	2700.00'
PC	945+94.94
PT	960+86.82

SUPERELEVATION TABLE	
SH 6 NB ☉	2.000%   2.000%
943+25.00	
BEGIN SUPERELEVATION TRANSITION	
SH 6 NB ☉	5.500%   5.500%
948+50.00   957+00.00	
FULL SUPERELEVATION	
SH 6 NB ☉	2.000%   2.000%
962+00.00	
END SUPERELEVATION TRANSITION	

SUPERELEVATION TABLE	
SH 6 SB ☉	2.000%   2.000%
942+50.00	
BEGIN SUPERELEVATION TRANSITION	
SH 6 SB ☉	6.200%   6.200%
946+75.00   960+25.00	
FULL SUPERELEVATION	
SH 6 SB ☉	2.000%   2.000%
965+00.00	
END SUPERELEVATION TRANSITION	



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-02-018

### PLAN LAYOUT STA: 947+00.00 TO 971+00.00

SHEET 9 OF 14

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	56

DATE: 11/28/2023 5:25:11 PM  
FILE: ...IBL CL - Plan 09.dgn

CK: DW: CK: DW:

### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY

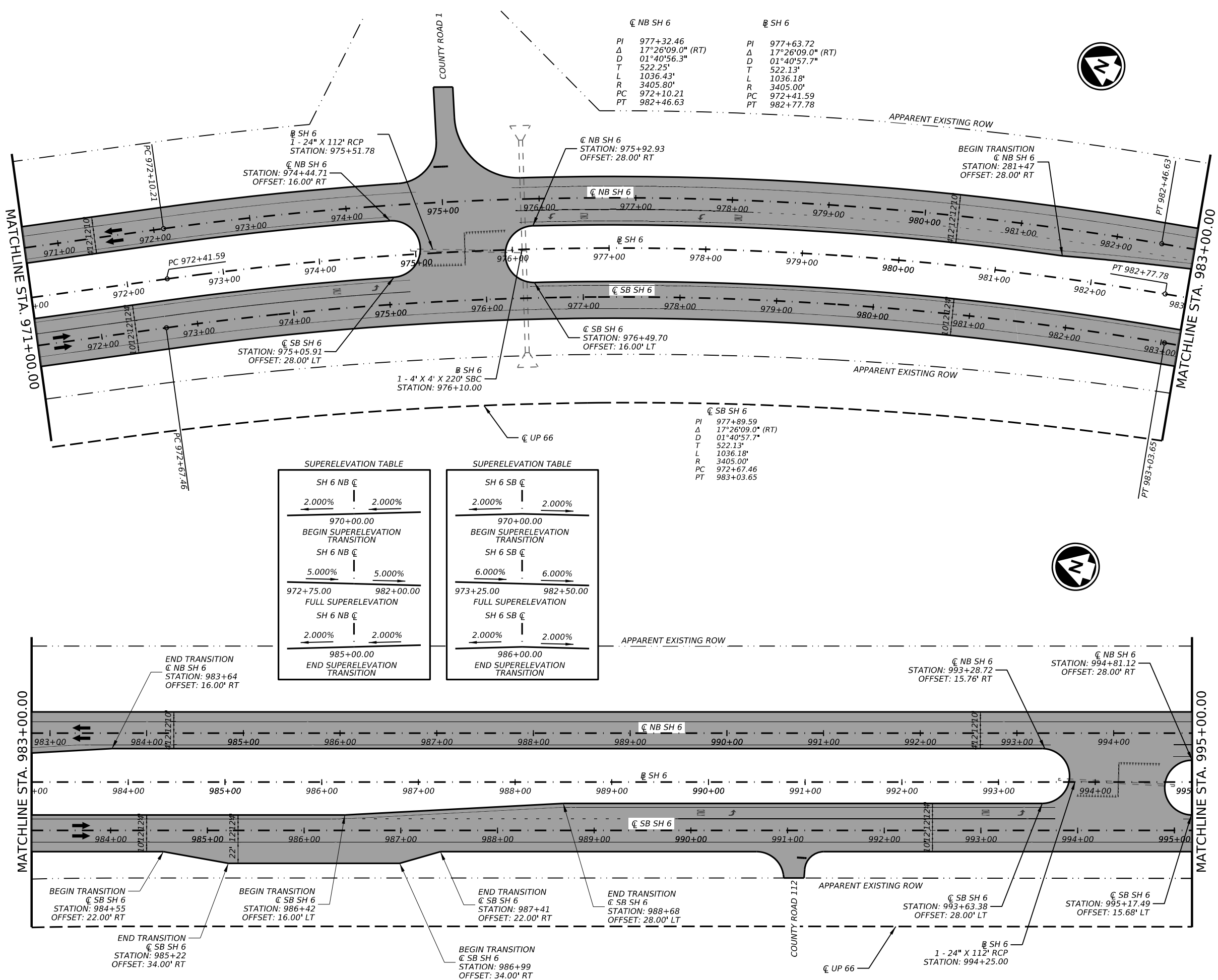


SH 6  
CSJ: 0049-02-018

## PLAN LAYOUT STA: 971+00.00 TO 995+00.00

SHEET 10 OF 14

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	57



SUPERELEVATION TABLE	
SH 6 NB C	SH 6 SB C
2.000%   2.000%	2.000%   2.000%
970+00.00 BEGIN SUPERELEVATION TRANSITION	
5.000%   5.000%	6.000%   6.000%
972+75.00   982+00.00 FULL SUPERELEVATION	
2.000%   2.000%	2.000%   2.000%
985+00.00 END SUPERELEVATION TRANSITION	

DATE: 11/28/2023 5:25:27 PM  
FILE: ...IBL CL - Plan 10.dgn

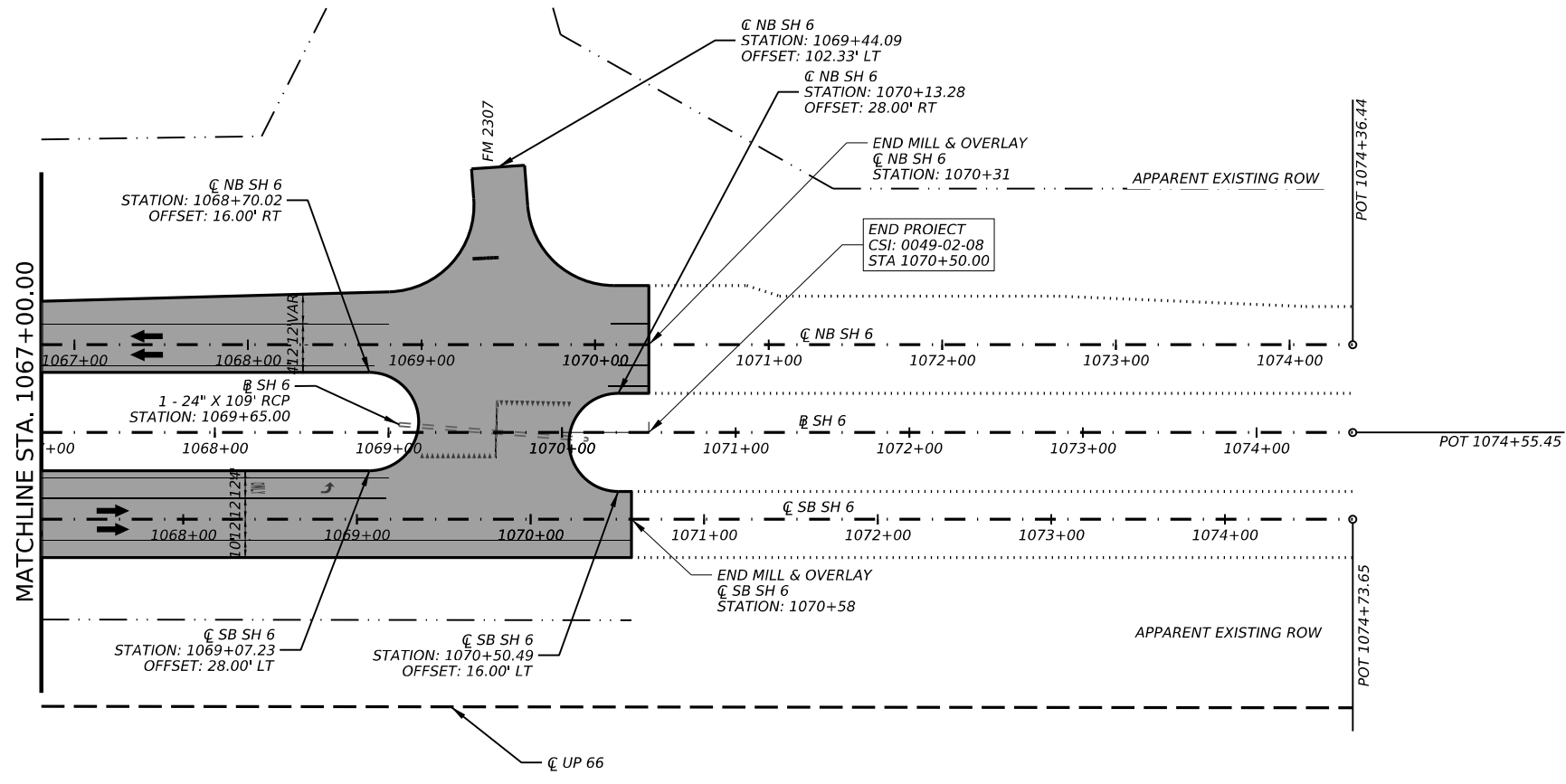








CK: DW: CK: DW:



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

**NOTES:**

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO	DATE	REVISION	BY



SH 6  
CSJ: 0049-02-018

PLAN LAYOUT  
STA: 1067+00.00  
TO END PROJECT

SHEET 14 OF 14

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	61

DATE: 11/28/2023 5:26:22 PM  
FILE: ...IBL CL - Plan 14.dgn

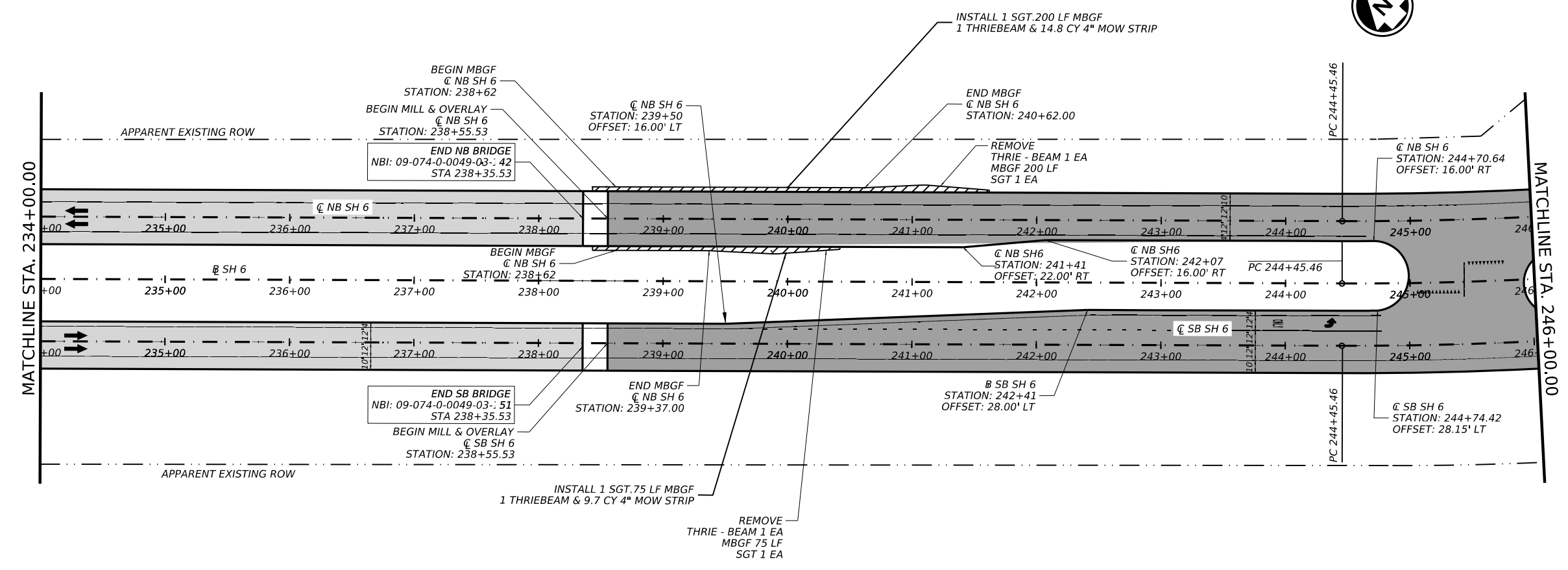
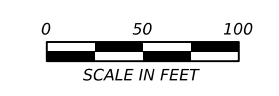
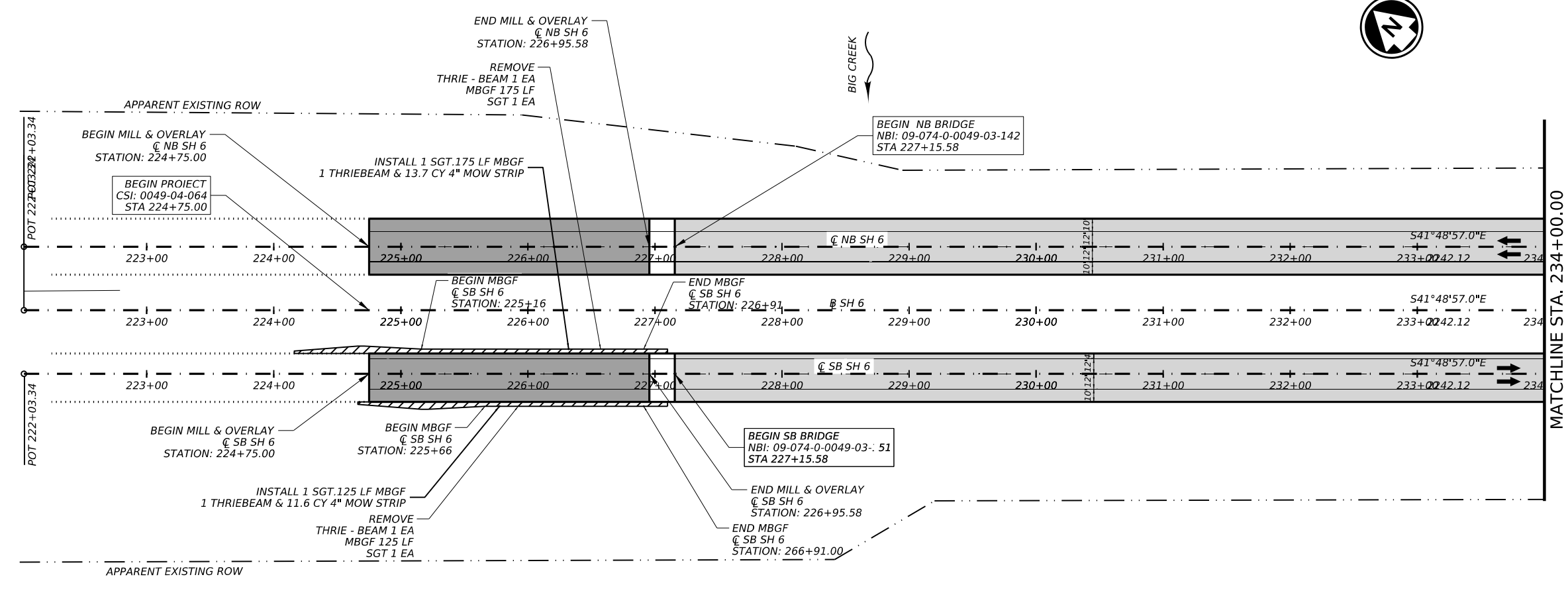
CK: DW: CK: DW:



### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
BEGIN PROJECT TO 246+00.00




SHEET 1 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	62

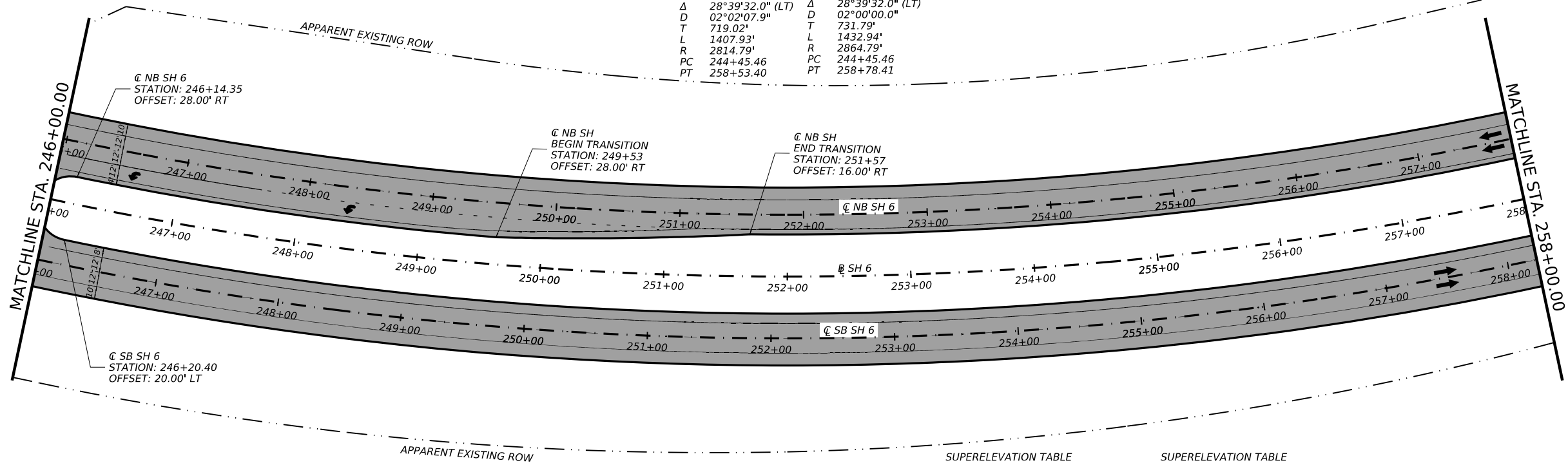
DATE: 11/28/2023 5:28:57 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-1.dgn

<b>☉ NB SH 6</b> PI 251+64.48 Δ 28°39'32.0" (LT) D 02°02'07.9" T 719.02' L 1407.93' R 2814.79' PC 244+45.46 PT 258+53.40		<b>☉ SH 6</b> PI 251+77.26 Δ 28°39'32.0" (LT) D 02°00'00.0" T 731.79' L 1432.94' R 2864.79' PC 244+45.46 PT 258+78.41	
--	--	---	--

### LEGEND

-  MILL AND OVERLAY
-  BRIDGE
-  TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



<b>☉ SB SH 6</b> PI 251+90.03 Δ 28°39'32.0" (LT) D 01°57'56.5" T 744.57' L 1457.95' R 2914.79' PC 244+45.46 PT 259+03.42	
--	--

SUPERELEVATION TABLE		SUPERELEVATION TABLE	
SH 6 NB ☉		SH 6 SB ☉	
2.000%	2.000%	2.000%	2.000%
243+04.66 BEGIN SUPERELEVATION TRANSITION		243+04.66 BEGIN SUPERELEVATION TRANSITION	
2.000%	2.000%	2.000%	2.000%
245+15.86 258+33.02 FULL SUPERELEVATION		245+15.86 258+33.02 FULL SUPERELEVATION	
SH 6 NB ☉		SH 6 SB ☉	
2.000%	2.000%	2.000%	2.000%
260+44.22 END SUPERELEVATION TRANSITION		260+44.22 END SUPERELEVATION TRANSITION	



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
STA: 246+00.00 TO 270+00.00

SHEET 2 OF 24			
CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	63

DATE: 11/28/2023 5:29:11 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-2.dgn







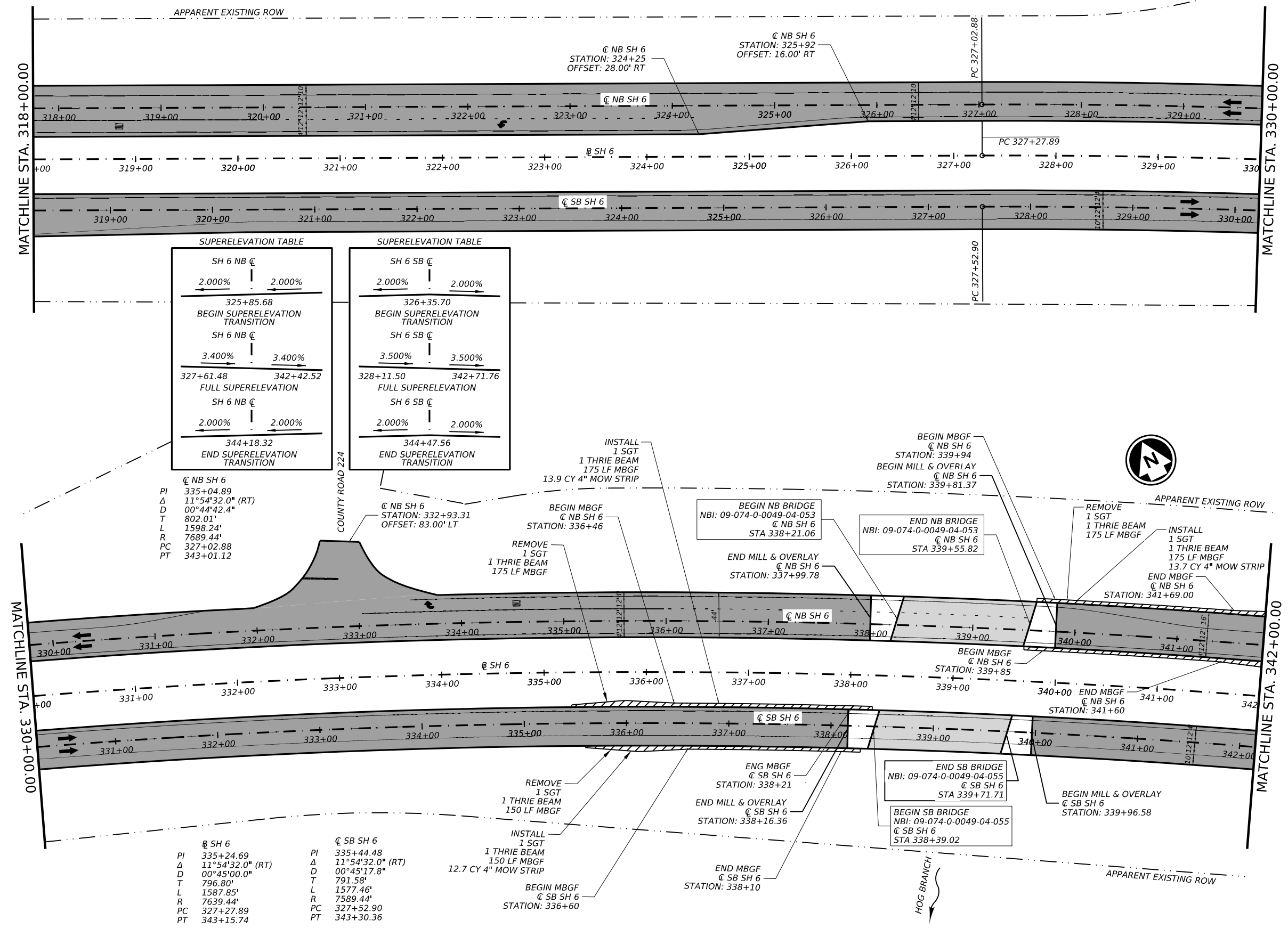
CK:  
DW:  
CK:  
DW:



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064

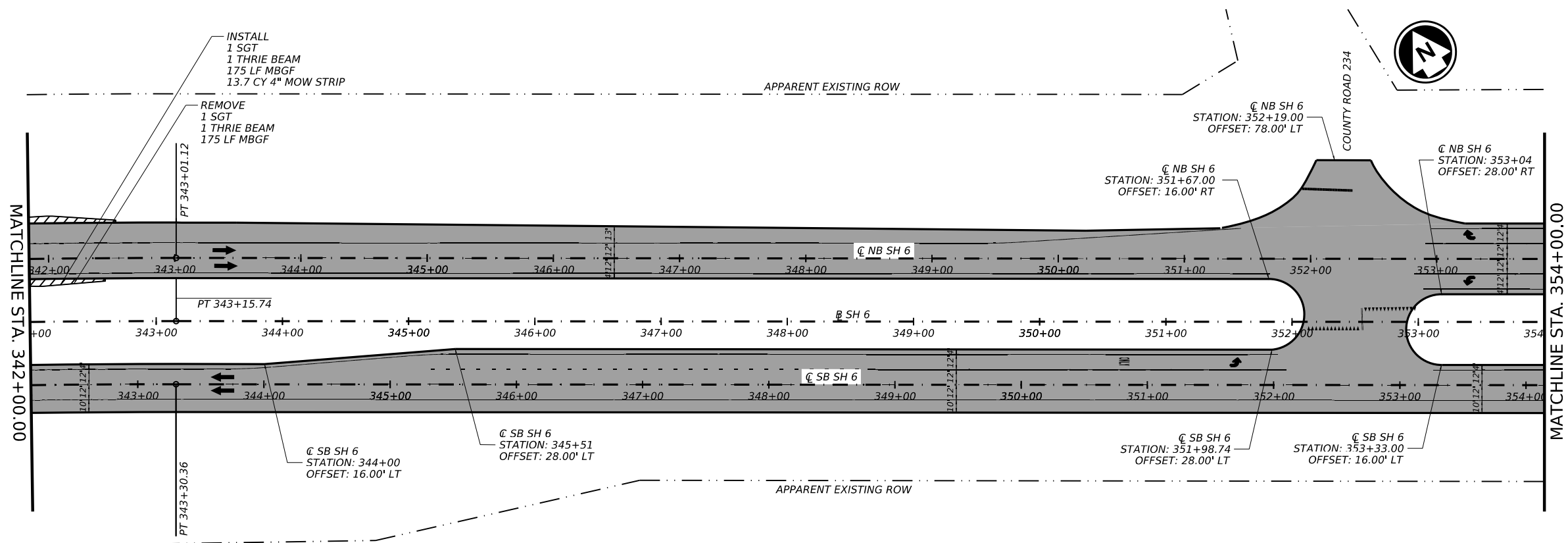
**PLAN LAYOUT**  
STA: 318+00.00 TO 342+00.00

SHEET 5 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	66	

DATE: 11/28/2023 5:29:53 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-8.dgn

CK:  
DW:  
CK:  
DW:

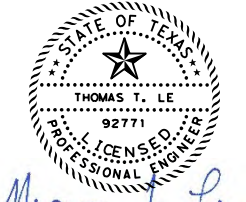


**LEGEND**

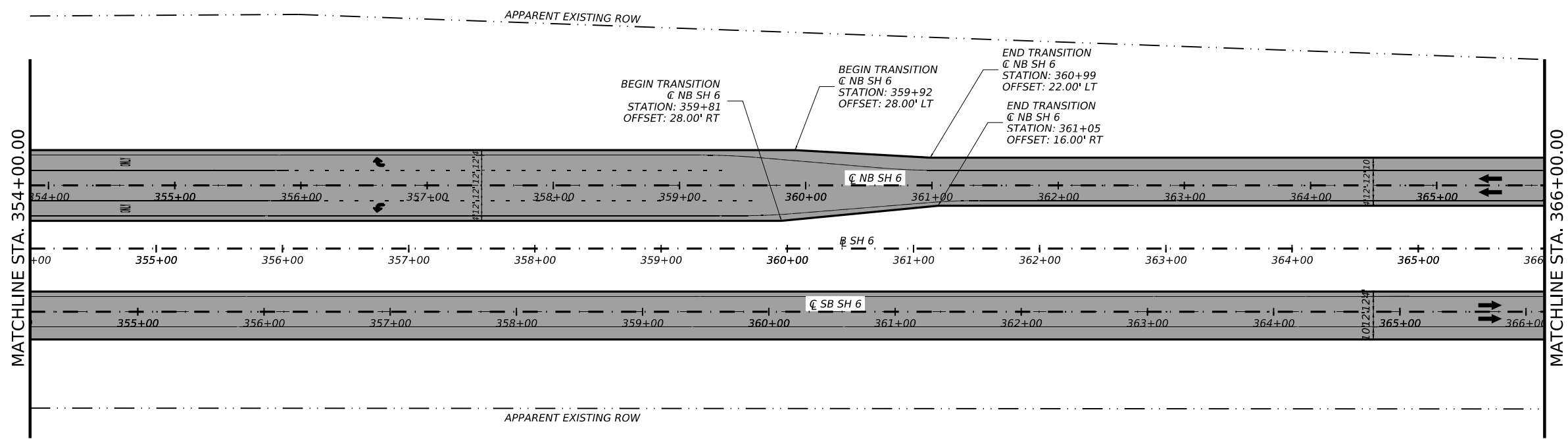
- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

**NOTES:**

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



*Thomas T. Le*  
11/28/2023



DATE: 11/28/2023 5:30:08 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-10.dgn

REV. NO	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
STA: 342+00.00 TO 366+00.00

SHEET 6 OF 24

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	67	

DW: \_\_\_\_\_  
 CK: \_\_\_\_\_  
 DW: \_\_\_\_\_  
 CK: \_\_\_\_\_

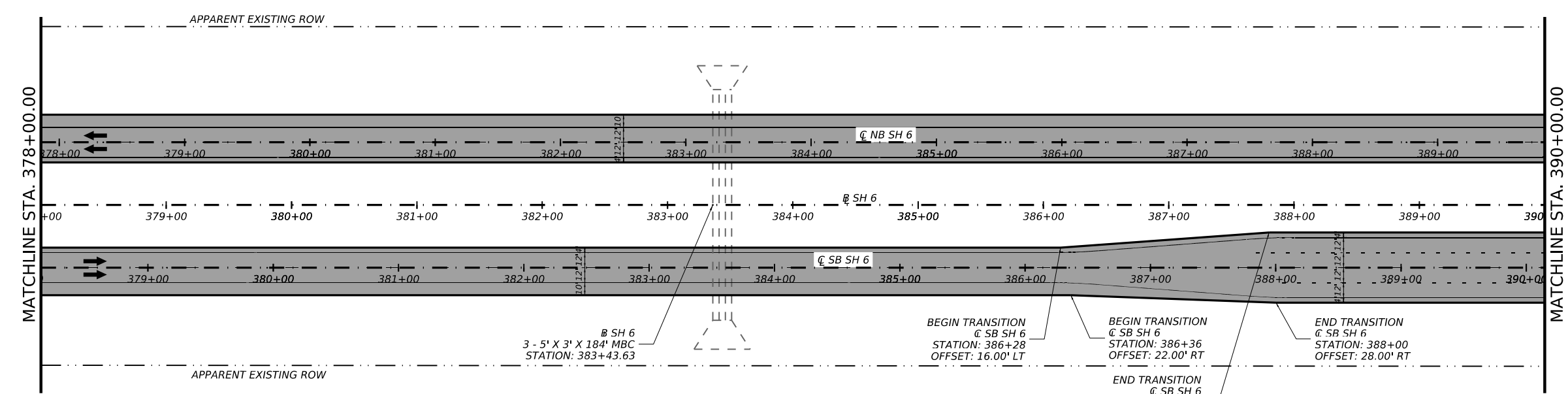
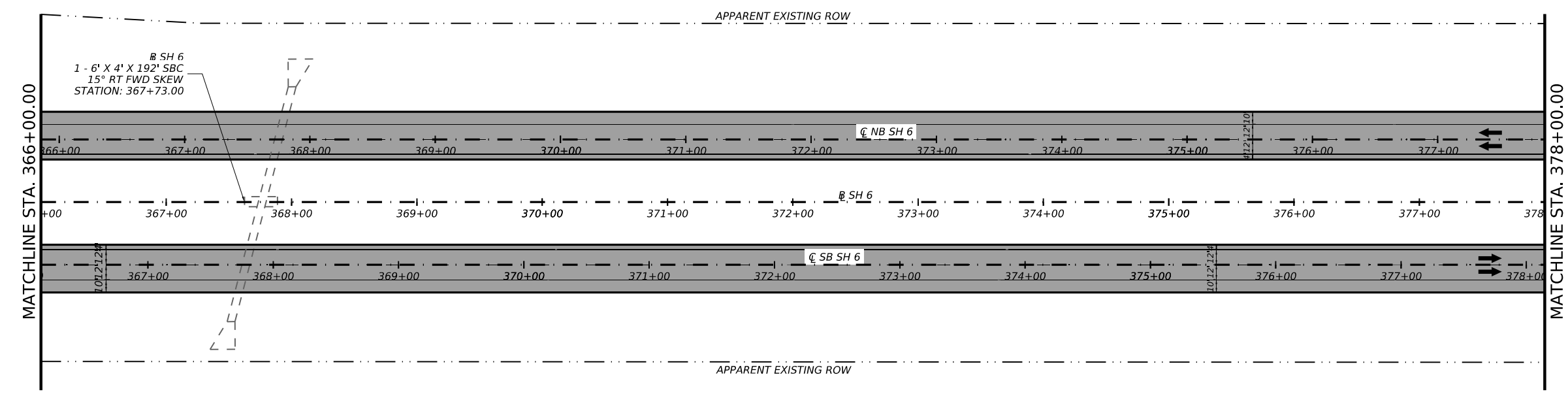


### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

#### NOTES:

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023



REV. NO.	DATE	REVISION	BY



**SH 6**  
**CSJ: 0049-04-064**

### PLAN LAYOUT

STA: 366+00.00 TO 390+00.00

SHEET 7 OF 24			
CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	68

DATE: 11/28/2023 5:30:22 PM  
 FILE: ...IBL CL-32 - SH6 FALLSOUTH-12.dgn



CK: DW: CK: DW:

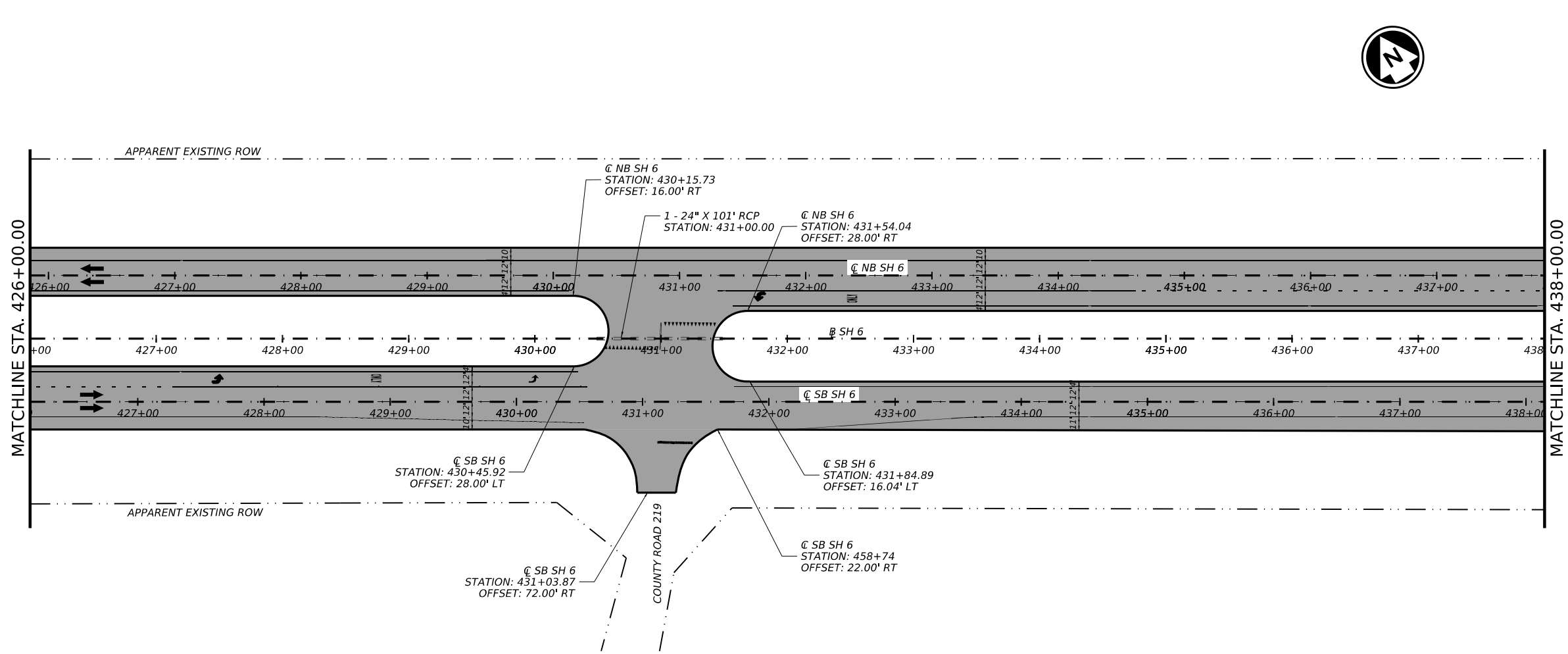
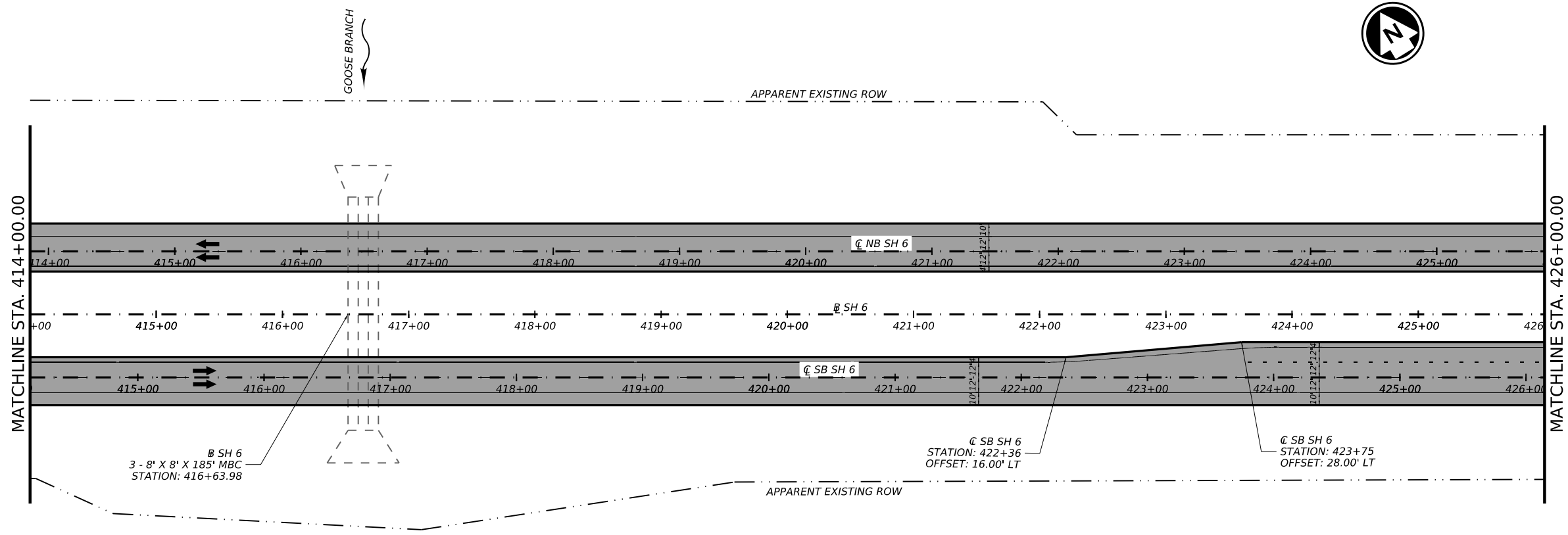


### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

**NOTES:**

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



STATE OF TEXAS  
 THOMAS T. LE  
 92771  
 LICENSED PROFESSIONAL ENGINEER  
 11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
 CSJ: 0049-04-064

PLAN LAYOUT  
 STA: 414+00.00 TO 438+00.00

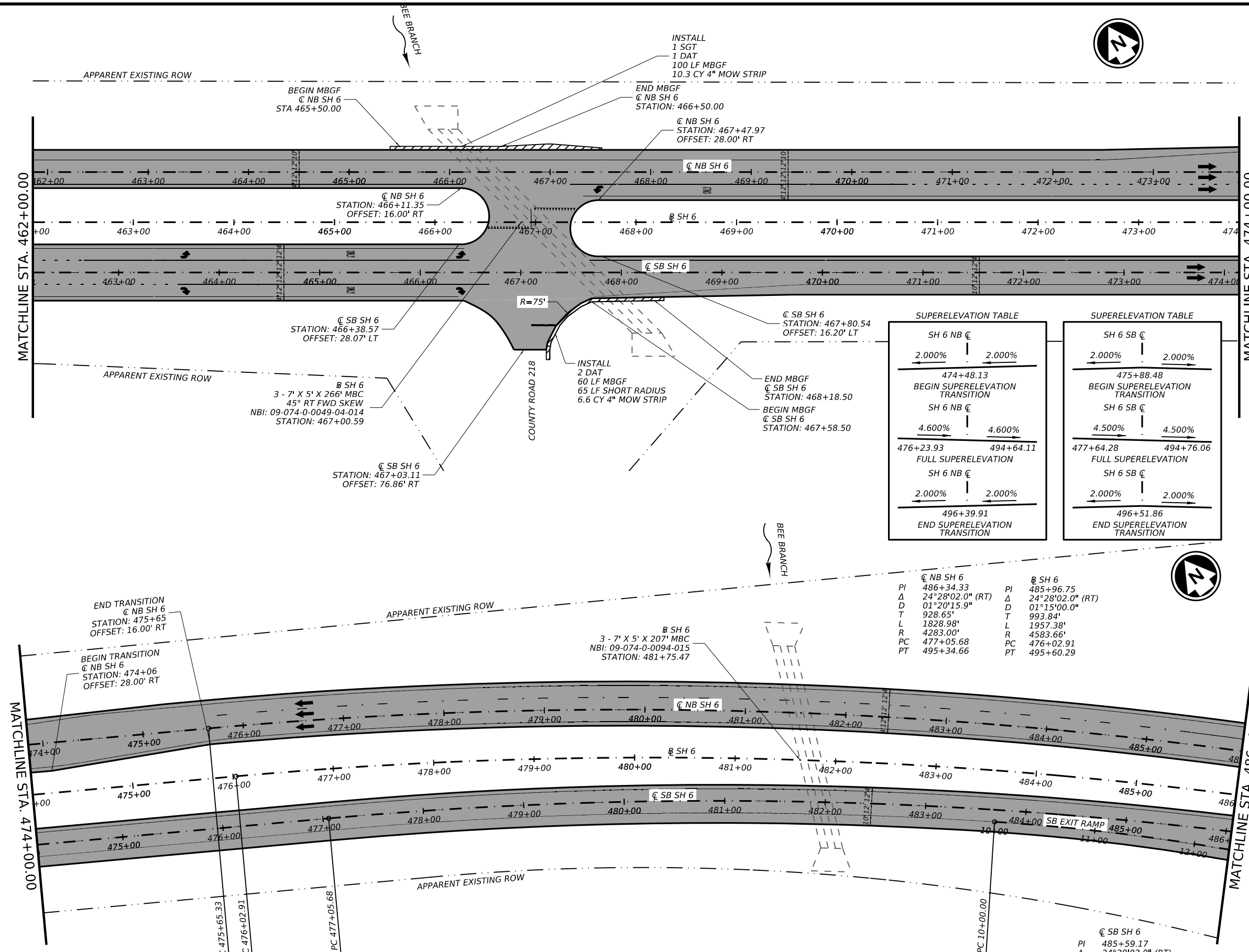
SHEET 9 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	70

DATE: 11/28/2023 5:30:50 PM  
 FILE: ...IBL CL-32 - SH6 FALLSOUTH-16.dgn



CK:  
DW:  
CK:  
DW:



**SUPERELEVATION TABLE**

SH 6 NB C	2.000%	2.000%
474+48.13 BEGIN SUPERELEVATION TRANSITION		
SH 6 NB C	4.600%	4.600%
476+23.93      494+64.11 FULL SUPERELEVATION		
SH 6 NB C	2.000%	2.000%
496+39.91 END SUPERELEVATION TRANSITION		

**SUPERELEVATION TABLE**

SH 6 SB C	2.000%	2.000%
475+88.48 BEGIN SUPERELEVATION TRANSITION		
SH 6 SB C	4.500%	4.500%
477+64.28      494+76.06 FULL SUPERELEVATION		
SH 6 SB C	2.000%	2.000%
496+51.86 END SUPERELEVATION TRANSITION		

PI	486+34.33	PI	485+96.75
Δ	24°28'02.0" (RT)	Δ	24°28'02.0" (RT)
D	01°20'15.9"	D	01°15'00.0"
T	928.65'	T	993.84'
L	1828.98'	L	1957.38'
R	4283.00'	R	4583.66'
PC	477+05.68	PC	476+02.91
PT	495+34.66	PT	495+60.29

**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY

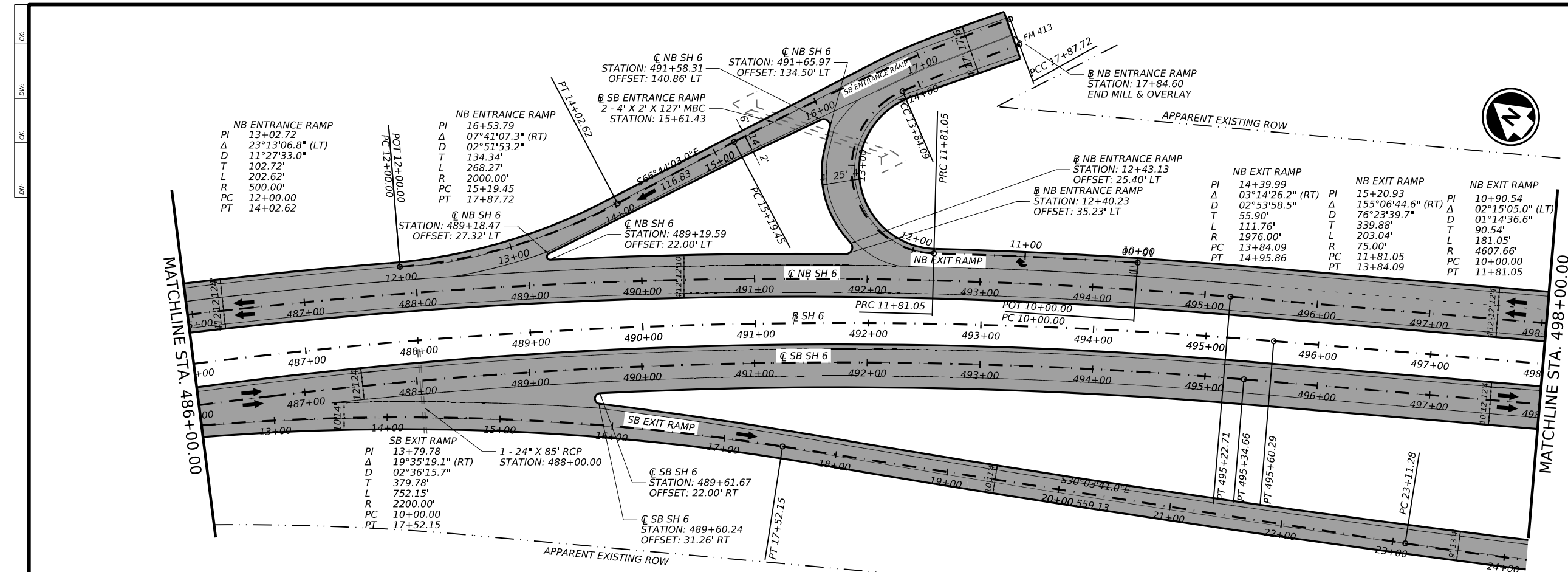


SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
STA: 462+00.00 TO 486+00.00

SHEET 11 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	72	

DATE: 11/28/2023 5:31:18 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH+20.dgn



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- ← TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.

NB ENTRANCE RAMP  
 PI 13+02.72  
 Δ 23°13'06.8" (LT)  
 D 11°27'33.0"  
 T 102.72'  
 L 202.62'  
 R 500.00'  
 PC 12+00.00  
 PT 14+02.62

NB ENTRANCE RAMP  
 PI 16+53.79  
 Δ 07°41'07.3" (RT)  
 D 02°51'53.2"  
 T 134.34'  
 L 268.27'  
 R 2000.00'  
 PC 15+19.45  
 PT 17+87.72

NB EXIT RAMP  
 PI 14+39.99  
 Δ 03°14'26.2" (RT)  
 D 02°53'58.5"  
 T 55.90'  
 L 111.76'  
 R 1976.00'  
 PC 13+84.09  
 PT 14+95.86

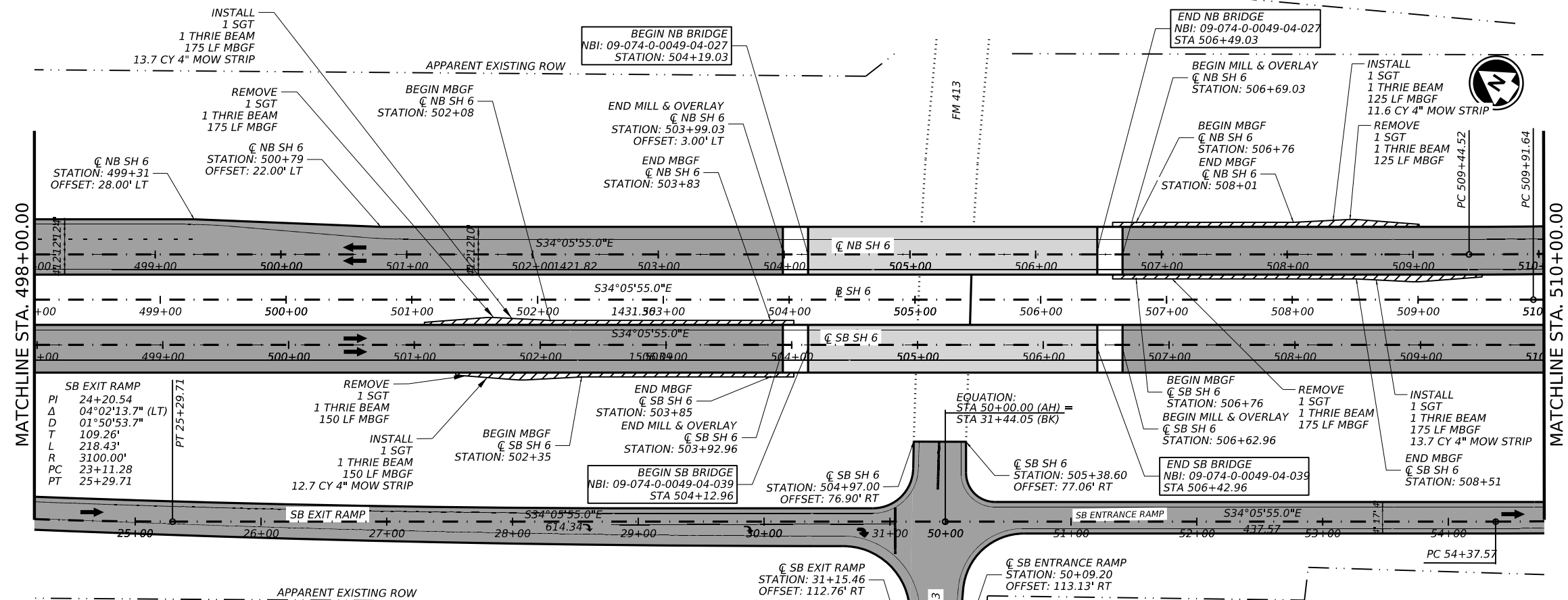
NB EXIT RAMP  
 PI 15+20.93  
 Δ 155°06'44.6" (RT)  
 D 76°23'39.7"  
 T 203.04'  
 L 203.04'  
 R 75.00'  
 PC 11+81.05  
 PT 13+84.09

NB EXIT RAMP  
 PI 10+90.54  
 Δ 02°15'05.0" (LT)  
 D 01°14'36.6"  
 T 90.54'  
 L 181.05'  
 R 4607.66'  
 PC 10+00.00  
 PT 11+81.05

SB EXIT RAMP  
 PI 13+79.78  
 Δ 19°35'19.1" (RT)  
 D 02°36'15.7"  
 T 379.78'  
 L 752.15'  
 R 2200.00'  
 PC 10+00.00  
 PT 17+52.15

SB EXIT RAMP  
 PI 13+79.78  
 Δ 19°35'19.1" (RT)  
 D 02°36'15.7"  
 T 379.78'  
 L 752.15'  
 R 2200.00'  
 PC 10+00.00  
 PT 17+52.15

SB EXIT RAMP  
 PI 13+79.78  
 Δ 19°35'19.1" (RT)  
 D 02°36'15.7"  
 T 379.78'  
 L 752.15'  
 R 2200.00'  
 PC 10+00.00  
 PT 17+52.15



STATE OF TEXAS  
 THOMAS T. LE  
 92771  
 LICENSED PROFESSIONAL ENGINEER  
 11/28/2023

REV. NO.	DATE	REVISION	BY

**AtkinsRéalis**  
 TBPE REG. # F-474

Texas Department of Transportation

SH 6  
 CSJ: 0049-04-064

**PLAN LAYOUT**  
 STA: 486+00.00 TO 510+00.00

SHEET 12 OF 24




CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	73	

DATE: 11/28/2023 5:31:32 PM  
 FILE: ...IBL CL-32 - SH6 FALLSOUTH-22.dgn



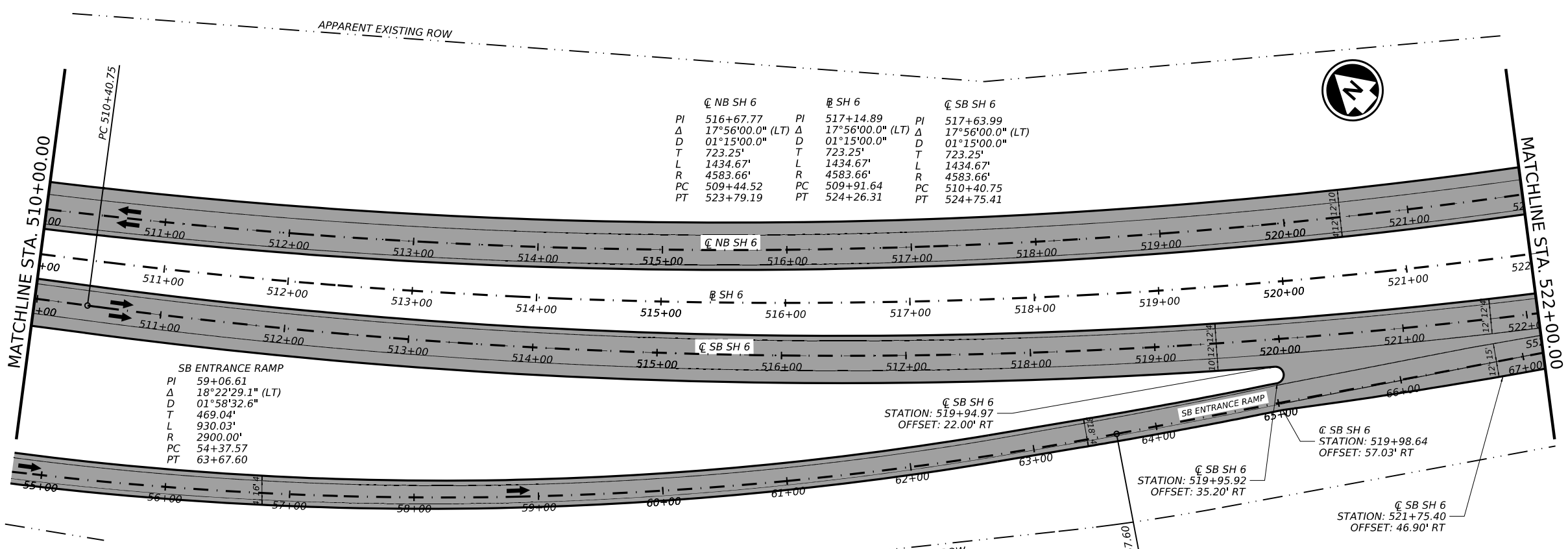
CK: DW: CK: DW:

### LEGEND

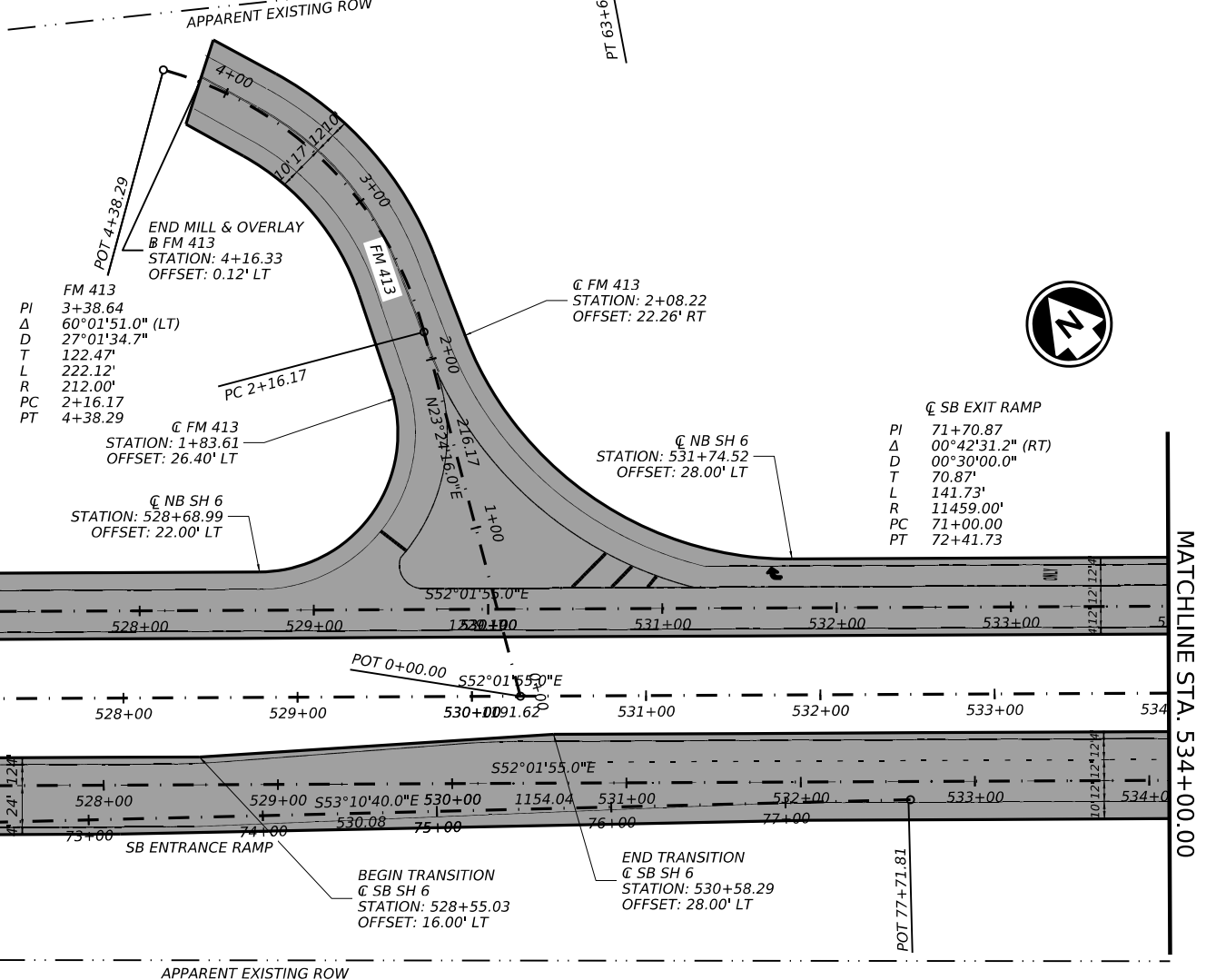
-  MILL AND OVERLAY
-  BRIDGE
-  TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.

☉ NB SH 6	☉ SH 6	☉ SB SH 6
PI 516+67.77	PI 517+14.89	PI 517+63.99
Δ 17°56'00.0" (LT)	Δ 17°56'00.0" (LT)	Δ 17°56'00.0" (LT)
D 01°15'00.0"	D 01°15'00.0"	D 01°15'00.0"
T 723.25'	T 723.25'	T 723.25'
L 1434.67'	L 1434.67'	L 1434.67'
R 4583.66'	R 4583.66'	R 4583.66'
PC 509+44.52	PC 509+91.64	PC 510+40.75
PT 523+79.19	PT 524+26.31	PT 524+75.41



SUPERELEVATION TABLE		SUPERELEVATION TABLE	
SH 6 NB ☉	SH 6 NB ☉	SH 6 SB ☉	SH 6 SB ☉
2.000%	2.000%	2.000%	2.000%
508+27.32 BEGIN SUPERELEVATION TRANSITION		509+23.55 BEGIN SUPERELEVATION TRANSITION	
4.000%	4.000%	4.000%	4.000%
510+03.12	523+20.59	510+99.35	524+16.81
FULL SUPERELEVATION		FULL SUPERELEVATION	
2.000%	2.000%	2.000%	2.000%
524+96.39 END SUPERELEVATION TRANSITION		525+92.61 END SUPERELEVATION TRANSITION	



11/28/2023

REV. NO.	DATE	REVISION	BY



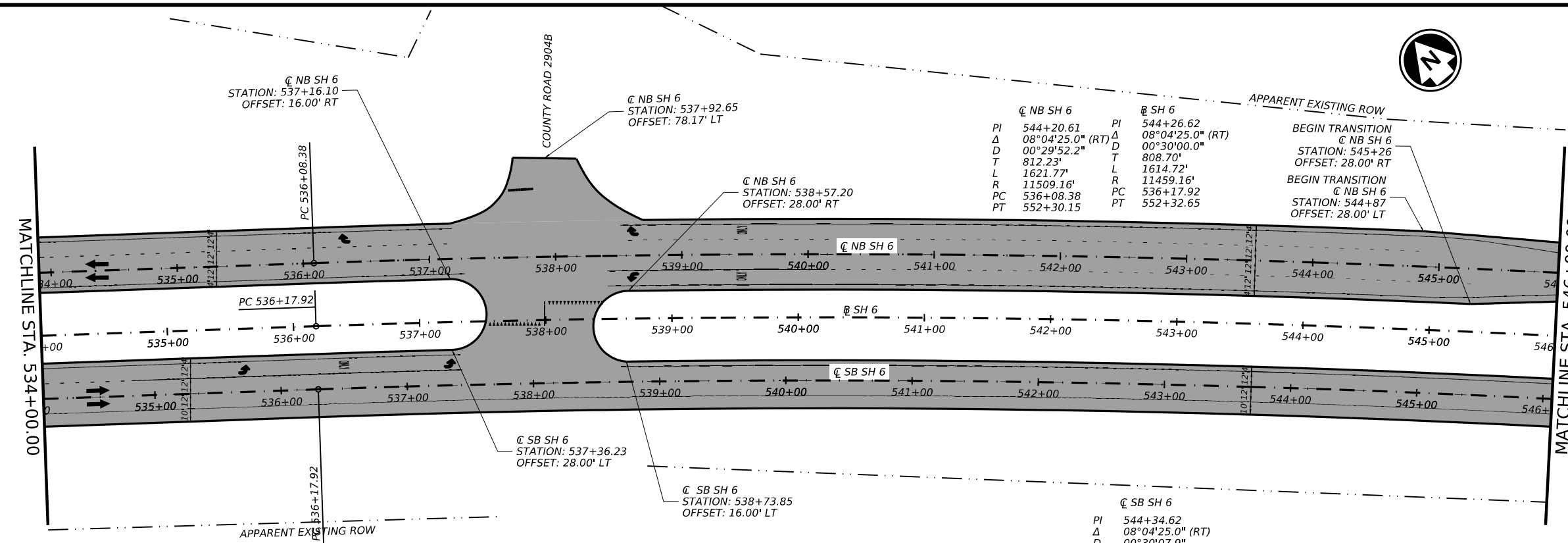
SH 6  
CSJ: 0049-04-064

### PLAN LAYOUT STA: 510+00.00 TO 534+00.00

SHEET 13 OF 24			
CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	74	

DATE: 11/28/2023 5:31:47 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-24.dgn

CK:  
DW:  
CK:  
DW:



NB SH 6		SB SH 6	
PI	544+20.61	PI	544+26.62
Δ	08°04'25.0" (RT)	Δ	08°04'25.0" (RT)
D	00°29'52.2"	D	00°30'00.0"
T	812.23'	T	808.70'
L	1621.77'	L	1614.72'
R	11509.16'	R	11459.16'
PC	536+08.38	PC	536+17.92
PT	552+30.15	PT	552+32.65

BEGIN TRANSITION  
 NB SH 6  
 STATION: 545+26  
 OFFSET: 28.00' RT

BEGIN TRANSITION  
 SB SH 6  
 STATION: 544+87  
 OFFSET: 28.00' LT

### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.

