SEE SHEET NO. 2 FOR
INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO. STP 1302(022)

SH 118
JEFF DAVIS COUNTY

NET LENGTH OF ROADWAY = 33,601.92 FT.= 6.364 MI.
NET LENGTH OF BRIDGE = 519.00 FT.= 0.098 MI.
NET LENGTH OF PROJECT = 34,120.92 FT.= 6.462 MI.

LIMITS: FROM APPROX 0.1 MI S OF FORT DAVIS TO APPROX 6.5 MI S OF FORT DAVIS

FOR THE CONSTRUCTION OF REHABILITATION OF EXISTING ROADWAY

CONSISTING OF BASE REPAIR, MILL, OVERLAY, AND PAVEMENT MARKINGS

DESIGN SPEED = 50 MPH
A.D.T. (2022)= 1,849
A.D.T. (2042)= 2,330

FEDERAL AID PROJECT NO.			
STP 1302(022)			
CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		1

FINAL PLANS

CONTRACTOR:_____

LETTING DATE:_____

TIME CHARGES BEGAN:_____

DATE CONTRACTOR BEGAN WORK:_____

DATE WORK WAS COMPLETED:_____

DATE WORK WAS ACCEPTED:_____

TOTAL DAYS CHARGED: _____

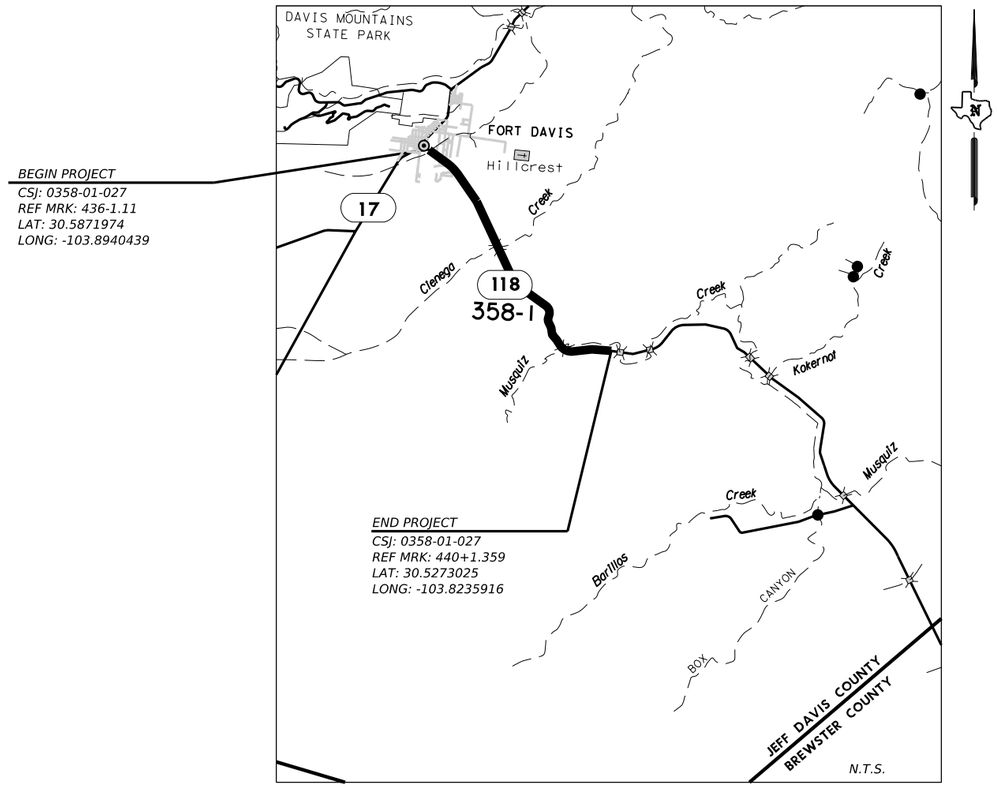
ORIGINAL CONTRACT AMOUNT: $_____

AMOUNT OF CONTRACT AMENDMENTS: $_____

FINAL CONTRACT COST: $_____

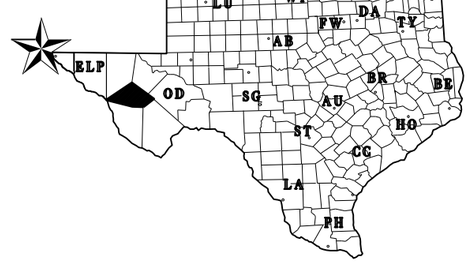
DATE:_____ 20_____

_____
AREA ENGINEER



BEGIN PROJECT
CSJ: 0358-01-027
REF MRK: 436-1.11
LAT: 30.5871974
LONG: -103.8940439

END PROJECT
CSJ: 0358-01-027
REF MRK: 440+1.359
LAT: 30.5273025
LONG: -103.8235916



KEY TO COUNTIES

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

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE
TDLR INSPECTION: NONE

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 23, 2023)

Texas Department of Transportation

RECOMMENDED FOR LETTING: 8/31/2023
DocuSigned by: Eduardo Perales, P.E.
2778C60ABBC7428...
SAFETY REVIEW COMMITTE CHAIRMAN

RECOMMENDED FOR LETTING: 8/31/2023
DocuSigned by: L. Raul Ortega Jr., P.E.
DISTRICT DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 8/31/2023
DocuSigned by: Tom Vreeman, P.E.
7A68B25EA0D94D6...
DISTRICT ENGINEER

DATE: 8/30/2023 10:40:49 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010027/4 - Design/Plan Set/1. General/TITLE SHEET

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3-7	PROJECT LAYOUT
8	TYPICAL SECTION
9, 9A-9G	GENERAL NOTES
10	ESTIMATE & QUANTITY
11	QUANTITY SUMMARY
12	ENVIRONMENTAL PERMITS, ISSUES, & COMMENTS (EPIC)
	TRAFFIC CONTROL PLAN
13	TRAFFIC CONTROL PLAN NARRATIVE
14	TCP SELECTION TABLE
	TRAFFIC CONTROL PLAN STANDARDS
15-26#	BC (1)-21 THRU BC (12)-21
27#	TCP (2-2)-18
28#	TCP (2-3)-23
29#	TCP (3-1)-13
30#	TCP (3-3)-14
31#	TCP (7-1)-13
32	EDGE CON-21
33#	WZ (BRK)-13
34#	WZ (STPM)-23
35#	WZ (UL)-13
	ROADWAY
36-38	HORIZONTAL & VERTICAL CONTROL SHEET
39-46	SECONDARY CONTROL
47-61	PLAN LAYOUT
62-63	MISCELLANEOUS DETAILS

SHEET NO.	DESCRIPTION
	BRIDGE
64	CLEANING AND SEALING EXISTING BRIDGE JOINTS
	ROADWAY STANDARDS
65#	TE(HMAC)-11
	SIGNING & PAVEMENT MARKINGS
66-80	STRIPING LAYOUT
	SIGNING & PAVEMENT MARKINGS STANDARDS
81-85#	D&OM (1)-20 THRU D&OM (5)-20
86-87#	PM(1)-22 THRU PM(2)-22
88-89#	RS(2)-23 & RS(4)-23
	ENVIRONMENTAL
90#	EC(1)-16
91-92	STORMWATER POLLUTION PREVENTION PLAN (SWP3)

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

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER

Antonio Santana PE

08/29/2023

Texas Department of Transportation

SH 118

GENERAL
INDEX OF SHEETS

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CONT	SECT	JOB	HIGHWAY
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DATE: 8/29/2023 9:47:23 PM
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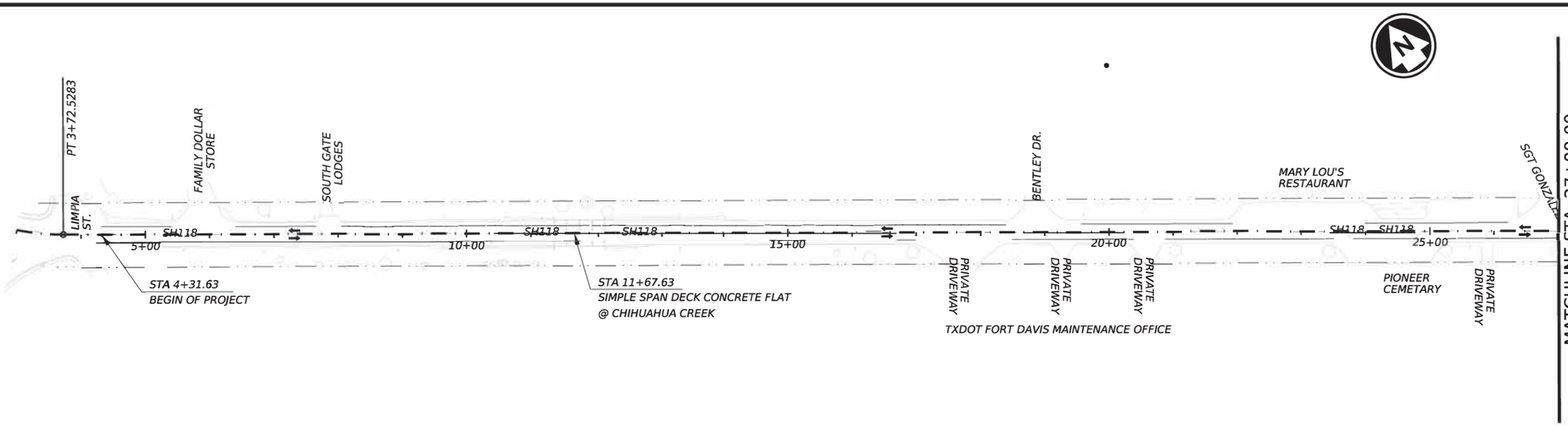

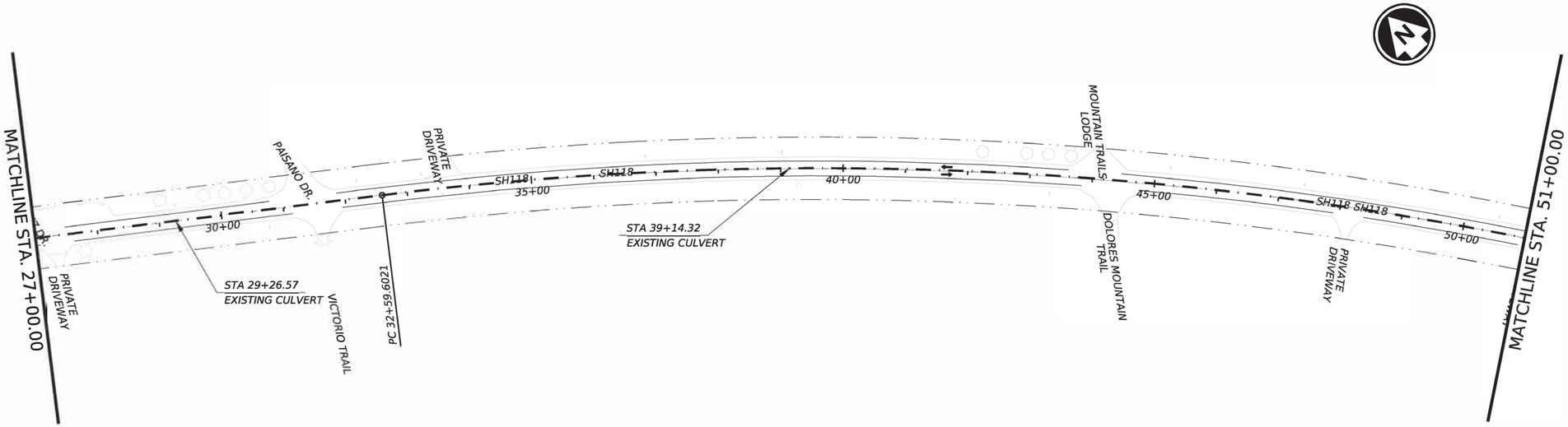

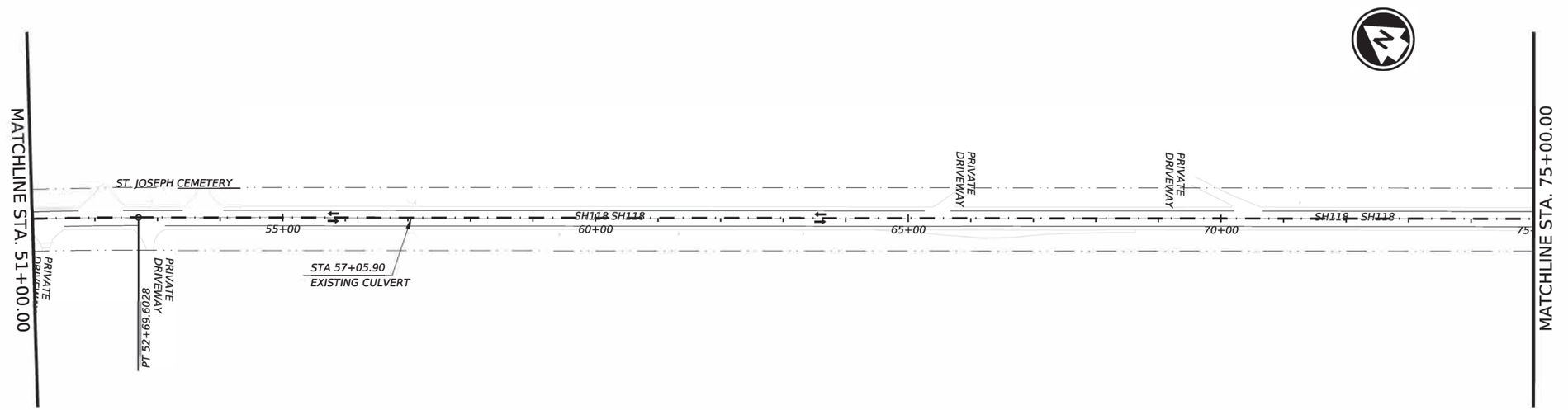

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

0 100 200
SCALE IN FEET

Texas Department of Transportation

SH 118

GENERAL PROJECT LAYOUT

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		3

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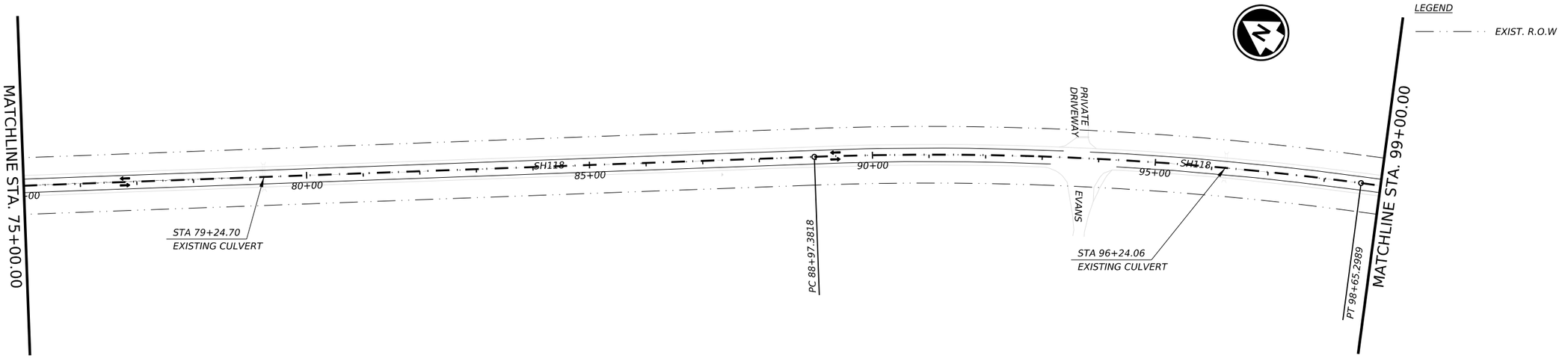

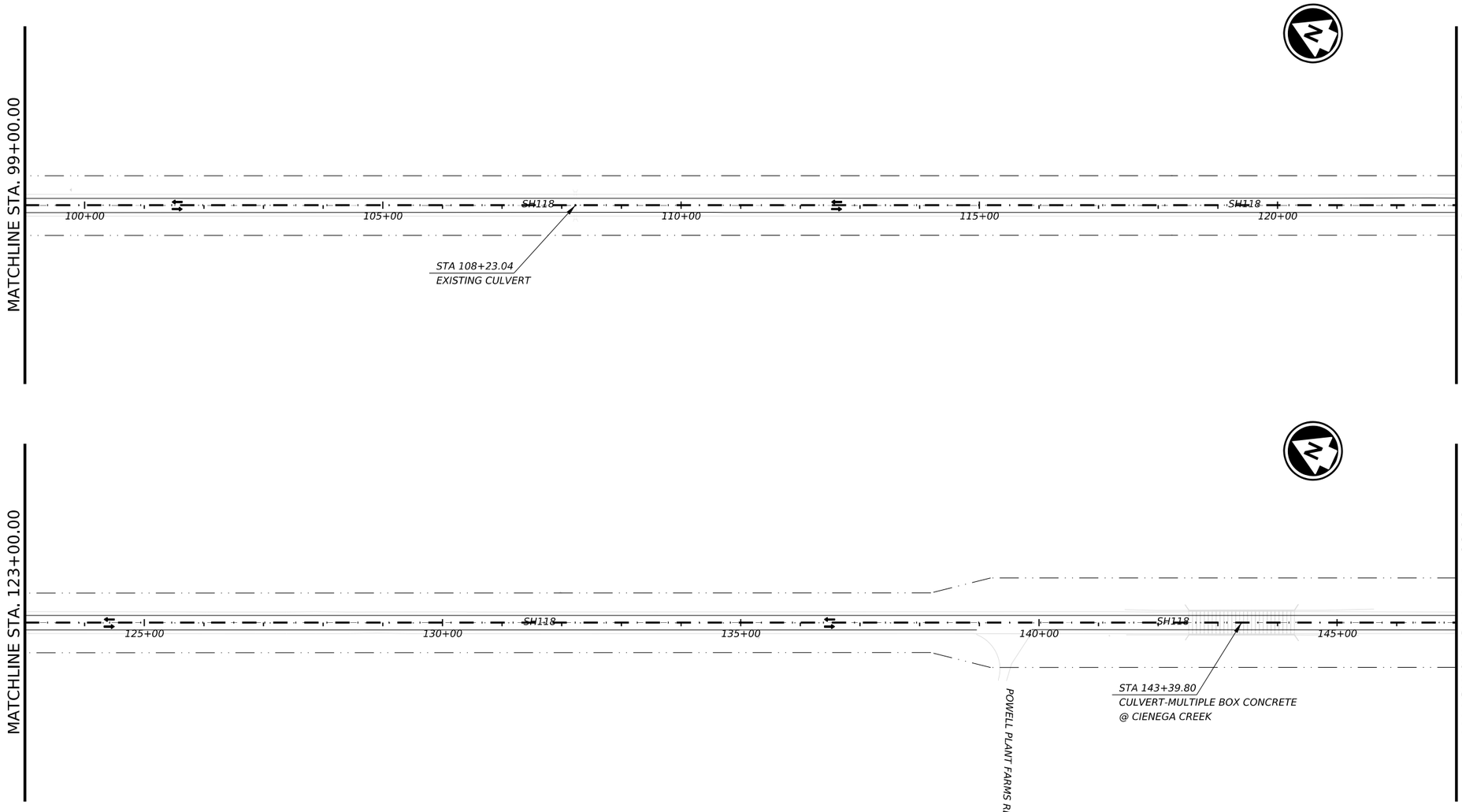

LEGEND

EXIST. R.O.W

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER

Antonio Santana, PE

08-29-23

0 100 200

SCALE IN FEET

Texas Department of Transportation

SH 118

GENERAL PROJECT LAYOUT

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		4

DATE: 8/29/2023 2:06:59 PM
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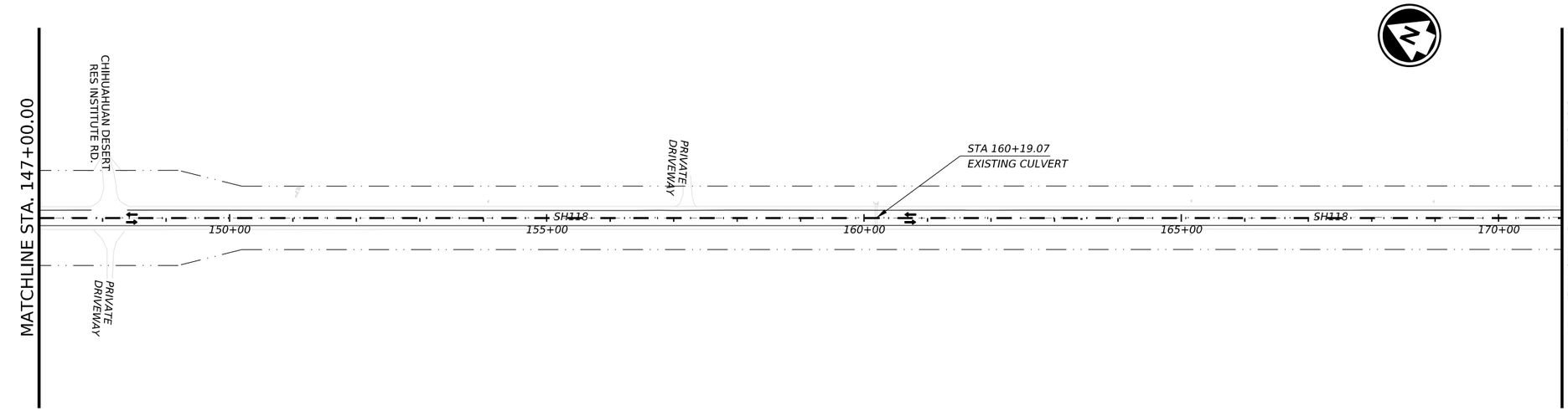

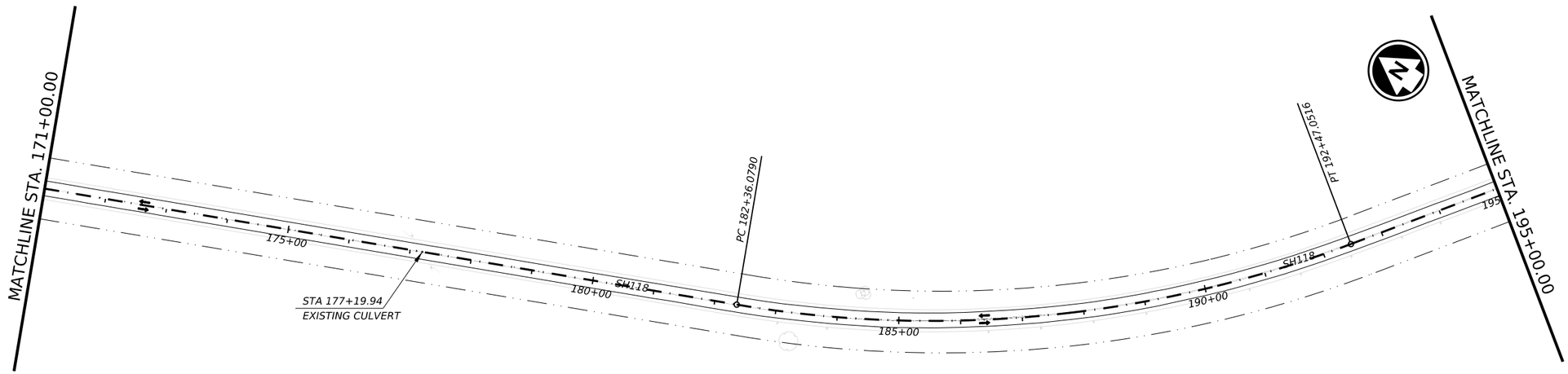

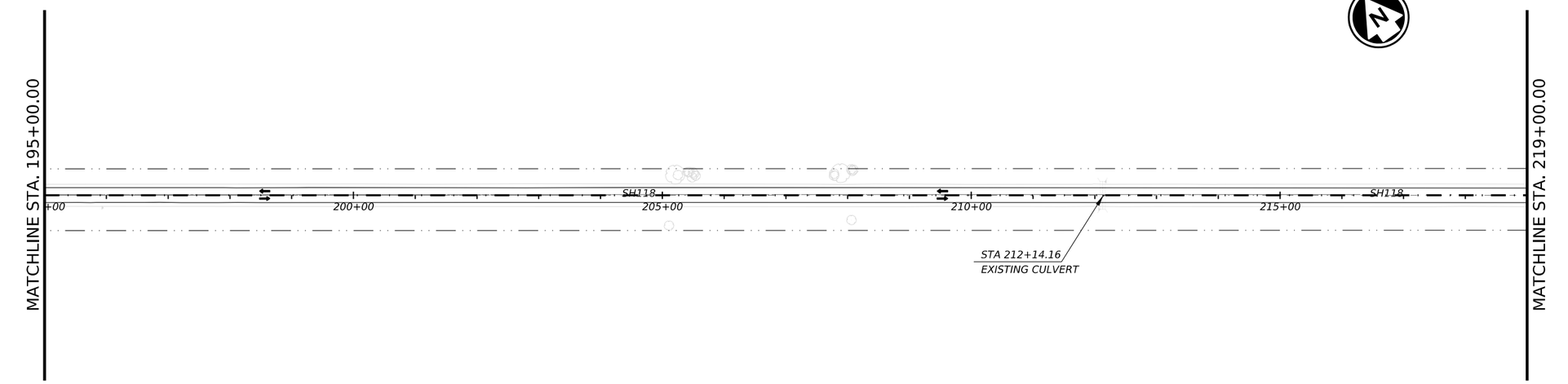

LEGEND

EXIST. R.O.W

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED
PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

0 100 200
SCALE IN FEET

Texas Department of Transportation

SH 118

GENERAL PROJECT LAYOUT

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		5

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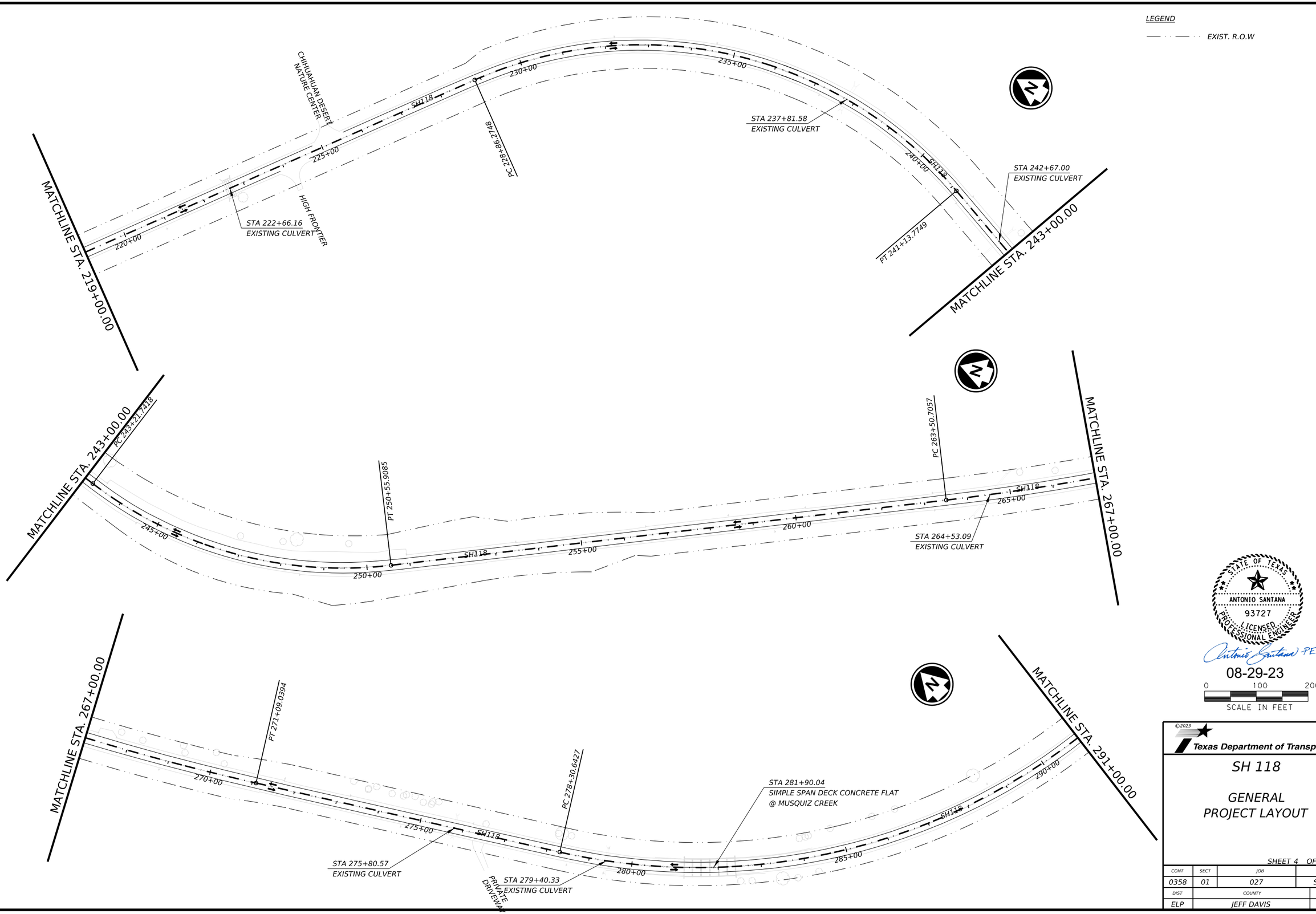

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

0 100 200
SCALE IN FEET

Texas Department of Transportation

SH 118

GENERAL PROJECT LAYOUT

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		6

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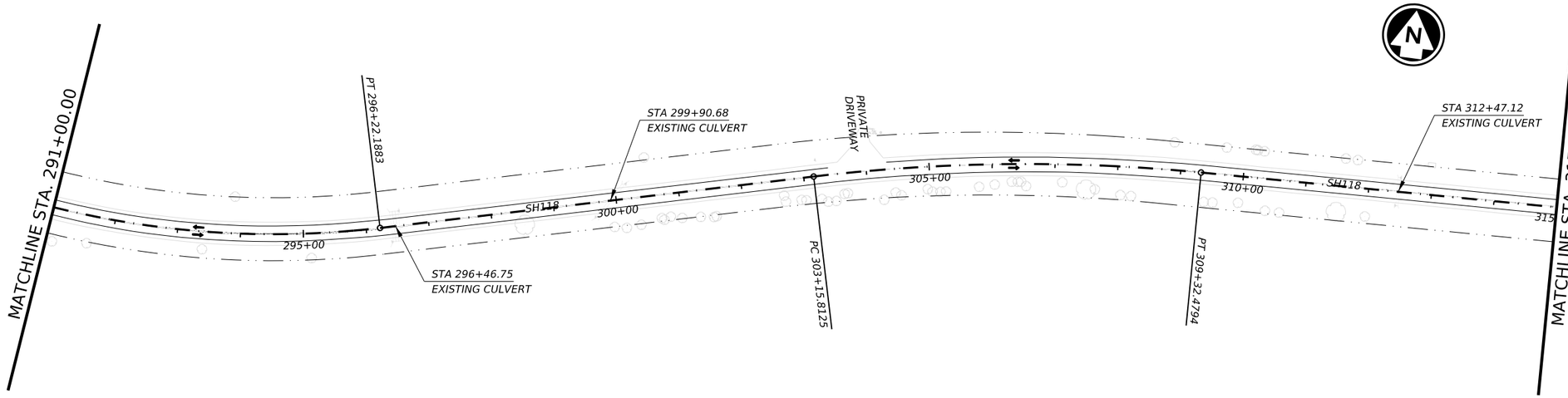
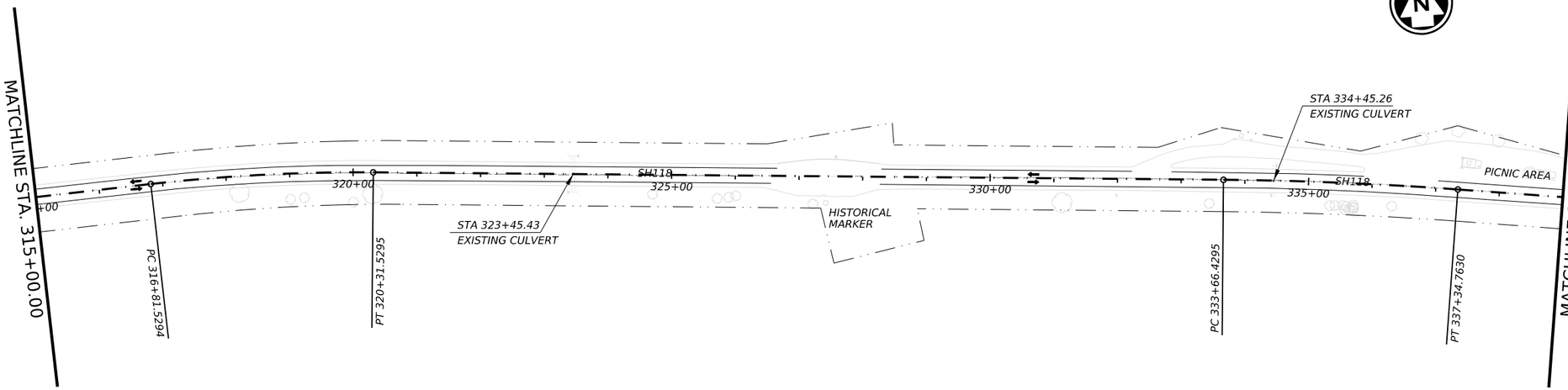
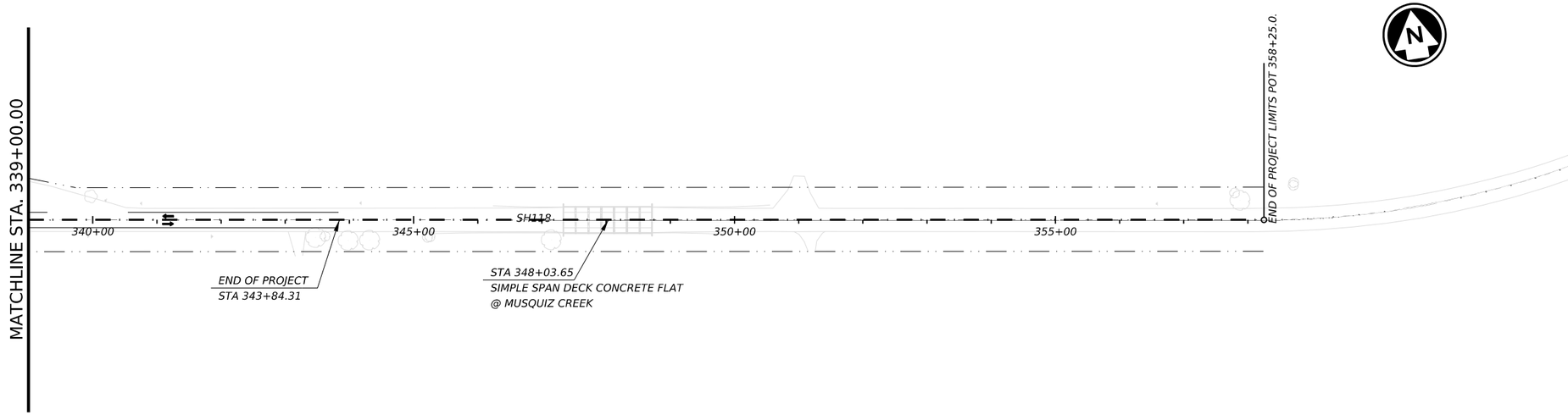






LEGEND

EXIST. R.O.W

08-29-23

0 100 200

SCALE IN FEET

Texas Department of Transportation

SH 118

GENERAL PROJECT LAYOUT

SHEET 5 OF 5

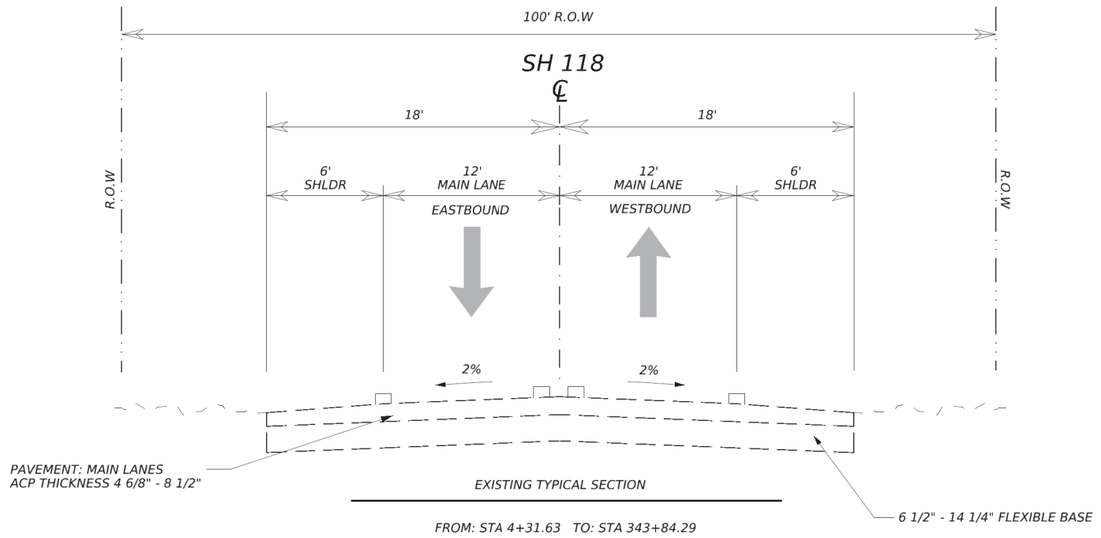
CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		7

DATE: 8/29/2023 2:07:58 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Project Layout/SH 118 - Plan 13.dgn

NOTES:

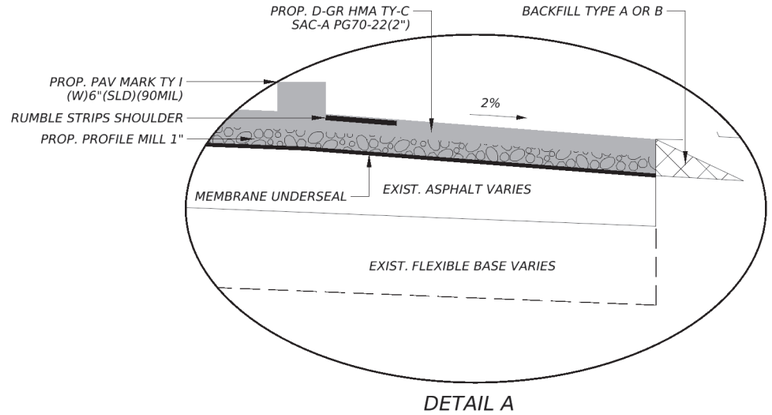
1. TYPICAL SECTIONS ARE FOR GENERAL INFORMATION ONLY. DO NOT USE FOR QUANTITY CALCULATIONS OR AS A CONSTRUCTION DETAIL. REFER TO SPECIFIC DETAIL SHEET(S) AND/OR STATE STANDARD(S) FOR PROPER CONSTRUCTION.

2. FIELD VERIFY ACTUAL LOCATIONS AND PAVEMENT DIMENSIONS. REFERENCE MARKER ARE FOR LOCATIONS PURPOSES ONLY.

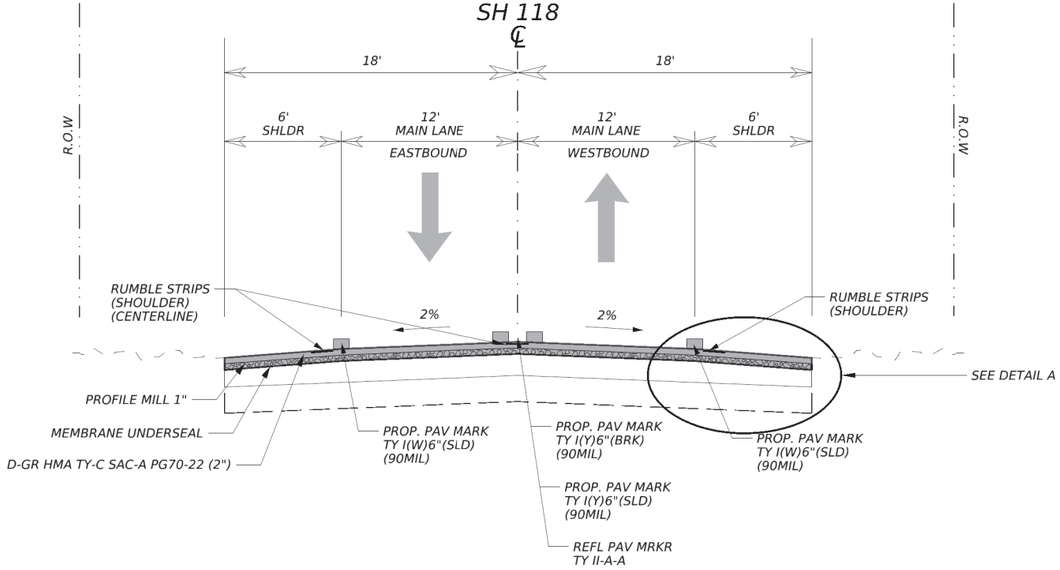


EXISTING TYPICAL SECTION

FROM: STA 4+31.63 TO: STA 343+84.29



DETAIL A



PROPOSED TYPICAL SECTION

FROM: STA 4+31.63 TO: STA 343+84.29
INCIDENTAL WORK FROM STA. 343+84.29 TO STA. 346+72.54

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED
PROFESSIONAL ENGINEER

Antonio Santana PE

08/29/23

NOT TO SCALE

Texas Department of Transportation

SH 118

GENERAL
TYPICAL SECTION

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
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ELP	JEFF DAVIS		8

DATE: 8/26/2023 3:53:21 PM
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DN: CK: DW: CK:

********** General Notes **********

2014 Specification Book

Specification Data

Table 1

Basis of Estimate

Item	Description	Rate
351	D-GR HMA TY-B PG 64-22 (EXEMPT) - Flexible Pavement structure repairs (1)	1 in. = 110 lb./sq.yd.
3002	UNDERSEAL MEMBRANE	0.20 gal/sy
3076	D-GR HMA TY-C SAC-A PG70-22	1 in. = 220 lb./sq.yd.

Notes:

1. Provide **6"** of **ITEM 3076 D-GR HMA TY-B PG 64-22 (EXEMPT)** for all repairs 1" =110 LBS/SY**,** will not be measured but will be subsidiary to Item 351, "Flexible Pavement Structure Repair."
2. Location and quantities may vary as directed by the Engineer.
3. Ride payment adjustment **Item 585** for Item 3077 **Schedule 1**.

General Requirements

Maintain the entire project area in a neat and orderly manner throughout the duration of the work. Remove all construction litter and undesirable vegetation within the right of way inside the project limits. This work will be subsidiary to the various bid items.
General Project Description – This project consists of a Mill, Inlay, Flexible Base, Repairs, Signing, Pavement Markings, and Metal Beam Guard Fence replacement.

Traffic

Contact the Engineer or the City when construction operations are within 400 feet of a signalized intersection to determine/verify the location of loop detectors, conduit, ground-boxes, etc. Repair or replace any signal equipment damaged by construction operations. The method of repair or replacement shall be pre-approved and inspected. This work shall be completed at the Contractor's expense.
Contractor questions on this project are to be addressed to the following individual(s):
Alpine Area Office:

Armando Ramirez, P.E. **Aldo Madrid, P.E.** **Monica Ruiz, P.E**
Alpine Area Engineer **Director of Construction** **District Construction Engineer**
Armando.Ramirez2@txdot.gov Aldo.Madrid@txdot.gov Monica.Ruiz@txdot.gov

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address: https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors.
All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page. The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

Traffic

Contact the Department's El Paso District Signal Shop at txdotelplocates@txdot.gov to request all Department utility line locates within the project limits. The Signal Shop will locate one time only. Record locates for the purpose of refreshing and maintaining all markings throughout the duration of the project.

Item 4 – Scope of Work

Schedule and perform all work to ensure proper drainage during the course of construction or maintenance operations. All labor, tools, equipment, and supervision required, to ensure drainage, removal, and handling of water shall be considered incidental work.

Item 5 – Control of Work

Keep traveled surfaces used in hauling operations clear and free of dirt or other material.

Coordinate to complete all required adjustments within project duration acceptable to the Department and each applicable Utility Agency.

Existing pavement, utilities, structures, etc. damaged as a result of construction operations will be repaired at no additional cost to the Department.

Protect from damage and destruction all areas of the right of way, which are not included in the actual limits of the proposed construction areas. Exercise care to prevent damage to trees, vegetation, irrigation system and other natural features. Protect trees, shrubs, and other landscape features from abuse, marring, or damage within the actual construction and/or fenced protection areas designated for preservation.

Restore any area disturbed or damaged to a condition "as good as" or "better than" prior to start of construction operation. This work will be 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 a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

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

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

Item 7 – Legal Relations and Responsibilities

Comply with all requirements of the Environmental Permits Issues and Commitments (EPIC) Sheet.

Do not discharge any liquid pollutant from vehicles onto the roadside. Immediately clean spills and dispose in compliance with local, state, and federal regulations to the satisfaction of the Engineer at no additional cost to the Department.

Occupational Safety & Health Administration (OSHA) regulations prohibit operations that bring people or equipment within 10 ft. of an energized electrical line. Where workers and/or equipment may be close to an energized electrical line, notify the electrical power company and make all necessary adjustments to ensure the safety of workers near the energized line.

No significant traffic generator events identified.

Law Enforcement Personnel

Coordinate with TxDOT Engineer for off-duty Law enforcement assistance when needed to direct traffic during significant closures and detours, as approved unless otherwise directed by the engineer. The officer shall monitor or direct traffic during the closure as directed by the Engineer. 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.

Contractor to submit a written request at least 48 hrs prior to the need for lar enforcement to the Engineer. The Engineer will make arrangements with the respective entity to formally request the services.

Fees resulting from contractor-initiated cancellations shall be the Contractor's responsibility.

The method used to direct traffic at signalized intersections shall be as approved. Additional officers and vehicles may be provided when approved or directed.

Show proof of certification by the Texas Commission on Law Enforcement Standards.

Complete the daily tracking form provided by the department and submit proof of payment such as cancelled checks for the approved invoices that have been billed to the project no later than 30 days from the invoice date.

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site.

Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case-by-case basis.

Item 8 – Prosecution and Progress

Working days will be calculated in accordance with Section 8.3.1., "**Standard** Workweek."

Create and maintain a bar chart schedule.
Submit baseline schedule and obtain approval prior to beginning construction. The monthly progress payment will be held if the monthly update is not submitted.

Item 9 – Measurement and Payment

Monthly progress payments will be made for items of work completed by the 27th day of each month. Any work completed after the 27th will be included for payment in the subsequent monthly progress payment.

Submit Material on Hand (MOH) payment requests at least **two (2)** working days prior to the 27th of the month for payment consideration on that month's estimate.

Item 134 – Backfilling Pavement Edges

Backfill pavement edges immediately after the surface course has begun unless determined otherwise by the Engineer.

Backfill edges to allow no more than a 1:3 slope from pavement edge to existing ground.

Reclaimed asphalt pavement (RAP) may be used to backfill pavement edges. When using a Type B material, Department-owned RAP generated through the required work on the Contract is available for the Contractor's use. If insufficient RAP is available, then substitute Flexible Base of a type and grade acceptable by the Engineer to backfill pavement edges at no additional cost to the Department.

If Contractor elects to use RAP material for backfill pavement edges, the RAP material must pass a 2” sieve. All material not passing sieve will be removed and disposed of properly. This shall be considered subsidiary to Item 134.

Apply emulsified asphalt at a 50/50 solution of water to emulsion over the disturbed area with backfill material. The application rate shall achieve a final emulsion rate of 0.15 gal/SY residual asphalt.

Item 351 – Flexible Pavement Structure Repair

Provide **FIVE (5)** inches of **Item 3076 D-GR HMA TY B PG 64-22 (EXEMPT)** for all repairs. Item 3076 will not be measured but will be subsidiary to Item 351, “Flexible Pavement Structure Repair”.

Perform repairs on locations shown in plans, as per plan quantities or as directed by the Engineer.

Repair pavement edges to the line and grade of the original pavement. Sides of the repair area shall be made square by saw cutting or other approved methods. Any loose and foreign material shall be removed. Repair area to be clean and dry prior to application of prime coat. AE-P to be applied as prime coat at 0.15 gal/sy to repaired area surfaces, unless otherwise directed. Waste material to be removed and disposed of as directed or approved.

Tack coat to be applied all surfaces that will be in contact with the subsequent HMA placement at 0.15 GAL/SY unless otherwise directed.

Use of a motor grader will not be permitted unless otherwise directed by the Engineer.

Proof rolling or other approved compacting method as directed by the Engineer shall be required in the event that Flex Base or Subgrade is exposed. Payment is subsidiary to this item.

Item 354 – Planing and Texturing Pavement

When a bridge deck is planed and textured, remove excess material. Do not broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints, rails on bridge, and all railroad tracks encountered as approved by the engineer. Clean all these features if they weren’t properly protected. This work is subsidiary work to applicable bid items. Refer to Item 438, “Cleaning and Sealing Joints”, for procedures and methods.

Contractor shall furnish flood light towers at stockpile locations for work performed during night hours. Provide sufficient equipment to stockpile materials during the milling operations at the designated locations shown on plans or as directed by the engineer.

A maximum milling speed of 50 feet per minute shall be applied unless directed otherwise by the Engineer.

Construct a taper with an asphaltic mixture at all uneven transverse joints left by planing operation. Transitions shall be at 10 feet for every 1 inch. Asphaltic material will be subsidiary to this item of work.

Department will retain ownership of planed materials. The asphalt removed under this item shall be salvaged and stockpiled in separate stockpiles as directed by the Engineer at the location listed below. RAP generated through the required work on the contract is available for the Contractor’s use when shown under Item 134 or the HMA items of work, if applicable.

TxDOT Alpine Area Office

2400 TX-118

Alpine, TX 79830

Contact the Alpine Area Maintenance Supervisor at (432) 837-7800 for coordination prior to delivery of materials. Stack in piles 12 to 13 feet maximum height. Place silt fence along the perimeter of stockpiled material. Silt fence will be paid under Item 506, “Temporary Erosion, Sedimentation, and Environmental Controls”. Final quantity of silt fence to be approved by the engineer prior to stockpiling. Hauling of material and incidentals to complete this work is subsidiary to this Item.

Item 500 – Mobilization

The Contractor will be paid in accordance with the associated Item based work performed. This will fully compensate the Contractor for all associated activities.

Item 502 – Barricades, Signs, and Traffic Handling

Prior to beginning construction, the Engineer will approve the routing of traffic and sequence of work.

Additional signs and barricades, placed as directed, will be considered subsidiary to this Item

In accordance with Section 7.2.6.1, designate, in writing, a Contractor Responsible Person (CRP) and a CRP alternate to take full responsibility for the set-up, maintenance, and necessary corrective measures of the traffic control plan. The CRP or CRP alternate must be present at site and implement the initial set up of every traffic control phase/stage, at each location, and/or each call out, for the entire duration of the project.

At the written request of the Engineer, immediately remove the CRP or CRP alternate from the project if, in the opinion of the Engineer, is not competent, not present at initial TCP set-ups, or does not perform in a proper, skillful, or safe manner. These individuals shall not be reinstated without written consent of the Engineer.

CRP and CRP alternate must be trained using Department approved training. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 2 for Department approved Training.

Table 2

Contractor Responsible Person and Alternate

Provider	Course Number	Course Title	Duration	Notes
American Traffic Safety Services Association	TCS	Traffic Control Supervisor	2 days	
National Highway Institute	133112 133113	Design and Operation of Work Zone Traffic Control Work Zone Traffic Control for Maintenance Operations	1 day 1 day	Both courses are required to meet minimum required training.
Texas Engineering Extension Services	133112A	Design and Operation of Work Zone Traffic Control	3 days	
University of Texas Arlington Division for Enterprise Development	WKZ421	Traffic Control Supervisor	16 hours	Contact UTA for training needs.

All contractor workers involved with the traffic control implementation and maintenance must participate and complete a Department approved training course. Provide a copy of the certificate of completion to the Engineer for project records. Refer to Table 3 for Department approved training.

Table 3

Other Work Zone Personnel

Provider	Course Number	Course Title	Duration	Notes
American Traffic Safety Services Association	TCT	Traffic Control Technician	1 day	
Texas Engineering Extension Services	HWS002	Work Zone Traffic Control	16 hours	Identical to HWS-410. Counts for 3 years CRP requirement.
National Highway Institute	133116	Maintenance of Traffic for Technicians	5 hours	Web based
National Highway Institute	134109-I	Maintenance Training Series: Basics of Work Zone Traffic Control	1 hour	Free, Web based
University of Texas at Arlington, Division for Enterprise Development	WKZ100	Work Zone Safety: Temporary Traffic Control	4 hours	Note name change. Free, Web based
TxDOT/AGC Joint Development	N/A	Safe Workers Awareness Highway Construction Work Zone Hazards	16 minutes 18 minutes	Videos available through AGC of Texas offices. English & Spanish
AGC America	N/A	Highway Work Zone Safety Training	1 day	
Texas Engineering Extension Service	HWS400	Temporary Traffic Control Worker	4 hours	Contact TEEX, if interested in course
TxDOT/AGC Joint Development	N/A	Work Zone Fundamentals	10 minutes	Videos available through ACT of Texas offices. English & Spanish

Contractor may choose to train workers involved with the traffic control implementation and maintenance with a contractor developed training in lieu of Department approved training. Contractor developed training must be equivalent to the Department approved training shown in Table 2. Provide the Engineer a copy of the course curriculum for pre-approval, prior to conducting

the contractor developed training. Provide the Engineer a copy of the log of attendees after training completion for project records.

Existing regulatory signs, route marker auxiliaries, guide signs, and warning signs that must be removed due to widening shall be relocated temporarily and erected on approved supports at locations shown in the plans, or as directed. This work will not be paid for directly but is considered subsidiary to this Item.

Notify the Department officials when major traffic changes are to be made, such as detours. Coordinate with the Department on all traffic changes. Advance notification for the following week's work must be made by 5 P.M. on Wednesdays.

If Law Enforcement Personnel is required by the Engineer, coordinate with local law enforcement as directed or agreed. Complete the weekly tracking form provided by the Department and submit invoices with 5% allowance for Law Enforcement payments by Contractor that agree with the tracking form for payment at the end of each month where approved services were provided.

Provide access to intersecting side roads and driveways at all times, unless otherwise directed.

Any approved change to the sequence of work or TCP, must be signed and sealed by a Contractor's Licensed Professional Engineer assuming full responsibility for any additional barricade signs and devices needed.

Use striping operations to channelize traffic into the newly completed roadway, as directed. Maintain shoulders and median areas in a condition capable of serving as emergency paths, as approved. This work will be subsidiary to this Item.

Use portable changeable message signs (PCMS) to alert public of construction two weeks prior to construction.

Use flaggers when directed. Provide two-way radio communication for all flaggers.

Place and maintain sufficient additional warning signs, beacons, delineators, and barricades to warn and guide the public of all hazards in the construction zone limits at all times, and as directed.

Use flashing arrow boards on all tapers for each lane closure.

Some signs, barricades, and channelization devices may not be shown at the precise or measured position. Place the barricades, devices, or signs, with approval, in positions to meet field conditions.

Use Type A flashing warning lights or delineators to mark open excavation, footings, foundations, or other obstructions near lanes that may be open to traffic, as directed.

Remove or cover signs that do not apply to current conditions at the end of each day's work.

Repair or replace all signs damaged by the public or due to weather events.

All project signs shall be maintained free of litter, debris, or sediment build up at the base supports. This work is subsidiary to this item of work.

Safety Contingency

The contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancement, to improve the effectiveness of the TCP 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.

Item 506 – Temporary Erosion, Sedimentation, and Environmental Controls

Place Best Method Practices (BMP's) in locations as designated in the plans or as directed to meet field conditions.

Place a weatherproof bulletin board containing the Texas Commission on Environmental Quality (TCEQ) required information on the project at a site as directed. Post the following documents: TCEQ "TPDES Storm Water Program" Construction Site Notice; Primary Construction Site Notices from both Contractor and Department, completed and signed.

Place rain gauge(s) at locations, as designated.

The total disturbed area for this project is **1.44** acres. Establish the authorization requirements for Storm Water Discharges for soil disturbed area in this project, all project locations in the Contract, and Contractor Project Specific Locations (PSLs), within one mile of the project limits. Both the Department and the Contractor shall obtain an authorization to discharge storm water from TCEQ for the construction activities shown on the plans. Obtain required authorization from the TCEQ for any Contractor PSLs for construction support activities on or off right of way. When the total area disturbed for all projects in the Contract and PSLs within one mile of the project limits exceeds five acres, provide a copy of the Contractor NOI PSLs on the right of way to the Engineer (to the appropriate Municipal Separate Storm Sewer System (MS4) Operator when on an Off-system State route).

Best Method Practices (BMP's) may be adjusted to meet field conditions, or as directed. Engineer will verify all locations prior to placement of BMPs. Within the project limits, keep all inlets functional as long as possible to accept storm water as part of the Storm Water Pollution Prevention Plan (SWP3), as directed.

Grading operations will be limited to the catch point of the proposed cross-section.

Preserve any vegetation outside these limits.

Item 585 – Ride Quality for Pavement Surfaces

Use diamond grinding or equivalent to correct areas of localized roughness. Use CSS-1H emulsion to fog seal the corrected areas.

The contractor shall take care to 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 of hot mix.

Use Surface Test Type B to govern ride quality for finished riding surfaces of travel lanes. Notify the District Laboratory 48 hours prior to conducting Surface Test Type B. Properly mark all starting/ending points, and leave-out sections prior to testing. Deliver test results within 24 hours of testing. Provide all profile measurements in electronic data to ELP-LAB@txdot.gov using the format specified in Tex-1001-S.

“Payment Adjustment, Schedule 1” will be used for the travel lanes.

An IRI > 95 will require corrective action.

Use diamond grinding or equivalent to correct areas of localized roughness. For flexible pavements, use CSS-1H emulsion to fog seal the corrected areas.

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

Item 658 – Delineator and Object Marker Assemblies

Verify all locations with the Engineer prior to installation.

Removal and proper disposal of all existing delineators, object markers, and any non-standard hardware assemblies are not paid directly, but will be considered subsidiary to pertinent items for payment.

Item 662 – Work Zone Pavement Markings

In those areas where existing pavement markings are to be covered or removed, field locate and record the existing pavement markings by survey or other approved method by the Engineer as directed. Place final striping on these locations.

Remove and properly dispose of tabs upon completion of the final striping. This work is considered subsidiary to various bid items.

Place tabs as per the Department’s Standard sheet TCP (7-1)-13. Place raised pavement markers in accordance with applicable standards and as directed.

Item 666 –Retroreflectorized Pavement Markings

Use a pilot line for final striping and remove pilot line after all striping is complete. Removal will be in accordance with the methods specified in Item 677, “Eliminating Existing Pavement Markings and Markers,” and will be subsidiary to this Item.

Air blasting is required as pavement surface preparation.

In those areas where existing pavement markings are to be covered or removed, field locate and record the existing pavement markings by survey or other approved method by the Engineer as directed. Place final striping on these locations.

Item 672 – Raised Pavement Markers

Use a pilot line for final pavement markers and remove pilot line after all striping is complete. Remove pilot line in accordance with the methods specified in Item 677, “Eliminating Existing Pavement Markings and Markers,” and will be subsidiary to this Item

Air blasting is required for pavement surface preparation.

Do not place raised pavement markers when the pavement surface temperature is below 60°F.

Completely remove all existing raised pavement markers from pavement where raised pavement markers are proposed as shown in the plans. This will include all RPMs in the surrounding area of the proposed RPM. Removal of raised pavement markers is subsidiary to various bid items

Raised pavement marking spacing must be in compliance with the requirements as shown on the plans.

Item 3002 – Membrane Underseal

Prepare the roadway surface prior to placing Membrane Underseal to the satisfaction of the Engineer. Some areas may require more extensive cleaning than other areas. This work will not *be paid for directly but will be subsidiary to pertinent items.*

Use Spray Applied Underseal Membrane prior to the placement of subsequent HMA pavement along entire width of roadway.

