DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.			
	6	C918-47-360			
GRAPHICS	STATE	CONT	SECT	JOB	HIGHWAY NO.
	TEXAS	0918	47	360	FD 701241
CHECK	CHECK	DIST	COUNTY		SHEET NO.
		DAL	DALLAS		1

FINAL PLANS

NAME OF CONTRACTOR: _____

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED: _____

DATE WORK ACCEPTED: _____

SUMMARY OF CHANGE ORDERS:

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

STATE PROJECT

C 918-47-360

CSJ: 0918-47-360

FD 701241

DALLAS COUNTY

LIMITS: FROM-ON EAGLE FORD AND SHADY RIDGE CAMP LOOPS TO-WITHIN CEDAR HILL STATE PARK

TOTAL LENGTH OF PROJECT =

ROADWAY =	*11,882.81 FT. = 2.251*	*MI.*
BRIDGE =	*0 FT. = 0*	*MI.*
TOTAL =	*11,882.81 FT. = 2.251*	*MI.*

FOR THE CONSTRUCTION OF REHABILITATION OF EXISTING ROAD
CONSISTING OF: RECONSTRUCTION OF EXISTING ROADS IN CAMP LOOPS

DESIGN SPEED = NOT APPLICABLE

ADT (2024) = 880

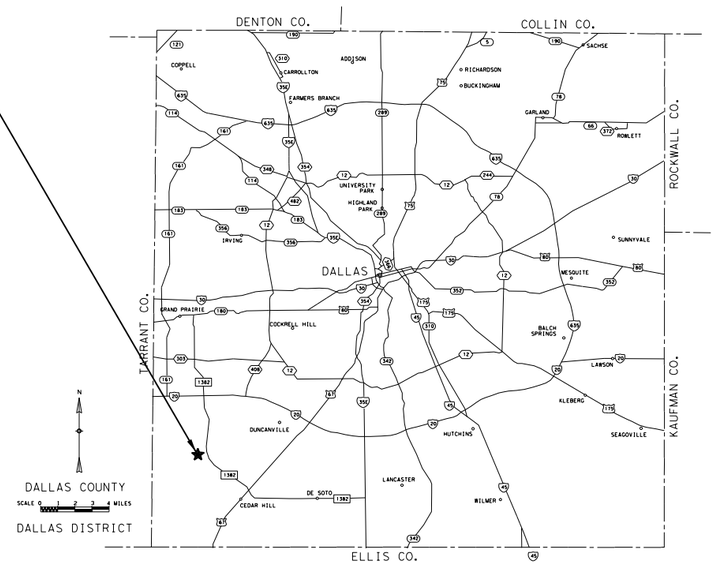
ADT (2044) = 880

FUNCTIONAL CLASSIFICATION: URBAN LOCAL

NOTE:

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2024, AND THE CONTRACT PROVISIONS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000-005)

PROJECT LOCATION
CSJ 0918-47-360
BEGIN STA 21+10.70
END STA 55+99.04



EQUATIONS: NONE
EXCEPTIONS: NONE
RAILROAD CROSSINGS: NONE

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED
Docusigned by: 6/27/2024
92E6FDDD1TAC4F2...
, P.E.
, DESIGN ENGINEER

RECOMMENDED
Docusigned by: 6/27/2024
9867TC09B9A4C5...
, P.E.
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

RECOMMENDED
Docusigned by: 6/27/2024
91B8F2112C2E4C...
, P.E.
, DESIGN ENGINEER

APPROVED FOR LETTING
Docusigned by: 6/28/2024
A879E0D10CD6464...
, P.E.
DISTRICT ENGINEER

WORK WAS COMPLETED ACCORDING TO THE PLANS AND CONTRACT.

_____ *, P.E.*
Signature of Registrant & Date

	I. GENERAL		IV. RETAINING WALL DETAILS		IX. ENVIRONMENTAL ISSUES
1	TITLE SHEET		NONE	102	ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS (EPIC)
2	INDEX OF SHEETS			103-104	STORMWATER POLUTION PREVENTION PLAN (SWP3)
3	PROJECT LAYOUT		V. DRAINAGE DETAILS	105-108	SW3P LAYOUT-SHADY RIDGE
4	TYPICAL SECTIONS		NONE	109-112	SW3P LAYOUT-EAGLE FORD
5,5A-5D	GENERAL NOTES			113	ENVIRONMENTALLY SENSITIVE AREA-SHADY RIDGE
6-6A	ESTIMATE & QUANTITY		VI. UTILITIES	114	ENVIRONMENTALLY SENSITIVE AREA-EAGLE FORD
7	EARTHWORK SUMMARY		NONE	115	VEGETATION ESTABLISHMENT SHEET (DAL) (MOD)
8-9	QUANTITY SUMMARY				
10	SUMMARY OF SMALL SIGNS (SOSS)		VII. BRIDGES		ENVIRONMENTAL ISSUES STANDARDS
			NONE	116	EC (1)-16
	II. TRAFFIC CONTROL PLAN			117	EC (2)-16
11	SEQUENCE OF WORK NARRATIVE		VIII. TRAFFIC ITEMS	118	EC (3)-16
12	SEQUENCE OF WORK LOOP CLOSURE	82-85	STRIPING AND SIGNING PLAN-SHADY RIDGE	119-121	EC (9)-16
13-19A	SEQUENCE OF WORK	86-89	STRIPING AND SIGNING PLAN-EAGLE FORD	122	SWP3 SIGN SHEET (DAL)
			TRAFFIC STANDARDS		X. MISCELLANEOUS ITEMS
	TRAFFIC CONTROL PLAN STANDARDS	90	SMD (SLIP-1) -08 (DAL)		NONE
20-31	BC (1)-21 THRU BC (12)-21	91	SMD (SLIP-2) -08		
32	WZ(RCD)-13	92	SMD (SLIP-3) -08		
		93	SMD (GEN) -08		
		94	TSR (4) -13		
	III. ROADWAY DETAILS	95	D&OM (1)-20		
33-34	SURVEY CONTROL	96	D&OM (2)-20		
35-44	HORIZONTAL ALIGNMENT DATA	97	D&OM (4)-20		
45-48	ROADWAY REMOVAL PLAN-SHADY RIDGE	98	D&OM (5)-20		
49-52	ROADWAY REMOVAL PLAN-EAGLE FORD	99	D&OM (VIA)-20		
		100	PM (1)-22		
53-58	PAVING PLAN & PROFILES-SHADY RIDGE	101	PM (2)-22		
59-64	PAVING PLAN & PROFILES-EAGLE FORD				
65-68	ROADWAY MISCELLANEOUS DETAILS				
69-70	PARKING LOT MISCELLANEOUS DETAILS				
	ROADWAY DETAILS STANDARDS				
71	GF (31)-19				
72	GF (31)MS-19				
73	GF (31)DAT-19				
74	OMIT				
75	OMIT				
75A-75C	SRG (TL-3)-21				
76	SGT (10S)31-18				
77	SGT (11S)31-18				
78	SGT (12S)31-18				
79	SGT (15) 31-20				
80	TE (HMAC)-11				
81	LJD (1-1)-07 (DAL)				

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

8/5/2024
Signature of Registrant & ,P.E. Date

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

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CEDAR HILL STATE PARK

INDEX OF SHEETS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		2

DATE: 7/31/2024 1:12:29 PM
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LEGEND

- EXISTING STRUCTURES
- PROJECT CONSTRUCTION
- BRANCH AND TRIBUATARIES

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/13/2024
, P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

PROJECT LAYOUT
PARK LOOPS
SHADY RIDGE
EAGLE FORD

SCALE: N.T.S SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		3

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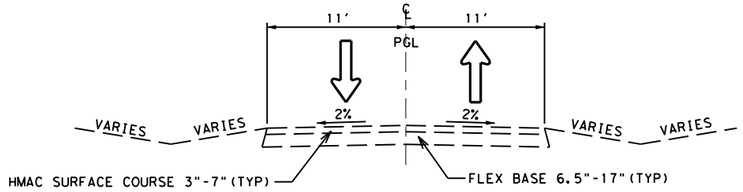
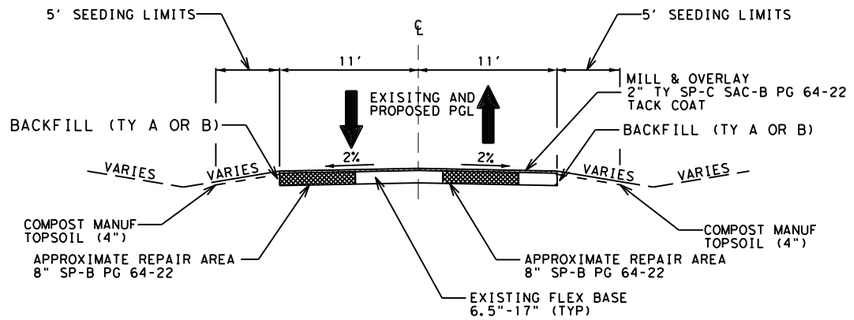


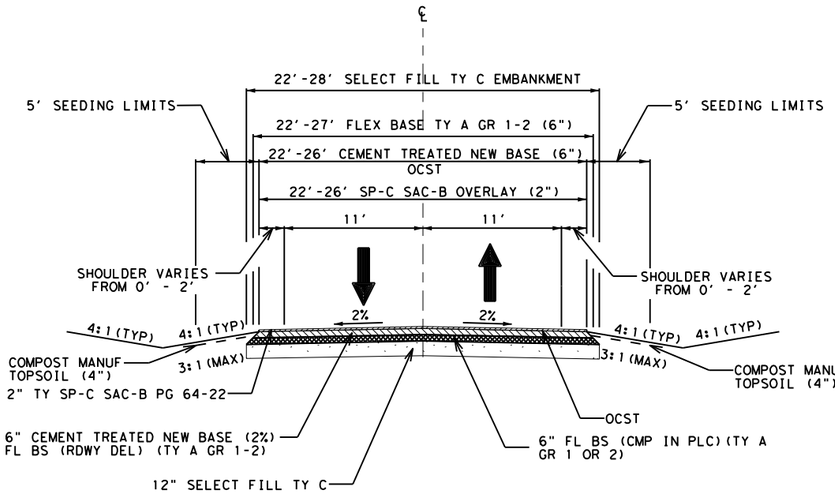
EXISTING TYPICAL SECTION

EAGLE FORD	SHADY RIDGE
LOOP H STA 0+22.25 TO STA 39+96.81	LOOP I STA 21+10.70 TO STA 55+84.80
LOOP H-2 STA 0+16.35 TO STA 8+49.70	LOOP I-2 STA 0+43.36 TO STA 11+97.08
LOOP H-3 STA 0+42.03 TO STA 9+77.85	LOOP I-3 STA 0+45.20 TO STA 15+42.23



PROPOSED MILL & OVERLAY TYPICAL SECTION

EAGLE FORD	SHADY RIDGE
LOOP H STA 0+22.25 TO STA 10+60.33	LOOP I STA 21+10.70 TO STA 48+92.78
	LOOP I-2 STA 00+43.36 TO STA 11+97.08



PROPOSED RECONSTRUCTION TYPICAL SECTION

EAGLE FORD	SHADY RIDGE
LOOP H STA 10+60.33 TO STA 39+96.81	LOOP I STA 48+92.78 TO STA 55+84.80
LOOP H-2 STA 0+16.35 TO STA 8+49.70	LOOP I-3 STA 00+45.20 TO STA 15+42.23
LOOP H-3 STA 0+42.03 TO STA 9+77.85	

NOTES:

1. FLEXIBLE PAVEMENT STRUCTURE REPAIR AT VARIOUS LOCATIONS WITHIN MILL AND OVERLAY TYPICAL SECTION LIMITS. REPAIR LOCATIONS TO BE LOCATED AND VERIFIED BY THE ENGINEER IN THE FIELD, MINIMUM WIDTH SHALL BE HALF LANE OR FULL LANE.

2. VERTICAL CUTS ARE REQUIRED AT THE EDGES OF EXISTING DRIVEWAYS AND PARKING LOTS, SEE ROADWAY MISC. DETAIL SHEET FOR MORE INFORMATION.

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/28/2024
,P.E.
Signature of Registrant & Date

Texas Department of Transportation

CEDAR HILL STATE PARK

TYPICAL SECTIONS

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

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		4

DATE: 6/28/2024 2:50:29 PM
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CK: DW: CK: DW:

SPECIFICATION DATA

Table 1: Soil Constants Requirements				
Item	Description	Plasticity Index		Note
		Max	Min	
132	EMBANK (FNL)(DC)(TY C)	20	10	1

Note 1: Material excavated from the project must meet the PI requirements when used in the top 10 feet of embankment that supports the pavement structure or other locations shown in the plans. Do not use shale and obtain approval to incorporate shaley clay produced by the construction project.

Table 2: Basis of Estimate for Permanent Construction					
Item	Description	Thickness	Rate		Quantity
164	Drill Seed (Perm_Rual_Clay)	N/A	See Specifications		8,191 SY
166 *	Fertilizer (12-6-6)	N/A	500	Lbs./Ac	0.43 Ton
168	Vegetative Watering (Warm)**	N/A	12	TGL/Ac/Day	1,220 TGL
344	SP MIXES	2”	110	Lbs./SY/In	3,616 Ton
344	Tack Coat (Undiluted Application Rate)	Milled HMA	0.11	Gal/SY	1,495 Gal
*For contractor’s information only **Use Summer rate for calculation, adjust for actual field conditions/temperatures as necessary. See Vegetation Establishment Plan Sheet for estimated daily rates.					
Note: (1) Base material weight based on 1.50 Ton/CY (dry- compacted) (2) Asphalt weight based on 110 Lbs./SY/In (3) Item 314 Residual Asphalt 0.20 Gal/SY					

CSJ: 0918-47-360 **Sheet 5**

County: Dallas

Highway: FD 701241

Table 3: Basis of Estimate for Temporary Erosion Control Items				
Item	Description	Rate		Quantity
164	Drill Seed (Temp_Warm_Cool)	See Specifications		8,191 SY
166*	Fertilizer (12-6-6)	500	Lb/Ac	0.43 Ton
168	Vegetative Watering (Warm)**	12	TGL/Ac/Day	1,220 TGL
*For Contractor’s Information Only. **Use Summer rate for calculation, adjust for Actual Field Conditions/Temperatures as Necessary. See Vegetation Establishment Sheet for estimated daily rates.				

GENERAL

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

The disturbed area for this project, as shown on the plans is 4.86 acres. However, the Total Disturbed Area (TDA) will establish the required authorization for storm water discharges. The TDA of this project will be determined by the sum of the disturbed area in all project locations in the contract, and all disturbed area on all Project-Specific Locations (PSL) located in the project limits and/or within 1 mile of the project limits. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction site as shown on the plans, according to the TDA of the project. The contractor will obtain any required authorization from the TCEQ for the discharge of storm water from any PSL for construction support activities on or off of the project row according to the TDA of the project. When the TDA for the project exceeds 1 acre, provide a copy of the appropriate application of permit (NOI, or Construction Site Notice) to the engineer, for any PSL located in the project limits or within 1 mile of the project limits. Follow the directives and adhere to all requirements set forth in the TCEQ, Texas Pollution Discharge Elimination System, Construction General Permit (TPDES, CGP).

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

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

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

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

or Contractor questions on this project are to be addressed to the following individual(s):

Nathan Petter Nathan.Petter@txdot.gov (Area Engineer)
Dung Nguyen Dung.Nguyen@txdot.gov (Assistant Area Engineer)

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

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.

Cross sections may be requested by posting a question to the above Letting Pre-Bid Q&A web page. This data is for non-construction purposes only and it is the responsibility of the prospective bidder to validate the enclosed data with appropriate plans, specifications and estimate for the project(s).

The following standard detail sheets have been modified:
Vegetation Establishment Sheet

Item 5:
Underground utilities owned by the Texas Parks and Wildlife Department (TPWD) may be present within the Right-Of-Way on this project. Contact the appropriate department of the TPWD a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages when utilities are damaged due to Contractor's negligence including, but not limited to, repair or replacement at the Contractor's expense.

For the project to be deemed complete, permanently stabilize all unpaved disturbed areas of the project with a vegetative cover at a minimum of 70% density for the control of erosion.

Place construction stakes/station markings at intervals of no more than 100 feet or as directed by the Engineer. Place stakes and markings so as not to interfere with normal construction operations.

Submit all shop drawings, working drawings, or other documents which require review sufficiently in advance of scheduled construction to allow no less than thirty (30) calendar days for review and response.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publications/bridge.html#design. Acceptance or denial of

CSJ: 0918-47-360 **Sheet 5A**

County: Dallas

Highway: FD 701241

an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

Item 7:
Repair or replace any structures and utilities that might have been damaged by negligence or a failure to have utility locates performed.

Holiday restrictions – The Engineer may decide that no lane closures or construction operations shall be allowed during the restricted periods listed in the following holiday schedule. TxDOT has the right to lengthen, shorten, or otherwise modify these restricted periods as actual, or expected, traffic conditions may warrant. Working days will not be charged for these restricted periods. No additional compensation will be allowed for these closures (i.e., overhead, delays, stand-by, barricades or any other associated cost impacts).

- New Year's Eve and Day (5 am on December 31 thru 10:00 pm January 1)
- Easter Holiday weekend (5 am on Friday thru 10:00 pm Sunday)
- Memorial Day weekend (5 am on Friday thru 10:00pm Monday)
- Independence Day (5 am on July 3 thru 10:00 pm on July 5)
- Labor Day weekend (5 am on Friday thru 10:00 pm Monday)
- Thanksgiving Holiday (5 am on Wednesday thru 10:00 pm Sunday)
- Christmas Holiday (5 am on December 23 thru 10:00 pm December 26)

No significant traffic generator events identified.

Item 8:
This Project will be a Five-Day Workweek in accordance with Article 8.3.1.1.

Meet weekly with the engineer to notify him or her of planned work for the upcoming week.

Provide the engineer with a daily work schedule of planned work.

Critical Path Method (CPM) schedule in P6 format will be required for this project. Submit baseline schedule and obtain approval prior to beginning construction. The Estimate will be held if monthly schedule update is not submitted.

This project will have a 90-day delay start per the item 8 special provisions to allow the completion of the park capital construction within the limits of this project.

Item 100:
Remove the existing roadway small signs, delineators and object markers as shown on the plans, or as directed, during construction within the right of way. Small sign, delineator and object marker removals are subsidiary to this Item.

The limits of preparing right of way will be measured from Sta. 0+22.25 to Sta. 39+96.81 for Loop H in Eagle Ford, Sta. 0+16.35 to Sta. 8+49.70 for Loop H2 in Eagle Ford, Sta. 0+42.03 to Sta. 9+77.85 for Loop H3 in Eagle Ford, Sta. 21+10.70 to Sta 55+99.04 for Loop I in Shady Ridge, Sta. 0+43.36 to Sta. 11+97.07 for Loop I2 in Shady Ridge, and Sta. 0+45.20 to Sta 15+42.23 for Loop I3 in Shady Ridge along the centerline of construction.

Items 105 and 354:
Saw existing asphalt along neat lines where portions are to be left in place temporarily or permanently. Sawing is not paid for directly, but is subsidiary to this item.

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

Properly dispose of unsalvageable material at your own expense.

Item 110:
Excavated shale is not an acceptable material for embankment.

Items 110 and 132:
Scarify and loosen the excavated areas, unpaved surface areas, except rock, to a depth of at least 8 inches and compact in accordance with the specifications.

Excavation and embankment for driveways, sleeper slabs, alleys and intersections will not be paid for directly, but will be considered subsidiary to these items.

Item 132:
Excavated material from the project site has not been determined to be suitable for embankment. The bidder assumes all risk for the use of excavated materials for embankment and is expected to meet all material requirements for embankment regardless of the source.

Perform Tex-106-E (Plasticity Index) by an approved laboratory on excavated soils from sources outside right of way when used in roadway embankment. Provide the test results at no expense to the department. The engineer will sample and test soils produced by the construction project for specification requirements or material sources specified in the plans.

Earth embankment Type C, is mainly composed of material other than shale. Furnish material that is free from vegetation or other objectionable material and that conforms to the requirements of Table 1 (Sheet A).

Do not use shaley clays in embankment unless approved in writing.

Item 134:
Start backfilling pavement edges as soon as possible after the surface course is started.

Backfill and compact the pavement edges to produce a smooth surface adjacent to the pavement with no vertical edges.

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

Blade the existing vegetation into a neat wind-row prior to overlay. After placing Ty A or Ty B backfill and placing seeding, the material from the wind-row shall be replaced on the completed slopes. Emulsion shall be placed at a 50/50 solution of water to emulsion over disturbed area.

CSJ: 0918-47-360 **Sheet 5B**

County: Dallas

Highway: FD 701241

Emulsion rate=0.15 Gal/SY residual. This work, materials and equipment shall be subsidiary to Item 134.

Item 160:
Sequence construction operations to salvage topsoil from one location and spread on areas ready to receive topsoil. Keep stockpiling of topsoil to a minimum.

Use fertile clay or loam from the project site not more than six inches below natural grade as topsoil.

Item 161:
Provide tickets representing quantity of compost delivered to site.

Item 164:
Only native grass species are allowed on USACE land. Contact Park Superintendent Rachel Laca (903-916-0031) for a list of acceptable grass species.

Remove Awnless Bush Sunflower from the permanent rural seed mix. As directed, replace Maximilian Sunflower or increase the percentage of Illinois Bundleflower. When directed, add Texas Winter Grass and/or Virginia Wildrye.

Remove Foxtail Millet from the Temporary Drill Seed Warm Mix. As directed, replace with Virginia Wildrye, Green Sprangletop and/or Buffalograss.

Remove Tall Fescue, Western Wheatgrass, and Red Winter Wheat from the Temporary Drill Seed Cool Mix. As directed, replace with Texas Winter Grass and Virginia Wildrye.

Item 247:
Construct uniform layer thickness of 12 inches, or less with the required density and moisture content. Minimum PI is equal to three (3) for all grades.

Item 275:
Microcrack cement treated base according to Item 275.4.9 prior to placing the one course surface treatment.

Item 301:
Provide liquid antistripping agents unless otherwise directed. Add the minimum dosage determined by the manufacturer or higher dosage determined by design requirement and try subsequent trials at 0.25% increments.

Item 316:

	AC20-5TR, AC20-XP AC15-P	CRS-2P	RC-250
JANUARY			REQUIRES INTERMEDIATE COURSE TO BE PLACED
FEBRUARY			

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<tr><td>NOVEMBER</td><td></td><td></td><td rowspan="3">REQUIRES INTERMEDIATE COURSE TO BE PLACED</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>DECEMBER</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

RC-250 is only allowed as a first course in accoradance with the table above with an ADT less than 1500, a subsequent intermediate surface course will be placed if the ADT is greater than 1500 unless it is determined by the Area Engineer that the road will be overlaid prior to the need of the intermediate course.

First Course				
ITEM	APPLICATION			
	Emul. Asphalt (Prime Coat)	1st Course		
*Asphalt Type	MS-2 or SS-1	CRS-2P	AC20-5TR, AC20-XP, AC15-P	RC-250
*Asph. Rate (Gal/SY)	0.20	0.50	0.42	0.28
Aggregate Type		B or L	B or L	B or L
Aggregate Grade		3	3	5
Aggr. Rate (CY/SY)		1:105	1:105	1:125
Min. Cure Time	24 hrs	14 days (Emulsion)		

* The information above is intended to provide general guidance and as a basis of estimate. Based on the season and weather conditions at the time, the engineer will determine the asphalt type and rates to be used at the time of application.

In addition to the temperature requirements of this Item, AC Asphalts used in Surface Treatments and Sealcoats must be placed between May 15 and August 31. Emulsions may be substituted for AC Asphalts outside this timeframe only with the approval of the Engineer.

CSJ: 0918-47-360 **Sheet 5C**

County: Dallas

Highway: FD 701241

Item 320:
Use a self-propelled wheel mounted MTV capable of receiving mix from the haul trucks, separate from the paver. It shall have a minimum storage capacity of approximately 25 tons. It shall be equipped with a pivoting discharge conveyor and shall completely and thoroughly remix the material prior to placement. The effectiveness of the MTV's remixing ability is subject to the approval of the Engineer. In addition, the paver shall have a surge storage insert with a minimum capacity of 20 tons.

The use of windrow pick-up equipment is allowed except on the first course of roadway material placed over the subgrade.

Item 344:
Use aggregate that meets the Surface Aggregate Classification (SAC) requirement of Class B.

Provide PG binder 64-22 in Type SP-C mixture.

Item 354:
Remove the loose material from the roadway before opening to traffic.

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

Item 479:
Submit a plan detailing proposed methods of handling phased construction at manholes and water valves.

Payment for the phase construction will be considered subsidiary to this item.

Item 500:
Material On Hand (MOH) will not be used in calculating partial payments for Mobilization.

Item 502:
The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

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

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

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

Do not commence work on the road before sunrise. Do not operate or park any equipment/machinery closer than 30 feet from the traveled roadway after sunset unless authorized by the engineer.

When moving unlicensed equipment on or across any pavement or public highways, protect the pavement from all damage using an acceptable method.

Item 506:
Take all practicable precautions to prevent debris from being discharged into the Waters of Texas or a designated wetland. Install Best Management Practices before demolition begins and maintain them during the demolition. Remove any debris or construction material that escapes containment devices and are discharged into the restricted areas, before the next rain event or within 24 hours of the discharge.

If temporary construction stream crossings are allowed under a Nationwide Permit, submit in writing for approval the type and location of each temporary stream crossing. Use temporary bridges, timber mats, or other structurally sound and non-eroding material for temporary stream crossings. A temporary culvert crossing will consist of storm sewer pipes and 4- to 8-inch nominal size rock. Temporary stream crossings must not cause more than minimal changes to the hydraulic flow characteristics of the stream, increase flooding, or cause more than minimal degradation of water quality. Remove the temporary stream crossings in their entirety and return the affected areas to their pre-existing elevation. All work and materials use for temporary construction stream crossings will not be paid for directly but are subsidiary to pertinent Items.

Provide SW3P Signs. Obtain from the Engineer a copy of the project's completed TPDES Storm Water Program Construction Site Notice and Contractor Site Notice. Laminate the sheets and bond with adhesive to 36" X 36" plywood sign blanks. Ensure the sheets remain dry. Apply Type C Blue reflective sheeting as the background and add the text "SW3P" in 5" white lettering, centered at the top. Attach the signs to approved temporary mounts and locate at each of the project limits just inside the right of way line at a readable height or as directed by the Engineer. If the sign cannot be placed outside the clear zone, it must adhere to the TMUTCD. SW3P signs, maintenance, and reposting (for replacement or as needed to ensure readability) will be subsidiary to Item 502.

Item 540:
Furnish one type of post throughout the project except as specifically noted in the plans.

CSJ: 0918-47-360 Sheet 5D

County: Dallas

Highway: FD 701241

Item 585:
Use Surface Test Type A on all intersections and driveways.

Use Surface Test Type B pay adjustment schedule 3 on the travel lanes.

Items 644:
Prior to taking elevations to determine lengths for fabrication of sign posts and/or sign support towers, obtain verification of all proposed locations.

All sign mounts shall have a clamp base system for all small roadside sign assemblies.

Affix a sign identification decal to the back of all signs in accordance with Item 643.

Item 730:
At the discretion of the Engineer, mow non-paved areas within the project prior to placement of permanent vegetation. Mow up to four (4) cycles per growing season.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0918-47-360 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY 701241

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0918-47-360**			
		PROJECT ID		**A00178241**			
		COUNTY		**Dallas**			
		HIGHWAY		**701241**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-7002	PREPARING ROW	STA	118.800		118.800	
	105-7121	RMV (12"-30") TRT/UNTRT BASE & ASPH PAV	SY	18,346.000		18,346.000	
	110-7001	EXCAV (ROADWAY)	CY	16,475.000		16,475.000	
	132-7006	EMBANK (FNL)(DC)(TY C)	CY	6,793.000		6,793.000	
	134-7004	BACKFILL (TY A OR B)	STA	49.700		49.700	
	161-7002	COMPOST MANUF TOPSOIL (4")	SY	8,191.000		8,191.000	
	164-7010	DRILL SEED (PERM_RURAL_CLAY)	SY	8,191.000		8,191.000	
	164-7015	DRILL SEED (TEMP_WARM_COOL)	SY	8,191.000		8,191.000	
	168-7001	VEGETATIVE WATERING	TGL	2,440.000		2,440.000	
	194-7007	RDSIDE AMENITY (WHEEL STOP)	EA	61.000		61.000	
	194-7025	RDSIDE AMENITY (REMOV)	EA	61.000		61.000	
	247-7176	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	3,232.000		3,232.000	
	247-7259	FL BS (RDWY DEL)(TY A GR 1-2)(FNAL POS)	CY	3,232.000		3,232.000	
	275-7001	CEMENT	TON	99.000		99.000	
	275-7010	CEMENT TRT (NEW BASE)(6")	SY	19,374.000		19,374.000	
	316-7012	ASPH (CRS-2P)	GAL	3,040.000		3,040.000	
	316-7016	ASPH (RC-250)	GAL	1,705.000		1,705.000	
	316-7071	ASPH (AC-15P, AC-20-5TR OR AC-20XP)	GAL	2,557.000		2,557.000	
	316-7171	AGGR (TY-B, GR-3)(SAC-B)	CY	117.000		117.000	
	316-7175	AGGR (TY-B, GR-5)(SAC-B)	CY	51.000		51.000	
	344-7011	SP MIXES SP-C SAC-B PG64-22	TON	3,616.000		3,616.000	
	344-7077	TACK COAT	GAL	1,495.000		1,495.000	
	351-7007	FLEXIBLE PAVEMENT STRUCTURE REPAIR(8")	SY	2,550.000		2,550.000	
	354-7032	PLANE ASPH CONC PAV(0" TO 2")	SY	13,349.000		13,349.000	
	432-7013	RIPRAP (MOW STRIP)(4 IN)	CY	19.500		19.500	
	500-7001	MOBILIZATION	LS	1.000		1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	16.000		16.000	
	506-7002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	970.000		970.000	
	506-7011	ROCK FILTER DAMS (REMOVE)	LF	970.000		970.000	
	506-7020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	103.000		103.000	
	506-7024	CONSTRUCTION EXITS (REMOVE)	SY	103.000		103.000	
	506-7034	CONSTRUCTION PERIMETER FENCE	LF	3,213.000		3,213.000	
	506-7039	TEMP SEDMT CONT FENCE (INSTALL)	LF	11,115.000		11,115.000	
	506-7041	TEMP SEDMT CONT FENCE (REMOVE)	LF	11,115.000		11,115.000	
	506-7044	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	210.000		210.000	
	506-7046	BIODEG EROSN CONT LOGS (REMOVE)	LF	210.000		210.000	
	540-7001	MTL W-BEAM GD FEN (TIM POST)	LF	300.000		300.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0918-47-360 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY 701241

		CONTROL SECTION JOB		**0918-47-360**		TOTAL EST.	TOTAL FINAL
		PROJECT ID		**A00178241**			
		COUNTY		**Dallas**			
		HIGHWAY		**701241**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	540-7015	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	1.000		1.000	
	540-7039	TL-3 31" SHORT RADIUS (COMPLETE)	EA	1.000		1.000	
	542-7001	REMOVE METAL BEAM GUARD FENCE	LF	125.000		125.000	
	544-7001	GUARDRAIL END TREATMENT (INSTALL)	EA	2.000		2.000	
	544-7003	GUARDRAIL END TREATMENT (REMOVE)	EA	2.000		2.000	
	644-7001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	12.000		12.000	
	658-7019	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	11.000		11.000	
	658-7056	INSTL OM ASSM (OM-2Y)(WC)GND	EA	24.000		24.000	
	666-7036	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	158.000		158.000	
	666-7411	REFL PAV MRK TY I (W)6"(SLD)(100MIL)	LF	16,851.000		16,851.000	
	666-7423	REFL PAV MRK TY I (Y)6"(SLD)(100MIL)	LF	23,741.000		23,741.000	
	672-7004	REFL PAV MRKR TY II-A-A	EA	596.000		596.000	
	730-7019	FULL - WIDTH MOWING	CYC	6.000		6.000	
	08	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (NON-PART)	LS	1.000		1.000	

CK
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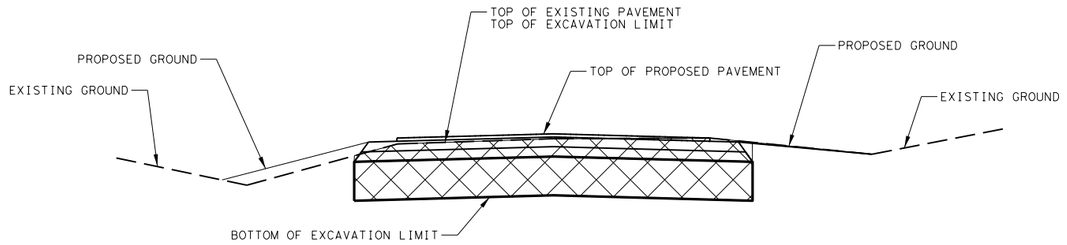
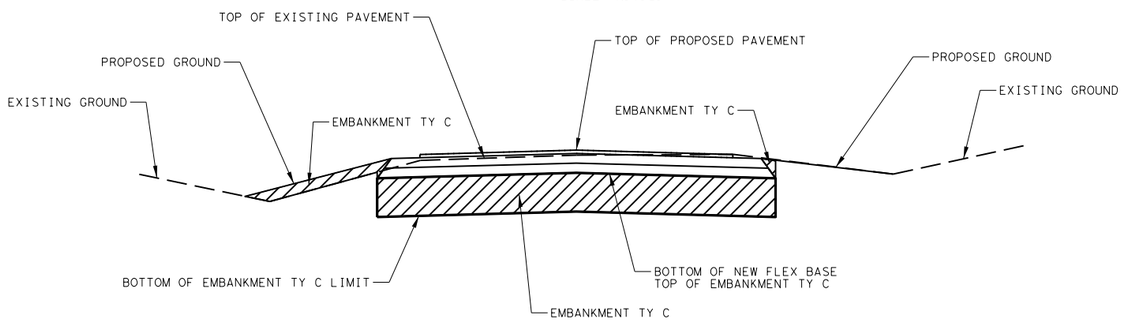
LIMITS OF EXCAVATION QUANTITIES
SCALE: N.T.S.



LIMITS OF EMBANKMENT QUANTITIES
SCALE: N.T.S.



LOCATION	110 7001 EXCAVATION (ROADWAY)	132* 7006 EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
SHADY RIDGE LOOP I		
48+92.78	0.00	0.00
49+00.000	7.13	3.69
49+50.000	143.26	51.50
50+00.000	150.68	46.35
50+50.000	112.68	46.54
51+00.000	121.66	52.10
51+50.000	114.47	46.30
52+00.000	211.63	46.30
52+50.000	297.08	51.85
53+00.000	210.14	51.85
53+50.000	127.74	49.08
54+00.000	99.31	43.52
54+50.000	93.84	43.52
55+00.000	88.27	43.52
55+50.000	115.61	46.38
55+98.928	185.38	64.19
LOOP I SUBTOTAL	2078.89	686.69

LOCATION	110 7001 EXCAVATION (ROADWAY)	132* 7006 EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
SHADY RIDGE LOOP I-3		
0+50.000	0.00	0.00
1+00.000	110.67	39.66
1+50.000	159.38	46.29
2+00.000	162.75	46.29
2+50.000	170.40	46.29
3+00.000	143.71	46.19
3+50.000	99.84	64.49
4+00.000	69.37	62.04
4+50.000	84.69	43.73
5+00.000	165.03	48.15
5+50.000	203.94	50.00
6+00.000	177.64	48.14
6+50.000	125.61	46.61
7+00.000	103.52	45.69
7+50.000	114.72	45.27
8+00.000	116.43	46.00
8+50.000	103.47	43.30
9+00.000	130.13	40.73
9+50.000	137.36	43.60
10+00.000	128.71	46.48
10+50.000	125.77	46.41
11+00.000	99.35	43.56
11+50.000	114.67	40.77
12+00.000	123.36	40.74
12+50.000	103.31	40.75
13+00.000	93.64	40.92
13+50.000	101.30	43.70
14+00.000	109.14	43.56
14+50.000	108.82	43.52
15+00.000	103.67	46.46
15+42.230	41.02	19.71
LOOP I-3 SUBTOTAL	3631.41	1349.04

LOCATION	110 7001 EXCAVATION (ROADWAY)	132* 7006 EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
EAGLE FORD LOOP H		
10+60.300	0.00	0.00
11+00.000	41.62	19.11
11+50.000	104.52	46.99
12+00.000	104.94	47.69
12+50.000	108.16	48.88
13+00.000	155.07	46.90
13+50.000	208.19	45.98
14+00.000	158.32	48.53
14+50.000	128.80	61.63
15+00.000	163.15	59.47
15+50.000	131.33	47.81
16+00.000	94.78	46.66
16+50.000	101.11	45.01
17+00.000	101.30	44.58
17+50.000	99.36	44.36
18+00.000	99.51	48.09
18+50.000	100.16	48.84
19+00.000	112.53	46.73
19+50.000	117.84	46.49
20+00.000	109.73	46.05
20+50.000	106.78	45.27
21+00.000	116.93	44.64
21+50.000	130.27	46.17
22+00.000	67.83	24.00
22+50.000	68.45	24.38
23+00.000	119.00	46.98
23+50.000	104.18	46.25
24+00.000	114.00	46.51
24+50.000	123.89	46.06
25+00.000	126.28	46.46
25+50.000	113.45	46.04
26+00.000	99.42	45.09
26+50.000	94.63	44.78
27+00.000	91.14	46.92
27+50.000	92.46	48.18
28+00.000	119.03	46.07
28+50.000	121.48	44.41
29+00.000	97.74	43.02
29+50.000	98.74	43.15
30+00.000	103.92	46.31
30+50.000	107.12	48.09
31+00.000	101.97	45.94
31+50.000	95.26	42.81
32+00.000	100.59	45.43
32+50.000	105.41	47.80
33+00.000	101.90	46.08
33+50.000	104.65	46.37
34+00.000	103.87	47.18
34+50.000	99.69	46.16
35+00.000	96.70	43.75
35+50.000	99.74	49.92
36+00.000	101.69	51.61
36+50.000	99.61	45.90
37+00.000	100.99	47.28
37+50.000	101.96	46.97
38+00.000	102.69	47.71
38+50.000	132.11	47.62
39+00.000	131.64	44.62
39+50.000	108.05	48.37
39+96.805	160.49	54.64
LOOP H SUBTOTAL	6506.14	2704.73

LOCATION	110 7001 EXCAVATION (ROADWAY)	132* 7006 EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
EAGLE FORD LOOP H-2		
0+16.35	0.00	0.00
0+50.000	46.26	13.71
1+00.000	113.88	40.30
1+50.000	119.51	44.81
2+00.000	159.70	50.11
2+50.000	149.60	50.22
3+00.000	114.77	47.69
3+50.000	99.58	47.57
4+00.000	104.92	49.44
4+50.000	107.01	46.90
5+00.000	105.41	45.58
5+50.000	109.48	47.66
6+00.000	107.05	47.53
6+50.000	108.21	48.34
7+00.000	101.86	41.89
7+50.000	91.98	40.74
8+00.000	124.18	45.37
8+49.700	122.80	45.10
LOOP H-2 SUBTOTAL	1886.22	752.94

LOCATION	110 7001 EXCAVATION (ROADWAY)	132* 7006 EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
EAGLE FORD LOOP H-3		
0+42.030	0.00	0.00
0+50.000	27.85	11.70
1+00.00	126.16	56.31
1+50.00	104.12	48.33
2+00.00	104.36	54.18
2+50.00	101.08	51.51
3+00.00	99.41	46.50
3+50.00	98.77	48.65
4+00.00	123.23	49.94
4+50.00	148.65	48.33
5+00.00	160.71	51.34
5+50.00	175.89	51.39
6+00.00	139.58	46.29
6+50.00	125.18	43.94
7+00.00	158.33	45.88
7+50.00	132.14	45.60
8+00.00	93.14	42.02
8+50.00	103.92	44.00
9+00.00	126.75	45.73
9+50.00	112.53	46.23
9+84.77	110.99	42.72
LOOP H-3 SUBTOTAL	2372.78	920.60

PROJECT TOTALS	16475	6414

* ITEM APPEARS IN
MULTIPLE SUMMARY TABLES

EARTHWORK QUANTITIES CALCULATED USING THE EXISTING SURFACE INCLUDING THE EXISTING PAVEMENT STRUCTURE WHERE PRESENT. NO ADJUSTMENTS TO EXCAVATION/EMABANKMENT VOLUMES FOR THE REMOVAL OF EXISTING CONCRETE OR HMA.

EXCAVATION AND EMBANKMENT ARE NOT NEEDED AT MILL & OVERLAY SECTIONS.

ITEM 134-7004 WILL BE USED TO BACKFILL PAVEMENT EDGES IN MILL & OVERLAY SECTIONS.

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

7/2/2024
,P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

EARTHWORK SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		7

DATE: 7/2/2024 1:19:30 PM
FILE: c:\txdot\pw online\txdot51\syoon.wold0799753\Quantity Summary.dgn

CK
DW
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SUMMARY OF ROADWAY ITEMS

LOCATION	100 7002	134 7004	194 7007	247* 7176	247* 7259	275* 7001	275* 7010	316 7012	316 7016	316 7071	316 7171	316 7175	344* 7011	344* 7077	351 7007	432 7013	540 7001
	PREPARING ROW	BACKFILL (TY A OR B)	ROADSIDE AMENITY (WHEEL STOP)	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	FL BS (RDWY DEL)(TY A GR 1-2)(FNAL POS)	CEMENT	CEMENT TRT (NEW BASE)(6")	ASPH (CRS-2P)	ASPH (RC-250)	ASPH (AC-15P, AC-20-5TR OR AC-20XP)	AGGR (TY-B, GR-3)(SAC-B)	AGGR (TY-B, GR-5)(SAC-B)	SP MIXES SP-C SAC-B PG64-22	TACK COAT	FLEXIBLE PAVEMENT STRUCTURE REPAIR(8")	RIPRAP (MOW STRIP)(4 IN)	MTL W-BEAM GD FEN (TIM POST)
	STA	STA	EA	CY	CY	TON	SY	GAL	GAL	GAL	CY	CY	TON	GAL	SY	CY	LF
SHADY RIDGE																	
SHEET 1 OF 6 LOOP I	13.8	13.8	0	0	0	0	0	0	0	0	0	0	371	371	865	0	0
STA 21+10.70 TO 34+90.32																	
SHEET 2 OF 6 LOOP I	14	14	7	0	0	0	0	0	0	0	0	0	377	377	735	0	0
STA 34+90.32 TO 48+92.78																	
SHEET 3 OF 6 LOOP I	7.1	0	0	328	328	10	1968	328	184	276	13	6	216	0	0	0	0
STA 48+92.78 TO 55+99.04																	
SHEET 4 OF 6 LOOP I-2	11.5	11.5	6	0	0	0	0	0	0	0	0	0	325	324	630	0	0
STA 0+43.36 TO 11+97.08																	
SHEET 5 OF 6 LOOP I-3	5.1	0	6	225	225	7	1345	224	126	188	9	4	151	0	0	0	0
STA 0+45.20 TO 5+58.00																	
SHEET 6 OF 6 LOOP I-3	9.8	0	7	449	449	13	2691	449	251	377	17	7	290	0	0	0	0
STA 5+58.00 TO 15+42.23																	
EAGLE FORD																	
SHEET 1 OF 6 LOOP H	10.4	10.4	12	0	0	0	0	0	0	0	0	0	330	330	320	0	0
STA 0+22.25 TO 10+60.33																	
SHEET 2 OF 6 LOOP H	9.5	0	7	401	401	13	2403	401	225	337	15	7	265	0	0	14	225
STA 10+60.33 TO 20+10.85																	
SHEET 3 OF 6 LOOP H	10.3	0	16	415	415	13	2490	415	232	349	16	7	273	0	0	5.5	75
STA 20+10.85 TO 30+40.85																	
SHEET 4 OF 6 LOOP H	9.6	0	0	429	429	13	2569	428	240	360	16	7	282	0	0	0	0
STA 30+40.85 TO 39+96.81																	
SHEET 5 OF 6 LOOP H-2	8.3	0	0	385	385	12	2310	385	217	325	15	6	254	0	0	0	0
STA 0+16.35 TO 8+49.70																	
SHEET 6 OF 6 LOOP H-3	9.4	0	0	410	410	12	2460	410	230	345	16	7	264	0	0	0	0
STA 0+42.03 TO 9+77.85																	
PROJECT TOTALS	118.8	49.7	61	3042	3042	93	18236	3040	1705	2557	117	51	3398	1402	2550	19.5	300

SUMMARY OF ROADWAY ITEMS

LOCATION	540 7015	540 7039	544 7001
	DOWNSTREAM ANCHOR TERMINAL SECTION	TL-3 31" SHORT RADIUS (COMPLETE)	GUARDRAIL END TREATMENT (INSTALL)
	EA	EA	EA
SHADY RIDGE			
SHEET 1 OF 6 LOOP I	0	0	0
STA 21+10.70 TO 34+90.32			
SHEET 2 OF 6 LOOP I	0	0	0
STA 34+90.32 TO 48+92.78			
SHEET 3 OF 6 LOOP I	0	0	0
STA 48+92.78 TO 55+99.04			
SHEET 4 OF 6 LOOP I-2	0	0	0
STA 0+43.36 TO 11+97.08			
SHEET 5 OF 6 LOOP I-3	0	0	0
STA 0+45.20 TO 5+58.00			
SHEET 6 OF 6 LOOP I-3	0	0	0
STA 5+58.00 TO 15+42.23			
EAGLE FORD			
SHEET 1 OF 6 LOOP H	0	0	0
STA 0+22.25 TO 10+60.33			
SHEET 2 OF 6 LOOP H	0	0	2
STA 10+60.33 TO 20+10.85			
SHEET 3 OF 6 LOOP H	1	1	0
STA 20+10.85 TO 30+40.85			
SHEET 4 OF 6 LOOP H	0	0	0
STA 30+40.85 TO 39+96.81			
SHEET 5 OF 6 LOOP H-2	0	0	0
STA 0+16.35 TO 8+49.70			
SHEET 6 OF 6 LOOP H-3	0	0	0
STA 0+42.03 TO 9+77.85			
PROJECT TOTALS	1	1	2

* ITEM APPEARS IN MULTIPLE SUMMARY TABLES

SUMMARY OF REMOVAL ITEMS

LOCATION	105 7121	194 7025	354 7032	542 7001	544 7003
	RMV (12"-30") TRT/UNTRT BASE & ASPH PAV	ROADSIDE AMENITY (REMOV)	PLANE ASPH CONC PAV(0" TO 2")	REMOVE METAL BEAM GUARD FENCE	GUARDRAIL END TREATMENT (REMOVE)
	SY	EA	SY	LF	EA
SHADY RIDGE					
SHEET 1 OF 4 LOOP I	0	0	4284	0	0
STA 20+10.70 TO 38+30.33					
SHEET 2 OF 4 LOOP I	1766	7	2907	0	0
STA 38+30.33 TO 55+99.04					
SHEET 3 OF 4 LOOP I-2	0	6	3152	0	0
STA 0+43.36 TO 11+97.08					
SHEET 4 OF 4 LOOP I-3	4138	13	0	0	0
STA 0+45.20 TO 15+42.23					
EAGLE FORD					
SHEET 1 OF 4 LOOP H	2611	19	3006	125	2
STA 0+22.25 TO 20+50.00					
SHEET 2 OF 4 LOOP H	5346	16	0	0	0
STA 20+50.00 39+96.81					
SHEET 3 OF 4 LOOP H-2	2153	0	0	0	0
STA 0+16.35 TO 8+49.70					
SHEET 4 OF 4 LOOP H-3	2332	0	0	0	0
STA 0+42.03 TO 9+77.85					
PROJECT TOTALS	18346	61	13349	125	2

CEDAR HILL STATE PARK

QUANTITY SUMMARY

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		8

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CK
DW
CK
DW

SUMMARY OF EROSION CONTROL ITEMS

LOCATION	161 7002	164 7010	164 7015	166** 7002	168 7001	506 7002	506 7011	506 7020	506 7024	506 7034	506 7039	506 7041	506 7044	506 7046	730 7019
	COMPOST MANUF TOPSOIL (4")	DRILL SEED (PERM_RURAL_CLAY)	DRILL SEED (TEMP_WARM_COOL)	FERTILIZER	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	CONSTRUCTION PERIMETER FENCE	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)	FULL - WIDTH MOWING
	SY	SY	SY	TON	TGL	LF	LF	SY	SY	LF	LF	LF	LF	LF	CYC
SHADY RIDGE															
SHEET 1 OF 4 LOOP I	1773	1773	1773	0.18	528	200	200	92	92	0	532	532	0	0	
STA 21+10.70 TO 38+24.06															
SHEET 2 OF 4 LOOP I	1128	1128	1128	0.12	336	70	70	0	0	0	719	719	0	0	
STA 38+24.06 TO 55+84.80															
SHEET 3 OF 4 LOOP I-2	816	816	816	0.08	244	50	50	0	0	0	1225	1225	40	40	
STA 0+43.36 TO 11+97.08															
SHEET 4 OF 4 LOOP I-3	753	753	753	0.08	224	190	190	0	0	778	2027	2027	0	0	
STA 0+45.20 TO 15+42.23															
EAGLE FORD															6
SHEET 1 OF 4 LOOP H	1386	1386	1386	0.14	412	180	180	0	0	0	3191	3191	80	80	
STA 0+22.25 TO 20+75.00															
SHEET 2 OF 4 LOOP H	1135	1135	1135	0.12	338	250	250	0	0	1297	2048	2048	40	40	
STA 20+75.00 TO 39+96.81															
SHEET 3 OF 4 LOOP H-02	671	671	671	0.08	200	30	30	0	0	0	844	844	40	40	
STA 0+16.35 TO 8+49.70															
SHEET 4 OF 4 LOOP H-3	529	529	529	0.06	158	0	0	0	0	985	0	0	0	0	
STA 0+42.03 TO 9+77.85															
***								11	11						
****										153	529	529	10	10	
PROJECT TOTALS	8191	8191	8191	0.86	2440	970	970	103	103	3213	11115	11115	210	210	6

** FOR CONTRACTOR INFORMATION ONLY

*** 12% ADDED TO BMP TOTALS FOR PERIODIC REPAIR/REPLACEMENT NEEDED DUE TO NORMAL WEAR OR DIFFERING SITE CONDITIONS

**** 5% ADDED TO BMP TOTALS FOR PERIODIC REPAIR/REPLACEMENT NEEDED DUE TO NORMAL WEAR OR DIFFERING SITE CONDITIONS

SUMMARY OF SIGNING ITEMS

LOCATION	644 7001
	IN SM RD SN SUP&AM TY10BWG(1)SA(P)
	EA
SHADY RIDGE	
SHEET 1 OF 4 LOOP I	0
STA 21+10.70 TO 39+02.39	
SHEET 2 OF 4 LOOP I	2
STA 39+02.39 TO 55+84.80	
SHEET 3 OF 4 LOOP I-2	2
STA 0+43.36 TO 11+97.08	
SHEET 4 OF 4 LOOP I-3	2
STA 0+45.20 TO 15+42.23	
EAGLE FORD	
SHEET 1 OF 4 LOOP H	1
STA 0+22.25 TO 20+75.00	
SHEET 2 OF 4 LOOP H	1
STA 20+75.00 TO 39+96.81	
SHEET 3 OF 4 LOOP H-2	2
STA 0+16.35 TO 8+49.70	
SHEET 4 OF 4 LOOP H-3	2
STA 0+42.03 TO 9+77.85	
PROJECT TOTALS	12

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	658 7019	658 7056	666 7036	666 7411	666 7423	672 7004
	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	INSTL OM ASSM (OM-2Y)(WC)GND	REFL PAV MRK TY I (W)24"(SLD)(100 MIL)	REFL PAV MRK TY I (W)6"(SLD)(100 MIL)	REFL PAV MRK TY I (Y)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A
	EA	EA	LF	LF	LF	EA
SHADY RIDGE						
SHEET 1 OF 4 LOOP I	0	0	0	3239	3584	90
STA 21+10.70 TO 39+02.39						
SHEET 2 OF 4 LOOP I	0	0	18	1985	3365	85
STA 39+02.39 TO 55+84.80						
SHEET 3 OF 4 LOOP I-2	0	4	34	1524	2308	58
STA 0+43.36 TO 11+97.08						
SHEET 4 OF 4 LOOP I-3	0	4	14	1521	2995	75
STA 0+45.20 TO 15+42.23						
EAGLE FORD						
SHEET 1 OF 4 LOOP H	6	4	15	3221	4106	103
STA 0+22.25 TO 20+75.00						
SHEET 2 OF 4 LOOP H	5	8	17	2834	3844	96
STA 20+75.00 TO 39+96.81						
SHEET 3 OF 4 LOOP H-2	0	4	35	1284	1667	42
STA 0+16.35 TO 8+49.70						
SHEET 4 OF 4 LOOP H-3	0	0	25	1243	1872	47
STA 0+42.03 TO 9+77.85						
PROJECT TOTALS	11	24	158	16851	23741	596

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2024
Texas Department of Transportation

CEDAR HILL STATE PARK

QUANTITY SUMMARY

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		9

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
83	S1	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
84	S2	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
84	S3	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
85	S4	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
86	S5	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
87	S6	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
88	S7	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
88	S8	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
89	S9	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
89	S10	R1-1	STOP	36" X 36"	X		10BWG	1	SA	P		
83	S11	R2-1	SPEED LIMIT	24" X 30"	X		10BWG	1	SA	P		
85	S12	W1-7		48" X 24"	X		10BWG	1	SA	P		

R2-1

W1-7

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

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

http://www.txdot.gov/

NOTE:

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

** Remove and store existing sign panel. Install on new post in its original location after 2" SP-C asphalt has been laid.

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

Sheet 1 of 1

FILE:	sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		0918	47	360	FD 701241
4-16		DIST	COUNTY		SHEET NO.
8-16		DAL	DALLAS		10

DATE:
FILE:

GENERAL NOTES:

1) PRIOR TO ANY ROADWORK OR CLOSURE COORDINATE WITH PARK SUPERINTENDENT RACHEL LACA AT (903) 916-0031.

2) PROJECT LIMIT TRAFFIC CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE BARRICADE AND CONSTRUCTION (BC) STANDARDS AND SHALL REMAIN IN PLACE UNTIL PROJECT IS COMPLETED.

3) REFER TO THE BC STANDARDS, WORK ZONE STANDARDS, AND TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) FOR DETAILS REGARDING TRAFFIC CONTROL DEVICES USED IN PHASE CONSTRUCTION.

4) MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.

5) INITIAL STORM WATER POLLUTION PREVENTION PLAN (SW3P) DEVICES SHALL BE IN PLACE (NO SOONER THAN TWO WEEKS) PRIOR TO THE START OF CONSTRUCTION IN THEIR CONTROL AREA AS SHOWN IN THE SW3P PLAN SHEETS AND/OR AS DIRECTED. ALL SW3P DEVICES SHALL BE INSTALLED, UPDATED, AND MAINTAINED DURING PHASE CONSTRUCTION AS REQUIRED BY THE PLANS AND/OR AS DIRECTED.

6) PHASE PROJECT TO MINIMIZE EXPOSURE OF DISTURBED SOILS. ALSO MINIMIZE DISTURBANCE OF EXISTING VEGETATION OF THE EXTENT PRACTICABLE.

7) THE FOLLOWING SEQUENCE OF WORK IS BASED ON A FULL CLOSURE OF SHADY RIDGE AND EAGLE FORD TO BE ACCOMPLISHED WITH BARRICADES ON SPINE RD (LOOP I AT STATION 20+84.52)

8) THE CONTRACTOR IS REQUIRED TO COORDINATE WITH TPWD AND ADJUST CONSTRUCTION EFFORTS WITH THE DAILY OPERATIONS OF THE PARK. ESTABLISHMENT OF ANY MATERIAL AND/OR EQUIPMENT STAGING OR STORAGE AREAS OTHER THAN THOSE SHOWN ON THE PLANS MUST BE APPROVED BY THE ENGINEER AND THE PARK SUPERINTENDENT PRIOR TO THE START OF WORK AND THEREAFTER IF A CHANGE OF LOCATION BECOME NECESSARY. AS PART OF THIS COORDINATION THE CONTRACTOR WILL BE REQUIRED TO:
   - A. HOLD MEETINGS WITH A TXDOT REPRESENTATIVE THE PARK SUPERINTENDENT, AND THE CONTRACTOR'S SUPERINTENDENT TO REVIEW AND DISCUSS THE CONSTRUCTION WORK AND TRAFFIC CONTROL PROCEDURES PLANNED FOR THE FOLLOWING TWO-WEEK PERIOD.
   - B. SCHEDULE WORK SO THAT NO MORE THAN ONE CAMPING AREA IS UNDER CONSTRUCTION AT A TIME. ONCE CONSTRUCTION IS STARTED IN AN AREA, WORK MUST BE PERFORMED CONTINUOUSLY UNTIL ALL WORK IS COMPLETED WITHIN THE GIVEN AREA BEFORE CONSTRUCTION IN ANOTHER SUBSEQUENT AREA WILL BE ALLOWED TO BEGIN. ANY REQUEST TO SEQUENCE WORK IN AN OTHERWISE MANNER MUST BE OBTAINED BY WRITTEN APPROVAL OF THE ENGINEER AND THE PARK SUPERINTENDENT.
   - C. PROVIDE WRITTEN NOTIFICATION TO BOTH THE ENGINEER AND THE PARK SUPERINTENDENT AT LEAST TWO WEEKS PRIOR TO OPENING ANY NEW CONSTRUCTION LOCATIONS WITHIN THE PARK.
   - D. NOT BE AUTHORIZED TO WORK ON WEEKENDS OR MAJOR HOLIDAYS WITHOUT PRIOR WRITTEN APPROVAL OF BOTH THE ENGINEER AND THE PARK SUPERINTENDENT.
   - E. MITIGATE OR REPLACE UNNECESSARY DAMAGE TO TREES OR SHRUBS WITHIN AND ADJACENT TO THE LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR MITIGATE DAMAGED TREES OR SHRUBS WITH LIKE SIZE AND TYPES OF TREES OR SHRUBS DAMAGED. FINAL DETERMINATION OF THE REPLACEMENT OR MITIGATION REQUIREMENTS WILL BE DETERMINED BY THE TXDOT LANDSCAPE ARCHITECT. ALL COST ASSOCIATED WITH THE REPLACEMENT OR MITIGATION COST WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
   - F. IF ANY ARCHEOLOGICAL ITEMS ARE DISCOVERED DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR MUST STOP WORK AND WILL BE REQUIRED TO NOTIFY TPWD POC BEFORE ANY FURTHER GROUND DISTURBING WORK CAN BE PERFORMED ON ANY PHASE OF THE PROJECT.

9) THE CONTRACTOR MAY NOT WORK ON LOOPS I, LOOP I-3, AND LOOP H BEFORE PARK CAPITAL CONSTRUCTION IS COMPLETED.

SEQUENCE OF WORK FOR PHASE 1 STAGE 1 (LOOP I-2 MILL AND OVERLAY):

1). ERECT ALL ADVANCED WARNING AND WORK ZONE SIGNAGE AS SHOWN IN THE BC AND WZ STANDARD SHEETS.
2). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
3). MILL 2" OF EXISTING ASPHAULT PAVEMENT OVER THE FULL WIDTH OF ROADWAY.
4). PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR AT LOCATIONS AS DIRECTED.
5). PLACE 2" HMA SURFACE OVER FULL ROADWAY WIDTH
6). BACK FILL PAVEMENT EDGES.
7). PLACE PERMANENT PAVEMENT MARKINGS.
8). ESTABLISH TEMPORARY VEGETATIVE COVER.
9). REMOVE SW3P DEVICES UPON FINAL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

SEQUENCE OF WORK FOR PHASE 2 STAGE 1 (LOOP H-3 FULL RECONSTRUCTION):

1). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
2). REMOVE ASPHALT AND EXISTING BASE MATERIAL. EXCAVATE 12" AND REPLACE WITH TYPE C EMBANKMENT.
3). PLACE NEW FLEXIBLE BASE MATERIAL, CEMENT TREAT THE TOP 6", AND MICROCRACK THE CEMENT TREATED BASE.
4). PLACE ONE COURSE SURFACE TREATMENT.
5). PLACE HMA SURFACE OVER FULL ROAD WIDTH.
6). BACK FILL/EMBANKMENT EDGES AND GRADE TO DRAIN IN ACCORDANCE WITH CROSS SECTIONS AND EXISTING TOPOGRAPHY.
7). PLACE PERMANENT PAVEMENT MARKINGS.
8). ESTABLISH TEMPORARY VEGETATIVE COVER.
9). REMOVE SW3P DEVICES UPON FINAL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

SEQUENCE OF WORK FOR PHASE 2 STAGE 2 (LOOP H-2 FULL RECONSTRUCTION):

1). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
2). REMOVE ASPHALT AND EXISTING BASE MATERIAL. EXCAVATE 12" AND REPLACE WITH TYPE C EMBANKMENT.
3). PLACE NEW FLEXIBLE BASE MATERIAL, CEMENT TREAT THE TOP 6", AND MICROCRACK THE CEMENT TREATED BASE.
4). PLACE ONE COURSE SURFACE TREATMENT.
5). PLACE HMA SURFACE OVER FULL ROAD WIDTH.
6). BACK FILL/EMBANKMENT EDGES AND GRADE TO DRAIN IN ACCORDANCE WITH CROSS SECTIONS AND EXISTING TOPOGRAPHY.
7). PLACE PERMANENT PAVEMENT MARKINGS.
8). ESTABLISH TEMPORARY VEGETATIVE COVER.
9). REMOVE SW3P DEVICES UPON FINAL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

SEQUENCE OF WORK FOR PHASE 3 STAGE 1 (LOOP I-3 FULL RECONSTRUCTION):

1). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
2). REMOVE ASPHALT AND EXISTING BASE MATERIAL. EXCAVATE 12" AND REPLACE WITH TYPE C EMBANKMENT.
3). PLACE NEW FLEXIBLE BASE MATERIAL, CEMENT TREAT THE TOP 6", AND MICROCRACK THE CEMENT TREATED BASE.
4). PLACE ONE COURSE SURFACE TREATMENT.
5). PLACE HMA SURFACE OVER FULL ROAD WIDTH.
6). BACK FILL/EMBANKMENT EDGES AND GRADE TO DRAIN IN ACCORDANCE WITH CROSS SECTIONS AND EXISTING TOPOGRAPHY.
7). PLACE PERMANENT PAVEMENT MARKINGS.
8). ESTABLISH TEMPORARY VEGETATIVE COVER.
9). REMOVE SW3P DEVICES UPON FINAL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

SEQUENCE OF WORK FOR PHASE 3 STAGE 2 (LOOP I FULL RECONSTRUCTION):

1). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
2). REMOVE ASPHALT AND EXISTING BASE MATERIAL. EXCAVATE 12" AND REPLACE WITH TYPE C EMBANKMENT.
3). PLACE NEW FLEXIBLE BASE MATERIAL, CEMENT TREAT THE TOP 6", AND MICROCRACK THE CEMENT TREATED BASE.
4). PLACE ONE COURSE SURFACE TREATMENT.
5). PLACE HMA SURFACE OVER FULL ROAD WIDTH.
6). BACK FILL/EMBANKMENT EDGES AND GRADE TO DRAIN IN ACCORDANCE WITH CROSS SECTIONS AND EXISTING TOPOGRAPHY.
7). PLACE PERMANENT PAVEMENT MARKINGS.
8). ESTABLISH TEMPORARY VEGETATIVE COVER.
9). REMOVE SW3P DEVICES UPON FINAL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

SEQUENCE OF WORK FOR PHASE 3 STAGE 3 (LOOP I MILL AND OVERLAY):

1). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
2). MILL 2" OF EXISTING ASPHAULT PAVEMENT OVER THE FULL WIDTH OF ROADWAY.
3). PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR AT LOCATIONS AS DIRECTED.
4). PLACE 2" HMA SURFACE OVER FULL ROADWAY WIDTH
5). BACK FILL PAVEMENT EDGES.
6). PLACE PERMANENT PAVEMENT MARKINGS.
7). ESTABLISH TEMPORARY VEGETATIVE COVER.
8). REMOVE SW3P DEVICES UPON FINAL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

SEQUENCE OF WORK FOR PHASE 4 STAGE 1 (LOOP H FULL RECONSTRUCTION):

1). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
2). REMOVE ASPHALT AND EXISTING BASE MATERIAL. EXCAVATE 12" AND REPLACE WITH TYPE C EMBANKMENT.
3). PLACE NEW FLEXIBLE BASE MATERIAL, CEMENT TREAT THE TOP 6", AND MICROCRACK THE CEMENT TREATED BASE.
4). PLACE ONE COURSE SURFACE TREATMENT.
5). PLACE HMA SURFACE OVER FULL ROAD WIDTH.
6). BACK FILL/EMBANKMENT EDGES AND GRADE TO DRAIN IN ACCORDANCE WITH CROSS SECTIONS AND EXISTING TOPOGRAPHY.
7). PLACE PERMANENT PAVEMENT MARKINGS.
8). ESTABLISH TEMPORARY VEGETATIVE COVER.
9). REMOVE SW3P DEVICES UPON FINAL ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

SEQUENCE OF WORK FOR PHASE 4 STAGE 2 (LOOP H & LOOP I MILL AND OVERLAY):

1). INSTALL SW3P DEVICES AS REQUIRED IN THE PLANS AND/OR AS DIRECTED.
2). MILL 2" OF EXISTING ASPHAULT PAVEMENT OVER THE FULL WIDTH OF ROADWAY.
3). PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR AT LOCATIONS AS DIRECTED.
4). PLACE 2" HMA SURFACE OVER FULL ROADWAY WIDTH
5). BACK FILL PAVEMENT EDGES.
6). PLACE PERMANENT PAVEMENT MARKINGS.
7). PERFORM A CYCLE OF MOWING FOR ALL PROJECT AREAS
8). ESTABLISH PERMANENT VEGETATIVE COVER FOR ALL PROJECT AREAS.
9). REMOVE SW3P DEVICES FROM ALL AREAS UPON FINAL ESTABLISHMENT OF VEGETATIVE COVER.
10). PERFORM FINAL SITE CLEAN UP AS DIRECTED AND REMOVE PROJECT LIMIT/ADVANCE WARNING SIGNS.