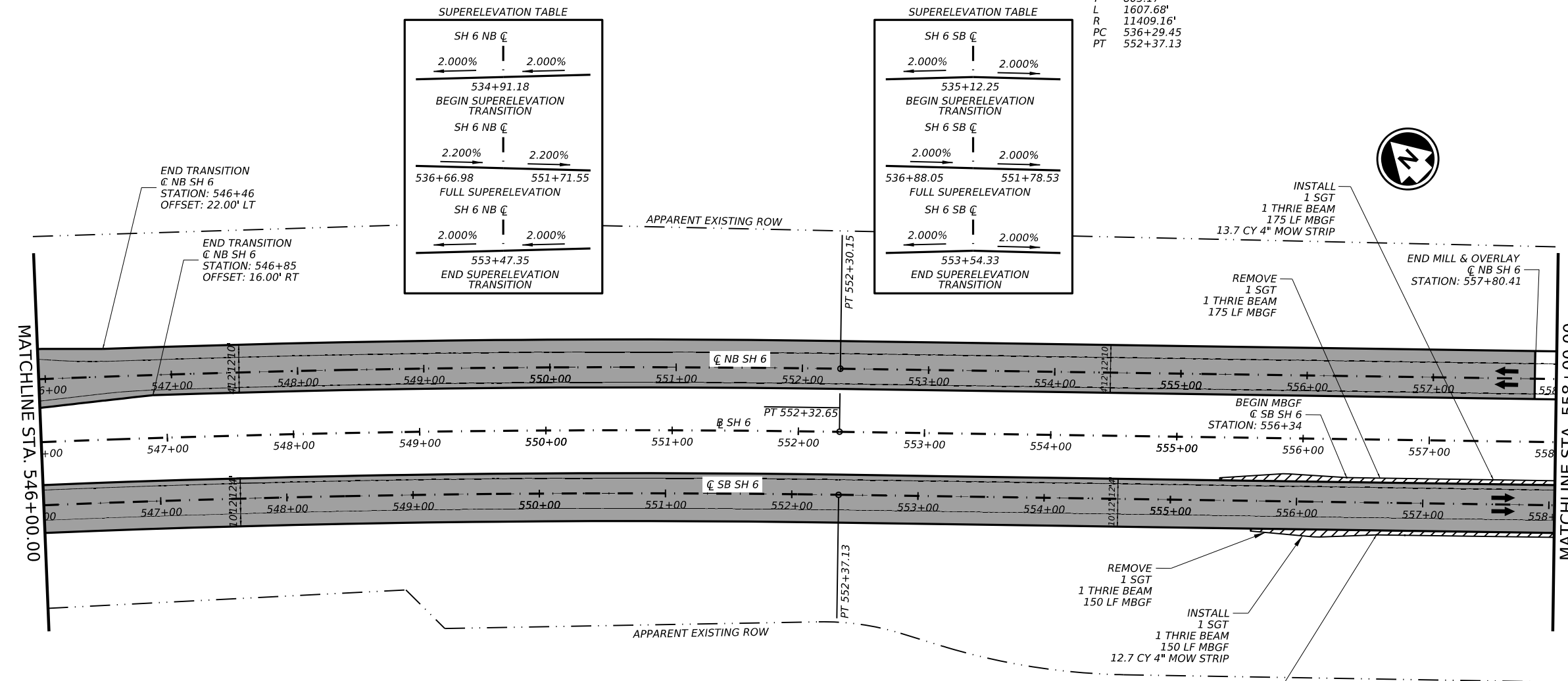
**SUPERELEVATION TABLE**

SH 6 NB CL	
2.000%	2.000%
534+91.18 BEGIN SUPERELEVATION TRANSITION	
2.200%	2.200%
536+66.98      551+71.55 FULL SUPERELEVATION	
2.000%	2.000%
553+47.35 END SUPERELEVATION TRANSITION	

**SUPERELEVATION TABLE**

SH 6 SB CL	
2.000%	2.000%
535+12.25 BEGIN SUPERELEVATION TRANSITION	
2.000%	2.000%
536+88.05      551+78.53 FULL SUPERELEVATION	
2.000%	2.000%
553+54.33 END SUPERELEVATION TRANSITION	

SB SH 6	
PI	544+34.62
Δ	08°04'25.0" (RT)
D	00°30'07.9"
T	805.17'
L	1607.68'
R	11409.16'
PC	536+29.45
PT	552+37.13



INSTALL  
 1 SGT  
 1 THRIE BEAM  
 175 LF MBGF  
 13.7 CY 4" MOW STRIP

REMOVE  
 1 SGT  
 1 THRIE BEAM  
 175 LF MBGF

END MILL & OVERLAY  
 NB SH 6  
 STATION: 557+80.41



11/28/2023

REV. NO.	DATE	REVISION	BY



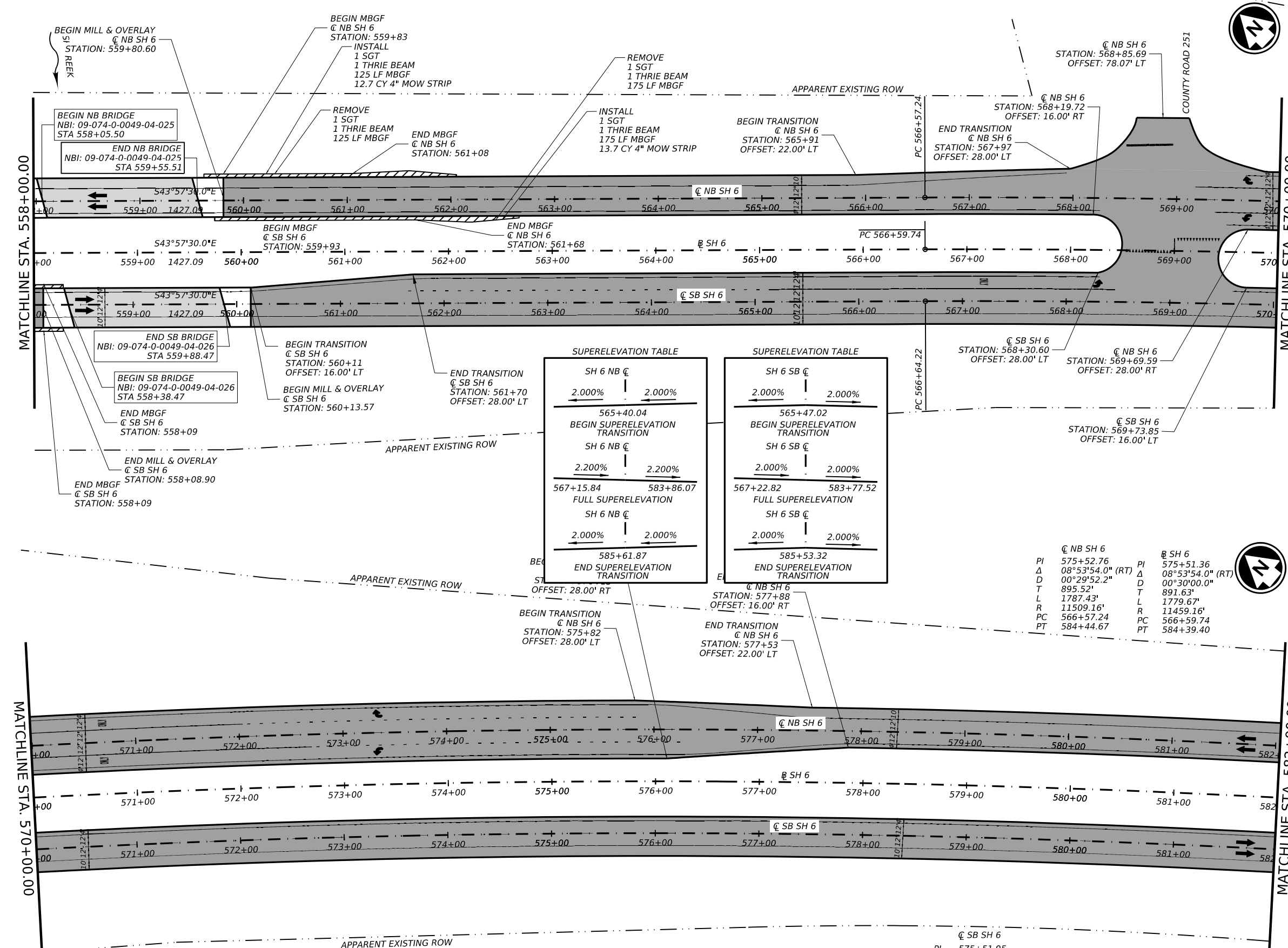
SH 6  
 CSJ: 0049-04-064  
**PLAN LAYOUT**  
 STA: 534+00.00 TO 558+00.00

SHEET 14 OF 24

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN,ETC.	75

DATE: 11/28/2023 5:32:01 PM  
 FILE: ...IBL CL-32 - SH6 FALLSOUTH-26.dgn

CK: DW: CK: DW:



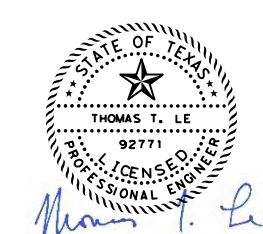
### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.

SUPERELEVATION TABLE	
SH 6 NB $\bar{C}$ 2.000%   2.000% 565+40.04 BEGIN SUPERELEVATION TRANSITION SH 6 NB $\bar{C}$ 2.200%   2.200% 567+15.84   583+86.07 FULL SUPERELEVATION SH 6 NB $\bar{C}$ 2.000%   2.000% 585+61.87 END SUPERELEVATION TRANSITION	SH 6 SB $\bar{C}$ 2.000%   2.000% 565+47.02 BEGIN SUPERELEVATION TRANSITION SH 6 SB $\bar{C}$ 2.000%   2.000% 567+22.82   583+77.52 FULL SUPERELEVATION SH 6 SB $\bar{C}$ 2.000%   2.000% 585+53.32 END SUPERELEVATION TRANSITION

$\bar{C}$ NB SH 6 PI 575+52.76 $\Delta$ 08°53'54.0" (RT) D 00°29'52.2" T 895.52' L 1787.43' R 11509.16' PC 566+57.24 PT 584+44.67	$\bar{C}$ SB SH 6 PI 575+51.36 $\Delta$ 08°53'54.0" (RT) D 00°30'00.0" T 891.63' L 1779.67' R 11459.16' PC 566+59.74 PT 584+39.40
---	---



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
STA: 558+00.00 TO 582+00.00

SHEET 15 OF 24




CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	76	

DATE: 11/28/2023 5:32:15 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-28.dgn

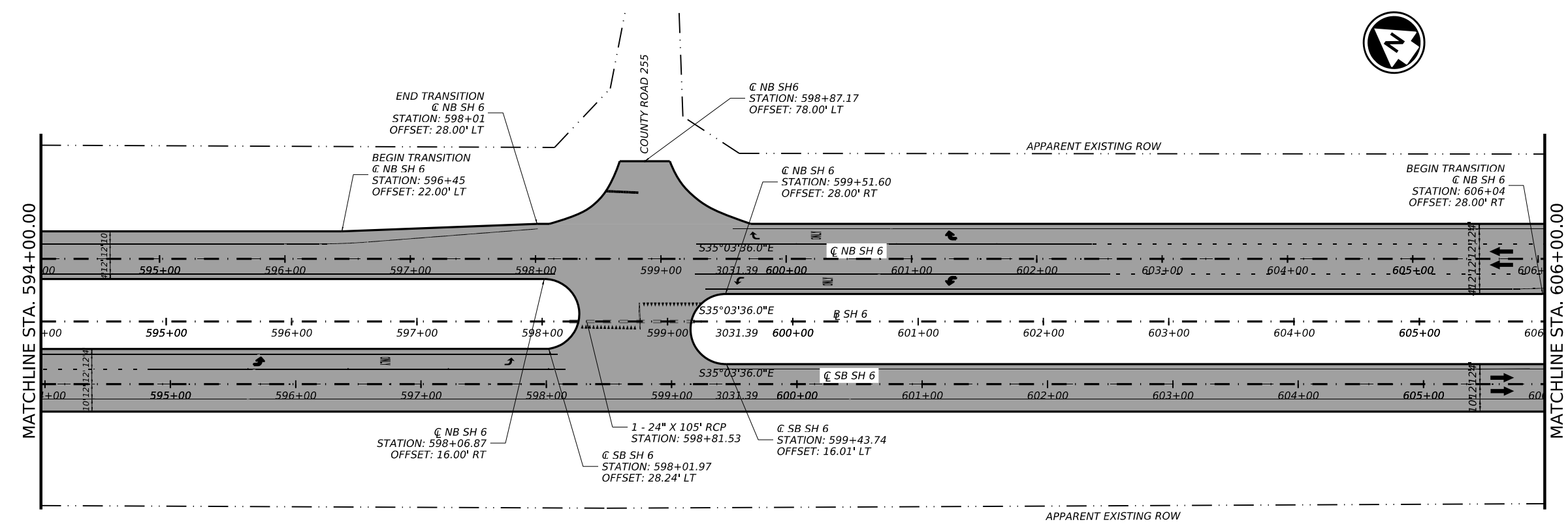
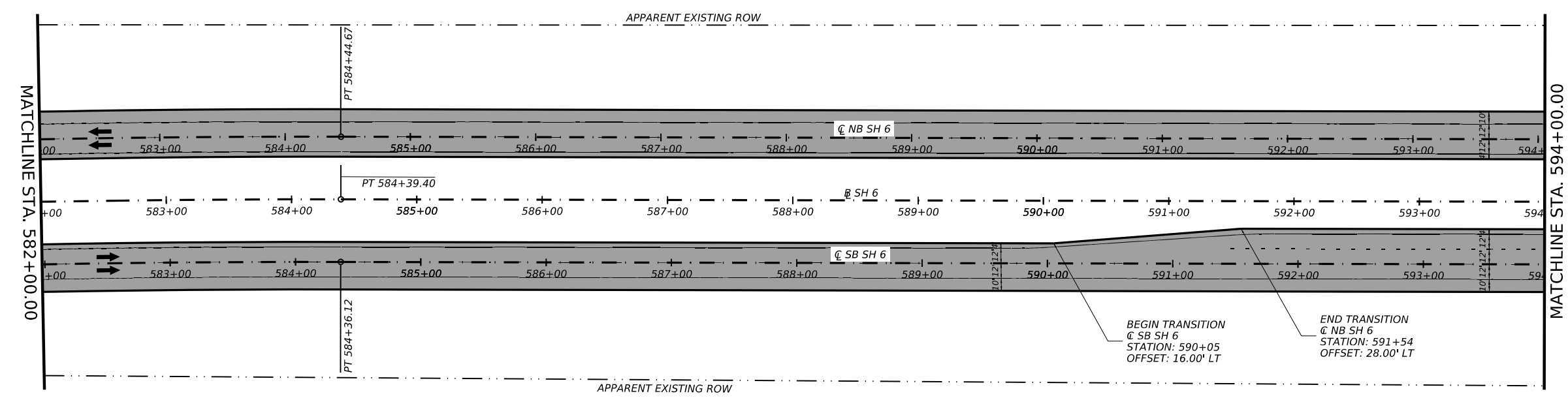
CK: DW: CK: DW: CK: DW:



### LEGEND

-  MILL AND OVERLAY
-  BRIDGE
-  TRAFFIC DIRECTION

- NOTES:
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
STA: 582+00.00 TO 606+00.00

SHEET 16 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	77

DATE: 11/28/2023 5:32:30 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-30.dgn

CK: DW: CK: DW: CK: DW:

☉ NB SH 6		☉ SH 6	
PI	617+22.55	PI	617+18.36
Δ	02°28'31.0" (LT)	Δ	02°28'31.0" (LT)
D	00°30'07.9"	D	00°30'00.0"
T	246.49'	T	247.57'
L	492.90'	L	495.06'
R	11409.16'	R	11459.16'
PC	614+76.06	PC	614+70.79
PT	619+68.96	PT	619+65.85

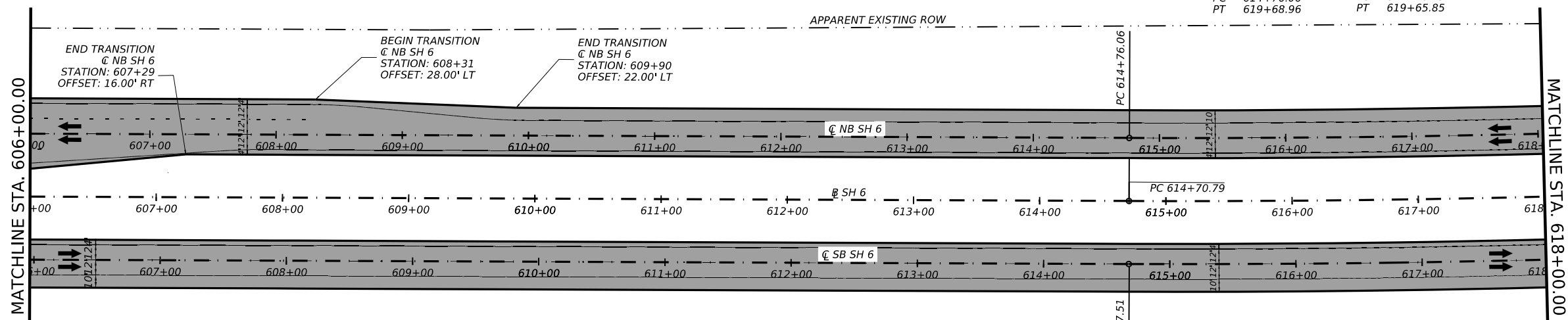


### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

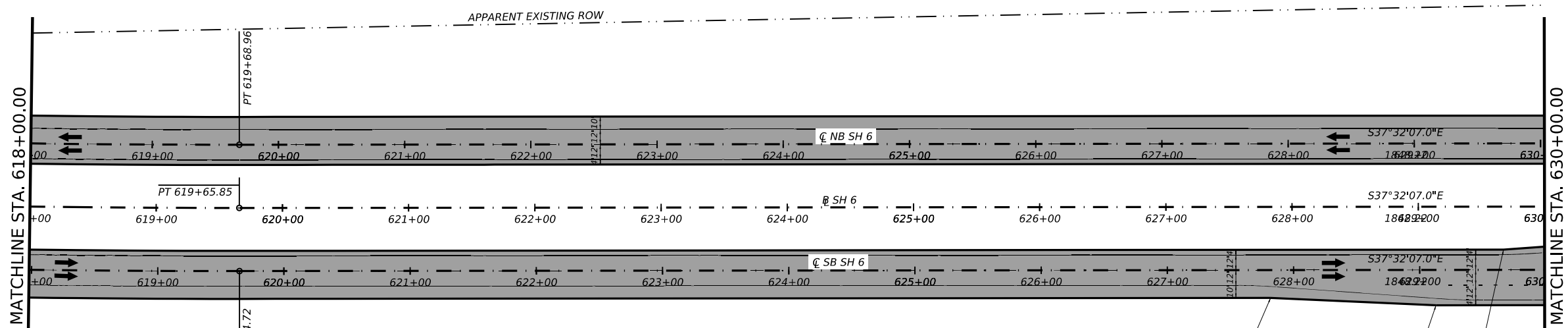
#### NOTES:

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



SUPERELEVATION TABLE		SUPERELEVATION TABLE	
SH 6 NB ☉		SH 6 SB ☉	
2.000%	2.000%	2.000%	2.000%
613+58.86 BEGIN SUPERELEVATION TRANSITION		613+50.31 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB ☉		SH 6 SB ☉	
2.000%	2.000%	2.000%	2.000%
615+34.66	619+10.36	615+26.11	619+06.12
FULL SUPERELEVATION		FULL SUPERELEVATION	
SH 6 NB ☉		SH 6 SB ☉	
2.000%	2.000%	2.000%	2.000%
620+86.16 END SUPERELEVATION TRANSITION		620+81.92 END SUPERELEVATION TRANSITION	

☉ SB SH 6	
PI	617+16.15
Δ	02°28'31.0" (LT)
D	00°29'52.2"
T	248.65'
L	497.22'
R	11509.16'
PC	614+67.51
PT	619+64.72



11/28/2023



*Thomas T. Le*

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
PLAN LAYOUT  
STA: 606+00.00 TO 630+00.00

SHEET 17 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	78	

DATE: 11/28/2023 5:32:44 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-32.dgn

CK: DW: CK: DW:



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

**NOTES:**

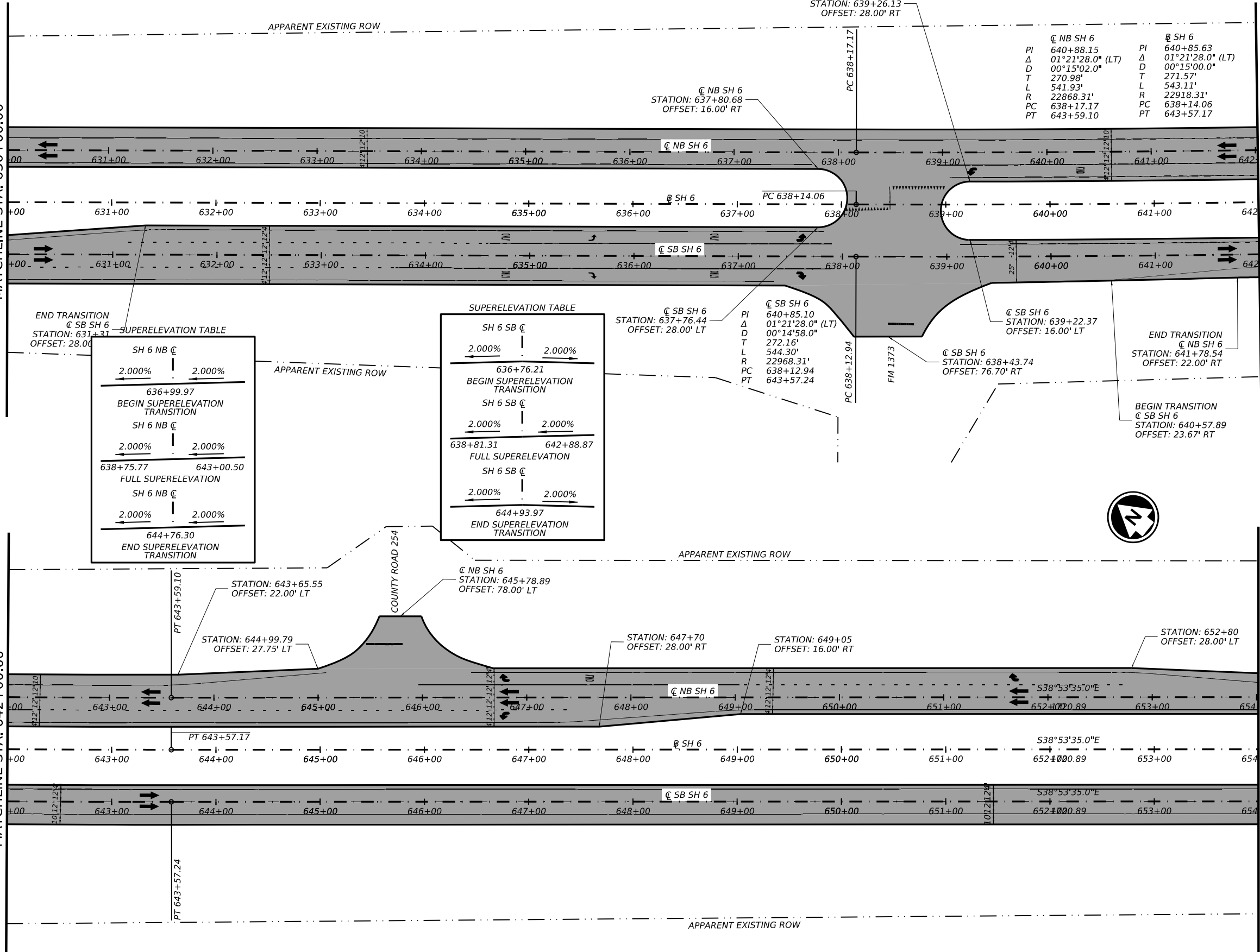
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.

MATCHLINE STA. 630+00.00

MATCHLINE STA. 642+00.00

MATCHLINE STA. 642+00.00

MATCHLINE STA. 654+00.00



**SUPERELEVATION TABLE**

SH 6 NB $\bar{C}$	
2.000%	2.000%
636+99.97 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB $\bar{C}$	
2.000%	2.000%
638+75.77      643+00.50 FULL SUPERELEVATION	
SH 6 NB $\bar{C}$	
2.000%	2.000%
644+76.30 END SUPERELEVATION TRANSITION	

**SUPERELEVATION TABLE**

SH 6 SB $\bar{C}$	
2.000%	2.000%
636+76.21 BEGIN SUPERELEVATION TRANSITION	
SH 6 SB $\bar{C}$	
2.000%	2.000%
638+81.31      642+88.87 FULL SUPERELEVATION	
SH 6 SB $\bar{C}$	
2.000%	2.000%
644+93.97 END SUPERELEVATION TRANSITION	

$\bar{C}$ NB SH 6		$\bar{C}$ SH 6	
PI	640+88.15	PI	640+85.63
$\Delta$	01°21'28.0" (LT)	$\Delta$	01°21'28.0" (LT)
D	00°15'02.0"	D	00°15'00.0"
T	270.98'	T	271.57'
L	541.93'	L	543.11'
R	22868.31'	R	22918.31'
PC	638+17.17	PC	638+14.06
PT	643+59.10	PT	643+57.17



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
STA: 630+00.00 TO 654+00.00

SHEET 18 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	79

DATE: 11/28/2023 5:32:58 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-34.dgn

CK: DW: CK: DW:

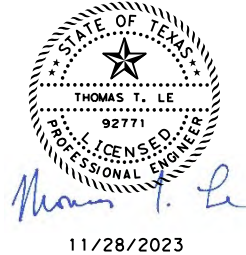
	☉ NB SH 6	☉ SH 6
PI	665+89.60	665+85.46
Δ	05°04'14.3" (RT)	05°04'14.3" (RT)
D	00°29'52.2"	00°30'00.0"
T	509.61'	507.39'
L	1018.55'	1014.13'
R	11509.16'	11459.16'
PC	660+79.99	660+78.07
PT	670+98.55	670+92.19



**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



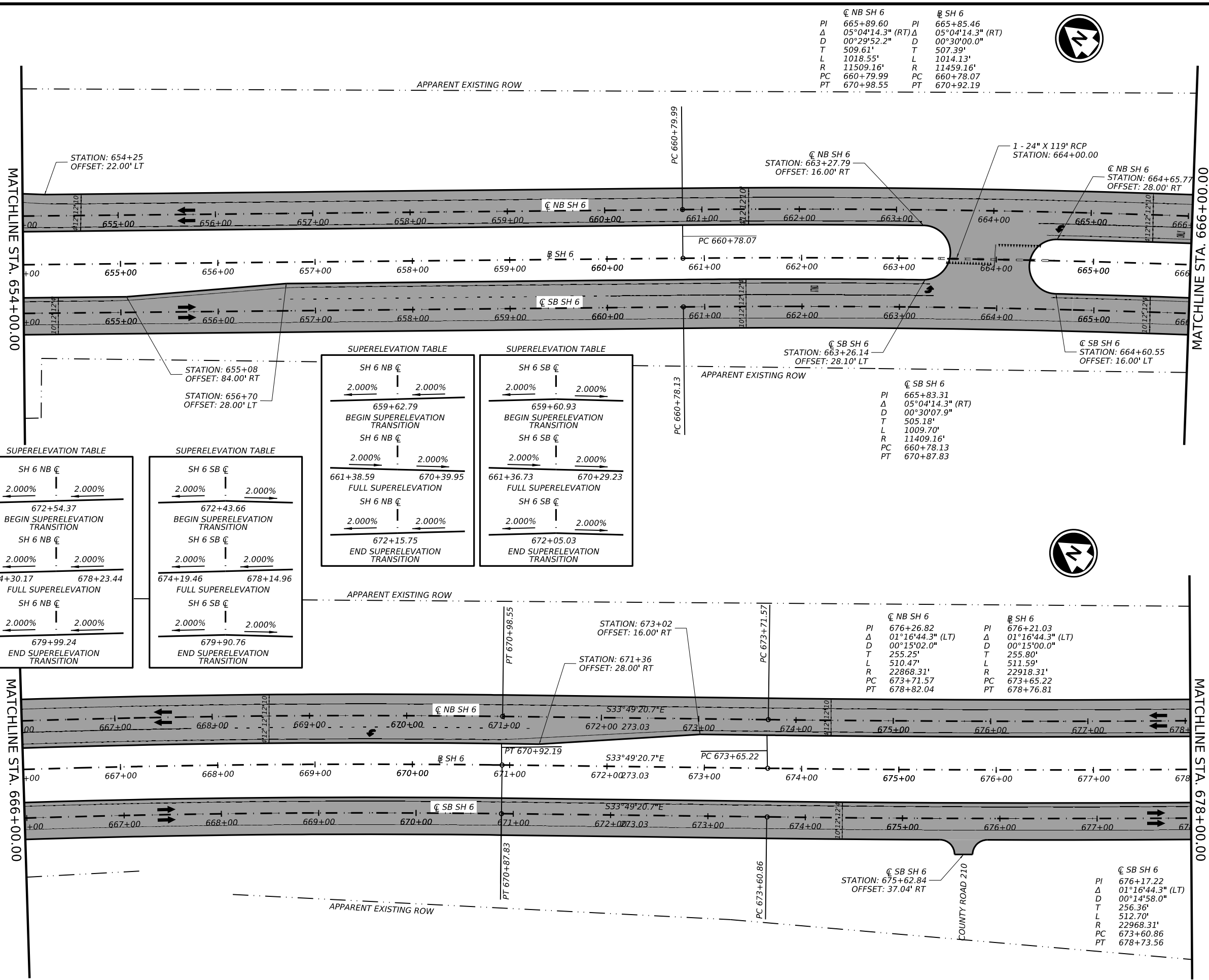
REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064  
**PLAN LAYOUT**  
STA: 654+00.00 TO 678+00.00

SHEET 19 OF 24

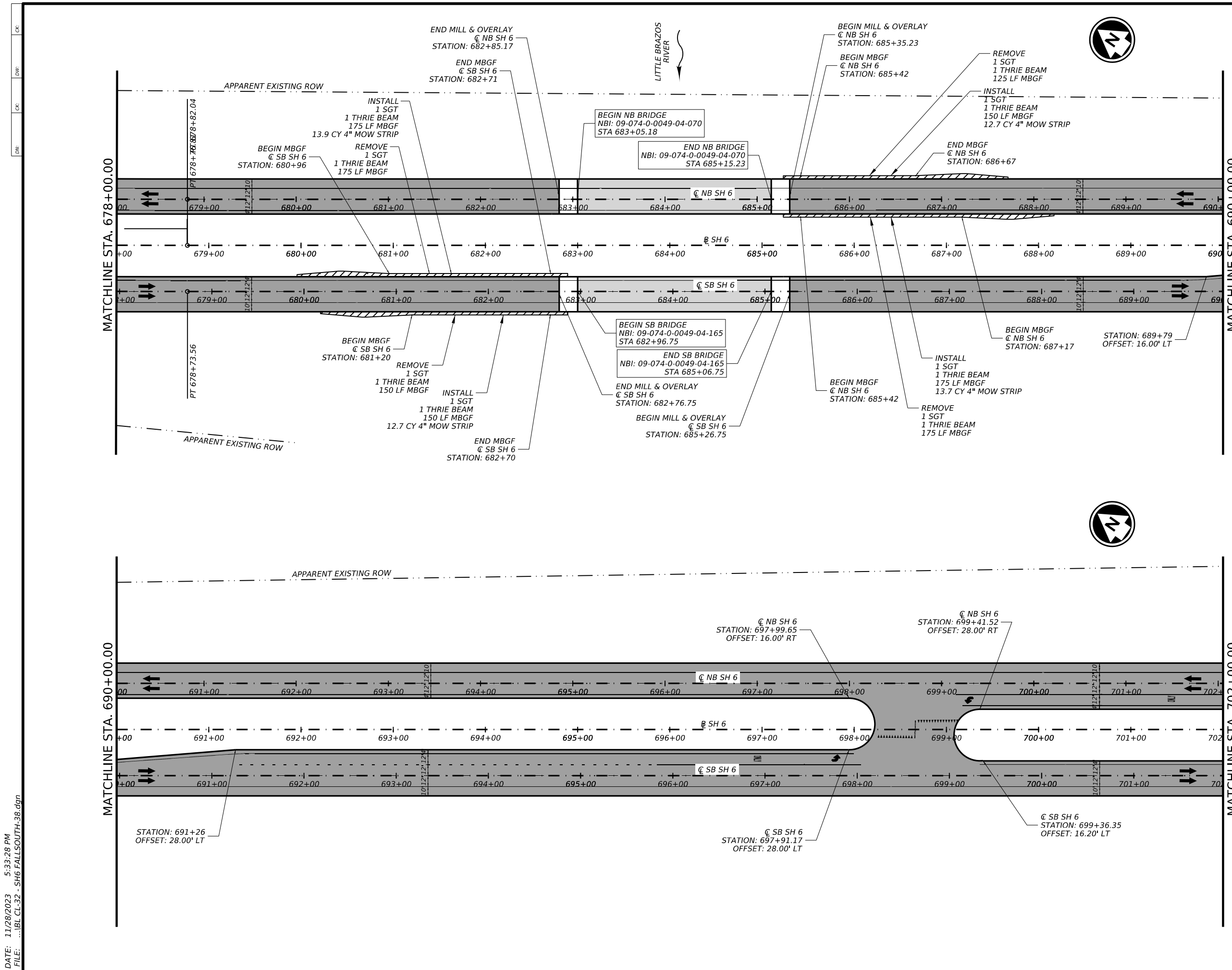
CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	80



SUPERELEVATION TABLE		SUPERELEVATION TABLE	
SH 6 NB ☉	2.000%	SH 6 SB ☉	2.000%
2.000%	2.000%	2.000%	2.000%
659+62.79 BEGIN SUPERELEVATION TRANSITION		659+60.93 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB ☉	2.000%	SH 6 SB ☉	2.000%
2.000%	2.000%	2.000%	2.000%
661+38.59      670+39.95 FULL SUPERELEVATION		661+36.73      670+29.23 FULL SUPERELEVATION	
SH 6 NB ☉	2.000%	SH 6 SB ☉	2.000%
2.000%	2.000%	2.000%	2.000%
672+15.75 END SUPERELEVATION TRANSITION		672+05.03 END SUPERELEVATION TRANSITION	

SUPERELEVATION TABLE		SUPERELEVATION TABLE	
SH 6 NB ☉	2.000%	SH 6 SB ☉	2.000%
2.000%	2.000%	2.000%	2.000%
672+54.37 BEGIN SUPERELEVATION TRANSITION		672+43.66 BEGIN SUPERELEVATION TRANSITION	
SH 6 NB ☉	2.000%	SH 6 SB ☉	2.000%
2.000%	2.000%	2.000%	2.000%
674+30.17      678+23.44 FULL SUPERELEVATION		674+19.46      678+14.96 FULL SUPERELEVATION	
SH 6 NB ☉	2.000%	SH 6 SB ☉	2.000%
2.000%	2.000%	2.000%	2.000%
679+99.24 END SUPERELEVATION TRANSITION		679+90.76 END SUPERELEVATION TRANSITION	

DATE: 11/28/2023 5:33:14 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-36.dgn



### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
- CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  - PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064

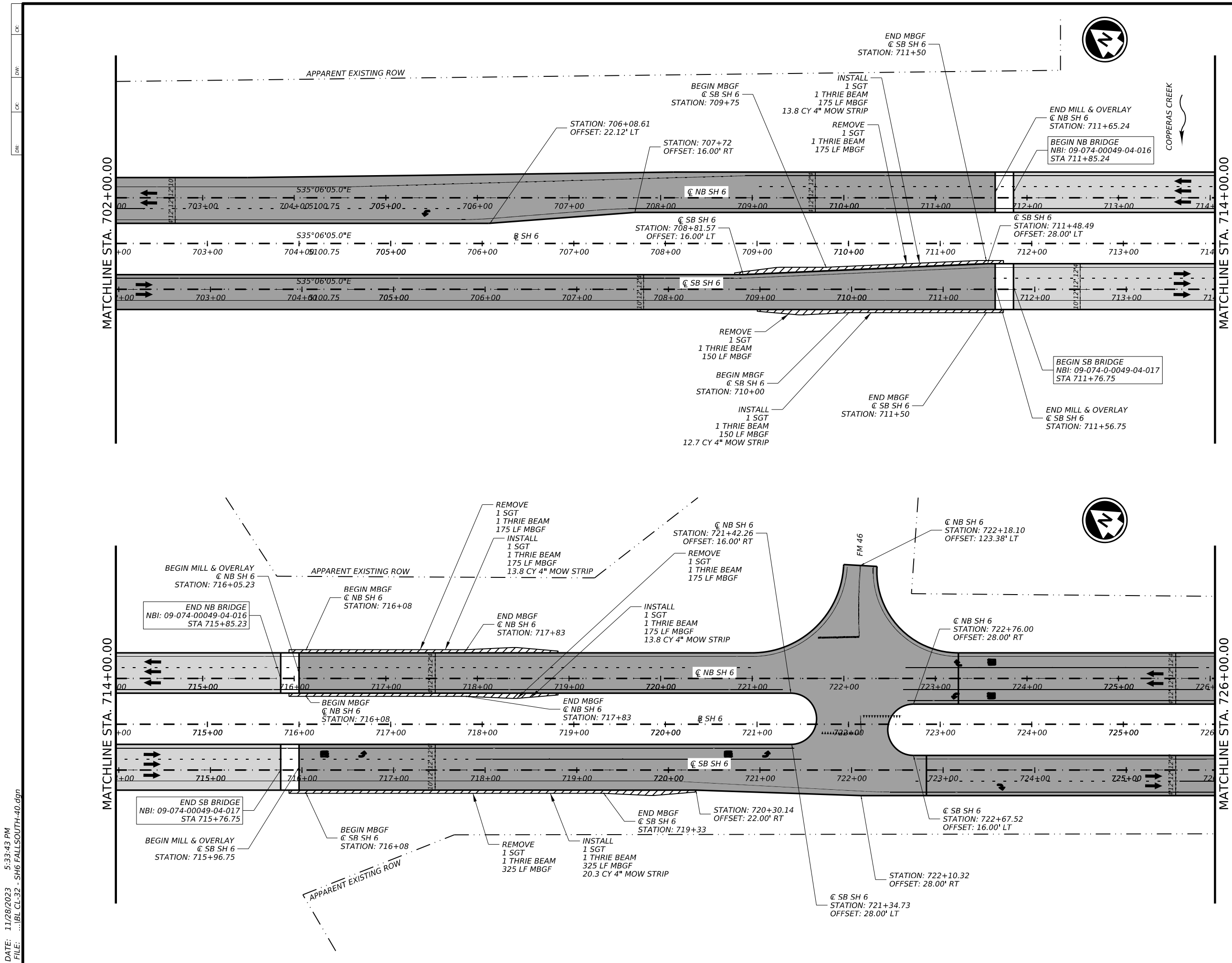
PLAN LAYOUT  
STA: 678+00.00 TO 702+00.00

SHEET 20 OF 24

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	81

DATE: 11/28/2023 5:33:28 PM  
 FILE: ...IBL CL-32 - SH6 FALLSOUTH-38.dgn

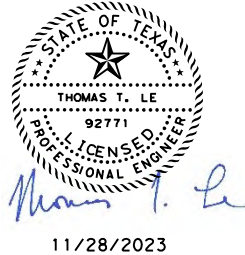




**LEGEND**

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



REV. NO.	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064

**PLAN LAYOUT**  
STA: 702+00.00 TO 726+00.00

SHEET 21 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	82	

DATE: 11/28/2023 5:33:43 PM  
FILE: ...NBL CL-32 - SH6 FALLSOUTH-40.dgn

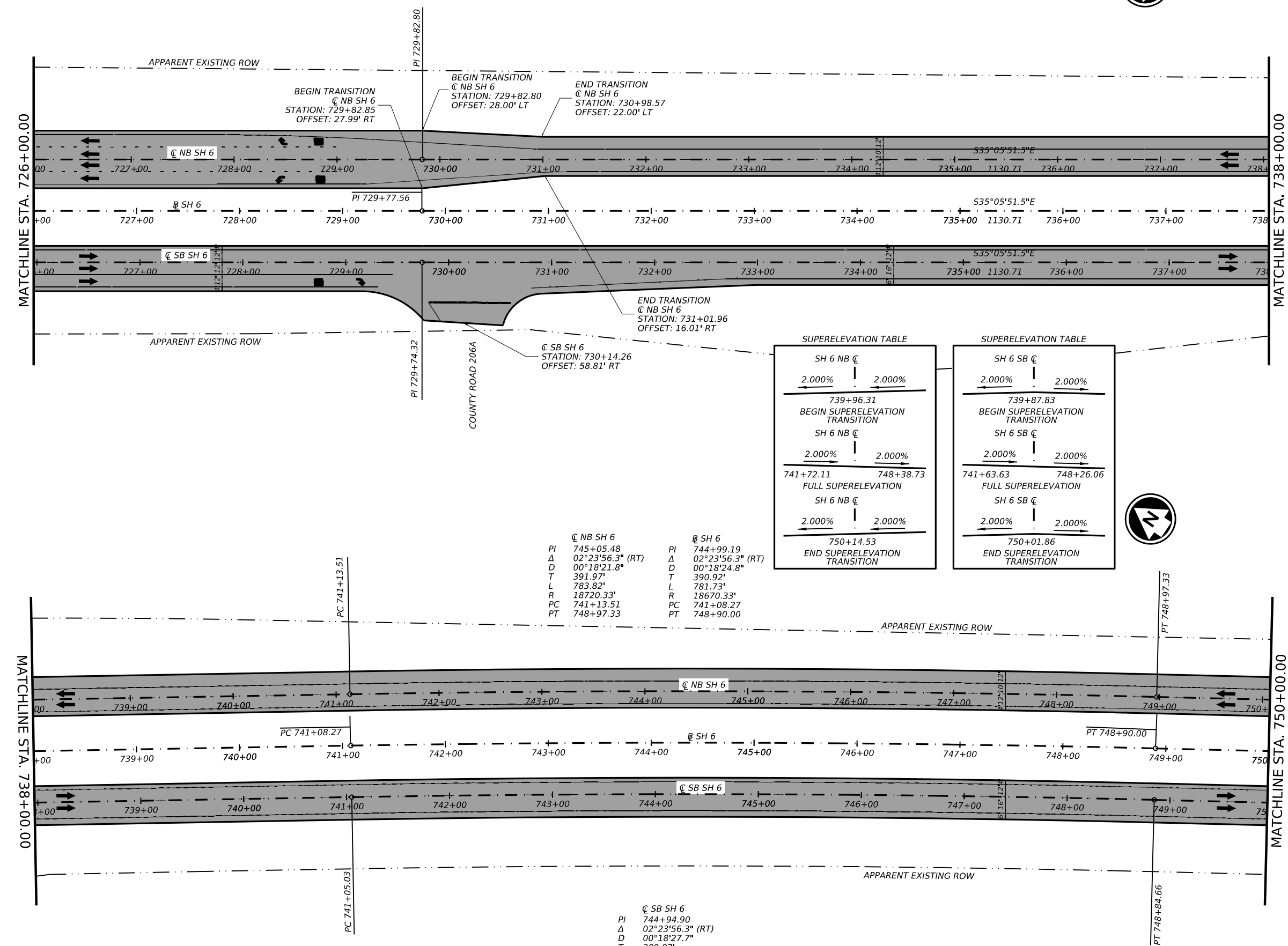
DW: CK: DW: CK: DW: CK:



### LEGEND

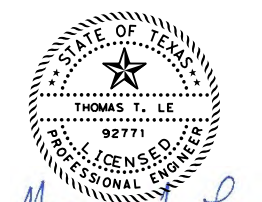
- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



<p>☐ NB SH 6</p> <p>PI 745+05.48</p> <p>Δ 02°23'56.3" (RT)</p> <p>D 00°18'21.8"</p> <p>T 391.97'</p> <p>L 783.82'</p> <p>R 18720.33'</p> <p>PC 741+13.51</p> <p>PT 748+97.33</p>	<p>☐ SH 6</p> <p>PI 744+99.19</p> <p>Δ 02°23'56.3" (RT)</p> <p>D 00°18'24.8"</p> <p>T 390.92'</p> <p>L 781.73'</p> <p>R 18670.33'</p> <p>PC 741+08.27</p> <p>PT 748+90.00</p>
--	---

<p>SUPERELEVATION TABLE</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">SH 6 NB ☐</td> <td style="width: 50%; text-align: center;">SH 6 SB ☐</td> </tr> <tr> <td style="text-align: center;">2.000%   2.000%</td> <td style="text-align: center;">2.000%   2.000%</td> </tr> <tr> <td style="text-align: center;">739+96.31</td> <td style="text-align: center;">739+87.83</td> </tr> <tr> <td style="text-align: center;">BEGIN SUPERELEVATION TRANSITION</td> <td style="text-align: center;">BEGIN SUPERELEVATION TRANSITION</td> </tr> <tr> <td style="text-align: center;">SH 6 NB ☐</td> <td style="text-align: center;">SH 6 SB ☐</td> </tr> <tr> <td style="text-align: center;">2.000%   2.000%</td> <td style="text-align: center;">2.000%   2.000%</td> </tr> <tr> <td style="text-align: center;">741+72.11</td> <td style="text-align: center;">748+38.73</td> </tr> <tr> <td colspan="2" style="text-align: center;">FULL SUPERELEVATION</td> </tr> <tr> <td style="text-align: center;">SH 6 NB ☐</td> <td style="text-align: center;">SH 6 SB ☐</td> </tr> <tr> <td style="text-align: center;">2.000%   2.000%</td> <td style="text-align: center;">2.000%   2.000%</td> </tr> <tr> <td style="text-align: center;">750+14.53</td> <td style="text-align: center;">750+01.86</td> </tr> <tr> <td colspan="2" style="text-align: center;">END SUPERELEVATION TRANSITION</td> </tr> </table>	SH 6 NB ☐	SH 6 SB ☐	2.000%   2.000%	2.000%   2.000%	739+96.31	739+87.83	BEGIN SUPERELEVATION TRANSITION	BEGIN SUPERELEVATION TRANSITION	SH 6 NB ☐	SH 6 SB ☐	2.000%   2.000%	2.000%   2.000%	741+72.11	748+38.73	FULL SUPERELEVATION		SH 6 NB ☐	SH 6 SB ☐	2.000%   2.000%	2.000%   2.000%	750+14.53	750+01.86	END SUPERELEVATION TRANSITION		
SH 6 NB ☐	SH 6 SB ☐																								
2.000%   2.000%	2.000%   2.000%																								
739+96.31	739+87.83																								
BEGIN SUPERELEVATION TRANSITION	BEGIN SUPERELEVATION TRANSITION																								
SH 6 NB ☐	SH 6 SB ☐																								
2.000%   2.000%	2.000%   2.000%																								
741+72.11	748+38.73																								
FULL SUPERELEVATION																									
SH 6 NB ☐	SH 6 SB ☐																								
2.000%   2.000%	2.000%   2.000%																								
750+14.53	750+01.86																								
END SUPERELEVATION TRANSITION																									



11/28/2023

REV. NO	DATE	REVISION	BY



SH 6  
CSJ: 0049-04-064

**PLAN LAYOUT**  
STA: 726+00.00 TO 750+00.00

SHEET 22 OF 24

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST. COUNTY			SHEET NO.
WAC. McLENNAN, ETC.			83

DATE: 11/28/2023 5:33:57 PM  
FILE: ...IBL CL-32 - SH6 FALLSOUTH-42.dgn

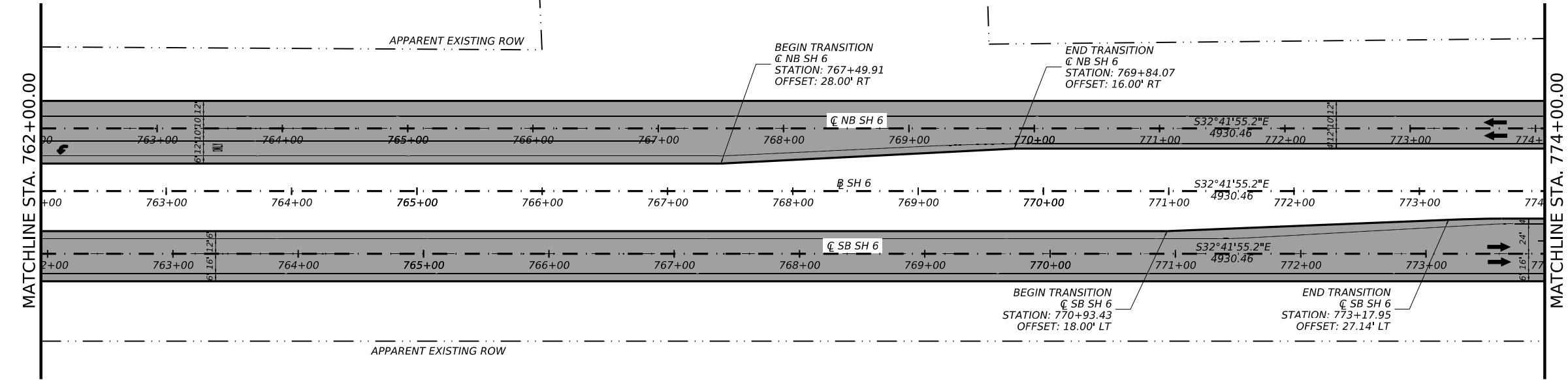
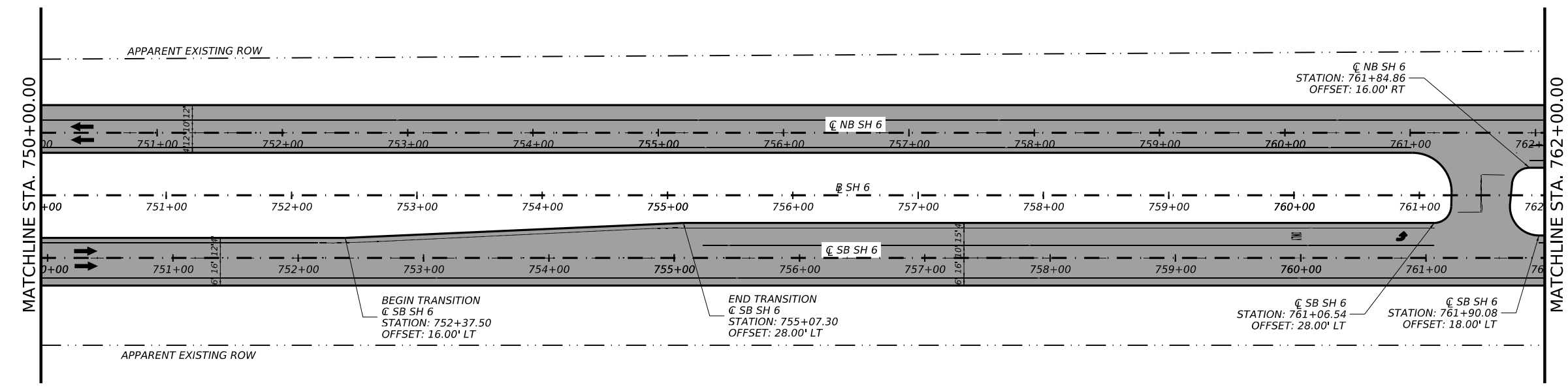
DW: \_\_\_\_\_  
 CK: \_\_\_\_\_  
 DW: \_\_\_\_\_  
 CK: \_\_\_\_\_



### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

- NOTES:
1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
  2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



**SH 6**  
**CSJ: 0049-04-064**

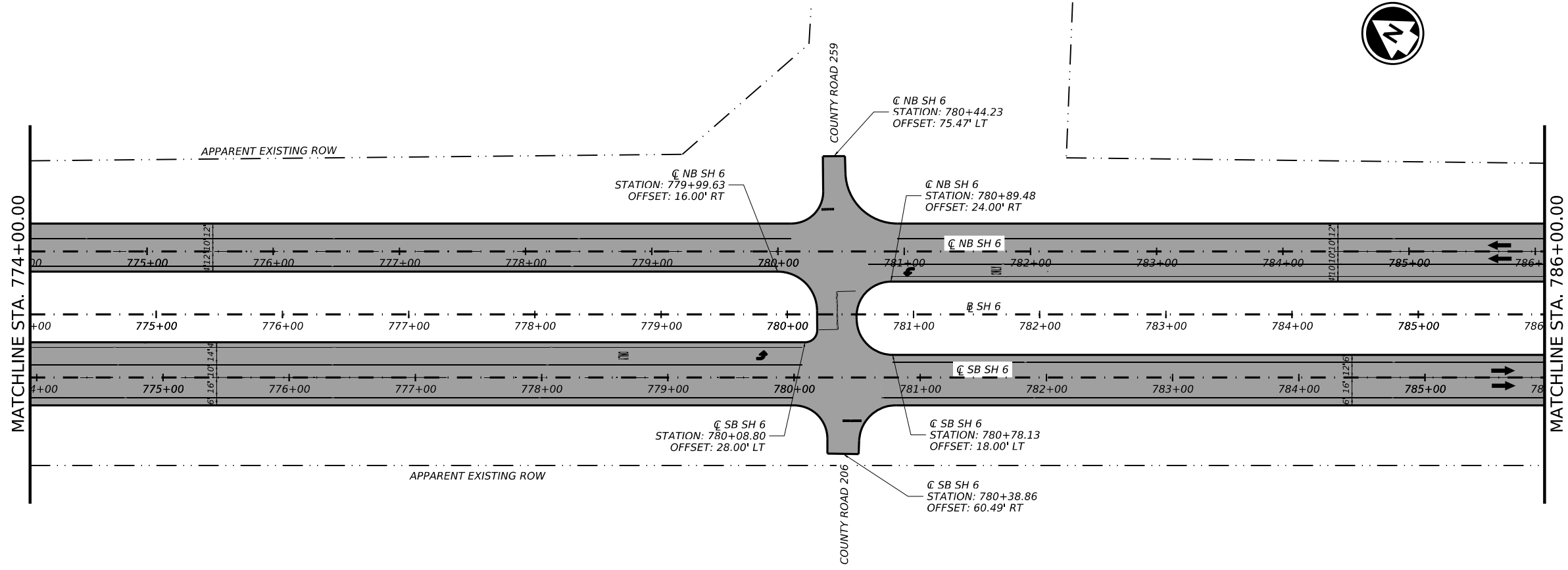
**PLAN LAYOUT**  
**STA: 750+00.00 TO 774+00.00**

SHEET 23 OF 24

CONT.	SECT.	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN, ETC.	84

DATE: 11/28/2023 5:34:11 PM  
 FILE: ...IBL CL-32 - SH6 FALLSOUTH-44.dgn

DW: \_\_\_\_\_  
 CK: \_\_\_\_\_  
 DW: \_\_\_\_\_  
 CK: \_\_\_\_\_



### LEGEND

- MILL AND OVERLAY
- BRIDGE
- TRAFFIC DIRECTION

**NOTES:**

1. CONTRACTOR MUST INVESTIGATE, RECORD, AND DOCUMENT ALL EXISTING PAVEMENT MARKINGS ALONG SH 6 AND OTHER ROADWAYS WITHIN THE PROJECT LIMITS. A COPY OF SUCH DOCUMENT MUST BE PROVIDED TO THE AREA ENGINEER BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION WORK. CONTRACTOR TO APPLY PROPOSED PAVEMENT MARKINGS MATCHING THE LAYOUT OF THE EXISTING MARKINGS IN SUCH DOCUMENT
2. PAVEMENT MARKINGS OR RAISED MARKERS MUST BE PLACED AS PER STANDARDS WHICH ARE AVAILABLE IN THE PLAN SET.



11/28/2023

REV. NO.	DATE	REVISION	BY



**SH 6**  
**CSJ: 0049-04-064**  
**PLAN LAYOUT**  
**STA: 774+00 TO END PROJECT**

SHEET 24 OF 24			
CONT.	SECT.	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST.		COUNTY	SHEET NO.
WAC		McLENNAN,ETC.	85

DATE: 11/28/2023 5:34:26 PM  
 FILE: ... \BL CL-32 - SH6 FALLSOUTH-46.dgn

DATE: 11/28/2023 6:09:11 PM  
 FILE: ...SH6\_SuperElevation Data Sheet 1

NB LANE									
CURVE #	RADIUS	DIRECTION	PC/PT	PC/PT STA.	*DESIGN SPEED	BEGIN STA.	BEGIN CS	END STA..	END CS
McLENNAN	CSJ: 049-02-095								
1	5,635.00'	RT	PC	700+40.85	60	693+23.00	-2.0%	701+00.00	3.0%
	5,635.00'	RT	PT	716+31.86	60	715+75.00	3.0%	717+50.00	-2.0%
2	5,999.20'	LT	PC	725+09.62	60	719+25.00	-2.0%	725+75.00	2.8%
	5,999.20'	LT	PT	731+06.16	60	730+50.00	2.8%		
3	5,730.38'	RT	PC	735+06.22	60			735+75.00	3.6%
	5,730.38'	RT	PT	740+51.89	60	738+50.00	3.6%	744+00.00	-2.0%
FALLS	CSJ: 049-02-18								
4	2,699.20'	LT	PC	791+37.82	60	789+25.00	-2.0%	792+00.00	6.0%
	2,699.20'	LT	PT	812+89.25	60	812+00.00	6.0%	818+00.00	-2.0%
5	2,100.80'	RT	PC	837+34.26	60	835+00.00	-2.0%	838+25.00	6.4%
	2,100.80'	RT	PT	852+20.35	60	851+75.00	6.4%	855+00.00	-2.0%
6	2,699.20'	LT	PC	945+51.45	60	943+25.00	-2.0%	948+50.00	5.5%
	2,699.20'	LT	PT	960+42.89	60	957+00.00	5.5%	962+00.00	-2.0%
7	3,405.80'	RT	PC	972+10.21	60	970+00.00	-2.0%	972+75.00	5.0%
	3,405.80'	RT	PT	982+46.63	60	982+00.00	5.0%	985+00.00	-2.0%
FALLS	CSJ: 049-04-064								
8	2,814.79'	LT	PC	244+45.46	60	243+04.66	-2.0%	245+15.86	6.8%
	2,814.79'	LT	PT	259+03.42	60	258+33.02	6.8%	260+44.22	-2.0%
9	7,689.44'	RT	PC	327+02.88	60	325+85.68	-2.0%	327+61.48	3.4%
	7,689.44'	RT	PT	343+01.12	60	342+42.52	3.4%	344+18.32	-2.0%
10	4,283.00'	RT	PC	475+65.33	60	474+48.13	-2.0%	476+23.93	4.6%
	4,283.00'	RT	PT	495+22.71	60	494+64.11	4.6%	496+39.91	-2.0%
11	4,583.66'	LT	PC	509+44.52	60	508+27.32	-2.0%	510+03.12	4.0%
	4,583.66'	LT	PT	523+79.19	60	523+20.59	4.0%	524+96.39	-2.0%
12	11,509.16'	RT	PC	536+08.38	60	534+91.18	-2.0%	536+66.98	2.2%
	11,509.16'	RT	PT	552+30.15	60	551+71.55	2.2%	553+47.35	-2.0%
13	11,509.16'	RT	PC	566+57.24	60	565+40.04	-2.0%	567+15.84	2.0%
	11,509.16'	RT	PT	584+44.67	60	583+86.07	2.0%	585+61.87	-2.0%
14	11,409.16'	LT	PC	614+76.06	60	613+58.86	-2.0%	615+34.66	2.0%
	11,409.16'	LT	PT	619+68.96	60	619+10.36	2.0%	620+86.16	-2.0%
15	22,868.31'	LT	PC	638+17.17	60	636+99.97	-2.0%	638+75.77	2.0%
	22,868.31'	LT	PT	643+59.10	60	643+00.50	2.0%	644+76.30	-2.0%
16	11,509.16'	RT	PC	660+79.99	60	659+62.79	-2.0%	661+38.59	2.0%
	11,509.16'	RT	PT	670+98.55	60	670+39.95	2.0%	672+15.75	-2.0%
17	22,868.31'	RT	PC	673+71.57	60	672+54.37	-2.0%	674+30.17	2.0%
	22,868.31'	RT	PT	678+82.04	60	678+23.44	2.0%	679+99.24	-2.0%
18	18,720.33'	RT	PC	741+13.51	60	739+96.31	-2.0%	741+72.11	2.0%
	18,720.33'	RT	PT	748+97.33	60	748+38.73	2.0%	750+14.53	-2.0%

\* 60 MPH USED AS THE MINIMUM DESIGN SPEED.

REV. NO	DATE	REVISION	BY



**SH 6**  
  
**SUPERELEVATION DATA**

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST	COUNTY		SHEET NO.
WAC	McLENNAN,ETC.		86

DATE: 11/28/2023 5:34:54 PM  
 FILE: ...SH6\_SuperElevation Data Sheet 2

SB LANE									
CURVE #	RADIUS	DIRECTION	PC/PT	PC/PT STA.	*DESIGN SPEED	BEGIN STA.	BEGIN CS	END STA..	END CS
<b>McLENNAN</b>	<b>CSJ: 049-02-095</b>								
1	11,460.00'	RT	PC	700+39.53	60	<b>698+00.00</b>	2.0%	<b>701+00.00</b>	3.0%
	11,460.00'	RT	PT	709+20.93	60	<b>708+75.00</b>	3.0%	<b>711+75.00</b>	2.0%
2	11,460.00'	RT	PC	718+48.59	60	<b>712+00.00</b>	2.0%	<b>719+00.00</b>	3.0%
	11,460.00'	RT	PT	739+36.47	60	<b>738+75.00</b>	3.0%	<b>742+00.00</b>	2.0%
<b>FALLS</b>	<b>CSJ: 049-02-18</b>								
3	2,700.00'	LT	PC	791+78.66	60	<b>786+75.00</b>	2.0%	<b>792+25.00</b>	6.3%
	2,700.00'	LT	PT	813+30.73	60	<b>812+75.00</b>	6.3%	<b>817+00.00</b>	2.0%
4	2,100.00'	RT	PC	837+83.48	60	<b>834+50.00</b>	2.0%	<b>838+50.00</b>	6.7%
	2,100.00'	RT	PT	852+69.00	60	<b>852+00.00</b>	6.7%	<b>855+75.00</b>	2.0%
5	2,700.00'	LT	PC	945+94.94	60	<b>942+50.00</b>	2.0%	<b>946+75.00</b>	6.2%
	2,700.00'	LT	PT	960+86.82	60	<b>960+25.00</b>	6.2%	<b>965+00.00</b>	2.0%
6	3,405.00'	RT	PC	972+67.46	60	<b>970+00.00</b>	2.0%	<b>973+25.00</b>	6.0%
	3,405.00'	RT	PT	983+03.65	60	<b>982+50.00</b>	6.0%	<b>986+00.00</b>	2.0%
<b>FALLS</b>	<b>CSJ: 049-04-064</b>								
7	2,914.79'	LT	PC	244+45.46	60	<b>243+04.66</b>	-2.0%	<b>245+15.86</b>	6.8%
	2,914.79'	LT	PT	259+03.42	60	<b>258+33.02</b>	6.8%	<b>260+44.22</b>	-2.0%
8	7,589.44'	RT	PC	327+52.90	60	<b>326+35.70</b>	-2.0%	<b>328+11.50</b>	3.5%
	7,589.44'	RT	PT	343+30.36	60	<b>342+71.76</b>	3.5%	<b>344+47.56</b>	-2.0%
9	4,283.00'	RT	PC	477+05.68	60	<b>475+88.48</b>	-2.0%	<b>477+64.28</b>	4.5%
	4,283.00'	RT	PT	495+34.66	60	<b>494+76.06</b>	4.5%	<b>496+51.86</b>	-2.0%
10	4,583.66'	LT	PC	510+40.75	60	<b>509+23.55</b>	-2.0%	<b>510+99.35</b>	4.0%
	4,583.66'	LT	PT	524+75.41	60	<b>524+16.81</b>	4.0%	<b>525+92.61</b>	-2.0%
11	11,409.16'	RT	PC	536+29.45	60	<b>535+12.25</b>	-2.0%	<b>536+88.05</b>	2.0%
	11,409.16'	RT	PT	552+37.13	60	<b>551+78.53</b>	2.0%	<b>553+54.33</b>	-2.0%
12	11,409.16'	RT	PC	566+64.22	60	<b>565+47.02</b>	-2.0%	<b>567+22.82</b>	2.0%
	11,409.16'	RT	PT	584+36.12	60	<b>583+77.52</b>	2.0%	<b>585+53.32</b>	-2.0%
13	11,509.16'	LT	PC	614+67.51	60	<b>613+50.31</b>	-2.0%	<b>615+26.11</b>	2.0%
	11,509.16'	LT	PT	619+64.72	60	<b>619+06.12</b>	2.0%	<b>620+81.92</b>	-2.0%
14	22,968.31'	LT	PC	638+12.94	70	<b>636+76.21</b>	-2.0%	<b>638+81.31</b>	2.0%
	22,968.31'	LT	PT	643+57.24	70	<b>642+88.87</b>	2.0%	<b>644+93.97</b>	-2.0%
15	11,409.16'	RT	PC	660+78.13	60	<b>659+60.93</b>	-2.0%	<b>661+36.73</b>	2.0%
	11,409.16'	RT	PT	670+87.83	60	<b>670+29.23</b>	2.0%	<b>672+05.03</b>	-2.0%
16	22,868.31'	RT	PC	673+60.86	60	<b>672+43.66</b>	-2.0%	<b>674+19.46</b>	2.0%
	22,868.31'	RT	PT	678+73.56	60	<b>678+14.96</b>	2.0%	<b>679+90.76</b>	-2.0%
17	18,620.33'	RT	PC	741+05.03	60	<b>739+87.83</b>	-2.0%	<b>741+63.63</b>	2.0%
	18,620.33'	RT	PT	748+84.66	60	<b>748+26.06</b>	2.0%	<b>750+01.86</b>	-2.0%

\* 60 MPH USED AS THE MINIMUM DESIGN SPEED.