Item 3076 – Dense-Graded Hot-Mix Asphalt

Provide aggregates with a Surface Aggregate Classification (SAC) of “A” for all surface mixes. Provide aggregates with a minimum SAC of B for all other layers unless otherwise shown on the plans.

In place of typical tack materials shown in Table 18 under Item 3096, use a tracking resistant asphalt interlayer (TRAIL) material as a tack coat. TRAIL shall only be required prior to the final riding surface layer of HMA. Approved TRAIL products are found on TxDOT's Material Producer List under Asphalt Interlayer (Tracking Resistant) website here: https://www.txdot.gov/business/resources/materials.html

Do not dilute the tack coat. Tack coat shall be applied to each layer as directed by the Engineer.

Supply Warm-Mix Asphalt (WMA) under this Item.

When Reclaimed Asphalt Pavement (RAP) is used in the production of hot-mix asphaltic concrete, use fractionated RAP. Do not exceed 10.0% of Fractionated RAP on surface mixtures. Department-owned RAP generated through the required work on the Contract is available for the Contractor's use. Contractor may use Contractor-owned fractionated RAP and replace it with an equal quantity of Department-owned RAP when RAP is generated through the required work on the Contract.

Use of Recycled Asphalt Shingles (RAS) is not allowed for any mixtures.

Substitute PG Binders (grade dumping) will not be allowed for any mixtures.

Obtain the current version of the templates at http://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/forms/site-manager.html Submit electronically to the Engineer.

Design the mixture at 50 gyrations (Ndesign).

Do not cover with asphaltic material, any existing survey monuments, manholes, or valve covers, etc. Adjustments will be done in coordination with the respective utility owners.

Place a string line or other suitable marking to ensure smooth, neat lines, or as directed. Provide smooth transitions to existing driveways and intersections.

Place longitudinal joints approximately 6 in. from the stripe, or as directed by the Engineer. Avoid placing joint under the wheel path. Avoid placing longitudinal joints on the outside travel lane on multi-lane roadway.
Operate the spreading and finishing machine at a uniform forward speed consistent with the plant production rate, hauling capability, and roller train capacity to result in a continuous operation. The speed will be slow enough, so that stopping between trucks is not ordinarily required. If the Engineer determines non-uniform delivery of material is affecting the HMA placement, the Engineer may require the paving operations to cease until acceptable methods are employed to minimize starting and stopping of the paver.

Item 6001 – Portable Changeable Message Sign

Provide messages as directed by the Engineer.

Provide two Portable Changeable Message Signs (PCMS) as advanced notification for two weeks prior to beginning project and throughout duration of project as directed.

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

All TMA Operators must participate in a TMA workshop to be conducted by the El Paso District Safety Office, on the proper use of TMAs, prior to working on Department Right of Way (ROW). A certificate of completion will be issued to TMA Operators that successfully complete the TMA workshop. The certificate of completion must be carried by TMA Operators at all times while working on Department right of way.

Acquire the TCP and TMA Operator's certificates of completion prior to the authorization to begin work. No time suspension will be granted and no traffic control work will be allowed without certificates of completion.

In addition to the shadow vehicles with Truck Mounted Attenuator (TMA) that are specified as being required on the traffic control plan for this project, provide 1 additional shadow vehicle(s) with TMA for TCP (2-2)-18 as shown on Table 4.

Therefore, 2 total shadow vehicles with TMA will be required for this type of work. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

The supporting vehicle for the TMA shall have a minimum gross (i.e., ballasted) vehicular weight of 19,000 pounds.

Table 4

Basis of Estimate for Stationary TMAs				
		TMA(Stationary)		
Phase	Standard	Required	Additional	TOTAL
I	TCP (2-2)-18	1	1	2
II	TCP (2-2)-18	1	1	2

Basis of Estimate for Mobile TMAs			
	TMA(Mobile)		
Standard	Required	Additional	TOTAL
TCP (3-1)-13	1	0	1
TCP (3-3)-14	1	0	1

CONTROL: 0358-01-027
COUNTY: JEFF DAVIS
HIGHWAY: SH 118

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0358-01-027 **DISTRICT** El Paso **COUNTY** Jeff Davis
HIGHWAY SH 118

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0358-01-027**			
		PROJECT ID		**A00024493**			
		COUNTY		**Jeff Davis**			
		HIGHWAY		**SH 118**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	134-6004	BACKFILL (TY A OR B)	STA	340.000		340.000	
	351-6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	SY	6,993.000		6,993.000	
	354-6001	PLAN & TEXT ASPH CONC PAV(0" TO 1")	SY	701.000		701.000	
	354-6043	PLANE ASPH CONC PAV (1")	SY	147,145.000		147,145.000	
	438-6002	CLEANING AND SEALING EXIST JOINTS(CL3)	LF	588.000		588.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3.000		3.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	500.000		500.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	500.000		500.000	
	533-6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	65,032.000		65,032.000	
	533-6004	RUMBLE STRIPS (CENTERLINE) ASPHALT	LF	33,957.000		33,957.000	
	658-6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	72.000		72.000	
	658-6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	139.000		139.000	
	658-6093	INSTL DEL ASSM (D-DW)SZ 1(WFLX)GND(BI)	EA	14.000		14.000	
	658-6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	58.000		58.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	3,839.000		3,839.000	
	666-6208	REFL PAV MRK TY II (Y) 6" (BRK)	LF	2,500.000		2,500.000	
	666-6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	65,072.000		65,072.000	
	666-6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	6,990.000		6,990.000	
	666-6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	24,483.000		24,483.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	664.000		664.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF	2,500.000		2,500.000	
	3002-6001	MEMBRANE UNDERSEAL	GAL	29,429.000		29,429.000	
	3076-6024	D-GR HMA TY-C SAC-A PG70-22	TON	16,187.000		16,187.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	65.000		65.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	9.000		9.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

SUMMARY OF ROADWAY ITEMS							
LOCATION	134 6004	351 6001	354 6001	354 6043	438 6002	3076 6024	3002 6001
	BACKFILL (TY A OR B)	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	PLAN & TEXT ASPH CONC PAV(0" TO 1")	PLANE ASPH CONC PAV (1")	CLEANING AND SEALING EXIST JOINTS(CL3)	D-GR HMA TY-C SAC-A PG70-22	MEMBRANE UNDERSEAL
CSJ: 0358-01-027	STA	SY	SY	SY	LF	TON	GAL
PLAN LAYOUT 1 OF 15	20	1427	234	9832	126	1082	1966
PLAN LAYOUT 2 OF 15	24	0	0	12009	0	1321	2402
PLAN LAYOUR 3 OF 15	24	0	0	10390	0	1143	2078
PLAN LAYOUT 4 OF 15	24	0	0	9851	0	1084	1970
PLAN LAYOUT 5 OF 15	24	0	0	9600	0	1056	1920
PLAN LAYOUT 6 OF 15	24	169	0	9600	210	1056	1920
PLAN LAYOUT 7 OF 15	24	403	0	9758	42	1073	1952
PLAN LAYOUT 8 OF 15	24	699	0	9600	0	1056	1920
PLAN LAYOUT 9 OF 15	24	0	0	9600	0	1056	1920
PLAN LAYOUT 10 OF 15	24	731	0	9894	0	1088	1979
PLAN LAYOUT 11 OF 15	24	760	0	11262	0	1239	2252
PLAN LAYOUT 12 OF 15	24	1635	0	10109	210	1112	2022
PLAN LAYOUT 13 OF 15	24	278	0	9778	0	1076	1956
PLAN LAYOUT 14 OF 15	24	331	0	10782	0	1186	2156
PLAN LAYOUT 15 OF 15	8	560	467	5080	0	559	1016
PROJECT TOTALS	340	6993	701	147145	588	16187	29429

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS						
LOCATION	662 6111	666 6208	677 6002	6001 6002	6185 6002	6185 6005
	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	REFL PAV MRK TY II (Y) 6" (BRK)	ELIM EXT PAV MRK & MRKS (6")	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	EA	LF	LF	EA	DAY	DAY
CSJ: 0358-01-027	3839	2500	2500	2	65	9
PROJECT TOTALS	3839	2500	2500	2	65	9

SUMMARY OF MOBILIZATION ITEMS		
LOCATION	500 6001	502 6001
	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING
	LS	MO
CSJ: 0358-01-027	1.00	3.00
PROJECT TOTALS	1	3

SUMMARY OF EROSION CONTROL ITEMS		
LOCATION	506 6038	506 6039
	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)
	LF	LF
CSJ: 0358-01-027	500	500
PROJECT TOTALS	500	500

SUMMARY OF SIGNING AND PAVEMENT MARKING ITEMS										
LOCATION	533 6003	533 6004	658 6060	658 6062	658 6093	658 6099	666 6308	666 6317	666 6320	672 6009
	RUMBLE STRIPS (SHOULDER) ASPHALT	RUMBLE STRIPS (CENTERLINE) ASPHALT	REMOVE DELIN & OBJECT MARKER ASSMS	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	INSTL DEL ASSM (D-DW)SZ 1 (WFLX)GND(BI)	INSTL OM ASSM (OM-2Z)(WFLX)GND	RE PM W/RET REQ TY I (W)6"(SLD) (090MIL)	RE PM W/RET REQ TY I (Y)6"(BRK) (090MIL)	RE PM W/RET REQ TY I (Y)6"(SLD) (090MIL)	REFL PAV MRKR TY II-A-A
CSJ: 0358-01-027	LF	LF	EA	EA	EA	EA	LF	LF	LF	EA
STRIPING LAYOUT 1 OF 15	3246	1969	0	31	0	0	3246	493	0	25
STRIPING LAYOUT 2 OF 15	4244	2400	4	0	0	4	4244	600	1136	47
STRIPING LAYOUT 3 OF 15	4400	2400	2	0	0	2	4440	600	2400	60
STRIPING LAYOUT 4 OF 15	4637	2400	2	0	0	2	4637	600	682	40
STRIPING LAYOUT 5 OF 15	4800	2400	4	0	0	4	4800	600	0	30
STRIPING LAYOUT 6 OF 15	4680	2400	0	24	0	0	4680	600	0	30
STRIPING LAYOUT 7 OF 15	4743	2400	2	14	0	2	4743	600	0	30
STRIPING LAYOUT 8 OF 15	4800	2400	12	0	10	2	4800	450	2400	53
STRIPING LAYOUT 9 OF 15	4800	2400	6	0	4	2	4800	300	3600	60
STRIPING LAYOUT 10 OF 15	4649	2400	6	0	0	6	4649	325	3130	56
STRIPING LAYOUT 11 OF 15	4800	2400	12	0	0	12	4800	400	2835	55
STRIPING LAYOUT 12 OF 15	4800	2400	8	36	0	8	4800	400	2800	55
STRIPING LAYOUT 13 OF 15	4706	2400	4	0	0	4	4706	225	3400	55
STRIPING LAYOUT 14 OF 15	4390	2400	6	0	0	6	4390	600	1900	55
STRIPING LAYOUT 15 OF 15	1337	788	4	34	0	4	1337	197	200	13
PROJECT TOTALS	65032	33957	72	139	14	58	65072	6990	24483	664

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED
PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

Texas Department of Transportation

SH 118

GENERAL
QUANTITY SUMMARY

2023 SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		11

DATE: 8/28/2023 4:47:32 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/1. General/QUANTITY SUMMARY

DATE: 8/29/2023
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/1. General/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
☐ Temporary Vegetation	☒ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

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

☐ No Action Required ☒ Required Action

Action No.

1. Employees and contractors will provide information prior to start of construction to educate personnel of the importance to preserve historic masonry walls located within the project limits. (Constructed in the 1930s during the Great Depression)
2. Necessary precautions are required to go into effect prior and during construction in order to minimize any penitential harm to the masonry walls during all construction activities.
3.

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. Areas within the ROW, but outside the limits of construction, should not be disturbed to the extent practical. Every effort shoud be made to preserve vegetation where it would neither compromise safety nor substantially interfere with the proposed project.
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. TxDOT will take all appropriate actions to prevent the take of migratory birds, their active nests, eggs, or young should they be discovered on the project site.
2. Between October 1st and February 15th, the contractor should avoid the removal of unoccupied, inactive nests as practicable.
3. The contractor should be prepared to prevent migratory birds from building nests that may affect the proposed activities by utilizing prevention methods beyween February 15th and October 1st.
4. Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

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

☐ Yes ☒ No

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

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

☐ Yes ☒ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS)	0358	01	027	SH 118
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.	ELP	JEFF DAVIS		12

CK:
DW:
CK:
DN:

SH 118

GENERAL NOTES

1. FURNISH AND INSTALL ALL TRAFFIC CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO BARRICADES, SIGNS, AND WORK ZONE MARKINGS, IN COMPLIANCE WITH THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), THE STATE STANDARD TRAFFIC CONTROL PLANS (TCP), THE BARRICADES AND CONSTRUCTION (BC) SHEETS OR AS DIRECTED BY THE ENGINEER. ALL SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION.
2. ALL EXISTING PAVEMENT MARKINGS AND SIGNS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS AND TEMPORARY SIGNS MUST BE REMOVED OR COVERED.
3. PROVIDE ACCESS TO PRIVATE PROPERTY AT ALL TIMES. MATERIALS, MAINTENANCE, AND LABOR FOR TEMPORARY ACCESS IS SUBSIDIARY TO THE VARIOUS BID ITEMS.
4. CONTRACTOR TO LIMIT ROADWAY PAVEMENT WORK TO 2 MILE SEGMENT UNLESS OTHERWISE DIRECTED AND APPROVED BY THE ENGINEER.
5. ALL PAVEMENT EDGE DROP-OFFS USED BY THE TRAVELLING PUBLIC SHALL BE FILLED WITH SUITABLE MATERIAL TO FORM A STABLE 3:1 SLOPE AT THE END OF EACH WORKDAY PER WZ(UL)-13
6. CONDUCT CONSTRUCTION OPERATIONS SO AS TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC AND TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL ALLOWABLE DIRECTIONS AT ALL TIMES OR AS PERMITTED BY THE SEQUENCE OF CONSTRUCTION. PROVIDE FOR SAFE AND CONVENIENT ACCESS TO ABUTTING PROPERTY, HIGHWAYS, PUBLIC ROADWAYS, AND STREET CROSSINGS EXCEPT AS OTHERWISE SHOWN ON THE SEQUENCE OF CONSTRUCTION.
7. ALL THROUGH LANES WILL BE OPENED TO TRAFFIC AT THE END OF EACH WORKDAY, OR AS DIRECTED BY THE ENGINEER.

SEQUENCE OF WORK

PHASE 1

1. PLACE ADVANCE WORK ZONE SIGNS IN ACCORDANCE WITH TXDOT BARRICADE AND CONSTRUCTION STANDARDS.
2. PLACE CHANNELIZING DEVICES THROUGH THE WORK AREAS AS REQUIRED IN THE PLANS AND/OR AS DIRECTED BY THE ENGINEER.
3. DAILY LANE CLOSURE USING FLAGGERS AND PILOT CARS WILL BE IN ACCORDANCE TO TCP(2-2b) AND TCP(7-1).
4. PERFORM THE FLEXIBLE PAVEMENT STRUCTURE REPAIRS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. FULL DEPTH REPAIRS SHOULD BE DONE PRIOR TO MILLING AND PAVING. CONTRACTOR TO LIMIT THE DAILY FLEXIBLE PAVEMENT REPAIR OPERATIONS TO THE LIMITS THAT CAN BE COMPLETED DURING A WORKDAY AND HAVE TEMPORARY PAVEMENT MARKINGS PLACED BEFORE OPENING TO TRAFFIC BY 4:00 PM.
5. MILL EXISTING ACP AS PROPOSED. CONTRACTOR TO TAKE CAUTION WHEN MILLING OVER BRIDGES AND CULVERTS. ANY STRUCTURAL DAMAGE DONE BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. PLACE UNDERSEAL AND PROPOSED HMA. THE WORKZONE LENGTH FOR HMA PLACEMENT IS RESTRICTED TO WHAT CAN BE OVERLAID WITHIN THE WORKZONE PRIOR TO THE END OF WORKDAY OR AS DIRECTED BY THE ENGINEER. THE INTENT IS TO OVERLAY THE FULL WORKZONE WIDTH BY ELIMINATING THE CENTERLINE LONGITUDINAL DROP-OFF BETWEEN THE OPPOSING TRAVEL LANES PRIOR TO END OF WORKDAY.
7. AT THE END OF EACH WORKING DAY, UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE ROADWAY WILL BE OPEN TO THE TRAFFIC.
8. SHORT TERM FLEXIBLE REFLECTIVE ROADWAY TABS SHALL BE USED TO DELINEATE THE CENTERLINE FOR A MAXIMUM OF 14 DAYS. PERMANENT STRIPING SHALL THEN BE PLACED, PERMANENT STRIPING SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.

PHASE 2

1. PLACE PROPOSED PAVEMENT MARKINGS, AND CENTERLINE RUMBLE STRIPS IN ACCORDANCE TO TCP(3-1b)-13 AND TCP(3-3a)-14.
2. REMOVE OR REPLACE OBJECT MARKERS IN ACCORDANCE TO TCP(2-2b)-18 AND TCP(2-3a)-23.
3. REPLACEMENT OF SIGNS SHOULD BE DONE PRIOR TO THE REMOVAL OF ANY TRAFFIC CONTROL DEVICES AND TEMPORARY SIGNS.

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED
PROFESSIONAL ENGINEER

Antonio Santana PE

08/29/23

Texas Department of Transportation

SH 118

TRAFFIC CONTROL
PLAN NARRATIVE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		13

DATE: 8/26/2023 3:55:38 PM
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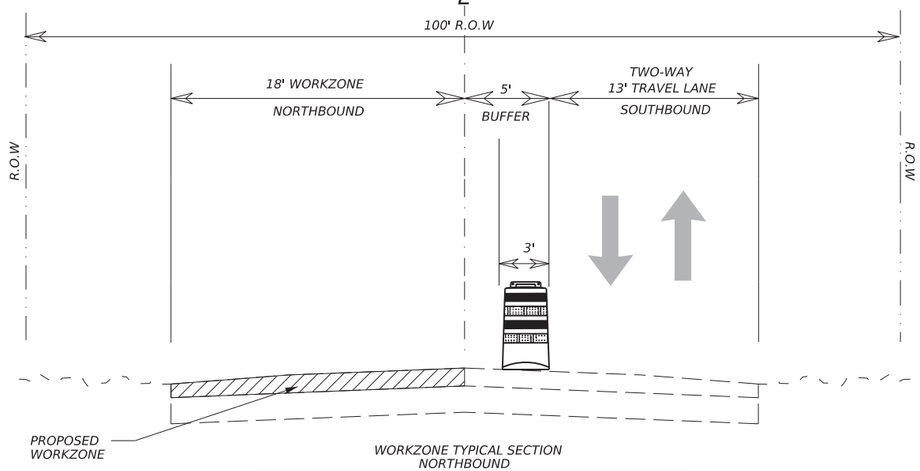
CK
DW
CK
DW

TCP SELECTION TABLE

TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
MILL & OVERLAY/ FLEXIBLE PAVEMENT REPAIRS	TCP (2-2) -18	ONE-LANE TWO-WAY TRAFFIC CONTROL	TCP (2-2b)	REFER TO TYPICAL SELECTIONS FOR LANE CLOSURE
PAVEMENT MARKINGS	TCP (3-1) -13	MOBILE OPERATIONS UNDIVIDED HIGHWAYS	TCP (3-1b)	MOBILE OPERATIONS
RPM INSTALLATION	TCP (3-3) -14	MOBILE OPERATIONS RAISED PAVEMENT MARKER	TCP (3-3a)	MOBILE OPERATIONS

TCP PHASE 1

SH 118

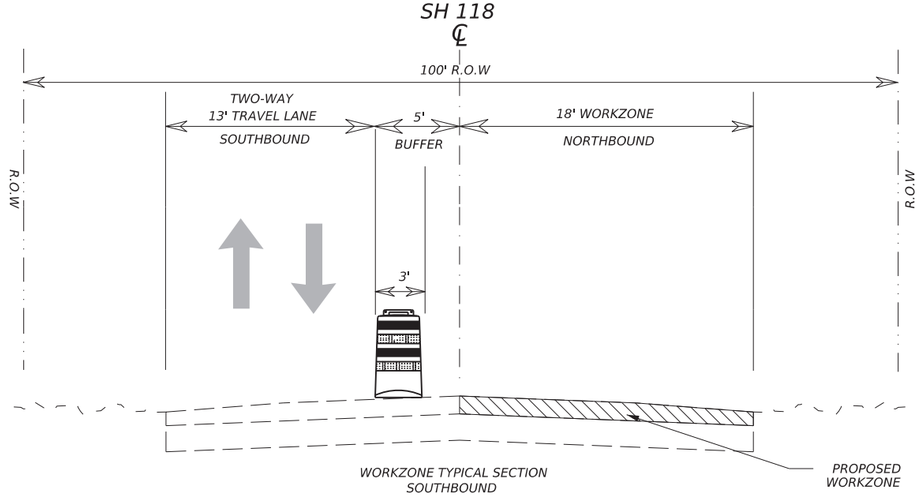


WORKZONE TYPICAL SECTION
NORTHBOUND

FROM: APPROX 0.1 MI S OF FORT DAVIS (RM 436 -1.078)
TO: APPROX 6.5 MI S OF FORT DAVIS (RM 440 +1.359)
STA 5+26.27 TO STA 343+84.29

TCP PHASE 2

SH 118



WORKZONE TYPICAL SECTION
SOUTHBOUND

FROM: APPROX 0.1 MI S OF FORT DAVIS (RM 436 -1.078)
TO: APPROX 6.5 MI S OF FORT DAVIS (RM 440 +1.359)
STA 5+26.27 TO STA 343.84.29

TCP GENERAL NOTES

1. PLACE TRAFFIC CONTROL DEVICES AND ADVANCED WARNING SIGNS AS SHOWN IN THE STANDARDS AND IN ACCORDANCE WITH THE TXMUTCD.
2. USE PILOT CAR AND FLAGGERS TO CONTROL TRAFFIC DIRECTION AND SPEED DURING WORK HOURS.
3. AT THE END OF EACH WORKING DAY, UNLESS DIRECTED BY THE ENGINEER THE TWO-LANE ROADWAY WILL BE OPEN TO TRAFFIC.
4. REFER TO TCP STANDARD (2-2)-18 FOR FURTHER INFORMATION ON A ONE LANE TWO-WAY TCP LANE CLOSURE.
5. REGULATE ALL CONSTRUCTION TRAFFIC TO CAUSE A MINIMUM OF INCONVENIENCE TO THE TRAVELING PUBLIC. AT POINTS WHERE IT IS NECESSARY FOR TRUCKS TO STOP AND UNLOAD, PROVIDE WARNING SIGNS AND FLAGGERS AS NECESSARY TO ADEQUATELY TRAVELING PUBLIC.
6. CONTRACTOR TO CONTACT 811 UTILITY AND VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO BEGINNING WORK.
7. DAY TIME WORK WILL BE ALLOWED MONDAY THROUGH FRIDAY BETWEEN 9:00AM TO 4:00PM. NIGHT TIME WORK WILL BE ALLOWED SUNDAY THROUGH THURSDAY BETWEEN 9:00PM TO 6:00AM.

CONSTRUCTION

1. SET UP CONSTRUCTION SIGNS IN ACCORDANCE WITH TXDOT STANDARDS.
2. SET TRAFFIC CONTROL DEVICES.
3. POT HOLE ALL NECESSARY LOCATIONS.
4. PLACE SEDIMENT CONTROL DEVICES.
5. CONSTRUCT PER PLAN.
6. REMOVE SEDIMENT CONTROL DEVICES.
7. REMOVE TRAFFIC CONTROL DEVICES AND CONSTRUCTION SIGNS.

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED
PROFESSIONAL ENGINEER

Antonio Santana PE

08/29/23

NOT TO SCALE

Texas Department of Transportation

SH 118

TRAFFIC CONTROL PLAN
TCP SELECTION TABLE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		14

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DATE: 8/26/2023 3:56:57 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/035801027/4 - Design/Plan Set/2. TCP/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).

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	ELP	JEFF DAVIS		15
5-10 5-21				

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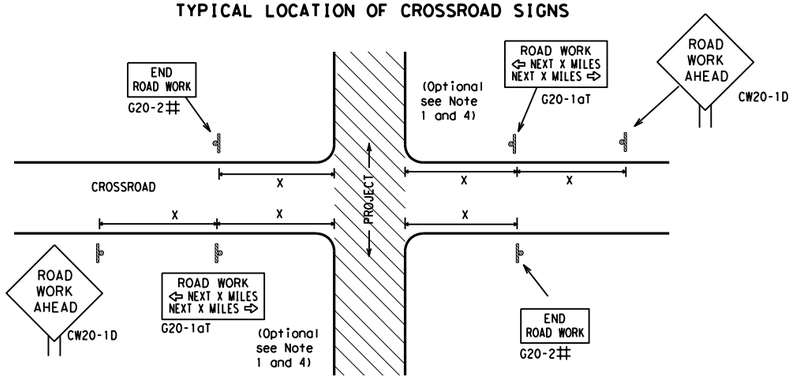
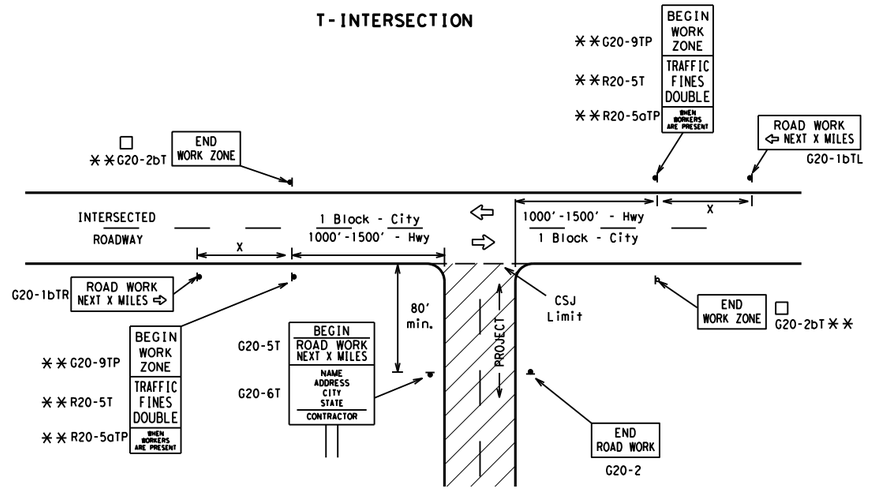
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

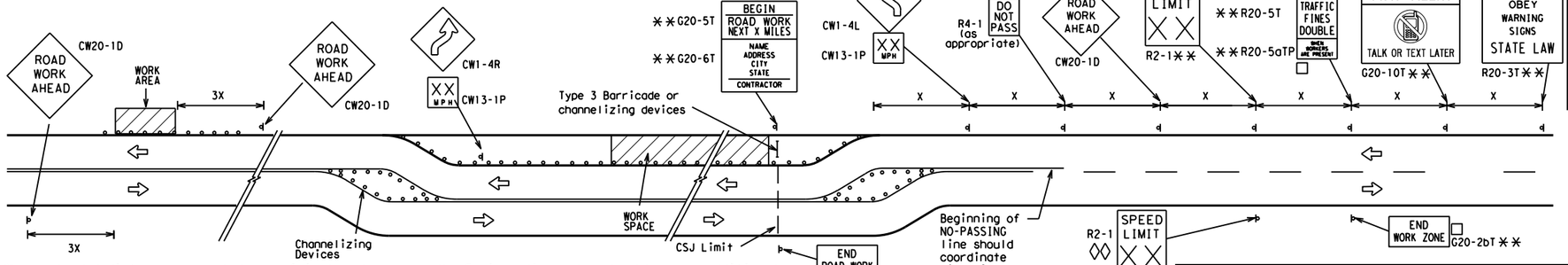
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

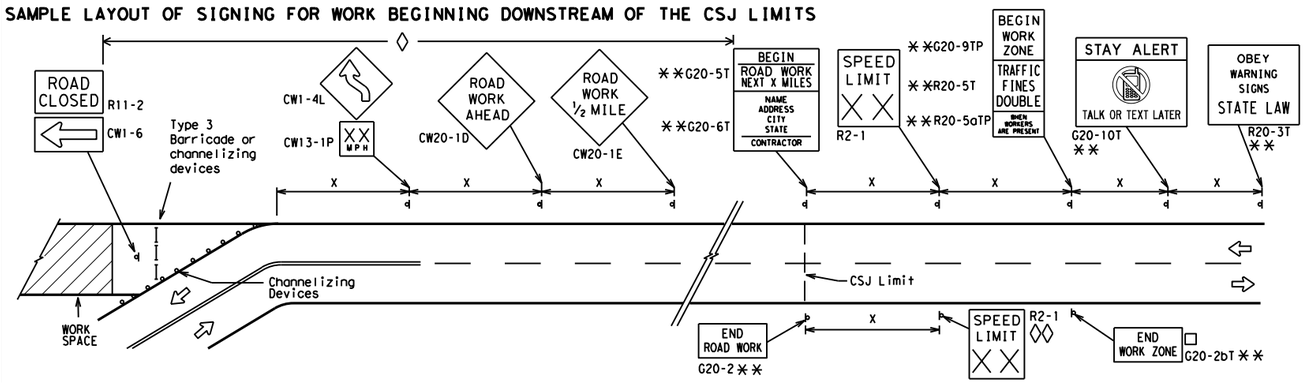
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

** 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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	JEFF DAVIS		16

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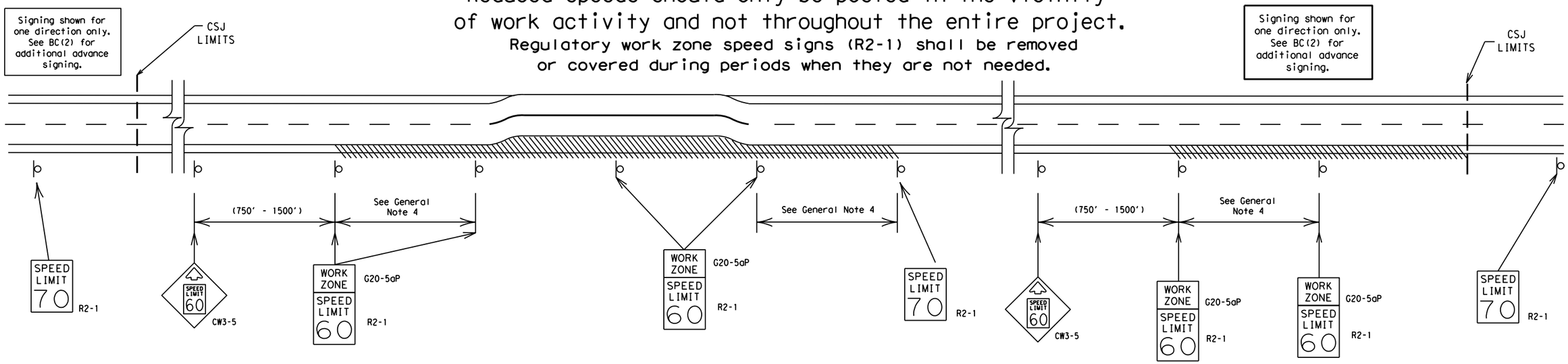
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	JEFF DAVIS		17

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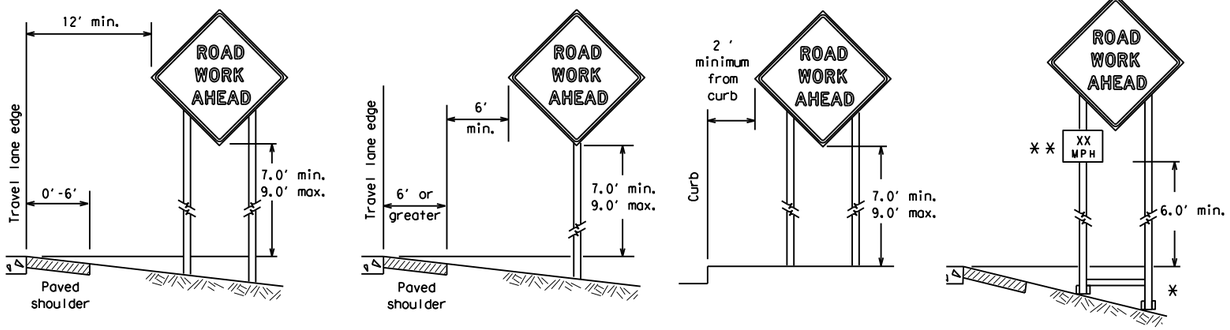
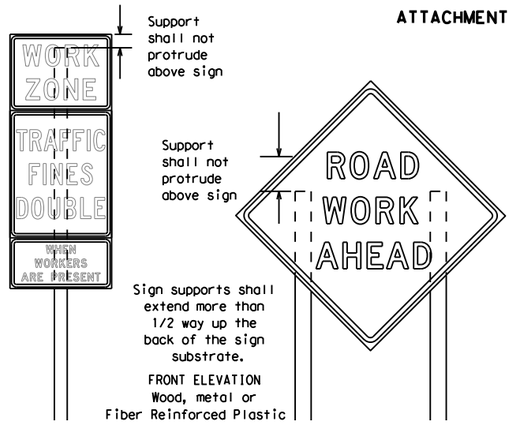
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

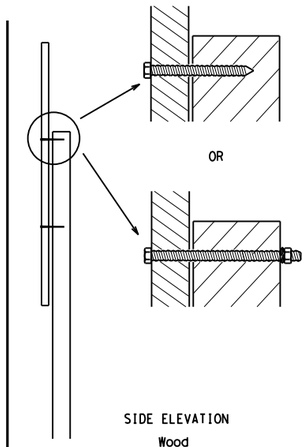


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





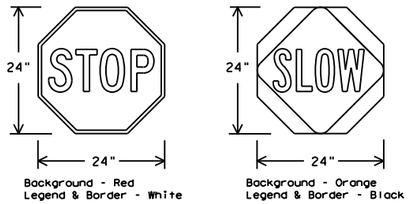
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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7-13 5-21	ELP	JEFF DAVIS		18

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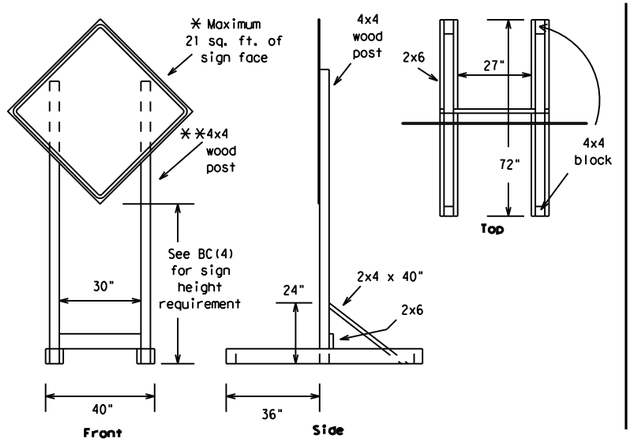
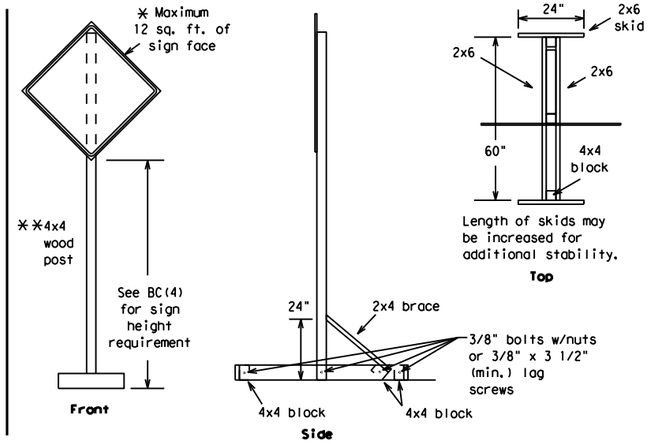
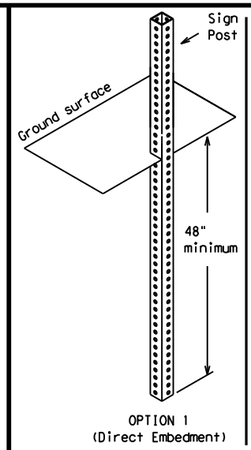


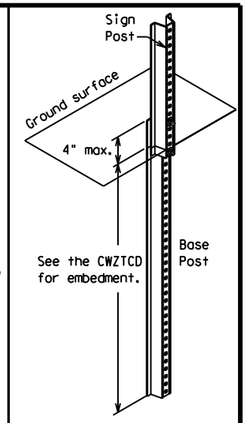


SKID MOUNTED WOOD SIGN SUPPORTS

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



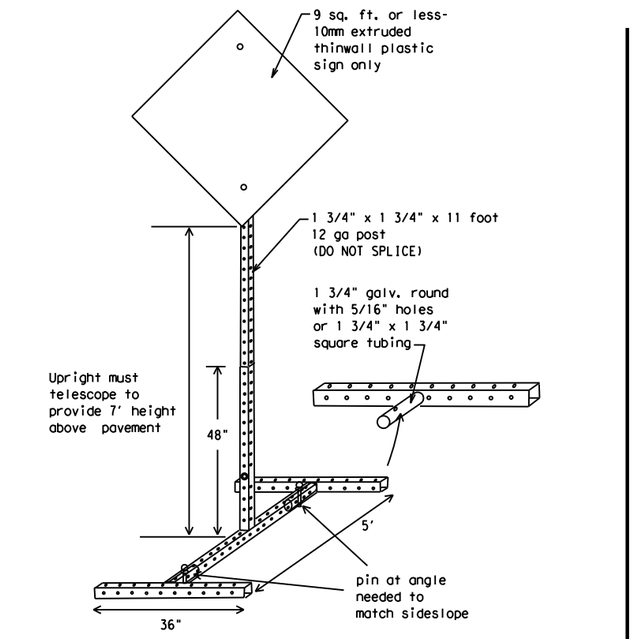
PERFORATED SQUARE METAL TUBING

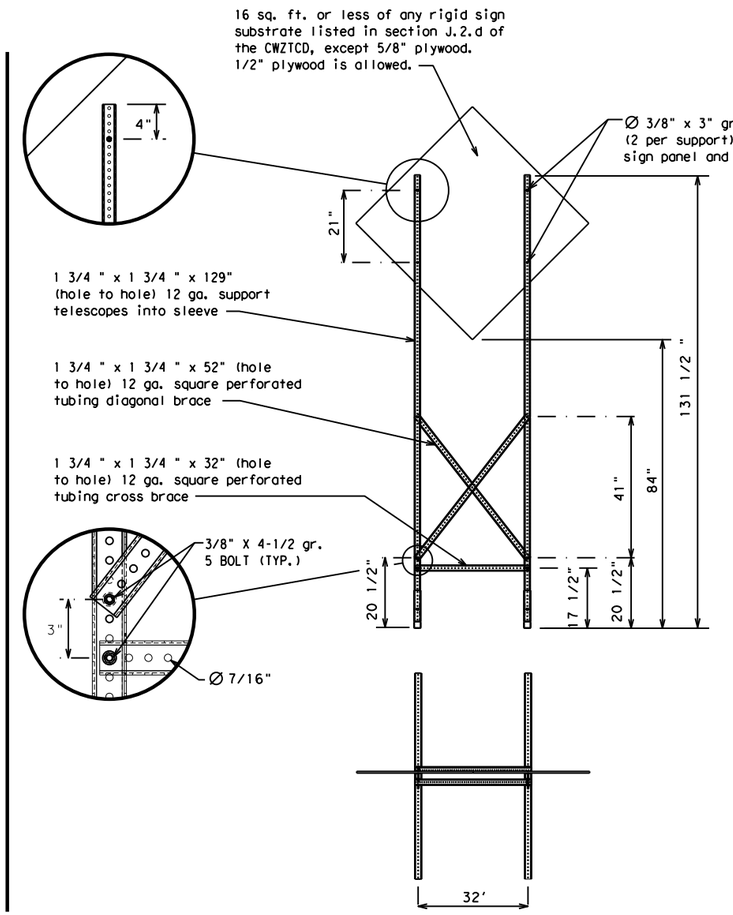


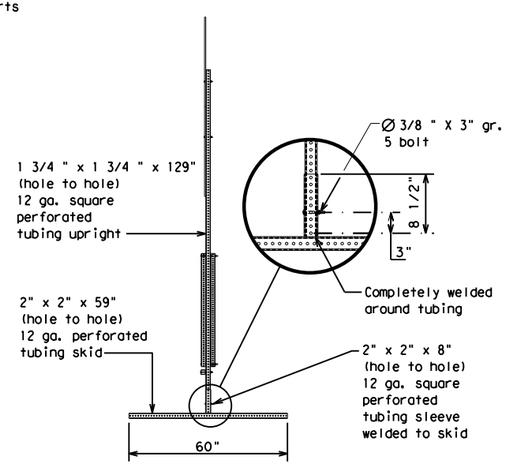
WING CHANNEL
Lap-splice/base bolted anchor

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 8-14	DIST	COUNTY		SHEET NO.
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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List		Other Condition List	
FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXX BLVD CLOSED			

* 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		Location List	Warning List	** Advance Notice List
MERGE RIGHT	FORM X LINES RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM- X PM
DETOUR NEXT X EXITS	USE XXXXX RD EXIT	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX-XX X PM-X AM
USE EXIT XXX	USE EXIT I-XX NORTH	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	WATCH FOR TRUCKS	XXXXXXX TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	EXPECT DELAYS	US XXX TO FM XXXX	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS	PREPARE TO STOP		DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT	END SHOULDER USE		DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES	WATCH FOR WORKERS			TONIGHT XX PM- XX AM
STAY IN LANE *				

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	JEFF DAVIS		20

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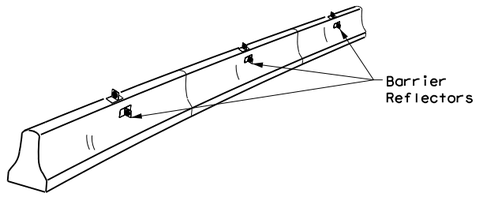
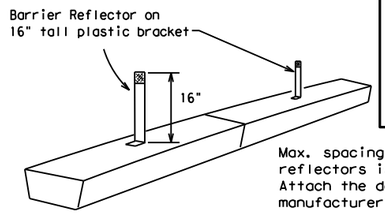
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/035801027/4 - Design/Plan Set/2. TCP/bc-21.dgn

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



CONCRETE TRAFFIC BARRIER (CTB)

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

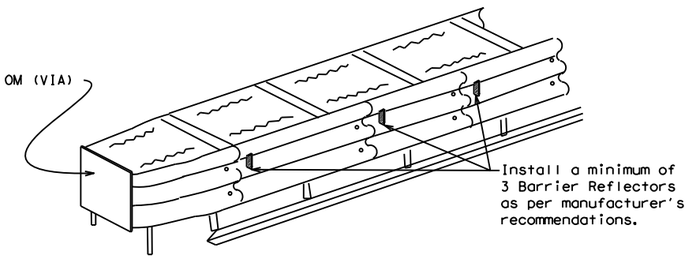


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) 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.

LOW PROFILE CONCRETE BARRIER (LPCB)

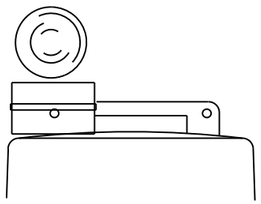


DELINEATION OF END TREATMENTS

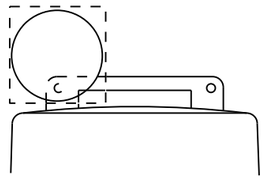
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

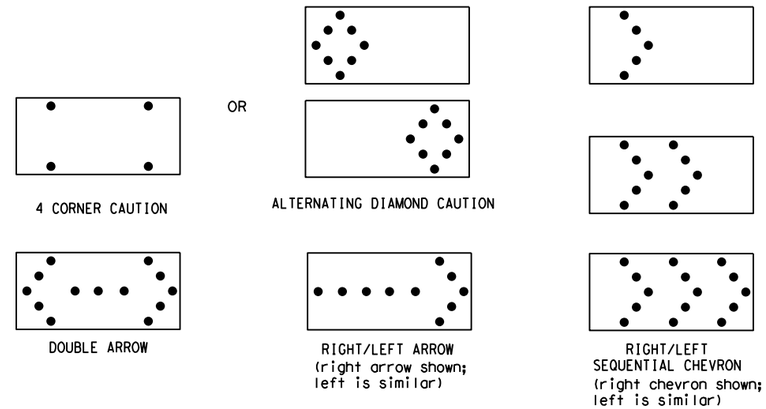
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	ELP	JEFF DAVIS		21

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

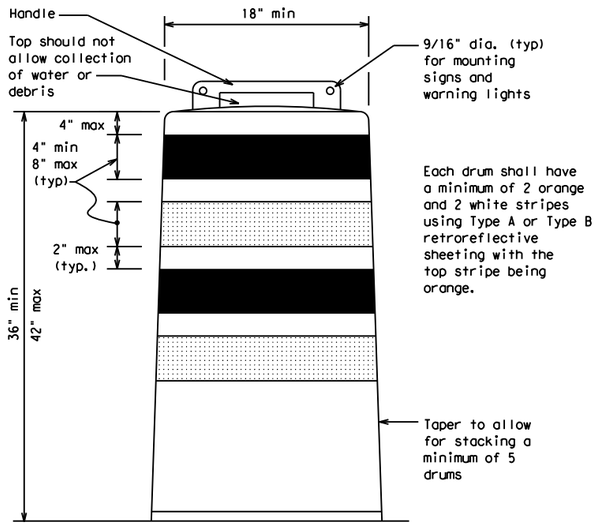
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

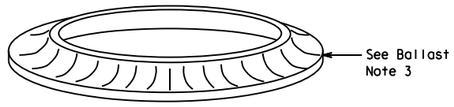
RETROREFLECTIVE SHEETING

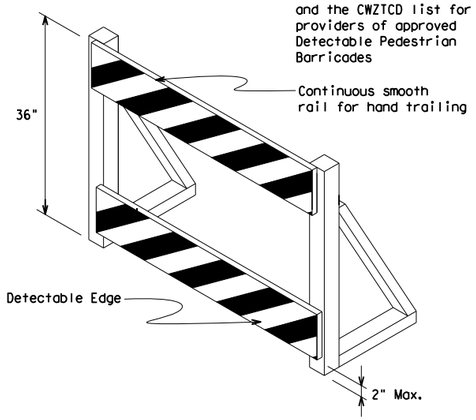
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

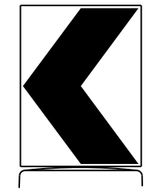




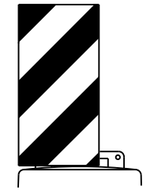


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	ELP	JEFF DAVIS		22
7-13				

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DATE: 8/26/2023 3:59:21 PM
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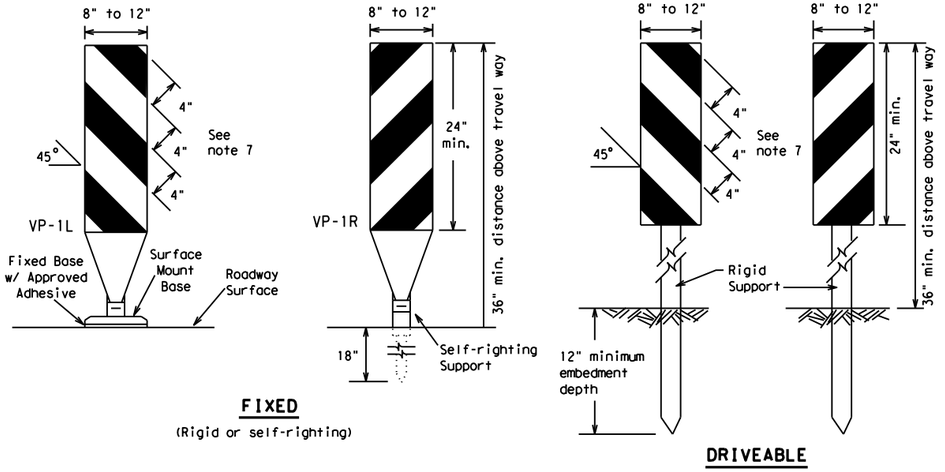
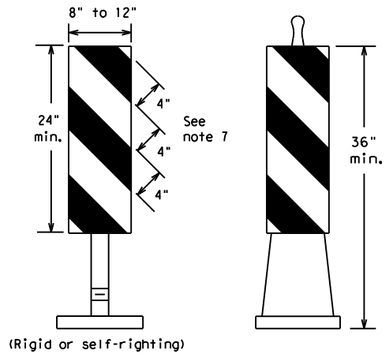


FIXED
(Rigid or self-righting)

DRIVEABLE

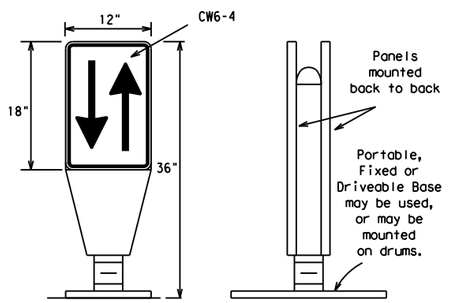


(Rigid or self-righting)

PORTABLE

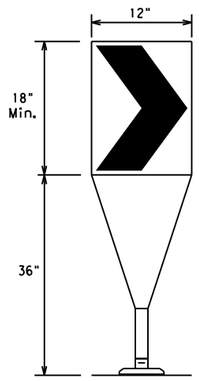
VERTICAL PANELS (VPs)

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



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



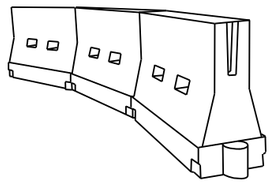
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0358	01	027	SH 118
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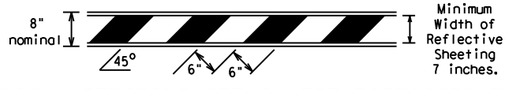
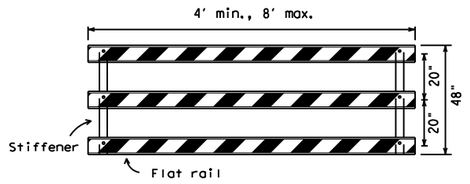
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



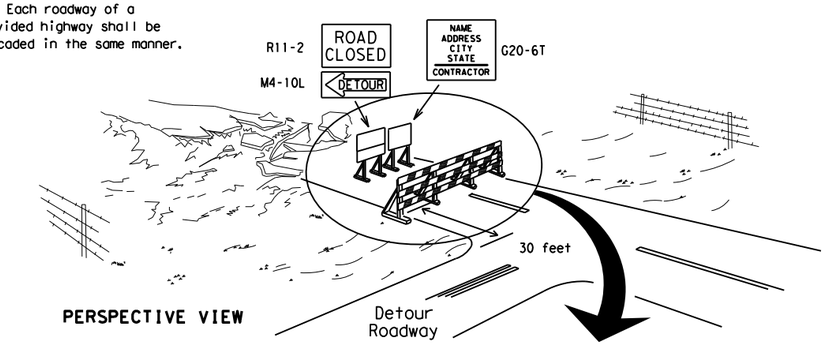
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

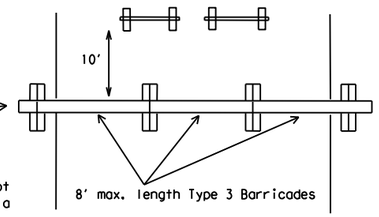
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

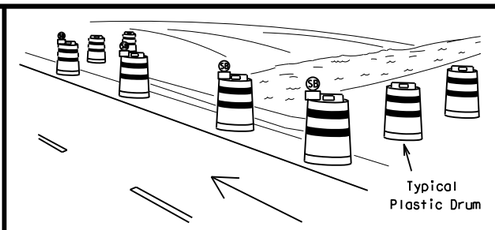
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

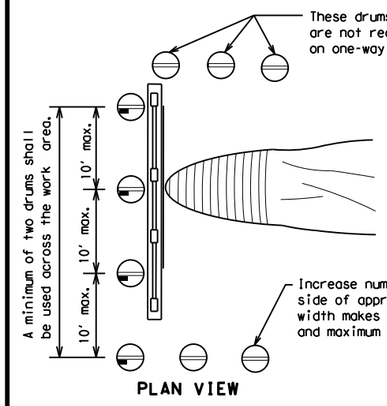
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

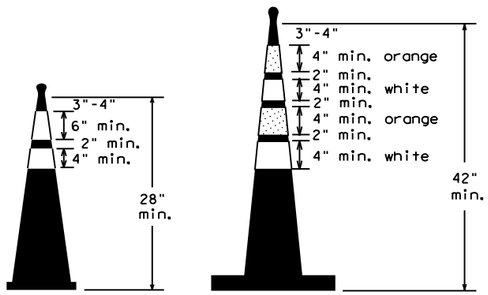
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



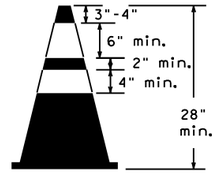
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

PLAN VIEW

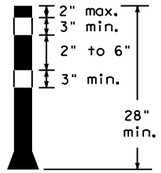
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

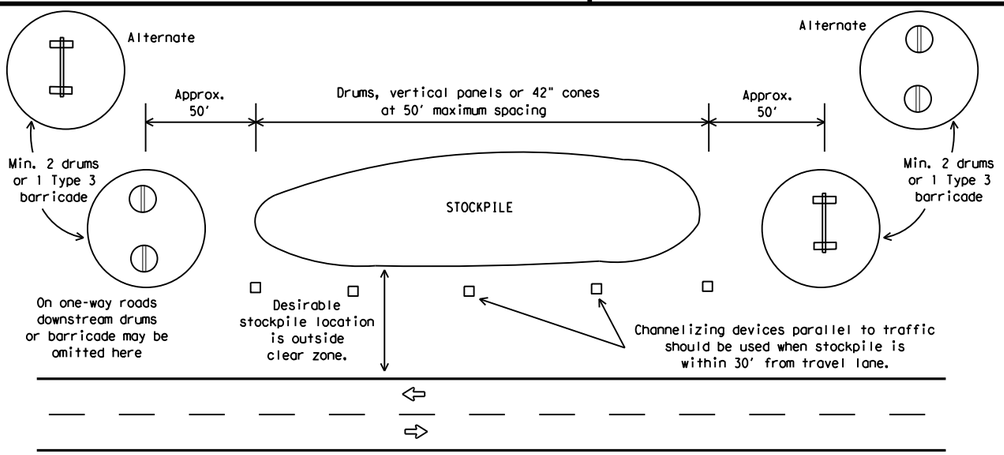


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 8-14	DIST	COUNTY		SHEET NO.
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

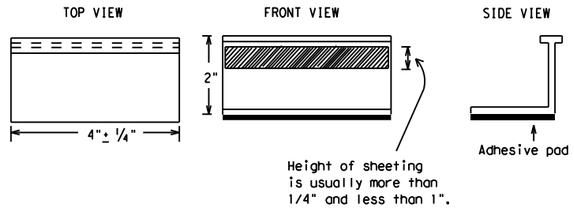
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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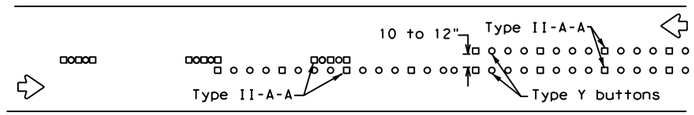
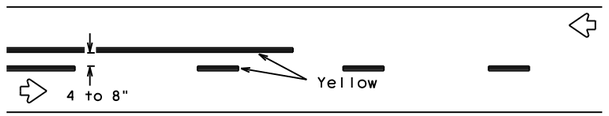
PAVEMENT MARKING PATTERNS

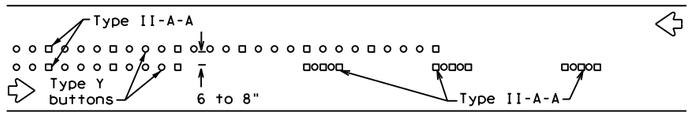
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



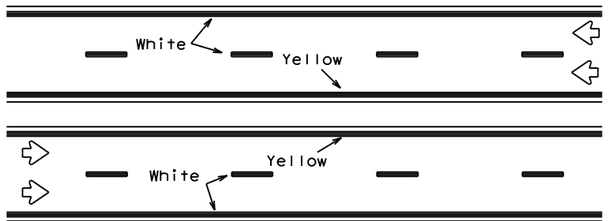
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



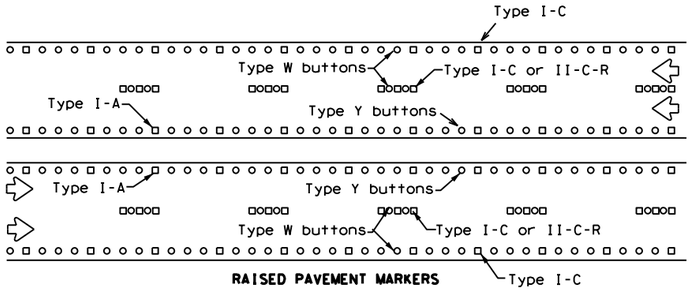
RAISED PAVEMENT MARKERS - PATTERN B

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

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



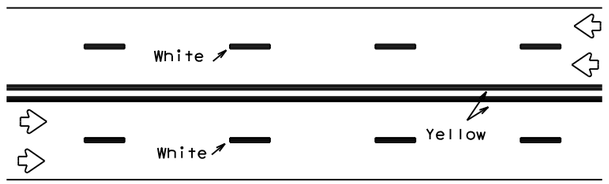
REFLECTORIZED PAVEMENT MARKINGS



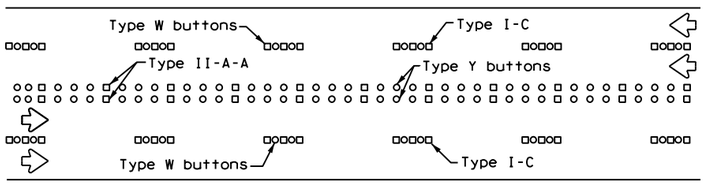
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



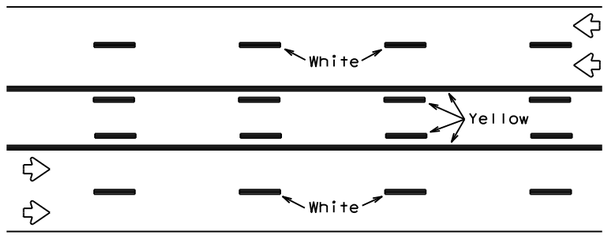
REFLECTORIZED PAVEMENT MARKINGS



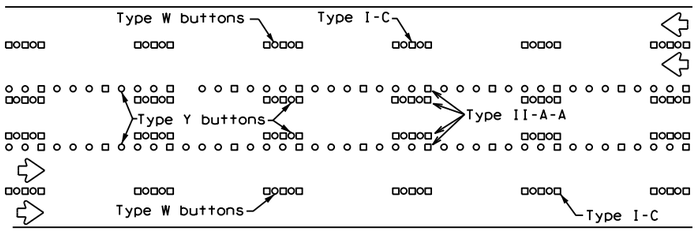
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

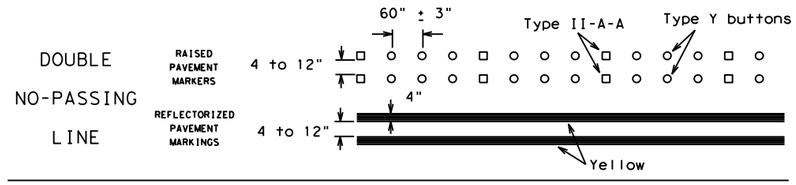
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

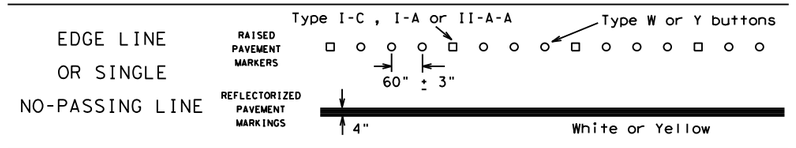
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