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/28/2024
, P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

SEQUENCE OF WORK NARRATIVE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		11

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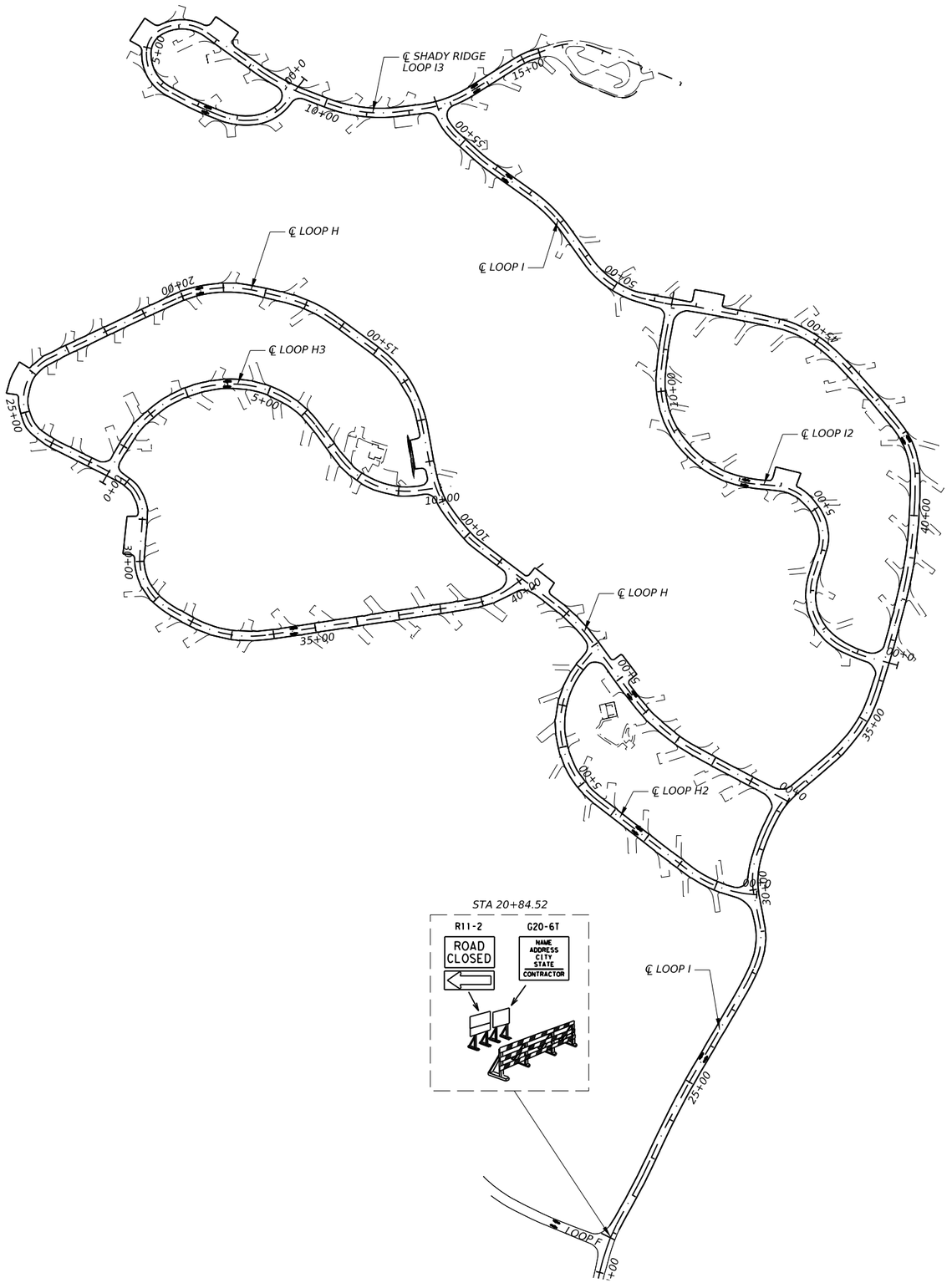

N

0 150 300

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	VEHICLE DIRECTION
▬	TY III BARRICADE

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/28/2024
, P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

SEQUENCE OF WORK LOOP CLOSURE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		12

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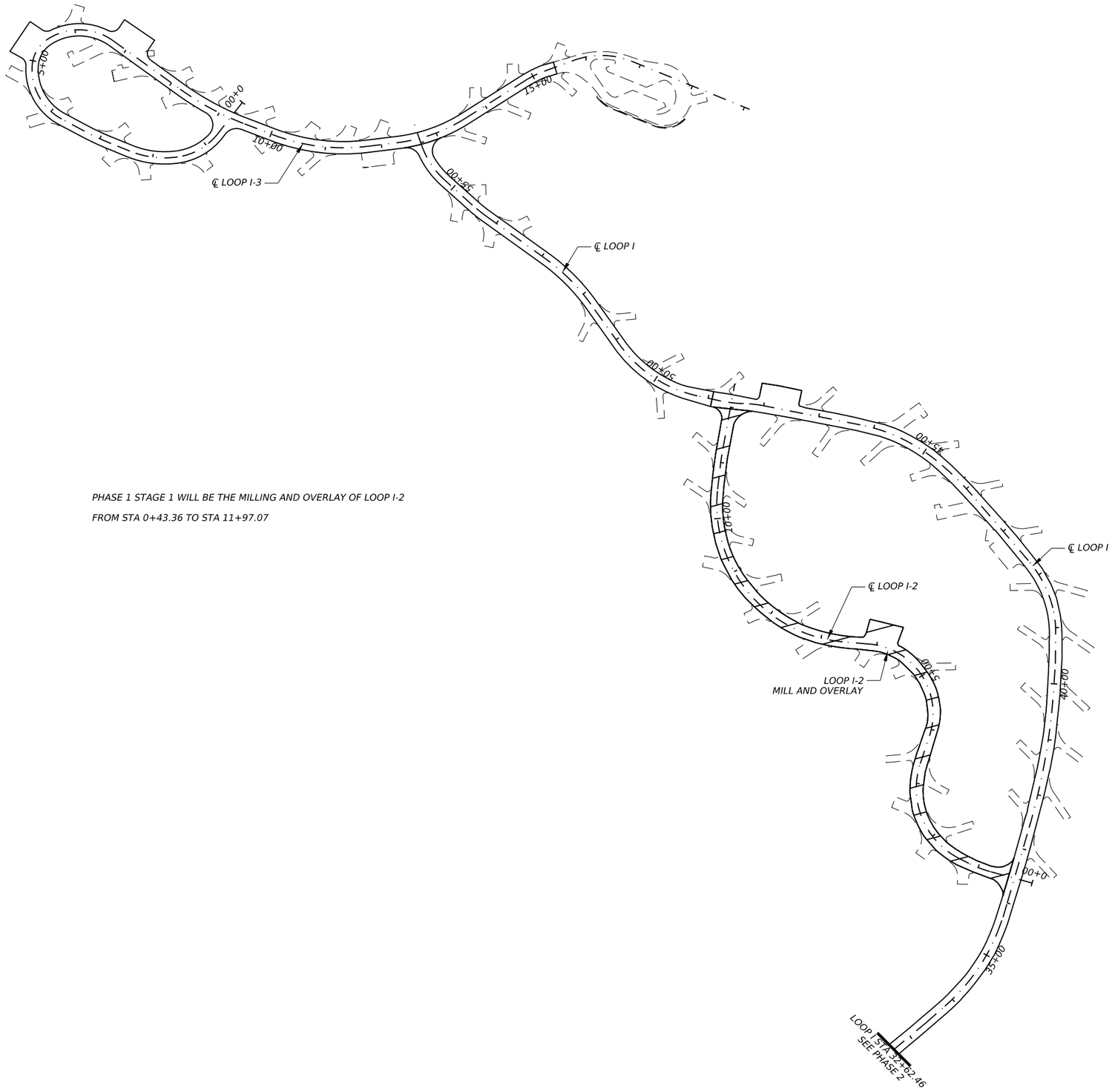

PHASE 1 STAGE 1 WILL BE THE MILLING AND OVERLAY OF LOOP I-2

FROM STA 0+43.36 TO STA 11+97.07

N

0 100 200

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/28/2024

, P.E.

Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

SEQUENCE OF WORK
SHADY RIDGE AREA
PHASE 1-STAGE 1
LOOP I-2

SHEET 1 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		13

DATE: 6/28/2024 1:39:31 PM
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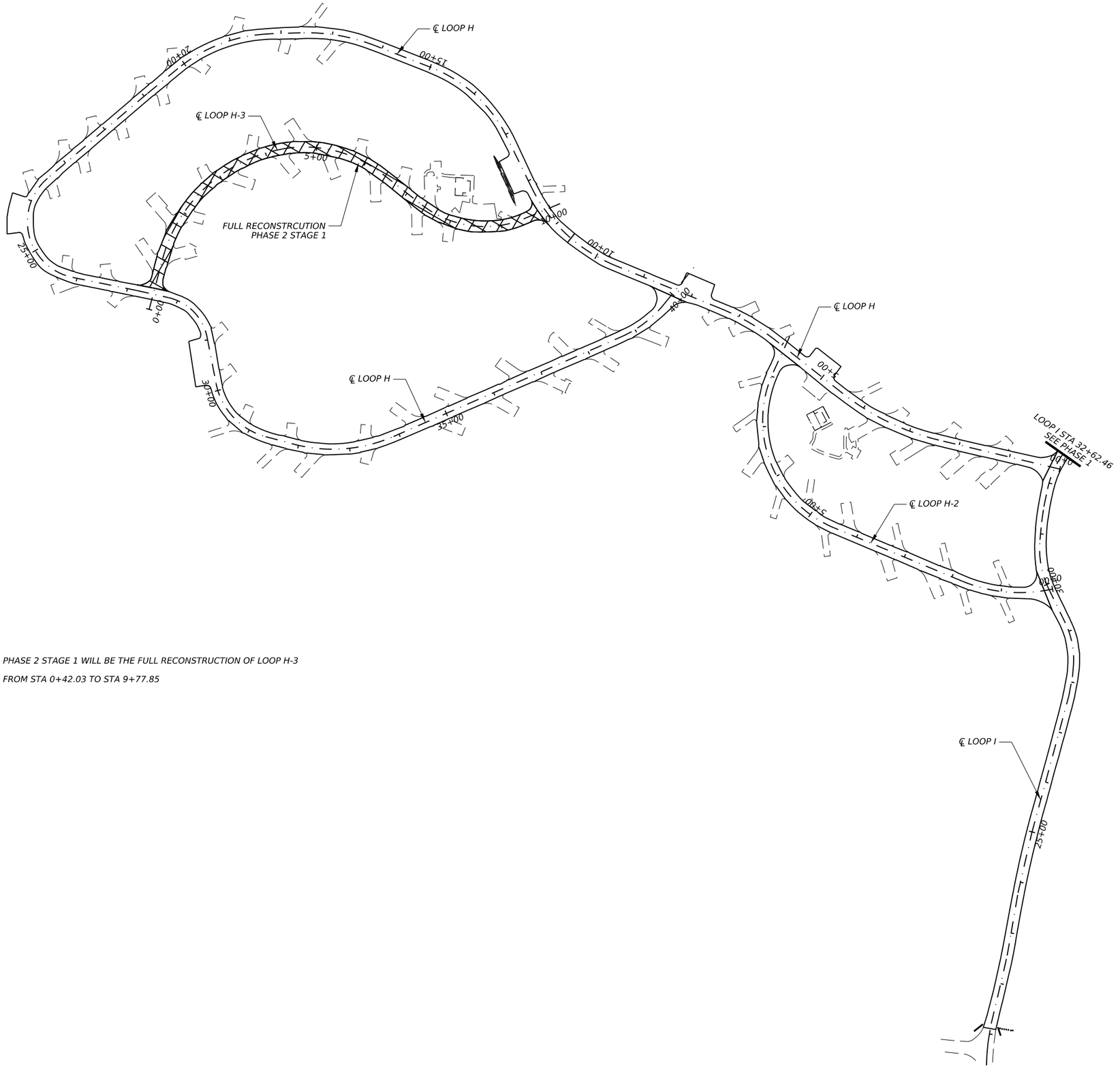

PHASE 2 STAGE 1 WILL BE THE FULL RECONSTRUCTION OF LOOP H-3
FROM STA 0+42.03 TO STA 9+77.85

0 100 200
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/28/2024
, P.E.
Signature of Registrant & Date

Texas Department of Transportation

CEDAR HILL STATE PARK

SEQUENCE OF WORK
EAGLE FORD AREA
PHASE 2-STAGE 1
LOOP H-3

SHEET 2 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		14

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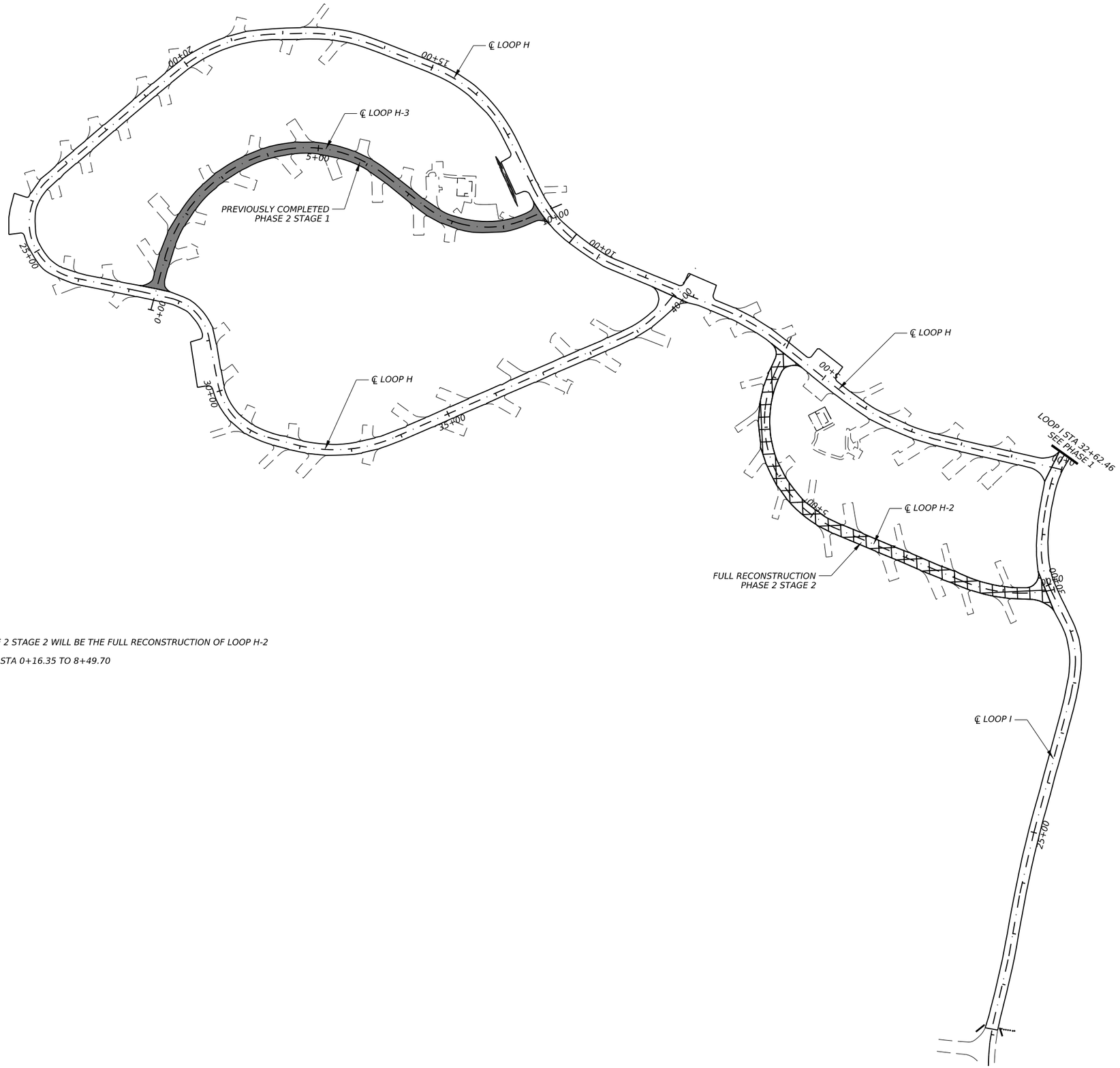

0 100 200

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION

PHASE 2 STAGE 2 WILL BE THE FULL RECONSTRUCTION OF LOOP H-2

FROM STA 0+16.35 TO 8+49.70

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/28/2024
, P.E.
Signature of Registrant & Date

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CEDAR HILL STATE PARK

SEQUENCE OF WORK
EAGLE FORD AREA
PHASE 2-STAGE 2
LOOP H-2

SHEET 3 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		15

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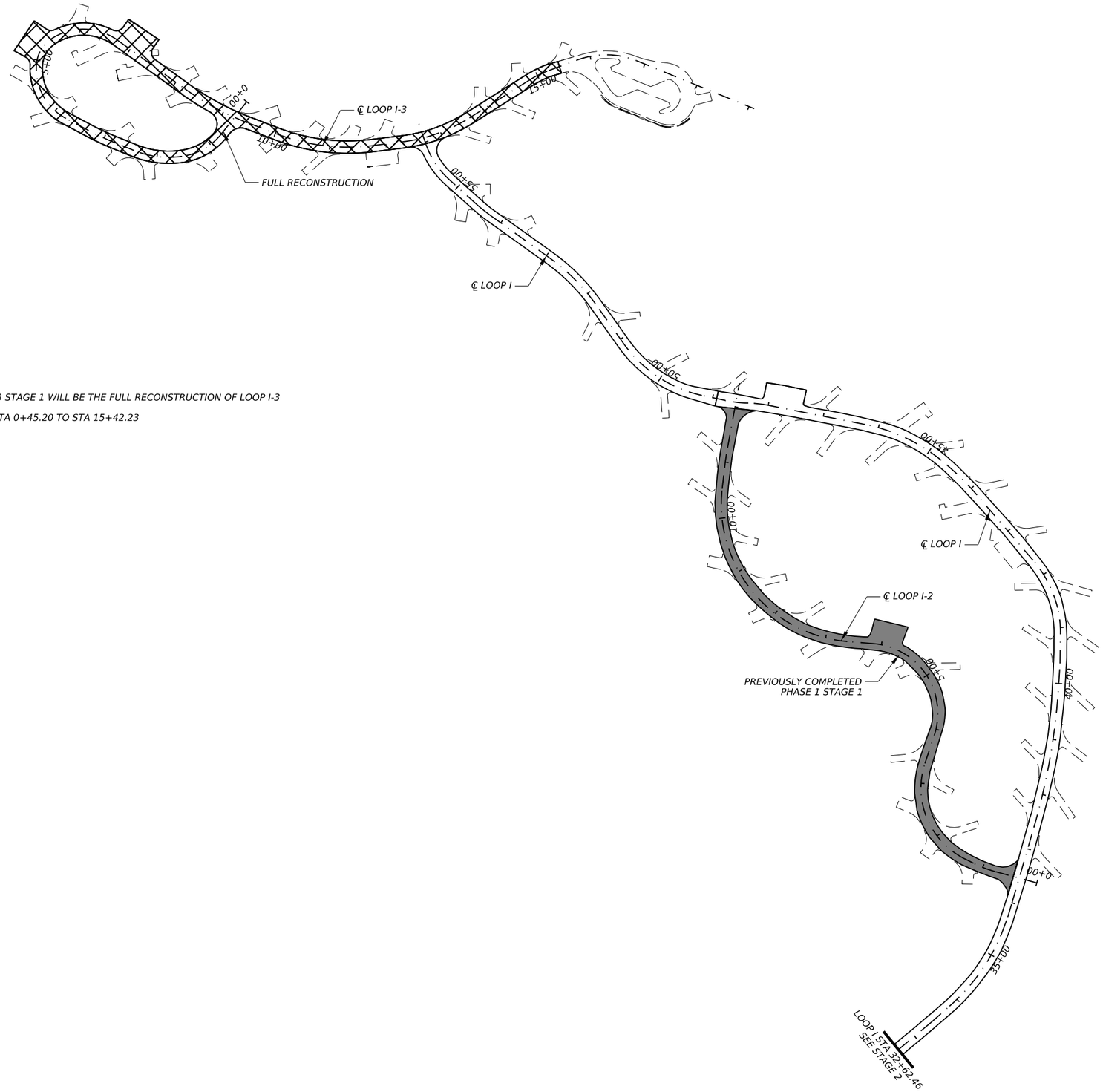

PHASE 3 STAGE 1 WILL BE THE FULL RECONSTRUCTION OF LOOP I-3
FROM STA 0+45.20 TO STA 15+42.23

N

0 100 200
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION

STATE OF TEXAS
DANIEL DIAZ, JR
124907
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PROFESSIONAL ENGINEER

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SEQUENCE OF WORK
SHADY RIDGE AREA
PHASE 3-STAGE 1
LOOP I-3

SHEET 4 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		16

DATE: 6/28/2024 1:40:15 PM
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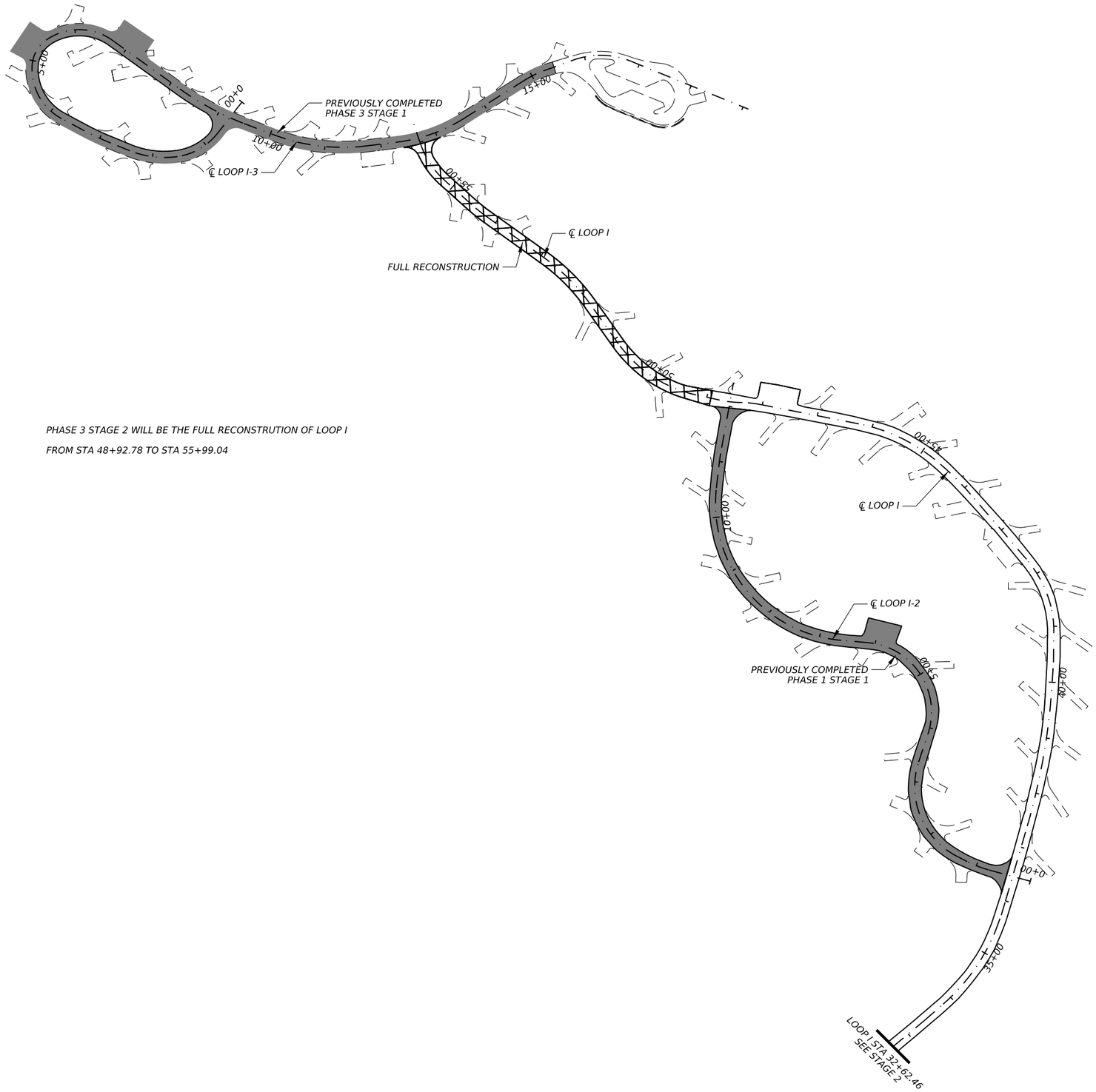

PHASE 3 STAGE 2 WILL BE THE FULL RECONSTRUTION OF LOOP I
FROM STA 48+92.78 TO STA 55+99.04

0 100 200
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/28/2024
, P.E.
Signature of Registrant & Date

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Texas Department of Transportation

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SEQUENCE OF WORK
SHADY RIDGE AREA
PHASE 3-STAGE 2
LOOP I

SHEET 5 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		17

DATE: 6/28/2024 1:40:19 PM
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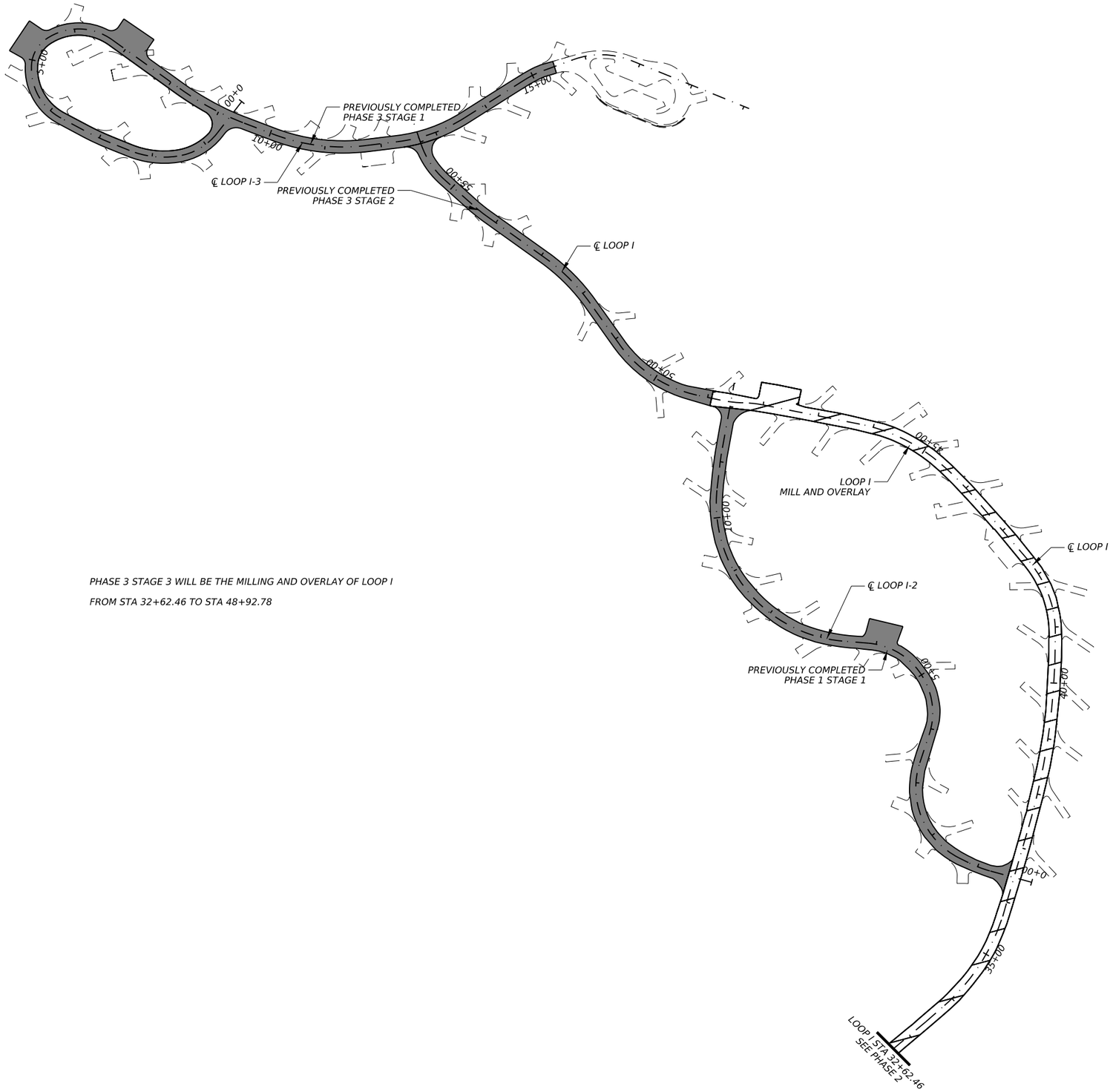
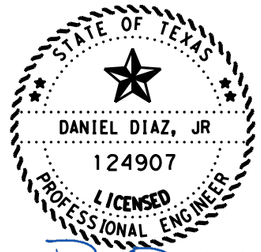


PHASE 3 STAGE 3 WILL BE THE MILLING AND OVERLAY OF LOOP I
FROM STA 32+62.46 TO STA 48+92.78

0 100 200
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION



6/28/2024
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2024
Texas Department of Transportation

CEDAR HILL STATE PARK

SEQUENCE OF WORK
SHADY RIDGE AREA
PHASE 3-STAGE 3
LOOP I

SHEET 6 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		18

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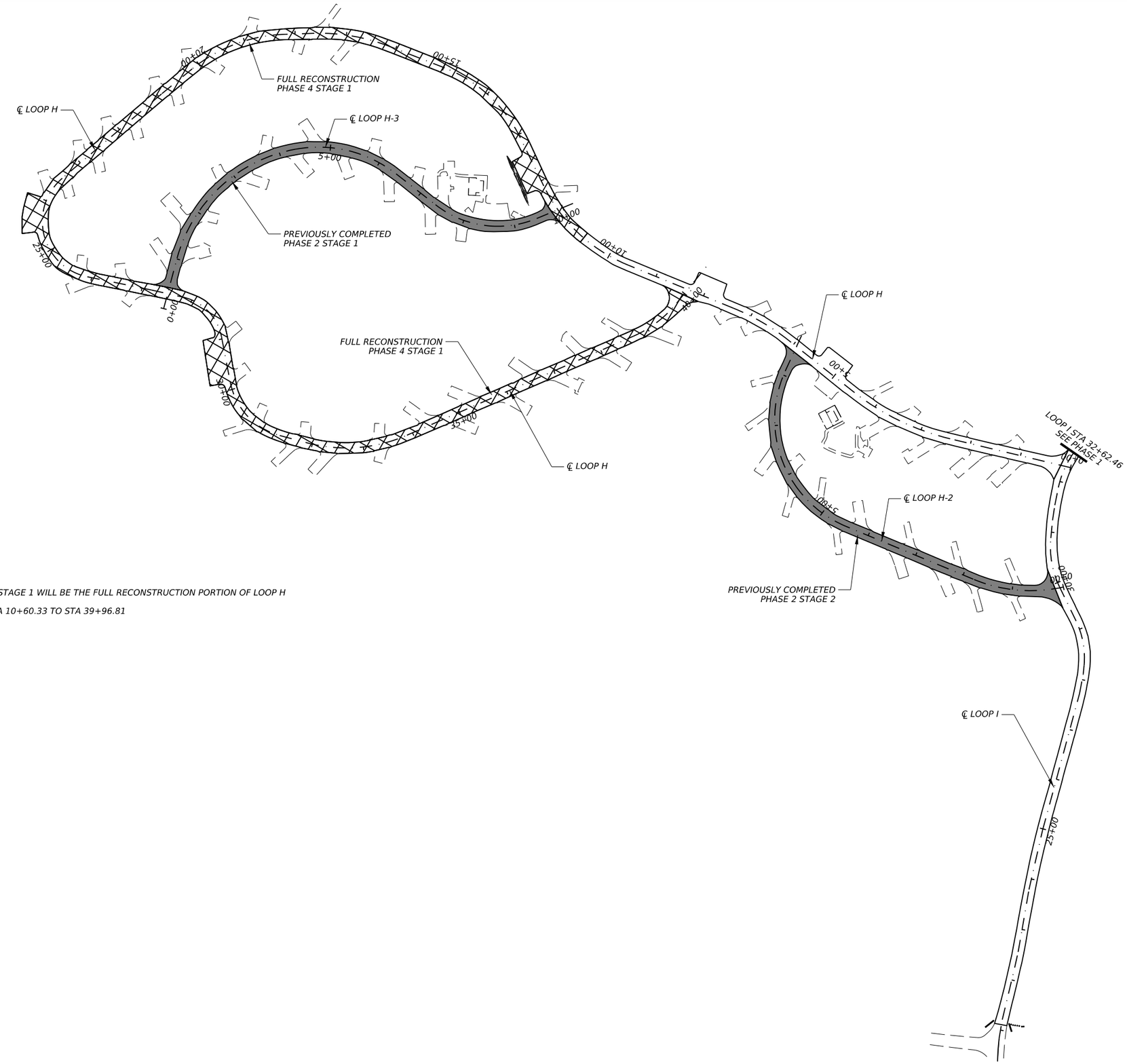

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION

PHASE 4 STAGE 1 WILL BE THE FULL RECONSTRUCTION PORTION OF LOOP H

FROM STA 10+60.33 TO STA 39+96.81

STATE OF TEXAS
DANIEL DIAZ, JR
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LICENSED
PROFESSIONAL ENGINEER

6/28/2024

, P.E.

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CEDAR HILL STATE PARK

SEQUENCE OF WORK
EAGLE FORD AREA
PHASE 4-STAGE 1
LOOP H

SHEET 7 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		19

DATE: 6/28/2024 1:40:42 PM
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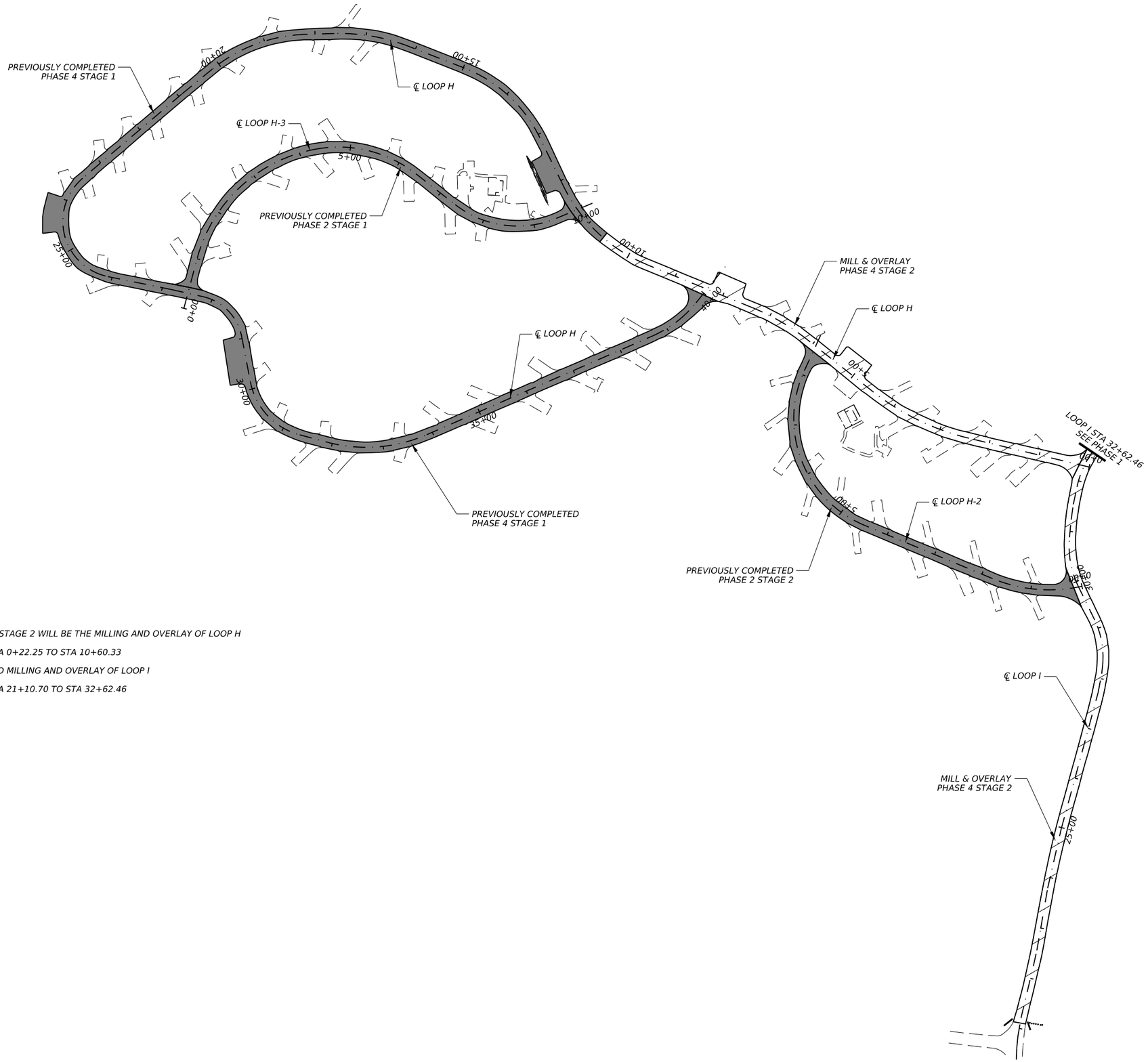

LEGEND	
SYMBOL	DESCRIPTION
	PRIOR ROADWORK
	MILL & OVERLAY
	FULL RECONSTRUCTION

PHASE 4 STAGE 2 WILL BE THE MILLING AND OVERLAY OF LOOP H
FROM STA 0+22.25 TO STA 10+60.33
AND ALSO MILLING AND OVERLAY OF LOOP I
FROM STA 21+10.70 TO STA 32+62.46

STATE OF TEXAS
DANIEL DIAZ, JR
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LICENSED
PROFESSIONAL ENGINEER

6/28/2024
, P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

SEQUENCE OF WORK
EAGLE FORD AREA
PHASE 4-STAGE 2
LOOP H & LOOP I

SHEET 8 OF 8

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		19A

CK:
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DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

10. 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

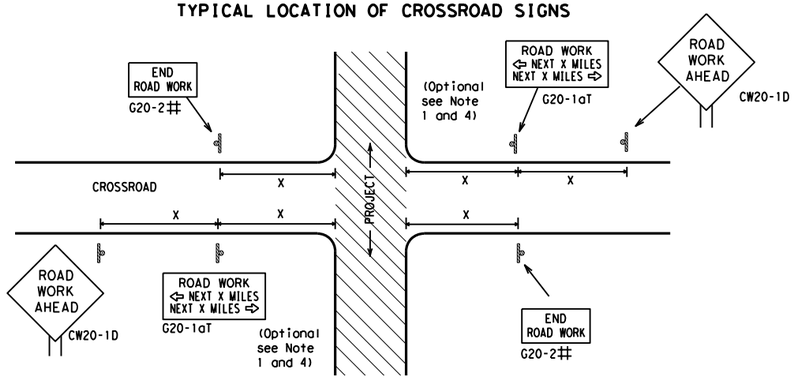
Traffic Safety Division Standard

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	0918	47	360	FD 701241
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	DAL	DALLAS		20
5-10 5-21				

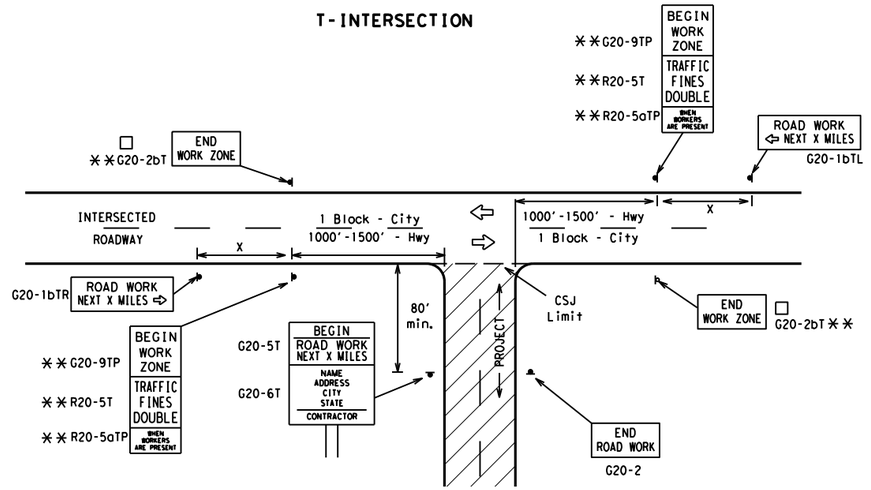
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

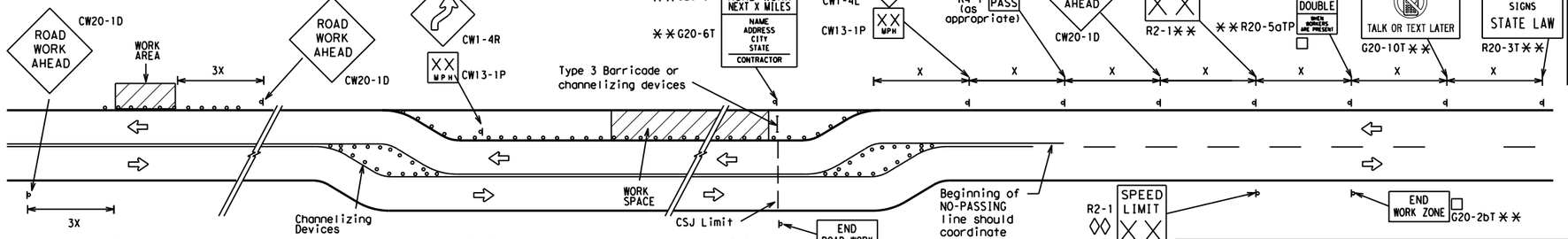
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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.

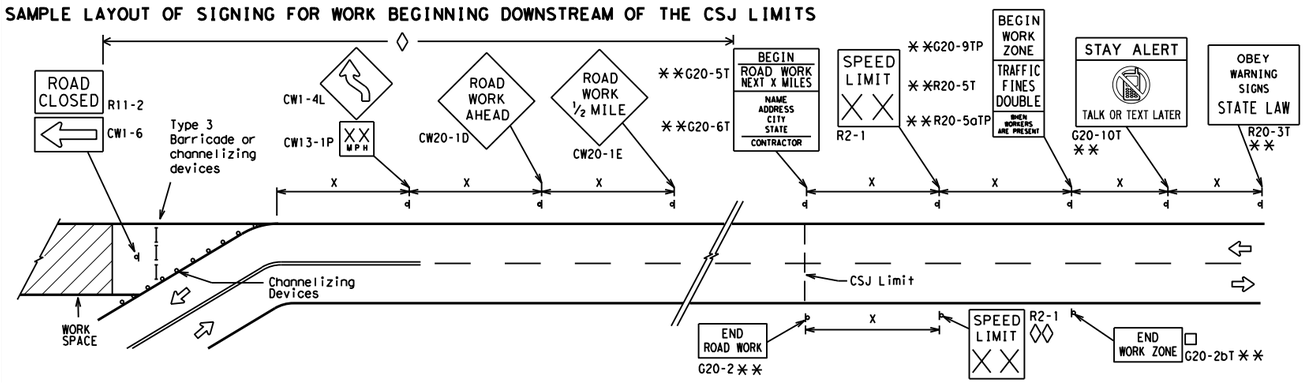
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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.

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	0918	47	360	FD 701241
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		21

DATE:
FILE:

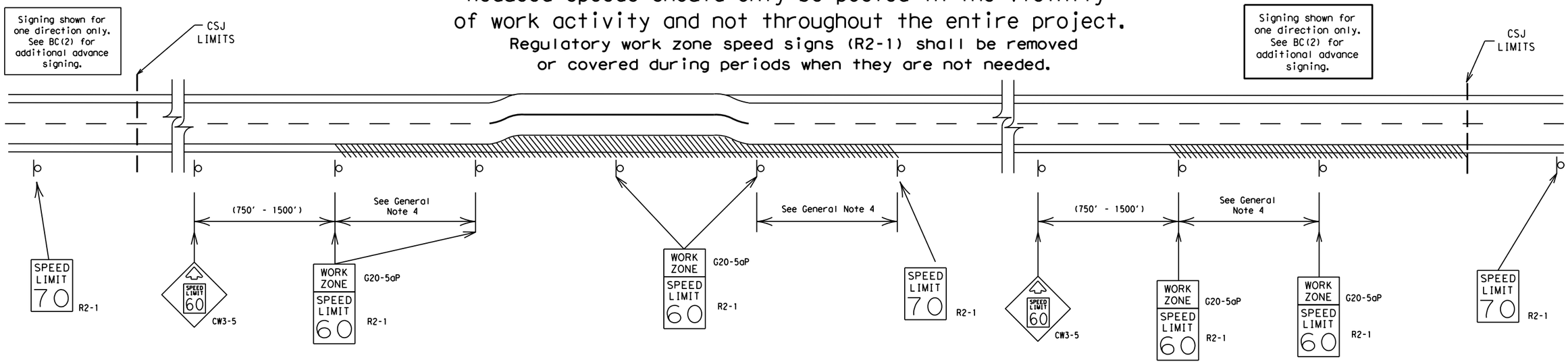
DATE:
FILE:

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

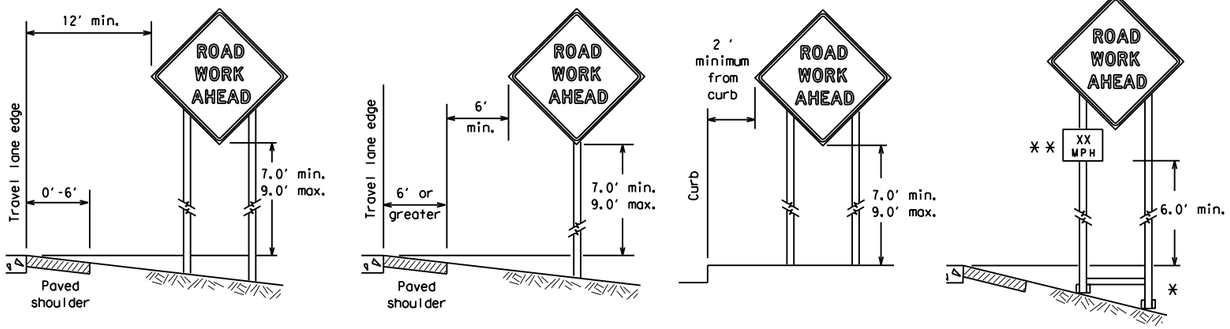
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		22

DATE:
FILE:

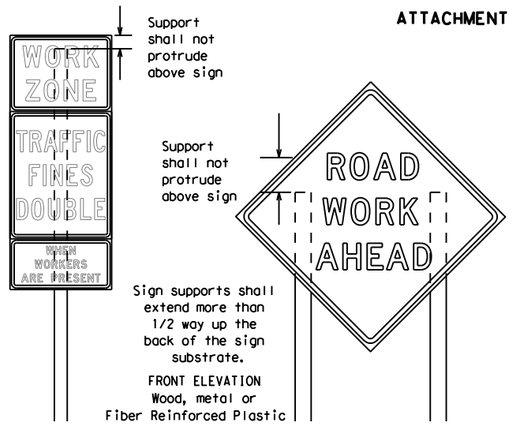
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

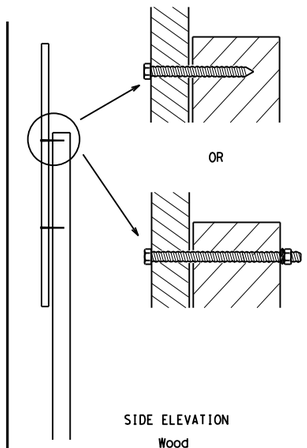


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** 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





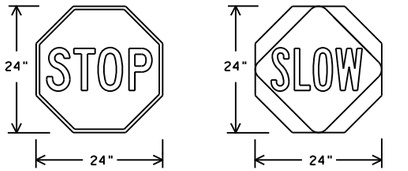
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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
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DATE:
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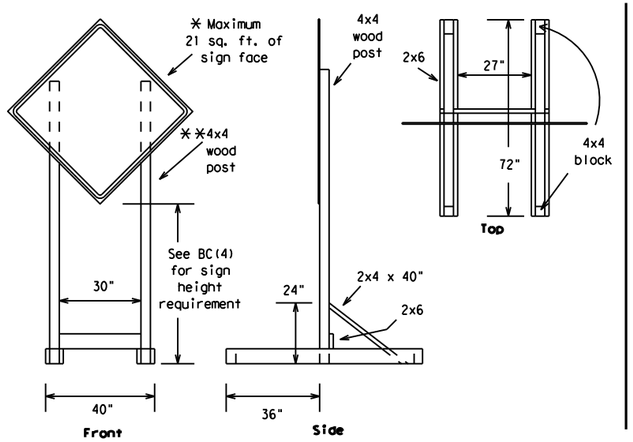
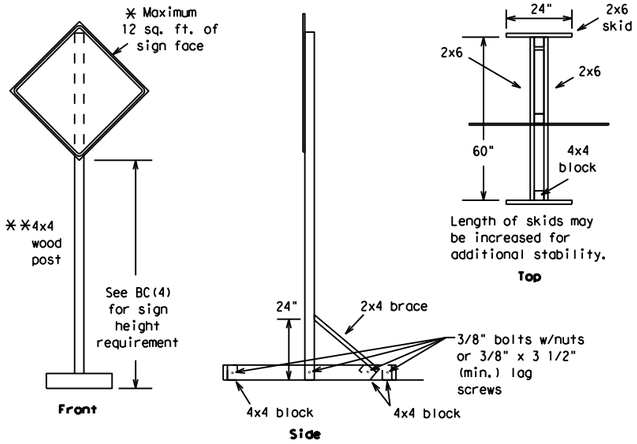
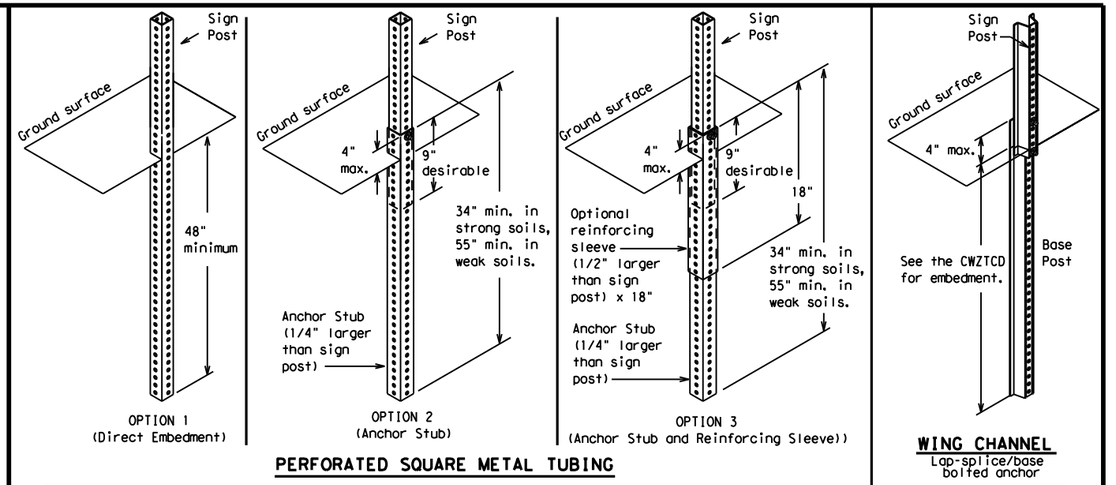




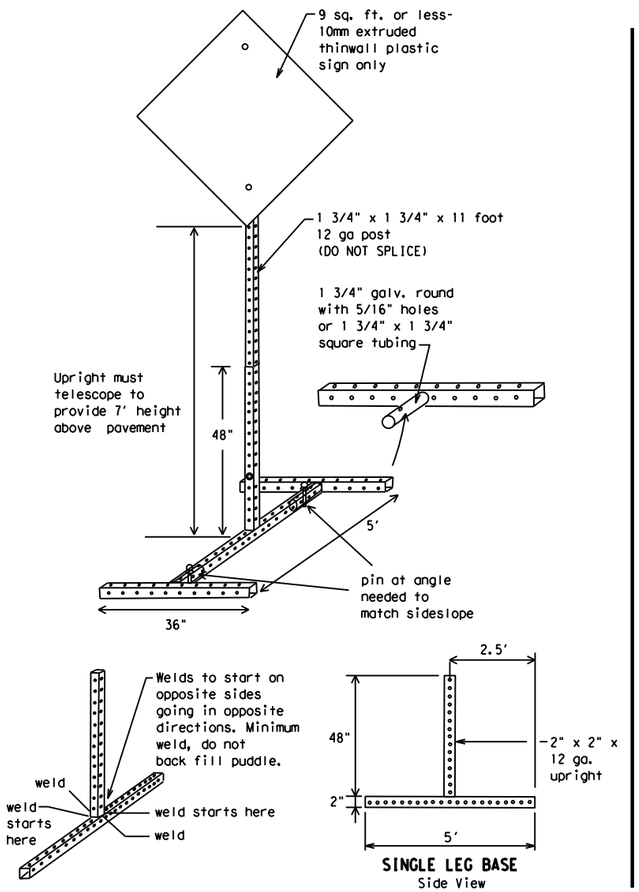
SKID MOUNTED WOOD SIGN SUPPORTS

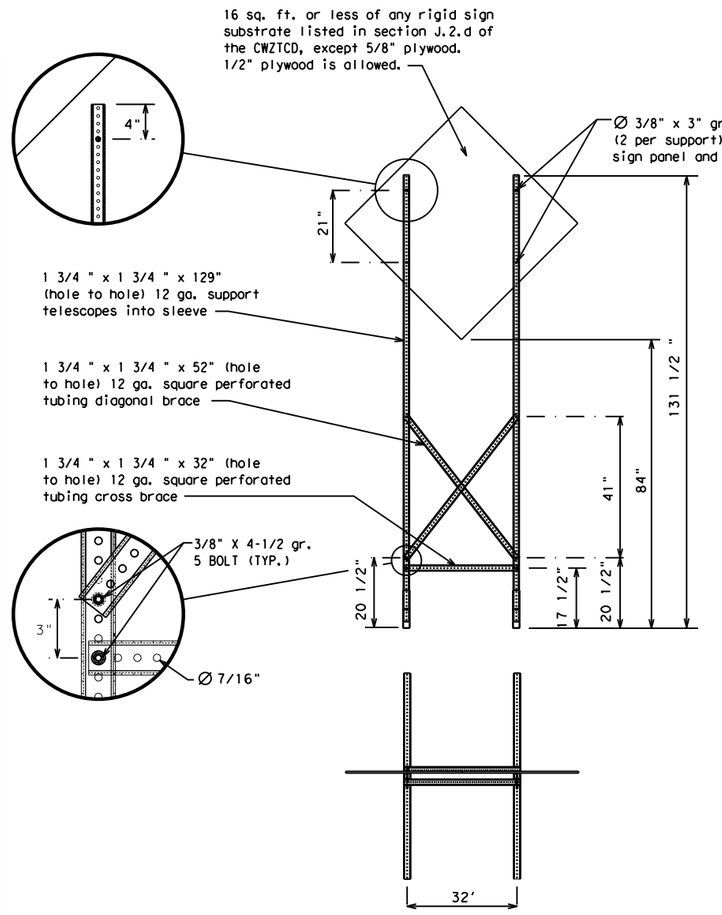
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

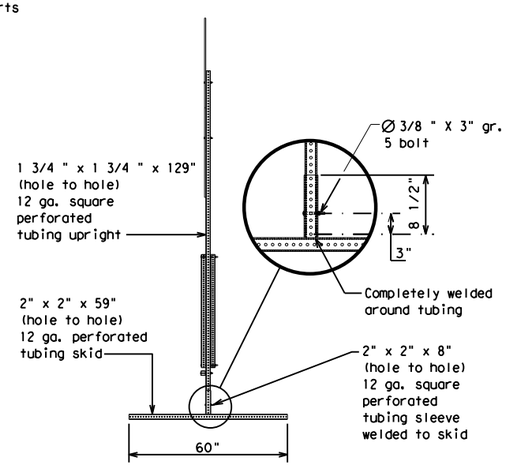


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic 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
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REVISIONS	0918	47	360	FD 701241
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DATE:
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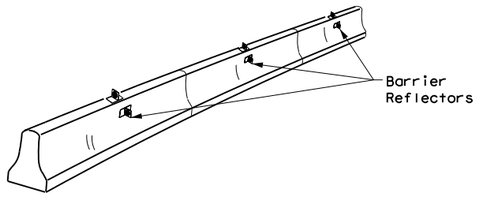
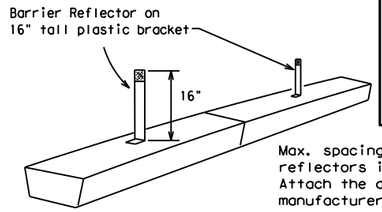
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

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

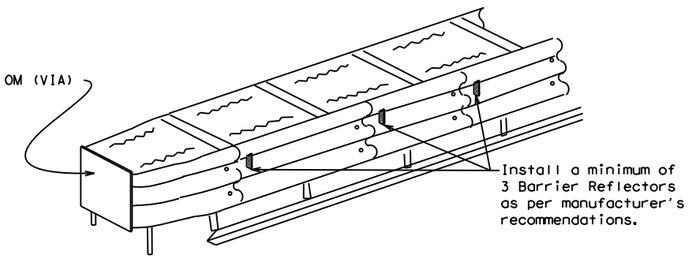


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) 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)

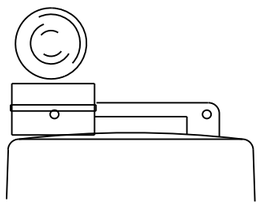


DELINEATION OF END TREATMENTS

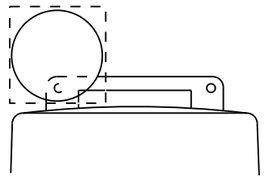
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

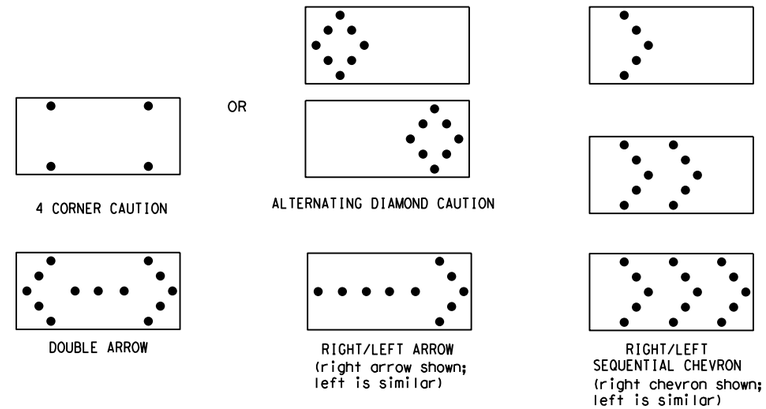
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

SHEET 7 OF 12

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	0918	47	360	FD 701241
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		26

DATE:
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

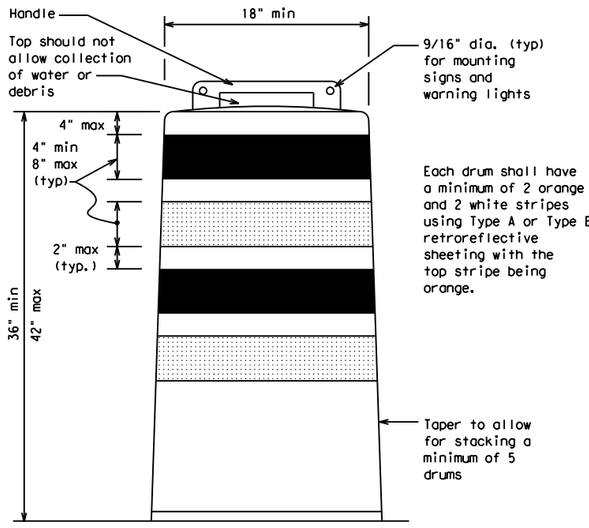
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

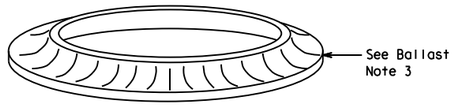
RETROREFLECTIVE SHEETING

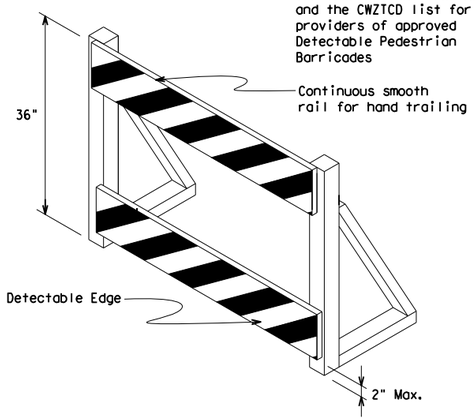
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

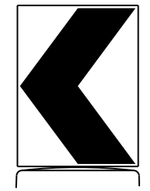




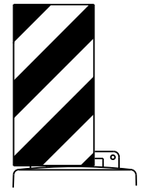


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

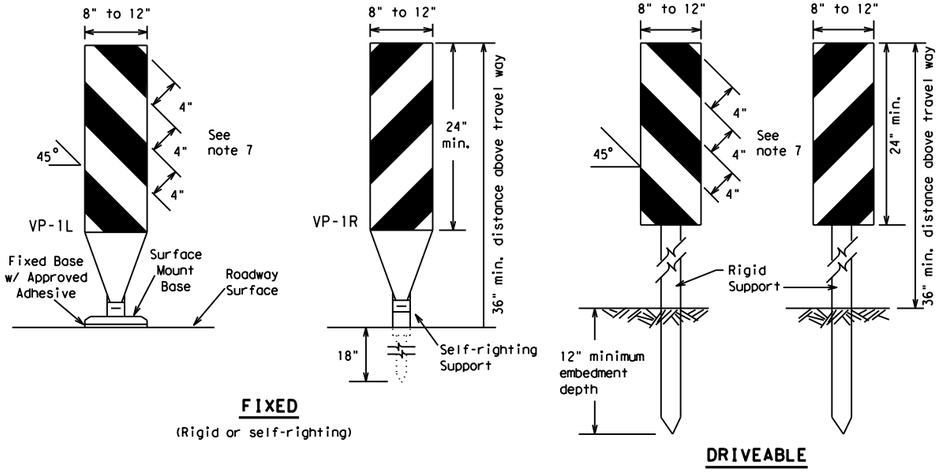
Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

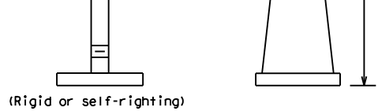
BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	DAL	DALLAS		27
7-13				



FIXED
(Rigid or self-righting)

DRIVEABLE

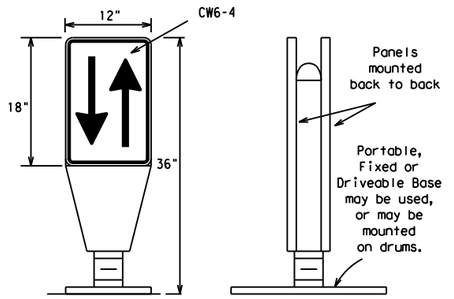


(Rigid or self-righting)

PORTABLE

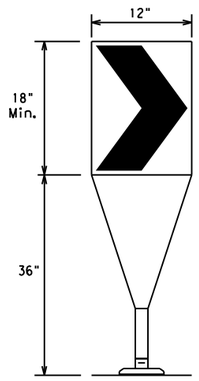
VERTICAL PANELS (VPs)

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.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

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.



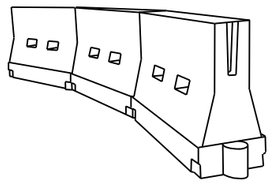
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

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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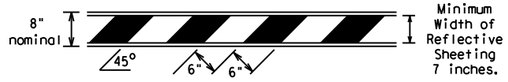
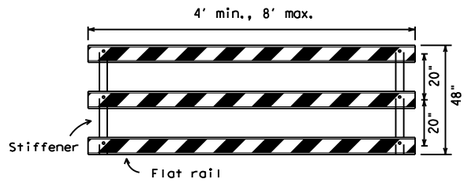
TYPE 3 BARRICADES

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.



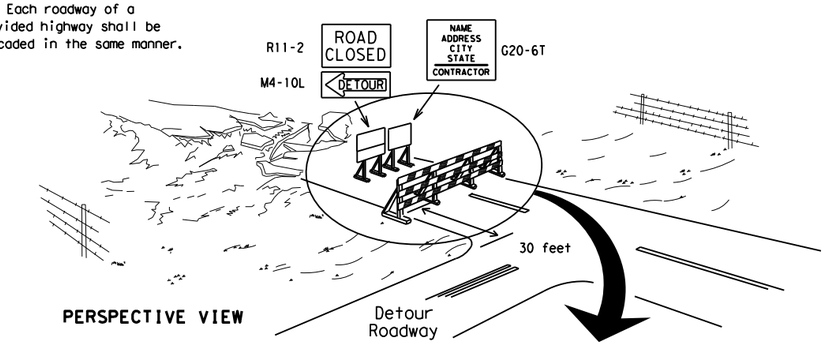
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

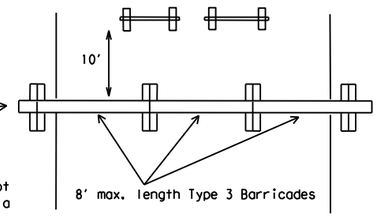
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

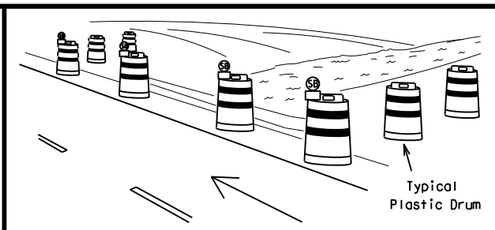
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

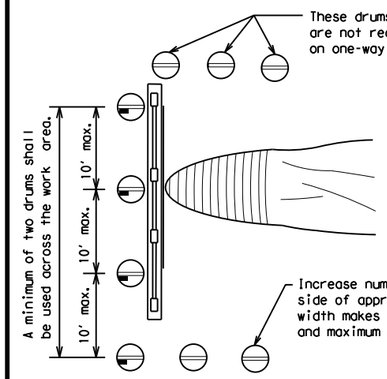
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

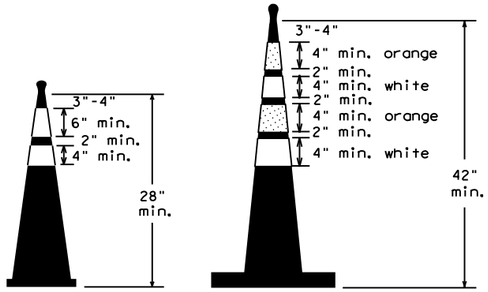
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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

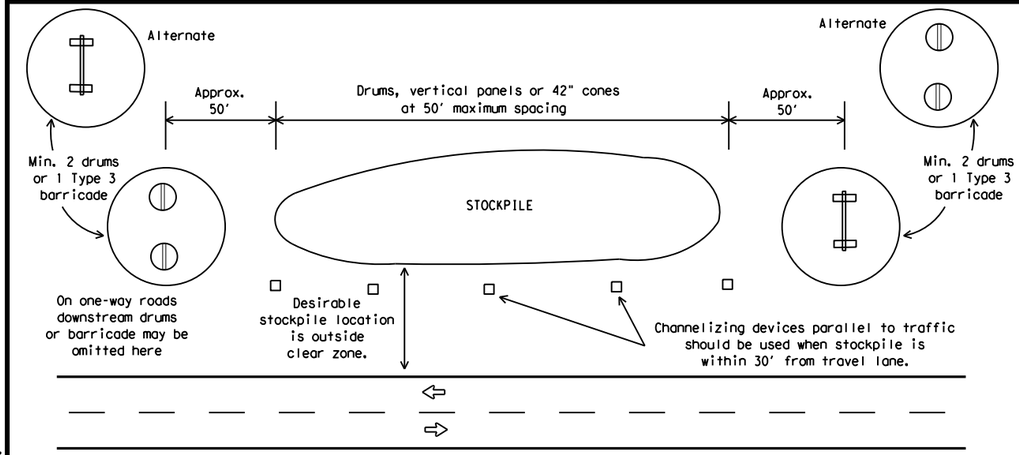
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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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.