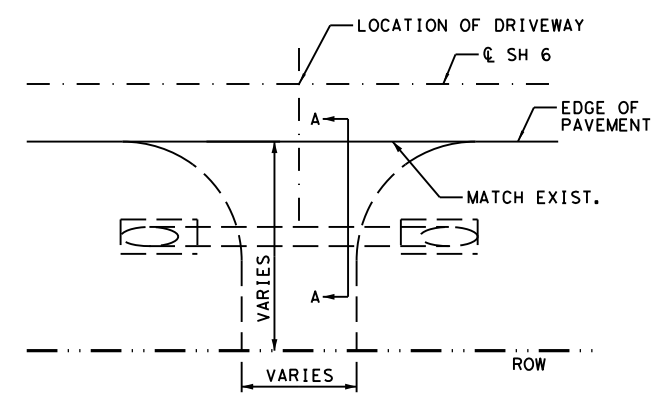
REV. NO	DATE	REVISION	BY



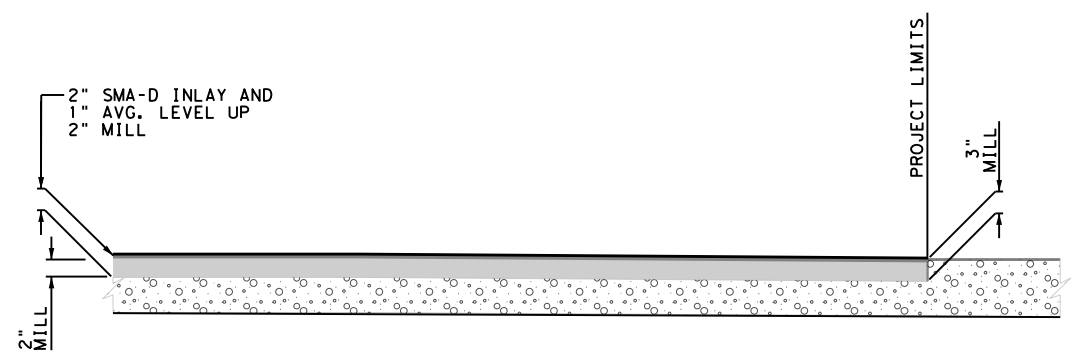
SH 6  
  
SUPERELEVATION  
DATA

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST	COUNTY		SHEET NO.
WAC	McLENNAN,ETC.		87

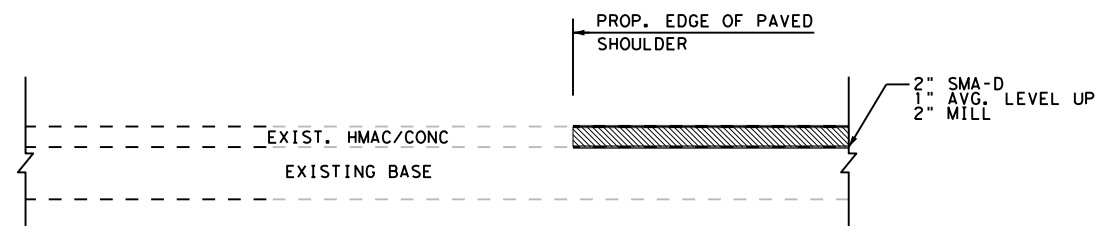
CK: DW: CK: DW: CK: DW: CK: DW:



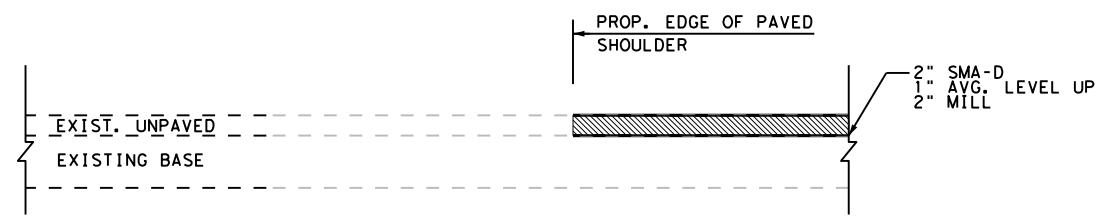
**TYPICAL DRIVEWAY  
PLAN VIEW**  
N. T. S.



**TYPICAL BUTTJOINT AT  
ROADWAY INTERSECTION DETAIL**  
N. T. S.



**SECTION A-A**  
PAVEMENT TRANSITION DETAIL @ PAVED DRIVEWAYS  
N. T. S.



**SECTION A-A**  
PAVEMENT TRANSITION DETAIL @ UNPAVED DRIVEWAYS  
N. T. S.



*Thomas T. Le*

11/28/2023

REV. NO	DATE	REVISION	BY



SH 6  
**MISCELLANEOUS  
ROADWAY  
DETAILS**

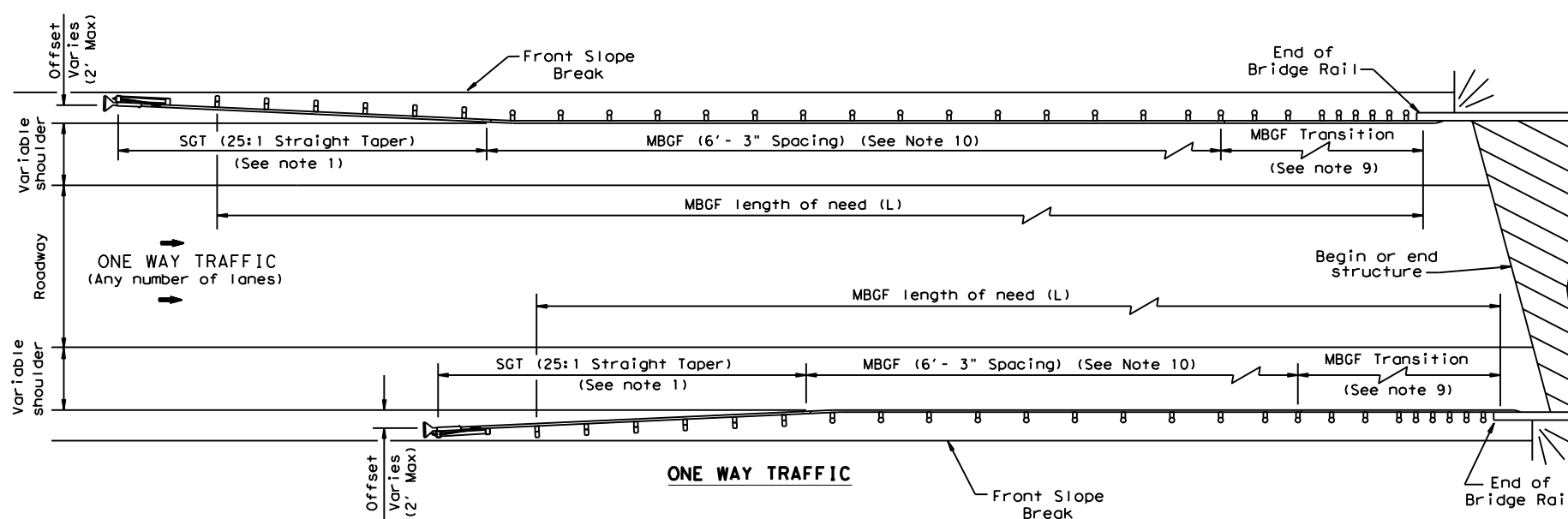
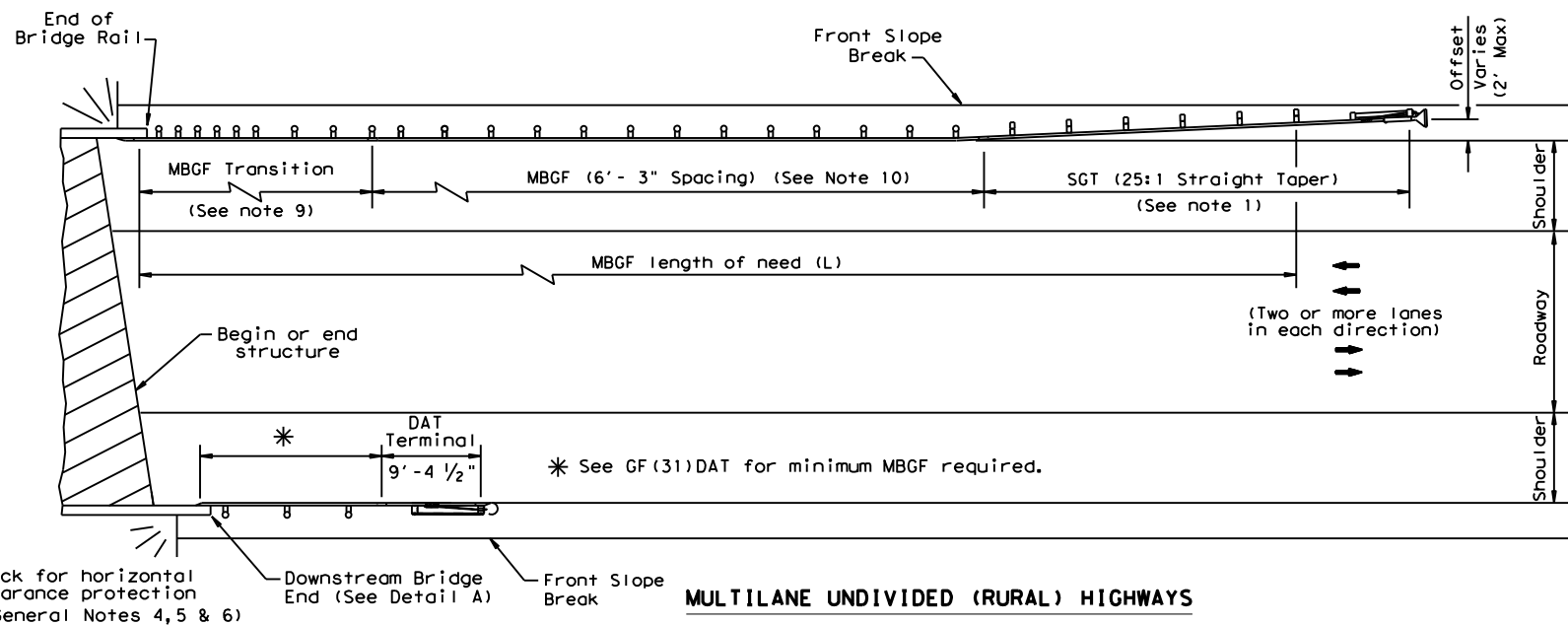
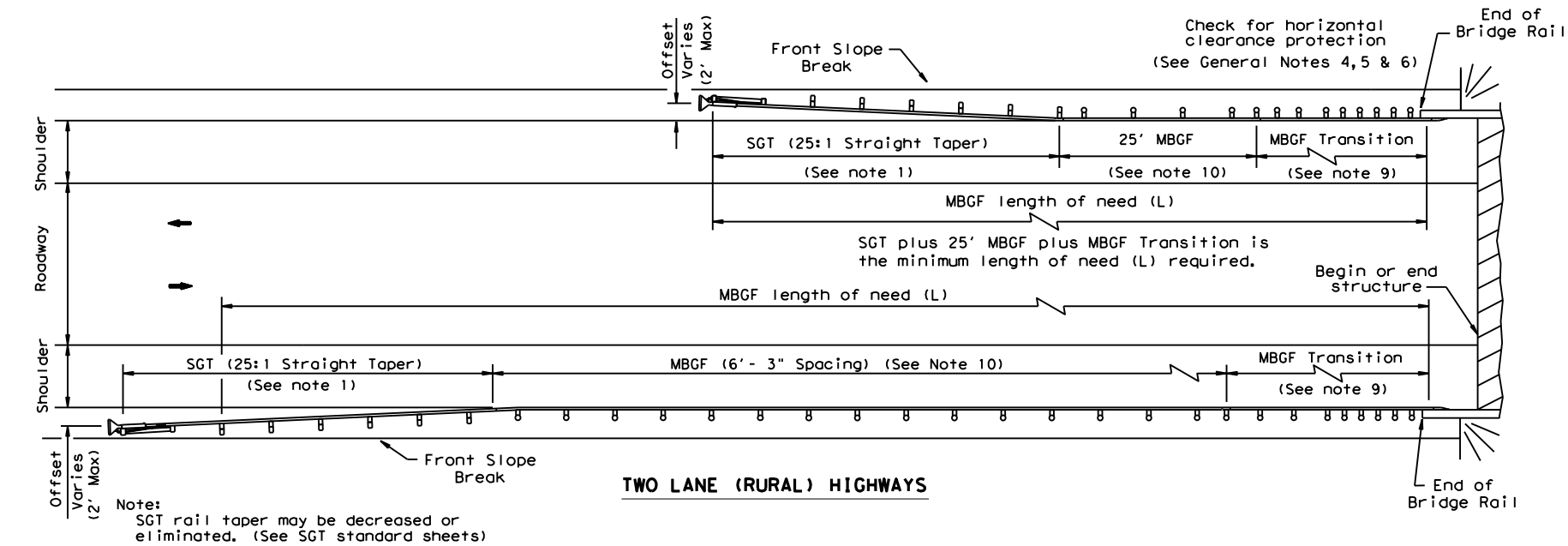
SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	88	

DATE: 11/28/2023 5:35:08 PM  
FILE: ...13\_Roadway\SH6 MiscRdwy\DETAIL

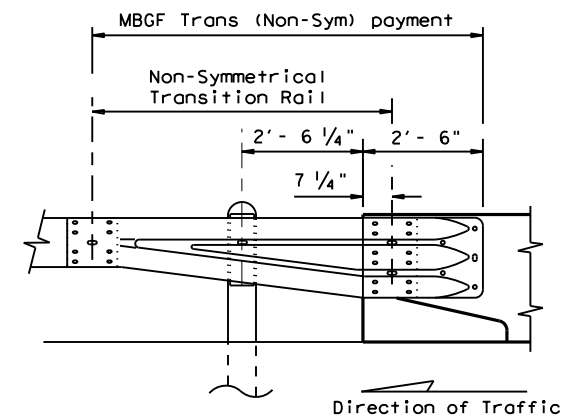
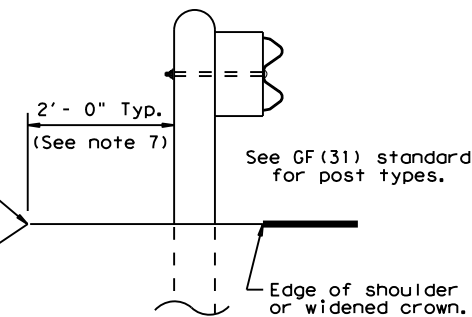
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:  
FILE:



**GENERAL NOTES**

1. For more detail: See GF(31), SGT( )31, GF(31)TR, and GF(31)TL2 standard sheets.
2. Quantities of metal beam guard fence (MBSG) at individual bridge ends are as shown in the plans.
3. Use average daily traffic (ADT) for the current year to determine MBSG length of need in accordance with the Roadway Design Manual unless otherwise specified. Where significant traffic volume growth is anticipated on low volume (0-750 ADT) highways, use length determinations for the higher volume category.
4. MBSG may not be required to shield departure end of bridge unless other obstacles within the horizontal clearance limits or opposing traffic indicate a MBSG consideration.
5. Downstream anchor terminals (DAT) are only for downstream end anchorage use, outside the horizontal clearance area of opposing traffic.
6. Direct connection of MBSG to concrete rails are only for downstream rail connections outside the horizontal clearance area of opposing traffic. (This requires a minimum of three standard line posts plus the DAT terminal, See Detail A)
7. The crown shall be widened to accommodate MBSG. Typically the "front slope" break should be 2'-0" from the back of the MBSG post. This applies to new construction on new alignment or where existing roadway cross section is to be widened to increase roadway width. This does not apply to rehabilitation work where existing roadway crown width is to be retained (See Typical Cross Section at MBSG).
8. For restrictive bridge widths: The MBSG should be properly transitioned from the existing bridge rail to the adjoining MBSG (See MBSG Transition Standards). Metal beam guard fence at these bridge locations shall be flared at the rate of 25:1 or flatter, and be of the length necessary to locate the terminal end at the 2 ft. "maximum" offset from the shoulder edge in the approach direction.
9. Transition length and post spacing will vary depending on the transition type. Transition type will be shown elsewhere in the plans.
10. A minimum 25' length of MBSG will be required.



Texas Department of Transportation  
Design Division Standard

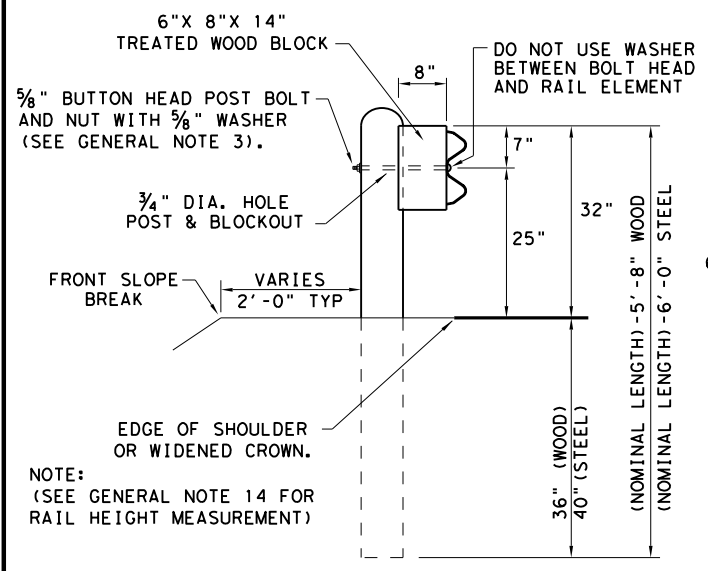
**BRIDGE END DETAILS**  
(METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)  
**BED-14**

FILE: bed14.dgn	DN: TxDOT	CK: AM	DW: BD/VP	CK: CGL
© TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049 01	095, ETC.	SH 6	
REVISED APRIL 2014 SEE (MEMO 0414)	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	89	

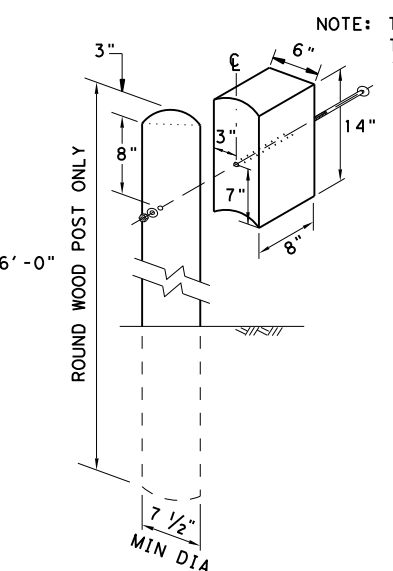


DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

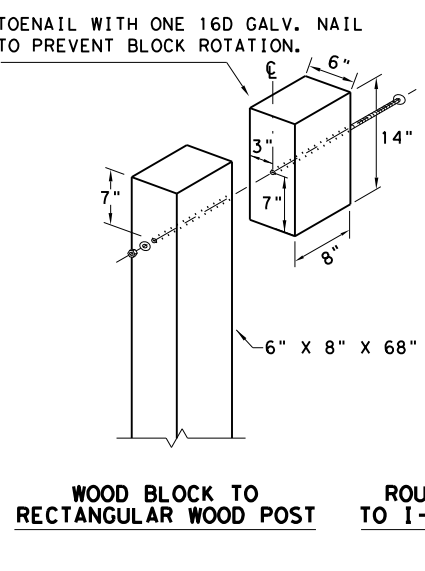
DATE: FILE:



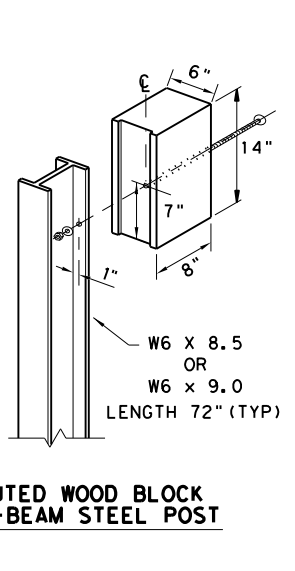
**TYPICAL POST PLACEMENT**



**WOOD BLOCK TO ROUND WOOD POST**



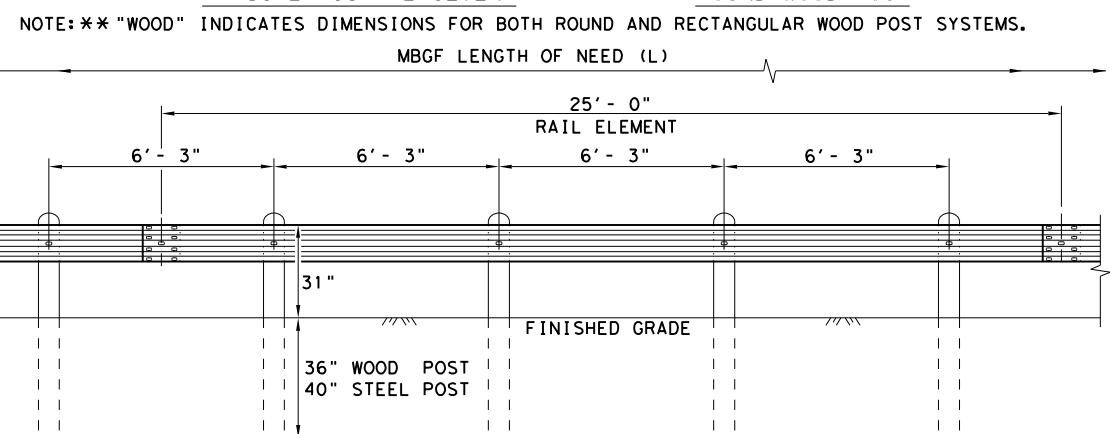
**WOOD BLOCK TO RECTANGULAR WOOD POST**



**ROUTED WOOD BLOCK TO I-BEAM STEEL POST**

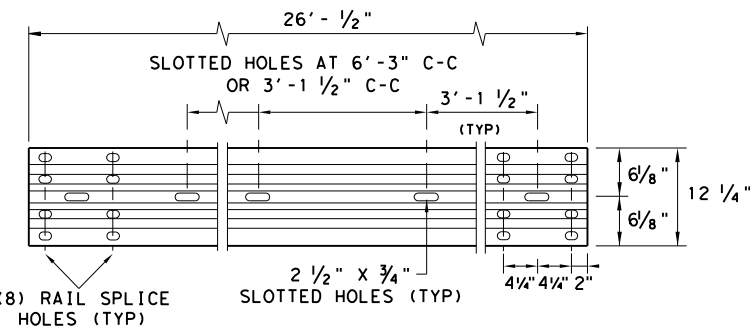
**GENERAL NOTES**

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'-0", OR 12'-6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 3/8" WASHER (FWC160) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.



**ELEVATION MID-SPAN RAIL SPLICE**

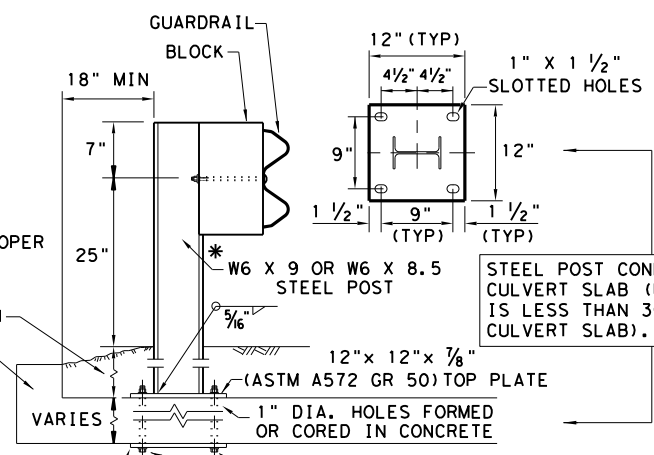
SHOWING A 25'-0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



**ELEVATION 25'-0" (NOM.) W-BEAM SECTION**

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES. SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.

\* POST(S) MAY REQUIRE FIELD MODIFICATION TO ENSURE PROPER GUARDRAIL HEIGHT.

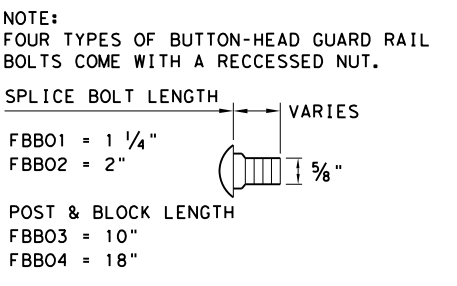


**LOW FILL CULVERT POST**

NOTE: TWO INSTALLATION OPTIONS.

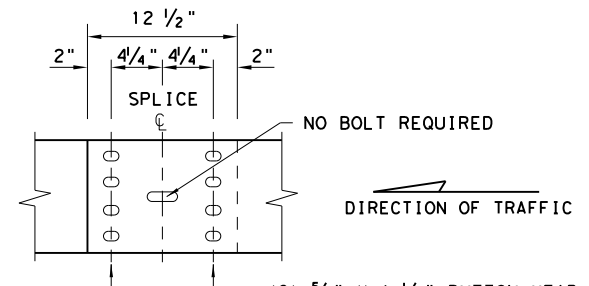
1. **BOLT-THROUGH OPTION:** REQUIRES A 6" MIN. SLAB THICKNESS. 7/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS. NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.
2. **EPOXY ANCHOR OPTION:** THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE 7/8" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS 1/4" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.



**BUTTON HEAD BOLT**

NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



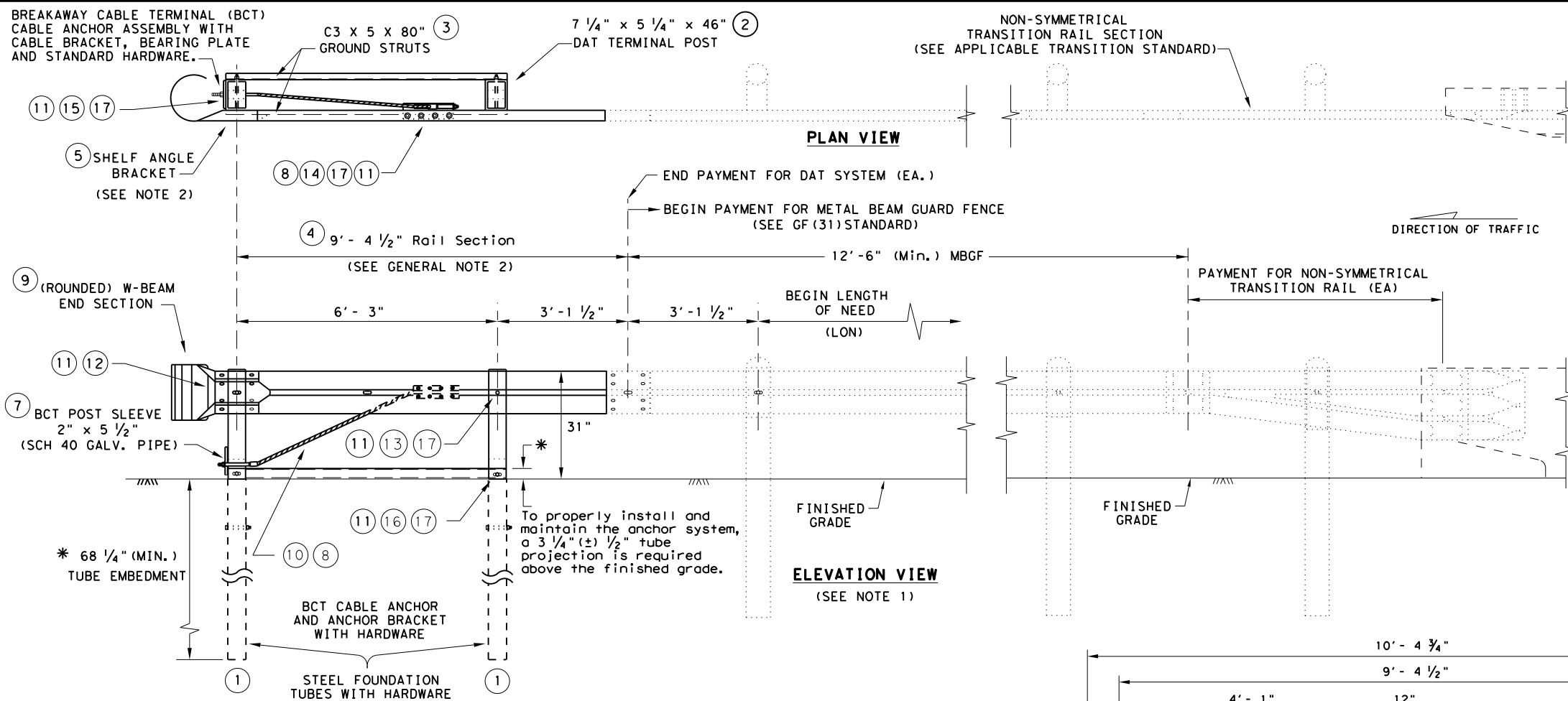
**MID-SPAN RAIL SPLICE DETAIL**

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.

				Design Division Standard
<b>METAL BEAM GUARD FENCE</b> <b>TL-3 MASH COMPLIANT</b> <b>GF(31)-19</b>				
FILE: gf3119.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	90	

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE: FILE:



NON-SYMMETRICAL TRANSITION RAIL SECTION (SEE APPLICABLE TRANSITION STANDARD)

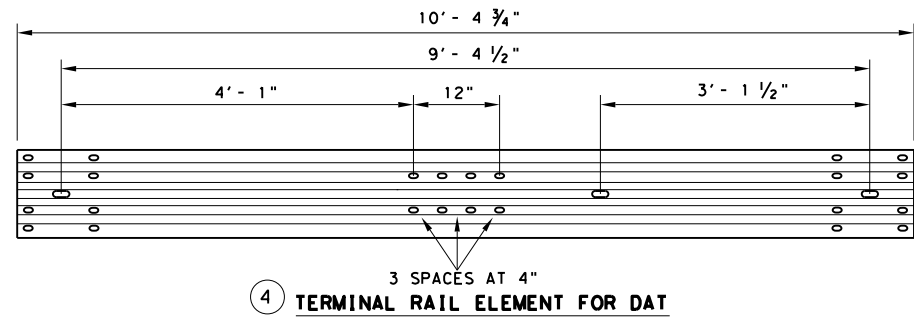
**GENERAL NOTES**

1. THE DETAIL SHOWN IS THE MINIMUM LENGTH OF NEED (LON) FOR A DOWNSTREAM ANCHOR TERMINAL (DAT) CONNECTED TO A CONCRETE RAIL.
2. THE RAIL SECTION AT THE END POST IS SUPPORTED BY THE SHELF ANGLE BRACKET. THE RAIL ELEMENT IS NOT ATTACHED TO THE END POST.
3. THE FOUNDATION TUBES SHALL NOT PROJECT MORE THAN 3 3/4" ABOVE THE FINISHED GRADE.
4. ALL HARDWARE FOR DAT SHALL BE ASTM A307 UNLESS OTHERWISE SHOWN.
5. REFER TO GF(31) SHEET FOR TERMINAL CONNECTION DETAILS.

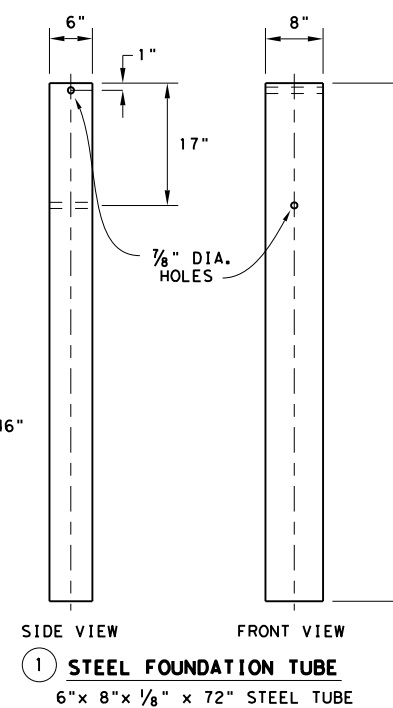
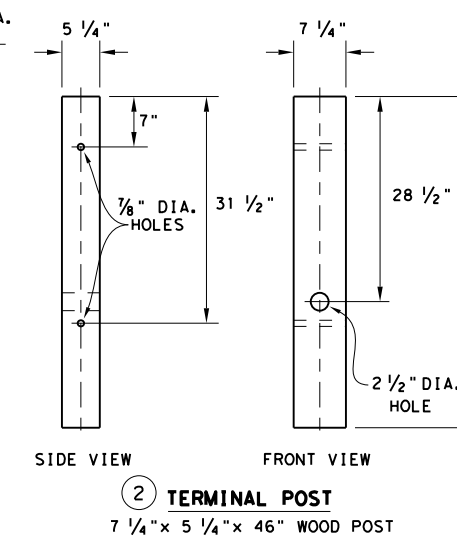
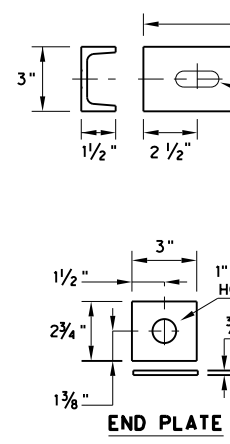
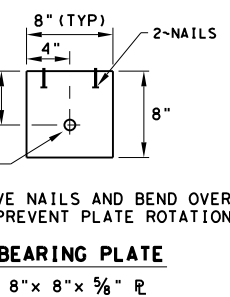
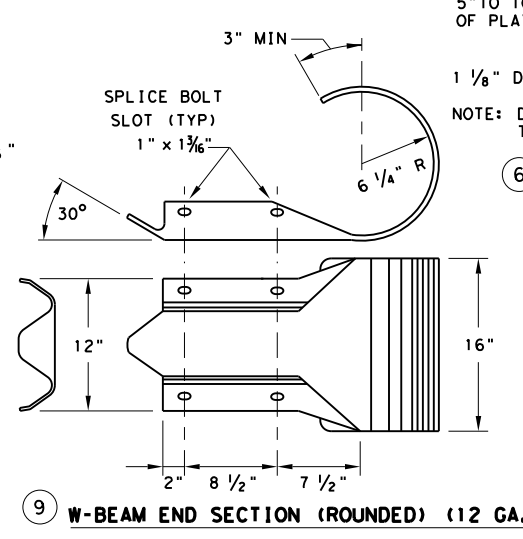
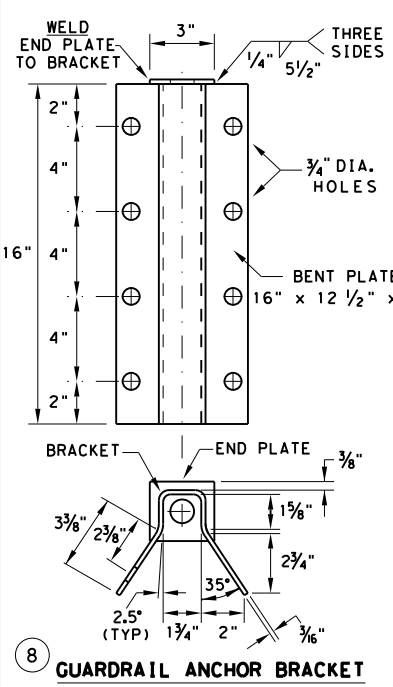
**MOW STRIP INSTALLATION**  
 IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

**DOWNSTREAM ANCHOR TERMINAL (DAT)**

NOTE: ONLY FOR DOWNSTREAM USE, WHEN LOCATED OUTSIDE THE HORIZONTAL CLEARANCE AREA OF OPPOSING TRAFFIC.



#	(DAT) PARTS LIST	QTY
1	STEEL FOUNDATION TUBE	2
2	DAT TERMINAL POST	2
3	CHANNEL STRUT	2
4	TERMINAL RAIL ELEMENT	1
5	SHELF ANGLE BRACKET	1
6	BCT BEARING PLATE	1
7	BCT POST SLEEVE	1
8	GUARDRAIL ANCHOR BRACKET	1
9	(ROUNDED) W-BEAM END SECTION	1
10	BCT CABLE ANCHOR	1
11	RECESSED NUT, GUARDRAIL	20
12	1 1/4" BUTTON HEAD BOLT	4
13	10" BUTTON HEAD BOLT	2
14	5/8" X 2" HEX HEAD BOLT	8
15	5/8" X 8" HEX HEAD BOLT	4
16	5/8" X 10" HEX HEAD BOLT	2
17	5/8" FLAT WASHER	18



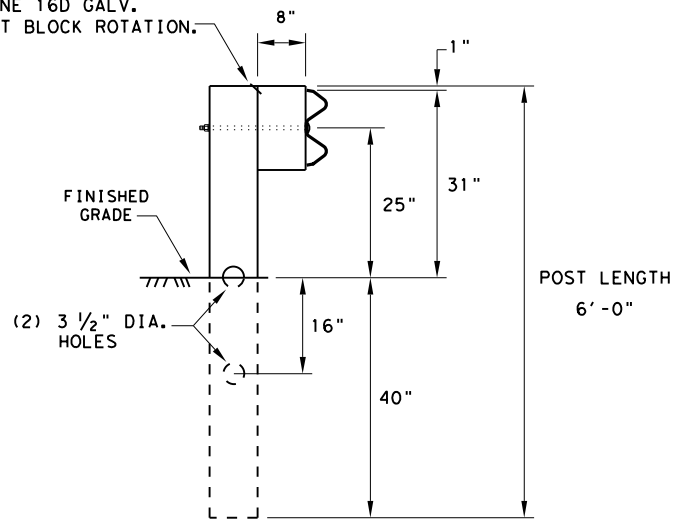
Texas Department of Transportation  
**METAL BEAM GUARD FENCE (DOWNSTREAM ANCHOR TERMINAL) TL-3 MASH COMPLIANT GF(31)DAT-19**

FILE: gf31dat19.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	91	

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

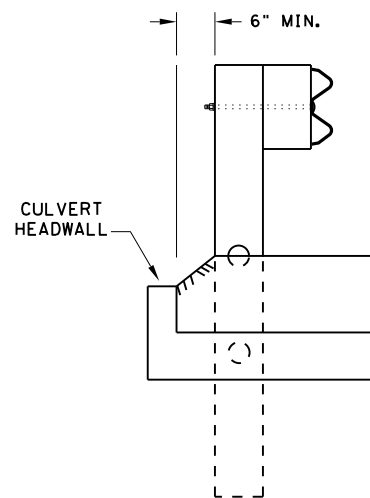
DATE: 11/28/2023  
 FILE: ...RDWY STD\gf31ls19.dgn

NOTE: TOENAIL WITH ONE 16D GALV. NAIL TO PREVENT BLOCK ROTATION.



**RECTANGULAR CRT POST  
(6" X 8" X 6' LONG)**

(6) CRT REQUIRED  
SEE ELEVATION DETAIL FOR LOCATIONS



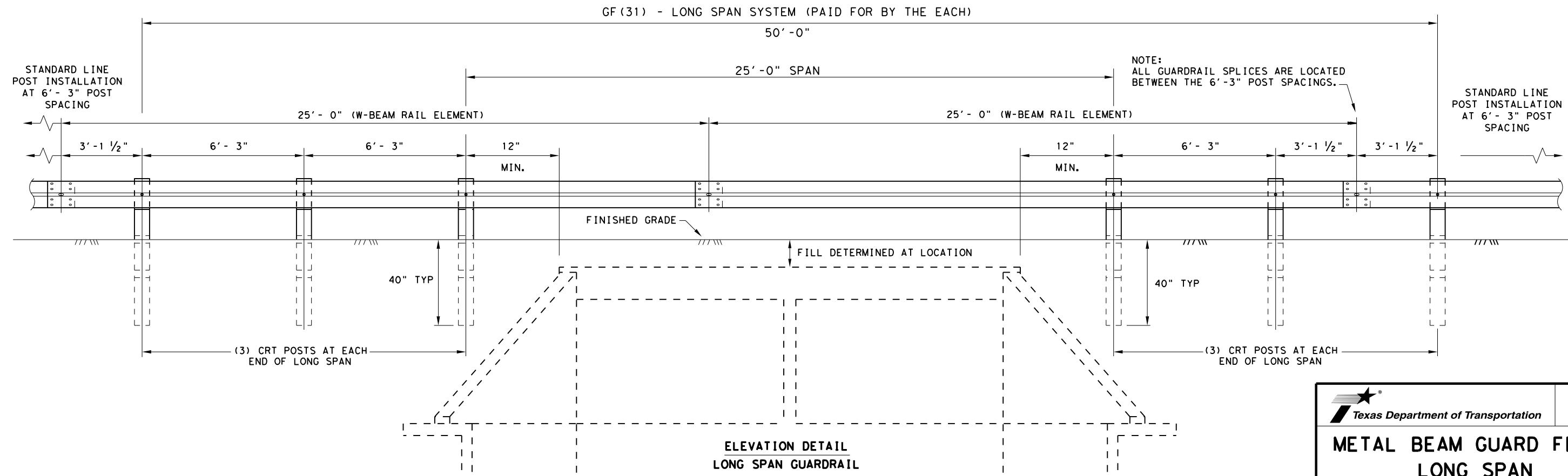
**LATERAL OFFSET BETWEEN THE  
GUARDRAIL AND THE CULVERT HEADWALL**

**GENERAL NOTES**

1. THE TYPE OF LINE POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF THE TRANSITIONS SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENT SHALL MEET ALL REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 12'-6" OR 25'-0" NOMINAL LENGTHS.
3. RAIL POST HOLES ARE OFFSET 3'-1 1/2" FROM STANDARD GUARDRAIL TO ACCOMMODATE THE MIDSPAN SPLICING.
4. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC160) AND NO MORE THAN 1" BEYOND IT.
5. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
7. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
8. REFER TO GF(31) STANDARD SHEET FOR ADDITIONAL DETAILS.
9. FLAME CUTTING OF HOLES IN GUARDRAIL SHALL NOT BE PERMITTED. IF YOU ENCOUNTER MIS-ALIGNED BOLT HOLES IN GUARDRAIL CONTACT THE DESIGN DIVISION FOR ADDITIONAL INFORMATION & OPTIONS.

NOTE: SEE GF(31) STANDARD FOR STANDARD LINE POSTS.

DIRECTION OF TRAFFIC

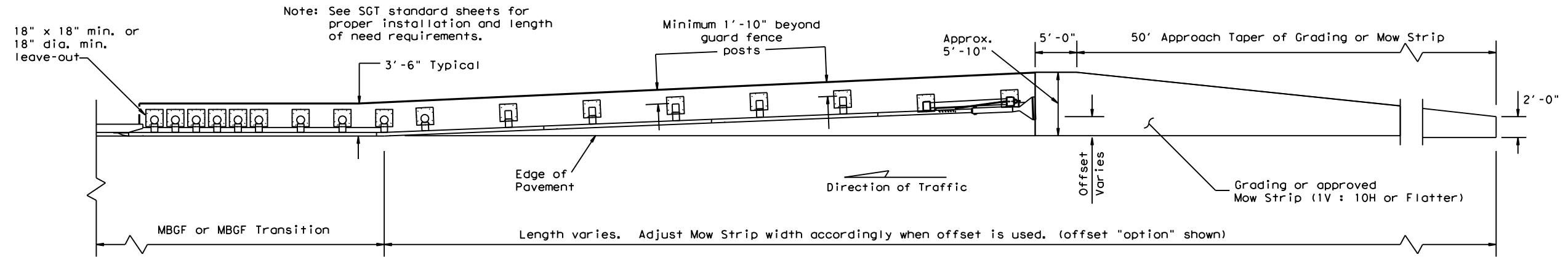


**ELEVATION DETAIL  
LONG SPAN GUARDRAIL**

				Design Division Standard
<b>METAL BEAM GUARD FENCE LONG SPAN TL-3 MASH COMPLIANT</b>				
<b>GF(31)LS-19</b>				
FILE: gf31ls19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	92	

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

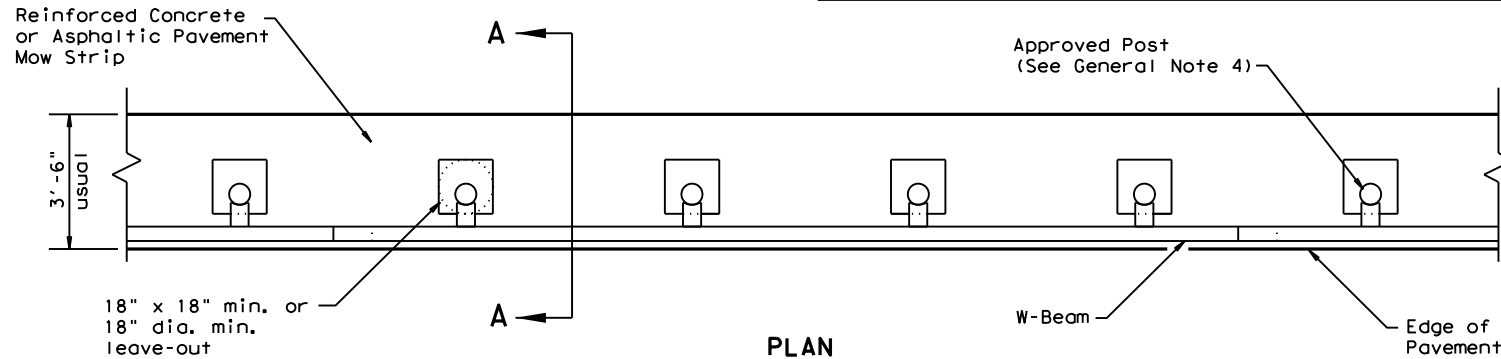
DATE: FILE:



Note: See SGT standard sheets for proper installation and length of need requirements.

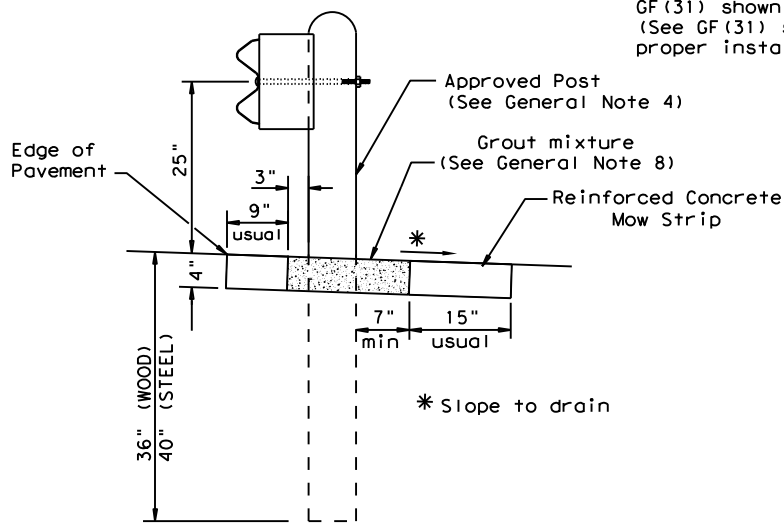
**GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS**

Note: Site Condition(s)  
 Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.  
 Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.



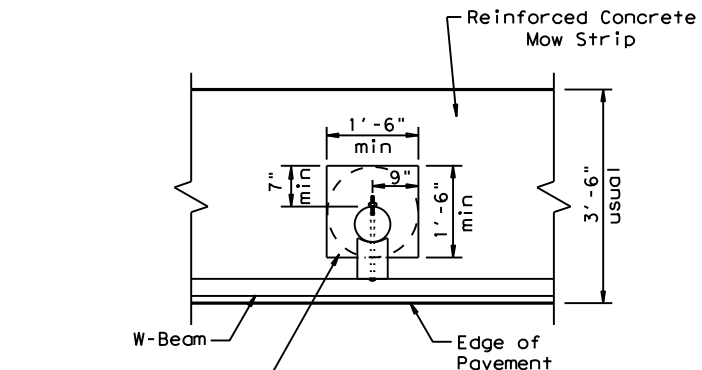
**PLAN**

GF(31) shown with Mow Strip  
 (See GF(31) standard sheet for proper installation)



**SECTION A-A**

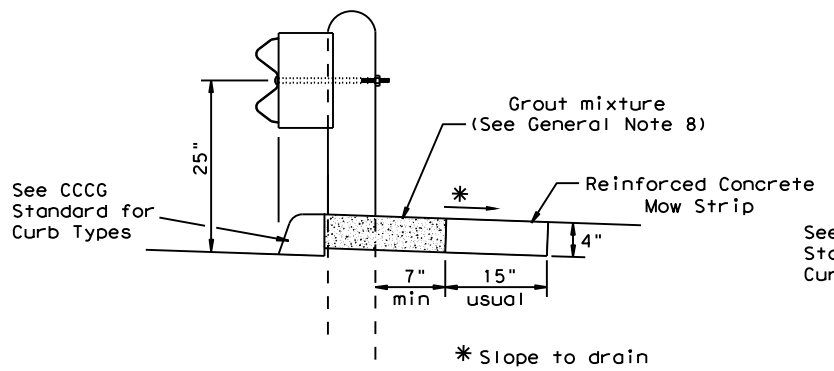
Typical



**MOW STRIP DETAIL**

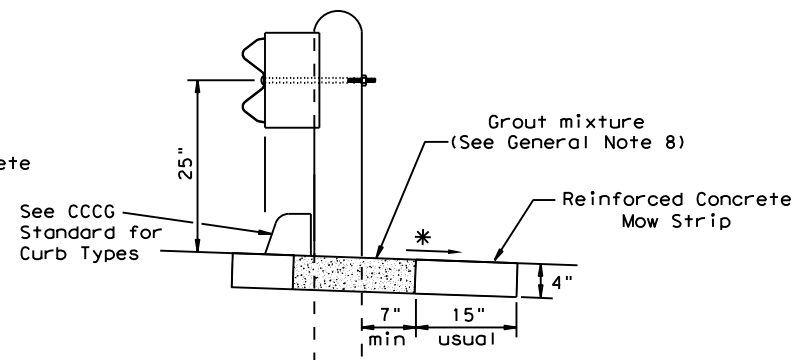
Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.

- GENERAL NOTES**
1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
  2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
  3. The leave-out behind the post shall be a minimum of 7".
  4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 1/2" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
  5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
  6. Thickness of the mow strip will be 4".
  7. The limits of payment for reinforced concrete will include leave-outs for the posts.
  8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.



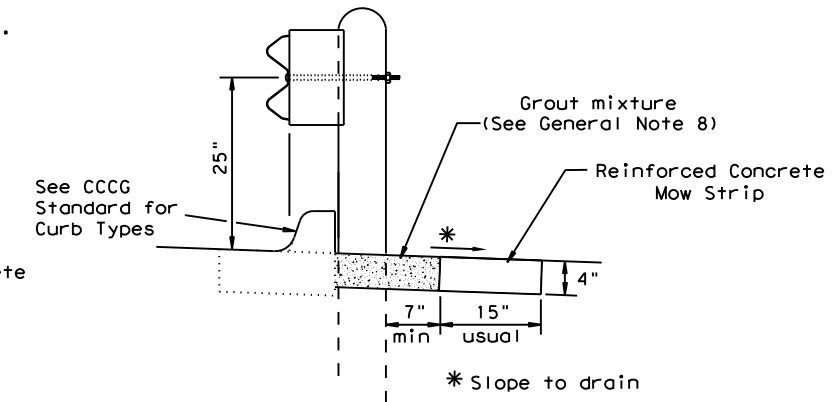
**CURB OPTION (1)**

This option will increase the post embedment throughout the system.



**CURB OPTION (2)**

Curb shown on top of mow strip

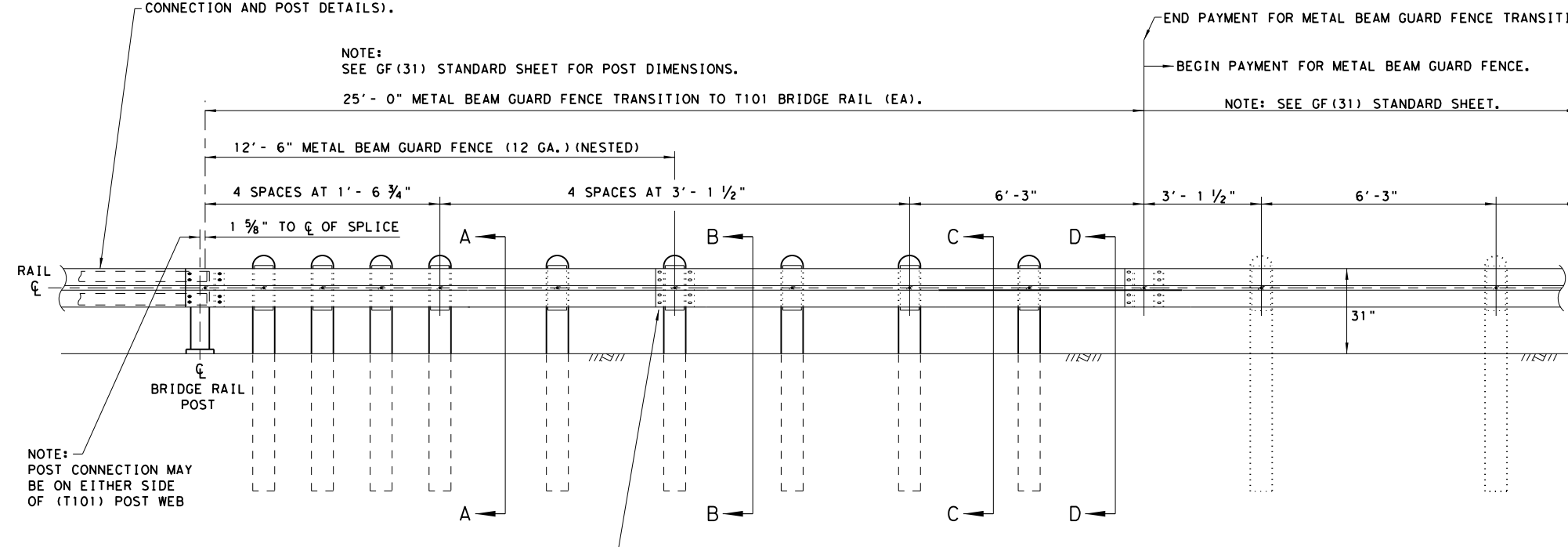
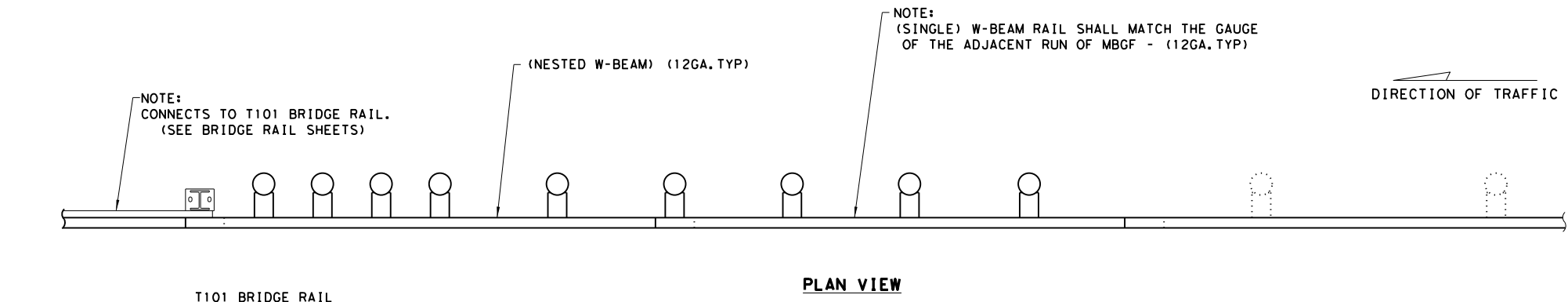


**CURB OPTION (3)**

				Design Division Standard
<b>METAL BEAM GUARD FENCE          (MOW STRIP)          TL-3 MASH COMPLIANT          GF(31)MS-19</b>				
FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	93	

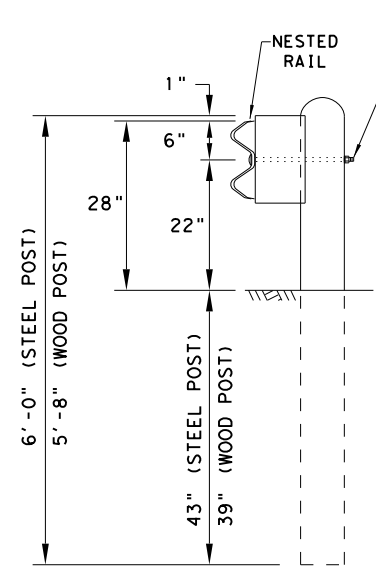
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE: 11/28/2023  
 FILE: ...RDWY STD\gf31+10119.dgn

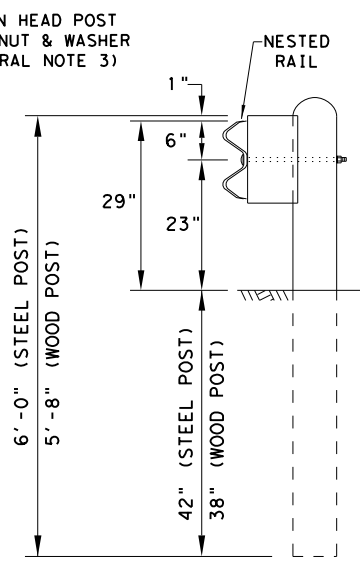


(8) 5/8" DIA. X 2" GUARDRAIL SPLICE BOLTS (FBB02) WITH 5/8" GUARDRAIL NUTS (ASTM A563) (SEE GENERAL NOTE 3)

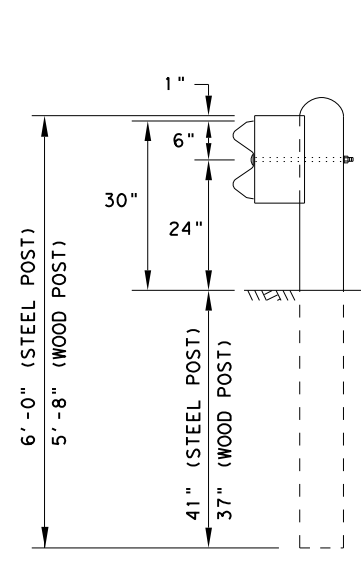
\* "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



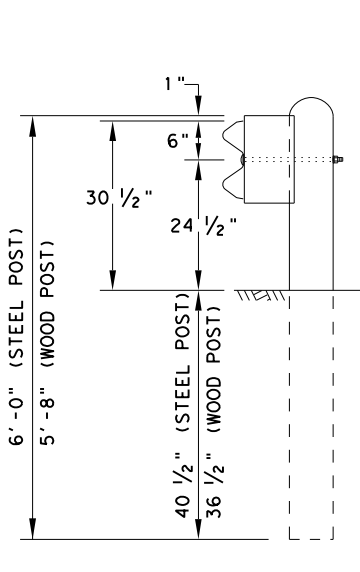
SECTION A-A



SECTION B-B



SECTION C-C



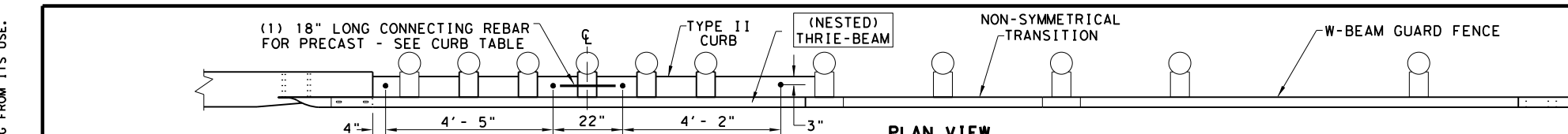
SECTION D-D

**GENERAL NOTES**

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENT SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'-0", OR 12'-6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST" BOLTS (ASTM A307 GR. A) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND 5/8" ROUND WASHER (ASTM F436) AND NOT MORE THAN 1" BEYOND IT. BUTTON HEAD "SPLICE" BOLTS (ASTM A307) ARE 5/8" X 1-1/4" WITH 5/8" NUTS (ASTM A563).
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM REQUIRING CONSTRUCTION OF THE TRANSITION.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
9. REFER TO STANDARD GF(31) AND APPLICABLE BRIDGE RAILING STANDARD FOR ADDITIONAL DETAILS.

				Design Division Standard
<b>METAL BEAM GUARD FENCE          TRANSITION          (T101)          GF(31) T101-19</b>				
FILE: gf31+10119	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
	DIST	COUNTY		SHEET NO.
	WAC	McLENNAN, ETC.		94

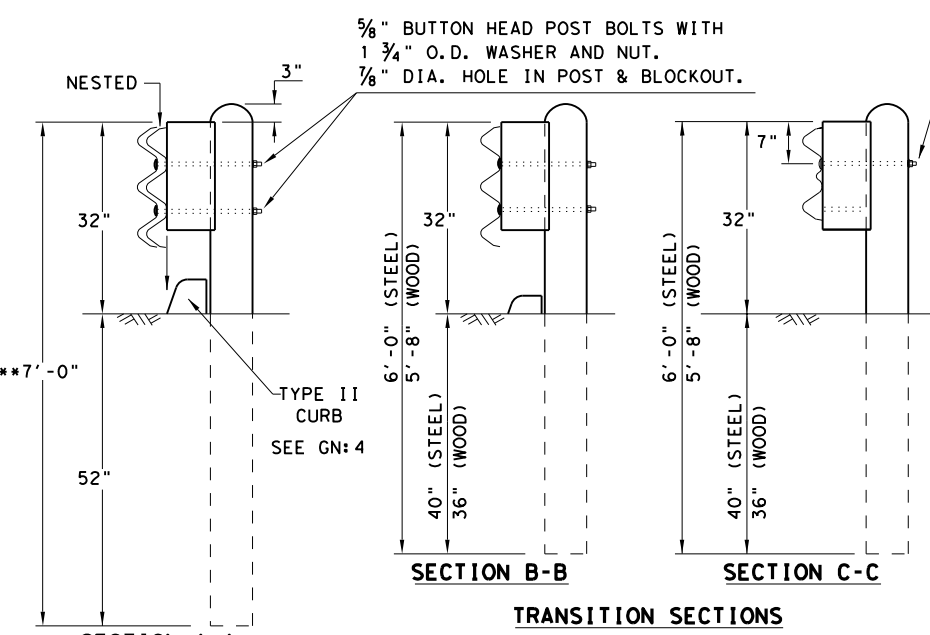
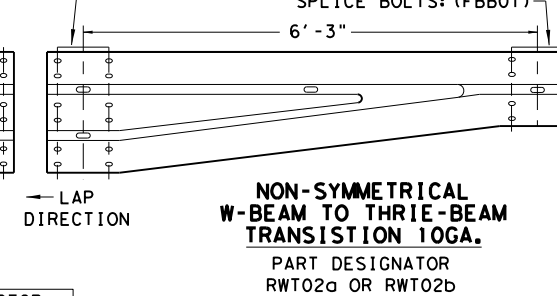
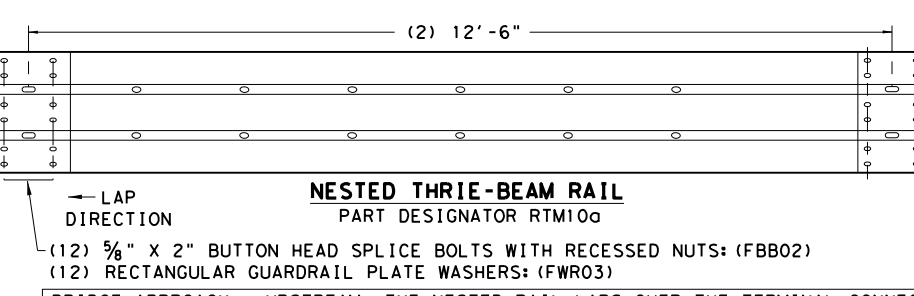
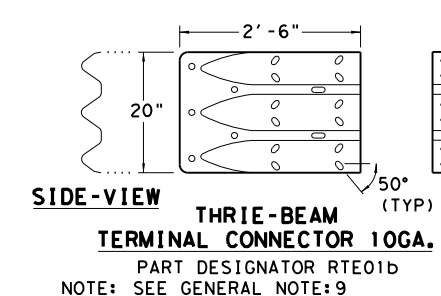
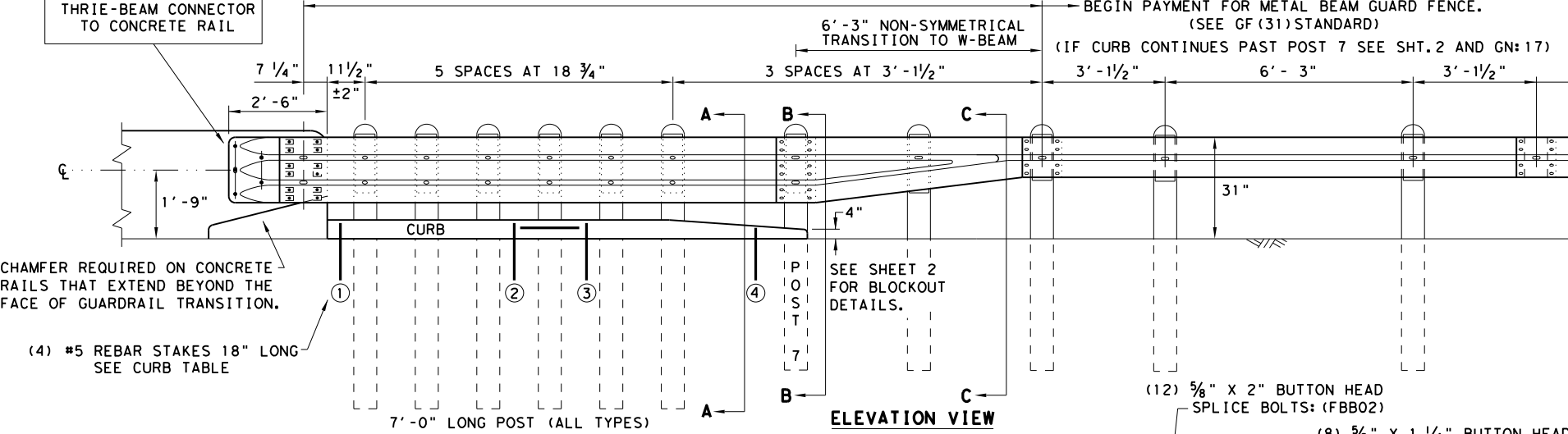
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TxDOT FOR ANY PURPOSE WHATSOEVER. TxDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



- (5) 1" DIA. HOLES.
- (5) 7/8" DIA. HEAVY HEX HEAD BOLTS (FACING TRAFFIC SIDE) (ASTM F3125 GR A325 OR A449).
- (10) 1 3/4" O.D. WASHER UNDER EACH HEX BOLT HEAD AND NUT.
- (5) 7/8" DIA. HEAVY HEX NUTS (ASTM A194 OR A563).