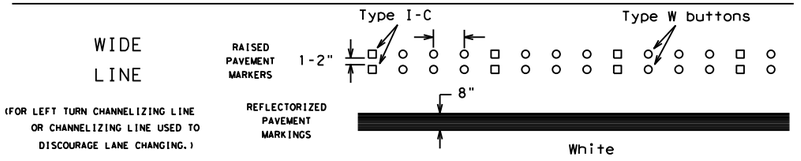


EDGE LINE OR SINGLE NO-PASSING LINE



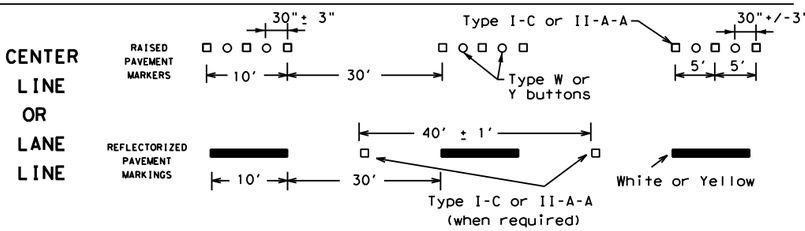
WIDE LINE

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

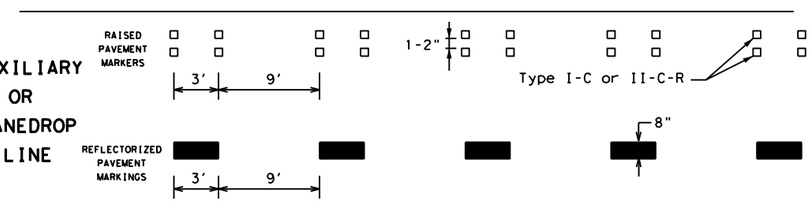


BROKEN LINES

CENTER LINE OR LANE LINE

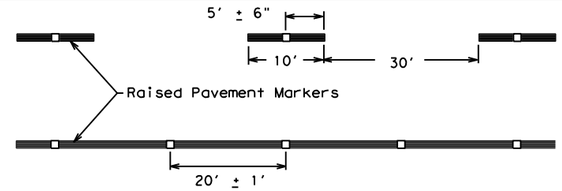


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0358	01	027	SH 118
	DIST	COUNTY		SHEET NO.
	ELP	JEFF DAVIS		26

106

DATE: 8/26/2023 4:00:13 PM
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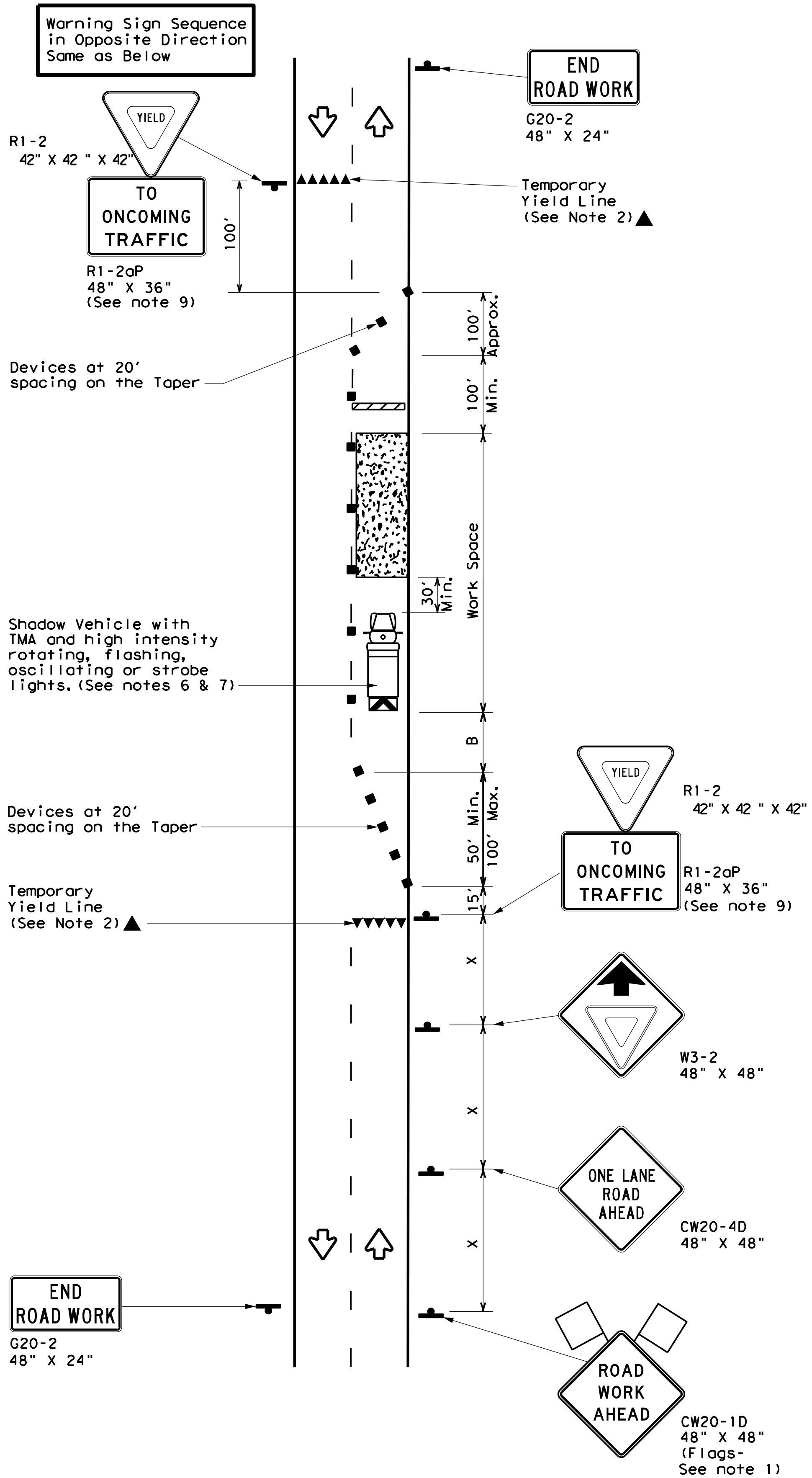
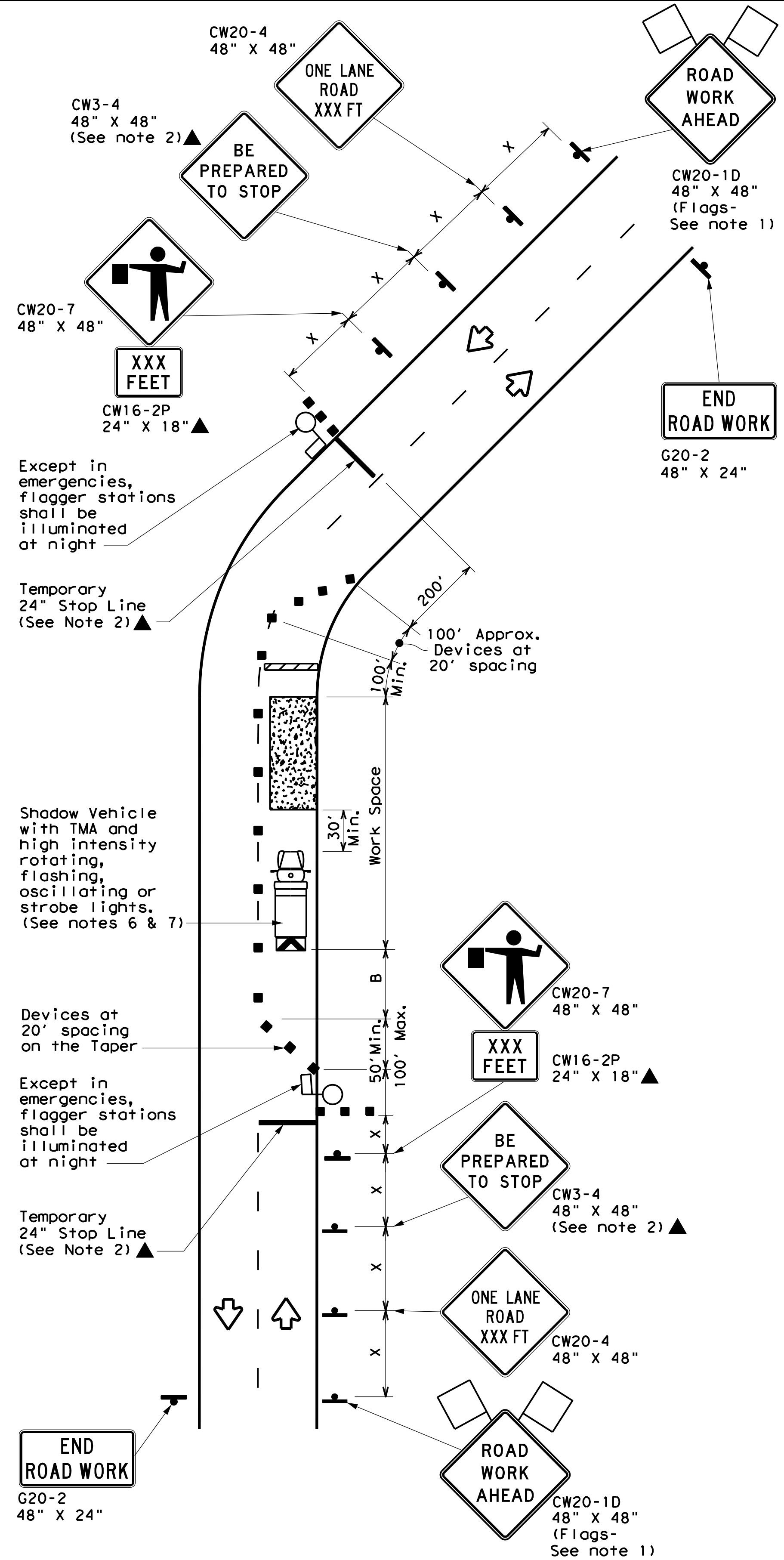


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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

LEGEND

Symbol	Description	Symbol	Description
	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"	Stopping Sight Distance
		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'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

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

TYPICAL USAGE

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
	CONT 0358	SECT 01	JOB 027	HIGHWAY SH 118
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	DIST ELP	COUNTY JEFF DAVIS		SHEET NO. 27

DATE: 8/26/2023 4:00:43 PM
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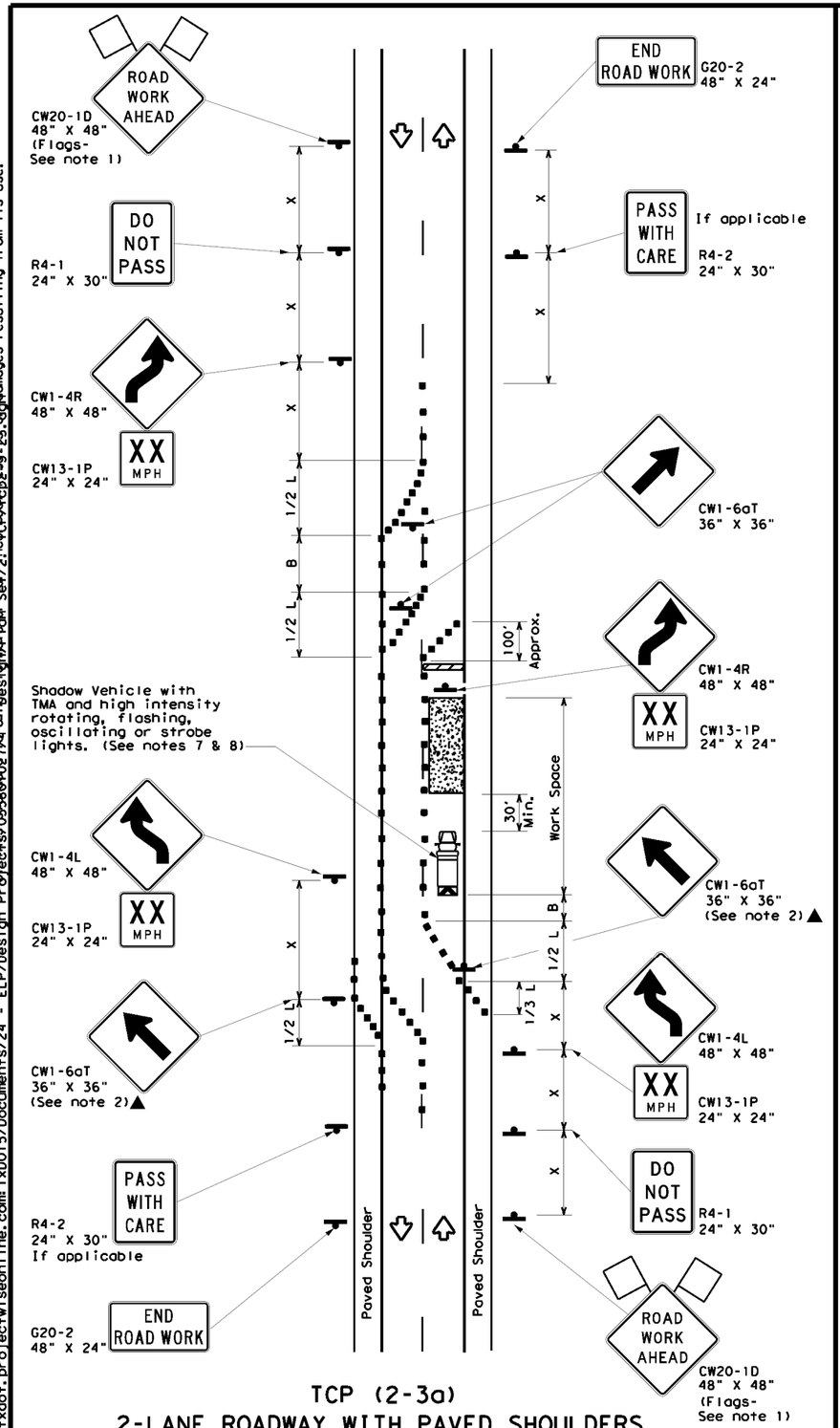
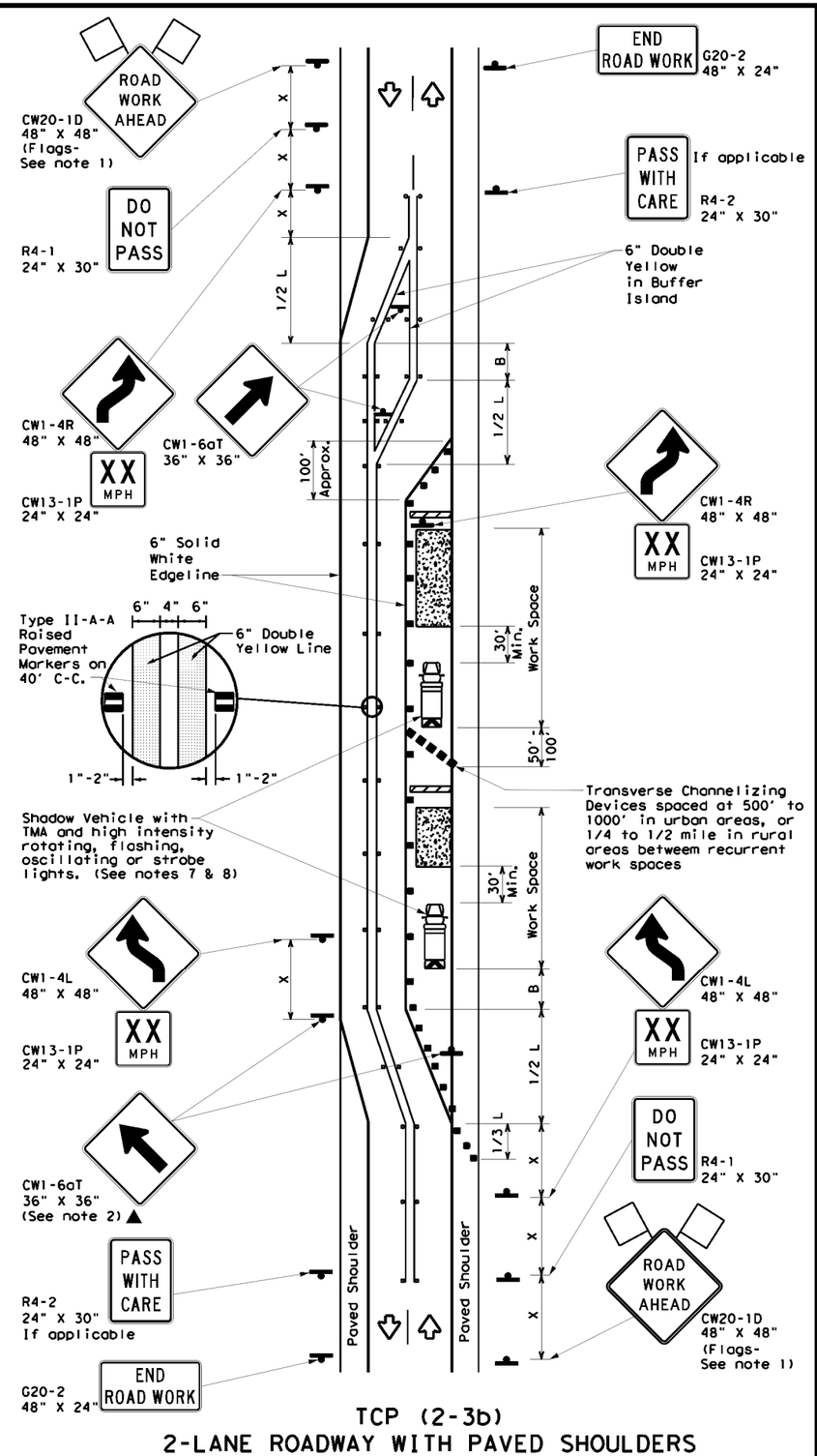


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	• • • •	Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

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

* Conventional Roads Only

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. 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.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

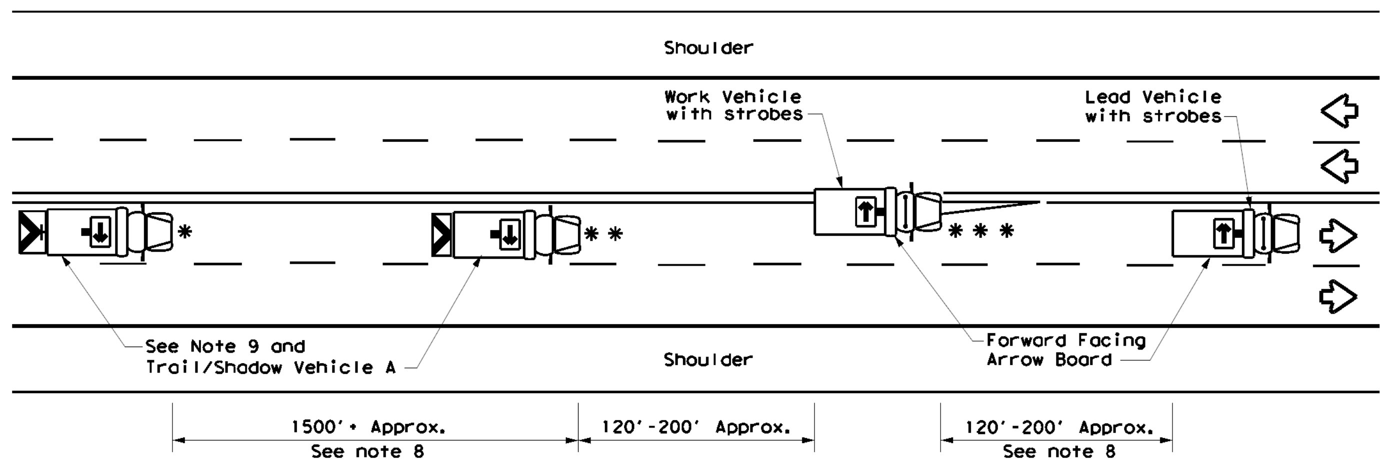
9. Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections,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

Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

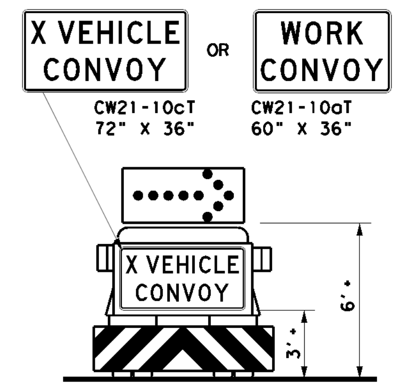
TCP(2-3)-23

FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18	0358	01	027	SH 118
8-95 3-03 4-23	DIST	COUNTY		SHEET NO.
1-97 2-12	ELP	JEFF DAVIS		28



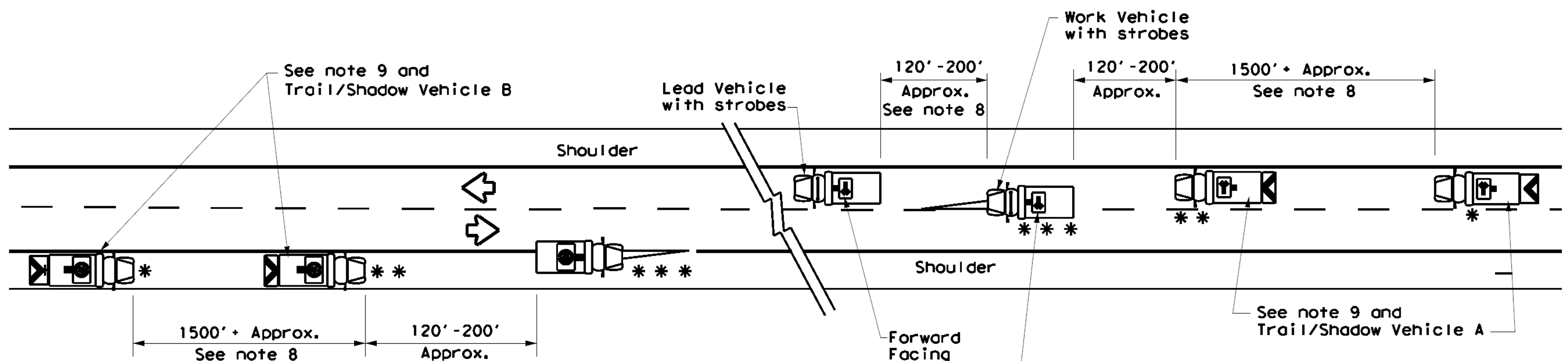
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

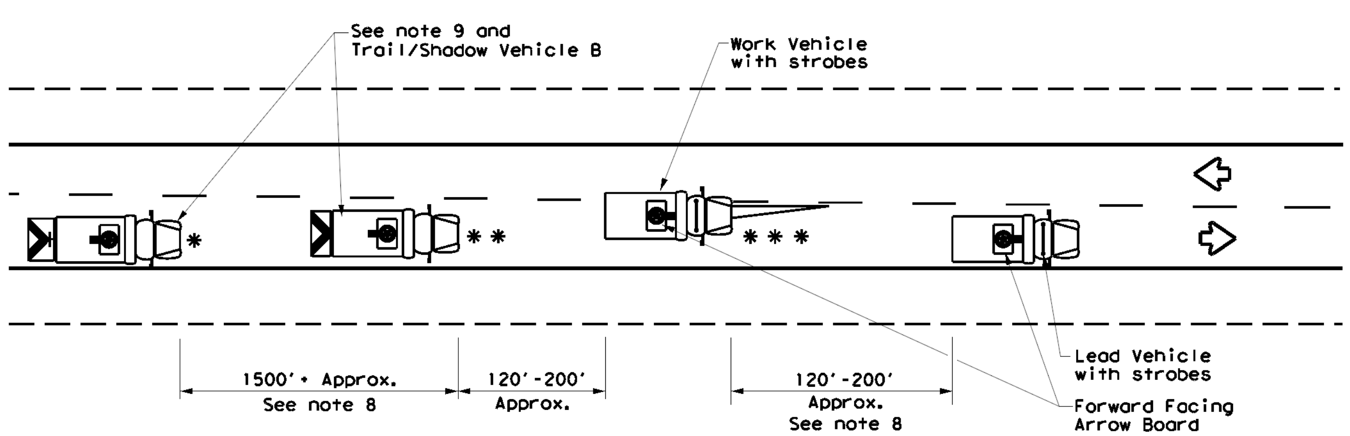


WORK ON SHOULDER

WORK ON TRAVEL LANE

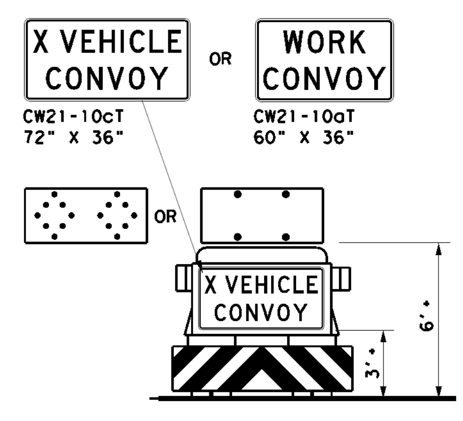
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display

LEGEND

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

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.

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

3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.

4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.

5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.

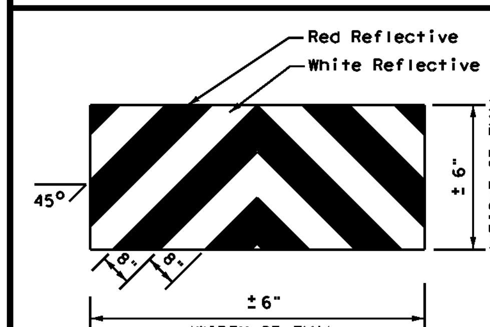
6. Each vehicle shall have two-way radio communication capability.

7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.

8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.

9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.

10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0358	01	027	SH 118
	DIST		COUNTY	SHEET NO.
	ELP		JEFF DAVIS	29

175

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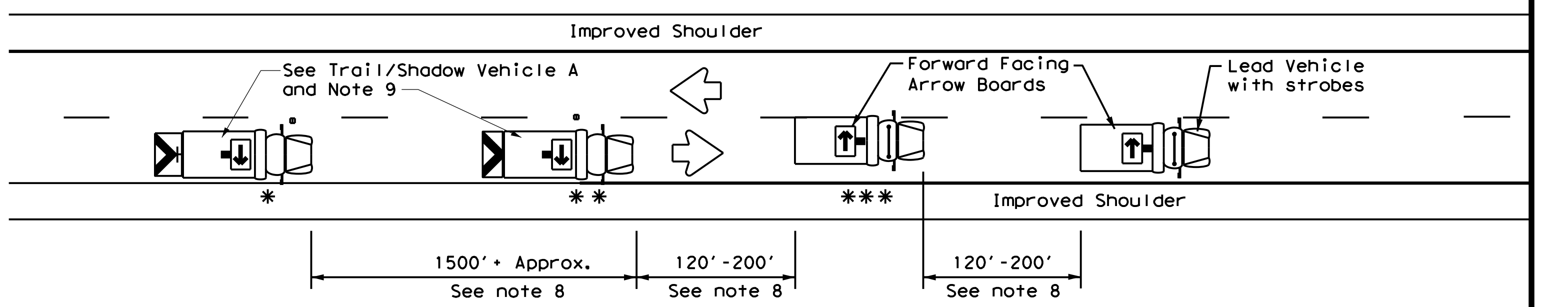
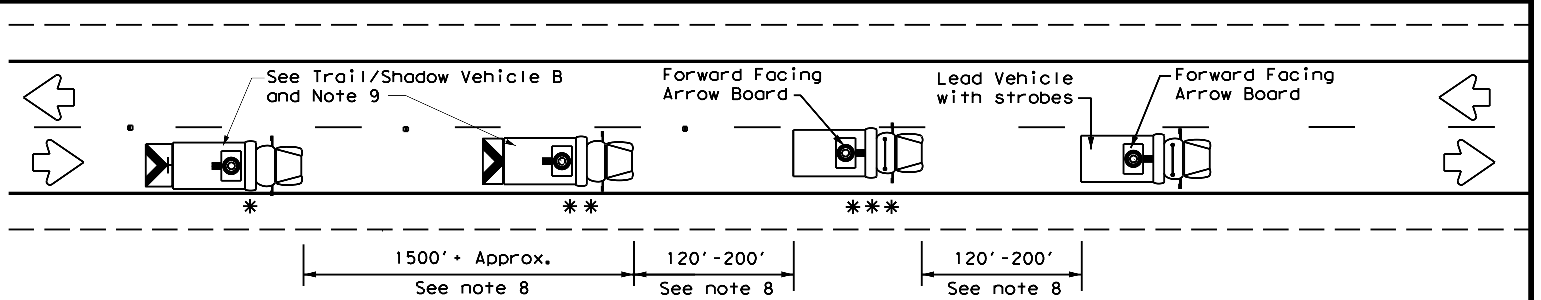


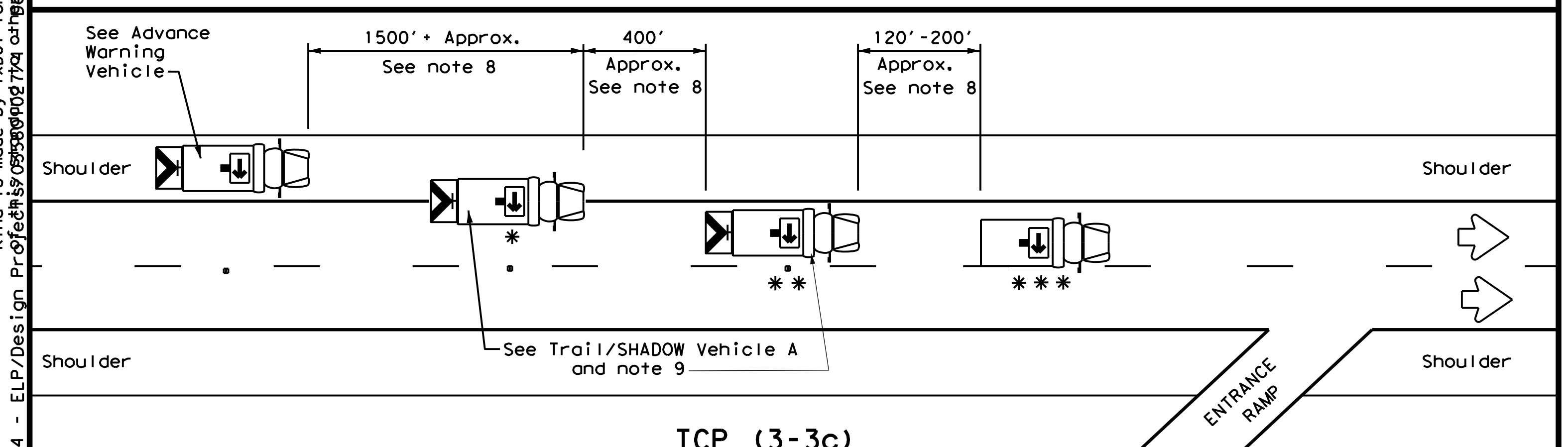
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



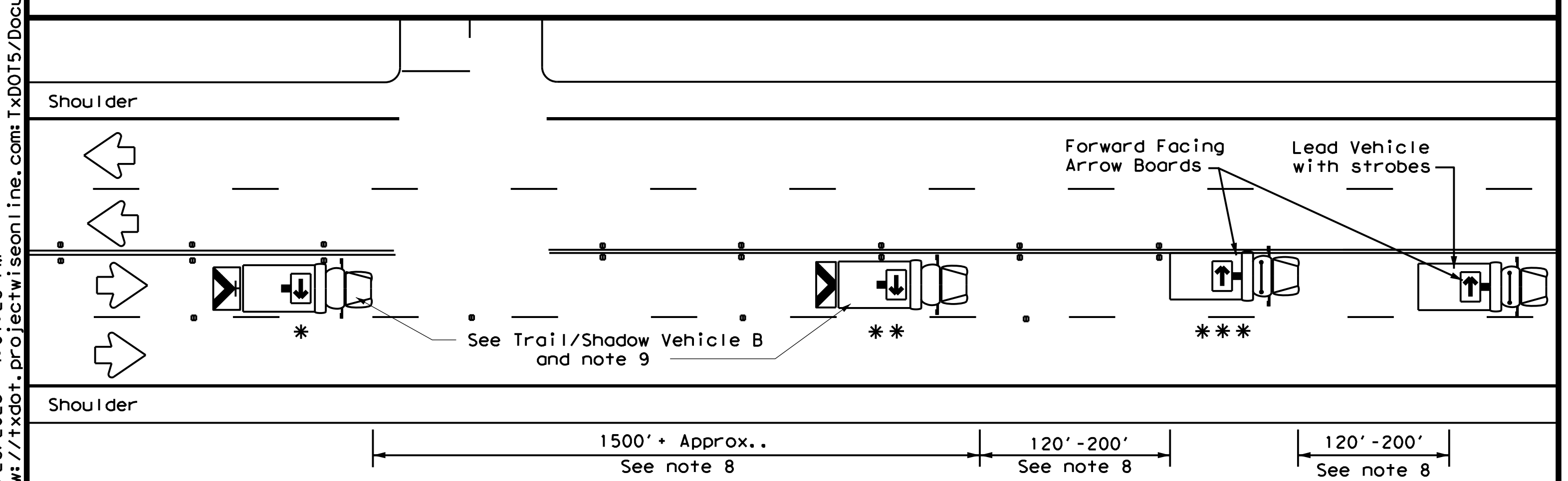
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



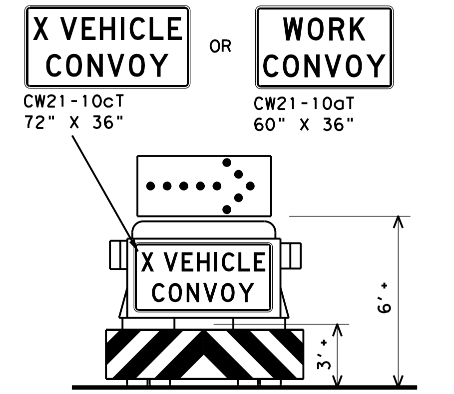
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



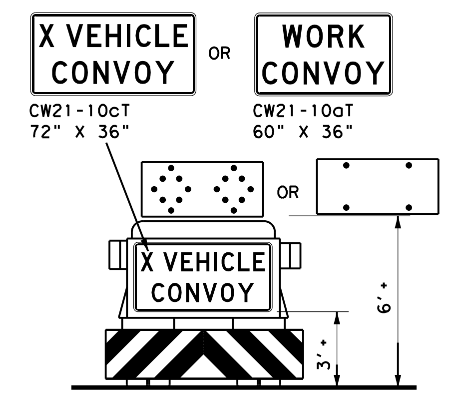
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



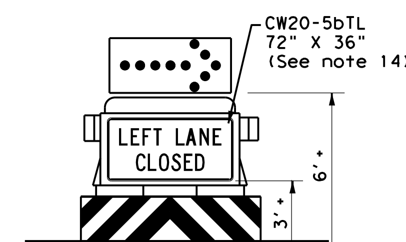
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

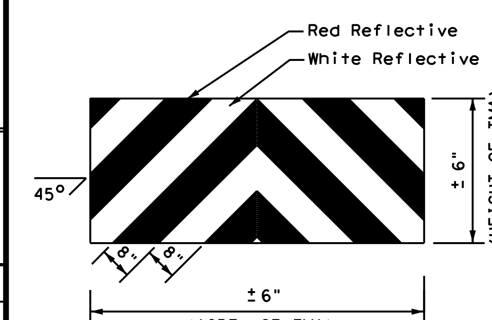


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND

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

TYPICAL USAGE

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used 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.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. 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.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. 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

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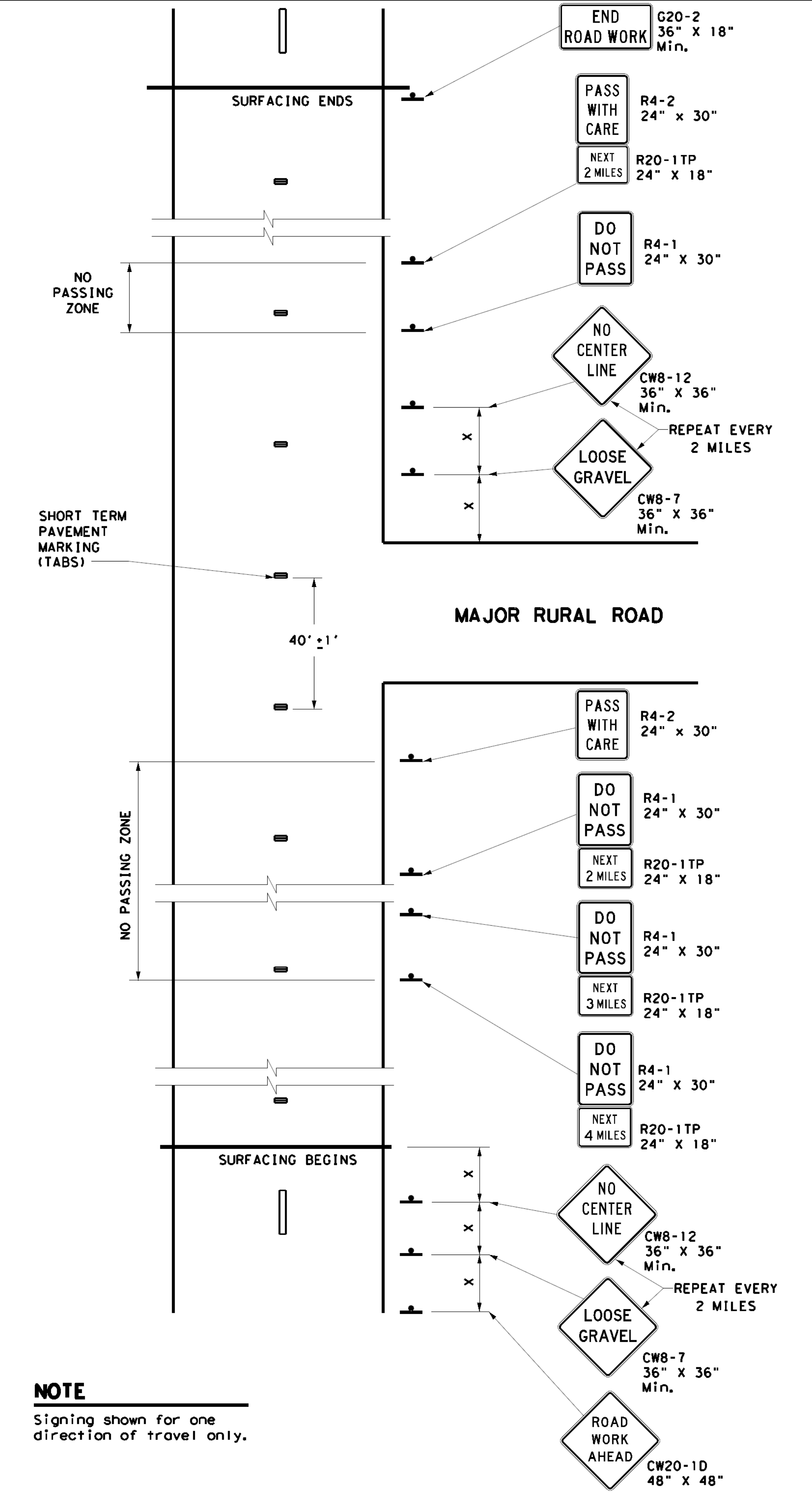
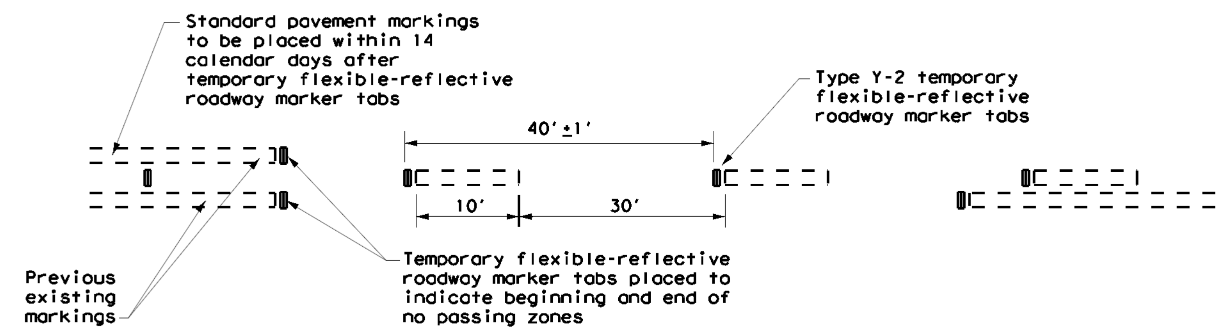
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS: 2-94 4-98 8-95 7-13 1-97 7-14	0358	01	027	SH 118
	DIST		COUNTY	SHEET NO.
	ELP		JEFF DAVIS	30



NOTE

Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

"DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES

A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.

B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.

C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.

D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CW8-12)

A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.

B. At the time construction activity obliterates the existing center line markings(low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.

C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CW8-7)

A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.

B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.

B. Tabs shall not be used to simulate edge lines.

C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

COORDINATION OF SIGN LOCATIONS

A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.

B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T)sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

TCP(7-1)-13

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© TxDOT March 1991	CONT 0358	SECT 01	JOB 027	HIGHWAY SH 118
REVISIONS 4-92 4-98 1-97 7-13	DIST ELP	COUNTY JEFF DAVIS		SHEET NO. 31

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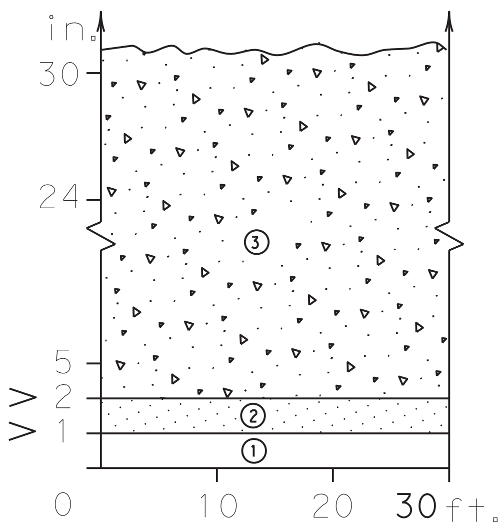
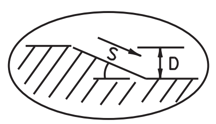
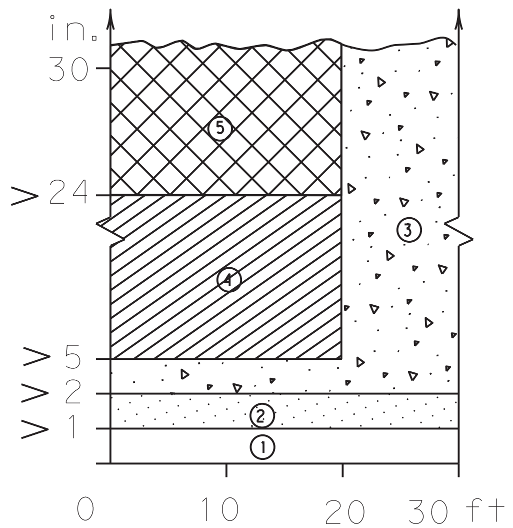
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet

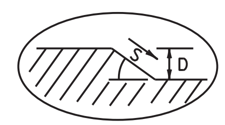


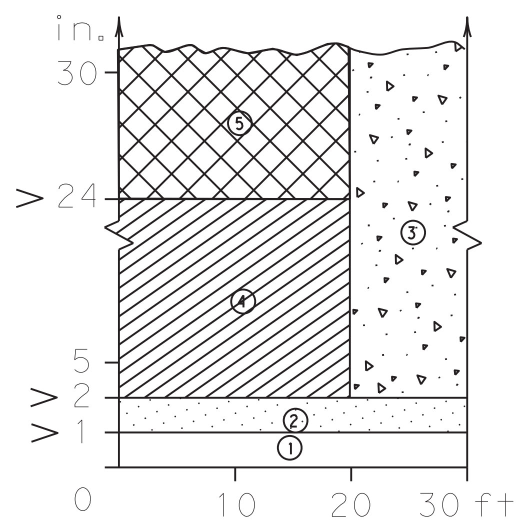
Edge Condition I
S = (3:1) (or flatter)



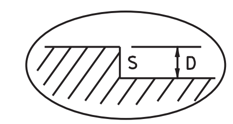


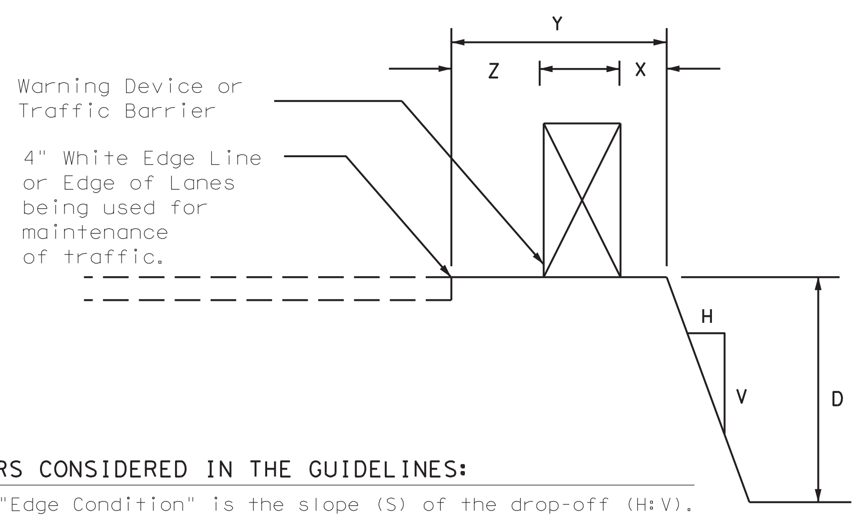
Edge Condition II
S = ((2.99):1) to (1:1)





Edge Condition III
S is steeper than (1:1)





FACTORS CONSIDERED IN THE GUIDELINES:

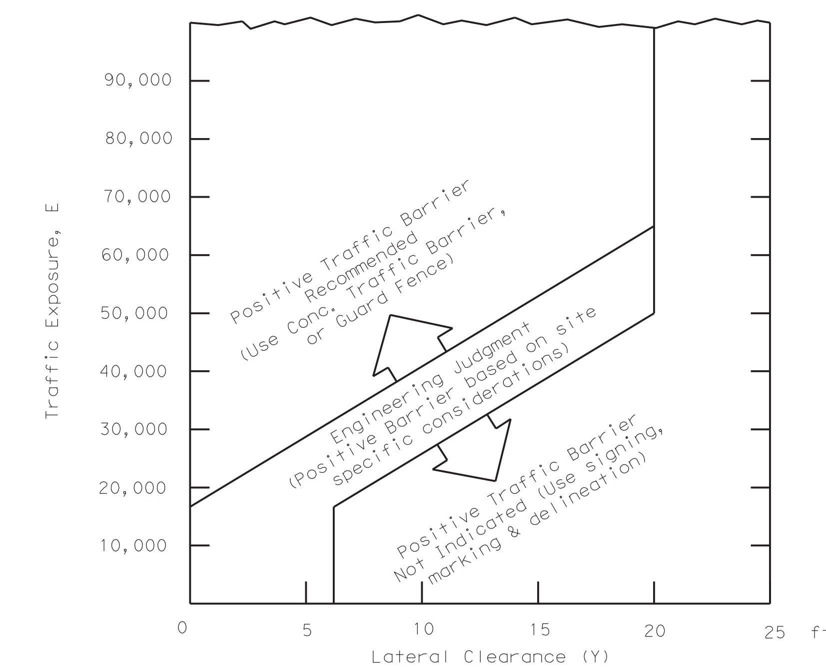
1. The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height is the depth of the drop-off "D".
2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.
3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.
4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.
5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
1	No treatment
2	CW 8-11 "Uneven Lanes" signs.
3	CW 8-9a Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
4	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered Edge Condition I.
5	Check indications (Figure-1) for possitive barrier. Where positive barrier is not indicated, the treatment shown above for Zone-4 may be used after consideration of other applicable factors.

Edge Condition Notes:

1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.
2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exeeds 24 inches, the possibility for rollover is greater in most vehicles.
3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differen-tial when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.
4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 (▩)



1. E = ADT x T
   Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.
2. Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.
3. An approved end treatment should be provided for any positive barrier end located within the clear zone.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

Engineer's Seal

Date 08/29/23

Antonio Santana PE

Texas Department of Transportation

Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

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© TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
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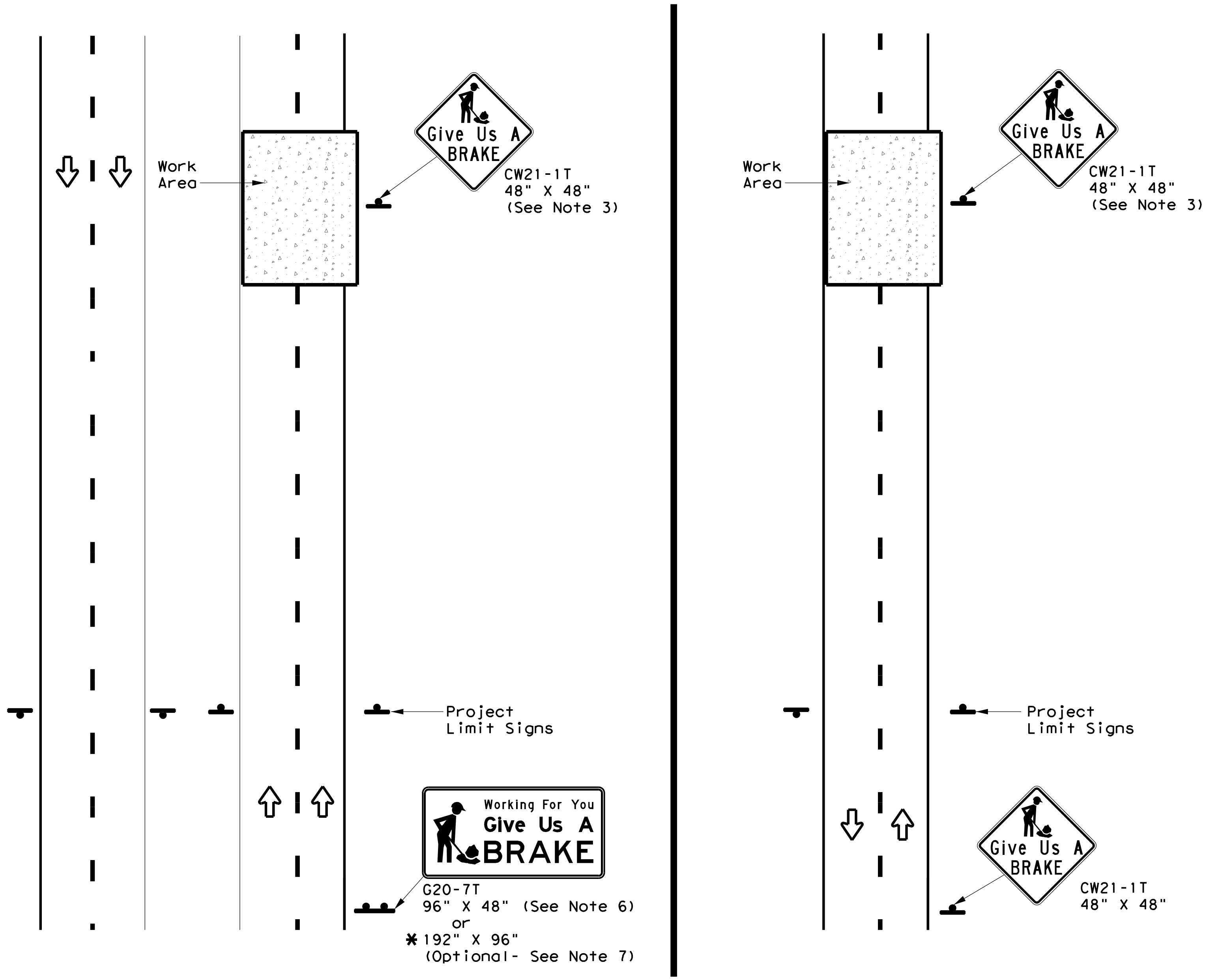

DIVIDED HIGHWAY

UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

✱ When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL Size	(LF) ①	(LF) ②	DRILLED SHAFT 24" DIA. (LF)
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND

Symbol	Meaning
(sign symbol)	Sign
(large sign symbol)	Large Sign
⇦	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS

PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   - Item 636 - Aluminum Signs
   - Item 647 - Large Roadside Sign Supports and Assemblies.
   - Item 416 - Drilled Shaft Foundations
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.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT 0358	SECT 01	JOB 027	HIGHWAY SH 118
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WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

TABS: 4" to 12" | 20' ± 6" | Type Y-2

TAPE: 4" to 12" | 6" | 20' ± 6" | Yellow | 4.5' ± 6"

SINGLE NO-PASSING LINE or CHANNELIZATION LINE

TABS: 20' ± 6" | Type Y-2 or W

TAPE: 6" | 20' ± 6" | 4.5' ± 6" | Yellow or White

BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

TABS: 40' ± 1' | Type Y-2 or W | 1' ± 3"

TAPE: 6" | 40' ± 1' | 4.5' ± 6" | Yellow or White

WIDE DOTTED LINES

(FOR LANE DROP LINES)

TABS: 12' ± 6" | 4" ± 1" | 3' ± 3" | Type W

TAPE: 12" | 12' ± 6" | 3' ± 3" | White

WIDE GORE MARKINGS

TABS: 20' ± 6" | 4" ± 1" | Type W

TAPE: 12" | 20' ± 6" | 4.5' ± 6" | White

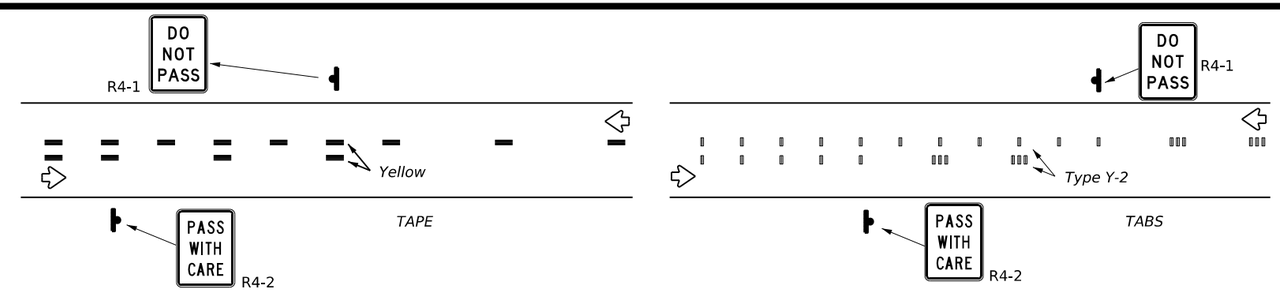
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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).
8. 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.

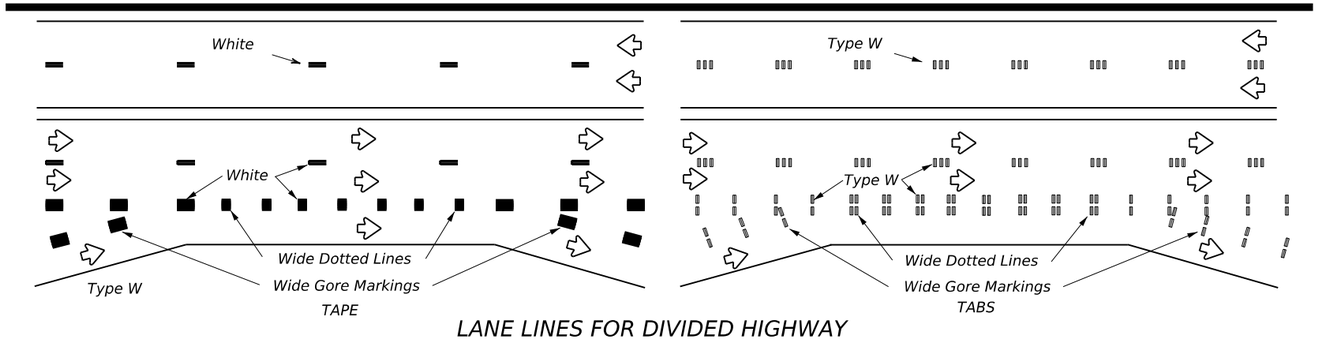
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. 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).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. 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.
4. 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.