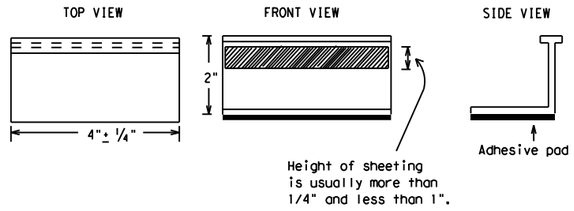
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

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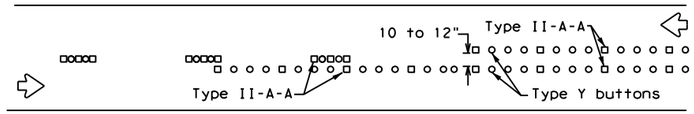
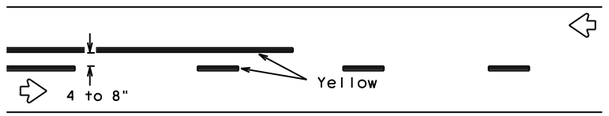
PAVEMENT MARKING PATTERNS

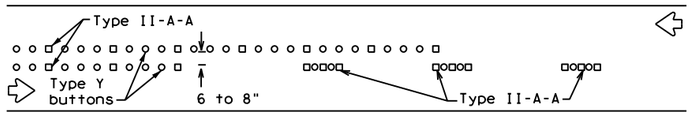
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



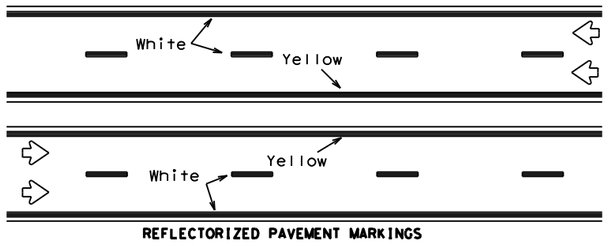
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



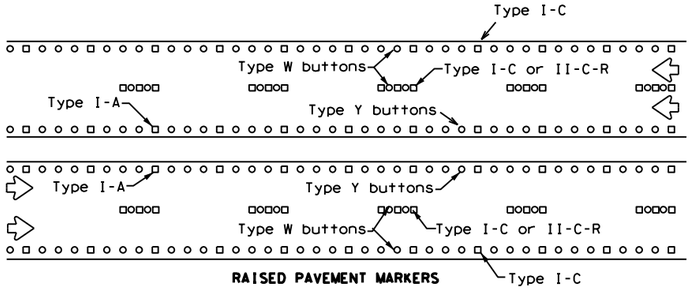
RAISED PAVEMENT MARKERS - PATTERN B

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



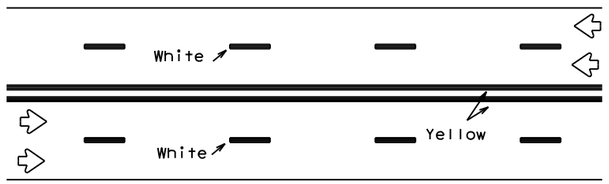
REFLECTORIZED PAVEMENT MARKINGS



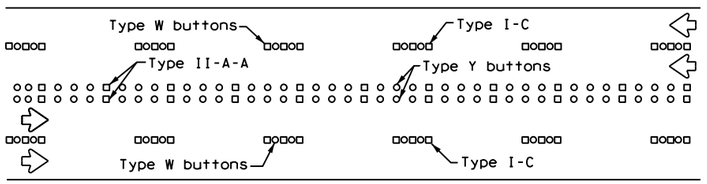
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



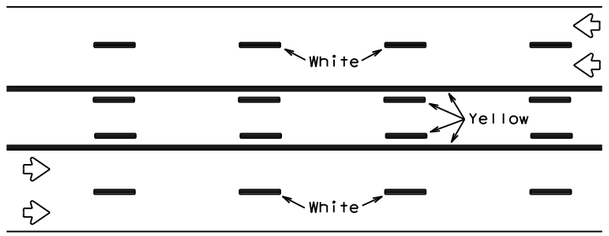
REFLECTORIZED PAVEMENT MARKINGS



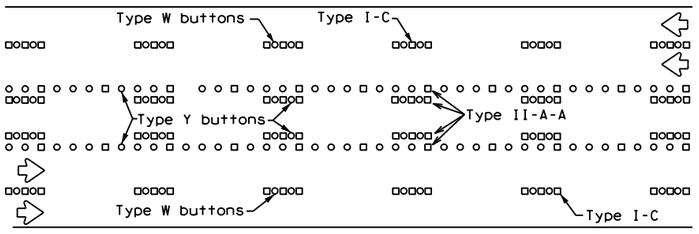
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

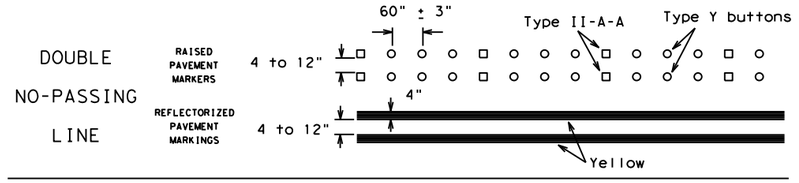
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

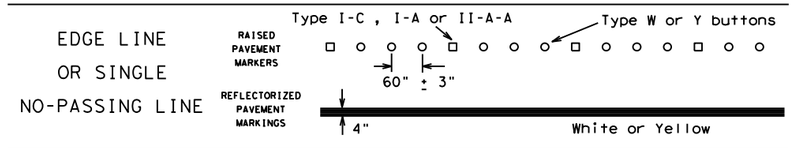
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

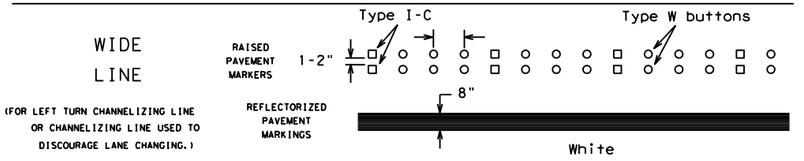


EDGE LINE OR SINGLE NO-PASSING LINE



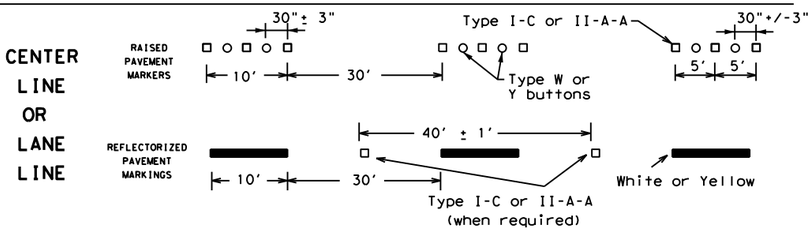
WIDE LINE

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

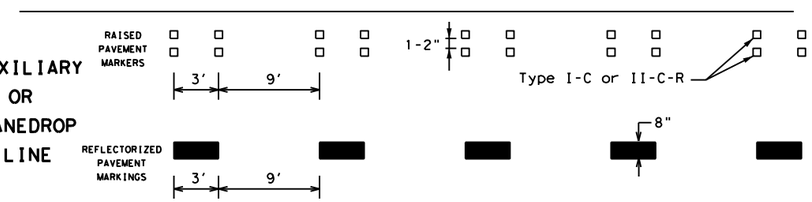


BROKEN LINES

CENTER LINE OR LANE LINE

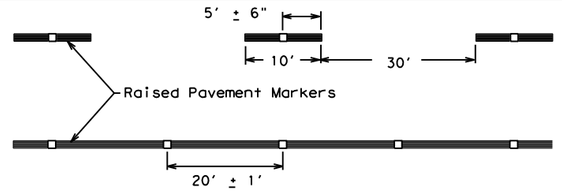


AUXILIARY OR LANEDROP LINE



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."

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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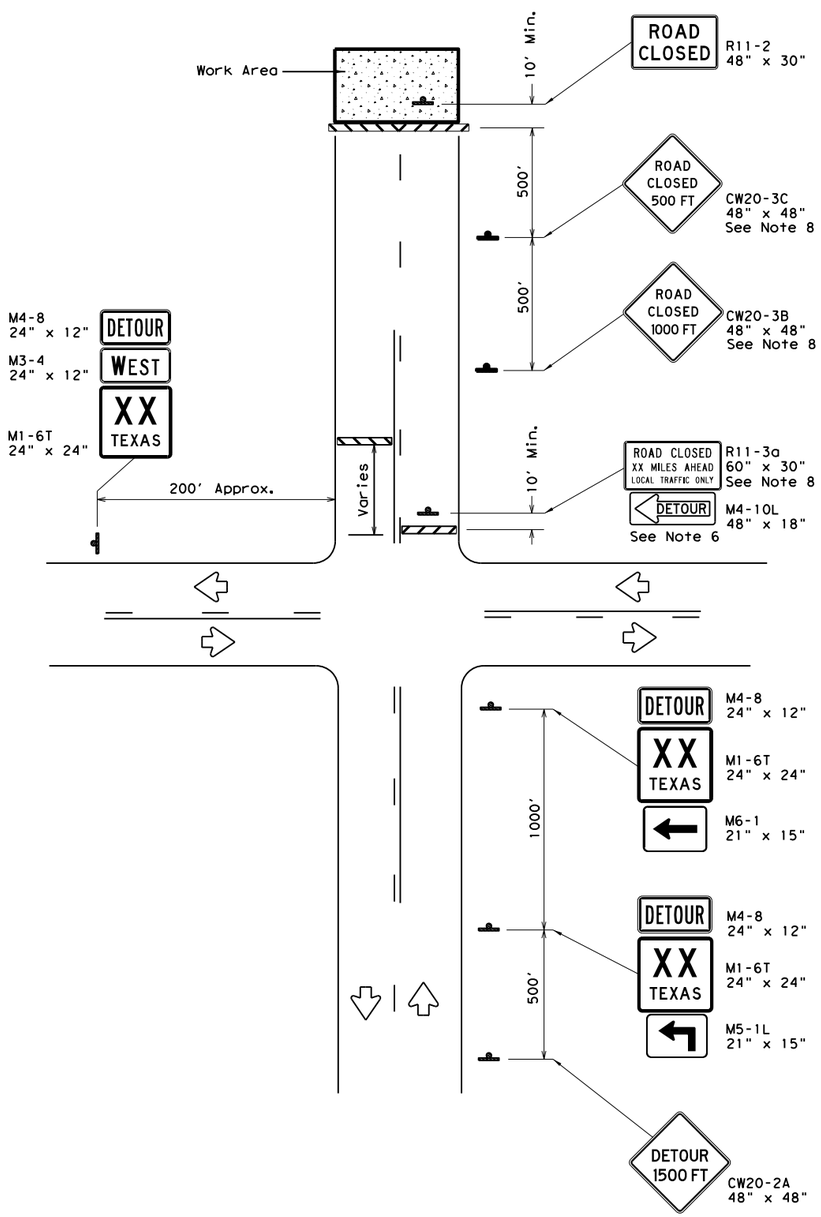
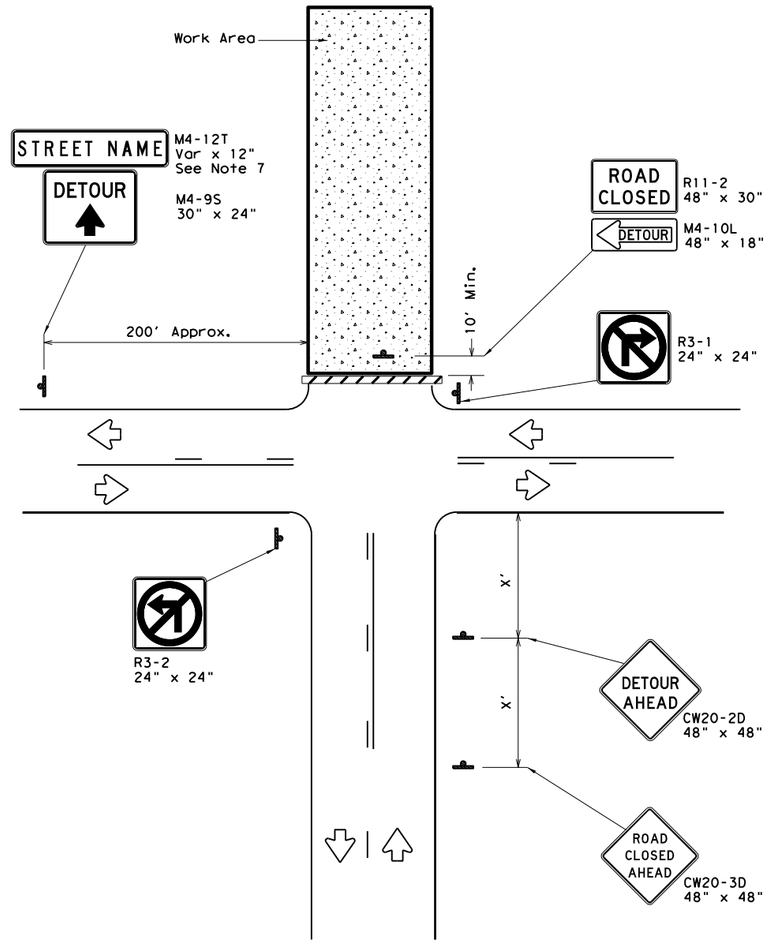


ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

Traffic Operations Division Standard

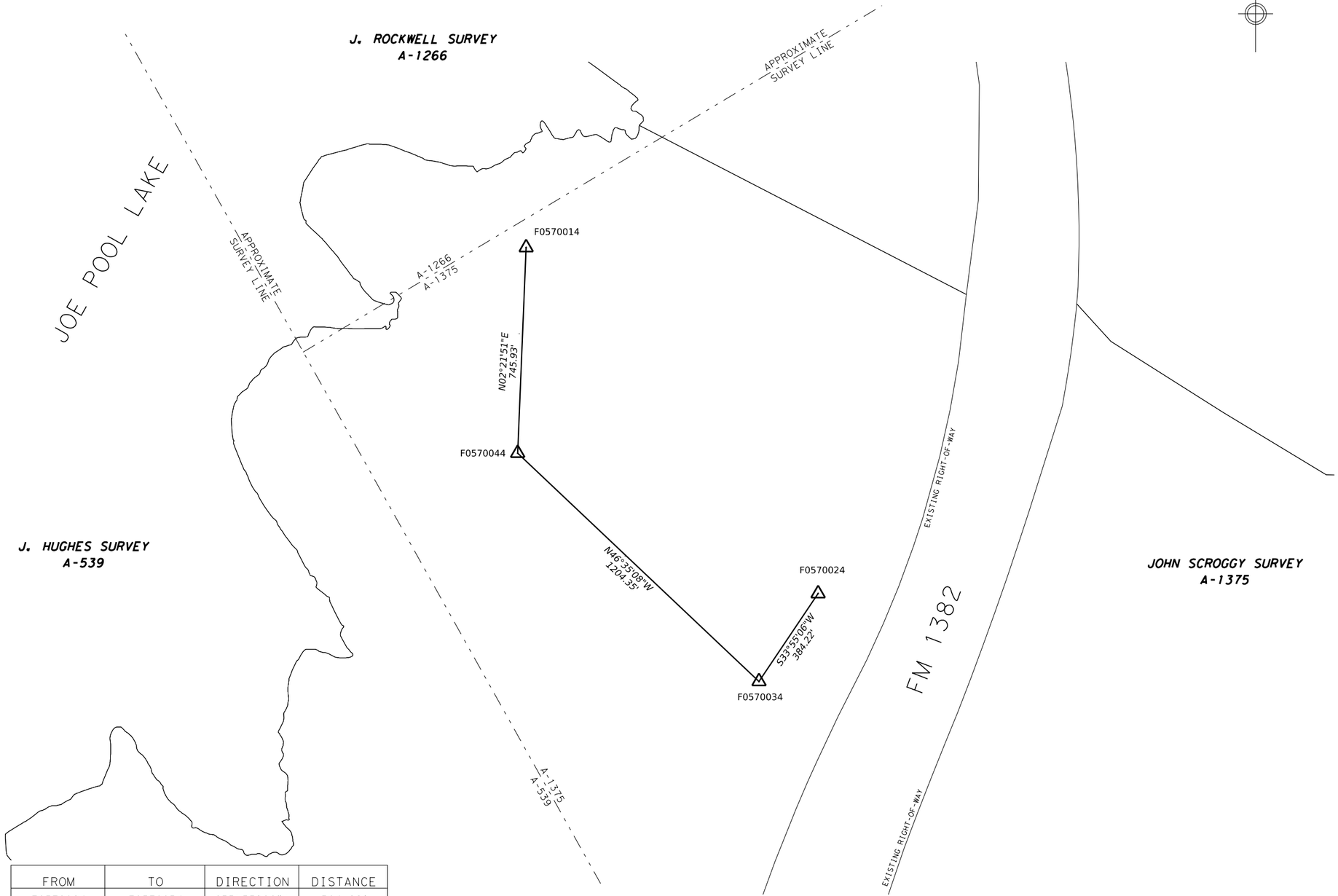
WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	DAL	DALLAS		32

113

POINT	NORTH	EAST	ELEVATION	DESCRIPTION
F0570014	6,919,369.50	2,437,347.71	547.57′	SET 5/8" IR W/TXDOT ALUMINUM CAP IN CONCRETE
F0570024	6,918,115.33	2,438,406.18	611.81′	SET 5/8" IR W/TXDOT ALUMINUM CAP IN CONCRETE
F0570034	6,917,796.49	2,438,191.78	608.62′	SET 5/8" IR W/TXDOT ALUMINUM CAP IN CONCRETE
F0570044	6,918,624.19	2,437,316.94	568.95′	SET 5/8" IR W/TXDOT ALUMINUM CAP IN CONCRETE



FROM	TO	DIRECTION	DISTANCE
F0570024	F0570034	S33°55′06"W	384.22′
F0570034	F0570044	N46°35′08"W	1,204.35′
F0570044	F0570014	N02°21′51"E	745.93′

NOTES:

1. ALL COORDINATES AND BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM; NORTH CENTRAL ZONE (4202); NORTH AMERICAN DATUM OF 1983 EPOCH 2010.00. ESTABLISHED FROM THE TXDOT RTN VRS NETWORK AND VERIFIED MARCH, 2024. HORIZONTAL CONTROL VALUES ARE BASED ON HOLDING TXDOT REFERENCE STATION HUTCHINS-TXHC WITH A SURFACE VALUE OF N=6923050.8679, E=2520754.2021.
2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. VERTICAL CONTROL VALUES ON ALL CONTROL POINTS WERE ESTABLISHED USING TXDOT RTN VRS NETWORK WITH REDUNDANT OBSERVATIONS (180 EPOCHS), HOLDING TXDOT REFERENCE STATION HUTCHINS-TXHC ELEVATION = 486.49′ (NAVD 88).
4. ALL DISTANCES AND COORDINATES SHOWN ARE U.S. SURVEY FEET, DISPLAYED IN SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.000136506.

THIS SURVEY WAS PERFORMED ON THE GROUND UNDER MY SUPERVISION

STATE OF TEXAS
REGISTERED
JEFFREY W. McGUIRE
6840
PROFESSIONAL
LAND SURVEYOR

4/22/2024

Survey Date: April, 2024

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED IN THIS PS&E

SAM™
TBPLS FIRM REGISTRATION #10064300
11111 KATY FREEWAY
SUITE 200
HOUSTON, TEXAS 77079
PHONE: 713.973.5100
FAX: 713.973.5150
EMAIL: INFO@SAM.BIZ

Texas Department of Transportation

CEDAR HILL STATE PARK

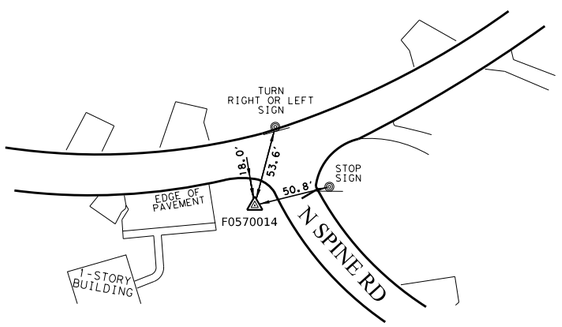
TEXAS PARKS & WILDLIFE

SURVEY CONTROL INDEX SHEET

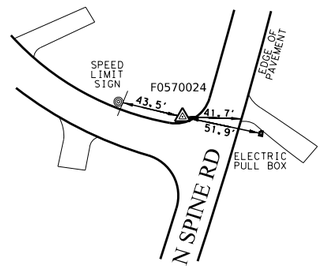
1 OF 1

FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS				FD 701241
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DAL	DALLAS	0918	47	360	33

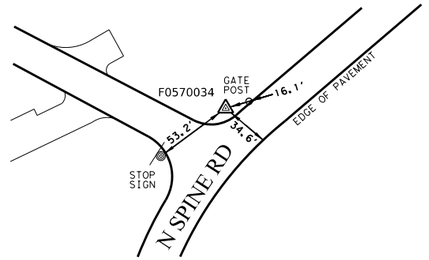
F0570014
SET 5/8"IR
W/ALUMINUM TXDOT CAP
N= 6,919,369.50
E= 2,437,347.71
ELEV.=547.57'



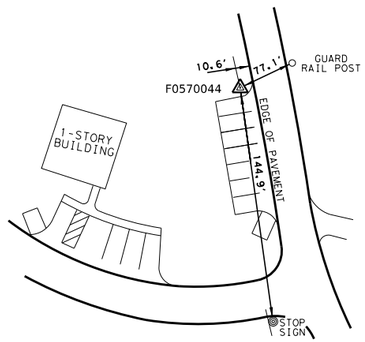
F0570024
SET 5/8"IR
W/ALUMINUM TXDOT CAP
N= 6,918,115.33
E= 2,438,406.18
ELEV.=611.81'



F0570034
SET 5/8"IR
W/ALUMINUM TXDOT CAP
N=6,917,796.49
E= 2,438,191.78
ELEV.=608.62'



F0570044
SET 5/8"IR
W/ALUMINUM TXDOT CAP
N=6,918,624.19
E= 2,437,316.94
ELEV.=568.95'



NOTES:

1. ALL COORDINATES AND BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM; NORTH CENTRAL ZONE (4202); NORTH AMERICAN DATUM OF 1983 EPOCH 2010.00. ESTABLISHED FROM THE TXDOT RTN VRS NETWORK AND VERIFIED MARCH, 2024. HORIZONTAL CONTROL VALUES ARE BASED ON HOLDING TXDOT REFERENCE STATION HUTCHINS-TXHC WITH A SURFACE VALUE OF N=6923050.8679, E=2520754.2021.
2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. VERTICAL CONTROL VALUES ON ALL CONTROL POINTS WERE ESTABLISHED USING TXDOT RTN VRS NETWORK WITH REDUNDANT OBSERVATIONS (180 EPOCHS), HOLDING TXDOT REFERENCE STATION HUTCHINS-TXHC ELEVATION = 486.49' (NAVD 88).
4. ALL DISTANCES AND COORDINATES SHOWN ARE U.S. SURVEY FEET, DISPLAYED IN SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.000136506.

THIS SURVEY WAS PERFORMED ON THE GROUND UNDER MY SUPERVISION

STATE OF TEXAS
REGISTERED
JEFFREY W. McGUIRE
5840
PROFESSIONAL
LAND SURVEYOR

4/22/2024

Survey Date: April 2024

THIS SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED IN THIS PS&E

SAM™
TBPLS FIRM REGISTRATION #10064300
11111 KATY FREEWAY
SUITE 200
HOUSTON, TEXAS 77079
PHONE: 713.973.5100
FAX: 713.973.5150
EMAIL: INFO@SAM.BIZ

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

TEXAS PARKS & WILDLIFE

HORIZONTAL & VERTICAL CONTROL SHEET

1 OF 1

FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS				FD 701241

STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
18	DALLAS	0918	47	360	34

Alignment Name: LOOP I
Alignment Description: STATIONS 10+00.00 THROUGH 20+10.70 SHOWN FOR GENERAL INFORMATION ONLY
Alignment Style: Alignment\Baseline

			Station	Northing	Easting
Element: Linear					
POT		( )	10+00.000	6915700.945	2437436.208
PC		( )	10+62.101	6915762.817	2437441.538
	Tangential Direction:		N04°55'24.536"E		
	Tangential Length:		62.101		
Element: Circular					
PC		( )	10+62.101	6915762.817	2437441.538
PI		( )	11+42.392	6915842.811	2437448.429
CC		( )		6915726.77	2437859.989
PT		( )	12+20.768	6915914.623	2437484.341
	Radius:		420		
	Delta:		21°38'42.235" Right		
	Degree of Curvature (Arc):		13°38'30.668"		
	Length:		158.667		
	Tangent:		80.29		
	Chord:		157.725		
	Middle Ordinate:		7.47		
	External:		7.606		
	Back Tangent Direction:		N04°55'24.536"E		
	Back Radial Direction:		S85°04'35.464"E		
	Chord Direction:		N15°44'45.654"E		
	Ahead Radial Direction:		S63°25'53.228"E		
	Ahead Tangent Direction:		N26°34'06.772"E		
Element: Linear					
PT		( )	12+20.768	6915914.623	2437484.341
PC		( )	14+91.866	6916157.094	2437605.594
	Tangential Direction:		N26°34'06.772"E		
	Tangential Length:		271.099		
Element: Circular					
PC		( )	14+91.866	6916157.094	2437605.594
PI		( )	16+31.075	6916281.602	2437667.858
CC		( )		6916693.816	2436532.315
PT		( )	17+69.045	6916417.058	2437699.964
	Radius:		1200		
	Delta:		13°14'03.562" Left		
	Degree of Curvature (Arc):		04°46'28.734"		
	Length:		277.179		
	Tangent:		139.209		
	Chord:		276.563		
	Middle Ordinate:		7.994		
	External:		8.048		
	Back Tangent Direction:		N26°34'06.772"E		
	Back Radial Direction:		S63°25'53.228"E		
	Chord Direction:		N19°57'04.991"E		
	Ahead Radial Direction:		S76°39'56.790"E		
	Ahead Tangent Direction:		N13°20'03.210"E		
Element: Linear					
PT		( )	17+69.045	6916417.058	2437699.964
PI		( )	19+32.012	6916575.631	2437737.549
	Tangential Direction:		N13°20'03.210"E		
	Tangential Length:		162.966		
Element: Linear					
PI		( )	19+32.012	6916575.631	2437737.549
PI		( )	20+00.000	6916641.718	2437753.515
	Tangential Direction:		N13°34'54.538"E		
	Tangential Length:		67.988		
Element: Linear					
PI		( )	20+00.000	6916641.718	2437753.515
PI		( )	20+30.332	6916671.084	2437761.111
	Tangential Direction:		N14°30'11.819"E		
	Tangential Length:		30.332		
Element: Linear					
PI		( )	20+30.332	6916671.084	2437761.111
PI		( )	20+60.338	6916699.755	2437769.963
	Tangential Direction:		N17°09'23.528"E		
	Tangential Length:		30.006		

Alignment Name: LOOP I CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

			Station	Northing	Easting
Element: Linear					
PI		( )	20+60.338	6916699.755	2437769.963
PI		( )	20+84.002	6916721.985	2437778.072
	Tangential Direction:		N20°02'26.619"E		
	Tangential Length:		23.664		
Element: Linear					
PI		( )	20+84.002	6916721.985	2437778.072
PI		( )	21+20.610	6916755.257	2437793.341
	Tangential Direction:		N24°39'02.562"E		
	Tangential Length:		36.608		
Element: Linear					
PI		( )	21+20.610	6916755.257	2437793.341
PI		( )	22+24.959	6916847.068	2437842.934
	Tangential Direction:		N28°22'34.840"E		
	Tangential Length:		104.349		
Element: Linear					
PI		( )	22+24.959	6916847.068	2437842.934
PI		( )	22+55.892	6916874.483	2437857.261
	Tangential Direction:		N27°35'32.356"E		
	Tangential Length:		30.933		
Element: Linear					
PI		( )	22+55.892	6916874.483	2437857.261
PI		( )	22+99.049	6916913.596	2437875.501
	Tangential Direction:		N25°00'07.108"E		
	Tangential Length:		43.157		
Element: Linear					
PI		( )	22+99.049	6916913.596	2437875.501
PI		( )	23+79.037	6916986.169	2437909.135
	Tangential Direction:		N24°51'54.720"E		
	Tangential Length:		79.988		
Element: Linear					
PI		( )	23+79.037	6916986.169	2437909.135
PI		( )	24+97.316	6917090.713	2437964.457
	Tangential Direction:		N27°53'12.062"E		
	Tangential Length:		118.279		
Element: Linear					
PI		( )	24+97.316	6917090.713	2437964.457
PI		( )	26+00.000	6917179.534	2438015.981
	Tangential Direction:		N30°07'02.951"E		
	Tangential Length:		102.684		
Element: Linear					
PI		( )	26+00.000	6917179.534	2438015.981
PI		( )	27+72.607	6917328.839	2438102.591
	Tangential Direction:		N30°07'02.951"E		
	Tangential Length:		172.607		
Element: Linear					
PI		( )	27+72.607	6917328.839	2438102.591
PI		( )	28+11.376	6917363.756	2438119.439
	Tangential Direction:		N25°45'28.814"E		
	Tangential Length:		38.769		
Element: Linear					
PI		( )	28+11.376	6917363.756	2438119.439
PC		( )	28+28.254	6917379.572	2438125.332
	Tangential Direction:		N20°26'01.142"E		
	Tangential Length:		16.878		
Element: Circular, NAME: HC 1					
PC		( )	28+28.254	6917379.572	2438125.332
PI		( )	28+73.837	6917422.286	2438141.245
CC		( )		6917436.479	2437972.588
PT		( )	29+17.148	6917467.059	2438132.694
	Radius:		163		
	Delta:		31°14'48.742" Left		
	Degree of Curvature (Arc):		35°09'02.826"		
	Length:		88.894		
	Tangent:		45.582		
	Chord:		87.796		
	Middle Ordinate:		6.022		
	External:		6.253		
	Back Tangent Direction:		N20°26'01.142"E		
	Back Radial Direction:		S69°33'58.858"E		
	Chord Direction:		N04°48'36.771"E		
	Ahead Radial Direction:		N79°11'12.400"E		
	Ahead Tangent Direction:		N10°48'47.600"W		

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/12/2024
,P.E.
Signature of Registrant & Date

© 2024 Texas Department of Transportation

CEDAR HILL STATE PARK

ALIGNMENT DATA

SHEET 1 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		35

DATE: 6/11/2024 10:53:10 AM
FILE: c:\txdot\pw_online\txdot5\siyoon.wool\d0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP I CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	29+17.148	6917467.059	2438132.694
PC	( )	29+90.781	6917539.384	2438118.88
	Tangential Direction:	N10°48'47.600"W		
	Tangential Length:	73.633		
Element: Circular, NAME: HC 2				
PC	( )	29+90.781	6917539.384	2438118.88
PI	( )	30+40.853	6917588.568	2438109.486
CC	( )		6917572.966	2438294.701
PT	( )	30+88.429	6917635.486	2438126.975
	Radius:	179		
	Delta:	31°15'22.001" Right		
	Degree of Curvature (Arc):	32°00'31.735"		
	Length:	97.648		
	Tangent:	50.072		
	Chord:	96.442		
	Middle Ordinate:	6.617		
	External:	6.872		
	Back Tangent Direction:	N10°48'47.600"W		
	Back Radial Direction:	N79°11'12.400"E		
	Chord Direction:	N04°48'53.400"E		
	Ahead Radial Direction:	S69°33'25.599"E		
	Ahead Tangent Direction:	N20°26'34.401"E		
Element: Linear				
PT	( )	30+88.429	6917635.486	2438126.975
PI	( )	31+23.020	6917667.898	2438139.056
	Tangential Direction:	N20°26'34.401"E		
	Tangential Length:	34.591		
Element: Linear				
PI	( )	31+23.020	6917667.898	2438139.056
PI	( )	31+52.962	6917695.369	2438150.969
	Tangential Direction:	N23°26'40.481"E		
	Tangential Length:	29.942		
Element: Linear				
PI	( )	31+52.962	6917695.369	2438150.969
PC	( )	31+88.014	6917726.656	2438166.772
	Tangential Direction:	N26°47'50.027"E		
	Tangential Length:	35.052		
Element: Circular, NAME: HC 3				
PC	( )	31+88.014	6917726.656	2438166.772
PI	( )	32+25.148	6917759.803	2438183.513
CC	( )		6917645.957	2438326.548
PT	( )	32+61.244	6917783.554	2438212.059
	Radius:	179		
	Delta:	23°26'24.737" Right		
	Degree of Curvature (Arc):	32°00'31.735"		
	Length:	73.23		
	Tangent:	37.135		
	Chord:	72.721		
	Middle Ordinate:	3.732		
	External:	3.811		
	Back Tangent Direction:	N26°47'50.027"E		
	Back Radial Direction:	S63°12'09.973"E		
	Chord Direction:	N38°31'02.395"E		
	Ahead Radial Direction:	S39°45'45.236"E		
	Ahead Tangent Direction:	N50°14'14.764"E		
Element: Linear				
PT	( )	32+61.244	6917783.554	2438212.059
PI	( )	33+37.770	6917832.501	2438270.884
	Tangential Direction:	N50°14'14.764"E		
	Tangential Length:	76.526		
Element: Linear				
PI	( )	33+37.770	6917832.501	2438270.884
PC	( )	33+81.872	6917861.574	2438304.047
	Tangential Direction:	N48°45'34.259"E		
	Tangential Length:	44.102		

Alignment Name: LOOP I CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Circular, NAME: HC 4				
PC	( )	33+81.872	6917861.574	2438304.047
PI	( )	34+60.572	6917913.455	2438363.225
CC	( )		6918124.756	2438073.32
PT	( )	35+36.698	6917985.675	2438394.499
	Radius:	350		
	Delta:	25°20'42.932" Left		
	Degree of Curvature (Arc):	16°22'12.802"		
	Length:	154.825		
	Tangent:	78.7		
	Chord:	153.566		
	Middle Ordinate:	8.526		
	External:	8.739		
	Back Tangent Direction:	N48°45'34.259"E		
	Back Radial Direction:	S41°14'25.741"E		
	Chord Direction:	N36°05'12.793"E		
	Ahead Radial Direction:	S66°35'08.674"E		
	Ahead Tangent Direction:	N23°24'51.326"E		
Element: Linear				
PT	( )	35+36.698	6917985.675	2438394.499
PI	( )	35+43.292	6917991.726	2438397.12
	Tangential Direction:	N23°24'51.326"E		
	Tangential Length:	6.595		
Element: Linear				
PI	( )	35+43.292	6917991.726	2438397.12
PI	( )	35+73.633	6918020.17	2438407.682
	Tangential Direction:	N20°22'21.522"E		
	Tangential Length:	30.341		
Element: Linear				
PI	( )	35+73.633	6918020.17	2438407.682
PI	( )	36+00.000	6918045.485	2438415.051
	Tangential Direction:	N16°13'45.683"E		
	Tangential Length:	26.367		
Element: Linear				
PI	( )	36+00.000	6918045.485	2438415.051
PC	( )	37+39.348	6918179.281	2438453.997
	Tangential Direction:	N16°13'45.683"E		
	Tangential Length:	139.348		
Element: Circular, NAME: HC 5				
PC	( )	37+39.348	6918179.281	2438453.997
PI	( )	38+70.927	6918305.616	2438490.771
CC	( )		6918506.276	2437330.62
PT	( )	40+01.404	6918436.963	2438498.565
	Radius:	1170		
	Delta:	12°49'58.991" Left		
	Degree of Curvature (Arc):	04°53'49.471"		
	Length:	262.055		
	Tangent:	131.578		
	Chord:	261.508		
	Middle Ordinate:	7.329		
	External:	7.375		
	Back Tangent Direction:	N16°13'45.683"E		
	Back Radial Direction:	S73°46'14.317"E		
	Chord Direction:	N09°48'46.188"E		
	Ahead Radial Direction:	S86°36'13.308"E		
	Ahead Tangent Direction:	N03°23'46.692"E		
Element: Linear				
PT	( )	40+01.404	6918436.963	2438498.565
PI	( )	40+35.711	6918471.21	2438500.598
	Tangential Direction:	N03°23'46.692"E		
	Tangential Length:	34.307		
Element: Linear				
PI	( )	40+35.711	6918471.21	2438500.598
PC	( )	40+90.305	6918525.798	2438501.363
	Tangential Direction:	N00°48'11.791"E		
	Tangential Length:	54.594		

STATE OF TEXAS
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CEDAR HILL STATE PARK

ALIGNMENT DATA

SHEET 2 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		36

DATE: 6/11/2024 10:53:13 AM
FILE: c:\txdot\pw_online\txdot5\siyoon.wold\d0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP I CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Circular, NAME: HC 6				
PC	( )	40+90.305	6918525.798	2438501.363
PI	( )	41+13.095	6918548.586	2438501.683
CC	( )		6918528.252	2438326.38
PCC	( )	41+35.630	6918570.696	2438496.155
Radius:		175		
Delta:		14°50'22.712" Left		
Degree of Curvature (Arc):		32°44'25.604"		
Length:		45.325		
Tangent:		22.79		
Chord:		45.199		
Middle Ordinate:		1.465		
External:		1.478		
Back Tangent Direction:		N00°48'11.791"E		
Back Radial Direction:		S89°11'48.209"E		
Chord Direction:		N06°36'59.565"W		
Ahead Radial Direction:		N75°57'49.079"E		
Ahead Tangent Direction:		N14°02'10.921"W		
Element: Circular, NAME: HC 7				
PCC	( )	41+35.630	6918570.696	2438496.155
PI	( )	41+84.412	6918618.022	2438484.324
CC	( )		6918520.733	2438296.306
PT	( )	42+31.430	6918655.015	2438452.525
Radius:		206		
Delta:		26°38'43.368" Left		
Degree of Curvature (Arc):		27°48'48.547"		
Length:		95.8		
Tangent:		48.782		
Chord:		94.939		
Middle Ordinate:		5.544		
External:		5.697		
Back Tangent Direction:		N14°02'10.921"W		
Back Radial Direction:		N75°57'49.079"E		
Chord Direction:		N27°21'32.605"W		
Ahead Radial Direction:		N49°19'05.711"E		
Ahead Tangent Direction:		N40°40'54.289"W		
Element: Linear				
PT	( )	42+31.430	6918655.015	2438452.525
PC	( )	43+84.272	6918770.922	2438352.894
Tangential Direction:		N40°40'54.289"W		
Tangential Length:		152.842		
Element: Circular, NAME: HC 8				
PC	( )	43+84.272	6918770.922	2438352.894
PI	( )	44+28.873	6918804.744	2438323.82
CC	( )		6918444.993	2437973.723
PCC	( )	44+73.238	6918832.887	2438289.219
Radius:		500		
Delta:		10°11'41.132" Left		
Degree of Curvature (Arc):		11°27'32.961"		
Length:		88.966		
Tangent:		44.601		
Chord:		88.849		
Middle Ordinate:		1.977		
External:		1.985		
Back Tangent Direction:		N40°40'54.289"W		
Back Radial Direction:		N49°19'05.711"E		
Chord Direction:		N45°46'44.855"W		
Ahead Radial Direction:		N39°07'24.578"E		
Ahead Tangent Direction:		N50°52'35.422"W		
Element: Circular, NAME: HC 9				
PCC	( )	44+73.238	6918832.887	2438289.219
PI	( )	45+50.431	6918881.596	2438229.334
CC	( )		6918592.393	2438093.611
PT	( )	46+24.548	6918896.534	2438153.599
Radius:		310		
Delta:		27°57'57.058" Left		
Degree of Curvature (Arc):		18°28'57.034"		
Length:		151.31		
Tangent:		77.194		
Chord:		149.812		
Middle Ordinate:		9.186		
External:		9.467		
Back Tangent Direction:		N50°52'35.422"W		
Back Radial Direction:		N39°07'24.578"E		
Chord Direction:		N64°51'33.951"W		
Ahead Radial Direction:		N11°09'27.520"E		
Ahead Tangent Direction:		N78°50'32.480"W		

Alignment Name: LOOP I CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	46+24.548	6918896.534	2438153.599
PC	( )	48+01.832	6918930.84	2437979.666
Tangential Direction:		N78°50'32.480"W		
Tangential Length:		177.285		
Element: Circular, NAME: HC 10				
PC	( )	48+01.832	6918930.84	2437979.666
PI	( )	48+18.844	6918934.132	2437962.976
CC	( )		6918734.62	2437940.964
PT	( )	48+35.774	6918934.557	2437945.969
Radius:		200		
Delta:		09°43'24.625" Left		
Degree of Curvature (Arc):		28°38'52.403"		
Length:		33.941		
Tangent:		17.012		
Chord:		33.901		
Middle Ordinate:		0.72		
External:		0.722		
Back Tangent Direction:		N78°50'32.480"W		
Back Radial Direction:		N11°09'27.520"E		
Chord Direction:		N83°42'14.792"W		
Ahead Radial Direction:		N01°26'02.895"E		
Ahead Tangent Direction:		N88°33'57.105"W		
Element: Linear				
PT	( )	48+35.774	6918934.557	2437945.969
PC	( )	48+39.104	6918934.641	2437942.64
Tangential Direction:		N88°33'57.105"W		
Tangential Length:		3.33		
Element: Circular, NAME: HC 11				
PC	( )	48+39.104	6918934.641	2437942.64
PI	( )	48+58.071	6918935.115	2437923.679
CC	( )		6919134.578	2437947.646
PT	( )	48+76.924	6918939.146	2437905.146
Radius:		200		
Delta:		10°50'05.189" Right		
Degree of Curvature (Arc):		28°38'52.403"		
Length:		37.82		
Tangent:		18.967		
Chord:		37.764		
Middle Ordinate:		0.893		
External:		0.897		
Back Tangent Direction:		N88°33'57.105"W		
Back Radial Direction:		N01°26'02.895"E		
Chord Direction:		N83°08'54.511"W		
Ahead Radial Direction:		N12°16'08.084"E		
Ahead Tangent Direction:		N77°43'51.916"W		
Element: Linear				
PT	( )	48+76.924	6918939.146	2437905.146
PC	( )	49+19.753	6918948.247	2437863.295
Tangential Direction:		N77°43'51.916"W		
Tangential Length:		42.829		
Element: Circular, NAME: HC 12				
PC	( )	49+19.753	6918948.247	2437863.295
PI	( )	50+08.687	6918967.146	2437776.392
CC	( )		6919172.994	2437912.17
PT	( )	50+89.475	6919039.592	2437724.81
Radius:		230		
Delta:		42°16'47.147" Right		
Degree of Curvature (Arc):		24°54'40.351"		
Length:		169.722		
Tangent:		88.934		
Chord:		165.897		
Middle Ordinate:		15.478		
External:		16.595		
Back Tangent Direction:		N77°43'51.916"W		
Back Radial Direction:		N12°16'08.084"E		
Chord Direction:		N56°35'28.343"W		
Ahead Radial Direction:		N54°32'55.231"E		
Ahead Tangent Direction:		N35°27'04.769"W		

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ALIGNMENT DATA

SHEET 3 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		37

DATE: 6/11/2024 10:53:17 AM
FILE: c:\txdot\pw_online\txdot51\syoon.wold07997581\Horizontal Alignment Data.dgn

Alignment Name: LOOP I CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	50+89.475	6919039.592	2437724.81
PC	( )	51+77.437	6919111.246	2437673.791
Tangential Direction:		N35°27'04.769"W		
Tangential Length:		87.962		
Element: Circular, NAME: HC 13				
PC	( )	51+77.437	6919111.246	2437673.791
PI	( )	52+35.787	6919158.779	2437639.947
CC	( )		6918908.242	2437388.678
PT	( )	52+93.074	6919192.761	2437592.514
Radius:		350		
Delta:		18°55'47.778" Left		
Degree of Curvature (Arc):		16°22'12.802"		
Length:		115.636		
Tangent:		58.35		
Chord:		115.111		
Middle Ordinate:		4.765		
External:		4.831		
Back Tangent Direction:		N35°27'04.769"W		
Back Radial Direction:		N54°32'55.231"E		
Chord Direction:		N44°54'58.658"W		
Ahead Radial Direction:		N35°37'07.454"E		
Ahead Tangent Direction:		N54°22'52.546"W		
Element: Linear				
PT	( )	52+93.074	6919192.761	2437592.514
PC	( )	54+20.394	6919266.911	2437489.014
Tangential Direction:		N54°22'52.546"W		
Tangential Length:		127.32		
Element: Circular, NAME: HC 14				
PC	( )	54+20.394	6919266.911	2437489.014
PI	( )	54+36.963	6919276.561	2437475.545
CC	( )		6919510.784	2437663.731
PT	( )	54+53.499	6919287.635	2437463.22
Radius:		300		
Delta:		06°19'21.163" Right		
Degree of Curvature (Arc):		19°05'54.935"		
Length:		33.105		
Tangent:		16.569		
Chord:		33.088		
Middle Ordinate:		0.457		
External:		0.457		
Back Tangent Direction:		N54°22'52.546"W		
Back Radial Direction:		N35°37'07.454"E		
Chord Direction:		N51°13'11.965"W		
Ahead Radial Direction:		N41°56'28.616"E		
Ahead Tangent Direction:		N48°03'31.384"W		
Element: Linear				
PT	( )	54+53.499	6919287.635	2437463.22
PC	( )	55+19.426	6919331.699	2437414.181
Tangential Direction:		N48°03'31.384"W		
Tangential Length:		65.928		
Element: Circular, NAME: HC 15				
PC	( )	55+19.426	6919331.699	2437414.181
PI	( )	55+58.287	6919357.672	2437385.275
CC	( )		6919443.273	2437514.437
PT	( )	55+95.476	6919394.414	2437372.617
Radius:		150		
Delta:		29°02'55.765" Right		
Degree of Curvature (Arc):		38°11'49.871"		
Length:		76.05		
Tangent:		38.861		
Chord:		75.238		
Middle Ordinate:		4.794		
External:		4.952		
Back Tangent Direction:		N48°03'31.384"W		
Back Radial Direction:		N41°56'28.616"E		
Chord Direction:		N33°32'03.501"W		
Ahead Radial Direction:		N70°59'24.381"E		
Ahead Tangent Direction:		N19°00'35.619"W		
Element: Linear				
PT	( )	55+95.476	6919394.414	2437372.617
POT	( )	56+43.284	6919439.615	2437357.044
Tangential Direction:		N19°00'35.619"W		
Tangential Length:		47.808		

Alignment Name: LOOP I2
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
POT	( )	0+00.000	6918080.879	2438459.269
PC	( )	0+77.145	6918101.189	2438384.846
Tangential Direction:		N74°44'07.937"W		
Tangential Length:		77.145		
Element: Circular, NAME: HC 16				
PC	( )	0+77.145	6918101.189	2438384.846
PI	( )	0+97.669	6918106.593	2438365.046
CC	( )		6918294.133	2438437.501
PT	( )	1+18.050	6918115.905	2438346.756
Radius:		200		
Delta:		11°43'06.445" Right		
Degree of Curvature (Arc):		28°38'52.403"		
Length:		40.905		
Tangent:		20.524		
Chord:		40.834		
Middle Ordinate:		1.045		
External:		1.05		
Back Tangent Direction:		N74°44'07.937"W		
Back Radial Direction:		N15°15'52.063"E		
Chord Direction:		N68°52'34.715"W		
Ahead Radial Direction:		N26°58'58.508"E		
Ahead Tangent Direction:		N63°01'01.492"W		
Element: Linear				
PT	( )	1+18.050	6918115.905	2438346.756
PC	( )	1+37.376	6918124.674	2438329.533
Tangential Direction:		N63°01'01.492"W		
Tangential Length:		19.326		
Element: Circular, NAME: HC 17				
PC	( )	1+37.376	6918124.674	2438329.533
PI	( )	2+57.732	6918179.282	2438222.279
CC	( )		6918249.434	2438393.055
PT	( )	3+36.202	6918293.516	2438260.176
Radius:		140		
Delta:		81°22'13.172" Right		
Degree of Curvature (Arc):		40°55'32.004"		
Length:		198.825		
Tangent:		120.356		
Chord:		182.533		
Middle Ordinate:		33.838		
External:		44.623		
Back Tangent Direction:		N63°01'01.492"W		
Back Radial Direction:		N26°58'58.508"E		
Chord Direction:		N22°19'54.906"W		
Ahead Radial Direction:		S71°38'48.321"E		
Ahead Tangent Direction:		N18°21'11.679"E		
Element: Linear				
PT	( )	3+36.202	6918293.516	2438260.176
PC	( )	3+89.166	6918343.786	2438276.853
Tangential Direction:		N18°21'11.679"E		
Tangential Length:		52.965		
Element: Circular, NAME: HC 18				
PC	( )	3+89.166	6918343.786	2438276.853
PI	( )	5+46.386	6918493.009	2438326.358
CC	( )		6918382.831	2438159.161
PT	( )	6+13.105	6918506.382	2438169.708
Radius:		124		
Delta:		103°28'26.401" Left		
Degree of Curvature (Arc):		46°12'22.586"		
Length:		223.939		
Tangent:		157.22		
Chord:		194.724		
Middle Ordinate:		47.21		
External:		76.235		
Back Tangent Direction:		N18°21'11.679"E		
Back Radial Direction:		S71°38'48.321"E		
Chord Direction:		N33°23'01.521"W		
Ahead Radial Direction:		N04°52'45.279"E		
Ahead Tangent Direction:		N85°07'14.721"W		

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ALIGNMENT DATA

SHEET 4 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		38

DATE: 6/11/2024 10:53:21 AM
FILE: c:\txdot\pw_online\txdot5\sjyoon.wold\d0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP I2 CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	6+13.105	6918506.382	2438169.708
PC	( )	6+60.818	6918510.44	2438122.168
Tangential Direction:		N85°07'14.721"W		
Tangential Length:		47.713		
Element: Circular, NAME: HC 19				
PC	( )	6+60.818	6918510.44	2438122.168
PI	( )	9+12.530	6918531.849	2437871.368
CC	( )		6918754.552	2438143.007
PT	( )	10+52.284	6918781.98	2437899.547
Radius:		245		
Delta:		91°32'54.423" Right		
Degree of Curvature (Arc):		23°23'09.717"		
Length:		391.466		
Tangent:		251.712		
Chord:		351.132		
Middle Ordinate:		74.116		
External:		106.261		
Back Tangent Direction:		N85°07'14.721"W		
Back Radial Direction:		N04°52'45.279"E		
Chord Direction:		N39°20'47.510"W		
Ahead Radial Direction:		S83°34'20.298"E		
Ahead Tangent Direction:		N06°25'39.702"E		
Element: Linear				
PT	( )	10+52.284	6918781.98	2437899.547
PC	( )	10+90.665	6918820.119	2437903.844
Tangential Direction:		N06°25'39.702"E		
Tangential Length:		38.381		
Element: Circular, NAME: HC 20				
PC	( )	10+90.665	6918820.119	2437903.844
PI	( )	11+07.859	6918837.205	2437905.768
CC	( )		6918764.145	2438400.701
PT	( )	11+25.039	6918854.118	2437908.862
Radius:		500		
Delta:		03°56'20.286" Right		
Degree of Curvature (Arc):		11°27'32.961"		
Length:		34.374		
Tangent:		17.194		
Chord:		34.367		
Middle Ordinate:		0.295		
External:		0.296		
Back Tangent Direction:		N06°25'39.702"E		
Back Radial Direction:		S83°34'20.298"E		
Chord Direction:		N08°23'49.845"E		
Ahead Radial Direction:		S79°38'00.012"E		
Ahead Tangent Direction:		N10°21'59.988"E		
Element: Linear				
PT	( )	11+25.039	6918854.118	2437908.862
POT	( )	12+42.990	6918970.144	2437930.087
Tangential Direction:		N10°21'59.988"E		
Tangential Length:		117.951		

Alignment Name: LOOP I3
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
POT	( )	0+00.000	6919470.534	2437053.407
PC	( )	0+71.086	6919414.529	2437009.629
Tangential Direction:		S38°00'50.095"W		
Tangential Length:		71.086		
Element: Circular, NAME: HC 21				
PC	( )	0+71.086	6919414.529	2437009.629
PI	( )	1+15.426	6919379.595	2436982.322
CC	( )		6919482.272	2436922.964
PCC	( )	1+55.383	6919373.364	2436938.422
Radius:		110		
Delta:		43°54'28.796" Right		
Degree of Curvature (Arc):		52°05'13.460"		
Length:		84.297		
Tangent:		44.34		
Chord:		82.25		
Middle Ordinate:		7.977		
External:		8.6		
Back Tangent Direction:		S38°00'50.095"W		
Back Radial Direction:		N51°59'09.905"W		
Chord Direction:		S59°58'04.493"W		
Ahead Radial Direction:		N08°04'41.109"W		
Ahead Tangent Direction:		S81°55'18.891"W		
Element: Circular, NAME: HC 22				
PCC	( )	1+55.383	6919373.364	2436938.422
PI	( )	1+99.727	6919367.133	2436894.517
CC	( )		6919536.727	2436915.235
PT	( )	2+42.024	6919383.75	2436853.404
Radius:		165		
Delta:		30°05'09.290" Right		
Degree of Curvature (Arc):		34°43'28.973"		
Length:		86.641		
Tangent:		44.344		
Chord:		85.649		
Middle Ordinate:		5.654		
External:		5.855		
Back Tangent Direction:		S81°55'18.891"W		
Back Radial Direction:		N08°04'41.109"W		
Chord Direction:		N83°02'06.464"W		
Ahead Radial Direction:		N22°00'28.181"E		
Ahead Tangent Direction:		N67°59'31.819"W		
Element: Linear				
PT	( )	2+42.024	6919383.75	2436853.404
PC	( )	2+78.437	6919397.395	2436819.645
Tangential Direction:		N67°59'31.819"W		
Tangential Length:		36.412		
Element: Circular, NAME: HC 23				
PC	( )	2+78.437	6919397.395	2436819.645
PI	( )	3+05.124	6919407.395	2436794.903
CC	( )		6919860.961	2437007.012
PT	( )	3+31.760	6919419.973	2436771.365
Radius:		500		
Delta:		06°06'37.610" Right		
Degree of Curvature (Arc):		11°27'32.961"		
Length:		53.324		
Tangent:		26.687		
Chord:		53.298		
Middle Ordinate:		0.711		
External:		0.712		
Back Tangent Direction:		N67°59'31.819"W		
Back Radial Direction:		N22°00'28.181"E		
Chord Direction:		N64°56'13.014"W		
Ahead Radial Direction:		N28°07'05.791"E		
Ahead Tangent Direction:		N61°52'54.209"W		

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ALIGNMENT DATA

SHEET 5 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		39

DATE: 6/11/2024 10:53:25 AM
FILE: c:\txdot\pw_online\txdot5\siyoon.woold0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP I3 CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	3+31.760	6919419.973	2436771.365
PC	( )	3+76.521	6919441.068	2436731.887
	Tangential Direction:	N61°52'54.209"W		
	Tangential Length:	44.761		
Element: Circular, NAME: HC 24				
PC	( )	3+76.521	6919441.068	2436731.887
PI	( )	4+41.847	6919471.856	2436674.271
CC	( )		6919529.266	2436779.016
PCC	( )	4+92.254	6919536.987	2436679.315
	Radius:	100		
	Delta:	66°18'36.159" Right		
	Degree of Curvature (Arc):	57°17'44.806"		
	Length:	115.733		
	Tangent:	65.326		
	Chord:	109.381		
	Middle Ordinate:	16.281		
	External:	19.447		
	Back Tangent Direction:	N61°52'54.209"W		
	Back Radial Direction:	N28°07'05.791"E		
	Chord Direction:	N28°43'36.130"W		
	Ahead Radial Direction:	S85°34'18.050"E		
	Ahead Tangent Direction:	N04°25'41.950"E		
Element: Circular, NAME: HC 25				
PCC	( )	4+92.254	6919536.987	2436679.315
PI	( )	5+21.214	6919565.86	2436681.551
CC	( )		6919532.342	2436739.303
PCC	( )	5+46.235	6919582.124	2436705.512
	Radius:	60.168		
	Delta:	51°24'12.979" Right		
	Degree of Curvature (Arc):	95°13'34.453"		
	Length:	53.981		
	Tangent:	28.959		
	Chord:	52.188		
	Middle Ordinate:	5.953		
	External:	6.606		
	Back Tangent Direction:	N04°25'41.950"E		
	Back Radial Direction:	S85°34'18.050"E		
	Chord Direction:	N30°07'48.439"E		
	Ahead Radial Direction:	S34°10'05.071"E		
	Ahead Tangent Direction:	N55°49'54.929"E		
Element: Circular, NAME: HC 26				
PCC	( )	5+46.235	6919582.124	2436705.512
PI	( )	6+17.970	6919622.412	2436764.865
CC	( )		6919497.316	2436763.078
PT	( )	6+71.414	6919580.445	2436823.043
	Radius:	102.5		
	Delta:	69°58'22.418" Right		
	Degree of Curvature (Arc):	55°53'53.957"		
	Length:	125.179		
	Tangent:	71.735		
	Chord:	117.543		
	Middle Ordinate:	18.523		
	External:	22.609		
	Back Tangent Direction:	N55°49'54.929"E		
	Back Radial Direction:	S34°10'05.071"E		
	Chord Direction:	S89°10'53.862"E		
	Ahead Radial Direction:	S35°48'17.347"W		
	Ahead Tangent Direction:	S54°11'42.653"E		
Element: Linear				
PT	( )	6+71.414	6919580.445	2436823.043
PC	( )	8+19.200	6919493.987	2436942.9
	Tangential Direction:	S54°11'42.653"E		
	Tangential Length:	147.786		

Alignment Name: LOOP I3 CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Circular, NAME: HC 27				
PC	( )	8+19.200	6919493.987	2436942.9
PI	( )	8+84.808	6919455.604	2436996.109
CC	( )		6919899.494	2437235.413
PT	( )	9+49.672	6919432.248	2437057.42
	Radius:	500		
	Delta:	14°57'03.533" Left		
	Degree of Curvature (Arc):	11°27'32.961"		
	Length:	130.472		
	Tangent:	65.609		
	Chord:	130.102		
	Middle Ordinate:	4.25		
	External:	4.286		
	Back Tangent Direction:	S54°11'42.653"E		
	Back Radial Direction:	S35°48'17.347"W		
	Chord Direction:	S61°40'14.420"E		
	Ahead Radial Direction:	S20°51'13.814"W		
	Ahead Tangent Direction:	S69°08'46.186"E		
Element: Linear				
PT	( )	9+49.672	6919432.248	2437057.42
PC	( )	10+04.499	6919412.731	2437108.656
	Tangential Direction:	S69°08'46.186"E		
	Tangential Length:	54.827		
Element: Circular, NAME: HC 28				
PC	( )	10+04.499	6919412.731	2437108.656
PI	( )	10+91.342	6919381.816	2437189.809
CC	( )		6919739.803	2437233.251
PT	( )	11+74.746	6919392.423	2437276.002
	Radius:	350		
	Delta:	27°52'11.498" Left		
	Degree of Curvature (Arc):	16°22'12.802"		
	Length:	170.247		
	Tangent:	86.843		
	Chord:	168.574		
	Middle Ordinate:	10.301		
	External:	10.613		
	Back Tangent Direction:	S69°08'46.186"E		
	Back Radial Direction:	S20°51'13.814"W		
	Chord Direction:	S83°04'51.935"E		
	Ahead Radial Direction:	S07°00'57.684"E		
	Ahead Tangent Direction:	N82°59'02.316"E		
Element: Linear				
PT	( )	11+74.746	6919392.423	2437276.002
PC	( )	12+29.704	6919399.136	2437330.548
	Tangential Direction:	N82°59'02.316"E		
	Tangential Length:	54.957		
Element: Circular, NAME: HC 29				
PC	( )	12+29.704	6919399.136	2437330.548
PI	( )	12+94.634	6919407.067	2437394.992
CC	( )		6919686.965	2437295.125
PT	( )	13+57.457	6919441.721	2437449.901
	Radius:	290		
	Delta:	25°14'25.489" Left		
	Degree of Curvature (Arc):	19°45'25.795"		
	Length:	127.753		
	Tangent:	64.93		
	Chord:	126.723		
	Middle Ordinate:	7.006		
	External:	7.18		
	Back Tangent Direction:	N82°59'02.316"E		
	Back Radial Direction:	S07°00'57.684"E		
	Chord Direction:	N70°21'49.571"E		
	Ahead Radial Direction:	S32°15'23.173"E		
	Ahead Tangent Direction:	N57°44'36.827"E		

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/12/2024
,P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

ALIGNMENT DATA

SHEET 6 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		40

DATE: 6/11/2024 10:53:29 AM
FILE: c:\txdot\pw_online\txdot5\siyoon.wool\d0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP I3 CONT.
Alignment Description: LOOP I3 DATA FROM STA 15+42.23 TO 19+10.00, IS INFORMATIONAL ONLY
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	13+57.457	6919441.721	2437449.901
PC	( )	14+84.506	6919509.528	2437557.342
	Tangential Direction:	N57°44'36.827"E		
	Tangential Length:	127.049		
Element: Circular, NAME: HC 30				
PC	( )	14+84.506	6919509.528	2437557.342
PI	( )	15+03.327	6919519.573	2437573.259
CC	( )		6919360.577	2437651.347
PT	( )	15+22.006	6919526.028	2437590.938
	Radius:	176.135		
	Delta:	12°11'54.569" Right		
	Degree of Curvature (Arc):	32°31'45.954"		
	Length:	37.5		
	Tangent:	18.821		
	Chord:	37.429		
	Middle Ordinate:	0.997		
	External:	1.003		
	Back Tangent Direction:	N57°44'36.827"E		
	Back Radial Direction:	S32°15'23.173"E		
	Chord Direction:	N63°50'34.112"E		
	Ahead Radial Direction:	S20°03'28.604"E		
	Ahead Tangent Direction:	N69°56'31.396"E		
Element: Linear				
PT	( )	15+22.006	6919526.028	2437590.938
PC	( )	15+78.403	6919545.371	2437643.915
	Tangential Direction:	N69°56'31.396"E		
	Tangential Length:	56.398		
Element: Circular				
PC	( )	15+78.403	6919545.371	2437643.915
PI	( )	16+33.717	6919564.342	2437695.874
CC	( )		6919410.832	2437693.038
PT	( )	16+83.976	6919543.465	2437747.097
	Radius:	143.226		
	Delta:	42°13'58.920" Right		
	Degree of Curvature (Arc):	40°00'13.119"		
	Length:	105.573		
	Tangent:	55.314		
	Chord:	103.199		
	Middle Ordinate:	9.618		
	External:	10.31		
	Back Tangent Direction:	N69°56'31.396"E		
	Back Radial Direction:	S20°03'28.604"E		
	Chord Direction:	S88°56'29.144"E		
	Ahead Radial Direction:	S22°10'30.316"W		
	Ahead Tangent Direction:	S67°49'29.684"E		
Element: Linear				
PT	( )	16+83.976	6919543.465	2437747.097
POT	( )	19+10.000	6919458.155	2437956.402
	Tangential Direction:	S67°49'29.684"E		
	Tangential Length:	226.024		

Alignment Name: LOOP H
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
POT	( )	0+00.000	6917757.959	2438199.463
PC	( )	2+40.604	6917872.606	2437987.93
	Tangential Direction:	N61°32'35.236"W		
	Tangential Length:	240.604		
Element: Circular, NAME: HC 31				
PC	( )	2+40.604	6917872.606	2437987.93
PI	( )	3+47.230	6917923.413	2437894.187
CC	( )		6918297.248	2438218.078
PT	( )	4+50.489	6918008.964	2437830.546
	Radius:	483		
	Delta:	24°53'51.386" Right		
	Degree of Curvature (Arc):	11°51'44.929"		
	Length:	209.885		
	Tangent:	106.626		
	Chord:	208.238		
	Middle Ordinate:	11.356		
	External:	11.629		
	Back Tangent Direction:	N61°32'35.236"W		
	Back Radial Direction:	N28°27'24.764"E		
	Chord Direction:	N49°05'39.543"W		
	Ahead Radial Direction:	N53°21'16.150"E		
	Ahead Tangent Direction:	N36°38'43.850"W		
Element: Linear				
PT	( )	4+50.489	6918008.964	2437830.546
PC	( )	6+12.302	6918138.793	2437733.966
	Tangential Direction:	N36°38'43.850"W		
	Tangential Length:	161.813		
Element: Circular, NAME: HC 32				
PC	( )	6+12.302	6918138.793	2437733.966
PI	( )	6+75.060	6918189.146	2437696.509
CC	( )		6917874.383	2437378.528
PT	( )	7+36.987	6918227.114	2437646.539
	Radius:	443		
	Delta:	16°07'34.439" Left		
	Degree of Curvature (Arc):	12°56'00.904"		
	Length:	124.685		
	Tangent:	62.757		
	Chord:	124.274		
	Middle Ordinate:	4.379		
	External:	4.423		
	Back Tangent Direction:	N36°38'43.850"W		
	Back Radial Direction:	N53°21'16.150"E		
	Chord Direction:	N44°42'31.069"W		
	Ahead Radial Direction:	N37°13'41.711"E		
	Ahead Tangent Direction:	N52°46'18.289"W		
Element: Linear				
PT	( )	7+36.987	6918227.114	2437646.539
PC	( )	9+58.472	6918361.11	2437470.187
	Tangential Direction:	N52°46'18.289"W		
	Tangential Length:	221.484		
Element: Circular, NAME: HC 33				
PC	( )	9+58.472	6918361.11	2437470.187
PI	( )	10+78.967	6918434.009	2437374.244
CC	( )		6918611.923	2437660.759
PT	( )	11+88.644	6918552.329	2437351.448
	Radius:	315		
	Delta:	41°51'58.938" Right		
	Degree of Curvature (Arc):	18°11'20.891"		
	Length:	230.172		
	Tangent:	120.496		
	Chord:	225.086		
	Middle Ordinate:	20.791		
	External:	22.26		
	Back Tangent Direction:	N52°46'18.289"W		
	Back Radial Direction:	N37°13'41.711"E		
	Chord Direction:	N31°50'18.820"W		
	Ahead Radial Direction:	N79°05'40.649"E		
	Ahead Tangent Direction:	N10°54'19.351"W		

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/12/2024
,P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

ALIGNMENT DATA

SHEET 7 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		41

DATE: 6/11/2024 10:53:33 AM
FILE: c:\txdot\pw_online\txdot5\siyoon.would0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP H CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	11+88.644	6918552.329	2437351.448
PC	( )	12+92.626	6918654.432	2437331.776
	Tangential Direction:	N10°54'19.351"W		
	Tangential Length:	103.982		
Element: Circular, NAME: HC 34				
PC	( )	12+92.626	6918654.432	2437331.776
PI	( )	14+00.294	6918760.157	2437311.406
CC	( )		6918602.406	2437061.742
PT	( )	14+97.873	6918823.946	2437224.668
	Radius:	275		
	Delta:	42°45'46.396" Left		
	Degree of Curvature (Arc):	20°50'05.384"		
	Length:	205.247		
	Tangent:	107.669		
	Chord:	200.516		
	Middle Ordinate:	18.927		
	External:	20.326		
	Back Tangent Direction:	N10°54'19.351"W		
	Back Radial Direction:	N79°05'40.649"E		
	Chord Direction:	N32°17'12.549"W		
	Ahead Radial Direction:	N36°19'54.253"E		
	Ahead Tangent Direction:	N53°40'05.747"W		
Element: Linear				
PT	( )	14+97.873	6918823.946	2437224.668
PC	( )	16+13.469	6918892.432	2437131.544
	Tangential Direction:	N53°40'05.747"W		
	Tangential Length:	115.596		
Element: Circular, NAME: HC 35				
PC	( )	16+13.469	6918892.432	2437131.544
PI	( )	16+89.042	6918937.206	2437070.662
CC	( )		6918594.36	2436912.334
PT	( )	17+62.565	6918954.52	2436997.098
	Radius:	370		
	Delta:	23°05'17.247" Left		
	Degree of Curvature (Arc):	15°29'07.245"		
	Length:	149.097		
	Tangent:	75.574		
	Chord:	148.09		
	Middle Ordinate:	7.485		
	External:	7.639		
	Back Tangent Direction:	N53°40'05.747"W		
	Back Radial Direction:	N36°19'54.253"E		
	Chord Direction:	N65°12'44.371"W		
	Ahead Radial Direction:	N13°14'37.006"E		
	Ahead Tangent Direction:	N76°45'22.994"W		
Element: Linear				
PT	( )	17+62.565	6918954.52	2436997.098
PC	( )	18+19.523	6918967.568	2436941.655
	Tangential Direction:	N76°45'22.994"W		
	Tangential Length:	56.958		
Element: Circular, NAME: HC 36				
PC	( )	18+19.523	6918967.568	2436941.655
PI	( )	19+21.257	6918990.875	2436842.626
CC	( )		6918675.547	2436872.927
PT	( )	20+15.689	6918949.137	2436749.848
	Radius:	300		
	Delta:	37°27'53.791" Left		
	Degree of Curvature (Arc):	19°05'54.935"		
	Length:	196.166		
	Tangent:	101.734		
	Chord:	192.69		
	Middle Ordinate:	15.891		
	External:	16.78		
	Back Tangent Direction:	N76°45'22.994"W		
	Back Radial Direction:	N13°14'37.006"E		
	Chord Direction:	S84°30'40.110"W		
	Ahead Radial Direction:	N24°13'16.785"W		
	Ahead Tangent Direction:	S65°46'43.215"W		

Alignment Name: LOOP H CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	20+15.689	6918949.137	2436749.848
PI	( )	20+92.802	6918917.501	2436679.524
	Tangential Direction:	S65°46'43.215"W		
	Tangential Length:	77.113		
Element: Linear				
PI	( )	20+92.802	6918917.501	2436679.524
PC	( )	23+46.065	6918809.046	2436450.658
	Tangential Direction:	S64°38'40.965"W		
	Tangential Length:	253.263		
Element: Circular, NAME: HC 37				
PC	( )	23+46.065	6918809.046	2436450.658
PI	( )	25+71.702	6918712.421	2436246.757
CC	( )		6918709.642	2436497.763
PT	( )	25+91.847	6918611.306	2436448.469
	Radius:	110		
	Delta:	128°01'14.835" Left		
	Degree of Curvature (Arc):	52°05'13.460"		
	Length:	245.782		
	Tangent:	225.637		
	Chord:	197.752		
	Middle Ordinate:	61.797		
	External:	141.022		
	Back Tangent Direction:	S64°38'40.965"W		
	Back Radial Direction:	N25°21'19.035"W		
	Chord Direction:	S00°38'03.548"W		
	Ahead Radial Direction:	S26°37'26.130"W		
	Ahead Tangent Direction:	S63°22'33.870"E		
Element: Linear				
PT	( )	25+91.847	6918611.306	2436448.469
PI	( )	27+18.299	6918554.639	2436561.513
	Tangential Direction:	S63°22'33.870"E		
	Tangential Length:	126.452		
Element: Linear				
PI	( )	27+18.299	6918554.639	2436561.513
PC	( )	27+81.680	6918525.247	2436617.667
	Tangential Direction:	S62°22'19.171"E		
	Tangential Length:	63.381		
Element: Circular, NAME: HC 38				
PC	( )	27+81.680	6918525.247	2436617.667
PI	( )	28+45.727	6918495.547	2436674.411
CC	( )		6918438.421	2436572.221
PT	( )	28+95.136	6918431.653	2436669.987
	Radius:	98		
	Delta:	66°19'55.890" Right		
	Degree of Curvature (Arc):	58°27'54.292"		
	Length:	113.456		
	Tangent:	64.047		
	Chord:	107.225		
	Middle Ordinate:	15.965		
	External:	19.072		
	Back Tangent Direction:	S62°22'19.171"E		
	Back Radial Direction:	S27°37'40.829"W		
	Chord Direction:	S29°12'21.225"E		
	Ahead Radial Direction:	N86°02'23.280"W		
	Ahead Tangent Direction:	S03°57'36.720"W		
Element: Linear				
PT	( )	28+95.136	6918431.653	2436669.987
PC	( )	29+86.157	6918340.849	2436663.701
	Tangential Direction:	S03°57'36.720"W		
	Tangential Length:	91.021		

STATE OF TEXAS
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PROFESSIONAL ENGINEER

6/12/2024
Signature of Registrant & Date, P.E.