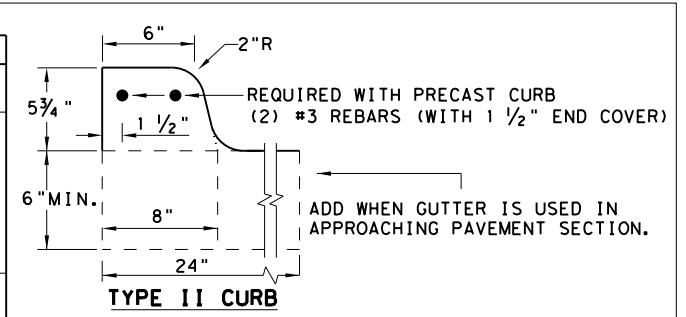
NOTE:  
HEAVY HEX BOLT LENGTH WILL VARY DEPENDING ON WIDTH CONCRETE RAIL, LEAVE 1" OF BOLT LENGTH PAST THE 7/8" HEX NUT. TRIM AS REQUIRED.

NOTE:  
CURB IS A REQUIRED COMPONENT FOR THE TRANSITION TO FUNCTION PROPERLY. SEE GENERAL NOTES: 2-4 AND 16-17.



THRIE-BEAM TERMINAL - CURB TABLE	
PRECAST CURB FULL LENGTH EQUALS 12'- 2"	
THE PRECAST CURB MAY BE FORMED INTO TWO SECTIONS.	
CURB (1) LENGTH	5'- 8"
CURB (2) LENGTH	6'- 6"
TAPER CURB (2) TO A HEIGHT OF 4" AT POST 7	
CONNECTING PRECAST CURB SECTIONS (1) & (2):	
FORM OR CORE	1" DIA. HOLE 9" LONG INTO EACH CURB END.
USE	(1) #5 GR.60 REBAR 18" LONG TO CONNECT BOTH CURBS.
SECURING PRECAST OR CAST-IN-PLACE TO FINISHED GRADE *:	
FORM OR CORE	(4) 1" DIA. HOLES, SEE PLAN AND ELEVATION VIEWS FOR HOLE LOCATIONS. DRIVE (4) #5 GR.60 REBAR STAKES 18" LONG INTO THE GROUND AND 1/2" BELOW TOP OF CURB.
FILL HOLES WITH APPROVED GROUT MIXTURE.	

\* NOTES: NOT NEEDED FOR CAST-IN-PLACE. SEE TYPE II CURB DETAIL FOR REBAR AND COVER REQUIREMENTS. PERCUSSION DRILLING IS NOT PERMITTED WITH: TYPE II CURB, BRIDGE RAIL OR CONCRETE TRAFFIC RAIL.



NOTE: OPTIONS FOR TYPE II CURB:  
1. PRECAST  
2. CAST-IN-PLACE

**GENERAL NOTES**

1. CONTACT THE DESIGN DIVISION FOR DRAINAGE CUT OUT OPTIONS NEEDED WITHIN THE CURB SECTION OF THE THRIE-BEAM TRANSITION. (512) 416-2678
2. CONCRETE CURB MAY BE CAST-IN-PLACE OR PRECAST AS SHOWN ON THIS SHEET. WHEN USED IN CONJUNCTION WITH THE THRIE-BEAM TRANSITIONS, CURB SHALL BE TYPE II (5- 3/4" HEIGHT); SEE CURRENT CCGG STANDARD SHEET FOR FURTHER DETAILS. IF OTHER CURB HEIGHTS ARE SHOWN IN THE PLANS IN CONJUNCTION WITH THE TRANSITION, THE CURB HEIGHT MAY BE FROM 4" TO 8" WITH A RELATIVELY VERTICAL FACE. CONCRETE CURB SHALL BE CONTINUOUS TO THE SEVENTH POST UNLESS OTHERWISE SHOWN IN THE PLANS. SEE GENERAL NOTE:17 FOR CIRCUMSTANCES WHERE CURB CONTINUES PAST POST 7.
3. CONCRETE CURB TYPE II SUBSIDIARY TO "METAL BEAM GUARD FENCE TRANSITION". IF NO ADDITIONAL CURB IS INDICATED BEYOND THE TRANSITION, THEN ANY CURB HEIGHT GREATER THAN 4" WILL BE TAPERED DOWN BEGINNING AT THE LAST 7 FT. POST TO A MAXIMUM HEIGHT OF 4" AT POST 7. IF SHOWN ELSEWHERE IN THE PLANS, ADDITIONAL CURB UNDERNEATH GUARDRAIL WILL BE PAID FOR BY THE LINEAR FOOT.
4. UNLESS OTHERWISE SHOWN IN THE PLANS, TRANSITIONS SHALL BE PLACED WITH THE BLOCKOUT FACE IN FRONT OF OR DIRECTLY ABOVE THE CURB FACE. SEE SECTION A-A.
5. FOR ROUND WOOD POST SYSTEMS, ALL ROUND WOOD POSTS SHALL BE 7 1/2" DIA. MINIMUM THROUGHOUT THE THRIE-BEAM TRANSITION.
6. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. REFER TO GF (31) STANDARD SHEET.
7. THE POST LENGTH SHALL BE MARKED ON ALL 7'- 0" LONG POSTS BY THE MANUFACTURER. THE MARK SHALL BE LOCATED WITHIN THE TOP 1 FT. REGION OF THE POST, AT LEAST 5/8" IN HEIGHT, AND VISIBLE AFTER INSTALLATION. WOODEN POSTS SHALL BE MARKED WITH A BRAND, AND STEEL POSTS WITH A STENCIL BEFORE GALVANIZING.
8. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
9. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE THRIE-BEAM TERMINAL CONNECTOR AND THE THRIE-BEAM TRANSITION TO W-BEAM SHALL BE OF THE SAME MATERIAL, BUT SHALL NOT BE LESS THAN 10 GAUGE. CONTRACTOR SHALL VERIFY THAT THE LOCATIONS OF BOLT HOLES MATCH THOSE IN THE THRIE-BEAM TERMINAL CONNECTOR PRIOR TO ORDERING MATERIALS.
10. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC16G) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
11. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
12. CROWN SHALL BE WIDENED TO ACCOMMODATE TRANSITIONS.
13. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
14. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. TxDOT'S MATERIALS AND TESTS DIVISION MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL CAN FURNISH COMPOSITE MATERIAL BLOCKS.
15. REFER TO GF (31) STANDARD SHEET & BRIDGE RAILING DETAILS FOR ADDITIONAL DETAILS.
16. THE INSTALLATION OF THE TYPE II CURB IS CRITICAL FOR THE PERFORMANCE OF THE THRIE-BEAM TRANSITION SYSTEM. THE CURB PREVENTS (VEHICLE WHEEL SNAGGING) AT THE CONCRETE RAIL AND IS REQUIRED TO MEET MASH CRASH TEST CRITERIA.
17. IF CURB EXTENDS BEYOND POST 7, 25' OF NESTED W-BEAM GUARDRAIL SHALL BE INSTALLED BEYOND THE PAY LIMITS OF THRIE-BEAM TRANSITION SECTION, (SEE SHT.2). PAYMENT FOR THIS 25' SECTION WILL BE BY LINEAR FOOT, PAY ITEM "0540 6XXX MTL W-BEAM GD FEN (NESTED) (TIM POST)" OR "540 6XXX MTL W-BEAM GD FEN (NESTED) (STEEL POST)" AS APPLICABLE FOR POST TYPE. SEE SHT.2 FOR ADDITIONAL INFORMATION.

**HIGH-SPEED TRANSITION**  
**SHEET 1 OF 2**

Design Division Standard

## METAL BEAM GUARD FENCE THRIE-BEAM TRANSITION TL-3 MASH COMPLIANT

### GF (31) TR TL3-20

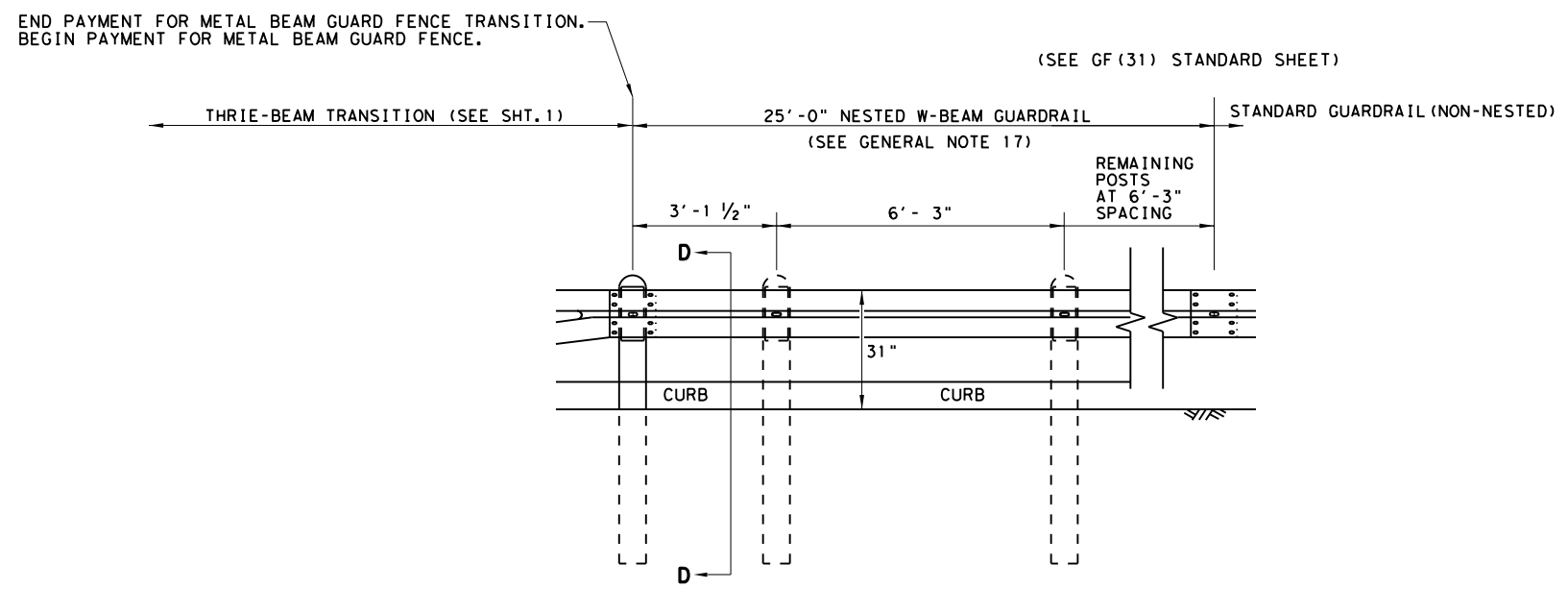
FILE: gf31tr+1320.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
© TxDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	95	

DATE: FILE:

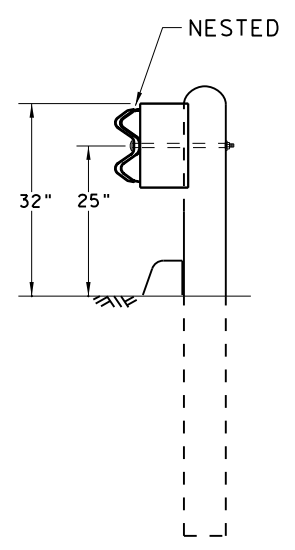
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:  
 FILE:

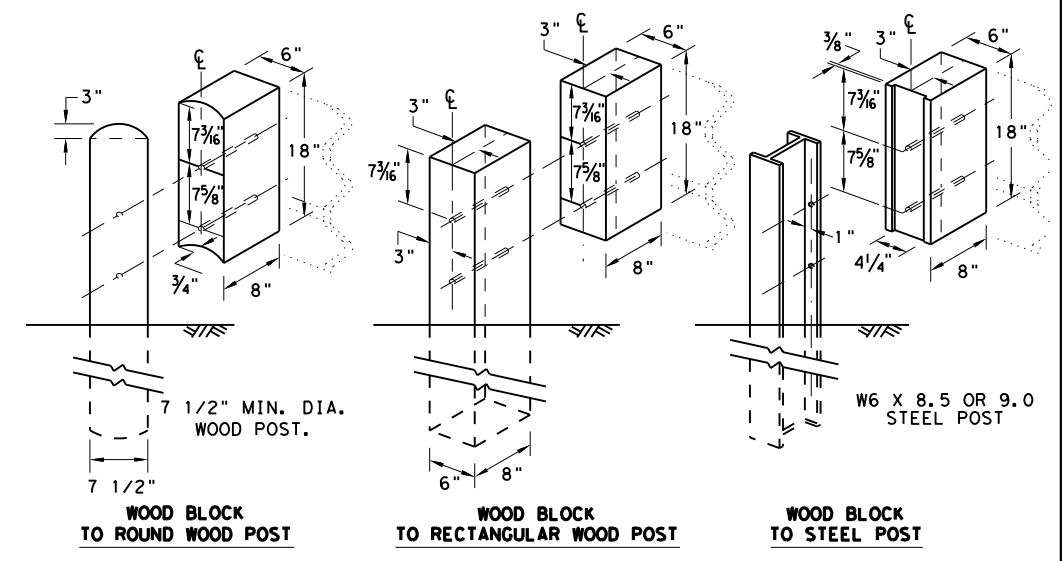
REQUIRED ALTERNATIVE FOR CONTINUOUS CURB EXTENDING PAST POST 7 (SEE SHT. 1 GENERAL NOTE 17)



**ELEVATION VIEW**



**SECTION D-D**



**THRIE BEAM TRANSITION BLOCKOUT DETAILS**

**HIGH-SPEED TRANSITION**

**SHEET 2 OF 2**

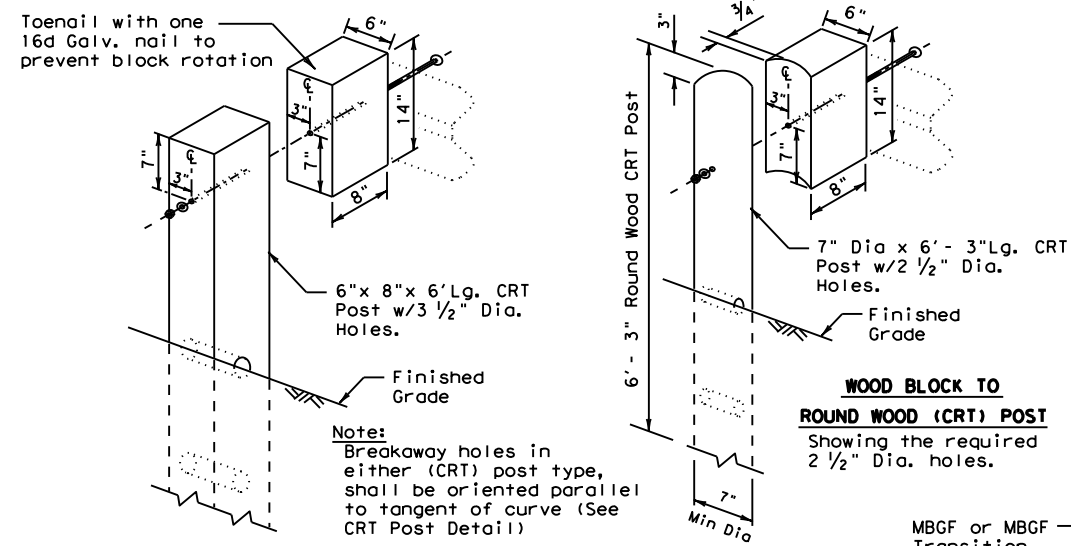


METAL BEAM GUARD FENCE  
 THRIE-BEAM TRANSITION  
 TL-3 MASH COMPLIANT  
 GF (31) TR TL3-20

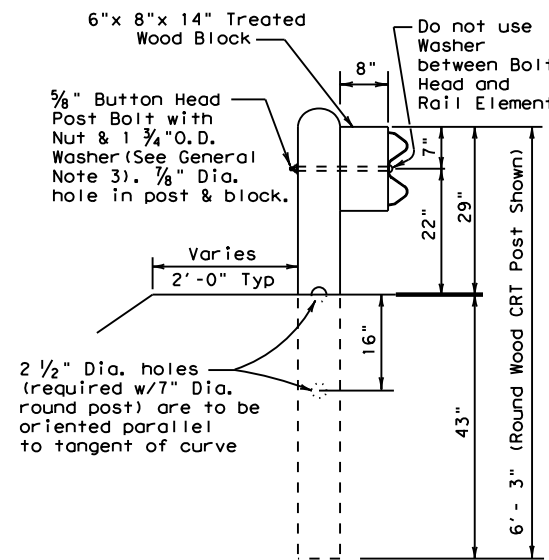
FILE: gf31tr+1320.dgn	DN: TXDOT	CK: KM	DW: KM	CK: CGL/AG
©TXDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DIST	WAC	COUNTY	McLENNAN, ETC.	SHEET NO. <b>96</b>

DISCLAIMER: THE USE OF THIS STANDARD IS COVERED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TxDOT FOR ANY PURPOSE WHATSOEVER. TxDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE: 11/28/2023  
 FILE: ...RDWY STD.mbgfsr19.dgn



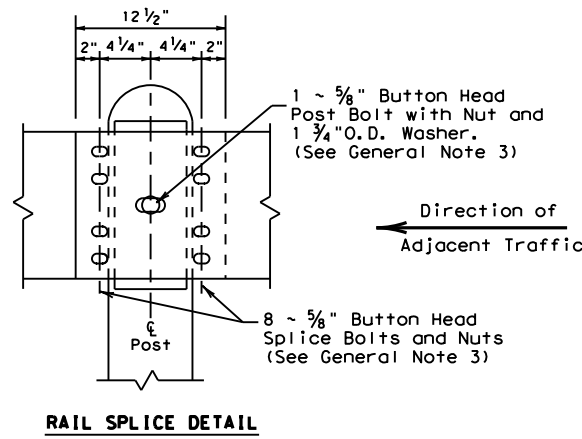
**WOOD BLOCK TO RECTANGULAR WOOD (CRT) POST**  
 Showing the required 3 1/2" Dia. holes.



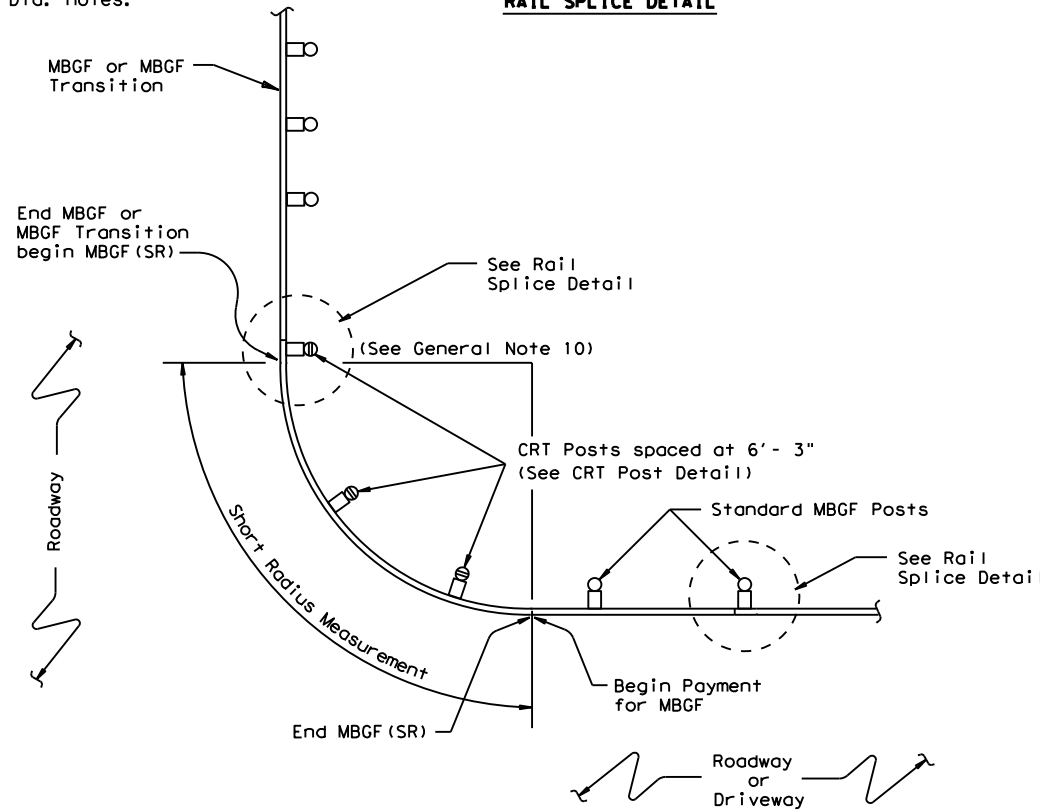
**(CRT) POST DETAIL CONTROLLED RELEASE TERMINAL POST**

Two or more wood CRT post(s) are required at any radius installation located at intersecting roadways or driveways.

**WOOD BLOCK TO ROUND WOOD (CRT) POST**  
 Showing the required 2 1/2" Dia. holes.



**RAIL SPLICE DETAIL**

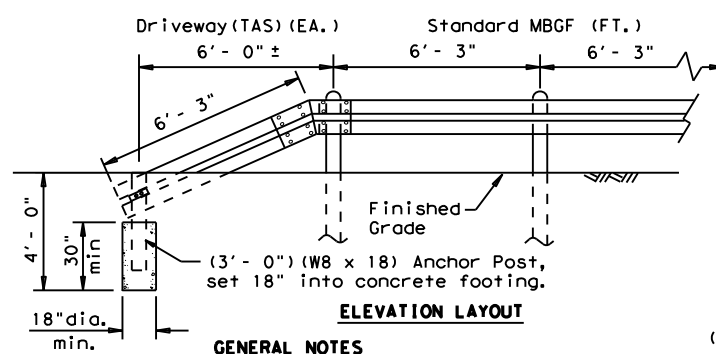


**PLAN VIEW SHOWING TYPICAL RADIUS**

The required radius is shown elsewhere on the plans.

**GENERAL NOTES**

- The type of (CRT) post (round wood post, or rectangular wood post) will be shown elsewhere in the plans. The exact position of MBGF shall be shown elsewhere in the plans or as directed by the Engineer.
- Steel posts are not permitted at CRT post positions.
- Rail element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified on the plans. The Contractor may furnish rail elements of 12 1/2 or 25 foot nominal lengths.
- Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 3/4" O.D.) washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are 5/8" x 1 1/4" (or 2" long at triple rail splices) with a 3/8" double recessed nut (ASTM A563).
- Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
- Crown shall be widened to accommodate the Metal Beam Guard Fence.
- The lateral approach to the guard fence, shall have a slope rate of not more than 1V:10H.
- Unless otherwise shown in the plans, guard fence placed in the vicinity of curbs shall be positioned so that the face of curb is located directly below or behind the face of the block. Rail placed over curbs shall be installed so that the post bolt is located approximately 21 inches above the gutter pan or roadway surface.
- If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, 24" into the rock, or drill two 12" dia. front to back overlapping holes, 24" into the rock. If solid rock is encountered below 18", drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever is less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
- Guardrail posts shall not be set in concrete, of any depth.
- Special rail fabrication will be required at installations having a curvature of less than 150 ft. radius. The required radius shall be shown on the plans.
- The terminal anchor section (TAS) post shall be set in Class A concrete (unless otherwise shown in the plans) in accordance with Item 421, "Hydraulic Cement Concrete." Concrete shall be subsidiary to the bid item requiring construction of the terminal anchor section (TAS). Terminal anchor post to be galvanized in accordance with Item 445, "Galvanizing."
- Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL can furnish composite material posts and/or blocks.



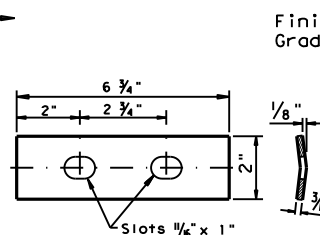
**ELEVATION LAYOUT**

**GENERAL NOTES**

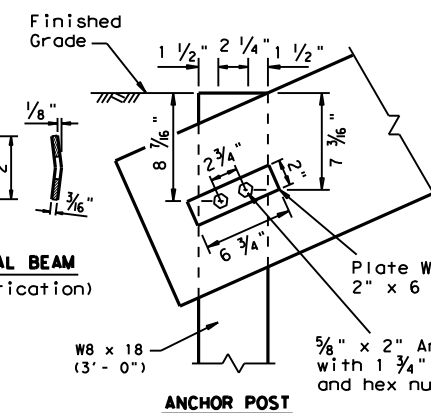
- The "Driveway" Terminal Anchor Section is ONLY to be used within driveway locations, where the ROW is limited and a standard 25 ft. (TAS) Terminal Anchor Section, is too long.
- Terminal anchor post shall be set in Class A concrete.
- All steel shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."

**"DRIVEWAY" TERMINAL ANCHOR SECTION**

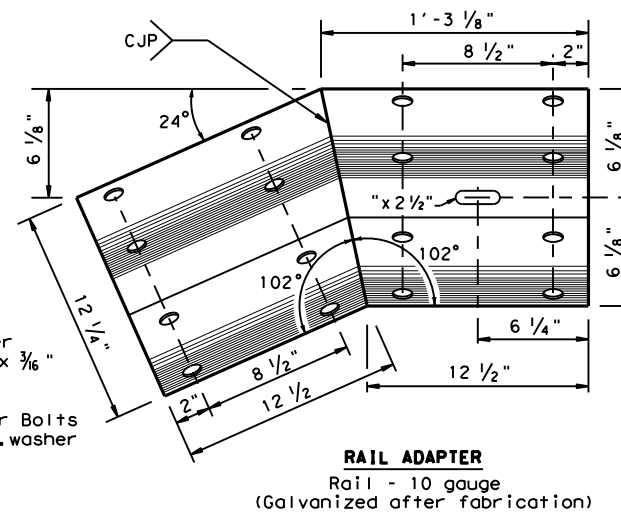
Only for use within driveway locations, where a standard (TAS) Terminal Anchor Section can not be installed.



**PLATE WASHER FOR METAL BEAM**  
 (Galvanized after fabrication)



**ANCHOR POST**



**RAIL ADAPTER**  
 Rail - 10 gauge  
 (Galvanized after fabrication)

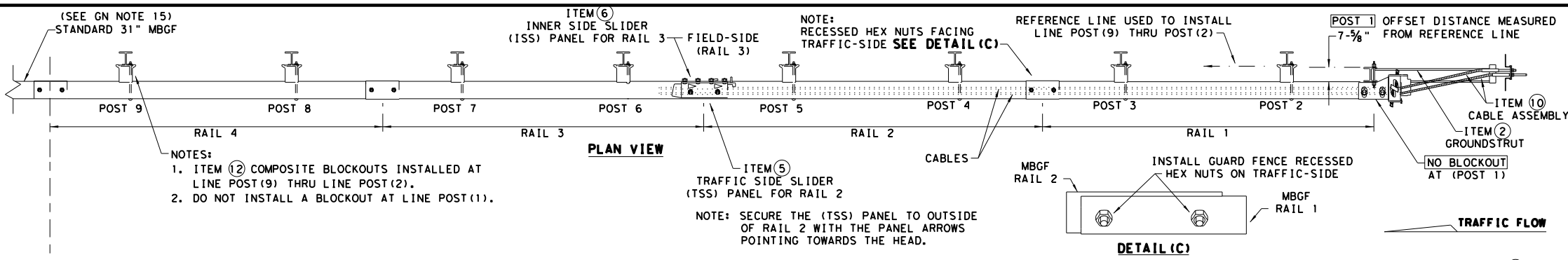
**ONLY FOR USE IN MAINTENANCE REPAIRS OR HIGHLY CONSTRAINED SITE CONDITIONS.**

		Design Division Standard	
<b>METAL BEAM GUARD FENCE (SHORT RADIUS) MBGF (SR) - 19</b>			
FILE: mbgfsr19.dgn	DN: TxDOT	CK: KM	DW: BD
© TxDOT NOVEMBER 2019	CONT: 0049	SECT: 01	JOB: 095, ETC.
REVISIONS			SH: 6
	DIST: WAC	COUNTY: McLENNAN, ETC.	SHEET NO.: 97



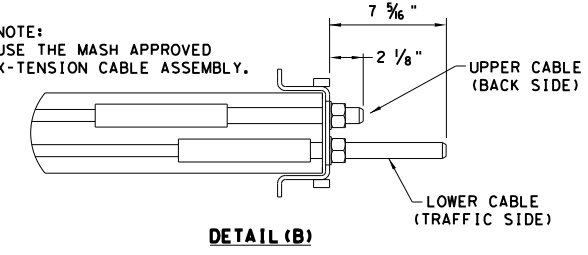
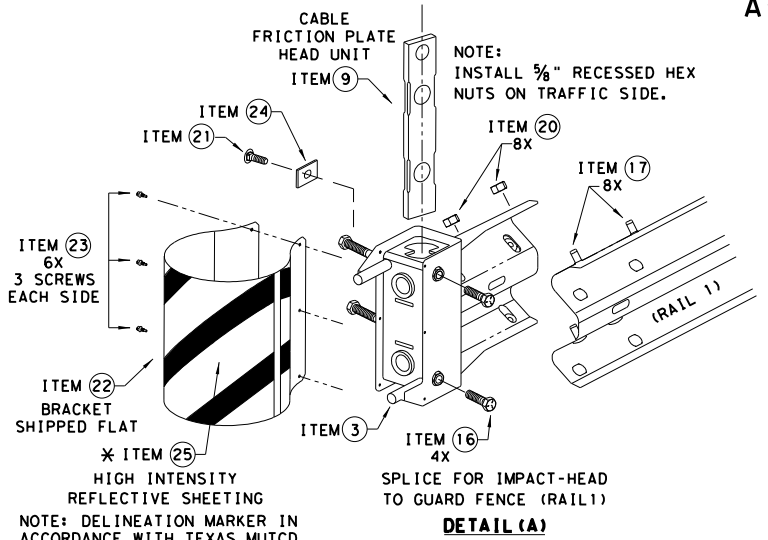
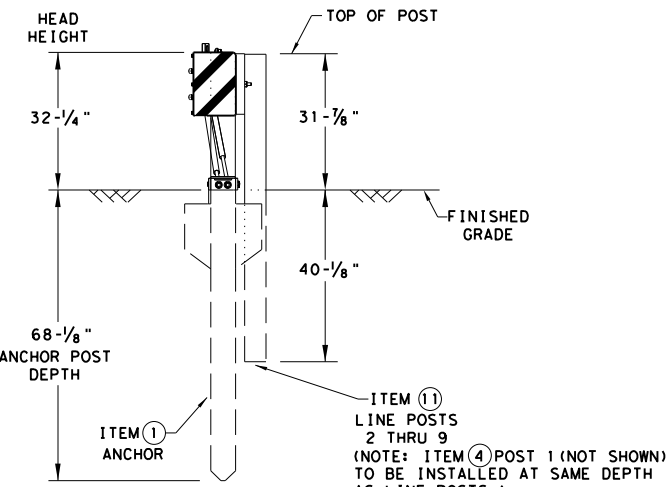
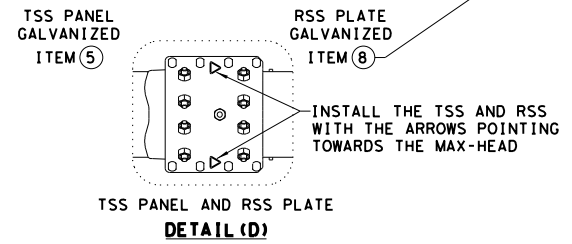
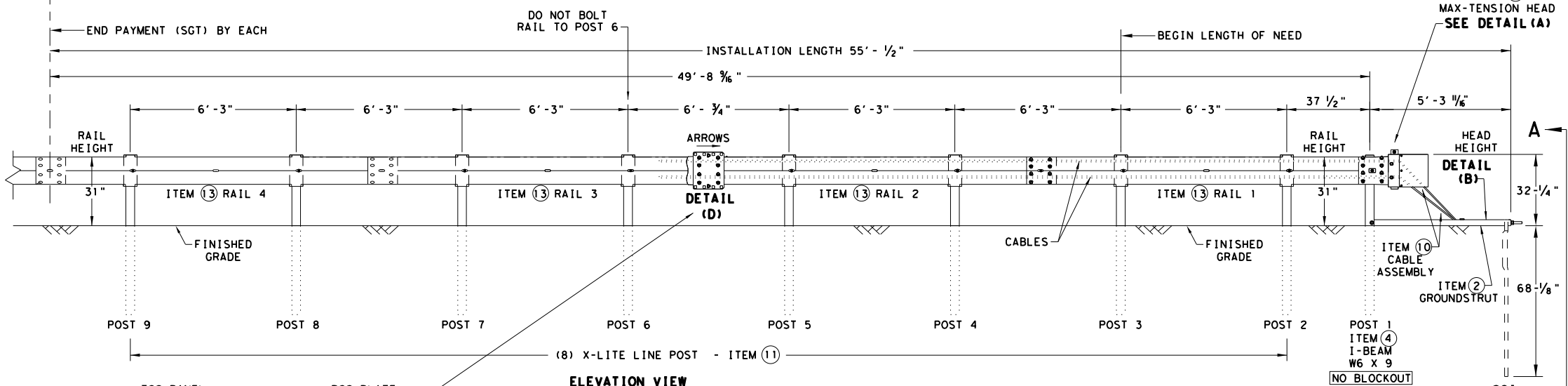
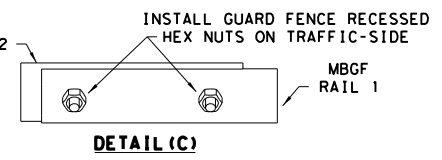
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023  
 FILE: ...RDWY STD.sgf11s3118.dgn



- NOTES:
- ITEM ② COMPOSITE BLOCKOUTS INSTALLED AT LINE POST (9) THRU LINE POST (2).
  - DO NOT INSTALL A BLOCKOUT AT LINE POST (1).

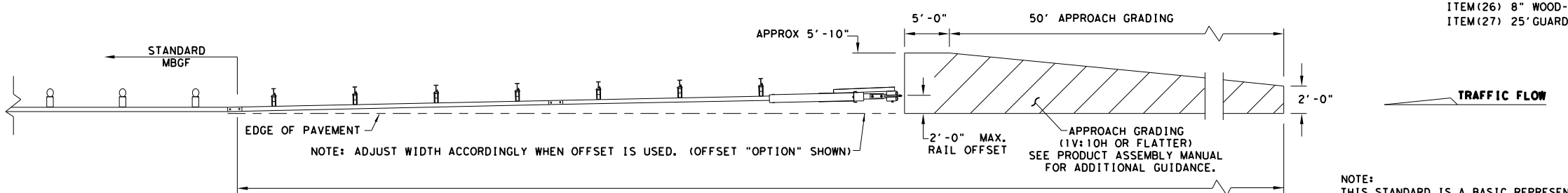
NOTE: SECURE THE (TSS) PANEL TO OUTSIDE OF RAIL 2 WITH THE PANEL ARROWS POINTING TOWARDS THE HEAD.



- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
  - FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE: MAX-TENSION INSTALLATION INSTRUCTION MANUAL, P/N MANMAX REV D (ECN 3516).
  - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
  - SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
  - COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
  - REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
  - IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
  - MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
  - IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  - THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
  - A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT. -GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	3/8" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	BSI-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	3/8" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWRO3	1
25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL, 8-SPACE, 12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

\* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.  
 \*\* ALTERNATIVE ITEMS NOT SHOWN. ITEM (26) 8" WOOD-BLOCKOUTS ITEM (27) 25' GUARD FENCE PANELS



NOTE: TxDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

**Texas Department of Transportation** Design Division Standard

## MAX-TENSION END TERMINAL

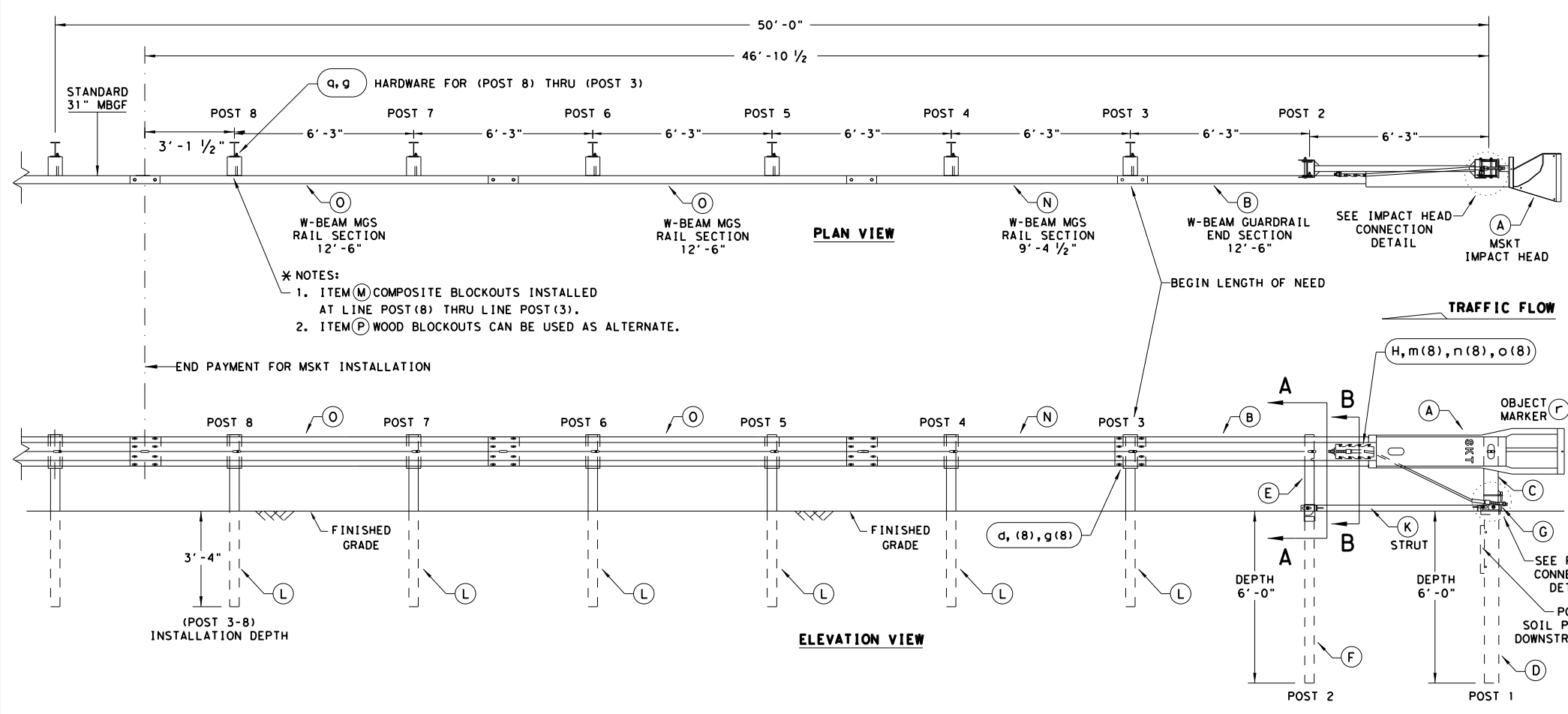
### MASH - TL-3

### SGT (11S) 31-18

FILE: sg11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
© TxDOT: FEBRUARY 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DIST	COUNTY		SHEET NO.	
WAC	McLENNAN, ETC.		98	

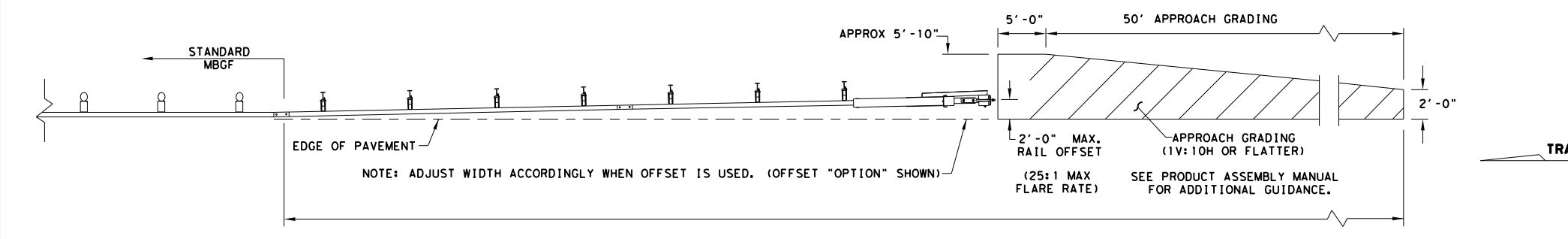
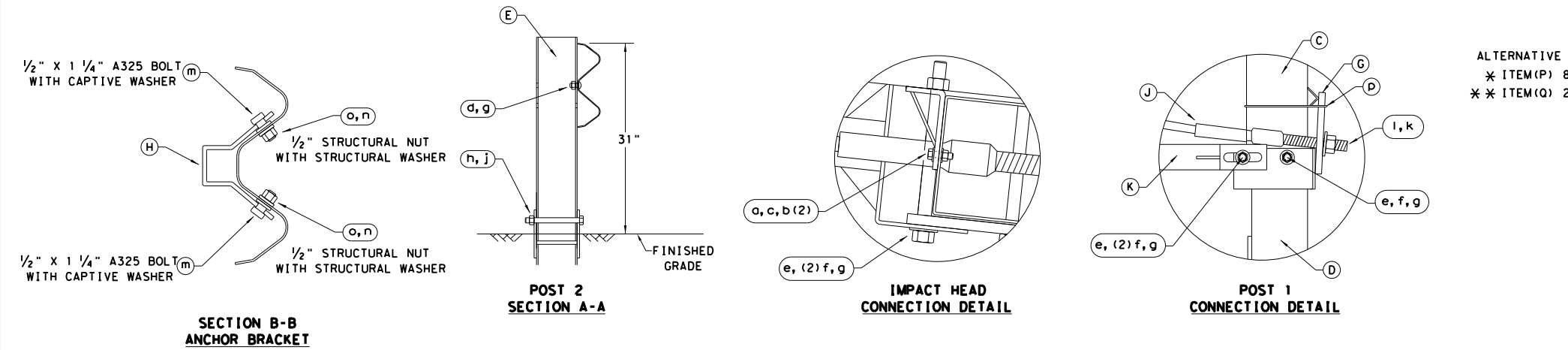
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TxDOT FOR ANY PURPOSE WHATSOEVER. THE USE OF THIS STANDARD ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE: 11/28/2023  
 FILE: ...RDWY STD.sgt12s3118.dgn



- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
  - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE: MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION-062717).
  - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
  - SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
  - A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
  - IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MOW STRIP STANDARD FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
  - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
  - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCRoACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
  - THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN ITS PLACE.
  - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Go.	SF1303
C	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6x9 OR W6x8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
SMALL HARDWARE			
o	2	5/8" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	5/8" WASHER	W0516
c	2	5/8" HEX NUT	N0516
d	25	5/8" Dia. x 1 1/4" SPLICE BOLT (POST 2)	B580122
e	2	5/8" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	5/8" WASHER	W050
g	33	5/8" Dia. H.G.R NUT	N050
h	1	3/4" Dia. x 8 1/2" HEX BOLT (GRD A449)	B340854A
j	1	3/4" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
i	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2" x 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	1/2" STRUCTURAL NUTS	N012A
o	8	1 1/8" O.D. x 3/8" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151



NOTE: TxDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

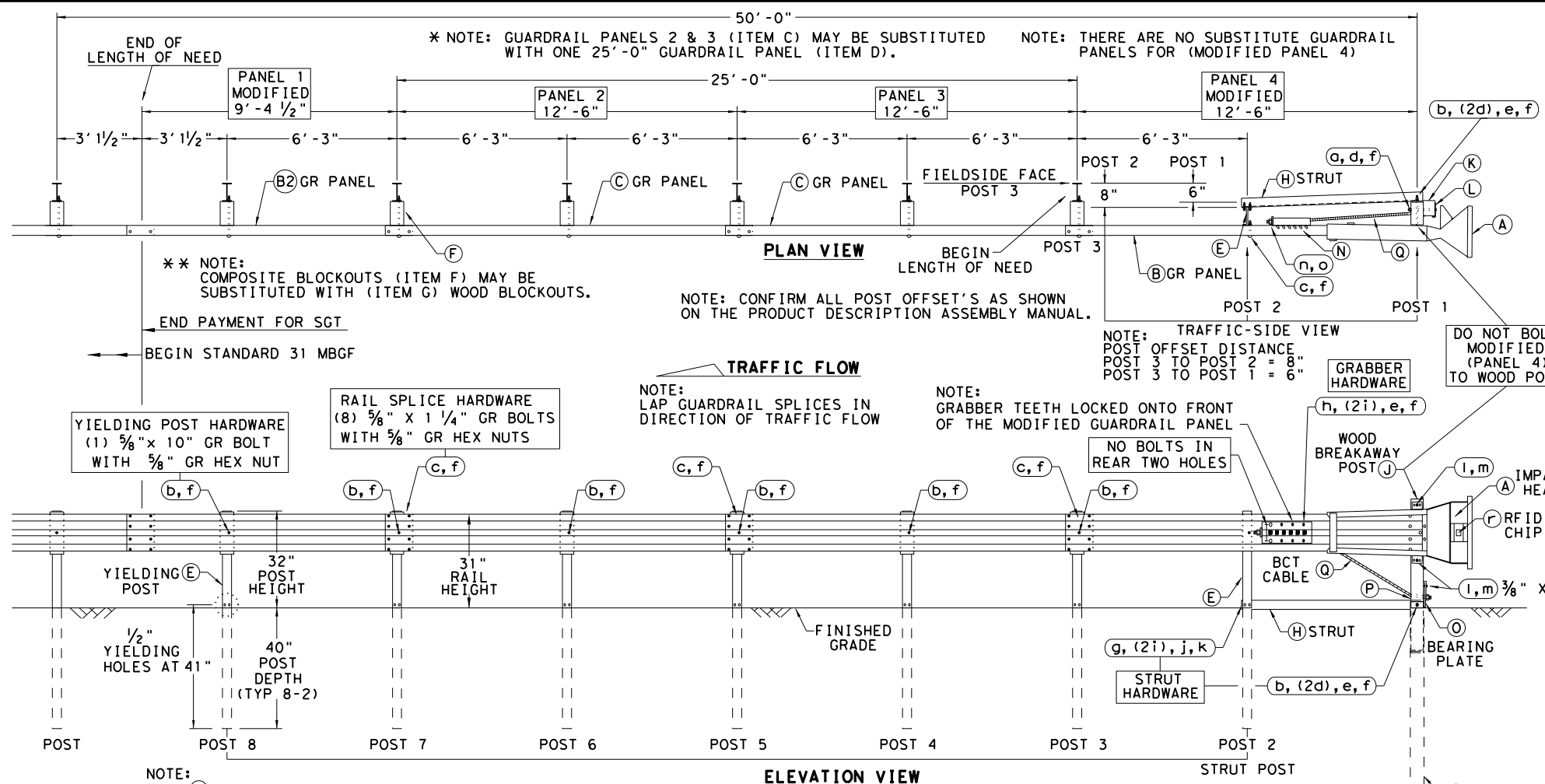
NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Design Division Standard

SINGLE GUARDRAIL TERMINAL  
 MSKT-MASH-TL-3  
 SGT (12S) 31-18

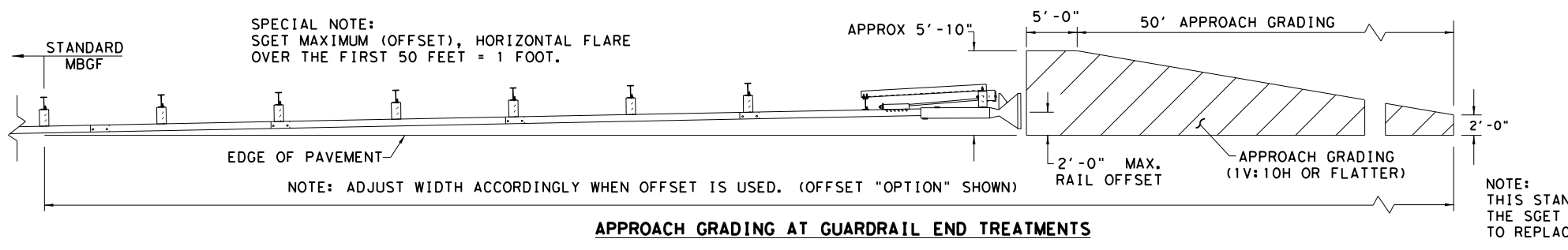
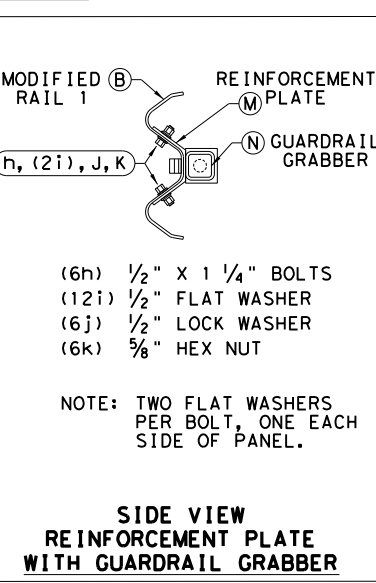
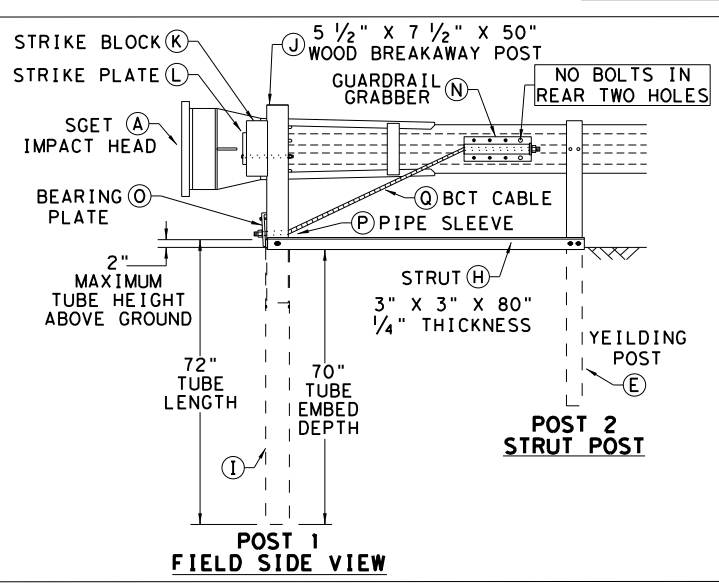
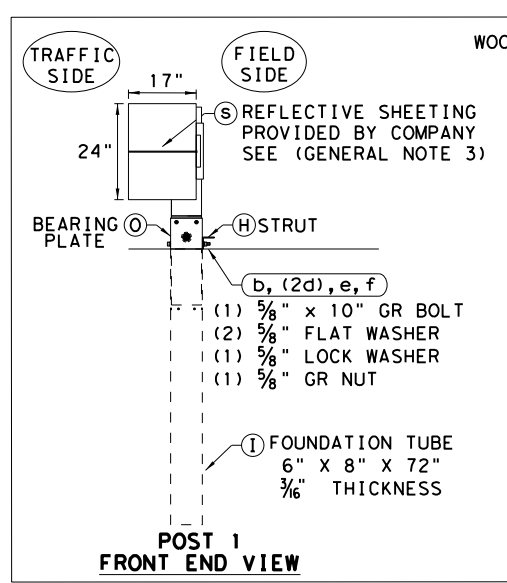
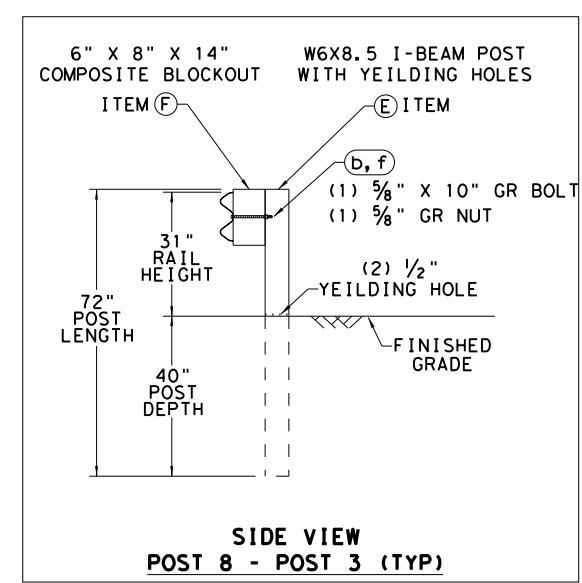
FILE: sgt12s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL
© TxDOT: APRIL 2018	CONT SECT	JOB	HIGHWAY	
REVISIONS		0049	01 095, ETC.	SH 6
DIST	COUNTY			SHEET NO.
WAC	McLENNAN, ETC.			99

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.



- ### GENERAL NOTES
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
  - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.
  - MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.
  - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
  - A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
  - THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" X 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" X 3/8"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" X 7 1/2" X 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
SMALL HARDWARE			
o	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPlice BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M



NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE SGET TERMINAL SYSTEM AND IS NOT INTENDED TO REPLACE THE MANUFACTURER'S ASSEMBLY MANUAL.

**Texas Department of Transportation**  
Design Division Standard

**SPIG INDUSTRY, LLC**  
**SINGLE GUARDRAIL TERMINAL**  
**SGET - TL-3 - MASH**  
**SGT (15) 31-20**

FILE: sg153120.dgn	DN: TXDOT	CK: KM	DW: VP	CK: VP
© TXDOT: APRIL 2020	CONT: 0049	SECT: 01	JOB: 095, ETC.	HIGHWAY: SH 6
REVISIONS	DIST: WAC	COUNTY: McLENNAN, ETC.	SHEET NO. 100	

DATE: FILE:

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

DATE: 11/28/2023 2:01:20 PM  
 FILE: ...RDWY STD.dml-20.dgn

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS				DELINEATORS				D & OM DESCRIPTIVE CODES	
DEVICE	SIZE 1	SIZE 2	SIZE 3	SIZE 4	SINGLE		DOUBLE		INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX) NUMBER OF REFLECTORS S = Single D = Double COLOR OF REFLECTORS W = White Y = Yellow R = Red REFLECTOR UNIT SIZE 1 or 2 TYPE OF POST OR DELINEATOR WC = Wing Channel Post YFLX = Yellow Flexible Post WFLX = White Flexible Post BRFL = Barrier Reflector TYPE OF MOUNT GND = Embedded (drivable or set in concrete) CTB = Concrete Barrier Mount GF1 or GF2 = Guard Fence Attachment SRF = Surface Mount DIRECTION If Required BI = Bi-Directional BR = Bi-Directional with red on back
SHEETING: Yellow, White or Red Type B or C reflective sheeting				SHEETING: Yellow, White or Red Type B or C Reflective Sheeting					
POST TYPE: WC, YFLX, WFLX				MOUNT TYPE: GND, SRF					

OBJECT MARKERS								D & OM DESCRIPTIVE CODES	
DEVICE	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)	INSTL OM ASSM (OM-XX) (XXXX)XXX(XX) TYPE OF OBJECT MARKER 1, 2, 3, or 4 NUMBER OF REFLECTORS OR DIRECTION X = 3-Size 2 reflector unit (Type 2 only) Y = 1-Size 3 reflector unit (Type 2 only) Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only) L = Left Side (Type 3 Object Marker only) R = Right Side (Type 3 Object Marker only) C = Center (Type 3 Object Marker only) TYPE OF POST WC = Wing Channel Post WFLX = White Flexible Post TWT = Thin Walled Tubing TYPE OF MOUNT GND = Embedded (drivable) SRF = Surface Mount WAS = Wedge Anchor Steel WAP = Wedge Anchor Plastic DIRECTION If Required BI = Bi-Directional
SHEETING: Yellow - Type B or C Sheeting		SHEETING: Alternating acrylic black and retroreflective yellow - Type B <sub>FL</sub> or C <sub>FL</sub> Sheeting			SHEETING: Red -Type B <sub>FL</sub> or C <sub>FL</sub> Sheeting				
POST TYPE: WC, WC, WFLX		POST TYPE: TWT		POST TYPE: TWT		POST TYPE: TWT			
MOUNT TYPE: GND, GND, GND		MOUNT TYPE: GND, SRF		MOUNT TYPE: WAS, WAP		MOUNT TYPE: WAS, WAP			

DEPARTMENTAL MATERIAL SPECIFICATIONS	
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)			CHEVRONS				ONE DIRECTION LARGE ARROW		NOTE: Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.
SHEETING: Yellow, White, Red NOTE: 1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.			SIZE (W x L): 18"x 24" (Conventional), 24"x 30" (Conventional Oversize), 30"x 36" (Expressway), 36" x 48" (Freeway)		SIZE (W x L): 48" x 24" (Conventional), 60" x 30" (Expressway & Freeway)				
MOUNTING HEIGHT: 4'-0" or 7'-0"			MOUNTING HEIGHT: 7'-0" Only		MOUNTING HEIGHT: 7'-0"				
NOTE: 1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.			NOTE: 1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).						

Texas Department of Transportation  
 Traffic Safety Division Standard

## DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

### D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	OW: TXDOT	CK: TXDOT
© TXDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	WAC	McLENNAN, ETC.	101	

20A

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.

**POST TYPE AND SUPPORT FOUNDATION DETAILS**

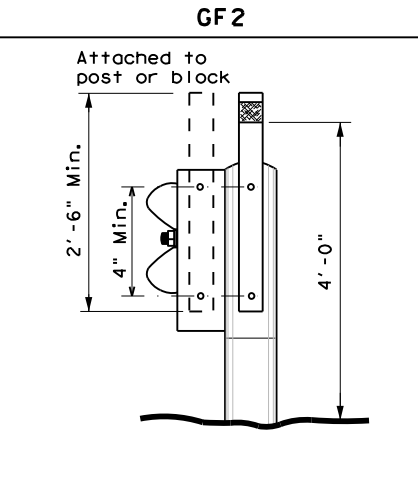
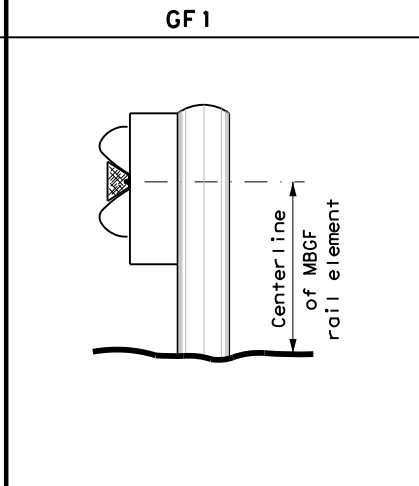
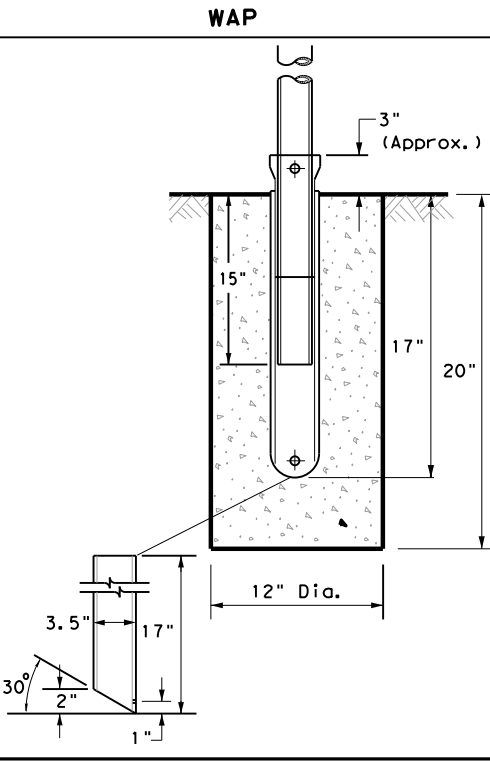
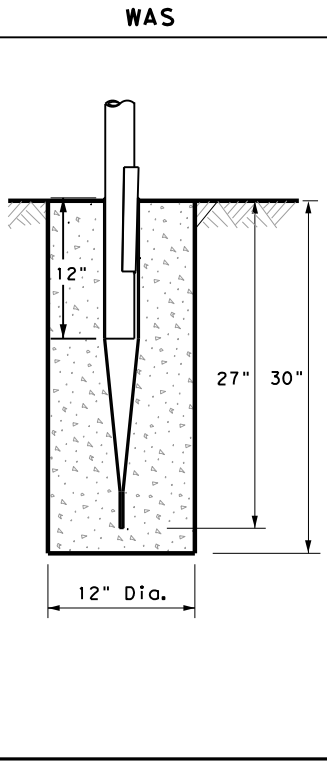
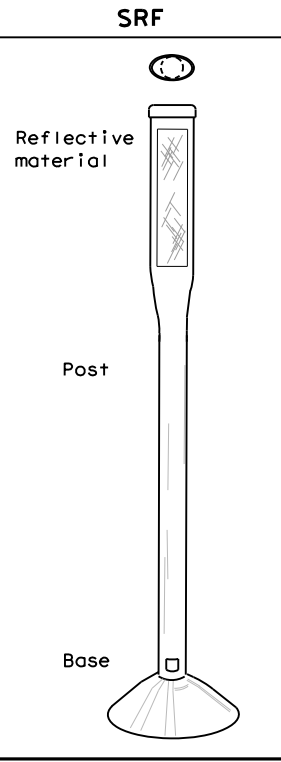
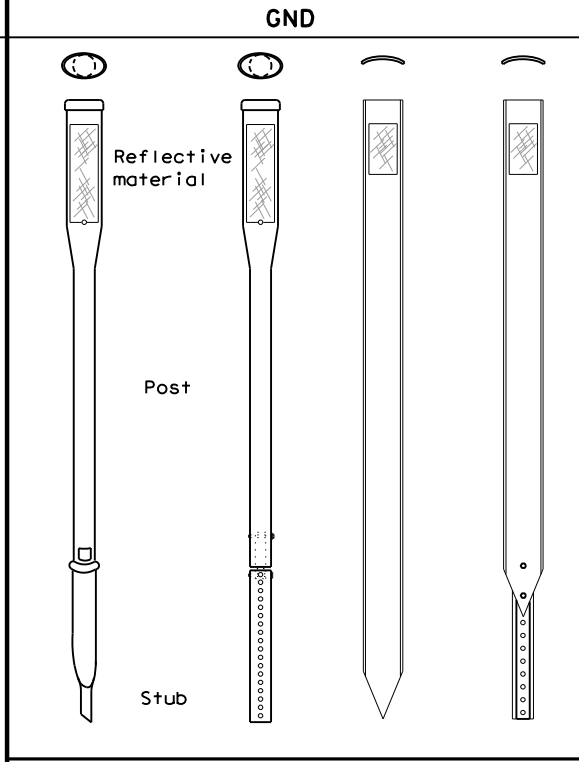
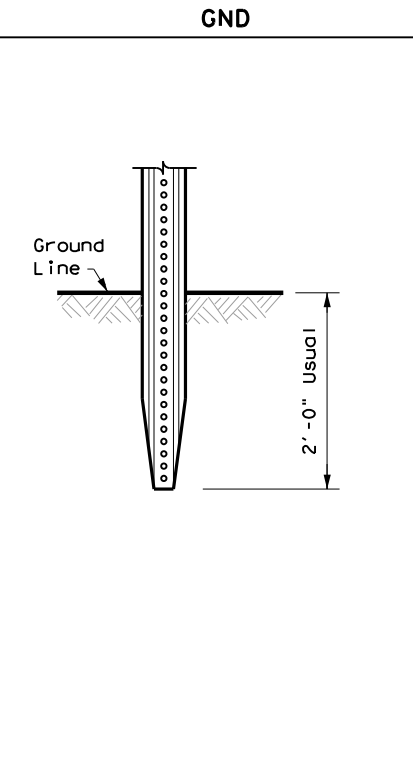
**TYPE OF BARRIER MOUNTS**

**WING CHANNEL (WC)**

**FLEXIBLE POSTS (YFLX, WFLX)**

**WEDGE ANCHOR SYSTEMS**

**GUARD FENCE ATTACHMENT**



**NOTES**

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

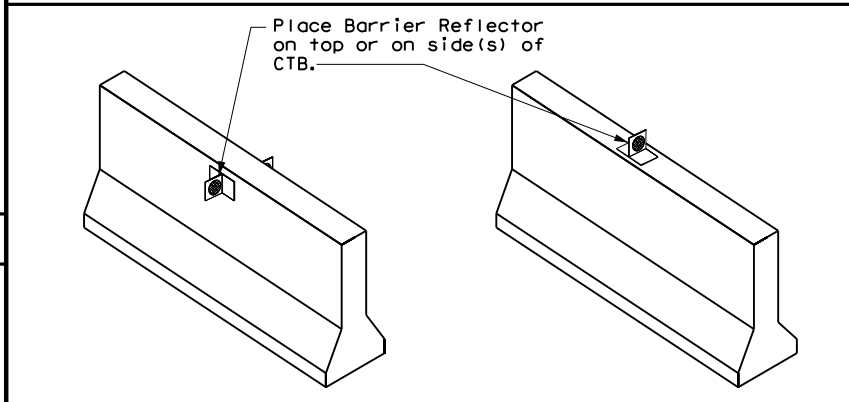
**NOTES**

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

**NOTE**

1. Install per manufacturer's recommendations.

**CONCRETE TRAFFIC BARRIER (CTB)**



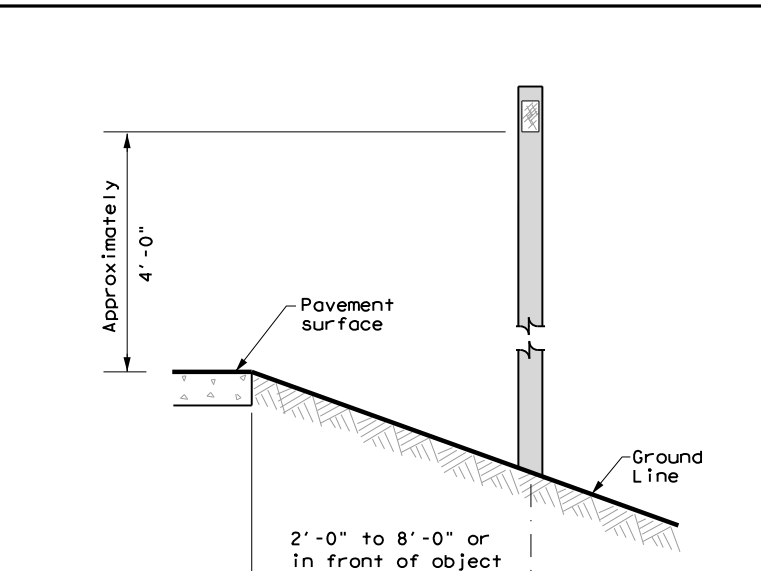
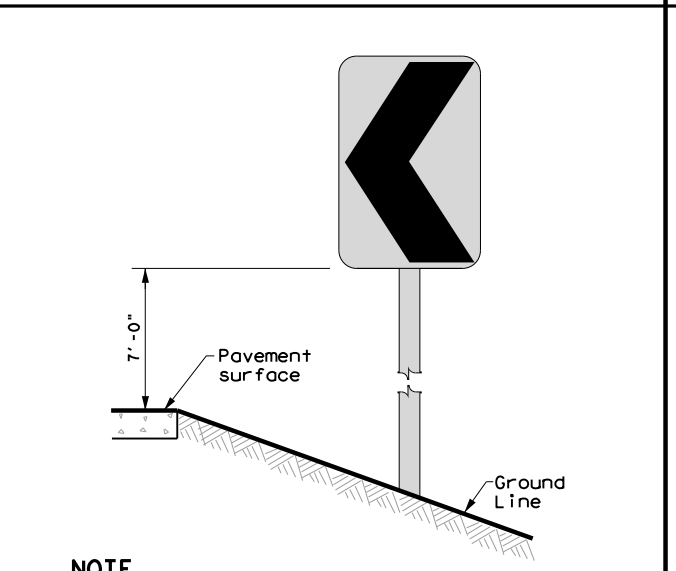
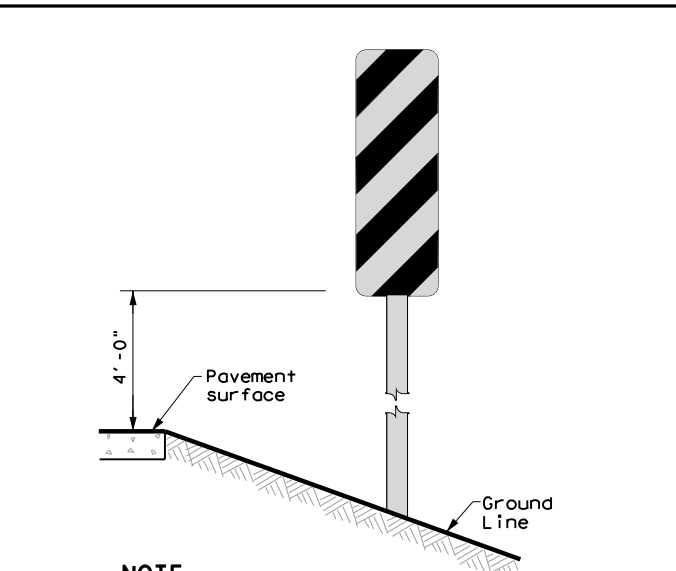
**GENERAL NOTES**

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

**TYPES 1,3, AND 4 OBJECT MARKERS AND CHEVRONS**

**CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN**

**DELINEATORS AND TYPE 2 OBJECT MARKERS**



**NOTE**

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

**NOTE**

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

See general notes 1, 2 and 3.