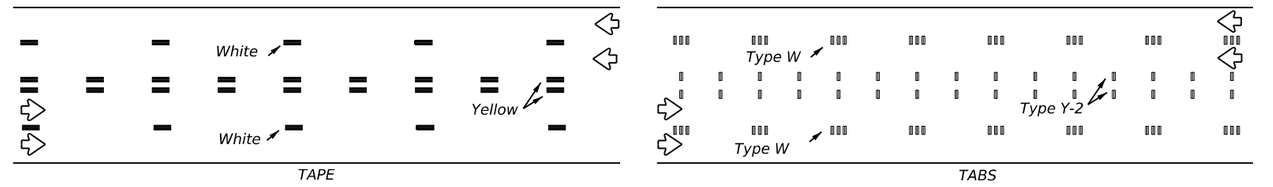
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



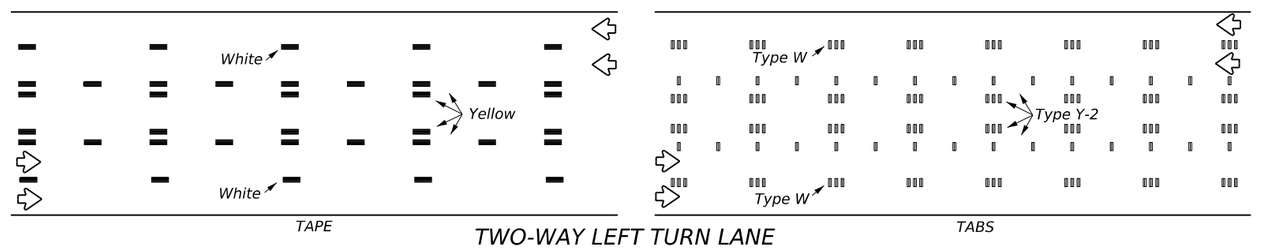
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



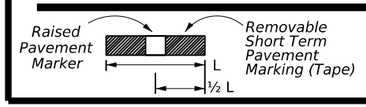
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

1. 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)

1. 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

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

FILE: wzstpm-23.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
4-92 7-13	DIST	COUNTY		SHEET NO.
1-97 2-23	ELP	JEFF DAVIS		34
3-03				

111

DATE: 8/26/2023 4:04:34 PM
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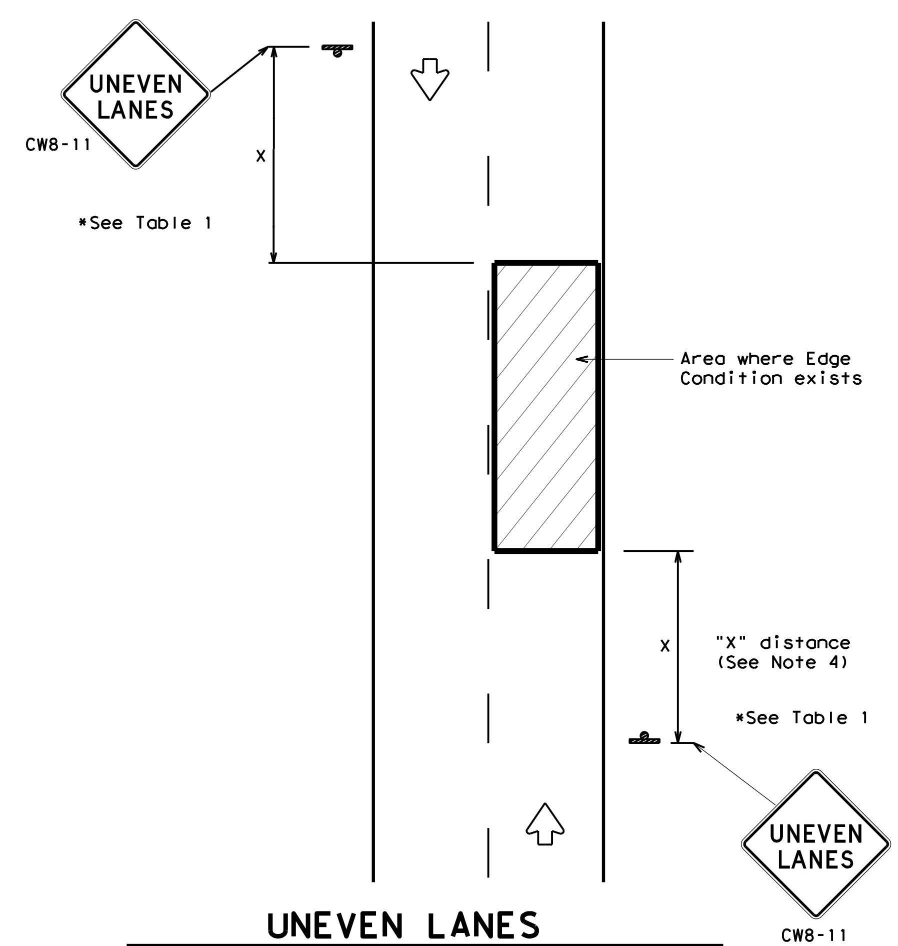
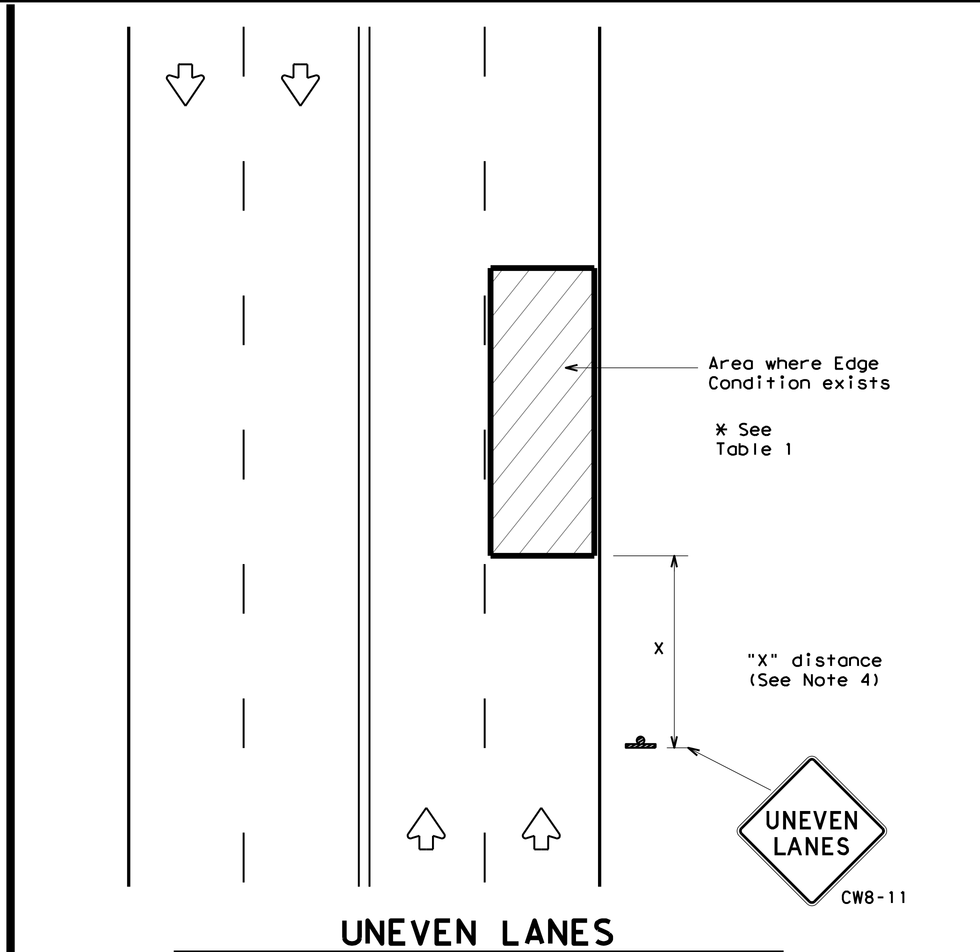
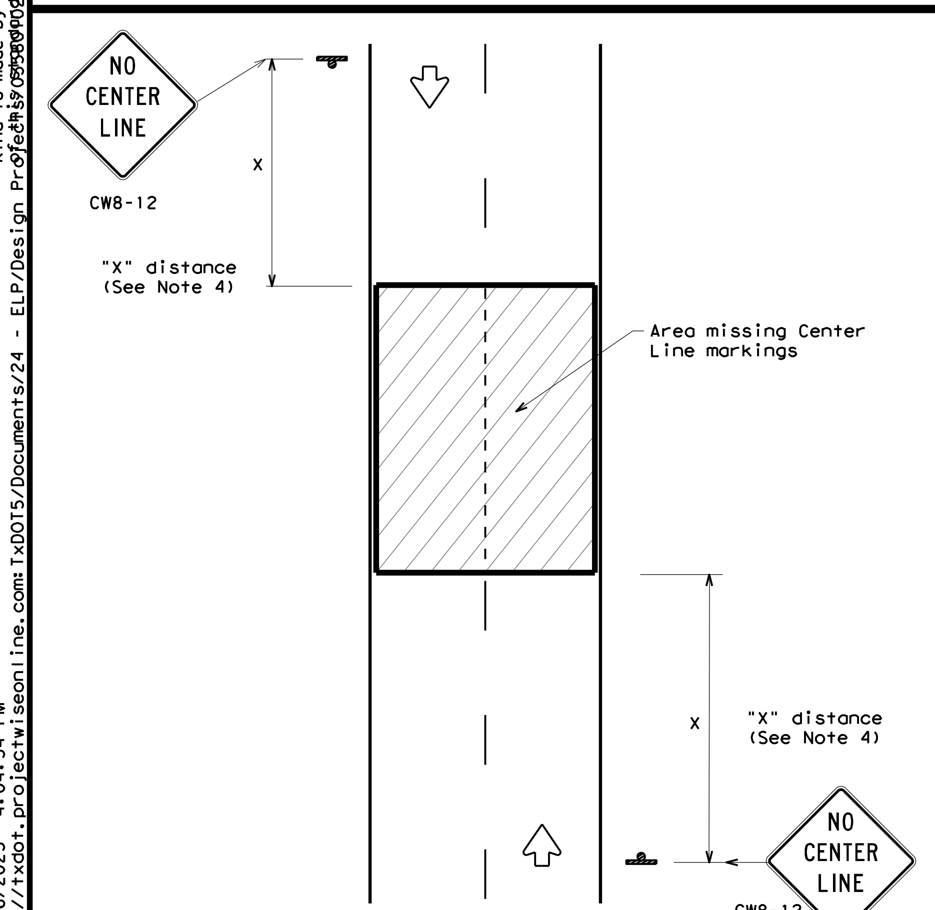


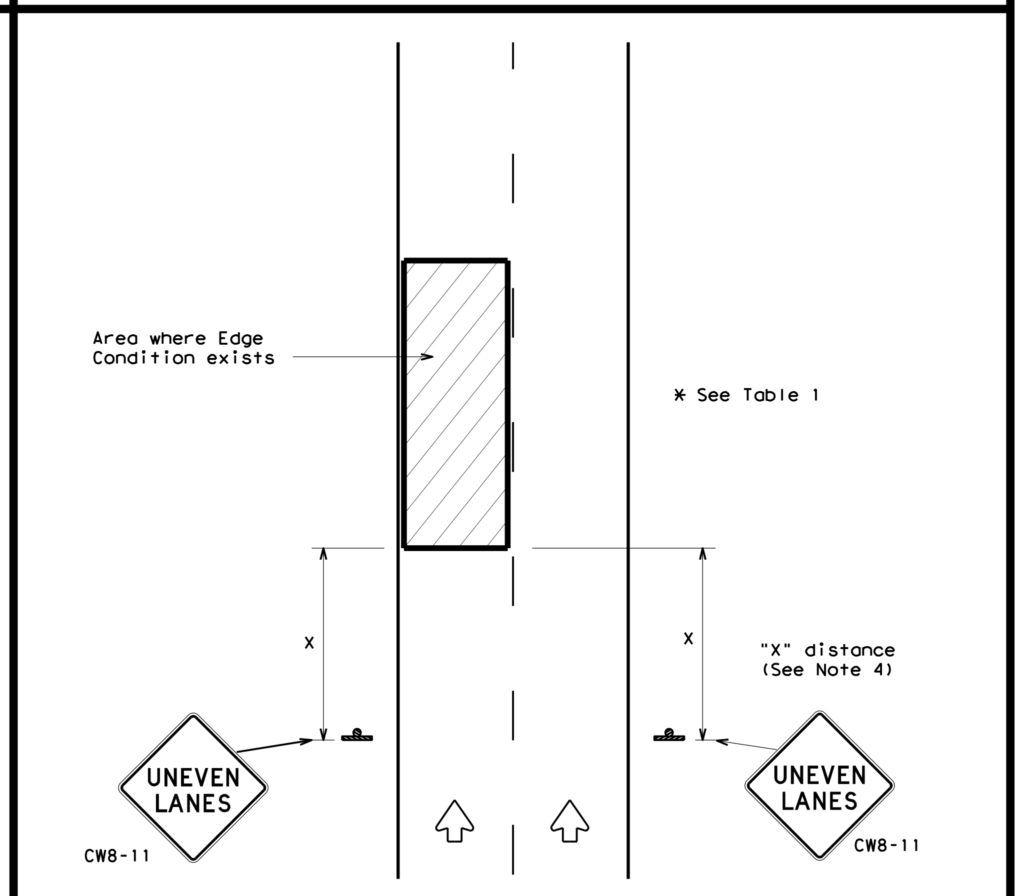
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

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_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. 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.
2. 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.
3. 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.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. 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."
6. 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.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① D	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② >3 1 D	Less than or equal to 3"	Sign: CW8-11
③ 0" to 3/4" D 12" Notched Wedge Joint	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

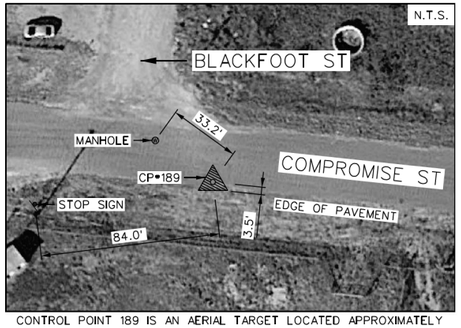
SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
8-95 2-98 7-13 1-97 3-03	DIST		COUNTY	SHEET NO.
	ELP		JEFF DAVIS	35

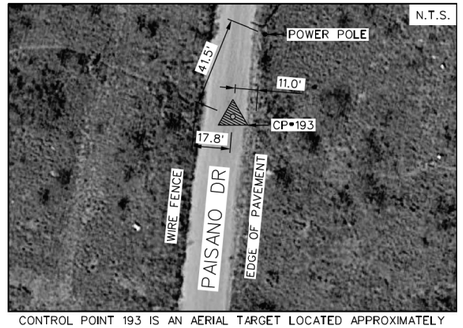
112

CP•189
Y = 10,202,143.28
X = 1,179,781.50
Z = 4,845.71



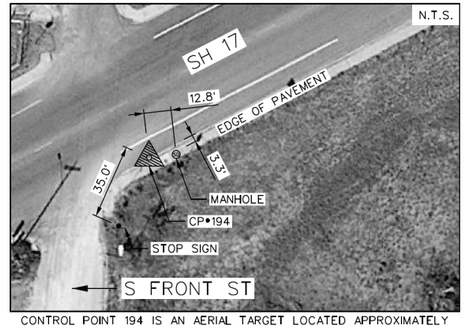
CONTROL POINT 189 IS AN AERIAL TARGET LOCATED APPROXIMATELY 39 FEET SOUTHEAST OF THE INTERSECTION OF COMPROMISE ST & BLACKFOOT ST, 3.5' NORTH FROM THE EDGE OF PAVEMENT, 33.2' SOUTHEAST OF A MANHOLE, AND 84.0' NORTHEAST OF A STOP SIGN.

CP•193
Y = 10,196,003.56
X = 1,178,907.10
Z = 4,902.88



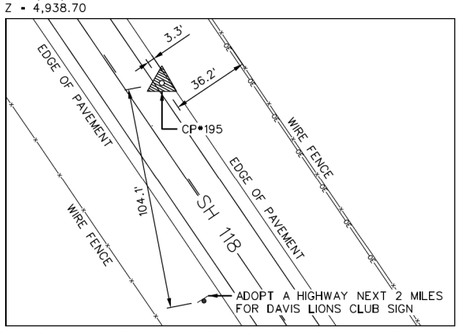
CONTROL POINT 193 IS AN AERIAL TARGET LOCATED APPROXIMATELY 324 FEET NORTH OF THE INTERSECTION OF SH 118 & PAISANO DR, 11.0' WEST FROM THE EDGE OF PAVEMENT, 17.8' EAST OF A WIRE FENCE, AND 41.5' SOUTHWEST OF A POWER POLE.

CP•194
Y = 10,197,115.62
X = 1,176,084.41
Z = 4,896.11



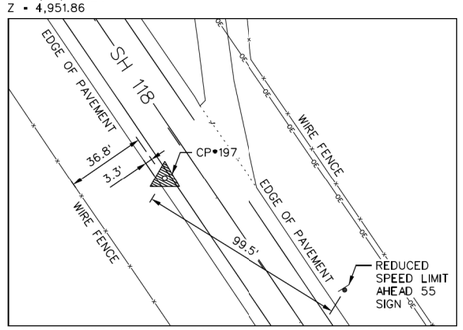
CONTROL POINT 194 IS AN AERIAL TARGET LOCATED APPROXIMATELY 34 FEET SOUTHEAST OF THE INTERSECTION OF SH 17 & S FRONT ST, 3.3' NORTHWEST OF THE EDGE OF PAVEMENT, 12.8' WEST OF A MANHOLE, AND 35.0' NORTHEAST OF A STOP SIGN.

CP•195
Y = 10,193,717.96
X = 1,180,675.60
Z = 4,938.70



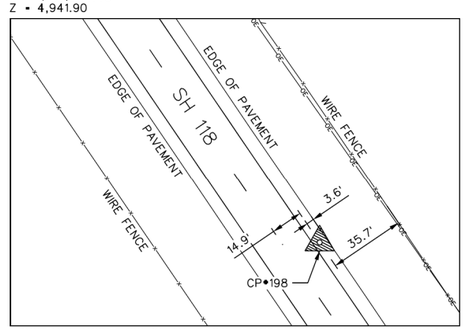
CONTROL POINT 195 IS AN AERIAL TARGET LOCATED APPROXIMATELY 1,419 FEET SOUTH OF THE INTERSECTION OF DOLORES MOUNTAIN TRAIL & SH 118, 3.3' SOUTHWEST FROM THE EDGE OF PAVEMENT, 3.5' SOUTHWEST OF A WIRE FENCE, AND 104.1' NORTHEAST OF AN ADOPT A HIGHWAY NEXT 2 MILES FOR DAVIS LIONS CLUB SIGN.

CP•197
Y = 10,192,719.22
X = 1,181,320.24
Z = 4,951.86



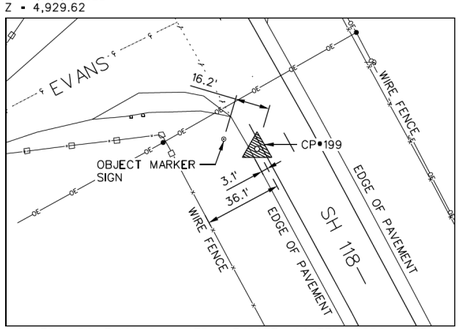
CONTROL POINT 197 IS AN AERIAL TARGET LOCATED APPROXIMATELY 0.4 MILES NORTH OF THE INTERSECTION OF EVANS & SH 118, 3.3' NORTHEAST FROM THE EDGE OF PAVEMENT, 36.8' NORTHEAST OF A WIRE FENCE, AND 99.5' NORTHWEST OF A REDUCED SPEED LIMIT AHEAD 55 SIGN.

CP•198
Y = 10,191,722.31
X = 1,182,034.40
Z = 4,941.90



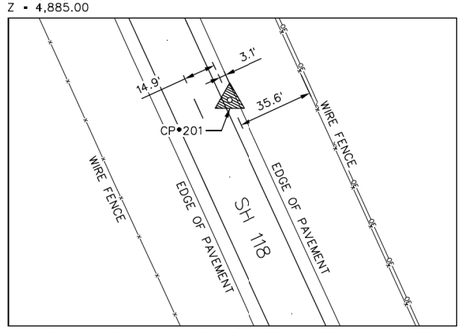
CONTROL POINT 198 IS AN AERIAL TARGET LOCATED APPROXIMATELY 1,113 FEET NORTH OF THE INTERSECTION OF EVANS & SH 118, 3.6' SOUTHWEST FROM THE EDGE OF PAVEMENT, 14.9' NORTHEAST FROM THE CENTERLINE OF SH 118, AND 35.7' SOUTHWEST OF A WIRE FENCE.

CP•199
Y = 10,190,715.74
X = 1,182,652.85
Z = 4,929.62



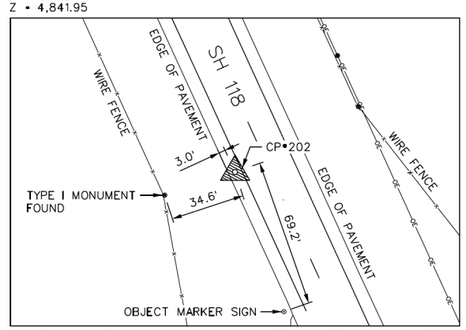
CONTROL POINT 199 IS AN AERIAL TARGET LOCATED APPROXIMATELY 69 FEET SOUTH OF THE INTERSECTION OF EVANS & SH 118, 3.1' NORTHEAST FROM THE EDGE OF PAVEMENT, 16.2' SOUTHEAST OF AN OBJECT MARKER SIGN, AND 36.1' NORTHEAST OF A WIRE FENCE.

CP•201
Y = 10,188,874.53
X = 1,183,544.01
Z = 4,885.00



CONTROL POINT 201 IS AN AERIAL TARGET LOCATED APPROXIMATELY 0.4 MILES SOUTH OF THE INTERSECTION OF EVANS & SH 118, 3.1' SOUTHWEST FROM THE EDGE OF PAVEMENT, 14.9' NORTHEAST FROM THE CENTERLINE OF SH 118, AND 35.6' SOUTHWEST OF A WIRE FENCE.

CP•202
Y = 10,186,740.85
X = 1,184,486.75
Z = 4,841.95



CONTROL POINT 202 IS AN AERIAL TARGET LOCATED APPROXIMATELY 135 FEET NORTH OF THE INTERSECTION OF POWELL PLANT FARMS RD & SH 118, 3.0' NORTHEAST FROM THE EDGE OF PAVEMENT, 34.6' NORTHEAST OF A TYPE I MONUMENT FOUND, AND 69.2' NORTHWEST OF AN OBJECT MARKER SIGN.

GRAPHIC SCALE
0 30 60 90
1" = 60'
HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.0002.
2. HORIZONTAL AND VERTICAL VALUES WERE ESTABLISHED USING THE TXDOX VRS/RTK NETWORK. ELEVATIONS ARE NAVD88 DATUM BASED ON RTK OBSERVATIONS USING GEOID 12B.
3. THIS CONTROL WAS SURVEYED IN JULY 2020.

STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905
12/28/20

AG3 Group, LLC
ENGINEERING · SURVEY · CONSTRUCTION
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SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
HORIZONTAL & VERTICAL
CONTROL SHEET

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	112 OF 120

Texas Department of Transportation

SH 118

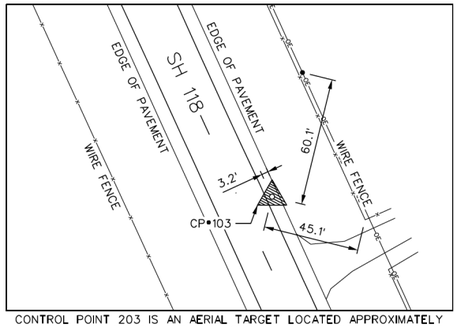
ROADWAY
HORIZONTAL & VERTICAL
CONTROL SHEET

2023 SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		36

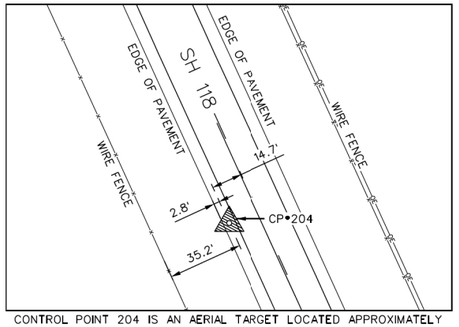
DATE: 8/28/2023 4:49:06 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Horizontal and Vertical Control Sheets/Horizontal and Vertical Control 1.dgn

CP•203
Y = 10,185,063.03
X = 1,185,287.03
Z = 4,845.03



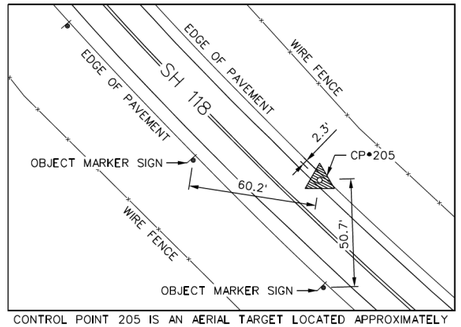
CONTROL POINT 203 IS AN AERIAL TARGET LOCATED APPROXIMATELY 868 FEET SOUTH OF THE INTERSECTION OF CHIHUAHUAN DESERT RES INSTITUTE RD & SH 118, 3.2' SOUTHWEST FROM THE EDGE OF PAVEMENT, 60.1' SOUTHWEST OF A POWER POLE, AND 45.1' NORTHWEST FROM THE CORNER OF THE WIRE FENCE.

CP•204
Y = 10,183,450.81
X = 1,185,991.77
Z = 4,862.48



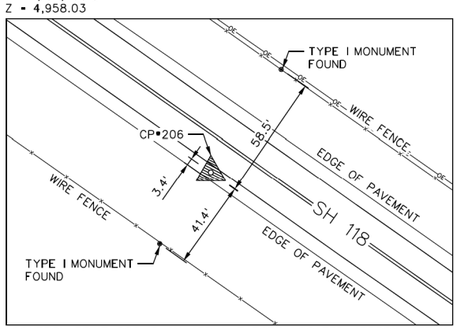
CONTROL POINT 204 IS AN AERIAL TARGET LOCATED APPROXIMATELY 0.4 MILES SOUTH OF THE INTERSECTION OF CHIHUAHUAN DESERT RES INSTITUTE RD & SH 118, 2.8' NORTHEAST FROM THE EDGE OF PAVEMENT, 14.7' SOUTHWEST FROM THE CENTERLINE OF SH 118, AND 35.2' NORTHEAST OF A WIRE FENCE.

CP•205
Y = 10,182,166.76
X = 1,186,755.42
Z = 4,913.58



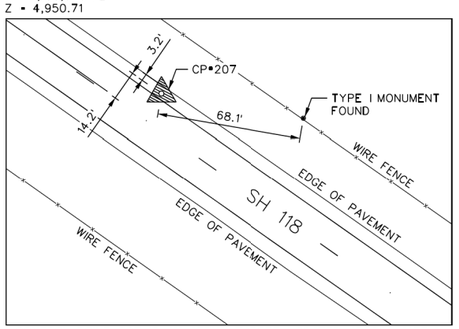
CONTROL POINT 205 IS AN AERIAL TARGET LOCATED APPROXIMATELY 0.7 MILES NORTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 2.3' SOUTHWEST FROM THE EDGE OF PAVEMENT, 60.2' SOUTHEAST OF AN OBJECT MARKER SIGN, AND 50.7' NORTHWEST OF AN OBJECT MARKER SIGN.

CP•206
Y = 10,181,396.37
X = 1,187,758.34
Z = 4,958.03



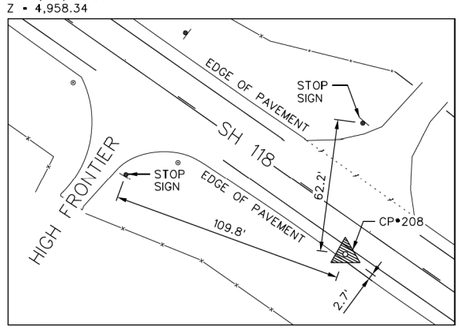
CONTROL POINT 206 IS AN AERIAL TARGET LOCATED APPROXIMATELY 0.4 MILES NORTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 3.4' NORTHEAST FROM THE EDGE OF PAVEMENT, 41.4' NORTHEAST OF A TYPE I MONUMENT FOUND, AND 58.5' SOUTHWEST OF A TYPE I MONUMENT FOUND.

CP•207
Y = 10,180,595.04
X = 1,188,949.72
Z = 4,950.71



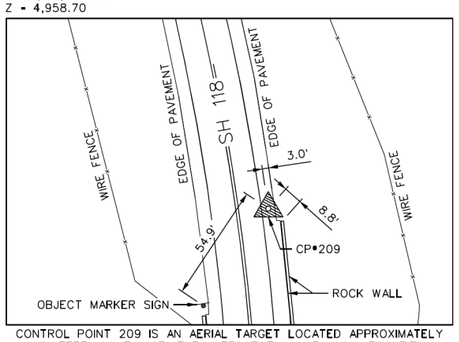
CONTROL POINT 207 IS AN AERIAL TARGET LOCATED APPROXIMATELY 761 FEET NORTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 3.2' SOUTHWEST FROM THE EDGE OF PAVEMENT, 14.2' NORTHEAST FROM THE CENTERLINE OF SH 118, AND 68.1' NORTHWEST OF A TYPE I MONUMENT FOUND.

CP•208
Y = 10,180,062.87
X = 1,189,655.59
Z = 4,958.34



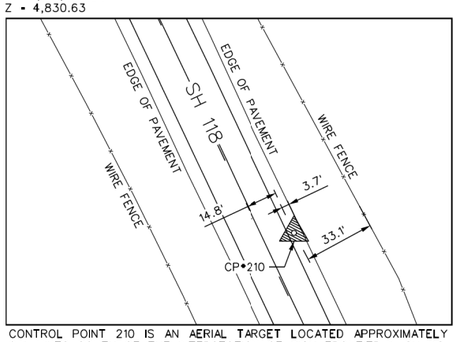
CONTROL POINT 208 IS AN AERIAL TARGET LOCATED APPROXIMATELY 123 FEET SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 2.7' NORTHEAST FROM THE EDGE OF PAVEMENT, 62.2' SOUTHWEST OF A STOP SIGN, AND 109.8' SOUTHEAST OF A STOP SIGN.

CP•209
Y = 10,179,216.85
X = 1,190,363.76
Z = 4,958.70



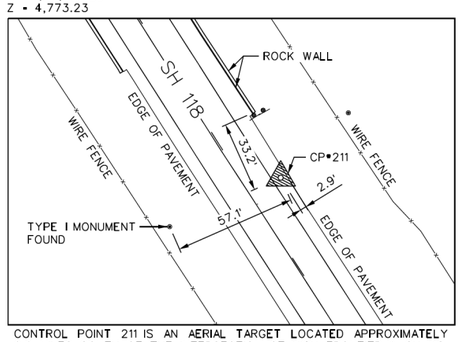
CONTROL POINT 209 IS AN AERIAL TARGET LOCATED APPROXIMATELY 1,225 FEET SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 3.0' SOUTHEAST FROM THE EDGE OF PAVEMENT, 8.8' NORTHWEST FROM THE END OF THE ROCK WALL, AND 54.9' NORTHEAST OF AN OBJECT MARKER SIGN.

CP•210
Y = 10,177,472.72
X = 1,190,486.54
Z = 4,830.63



CONTROL POINT 210 IS AN AERIAL TARGET LOCATED APPROXIMATELY 0.4 MILES SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 2.8' NORTHEAST FROM THE EDGE OF PAVEMENT, 14.7' SOUTHWEST FROM THE CENTERLINE OF SH 118, AND 35.2' NORTHEAST OF A WIRE FENCE.

CP•211
Y = 10,175,968.82
X = 1,191,266.83
Z = 4,773.23



CONTROL POINT 211 IS AN AERIAL TARGET LOCATED APPROXIMATELY 0.9 MILES SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 2.9' SOUTHWEST FROM THE EDGE OF PAVEMENT, 33.2' SOUTHEAST FROM THE END OF THE ROCK WALL, AND 57.1' NORTHWEST OF A TYPE I MONUMENT FOUND.

GRAPHIC SCALE
0 30 60 90
1" = 60'
HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.0002.
2. HORIZONTAL AND VERTICAL VALUES WERE ESTABLISHED USING THE TXDOX VRS/RTK NETWORK. ELEVATIONS ARE NAVD88 DATUM BASED ON RTK OBSERVATIONS USING GEOID 12B.
3. THIS CONTROL WAS SURVEYED IN JULY 2020.

HENRY C. CASAL JR., R.P.L.S. #4905
12/28/20

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TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
HORIZONTAL & VERTICAL
CONTROL SHEET

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	113 OF 120

Texas Department of Transportation

SH 118

ROADWAY
HORIZONTAL & VERTICAL
CONTROL SHEET

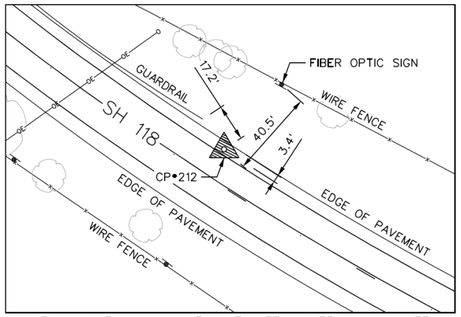
2023 SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		37

DATE: 8/28/2023 4:49:29 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Horizontal and Vertical Control Sheets/Horizontal and Vertical Control 2.dgn

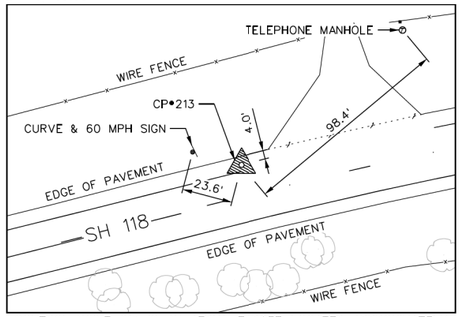
CK DW CK DW

CP•212
Y = 10,175,018.06
X = 1,192,029.80
Z = 4,752.36



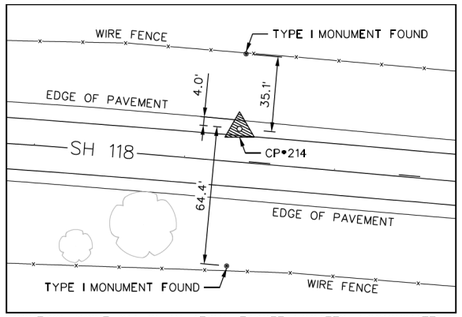
CONTROL POINT 212 IS AN AERIAL TARGET LOCATED APPROXIMATELY 1.1 MILES SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 3.4' SOUTHWEST FROM THE EDGE OF PAVEMENT, 17.2' SOUTHEAST FROM THE END OF THE GUARDRAIL, AND 40.5' SOUTHWEST OF A FIBER OPTIC SIGN.

CP•213
Y = 10,175,009.03
X = 1,193,850.16
Z = 4,740.03



CONTROL POINT 213 IS AN AERIAL TARGET LOCATED APPROXIMATELY 1.3 MILES SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 4.0' SOUTHWEST FROM THE EDGE OF PAVEMENT, 23.6' SOUTHWEST OF A CURVE & 60 MPH SIGN, AND 98.4' SOUTHWEST OF A TELEPHONE MANHOLE.

CP•214
Y = 10,175,099.31
X = 1,195,578.45
Z = 4,728.45



CONTROL POINT 214 IS AN AERIAL TARGET LOCATED APPROXIMATELY 1.3 MILES SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 4.0' SOUTHWEST FROM THE EDGE OF PAVEMENT, 35.1' SOUTHWEST OF A TYPE I MONUMENT FOUND, AND 64.4' NORTHEAST OF A TYPE I MONUMENT FOUND.

CP•215
Y = 10,174,876.18
X = 1,197,435.61
Z = 4,708.25

CONTROL POINT 215 IS AN AERIAL TARGET LOCATED APPROXIMATELY 1.8 MILES SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 3.0' NORTHEAST FROM THE EDGE OF PAVEMENT, 50.9' NORTHWEST OF A BRIDGE MAY ICE IN COLD WEATHER SIGN, AND 89.1' SOUTHWEST OF AN OBJECT MARKER SIGN.

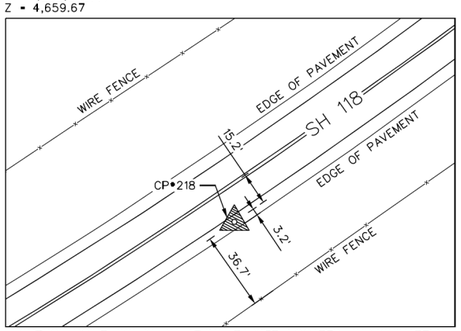
CP•216
Y = 10,174,576.35
X = 1,199,386.69
Z = 4,699.01

CONTROL POINT 216 IS AN AERIAL TARGET LOCATED APPROXIMATELY 2.1 MILES SOUTH OF THE INTERSECTION OF HIGH FRONTIER & SH 118, 3.5' NORTHEAST FROM THE EDGE OF PAVEMENT, 14.1' SOUTHWEST FROM THE CENTERLINE OF SH 118, AND 28.4' NORTHEAST OF A WIRE FENCE.

CP•217
Y = 10,174,985.41
X = 1,201,157.98
Z = 4,666.51

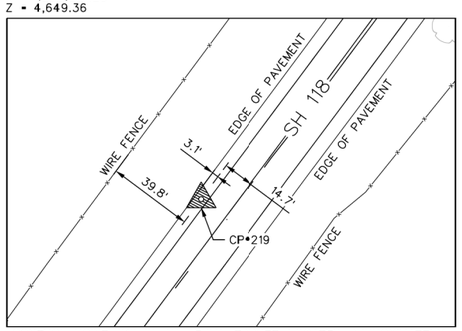
CONTROL POINT 217 IS AN AERIAL TARGET LOCATED APPROXIMATELY 2.3 MILES NORTH OF THE INTERSECTION OF KOKERNOT CREEK RD & SH 118, 3.4' SOUTHEAST FROM THE EDGE OF PAVEMENT, 37.2' SOUTHEAST OF A WIRE FENCE, AND 10.0' SOUTHWEST FROM THE END OF THE GUARDRAIL.

CP•218
Y = 10,175,443.91
X = 1,202,388.47
Z = 4,659.67



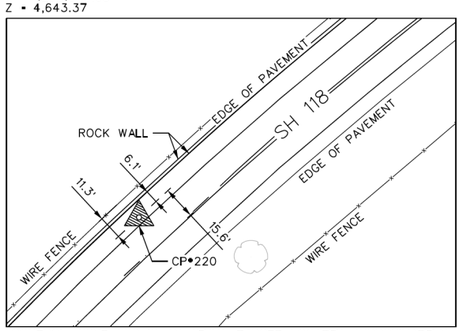
CONTROL POINT 218 IS AN AERIAL TARGET LOCATED APPROXIMATELY 2.3 MILES NORTH OF THE INTERSECTION OF KOKERNOT CREEK RD & SH 118, 3.2' NORTHWEST FROM THE EDGE OF PAVEMENT, 15.2' SOUTHEAST FROM THE CENTERLINE OF SH 118, AND 36.7' NORTHWEST OF A WIRE FENCE.

CP•219
Y = 10,176,338.87
X = 1,203,221.23
Z = 4,649.36



CONTROL POINT 219 IS AN AERIAL TARGET LOCATED APPROXIMATELY 2.2 MILES NORTH OF THE INTERSECTION OF KOKERNOT CREEK RD & SH 118, 3.1' SOUTHEAST FROM THE EDGE OF PAVEMENT, 14.7' NORTHWEST FROM THE CENTERLINE OF SH 118, AND 39.8' SOUTHEAST OF A WIRE FENCE.

CP•220
Y = 10,177,253.58
X = 1,203,940.95
Z = 4,643.37



CONTROL POINT 220 IS AN AERIAL TARGET LOCATED APPROXIMATELY 2.1 MILES NORTH OF THE INTERSECTION OF KOKERNOT CREEK RD & SH 118, 6.1' SOUTHEAST FROM THE EDGE OF PAVEMENT, 15.6' NORTHWEST FROM THE CENTERLINE OF SH 118, AND 11.3' SOUTHEAST OF A WIRE FENCE.

GRAPHIC SCALE
0 30 60 90
1" = 60'
HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.0002.
2. HORIZONTAL AND VERTICAL VALUES WERE ESTABLISHED USING THE TXDOX VRS/RTK NETWORK. ELEVATIONS ARE NAVD88 DATUM BASED ON RTK OBSERVATIONS USING GEOID 12B.
3. THIS CONTROL WAS SURVEYED IN JULY 2020.

HENRY C. CASAL JR., R.P.L.S. #4905
12/28/20

AG3 Group, LLC
ENGINEERING · SURVEY · CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-8400 F:210-208-8401
TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
HORIZONTAL & VERTICAL
CONTROL SHEET

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	114 OF 120

Texas Department of Transportation

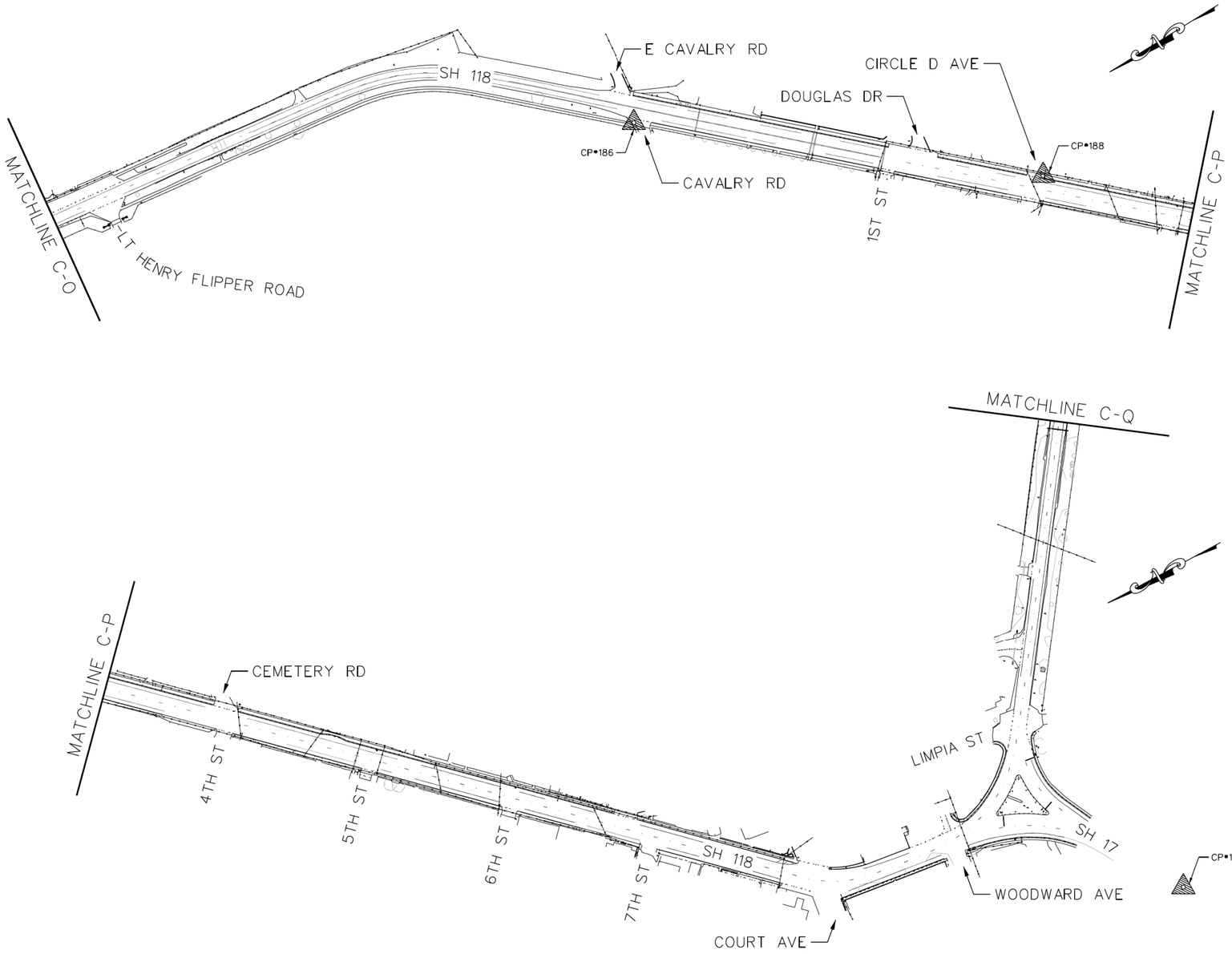
SH 118

ROADWAY
HORIZONTAL & VERTICAL
CONTROL SHEET

2023 *SHEET 3 OF 3*

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		38

DATE: 8/28/2023 4:49:55 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Horizontal and Vertical Control Sheets/Horizontal and Vertical Control 3.dgn



GRAPHIC SCALE

0 125 250 375

1" = 250'

HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.0002.
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STATE OF TEXAS
REGISTERED
HENRY C. CASAL, JR.
4905
PROFESSIONAL
LAND SURVEYOR

HENRY C. CASAL JR., R.P.L.S. #4905

12/28/20

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TBPLS #10194622

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	68 OF 120

Texas Department of Transportation

SH 118

ROADWAY SECONDARY CONTROL

2023 SHEET 1 OF 8

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		39

DATE: 8/24/2023 4:07:10 PM
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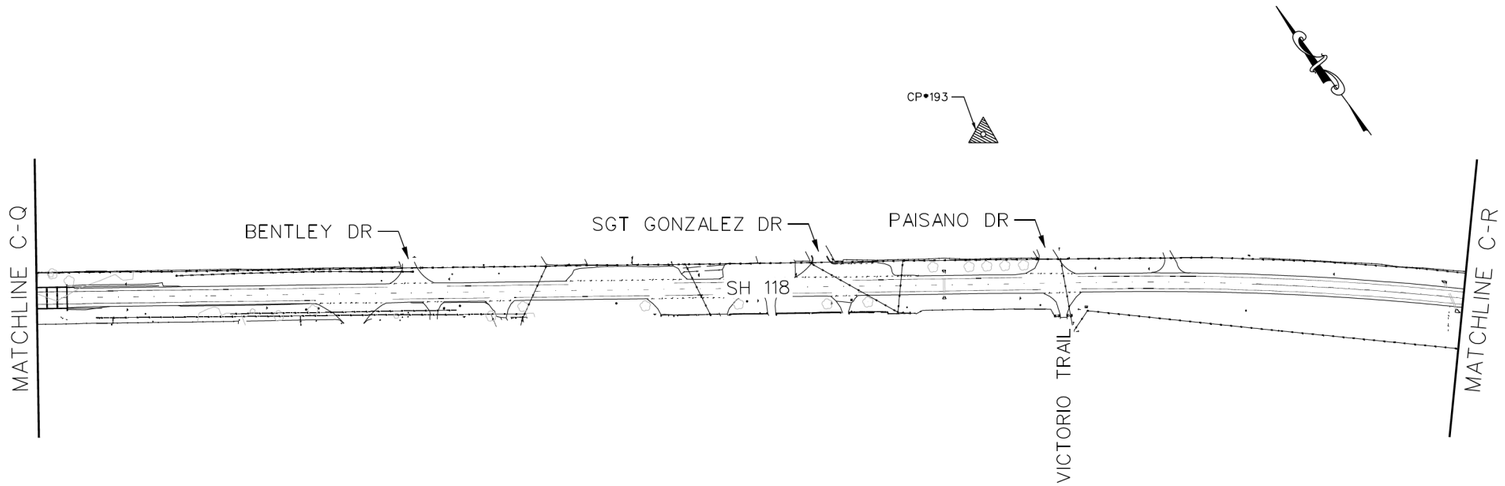

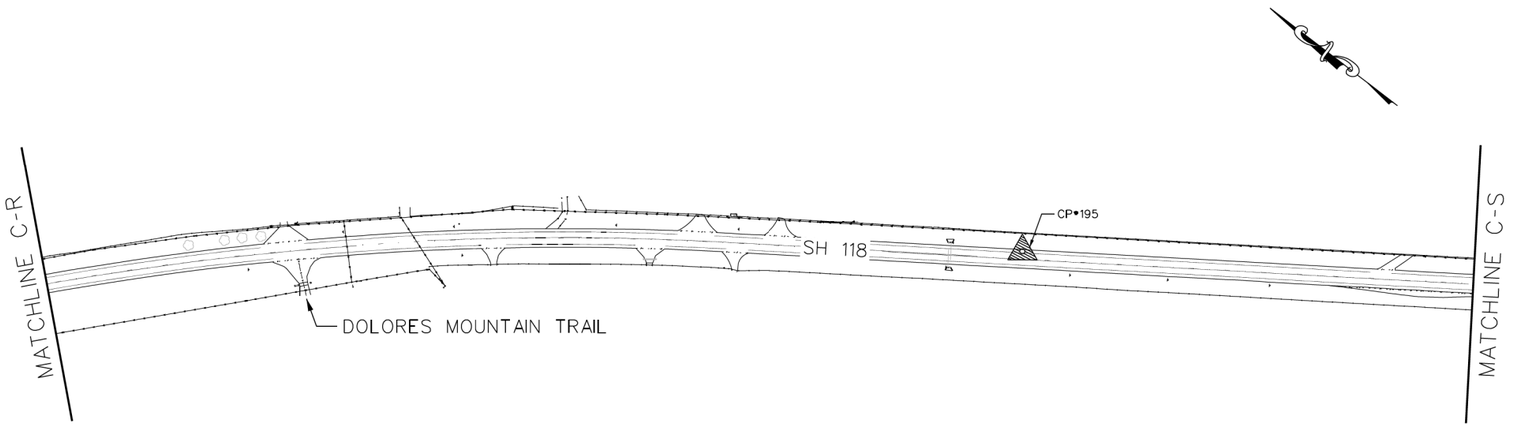

GRAPHIC SCALE
0 125 250 375
1" = 250'
HORIZONTAL SCALE

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TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	69 OF 120

Texas Department of Transportation

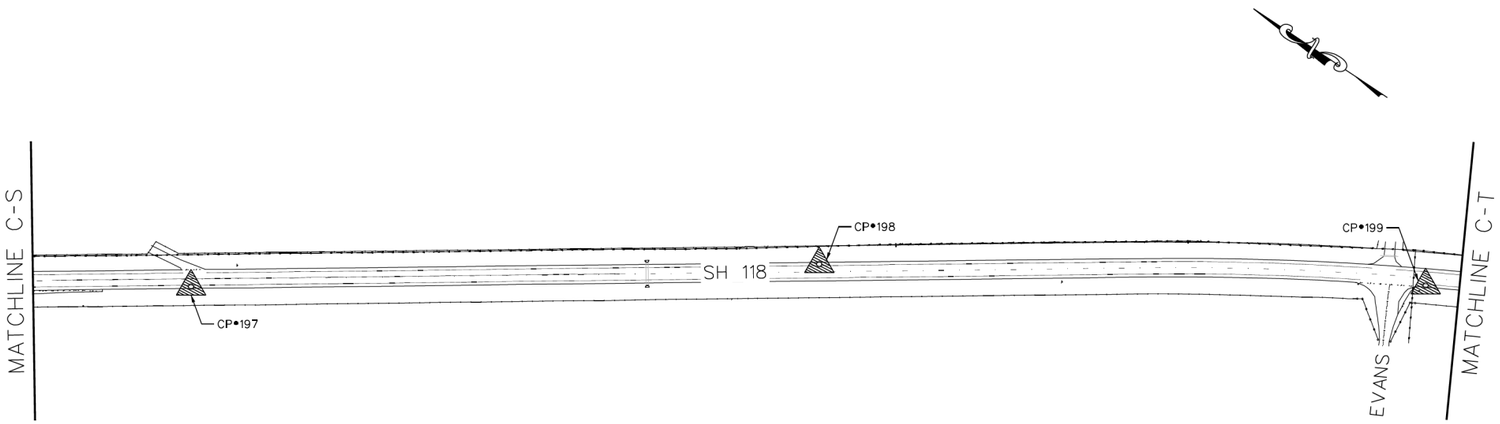
SH 118

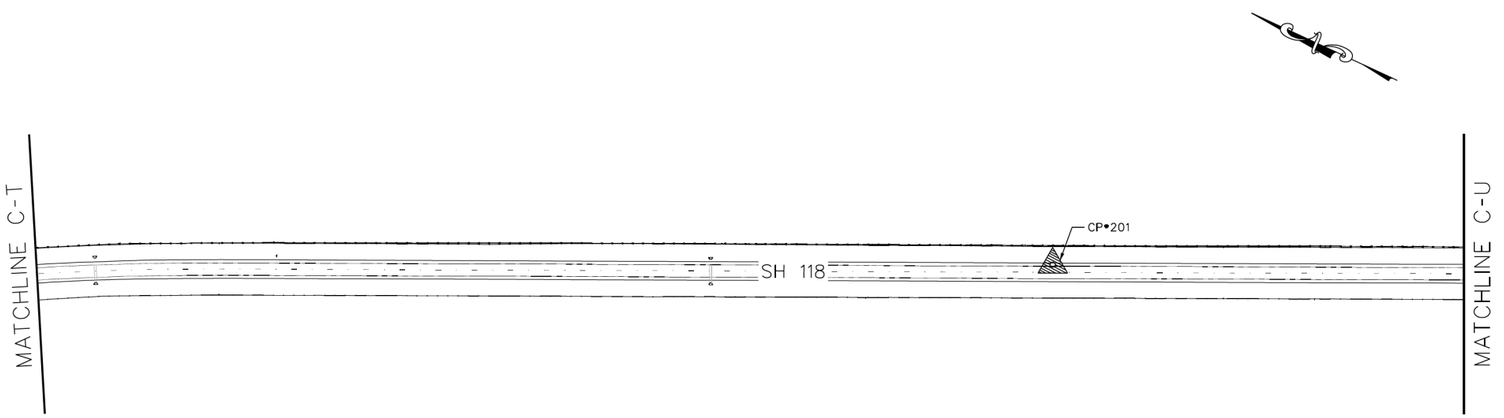
ROADWAY
SECONDARY CONTROL

2023 SHEET 2 OF 8

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		40

DATE: 8/26/2023 4:07:38 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Survey Control Sheets/SH118 SECONDARY CONTROL 69.dgn





GRAPHIC SCALE
0 125 250 375
1" = 250'
HORIZONTAL SCALE

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TBPLS #10194622

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	70 OF 120

Texas Department of Transportation

SH 118

ROADWAY
SECONDARY CONTROL

2023 SHEET 3 OF 8

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		41

DATE: 8/26/2023 4:08:03 PM
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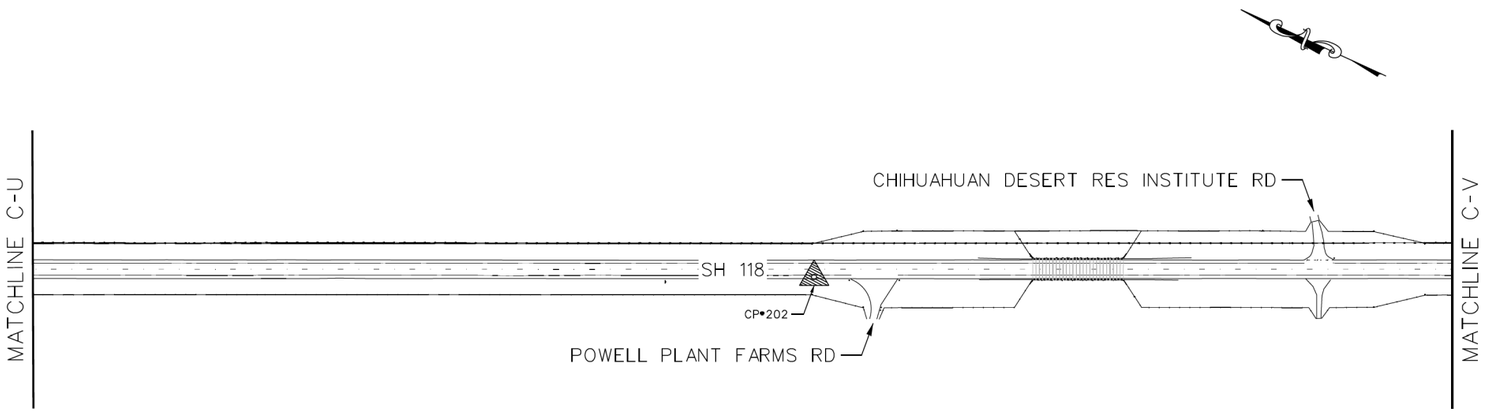

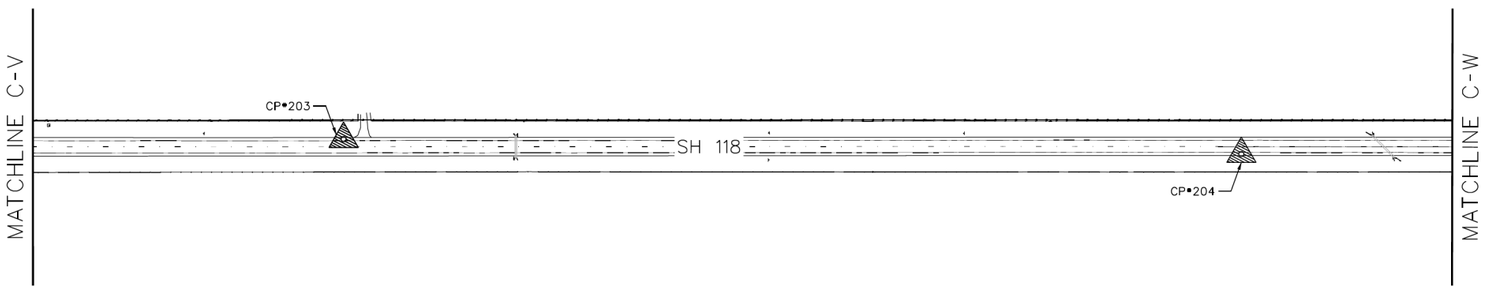

GRAPHIC SCALE
0 125 250 375
1" = 250'
HORIZONTAL SCALE

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T3PE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	71 OF 120

Texas Department of Transportation

SH 118

ROADWAY
SECONDARY CONTROL

2023 SHEET 4 OF 8

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		42

DATE: 8/26/2023 4:08:30 PM
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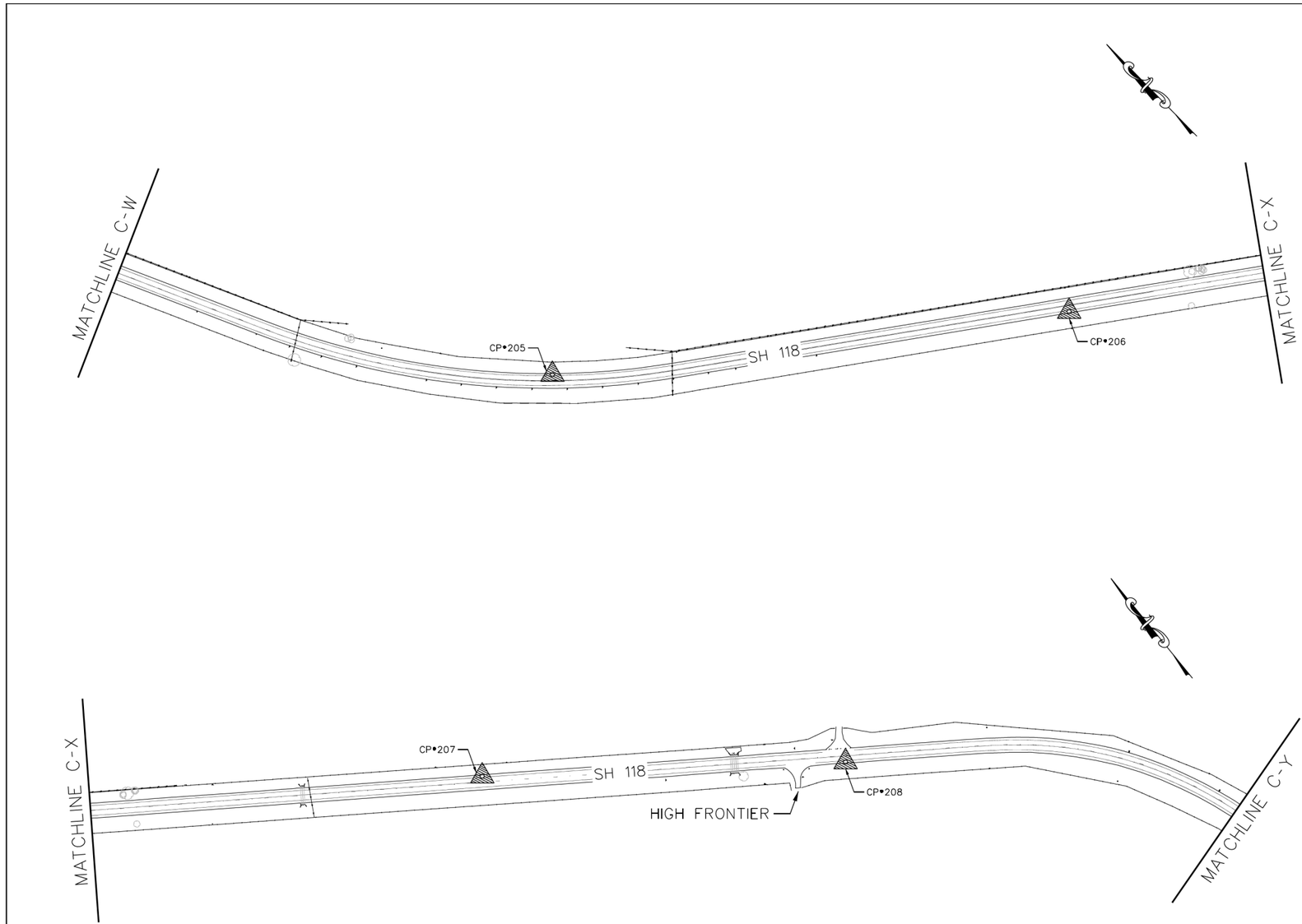

GRAPHIC SCALE

0 125 250 375

1" = 250'
HORIZONTAL SCALE

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TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	C26	72 OF 120