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

ALIGNMENT DATA

SHEET 8 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		42

DATE: 6/11/2024 10:53:37 AM
FILE: c:\txdot\pw_online\txdot5\siyoon.wold\d0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP H CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Circular, NAME: HC 39				
PC	( )	29+86.157	6918340.849	2436663.701
PI	( )	30+69.131	6918258.074	2436657.971
CC	( )		6918331.664	2436796.383
PT	( )	31+34.526	6918216.533	2436729.796
Radius:		133		
Delta:		63°55'00.673" Left		
Degree of Curvature (Arc):		43°04'46.320"		
Length:		148.369		
Tangent:		82.974		
Chord:		140.795		
Middle Ordinate:		20.158		
External:		23.76		
Back Tangent Direction:		S03°57'36.720"W		
Back Radial Direction:		N86°02'23.280"W		
Chord Direction:		S27°59'53.617"E		
Ahead Radial Direction:		S30°02'36.047"W		
Ahead Tangent Direction:		S59°57'23.953"E		
Element: Linear				
PT	( )	31+34.526	6918216.533	2436729.796
PC	( )	31+89.099	6918189.211	2436777.037
Tangential Direction:		S59°57'23.953"E		
Tangential Length:		54.572		
Element: Circular, NAME: HC 40				
PC	( )	31+89.099	6918189.211	2436777.037
PI	( )	32+92.560	6918137.413	2436866.597
CC	( )		6918444.577	2436924.73
PT	( )	33+88.113	6918152.901	2436968.893
Radius:		295		
Delta:		38°39'11.484" Left		
Degree of Curvature (Arc):		19°25'20.273"		
Length:		199.015		
Tangent:		103.461		
Chord:		195.262		
Middle Ordinate:		16.624		
External:		17.617		
Back Tangent Direction:		S59°57'23.953"E		
Back Radial Direction:		S30°02'36.047"W		
Chord Direction:		S79°16'59.695"E		
Ahead Radial Direction:		S08°36'35.437"E		
Ahead Tangent Direction:		N81°23'24.563"E		
Element: Linear				
PT	( )	33+88.113	6918152.901	2436968.893
PC	( )	38+68.581	6918224.83	2437443.946
Tangential Direction:		N81°23'24.563"E		
Tangential Length:		480.468		
Element: Circular, NAME: HC 41				
PC	( )	38+68.581	6918224.83	2437443.946
PI	( )	39+23.299	6918233.022	2437498.048
CC	( )		6918447.294	2437410.263
PT	( )	39+75.933	6918265.143	2437542.345
Radius:		225		
Delta:		27°20'13.208" Left		
Degree of Curvature (Arc):		25°27'53.247"		
Length:		107.352		
Tangent:		54.718		
Chord:		106.337		
Middle Ordinate:		6.372		
External:		6.558		
Back Tangent Direction:		N81°23'24.563"E		
Back Radial Direction:		S08°36'35.437"E		
Chord Direction:		N67°43'17.959"E		
Ahead Radial Direction:		S35°56'48.645"E		
Ahead Tangent Direction:		N54°03'11.355"E		
Element: Linear				
PT	( )	39+75.933	6918265.143	2437542.345
POT	( )	40+72.140	6918321.62	2437620.231
Tangential Direction:		N54°03'11.355"E		
Tangential Length:		96.207		

Alignment Name: LOOP H2
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Circular, NAME: HC 42				
PC	( )	0+00.000	6917537.242	2438125.923
PI	( )	0+92.233	6917540.929	2438033.764
CC	( )		6917827.01	2438137.516
PT	( )	1+78.599	6917597.176	2437960.666
Radius:		290		
Delta:		35°17'10.079" Right		
Degree of Curvature (Arc):		19°45'25.795"		
Length:		178.599		
Tangent:		92.233		
Chord:		175.79		
Middle Ordinate:		13.641		
External:		14.314		
Back Tangent Direction:		N87°42'32.339"W		
Back Radial Direction:		N02°17'27.661"E		
Chord Direction:		N70°03'57.300"W		
Ahead Radial Direction:		N37°34'37.740"E		
Ahead Tangent Direction:		N52°25'22.260"W		
Element: Linear				
PT	( )	1+78.599	6917597.176	2437960.666
PC	( )	4+46.993	6917760.85	2437747.955
Tangential Direction:		N52°25'22.260"W		
Tangential Length:		268.394		
Element: Circular, NAME: HC 43				
PC	( )	4+46.993	6917760.85	2437747.955
PI	( )	6+80.460	6917903.225	2437562.925
CC	( )		6917939.17	2437885.166
PT	( )	8+08.731	6918082.872	2437712.034
Radius:		225		
Delta:		92°06'57.268" Right		
Degree of Curvature (Arc):		25°27'53.247"		
Length:		361.738		
Tangent:		233.466		
Chord:		324.019		
Middle Ordinate:		68.866		
External:		99.24		
Back Tangent Direction:		N52°25'22.260"W		
Back Radial Direction:		N37°34'37.740"E		
Chord Direction:		N06°21'53.626"W		
Ahead Radial Direction:		S50°18'24.992"E		
Ahead Tangent Direction:		N39°41'35.008"E		
Element: Linear				
PT	( )	8+08.731	6918082.872	2437712.034
POT	( )	8+93.766	6918148.304	2437766.343
Tangential Direction:		N39°41'35.008"E		
Tangential Length:		85.034		

STATE OF TEXAS
DANIEL DIAZ, JR
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PROFESSIONAL ENGINEER

6/12/2024
,P.E.
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CEDAR HILL STATE PARK

ALIGNMENT DATA

SHEET 9 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		43

DATE: 6/11/2024 10:53:42 AM
FILE: c:\txdot\pw_online\txdot5\siyoon.wold0799758\Horizontal Alignment Data.dgn

Alignment Name: LOOP H3
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
POT	( )	0+00.000	6918513.215	2436575.387
PC	( )	1+01.392	6918600.988	2436626.145
Tangential Direction:		N30°02'23.409"E		
Tangential Length:		101.392		
Element: Circular, NAME: HC 44				
PC	( )	1+01.392	6918600.988	2436626.145
PI	( )	2+86.942	6918761.614	2436719.031
CC	( )		6918454.312	2436879.788
PT	( )	4+32.206	6918746.314	2436903.949
Radius:		293		
Delta:		64°41'24.556" Right		
Degree of Curvature (Arc):		19°33'17.545"		
Length:		330.813		
Tangent:		185.55		
Chord:		313.52		
Middle Ordinate:		45.462		
External:		53.811		
Back Tangent Direction:		N30°02'23.409"E		
Back Radial Direction:		S59°57'36.591"E		
Chord Direction:		N62°23'05.687"E		
Ahead Radial Direction:		S04°43'47.965"W		
Ahead Tangent Direction:		S85°16'12.035"E		
Element: Linear				
PT	( )	4+32.206	6918746.314	2436903.949
PC	( )	4+32.738	6918746.27	2436904.479
Tangential Direction:		S85°16'12.035"E		
Tangential Length:		0.532		
Element: Circular, NAME: HC 45				
PC	( )	4+32.738	6918746.27	2436904.479
PI	( )	5+42.691	6918737.203	2437014.058
CC	( )		6918502.105	2436884.277
PT	( )	6+39.443	6918649.31	2437080.123
Radius:		245		
Delta:		48°20'24.408" Right		
Degree of Curvature (Arc):		23°23'09.717"		
Length:		206.705		
Tangent:		109.954		
Chord:		200.629		
Middle Ordinate:		21.478		
External:		23.542		
Back Tangent Direction:		S85°16'12.035"E		
Back Radial Direction:		S04°43'47.965"W		
Chord Direction:		S61°05'59.831"E		
Ahead Radial Direction:		S53°04'12.373"W		
Ahead Tangent Direction:		S36°55'47.627"E		
Element: Linear				
PT	( )	6+39.443	6918649.31	2437080.123
PC	( )	7+36.694	6918571.57	2437138.555
Tangential Direction:		S36°55'47.627"E		
Tangential Length:		97.251		
Element: Circular, NAME: HC 46				
PC	( )	7+36.694	6918571.57	2437138.555
PI	( )	8+52.116	6918479.305	2437207.904
CC	( )		6918689.935	2437296.031
PT	( )	9+45.508	6918494.694	2437322.295
Radius:		197		
Delta:		60°43'54.244" Left		
Degree of Curvature (Arc):		29°05'02.947"		
Length:		208.814		
Tangent:		115.422		
Chord:		199.175		
Middle Ordinate:		27.025		
External:		31.322		
Back Tangent Direction:		S36°55'47.627"E		
Back Radial Direction:		S53°04'12.373"W		
Chord Direction:		S67°17'44.749"E		
Ahead Radial Direction:		S07°39'41.871"E		
Ahead Tangent Direction:		N82°20'18.129"E		

Alignment Name: LOOP H3 CONT.
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
PT	( )	9+45.508	6918494.694	2437322.295
POT	( )	10+25.263	6918505.327	2437401.339
Tangential Direction:		N82°20'18.129"E		
Tangential Length:		79.755		

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ALIGNMENT DATA

SHEET 10 OF 10

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		44

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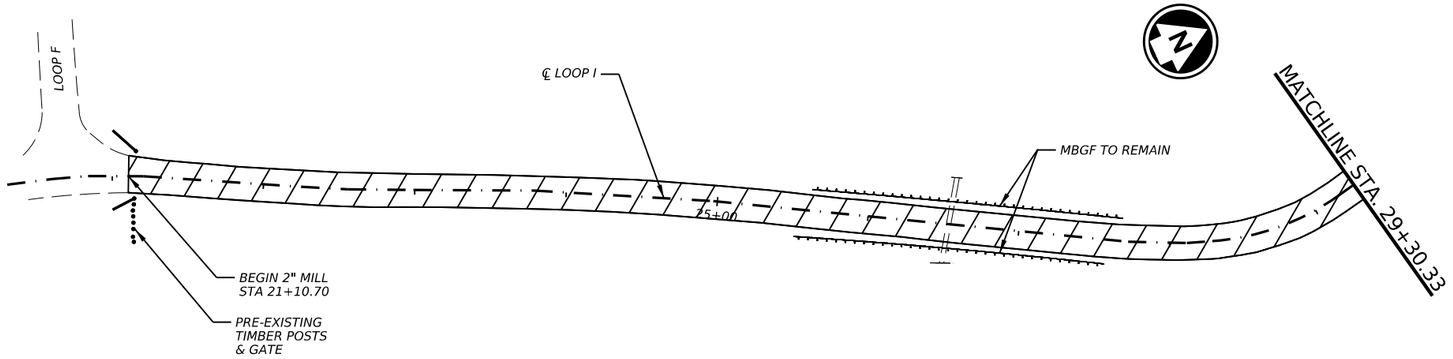

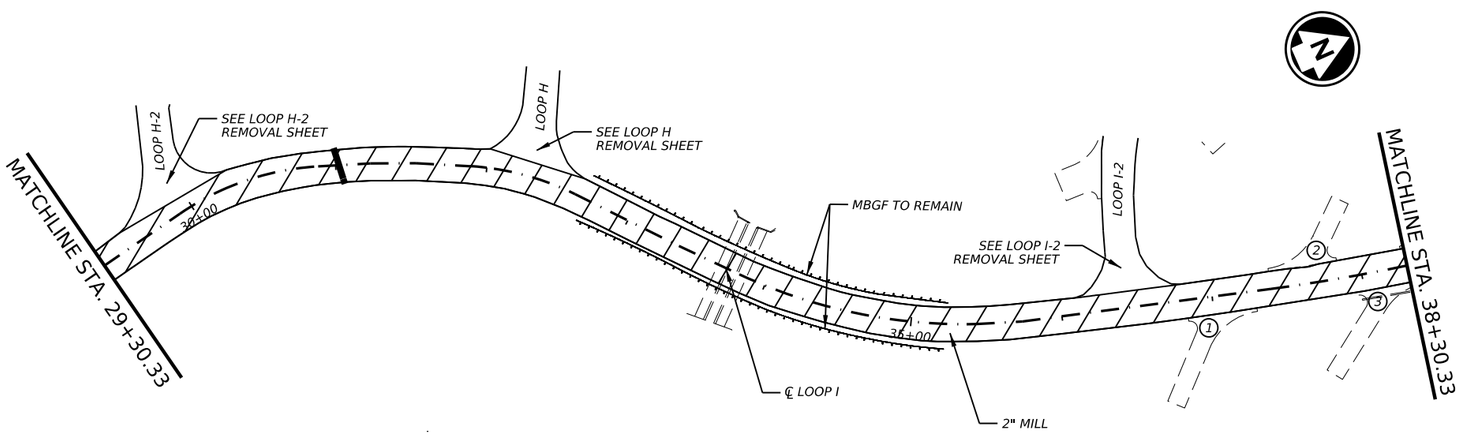

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SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	12" - 30" BASE & ASPHALT REMOVAL
	2" MILL AREA
	ABANDONED ELECTRIC & WATER LINE UTILITIES
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

1. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE SUBSIDIARY TO PREPARING ROW.
2. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE LEVEL C OR LEVEL D.
3. SEE ROADWAY MISCELLANEOUS DETAILS FOR DETAILS AND INFORMATION REGARDING VERTICAL CUTS AT DRIVEWAYS AND PARKING AREAS.

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ROADWAY REMOVAL PLAN SHADY RIDGE LOOP I

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		45

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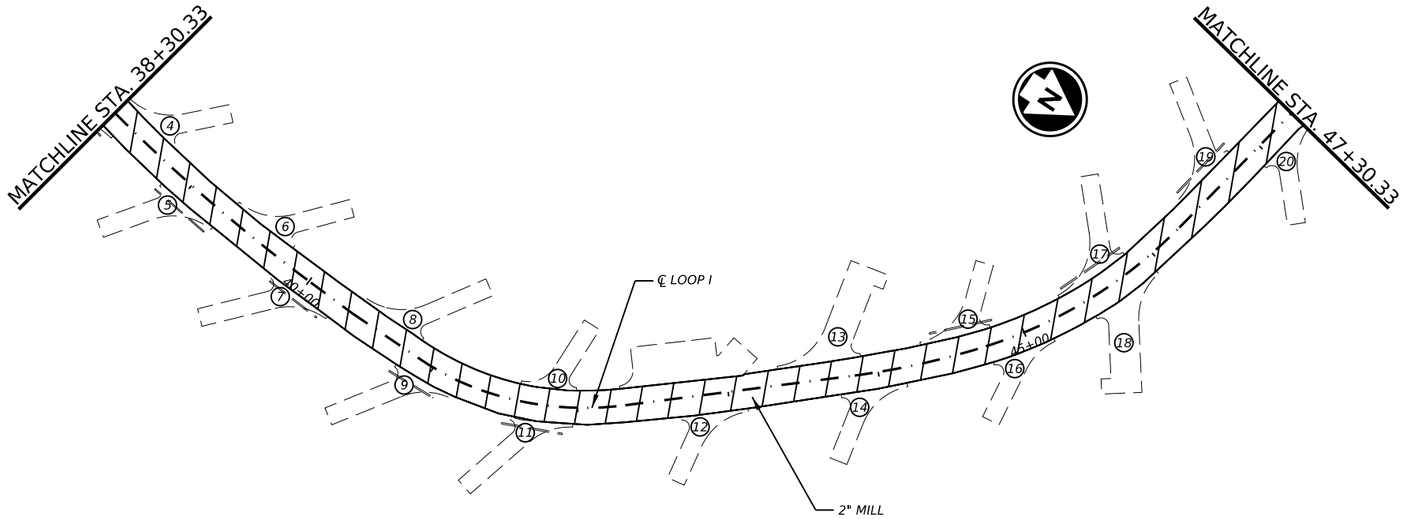

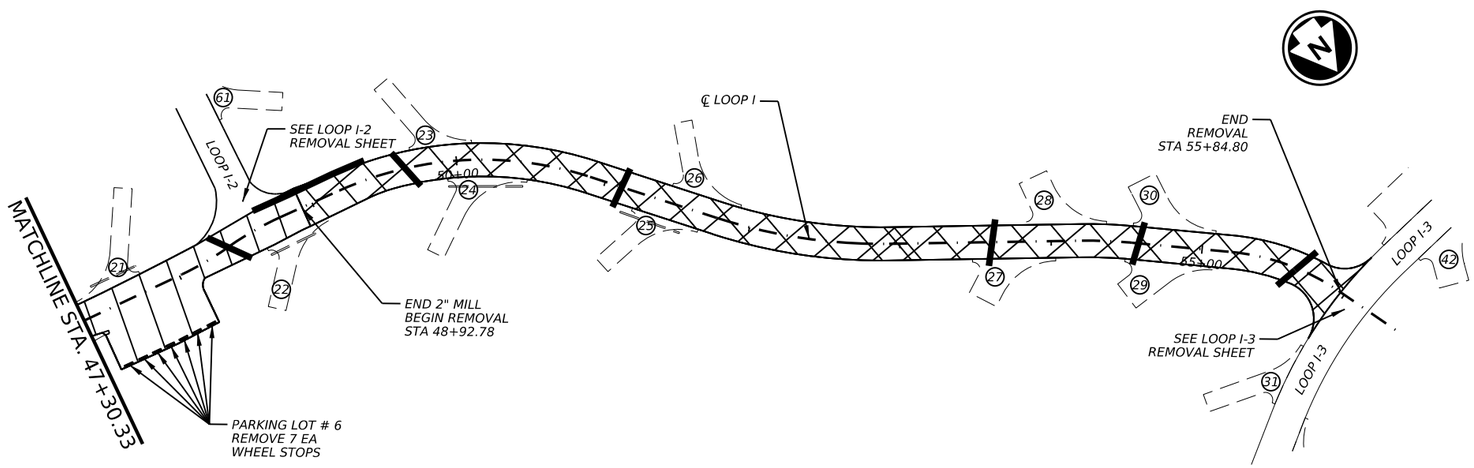

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SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	12" - 30" BASE & ASPHALT REMOVAL
	2" MILL AREA
	ABANDONED ELECTRIC & WATER LINE UTILITIES
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

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ROADWAY REMOVAL PLAN SHADY RIDGE LOOP I

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		46

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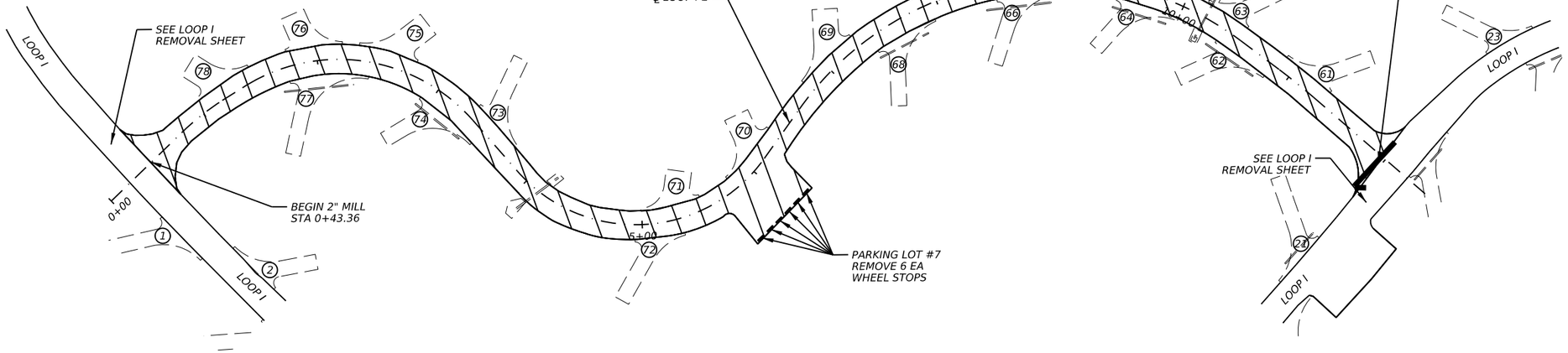

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SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	12" - 30" BASE & ASPHALT REMOVAL
	2" MILL AREA
	ABANDONED ELECTRIC & WATER LINE UTILITIES
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

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ROADWAY REMOVAL PLAN SHADY RIDGE LOOP I-2

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		47

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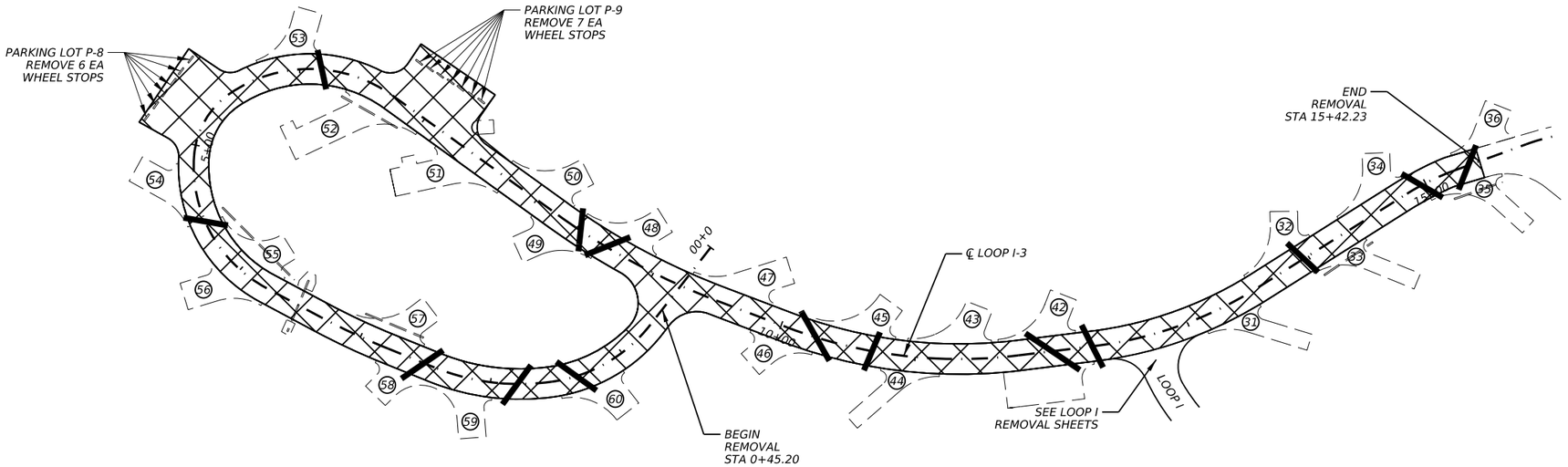

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SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	12" - 30" BASE & ASPHALT REMOVAL
	2" MILL AREA
	ABANDONED ELECTRIC & WATER LINE UTILITIES
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

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ROADWAY REMOVAL PLAN SHADY RIDGE LOOP I-3

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		48

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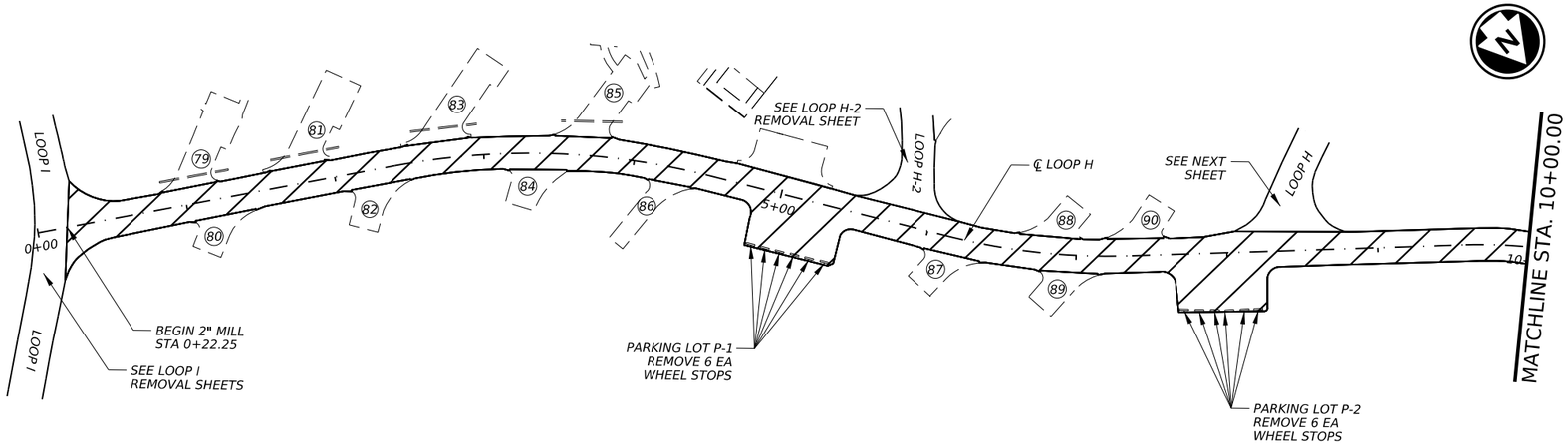

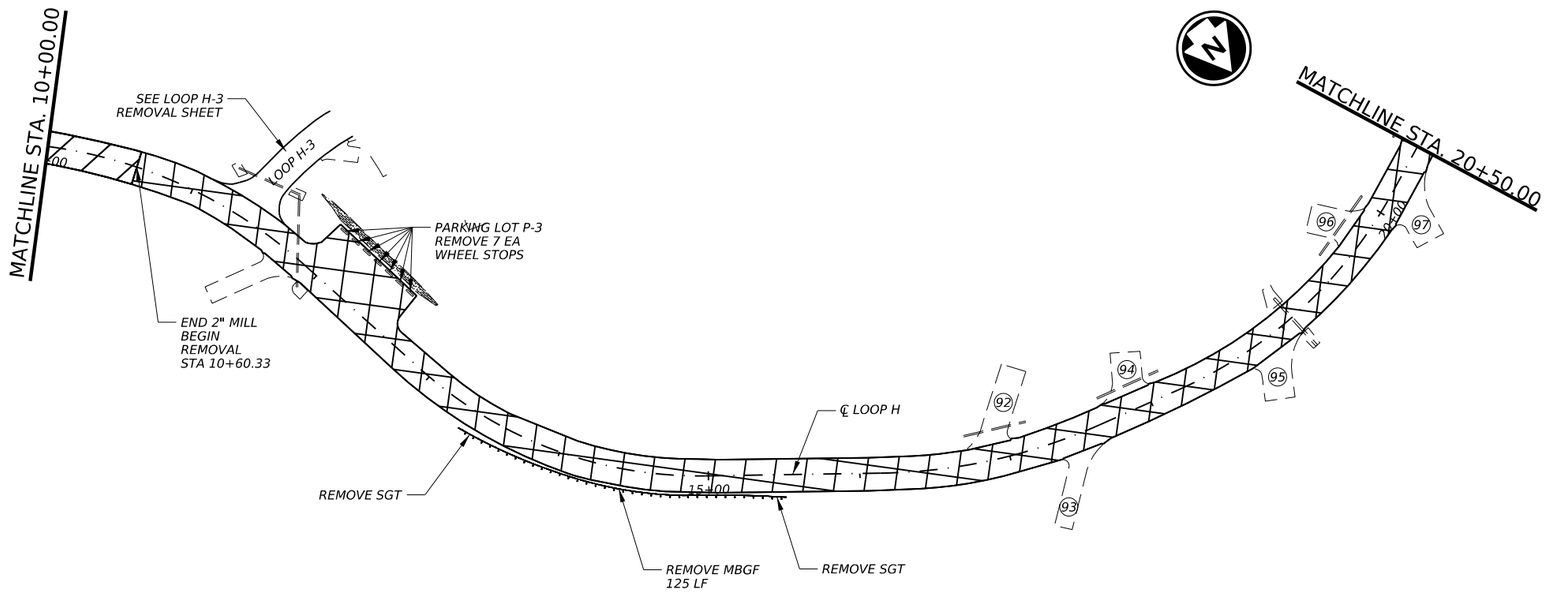

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SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	12"- 30" BASE & ASPHALT REMOVAL
	2" MILL AREA
	ABANDONED ELECTRIC & WATER LINE UTILITIES
#	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

1. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE SUBSIDIARY TO PREPARING ROW.
2. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE LEVEL C OR LEVEL D.
3. SEE ROADWAY MISCELLANEOUS DETAILS FOR DETAILS AND INFORMATION REGARDING VERTICAL CUTS AT DRIVEWAYS AND PARKING AREAS.

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ROADWAY REMOVAL PLAN EAGLE FORD LOOP H

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		49

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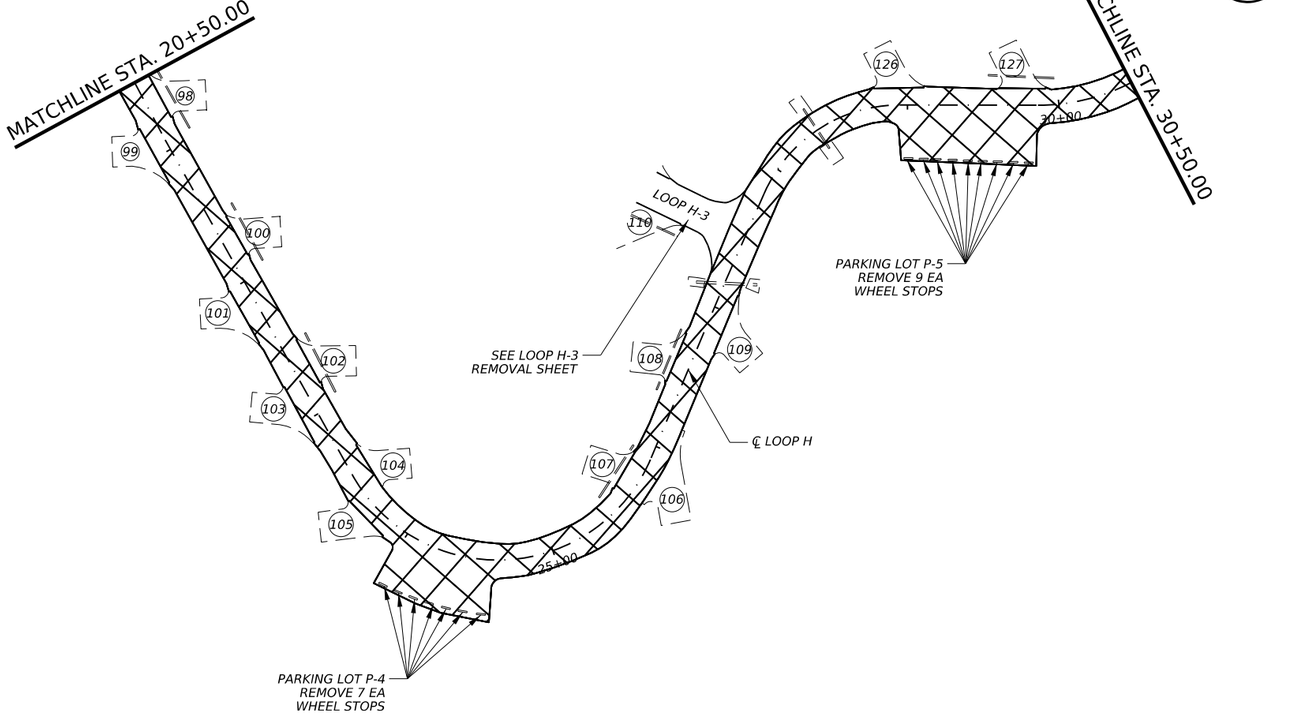

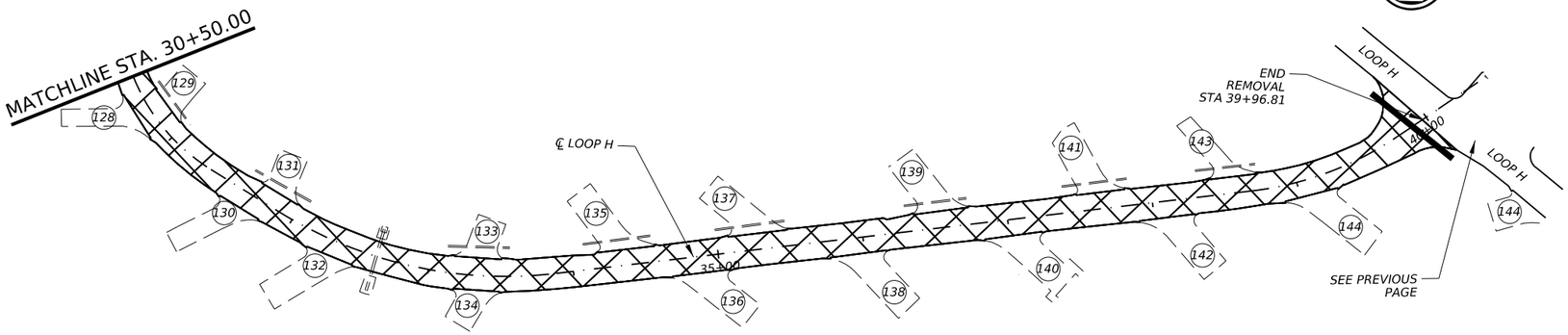

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SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	12"- 30" BASE & ASPHALT REMOVAL
	2" MILL AREA
	ABANDONED ELECTRIC & WATER LINE UTILITIES
#	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

1. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE SUBSIDIARY TO PREPARING ROW.
2. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE LEVEL C OR LEVEL D.
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STATE OF TEXAS
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ROADWAY REMOVAL PLAN EAGLE FORD LOOP H

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		50

DATE: 6/28/2024 3:06:37 PM
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CK
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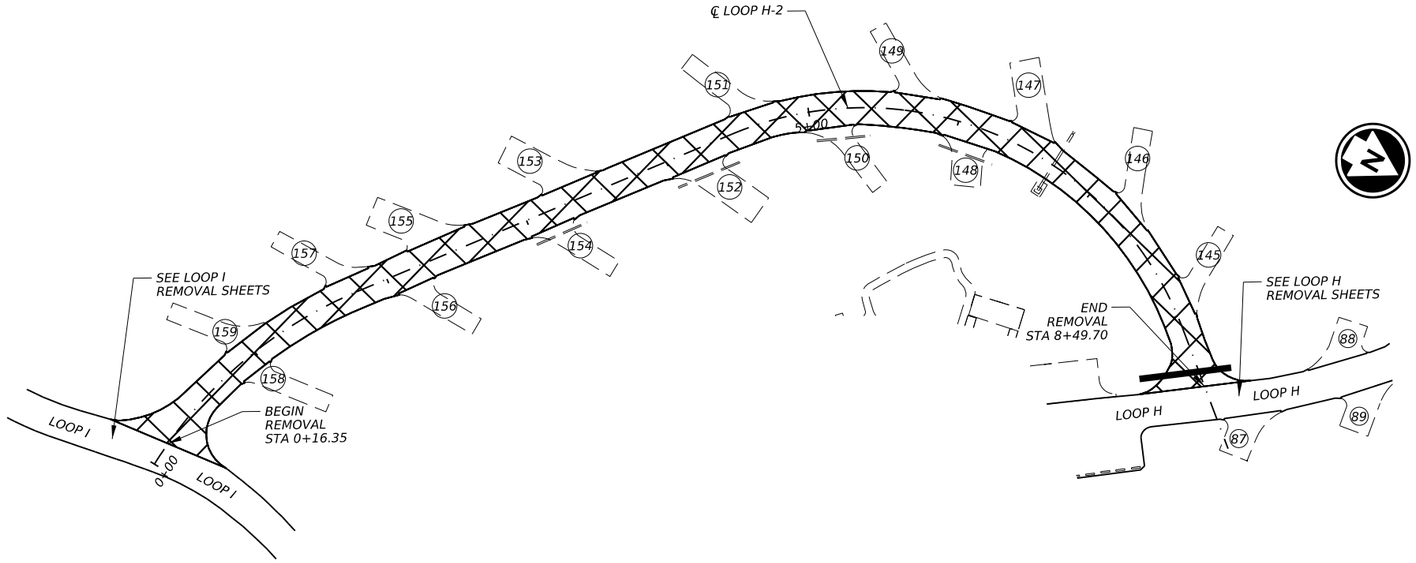
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
⊠	12"- 30" BASE & ASPHALT REMOVAL
▨	2" MILL AREA
▬	ABANDONED ELECTRIC & WATER LINE UTILITIES
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

1. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE SUBSIDIARY TO PREPARING ROW.
2. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE LEVEL C OR LEVEL D.
3. SEE ROADWAY MISCELLANEOUS DETAILS FOR DETAILS AND INFORMATION REGARDING VERTICAL CUTS AT DRIVEWAYS AND PARKING AREAS.



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CEDAR HILL STATE PARK

ROADWAY REMOVAL PLAN EAGLE FORD LOOP H-2

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		51

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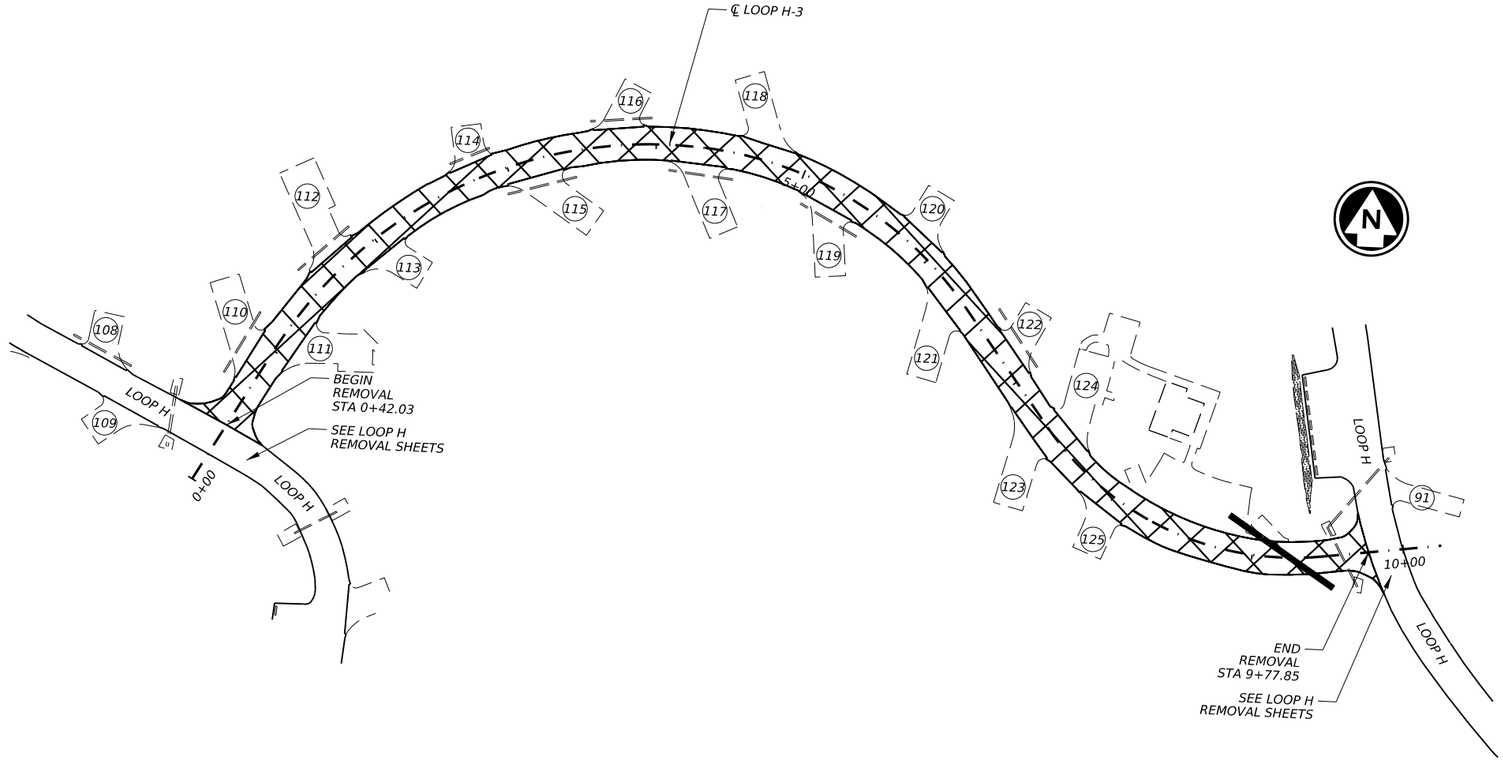

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SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
⊠	12"- 30" BASE & ASPHALT REMOVAL
▨	2" MILL AREA
▬	ABANDONED ELECTRIC & WATER LINE UTILITIES
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTES:

1. ABANDONED ELECTRIC & WATER LINE UTILITIES ARE SUBSIDIARY TO PREPARING ROW.
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CEDAR HILL STATE PARK

ROADWAY REMOVAL PLAN EAGLE FORD LOOP H-3

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		52

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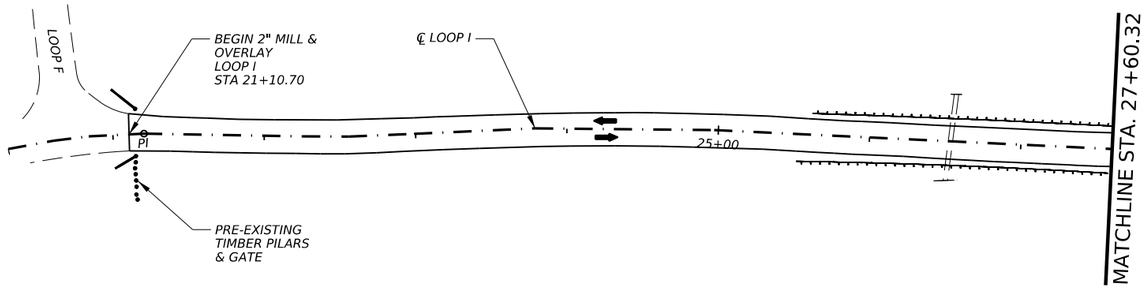

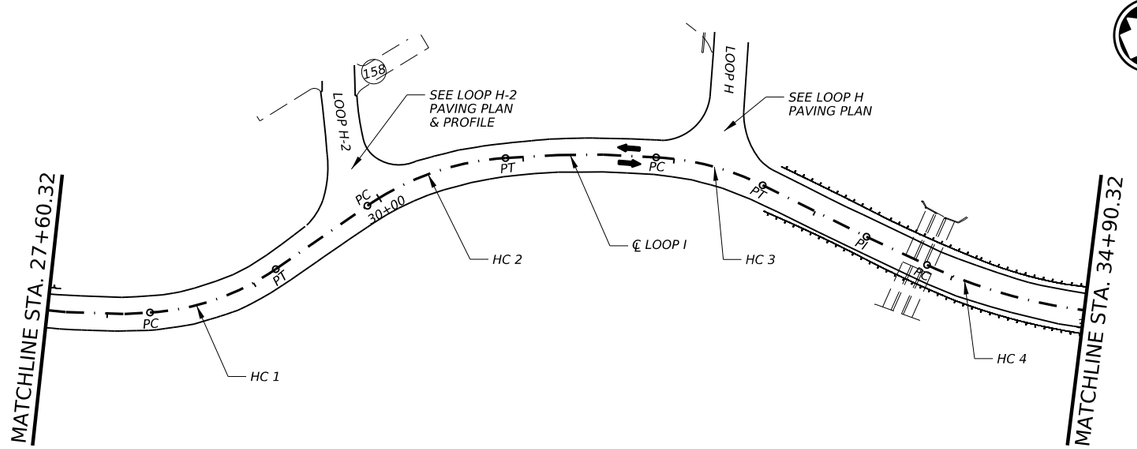

0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/13/2024

Signature of Registrant , P.E. & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

PAVING PLAN SHADY RIDGE LOOP I

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		53

DATE: 6/13/2024 8:54:51 AM
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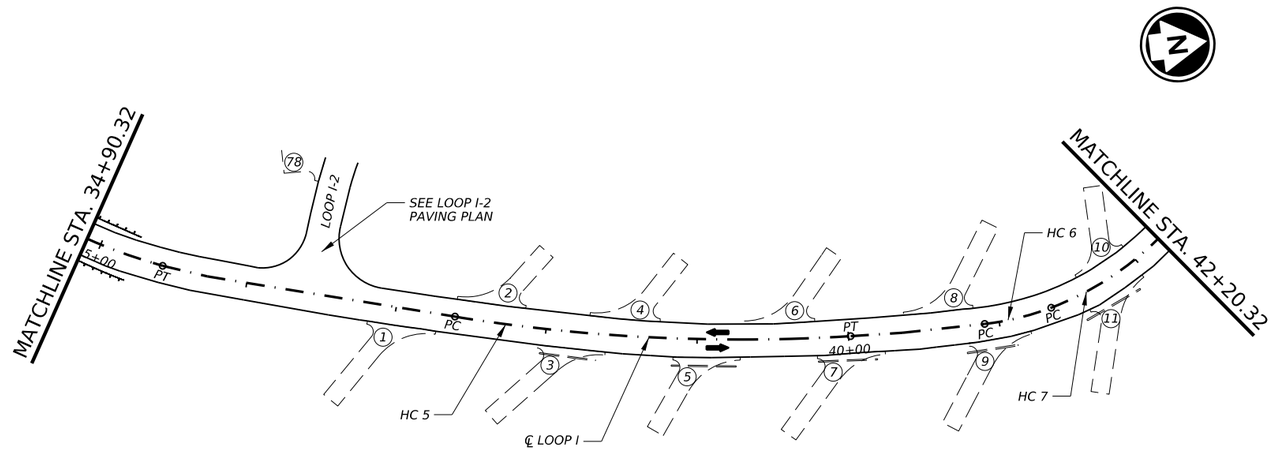

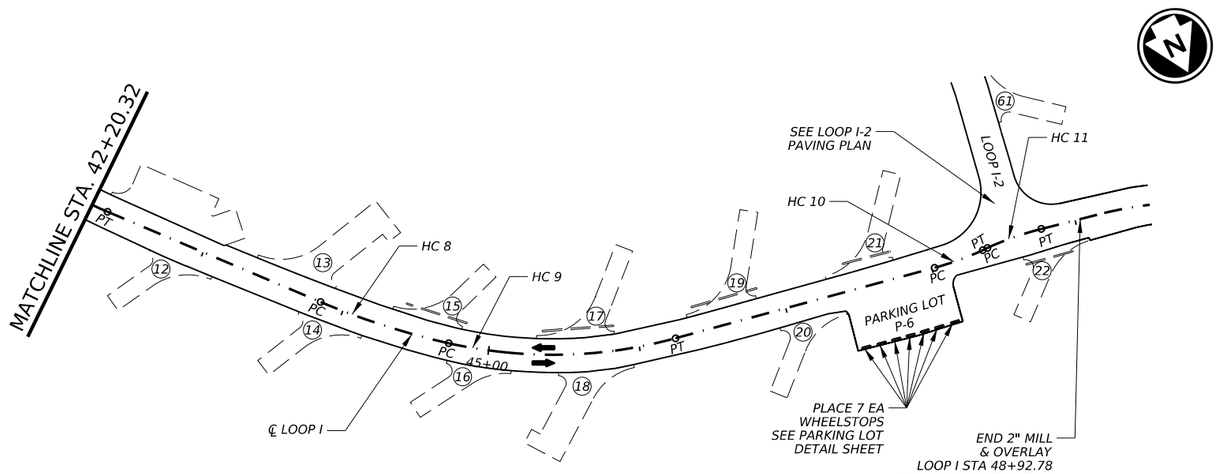

0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	TRAFFIC DIRECTION
#	DRIVEWAY DESIGNATOR (FOR REFERENCE)

STATE OF TEXAS
DANIEL DIAZ, JR
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6/13/2024

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CEDAR HILL STATE PARK

PAVING PLAN SHADY RIDGE LOOP I

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		54

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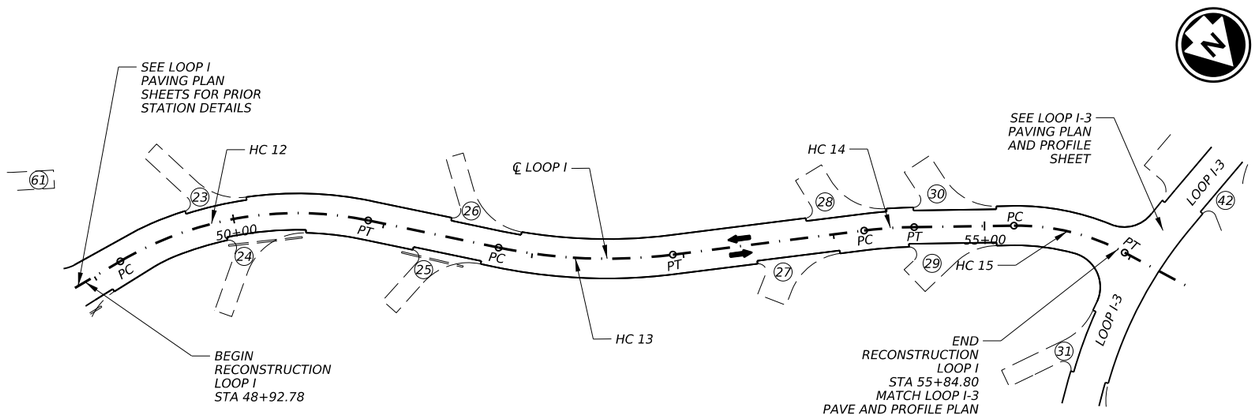

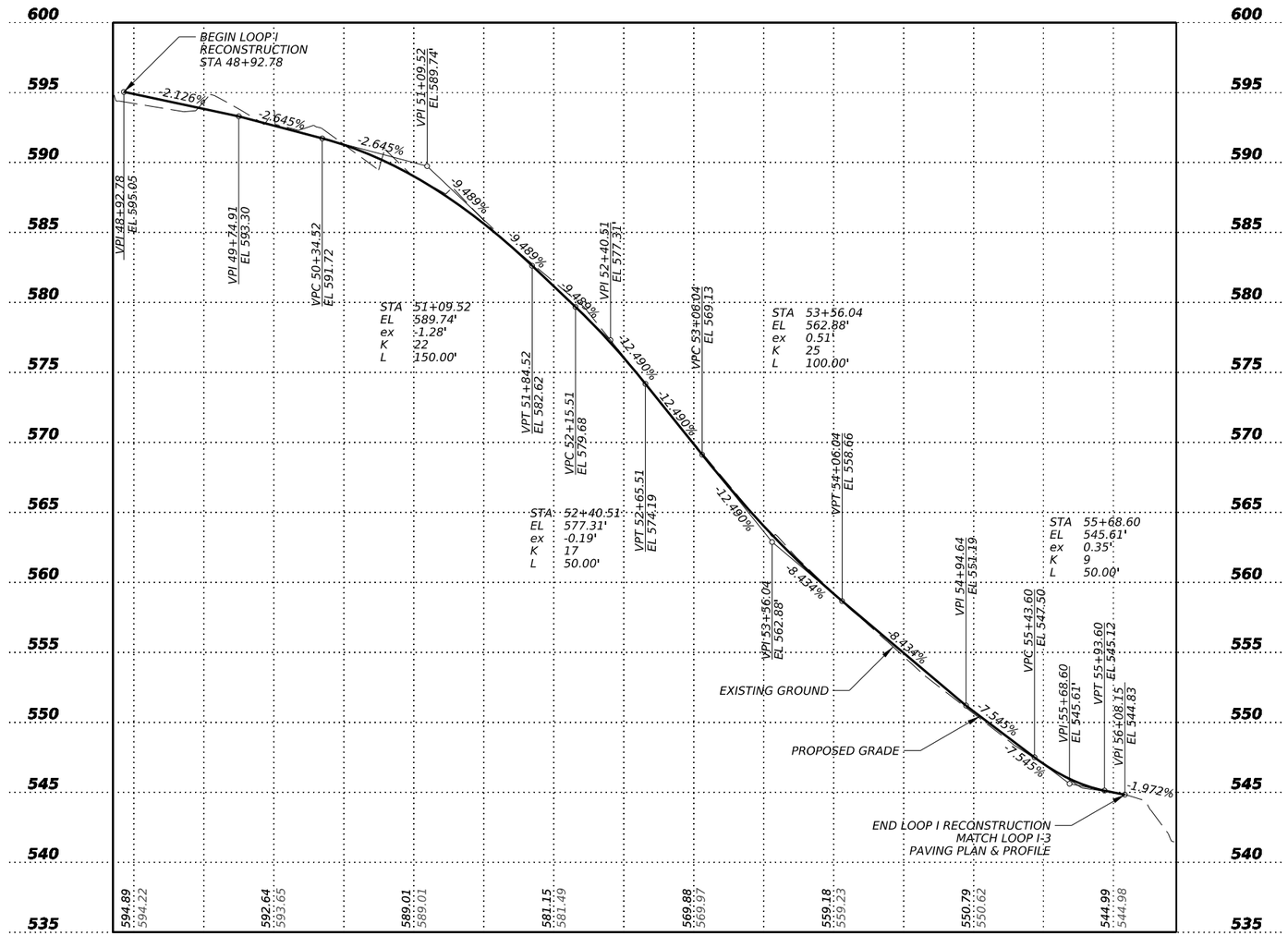

0 50 100
H.S.
SCALE IN FEET

0 2 4 6 8 10
V.S.
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTE:

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STATE OF TEXAS
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6/28/2024
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CEDAR HILL STATE PARK

PAVING PLAN & PROFILE SHADY RIDGE LOOP I

SHEET 3 OF 6

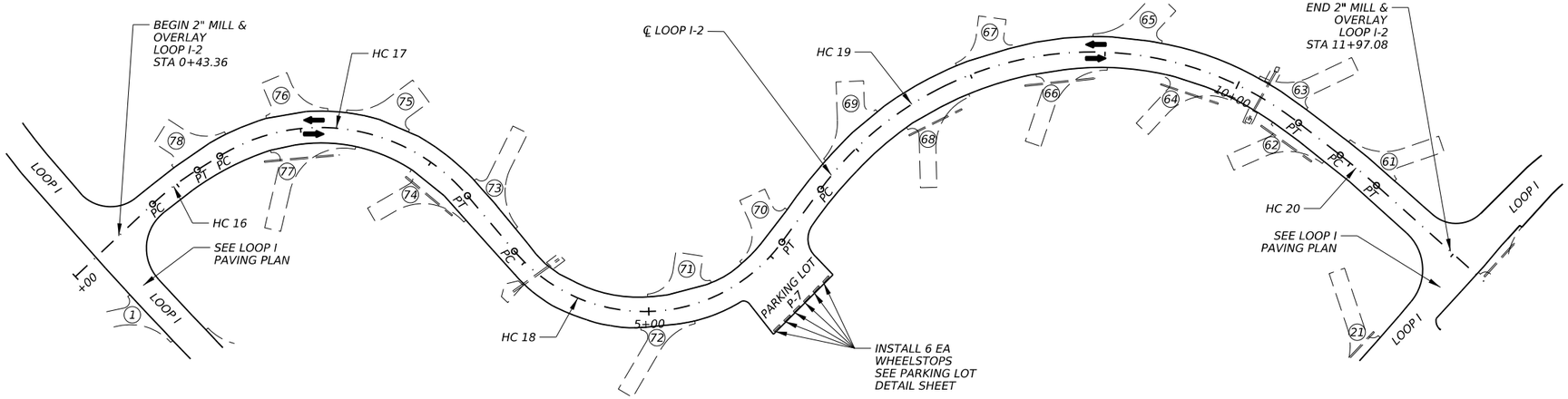
CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		55

DATE: 6/28/2024 4:23:11 PM
FILE: c:\txdot\pw_online\txdot51\siyoon.wool\d0799758\Horizontal vertical Sheets.dgn

CK
DW
CK
DW

0 50 100
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)



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CEDAR HILL STATE PARK

PAVING
PLAN
SHADY RIDGE
LOOP I-2

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		56

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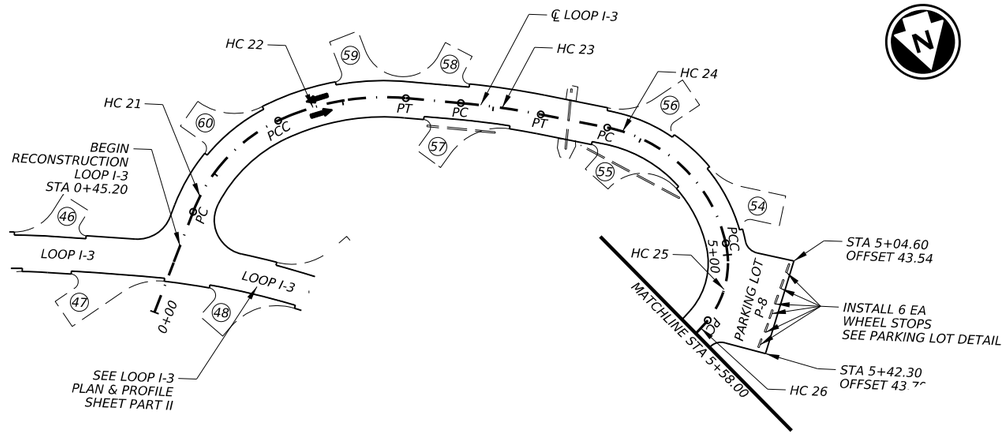

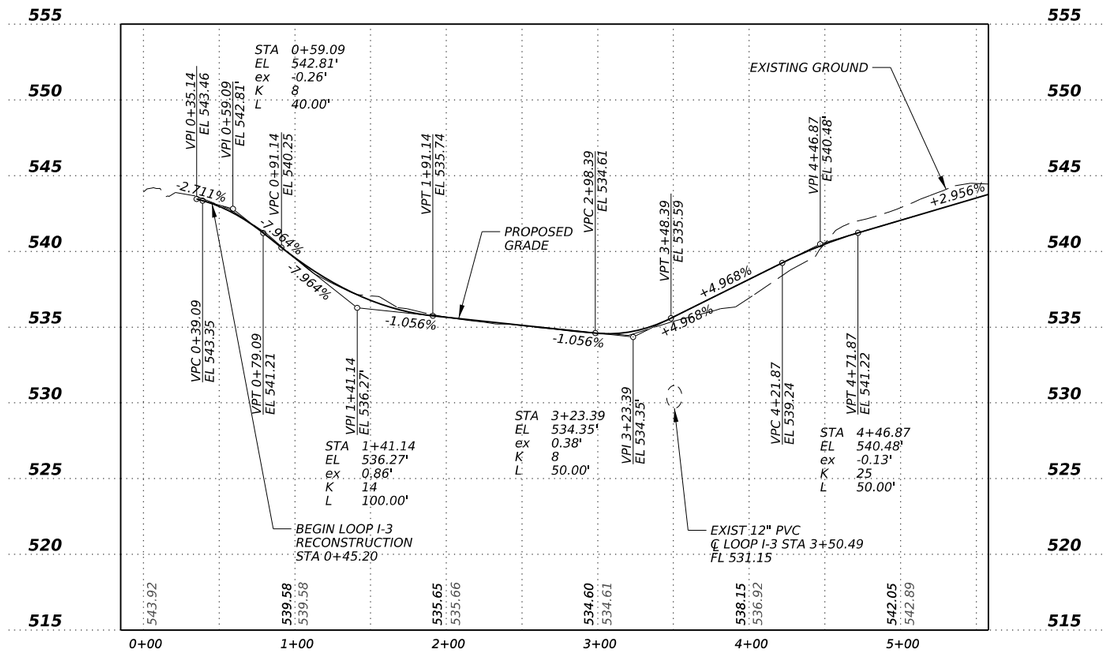

H.S. 0 50 100
SCALE IN FEET

V.S. 0 2 4 6 8 10
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTE:

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STATE OF TEXAS
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PAVING
PLAN & PROFILE
SHADY RIDGE
LOOP I-3

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		57

DATE: 6/28/2024 4:23:22 PM
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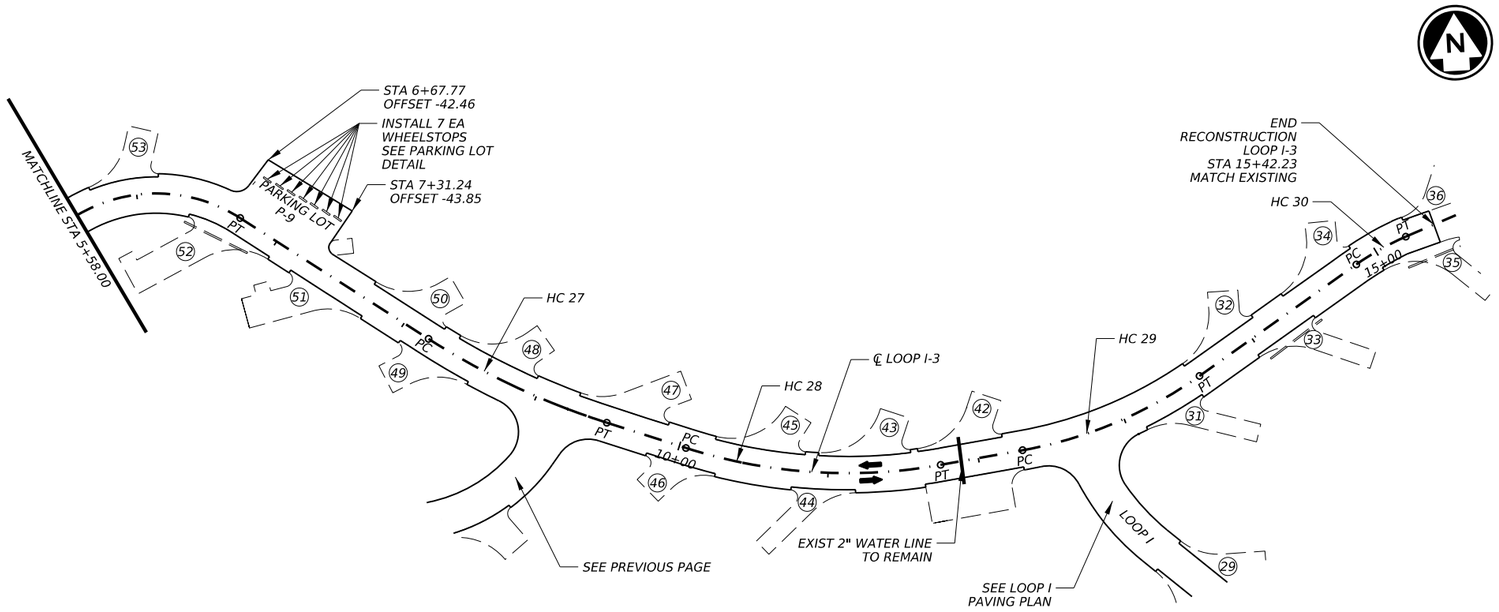

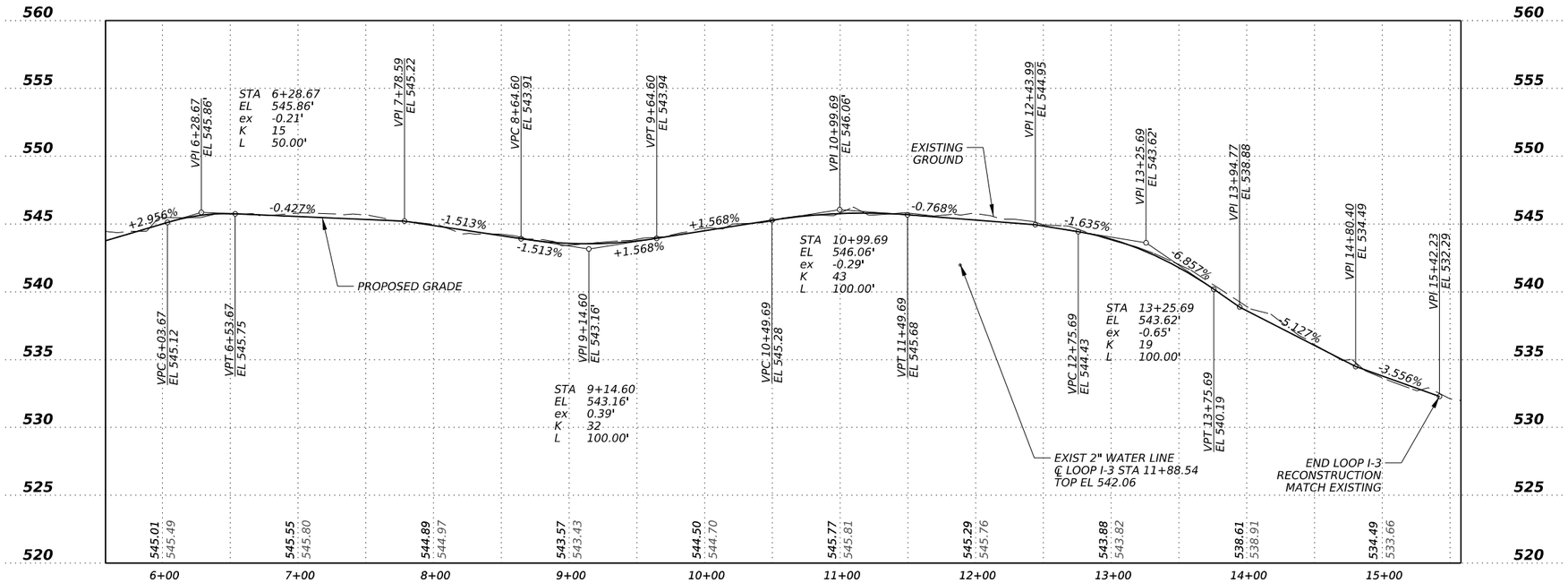

H.S. 0 50 100
SCALE IN FEET

V.S. 0 2 4 6 8 10
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

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7/1/2024
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CEDAR HILL STATE PARK

PAVING
PLAN & PROFILE
SHADY RIDGE
LOOP I-3

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		58

DATE: 7/1/2024 10:30:46 AM
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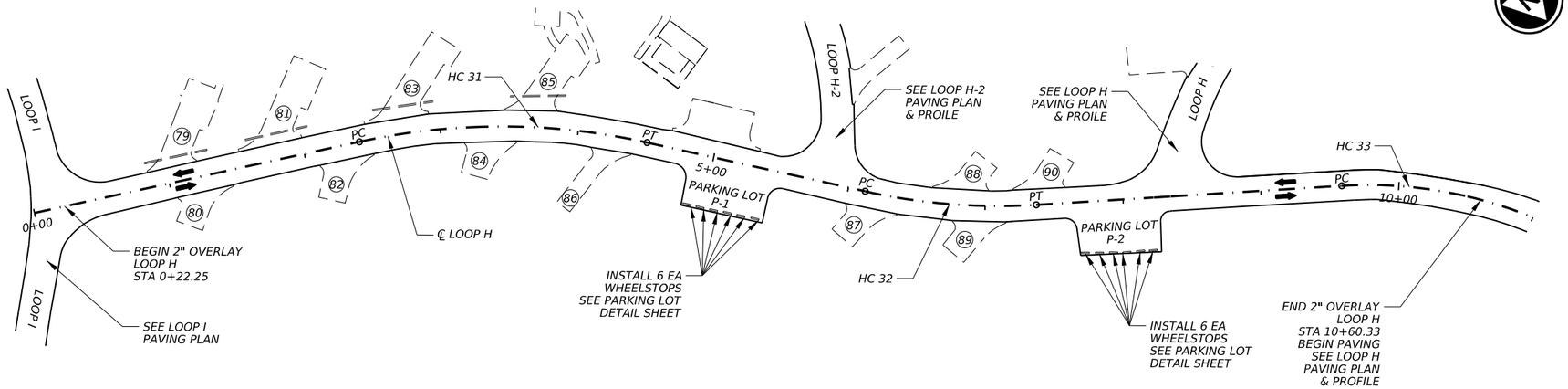
0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)



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DANIEL DIAZ, JR
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6/13/2024

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2024
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CEDAR HILL STATE PARK