DATE: 11/28/2023 2:01:36 PM  
 FILE: ...RDWY STD.dwg2-20.dgn

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2) - 20

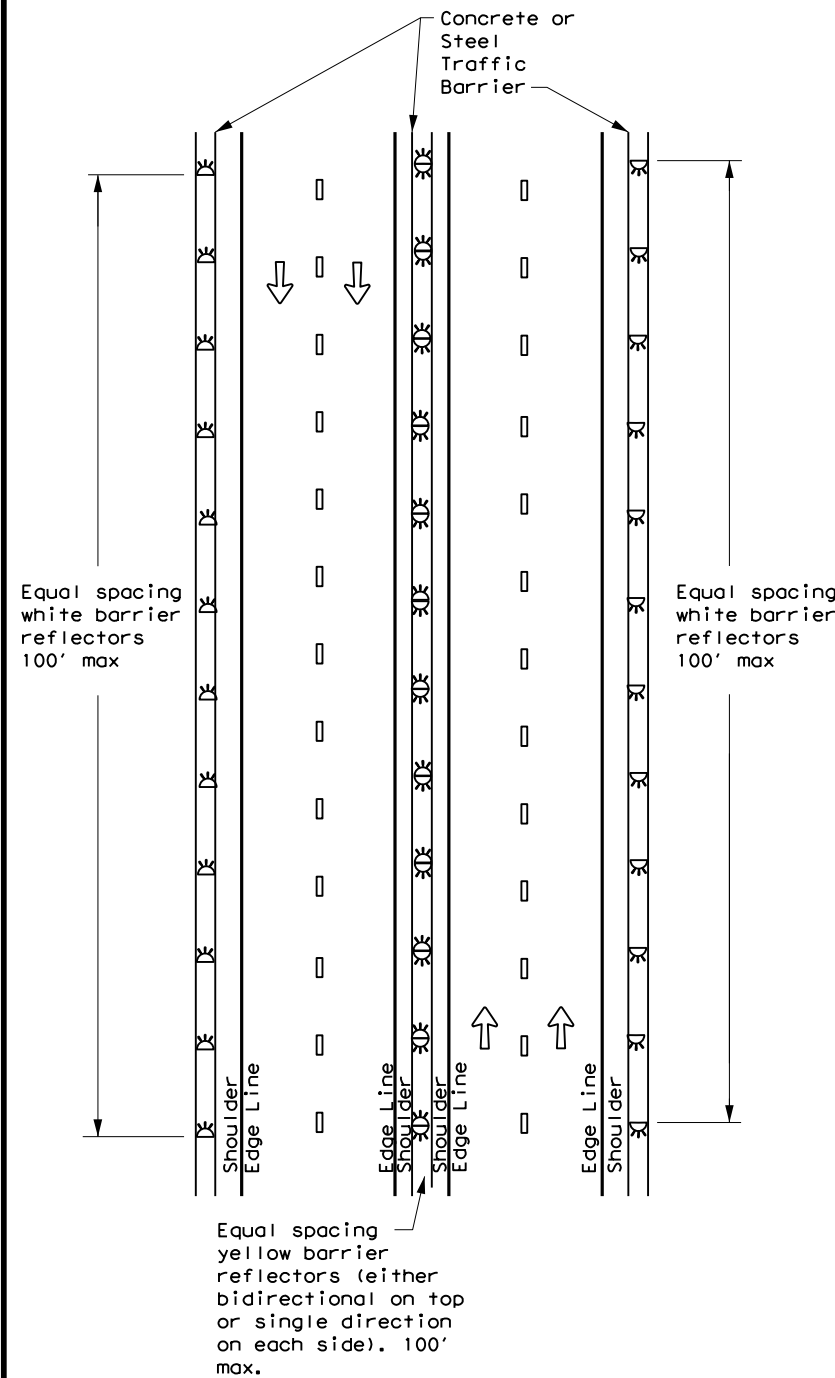
FILE: dom2-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	WAC	McLENNAN, ETC.	102	

20B

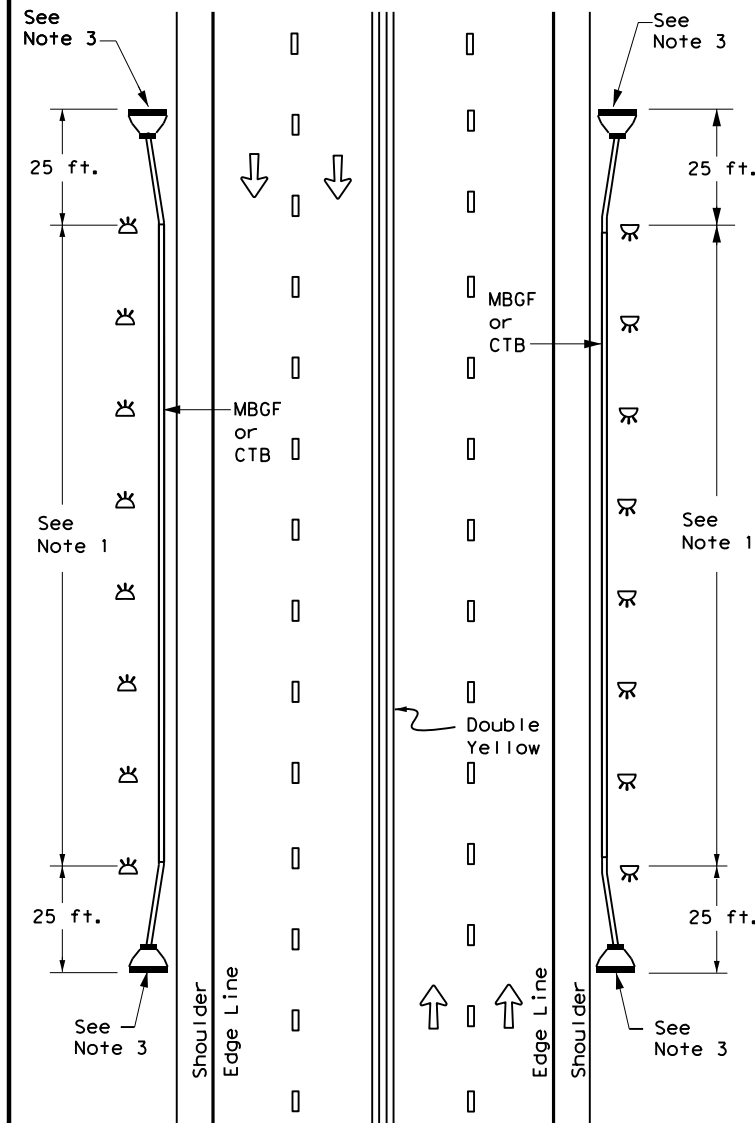
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023 2:01:53 PM  
 FILE: ... \RDWY STD\dom6-20.dgn

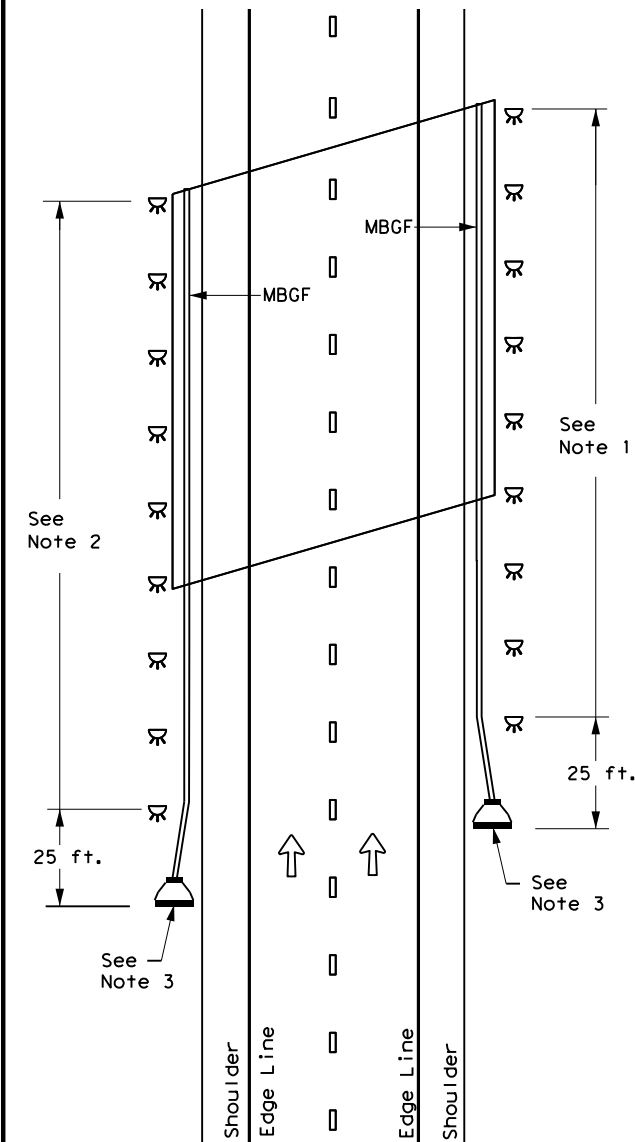
### CONTINUOUS CONCRETE OR STEEL BARRIER



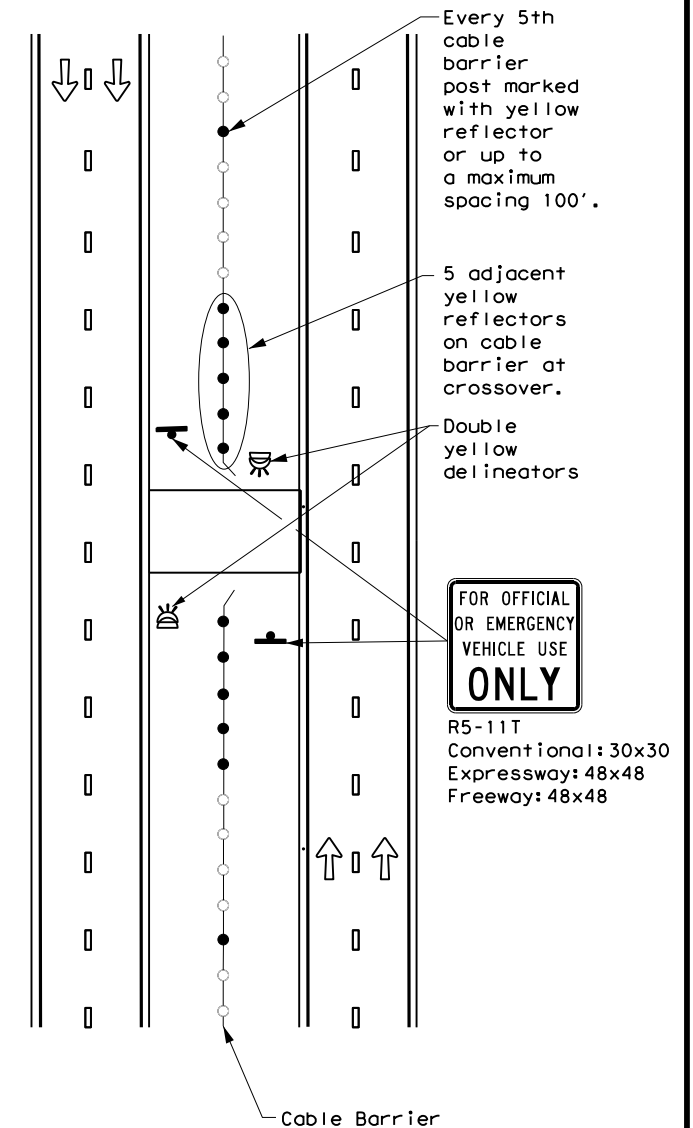
### MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



### DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



### EMERGENCY CROSSOVER



#### NOTES

1. Equal spacing (100' max), but not less than 3 single directional white barrier reflectors or delineators. On Continuous Barrier, equal spacing (100' max.)
2. Equal spacing (100' max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

#### LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow



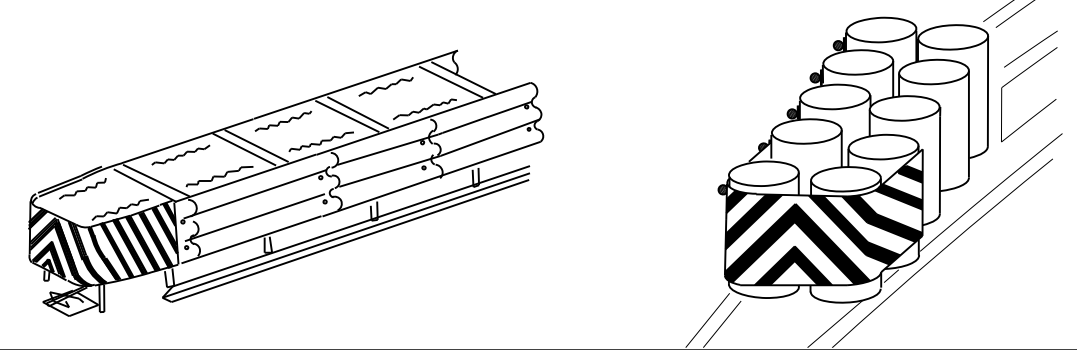
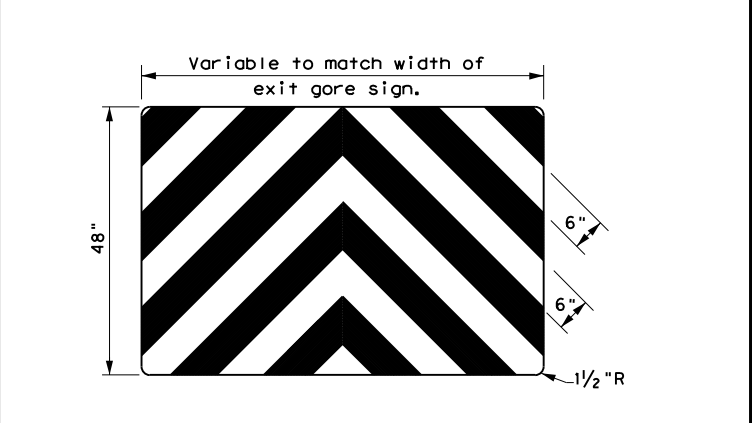
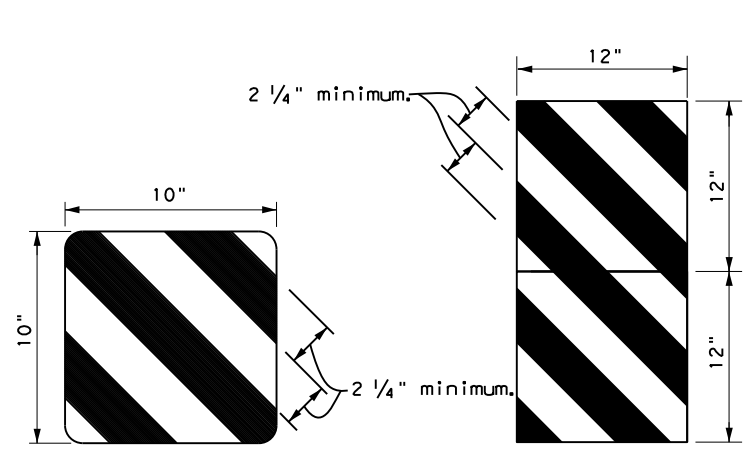
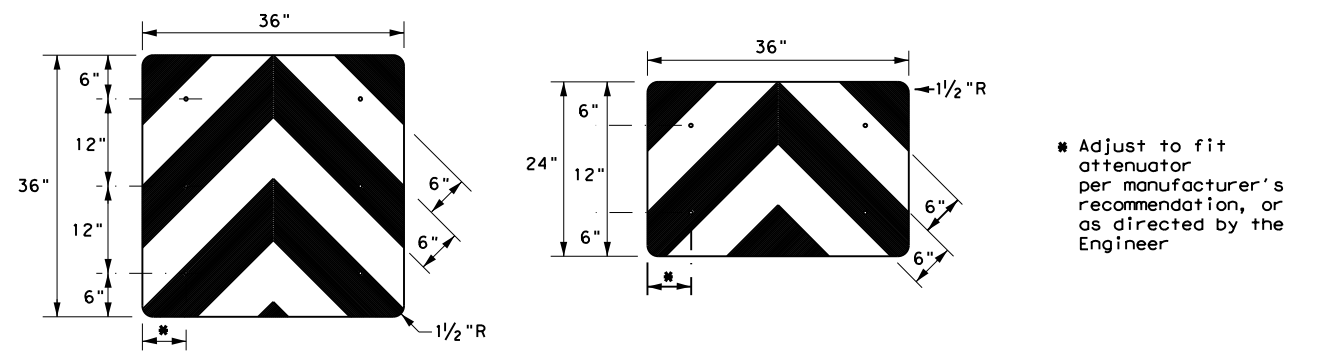
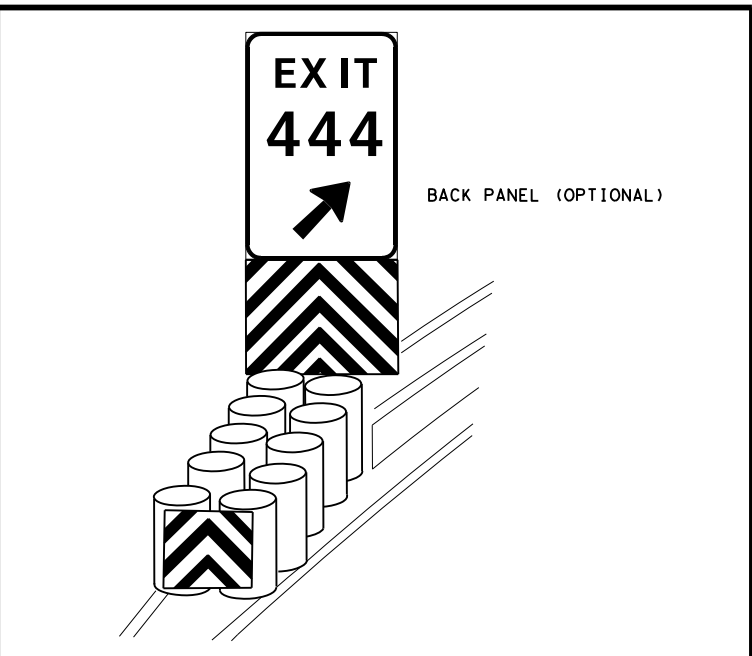
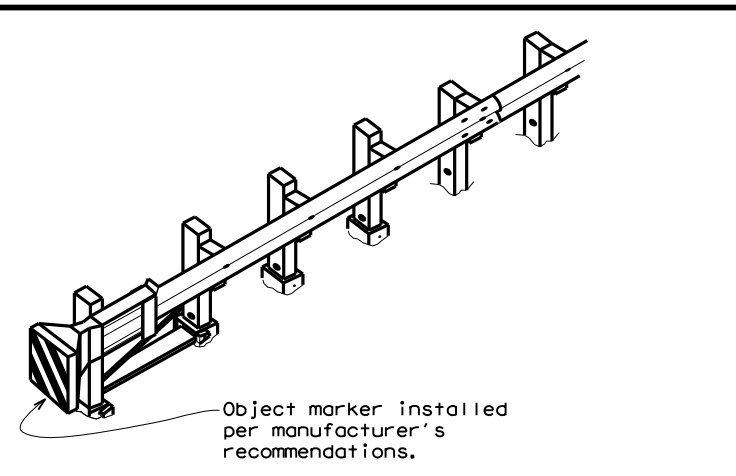
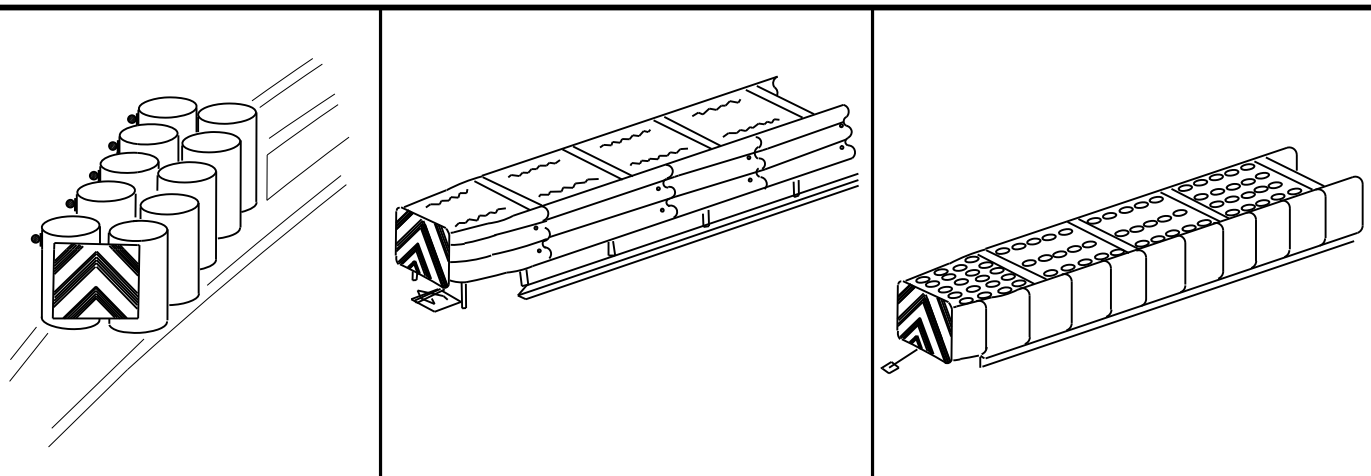
## DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

### D & OM(6)-20

FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
7-20	REVISIONS	0049 01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	103	

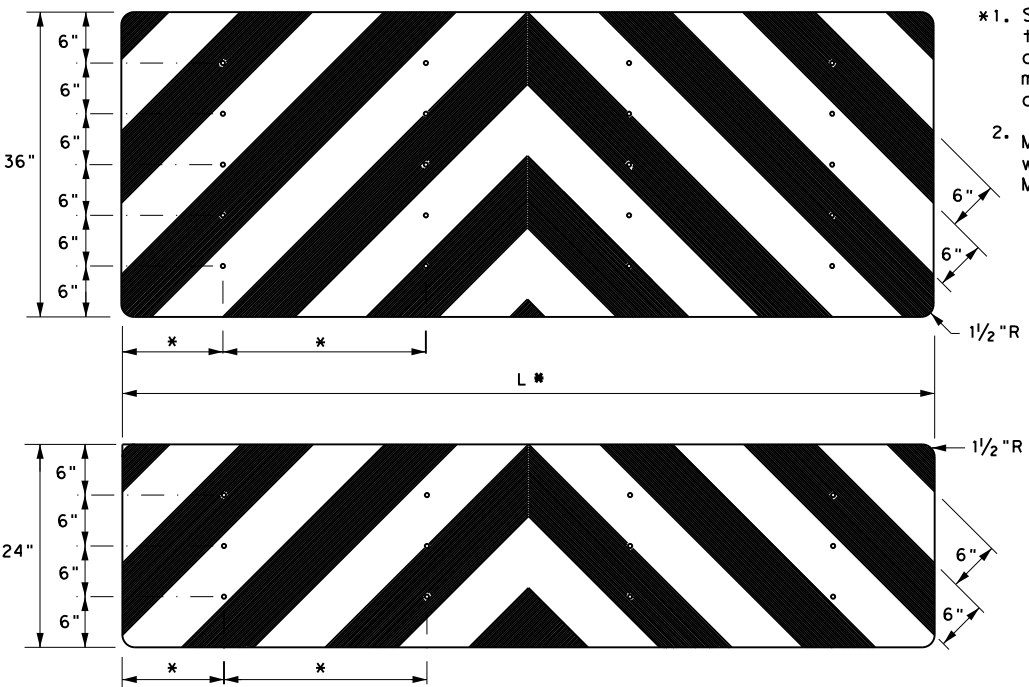
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023 2:02:11 PM  
 FILE: ... \RDWY STD\domvia-20.dgn



OBJECT MARKERS SMALLER THAN 3 FT<sup>2</sup>

- NOTES**
- Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturer's recommendation, or as directed by the Engineer.
  - Mounting should be flush with top of attenuator. Minimum size 96" x 24".



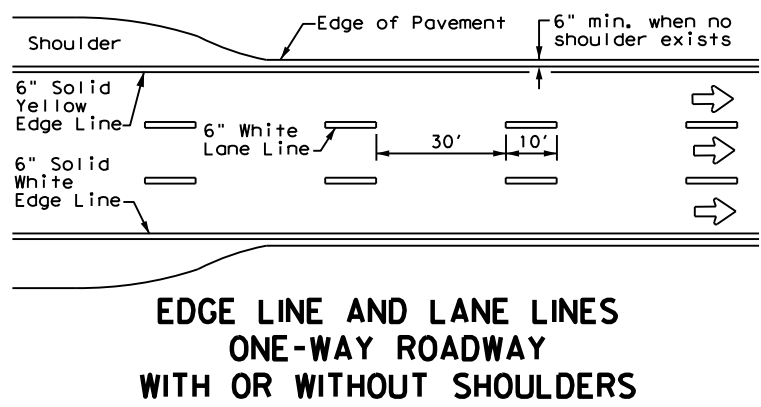
**NOTES**

- Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.
- Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.
- Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 1/4".
- Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.
- Object Marker at nose of attenuator is subsidiary to the attenuator.
- See D & OM (1-4) for required barrier reflectors.

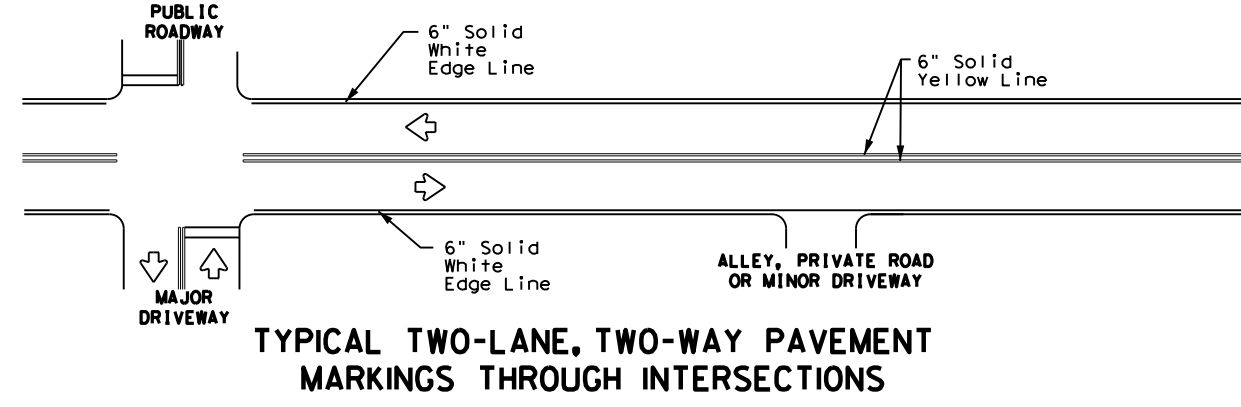
<b>DELINEATOR &amp; OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS</b> <b>D &amp; OM(VIA) -20</b>			
FILE: domvia20.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT
© TxDOT December 1989	CONT	SECT	JOB
REVISIONS		0049 01	095, ETC.
4-92 8-04	DIST	COUNTY	SHEET NO.
8-95 3-15	WAC	McLENNAN, ETC.	104
4-98 7-20			
20G			

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

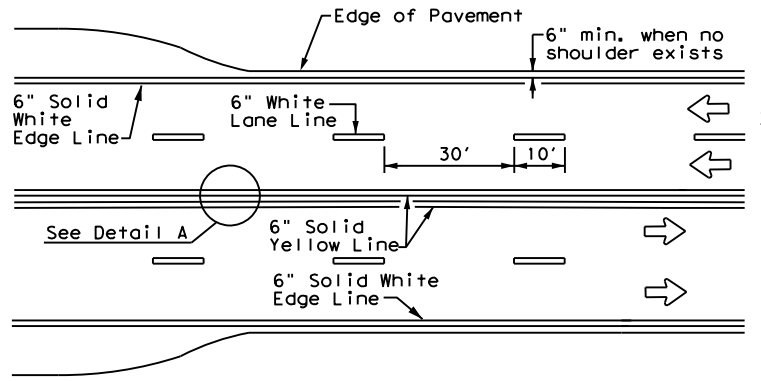
DATE: 11/28/2023 2:02:28 PM  
 FILE: ...3\_Roadway\RDWY STD.pml-22.dgn



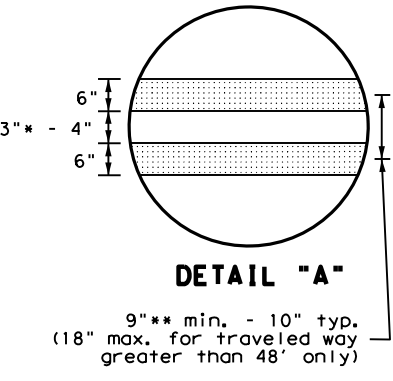
**EDGE LINE AND LANE LINES  
ONE-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



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

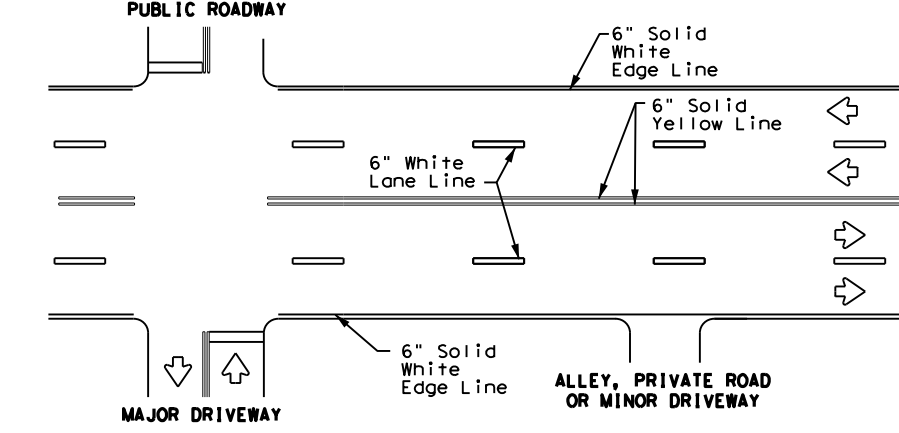


**CENTERLINE AND LANE LINES  
FOUR LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**

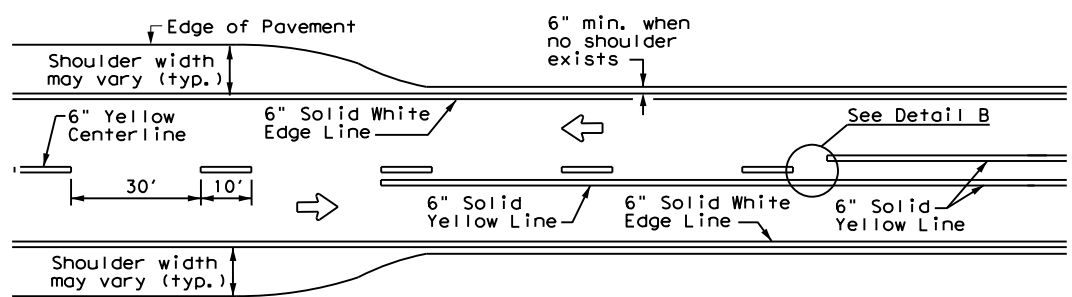


**DETAIL "A"**

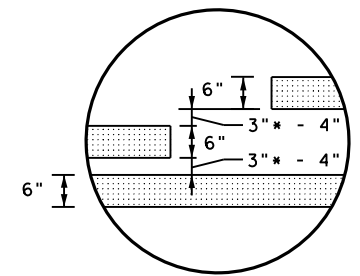
\* 2" minimum for restripe projects when approved by the Engineer.  
 \*\* 8" minimum for restripe projects when approved by the Engineer.



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

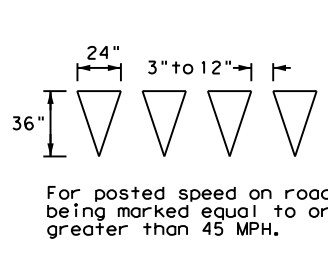


**TWO LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**

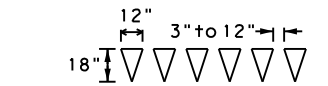


**DETAIL "B"**

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



**YIELD LINES**

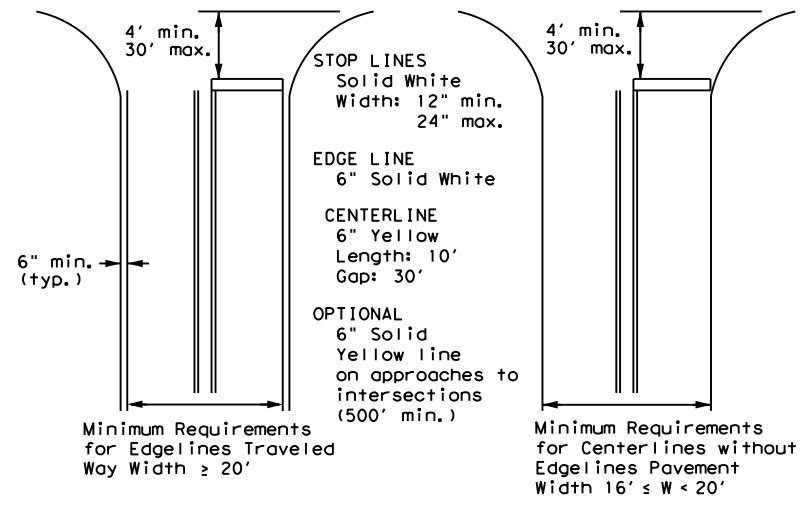


For posted speed on road being marked equal to or less than 40 MPH.

- GENERAL NOTES**
- 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.
  - 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.

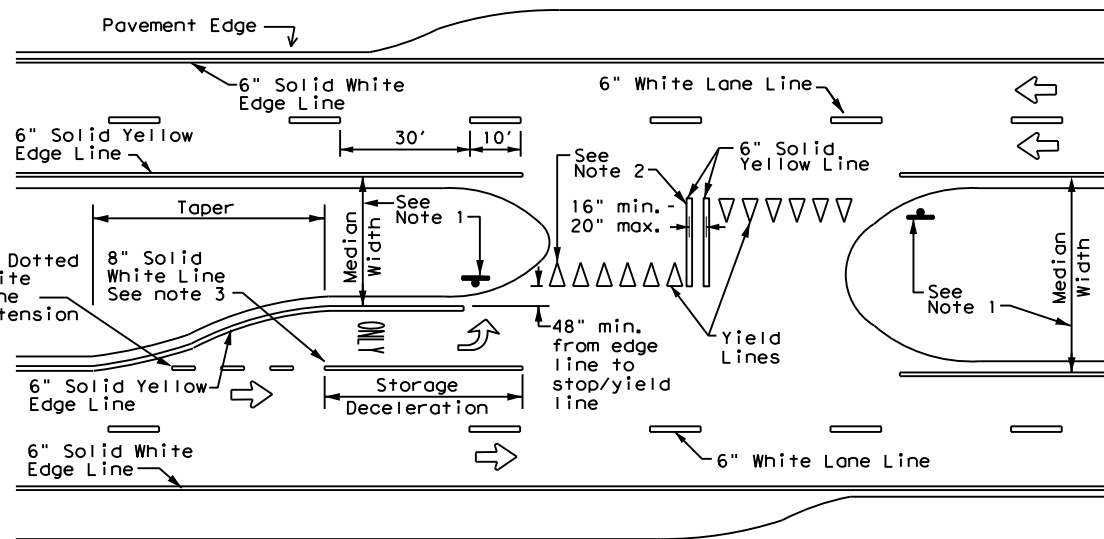


NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

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

**NOTES**

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



**FOUR LANE DIVIDED ROADWAY CROSSOVERS**

Texas Department of Transportation  
 Traffic Safety Division Standard

**TYPICAL STANDARD  
PAVEMENT MARKINGS**

**PM(1) - 22**

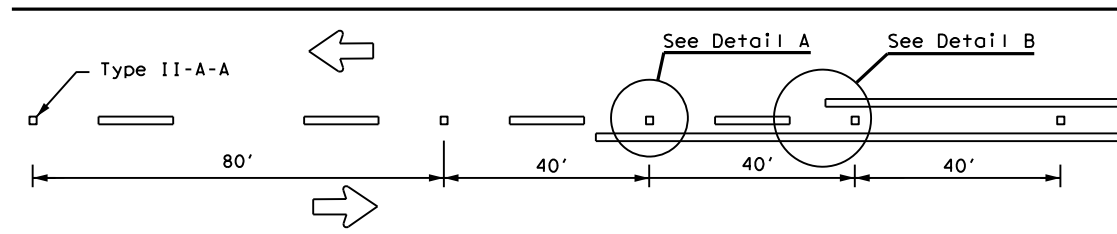
FILE: pml-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
11-78 8-00 6-20	DIST	COUNTY	SHEET NO.	
8-95 3-03 12-22	WAC	McLENNAN, ETC.	105	
5-00 2-12				

22A

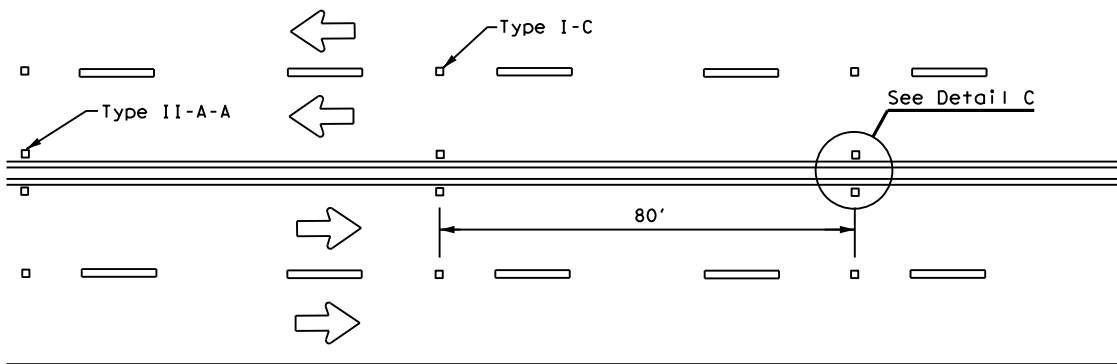


# REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

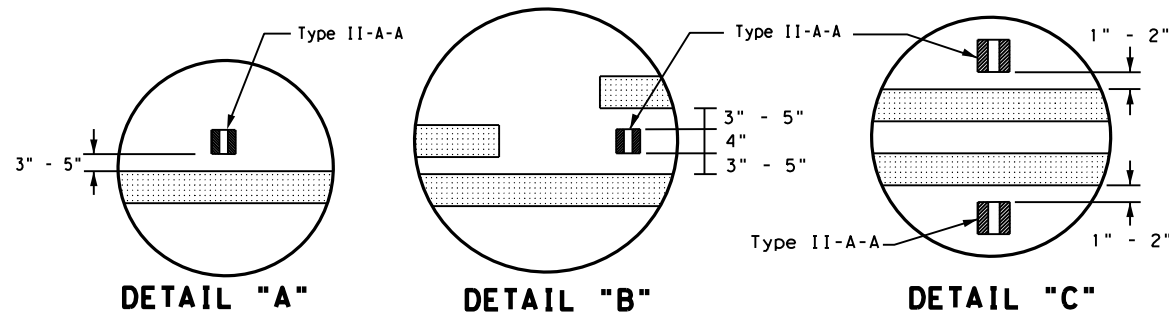
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



**CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS**



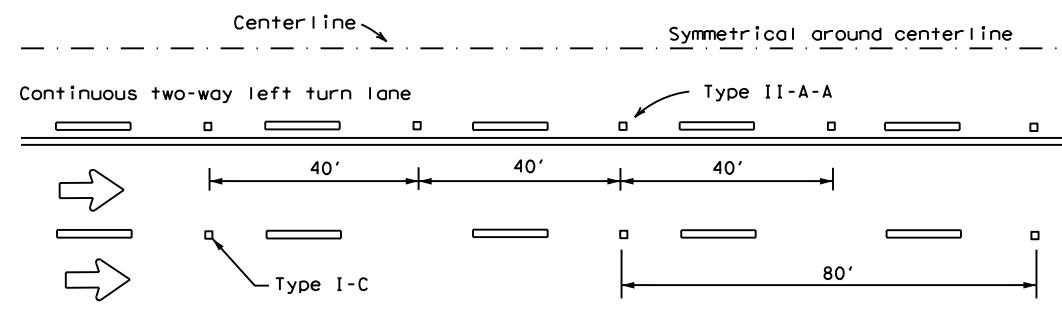
**CENTERLINE & LANE LINES  
FOR FOUR LANE TWO-WAY ROADWAYS**



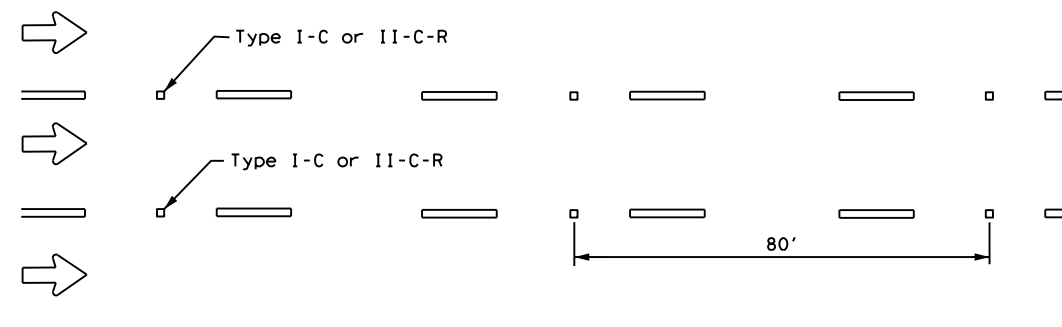
**DETAIL "A"**

**DETAIL "B"**

**DETAIL "C"**

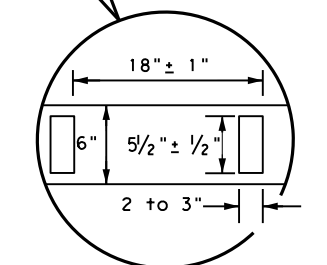
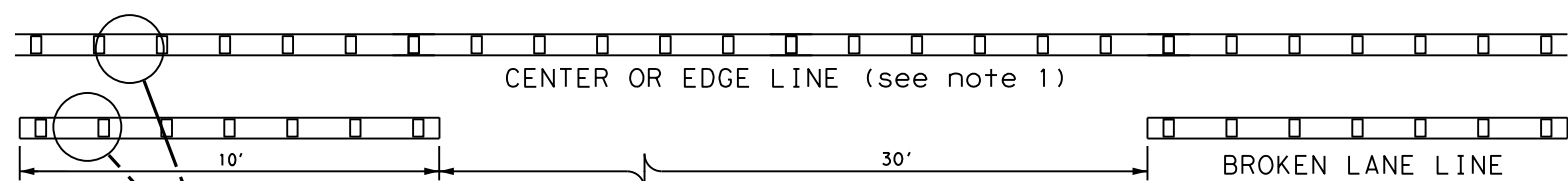


**CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE**



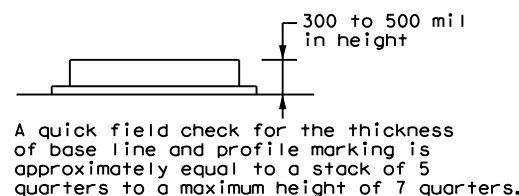
**LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)**

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.  
 See Note 3.



**REFLECTORIZED PROFILE  
PATTERN DETAIL**

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



**NOTES**

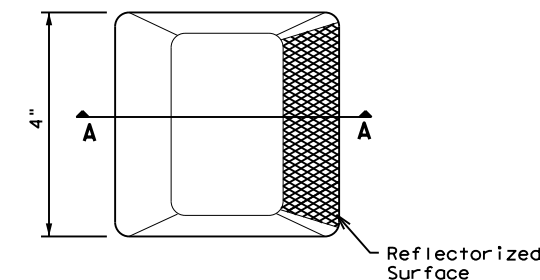
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

**GENERAL NOTES**

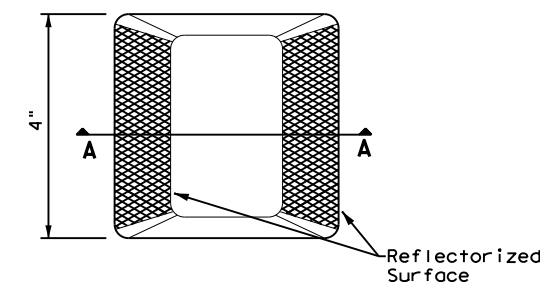
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

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

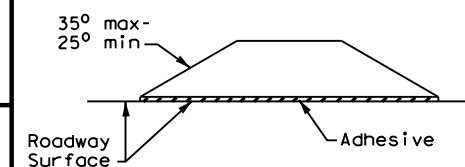
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



**Type I (Top View)**



**Type II (Top View)**



**SECTION A**

**RAISED PAVEMENT MARKERS**



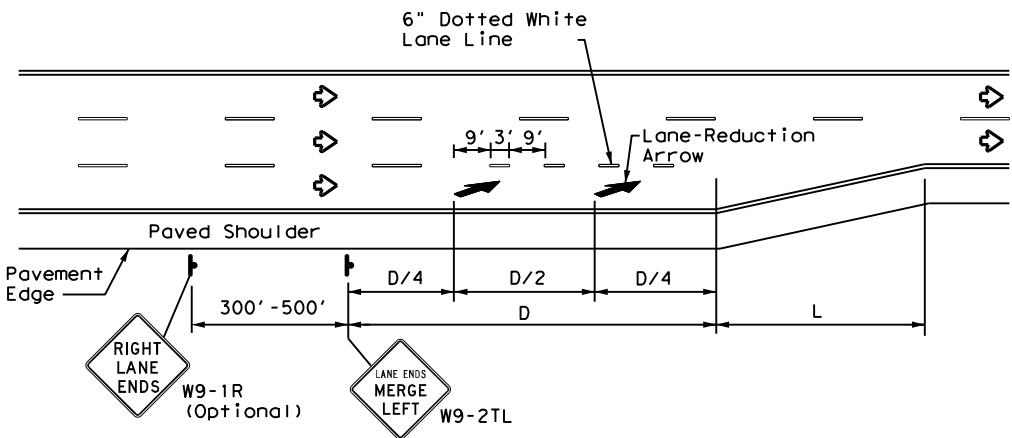
**POSITION GUIDANCE USING  
RAISED MARKERS  
REFLECTORIZED PROFILE  
MARKINGS  
PM(2) - 22**

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
4-77 8-00 6-20	DIST	COUNTY	SHEET NO.	
4-92 2-10 12-22	WAC	McLENNAN, ETC.	106	
5-00 2-12				

DATE: 11/28/2023 2:02:44 PM  
 FILE: ...3\_Roadway\RDWY STD\pm2-22.dgn

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

DATE: 11/28/2023 2:03:01 PM  
 FILE: ...3\_Roadway\RDWY STD\pm3-22.dgn



**LANE REDUCTION**

**NOTES**

- 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.
- 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.
- 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.
- For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

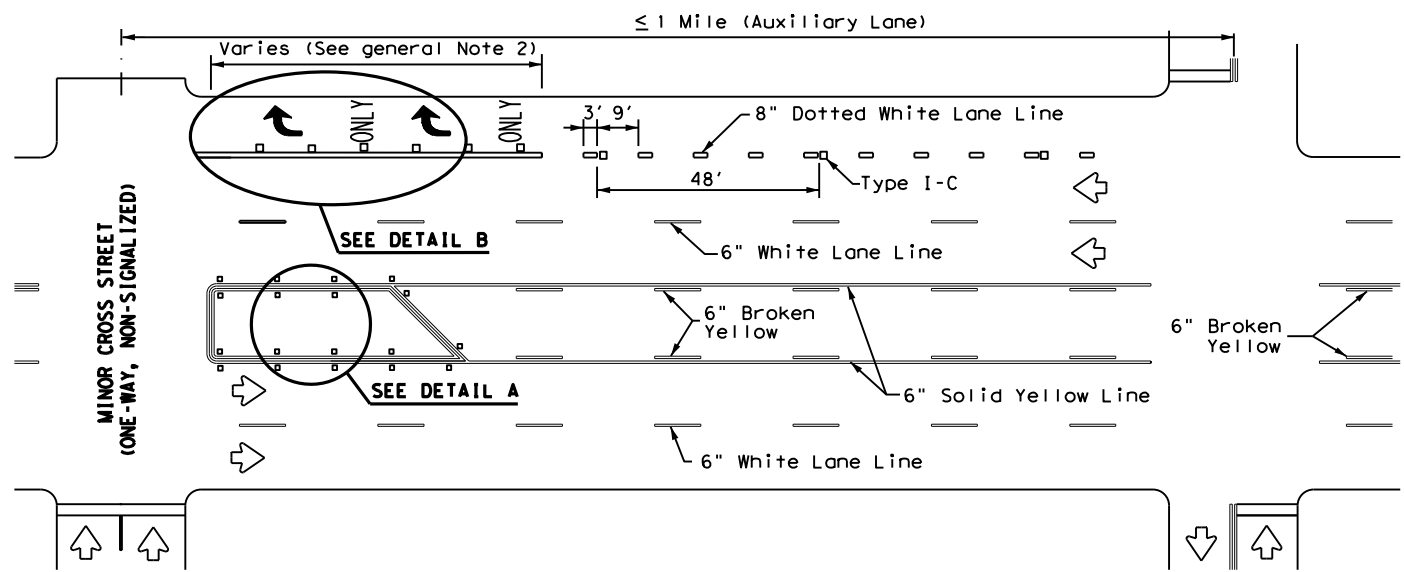
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

**GENERAL NOTES**

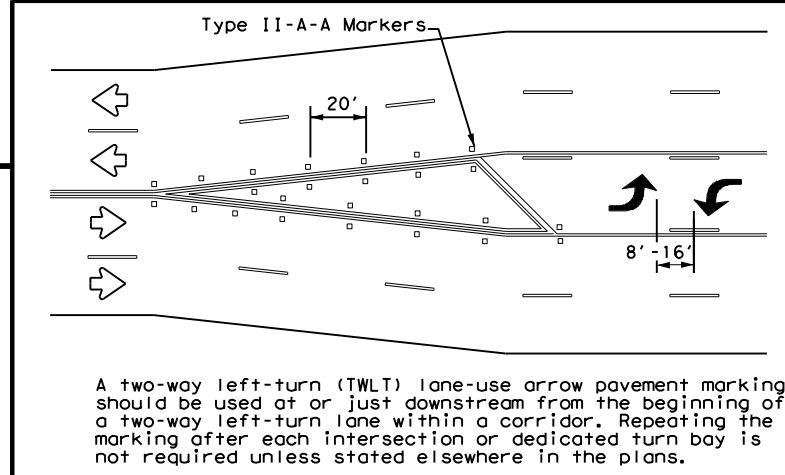
- Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
- 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.
- 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.
- 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

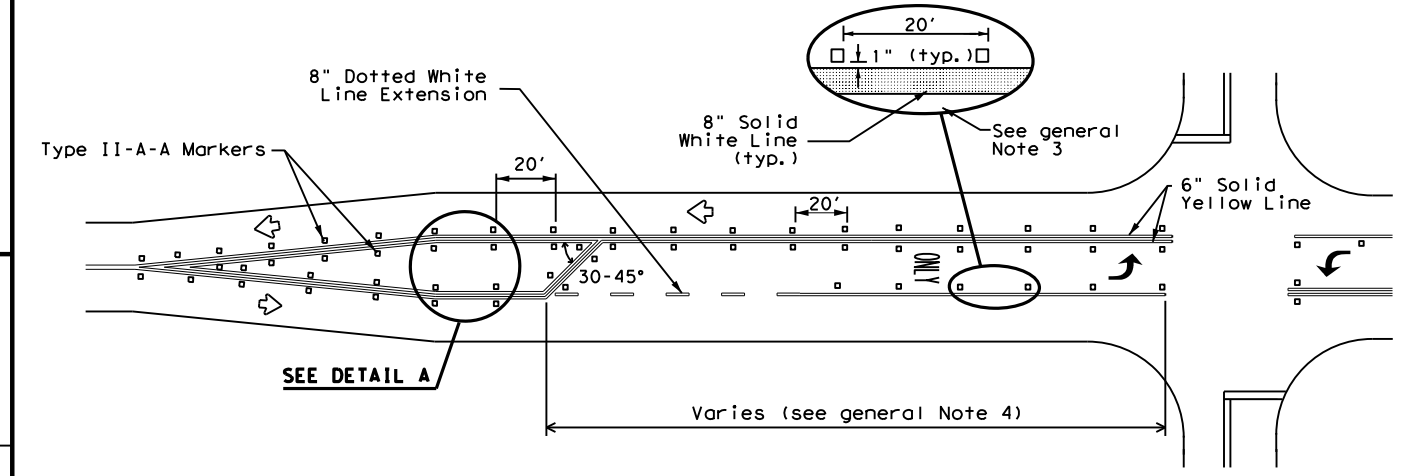
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



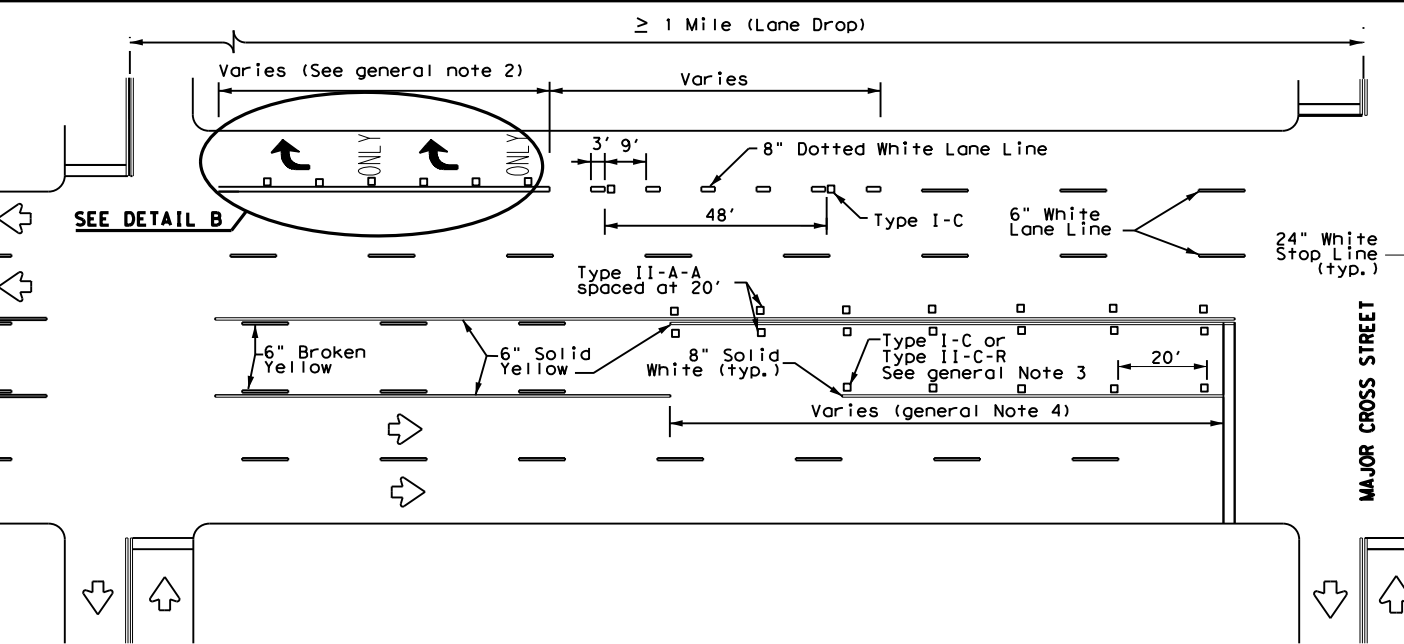
**TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE**



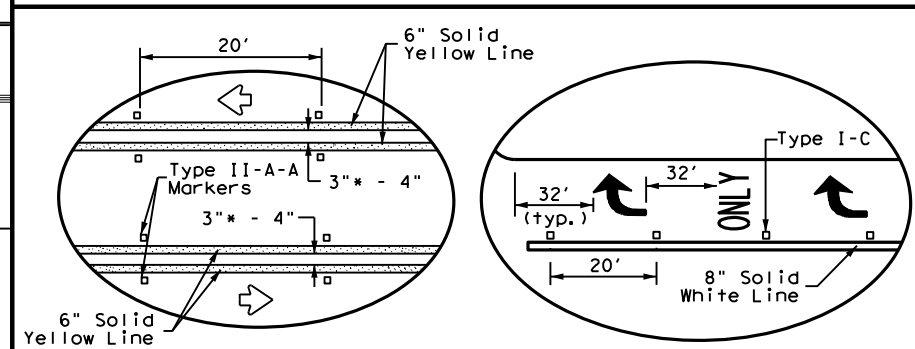
**TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY**



**TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS**



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



**DETAIL A**

**DETAIL B**

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

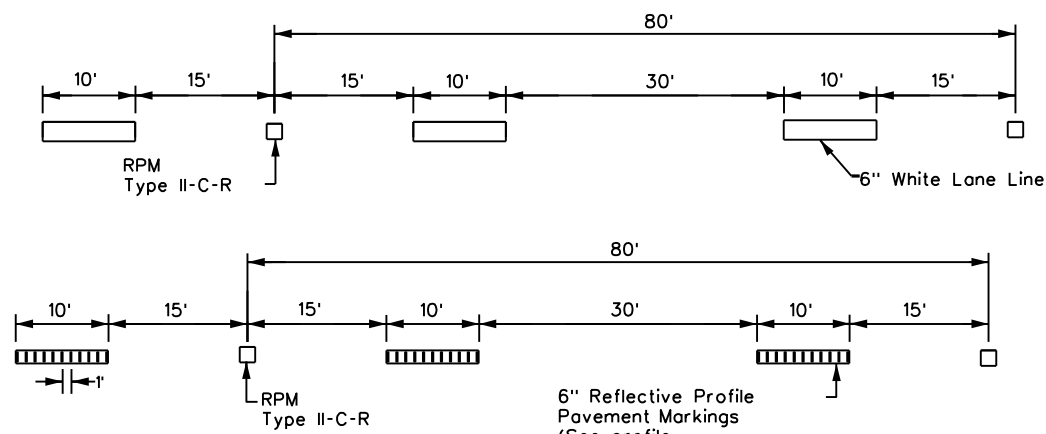
Texas Department of Transportation  
 Traffic Safety Division Standard

**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	0049	01	095, ETC.	SH 6
4-98 3-03 6-20	DIST	COUNTY	SHEET NO.	
5-00 2-10 12-22	WAC	McLENNAN, ETC.	107	
8-00 2-12				

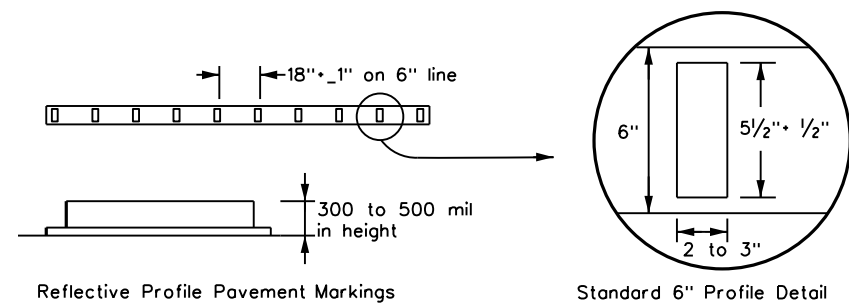
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023 2:04:26 PM  
 FILE: ...RDWY STD\Fpm(1)-22.dgn



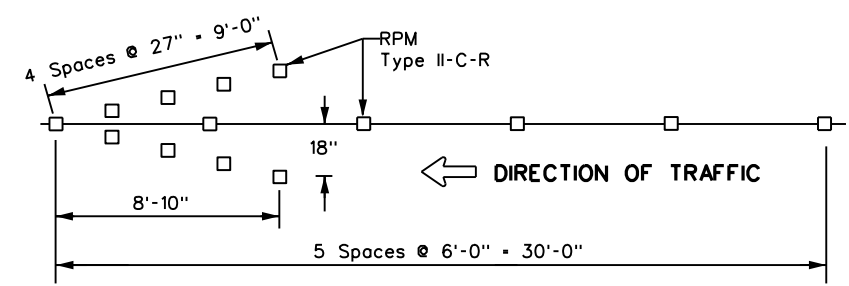
**NOTE**  
 ReflectORIZED raised pavement markers Type II-C-R shall be spaced on 80' centers with the clear face toward normal traffic and the red face toward wrong way traffic. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.

**TRAFFIC LANE LINES PAVEMENT MARKING**



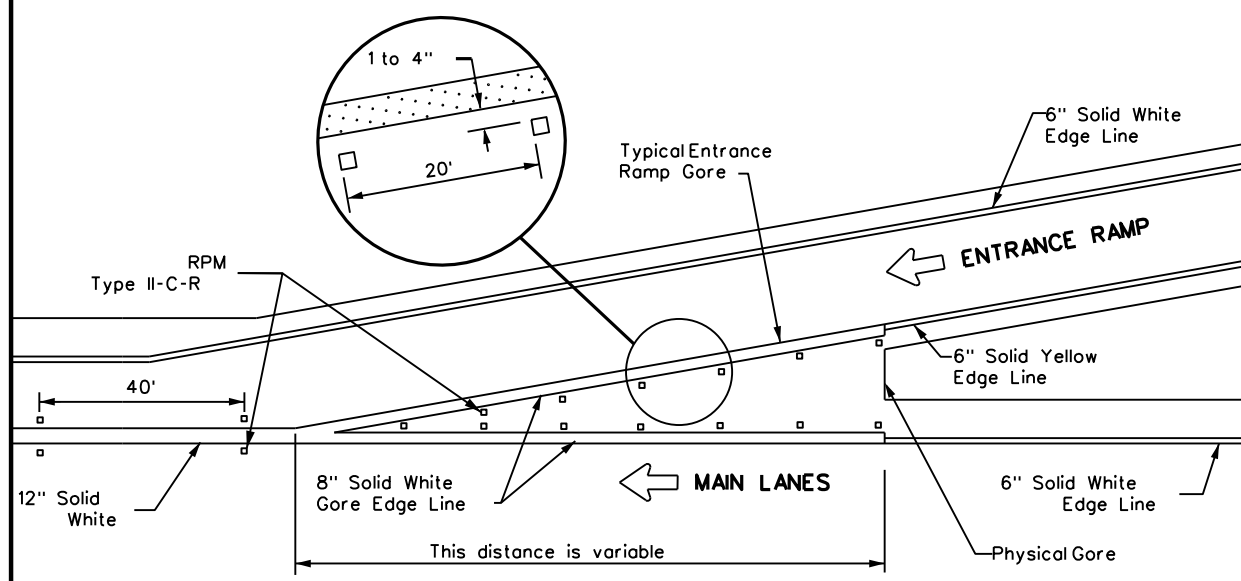
**NOTE**  
 Edge lines should typically be 6" wide and the materials shall be as specified in the plans. See details above if reflective profile pavement markings are to be used.