Texas Department of Transportation

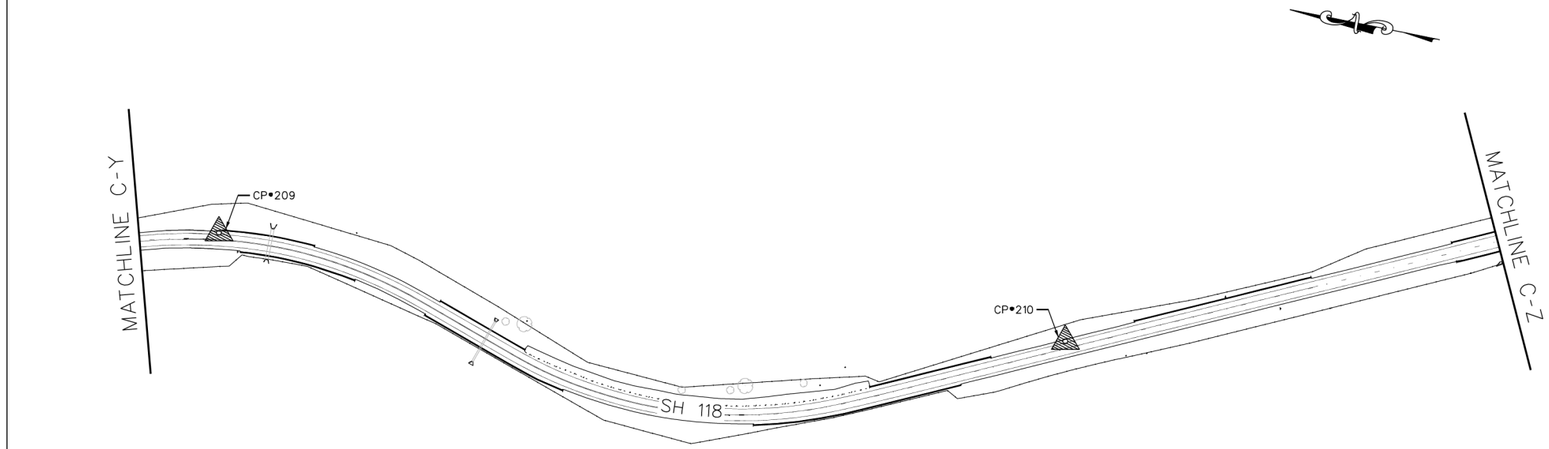
SH 118

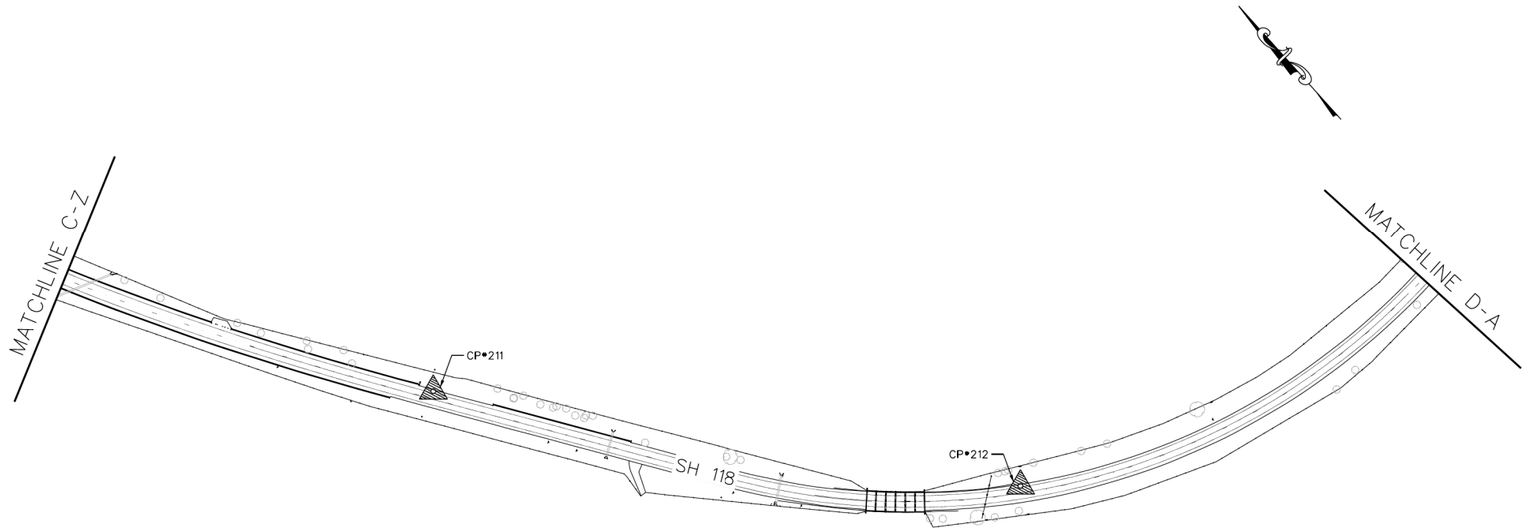
ROADWAY
SECONDARY CONTROL

2023 SHEET 5 OF 8

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		43

DATE: 8/26/2023 4:08:57 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Survey Control Sheets/SH118 SECONDARY CONTROL 72.dgn





GRAPHIC SCALE
0 125 250 375
1" = 250'
HORIZONTAL SCALE

NOTES:

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P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	73 OF 120

Texas Department of Transportation

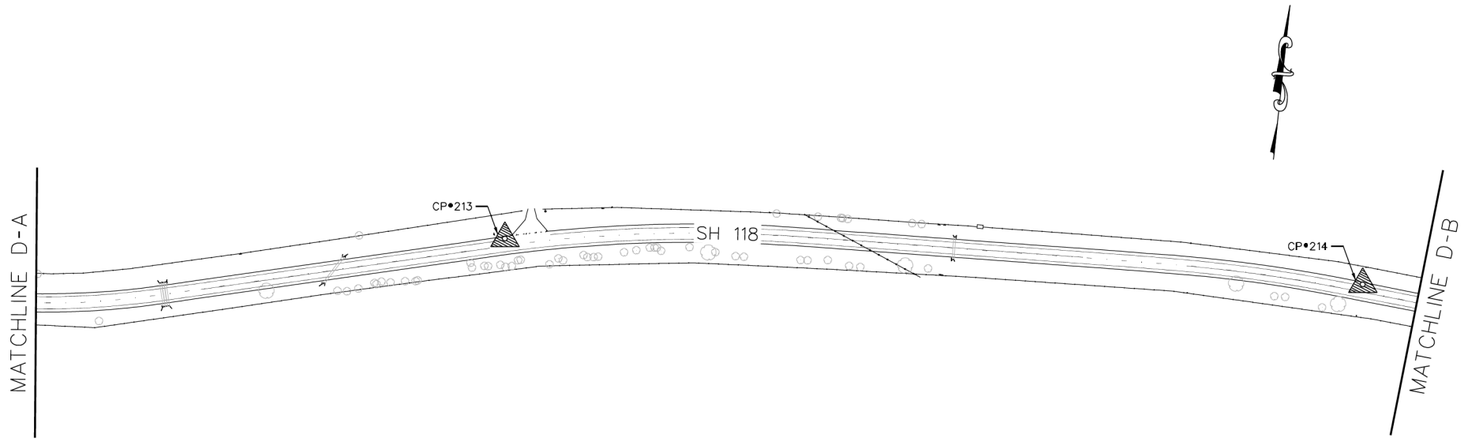
SH 118

ROADWAY
SECONDARY CONTROL

2023 *SHEET 6 OF 8*

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		44

DATE: 8/26/2023 4:09:22 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Survey Control Sheets/SH118 SECONDARY CONTROL 73.dgn



GRAPHIC SCALE
0 125 250 375
1" = 250'
HORIZONTAL SCALE

NOTES:

1. ALL COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. ALL COORDINATES SHOWN HERE ON ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED ADJUSTMENT FACTOR OF 1.0002.
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P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194822

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	74 OF 120

Texas Department of Transportation

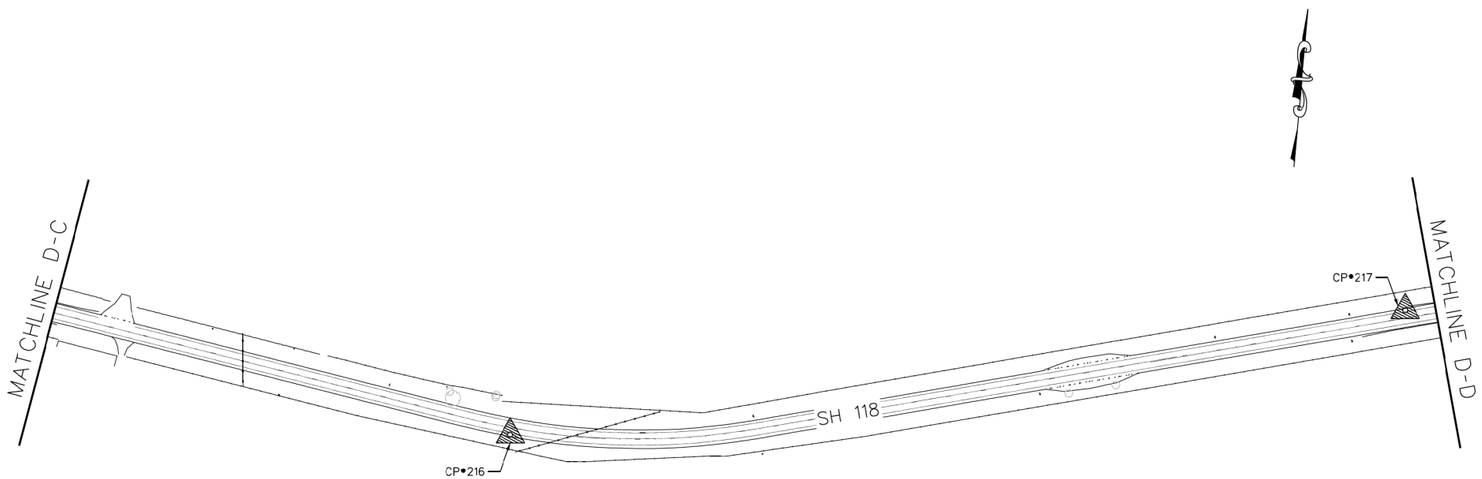
SH 118

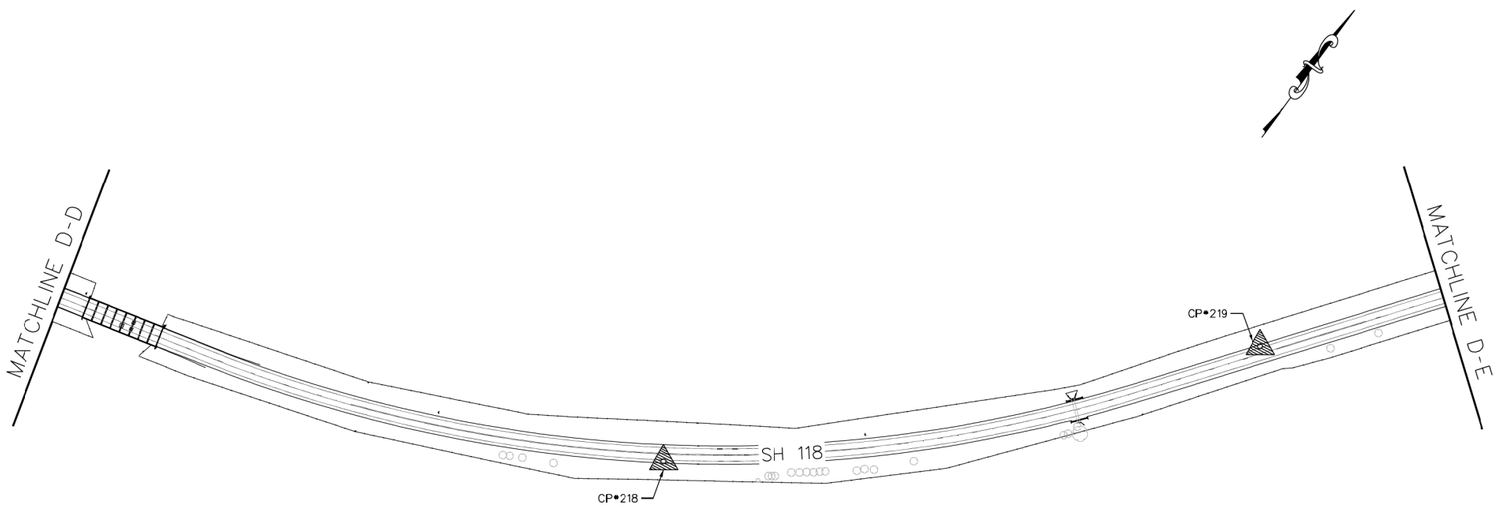
ROADWAY
SECONDARY CONTROL

2023 *SHEET 7 OF 8*

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		45

DATE: 8/26/2023 4:09:46 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Survey Control Sheets/SH118 SECONDARY CONTROL 74.dgn





GRAPHIC SCALE
0 125 250 375
1" = 250'
HORIZONTAL SCALE

NOTES:

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ENGINEERING · SURVEY · CONSTRUCTION
4800 FREDERICKSBURG RD SUITE 200SL
SAN ANTONIO, TX 78229
P:210-208-9400 F:210-208-9401
TBPE #F-21809
TBPLS #10194622

Texas Department of Transportation

SH 118
CONTROL INDEX

FED RD DIV NO	STATE	PROJECT NO			HWY NO
	TEXAS	CSJ 0415-01-026			SH 118
STATE DIST NO	COUNTY	CONT	SECT	JOB	SHEET NO
24	DAVIS	0415	01	026	75 OF 120

Texas Department of Transportation

SH 118

ROADWAY
SECONDARY CONTROL

2023 SHEET 8 OF 8

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		46

DATE: 8/27/2021 4:10:12 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Survey Control Sheets/SH118 SECONDARY CONTROL 75.dgn

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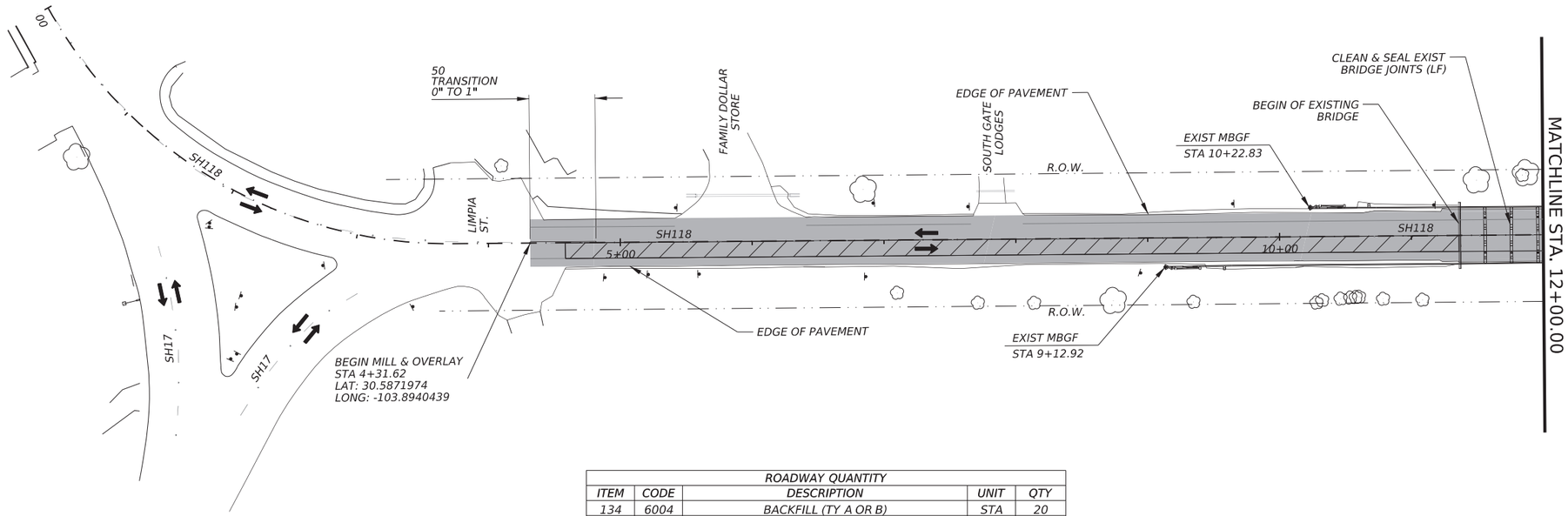


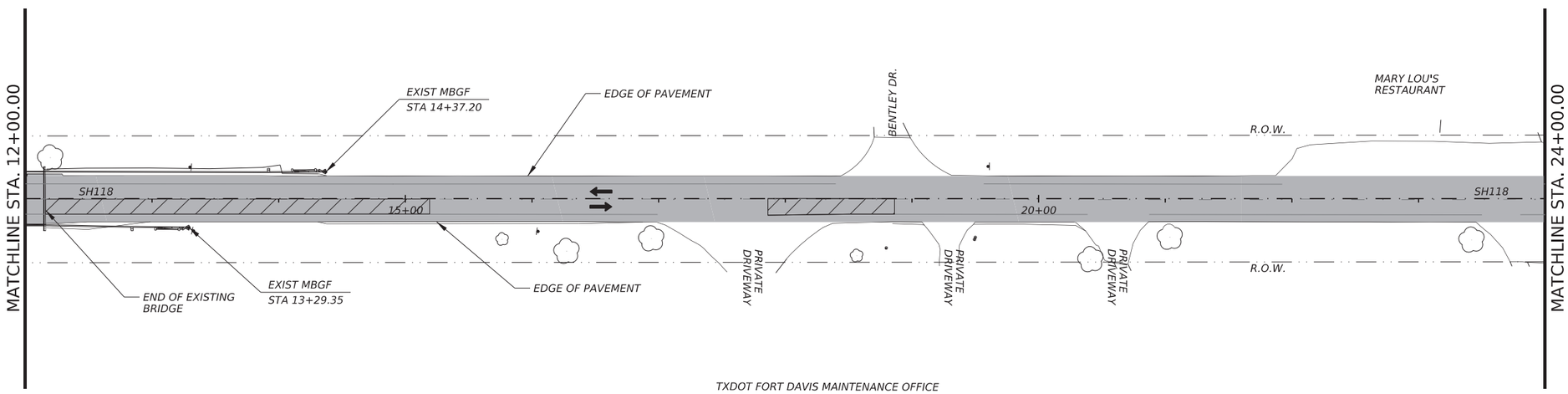
NOTES:

1. FLEXIBLE PAVEMENT STRUCTURE REAPAIRS ARE FOR THE CONTRACTOR PURPOSES ONLY. EXACT LOCATIONS MUST BE VERIFIED WITH THE ENGINEER.

LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	20
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	1427
354	6001	PLAN & TEXT ASPH CONC PAV (0" TO 1")	SY	234
354	6043	PLANE ASPH CONC PAV (1")	SY	9832
438	6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	LF	126
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1082
3002	6001	MEMBRANE UNDERSEAL	GAL	1966



TXDOT FORT DAVIS MAINTENANCE OFFICE

STATE OF TEXAS
ANTONIO SANTANA
93727
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PROFESSIONAL ENGINEER

Antonio Santana PE

08/29/23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

ROADWAY PLAN LAYOUT

SHEET 1 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		47

DATE: 8/28/2023 5:27:27 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Plan Layout/SH 118 Plan Layout 1.dgn

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NOTES:

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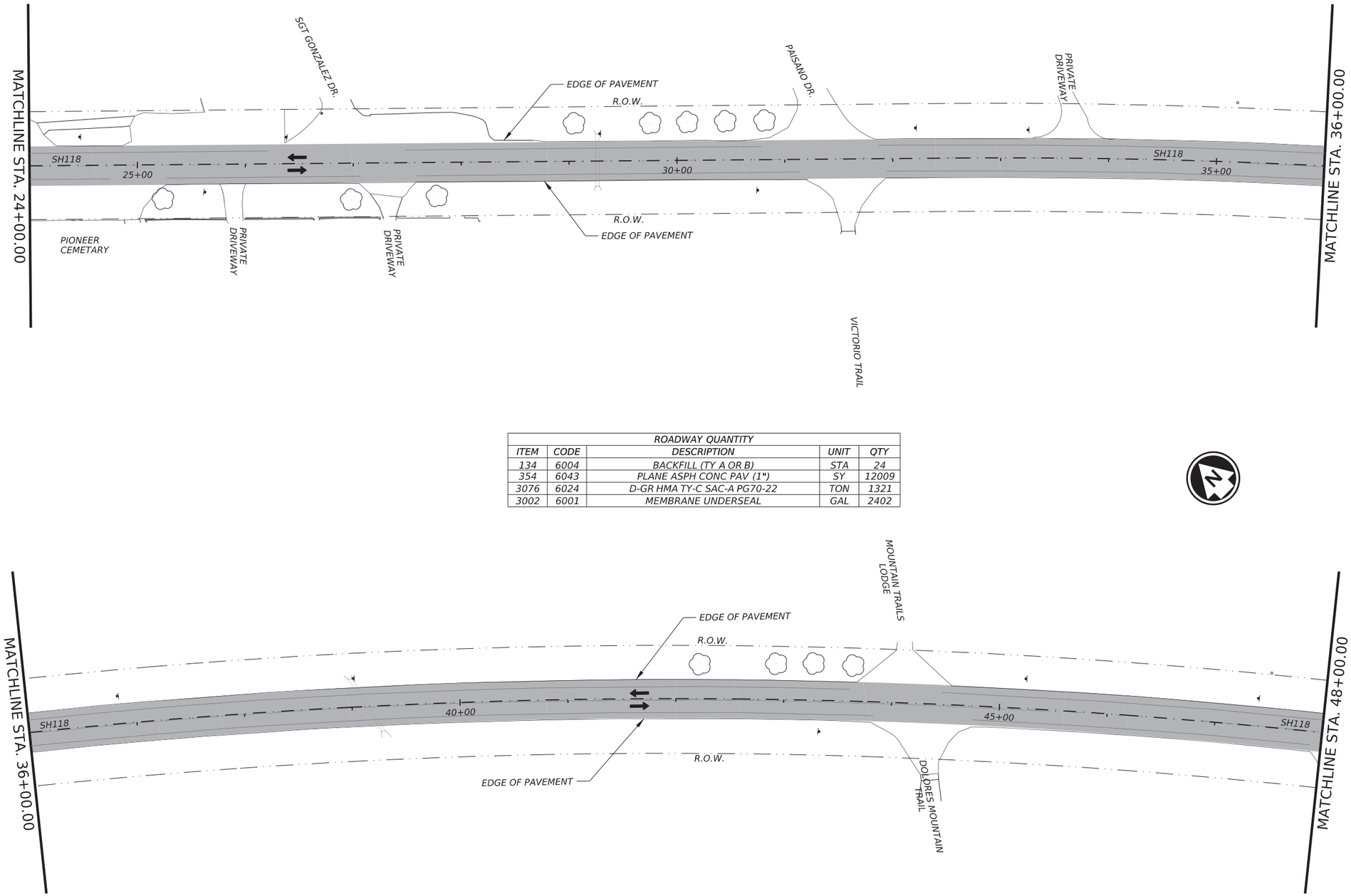
LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W



ROADWAY QUANTITY

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134	6004	BACKFILL (TY A OR B)	STA	24
354	6043	PLANE ASPH CONC PAV (1")	SY	12009
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1321
3002	6001	MEMBRANE UNDERSEAL	GAL	2402

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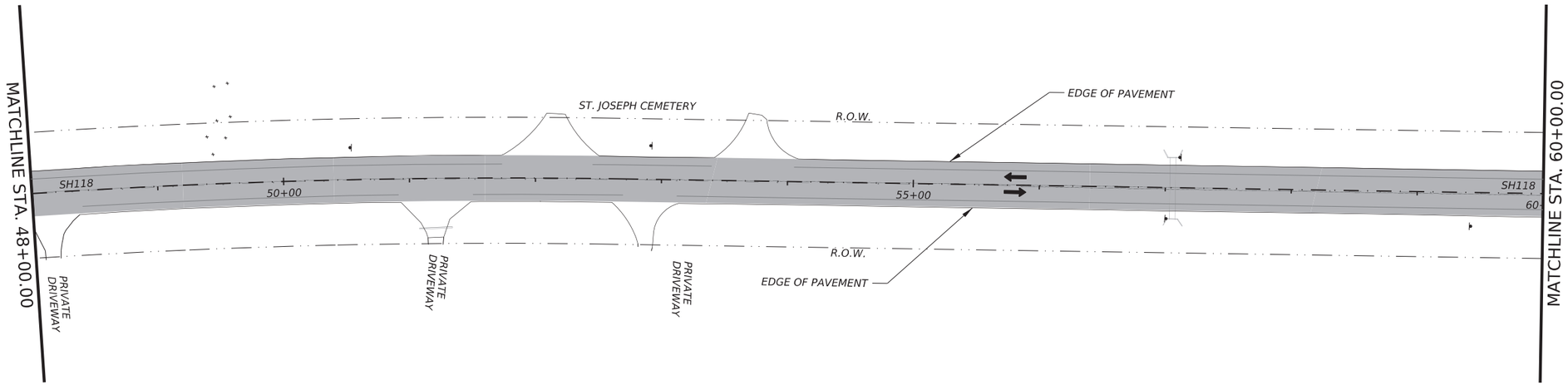
SH 118

ROADWAY PLAN LAYOUT

SHEET 2 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		48



NOTES:

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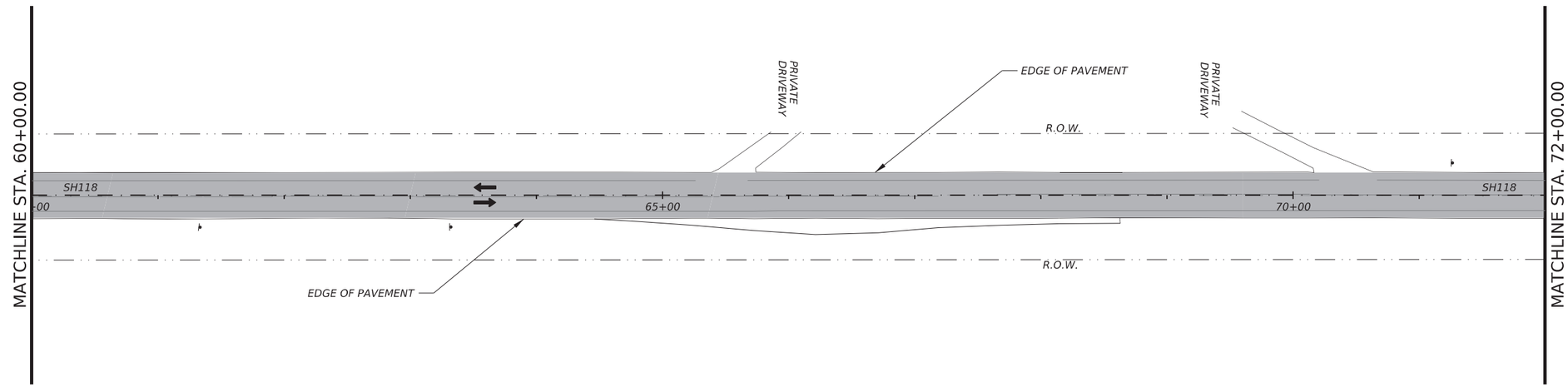
LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
354	6043	PLANE ASPH CONC PAV (1")	SY	10390
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1143
3002	6001	MEMBRANE UNDERSEAL	GAL	2078



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Antonio Santana PE

08/29/23

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Texas Department of Transportation

SH 118

ROADWAY
PLAN LAYOUT

SHEET 3 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		49

DATE: 8/28/2023 5:28:05 PM
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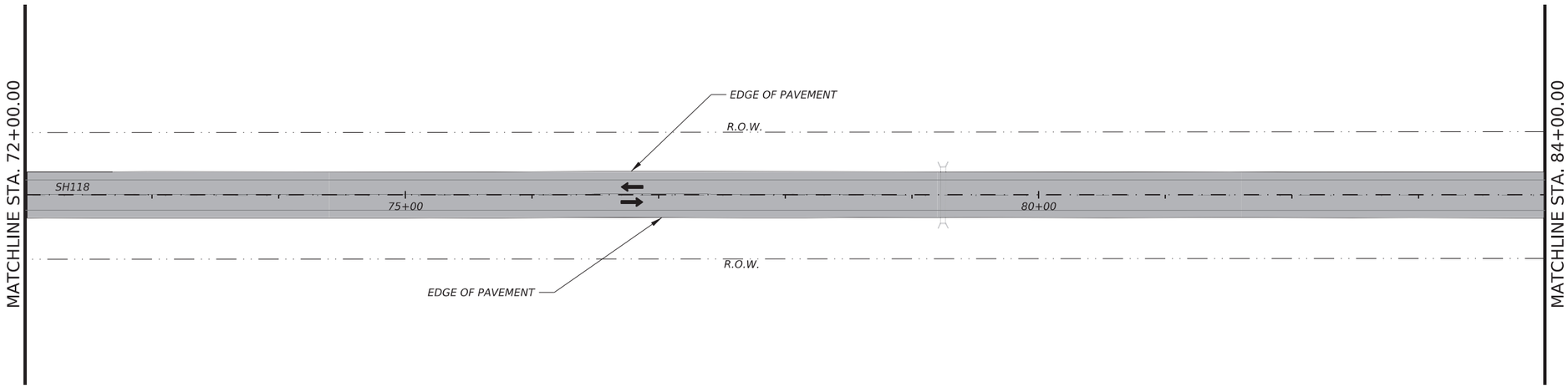


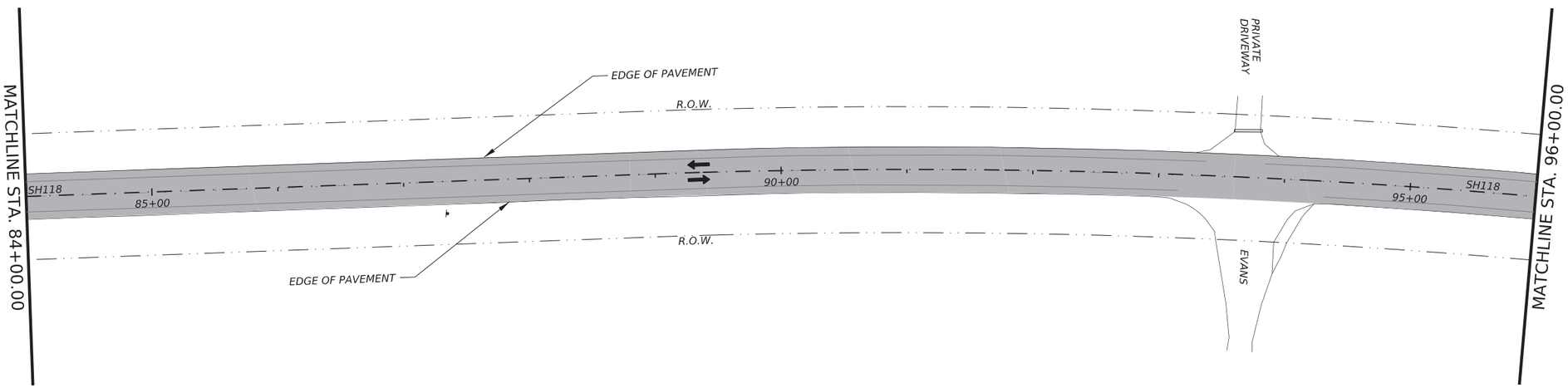
NOTES:

1. FLEXIBLE PAVEMENT STRUCTURE REAPAIRS ARE FOR THE CONTRACTOR PURPOSES ONLY. EXACT LOCATIONS MUST BE VERIFIED WITH THE ENGINEER.

LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
354	6043	PLANE ASPH CONC PAV (1")	SY	9851
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1084
3002	6001	MEMBRANE UNDERSEAL	GAL	1970



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SH 118

ROADWAY PLAN LAYOUT

SHEET 4 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		50

DATE: 8/28/2023 5:28:27 PM
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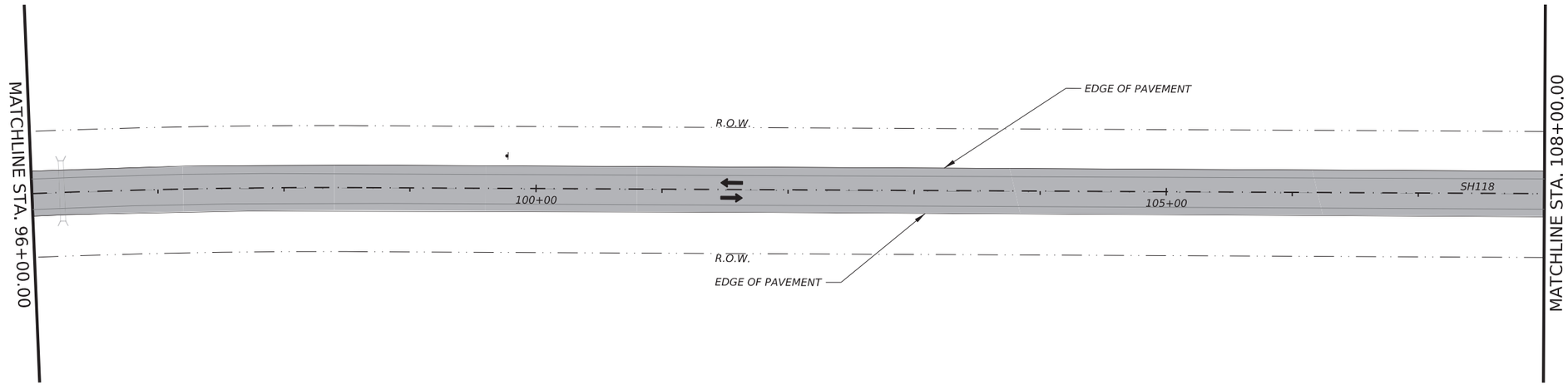

NOTES:

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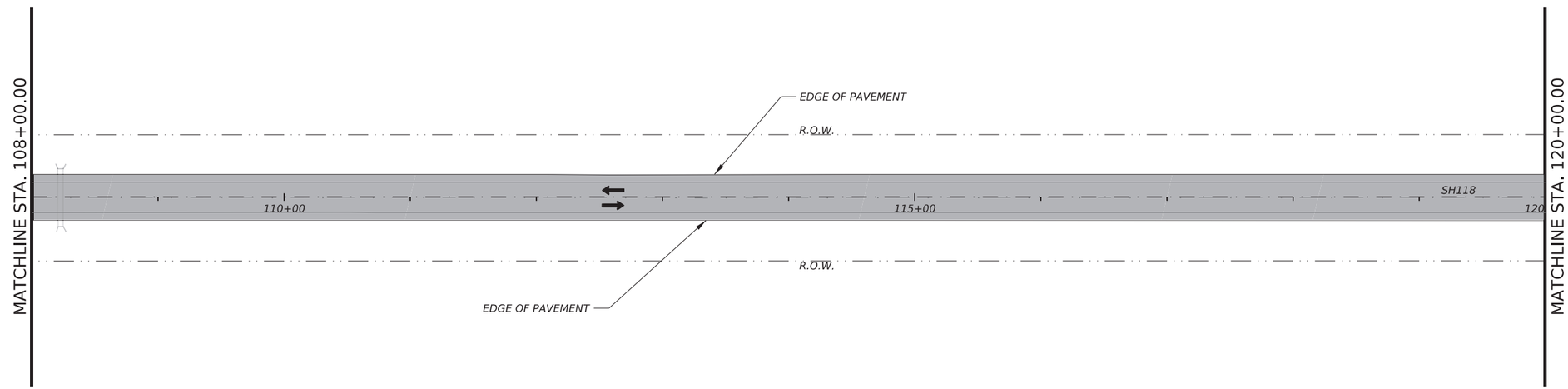
LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
354	6043	PLANE ASPH CONC PAV (1")	SY	9600
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1056
3002	6001	MEMBRANE UNDERSEAL	GAL	1920



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Antonio Santana PE

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Texas Department of Transportation

SH 118

ROADWAY PLAN LAYOUT

SHEET 5 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		51

DATE: 8/28/2023 5:28:47 PM
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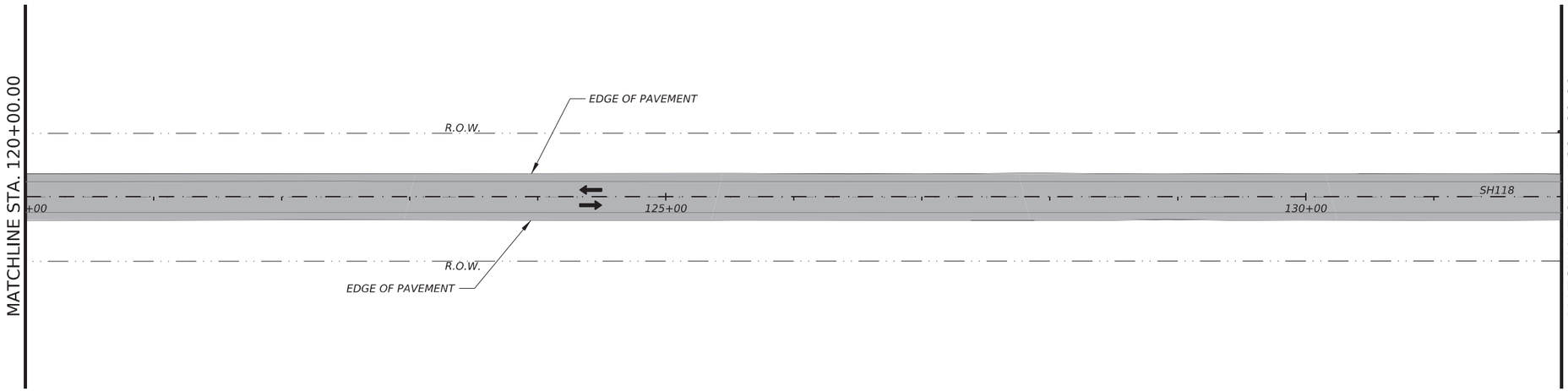

NOTES:

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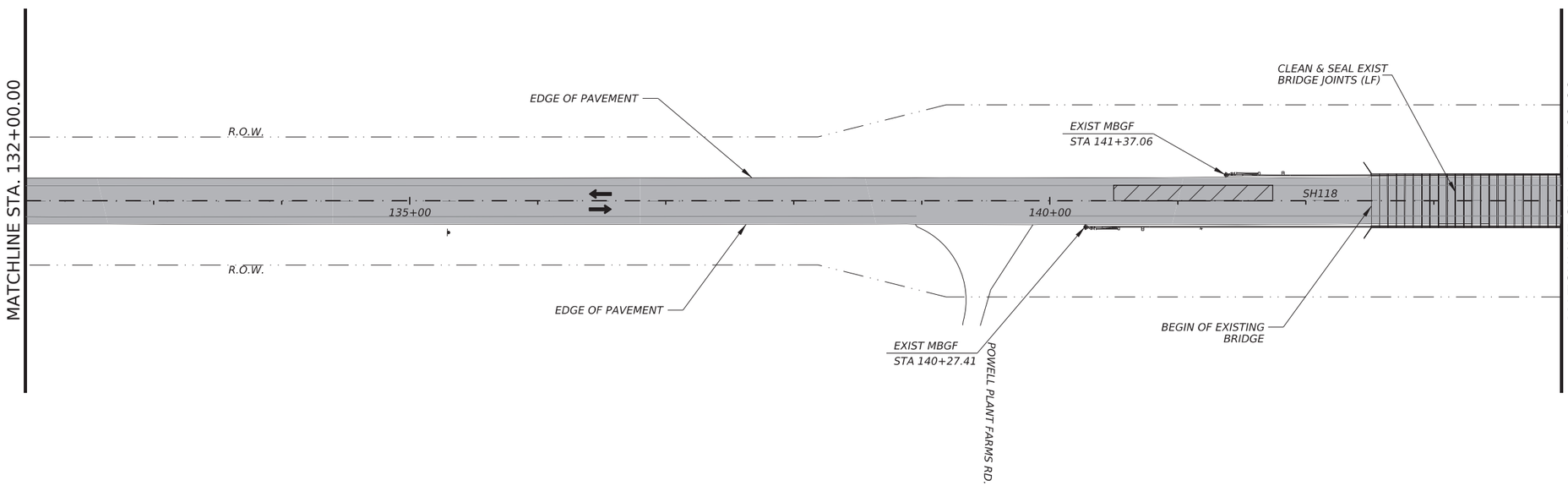
LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	169
354	6043	PLANE ASPH CONC PAV (1")	SY	9600
438	6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	LF	210
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1056
3002	6001	MEMBRANE UNDERSEAL	GAL	1920



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SH 118

ROADWAY PLAN LAYOUT

SHEET 6 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		52

DATE: 8/28/2023 5:34:16 PM
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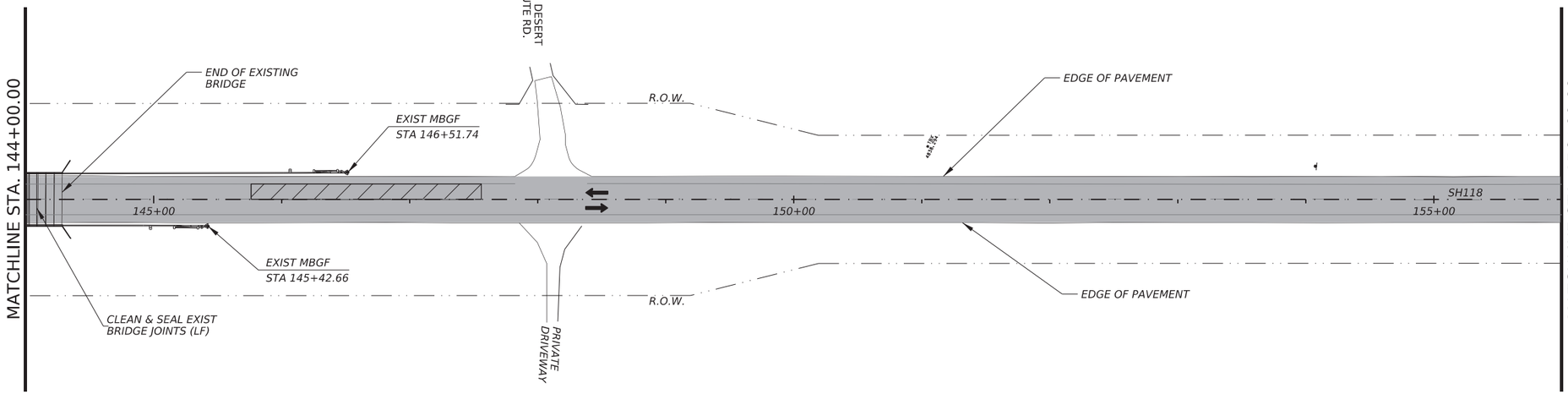

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LEGEND:

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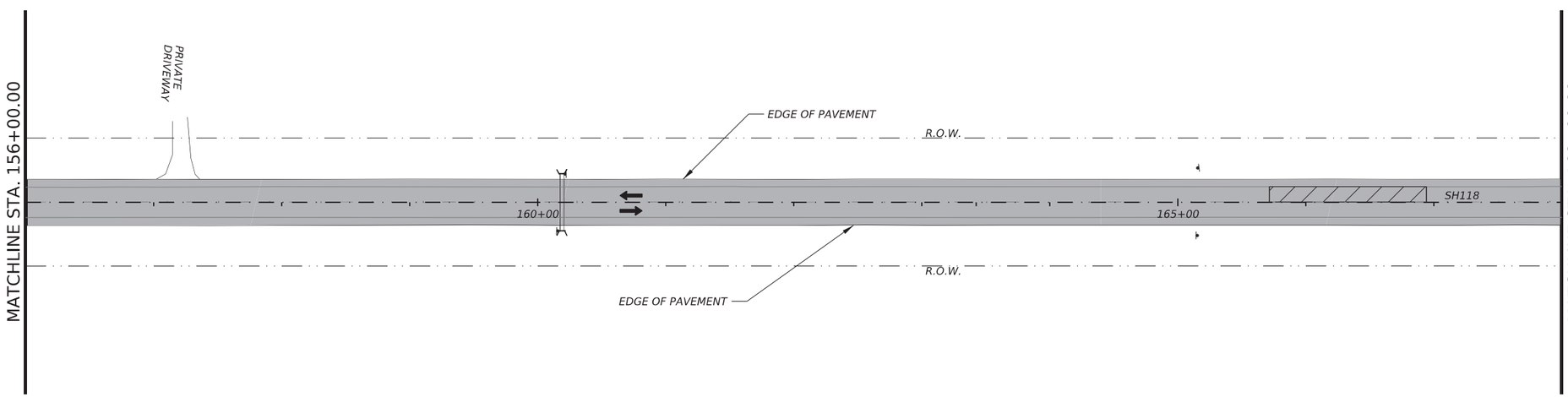
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	403
354	6043	PLANE ASPH CONC PAV (1")	SY	9758
438	6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	LF	42
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1073
3002	6001	MEMBRANE UNDERSEAL	GAL	1952



STATE OF TEXAS
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Antonio Santana PE

08/29/23

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SCALE IN FEET

Texas Department of Transportation

SH 118

ROADWAY PLAN LAYOUT

SHEET 7 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		53

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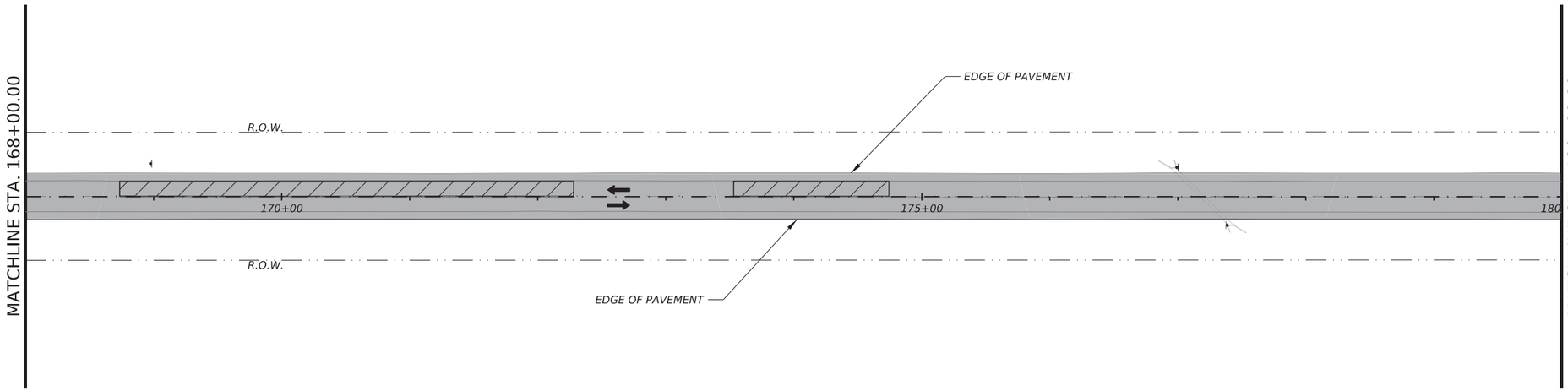

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LEGEND:

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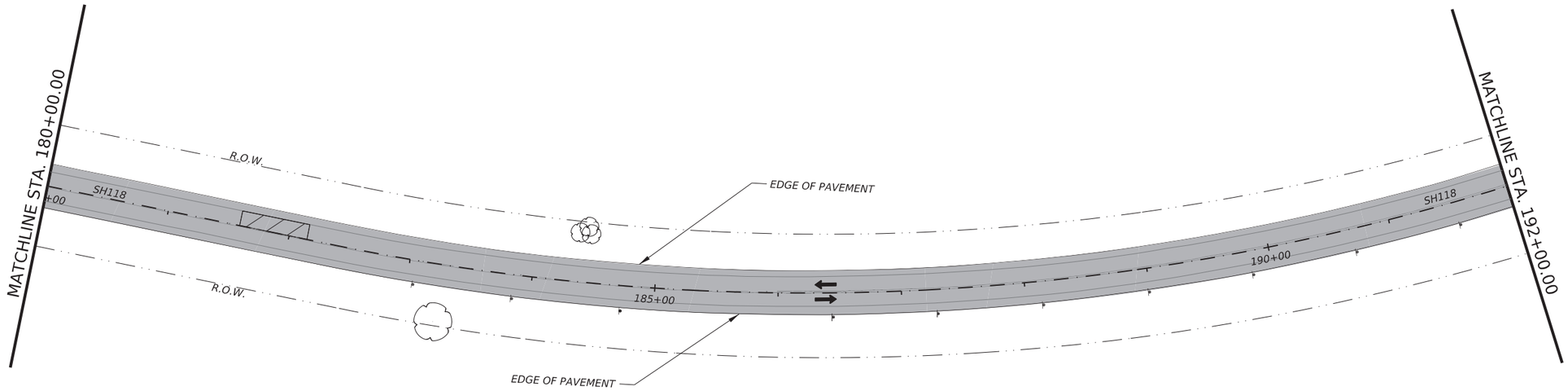
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	699
354	6043	PLANE ASPH CONC PAV (1")	SY	9600
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1056
3002	6001	MEMBRANE UNDERSEAL	GAL	1920



STATE OF TEXAS
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Antonio Santana PE

08/29/23

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Texas Department of Transportation

SH 118

ROADWAY
PLAN LAYOUT

SHEET 8 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		54

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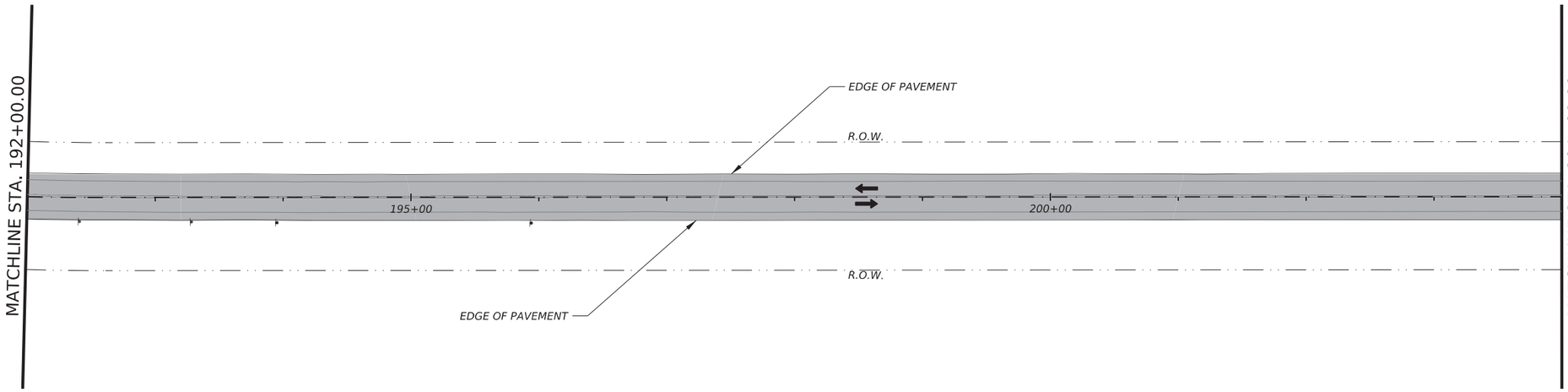

NOTES:

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LEGEND:

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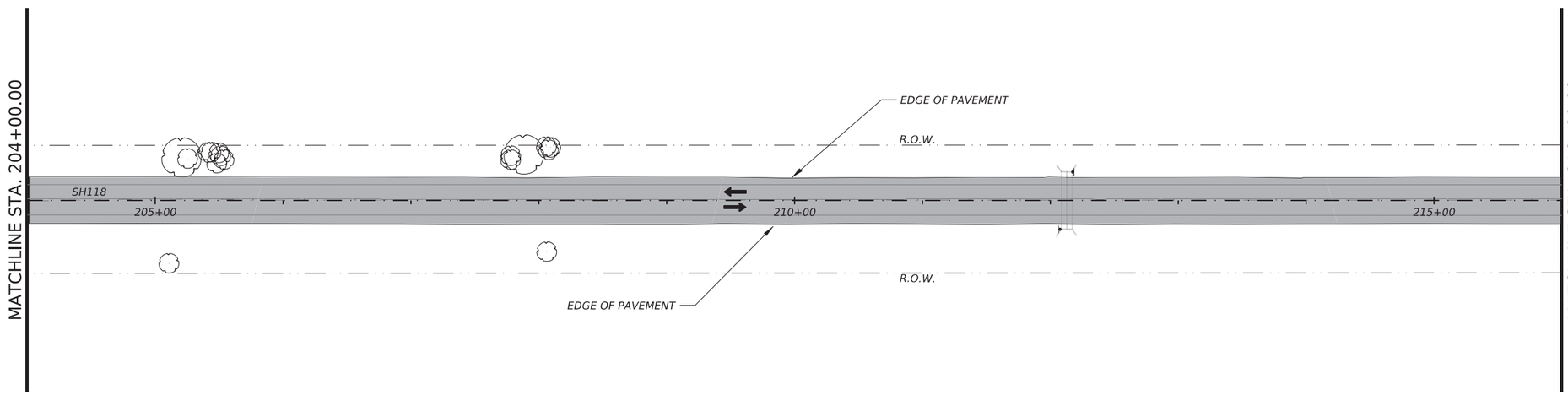
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
354	6043	PLANE ASPH CONC PAV (1")	SY	9600
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1056
3002	6001	MEMBRANE UNDERSEAL	GAL	1920



STATE OF TEXAS
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Texas Department of Transportation

SH 118

ROADWAY PLAN LAYOUT

SHEET 9 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		55

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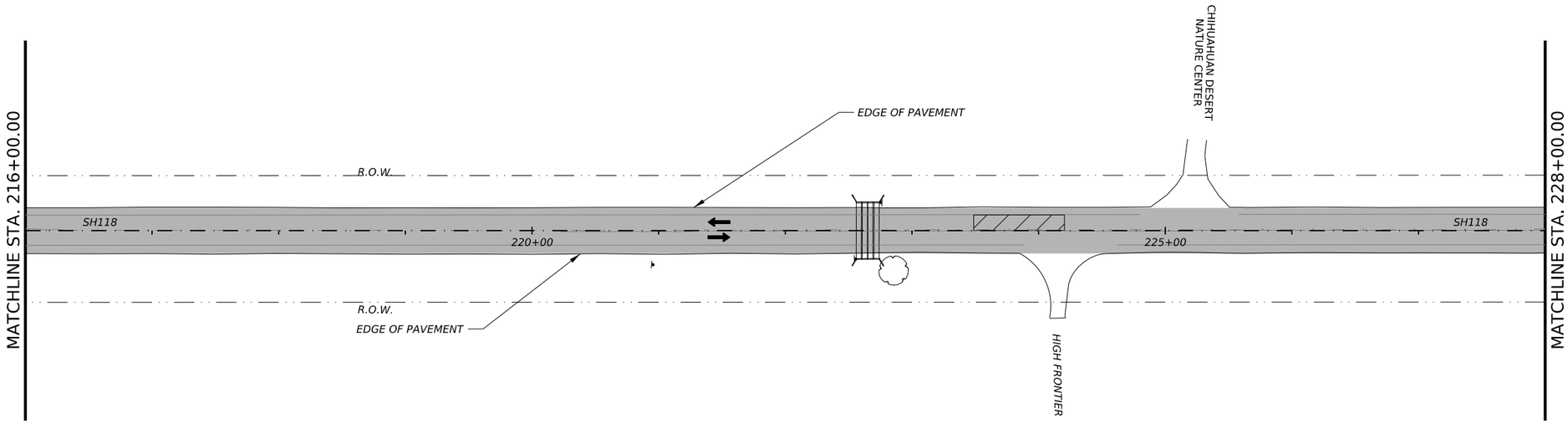

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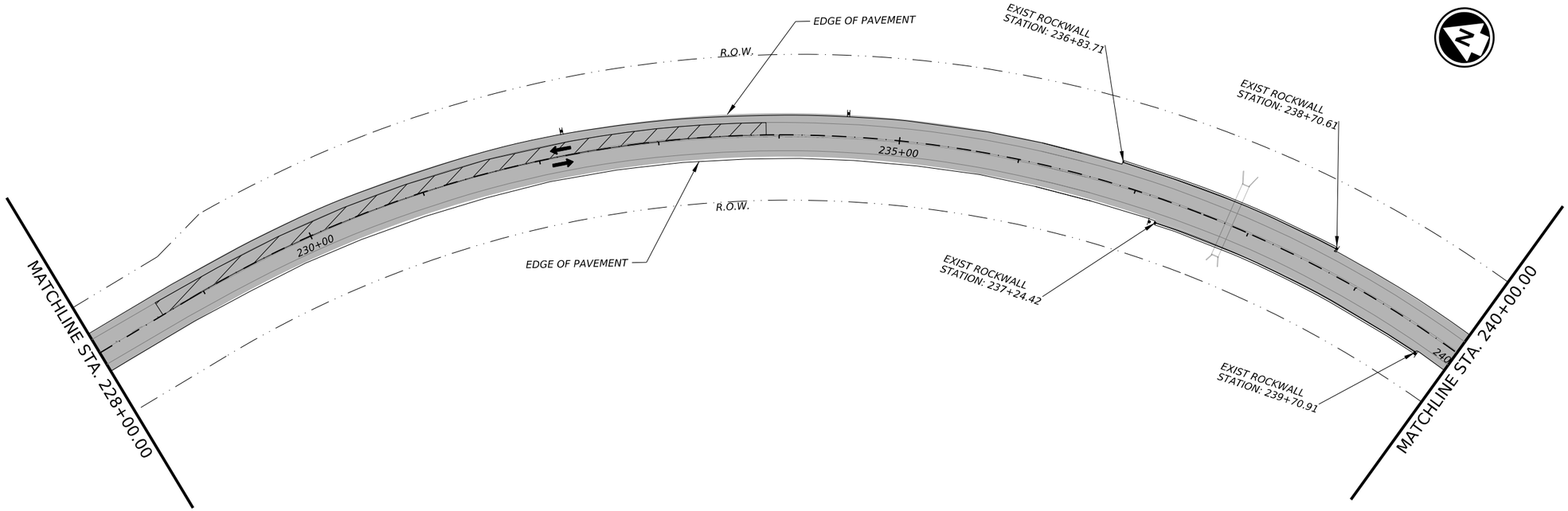
LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	731
354	6043	PLANE ASPH CONC PAV (1")	SY	9894
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1088
3002	6001	MEMBRANE UNDERSEAL	GAL	1979



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Antonio Santana PE

08/29/23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

ROADWAY PLAN LAYOUT

SHEET 10 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		56

DATE: 8/28/2023 5:30:34 PM
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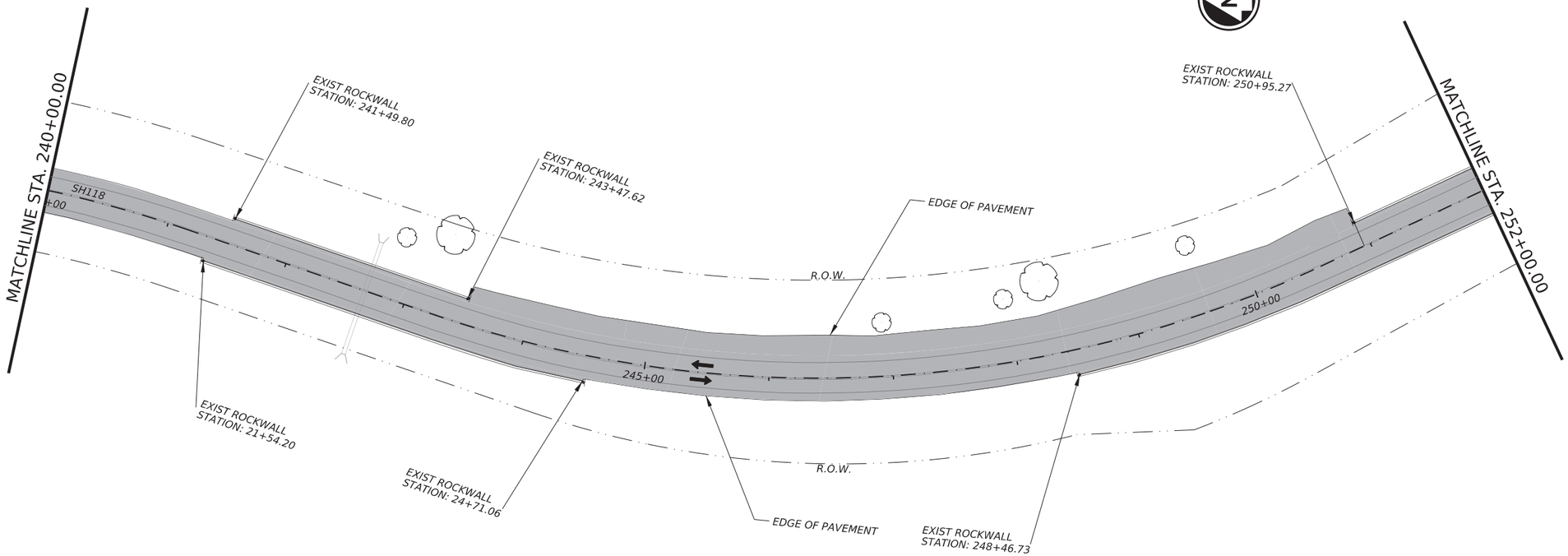

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LEGEND:

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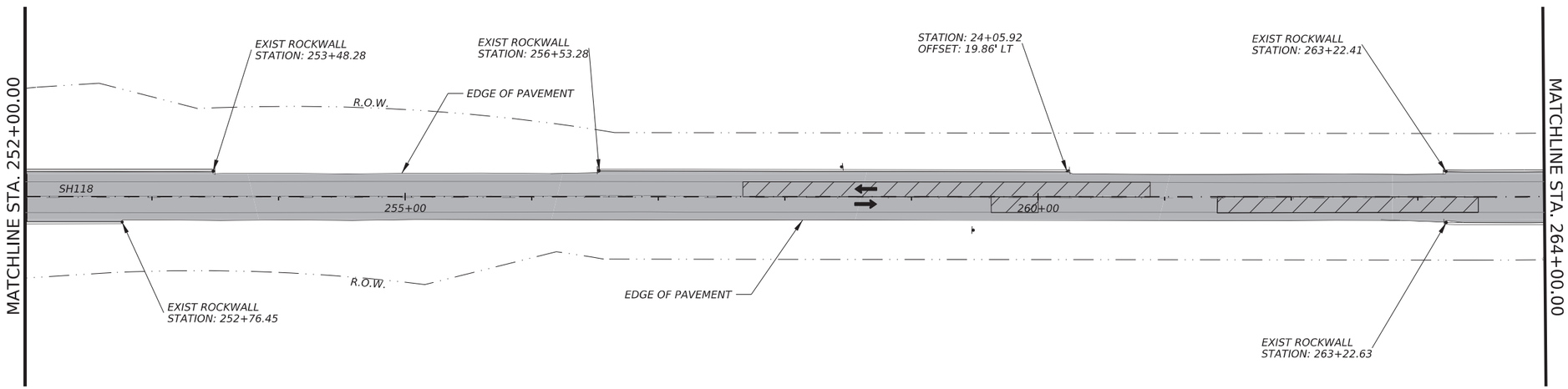
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	760
354	6043	PLANE ASPH CONC PAV (1")	SY	11262
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1239
3002	6001	MEMBRANE UNDERSEAL	GAL	2252



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SH 118

ROADWAY PLAN LAYOUT

SHEET 11 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		57

DATE: 8/28/2023 5:30:54 PM
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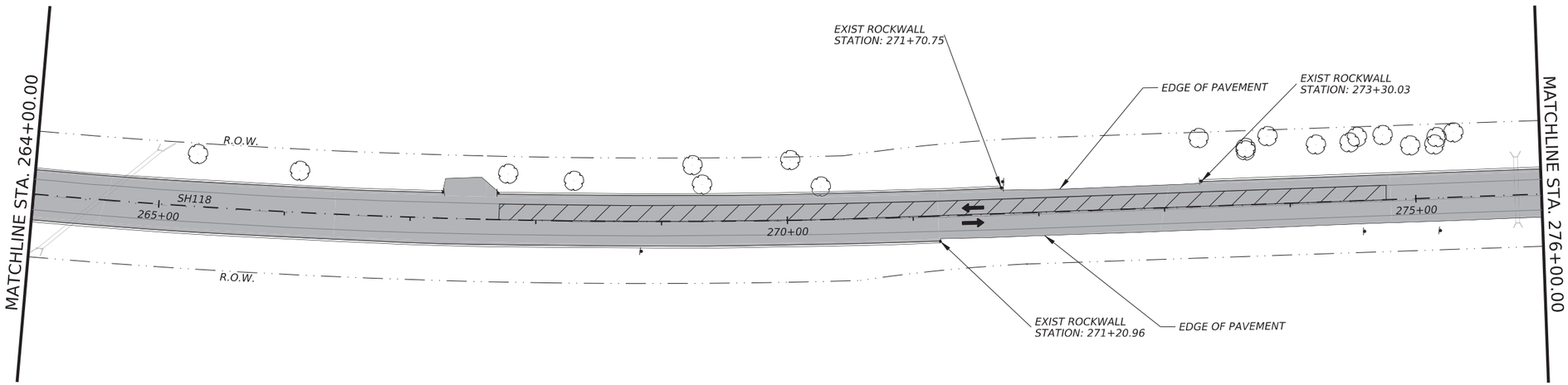


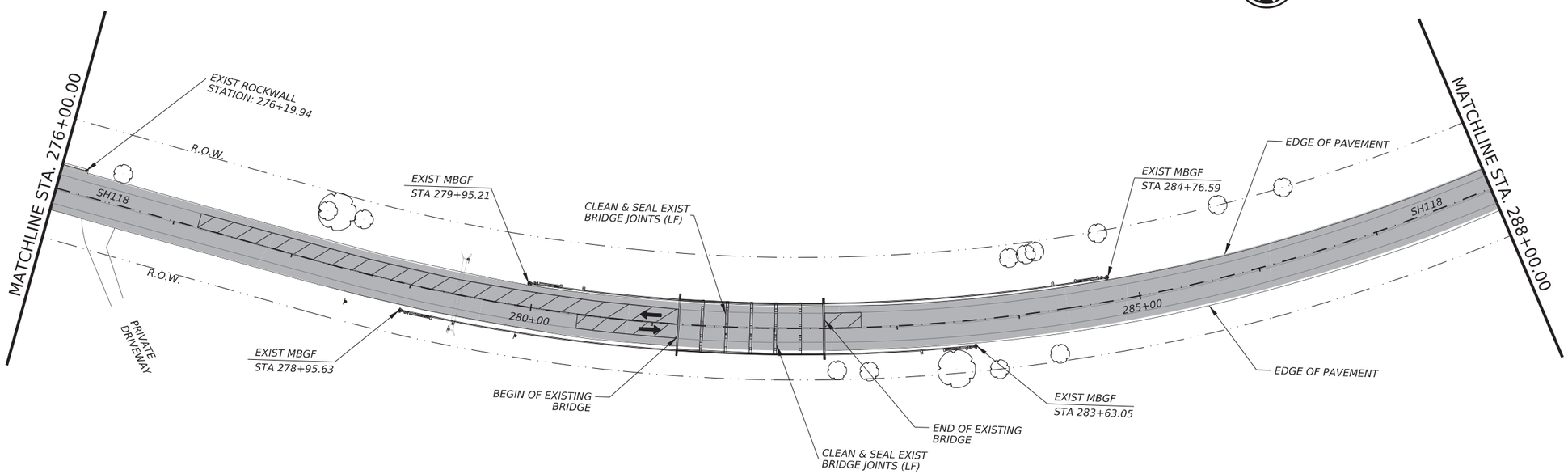
NOTES:

1. FLEXIBLE PAVEMENT STRUCTURE REAPAIRS ARE FOR THE CONTRACTOR PURPOSES ONLY. EXACT LOCATIONS MUST BE VERIFIED WITH THE ENGINEER.

LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	1635
354	6043	PLANE ASPH CONC PAV (1")	SY	10109
438	6002	CLEANING AND SEALING EXISTING JOINTS (CL3)	LF	210
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1112
3002	6001	MEMBRANE UNDERSEAL	GAL	2022



STATE OF TEXAS
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PROFESSIONAL ENGINEER

Antonio Santana PE

08/29/23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

ROADWAY
PLAN LAYOUT

SHEET 12 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		58

DATE: 8/28/2023 5:31:15 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Plan Layout/SH 118 Plan Layout 12.dgn

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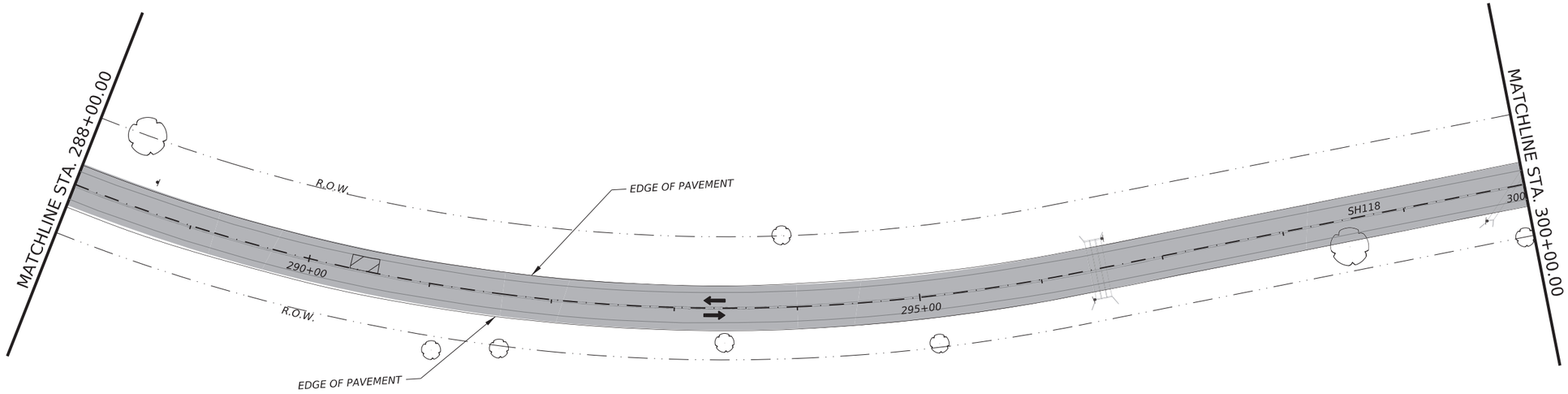


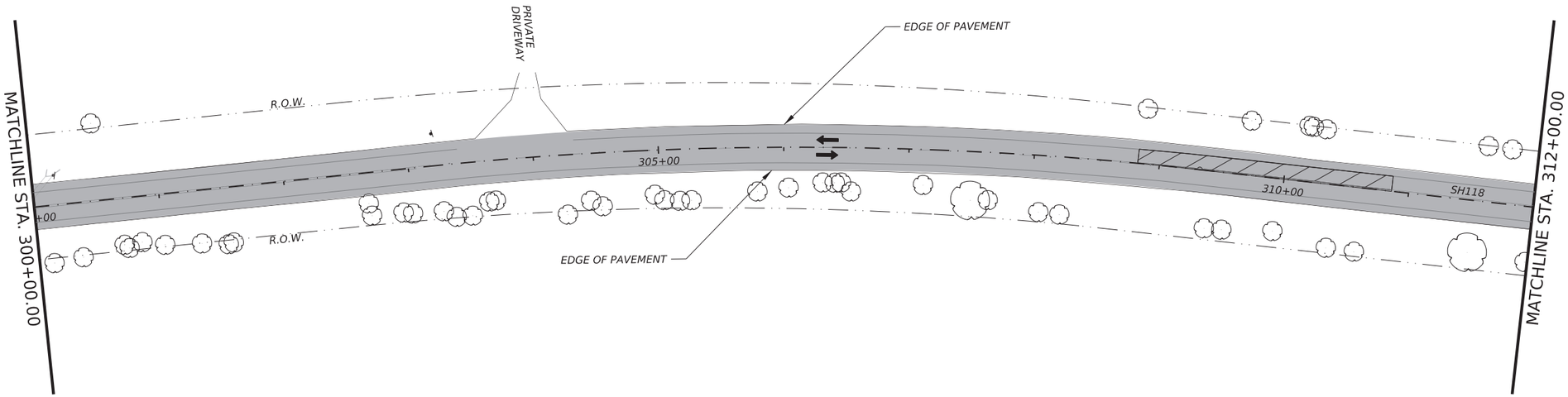
NOTES:

1. FLEXIBLE PAVEMENT STRUCTURE REAPAIRS ARE FOR THE CONTRACTOR PURPOSES ONLY. EXACT LOCATIONS MUST BE VERIFIED WITH THE ENGINEER.

LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	278
354	6043	PLANE ASPH CONC PAV (1")	SY	9778
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1076
3002	6001	MEMBRANE UNDERSEAL	GAL	1956



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SH 118

ROADWAY PLAN LAYOUT

SHEET 13 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		59

DATE: 8/28/2023 5:31:37 PM
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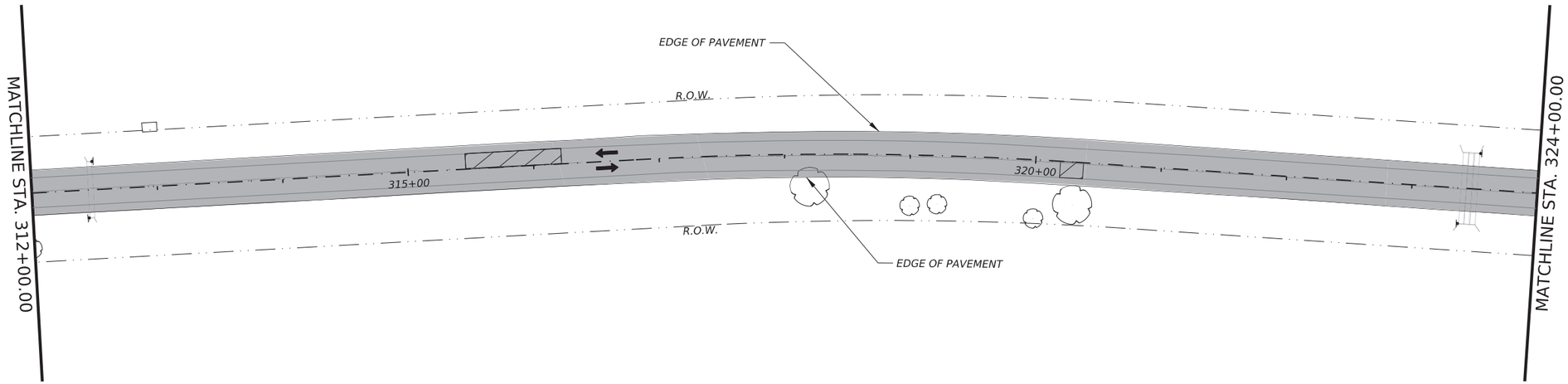


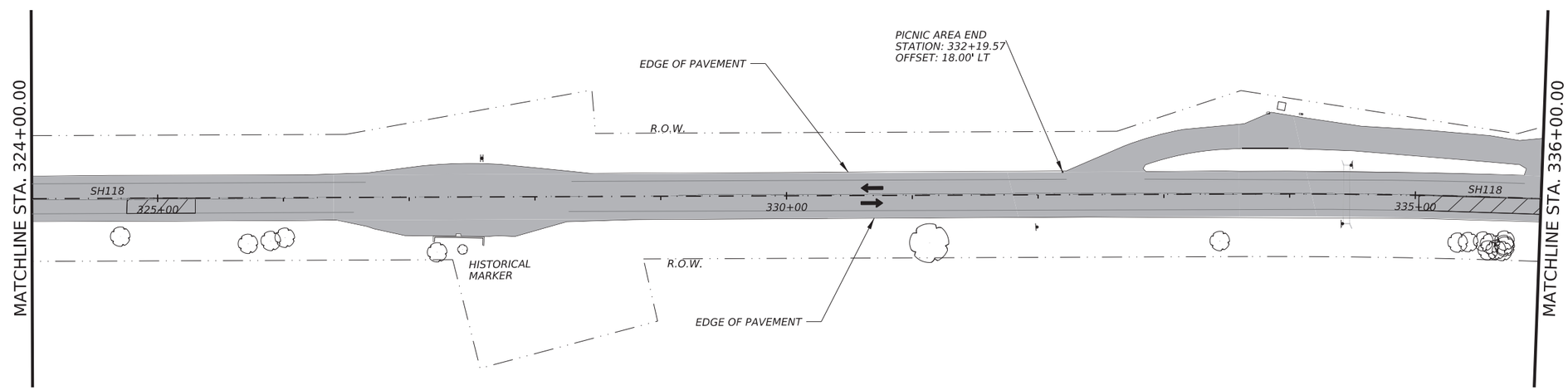
NOTES:

1. FLEXIBLE PAVEMENT STRUCTURE REAPAIRS ARE FOR THE CONTRACTOR PURPOSES ONLY. EXACT LOCATIONS MUST BE VERIFIED WITH THE ENGINEER.

LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	24
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	331
354	6043	PLANE ASPH CONC PAV (1")	SY	10782
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	1186
3002	6001	MEMBRANE UNDERSEAL	GAL	2156



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SH 118

ROADWAY PLAN LAYOUT

SHEET 14 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH0118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		60

DATE: 8/28/2023 5:31:57 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/Plan Layout/SH 118 Plan Layout 14.dgn

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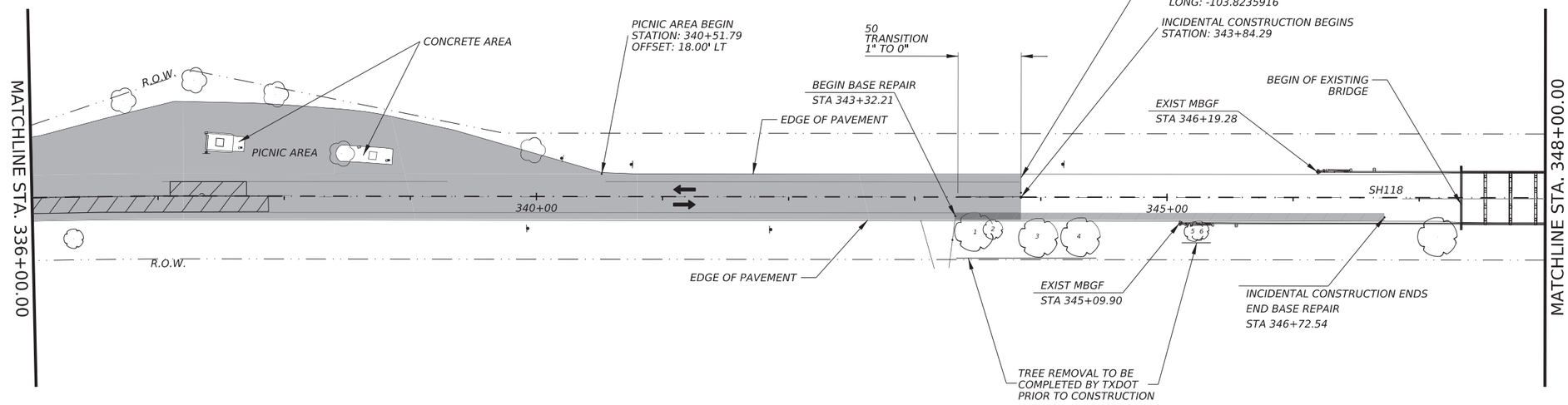


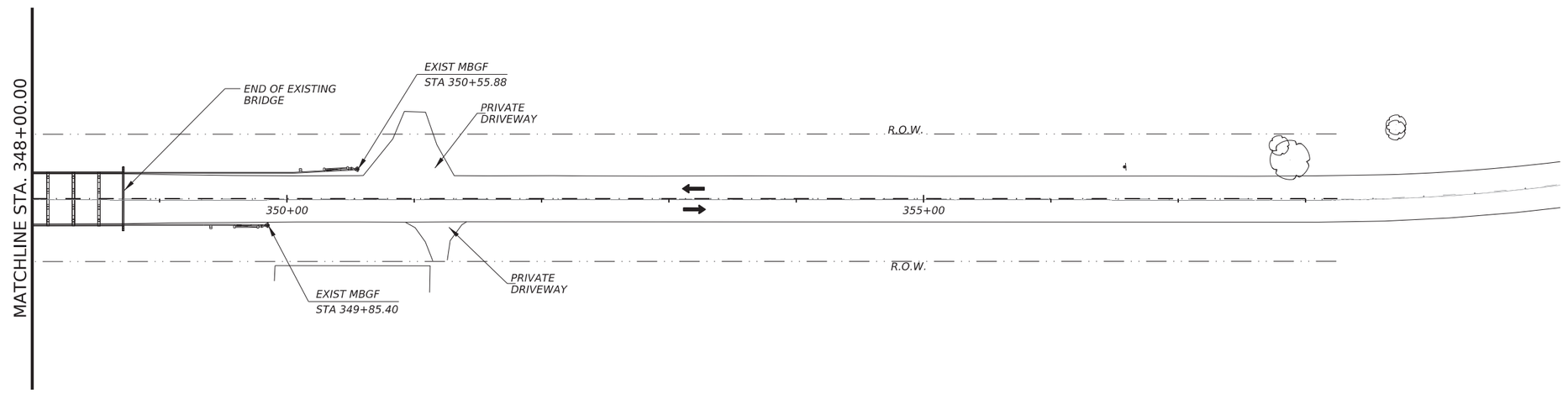
NOTES:

1. FLEXIBLE PAVEMENT STRUCTURE REAPAIRS ARE FOR THE CONTRACTOR PURPOSES ONLY. EXACT LOCATIONS MUST BE VERIFIED WITH THE ENGINEER.

LEGEND:

- MILL & OVERLAY
- TRAFFIC FLOW
- EXIST. SIGN
- FLEXIBLE PAVEMENT REPAIRS
- EXIST MBGF
- EXIST. R.O.W

ROADWAY QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
134	6004	BACKFILL (TY A OR B)	STA	8
351	6001	FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")	SY	560
354	6001	PLAN & TEXT ASPH CONC PAV (0" TO 1")	SY	467
354	6043	PLANE ASPH CONC PAV (1")	SY	5080
3076	6024	D-GR HMA TY-C SAC-A PG70-22	TON	559
3002	6001	MEMBRANE UNDERSEAL	GAL	1016



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ROADWAY
PLAN LAYOUT

SHEET 15 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		61

DATE: 8/28/2023 5:32:17 PM
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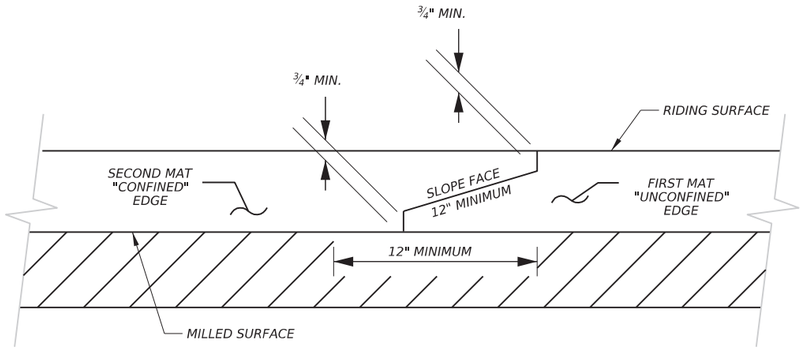

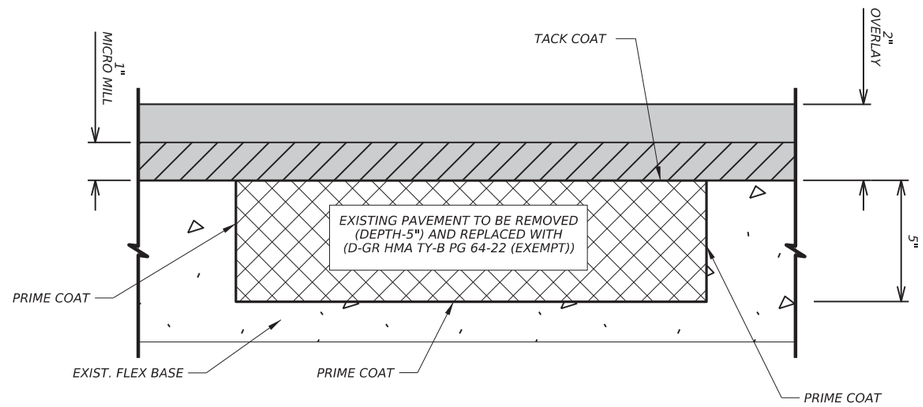

LONGITUDINAL "WEDGE" JOINT DETAIL NOTES

1. CONSTRUCT LONGITUDINAL JOINTS BY TAPERING THE SURFACE TREATMENT MAT.
2. EXTEND THE TAPERED PORTION BEYOND THE NORMAL PAVING LANE WIDTH TO AVOID JOINTS AND TAPERS IN THE WHEEL PATH
3. CONSTRUCT THE TAPERED PORTION OF THE MAT USING A STRIKE OFF DEVICE THAT WILL PROVIDE A UNIFORM SLOPE AND WILL NOT RESTRICT THE MAIN SCREED.
4. COMPACT THE TAPER USING A PNEUMATIC ROLLER OR A STATIC WHEEL ROLLER WITHOUT DAMAGING THE NOTCH.
5. APPLY TACK COAT TO THE IN-PLACE TAPER BEFORE PLACING THE ADJACENT MAT.
6. FINAL DENSITY REQUIREMENTS FOR THE ENTIRE PAVEMENT INCLUDING THE TAPERED AREA WILL REMAIN UNCHANGED.
7. THE ENGINEER MAY WAIVE THE TAPERED JOINT REQUIREMENTS.
8. FULL PAVING OF ALL LANES AND SHOULDERS BY THE END OF EACH DAY'S PRODUCTION WILL REQUIRE A TAPERED JOINT.

FLEXIBLE PAVEMENT REPAIR DETAIL NOTES

1. EXACT LOCATIONS MUST BE VERIFIED WITH THE ENGINEER.
   QUANTITIES WILL BE ADJUSTED AS DIRECTED BY THE ENGINEER.

2. PROVIDE MATERIALS OF TYPE AND GRADE AS SHOWN BELOW AND IN ACCORDANCE WITH ITEM 3076, "EXEMPT PRODUCTION."

3. THE FOLLOWING DATA IS FOR CONTRACTOR'S INFORMATION ONLY AND WILL BE SUBSIDARY TO ITEM 351, "FLEXIBLE PAVEMENT STRUCTURE REPAIR."
   - D-GR HMA TY-B PG 64-22 (EXEMPT), 1IN = 110 LBS/SY
   - PRIME COAT (SS-1H) = 0.15 GAL/SY
   - TACK COAT (TRAIL) = 0.15 GAL/SY

4. IF FLEX BASE IS EXPOSED, PRIME COAT IS TO BE APPLIED FOR PROPER BONDING. WHEN NO FLEX BASE IS EXPOSED, TACK COAT SHALL BE APPLIED TO BOND WITH EXISTING PAVEMENT.

5. CONTRACTOR TO PROVIDE CLEAN SAW-CUT EDGES.

6. PLACE 5" OF PROPOSED MIXTURE AND COMPACT TO REQUIRED DENSITY. MATCH THE EXISTING PAVEMENT SURFACE ELEVATION.

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SH 118

ROADWAY MISCELLANEOUS DETAILS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		62

DATE: 8/26/2023 4:16:06 PM
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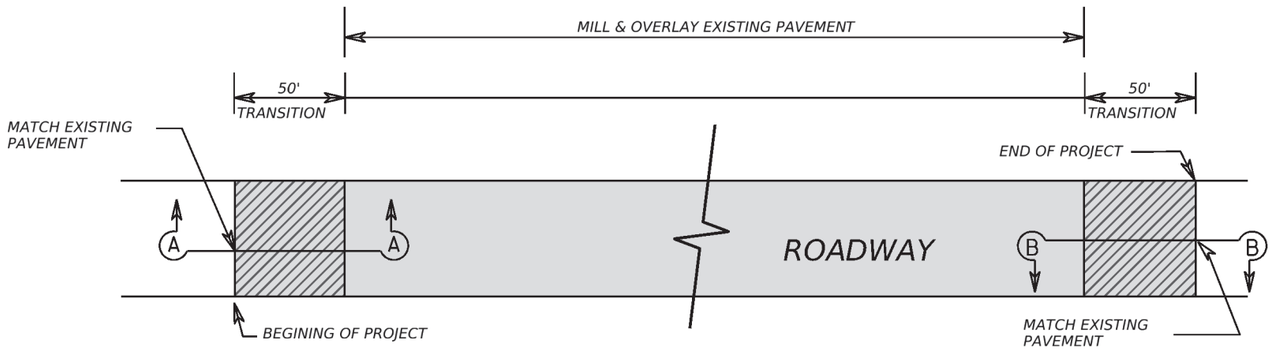
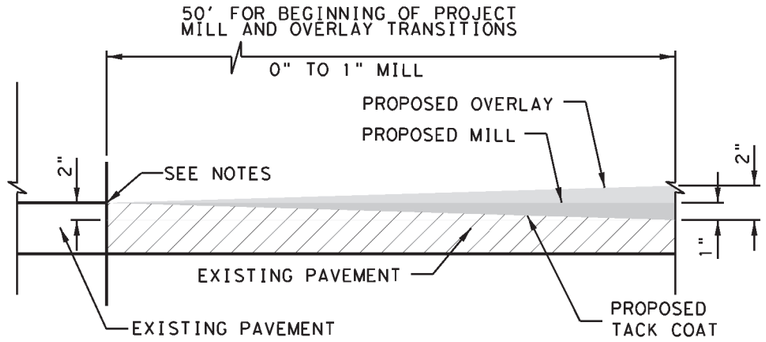
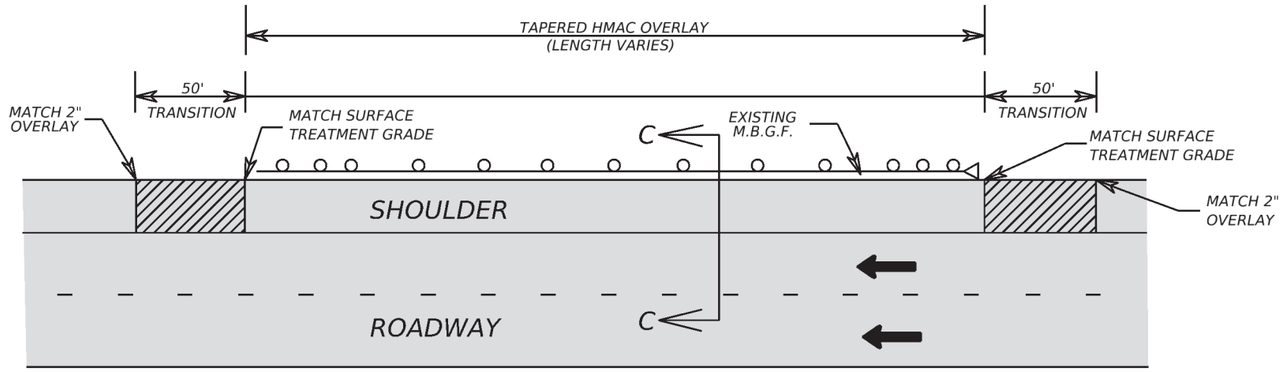


TYPICAL DETAIL FOR ROADWAY

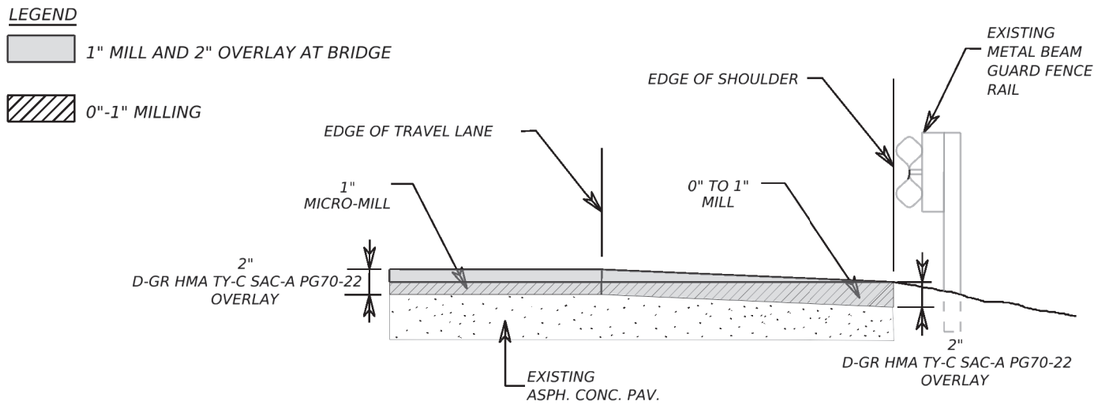


TRANSITION DETAIL SECTION "A-A"

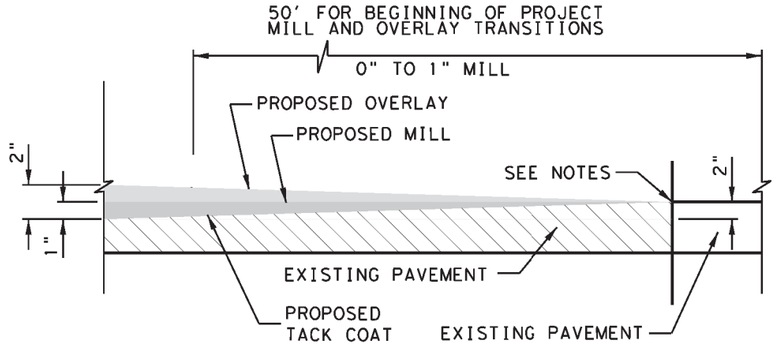
MAIN LANES AND SHOULDERS



TYPICAL SHOULDER DETAILS FOR AREAS ADJACENT TO M.B.G.F.



SECTION C-C



TRANSITION DETAIL SECTION "B-B"

MAIN LANES AND SHOULDERS

SECTION C-C NOTE:

1. D-GR HMA TY-C SAC-A PG70-22 OVERLAY ON SHOULDER TO BE TAPERED AT EDGE OF PAVEMENT ONLY FOR THE LENGTH OF THE M.B.G.F PLUS TRANSITIONS.
2. TAPER AT THE EDGE OF PAVEMENT WILL ALSO APPLY IN SHOULDER AREAS ADJACENT TO CONCRETE TRAFFIC BARRIERS.

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SH 118

ROADWAY
MISCELLANEOUS DETAILS

2023 SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		63

DATE: 8/26/2023 4:16:29 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/3. Roadway/MISC. DETAILS 2.dgn

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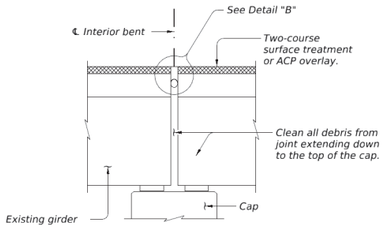
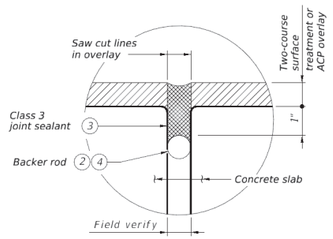
CK:
DN:



JOINT W/ HOT-POURED RUBBER SEAL

(Used with ACP overlay)



DETAIL "B"

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH HOT-POURED RUBBER SEAL:

1) Saw cut through the asphalt at the centerline of joint. Make multiple saw cuts to create a ½" minimum joint opening or match the existing 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." Clean joint out full depth of the joint.

2) Obtain approval of cleaned joint prior to proceeding with joint sealing operation.

3) Place backer rod into joint opening 1" below the top of concrete. When sealing joints for slab spans, slab beam spans, or box beam spans, fill void below backer rod with extruded polystyrene foam before placing backer rod.

4) Seal the joint opening with a Class 3 joint sealant. Seal flush to the top of the asphaltic concrete pavement.

NOTES:

1. Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.

2. Use Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers". Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."

3. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

4. Cleaning existing joint opening (full depth) of all debris, providing and placing backer rod, saw-cutting asphalt overlay, and sealing joint is paid for by Item 438, "Cleaning and Sealing Joints" and measured by the linear foot.

5. Obtain approval for all tools, equipment, materials and techniques proposed to clean and seal the joint. Provide Class 3 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in asphalt overlay.

6. Extend sealant up into rail or curb 3 inches on low side or sides of deck.

7. Prepare surfaces where sealant is to be placed in accordance with Manufacturer's specifications.

PROJECT LIMIT NBI NUMBERS:

NBI: 24-123-0358-01-005
NBI: 24-123-0358-01-006
NBI: 24-123-0358-01-007

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SH 118

BRIDGE
CLEANING AND SEALING
EXISTING BRIDGE JOINTS

2023 SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		64

CK: DW: CK: DN:

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DATE: 8/26/2023
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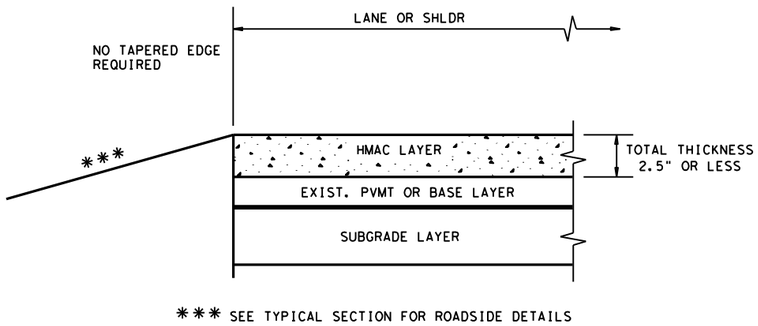
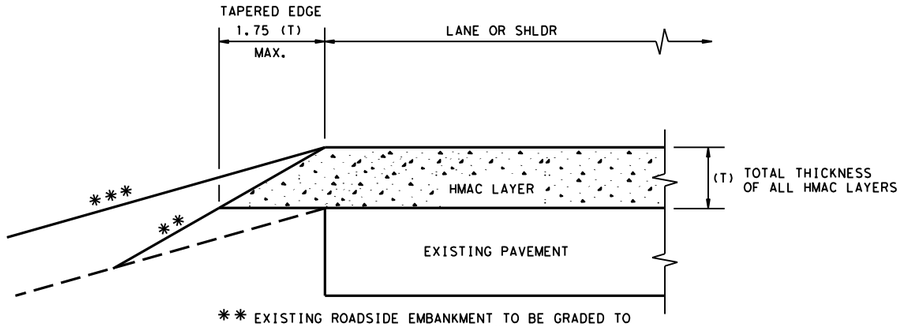


*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

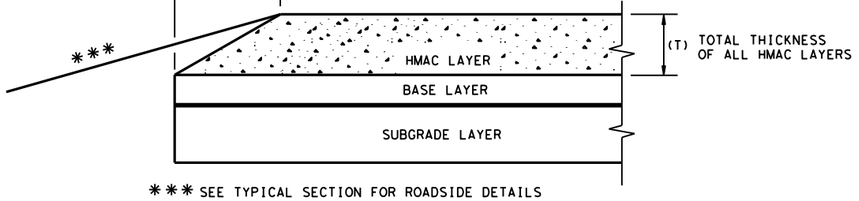
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY WITH THICKNESS OF 2.5" OR LESS



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

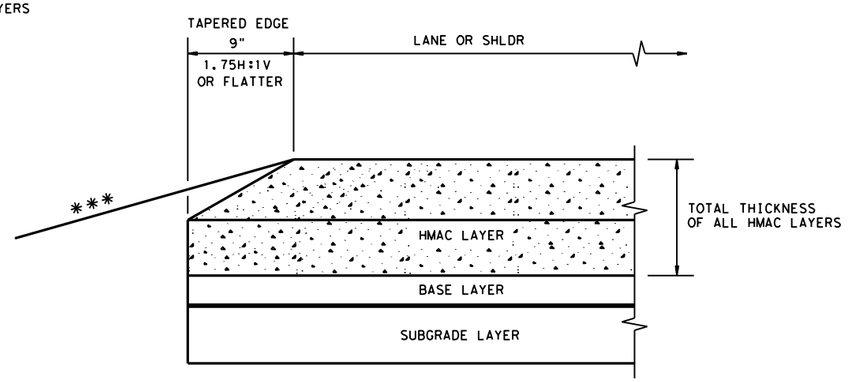
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2
OVERLAY OF EXISTING PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 5" OR GREATER

(NOT TO SCALE)

GENERAL NOTES

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

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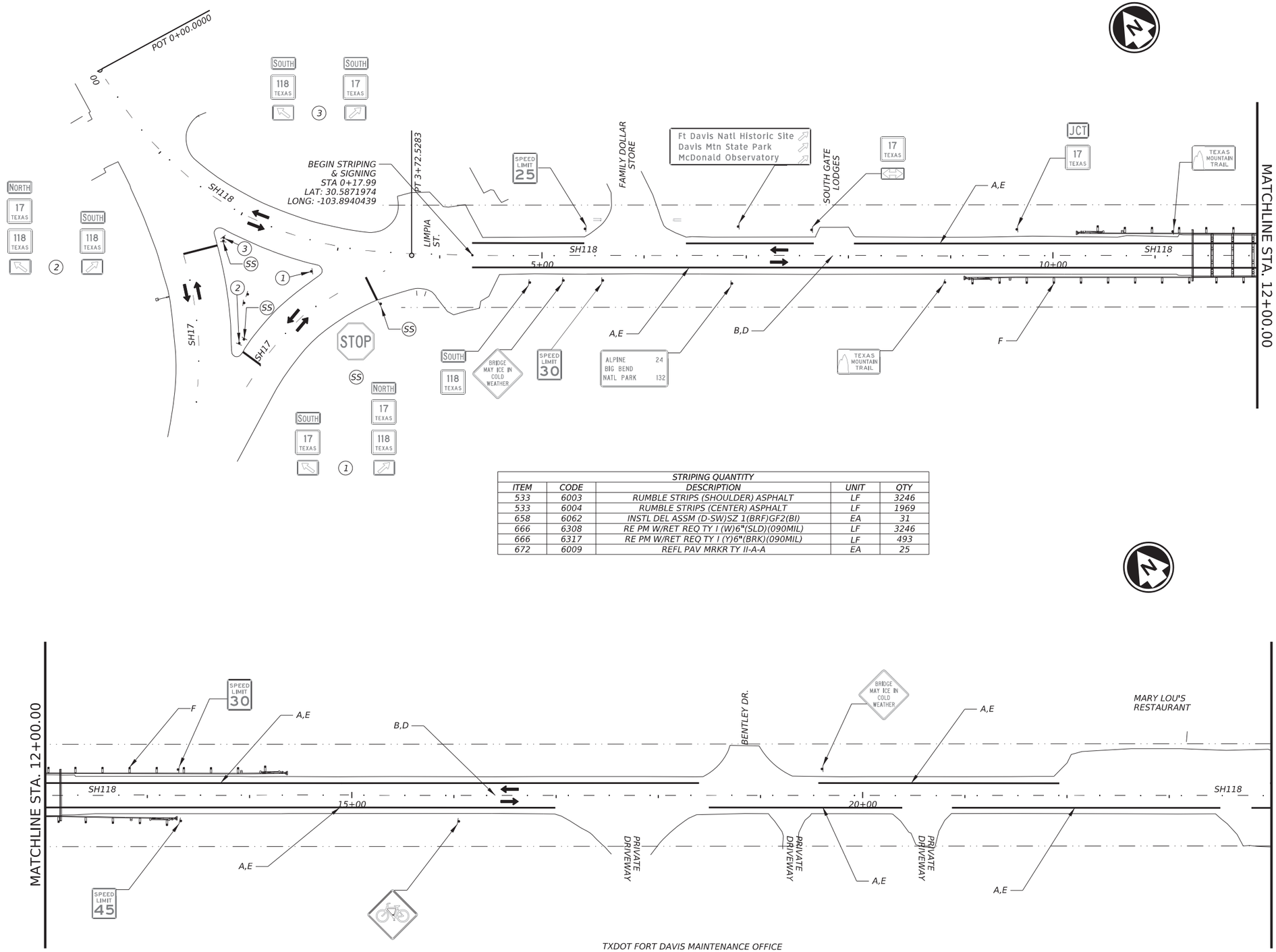
TAPERED EDGE DETAILS
HMAC PAVEMENT

TE(HMAC)-11

FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:
© TxDOT January 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
	DIST	COUNTY		SHEET NO.
	ELP	JEFF DAVIS		65



NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	3246
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	1969
658	6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	31
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	3246
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	493
672	6009	REFL PAV MRKR TY II-A-A	EA	25

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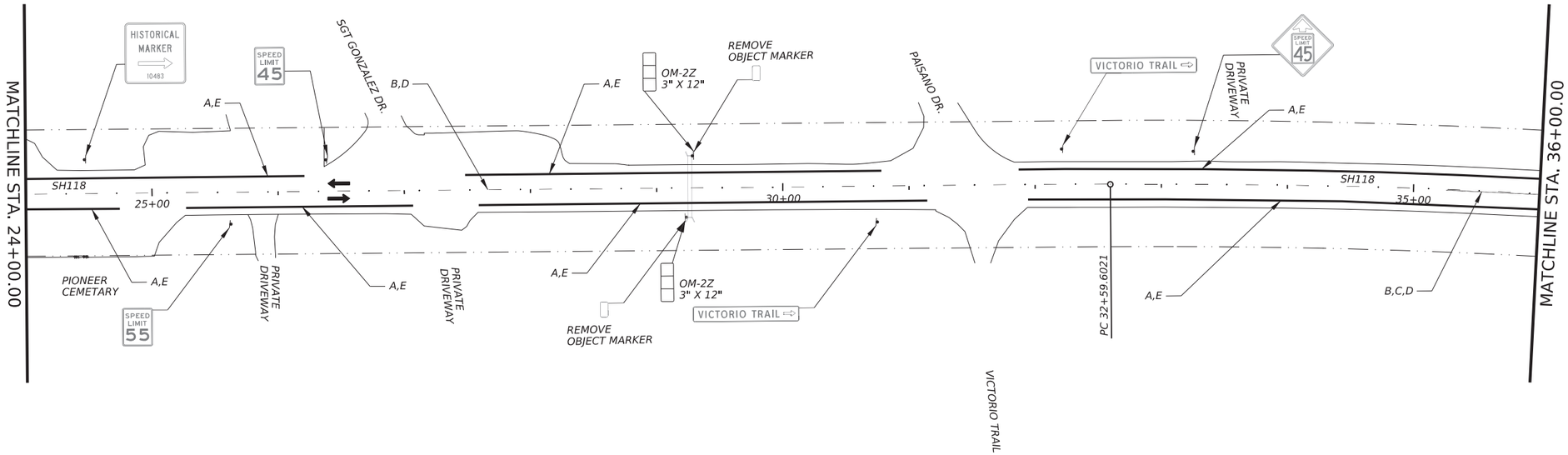
SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 1 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		66

DATE: 8/26/2023 4:17:41 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 1.dgn



NOTES:

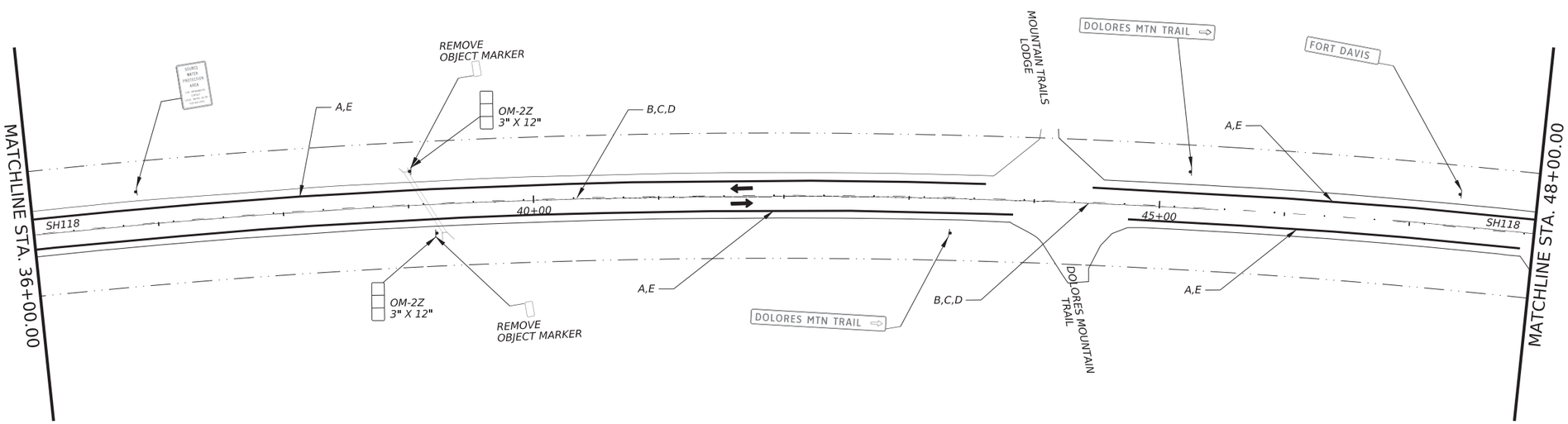
1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4244
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	4
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	4
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4244
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	600
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	1136
672	6009	REFL PAV MRKR TY II-A-A	EA	47



STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

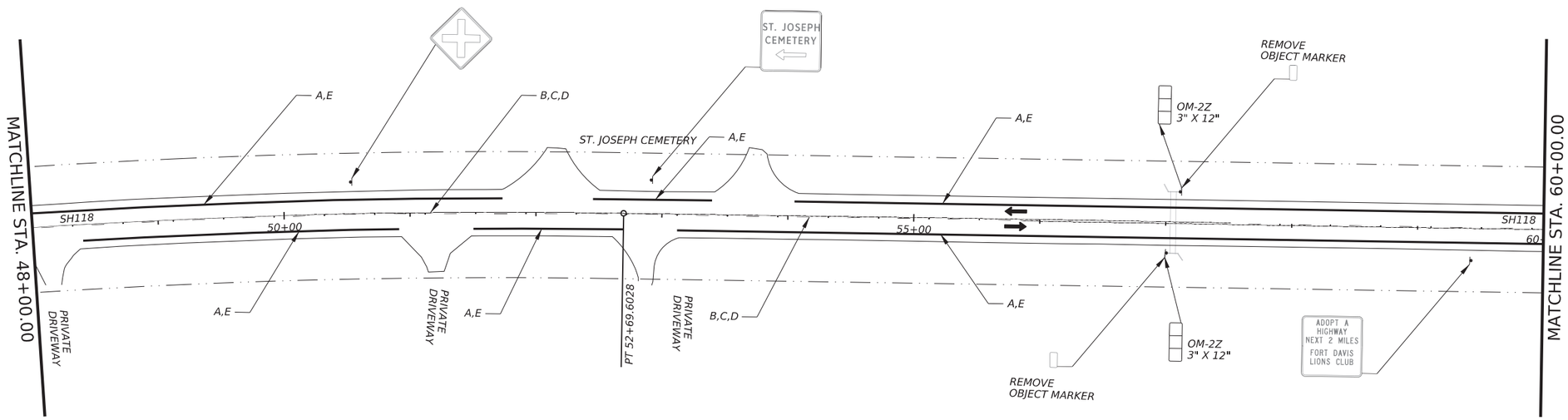
STRIPING LAYOUT

SHEET 2 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		67

DATE: 8/26/2023 4:18:04 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 3.dgn

CK DW CK DW



NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

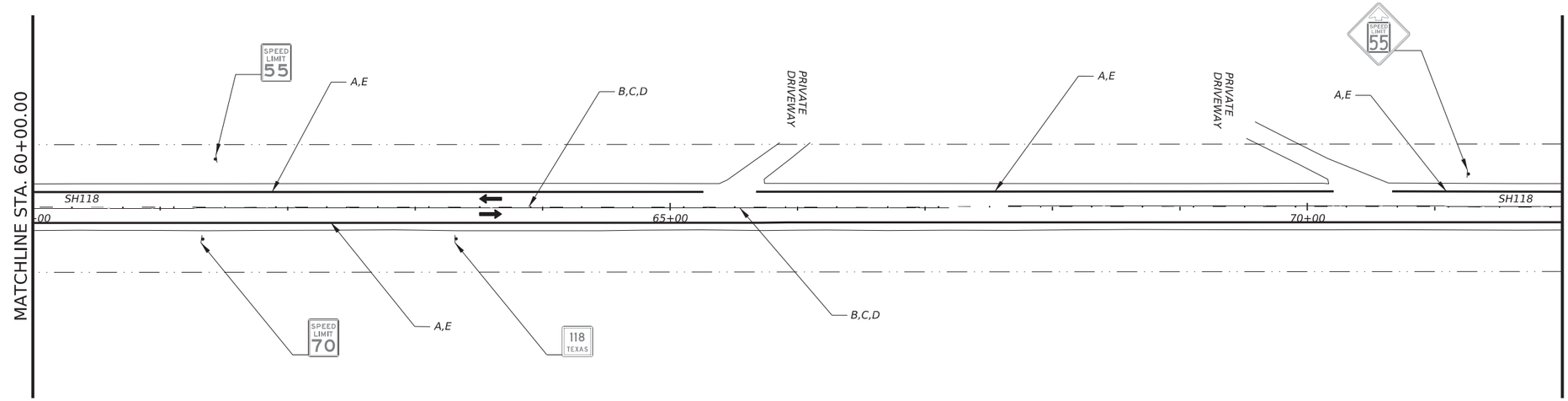
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4400
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	2
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	2
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4440
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	600
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	2400
672	6009	REFL PAV MRKR TY II-A-A	EA	60



STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 3 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		68

DATE: 8/26/2023 4:18:28 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 5.dgn

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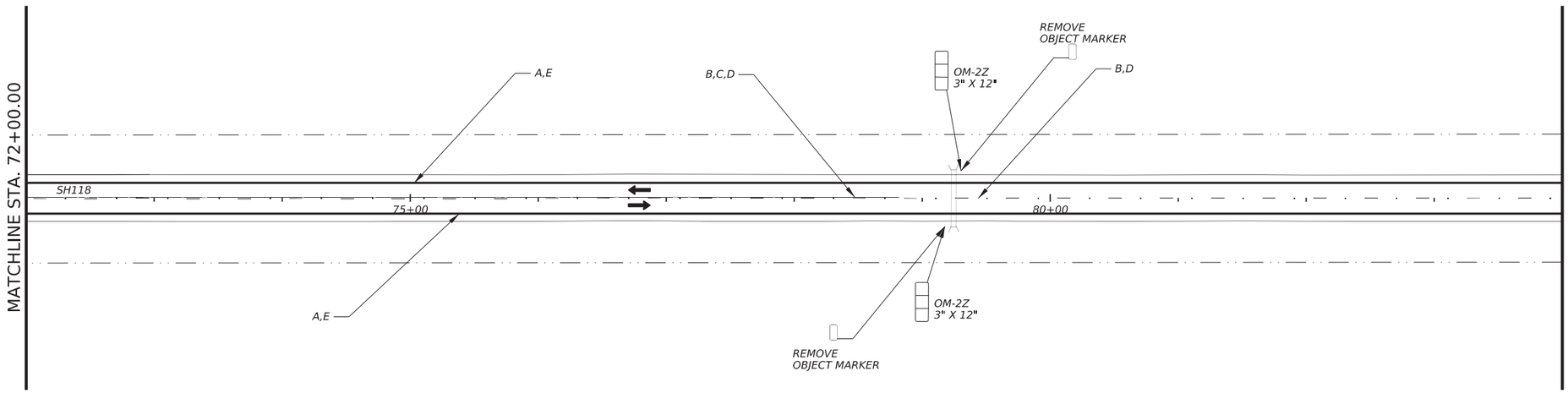


NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

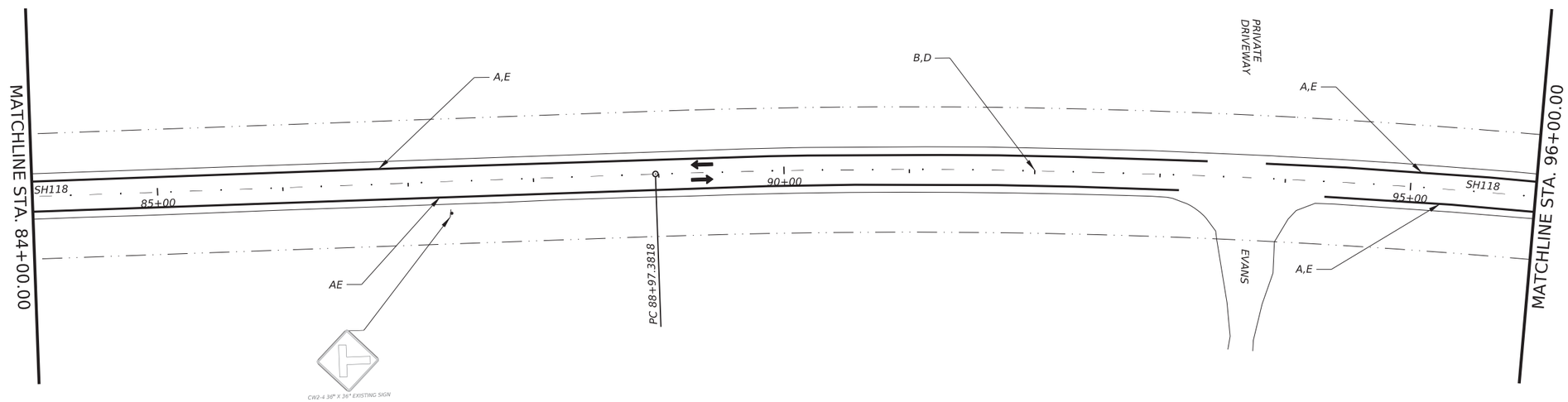
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4637
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	2
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	2
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4637
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	600
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	682
672	6009	REFL PAV MRKR TY II-A-A	EA	40



STATE OF TEXAS
ANTONIO SANTANA
93727
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Antonio Santana PE

08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 4 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		69

DATE: 8/26/2023 4:18:49 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 7.dgn

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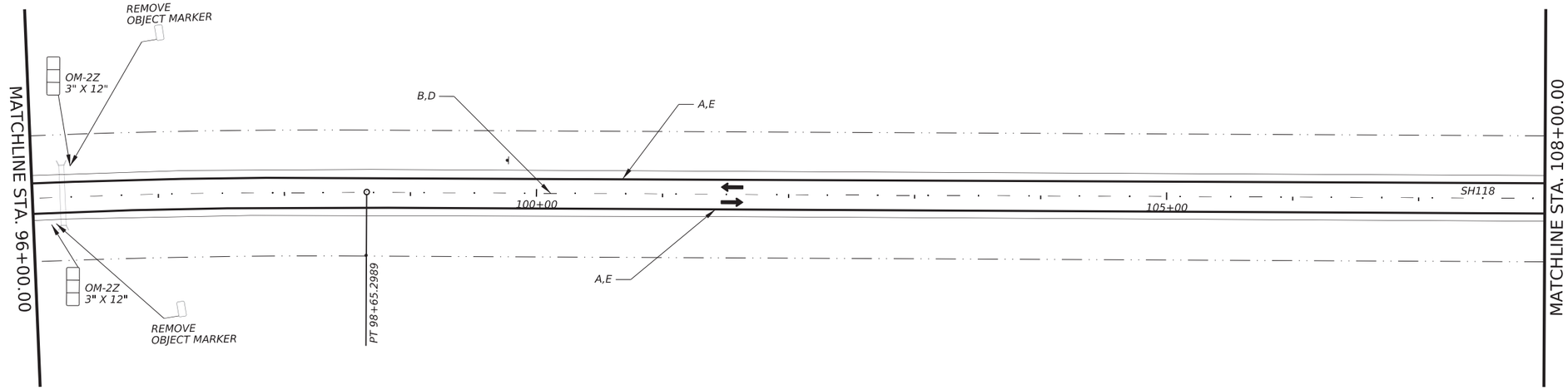


NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

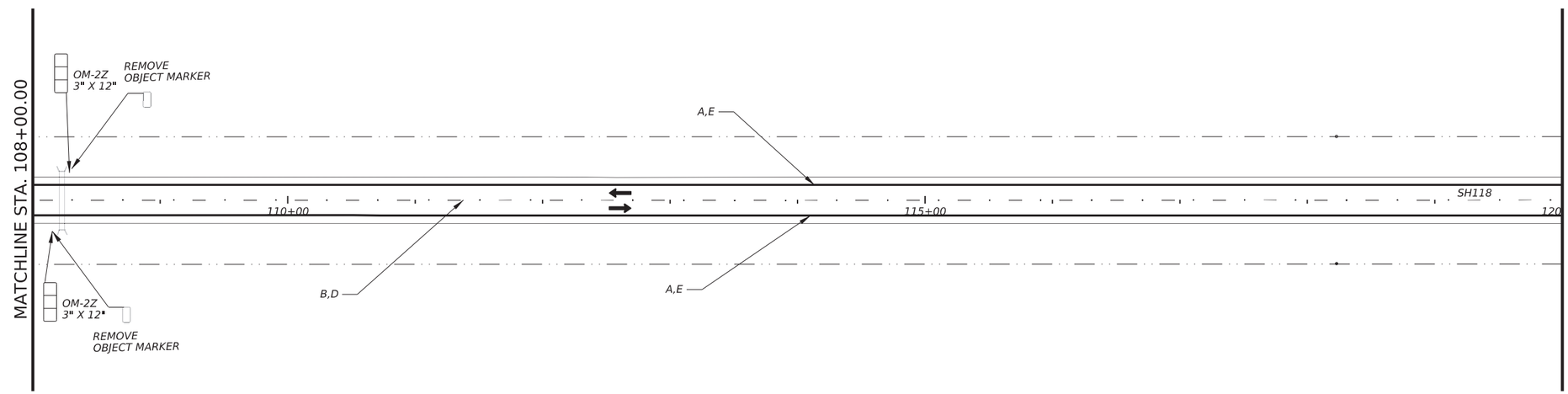
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX / TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4800
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	4
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	4
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4800
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	600
672	6009	REFL PAV MRKR TY II-A-A	EA	30



STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED
PROFESSIONAL ENGINEER

Antonio Santana PE

08-28-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 5 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		70