PAVING PLAN EAGLE FORD LOOP H

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		59

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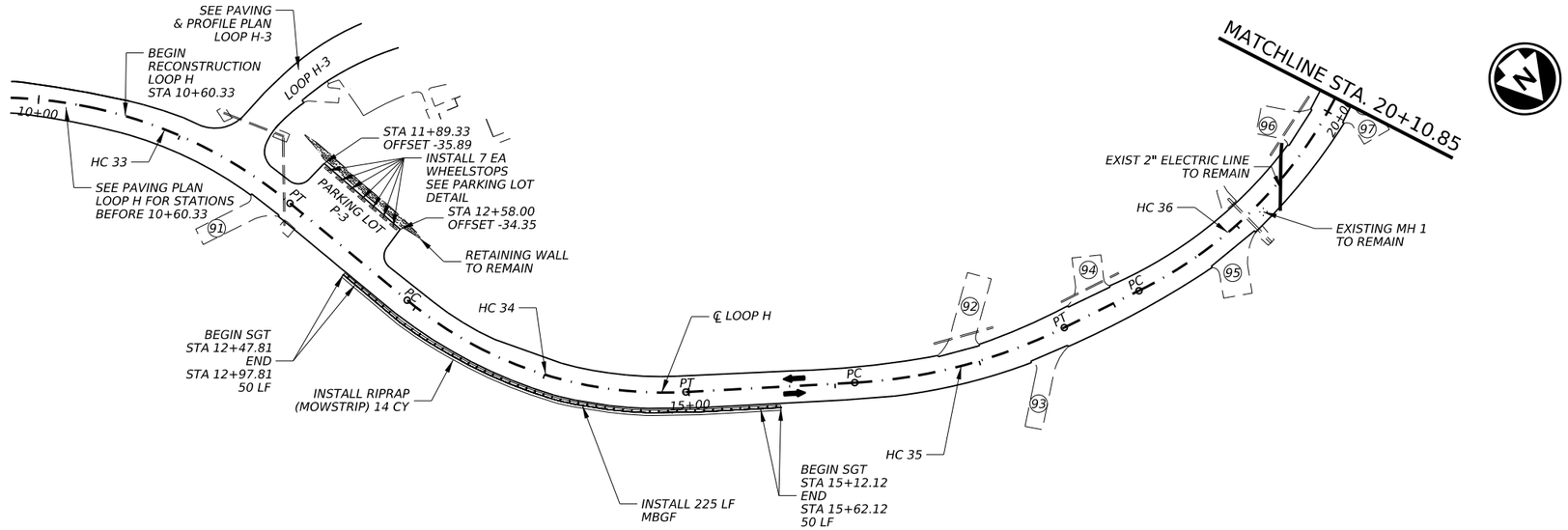

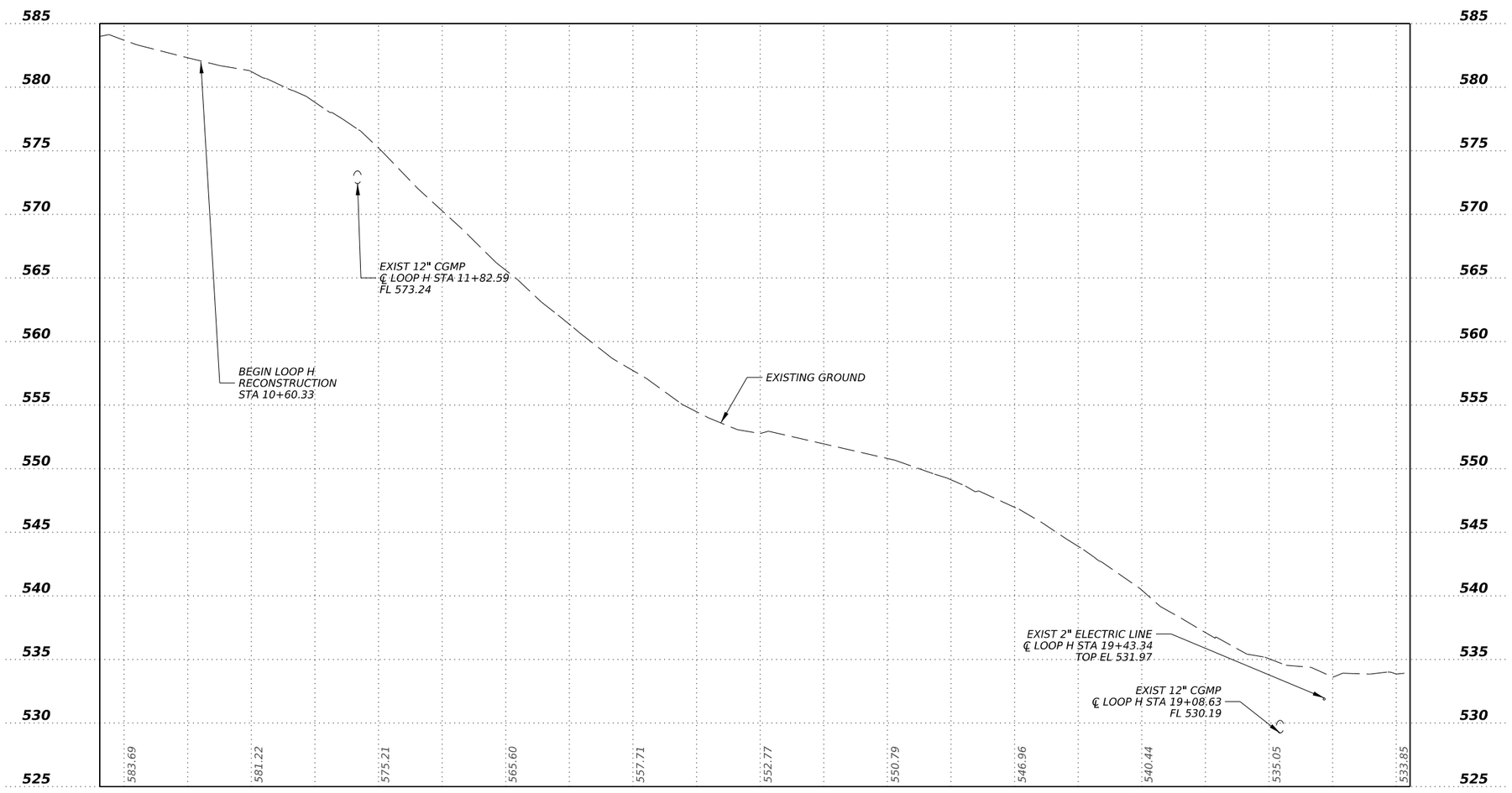

H.S. 0 50 100
SCALE IN FEET

V.S. 0 2 4 6 8 10
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

NOTE:

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STATE OF TEXAS
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8/5/2024
, P.E.
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CEDAR HILL STATE PARK

PAVING
PLAN & PROFILE
EAGLE FORD
LOOP H

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		60

DATE: 7/31/2024 12:14:11 PM
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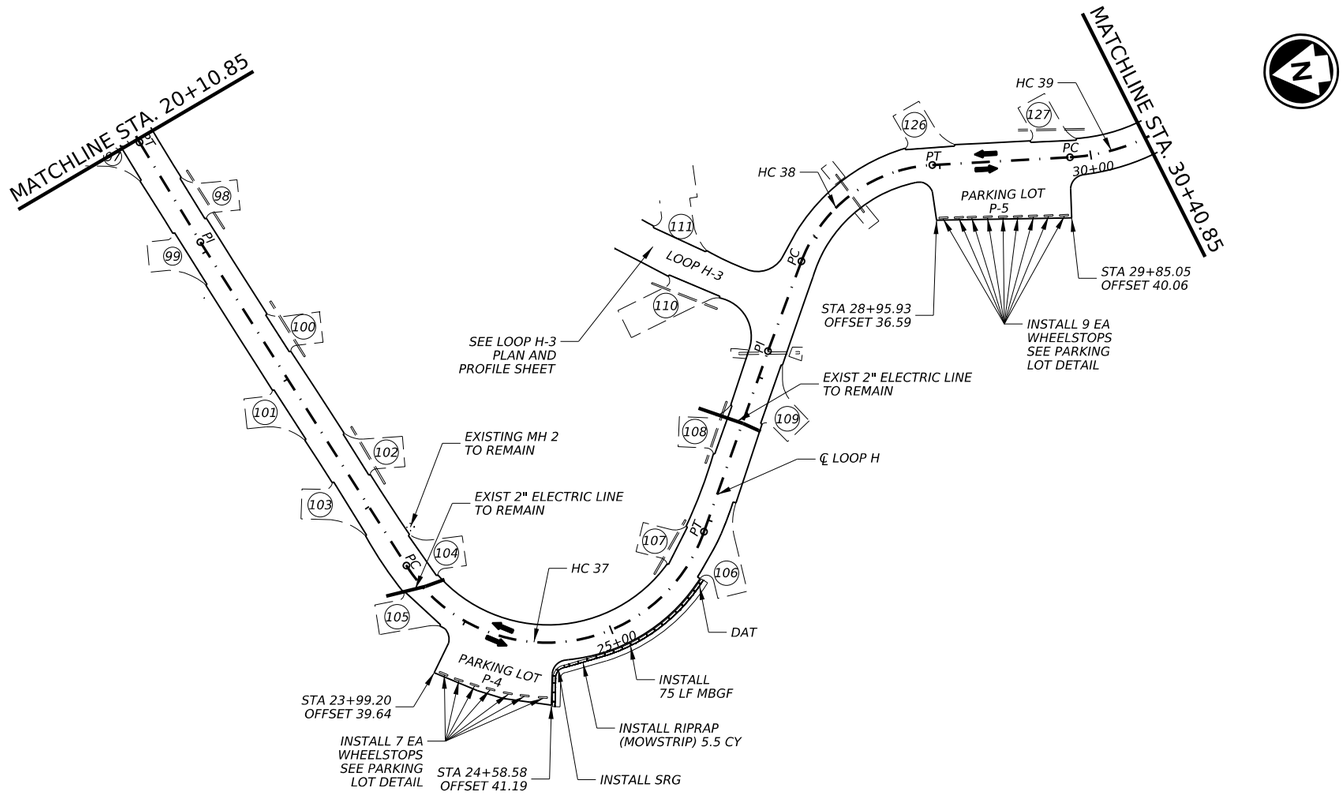

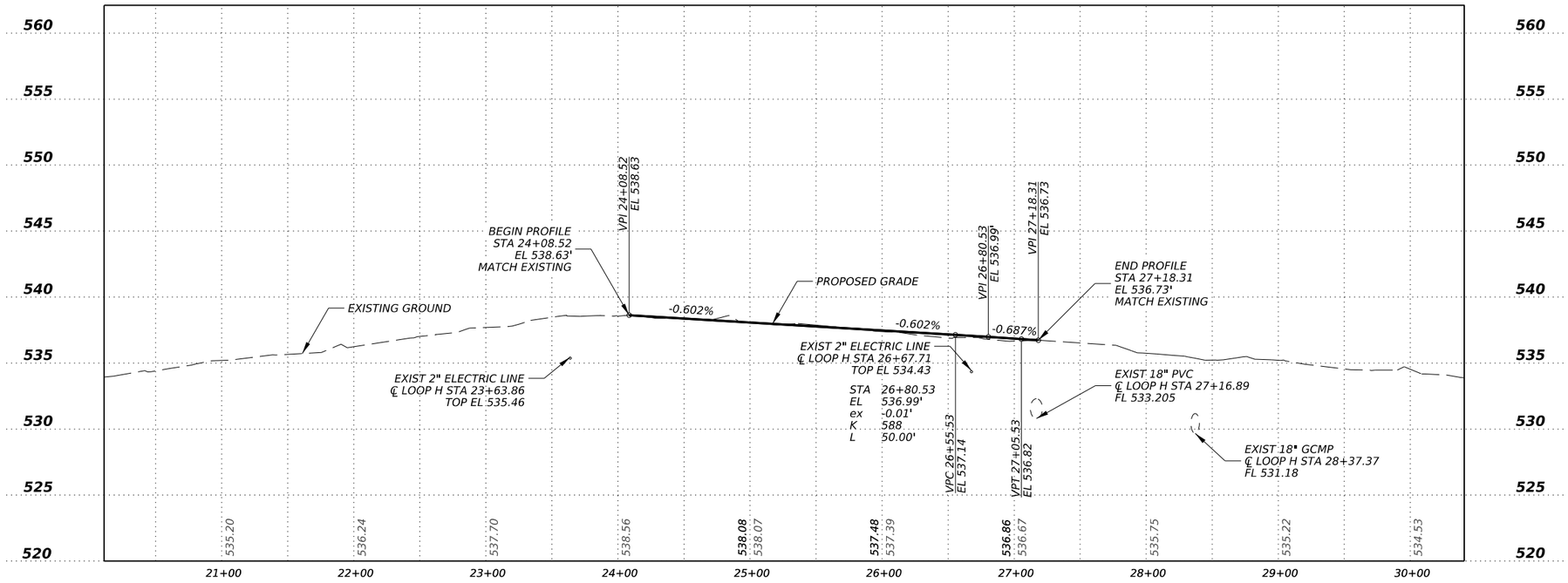

0 50 100
H.S.
SCALE IN FEET

0 2 4 6 8 10
V.S.
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

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2024
Texas Department of Transportation

CEDAR HILL STATE PARK

PAVING
PLAN & PROFILE
EAGLE FORD
LOOP H

SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		61

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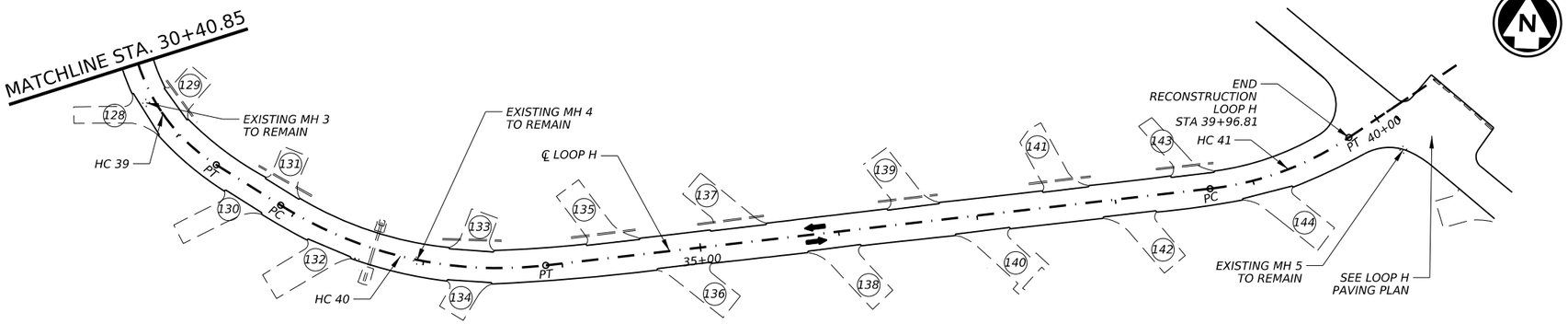

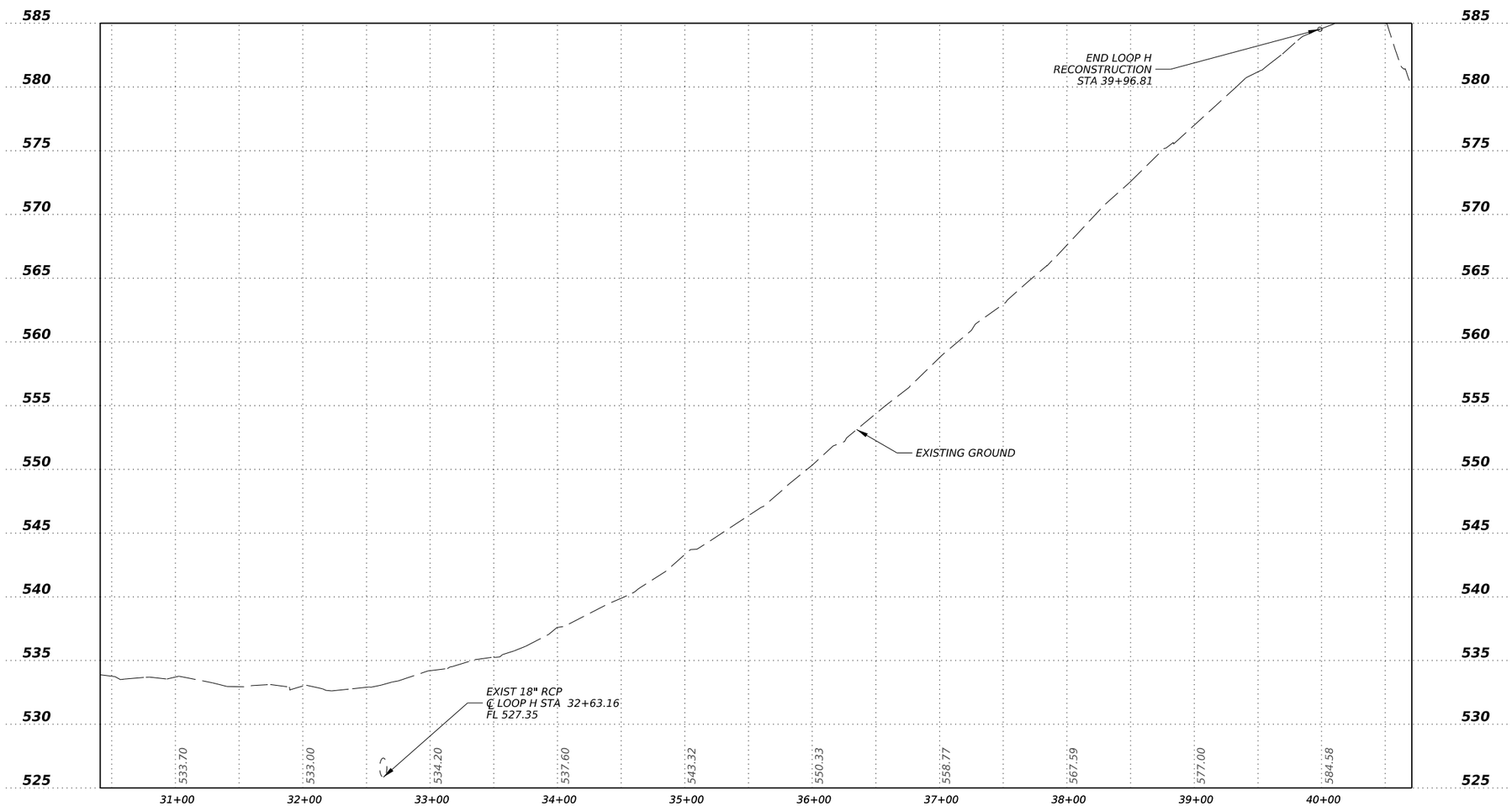

H.S. 0 50 100
SCALE IN FEET

V.S. 0 2 4 6 8 10
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

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Texas Department of Transportation

CEDAR HILL STATE PARK

PAVING
PLAN & PROFILE
EAGLE FORD
LOOP H

SHEET 4 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		62

DATE: 8/5/2024 3:17:24 PM
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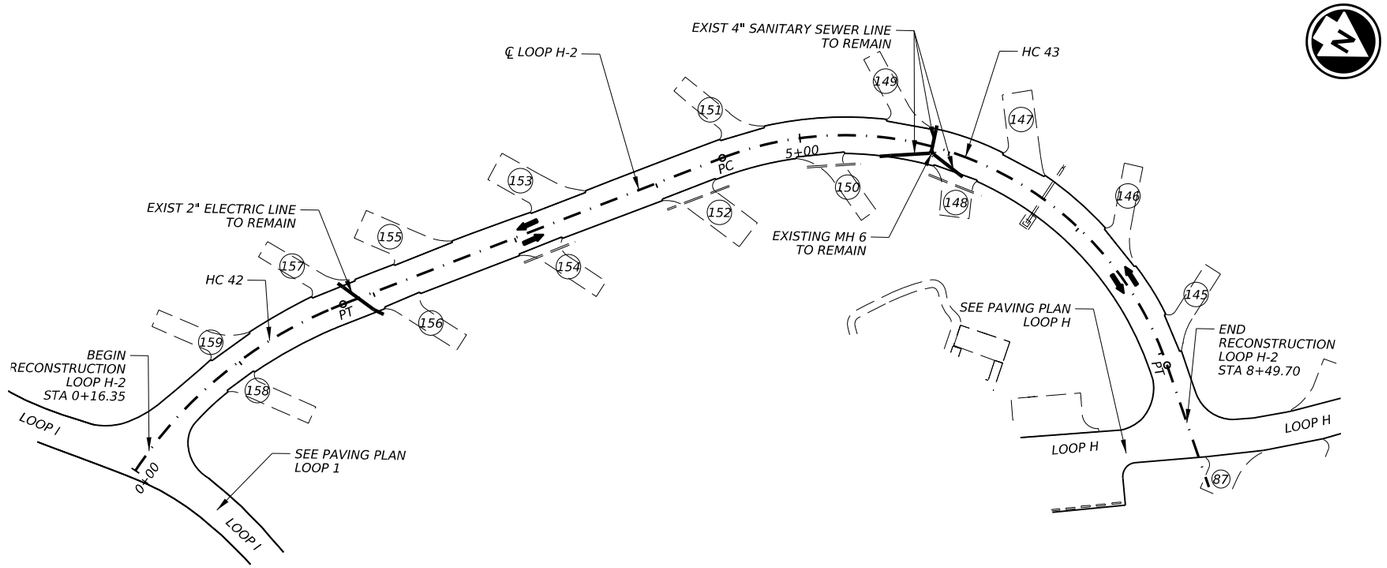

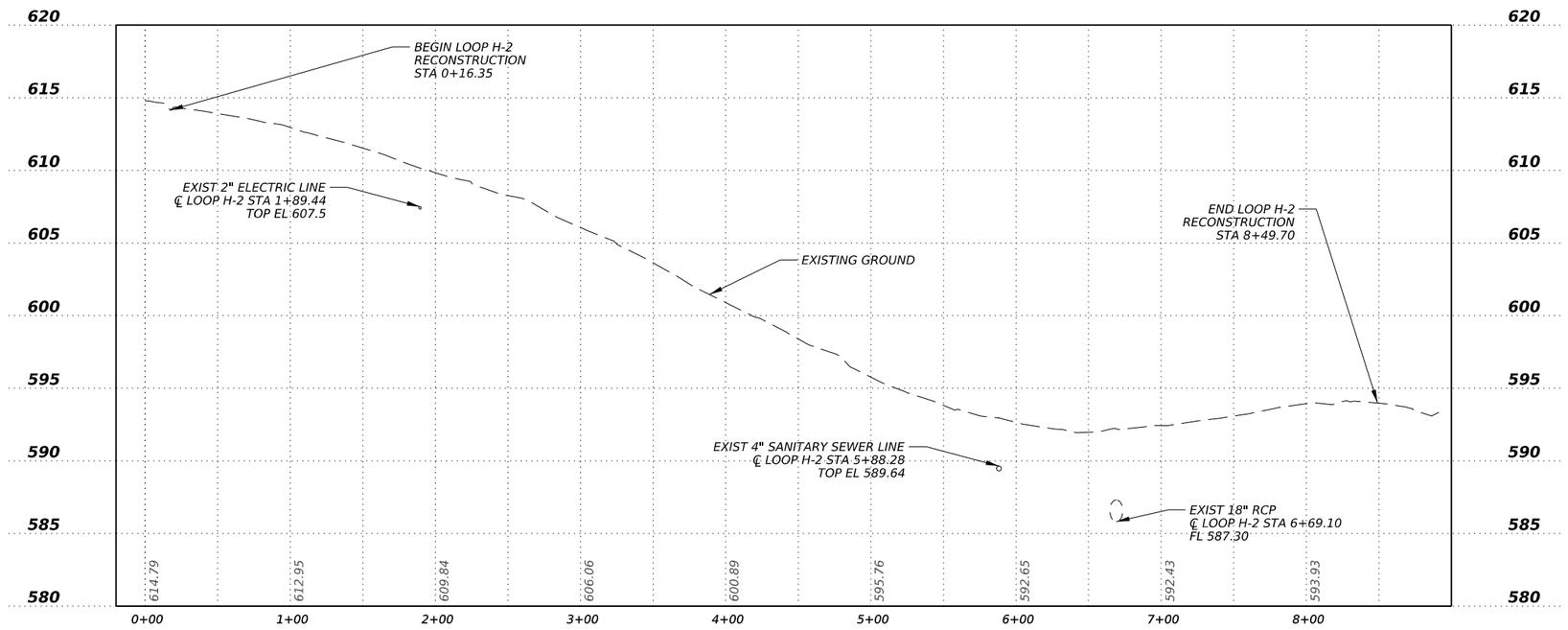

H.S. 0 50 100
SCALE IN FEET

V.S. 0 2 4 6 8 10
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

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CEDAR HILL STATE PARK

PAVING
PLAN & PROFILE
EAGLE FORD
LOOP H-2

SHEET 5 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		63

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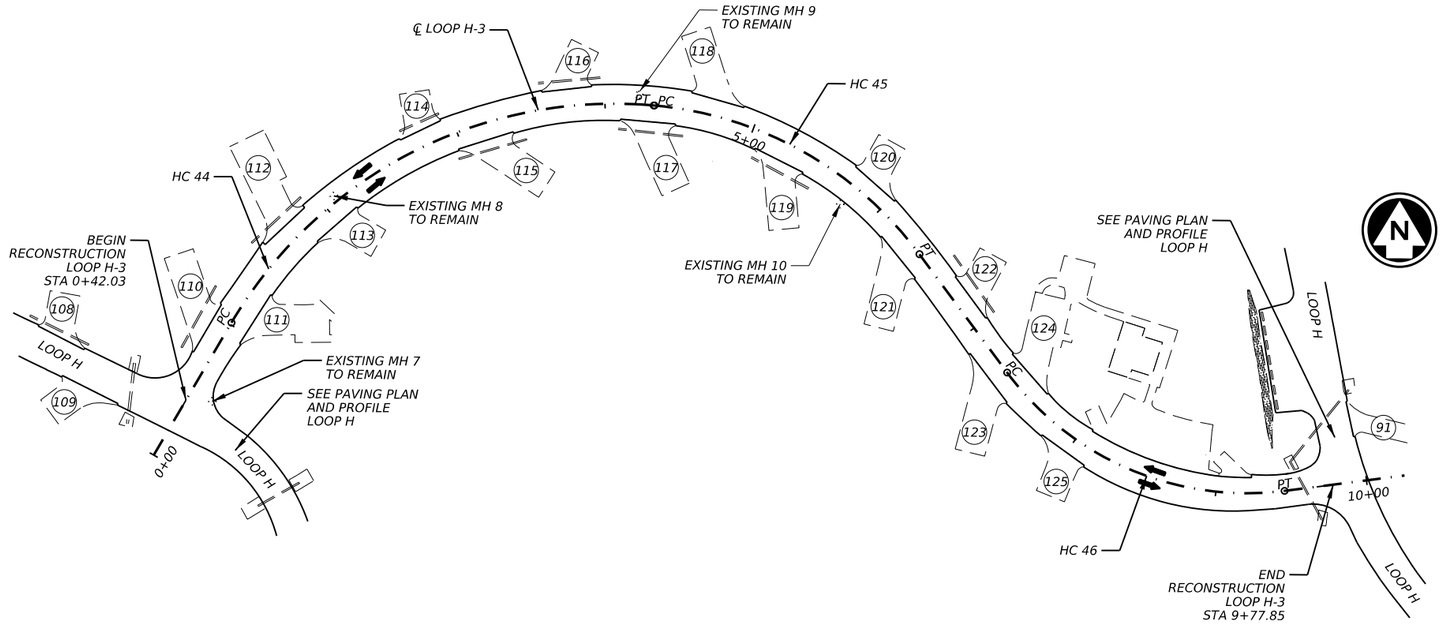

H.S. 0 50 100
SCALE IN FEET

V.S. 0 2 4 6 8 10
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
➡	TRAFFIC DIRECTION
(#)	DRIVEWAY DESIGNATOR (FOR REFERENCE)

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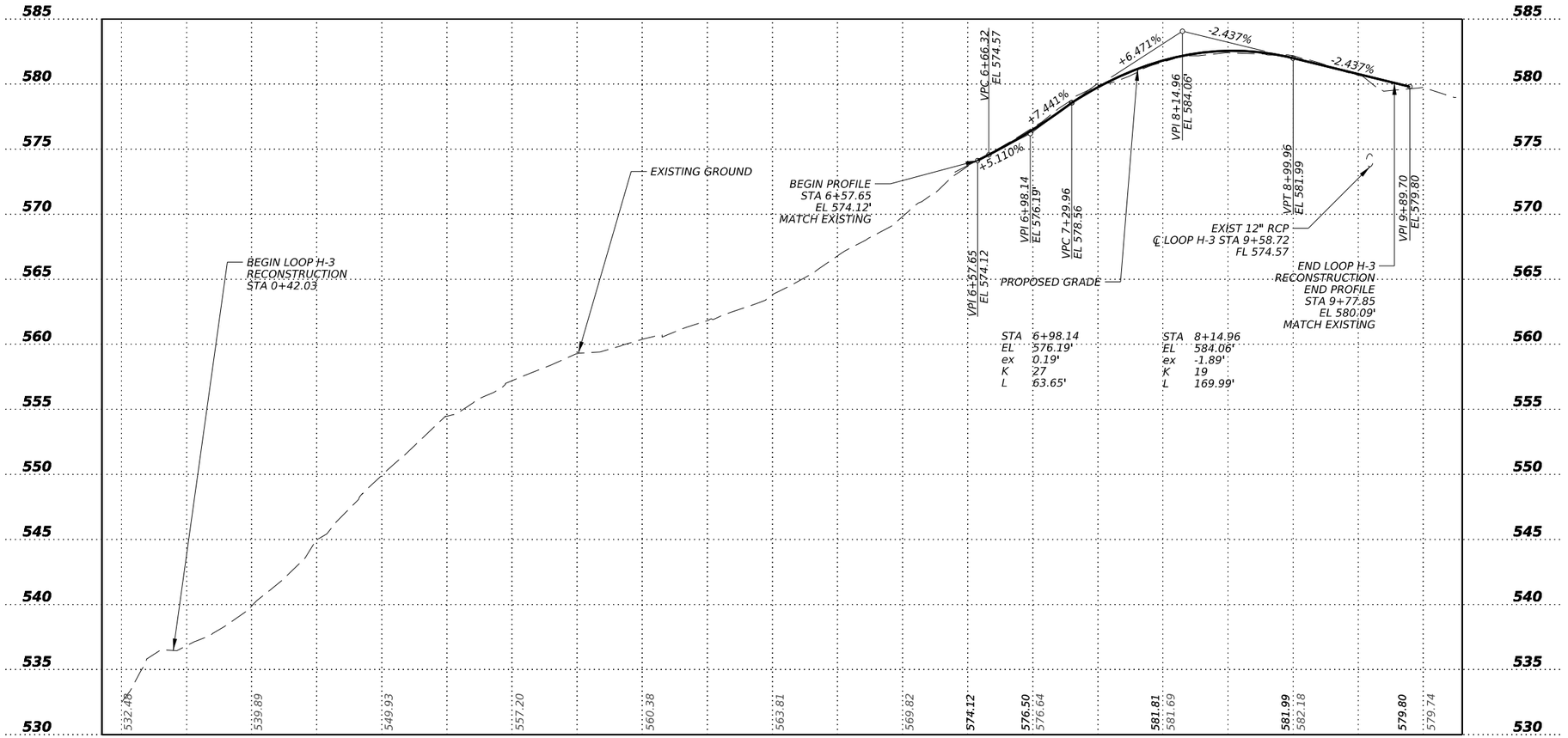

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Texas Department of Transportation

CEDAR HILL STATE PARK

PAVING
PLAN & PROFILE
EAGLE FORD
LOOP H-3

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		64

DATE: 8/6/2024 8:42:14 AM
FILE: c:\txdot\pw_online\txdot5\edward.ogawald0799758\Horizontal vertical Sheets.dgn

EXISTING DRIVEWAY AND PARKING LOT SUMMARY					
DRIVEWAY NO. OR PARKING LOT	CHAIN	STATION	LT/RT	W(FT)	DETAIL LETTER
1	I	37+06.62	RT	45.65	B
2	I	37+58.53	LT	45.62	B
3	I	38+26.80	RT	45.10	B
4	I	38+48.47	LT	46.52	B
5	I	39+07.01	RT	44.5	B
6	I	39+50.89	LT	46.64	B
7	I	40+07.86	RT	45.02	B
8	I	40+59.17	LT	46.06	B
9	I	41+04.65	RT	42.11	B
10	I	41+75.76	LT	36.92	B
11	I	41+85.74	RT	41.84	B
12	I	42+91.59	RT	44.72	B
PARKING	I	42+67.25	LT	81.82	A
13	I	43+62.16	LT	53.33	B
14	I	43.96.94	RT	44.37	B
15	I	44+54.94	LT	47.29	B
16	I	45+09.94	RT	43.20	B
17	I	45+62.56	LT	51.30	B
18	I	45+74.15	RT	50.40	B
19	I	46+62.70	LT	46.19	B
20	I	47+20.45	RT	47.46	B
21	I	47+53.38	LT	46.04	B
22	I	48+91.36	RT	45.5	B
23	I	49+94.51	LT	41.05	B
24	I	50+16.46	RT	52.58	B
25	I	51+45.56	RT	45.59	B
26	I	51+65.21	LT	47.17	B
27	I	53+74.59	RT	54.98	B
28	I	54+07.78	LT	53.54	B
29	I	54+91.35	RT	57.91	B
30	I	54+82.30	LT	54.77	B
31	I3	13+19.25	LT	42.43	B
32	I3	13+79.98	RT	55.45	B
33	I3	15+15.42	LT	45.04	B
34	I3	14+59.98	RT	54.57	B
35	I3	15+28.99	LT	53.76	B
36	I3	15+39.55	RT	47.75	B
PARKING	I3	11+90.56	LT	65.93	A
42	I3	11+91.15	RT	56.5	B
43	I3	11+31.36	RT	60.74	B
44	I3	11+07.22	LT	42.5	B
45	I3	10+57.91	RT	60.14	B
46	I3	10+07.51	LT	47.38	B
47	I3	9+42.17	RT	61.72	B
48	I3	8+67.76	RT	57.97	B
49	I3	8+31.79	LT	52.65	B
50	I3	7+98.36	RT	55.16	B
51	I3	7+54.65	LT	56.00	B
52	I3	6+73.62	LT	59.93	B

EXISTING DRIVEWAY AND PARKING LOT SUMMARY					
DRIVEWAY NO. OR PARKING LOT	CHAIN	STATION	LT/RT	W(FT)	DETAIL LETTER
53	I3	5+94.38	RT	46.03	B
54	I3	4+57.01	RT	45.76	B
55	I3	3+95.27	LT	64.36	B
56	I3	3+91.87	RT	46.52	B
57	I3	2+83.24	LT	57.08	B
58	I3	2+59.43	RT	41.16	B
59	I3	2+16.71	RT	46.99	B
60	I3	1+23.02	RT	48.1	B
106	H	26+07.73	LT	54.88	B
PARKING	H3	8+51.94	LT	81.45	A
DRIVEWAY	H3	9+25.42	LT	21.63	B
79	H	0+98.79	LT	36.42	B
80	H	1+28.67	RT	40.9	B
81	H	1+73.02	LT	46.49	B
82	H	2+29.75	RT	39.94	B
83	H	2+60.41	LT	46.85	B
84	H	3+34.61	RT	37.71	B
85	H	3+60.03	LT	37.55	C
86	H	4+28.63	RT	28.78	B
PARKING		4+98.41	LT	64.76	A
87	H	6+23.45	RT	37.87	B
88	H	6+76.10	LT	40.24	B
89	H	7+05.70	RT	38.3	B
90	H	7+34.41	LT	37.28	B
91	H	11+81.15	RT	23.8	B
92	H	16+83.18	LT	29.12	B
93	H	17+52.52	RT	27.32	B
94	H	17+84.13	LT	31.83	B
95	H	18+91.33	RT	38.34	B
96	H	19+85.09	LT	29.04	C
97	H	20+24.02	RT	39.64	B
98	H	20+61.37	LT	31.48	B
99	H	21+00.31	RT	40.4	B
100	H	21+65.05	LT	29.04	B
101	H	22+22.31	RT	39.17	B
102	H	22+61.12	LT	32.2	B
103	H	22+99.46	RT	41.4	B
104	H	23+41.26	LT	32.35	B
105	H	23+85.11	RT	31.92	B
107	H	25+77.89	LT	27.7	B
106	H	26+07.72	RT	54.88	B
108	H	26+60.01	LT	34.08	B
109	H	26+93.49	RT	41.14	B
110	H	0+78.60	LT	36.47	B
111	H	1+06.94	RT	38.23	B
112	H	1+71.39	LT	35.79	B
113	H	1+96.56	RT	34.54	B
114	H	2+75.50	LT	29.5	B
115	H	3+04.26	RT	37.81	B

STATE OF TEXAS
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, P.E.
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CEDAR HILL STATE PARK

ROADWAY
MISCELLANEOUS
DETAILS

SCALE: N.T.S. SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		65

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DW:
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DW:

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EXISTING DRIVEWAY AND PARKING LOT SUMMARY					
DRIVEWAY NO. OR PARKING LOT	CHAIN	STATION	LT/RT	W(FT)	DETAIL LETTER
116	H	3+66.48	LT	33.18	B
117	H	4+20.56	RT	36.46	B
118	H	4+80.07	LT	36.02	B
119	H	5+15.87	RT	35.41	B
120	H	5+84.83	LT	34.38	B
121	H	6+21.53	RT	35.38	B
122	H	6+86.86	LT	34	B
123	H	7+22.10	RT	40.52	B
124	H	7+56.90	LT	35.17	B
125	H	7+98.64	RT	34.46	B
PARKING	H	8+49.97	LT	110.93	A
126	H	28+99.22	LT	32.61	B
127	H	29+81.12	LT	30.33	B
128	H	30+80.59	RT	35.26	B
129	H	30+84.16	LT	27.84	B
130	H	31+71.49	RT	30.94	B
131	H	31+84.75	LT	28.58	B
132	H	32+43.95	RT	33.76	B
133	H	33+30.39	LT	32.14	B
134	H	33+40.15	RT	32.05	B
135	H	34+41.14	LT	38.66	B
136	H	34+72.58	RT	39.25	B
137	H	35+43.12	LT	40.71	B
138	H	35+86.49	RT	38.34	B
139	H	36+60.39	LT	37.68	B
140	H	36+92.06	RT	39.43	B
141	H	37+66.97	LT	33.41	B
142	H	38+03.26	RT	3815	B
143	H	38+66.07	LT	31.49	B
144	H	38+97.44	RT	36.93	B
145	H	7+98.01	LT	26.27	B
146	H	7+31.01	LT	32.01	B
147	H	6+61.67	LT	31.17	B
148	H	6+08.52	RT	30.13	B
149	H	5+77.62	LT	30.24	B
150	H	5+07.97	RT	31.81	B
151	H	4+70.74	LT	30.58	B
152	H	4+11.24	RT	37.85	B
153	H	3+46.94	LT	38.75	B
154	H	3+03.20	RT	30.28	B
155	H	2+53.53	LT	41.29	B
156	H	2+03.68	RT	25.11	B
157	H	1+83.70	LT	30.53	B
159	H	1+06.44	LT	31.18	B
158	H	0+85.45	RT	21.74	B

EXISTING MANHOLE LOCATIONS					
MANHOLE NO.	ROADWAY	STATION	OFFSET	X-COORDINATES	Y-COORDINATES
1	LOOP H	STA 19+19.44	6.11	2436841.7861	6918980.0674
2	LOOP H	STA 23+26.03	-15.89	2436473.7390	6918805.0130
3	LOOP H	STA 30+68.42	5.98	2436677.8494	6918259.0940
4	LOOP H	STA 32+95.15	0.62	2436876.2138	6918152.9675
5	LOOP H	STA 40+03.44	29.05	2437581.6651	6918257.7708
6	LOOP H-2	STA 5+89.00	4.03	2437673.0532	6917877.2959
7	LOOP H-3	STA 0+50.18	15.35	2436613.7949	6918548.9766
8	LOOP H-3	STA 2+08.80	-3.80	2436693.1918	6918685.1071
9	LOOP H-3	STA 4+26.64	-4.26	2436894.3403	6918753.2084
10	LOOP H-3	STA 5+77.25	14.98	2437027.5485	6918682.0527

NOTE: EXISTING MANHOLES TO REMAIN. WORK AROUND MANHOLES, NO VERTICAL ADJUSTMENT REQUIRED.

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8/5/2024
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CEDAR HILL STATE PARK

ROADWAY
MISCELLANEOUS
DETAILS

SCALE N.T.S SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		66

DATE: 8/5/2024 4:22:48 PM
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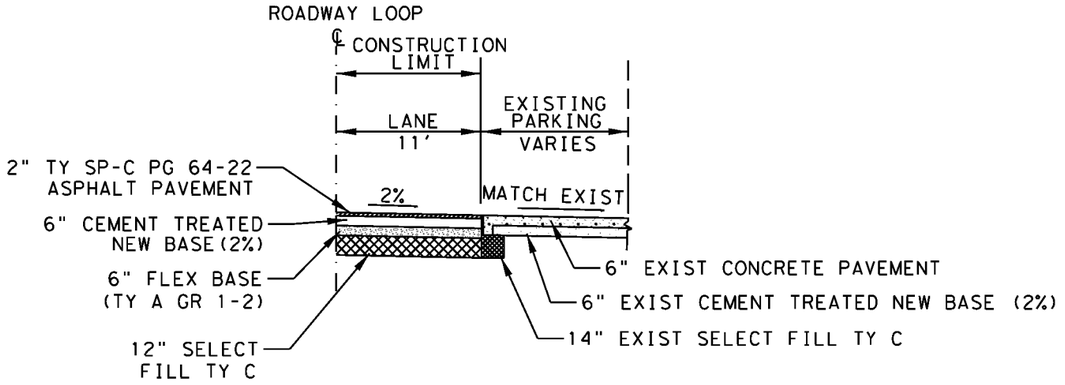
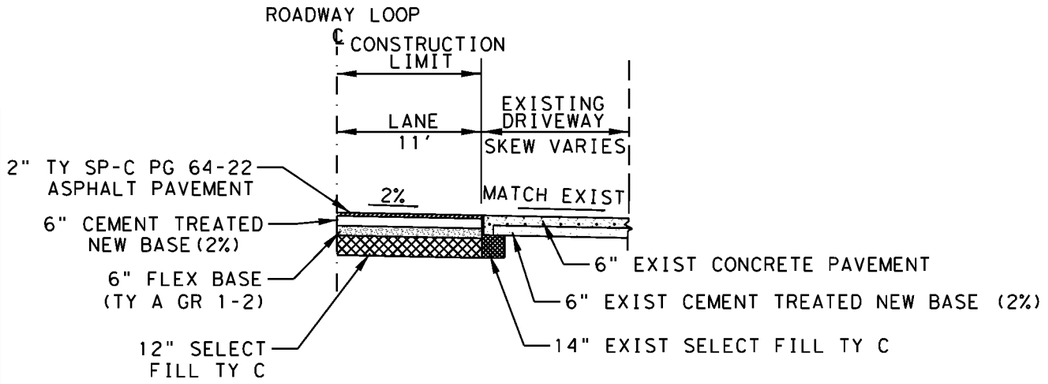


TYPICAL SECTION DETAIL A-A



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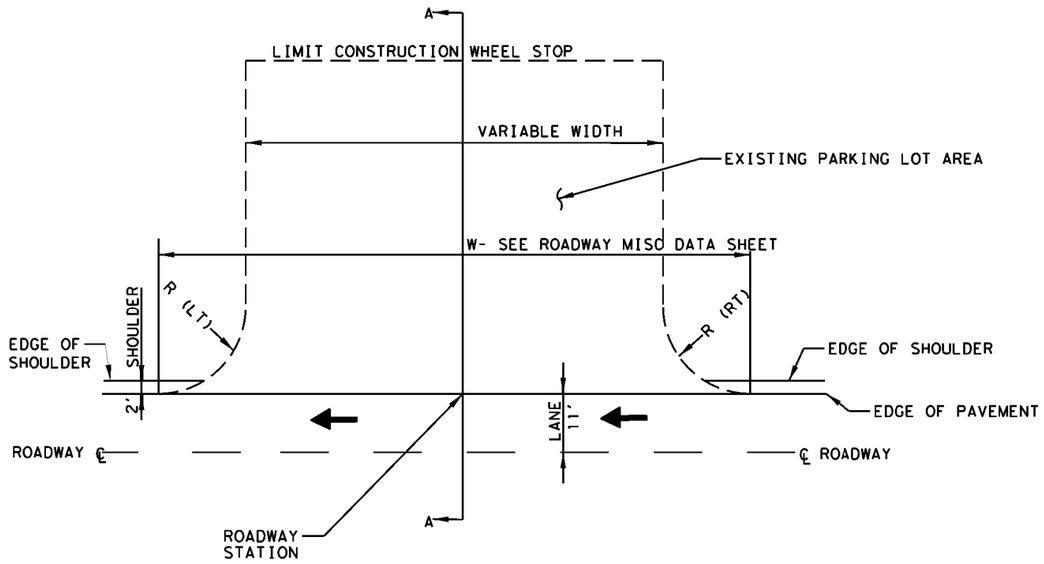
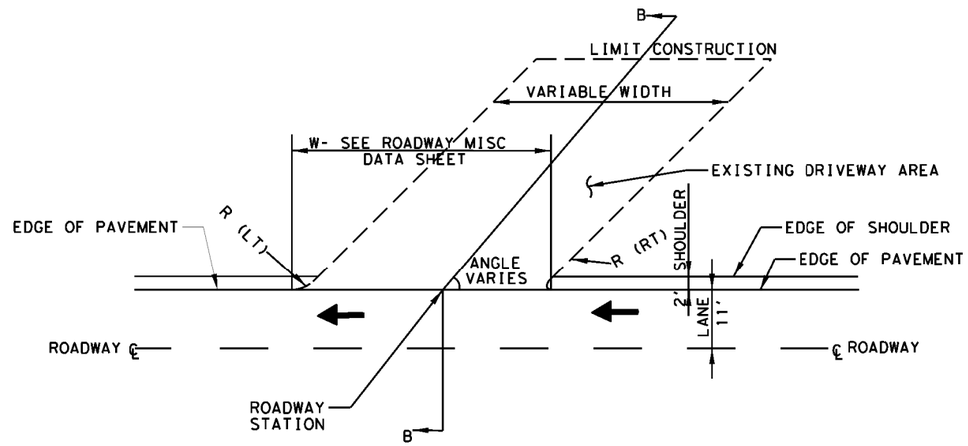


PLAN VIEW

EXISTING PARKING LOT DETAIL A



PLAN VIEW

EXISTING DRIVEWAY DETAIL B

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6/12/2024

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CEDAR HILL STATE PARK

ROADWAY MISCELLANEOUS DETAILS

SCALE: N.T.S. SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		67

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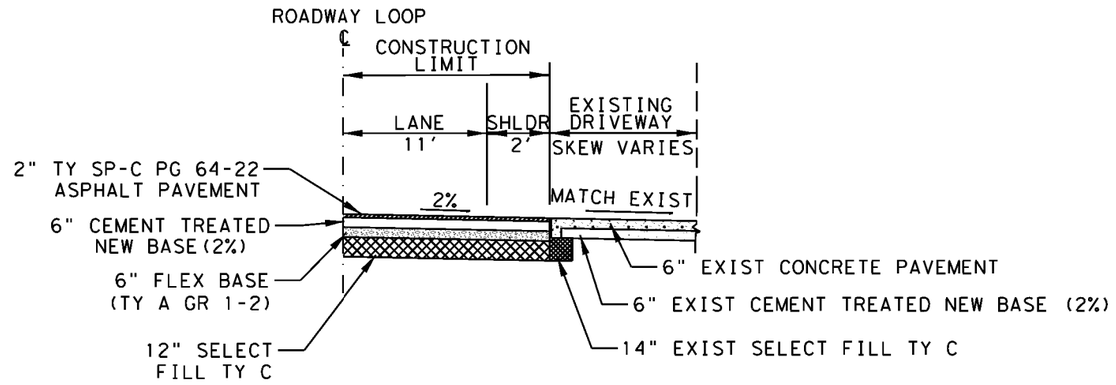
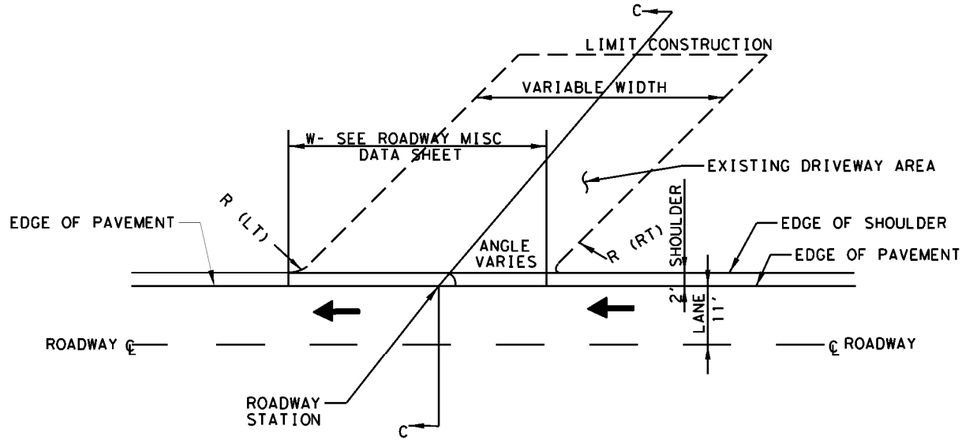


TYPICAL SECTION DETAIL C-C



PLAN VIEW

EXISTING DRIVEWAY DETAIL C

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ROADWAY MISCELLANEOUS DETAILS

SCALE: N.T.S. SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		68

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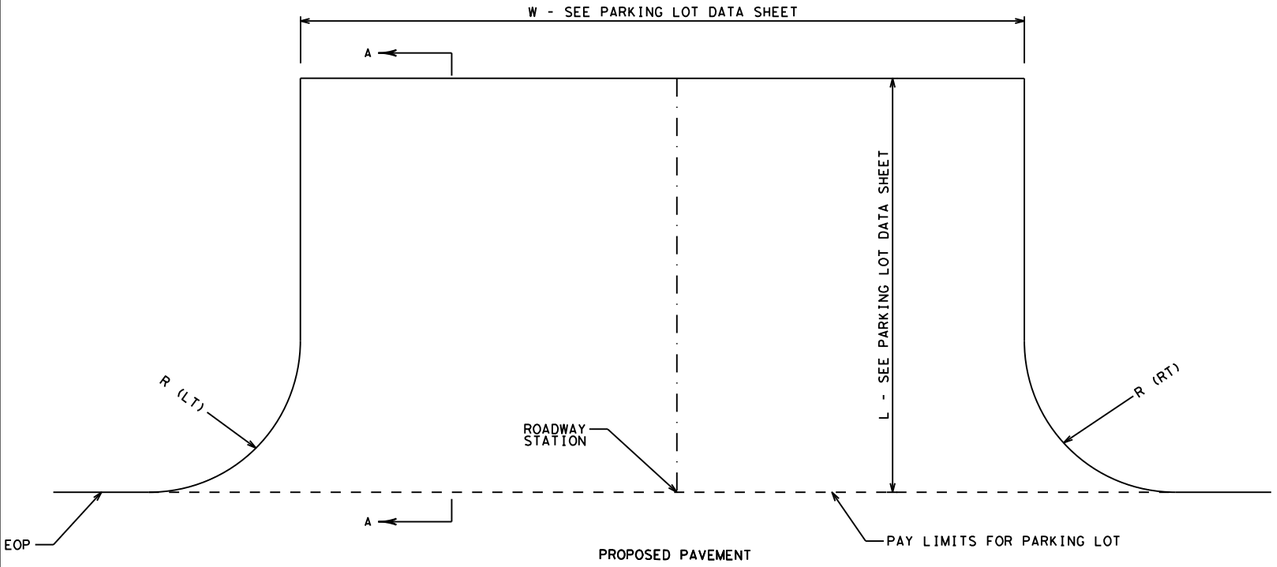
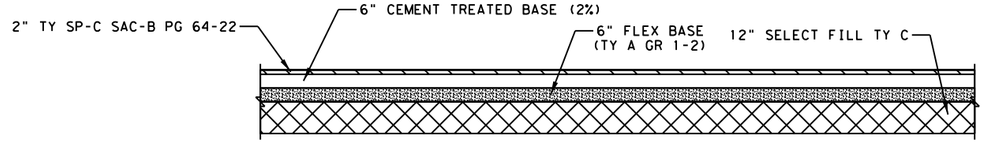
PARKING LOT SUMMARY								132	247	247	275	275	344	344
								7006	7176	7259	7001	7010	7011	7077
PARKING LOT NO.	LOOP	STATION	WIDTH (ft)	LENGTH (ft)	RADIUS (LT) (ft)	RADIUS (RT) (ft)	AREA (SY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	FL BS (RDWY DEL) (TY A GR 1-2) (FNAL POS)	CEMENT	CEMENT TREAT (NEW BASE) (6")	SP MIXES SP-C SAC-B PG64-22	TACK COAT
								CY	CY	CY	TON	SY	TON	GAL
** P-1	H	5+14.50	60.6	27.5	-	-	191	-	-	-	-	-	21	21
** P-2	H	7+97.06	59.48	28.4	-	-	192	-	-	-	-	-	21	21
*P-3	H	12+23.66	68.7	24.1	10	10	192	64	32	32	1	192	21	-
*P-4	H	24+28.46	75.9	26.4	10	10	223	74	37	37	1	223	25	-
*P-5	H	29+40.49	89.2	27.4	10	10	278	93	46	46	1	278	31	-
** P-6	I	47+74.25	71.8	30.4	-	-	244	-	-	-	-	-	27	27
** P-7	I2	5+92.25	61.3	33.6	-	-	214	-	-	-	-	-	24	24
*P-8	I3	5+22.60	62.8	29.7	10	10	216	72	36	36	1	216	24	-
*P-9	I3	6+99.15	63	31.6	10	5	229	76	38	38	1	229	25	-
TOTAL								379	190	190	6	1138	218	93

* RECONSTRUCTION PARKING LOT.
** 2" MILL AND OVERLAY PARKING LOT.

PROPOSED PARKING LOT

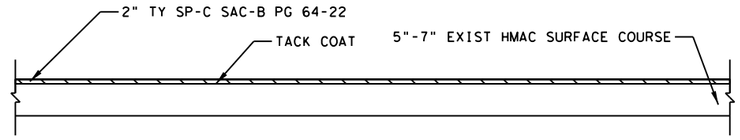




SECTION A-A

*PROPOSED PARKING LOT RECONSTRUCTION

OR



SECTION A-A

**PROPOSED PARKING LOT 2" MILL AND OVERLAY

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CEDAR HILL STATE PARK

PARKING LOT MISCELLANEOUS DETAILS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		69

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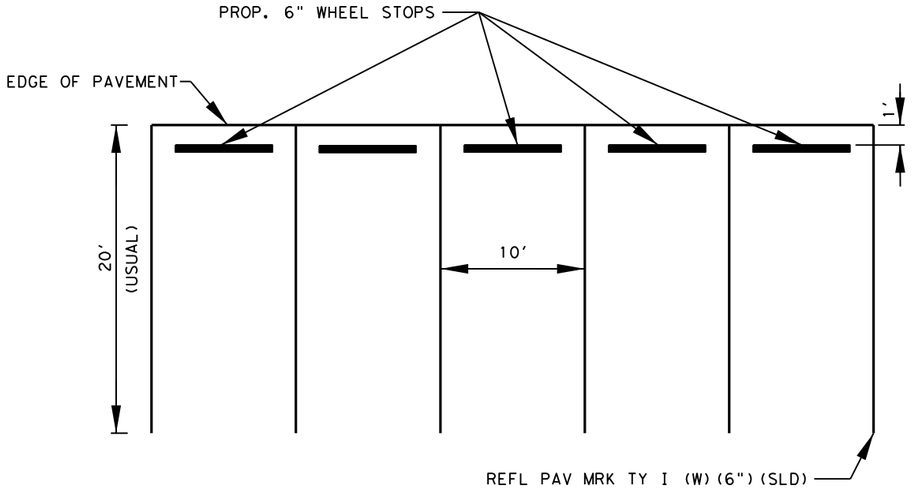
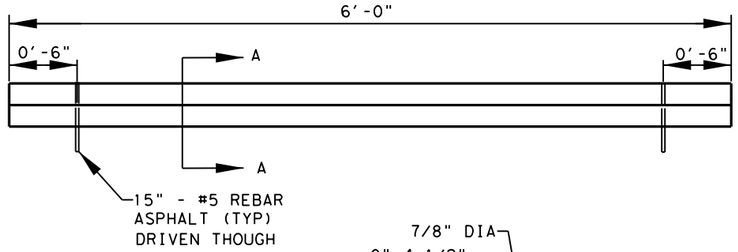
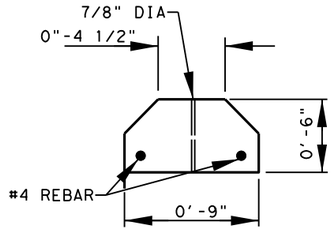


TYPICAL PARKING DETAIL





SECTION A-A

TYPICAL PRECAST CONCRETE WHEEL STOP DETAIL

NOTES:
CONTRACTOR TO PROVIDE SHOP DRAWINGS
FOR ENGINEERS APPROVAL

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CEDAR HILL STATE PARK

PARKING LOT
MISCELLANEOUS
DETAILS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		70

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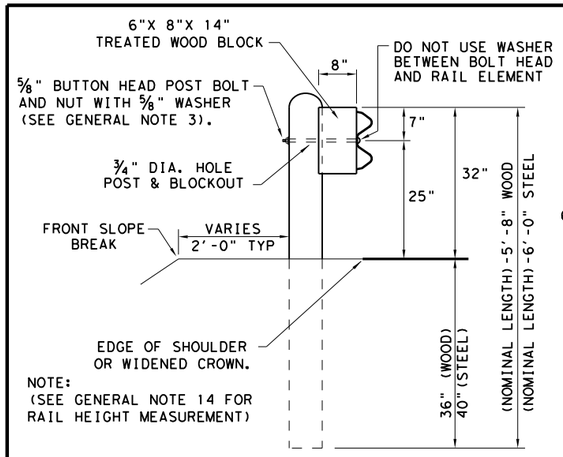
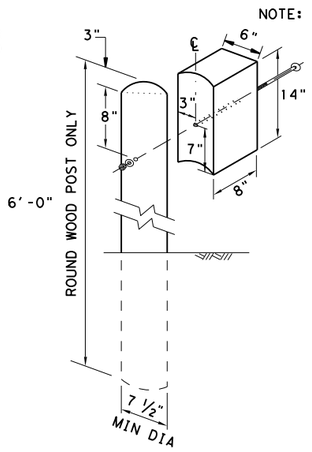
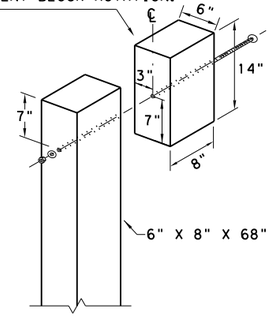


TYPICAL POST PLACEMENT

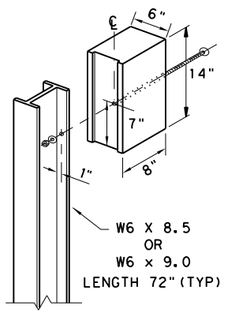


WOOD BLOCK TO ROUND WOOD POST

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

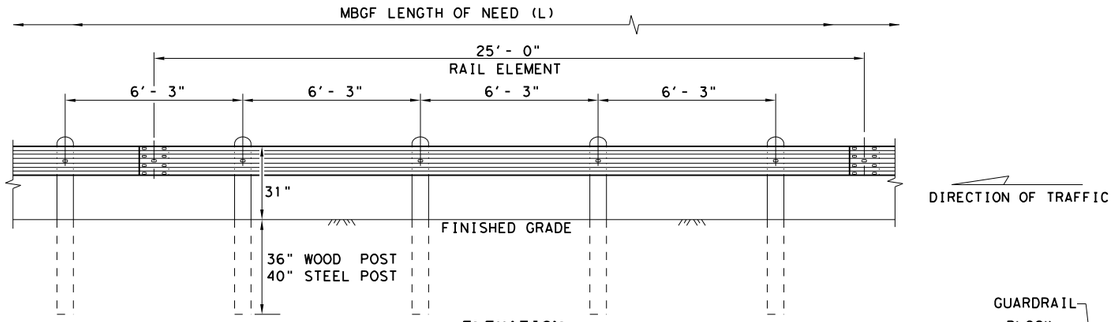


WOOD BLOCK TO RECTANGULAR WOOD POST



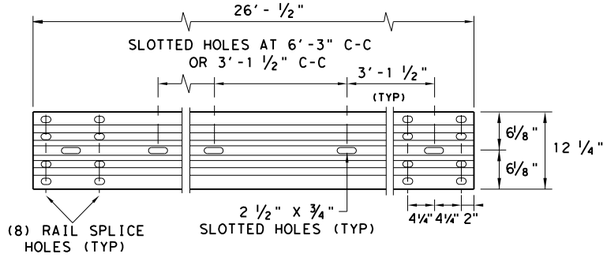
ROUTED WOOD BLOCK TO I-BEAM STEEL POST

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



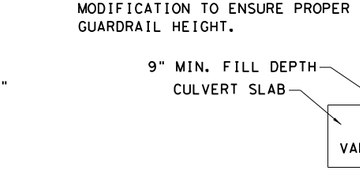
ELEVATION
MID-SPAN RAIL SPLICE

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

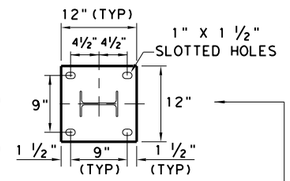


ELEVATION 25'- 0" (NOM.) W-BEAM SECTION

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



LOW FILL CULVERT POST



STEEL POST CONNECTION TO CULVERT SLAB (USE WHEN THERE IS LESS THAN 36" COVER OVER CULVERT SLAB).

NOTE: TWO INSTALLATION OPTIONS.

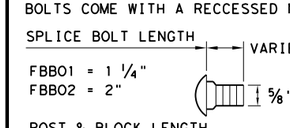
1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. ⅞" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 ¼" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE ⅞" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS ¼" MIN. BEYOND NUT.

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

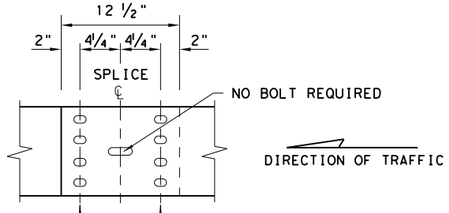
NOTE: TRANSISTIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS.
SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS.
SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

NOTE:
FOUR TYPES OF BUTTON-HEAD GUARD RAIL BOLTS COME WITH A RECCESSED NUT.