**EDGE LINE PAVEMENT MARKINGS**

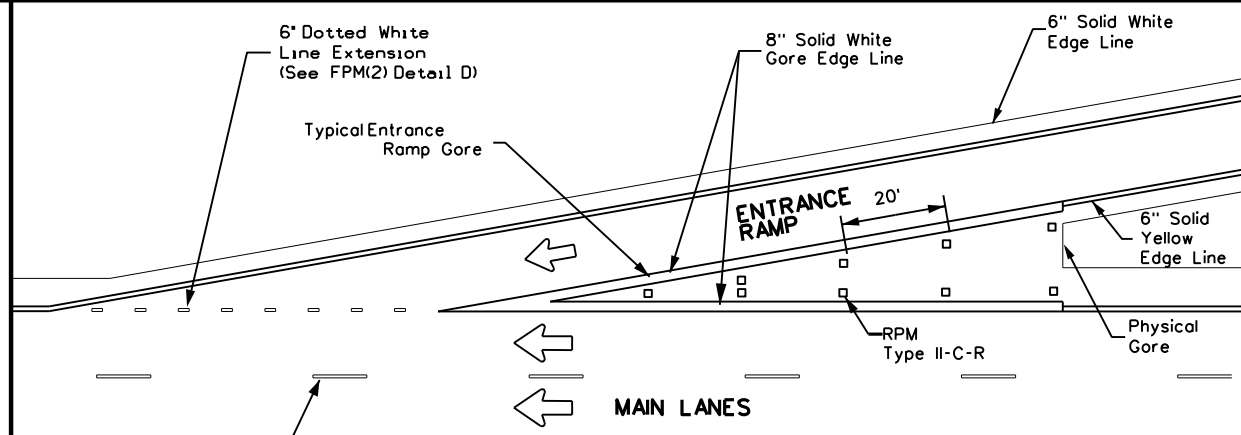


**NOTES**  
 1. ReflectORIZED raised pavement markers Type-II-C-R in the wrong way arrow shall have the clear face toward normal traffic and the red face toward the wrong way traffic.  
 2. Red reflectORIZED wrong way arrows, not to exceed two, may be placed on exit ramps. Locations of the arrows shall be as shown in the plans or as directed by the engineer.

**WRONG WAY ARROW**

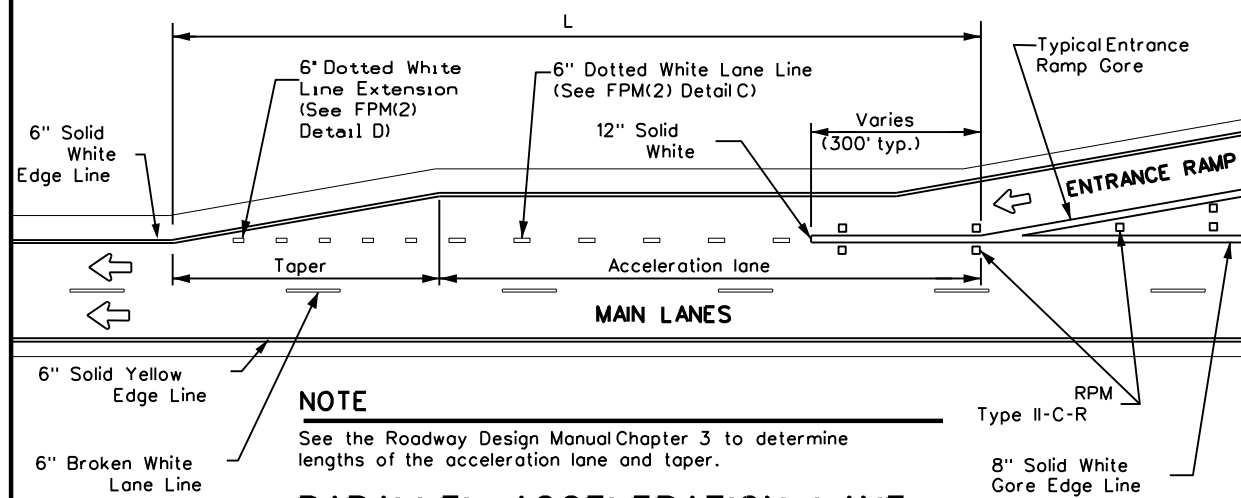


**TYPICAL ENTRANCE RAMP GORE MARKING**



**NOTE**  
 See the Roadway Design Manual Chapter 3 to determine if a tapered acceleration lane may be used.

**TAPERED ACCELERATION LANE**



**NOTE**  
 See the Roadway Design Manual Chapter 3 to determine lengths of the acceleration lane and taper.

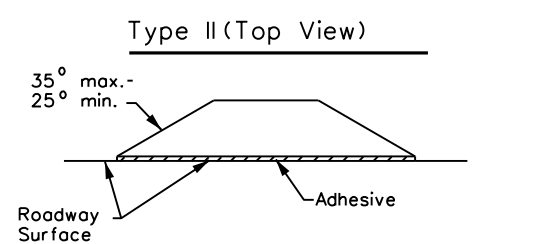
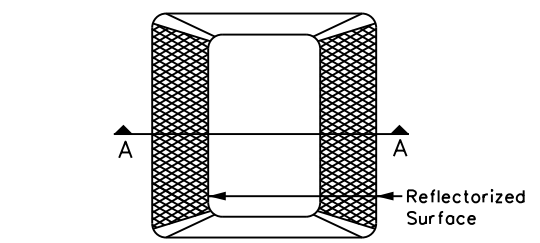
**PARALLEL ACCELERATION LANE**

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.

LEGEND	
←	Traffic flow
↩	Pavement marking arrows (white)
□	ReflectORIZED Raised Markers (RPM) Type II-C-R

**GENERAL NOTE**  
 On concrete pavements the raised pavement markers shall be placed to one side of the longitudinal joints.



**SECTION A**  
**REFLECTORIZED RAISED PAVEMENT MARKER (RPM)**

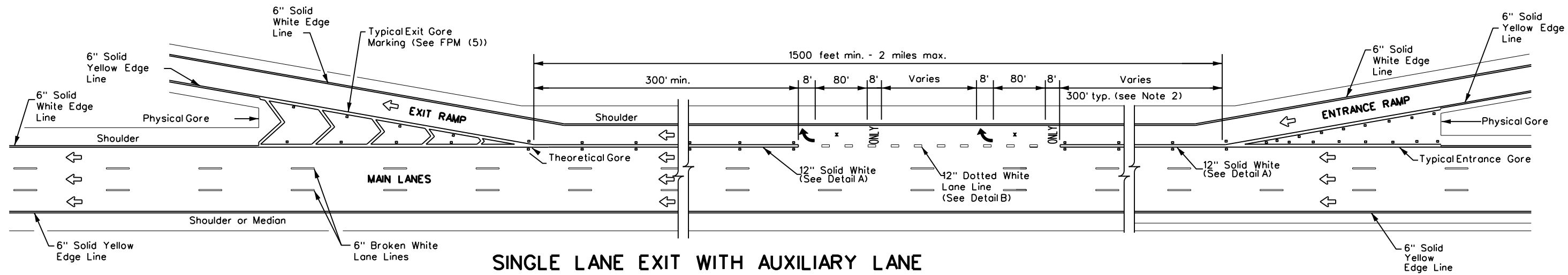
Texas Department of Transportation  
 Traffic Safety Division Standard

**TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS**  
**FPM(1)-22**

FILE: fpm(1)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095,ETC.	SH 6
5-74 8-00 2-12	DIST	COUNTY	SHEET NO.	
4-92 2-08 10-22	WAC	McLENNAN,ETC.	108	
5-00 2-10				

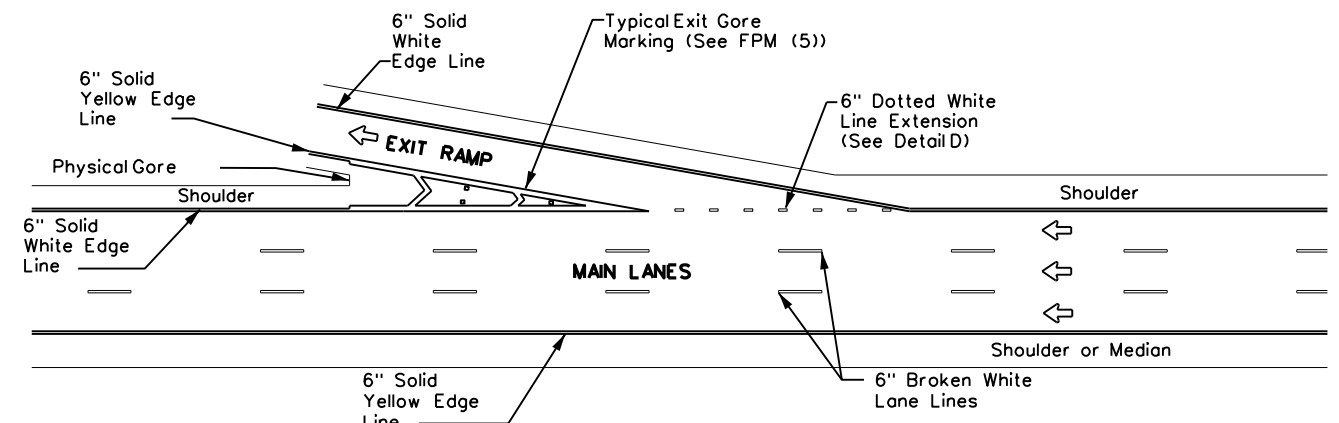
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 11/28/2023 2:04:28 PM  
 FILE: ...RDWY STD\Fpm(2)-22.dgn



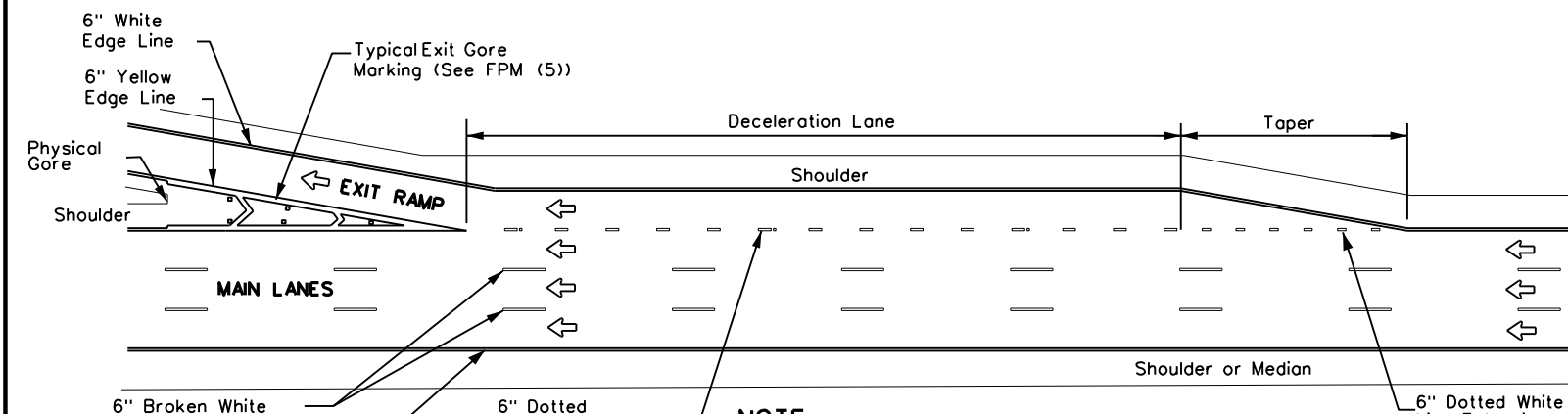
### SINGLE LANE EXIT WITH AUXILIARY LANE

(See Note 2)



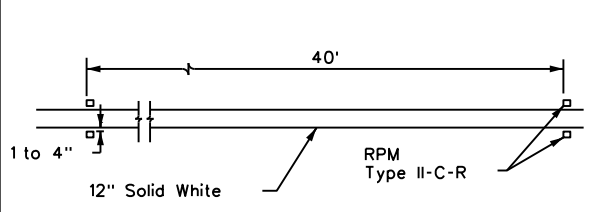
### TAPERED DECELERATION LANE

**NOTE**  
 Reference Roadway Design Manual Chapter 3 to determine if tapered deceleration lane may be used.

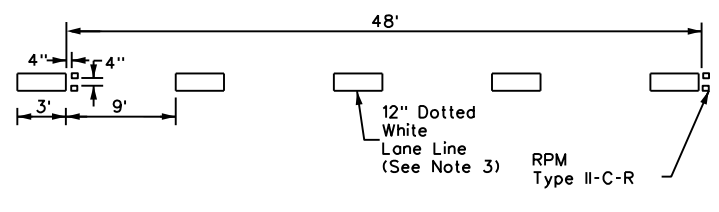


### PARALLEL DECELERATION LANE

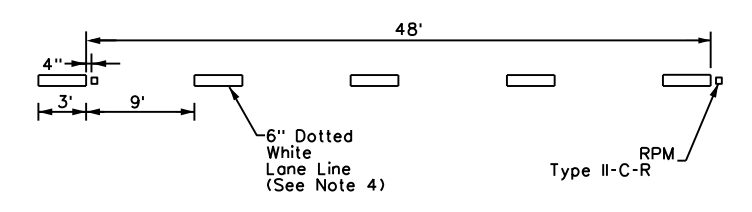
**NOTE**  
 Reference Roadway Design Manual Chapter 3 to determine length of deceleration lane and taper.



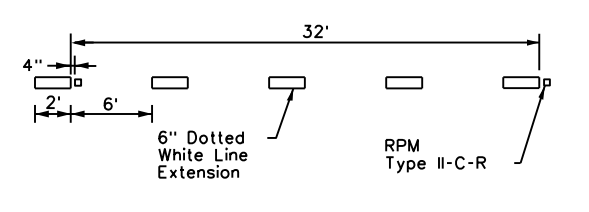
**DETAIL A**



**DETAIL B**



**DETAIL C**



**DETAIL D**

#### GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Normal (6") dotted lane line (see Detail C) is used at parallel acceleration and deceleration lanes.
5. See FPM(1) for traffic lane line pavement marking details.

#### LEGEND

←	Traffic flow
↘	Pavement marking arrows (white)
□	Reflectorized Raised Markers (RPM) Type II-C-R
x	Arrow markings are optional, however "ONLY" is required if arrow is used

#### 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

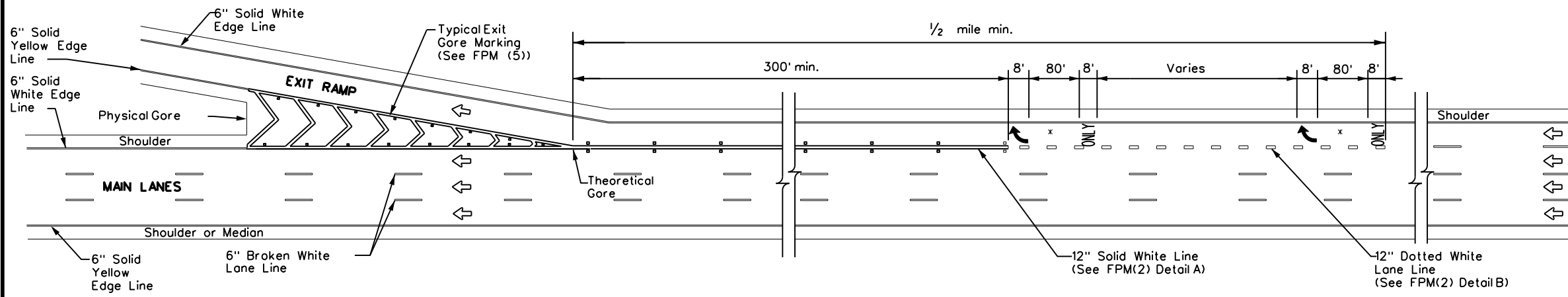
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



## TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS ENTRANCE AND EXIT RAMP

### FPM(2)-22

FILE: fpm(2)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095,ETC.	SH 6
2-77 5-00 2-12	DIST	COUNTY	SHEET NO.	
4-92 8-00 10-22	WAC	McLENNAN,ETC.	109	
8-95 2-10				

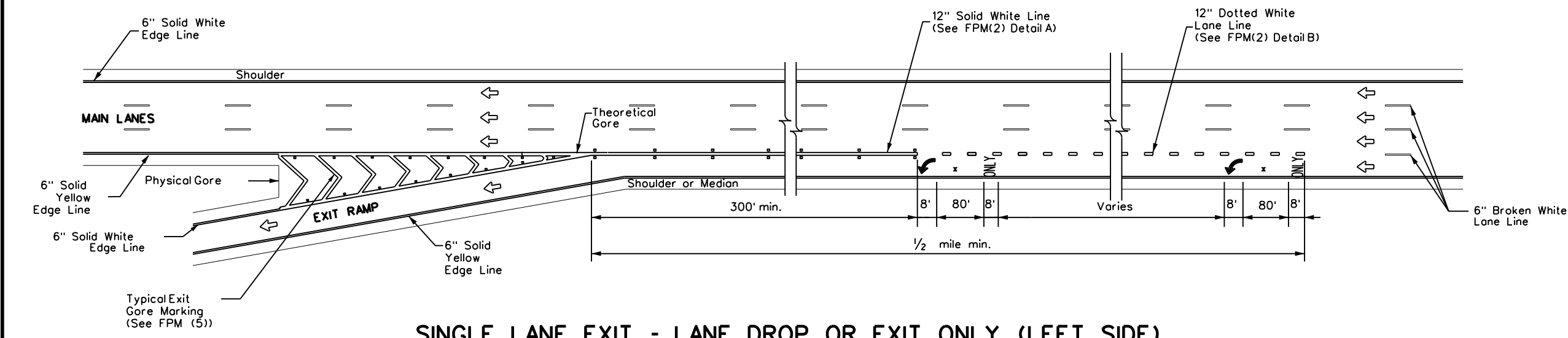


**SINGLE LANE EXIT - LANE DROP OR EXIT ONLY**

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.

LEGEND	
	Traffic flow
	Pavement marking arrows (white)
	ReflectORIZED Raised Markers (RPM) Type II-C-R
	Arrow markings are optional, however "ONLY" is required if arrow is used



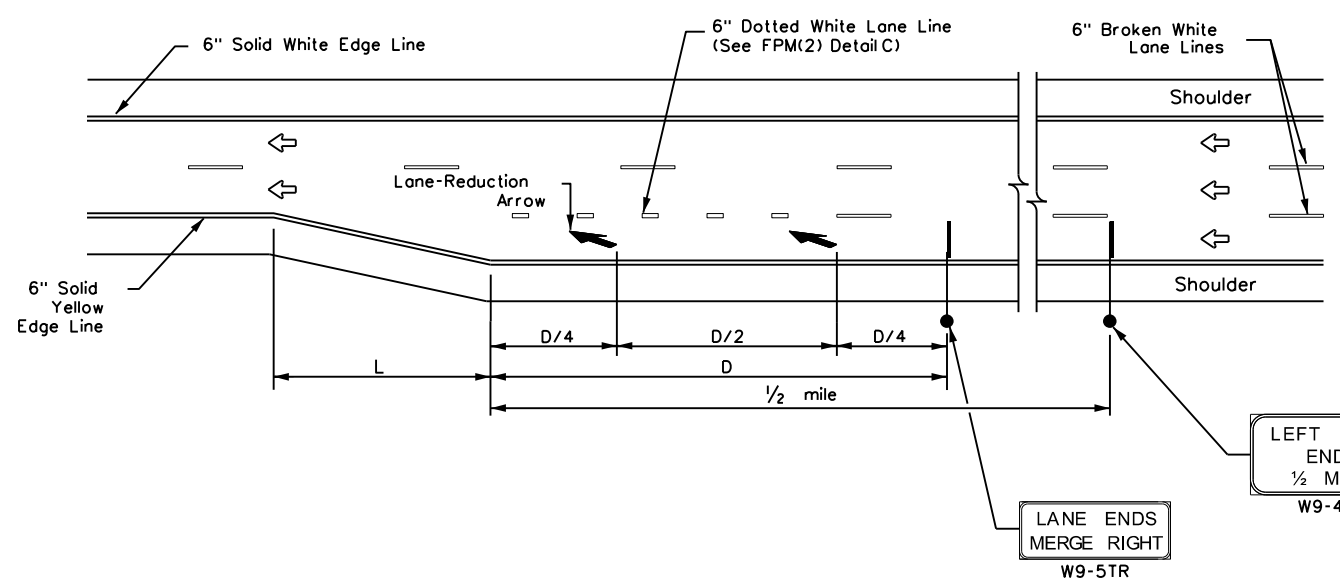
**SINGLE LANE EXIT - LANE DROP OR EXIT ONLY (LEFT SIDE)**

**GENERAL NOTES**

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see FPM(2) Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Edge lines are not required in curb and gutter sections of frontage roads.
5. See FPM(1) for traffic lane line pavement marking details.

**NOTES**

1. Large Guide signs shall conform to the TxDOT Freeway Signing Handbook.
2. 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.
3. Arrows and sign details can be found in the Standard Highway Sign Designs for Texas (SHSD) at <http://www.txdot.gov>.
4. These guidelines may also be applied to the design of a right side lane reduction. Use LANE ENDS MERGE LEFT (W9-5TL) and RIGHT LANE ENDS 1/2 MILE (W9-4TR) signs in lieu of what is shown on drawing.



**FREEWAY LANE REDUCTION**

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
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	
80 MPH	1,500	
85 MPH	1,625	



**TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS SINGLE LANE DROP (EXIT ONLY) AND LANE REDUCTION DETAILS FPM(3)-22**

FILE: fpm(3)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095,ETC.	SH 6
4-92 2-10	DIST	COUNTY	SHEET NO.	
5-00 2-12	WAC	McLENNAN,ETC.	110	
8-00 10-22				

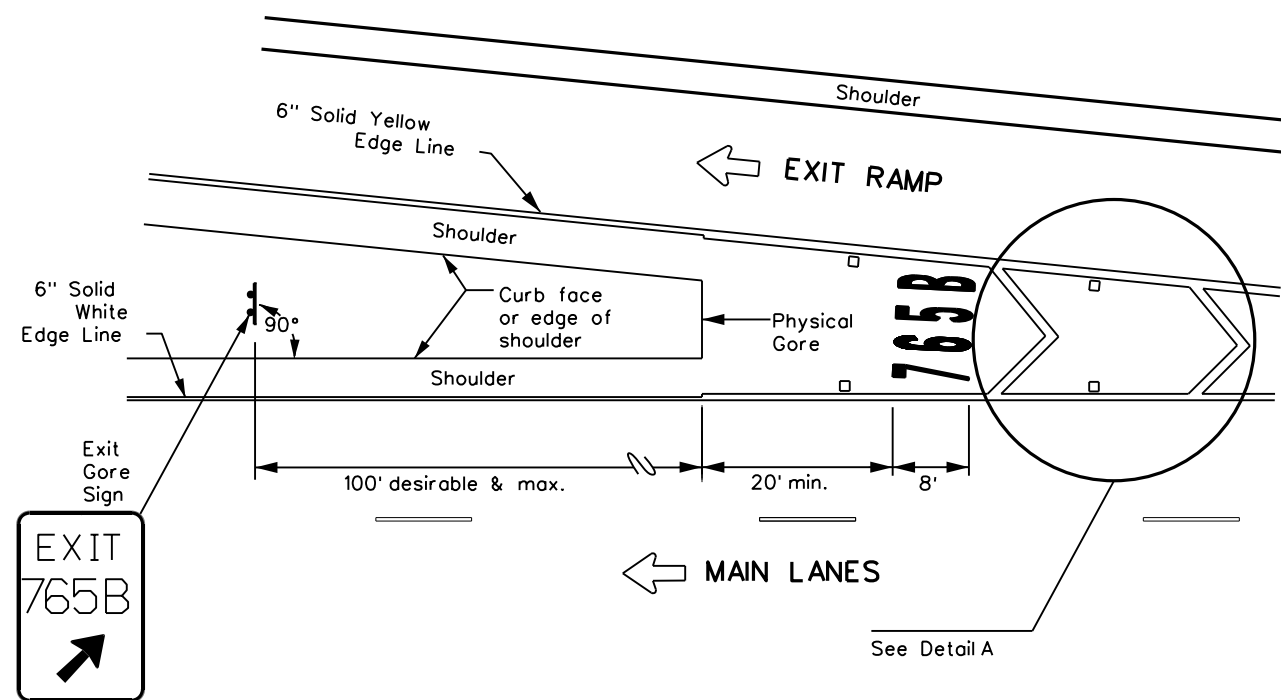
DATE: 11/28/2023 2:04:30 PM  
FILE: ...RDWY STD\Fpm(3)-22.dgn

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

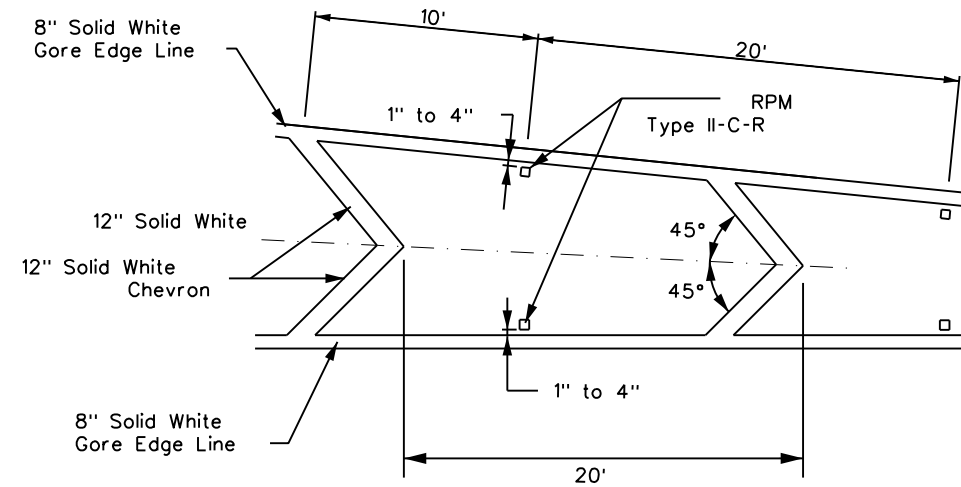
DATE: 11/28/2023 2:04:31 PM  
 FILE: ...RDWY STD\Fpm(5)-22.dgn

### EXIT NUMBER PAVEMENT MARKING NOTES

1. Minimum 8 foot white exit number pavement markings should be used, unless otherwise noted.
2. Spacing between letters and numbers should be approximately 4 inches.
3. Pavement markings are to be located as specified elsewhere in the plans.
4. Numbers and Letters details can be found in the Standard Highway Design for Texas (SHSD) Section 12 at <http://www.txdot.gov>



### MARKINGS WITH EXIT NUMBER



### NOTES

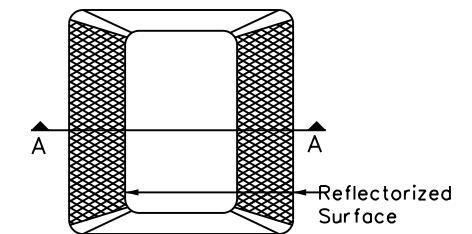
1. Raised pavement markers shall be centered between each chevron or neutral area line.
2. For more information, see ReflectORIZED Raised Pavement Marker Detail.

### DETAIL A

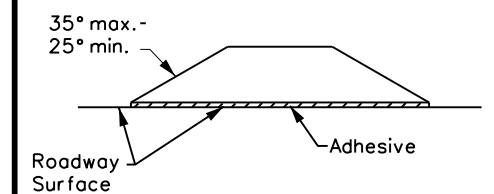
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

LEGEND	
←	Traffic flow
□	ReflectORIZED Raised Markers (RPM) Type II-C-R



Type II (Top View)



SECTION A

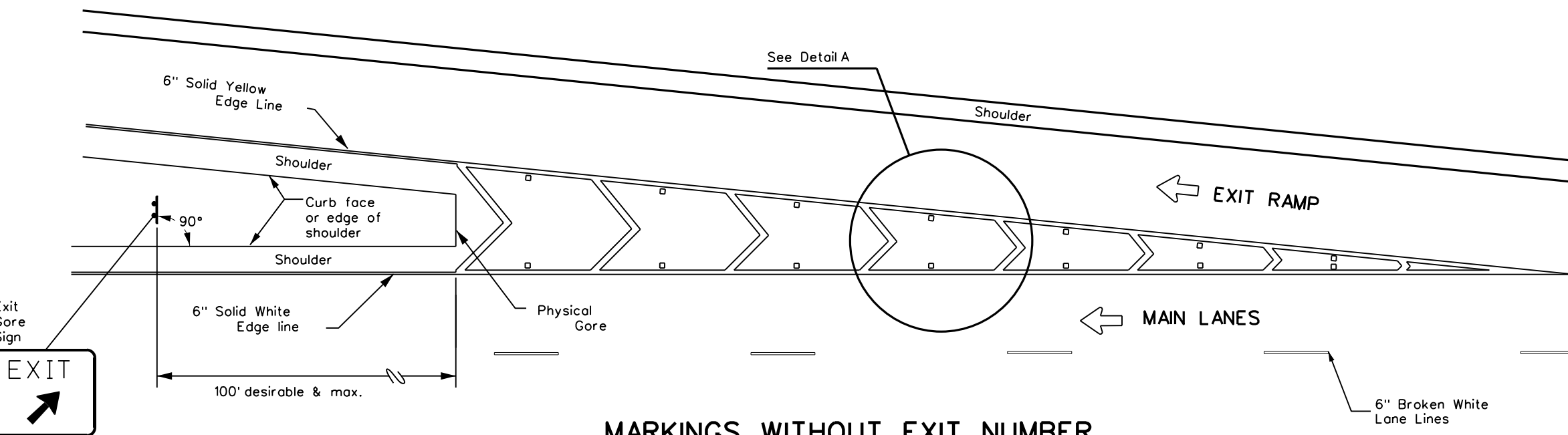
### REFLECTORIZED RAISED PAVEMENT MARKER (RPM)



### EXIT GORE PAVEMENT MARKINGS

### FPM(5)-22

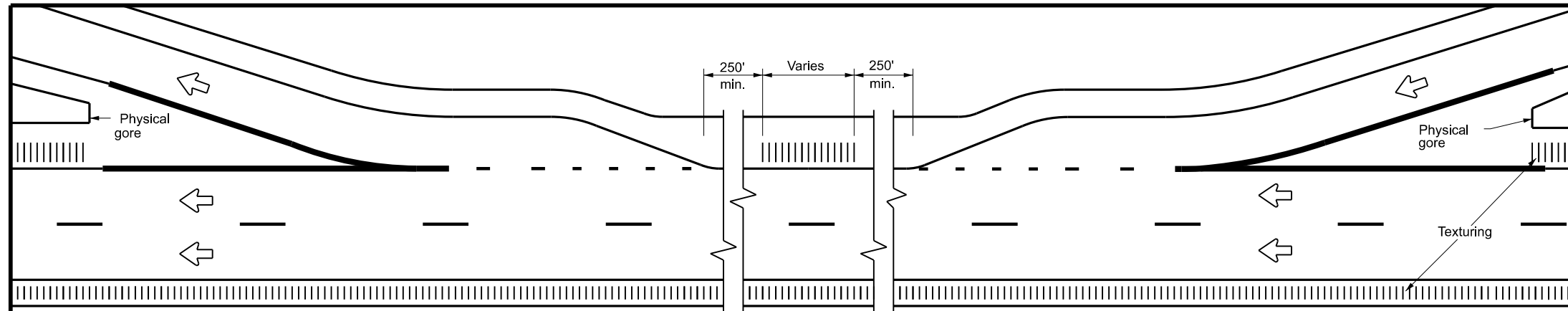
FILE: fpm(5)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095,ETC.	SH 6
9-19	DIST	COUNTY	SHEET NO.	
10-22	WAC	McLENNAN,ETC.	111	



### MARKINGS WITHOUT EXIT NUMBER

6" Broken White Lane Lines

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.



TYPICAL RUMBLE STRIP PLACEMENT AT EXIT AND ENTRANCE RAMPS

**GENERAL NOTES**

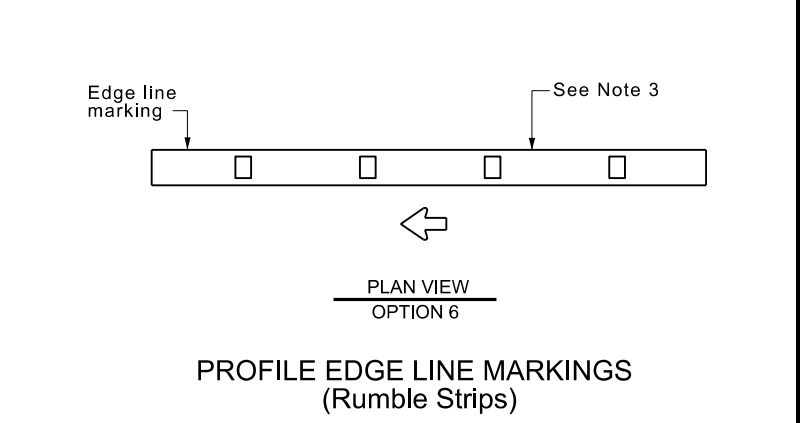
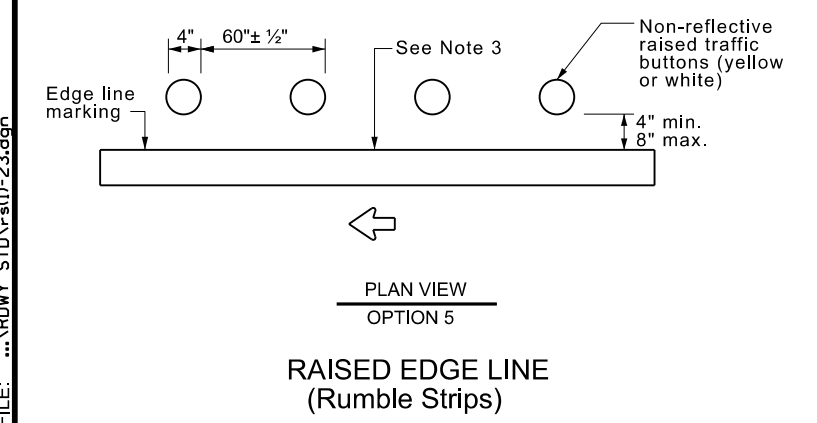
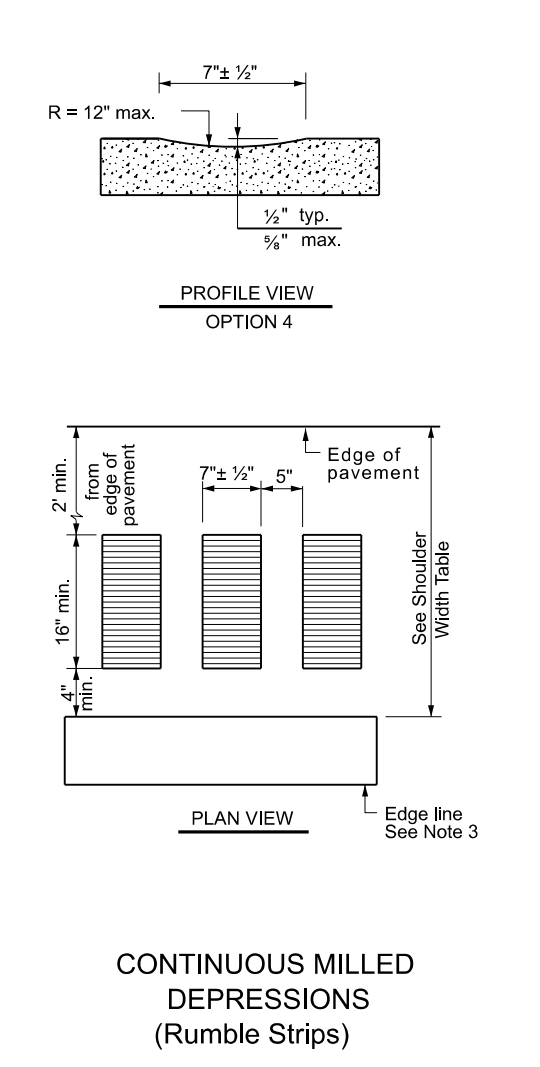
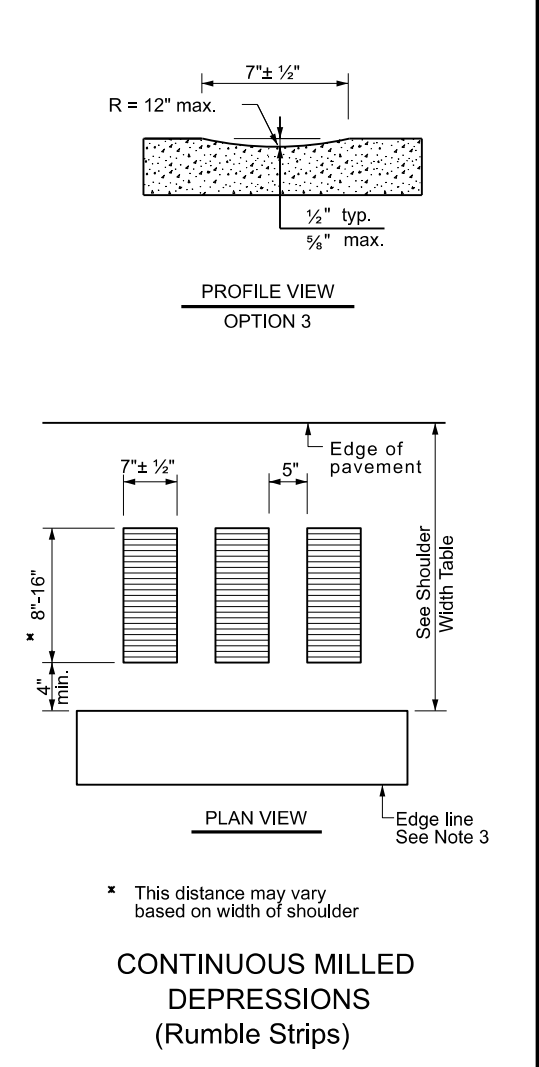
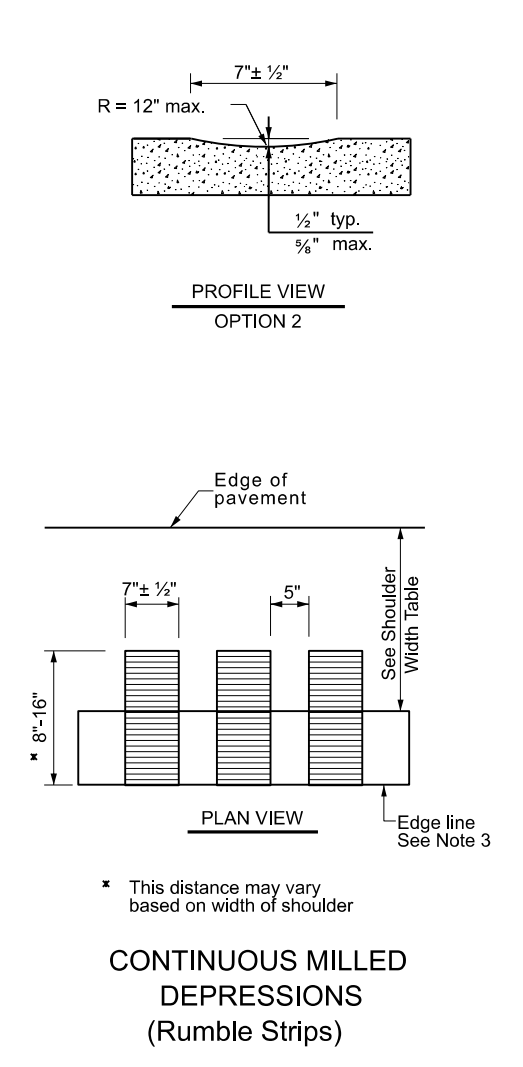
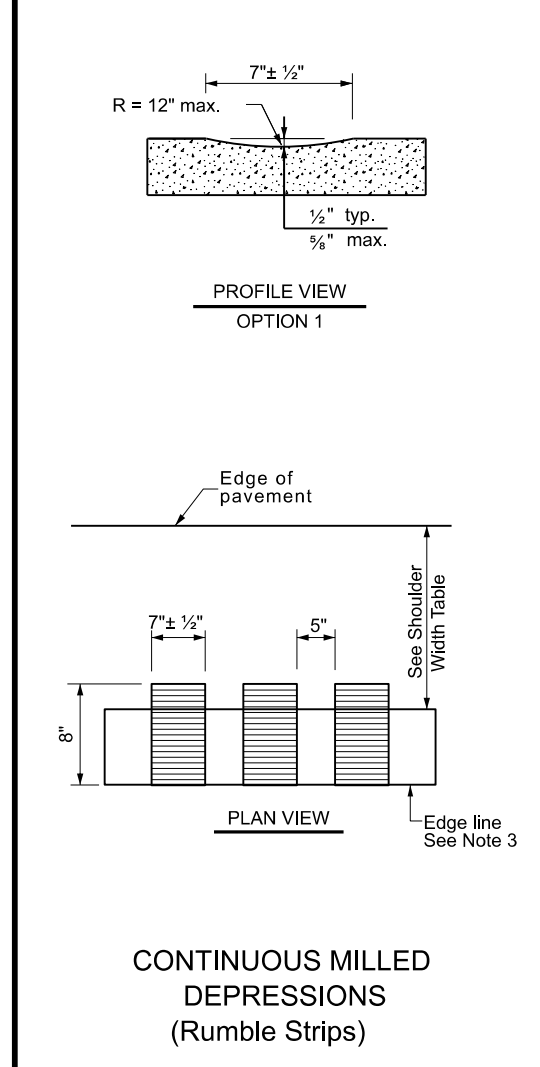
- Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
- Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
- Use standard sheets PM(2) and FPM(1) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
- See the Shoulder Width Table below for determining what options may be used for edge line rumble strips.
- Breaks in edge line rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections, or driveways with high usage of large trucks when installed on conventional highways.
- Rumble strips shall not be placed across exit or entrance ramps, acceleration or deceleration lanes, crossovers, gore areas, or intersections with other roadways.
- Consideration should be given to noise levels when edge line rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
- Consideration shall be given to bicyclists. See RS(6).

**WHEN INSTALLING MILLED DEPRESSION EDGE LINE RUMBLE STRIPS:**

- See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
- Pavement markings can be applied over milled shoulder rumble strips to create an edge line rumble stripe.

**WHEN INSTALLING RAISED OR PROFILE EDGE LINE RUMBLE STRIPS:**

- Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
- Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edge line when used as a rumble strip. The color of the button should match the color of the adjacent edge line marking (white or yellow). The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
- Non-reflective traffic buttons shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
- The minimum distance between the edge line and the buttons should be used if the shoulder is less than 8 feet in width.
- Raised profile thermoplastic markings used as edge lines may substitute for buttons.



SHOULDER WIDTH TABLE		
EQUAL TO OR LESS THAN 2 FEET	GREATER THAN 2 FEET LESS THAN 4 FEET	EQUAL TO OR GREATER THAN 4 FEET
Option 1, 5, or 6	Option 1, 2, 3, 5, or 6	Option 2, 4, 5, or 6

Texas Department of Transportation

Traffic Safety Division Standard

## EDGE LINE RUMBLE STRIPS ON FREEWAYS AND DIVIDED HIGHWAYS

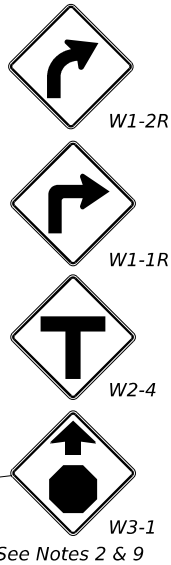
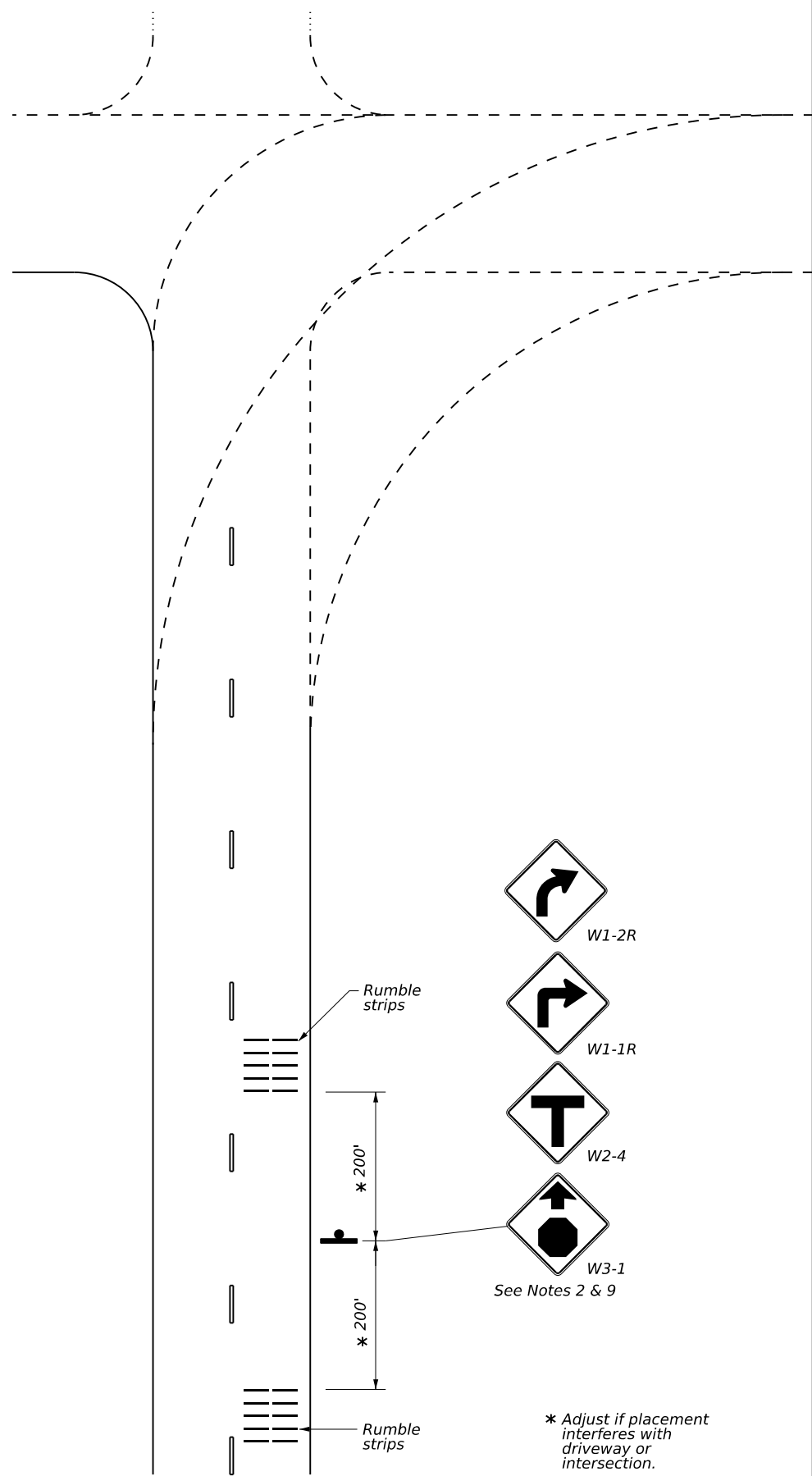
### RS(1)-23

FILE: rs(1)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	January 2023	CONT	SECT	JOB
		0049	01	095,ETC.
4-06	1-23	DIST	COUNTY	SHEET NO.
2-10		WAC	McLENNAN,ETC.	112
10-13				

DATE: 11/28/2023 2:04:33 PM  
 FILE: ...RDWY STD\rs(1)-23.dgn

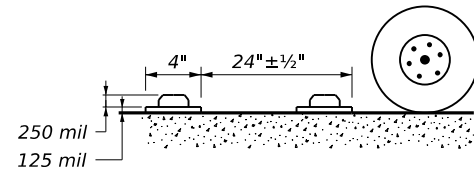
# RUMBLE STRIP TYPICAL APPLICATION

See Note 1



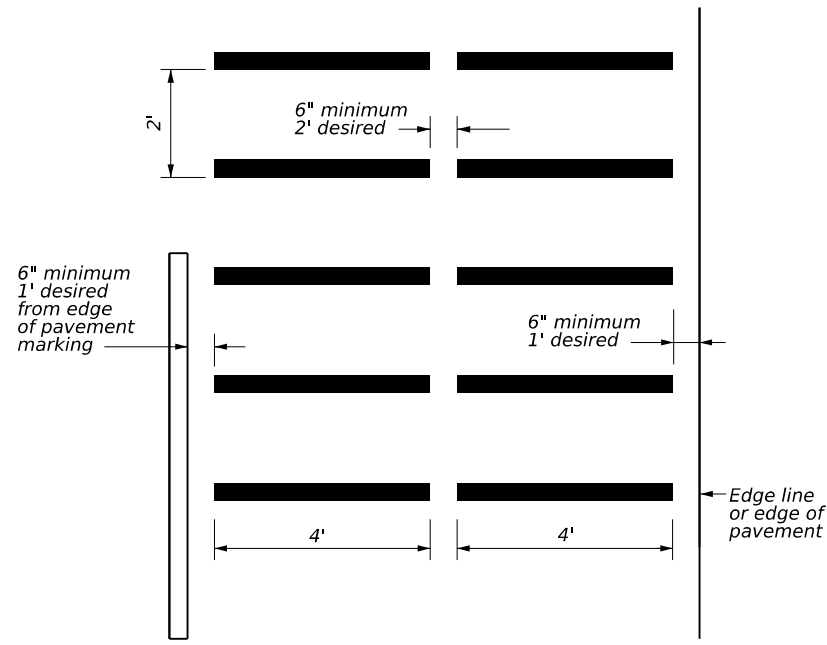
See Notes 2 & 9

\* Adjust if placement interferes with driveway or intersection.



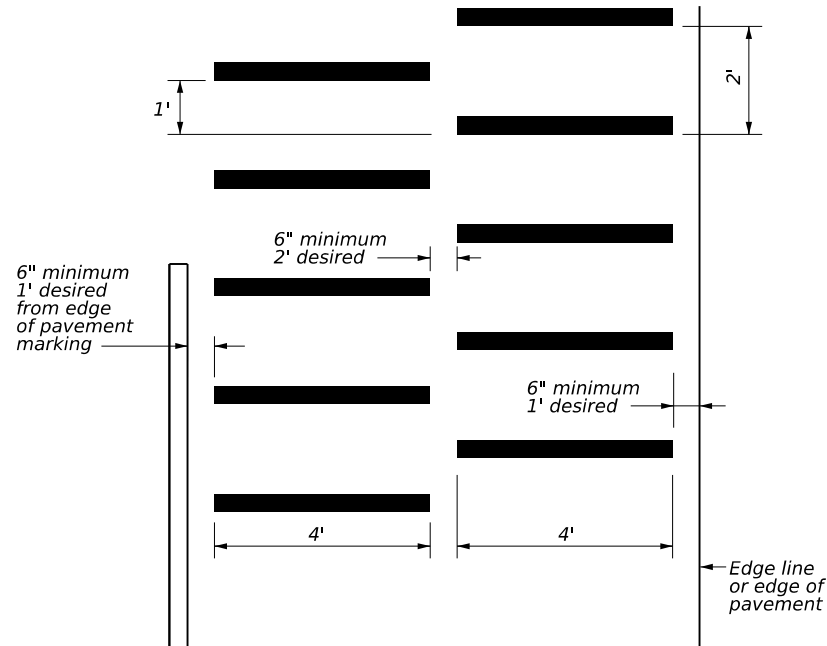
PROFILE VIEW

## RUMBLE STRIP STANDARD PATTERN



PLAN VIEW

## RUMBLE STRIP ALTERNATIVE PATTERN



PLAN VIEW

### GENERAL NOTES

1. Transverse or in-lane rumble strips should only be used at high incident and special geometric locations. These special geometric locations may include: approaches to rural, high speed signalized or stop-controlled intersections with sight restrictions and/or high crash rates, approaches to unexpected urban intersections, approaches to newly installed stop or signalized controlled intersections, approaches to toll plazas, approaches to hazardous horizontal curves, and approaches to railroad grade crossings.
2. When used, the rumble strips shall be placed 200 feet upstream and downstream of the warning sign.
3. The use of rumble strips should not be widespread or indiscriminate.
4. Preformed black raised rumble strips should be used. They should be installed in accordance with the manufacturer's recommendations.
5. Please reference the TxDOT Material Producers List for approved rumble strips (transverse): <http://www.txdot.gov/>
6. Consideration should be given to noise levels when in-lane or transverse rumble strips are to be installed near residential areas, schools, churches, etc.
7. The RUMBLE STRIPS AHEAD (W17-2T) sign may be used in advance of in-lane or transverse rumble strips, based on engineering judgement. This sign is typically not necessary for rumble strip installations built to the guidelines on this standard sheet. When used, this sign should be spaced in advance of the rumble strips based on the Guidelines for Advance Placement of Warning Signs table of the Texas Manual on Uniform Traffic Control Devices.
8. Consideration shall be given to bicyclists. See RS(6).
9. Other signs can be used as conditions warrant.



W17-2T

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

DATE: 11/28/2023 6:19:28 PM  
FILE: RUMBLE STRIPS(5)-23.dgn

				<b>Traffic Safety Division Standard</b>	
<h2>TRANSVERSE OR IN-LANE RUMBLE STRIPS</h2> <h3>RS(5)-23</h3>					
FILE: rs(5)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT	January 2023	CONT	SECT	JOB	HIGHWAY
		0049	01	095, ETC.	SH 6
4-06	1-12	REVISIONS		DIST	COUNTY
2-10				WAC	McLENNAN, ETC.
10-13					SHEET NO. 112A



**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.

**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.: 430 307 X  
 Crossing Type: AT-GRADE  
 RR Company Operating Track at Crossing: UNION PACIFIC  
 RR Company Owning Track at Crossing: UNION PACIFIC  
 RR MP: 151.230  
 RR Subdivision: FORT WORTH  
 City: RIESEL  
 County: MCLENNAN, ETC.  
 CSJ at this Crossing: 0049-01-095, ETC.  
 Latitude: 31.4745664  
 Longitude: -96.9266404

Scope of Work, including any TCP, to be performed by State Contractor:

REHABILITATION OF EXISTING ROAD, SURFACING/ROADWAY RESTORATION, MILL AND OVERLAY

Scope of Work to be performed by Railroad Company:

NONE

**II. FLAGGING & INSPECTION**

No. of Days of Railroad Flagging Expected: \_\_\_\_\_  
 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@railprofs.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: \_\_\_\_\_

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	
<input checked="" type="checkbox"/> Not Required	
<input type="checkbox"/> Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	\$2,000,000 / \$6,000,000
<input type="checkbox"/> Bridge Structure Projects. Includes new construction or replacement of overpass/underpass structures	\$5,000,000 / \$10,000,000
<input type="checkbox"/> 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: \_\_\_\_\_  
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: UNION PACIFIC RAILROAD COMPANY  
 Railroad Emergency Line at: 888-877-7267  
 Location: DOT 430 307 X  
 RR Milepost: 151.230  
 Subdivision: FORT WORTH

**RRD Review Only**  
 Initials: EM  
 Date: 10/27/23

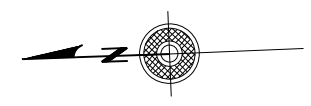
**Rail Division**

## RAILROAD SCOPE OF WORK

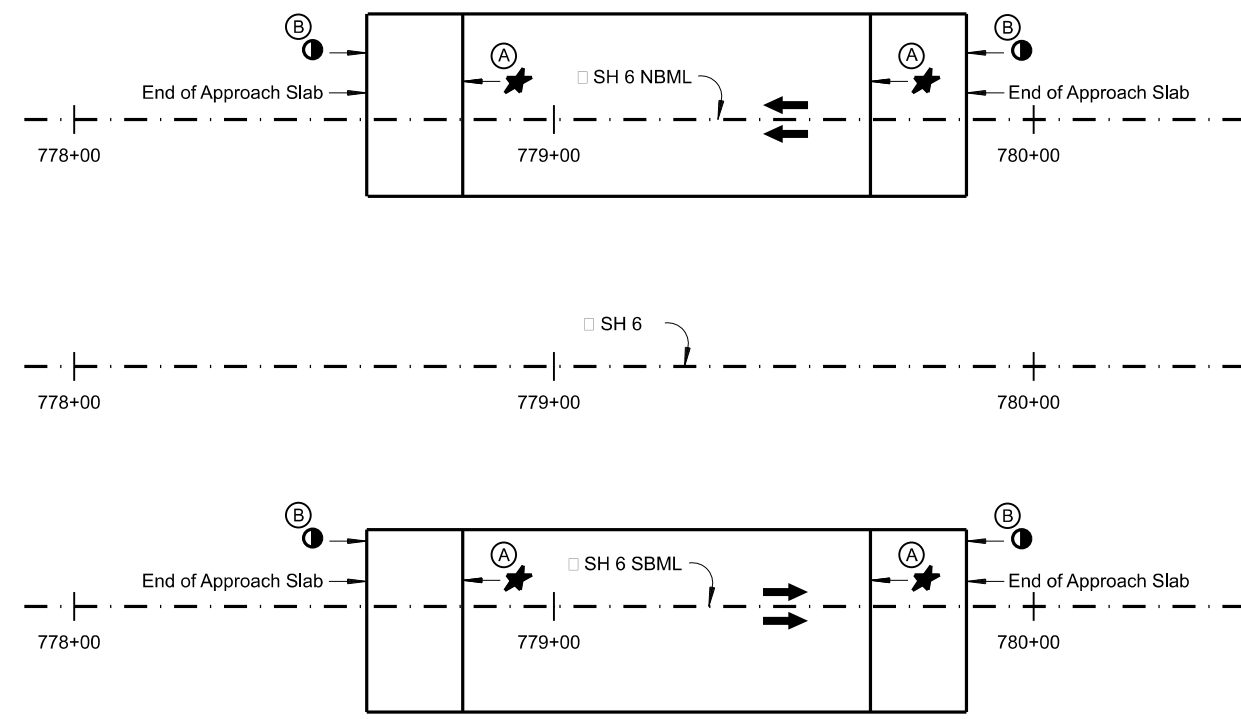
### PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf	DN: TxDOT	CK:	DW:	CK:
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY
6/2023	0049	01	095	SH 6
	DIST	COUNTY		SHEET NO.
	09	MCLENNAN		113

C/S:  
 D/W:  
 C/S:  
 D/W:



TO SL 484



- B
 Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- A
 Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

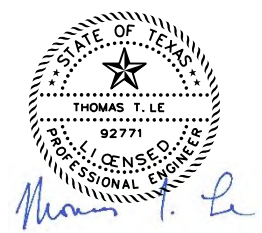
**LAYOUT PLAN**  
**SH 6 (NBML & SBML) OVER SANDY CREEK**  
(NBML N.B.I.#09-074-0-0049-02-162)  
(SBML N.B.I.#09-074-0-0049-02-163)  
STA 778+81.00 TO STA 779+66.00

**ESTIMATED QUANTITIES**

	<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">B</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">A</span>
ITEM	438-6002	438-6004
	CLEANING AND SEALING EXISTING JOINTS (CL 3)	CLEANING AND SEALING EXISTING JOINTS (CL 7)
LOCATION	L.F.	L.F.
STR. #162 (NBML)	76.0	76.0
STR. #163 (SBML)	76.0	76.0
<b>TOTAL</b>	<b>152.0</b>	<b>152.0</b>

**SH 6 (NB) OVER SANDY CREEK**  
 85' ~ OVERALL LENGTH =  
 1 - (85') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH  
 RAIL TYPE TL4

**SH 6 (SB) OVER SANDY CREEK**  
 85' ~ OVERALL LENGTH =  
 1 - (85') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH  
 RAIL TYPE TL4



11/28/2023

REV. NO	DATE	REVISION	BY

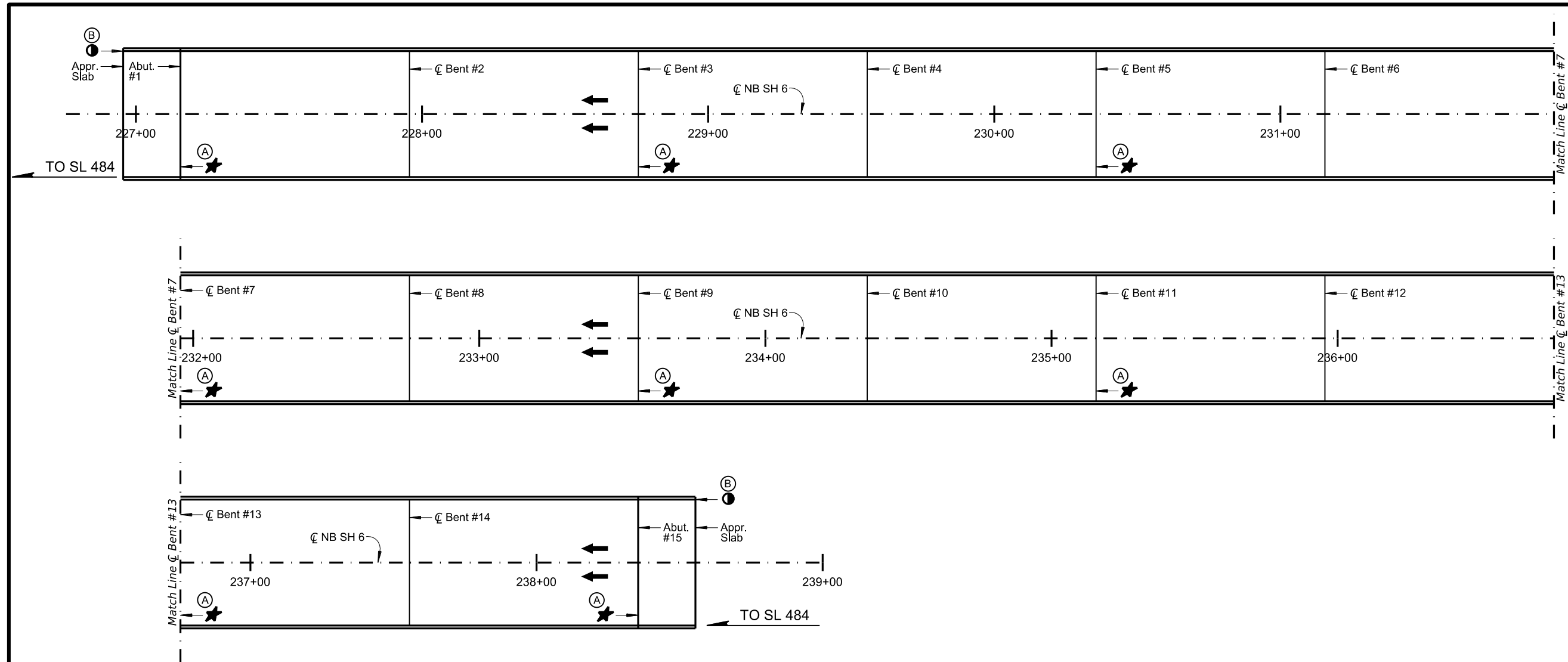
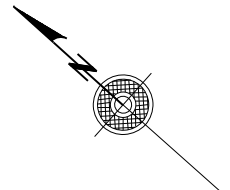


**SH 6**  
**LAYOUT FOR**  
**CLEANING AND SEALING**  
**EXISTING JOINTS**  
**SH 6 OVER**  
**SANDY CREEK**

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN,ETC.	114	

DATE: 11/28/2023 3:41:56 PM  
 FILE: ...SH 6 BRIDGE DETAIL.dgn



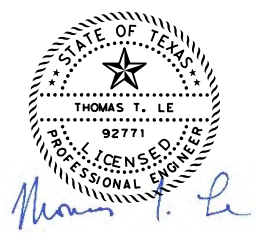
- Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

**LAYOUT PLAN**  
**NB SH 6 OVER BIG CREEK**  
 ( N.B.I.#09-074-0-0049-03-142)  
 STA 227+15.00 TO STA 238+35.00

ESTIMATED QUANTITIES

ITEM	Ⓐ	Ⓑ
	438-6004	438-6002
LOCATION	CLEANING AND SEALING EXISTING JOINTS (CL 7)	CLEANING AND SEALING EXISTING JOINTS (CL 3)
	L.F.	L.F.
STR. #142	352.0	88.0
TOTAL	352.0	88.0

SH 6 OVER BIG CREEK  
 1120' ~ OVERALL LENGTH =  
 7 - (160') PRESTRESSED CONC. BEAM UNITS  
 44'-0" ROADWAY  
 46'-0" OVERALL WIDTH  
 RAIL TYPE T501