DATE: 8/26/2023 4:19:12 PM
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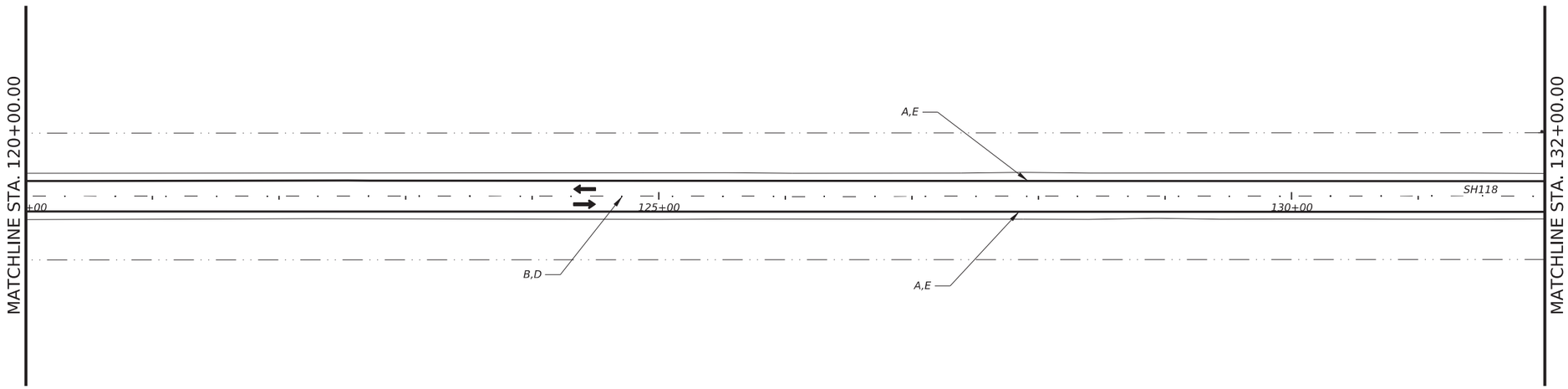


NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

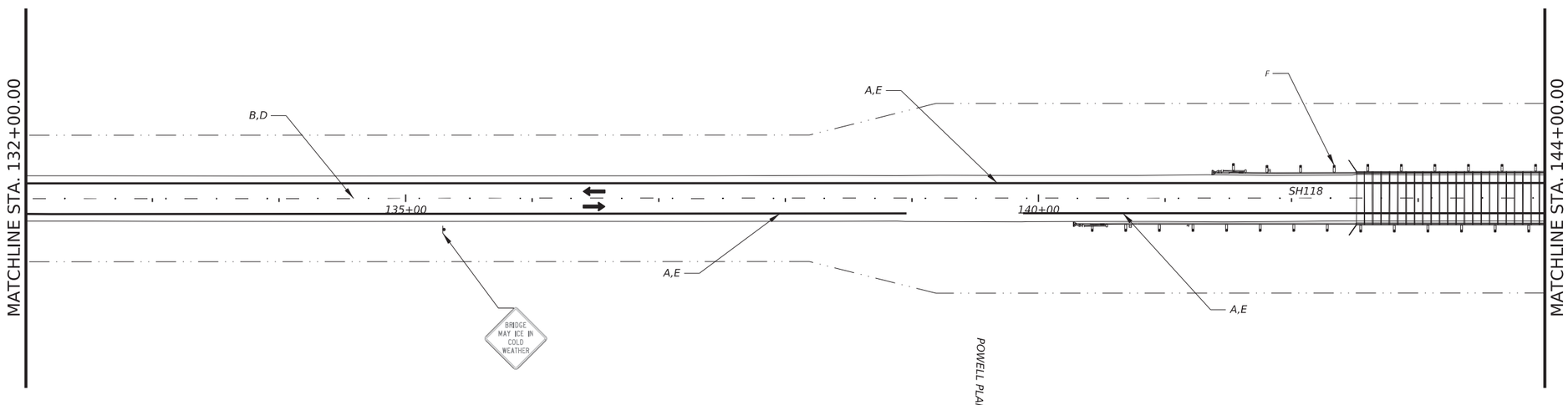
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX / TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4680
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	24
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4680
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	600
672	6009	REFL PAV MRKR TY II-A-A	EA	30



STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER
Antonio Santana, PE
08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 6 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		71

DATE: 8/26/2023 4:19:33 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 11.dgn

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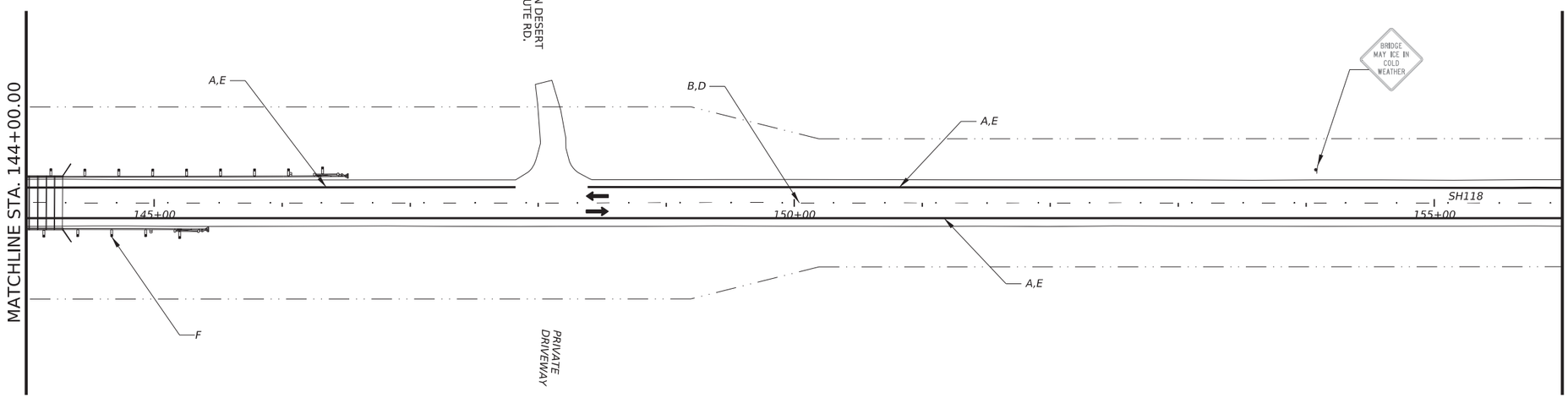


NOTES:

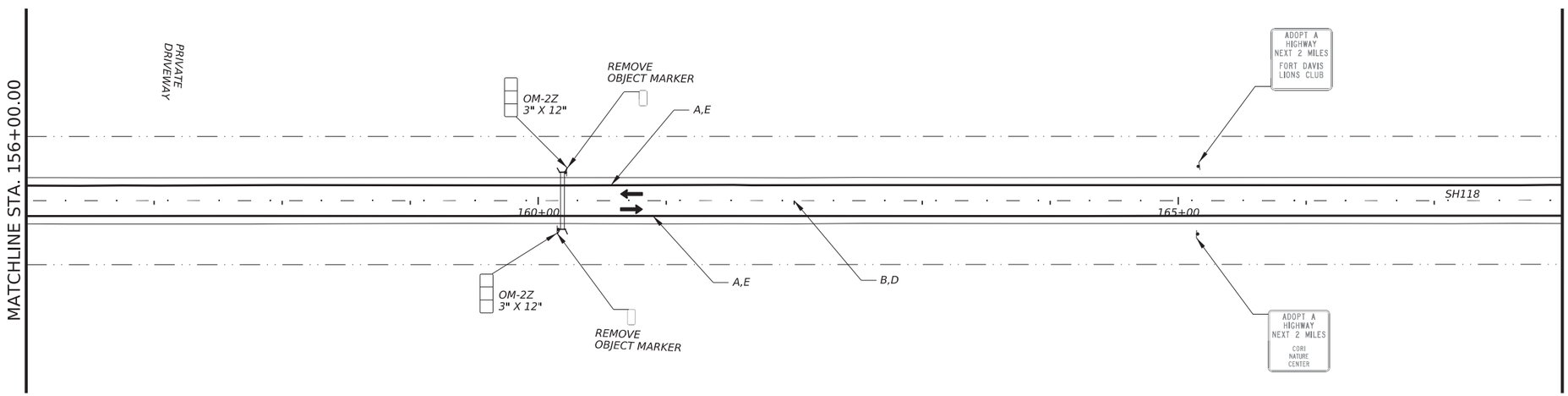
1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- XX TEXAS — EXISTING SIGN
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4743
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	2
658	6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	14
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	2
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4743
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	600
672	6009	REFL PAV MRKR TY II-A-A	EA	30



STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER
Antonio Santana PE
08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

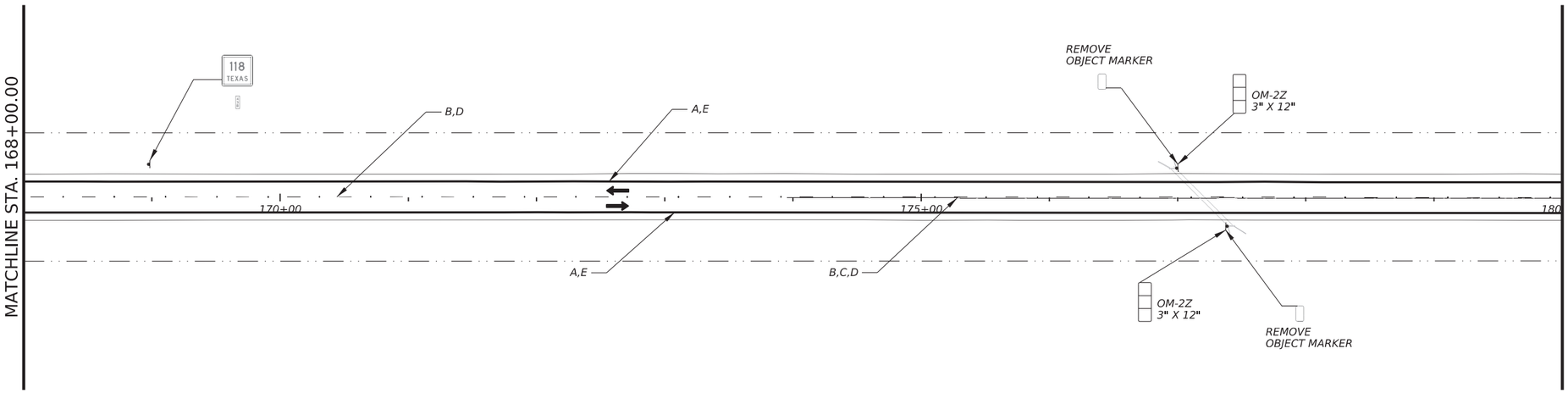
STRIPING LAYOUT

SHEET 7 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		72

DATE: 8/26/2023 4:19:56 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 13.dgn

CK DW CK DW



NOTES:

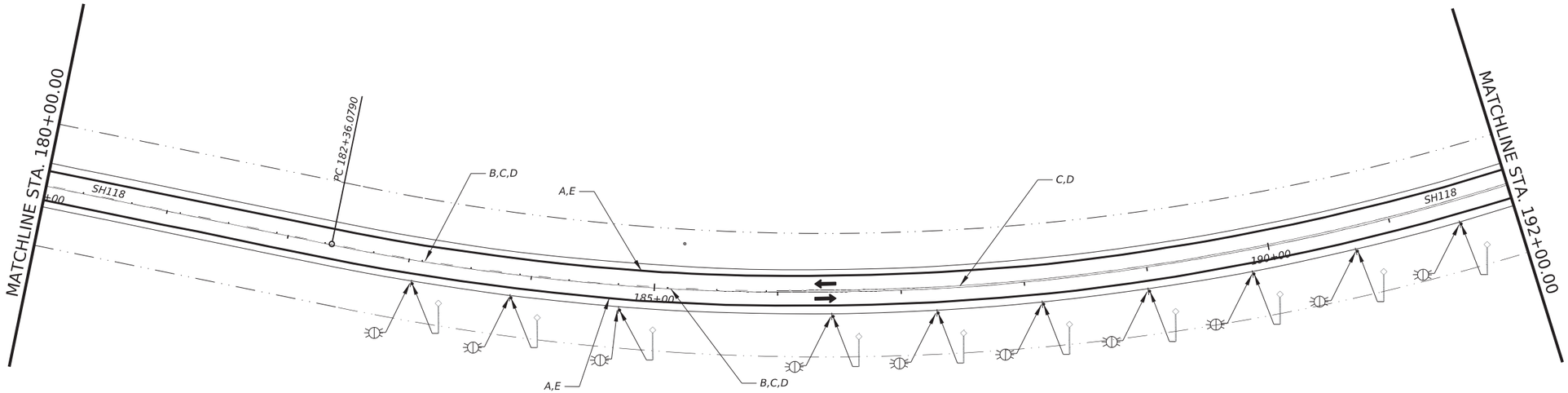
1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- XX TEXAS — EXISTING SIGN
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4800
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	12
658	6093	INSTL DEL ASSM (D-DW)SZ 1(WFLX)GND(BI)	EA	10
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	2
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4800
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	450
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	2400
672	6009	REFL PAV MRKR TY II-A-A	EA	53



STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER
Antonio Santana PE

08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

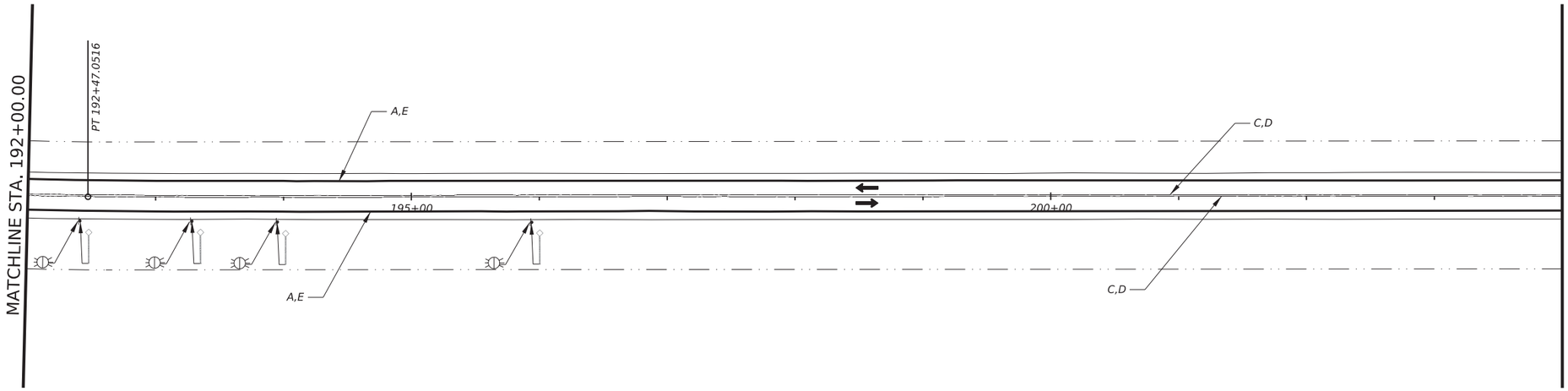
SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 8 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		73

DATE: 8/26/2023 4:20:19 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 15.dgn



NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

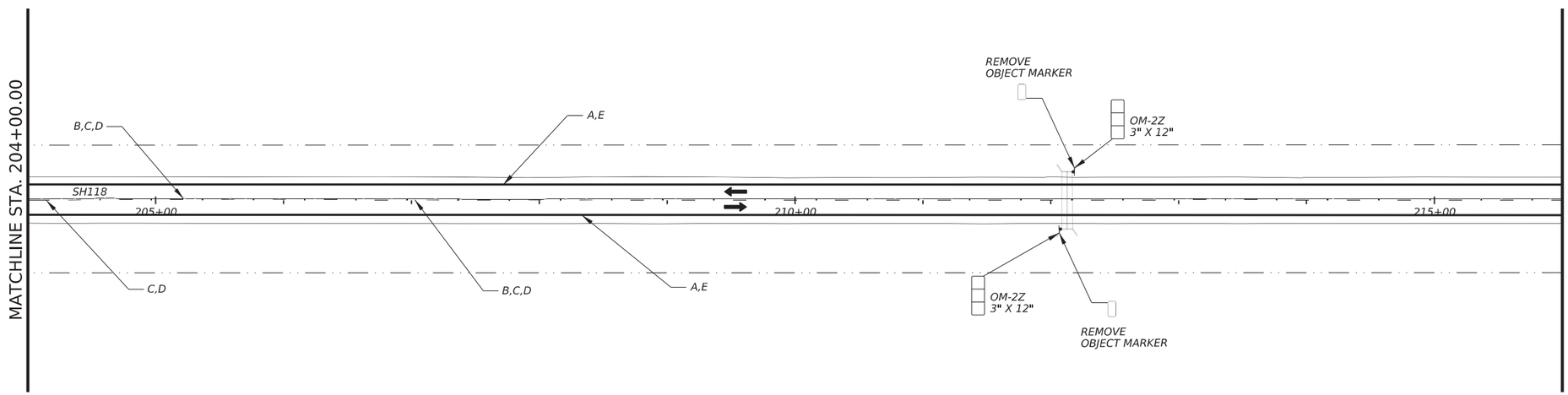
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX / TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4800
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	6
658	6093	INSTL DEL ASSM (D-DW)SZ 1(WFLX)GND(BI)	EA	4
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	2
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4800
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	300
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	3600
672	6009	REFL PAV MRKR TY II-A-A	EA	60



STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED
PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

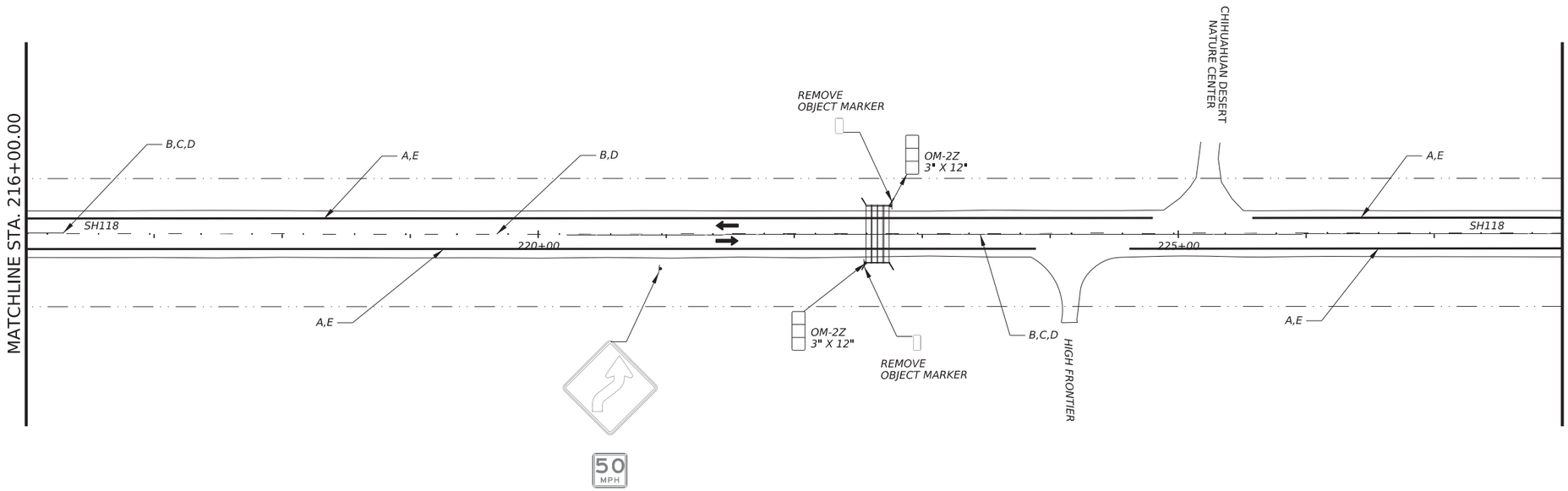
SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 9 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		74

DATE: 8/26/2023 4:20:41 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 17.dgn



NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

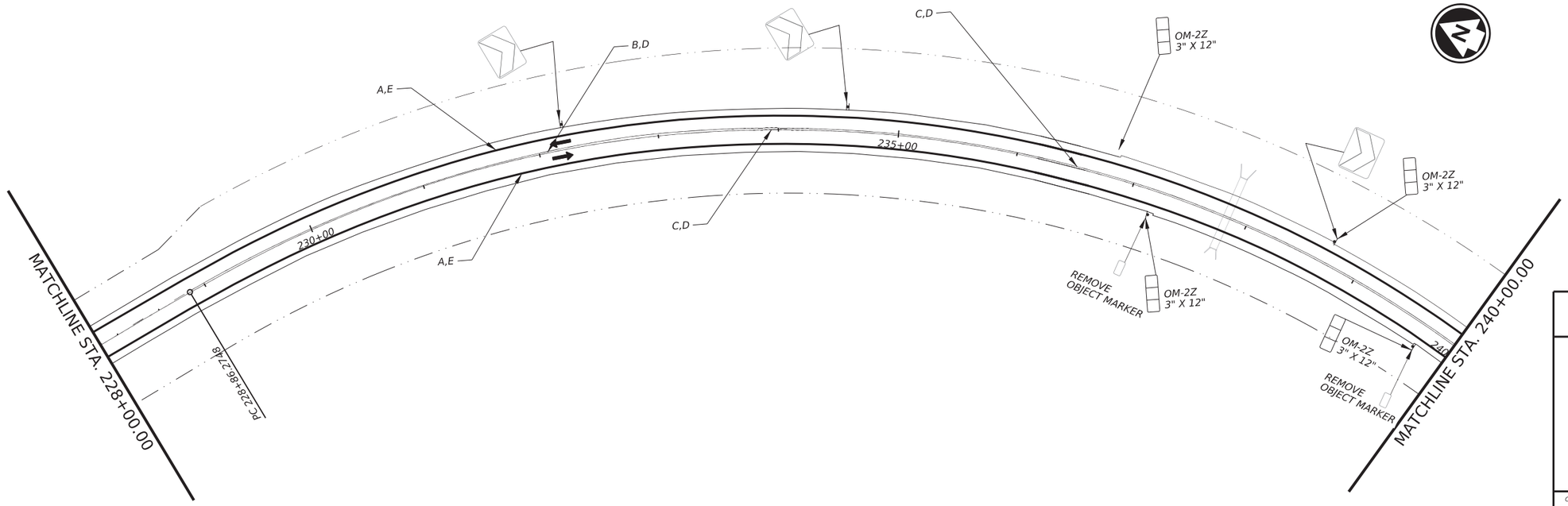
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- XX TEXAS — EXISTING SIGN
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4649
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	6
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	6
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4649
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	325
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	3130
672	6009	REFL PAV MRKR TY II-A-A	EA	56



STATE OF TEXAS
ANTONIO SANTANA
93727
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Antonio Santana, PE
08-29-23

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SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

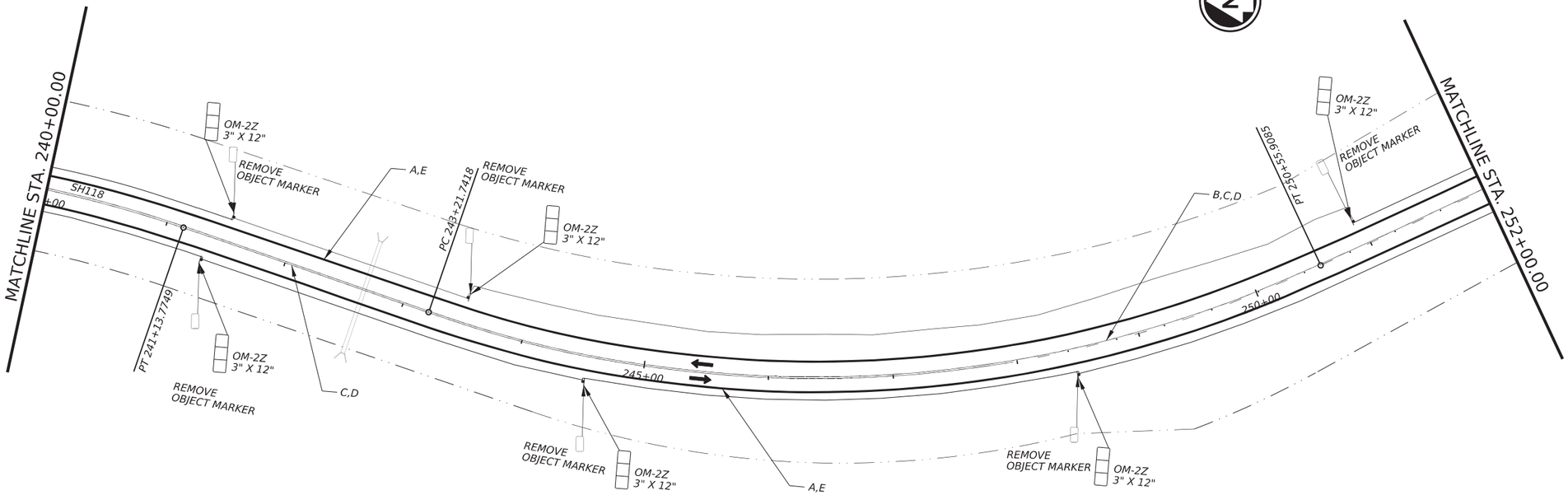
STRIPING LAYOUT

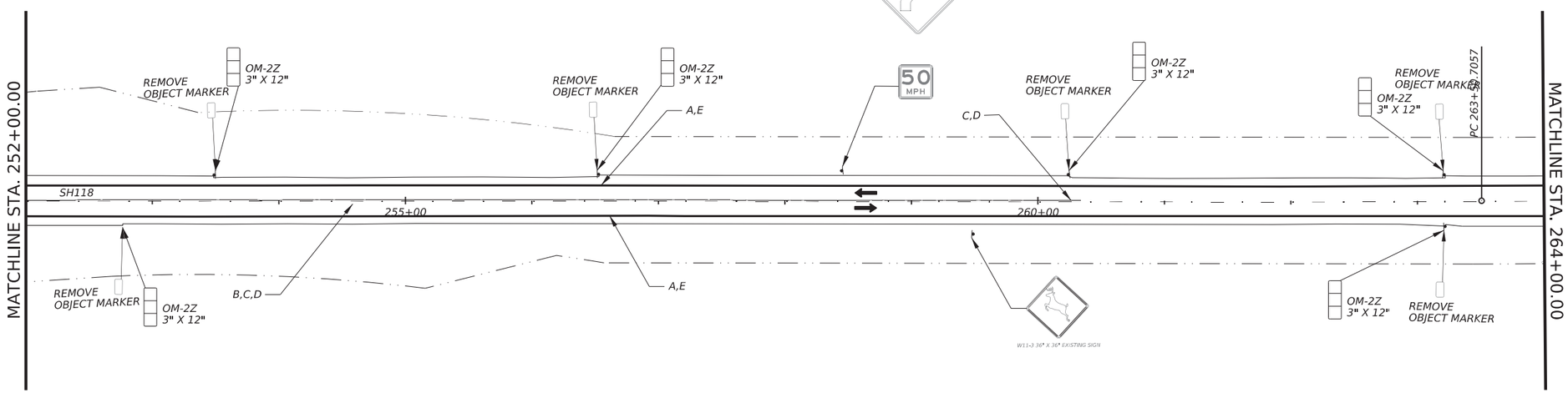
SHEET 10 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		75

DATE: 8/26/2023 4:21:03 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/035801027/4 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 19.dgn

CK DW CK DW





STRIPING QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4800
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	12
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	12
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4800
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	400
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	2835
672	6009	REFL PAV MRKR TY II-A-A	EA	55

NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX / TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STATE OF TEXAS
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Antonio Santana PE
08-29-23

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Texas Department of Transportation

SH 118

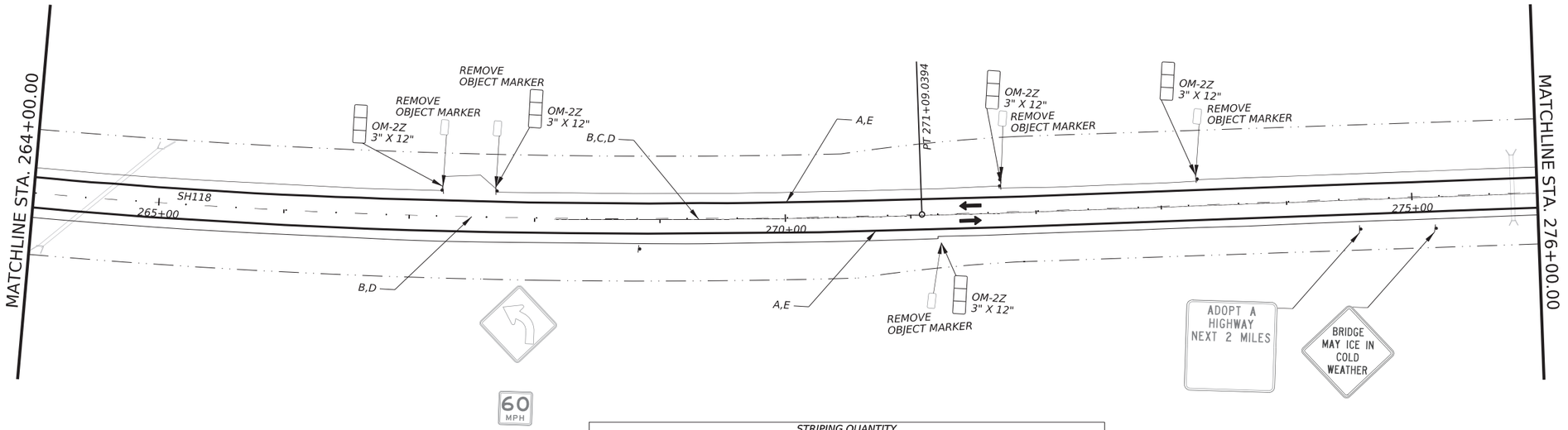
SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 11 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		76

DATE: 8/26/2023 4:21:25 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 21.dgn



NOTES:

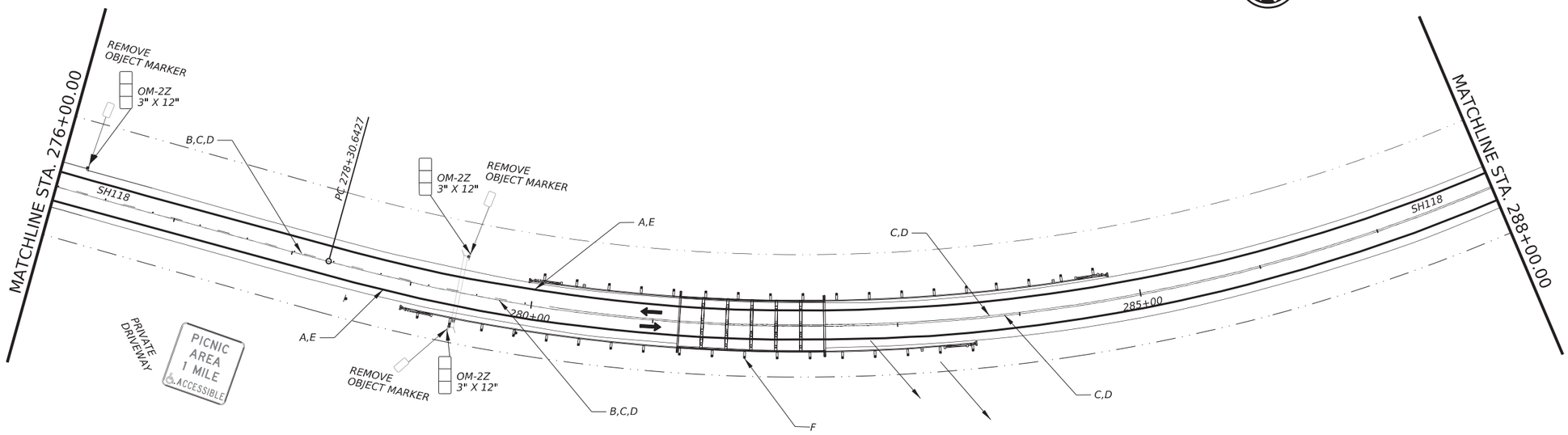
1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4800
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	8
658	6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	36
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	8
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4800
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	400
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	2800
672	6009	REFL PAV MRKR TY II-A-A	EA	55



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ANTONIO SANTANA
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Antonio Santana PE

08-29-23

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Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

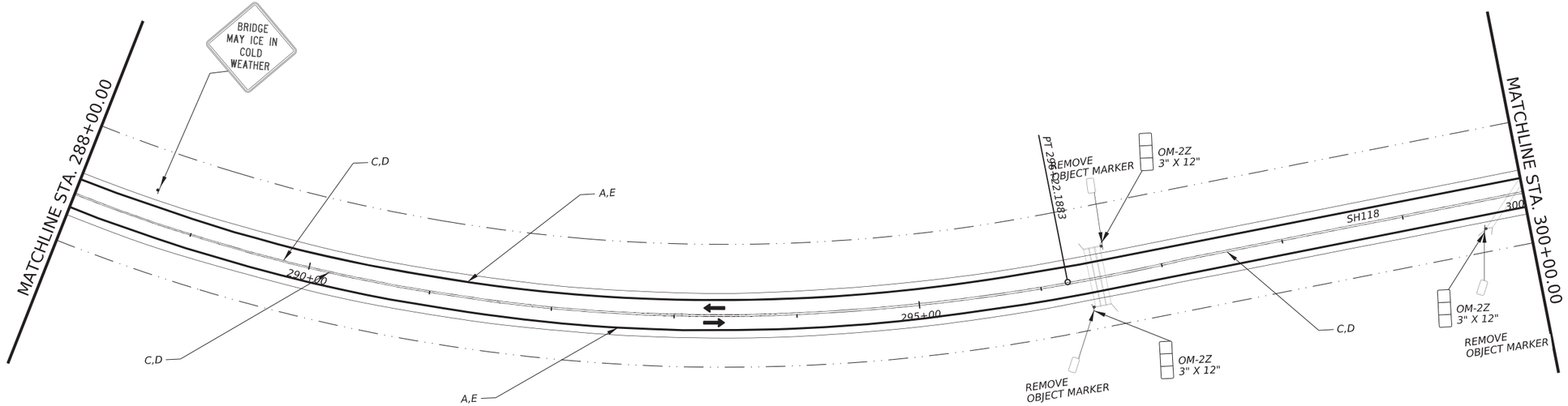
STRIPING LAYOUT

SHEET 12 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		77

DATE: 8/26/2023 4:21:48 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 23.dgn

CK | DW | CK | DW



NOTES:

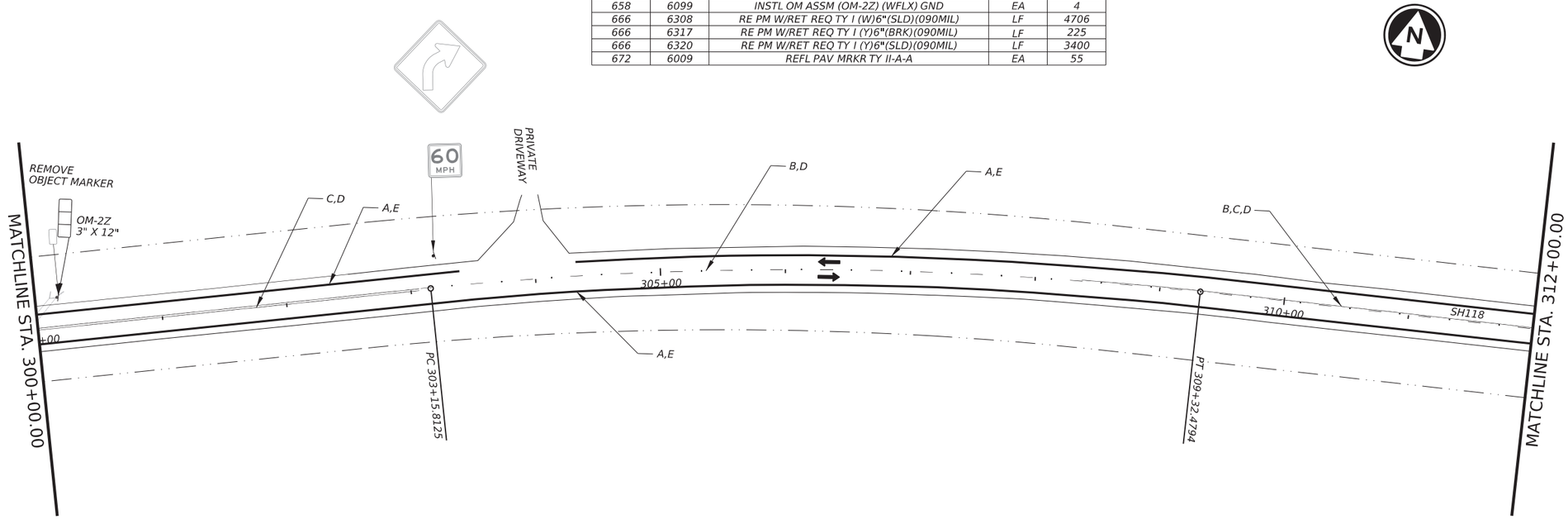
1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX / TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY				
ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4706
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	4
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	4
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4706
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	225
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	3400
672	6009	REFL PAV MRKR TY II-A-A	EA	55



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SH 118

SIGNING & PAVEMENT MARKINGS

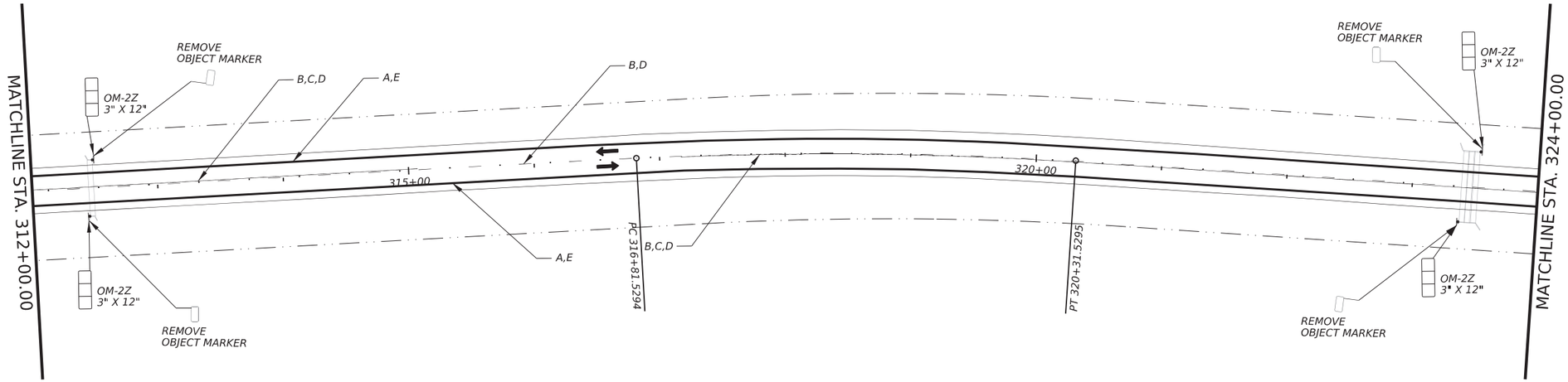
STRIPING LAYOUT

SHEET 13 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		78

DATE: 8/26/2023 4:22:11 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 25.dgn

CK | DW | CK | DW



NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

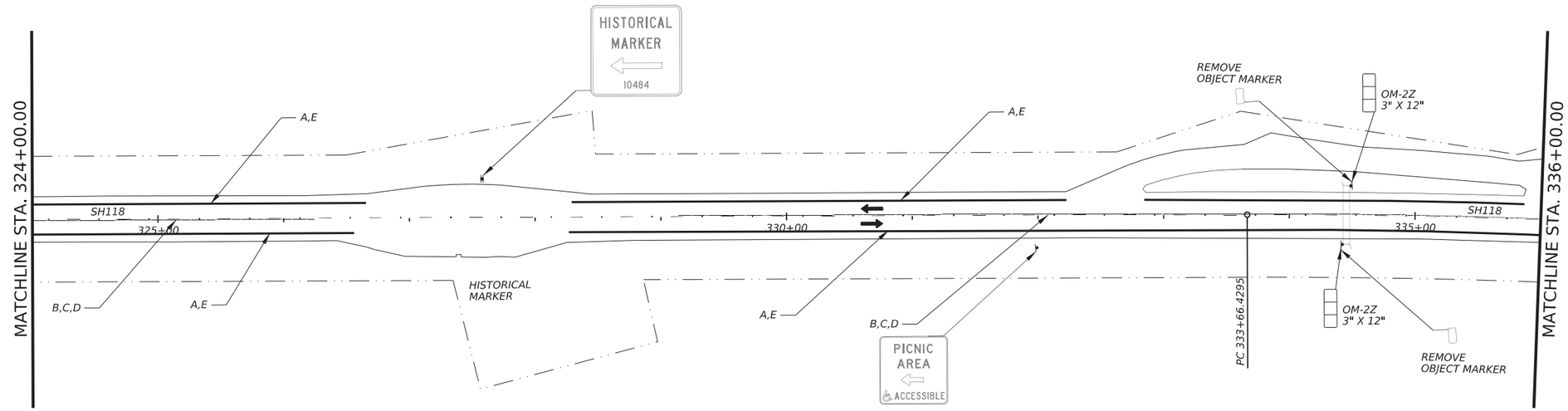
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	4390
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	2400
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	6
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	6
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	4390
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	600
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	1900
672	6009	REFL PAV MRKR TY II-A-A	EA	55



STATE OF TEXAS
ANTONIO SANTANA
93727
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Antonio Santana PE
08-29-23

0 50 100
SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

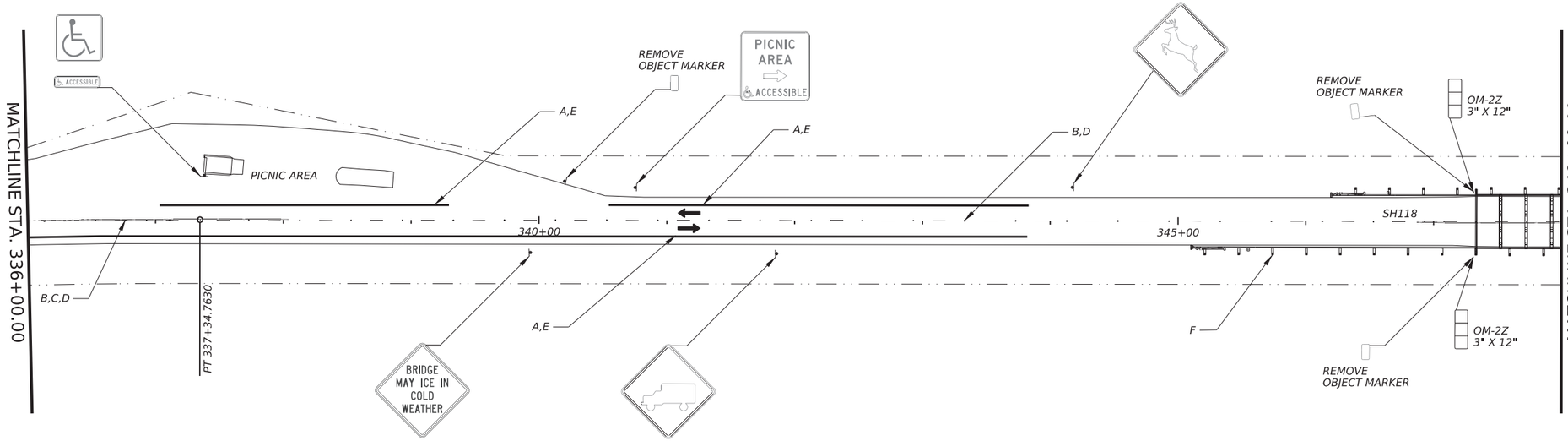
STRIPING LAYOUT

SHEET 14 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		79

DATE: 8/26/2023 4:22:33 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358010274 - Design/Plan Set/8. Traffic/Striping Layout Sheets/BL CL-24 - Striping 27.dgn

CK DW CK DW



NOTES:

1. REFER TO PM(2)-22 FOR FURTHER INFORMATION ON PAVEMENT MARKINGS.
2. REFER TO RS(2)-23 AND RS(4)-23 FOR FURTHER INFORMATION ON RUMBLE STRIPS.

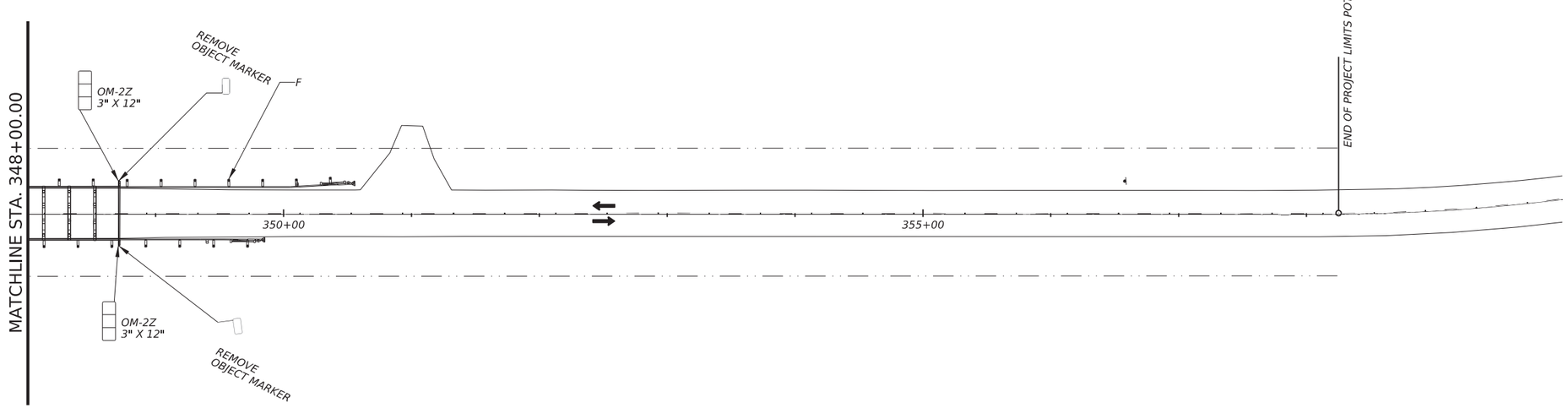
LEGEND:

- TRAFFIC FLOW
- EXIST. R.O.W
- OBJECT MARKER ASSY OM-2Z
- EXIST. SIGN
- EXISTING OBJECT MARKER
- EXISTING SIGN (XX / TEXAS)
- OBJECT MARKER BI ASSY D-DW

A — RE PM W/RET REQ TY I (W) 6" (SLD) (090 MIL)
B — RE PM W/RET REQ TY I (Y) 6" (BRK) (090 MIL)
C — RE PM W/RET REQ TY I (Y) 6" (SLD) (090 MIL)
D — RUMBLE STRIPS (CENTERLINE) ASPHALT
E — RUMBLE STRIPS (SHOULDER) ASPHALT
F — DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)

STRIPING QUANTITY

ITEM	CODE	DESCRIPTION	UNIT	QTY
533	6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	1337
533	6004	RUMBLE STRIPS (CENTER) ASPHALT	LF	788
658	6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	4
658	6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	34
658	6099	INSTL OM ASSM (OM-2Z) (WFLX) GND	EA	4
666	6308	RE PM W/RET REQ TY I (W)6"(SLD)(090MIL)	LF	1337
666	6317	RE PM W/RET REQ TY I (Y)6"(BRK)(090MIL)	LF	197
666	6320	RE PM W/RET REQ TY I (Y)6"(SLD)(090MIL)	LF	200
672	6009	REFL PAV MRKR TY II-A-A	EA	13



STATE OF TEXAS
ANTONIO SANTANA
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Antonio Santana PE

08-29-23

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SCALE IN FEET

Texas Department of Transportation

SH 118

SIGNING & PAVEMENT MARKINGS

STRIPING LAYOUT

SHEET 15 OF 15

CONT	SECT	JOB	HIGHWAY
0358	01	027	SH 118
DIST	COUNTY		SHEET NO.
ELP	JEFF DAVIS		80

DATE: 8/26/2023 4:22:55 PM
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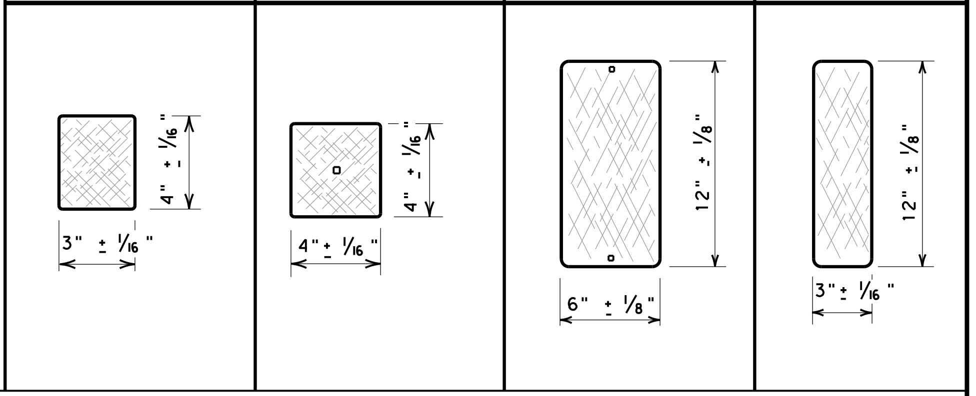
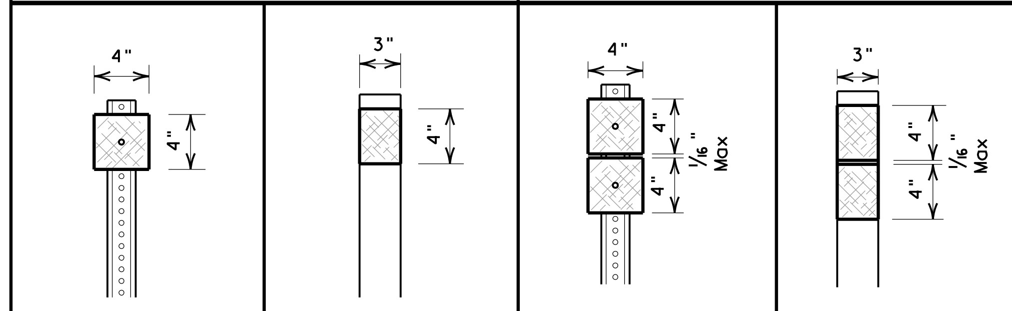
CK DW CK DW

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

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
BRF = 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

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

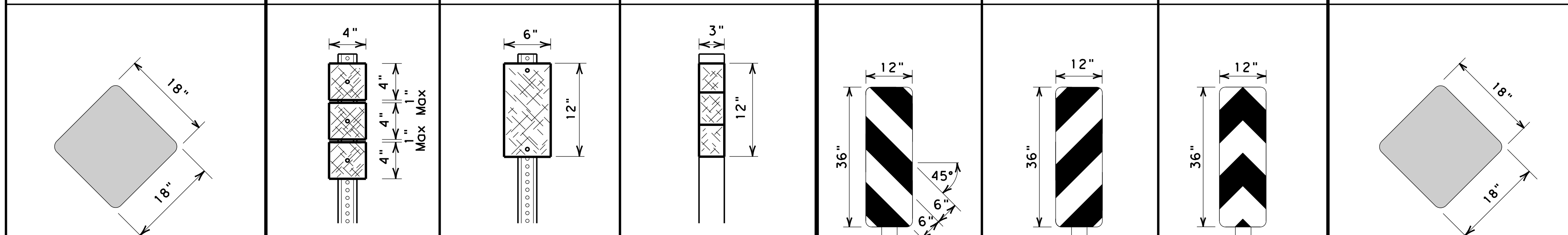
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

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

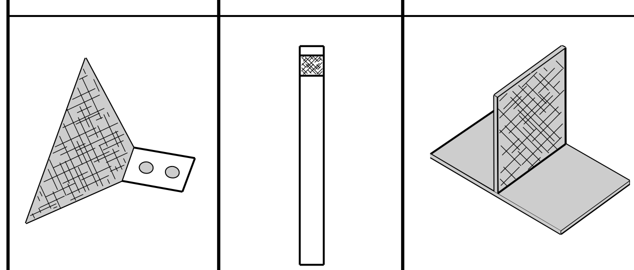
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

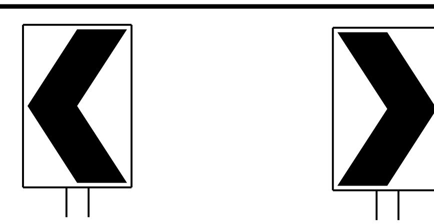
DEPARTMENTAL MATERIAL SPECIFICATIONS

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

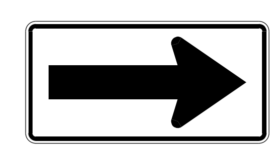
BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	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.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE	 W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

ONE DIRECTION LARGE ARROW

DEVICE	 W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

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).

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.

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	DW: TXDOT	CK: TXDOT
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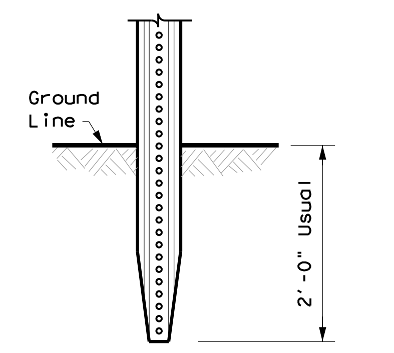
20A

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

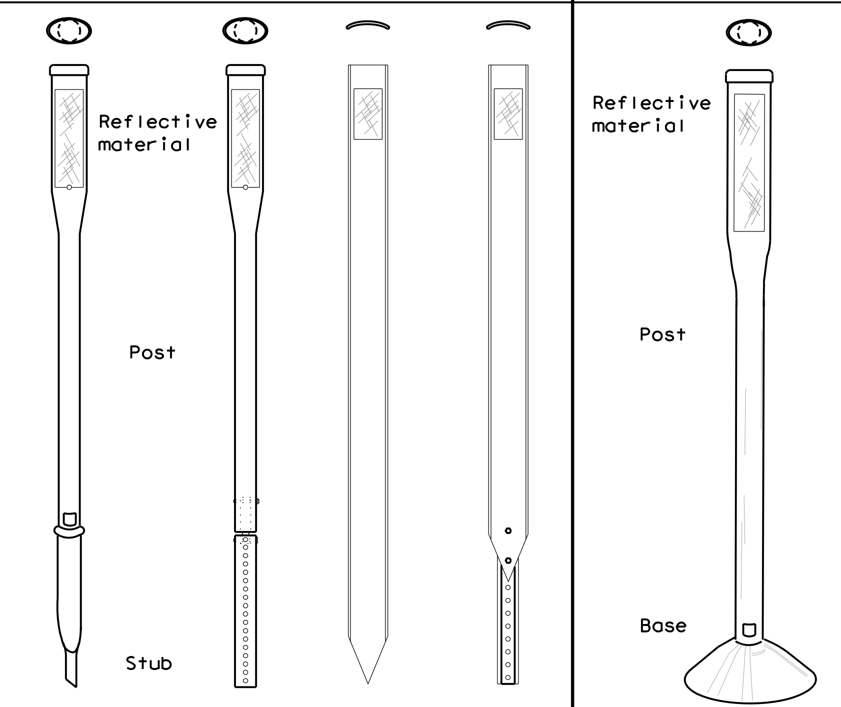


NOTES

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.

FLEXIBLE POSTS (YFLX, WFLX)

GND | SRF



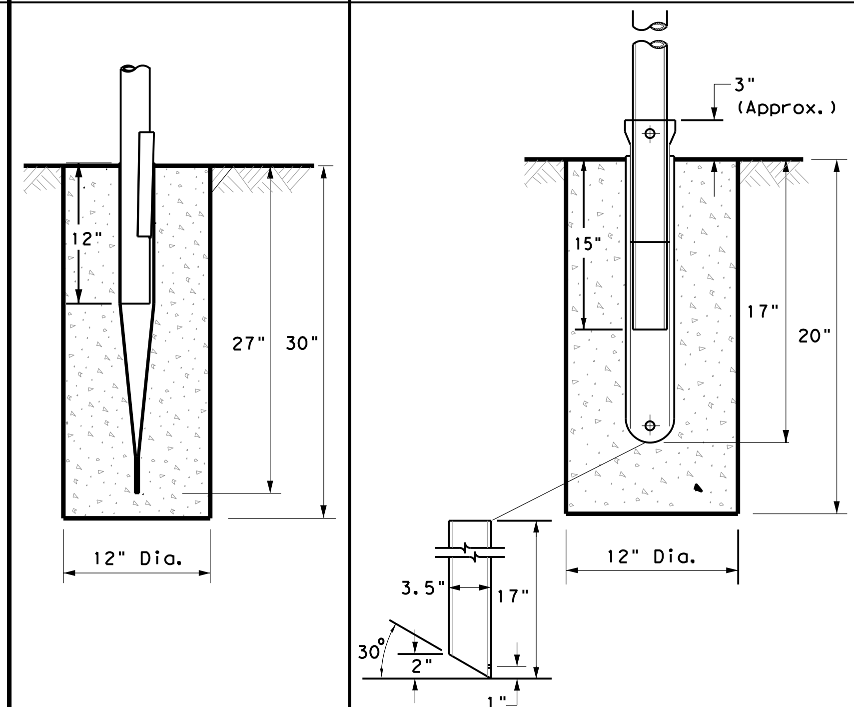
EMBEDDED | SURFACE MOUNT

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.

WEDGE ANCHOR SYSTEMS

WAS | WAP



STEEL | PLASTIC

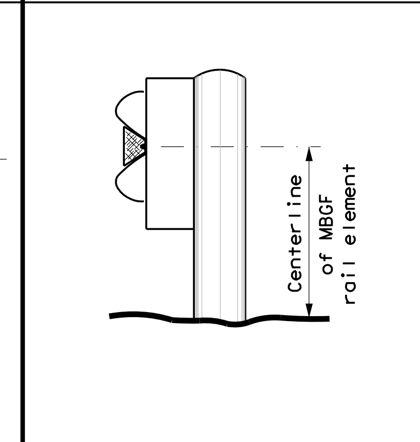
NOTE

1. Install per manufacturer's recommendations.

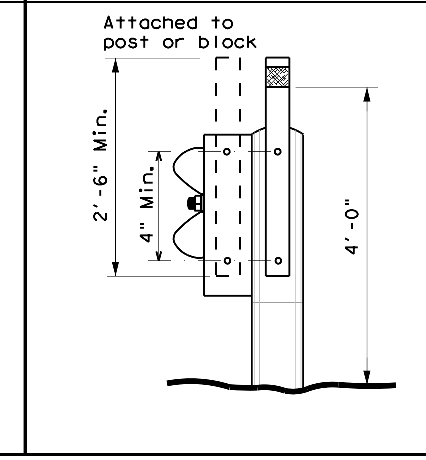
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

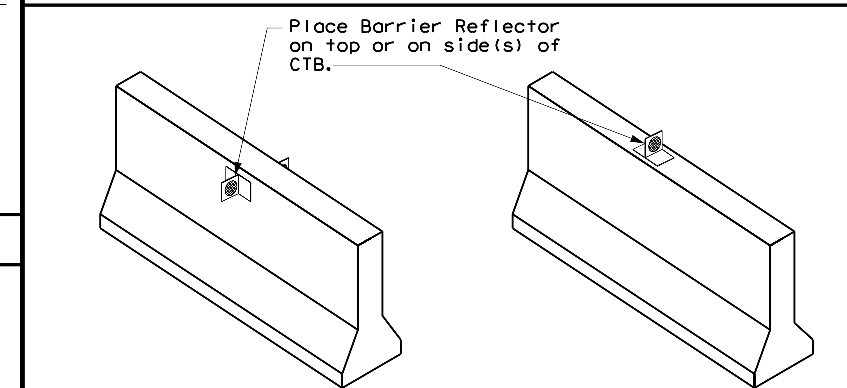
GF1



GF2



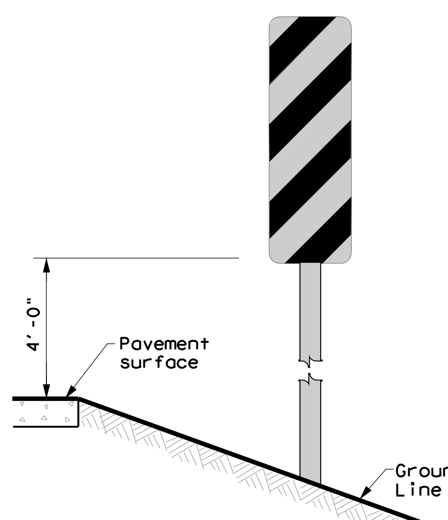
CONCRETE TRAFFIC BARRIER (CTB)



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.