BUTTON HEAD BOLT

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



MID-SPAN RAIL SPLICE DETAIL

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

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0918	47	360	FD 701241	
	DIST	COUNTY		SHEET NO.	
	DAL	DALLAS		71	

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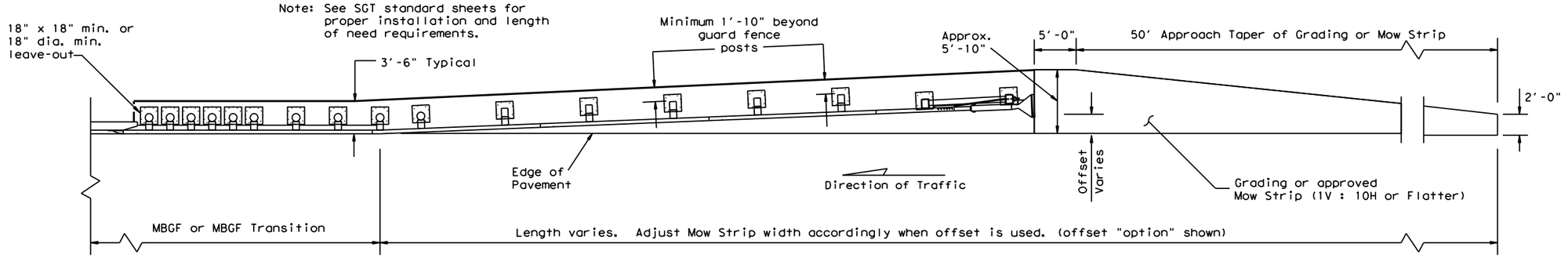
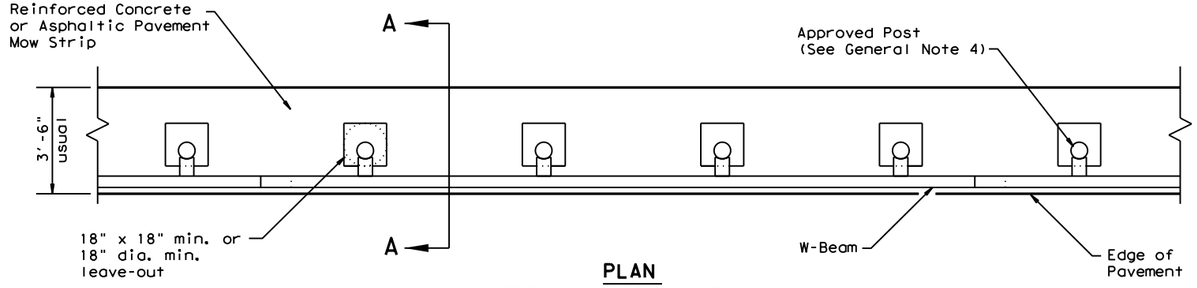
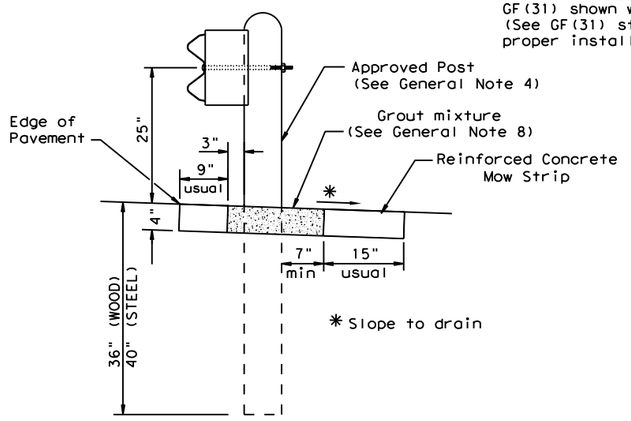


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



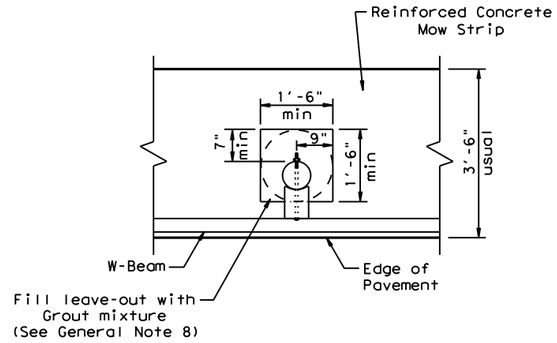
PLAN

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



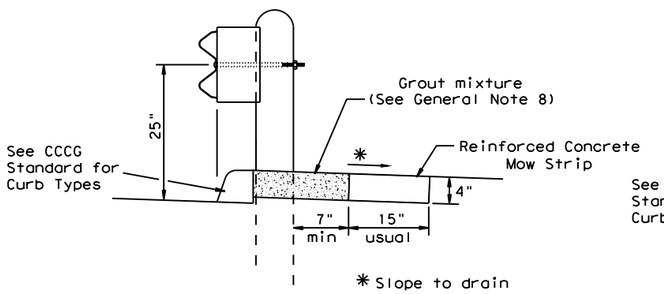
SECTION A-A

Typical



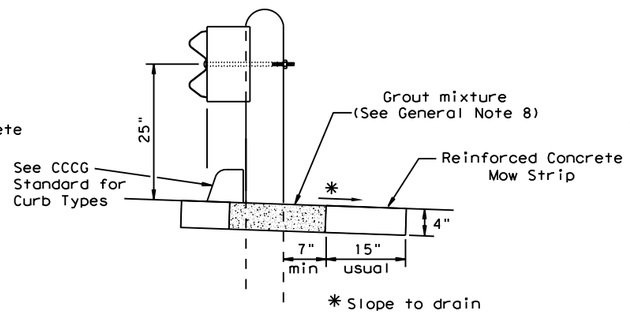
MOW STRIP DETAIL

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



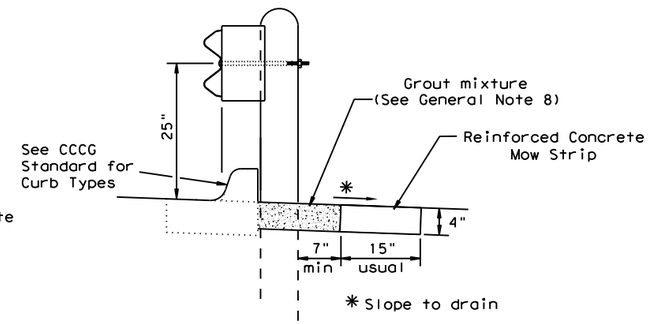
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 ½" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT

GF(31)MS-19

FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG	
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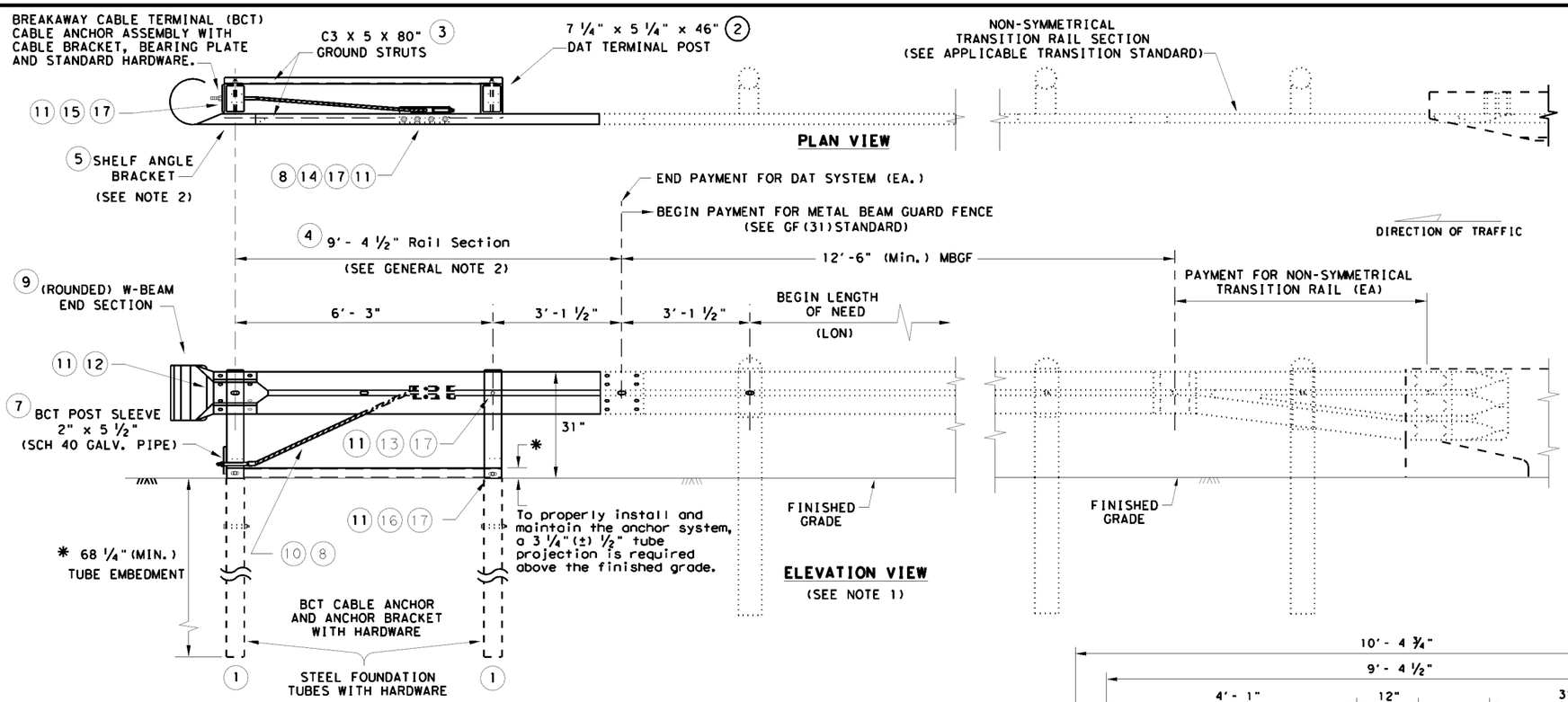


DOWNSTREAM ANCHOR TERMINAL (DAT)

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

GENERAL NOTES

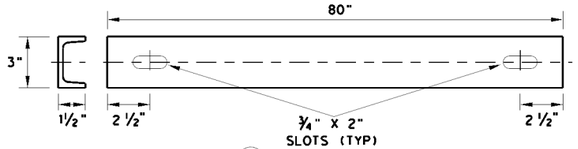
1. THE DETAIL SHOWN IS THE MINIMUM LENGTH OF NEED (LON) FOR A DOWNSTREAM ANCHOR TERMINAL (DAT) CONNECTED TO A CONCRETE RAIL.
2. THE RAIL SECTION AT THE END POST IS SUPPORTED BY THE SHELF ANGLE BRACKET. THE RAIL ELEMENT IS NOT ATTACHED TO THE END POST.
3. THE FOUNDATION TUBES SHALL NOT PROJECT MORE THAN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

MOW STRIP INSTALLATION

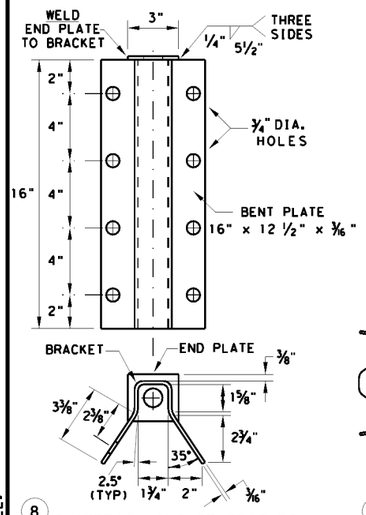
IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

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

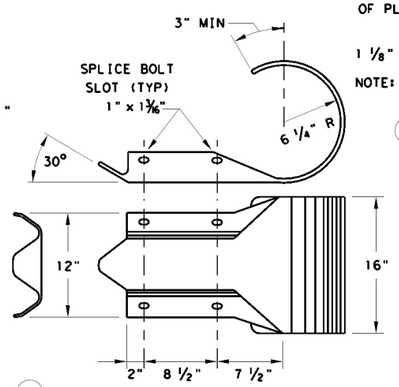
(4) TERMINAL RAIL ELEMENT FOR DAT



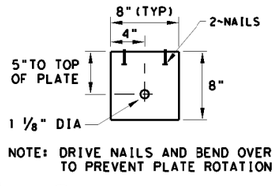
(3) CHANNEL STRUT
C3 X 5 X 80", GRADE A36



(8) GUARDRAIL ANCHOR BRACKET

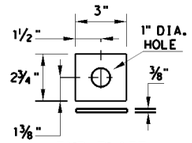


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

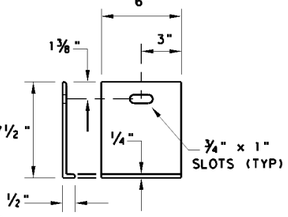


NOTE: DRIVE NAILS AND BEND OVER TO PREVENT PLATE ROTATION

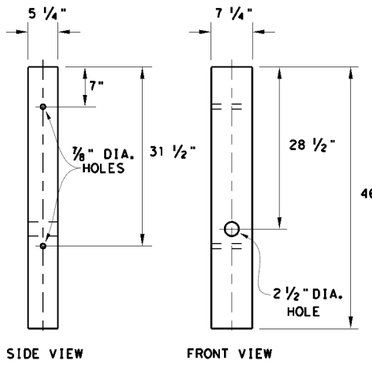
(6) BEARING PLATE
8"x 8"x 5/8" ℄



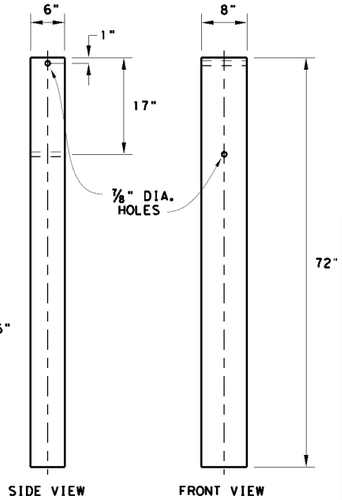
END PLATE



(5) SHELF ANGLE BRACKET



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" WOOD POST



(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" STEEL TUBE

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE (DOWNSTREAM ANCHOR TERMINAL) TL-3 MASH COMPLIANT

GF(31)DAT-19

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©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
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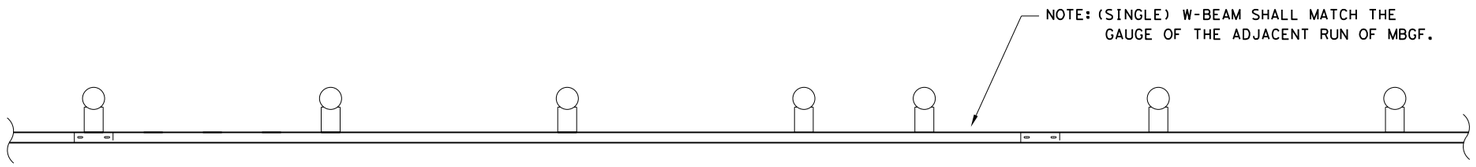
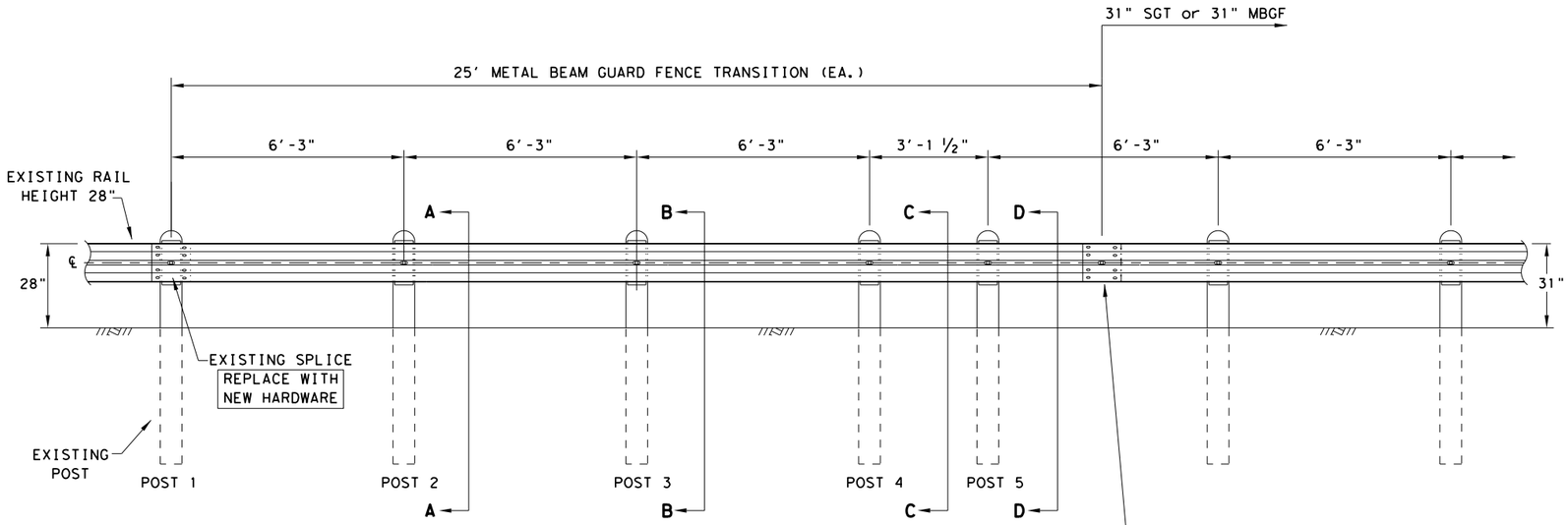
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		73

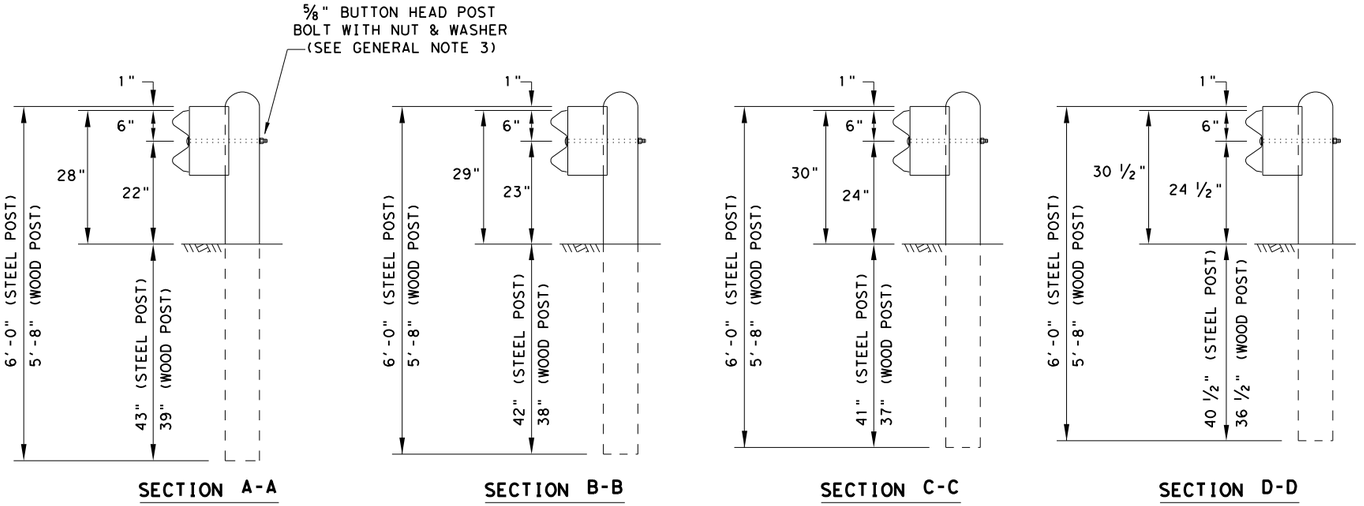


PLAN VIEW



ELEVATION VIEW

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



SECTION A-A | SECTION B-B | SECTION C-C | SECTION D-D

GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENT SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'- 1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST" BOLTS (ASTM A307) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND 5/8" ROUND WASHER (ASTM F436) AND NOT MORE THAN 1" BEYOND IT. BUTTON HEAD "SPLICE" BOLTS (ASTM A307) ARE 5/8" X 1- 1/4" WITH 5/8" NUTS (ASTM A563).
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM REQUIRING CONSTRUCTION OF THE TRANSITION.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. SEE GF(31) STANDARD FOR INSTALLATION GUIDANCE.
9. POSTS SHALL NOT BE SET IN CONCRETE.
10. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
11. REFER TO STANDARD GF(31) FOR ADDITIONAL DETAILS.
12. RAIL HEIGHT ADJUSTMENT IS ASSESSED AT TL-3 MASH COMPLIANT FOR STEEL POST HEIGHT TRANSITION TO 28" STEEL POST GUARDRAIL.

POST AND BLOCK-OUT TYPES AVAILABLE

HARDWARE LIST	
QTY	DESCRIPTION
1	25'-0" W-BEAM RAIL ELEMENT 12GA. (TYP)
5	7 1/2" DIA X 6'-0" DOMED ROUND WOOD POSTS (TYP)
5	6" X 8" X 68" RECTANGULAR WOOD POSTS (TYP)
5	W6 X 8.5 OR W6 X 9 X 72" STEEL POSTS (TYP)
5	6" X 8" X 14" WOOD BLOCKS OR COMPOSITE (TYP)
FOR WOOD POST 5	5/8" X 18" GUARDRAIL BOLTS AND NUTS (FBB04)
5	5/8" ROUND WASHERS (ASTM F436) (FWC16a)
FOR STEEL POST 5	5/8" X 10" GUARDRAIL BOLTS AND NUTS (FBB03)
16	5/8" X 1- 1/4" GUARDRAIL SPLICE BOLTS WITH DOUBLE RECESSED NUTS (ASTM A563) (FBB01)

NOTE: HARDWARE SHALL MEET THE FOLLOWING REQUIREMENTS.

GUARDRAIL POST BOLTS (ASTM A307 GR.A)
GUARDRAIL ROUND WASHERS (ASTM F436)
GUARDRAIL DOUBLE RECESSED NUTS (ASTM A563)
GUARDRAIL SPLICE BOLTS (ASTM A307 GR.A)
GUARDRAIL SPLICE NUTS (ASTM A563)

Texas Department of Transportation | Design Division Standard

METAL BEAM GUARD FENCE RAIL HEIGHT ADJUSTMENT (28" TO 31") TL-3 MASH COMPLIANT

RAIL-ADJ(B)-19

FILE: railadjb19	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
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	DAL	DALLAS		74

DATE: 6/11/2024
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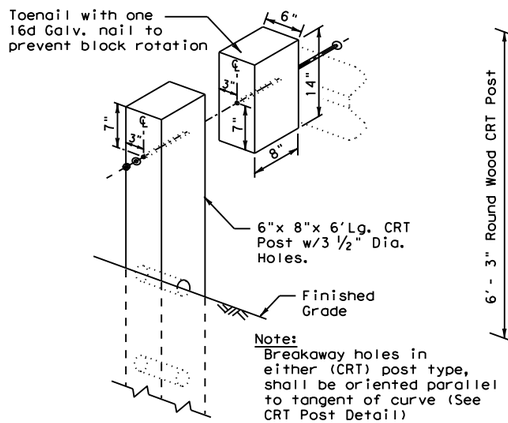
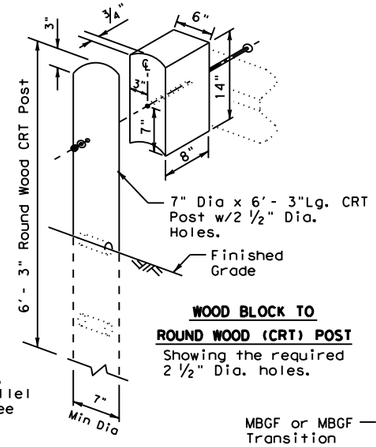


Note: Breakaway holes in either (CRT) post type, shall be oriented parallel to tangent of curve (See CRT Post Detail)

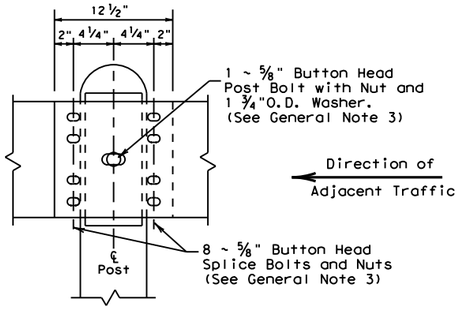
WOOD BLOCK TO RECTANGULAR WOOD (CRT) POST

Showing the required 3 ½" Dia. holes.

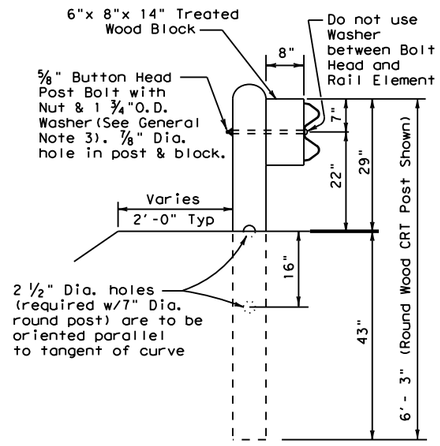


WOOD BLOCK TO ROUND WOOD (CRT) POST

Showing the required 2 ½" Dia. holes.

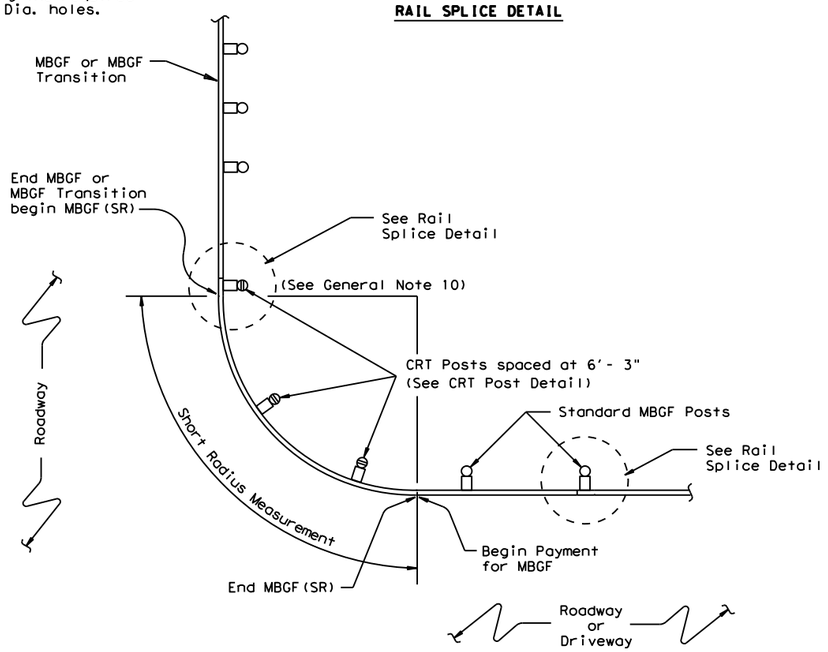


RAIL SPLICE DETAIL



(CRT) POST DETAIL
CONTROLLED RELEASE TERMINAL POST

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



PLAN VIEW
SHOWING TYPICAL RADIUS

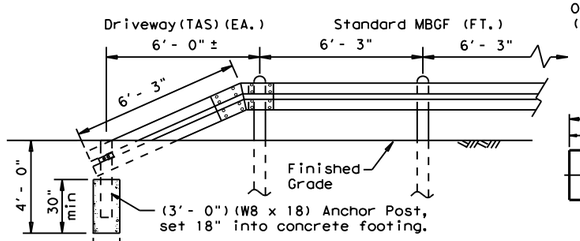
The required radius is shown elsewhere on the plans.

GENERAL NOTES

1. The type of (CRT) post (round wood post, or rectangular wood post) will be shown elsewhere in the plans. The exact position of MBGF shall be shown elsewhere in the plans or as directed by the Engineer.
2. Steel posts are not permitted at CRT post positions.
3. Rail element shall meet the requirements of Item 540,"Metal Beam Guard Fence" except as modified on the plans. The Contractor may furnish rail elements of 12 ½ or 25 foot nominal lengths.
4. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 ¾" O.D.)washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" (or 2" long at triple rail splices) with a ⅝" double recessed nut (ASTM A563).
5. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
6. Crown shall be widened to accommodate the Metal Beam Guard Fence.
7. The lateral approach to the guard fence, shall have a slope rate of not more than 1V:10H.
8. Unless otherwise shown in the plans, guard fence placed in the vicinity of curbs shall be positioned so that the face of curb is located directly below or behind the face of the block. Rail placed over curbs shall be installed so that the post bolt is located approximately 21 inches above the gutter pan or roadway surface.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, 24" into the rock, or drill two 12" dia. front to back overlapping holes, 24" into the rock. If solid rock is encountered below 18",drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever is less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
10. Guardrail posts shall not be set in concrete, of any depth.
11. Special rail fabrication will be required at installations having a curvature of less than 150 ft. radius. The required radius shall be shown on the plans.
12. The terminal anchor section (TAS) post shall be set in Class A concrete (unless otherwise shown in the plans) in accordance with Item 421,"Hydraulic Cement Concrete." Concrete shall be subsidiary to the bid item requiring construction of the terminal anchor section (TAS). Terminal anchor post to be galvanized in accordance with Item 445, "Galvanizing."
13. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210,"Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL can furnish composite material posts and/or blocks.

"DRIVEWAY" TERMINAL ANCHOR SECTION

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



ELEVATION LAYOUT

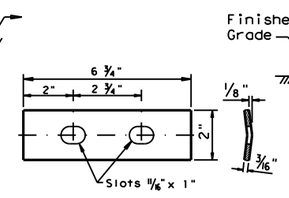
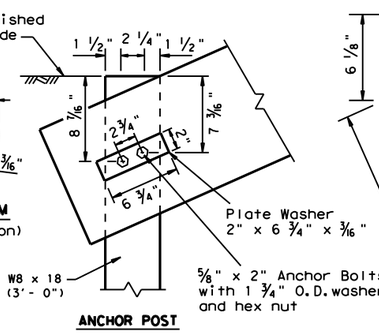
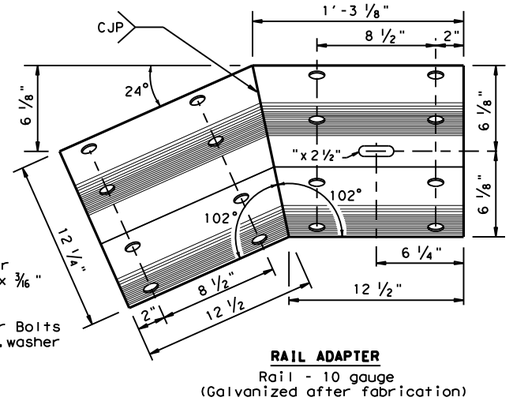


PLATE WASHER FOR METAL BEAM
(Galvanized after fabrication)



ANCHOR POST



RAIL ADAPTER
Rail - 10 gauge
(Galvanized after fabrication)

GENERAL NOTES

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

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

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE
(SHORT RADIUS)
MBGF(SR)-19

FILE: mbgfsr19.dgn	DN: TxDOT	CK: KM	DW: BD	CK: VP
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REVISIONS	0918	47	360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		75

DATE: 6/11/2024
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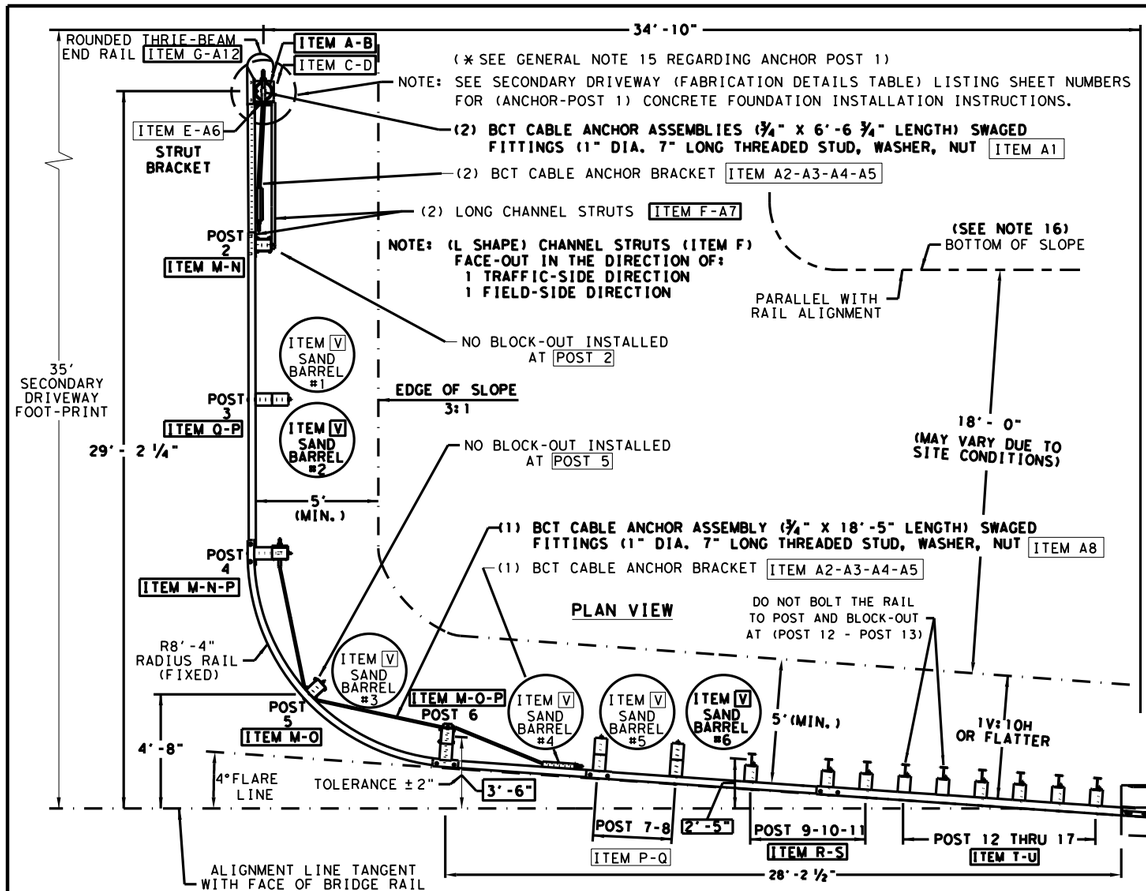
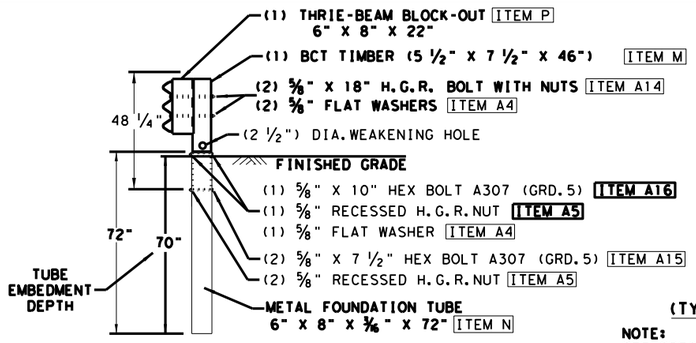
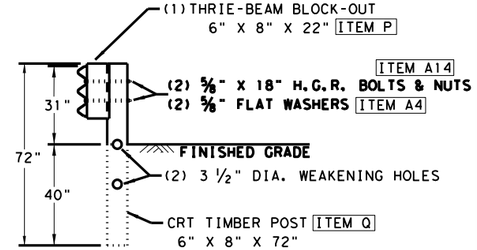




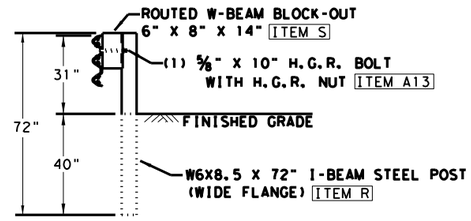
SECTION VIEW (A-A)
TIMBER POST WITH METAL FOUNDATION TUBE
(TYP) BCT POSTS 2-4-5-6

NOTE:
NO BLOCK-OUTS INSTALLED AT BCT POST 2 - POST 5

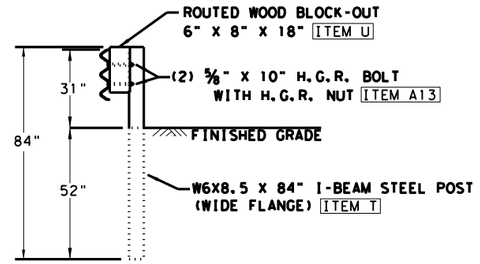


SECTION VIEW (B-B)
(TYP) CRT TIMBER POSTS 3-7-8

NOTE:
SEE SPECIAL APPLICATION NOTES ON SHEET 3 OF 3.
CRT POST WILL REQUIRE AN ADDITIONAL ¾" HOLE TO ACCOMMODATE THE 22" LONG BLOCKOUT.



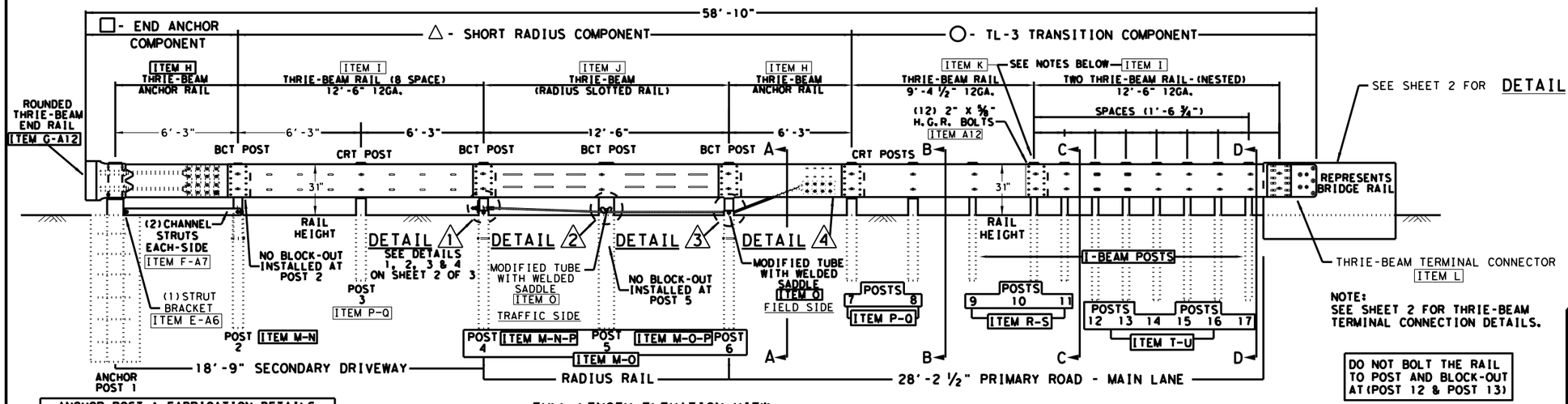
SECTION VIEW C-C
(TYP) AT POSTS 9-10-11



*SECTION VIEW D-D
(TYP) AT POSTS 12-13-14-15-16-17

DO NOT BOLT THE RAIL TO POST AND BLOCK-OUT AT (POST 12 & POST 13)

NOTE: FOR POST 12 & 13



NOTE:
SEE SHEET 2 FOR THRIE-BEAM TERMINAL CONNECTION DETAILS.

DO NOT BOLT THE RAIL TO POST AND BLOCK-OUT AT (POST 12 & POST 13)

NOTE: FOR POST 12 & 13

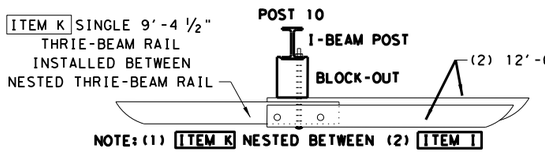
(MASH TL-3 COMPLIANT)
TESTED TO MASH TL-3 WITH A 3:1 SLOPE

ANCHOR POST 1 FABRICATION DETAILS	
SHEET DESCRIPTION	SHEET NUMBER
ANCHOR POST	SHEET 1 OF 8
ANCHOR SLEAVE	SHEET 2 OF 8
RADIUS RAIL	SHEET 3 OF 8
THRIE-BEAM RAILS	SHEET 4 OF 8
BCT TIMBER POST	SHEET 5 OF 8
STRUT RADIUS ANCHOR	SHEET 6 OF 8
FOUNDATION TUBE	SHEET 7 OF 8
ANCHOR CABLE	SHEET 8 OF 8

FULL-LENGTH ELEVATION VIEW

NOTE: ALL CABLE BRACKET ASSEMBLIES ARE LOCATED ON THE FIELD-SIDE. SHOWN HERE FOR CLARITY.

NOTE: FOR BCT POSTS 2-4-5-6 INSTALL (1) OR (2) ITEM A15-A4-A5 BOLT ASSEMBLIES TO PREVENT TIMBER POST SLIDING DOWN FOUNDATION TUBE.



NOTE: (1) ITEM K NESTED BETWEEN (2) ITEM I

NESTED-GUARDRAIL SPLICE AT POST 10

SHEET 1 OF 3

Texas Department of Transportation

Design Division Standard

TL-3
SHORT RADIUS GUARDRAIL
MASH COMPLIANT

SRG(TL-3)-21

FILE: srgt1321	TxDOT	CK:KM	DN: VP	CK:CGL
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	DAL	DALLAS		75A

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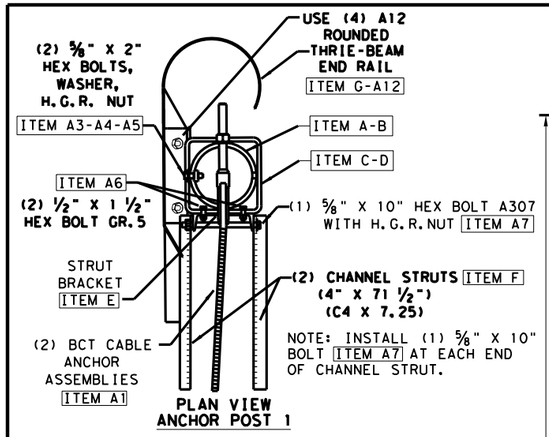
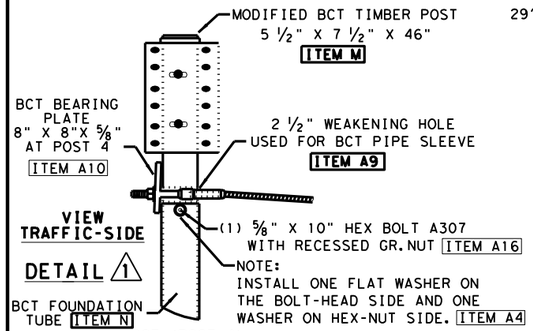


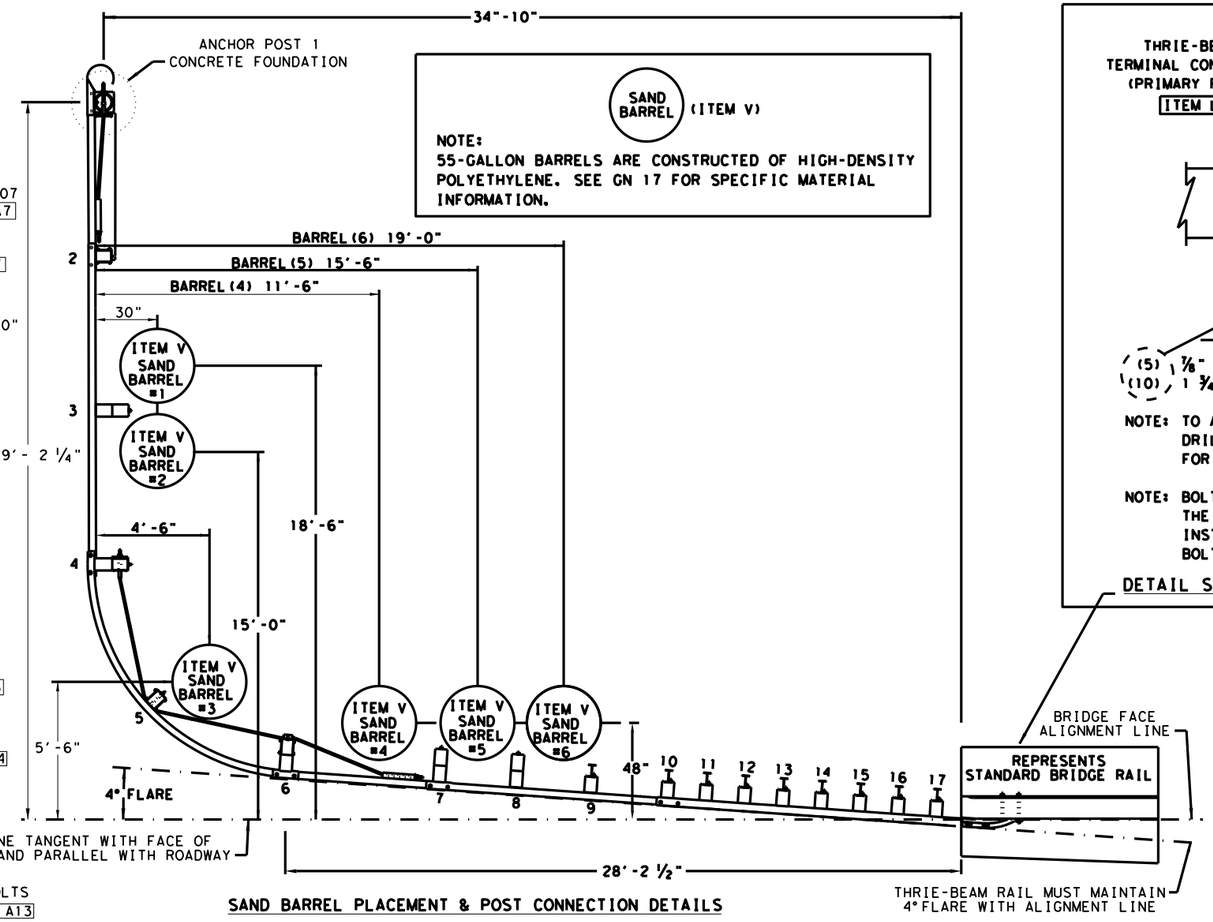
PLAN VIEW
ANCHOR POST 1



VIEW
TRAFFIC-SIDE

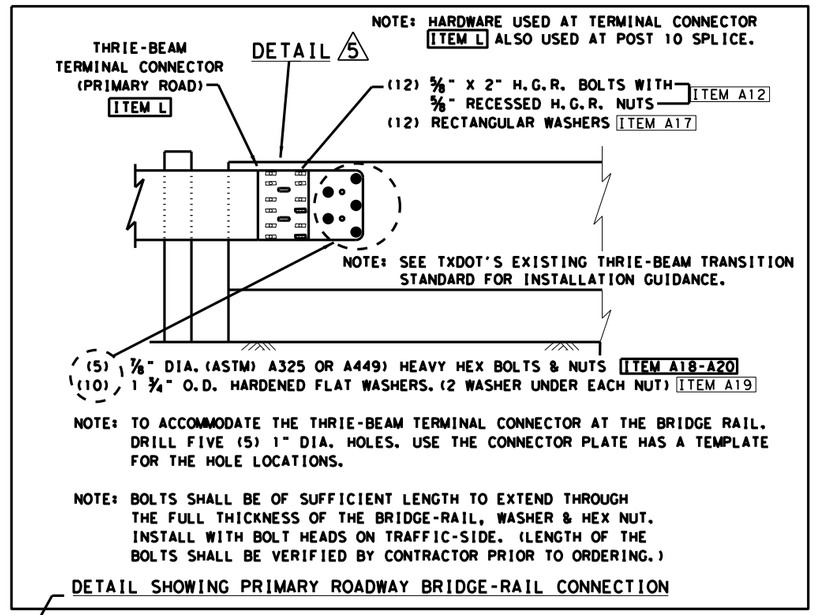
DETAIL 1

BCT (POST 4)
TIMBER POST WITH
METAL FOUNDATION TUBE

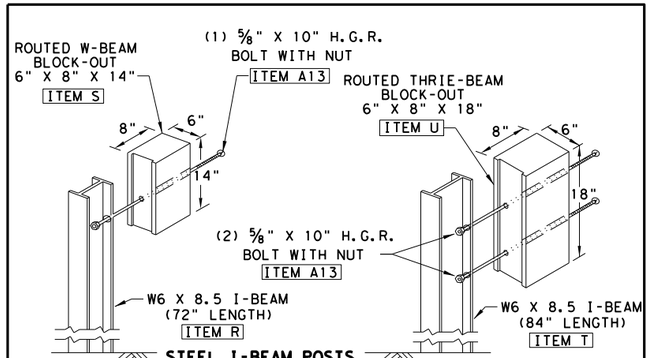


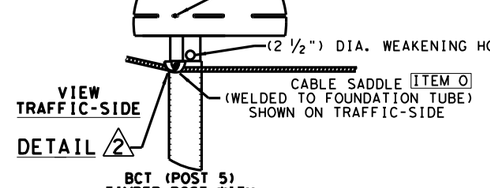
STRING -LINE TANGENT WITH FACE OF BRIDGE RAIL AND PARALLEL WITH ROADWAY

SAND BARREL PLACEMENT & POST CONNECTION DETAILS



DETAIL SHOWING PRIMARY ROADWAY BRIDGE-RAIL CONNECTION

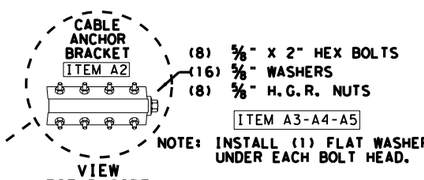




VIEW
TRAFFIC-SIDE

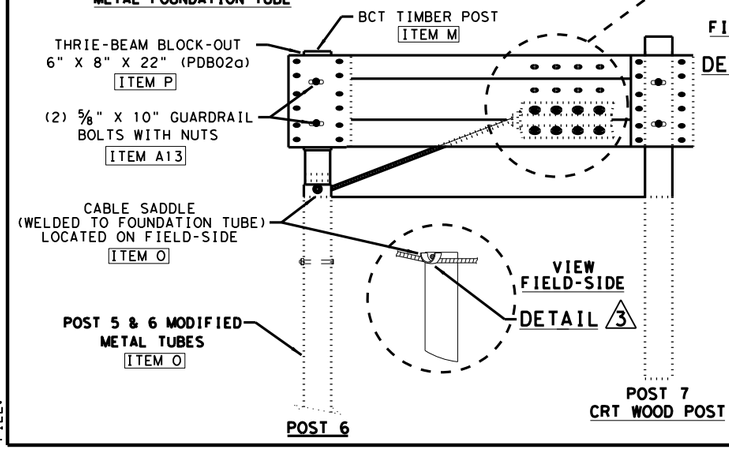
DETAIL 2

BCT (POST 5)
TIMBER POST WITH
METAL FOUNDATION TUBE

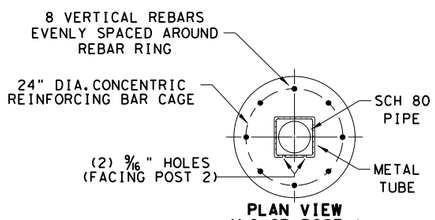


VIEW
FIELD-SIDE

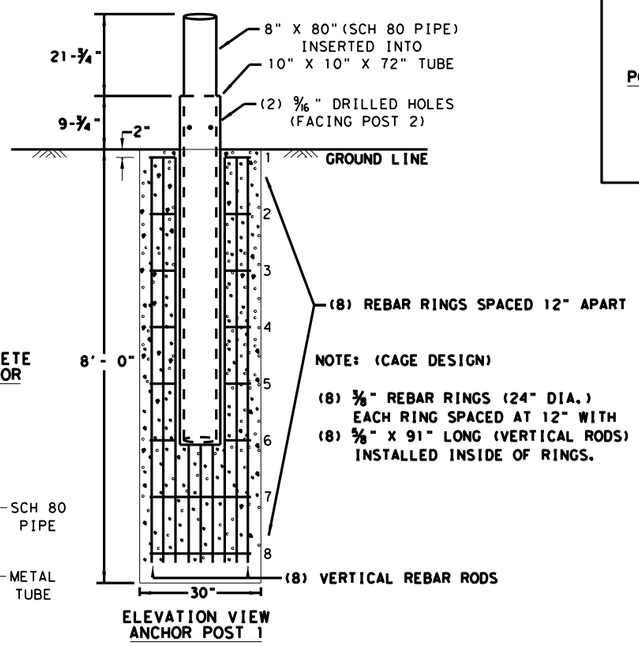
DETAIL 4



POST 1
REINFORCED CONCRETE
FOUNDATION ANCHOR



PLAN VIEW
ANCHOR POST 1



ELEVATION VIEW
ANCHOR POST 1

(MASH TL-3 COMPLIANT)
TESTED TO MASH TL-3 WITH A 3:1 SLOPE

Texas Department of Transportation

Design Division Standard

TL-3
SHORT RADIUS GUARDRAIL
MASH COMPLIANT

SRG(TL-3)-21

FILE: srgt1321	TxDOT	CK:KM	DN: VP	CK:CGL
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	DAL	DALLAS		75B

DATE:
FILE:

ITEM	ALL LARGE & SMALL COMPONENT DESCRIPTIONS	END ANCHOR (POST 1 & POST 2) □ ITEM	END ANCHOR (POST 1 & POST 2) □ QTY	TL-3 SHORT RADIUS (POST 2 TO POST 7) △ ITEM	TL-3 SHORT RADIUS (POST 2 TO POST 7) △ QTY	TL-3 TRANSITION (POST 7 TO POST 17) ○ ITEM	TL-3 TRANSITION (POST 7 TO POST 17) ○ QTY	TL-3 SHORT RADIUS GUARDRAIL COMPLETE SYSTEM ITEM	TL-3 SHORT RADIUS GUARDRAIL COMPLETE SYSTEM TOTAL QTY
A	POST 1 TOP (SCH.80 PIPE) (8" X 80" LENGTH)	A	1					A	1
B	POST 1 TOP (WELDED SUPPORT COLLAR 10" X 10" X ½" ASTM A36)	B	1					B	1
C	POST 1 TUBE (HSS 10" X 10" X ½" X 72" LENGTH) A500 GR.B	C	1					C	1
D	POST 1 (WELDED PLATE 9 ¼" X 9 ¼" X ⅛") A36	D	1					D	1
E	POST 1 STRUT BRACKET (C8 X 11.50 A36)	E	1					E	1
F	(POST 1 & 2) CHANNEL STRUTS (4" X 71 ½")(C4 X 7.25)A36	F	2					F	2
G	THRIE-BEAM RAIL (END ANCHOR - ROUNDED TYPE) 12GA. (RTE02a)	G	1					G	1
H	THRIE-BEAM RAIL (ANCHOR) (6'-3" LENGTH) 12GA. (RWM14a)	H	1	H	1			H	2
I	THRIE-BEAM RAIL (8 SPACE) (12'-6" LENGTH) 12GA. (RTM08)			I	1	I	2	I	3
J	THRIE-BEAM RAIL (RADIUS 8'-4 ½") (SLOTTED) 12GA.			J	1			J	1
K	THRIE-BEAM RAIL (3 SPACE) (9'-4 ½" LENGTH) 12GA.					K	1	K	1
L	THRIE BEAM RAIL (TERMINAL CONNECTOR) (BRIDGE-RAIL) (RTE01b)					L	1	L	1
M	POST 2,4,5,6 BCT TIMBER (5 ½" X 7 ½" X 46") (PDF04)			M	4			M	4
N	POST 2,4, BCT TUBE (6" X 8" X ⅜" X 72" LENGTH) (PTE05)			N	2			N	2
O	POST 5,6 MODIFIED BCT TUBES (FOR WELDED CABLE SADDLES)			O	2			O	2
P	POST 3,4,6,7,8 THRIE-BEAM BLOCK-OUT (6" X 8" X 22") (PDB02a)			P	4	P	1	P	5
Q	POST 3,7,8 CRT TIMBER POSTS (6" X 8" X 72" LENGTH) (PDE09)			Q	2	Q	1	Q	3
R	POST 9,10,11 I-BEAM POSTS (W6X8.5 X 72" LENGTH) (PWE01)					R	3	R	3
S	POST 9,10,11 ROUTED W-BEAM BLOCK-OUT(6" X 8" X 14") (PDB01b)					S	3	S	3
T	POST 12 THRU 17 I-BEAM POSTS (W6X8.5 X 84" LENGTH) (PWE07)					T	6	T	6
U	POST 12 THRU 17 ROUTED BLOCK-OUT (6" X 8" X 18") (PDB??)					U	6	U	6
V	SAND BARRELS 700-715 LBS							V	6
A1	BCT CABLE ANCHOR ASSEMBLIES (¾" X 6'-6 ¾" LENGTH) (FCA01)	A1	2					A1	2
A2	BCT CABLE ANCHOR BRACKET (FPA01)	A2	2	A2	1			A2	3
A3	⅝" X 2" HEX BOLT A307 GRD.5 (FOR CABLE BRACKETS)	A3	18	A3	8			A3	26
A4	⅝" FLAT WASHER A307 GRD.5 (1 WASHER UNDER BOLT HEAD & 1 NUT)	A4	36	A4	40			A4	76
A5	⅝" RECESSED H.G.R NUT (NUTS FOR HEX BOLTS)	A5	22	A5	20			A5	42
A6	STRUT BRACKET HARDWARE (½" X 1 ½") HEX BOLT A307 GRD.5	A6	2					A6	2
A7	CHANNEL STRUT HARDWARE (⅝" X 10") HEX BOLT A307 GRD.5	A7	2					A7	2
A8	BCT CABLE ANCHOR ASSEMBLY (FCA02) (¾" X 18'-5" LENGTH)			A8	1			A8	1
A9	BCT POST SLEEVE (FMM02a) (POST 4 ONLY)			A9	1			A9	1
A10	BCT CABLE BEARING PLATE (⅝" X 8" X 8" (FPB01) (POST 4 ONLY)			A10	1			A10	1
A11	⅝" X 1 ¼" H.G.R. BOLTS (FBB01) (SPLICES AT POST 2,4,6,7)			A11	48			A11	48
A12	⅝" X 2" H.G.R. BOLTS (FBB02)(ROUND TERM-POST 10-END SPLICE)	A12	4			A12	24	A12	28
A13	⅝" X 10" H.G.R. BOLTS (FBB03) (I-BEAM POSTS RAIL & BLOCKOUT)					A13	18	A13	18
A14	⅝" X 18" H.G.R. BOLTS (FBB04) (POSTS 3,4,6,7,8)			A14	8	A14	2	A14	10
A15	⅝" X 7 ½" HEX BOLTS A307 GRD.5 (BCT POSTS 2,4,5,6)			A15	8			A15	8
A16	⅝" X 10" HEX BOLTS A307 GRD.5 (BCT POSTS 2,4,5,6)			A16	4			A16	4
A17	RECTANGULAR WASHERS (FWR03) (FOR TERMINAL CONNECTOR RTE01b)					A17	12	A17	12
A18	⅞" X (LENGTH VARIES) HEX BOLTS A325 OR A449 GR.5					A18	5	A18	5
A19	1 ¾" O.D. HARDENED FLAT WASHER A325					A19	10	A19	10
A20	⅞" HEX NUT GR.5 A325					A20	5	A20	5

GENERAL NOTES

1. FOR ADDITIONAL INSTALLATION INFORMATION AND GUIDANCE CONTACT: TEXAS DEPARTMENT OF TRANSPORTATION, (TXDOT'S DESIGN DIVISION). (512) 416-2678. THE EXACT POSITION OF MBGF SHALL BE SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THE SIGHT DISTANCE OF THE INSTALLATION WILL NEED TO BE VERIFIED WITH RESPECT TO THE SPECIFIC SITE PLACEMENT.
2. STEEL POSTS ARE NOT PERMITTED AT CRT OR BCT POST POSITIONS.
3. RAIL ELEMENT SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 12 ½" OR 25 FOOT NOMINAL LENGTHS.
4. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
5. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
7. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A SLOPE RATE OF NOT MORE THAN 1V:10H.
8. IT IS NOT RECOMMENDED THAT GUARD FENCE BE PLACED IN THE VICINITY OF CURBS.
9. GUARDRAIL POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
10. SPECIAL FABRICATION WILL BE REQUIRED FOR THRIE BEAM RAIL RADIUS (ITEM J).
11. ALL MATERIAL AND WORK INVOLVED IS SUBSIDIARY TO SHORT RADIUS BID ITEM, INCLUDING, BUT NOT LIMITED TO FOUNDATIONS, GRADING, THRIE BEAM RAIL, SAND BARRELS, AND OTHER PARTS.
12. ALL CABLE ASSEMBLIES SHOULD BE TAUT AFTER INSTALLATION. WHEN CABLES ARE MANIPULATED BY HAND THE CABLES SHOULD NOT MOVE MORE THAN 1" IN ANY DIRECTION PERPENDICULAR TO THE CABLE.
13. THE BCT BEARING PLATE INSTALLED AT POST 4 SHOULD BE ORIENTED SUCH THAT THE 3" DIMENSION FROM PLATE EDGE TO CENTER OF BOLT HOLE IS ON THE BOTTOM AND 5" DIMENSION FROM PLATE EDGE TO CENTER OF BOLT HOLE IS ON THE TOP.
14. FOUNDATION AT POST 1 SHALL BE CLASS C CONCRETE.
- *15. POST (1) IS NOT A CRASHWORTHY TERMINAL. THE DESIGN AND PLACEMENT OF POST (1) MUST BE OUTSIDE OF THE CLEAR ZONE OF THE SECONDARY ROADWAY USING THE RESPECTIVE CLEAR ZONE CRITERIA. PLEASE CONTACT THE DESIGN DIVISION (512) 416-2678 FOR ASSISTANCE IN DETERMINING THE APPROPRIATE USE AND/OR PLACEMENT OF THE SYSTEM IN CONSTRAINED LOCATIONS. THE PAYMENT OF THE COMPLETE SYSTEM WILL BE WITH BID ITEMS: 540 XXXX TL-3 31" SHORT RADIUS (COMPLETE).
16. TESTED TO MASH WITH A 3:1 SLOPE OR SHALLOWER IS PREFERABLE IN THE LIMITS OF THE TOP AND BOTTOM OF THE SLOPE AS SHOWN IN THE PLAN VIEW. IF FIELD CONDITIONS REQUIRE A STEEPER SLOPE, THIS MAY BE ALLOWABLE UP TO A 2:1 SLOPE. CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE.
17. THE BARRELS ARE ENERGY ABSORPTION ENERGITE III, MODEL 640 FILLED WITH 715 LB (+/-15) SAND; OR AN APPROVED EQUIVALENT. THE APPROXIMATE HEIGHT OF THE BARREL IS 41" (+/-).
18. ALTERNATE METHODS TO TERMINATE THE SRG ALONG THE PRIMARY ROADWAY ARE AVAILABLE WHEN SITE CONDITIONS DICTATE. CONTACT DESIGN DIVISION FOR DETAILS: 512 416-2678

NOTE: SEE SHEET 1 OF 3.

(MASH TL-3 COMPLIANT)
TESTED TO MASH TL-3 WITH A 3:1 SLOPE

SPECIAL APPLICATION NOTES.

1. THIS IS A MASH COMPLIANT TL-3 SHORT RADIUS GUARDRAIL SYSTEM WITH A TOP RAIL HEIGHT OF 31". AVAILABLE FOR USE ON ANY SPEED ROADWAY. THE SYSTEM REQUIRES A MINIMUM PLACEMENT FOOTPRINT OF 34'-10" ALONG THE PRIMARY ROAD AND A 35'-0" ALONG SECONDARY DRIVEWAY.
2. IT IS CRITICAL THAT THE PRIMARY GUARDRAIL MAINTAIN A (4 DEGREE FLARE) WITH THE SECONDARY DRIVEWAY.
3. THE SYSTEM REQUIRES A MINIMUM 5' WIDE (WORK ZONE) DIRECTLY BEHIND THE GUARDRAIL SYSTEM WITH A SLOPE AT 1V:10H OR FLATTER FROM THERE A MAXIMUM 3:1 SLOPE IS RECOMMENDED. SEE SHEET 1 OF 3 FOR FLARE AND SLOPE DETAILS.
4. NOTE FOR INSTALLER: THE THREE (3) CRT POSTS ITEM (Q), AT POST LOCATIONS, 3, 7, & 8.), REQUIRE THE FOLLOWING FIELD ADJUSTMENT. USING A ¾" X 10" LONG SPADE BIT DRILL ONE (1) ADDITIONAL HOLE 7-⅞" DIRECTLY BELOW THE EXISTING TOP HOLE TO ACCOMMODATE THE HARDWARE FOR THE 22" LONG BLOCKOUT.

   OPTION FOR ADDITIONAL ¾" HOLE. THE 22" LONG BLOCKOUT (PDB01a) IS MANUFACTURED WITH TWO ¾" DRILLED HOLES FOR THE POST HARDWARE, THEREFORE THE BLOCKOUT CAN BE USED AS A TEMPLATE GUIDE FOR THE BOTTOM ¾" HOLE. AFTER INSTALLING THE CRT POST USE THE TOP HOLE TO MOUNT THE 22" LONG BLOCKOUT TO POST, USE THE BLOCKOUT'S PRE-DRILLED HOLE AS A GUIDE FOR THE BOTTOM ¾" HOLE.

Texas Department of Transportation — Design Division Standard

TL-3
SHORT RADIUS GUARDRAIL
MASH COMPLIANT

SRG(TL-3)-21

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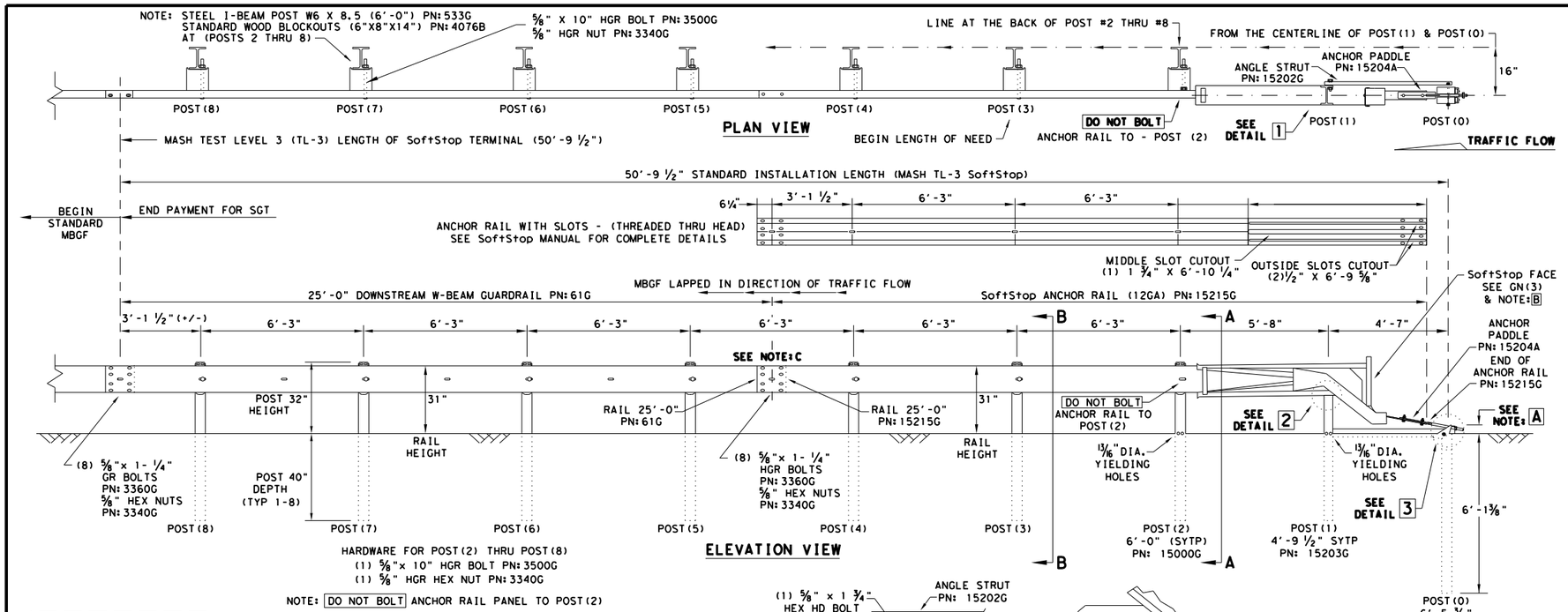
© TxDOT: FEBRUARY 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	091847		360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		75C



GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY AT 1(888)323-6374. 2525 N. STEMMONS FREEWAY, DALLAS, TX 75207
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; SoftStop END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL. PN: 620237B
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
7. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
8. POSTS SHALL NOT BE SET IN CONCRETE.
9. IT IS ACCEPTABLE TO INSTALL THE SoftStop IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT.
10. DO NOT ATTACH THE SoftStop SYSTEM DIRECTLY TO A RIGID BARRIER.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.

NOTE: A	THE INSTALLATION HEIGHT OF FULLY ASSEMBLED ANCHOR POST WILL VARY FROM 3-3/4" MIN. TO 4" MAX. ABOVE FINISHED GRADE.
NOTE: B	PART PN: 5852B RIGHT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING) PART PN: 5851B LEFT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING)
NOTE: C	W-BEAM SPLICE LOCATED BETWEEN LINE POST(4) AND LINE POST(5) GUARDRAIL PANEL 25'-0" PN: 61G ANCHOR RAIL 25'-0" PN: 15215G LAP GUARDRAIL IN DIRECTION OF TRAFFIC FLOW.

PART	QTY	MAIN SYSTEM COMPONENTS
620237B	1	PRODUCT DESCRIPTION ASSEMBLY MANUAL (LATEST REV.)
15208A	1	SoftStop HEAD (SEE MANUAL FOR RIGHT-LEFT APPROACH)
15215G	1	SoftStop ANCHOR RAIL (12GA) WITH CUTOUT SLOTS
61G	1	SoftStop DOWNSTREAM W-BEAM RAIL (12GA) (25'- 0")
15205A	1	POST #0 - ANCHOR POST (6'- 5 7/8")
15203G	1	POST #1 - (SYTP) (4'- 9 1/2")
15000G	1	POST #2 - (SYTP) (6'- 0")
533G	6	POST #3 THRU #8 - I-BEAM (W6 x 8.5) (6'- 0")
4076B	7	BLOCKOUT - WOOD (ROUTED) (6" x 8" x 14")
6777B	7	BLOCKOUT - COMPOSITE (4" x 7 1/2" x 14")
15204A	1	ANCHOR PADDLE
15207G	1	ANCHOR KEEPER PLATE (24 GA)
15206G	1	ANCHOR PLATE WASHER (1/2" THICK)
15201G	2	ANCHOR POST ANGLE (10" LONG)
15202G	1	ANGLE STRUT
		HARDWARE
4902G	1	1" ROUND WASHER F436
3908G	1	1" HEAVY HEX NUT A563 GR.DH
3717G	2	3/4" x 2 1/2" HEX BOLT A325
3701G	4	3/4" ROUND WASHER F436
3704G	2	3/4" HEAVY HEX NUT A563 GR.DH
3360G	16	5/8" x 1 1/4" W-BEAM RAIL SPLICE BOLTS HGR
3340G	25	5/8" W-BEAM RAIL SPLICE NUTS HGR
3500G	7	5/8" x 10" HGR POST BOLT A307
3391G	1	5/8" x 1 3/4" HEX HD BOLT A325
4489G	1	5/8" x 9" HEX HD BOLT A325
4372G	4	5/8" WASHER F436
105285G	2	5/8" x 2 1/2" HEX HD BOLT GR-5
105286G	1	5/8" x 1 1/2" HEX HD BOLT GR-5
3240G	6	5/8" ROUND WASHER (WIDE)
3245G	3	5/8" HEX NUT A563 GR.DH
5852B	1	HIGH INTENSITY REFLECTIVE SHEETING - SEE NOTE:B

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

Texas Department of Transportation

Design Division Standard

TRINITY HIGHWAY
SOFTSTOP END TERMINAL
MASH - TL-3
SGT(10S)31-16

FILE: sgt10s3116		DN: TxDOT		CK: KM	DW: VP		CK: MB/VP
©TxDOT: JULY 2016		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0918	47	360		FD 701241	
		DIST	COUNTY			SHEET NO.	
		DAL	DALLAS			76	

DATE:
FILE:

DATE:
FILE:

(SEE GN NOTE 15)
STANDARD 31" MBGF

ITEM (6)
INNER SIDE SLIDER
(ISS) PANEL FOR RAIL 3

FIELD-SIDE
(RAIL 3)

NOTE:
RECESSED HEX NUTS FACING
TRAFFIC-SIDE **SEE DETAIL (C)**

REFERENCE LINE USED TO INSTALL
LINE POST(9) THRU POST(2)

POST 1 OFFSET DISTANCE MEASURED
7-⅝" FROM REFERENCE LINE

ITEM (10)
CABLE ASSEMBLY

ITEM (2)
GROUNDSTRUT

NO BLOCKOUT
AT (POST 1)

POST 9 | POST 8 | POST 7 | POST 6 | POST 5 | POST 4 | POST 3 | POST 2

RAIL 4 | RAIL 3 | RAIL 2 | RAIL 1

NOTES:
1. ITEM (12) COMPOSITE BLOCKOUTS INSTALLED AT LINE POST(9) THRU LINE POST(2).
2. DO NOT INSTALL A BLOCKOUT AT LINE POST(1).

PLAN VIEW

ITEM (5)
TRAFFIC SIDE SLIDER
(TSS) PANEL FOR RAIL 2

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

CABLES

INSTALL GUARD FENCE RECESSED
HEX NUTS ON TRAFFIC-SIDE

MBGF
RAIL 2

MBGF
RAIL 1

DETAIL (C)

TRAFFIC FLOW

END PAYMENT (SGT) BY EACH

DO NOT BOLT
RAIL TO POST 6

BEGIN LENGTH OF NEED

INSTALLATION LENGTH 55'- ½"

49'-8 9/16"

6'-3" | 6'-3" | 6'-3" | 6'- ¾" | 6'-3" | 6'-3" | 6'-3" | 37 ½" | 5'-3 11/16"

ITEM (25)
MAX-TENSION HEAD
SEE DETAIL (A)

RAIL
HEIGHT
31"

ITEM (13) RAIL 4 | ITEM (13) RAIL 3 | ITEM (13) RAIL 2 | ITEM (13) RAIL 1

ARROWS

DETAIL (D)

RAIL
HEIGHT
31"

HEAD
HEIGHT

DETAIL (B)

32-¼"

68-⅛"

FINISHED
GRADE

CABLES

FINISHED
GRADE

ITEM (10)
CABLE
ASSEMBLY

ITEM (2)
GROUNDSTRUT

POST 9 | POST 8 | POST 7 | POST 6 | POST 5 | POST 4 | POST 3 | POST 2 | POST 1

(8) X-LITE LINE POST - ITEM (11)

POST 1
ITEM (4)
I-BEAM
W6 X 9

NO BLOCKOUT
AT (POST 1)

SOIL
ANCHOR POST
ITEM (1)

ELEVATION VIEW

A

A

TSS PANEL
GALVANIZED
ITEM (5)

RSS PLATE
GALVANIZED
ITEM (8)

INSTALL THE TSS AND RSS
WITH THE ARROWS POINTING
TOWARDS THE MAX-HEAD

TSS PANEL AND RSS PLATE

DETAIL (D)

HEAD
HEIGHT
32-¼"

TOP OF POST

31-⅞"

FINISHED
GRADE

40-⅛"

68-⅛"
ANCHOR POST
DEPTH

ITEM (1)
ANCHOR

ITEM (11)
LINE POSTS
2 THRU 9
(NOTE: ITEM (4) POST 1 (NOT SHOWN),
TO BE INSTALLED AT SAME DEPTH
AS LINE POSTS.)