11/28/2023

REV. NO	DATE	REVISION	BY

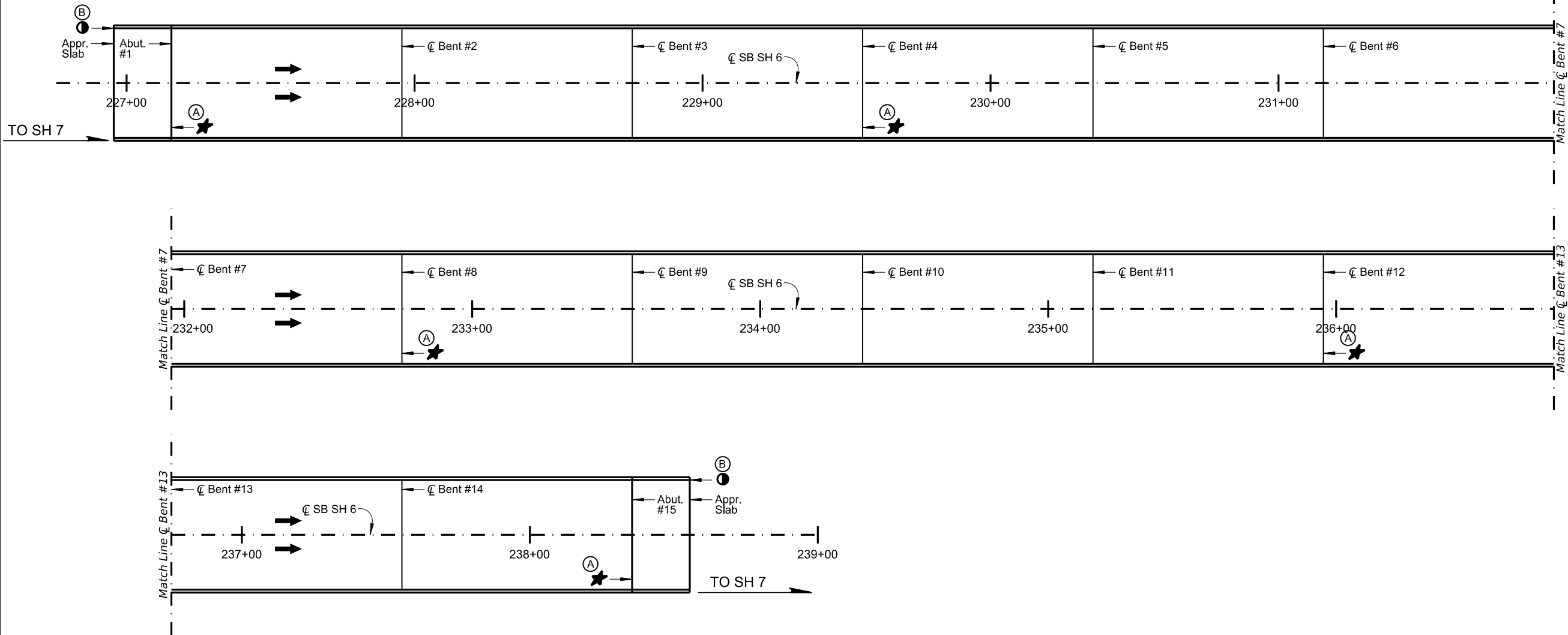
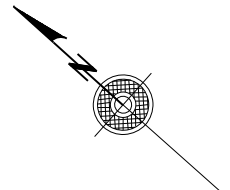


SH 6  
 LAYOUT FOR  
 CLEANING AND SEALING  
 EXISTING JOINTS  
 NB SH 6 OVER BIG CREEK

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	115	

DATE: 11/28/2023 3:43:33 PM  
 FILE: ...ISH36\_BRIDGE\_DETAIL\_01.dgn



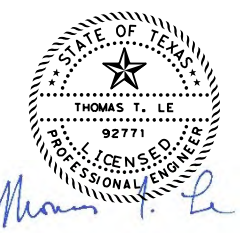
- B
 Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- A
 Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

**LAYOUT PLAN**  
**SB SH 6 OVER BIG CREEK**  
 ( N.B.I.#09-074-0-0049-03-151 )  
 STA 227+15.00 TO STA 238+35.00

ESTIMATED QUANTITIES

	(A)	(B)
ITEM	438-6004	438-6002
	CLEANING AND SEALING EXISTING JOINTS (CL 7)	CLEANING AND SEALING EXISTING JOINTS (CL 3)
LOCATION	L.F.	L.F.
STR. #151	190.0	76.0
TOTAL	190.0	76.0

SH 6 OVER BIG CREEK  
 1120' ~ OVERALL LENGTH =  
 2 - (320'), 2 - (240') PRESTRESSED CONC. BEAM UNITS  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH  
 RAIL TYPE T501 (EAST)  
 RAIL TYPE T502 (WEST)



11/28/2023

REV. NO	DATE	REVISION	BY

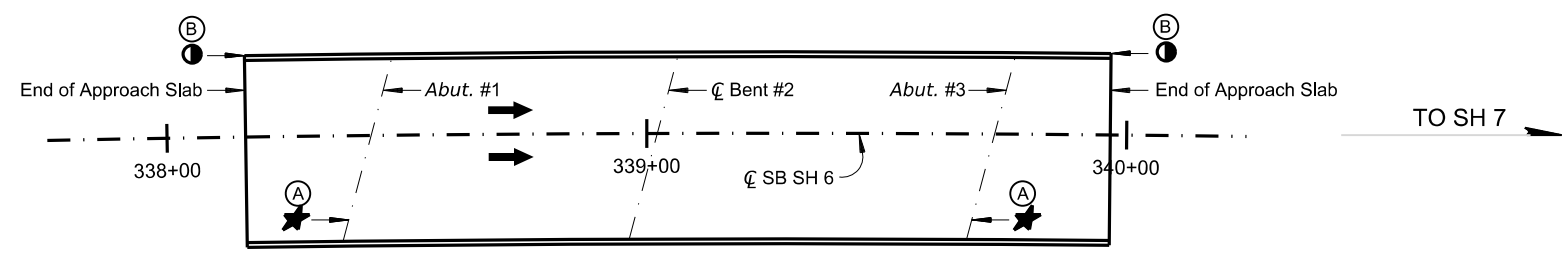
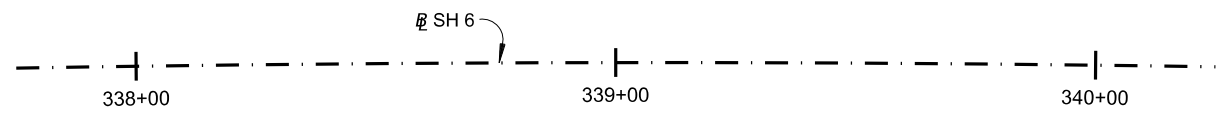
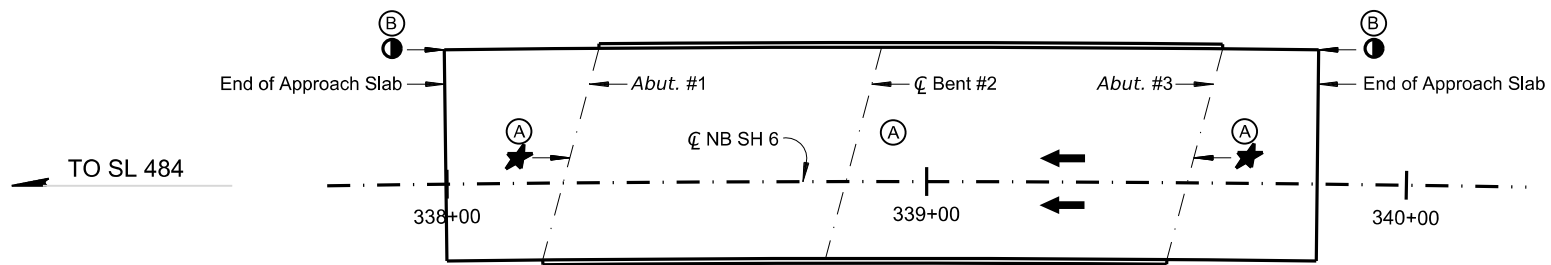


**SH 6**  
**LAYOUT FOR**  
**CLEANING AND SEALING**  
**EXISTING JOINTS**  
**SB SH 6 OVER BIG CREEK**

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	116	

DATE: 11/28/2023 3:43:37 PM  
 FILE: ...ISH36\_BRIDGE\_DETAIL\_01.dgn



- ⓑ Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- ⓐ Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

**LAYOUT PLAN**  
**SH 6 OVER HOG BRANCH**  
 ( N.B.I.#09-074-0-0049-04-053 )  
 ( N.B.I.#09-074-0-0049-04-055 )  
 NBML: STA 338+38.73 TO 339+67.89  
 SBML: STA 338+21.19 TO 339+62.05

ESTIMATED QUANTITIES

ITEM	ⓐ	ⓑ
	438-6004	438-6002
LOCATION	CLEANING AND SEALING EXISTING JOINTS (CL 7)	CLEANING AND SEALING EXISTING JOINTS (CL 3)
	L.F.	L.F.
STR. #053 (NBML)	91.4	88.0
STR. #055 (SBML)	78.9	76.0
<b>TOTAL</b>	<b>170.3</b>	<b>164.0</b>

SH 6 OVER HOG BRANCH (STR. #053)  
 130.06' ~ OVERALL LENGTH =  
 1 - (130.06') PRESTRESSED CONC. BEAM UNIT  
 44'-0" ROADWAY  
 46'-0" OVERALL WIDTH 15°  
 RAIL TYPE T401

SH 6 OVER HOG BRANCH (STR. #055)  
 129.95' ~ OVERALL LENGTH =  
 1 - (129.95') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH 15°  
 RAIL TYPE T401



11/28/2023

REV. NO	DATE	REVISION	BY

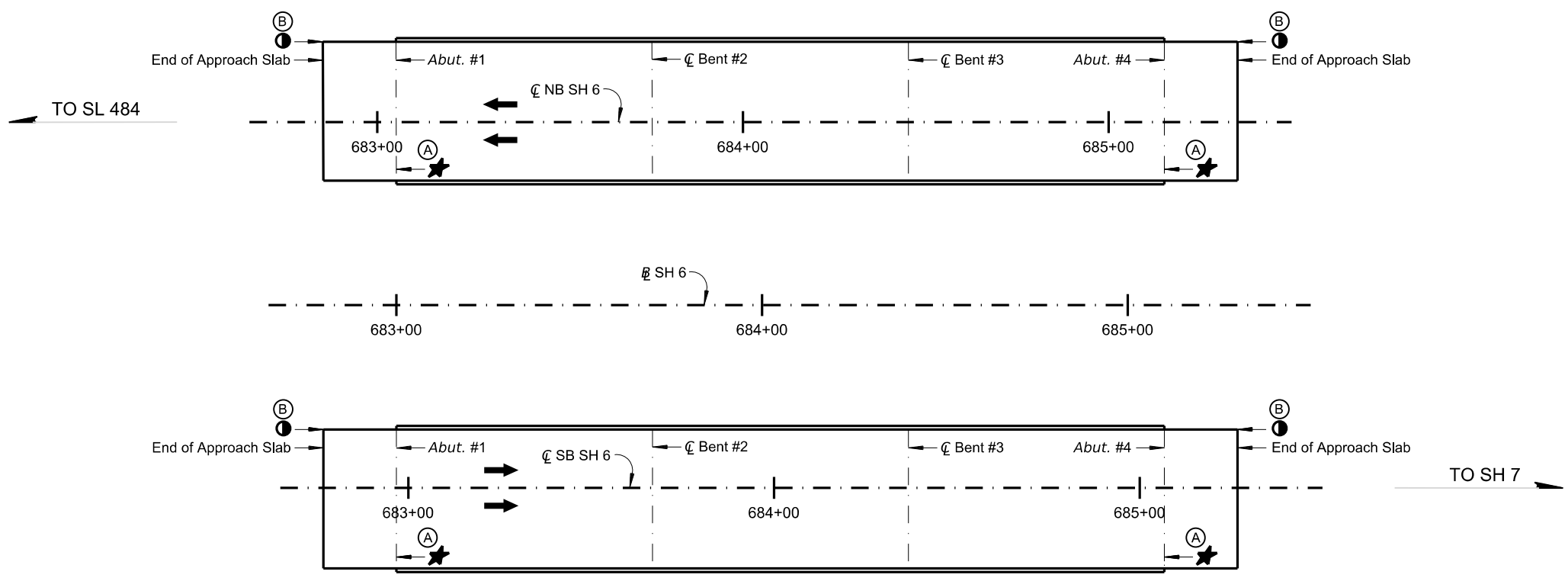
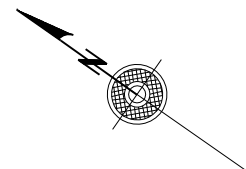


**SH 6**  
**LAYOUT FOR**  
**CLEANING AND SEALING**  
**EXISTING JOINTS**  
**SH 6 OVER**  
**HOG BRANCH**

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	117	

DATE: 11/28/2023 3:43:54 PM  
 FILE: ...ISH36\_BRIDGE\_DETAIL\_02.dgn



- ⓑ Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- Ⓐ Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

**LAYOUT PLAN**  
**SH 6 OVER LITTLE BRAZOS RIVER**  
 ( N.B.I.#09-074-0-0049-04-070 )  
 ( N.B.I.#09-074-0-0049-04-165 )  
 STA 683+00.00 TO 685+10.00

ESTIMATED QUANTITIES

ITEM	Ⓐ	ⓑ
	438-6004	438-6002
LOCATION	CLEANING AND SEALING EXISTING JOINTS (CL 7)	CLEANING AND SEALING EXISTING JOINTS (CL 3)
	L.F.	L.F.
STR. #070 (NBML)	76.0	76.0
STR. #165 (SBML)	76.0	76.0
<b>TOTAL</b>	<b>152.0</b>	<b>152.0</b>

SH 6 OVER LITTLE BRAZOS RIVER (STR. #070)  
 210' ~ OVERALL LENGTH =  
 1 - (210') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH  
 RAIL TYPE T401

SH 6 OVER LITTLE BRAZOS RIVER (STR. #165)  
 210' ~ OVERALL LENGTH =  
 1 - (210') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH  
 RAIL TYPE T401



11/28/2023

REV. NO	DATE	REVISION	BY

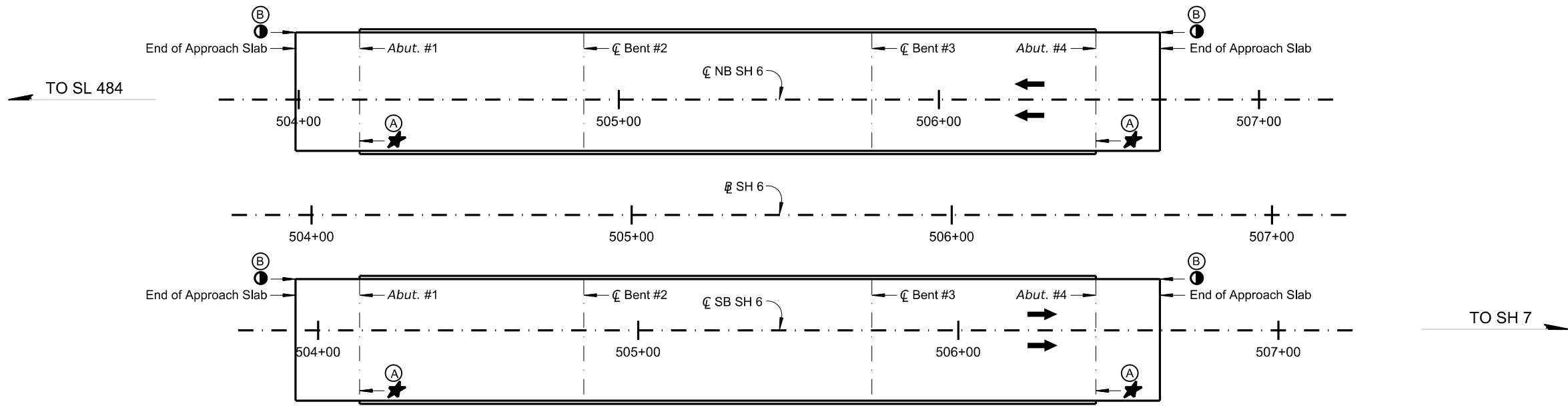
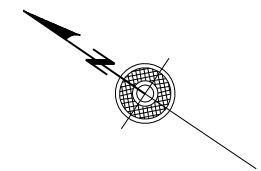


**SH 6**  
**LAYOUT FOR**  
**CLEANING AND SEALING**  
**EXISTING JOINTS**  
**SH 6 OVER**  
**LITTLE BRAZOS RIVER**

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	118	

DATE: 11/28/2023 3:44:11 PM  
 FILE: ...ISH36\_BRIDGE\_DETAIL\_03.dgn



**LAYOUT PLAN**

**SH 6 OVER FM 413**

( N.B.I.#09-074-0-0049-04-027)  
 ( N.B.I.#09-074-0-0049-04-039)  
 STA 504+15.00 TO 506+45.00

- ⓑ Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- ⓐ Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

**ESTIMATED QUANTITIES**

ITEM	ⓐ	ⓑ
	438-6004	438-6002
LOCATION	CLEANING AND SEALING EXISTING JOINTS (CL 7)	CLEANING AND SEALING EXISTING JOINTS (CL 3)
	L.F.	L.F.
STR. #027 (NBML)	76.0	76.0
STR. #039 (SBML)	76.0	76.0
TOTAL	152.0	152.0

SH 6 OVER FM 413 (STR. #027)  
 230' ~ OVERALL LENGTH =  
 1 - (230') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH  
 RAIL TYPE T401

SH 6 OVER FM 413 (STR. #039)  
 230' ~ OVERALL LENGTH =  
 1 - (230') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH  
 RAIL TYPE T401



11/28/2023

REV. NO	DATE	REVISION	BY

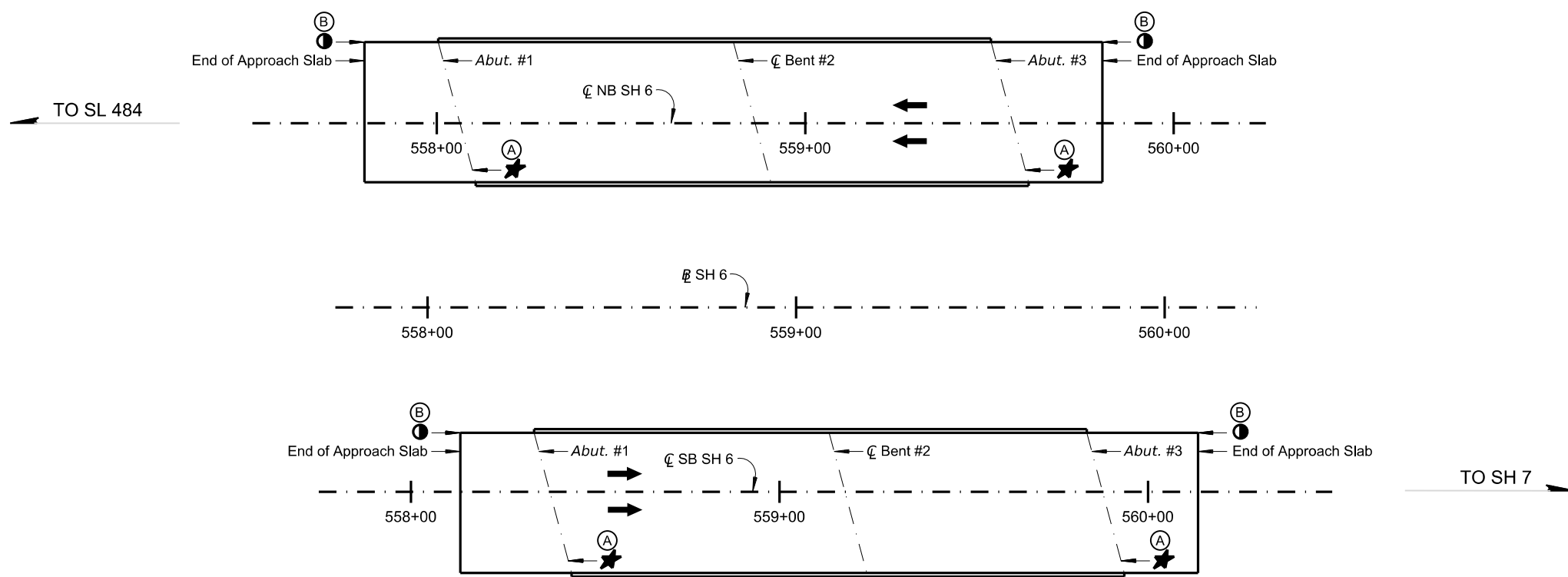
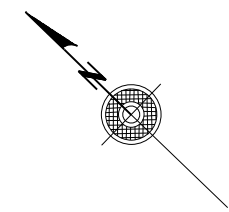


SH 6  
 LAYOUT FOR  
 CLEANING AND SEALING  
 EXISTING JOINTS  
 SH 6 OVER FM 413

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	119	

DATE: 11/28/2023 3:44:26 PM  
 FILE: ...ISH36\_BRIDGE\_DETAIL\_02.dgn



- ⓑ Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- ⓐ Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

**LAYOUT PLAN**  
**SH 6 OVER FISH CREEK**  
 ( N.B.I.#09-074-0-0049-04-025 )  
 ( N.B.I.#09-074-0-0049-04-026 )  
 NBML: STA 558+08.81 TO 559+58.81  
 SBML: STA 558+35.61 TO 559+85.61

ESTIMATED QUANTITIES

ITEM	ⓐ	ⓑ
	438-6004	438-6002
LOCATION	CLEANING AND SEALING EXISTING JOINTS (CL 7)	CLEANING AND SEALING EXISTING JOINTS (CL 3)
	L.F.	L.F.
STR. #025 (NBML)	78.7	76.0
STR. #026 (SBML)	78.7	76.0
<b>TOTAL</b>	<b>157.4</b>	<b>152.0</b>

SH 6 OVER FISH CREEK (STR. #025)  
 150' ~ OVERALL LENGTH =  
 1 - (150') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH 15°  
 RAIL TYPE T401

SH 6 OVER FISH CREEK (STR. #026)  
 150' ~ OVERALL LENGTH =  
 1 - (150') PRESTRESSED CONC. BEAM UNIT  
 38'-0" ROADWAY  
 40'-0" OVERALL WIDTH 15°  
 RAIL TYPE T401



11/28/2023

REV. NO	DATE	REVISION	BY



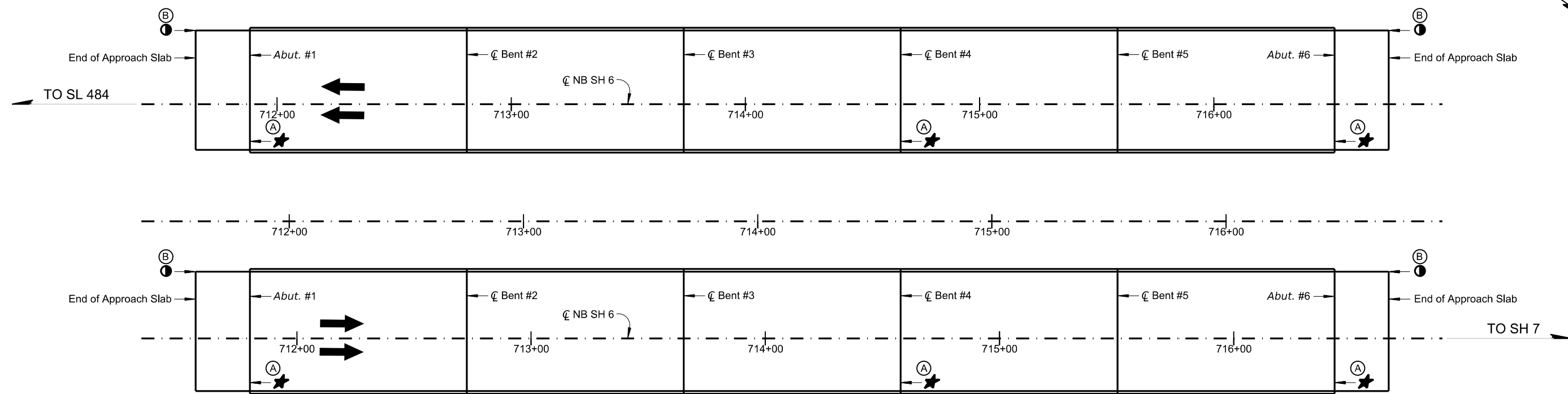
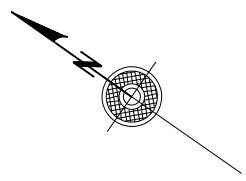
**SH 6**  
**LAYOUT FOR**  
**CLEANING AND SEALING**  
**EXISTING JOINTS**  
**SH 6 OVER FISH CREEK**

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	120	

DATE: 11/28/2023 3:44:26 PM  
 FILE: ...ISH36\_BRIDGE\_DETAIL\_02.dgn





- ⓑ Denotes Location for Cleaning and Sealing Joints between the Approach Slab and the Asphaltic Conc. Pavement with CL3 Sealant. (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)
- ⓐ Denotes Location for Cleaning and Sealing for Armor Joints with Backer Rods and CL7 Sealant (For further details see "CLEANING AND SEALING EXISTING BRIDGE JOINTS" Sheets)

**LAYOUT PLAN**  
**SH 6 OVER COPPERAS CREEK**  
 ( N.B.I.#09-074-0-0049-04-016 )  
 ( N.B.I.#09-074-0-0049-04-017 )  
 STA 711+80.00 TO 715+80.00



11/28/2023

**ESTIMATED QUANTITIES**

ITEM	ⓐ	ⓑ
	438-6004	438-6002
LOCATION	CLEANING AND SEALING EXISTING JOINTS (CL 7)	CLEANING AND SEALING EXISTING JOINTS (CL 3)
	L.F.	L.F.
STR. #016 (NBML)	132.0	88.0
STR. #017 (SBML)	150.0	100.0
<b>TOTAL</b>	<b>282.0</b>	<b>188.0</b>

SH 6 OVER COPPERAS CREEK (STR. #016)  
 400' ~ OVERALL LENGTH =  
 1 - (240') PRESTRESSED CONC. BEAM UNIT  
 1 - (160') PRESTRESSED CONC. BEAM UNIT  
 44'-0" ROADWAY  
 46'-0" OVERALL WIDTH  
 RAIL TYPE T401

SH 6 OVER COPPERAS CREEK (STR. #017)  
 400' ~ OVERALL LENGTH =  
 1 - (240') PRESTRESSED CONC. BEAM UNIT  
 1 - (160') PRESTRESSED CONC. BEAM UNIT  
 50'-0" ROADWAY  
 52'-0" OVERALL WIDTH  
 RAIL TYPE T401

DATE: 11/28/2023 3:44:43 PM  
 FILE: ...ISH36\_BRIDGE\_DETAIL\_03.dgn

REV. NO	DATE	REVISION	BY

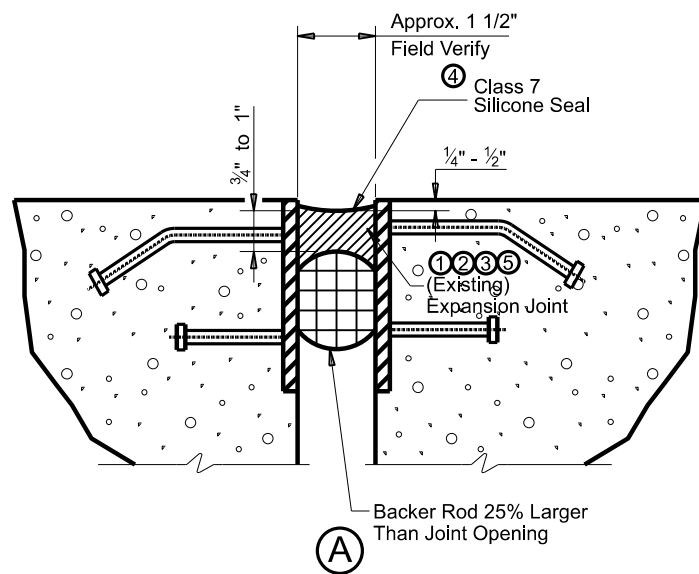


**SH 6**  
**LAYOUT FOR**  
**CLEANING AND SEALING**  
**EXISTING JOINTS**  
**SH 6 OVER COPPERAS CREEK**

SCALE: N.T.S. SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN,ETC.	121	

C/S:  
 D/W:  
 C/S:  
 D/W:



**SECTION THRU SEALED EXPANSION JOINT**  
NOT TO SCALE

**NOTES:**

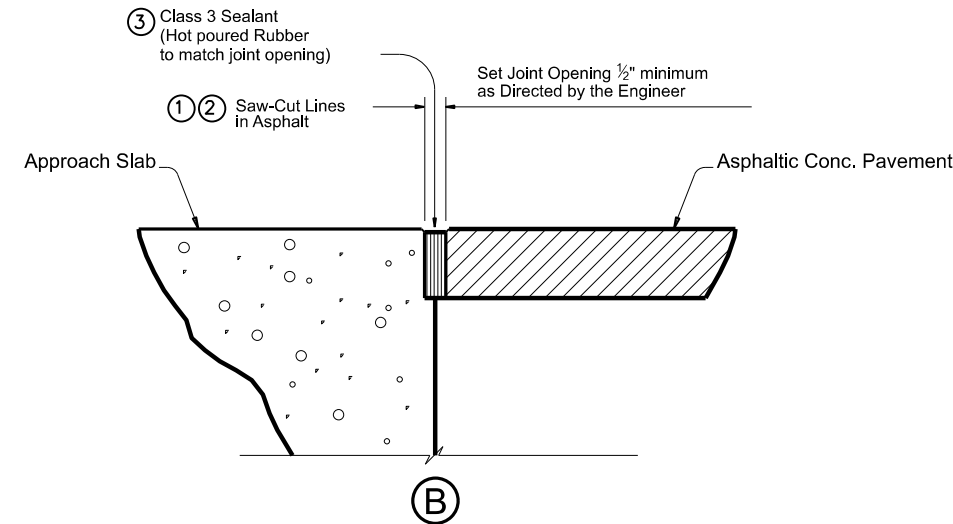
- ① The joints shall be cleaned in accordance with Item 438 and prior to beginning operations, the Contractor shall submit a statement from the Sealant Manufacturer showing the recommended equipment and Installation procedures to be used.
- ② Condition of existing expansion joint or rail shall be determined prior to placing sealant material. The entire length of existing joint shall be checked and any portion that is determined unsound by the Engineer shall be removed as directed by the Engineer. Any existing seal shall be removed and disposed of.
- ③ Surfaces where sealant material is to be placed shall be clean and dry in accordance with the manufacturer's specifications.
- ④ Seal when required as Directed by the Engineer. Extend sealant up into rail or curb 6 inches on low side or sides of deck. Prepare surfaces where sealant is to be placed in accordance with manufacturer's specifications. If the self-leveling sealant cannot be extended up into the rail, use a Class 4 Sealant in the curb or rail portion only. This will be considered subsidiary to Item 438.
- ⑤ Clean joint opening of all old expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint. Obtain approval of cleaned joint prior to proceeding with joint sealing operation. Seal the joint opening with a Class 7 Silicone.

**GENERAL NOTES:**

All work, including cleaning exist joint opening of all debris, and sealing joint, is paid for by Item 438, "Cleaning and Sealing Existing Joints."

Obtain approval for all tools, equipment, materials and techniques proposed for use to prepare the joint.

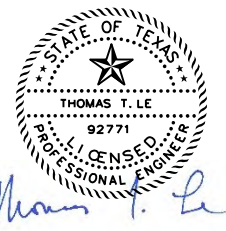
Provide the joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers."



**SECTION THRU JOINT BETWEEN THE APPROACH SLAB AND THE ASPHALTIC CONCRETE PAVEMENT (NOT TO SCALE)**

**PROCEDURE FOR CLEANING AND SEALING JOINT BETWEEN THE APPROACH SLAB AND THE ASPHALTIC CONCRETE PAVEMENT WITH HOT Poured RUBBER SEAL.**

- ① Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a 1/2" minimum joint opening. Clean joint opening of all old expansion materials/devices, bituminous materials, dirt, grease and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints."
- ② Obtain approval of cleaned joint prior to proceeding with joint sealing operation.
- ③ Seal the joint opening with a Class 3, "Hot Poured Rubber." Seal flush to the top of the asphaltic concrete pavement. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."



11/28/2023

REV. NO	DATE	REVISION	BY



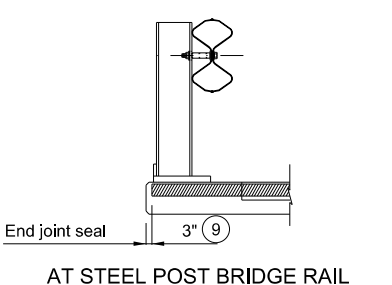
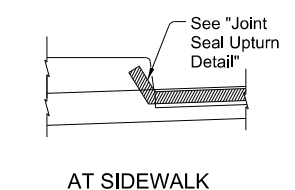
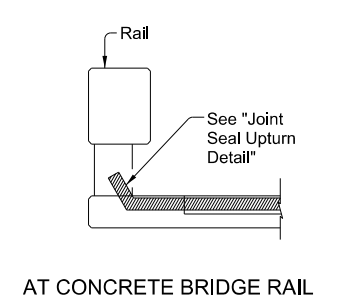
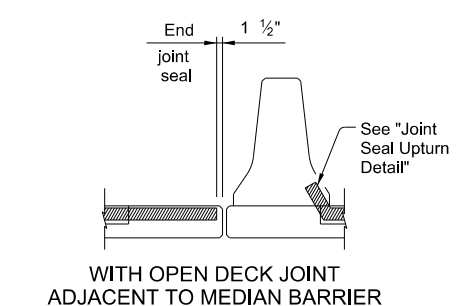
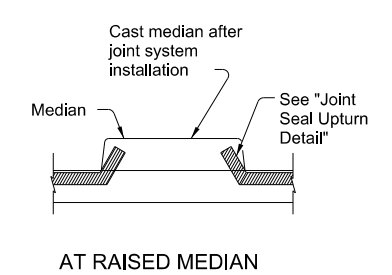
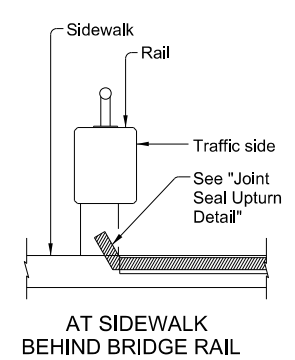
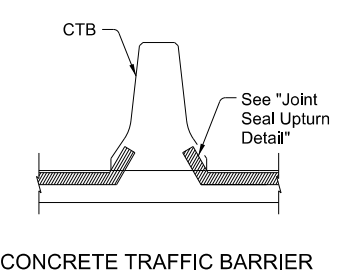
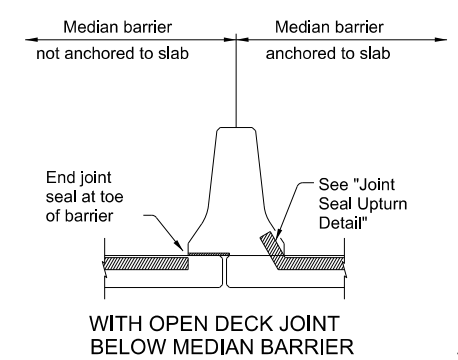
SH 6  
**CLEANING AND SEALING EXISTING BRIDGE JOINTS**

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0049	01	095,ETC.	SH 6
DIST		COUNTY	SHEET NO.
WAC		McLENNAN,ETC.	122

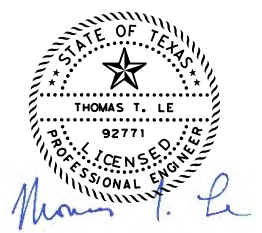
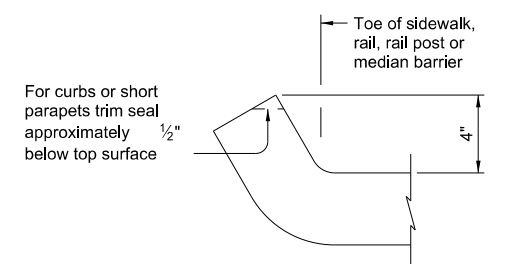
DATE: 11/28/2023 3:45:43 PM  
 FILE: ...SH 6 BRIDGE DETAIL.dgn

APPROVED PRECOMPRESSED FOAM SEAL MANUFACTURERS	
MANUFACTURER	SEAL TYPE
Watson Bowman Acme	Wabo FS
SSI	Silspec SES
Seallite	Seallite 50N
EMSEAL	BEJS



**JOINT SEALANT TERMINATION DETAILS**

⑨ 1 1/2" for precompressed foam and silicone seal



11/28/2023

REV. NO	DATE	REVISION	BY



SH 6  
**CLEANING AND SEALING EXISTING BRIDGE JOINTS**

SCALE: N.T.S.      SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0049	01	095, ETC.	SH 6
DIST	COUNTY	SHEET NO.	
WAC	McLENNAN, ETC.	123	

DATE: 11/28/2023 3:46:44 PM  
FILE: ...17\_Bridge\WD-CSB1-22 (1).dgn

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

DATE: 11/28/2023  
FILE: ...9, Environmental\STD\epic.dgn

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

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

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

- 1.
- 2.  No Action Required  Required Action

Action No.

- 1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
- 2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
- 3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
- 4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

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

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

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

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

- 1.
- 2.
- 3.
- 4.

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

**Best Management Practices:**

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

**III. CULTURAL RESOURCES**

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

- No Action Required  Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

**IV. VEGETATION RESOURCES**

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

- No Action Required  Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

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

- No Action Required  Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

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

**LIST OF ABBREVIATIONS**

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

**VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES**

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

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

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

- Yes  No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

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

- Yes  No

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

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

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

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

- No Action Required  Required Action

Action No.

- 1.
- 2.
- 3.

**VII. OTHER ENVIRONMENTAL ISSUES**

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

- No Action Required  Required Action

Action No.

- 1.
- 2.
- 3.



**ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC**

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
12-12-2011 (DS) REVISIONS	0049	01	095, ETC.	SH 6
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY	SHEET NO.	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	WAC	McLENNAN, ETC.	124	

**STORMWATER POLLUTION PREVENTION 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):**

0049-01-095, ETC.

**1.2 PROJECT LIMITS:**

From: FM 1860, ETC.

To: FALLS COUNTY LINE, ETC.

**1.3 PROJECT COORDINATES:**

BEGIN: (REFER TO LOCATION MAP ON TITLE SHEET)

END: (REFER TO LOCATION MAP ON TITLE SHEET)

**1.4 TOTAL PROJECT AREA (Acres):** 151.28

**1.5 TOTAL AREA TO BE DISTURBED (Acres):** 0.240

**1.6 NATURE OF CONSTRUCTION ACTIVITY:**

REHABILITATION OF EXISTING ROAD CONSISTING OF MILL AND OVERLAY

**1.7 MAJOR SOIL TYPES:**

Soil Type	Description
Satin Clay Loam, 1 to 5% slopes	38% clay, well drained, high rate of runoff, slight erosion potential
Wilson Loam, 0 to 1% slopes	15.4% clay loam, well drained, high rate of runoff, slight erosion potential
Heiden Clay, 1 to 3% slopes	10% clay, well drained, high rate of runoff, slight erosion potential
Wilson Clay Loam, 0 to 2% Slopes	6.4% clay, Moderately well drained, high rate of runoff, slight erosion potential
Heiden Clay, 2 to 5% slopes	5% clay, well drained, high rate of runoff, erosion potential
Wilson Silty Clay Loam, 1 to 3% slopes	4.9% silty clay, moderately well drained, high rate of runoff, slight 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
- 

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
Manos Creek, Sandy Creek, Big Creek, Hog Branch, Bee Branch, Goose Branch, Fish Creek	Brazos River Above Navasota River (1242)
Little Brazos River (1242E)	

\* 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: \_\_\_\_\_



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

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
	F 2024(764)			125
STATE	STATE DIST.	COUNTY		
TEXAS	WAC	McLENNAN, ETC.		
CONT.	SECT.	JOB	HIGHWAY NO.	
0049	01	095, ETC.	SH 6	

**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

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

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

**2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:**

**T / P**

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

**2.2 SEDIMENT CONTROL BMPs:**

**T / P**

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

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

**2.3 PERMANENT CONTROLS:**

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

**2.4 OFFSITE VEHICLE TRACKING CONTROLS:**

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

Other: \_\_\_\_\_

Other: \_\_\_\_\_

Other: \_\_\_\_\_

**2.5 POLLUTION PREVENTION MEASURES:**

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

**2.6 VEGETATED BUFFER ZONES:**

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

Type	Stationing	
	From	To

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

**2.7 ALLOWABLE NON-STORMWATER DISCHARGES:**

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

**2.8 DEWATERING:**

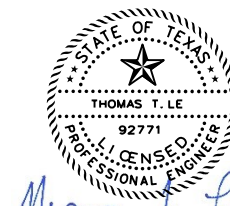
Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment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



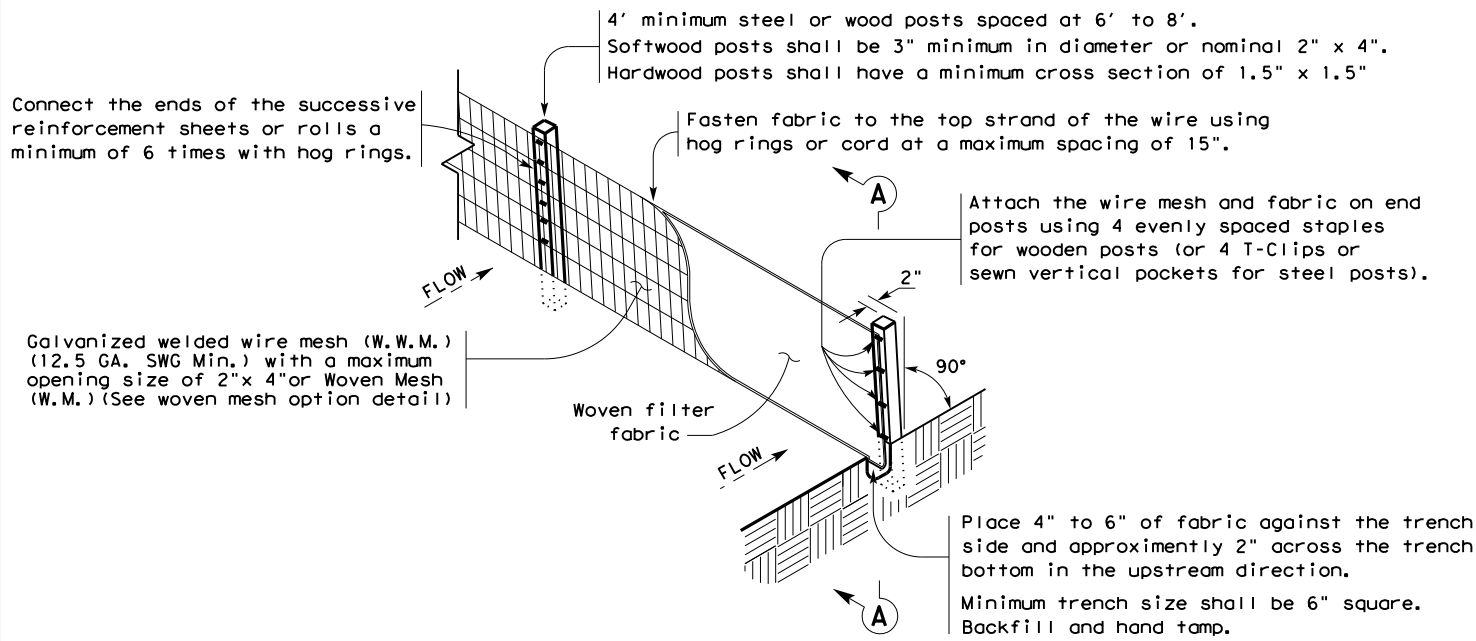
1/5/2024

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

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
	F 2024(764)			126
STATE	STATE DIST.	COUNTY		
TEXAS	WAC	McLENNAN, ETC.		
CONT.	SECT.	JOB	HIGHWAY NO.	
0049	01	095, ETC.	SH 6	

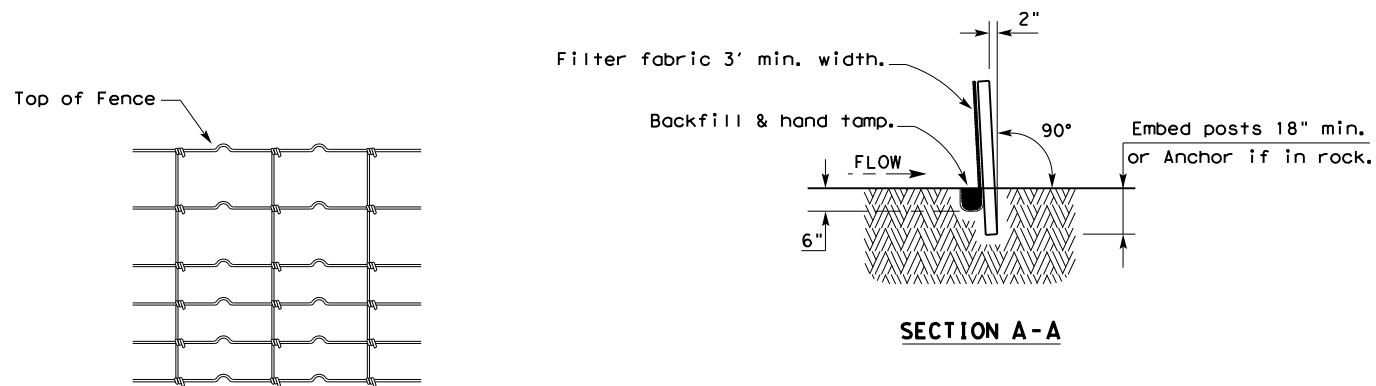
DISCLAIMER: This standard is made by TxDOT for any purpose whatsoever. The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats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

DATE: 11/28/2023 2:51:19 PM  
 FILE: ...9\_Environmental\STD.ec116.dgn



**TEMPORARY SEDIMENT CONTROL FENCE**

SCF



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

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

**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

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

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

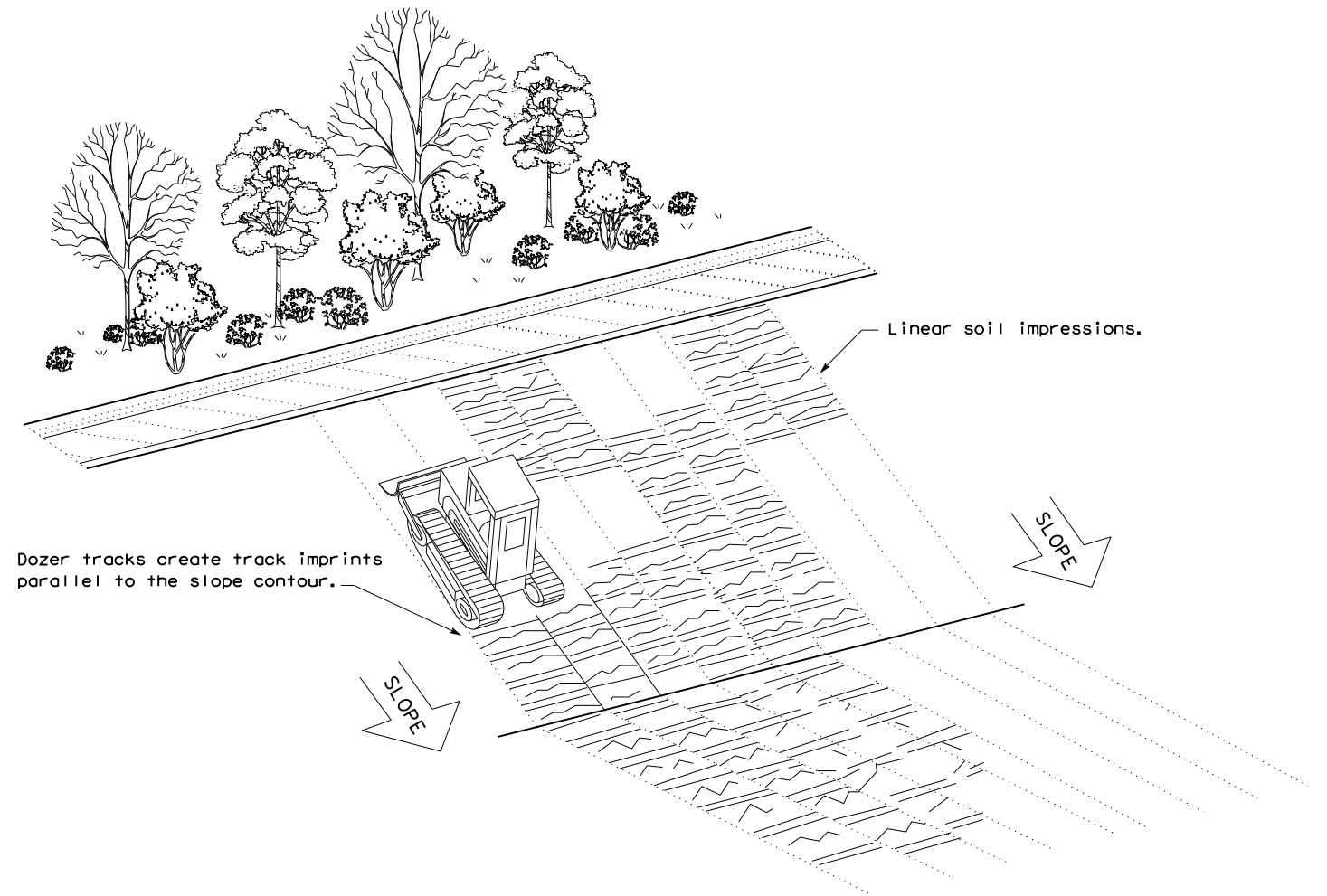
**LEGEND**

Sediment Control Fence

SCF

**GENERAL NOTES**

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



**VERTICAL TRACKING**

				Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE &amp; VERTICAL TRACKING</b> <b>EC(1) - 16</b>					
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS		0049 01	095, ETC.	SH 6	
	DIST	COUNTY	SHEET NO.		
	WAC	McLENNAN, ETC.	127		

## BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

1. Prior to TxDOT allowing the Contractor to start construction, the Contractor will provide the required storm water and 404 permit documentation and support activities, including but not limited to the following:
  - Provide a list of all chemicals, construction and waste products that will be generated, stored or brought upon TxDOT ROW. The list includes expected construction debris, sanitary wastes, construction chemicals and petroleum products used or generated by the Contractor and sub-contractors. Along with the list, the Contractor will supply a spill prevention plan and clean up procedures that will include each of these chemical products or generated waste.
  - Provide in the construction schedule the necessary line items that will comply with the schedule and planning requirements of the storm water permit.
  - Post the TxDOT storm water permit and any Contractor permits, per permit requirements.
  - Provide copies of storm water permits for Contractor PSL(s). As new PSL(s) may be obtained for the project, provide copies of new or amended permits to TxDOT. The Contractor will not disturb soil without the proper permits.
  - Provide scale drawings of off ROW PSL's within one mile of the project, for field offices, borrow sources, plant sites or other uses.
  - Provide permit information on any Contractor batch plants or concrete crushing plants to be located at a Contractor PSL(s) within one mile of the project limits or boundaries. Copies of the air and water permits are to be provided to TxDOT before materials will be used on the project. No asphalt or concrete batch plants or concrete crushing plants will be located on TxDOT ROW.
  - Provide a letter indicating a Contractor Responsible Person for environmental compliance (CRP) for the project, and maintain a CRP throughout the project duration.
  - Provide all environmental documentation including certification of compliance and EMS training documents/certificates prior to starting work. The Contractor is to provide daily BMP inspection reports that document all field BMPs needing repair or replacement. The Contractor is to clearly document specific BMPs needing repair and location each work day. The Contractor is encouraged to be proactive in fixing BMPs without TxDOT direction.
  - Provide documentation required for Waters of the US, Note #3 and submittals for Item 496 bridge removal. Bridge removal methods submitted will follow all Waters of the US note requirements. The Contractor is not to start construction within the Ordinary High Water Marks of any stream until receiving approval for stream channel construction methods from TxDOT.
  - Provide a written procedure for managing all chemicals and construction items placed in vertical containment structures. Also, provide methods to be used for the treatment, disposal, collection or release of storm water.
  - Provide an estimated date by letter, for the submittal of marked up bridge drawings, indicating cut locations for any structural steel requiring cutting or torching of steel, coated with lead containing paints.
2. Place and maintain trash cans and portable sanitary facilities at locations where there is active construction. Worker generated trash and construction debris will be kept from being transported by storm water and will be collected daily from the ground and routinely hauled from the work area.
3. Contractor will provide TxDOT copies of all correspondence with MS4s, TCEQ, EPA, DSHS and Corps of Engineers regarding activities on this project.
4. Contractor to conduct storm water inspections and develop SWPPP documents to support Contractor permits obtained for the project including PSL(s).
5. Contractor will maintain written documentation of locations of all portable sanitary facilities. The Contractor is required to document the location and disposition of all spills and cleanups from portable sanitary facilities.
6. Contractor will not store chemicals on TxDOT ROW, unless chemicals are stored following all environmental and safety regulations. Fuels for construction equipment will not be stored on TxDOT ROW.
7. The Contractor will store fuels and bulk chemicals on Contractor PSL(s) using a secondary containment method, such as double lined tanks and/or free standing containment reservoirs made of plastic or steel designed to hold bulk chemicals or drums.
8. The Contractor will not remove sediment controls without the prior approval of TxDOT, except for a sediment control that may back up water and cause safety or traffic problems.

SCALE = NTS SHEET 1 OF 10

 **Texas Department of Transportation**  
Waco District Standard

### TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN:	CK:	DW:	CK:
© TxDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	128	



## BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

9. Any sediment controls removed by the Contractor must be re-installed before the next rainfall event or by the end of day, as approved in advance.
10. Vegetative buffer strips may be used in place of temporary sediment controls such as silt fences and rock filter dams. The amount of disturbed soil area will be limited to 1/3 of an acre or less for a minimum of 50 feet of grassed ditch and 2/3 of an acre of disturbed soil for a minimum of 100 feet of grassed ditch.
11. Construction equipment found to be leaking oil, fuel or coolant will be immediately stopped, the leaking fluid collected and the equipment fixed. Equipment continuing to leak will be removed from the project at no cost to TxDOT. Leaking fluids from equipment will be collected and removed from the project or PSL.
12. Earth berms or mounds typically used to stockpile topsoil and used in place of boundary silt fence will be seeded upon being constructed. Long term use of earth berms or mounds will not be continued without establishing grass on the control.
13. The Contractor will inform TxDOT of new areas where soil will be disturbed to facilitate planning for new sediment controls. Areas of vegetated soil will not be disturbed by the Contractor, unless adequate sediment controls can be installed before the next rainfall event. The Contractor will assist TxDOT in keeping an accurate set of working SWPPP drawings that show the locations of all temporary sediment and erosion controls.
14. The Contractor will maintain an adequate amount of temporary sediment controls on hand at the field office or project staging area for critical SWPPP maintenance, including silt fence (minimum of 200 feet) and rock / fabric for rock filter dams (minimum for 100 feet of Type III dams).  
  
The requirement for BMP rock quantities on hand is waived for small projects for on and off system bridge installations. The Contractor having a BMP Subcontractor does not eliminate the requirement for the Contractor to have the required silt fence and rock on hand, typically stored at the Contractor PSL.
15. Failure of a sub-contractor to complete storm water work on time will require the Contractor to start storm water sediment control work immediately and complete the work with high priority, or be subject to stop work on the entire project.
16. Earth materials on roads as a result of soil tracking will not be allowed to be transported off ROW in storm water. Soil or rock material found on roadways deposited from Contractor equipment will be removed daily.
17. Unless approved, completed concrete curb inlets will not be blocked by sediment controls. The contractor will frequently sweep the completed or partially completed roadway to keep sediment out of drainage pipes.
18. The Contractor will be responsible for proper dust control and will route construction traffic in a manner that minimizes dust generation.
19. Water for dust control will contain no pollutants, but may be non-potable from upland stock ponds. No quantity of water to be used for construction purposes may be taken from a 404 stream, prior to the proper authorizations or permits being obtained by the Contractor.
20. Contractor is to direct workers and sub-contractors to use portable sanitary facilities provided by the Contractor and not to trespass off ROW.
21. Contractor will provide written verification to TxDOT that earth borrow pits and disposal sources meet environmental and regulatory requirements, prior to use. Excavations will meet all OSHA requirements and the current safety guidelines established for TxDOT Quarries and Pits.
22. Boundary silt fences that are terminated down slope, with one end being at the lowest elevation, will be installed with an L - hook to contain sediment. Boundary silt fences that are installed on flat ground will have L-hooks on both ends.
23. Rock filter dams across ditches will be constructed where the rock filter dam ends are embedded within the ditch side slopes and ditch bottom. The top center elevation of the rock filter dam will be at least 6 inches lower than the elevations on the rock filter dam ends.
24. Silt fence will be constructed in a U or V pattern across ditch lines and up the ditch side slope to keep storm water from flowing around the ends of the silt fence. Small silt fences that do not adequately span the ditch and allows storm water around the end(s) will not be used. Where there is adequate space, large U pattern silt fences are preferred to facilitate sediment collection and sediment removal with equipment.
25. Sediment controls (RFDs or silt fences) will be located along road ditches as marked on the SWPPP drawings. Modifications to the sediment control spacing will be adjusted during the project based on sediment control effectiveness. The installation and maintenance of sediment controls at or near outfalls, where storm water leaves TxDOT ROW, takes persistent over ditch line sediment controls.

SCALE = NTS SHEET 2 OF 10

 **Texas Department of Transportation**  
Waco District Standard

### TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN:	CK:	DW:	CK:
© TxDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	129	

## BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

26. Storm water draining sheet flow over disturbed soil sloped towards the ROW property line, will be intercepted by a boundary silt fence typically installed with L-shaped ends.
27. For ditch grading and shoulder up work, the Contractor is limited during good weather to remove up to one mile (limited to five acres of disturbed soil) of ditch line sediment controls; on one side of the roadway. Outfall controls cannot be removed during this activity. Ditch line controls must be replaced upon completion of work and before the next rain event.
28. Sediment controls damaged by the Contractor, as defined by permit, must be fixed or replaced immediately upon discovery.
29. Notches in silt fences are not typically allowed. Specific silt fences that back up water onto lanes of traffic may be notched if approved.
30. For silt fence maintenance, the Contractor will leave approximately 4 inches of deposited sediment up stream of silt fences and not over excavate around silt fences or rock filter dams.
31. The Contractor will inform TxDOT of new construction areas and where soil is planned to be disturbed. Sediment controls will be installed at outfalls prior to the Contractor beginning soil disturbing activities up slope from the outfall.
32. Water from concrete saw cutting, concrete grinding and concrete coring activities; or fine materials from concrete chipping and salvage will not be allowed to enter storm drains or enter streams.
33. Storm water containing suspended sediment and turbidity needing to be removed from excavations or low areas will be pumped or gravity drained through vegetated buffer strips (50 foot minimum) or placed in ditches with temporary sediment controls, prior to the water being discharged into a stream.
34. Uncontaminated water from natural groundwater seepage, springs, foundations and drains that does not contain suspended sediment or any pollutants may be discharged without storm water controls.
35. Lime or cement if spilled in ditches or outside the defined limits of application is considered a pollutant and will be excavated and removed the same day, to avoid contaminating streams.
36. If located along the project ROW, RAP stockpiles will be located where there is a minimum 100 feet of vegetative buffer strip before storm water will reach a stream. RAP will not be used as a construction material within the Ordinary High Water Marks of a stream channel of a 404 designated stream.
37. If allowed on the project, concrete truck wash out areas will have adequate volume to allow 12 inch freeboard for rain and will be lined with 6 mils of plastic. No concrete will be stored higher than the 12 inch freeboard. Cleaning of truck chutes and equipment does not constitute concrete truck wash out and this activity may be completed at the concrete placement location. Wash out areas will not be located closer than 50 ft from down slope inlets or stream channels.
38. For outfalls near stock ponds closer than 50 foot from disturbed soil at the ROW line, redundant sediment controls will be provided, typically a combination of rock filter dam and a silt fence constructed in line of the flow.
39. Earth stockpiles will utilize silt fence sediment controls, positioned on the low end of the stockpile drainage area with L-hooks or silt fence installed around the entire stockpile.
40. Sediment controls including rock filter dams and silt fences will not be installed across any 404 streams. Sediment controls at 404 streams will be positioned to limit sediment entering the stream from the banks and around structures/culverts, and will allow free flow of storm water to pass through the ROW without being dammed by any sediment controls. Remove loose materials from stream channels prior to each rain event.
41. Sediment controls for non-404 streams may be constructed across the drainage channel in unlimited locations. It is appropriate to use sediment control details typically used for 404 streams for non-404 streams when flow velocities are high. Remove loose material from stream channels prior to each rain event.
42. Incomplete drainage pipe installation across the roadway does not remove the requirement for having sediment controls around the ends of the pipe. To stay within permit requirements, sediment controls should be installed over and around the terminated end and along each side of the banks as soon as construction on the pipe has been completed. Remove loose material from stream channels prior to each rain event.
43. Safety end / headwall construction temporarily will require the removal of part of the sediment control placed over and around the pipe end. Retain in place as much functioning sediment control as possible. Replace the silt fence over and around the top of the pipe, immediately upon concrete placement and form removal. Do not remove culvert sediment controls that cannot be replaced before the next rain event. Sediment control at the ends of culverts must be in place and available for any rain event until the disturbed soil areas are re-vegetated.

SCALE = NTS SHEET 3 OF 10

 **Texas Department of Transportation**  
Waco District Standard

### TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN:	CK:	DW:	CK:
© TxDOT 2009	CONT	SECT	JOB	HIGHWAY
DEC 2013 FEB 2015	0049	01	095, ETC.	SH 6
	DIST	COUNTY	SHEET NO.	
	WAC	McLENNAN, ETC.	130	

## BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

44. Between the Ordinary High Water Marks of a 404 stream channel, the Contractor will disturb only the minimum amount of stream channel that is necessary to complete the work.
45. Rock riprap for erosion control does not replace the requirements to maintain sediment control until vegetation is re-established. Replace sediment controls immediately after installing erosion rock.
46. At the direction of TxDOT, sediment deposited into existing and new culverts will be removed subsidiary to Item 506. Sediment to be removed is either pre-existing material before construction starts or sediment generated as a part of this project.
47. Provide treated 2X4 cross bracing for rectangular inlet silt fence, subsidiary to Item 506.
48. Loose or granular earth materials will not be used to repair silt fence undercuts. Silt fence undercut repairs will be conducted with well compacted soils or the silt fence will be reset in a nearby location.
49. Silt fence steel T posts of approximately 1.25 pounds per foot are allowed at a spacing of 8 feet or less. Silt fence steel T posts between approximately 1.25 pounds per foot and 0.85 pounds per foot are allowed for T post spacing of 5 feet or less.
50. Silt fence to be used to slow the flow of storm water down slopes will be positioned approximately horizontal (on the contour) with L hooks on the ends and limited to approximately 200 feet in length. Multiple sections and levels of silt fence may be required in addition to temporary / permanent erosion control flumes.
51. Soil retention blankets will be installed rolled down the slope with the small dimension side embedded at the top of slope, unless recommended otherwise by the manufacturer. Excess grass, rocks, trash, debris or clods will be removed before seeding and installing soil retention blankets. All installations will be by the manufacturer recommendations. Contractor equipment, including tractor mowers will be kept off areas with soil retention blankets until the grass is established.