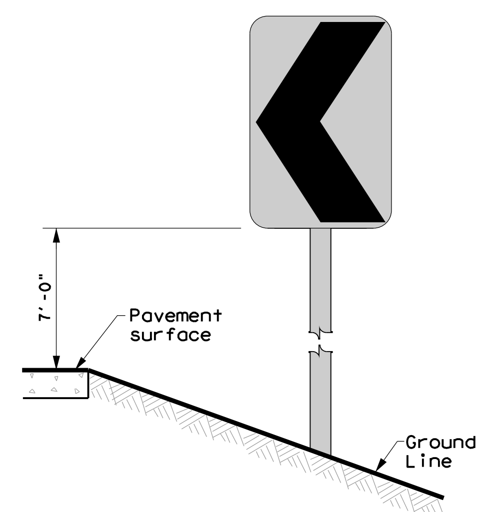
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

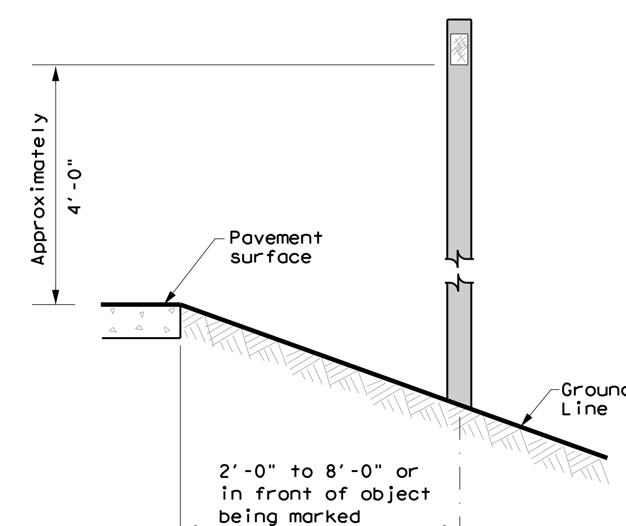
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

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DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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10-09 3-15	DIST		COUNTY	SHEET NO.
4-10 7-20	ELP		JEFF DAVIS	82

20B

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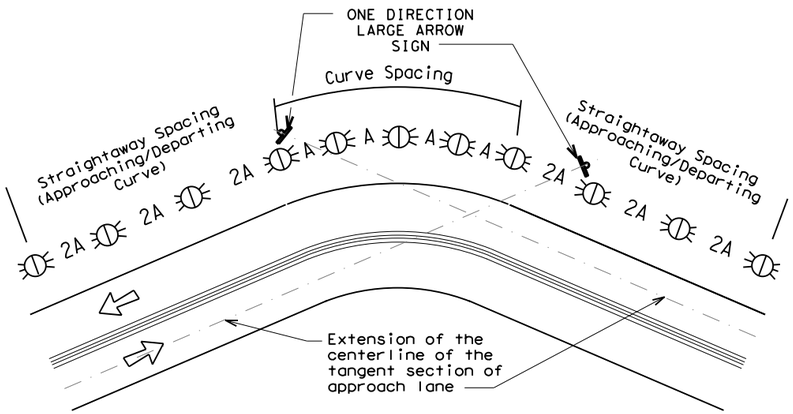
DATE: 8/26/2023 4:24:02 PM
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358-01-027 dom3-20.dgn

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

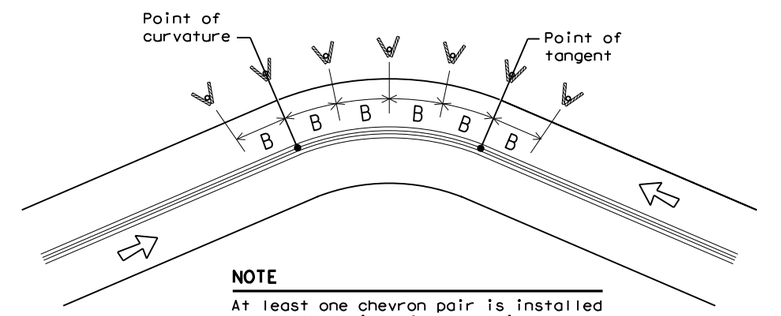
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	——
2	2865	160	320	——
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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REVISIONS	0358	01	027	SH 118
3-15 8-15 8-15 7-20	DIST	COUNTY		SHEET NO.
	ELP	JEFF DAVIS		83

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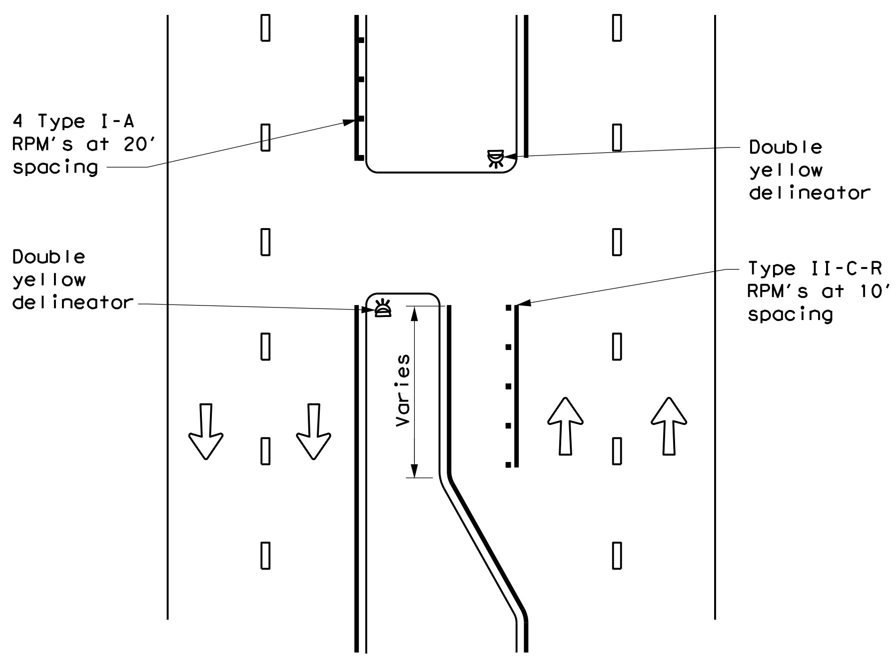
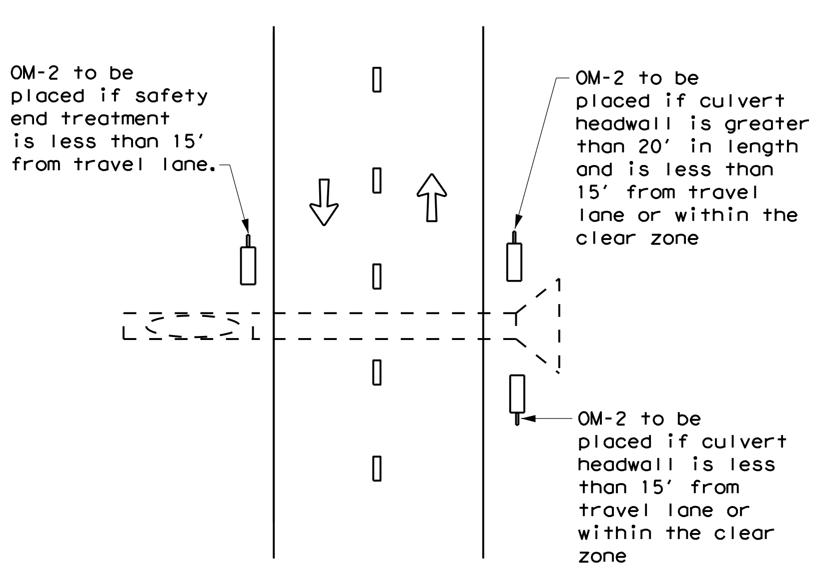
CROSSOVERS



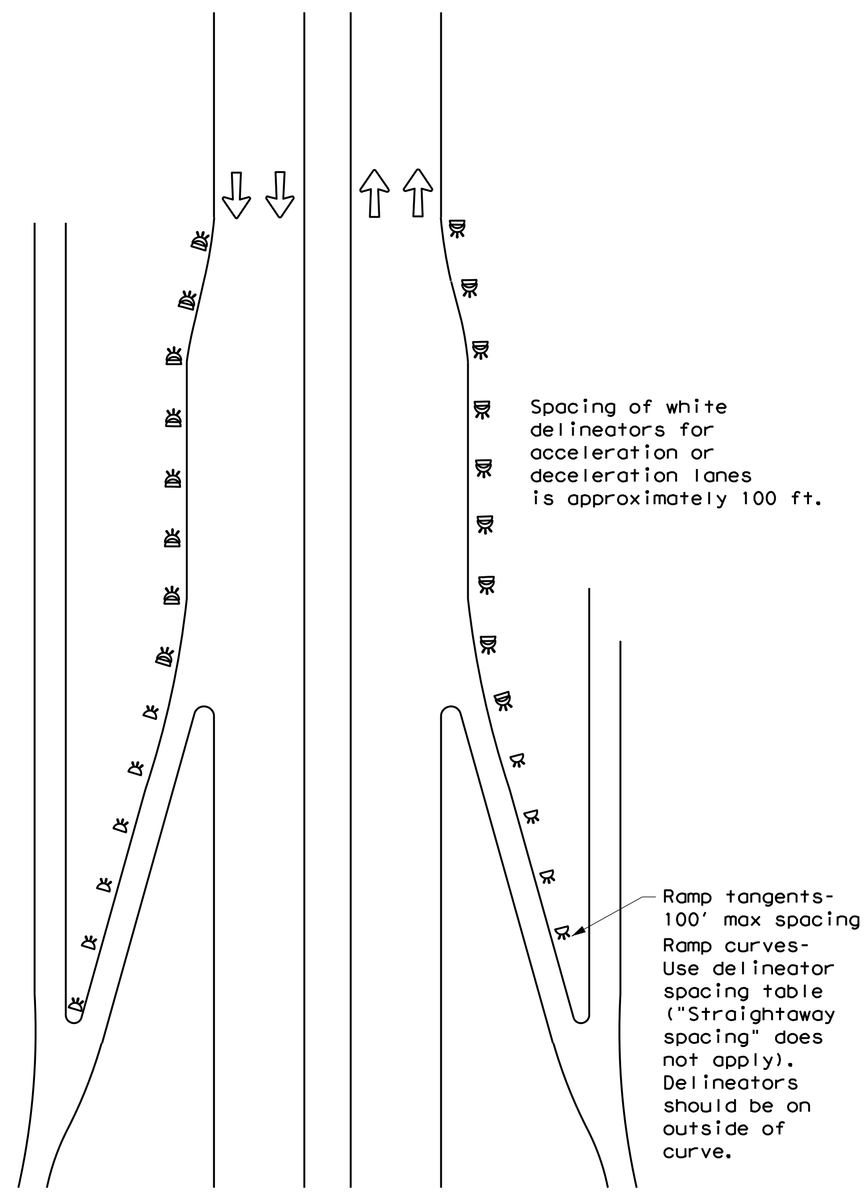
DETAIL 1

FOR CULVERTS WITHOUT MBGF



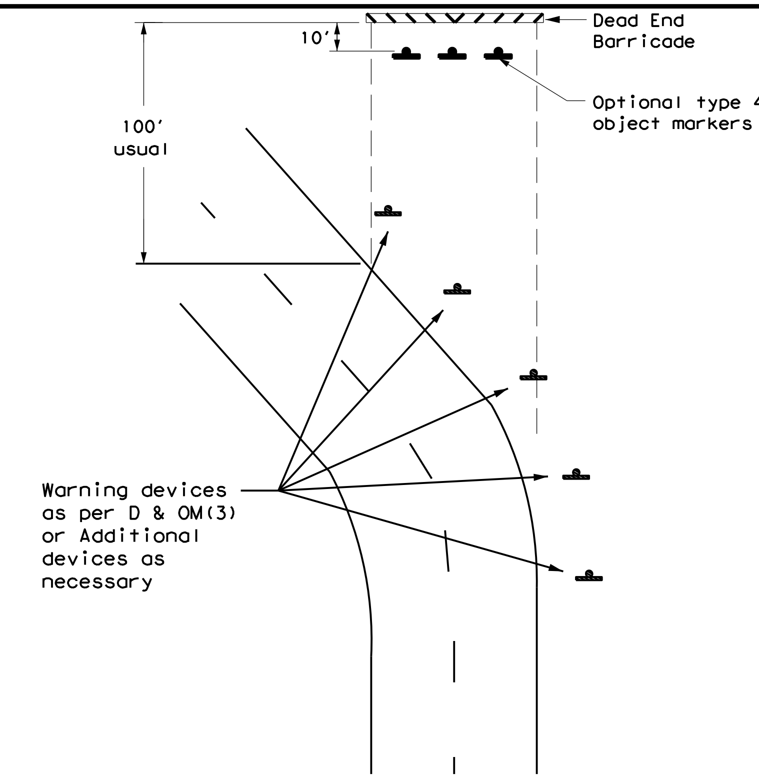
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



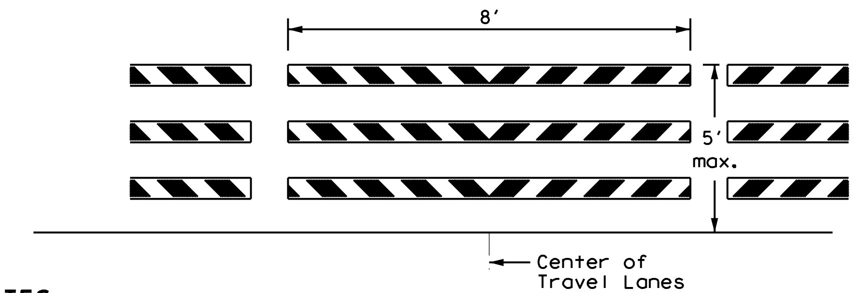
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND

Symbol	Description
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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REVISIONS 3-15 7-20	0358	01	027	SH 118
	DIST	COUNTY		SHEET NO.
	ELP	JEFF DAVIS		84

20D

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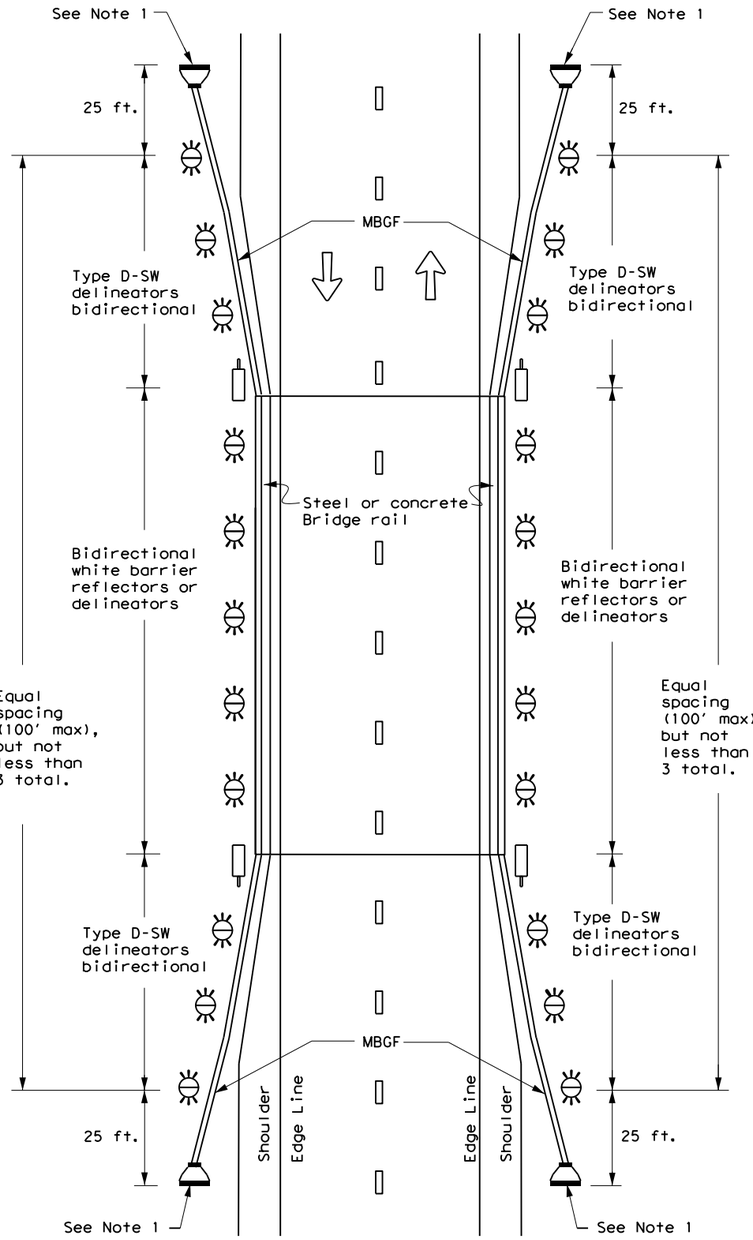
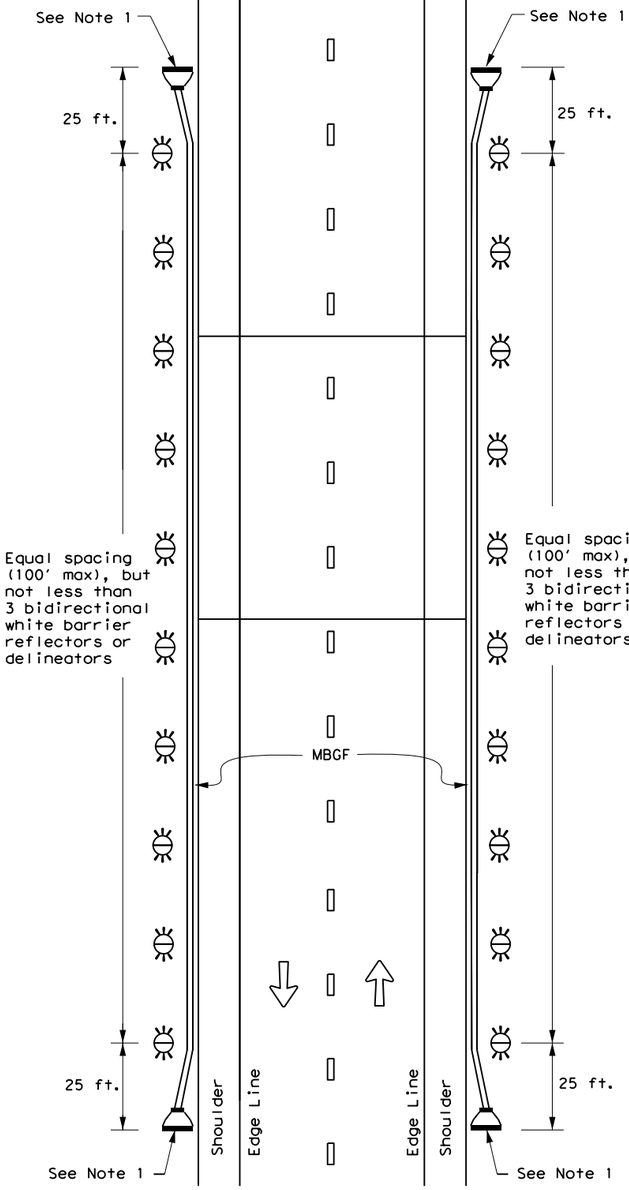
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. 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.

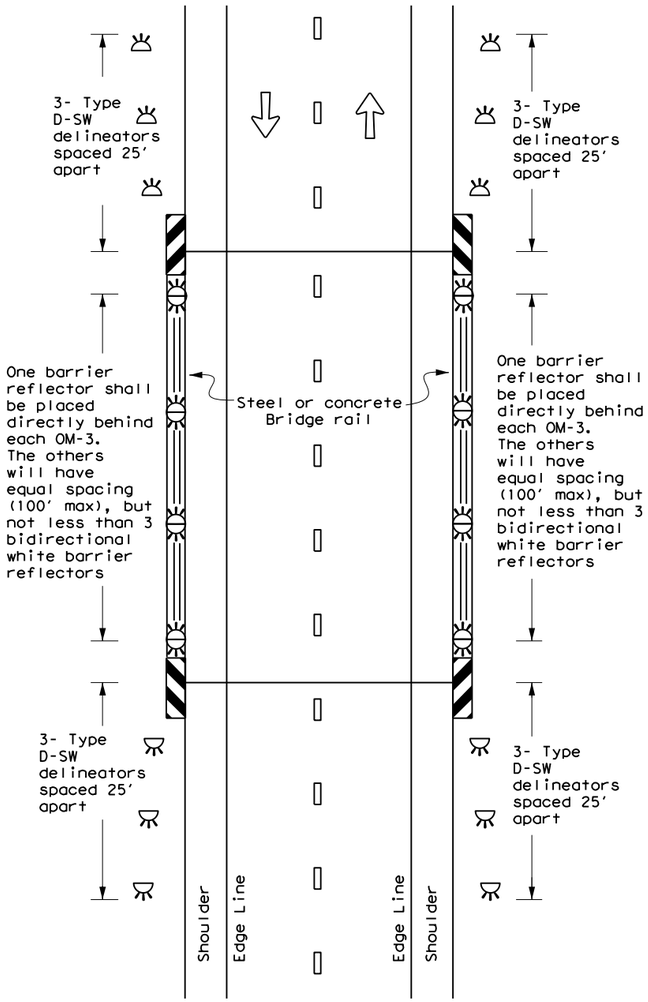
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. 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.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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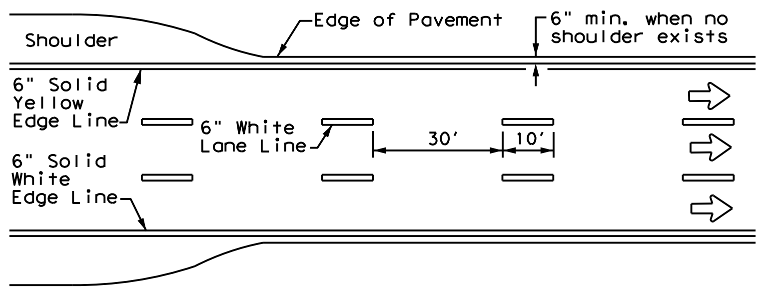
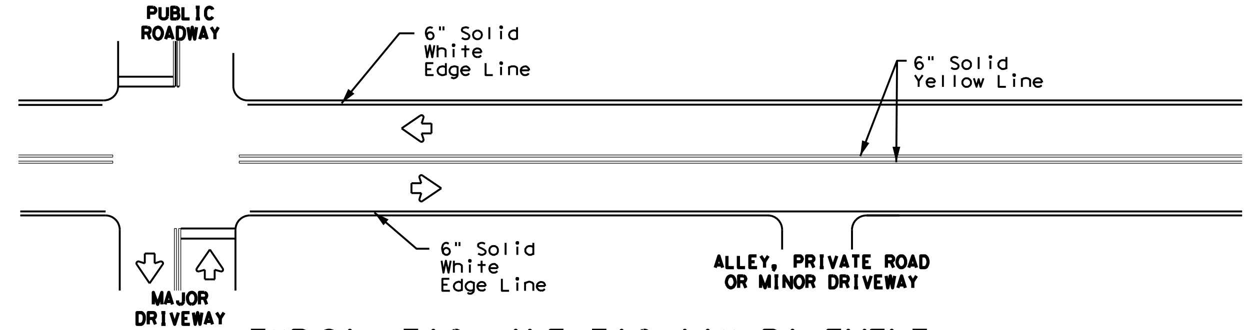
7-20	DIST	COUNTY		SHEET NO.
	ELP	JEFF DAVIS		85

20E



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



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

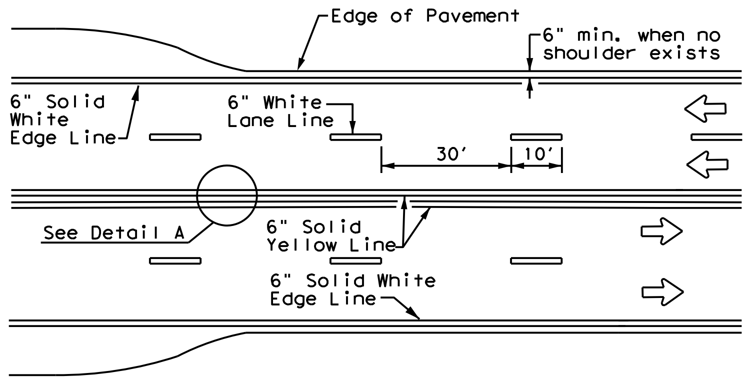
GENERAL NOTES

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

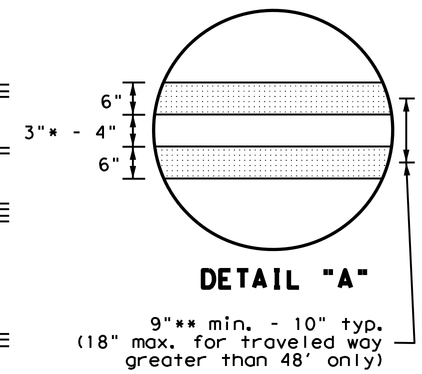
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



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

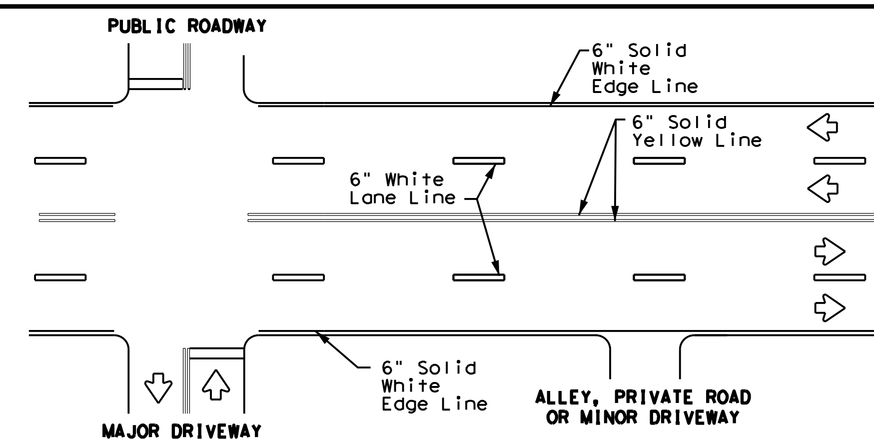


DETAIL "A"

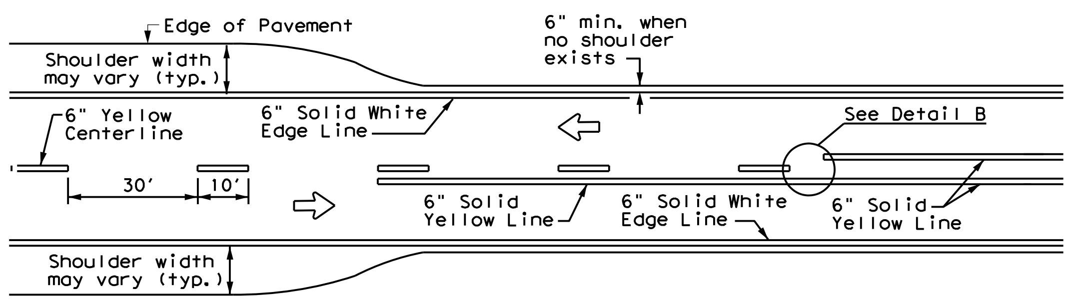
9"** min. - 10" typ. (18" max. for traveled way greater than 48' only)

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

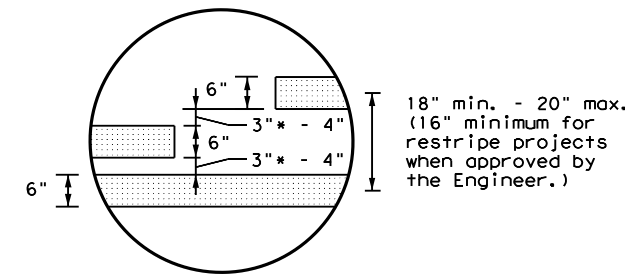
** 8" minimum for restripe projects when approved by the Engineer.



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

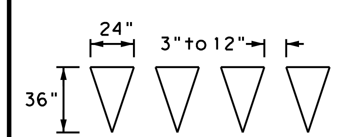


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



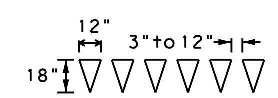
DETAIL "B"

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

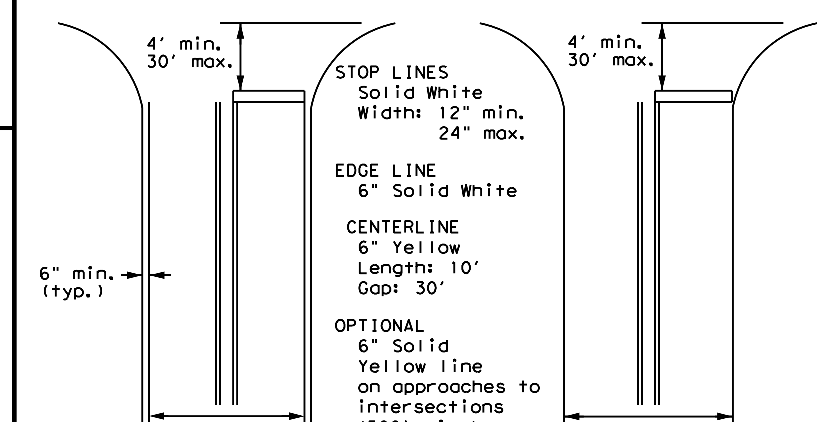


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



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



STOP LINES
Solid White
Width: 12" min. 24" max.

EDGE LINE
6" Solid White

CENTERLINE
6" Yellow
Length: 10'
Gap: 30'

OPTIONAL
6" Solid Yellow line on approaches to intersections (500' min.)

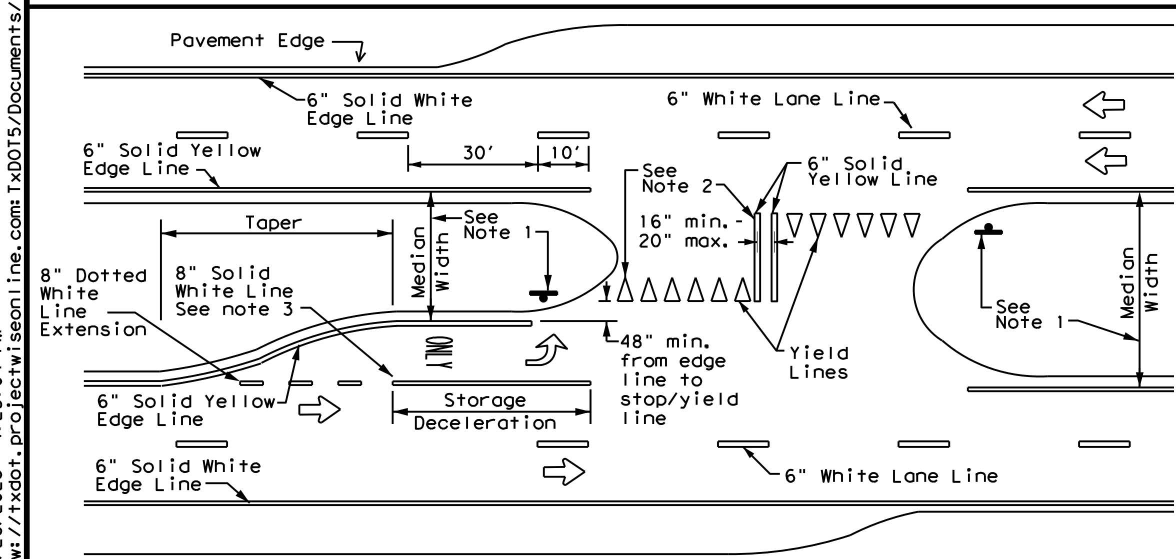
Minimum Requirements for Edgelines Traveled Way Width ≥ 20'

Minimum Requirements for Centerlines without Edgelines Pavement Width 16' ≤ W < 20'

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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

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

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

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

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TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
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	ELP		JEFF DAVIS	86

22A

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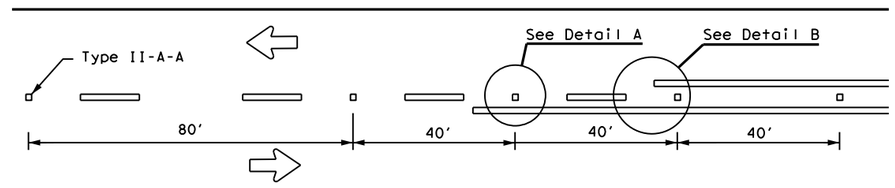
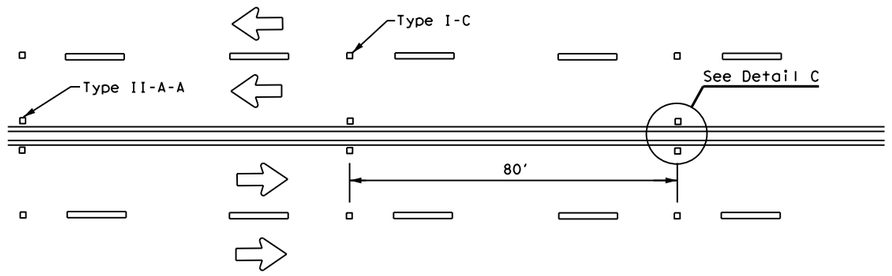
FILE: pw://txdot.projectwiseonline.com:TxDOT5/Documents/24 - ELP/Design Projects/0358-01-027

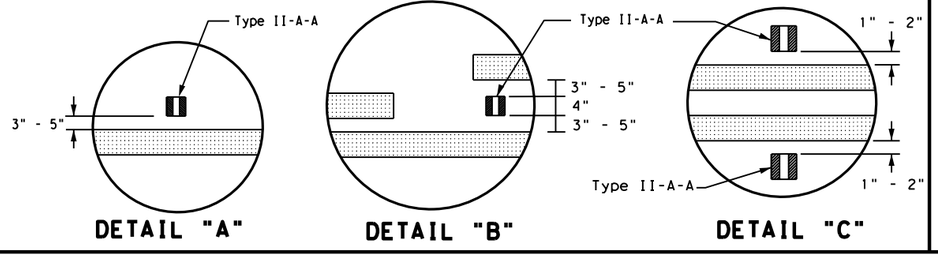
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

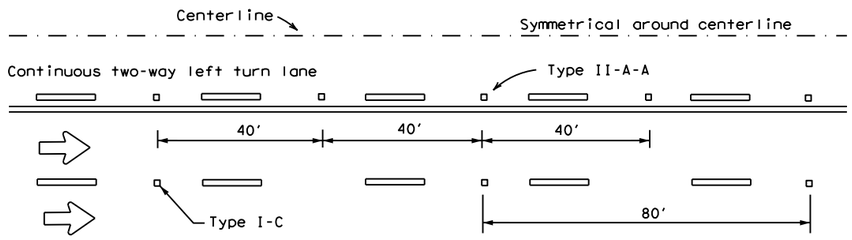


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

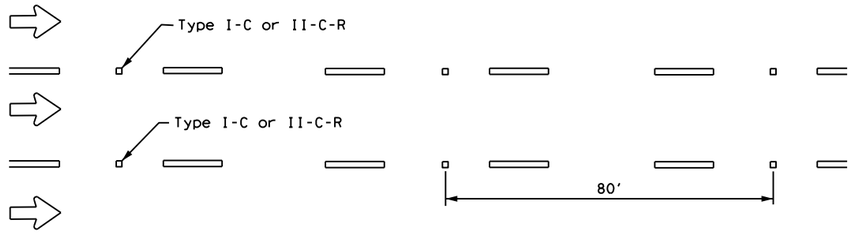


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



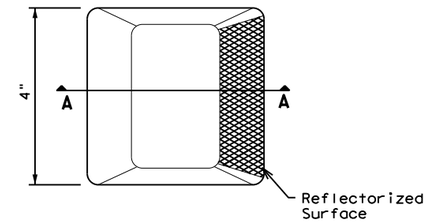
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

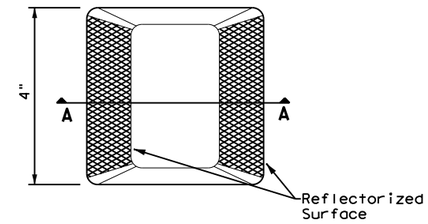
See Note 3.

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

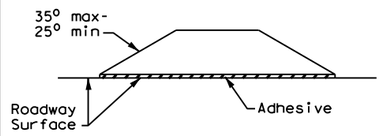
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

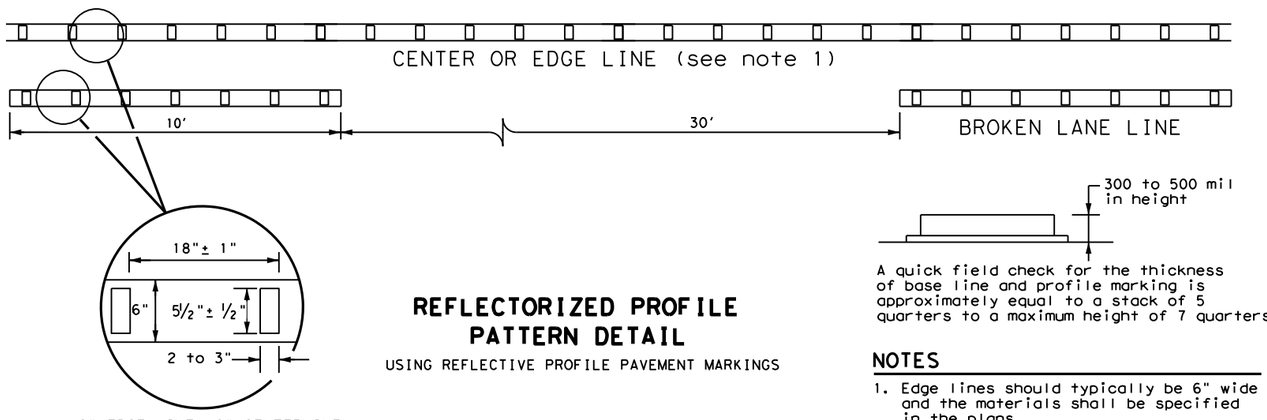


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

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.

Texas Department of Transportation

Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
4-77 8-00 6-20	DIST	COUNTY		SHEET NO.
4-92 2-10 12-22	ELP	JEFF DAVIS		87
5-00 2-12				

22B

DATE: 8/26/2023 4:25:43 PM
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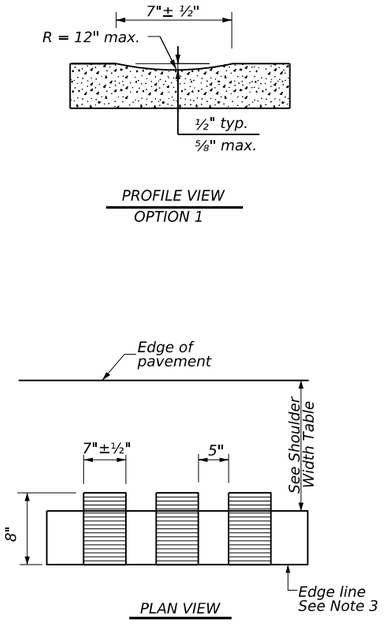
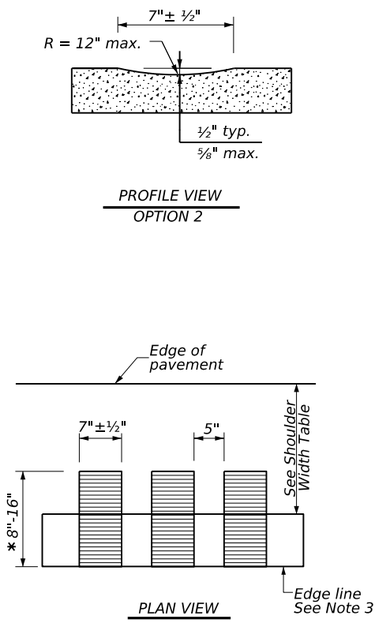


CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



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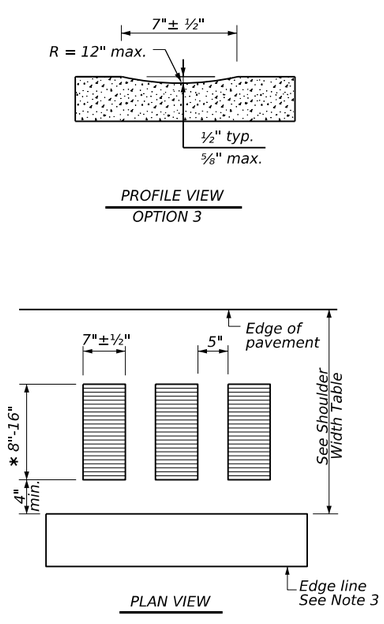

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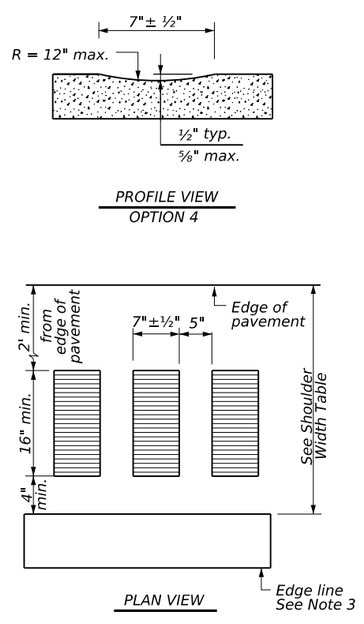
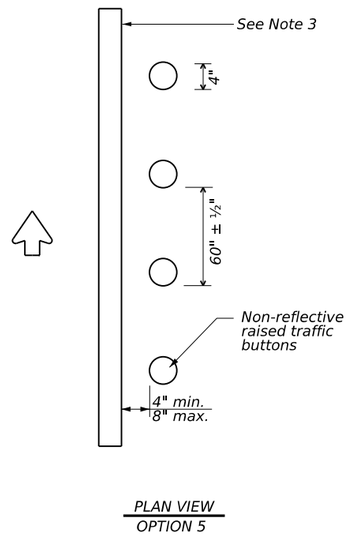
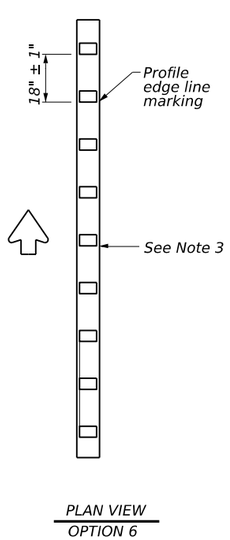


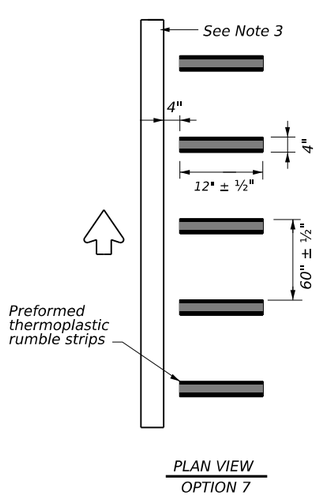
CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



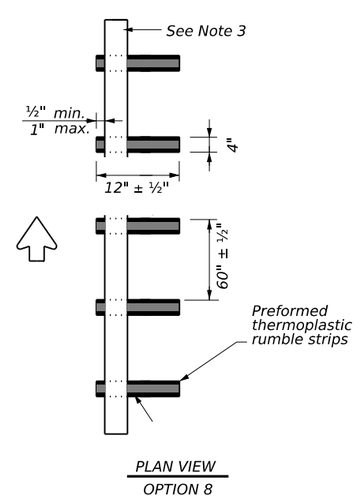
RAISED EDGE LINE (Rumble Strips)



PROFILE EDGE LINE MARKINGS (Rumble Strips)



PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)



PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)

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, 6 or 8	Option 1, 2, 3 5, 6 or 7	Option 2, 4, 5 6 or 7

GENERAL NOTES

1. Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
2. 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.
3. Use Standard Sheet PM(2) and FPM(1) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
4. See the Shoulder Width Table below for determining what options may be used for edge line rumble strips.
5. 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.
6. Rumble strips shall not be placed across exit or entrance ramps, acceleration or deceleration lanes, crossovers, gore areas, or intersections with other roadways.
7. Consideration should be given to noise levels when edgeline 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.
8. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING MILLED DEPRESSION EDGE LINE RUMBLE STRIPS:

9. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
10. Pavement markings can be applied over milled shoulder rumble strips to create an edge line rumble strip.

WHEN INSTALLING RAISED OR PROFILE EDGE LINE RUMBLE STRIPS:

11. 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.
12. 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.
13. 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.
14. The minimum distance between the edge line and the buttons should be used if the shoulder is less than 8 feet in width.
15. Raised profile thermoplastic markings used as edge lines may substitute for buttons.

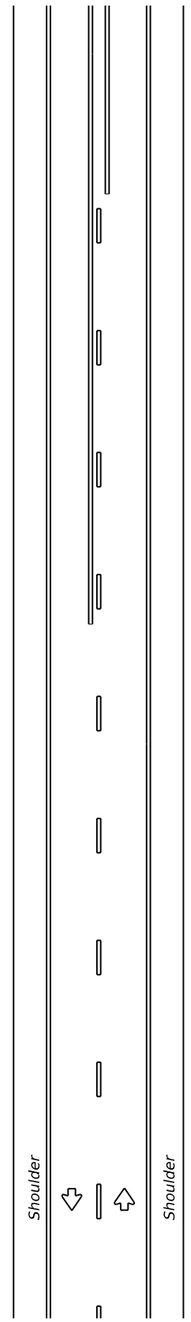
Texas Department of Transportation

Traffic Safety Division Standard

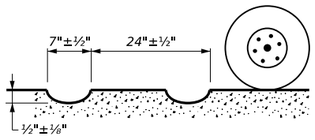
EDGE LINE RUMBLE STRIPS ON UNDIVIDED OR TWO LANE HIGHWAYS
RS(2)-23

FILE: rs(2)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
10-13 1-23	DIST	COUNTY		SHEET NO.
	ELP	JEFF DAVIS		88

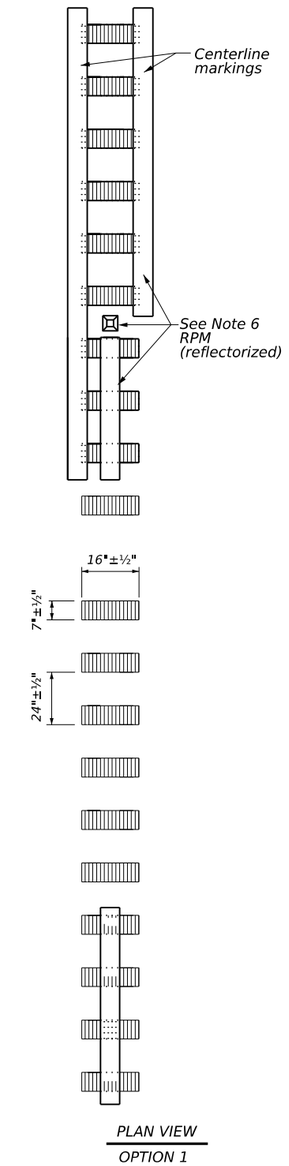
CENTERLINE RUMBLE STRIPS



TWO LANE TWO-WAY HIGHWAYS

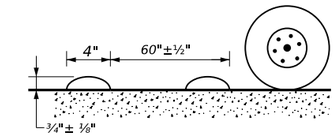


PROFILE VIEW

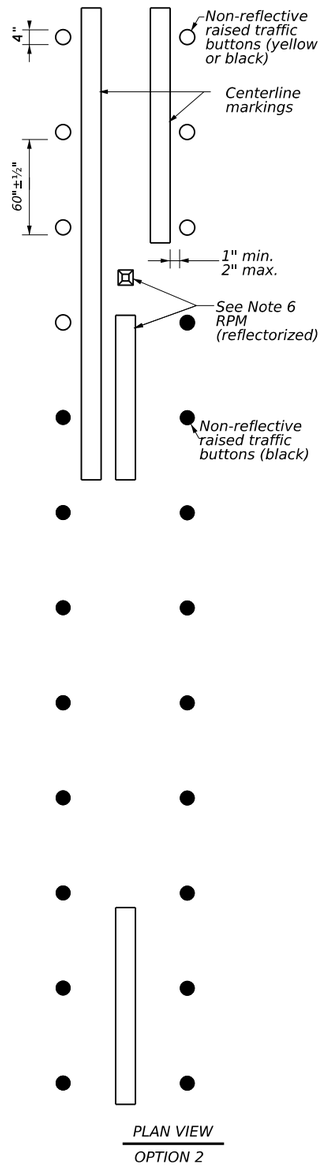


PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

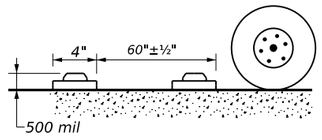


PROFILE VIEW

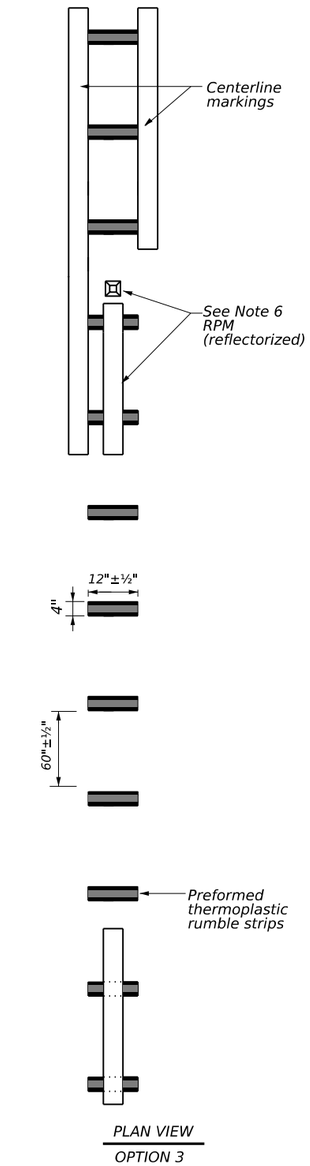


PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

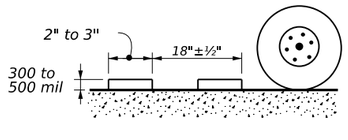


PROFILE VIEW

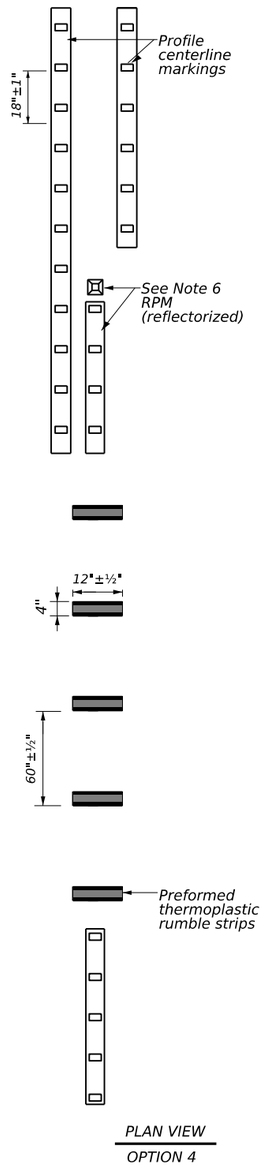


PLAN VIEW
OPTION 3

PREFORMED THERMOPLASTIC RUMBLE STRIPS



PROFILE VIEW



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS AND PREFORMED THERMOPLASTIC RUMBLE STRIPS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on two-lane highways with or without shoulders.
2. Centerline and edge line rumble strips or profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
3. 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.
4. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
5. Breaks in milled centerline 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.
6. Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline 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.
8. Pavement markings must be applied over milled centerline rumble strips.

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. 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 manufacturer's recommendations.
10. When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
11. The color of the button should be yellow for a continuous no passing roadway. Black buttons should be used in areas where passing is allowed.
12. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

13. See standard sheet RS(2).

Texas Department of Transportation

Traffic Safety Division Standard

CENTERLINE RUMBLE STRIPS ON TWO LANE TWO-WAY HIGHWAYS RS(4)-23

FILE: rs(4)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0358	01	027	SH 118
10-13 1-23	DIST	COUNTY		SHEET NO.
	ELP	JEFF DAVIS		89

DATE: 8/26/2023 4:26:04 PM
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DATE 8/26/2023
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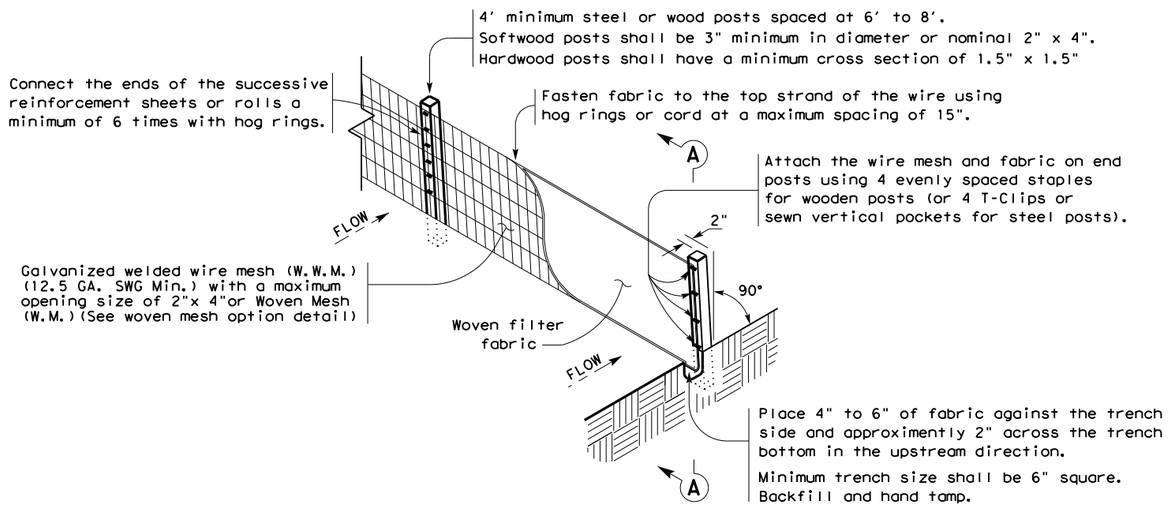
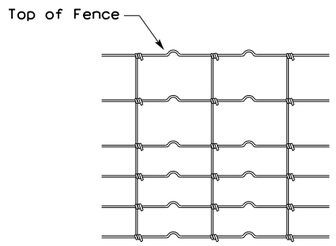
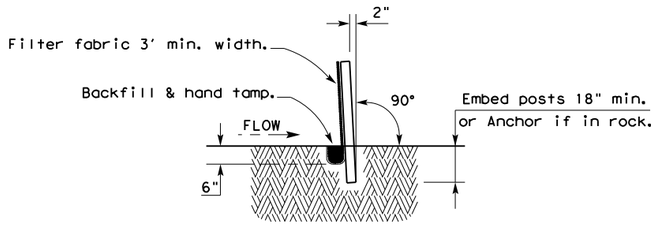


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

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^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

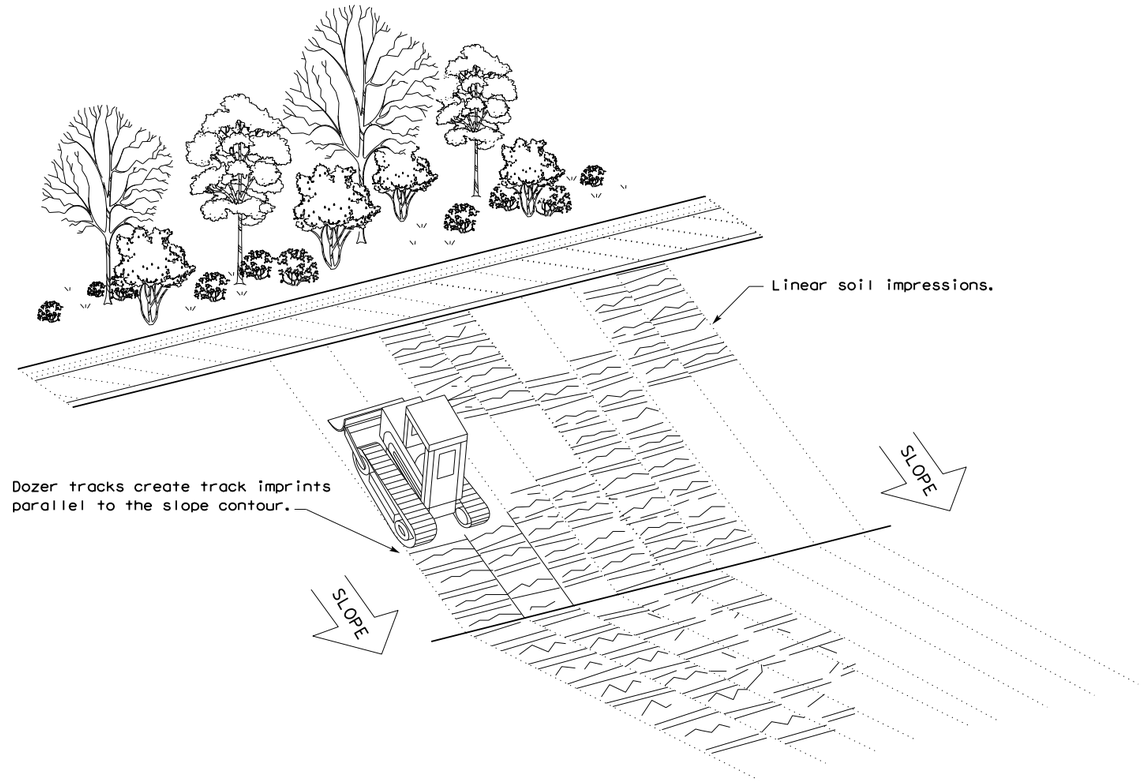
LEGEND

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 continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0358	01	027		SH 118	
	DIST	COUNTY			SHEET NO.	
	ELP	JEFF DAVIS			90	

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0358-01-027

1.2 PROJECT LIMITS:
From: APPROX 0.1 MI S OF FORT DAVIS

To: APPROX 6.5 MI S OF FORT DAVIS

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 30.5871974 ,(Long) -103.8940439

END: (Lat) 30.5273025 ,(Long) -103.8235916

1.4 TOTAL PROJECT AREA (Acres): 28.2

1.5 TOTAL AREA TO BE DISTURBED (Acres): 1.44

1.6 NATURE OF CONSTRUCTION ACTIVITY:
REHABILITATION OF EXISTING ROADWAY CONSISTING OF BASE REPAIR, MILL, OVERLAY, AND PAVEMENT MARKINGS.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Mu	MUSQUIZ CLAY LOAM, 0 TO 3 PERCENT SLOPES
BsE	BREWSTER ASSOCIATION, HILLY
BeB	BORACHO-ESPY COMPLEX, 1 TO 8 PERCENT SLOPES
RoF	ROCK OUTCROP-BREWSTER ASSOCIATION, STEEP

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:

- [X] PSLs determined during preconstruction meeting
- [ ] PSLs determined during construction
- [ ] No PSLs planned for construction

Type	Sheet #s
TREE REMOVAL FOR FLEXIBLE BASE REPAIRS	PLAN LAYOUT SHEET 15 OF 15 (SHEET NO. 61)

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

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

- [X] Mobilization
- [X] Install sediment and erosion controls
- [ ] Blade existing topsoil into windrows, prep ROW, clear and grub
- [X] 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
- [X] 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
- [X] 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
- [X] Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- [X] Solvents, paints, adhesives, etc. from various construction activities
- [ ] Transported soils from offsite vehicle tracking
- [X] Construction debris and waste from various construction activities
- [ ] Contaminated water from excavation or dewatering pump-out water
- [X] Sanitary waste from onsite restroom facilities
- [X] 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
CHIHUAHUA CREEK	STREAM
CIENEGA CREEK	STREAM
MUSQUIZ CREEK	STREAM

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

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

MS4 Entity

STATE OF TEXAS
ANTONIO SANTANA
93727
LICENSED PROFESSIONAL ENGINEER

Antonio Santana PE

08-29-23

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	STP 1302(022)		91
STATE	STATE DIST.	COUNTY	
TEXAS	ELP	JEFF DAVIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0358	01	027	SH 118

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

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

T / P

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
N/A		

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
- ☐ 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: _____
- ☐ 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
N/A		

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 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 2.5 of this SWP3 .

2.9 MAINTENANCE:

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

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STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

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