SOIL ANCHOR, POST 1
& LINE POST 2 THRU 9

SECTION VIEW A-A

NOTE:
USE THE MASH APPROVED
X-TENSION CABLE ASSEMBLY.

7 5/16"

2 ⅛"

UPPER CABLE
(BACK SIDE)

LOWER CABLE
(TRAFFIC SIDE)

DETAIL (B)

CABLE
FRICTION PLATE
HEAD UNIT
ITEM (9)

NOTE:
INSTALL ⅝" RECESSED HEX
NUTS ON TRAFFIC SIDE.

ITEM (24)

ITEM (21)

ITEM (20)
8X

ITEM (17)
8X

ITEM (23)
6X
3 SCREWS
EACH SIDE

(RAIL 1)

ITEM (22)
BRACKET
SHIPPED FLAT

ITEM (3)

ITEM (16)
4X

✱ ITEM (25)
HIGH INTENSITY
REFLECTIVE SHEETING

NOTE: DELINEATION MARKER IN
ACCORDANCE WITH TEXAS MUTCD.

SPLICE FOR IMPACT-HEAD
TO GUARD FENCE (RAIL1)

DETAIL (A)

GENERAL NOTES

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

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT.-GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	⅝" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	BSI-2001885	¾" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	⅝" X 1 ¼" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	⅝" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	⅝" WASHER F436 STRUCTURAL MGAL	2
20	4001116	⅝" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	⅝" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	¼" X ¾" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWR03	1
✱ 25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
✱✱ 26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
✱✱ 27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL,8-SPACE,12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

✱ TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.

✱✱ ALTERNATIVE ITEMS NOT SHOWN.
ITEM(26) 8" WOOD-BLOCKOUTS
ITEM(27) 25'GUARD FENCE PANELS

STANDARD
MBGF

APPROX 5'-10"

5'-0"

50' APPROACH GRADING

2'-0"

EDGE OF PAVEMENT

NOTE: ADJUST WIDTH ACCORDINGLY WHEN OFFSET IS USED. (OFFSET "OPTION" SHOWN)

2'-0" MAX.
RAIL OFFSET

APPROACH GRADING
(1V:10H OR FLATTER)
SEE PRODUCT ASSEMBLY MANUAL
FOR ADDITIONAL GUIDANCE.

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

APPROACH GRADING AT GUARDRAIL END TREATMENTS

TRAFFIC FLOW

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

Texas Department of Transportation

Design Division Standard

MAX-TENSION END TERMINAL
MASH - TL-3
SGT(11S)31-18

FILE: sgt11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
© TxDOT: FEBRUARY 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		77

DATE:
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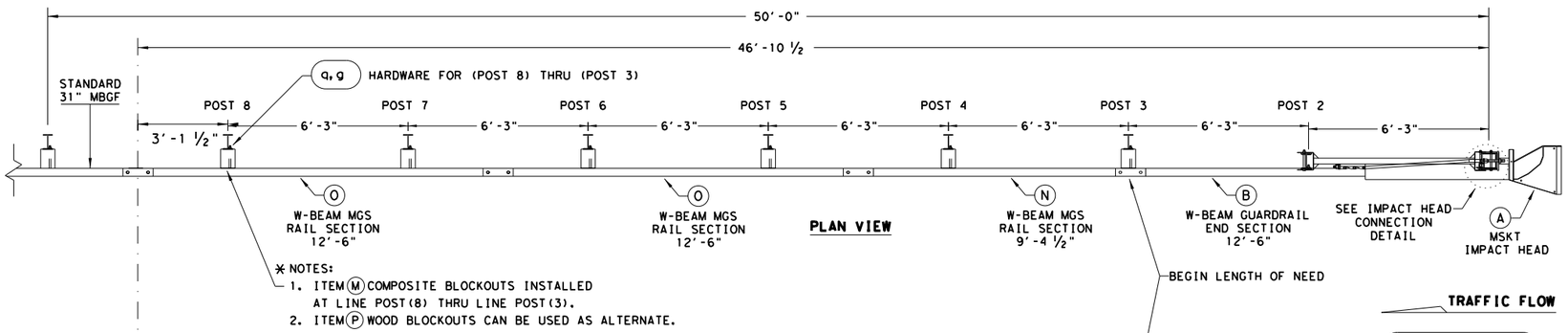
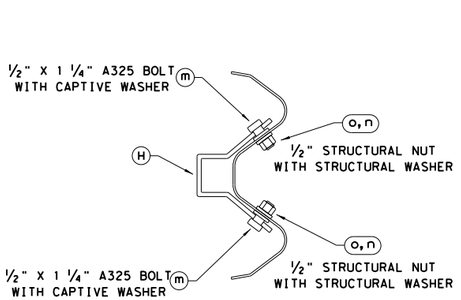
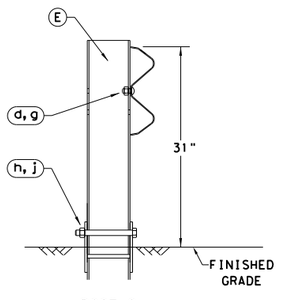


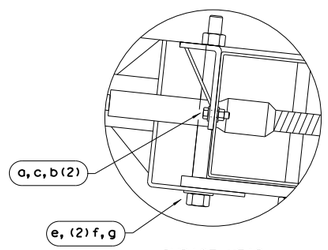
NOTE: SEE (GENERAL NOTE 14) FOR DRIVING CAP INFORMATION.



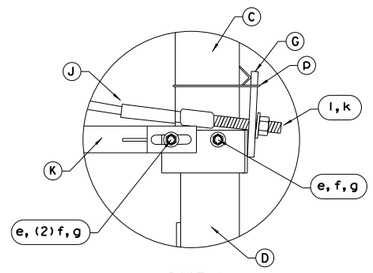
SECTION B-B
ANCHOR BRACKET



POST 2
SECTION A-A



IMPACT HEAD
CONNECTION DETAIL



POST 1
CONNECTION DETAIL

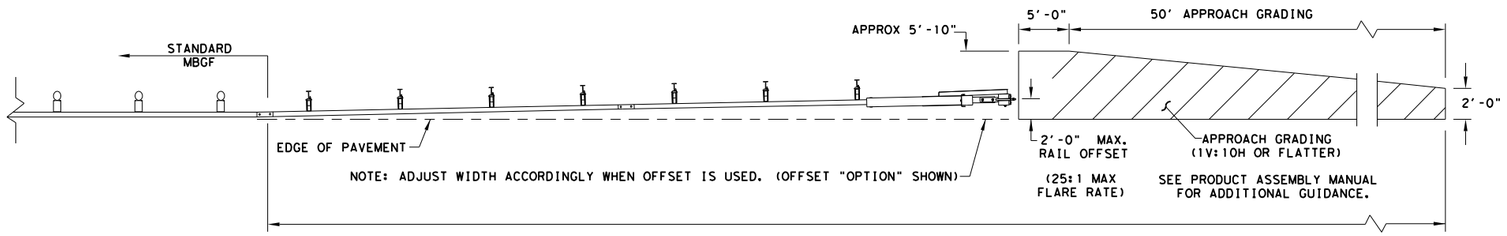
GENERAL NOTES

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

SEE NOTES: *

ALTERNATIVE ITEMS NOT SHOWN. **
* ITEM(P) 8" WOOD-BLOCKOUT
** ITEM(Q) 25'GUARD FENCE PANEL

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X ⅛" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6x9 OR W6x8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 ½")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
		SMALL HARDWARE	
a	2	⅝" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	⅝" WASHER	W0516
c	2	⅝" HEX NUT	N0516
d	25	⅝" Dia. x 1 ¼" SPLICE BOLT (POST 2)	B580122
e	2	⅝" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	⅝" WASHER	W050
g	33	⅝" Dia. H.G.R NUT	N050
h	1	¾" Dia. x 8 ½" HEX BOLT (GRD A449)	B340854A
j	1	¾" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	½" x 1 ¼" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	½" STRUCTURAL NUTS	N012A
o	8	1 1/16" O.D. x 9/16" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	⅝" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151



APPROACH GRADING AT GUARDRAIL END TREATMENTS

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

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

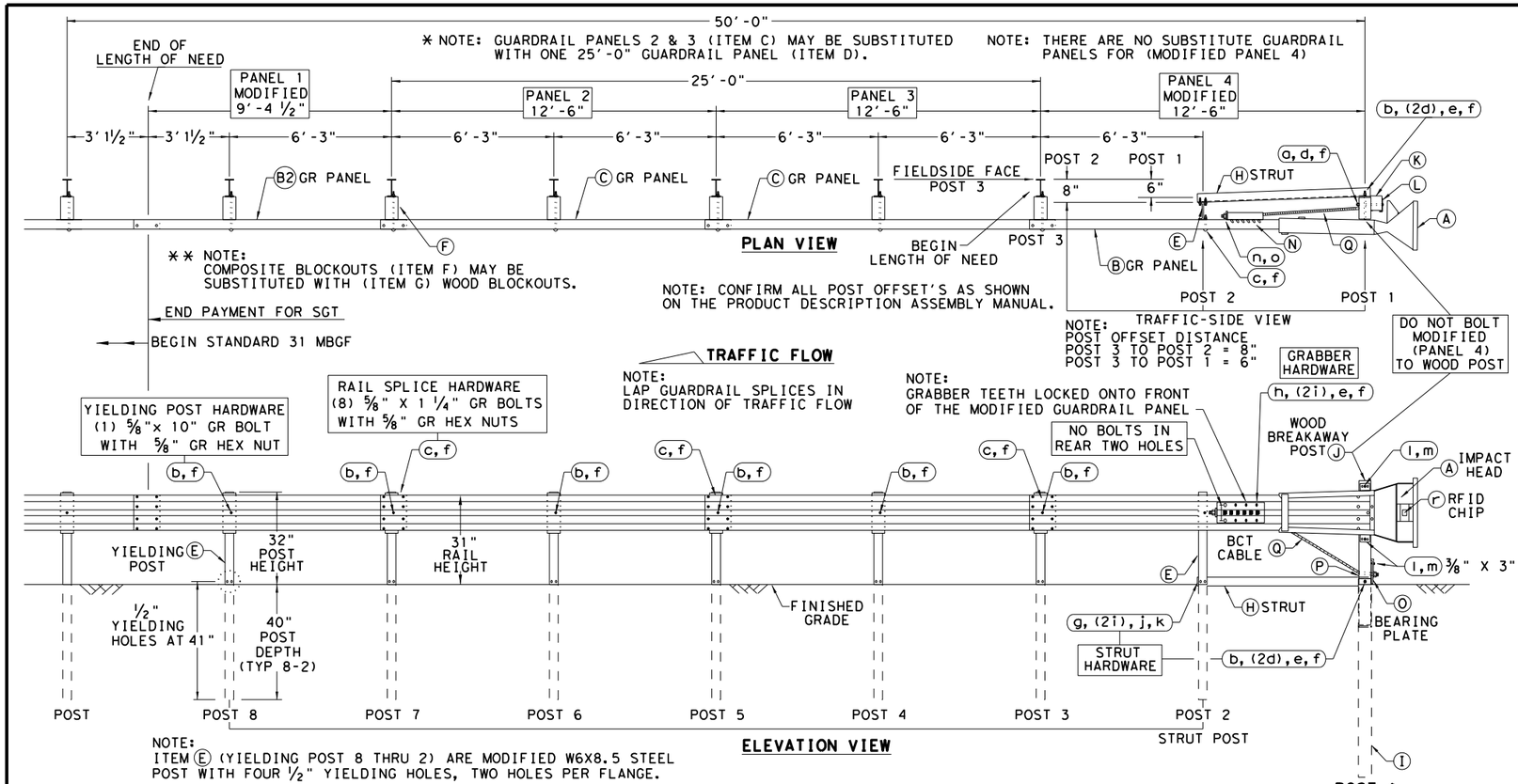
Texas Department of Transportation

Design Division Standard

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

FILE: sgt12s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL	
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0918	47	360	FD 701241	
	DIST	COUNTY		SHEET NO.	
	DAL	DALLAS		78	

DATE:
FILE:

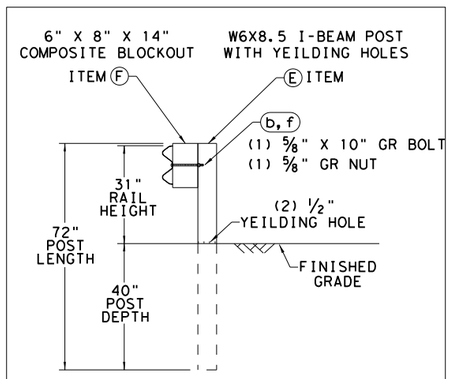


GENERAL NOTES

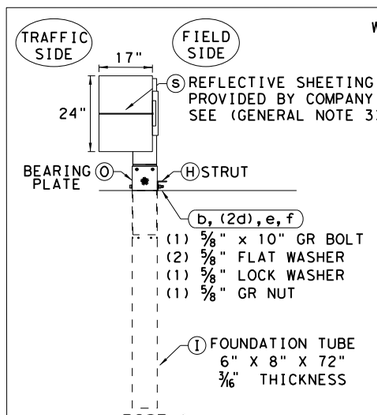
1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY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

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D *	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G **	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" x 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" x 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" x 7 1/2" x 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBLK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GGR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
		SMALL HARDWARE	
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPLICE BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563DH HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M

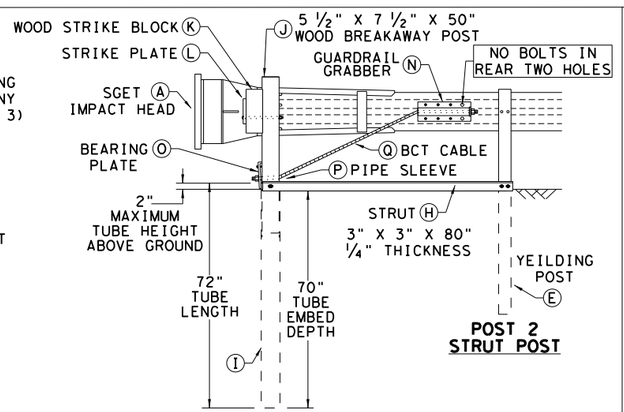
* ALTERNATIVE ITEMS
** NOTE: SEE PLAN VIEW



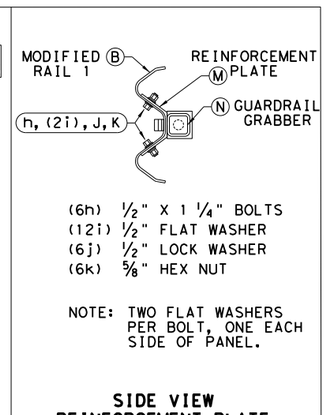
SIDE VIEW
POST 8 - POST 3 (TYP)



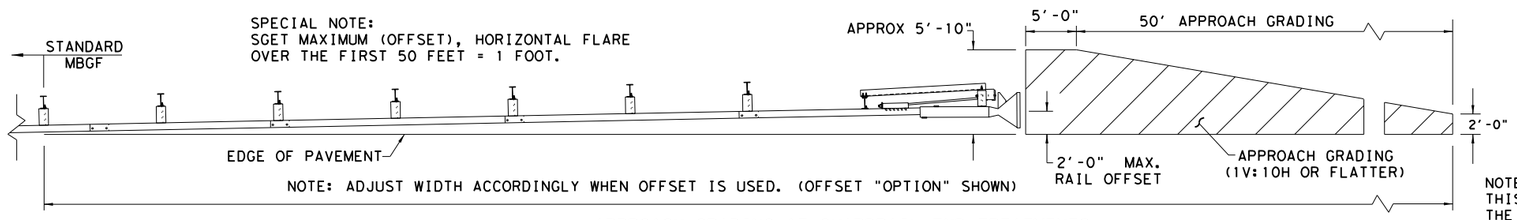
POST 1
FRONT END VIEW



POST 1
FIELD SIDE VIEW



SIDE VIEW
REINFORCEMENT PLATE
WITH GUARDRAIL GRABBER



APPROACH GRADING AT GUARDRAIL END TREATMENTS

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

Texas Department of Transportation
Design Division Standard

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

FILE: sgt153120.dgn	DN: TxDOT		CK: KM	DW: VP		CK: VP	
©TxDOT: APRIL 2020	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0918	47	360		FD 701241		
	DIST	COUNTY			SHEET NO.		
	DAL	DALLAS			79		

DATE: 6/11/2024
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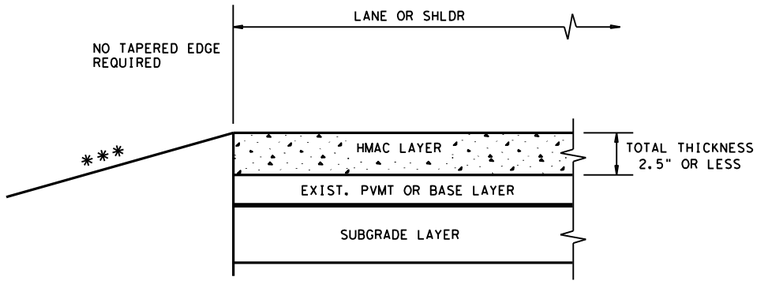
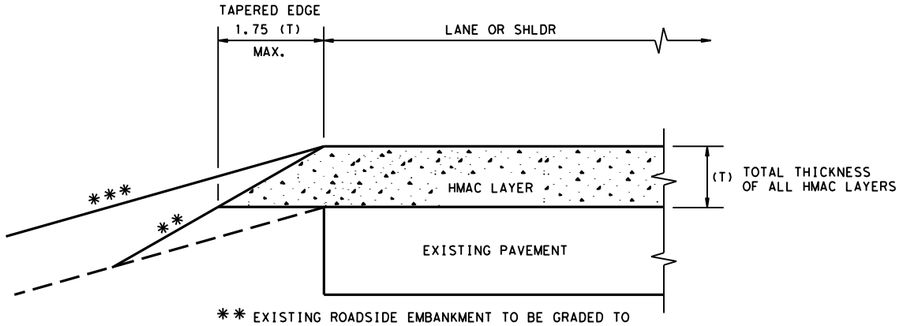


*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

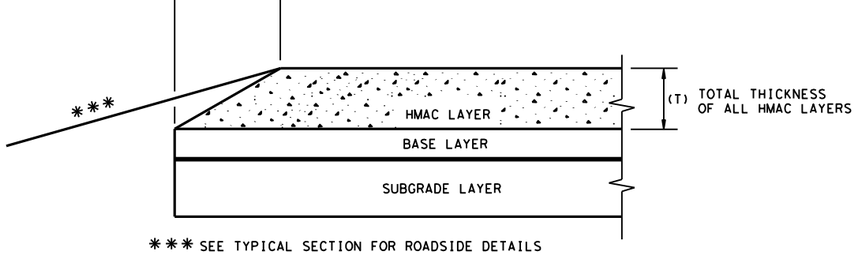
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY WITH THICKNESS OF 2.5" OR LESS



** 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.

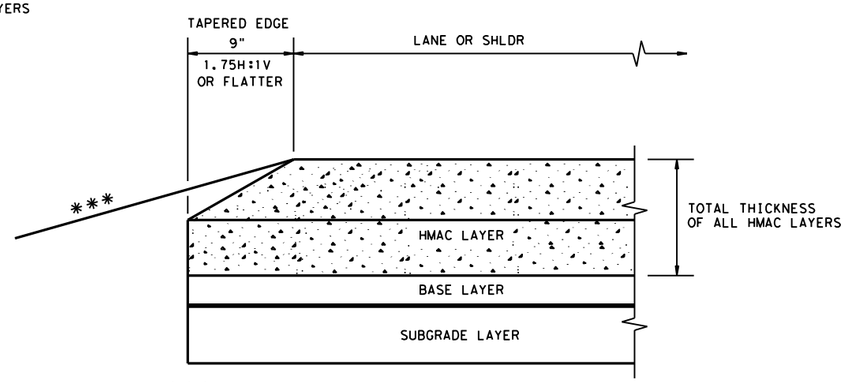
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

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.

Texas Department of Transportation

Design Division Standard

TAPERED EDGE DETAILS HMAC PAVEMENT

TE(HMAC)-11

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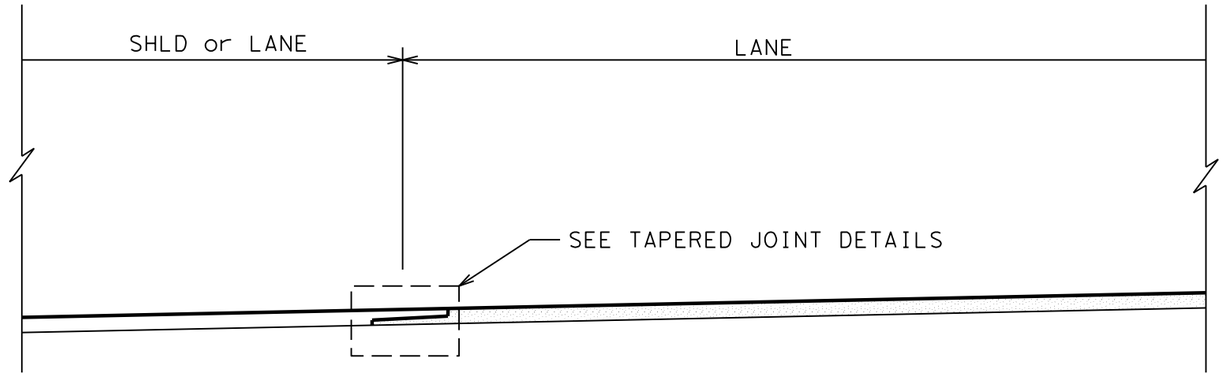
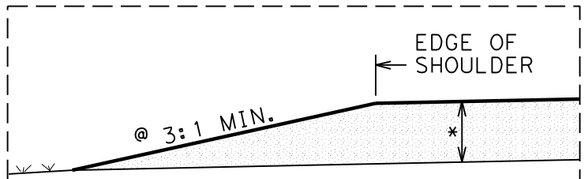
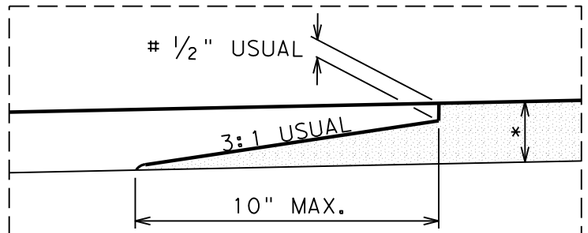
	DAL	DALLAS		80

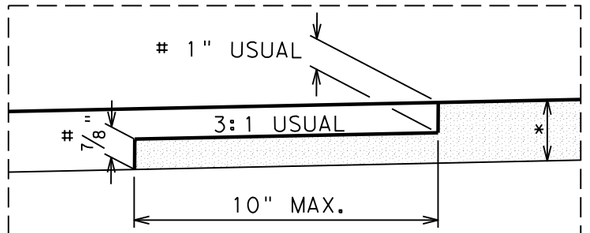




TAPERED OUTSIDE EDGE DETAIL



TAPERED JOINT DETAIL 1.5" TO 4" LIFTS



TAPERED JOINT DETAIL OVER 4" LIFTS

@ IF BACKFILLED SLOPE IS LESS THAN 3:1, COVER WEDGE WITH APPROVED BACKFILL.

* SEE TYPICAL SECTION FOR DEPTH AND TYPE OF HMA.
\# NOTCH DEPTH SHALL NOT BE LESS THAN NOMINAL AGGREGATE SIZE.

NOTES:

1. THE ABOVE DETAILS SHALL BE CONSTRUCTED BY TAPERING THE BITUMINOUS MAT. THE TAPERED PORTION SHALL EXTEND BEYOND THE NORMAL LANE WIDTH AND BE LAID MONOLITHICALLY WITH ADJOINING MAT. THE TAPERED PORTION OF THE MAT SHALL BE CONSTRUCTED BY THE USE OF AN APPROVED STRIKE-OFF DEVICE THAT WILL PROVIDE A UNIFORM SLOPE AND WILL NOT RESTRICT THE MAIN SCREED. CLEAN WEDGE PRIOR TO PLACEMENT OF TACK COAT. TACK COAT SHALL BE APPLIED UNIFORMLY TO THE IN-PLACE TAPER WITH A DISTRIBUTOR BEFORE THE ADJACENT MAT IS PLACED. FINAL DENSITY REQUIREMENTS FOR THE ENTIRE PAVEMENT, INCLUDING THE TAPER AREA, WILL REMAIN UNCHANGED. COMPACTION OF THE INITIAL TAPER SECTION WILL BE REQUIRED AS NEAR TO FINAL DENSITY AS POSSIBLE. ROLL ADJACENT MAT FROM HOT SIDE TO COLD.

2. THE TYPE OF DEVICE TO PRODUCE ABOVE REFERENCED DETAILS SHALL PROVIDE INITIAL COMPACTION EQUIVALENT TO LAYDOWN MACHINE, WITH FINAL DENSITY ADHERING TO NOTE 1, AND BE APPROVED BY THE ENGINEER.

3. HOT MIX MATERIAL AND PLACEMENT SHALL BE PAID FOR UNDER THE PERTINENT ITEM. ANY ADDITIONAL SURFACE PREPARATION, TACK COAT, TACK COAT PLACEMENT, EQUIPMENT, LABOR, TOOLS AND INCIDENTALS TO PRODUCE TAPERED EDGE AND JOINTS AS DESCRIBED ABOVE SHALL BE CONSIDERED SUBSIDIARY TO THE HOT MIX ITEM.

4. THE TAPERED JOINT DETAIL IS NOT INTENDED FOR USE ON 2 WAY 2 LANE ROADBED CENTERLINE WITH LESS THAN 22' OVERALL WIDTH.

5. FULL PAVING OF ALL LANES AND SHOULDRS BY THE END OF EACH DAY PRODUCTION WILL NOT REQUIRE A TAPERED JOINT.

HOT MIX EDGE AND LONGITUDINAL JOINT DETAILS DALLAS DISTRICT STANDARD

LJD(1-1)-07

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NUMBER
18	0918-47-360		81
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	SECTION	HIGHWAY NUMBER
0918	47	360	FD 701241

REVISED ON 9/10/08

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SCALE IN FEET

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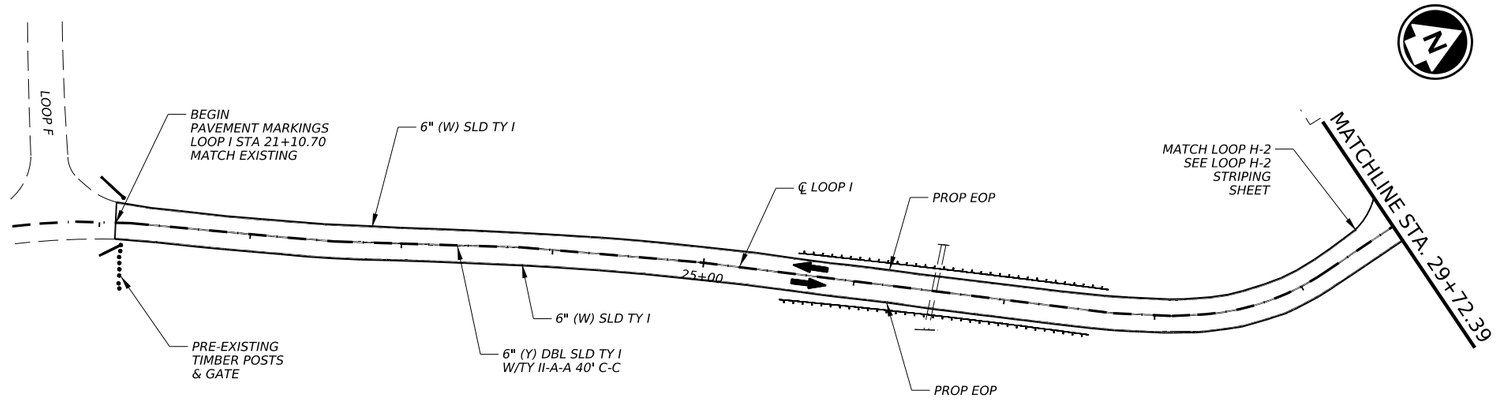
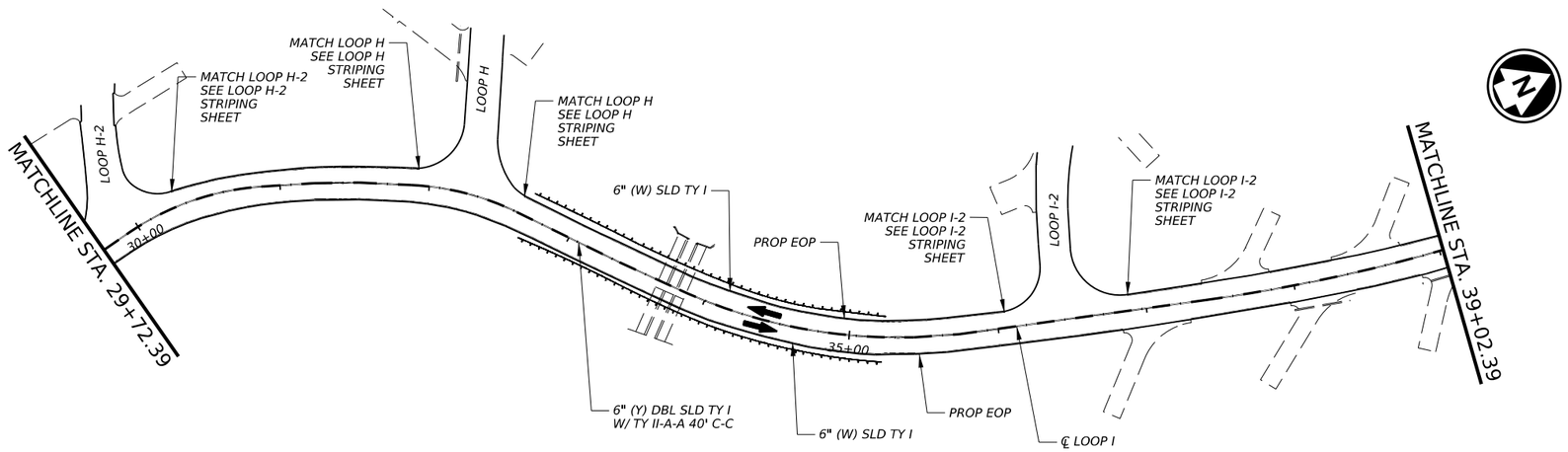
	SIGNAGE
	PRECAST WHEEL STOP
	OBJECT MARKER
	DELINEATOR





STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/12/2024

Signature of Registrant , P.E. & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

STRIPING & SIGNING PLAN SHADY RIDGE LOOP I

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
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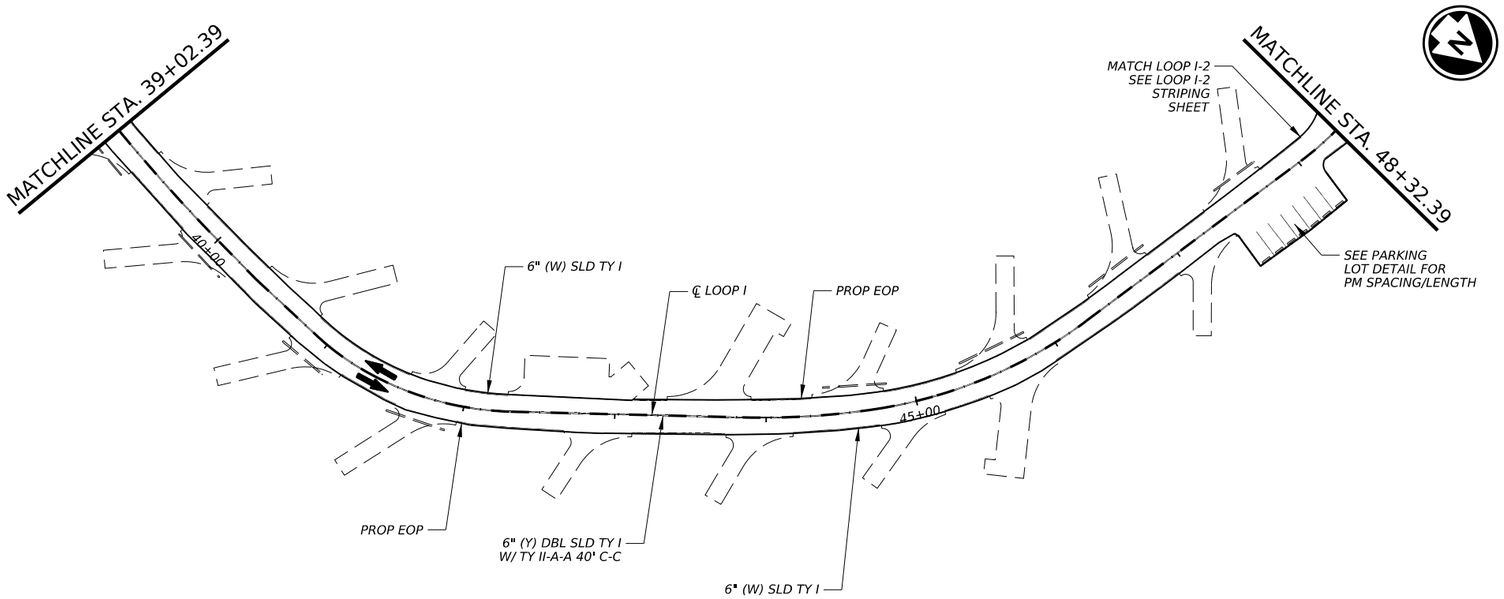

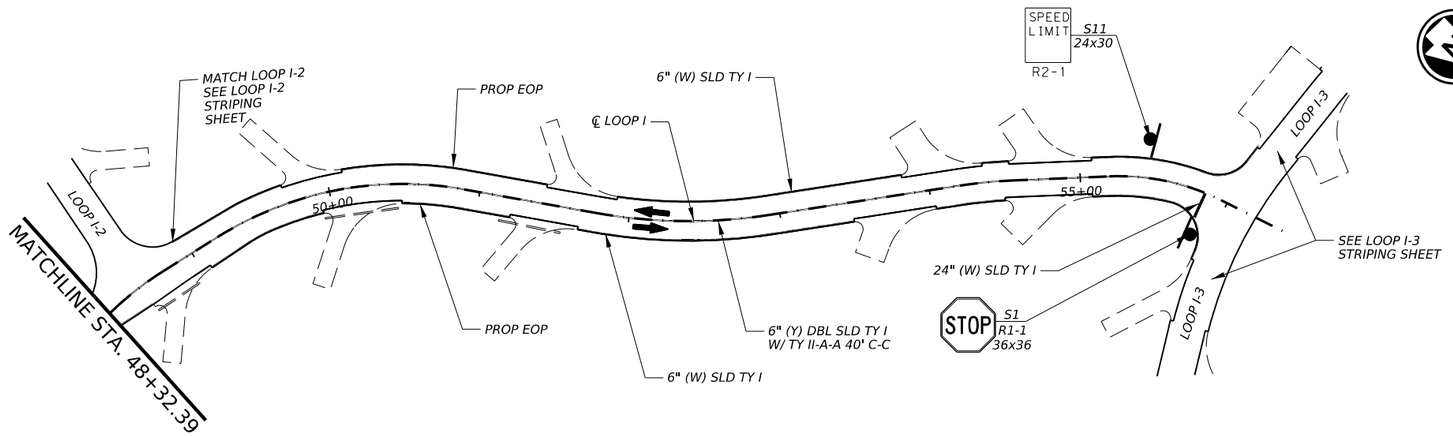

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	SIGNAGE
	PRECAST WHEEL STOP
	OBJECT MARKER
	DELINEATOR

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STRIPING & SIGNING PLAN SHADY RIDGE LOOP I

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
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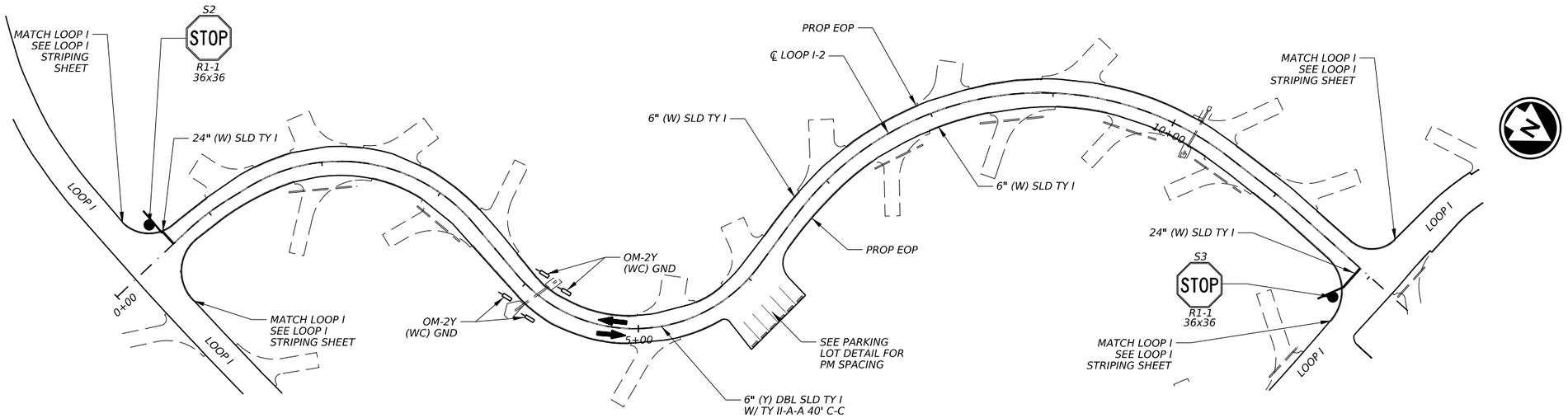

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STRIPING & SIGNING PLAN
SHADY RIDGE
LOOP I-2

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
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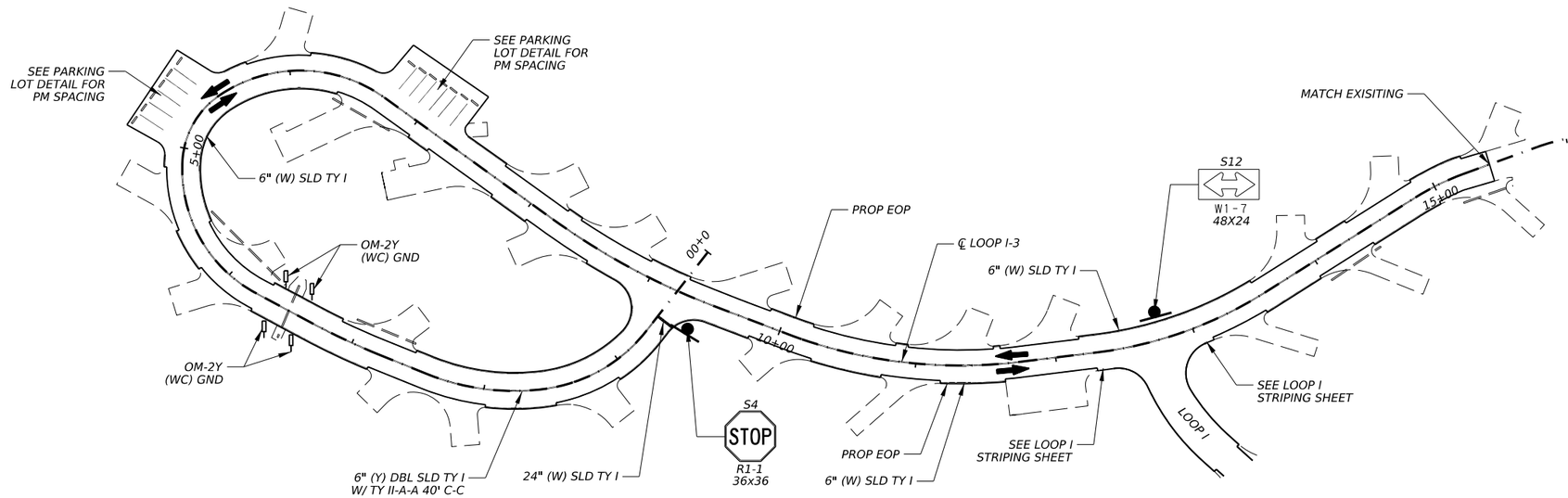

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CEDAR HILL STATE PARK

STRIPING & SIGNING PLAN SHADY RIDGE LOOP I-3

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
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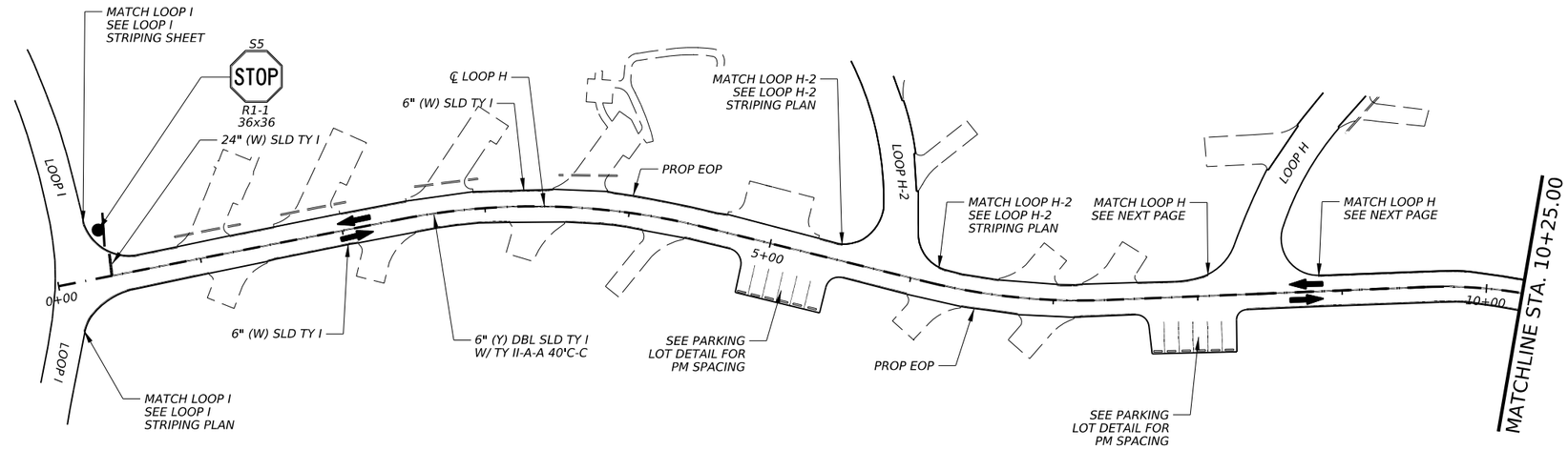

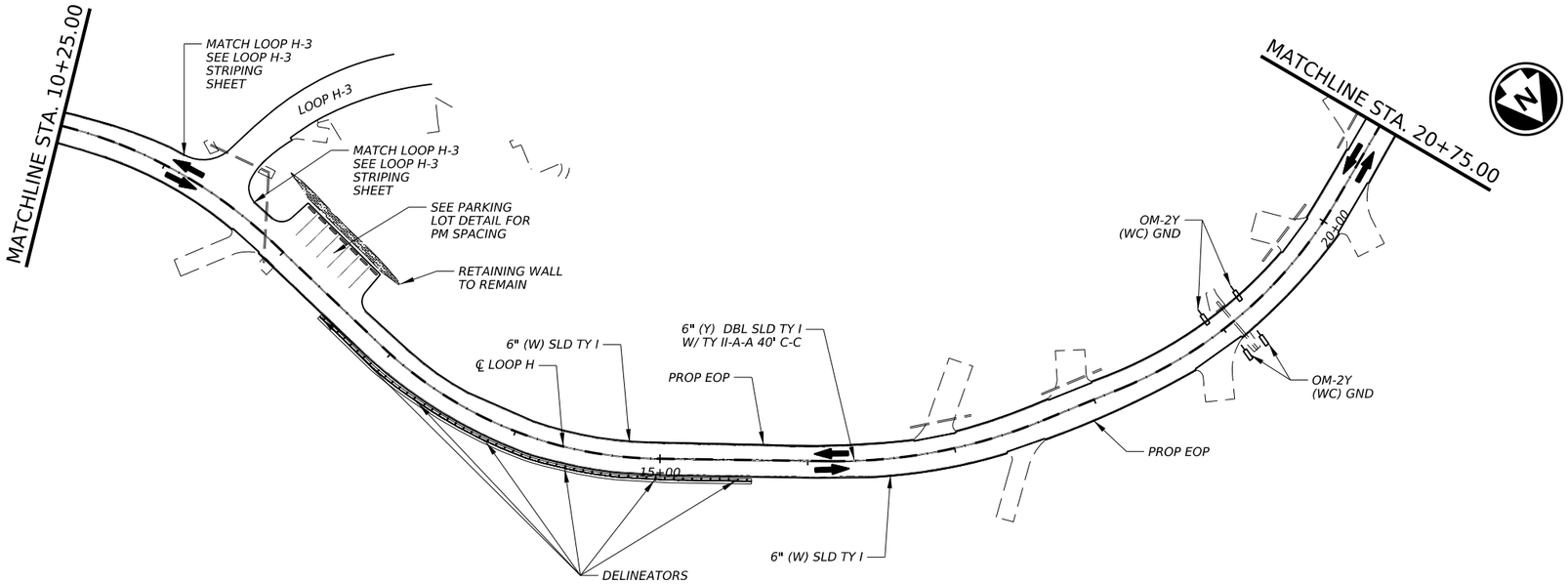

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CEDAR HILL STATE PARK

STRIPING & SIGNING PLAN EAGLE FORD LOOP H

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
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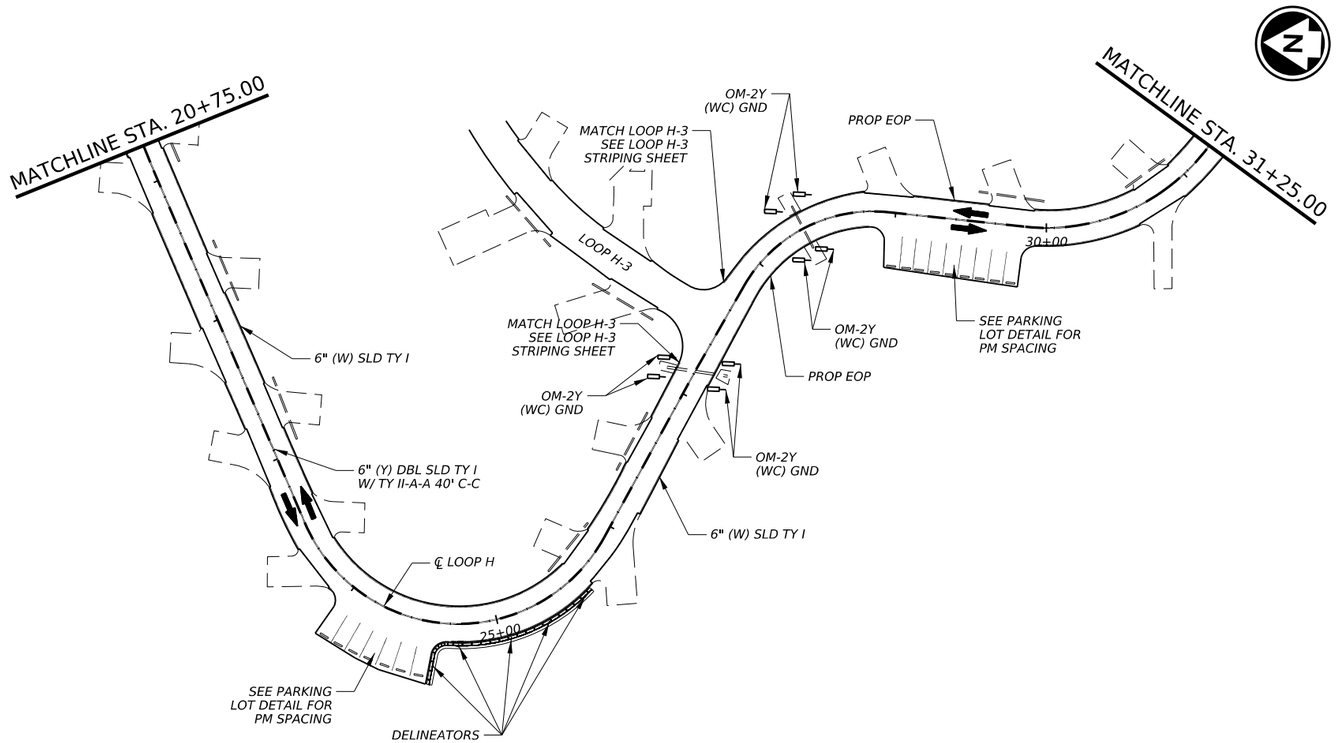

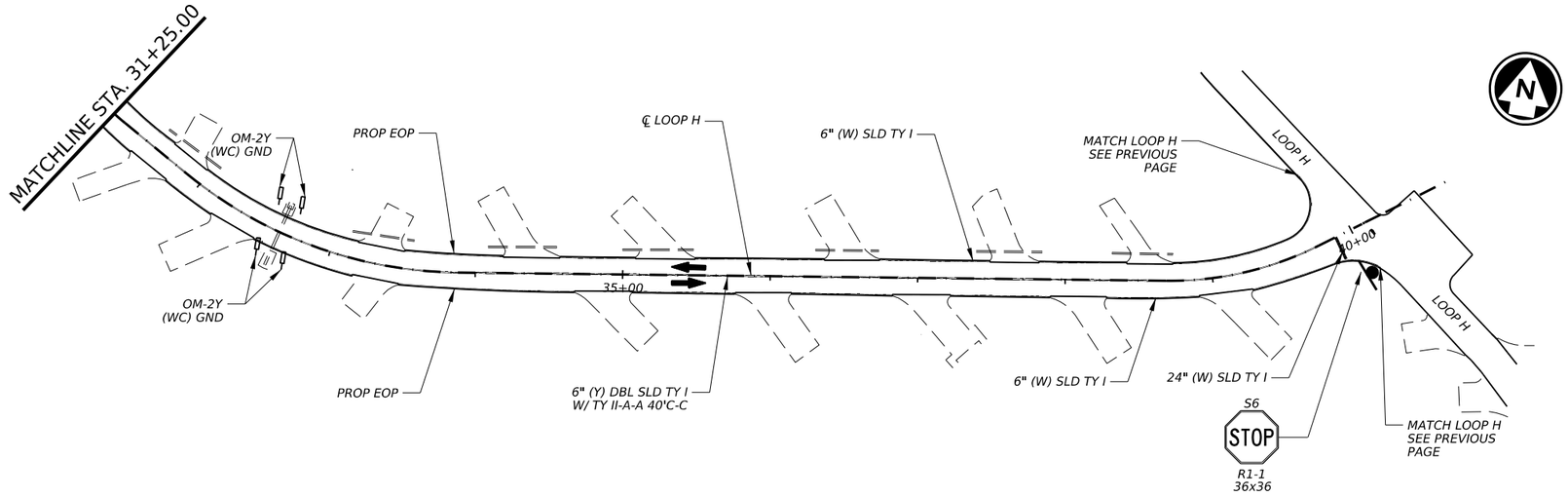

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	PRECAST WHEEL STOP
	OBJECT MARKER
	DELINEATOR

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STRIPING & SIGNING PLAN EAGLE FORD LOOP H

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
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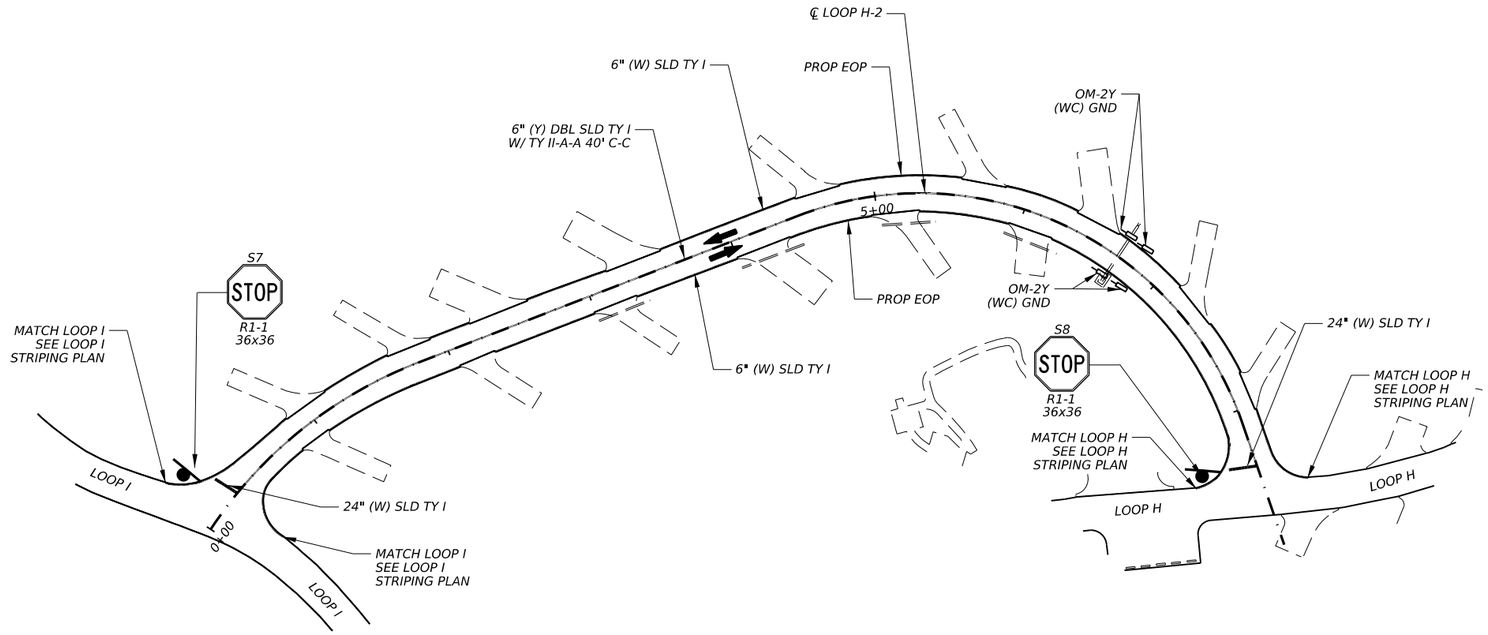

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CEDAR HILL STATE PARK

STRIPING & SIGNING PLAN EAGLE FORD LOOP H-2

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		88

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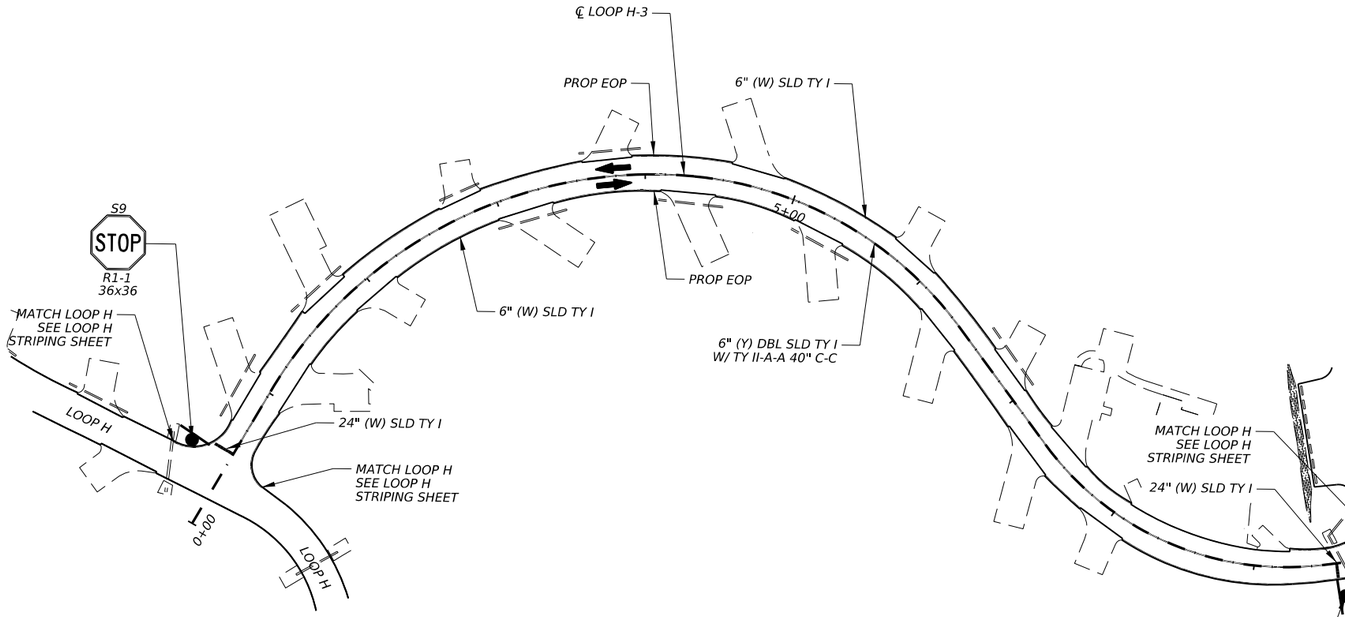
FILE: c:\txdot\pw_online\txdot5\sjyoon.wold\d0799763\TRAFFIC SHEETS.dgn

CK
DW
CK
DW

0 50 100
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
	VEHICLE DIRECTION
	SIGNAGE
	PRECAST WHEEL STOP
	OBJECT MARKER
	DELINEATOR



N

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/14/2024
, P.E.
Signature of Registrant & Date

2024
Texas Department of Transportation

CEDAR HILL STATE PARK

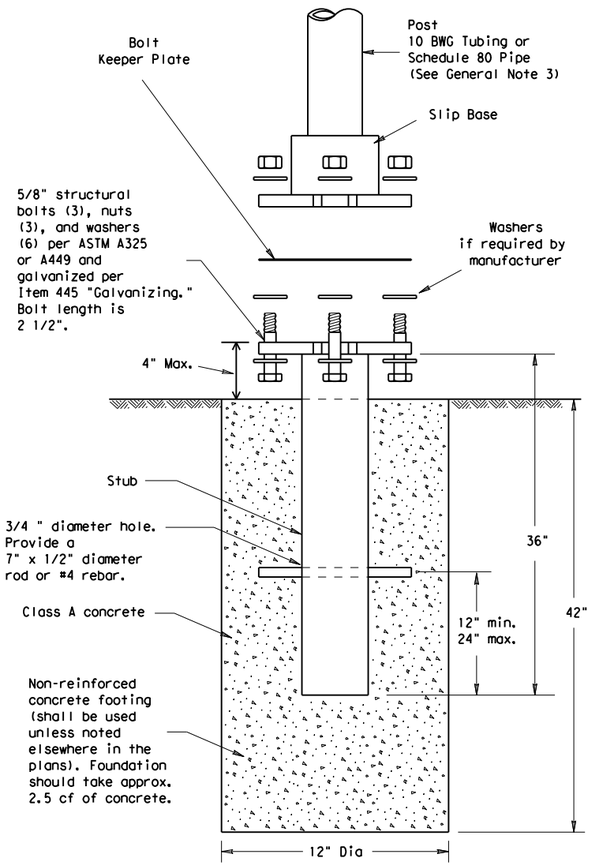
STRIPING & SIGNING PLAN EAGLE FORD LOOP H-3

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		89

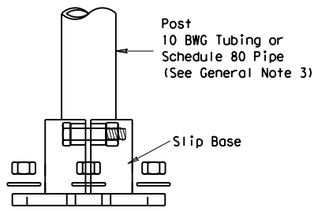
DATE: 6/14/2024 9:24:29 AM
FILE: c:\txdot\pw_online\txdot5\sjyoon.wool\d0799763\TRAFFIC SHEETS.dgn

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

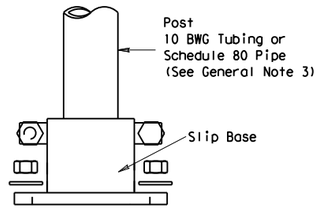


SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

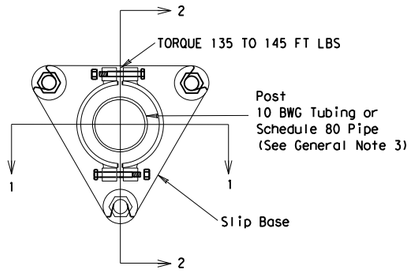
NOTE
The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.



SIDE VIEW 1-1



SIDE VIEW 2-2



TOP VIEW

DETAIL A

GENERAL NOTES:

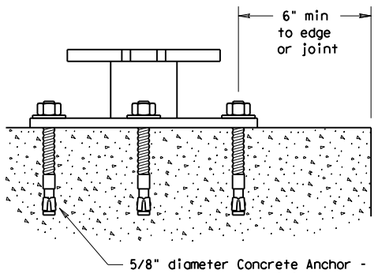
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

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

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

CONCRETE ANCHOR



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

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

ADDED DETAIL A FOR CLAMP BASE
10-2010

Texas Department of Transportation
Dallas District Standard

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

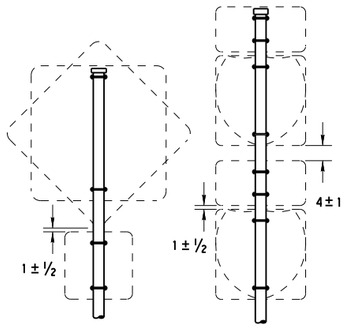
SMD(SLIP-1)-08(DAL)

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

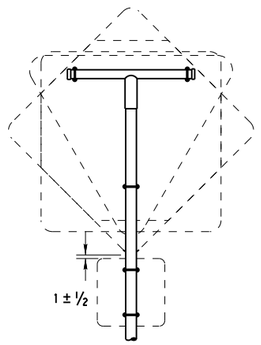
9-08 REVISIONS
12-10 (DISTRICT) ADDED CLAMP BASE DETAIL FOR SLIP BASE INSTALLATION

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		90

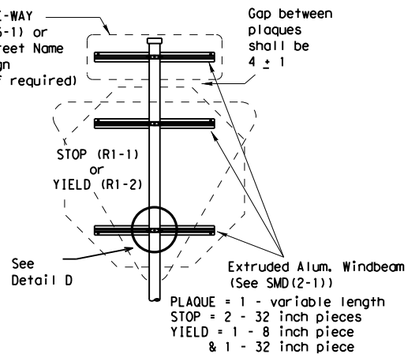
DATE:
FILE:



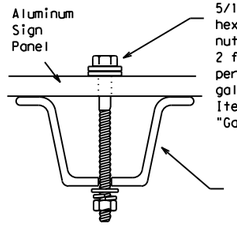
SM RD SGN ASSM TY XXXXX(1)XX(P)



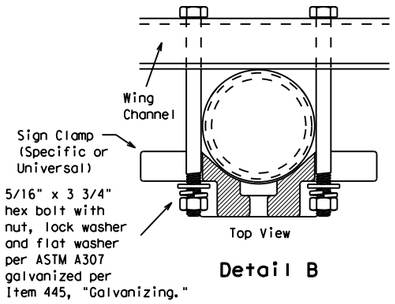
SM RD SGN ASSM TY XXXXX(1)XX(T)



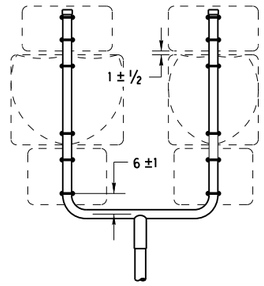
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



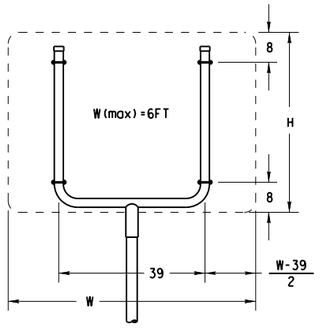
Detail A



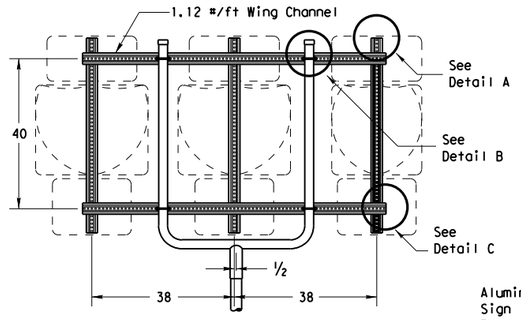
Detail B



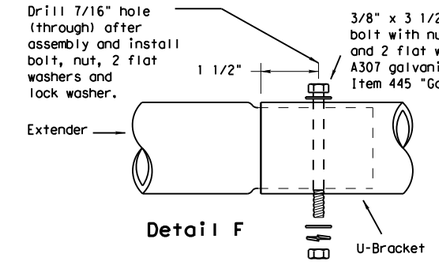
SM RD SGN ASSM TY XXXXX(1)XX(U)



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

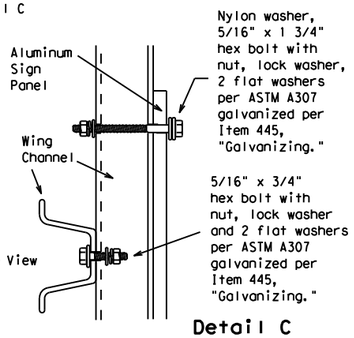


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

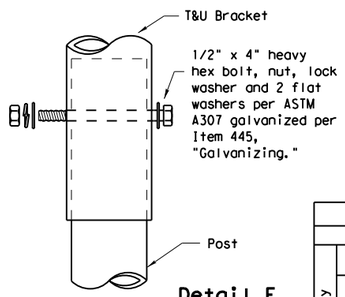


Detail F

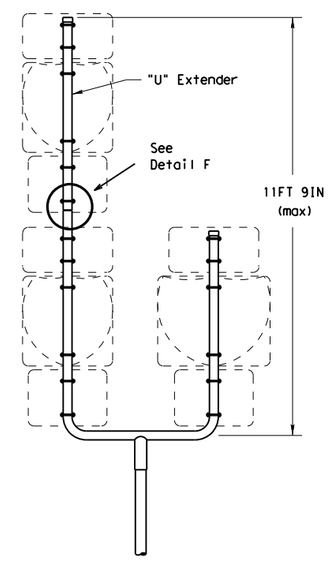
Splices shall only be allowed behind the sign substrate.



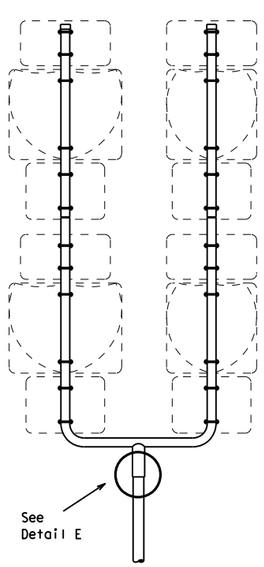
Detail C



Detail E



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



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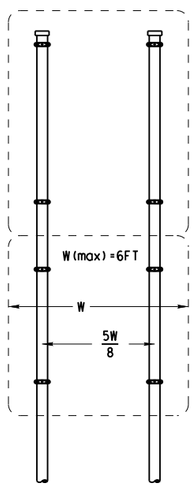
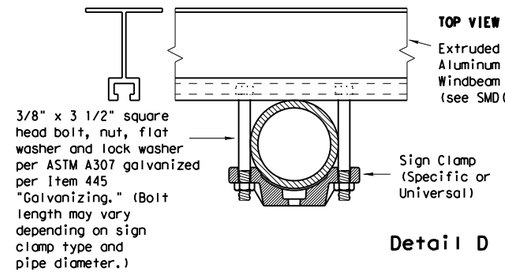
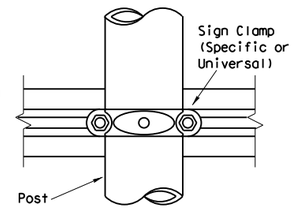


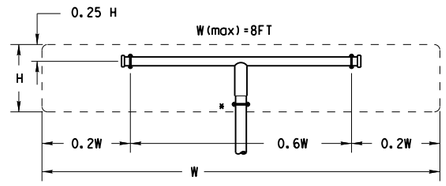
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

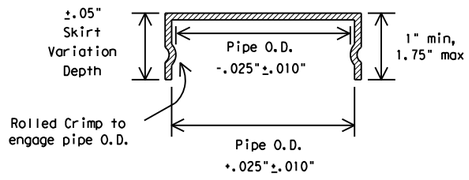




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



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

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

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

GENERAL NOTES:

1.