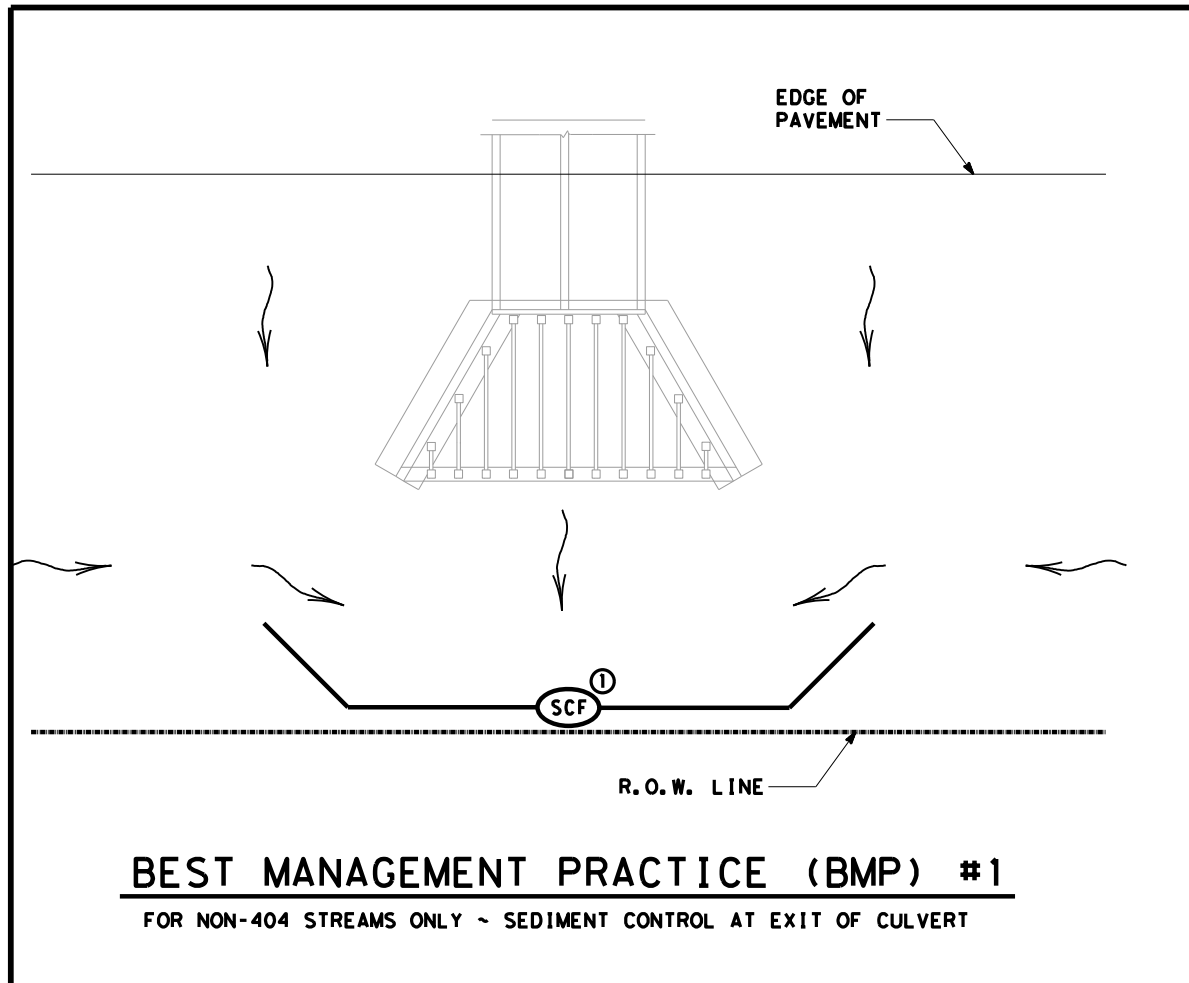
SCALE = NTS SHEET 4 OF 10

 **Texas Department of Transportation**  
Waco District Standard

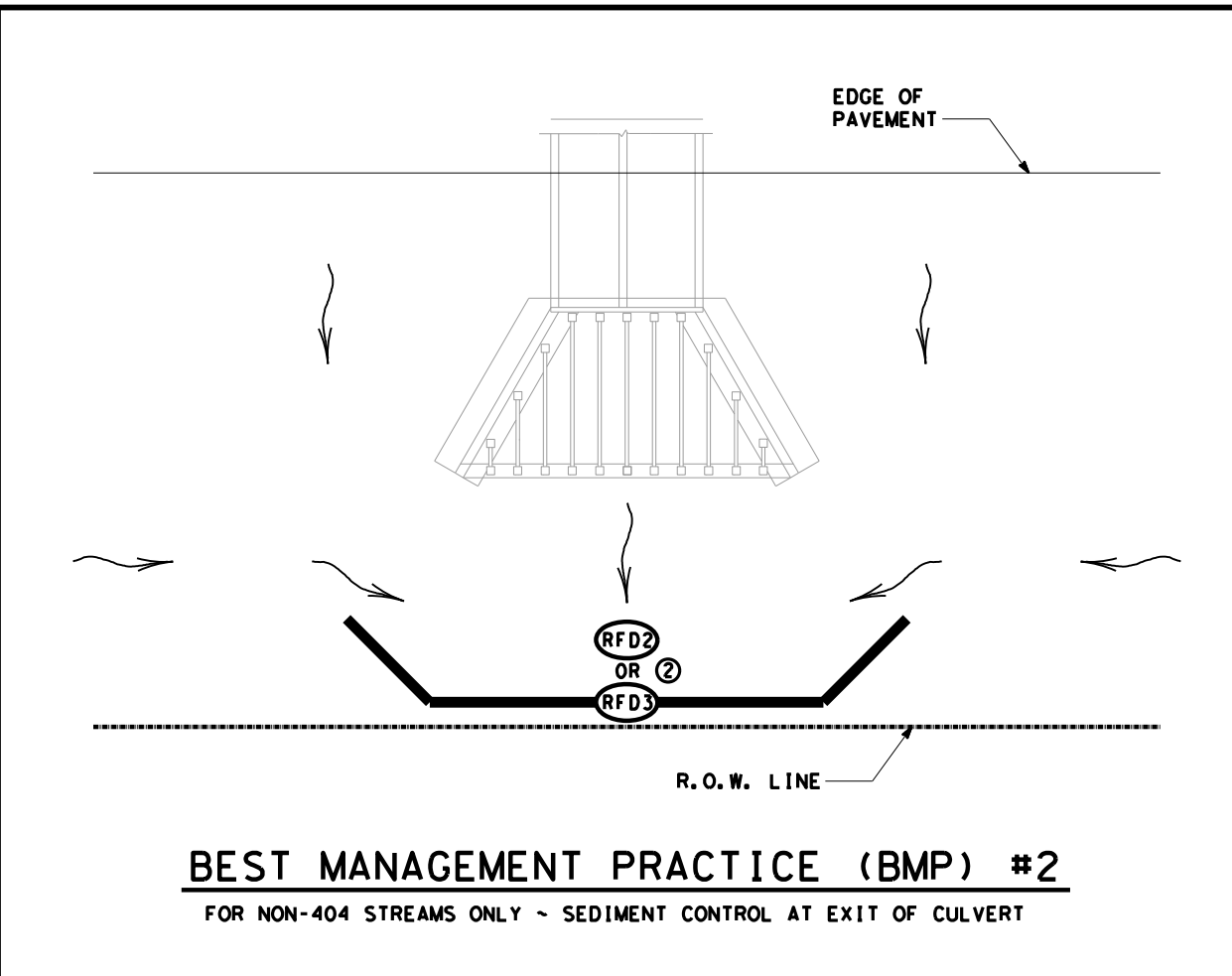
### TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

**TA-BMP**

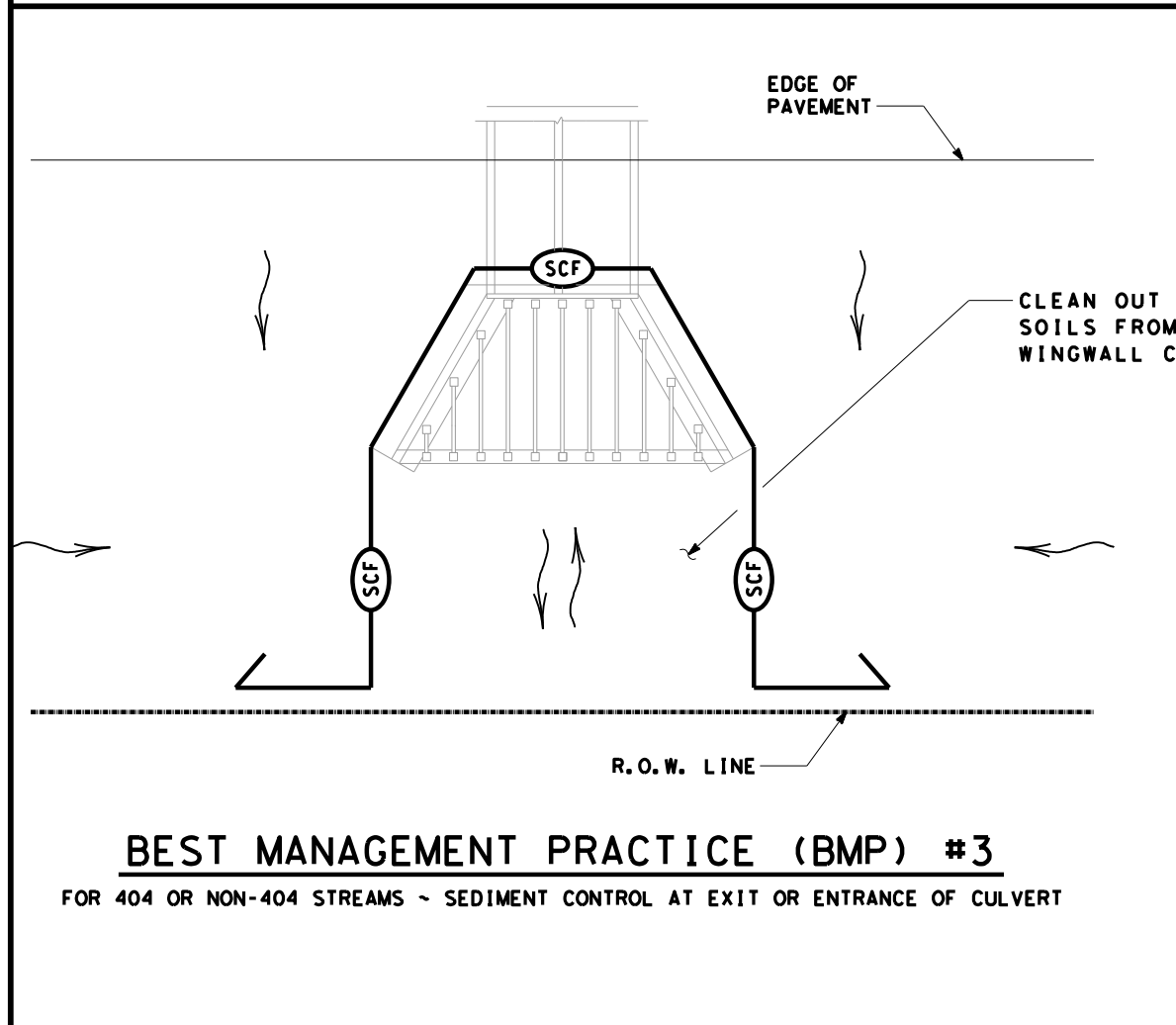
FILE: BMPLAYOUTS.dgn	DN:	CK:	DW:	CK:
© TxDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	131	



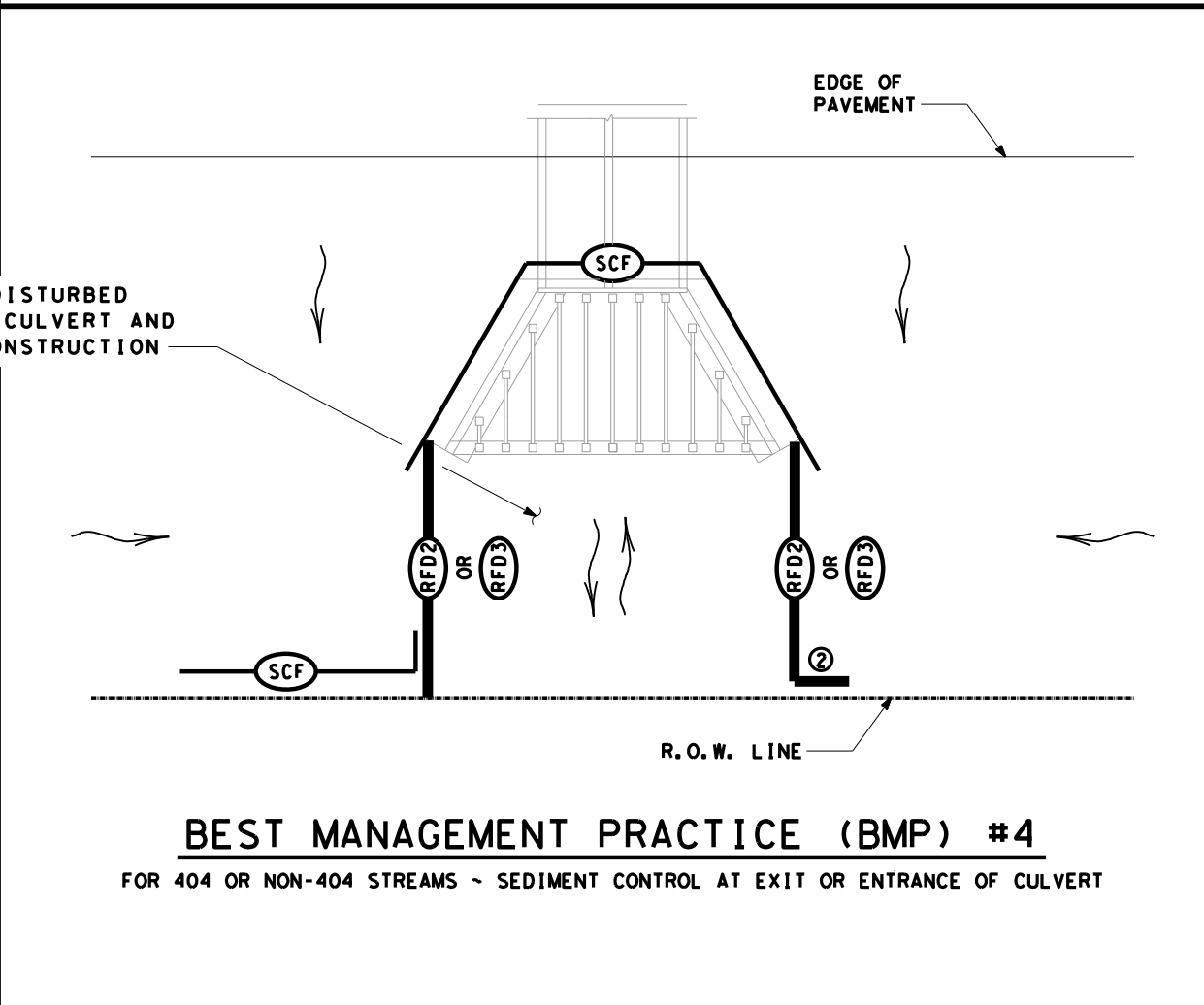
**BEST MANAGEMENT PRACTICE (BMP) #1**  
FOR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OF CULVERT



**BEST MANAGEMENT PRACTICE (BMP) #2**  
FOR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OF CULVERT



**BEST MANAGEMENT PRACTICE (BMP) #3**  
FOR 404 OR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OR ENTRANCE OF CULVERT



**BEST MANAGEMENT PRACTICE (BMP) #4**  
FOR 404 OR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OR ENTRANCE OF CULVERT

	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

- NOTES:
- ① EXTEND SILT FENCE SO STORM WATER DOES NOT GO AROUND THE ENDS. USE L-HOOKS ON ENDS AS REQUIRED.
  - ② EXTEND ROCK FILTER DAM SO STORM WATER DOES NOT GO AROUND THE ENDS.

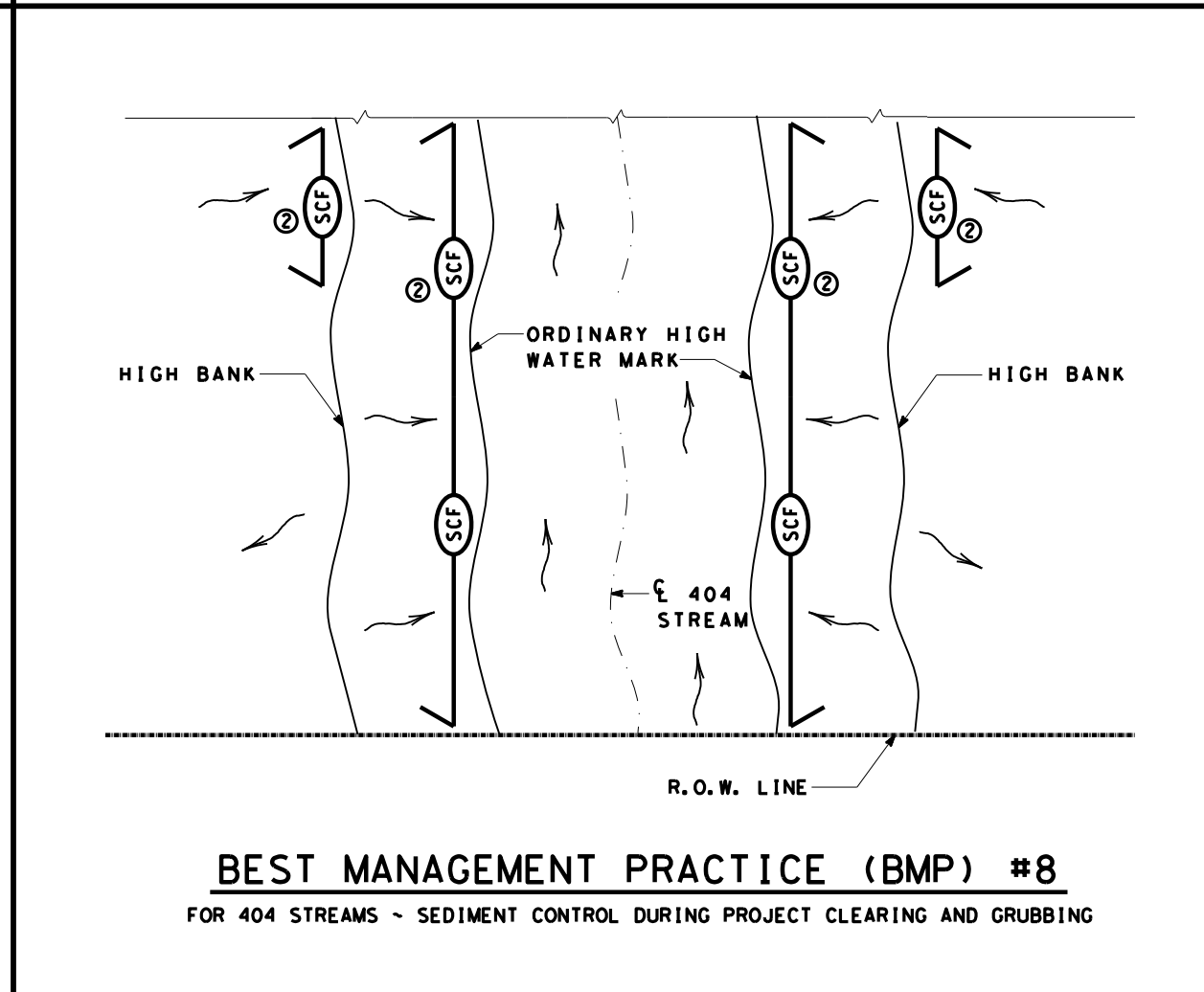
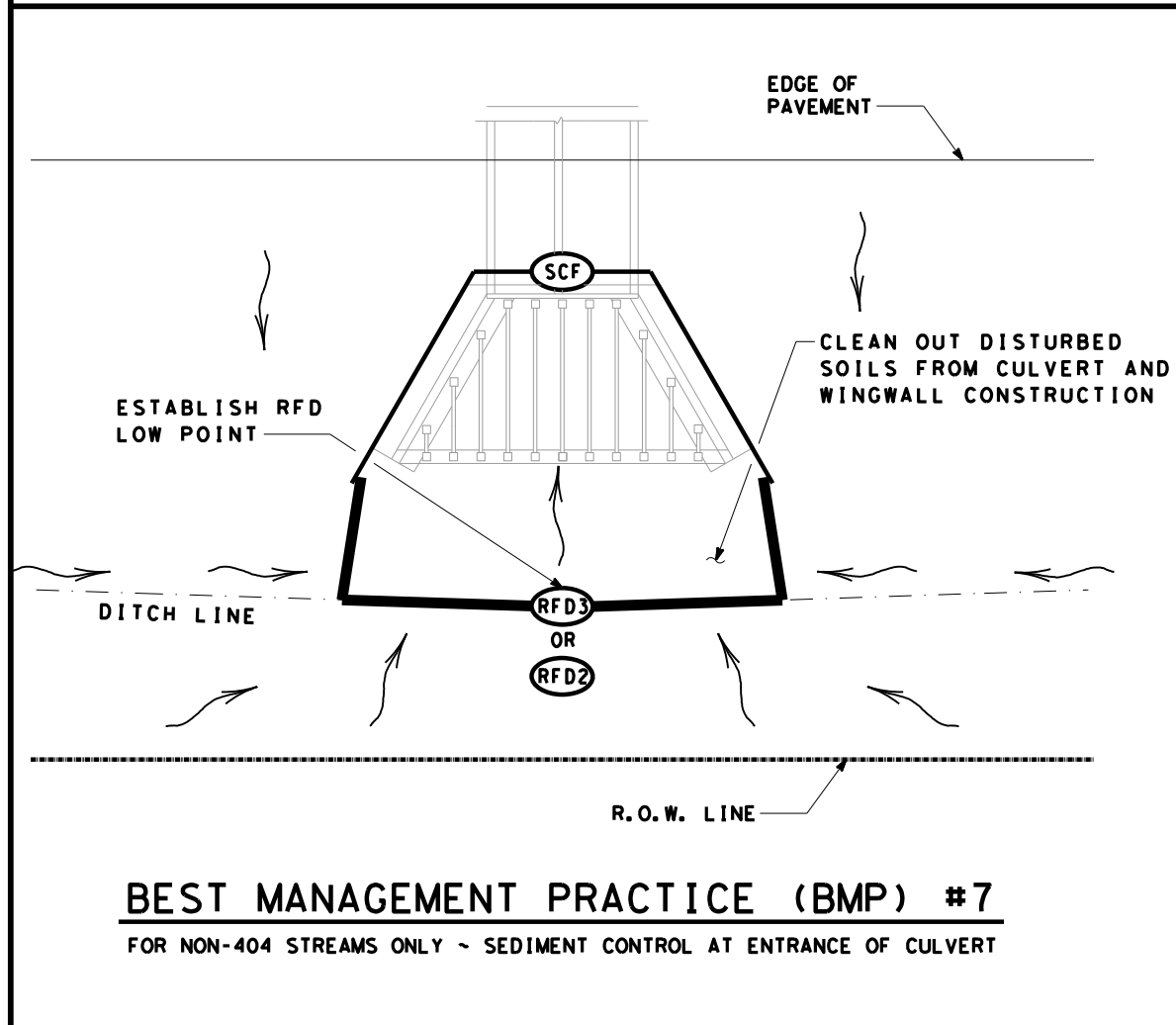
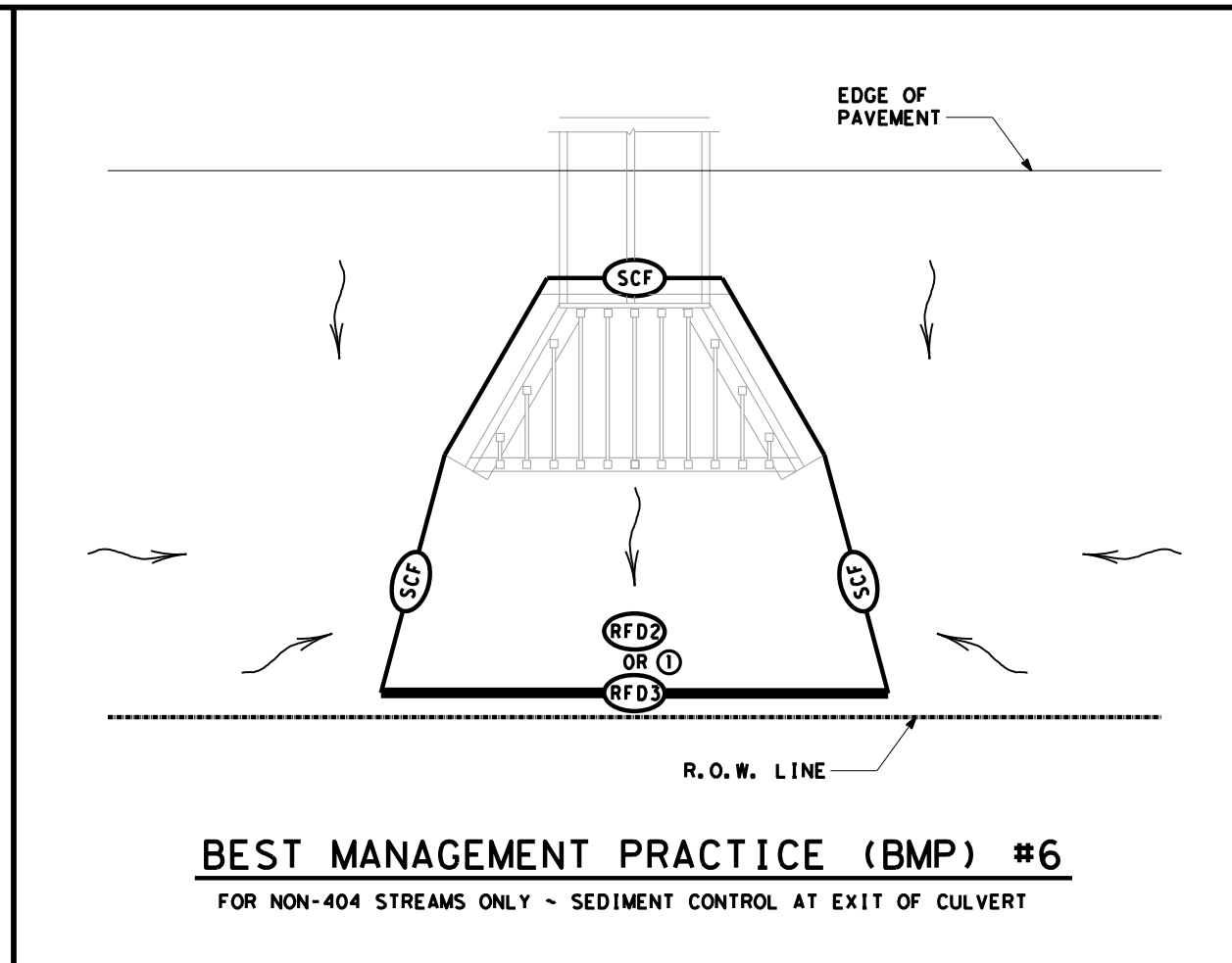
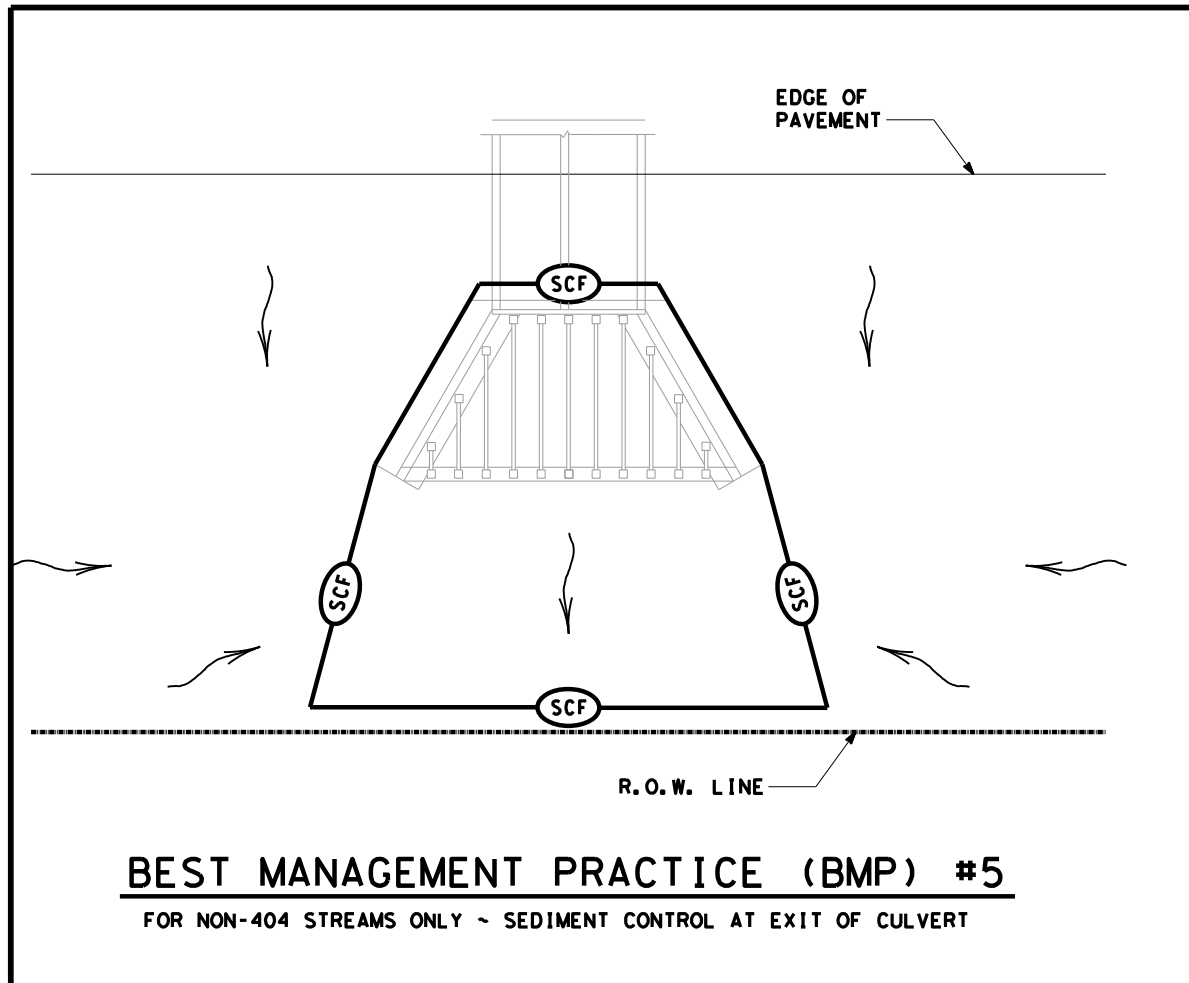
SCALE = NTS SHEET 5 OF 10



**TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES**

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TXDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	132	



	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

- NOTES:
- ① PROVIDE OVERLAP OF SILT FENCE WITH ROCK FILTER DAM.
  - ② USE SILT FENCE L-HOOKS ON ENDS TO BLOCK STORM WATER SEDIMENT

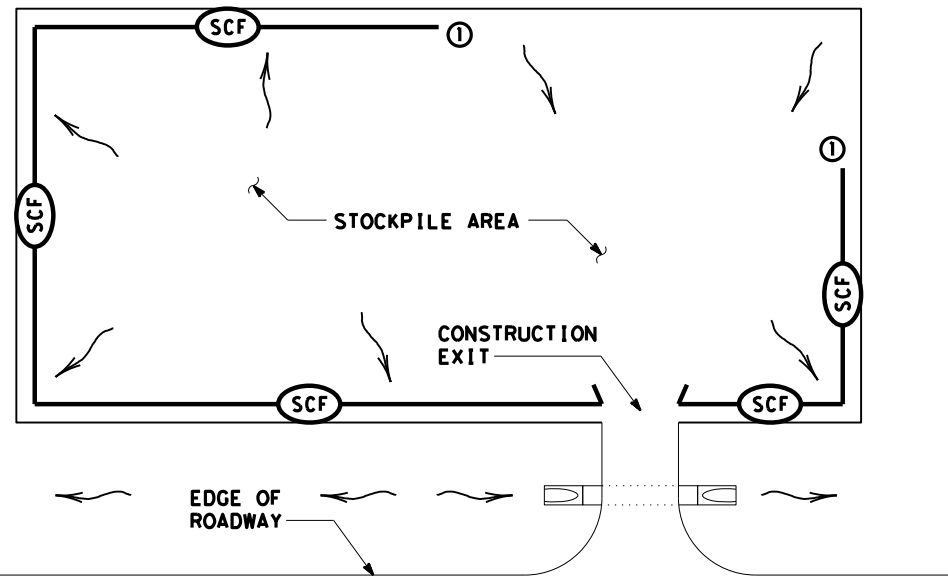
SCALE = NTS SHEET 6 OF 10



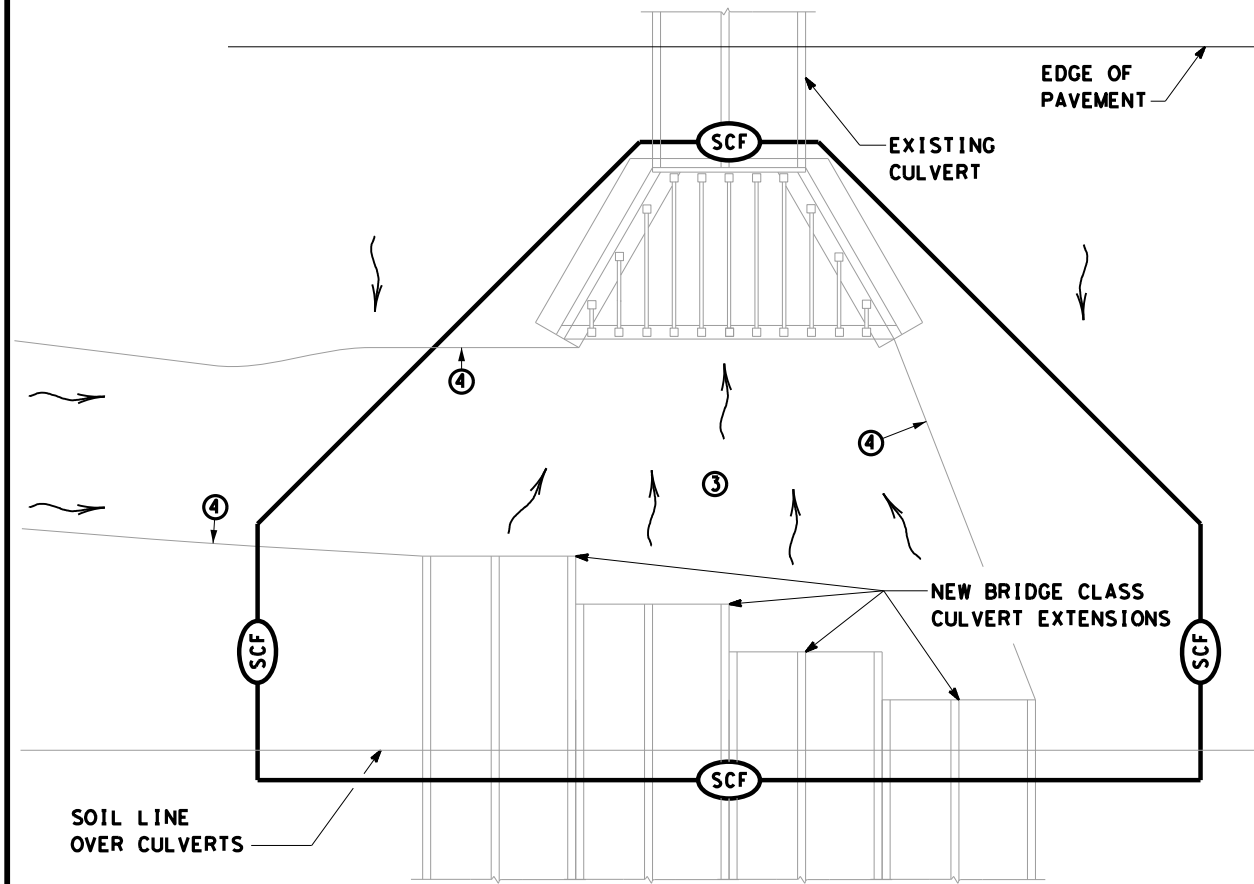
**TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES**

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TXDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	133	



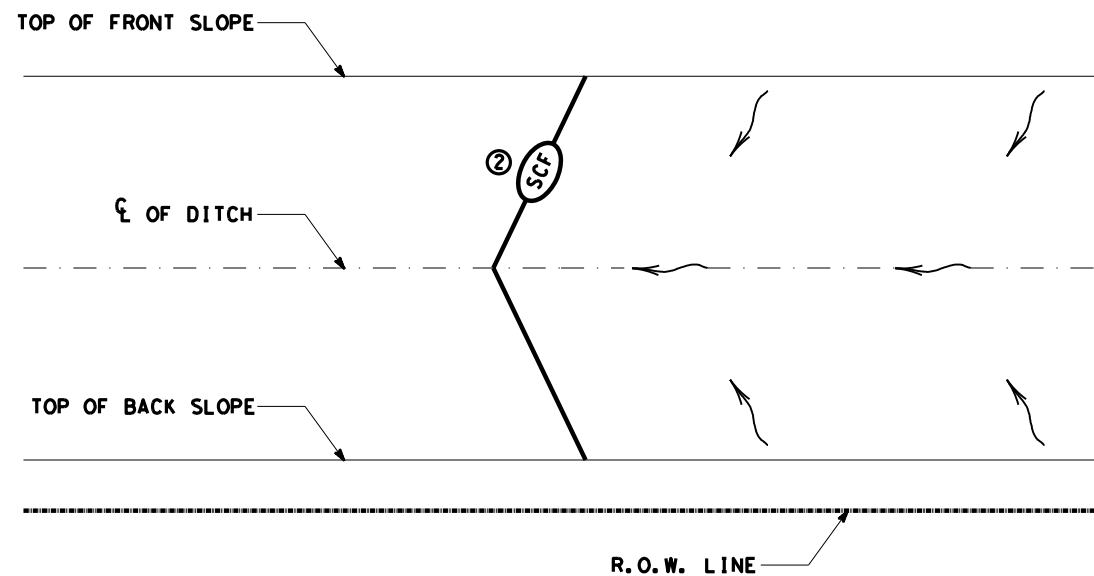
**BEST MANAGEMENT PRACTICE (BMP) #9**  
STOCKPILE SEDIMENT CONTROL



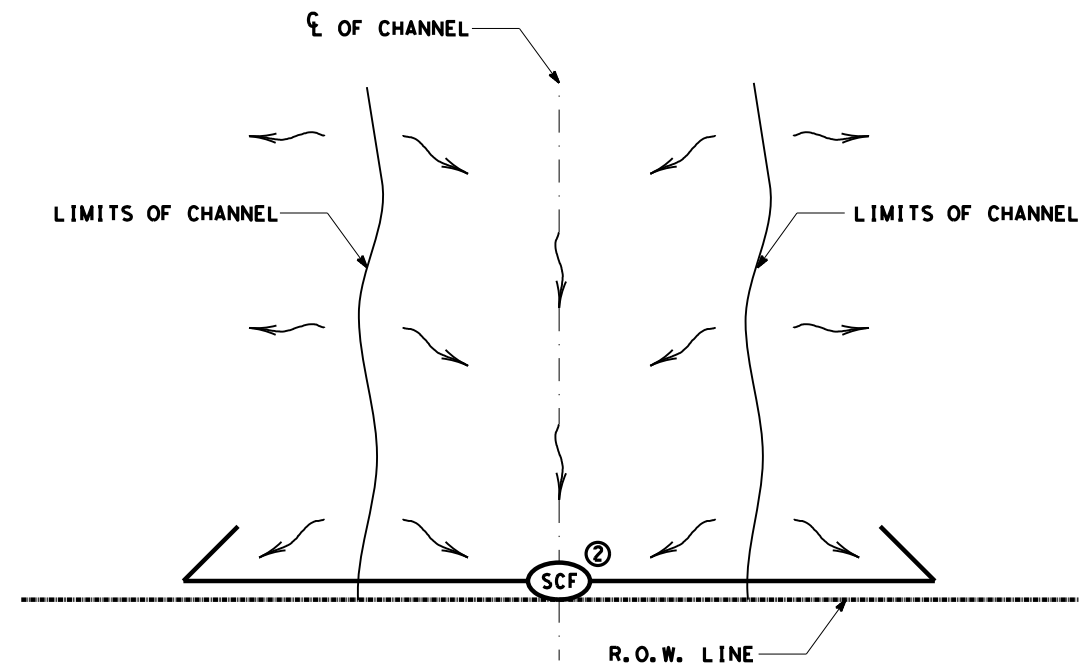
**BEST MANAGEMENT PRACTICE (BMP) #10**  
FOR 404 OR NON-404 STREAMS ONLY ~  
SEDIMENT CONTROL AT PHASED CONSTRUCTION OF BRIDGE CLASS CULVERTS

	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

- NOTES:
- START SEDIMENT CONTROL AT LOCATION SO ALL STORM WATER WITH SEDIMENT IS COLLECTED
  - ROCK FILTER DAMS OR EARTH/GRASSED EMBANKMENTS CAN BE SUBSTITUTED AS DIRECTED.
  - PROVIDE A SMOOTH TRANSITION FROM THE INVERT ELEVATIONS BETWEEN CULVERTS. REMOVE LOOSE SOIL FROM EXCAVATED AREA BETWEEN CULVERTS.
  - PROVIDE AND INSTALL PNEUMATICALLY PLACED CONCRETE ON THE DITCH BOTTOM AND SIDE SLOPES BETWEEN TEMPORARY TERMINATIONS BETWEEN OLD AND NEW CULVERTS. PNEUMATICALLY PLACED CONCRETE WILL BE PLACED TO THE HEIGHT OF THE LARGEST CULVERT ON THE DITCH SIDE SLOPES; AND TO A LIMIT 10 FEET OUTSIDE THE LOCATION OF BMPS ALONG THE DITCH BOTTOM. CEMENT STABILIZED SAND MAY BE SUBSTITUTED FOR PNEUMATICALLY PLACED CONCRETE, IN AREAS WHERE INSTALLATION WORKS AND AT THE OPTION OF TXDOT.



**BEST MANAGEMENT PRACTICE (BMP) #11**  
BOUNDARY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED UP SLOPE



**BEST MANAGEMENT PRACTICE (BMP) #12**  
BOUNDARY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED DOWN SLOPE

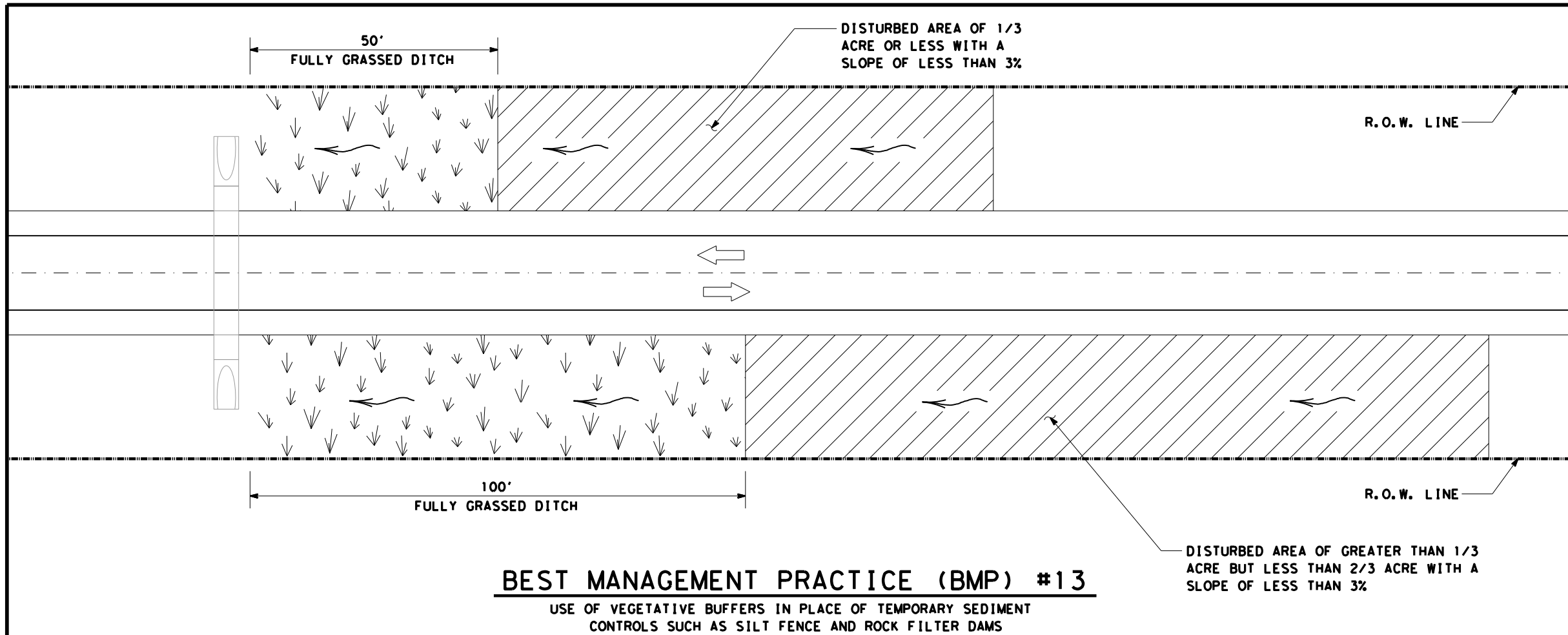
SCALE = NTS SHEET 7 OF 10

Texas Department of Transportation  
Waco District Standard

**TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES**

TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TXDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	134	

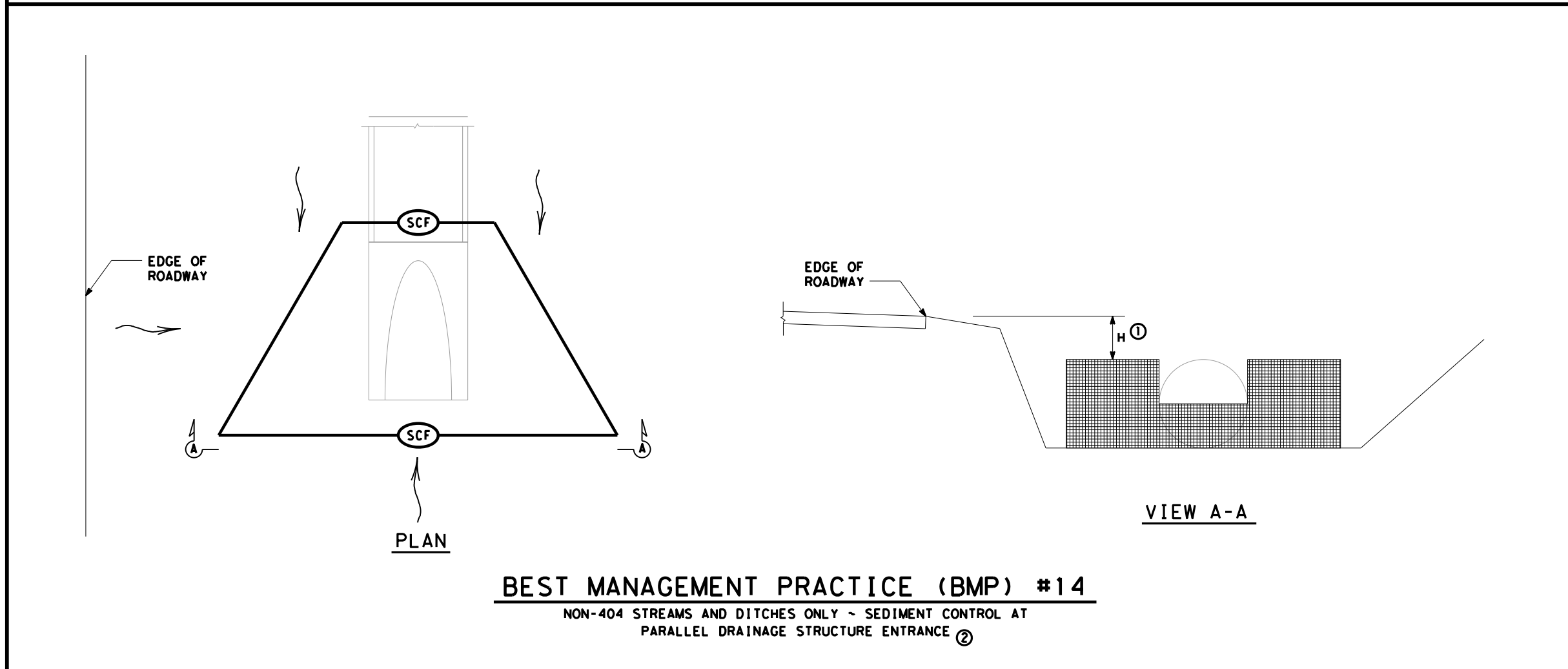


**BEST MANAGEMENT PRACTICE (BMP) #13**

USE OF VEGETATIVE BUFFERS IN PLACE OF TEMPORARY SEDIMENT CONTROLS SUCH AS SILT FENCE AND ROCK FILTER DAMS

	FULLY GRASSED DITCH
	DISTURBED AREA
	DIRECTION OF FLOW
	SEDIMENT CONTROL FENCE

- ① FOR H DIMENSIONS LESS THAN 1.5' SILT FENCE MAY NEED TO BE NOTCHED AS SHOWN IN VIEW A-A. ADD EXTRA POSTS AT NOTCH.
- ② BMP #14 MAY BE USED AT CROSS DRAINAGE STRUCTURES AS DIRECTED.



**BEST MANAGEMENT PRACTICE (BMP) #14**

NON-404 STREAMS AND DITCHES ONLY - SEDIMENT CONTROL AT PARALLEL DRAINAGE STRUCTURE ENTRANCE ②

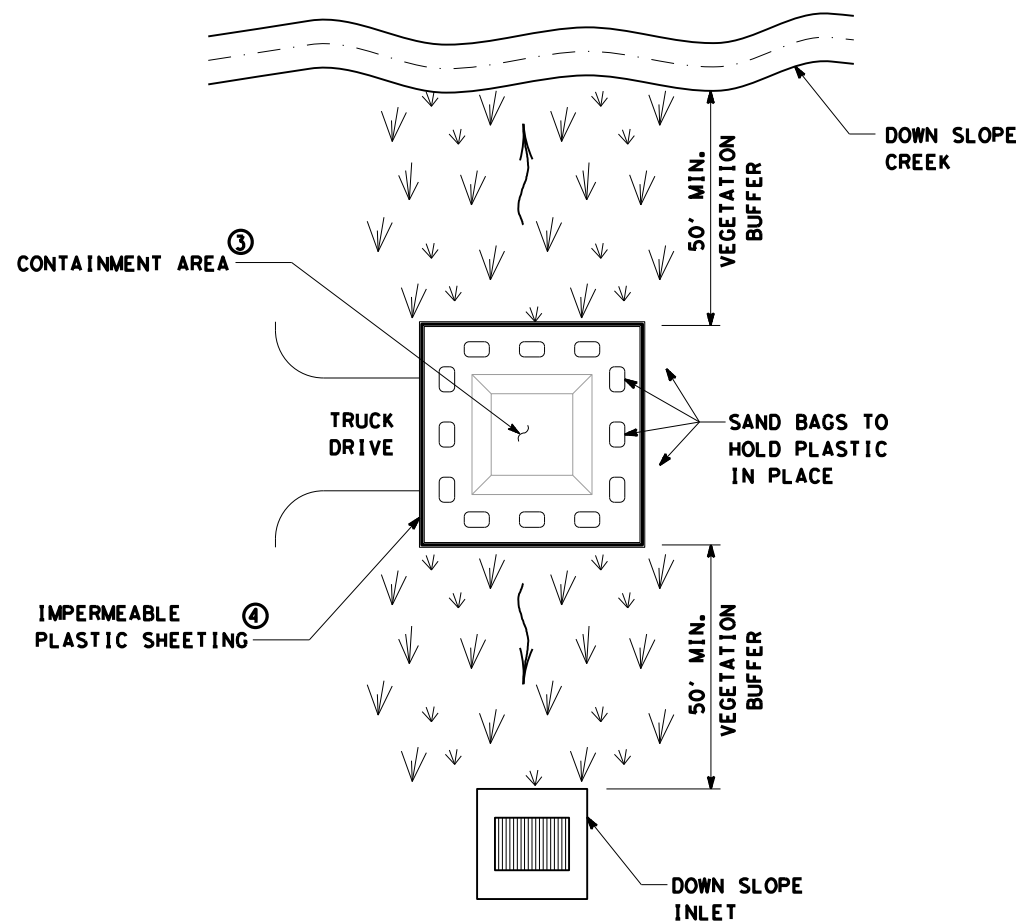
SCALE = NTS SHEET 8 OF 10



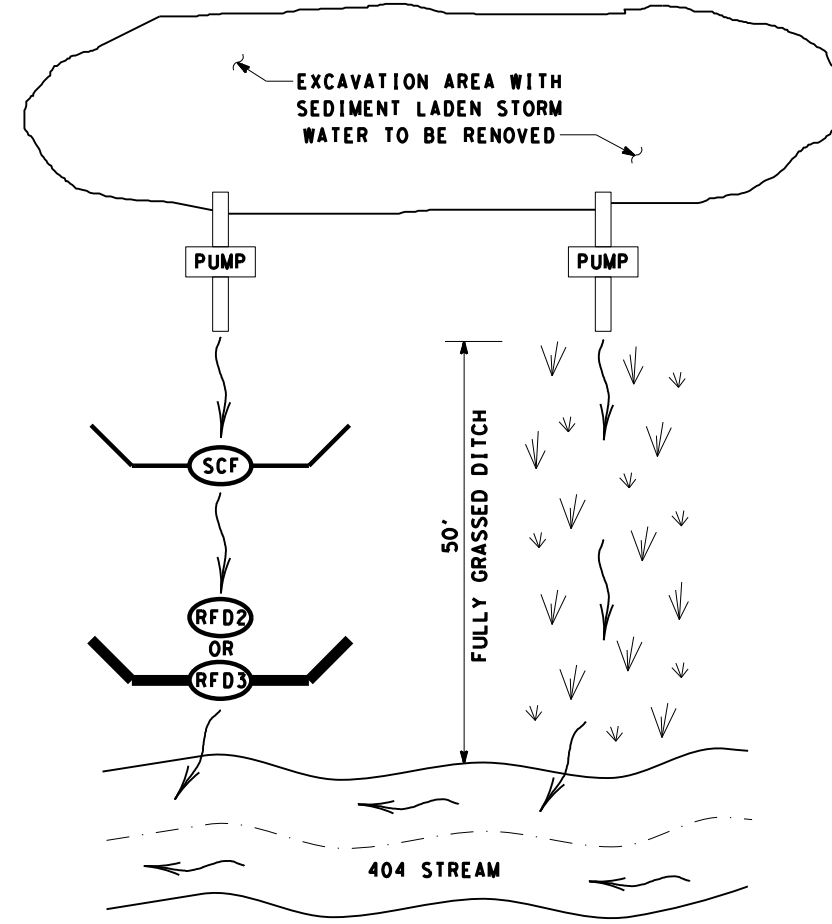
**TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES**

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TXDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	135	



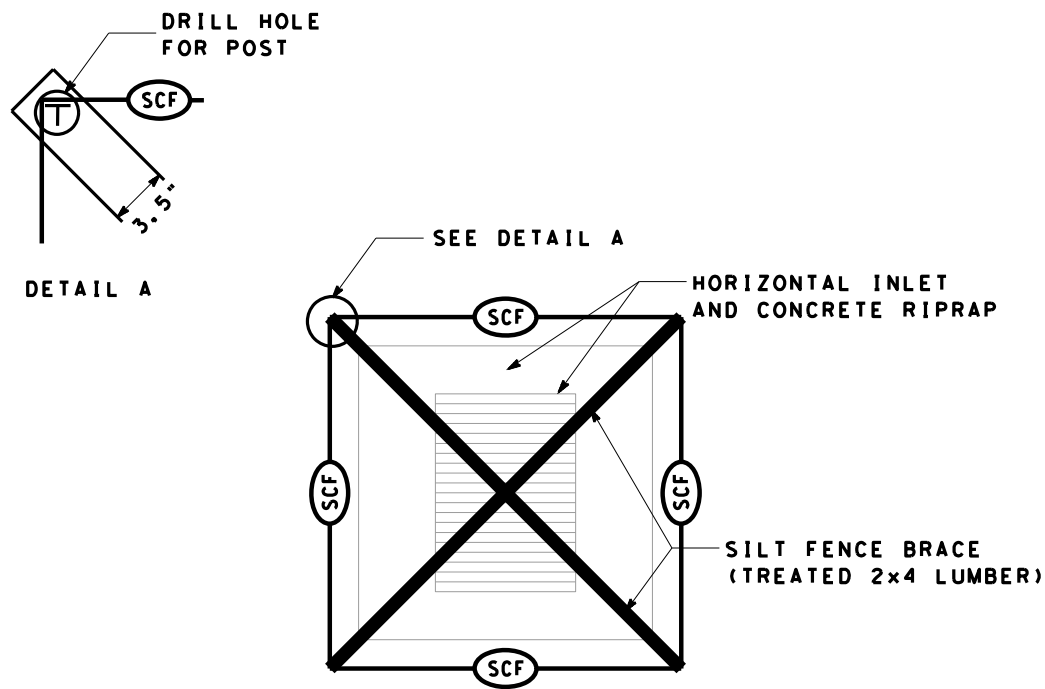
**BEST MANAGEMENT PRACTICE (BMP) #15**  
CONCRETE TRUCK WASHOUT AREA



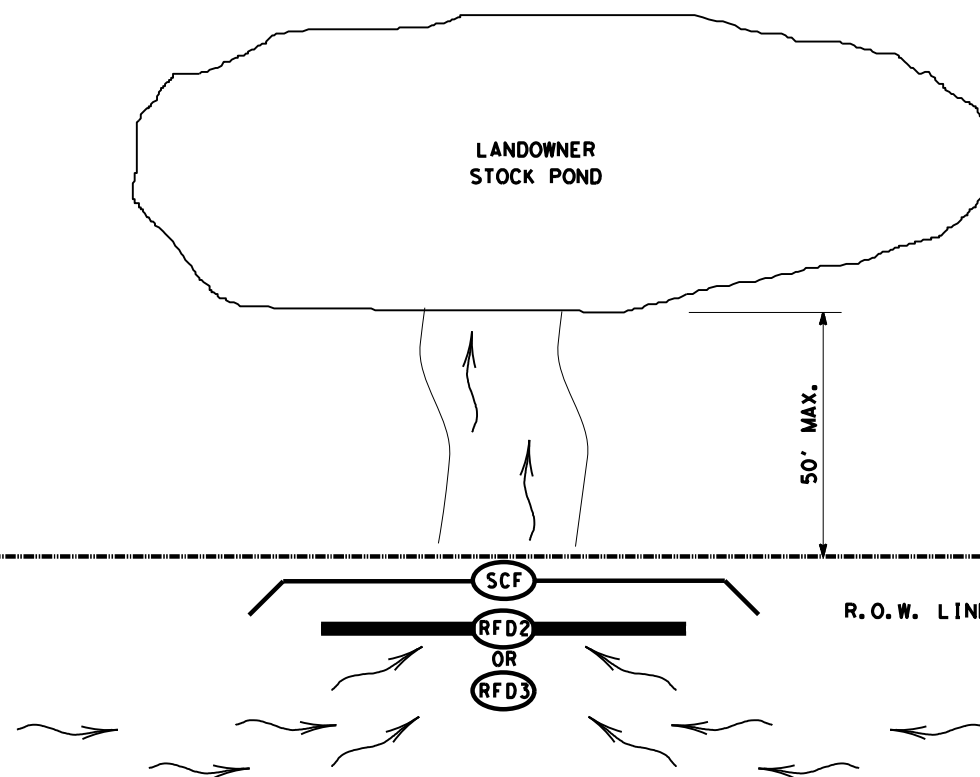
**BEST MANAGEMENT PRACTICE (BMP) #16**  
PUMPED STORM WATER SEDIMENT CONTROLS ①

	FULLY GRASSED DITCH
	DIRECTION OF FLOW
	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)

- ① PUMPED STORM WATER FROM AN EXCAVATION AREA SHOULD BE DISCHARGED IN A 50' VEGETATIVE BARRIER OR THROUGH TWO TEMPORARY SEDIMENT CONTROLS BEFORE ENTERING A 404 STREAM.
- ② FOR LANDOWNER STOCKPONDS WITHIN 50' OF THE RIGHT OF WAY LINE, PROVIDE REDUNDANT SEDIMENT CONTROLS AT THE CONVEYANCE OF THE POND. MINIMUM OF TWO SEDIMENT CONTROLS.
- ③ WHEN CONTAINMENT AREA REACHES 1' FREEBOARD, DISCONTINUE WASHOUT PLACEMENT AND REMOVE MATERIAL UPON SOLIDIFICATION.
- ④ EACH TIME SOLIDIFIED MATERIAL IS REMOVED REPLACE PLASTIC SHEETING.



**BEST MANAGEMENT PRACTICE (BMP) #17**  
HORIZONTAL INLET SEDIMENT CONTROL



**BEST MANAGEMENT PRACTICE (BMP) #18**  
LANDOWNER STOCKPOND SEDIMENT CONTROL ②

SCALE = NTS SHEET 9 OF 10

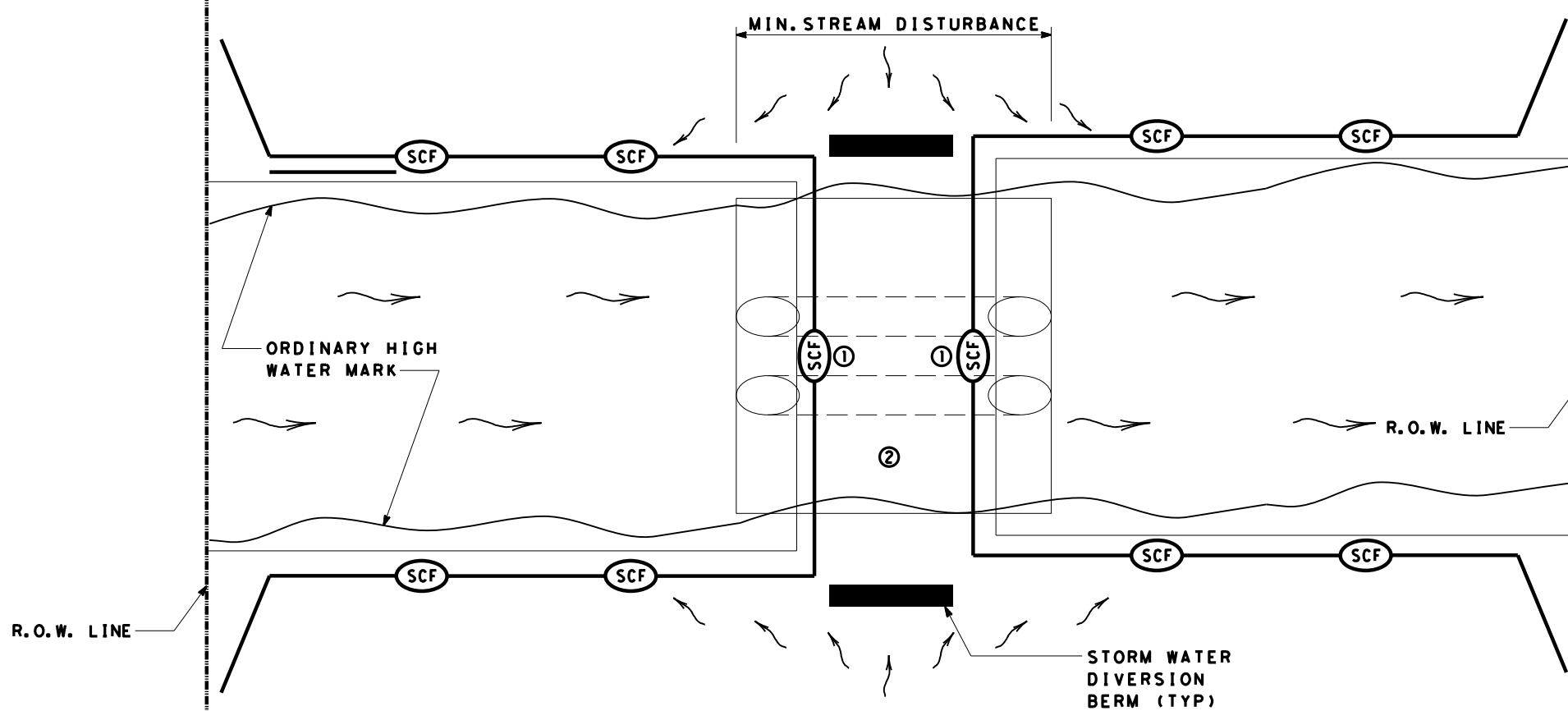
Texas Department of Transportation  
Waco District Standard

**TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES**

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TXDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	136	

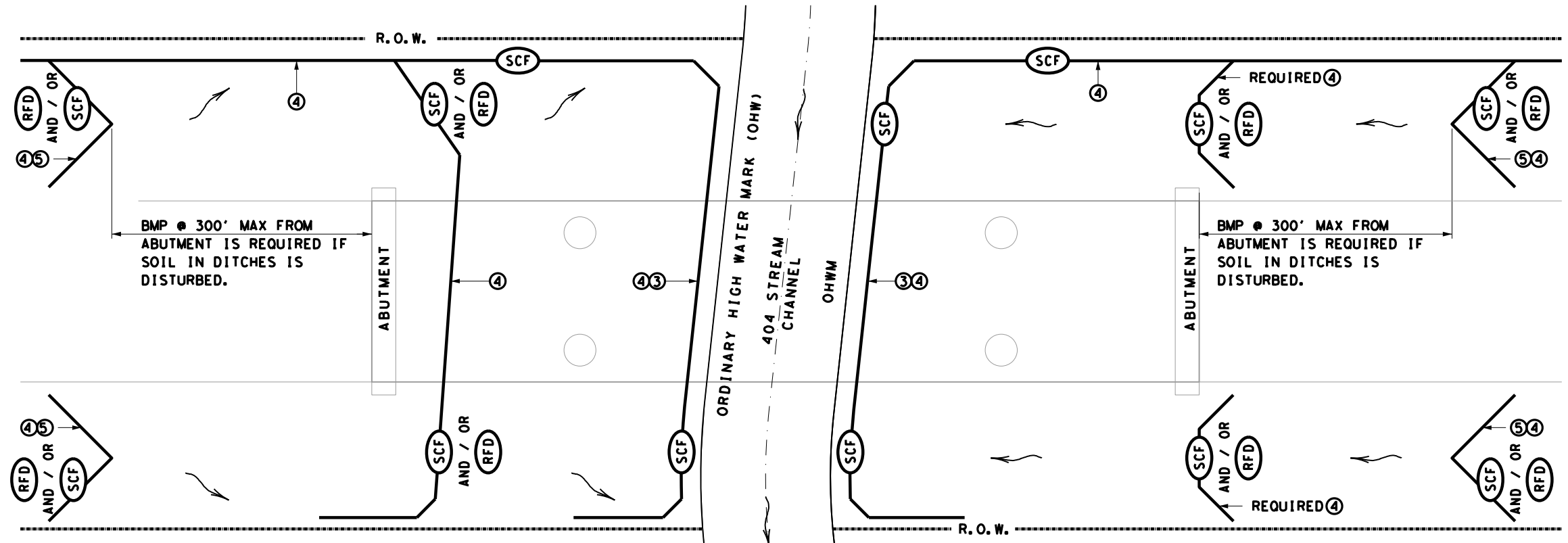




**BEST MANAGEMENT PRACTICE (BMP) #19**  
TYPICAL 404 STREAM CROSSING (SEDIMENT CONTROL AT CROSSING)

	DIRECTION OF FLOW
	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM
	SECURITY FENCING

- ① HAY BALES MAY BE SUBSTITUTED FOR SILT FENCE OVER THE STREAM CROSSING.
- ② CROSSING WILL BE AS PER REQUIREMENTS OF THE WATERS OF THE US GENERAL NOTES.
- ③ INSTALL SILT FENCE SLIGHTLY UP FROM OHW MARK FROM R.O.W. TO R.O.W.
- ④ USE SILT FENCE L-HOOKS ON LEVEL OR DOWN SLOPING ENDS TO BLOCK STORM WATER SEDIMENT
- ⑤ INSTALL LARGE V OR U SHAPED BMP'S FROM ABUTMENT AS SHOWN. IF THERE IS STEEP DITCH CONDITIONS DECREASE SPACING AND CONSIDER RFD'S. ADD ADDITIONAL BMP'S IF GRADE IS STEEP OR IF FLOW IS HIGH.



**BEST MANAGEMENT PRACTICE (BMP) #20**  
FOR 404 STREAMS - BMP'S AT BRIDGES

SCALE = NTS SHEET 10 OF 10



**TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES**

**TA-BMP**

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TXDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0049	01	095, ETC.	SH 6
DEC 2013	DIST	COUNTY	SHEET NO.	
FEB 2015	WAC	McLENNAN, ETC.	137	