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

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

REQUIRED SUPPORT

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

Texas Department of Transportation
Traffic Operations Division

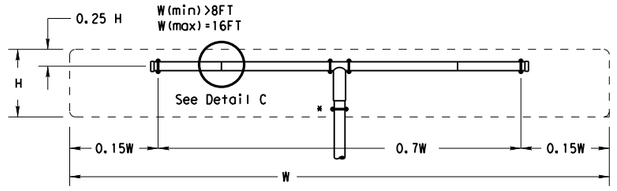
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

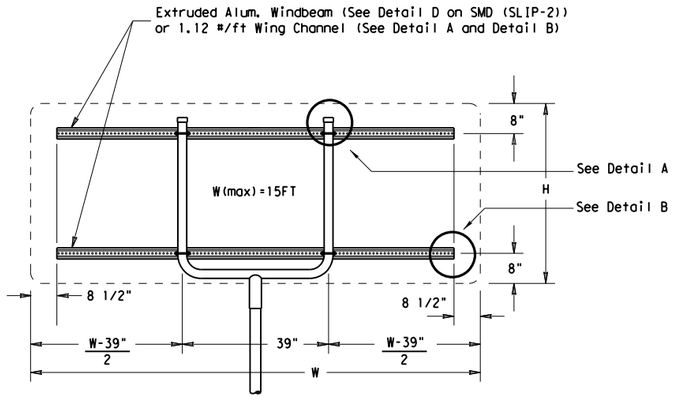
REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0918	47	360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		91

DATE:
FILE:

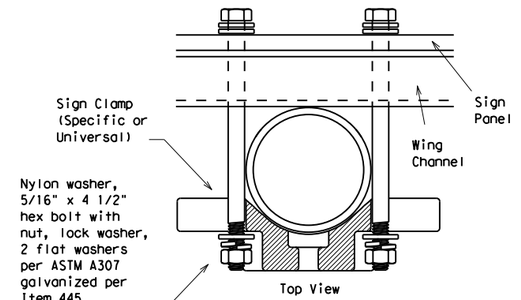
DATE:
FILE:



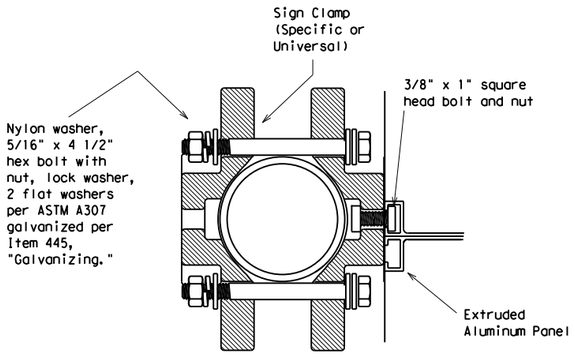
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



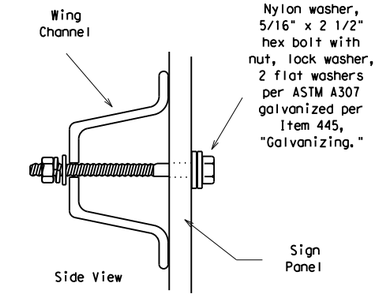
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



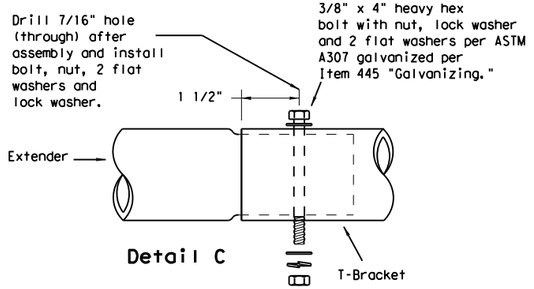
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

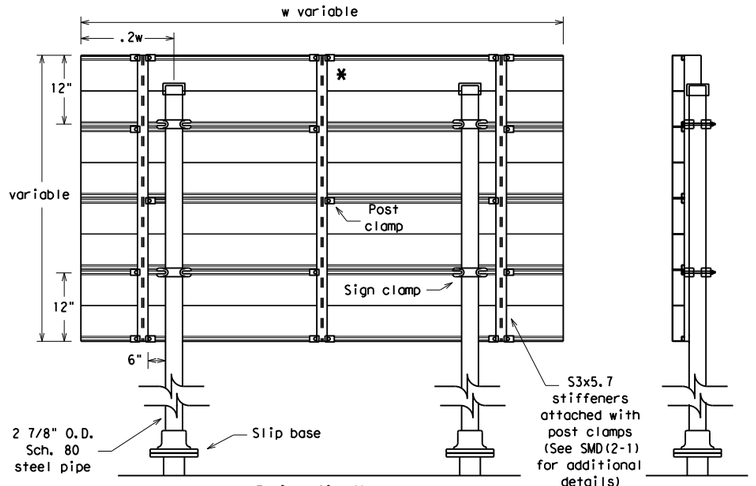


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

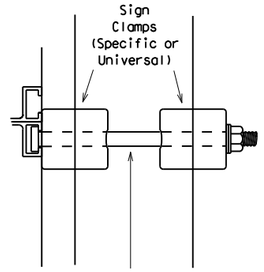


Typical Sign Mount

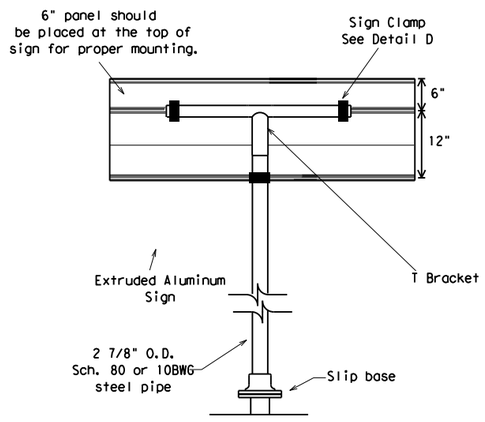
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

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

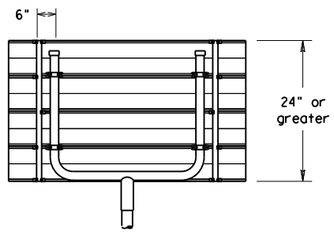
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



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

See Detail E
for clamp installation

GENERAL NOTES:

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

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

REQUIRED SUPPORT

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0918	47	360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		92

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

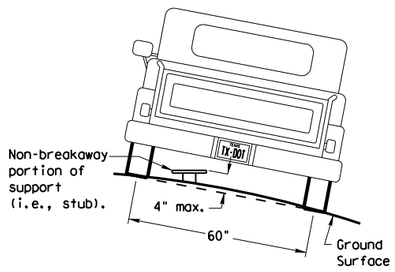
Anchor Type

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

Sign Mounting Designation

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

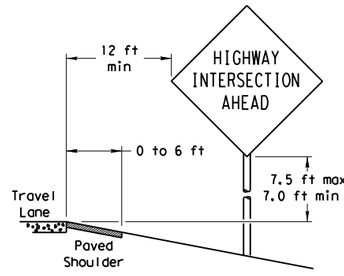
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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

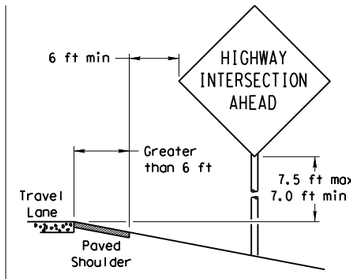
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

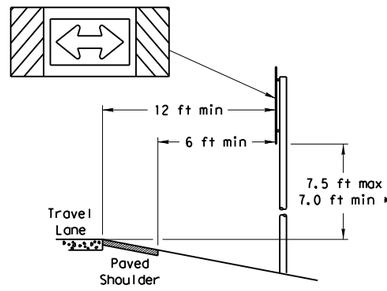
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



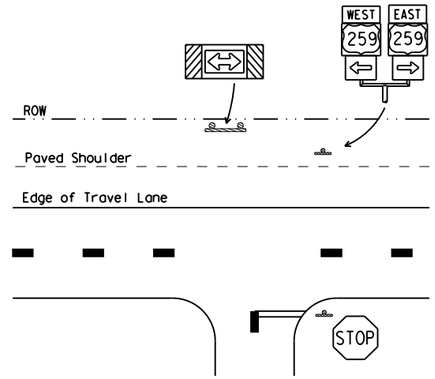
GREATER THAN 6 FT. WIDE

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

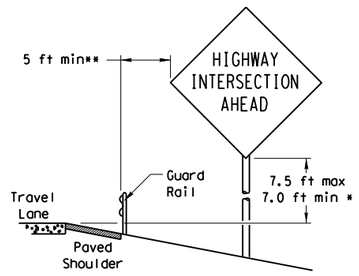
T-INTERSECTION



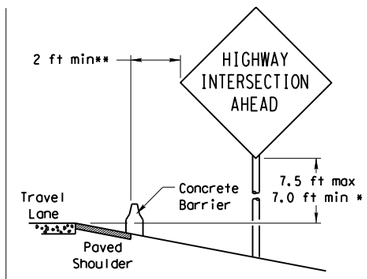
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

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

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

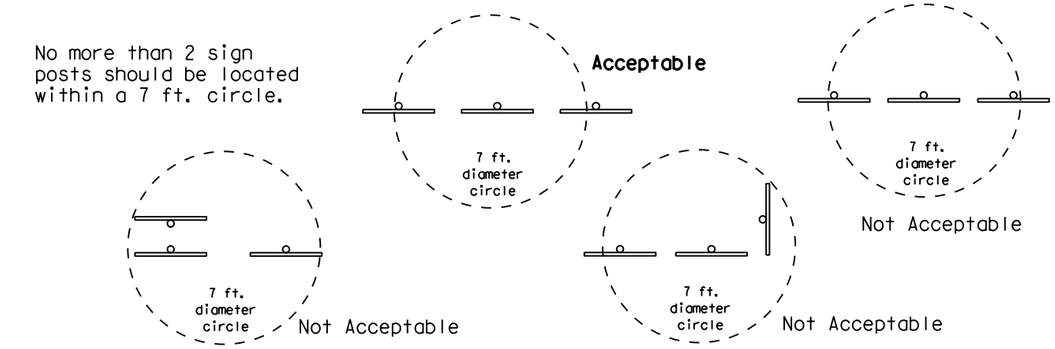
(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

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

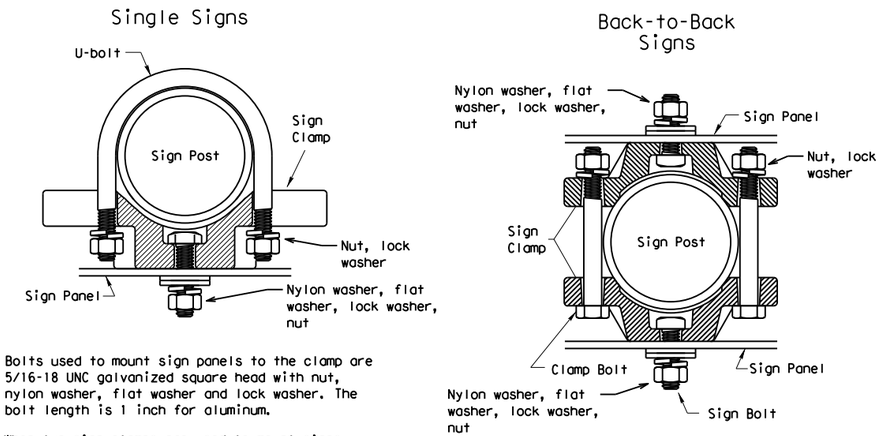
The maximum values may be increased when directed by the Engineer.

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

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



TYPICAL SIGN ATTACHMENT DETAIL



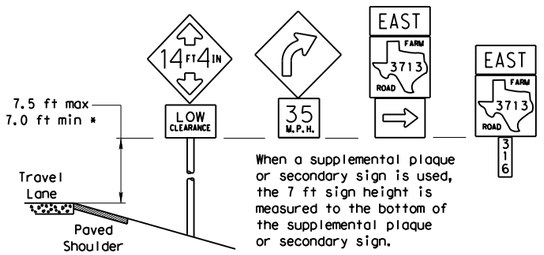
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

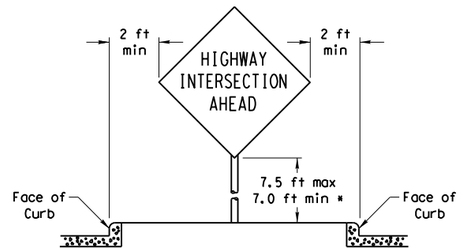
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



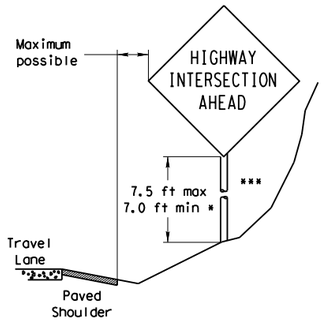
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

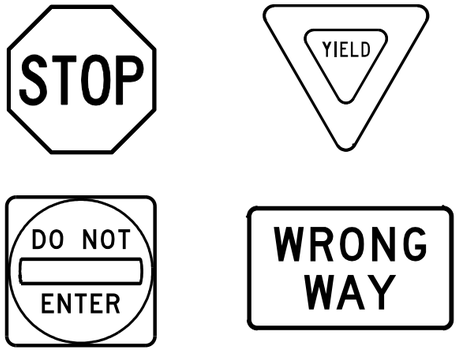
SMD(GEN)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0918	47	360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		93

DATE:
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

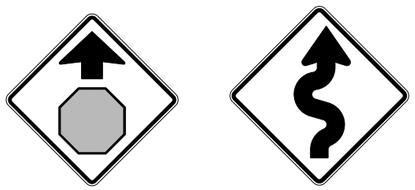
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

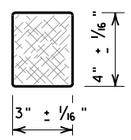
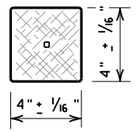
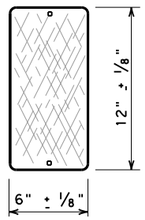
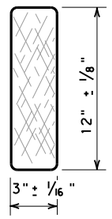
TYPICAL SIGN REQUIREMENTS

TSR(4)-13

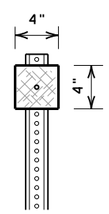
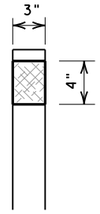
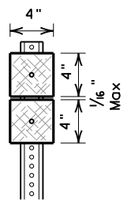
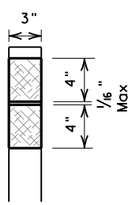
FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	DAL	DALLAS		94

DATE:
FILE:

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

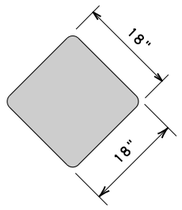
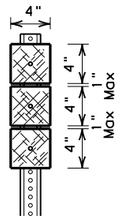
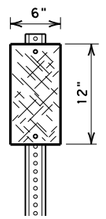
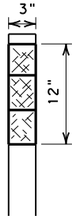
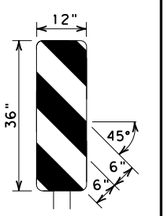
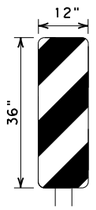
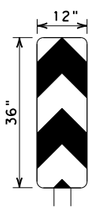
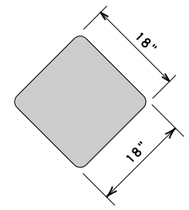
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

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

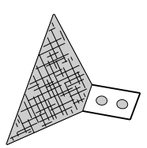
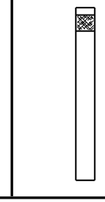
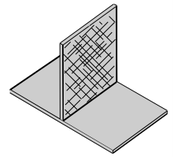
OBJECT MARKERS

	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

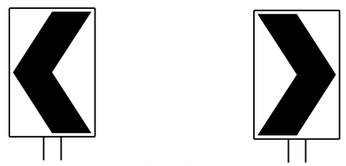
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

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

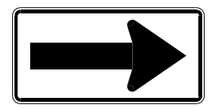


SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

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).

ONE DIRECTION LARGE ARROW

DEVICE



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

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
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	DAL	DALLAS		95

20A

DATE: 6/11/2024 2:26:54 PM
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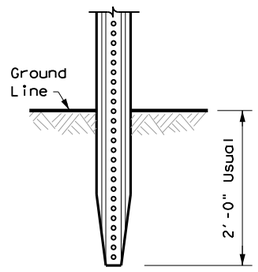
POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

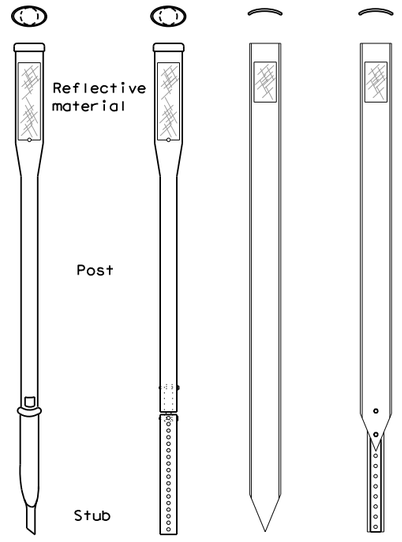


NOTES

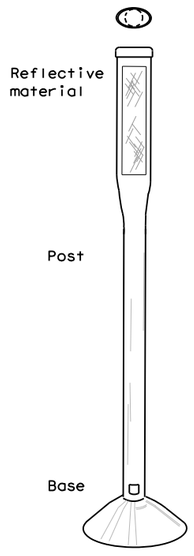
1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

FLEXIBLE POSTS (YFLX, WFLX)

GND



SRF



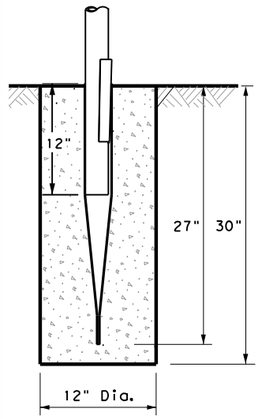
EMBEDDED | SURFACE MOUNT

NOTES

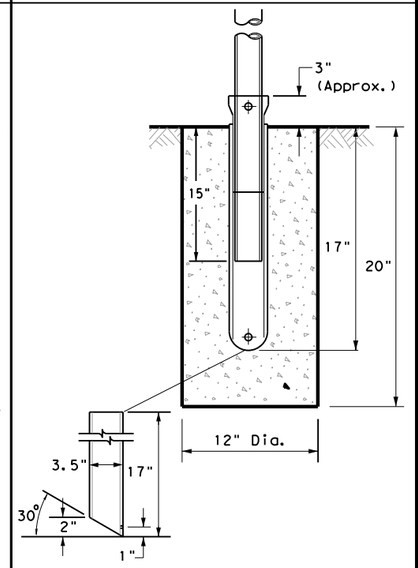
1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline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

WEDGE ANCHOR SYSTEMS

WAS



WAP



STEEL | PLASTIC

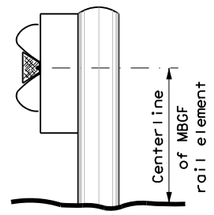
NOTE

1. Install per manufacturer's recommendations.

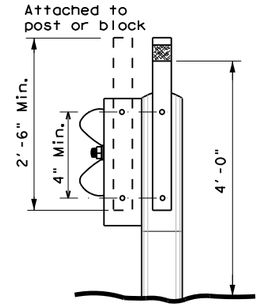
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

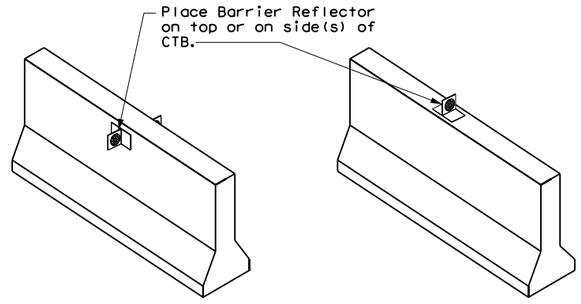
GF1



GF2



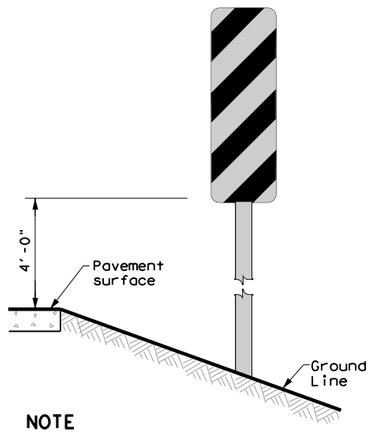
CONCRETE TRAFFIC BARRIER (CTB)



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.

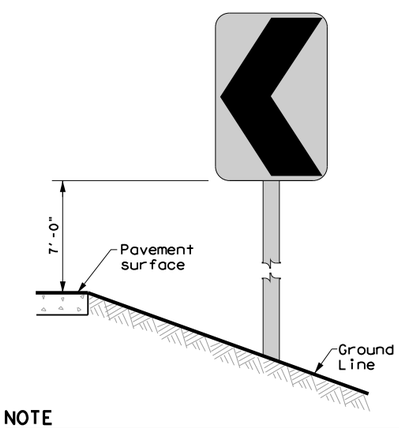
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

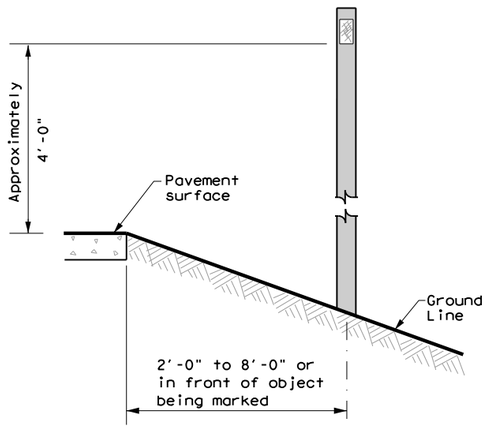
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	DAL	DALLAS		96
20B				

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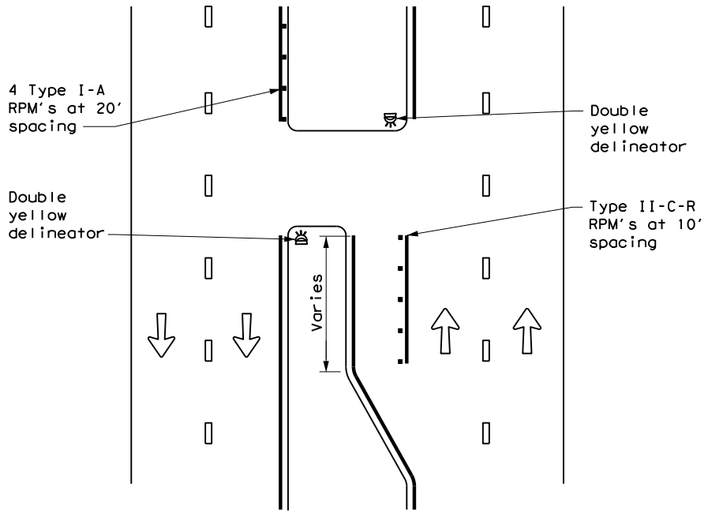
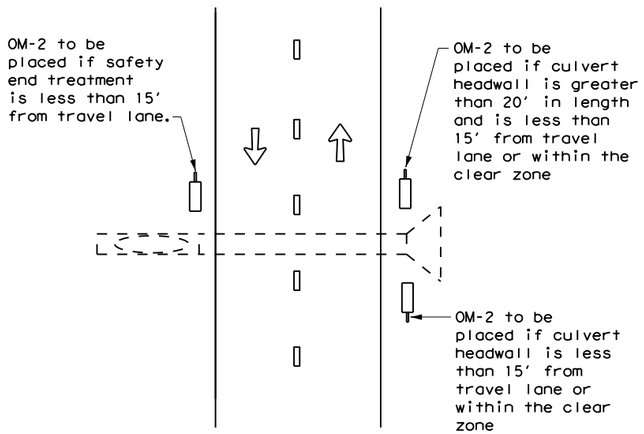
CROSSOVERS



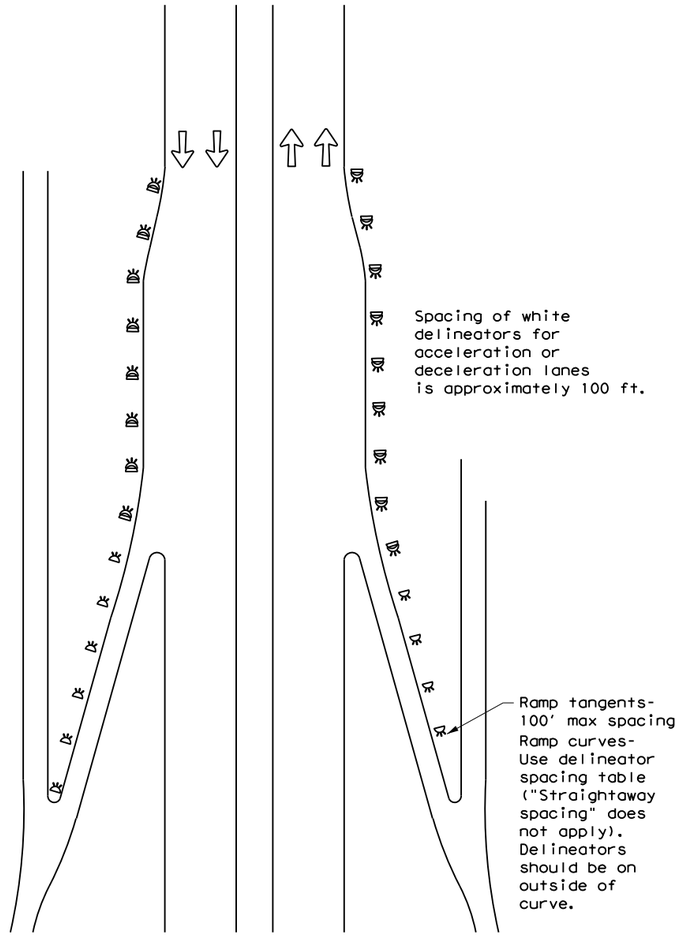
DETAIL 1

FOR CULVERTS WITHOUT MBGF



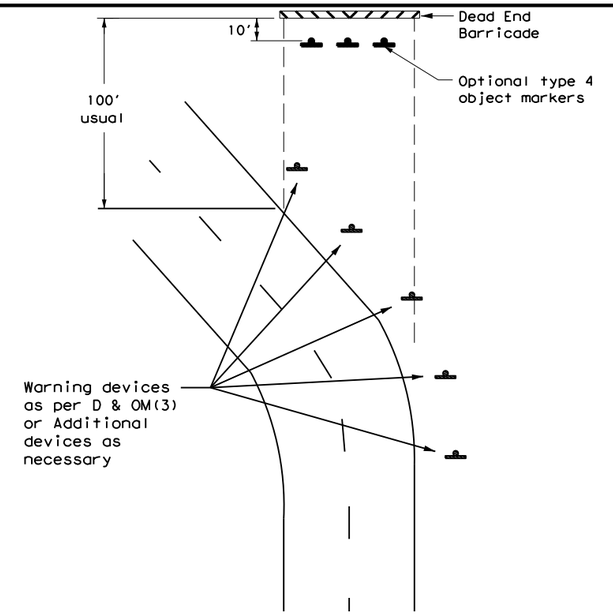
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



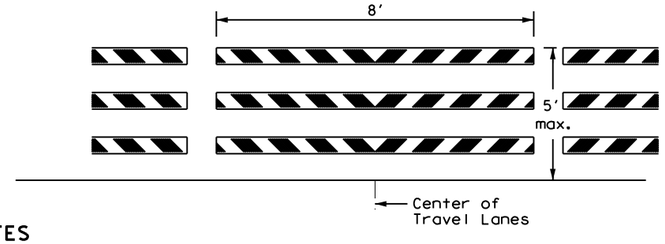
DETAIL 3

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	
	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
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
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3-15 7-20	DIST	COUNTY		SHEET NO.
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20D

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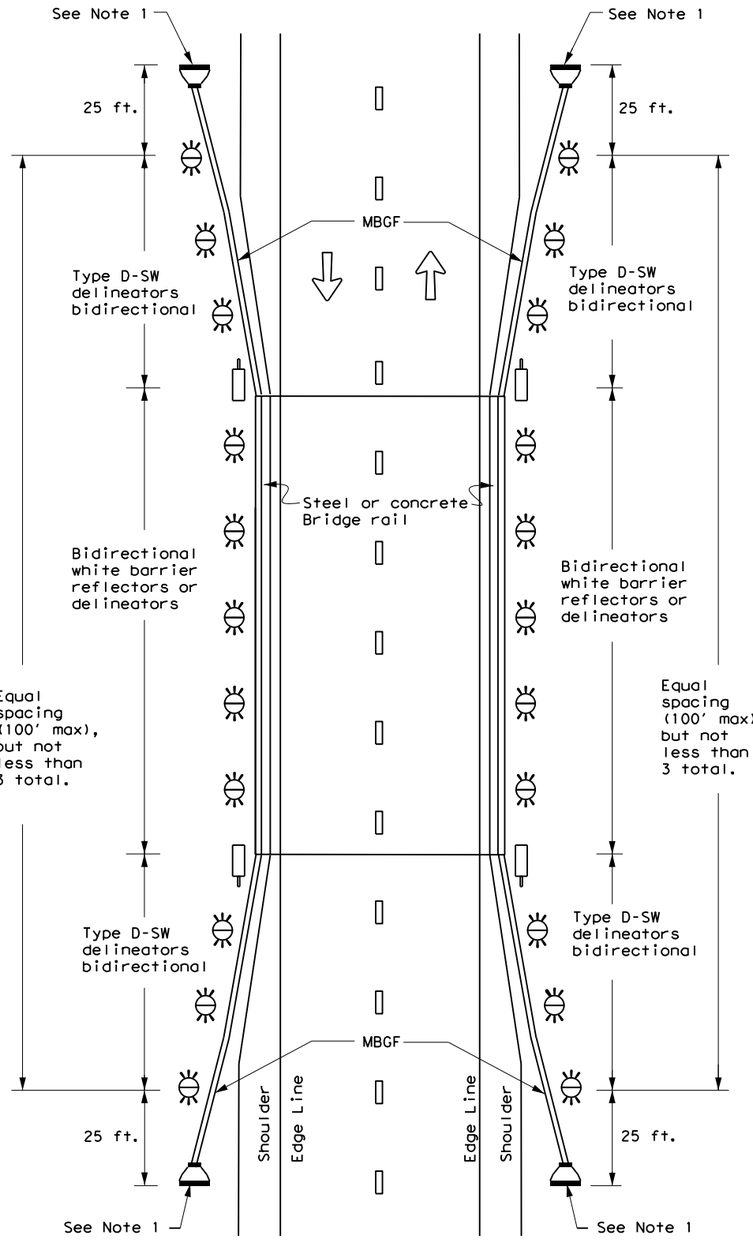
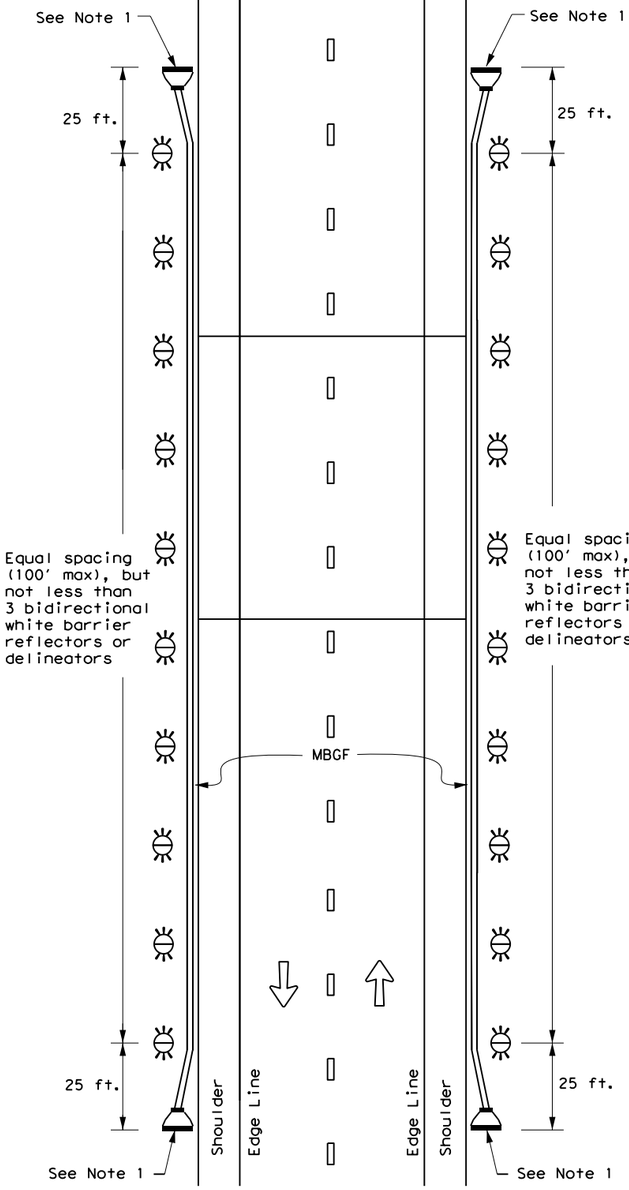
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



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.

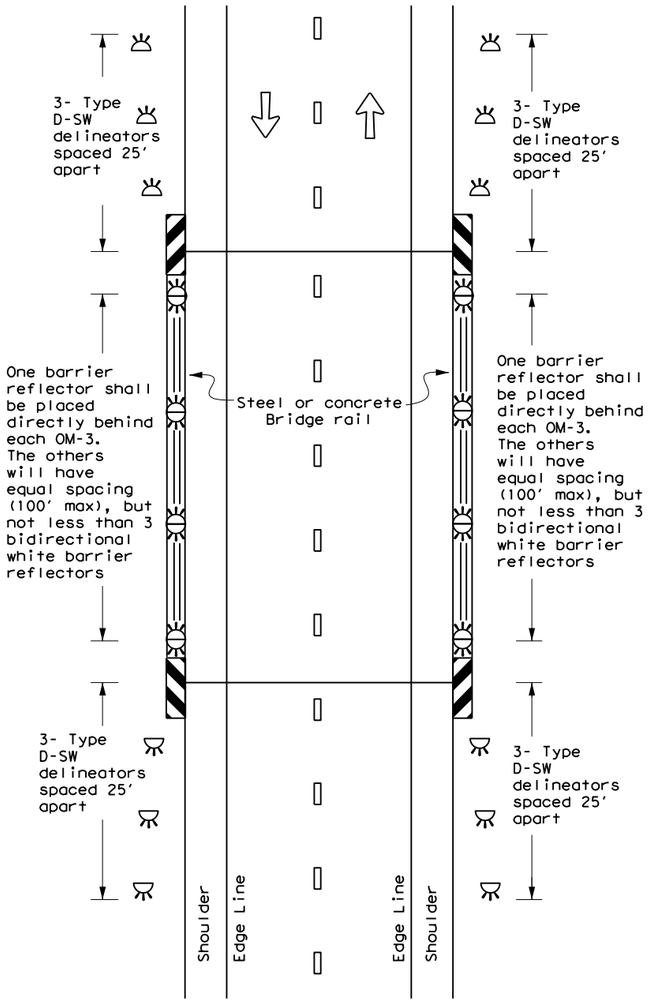
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



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

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©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
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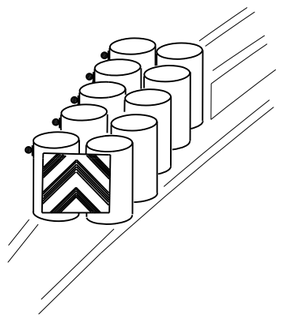
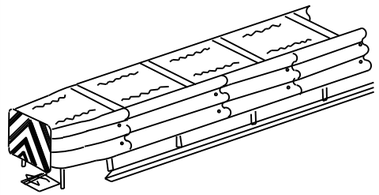
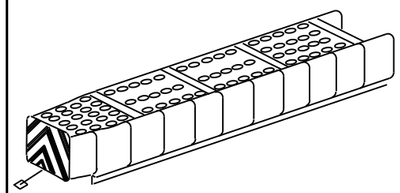
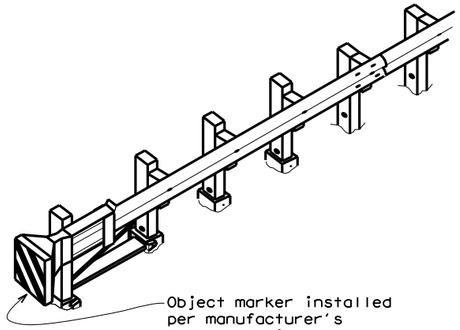
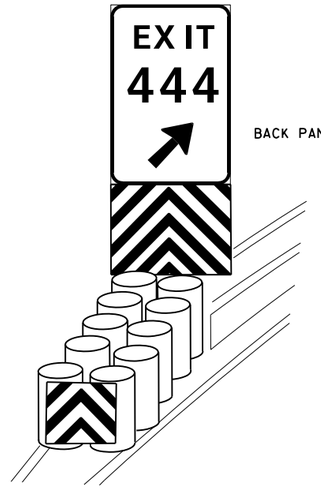
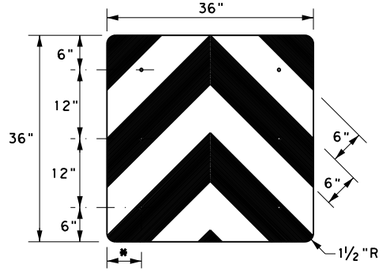


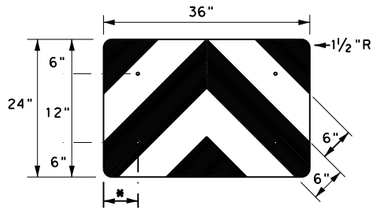




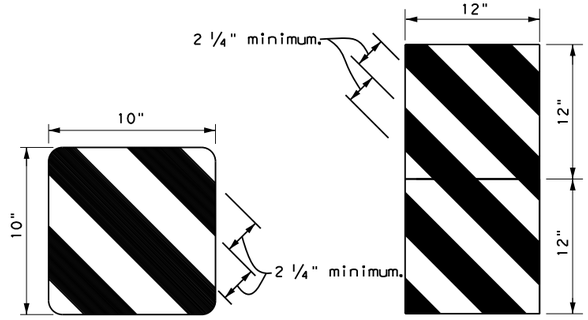




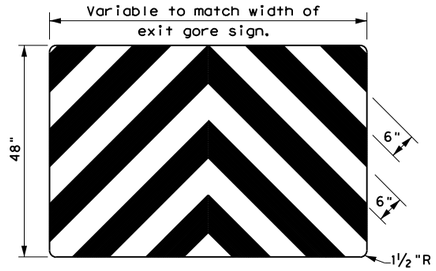


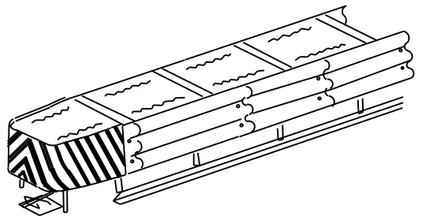


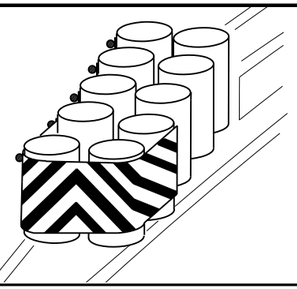
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

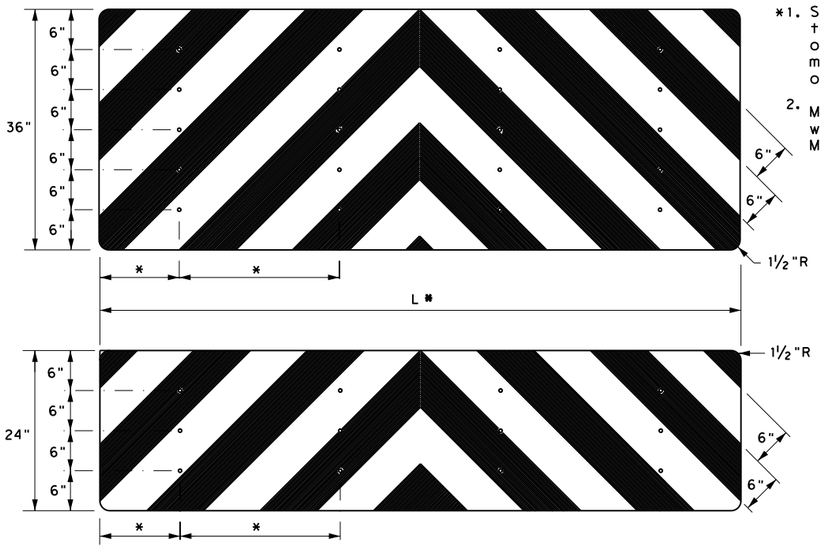


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
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4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	DAL	DALLAS		99
4-98 7-20				

20G

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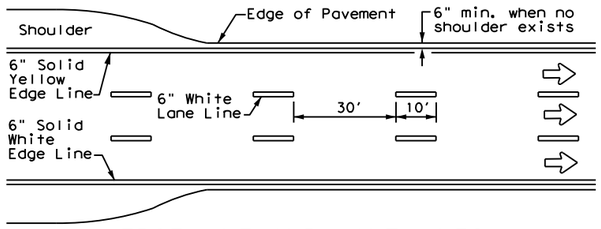
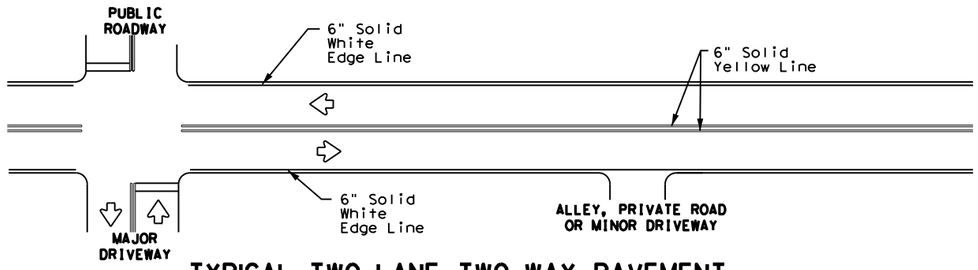
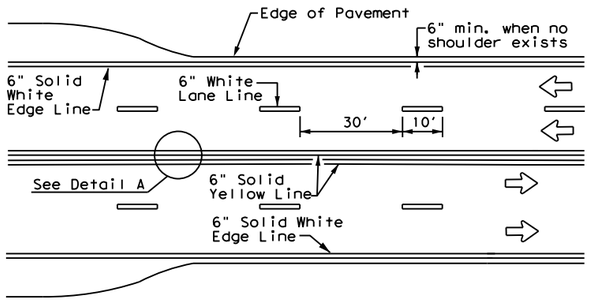
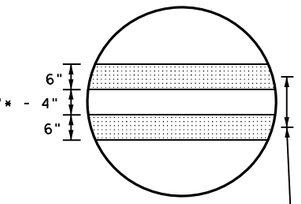


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

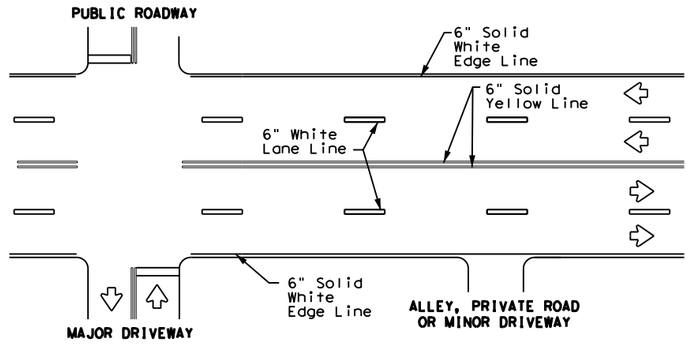




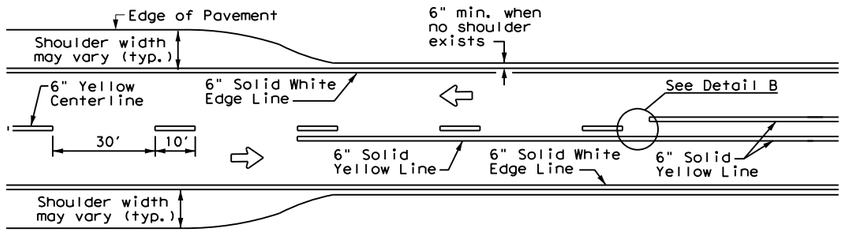
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

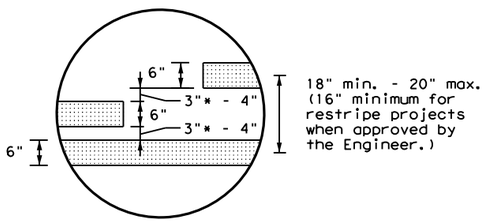
** 8" minimum for restripe projects when approved by the Engineer.



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

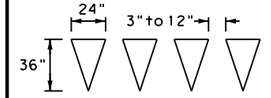


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



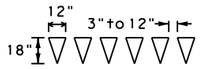
DETAIL "B"

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

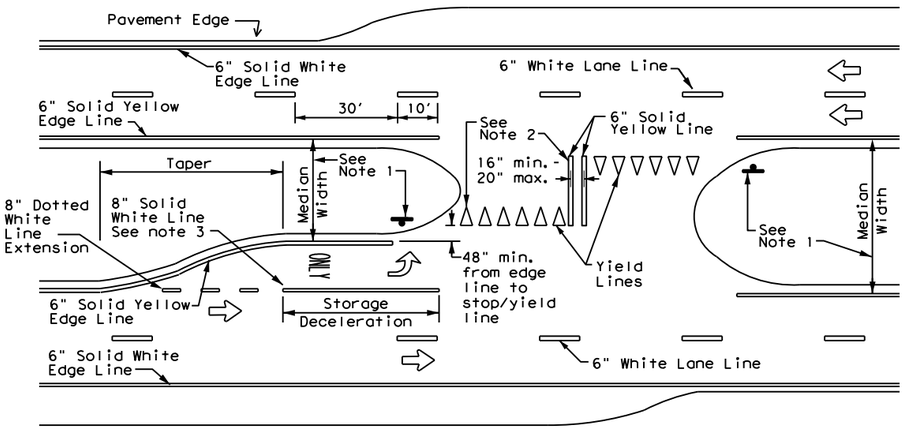


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

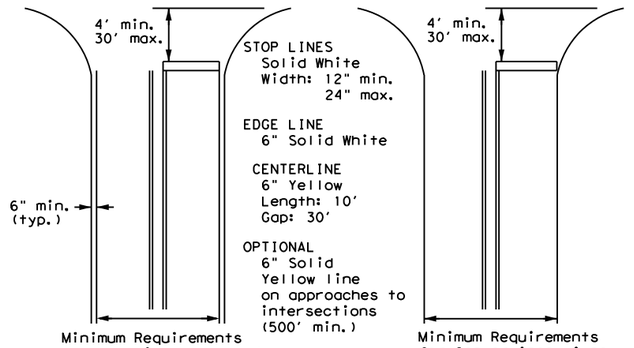
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



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

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

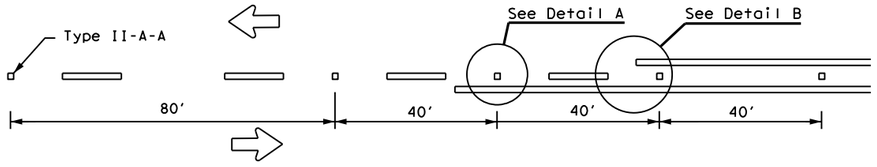
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0918	47	360	FD 701241
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	DAL	DALLAS		100

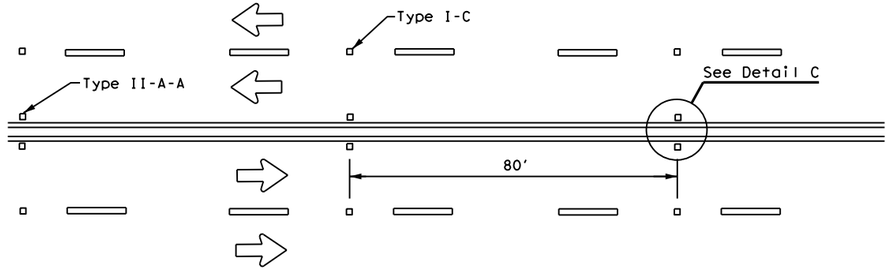
22A

DATE:
FILE:

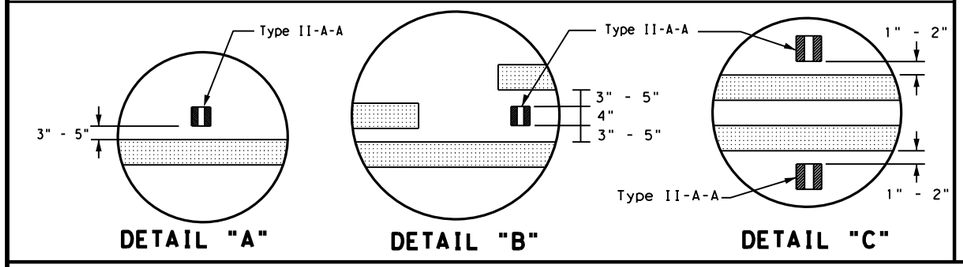
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

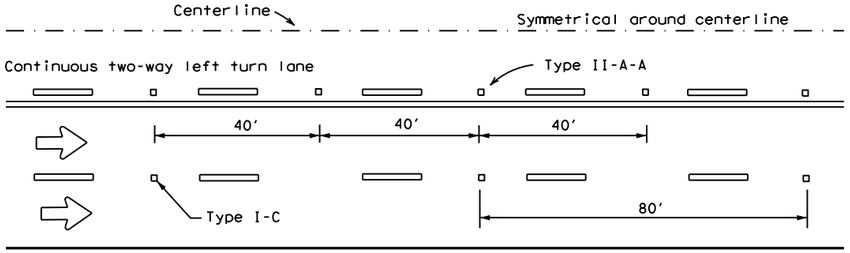


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

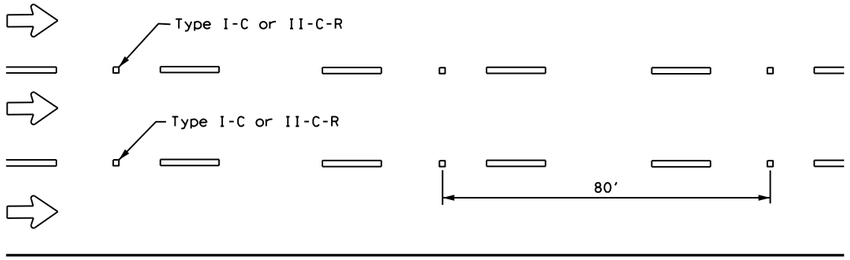


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



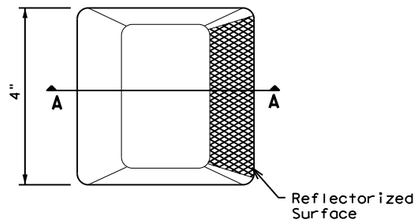
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

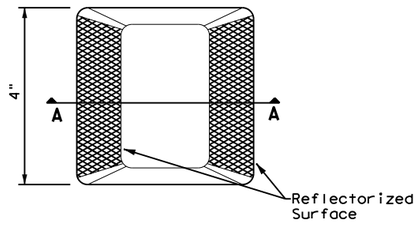
See Note 3.

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

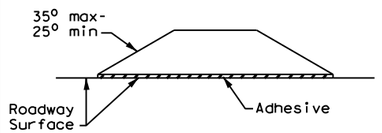
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

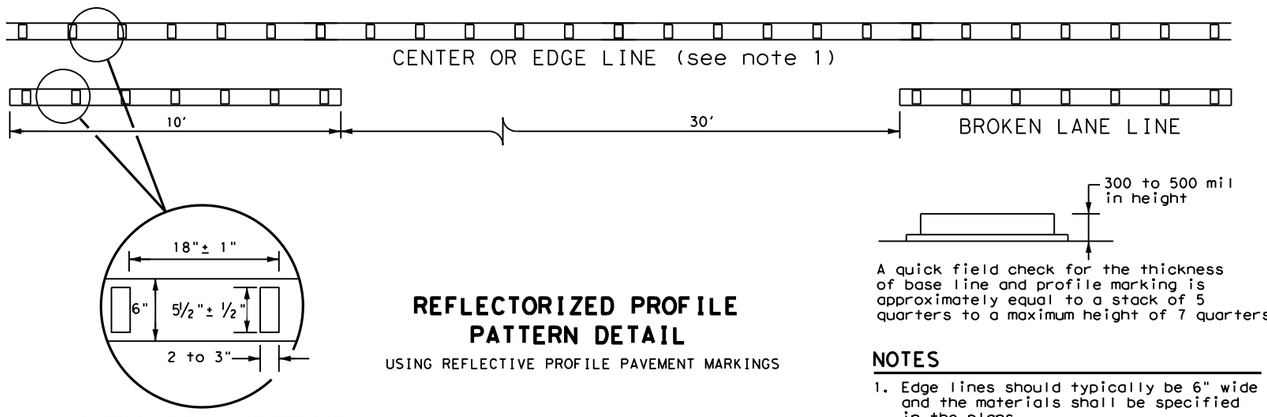


Type II (Top View)



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	0918	47	360	FD 701241
4-77 8-00 6-20	DIST	COUNTY		SHEET NO.
4-92 2-10 12-22	DAL	DALLAS		101
5-00 2-12				

228

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DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit is 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. Refer to Storm Water Pollution Prevention Plan (SWP3) Houston District standard plan.

No Additional Comments

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS

United States Army Corps of Engineers (USACE) Permit is required for filling, dredging, excavating or other work in water bodies, rivers, creeks, streams, wetlands or wet areas. The Contractor must adhere to all of the terms and general conditions associated with the following permit(s). If additional work not represented in the plans is required, contact the Engineer immediately.

☐ No United States Army Corps (USACE) Permit Required

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) without a Pre-Construction Notification (PCN). Project specific permit was not issued by USACE, therefore is not in the plan set. The USACE general conditions are in the “General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) with a Pre-Construction Notification (PCN). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set. The USACE general conditions are in the “General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Individual Permit (IP). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set.

☐ Work would be authorized by the United States Army Corps of Engineers (USACE) permit. The project specific permit issued by the USACE will be provided to the contractor.

United States Coast Guard (USCG) Permit is required for projects that involve the construction or modification (including changes to lighting) of a bridge or causeway across a water body determined to be navigable by the United States Coast Guard (USCG) under Section 9 of the Rivers and Harbors Act. If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Coast Guard (USCG) Coordination Required

☐ United States Coast Guard (USCG) Permit

☐ United States Coast Guard (USCG) Exemption

No Additional Comments

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 area and contact the Engineer immediately.

No Additional Comments

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Refer to TxDOT Standard Specifications in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal.

Additional Comments

If re-vegetation is required, all species must be native to the general area.

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

If any of the listed species below are observed, cease work in the area, do not disturb species or habitat and contact the Engineer immediately.

The work may not remove active nests (from bridges, structures, or vegetation adjacent to the roadway, etc.) during nesting season (February 15 to October 1). If removal of structures or vegetation is necessary during the nesting season, the Contractor shall conduct a bird survey no more than 3 days in advance of the clearing/demolish start date. All bird surveys shall be conducted by a Field Biologist and adhere to the guidance document “Avoiding Migratory Birds and Handling Potential Violations” found in the TxDOT Environmental Compliance Toolkits at the time of the survey. (See below for Field Biologist and Ornithologist qualifications)

No Additional Comments

Field Biologist, Ornithologist – a field biologist is defined as an individual qualified to perform field investigations, presence/absence surveys and habitat surveys for protected avian species or species of concern. A mandatory bachelor’s degree in biology or a related science is required. At a minimum, the Field Biologist, Ornithologist, shall have completed and reported a minimum of three presence/absence and habitat surveys for protected avian species in the past five years. A minimum of three projects must have been conducted in Texas. Surveys shall have been performed for documentation of species in accordance with a protocol approved by USFWS or TPWD, or following generally accepted methodologies.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

Refer to TxDOT Standard Specifications in the event potentially contaminated materials are observed, such as dead or distressed vegetation, trash disposal areas, drums, canisters, barrels, leaching or seepage of substances, unusual smells or odors, or stained soil, cease work in the area and contact the Engineer immediately.

No Additional Comments

VII. OTHER ENVIRONMENTAL ISSUES

Comments:

DATE: Apr 29, 2024
FILE:

Version 2.1

Texas Department of Transportation

TxDOT [redacted]

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: EPIC Sheet.dgn	DN:	CK:	DW:	CK:
© TxDOT: March 2017	CONT	SECT	JOB	HIGHWAY
REVISIONS UPDATED section V. text and added definition (10/17) ADDED USCG and USACE notes in Section VII (04/18)	0918	47	360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		102

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

This SWP3 is consistent with requirements specified in applicable stormwater plans and the 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):

0918-47-360

1.2 PROJECT LIMITS:

From:On Eagle Ford and Shady Ridge camp loops

To: Within the Cedar Hill State Park

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 32.6380582, (Long) -96.9778611

END: (Lat) 32.6381622, (Long) -96.9761291

1.4 TOTAL PROJECT AREA (Acres): 6.95

1.5 TOTAL AREA TO BE DISTURBED (Acres): 4.86

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Reconstruction of existing park roads in Camp Loops

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Houston Black-Heiden-Wilson	Clay Soils with 95% Existing Vegitation Density
Grassland and Woodland	Approximately 99% of site has existing vegetation cover, Tall grasses, shrubs, trees.

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

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

X 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
X Transported soils from offsite vehicle tracking
X Construction debris and waste from various construction activities
X Contaminated water from excavation or dewatering pump-out water
X Sanitary waste from onsite restroom facilities
X Trash from various construction activities/receptacles
X Long-term stockpiles of material and waste
X Discharges from concrete washout activities, runoff from concrete cutting activities, and other concrete related activities.
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.11 RECEIVING WATERS:

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

Tributaries	Classified Waterbody
Unnamed Tributary 1	Creek that flows to Joe Pool Lake (Segment 0838)
Unnamed Tributary 2	Creek that flows to Joe Pool Lake (Segment 0838)
NOTE: NO WATER QUALITY IMPAIRMENTS	

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

X Development of plans and specifications
X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
X Post Construction Site Notice
X Submit NOI/CSN to local MS4
X Perform SWP3 inspections
X Maintain SWP3 records and update to reflect daily operations
X Complete and submit Notice of Termination to TCEQ
X Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

X Day To Day Operational Control
X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
X Post Construction Site Notice
X Submit NOI/CSN to local MS4
X Maintain schedule of major construction activities
X Install, maintain and modify BMPs
X Complete and submit Notice of Termination to TCEQ
X Maintain SWP3 records for 3 years
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
Dallas County

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

6/12/2024
Signature of Registrant & Date, P.E.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	C918-47-360		103
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	360	FD 701241

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

- X X Protection of Existing Vegetation
- X X Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- X ☐ Temporary Seeding
- ☐ X Permanent Planting, Sodding or Seeding
- X ☐ Biodegradable Erosion Control Logs
- X ☐ Rock Filter Dams/ Rock Check Dams
- X ☐ 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

- X ☐ Biodegradable Erosion Control Logs
- X ☐ Dewatering Controls
- X ☐ Inlet Protection
- X ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ Sediment Control Fence
- X ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- X X 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
  - X 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
Permanent Seeding Loop H	10+60.33	39+96.81
Permanent Seeding Loop H-2	00+16.35	08+49.70
Permanent Seeding Loop H-3	00+42.03	09+77.85
Permanent Seeding Loop I	48+92.78	55+84.80
Permanent Seeding Loop I-3	00+45.20	15+42.23

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

- X Chemical Management
- X Concrete and Materials Waste Management
- X Debris and Trash Management
- X Dust Control
- X Sanitary Facilities
- X Other: Maintain Paved Surfaces Free Of Debris And Sedimentation
- X Other: Avoid Storing Portable Sanitary Units, Concrete Washouts, Or Chemicals Within 50 Feet Upgradient Of A Recieving Water Or Drainage Conveyance Without Adequate Pollution Controls
- ☐ 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
Unnamed Tributary #1 Buffer:Grass & Shrubbery	Loop I 25+52.48	Loop I 27+67.46
Unnamed Tributary #2 Buffer: Grass & Shrubery	Loop I 32+66.94	Loop I 35+24.13

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

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

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STATE OF TEXAS
DANIEL DIAZ, JR
124907
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PROFESSIONAL ENGINEER

6/12/2024

Signature of Registrant & , P.E. Date

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	C918-47-360		104
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	360	FD 701241

BMP INSTALL/REMOVE DATE

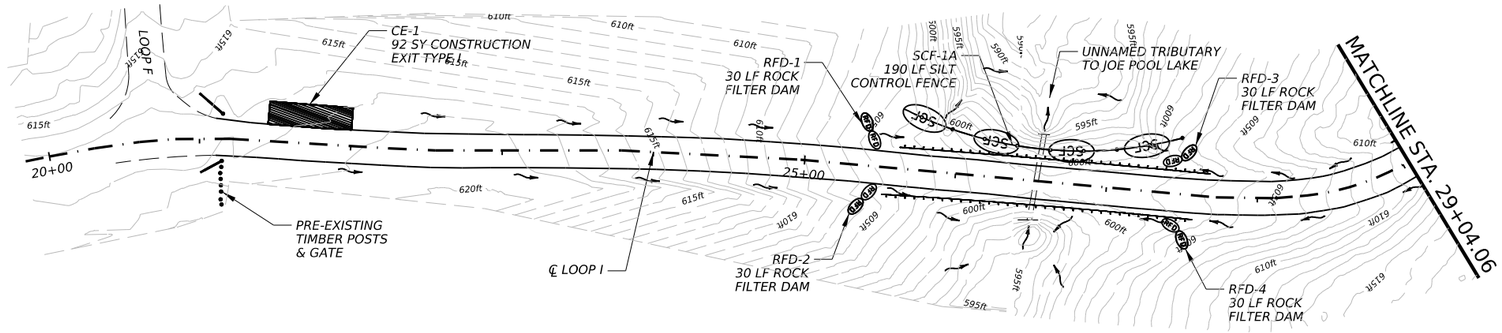
BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
SCF-1			RFD-4		
SCF-1A			RFD-5		
RFD-1			RFD-6		
RFD-2			CE-1		
RFD-3					

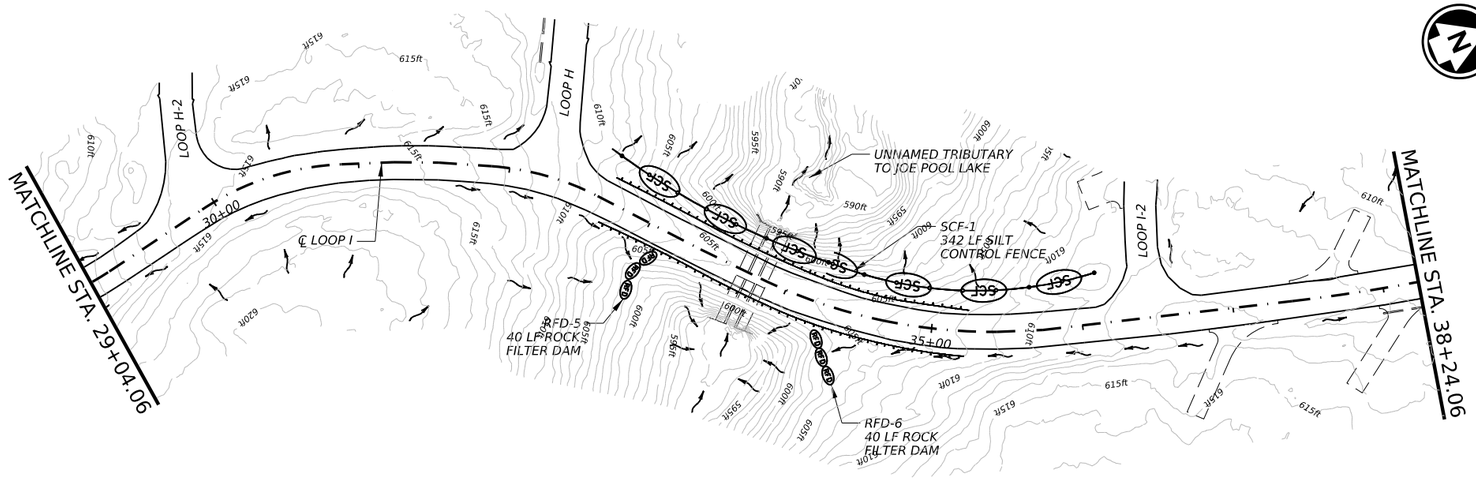
DATE DISTURBED	DATE STABALIZED

0 50 100
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
ECL	EROSION CONTROL LOG
	WATER DIRECTION

NOTES:
1. INSTALL BMPs NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBANCE OR OTHER POTENTIAL POLLUTANT-GENERATING ACTIVITIES IN THEIR CONTROL AREA.
2. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.
3. LIMITS OF TEMPORARY SEEDING FOR EROSION CONTROL MATCH PERMANENT SEEDING AS SHOWN ON THE TYPICAL SECTIONS.
4. REMOVE BMPs IN THEIR CONTROL AREAS WITHIN TWO WEEKS OF VEGETATION ESTABLISHMENT OR AS APPROVED.
5. NO PERSONNEL, EQUIPMENT, MATERIAL STOCKPILING, ETC., ALLOWED IN THE ENVIRONMENTAL SENSITIVE AREAS.





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CEDAR HILL STATE PARK

SW3P LAYOUT
SHADY RIDGE
LOOP I

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		105

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BMP INSTALL/REMOVE DATE		
BMP #	INSTALL DATE	REMOVE DATE
RFD-7		
RFD-8		
SCF-5		

DATE DISTURBED	DATE STABALIZED

0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
ECL	EROSION CONTROL LOG
	WATER DIRECTION

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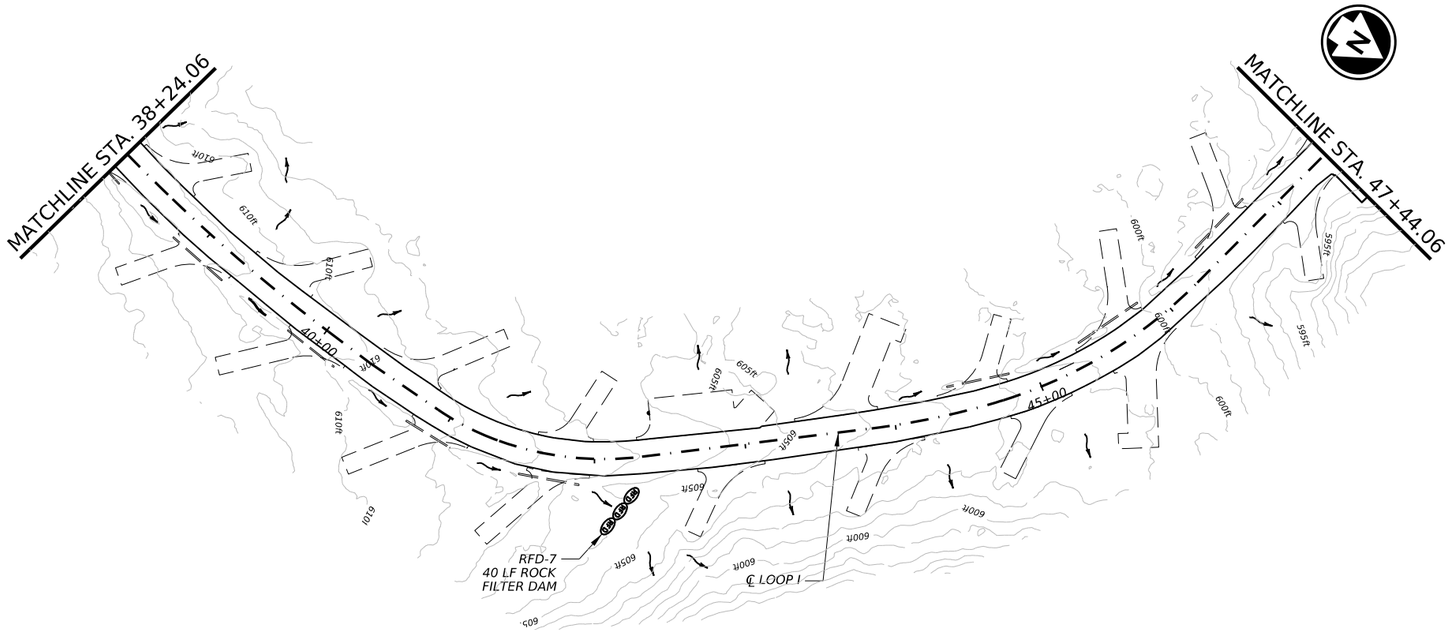

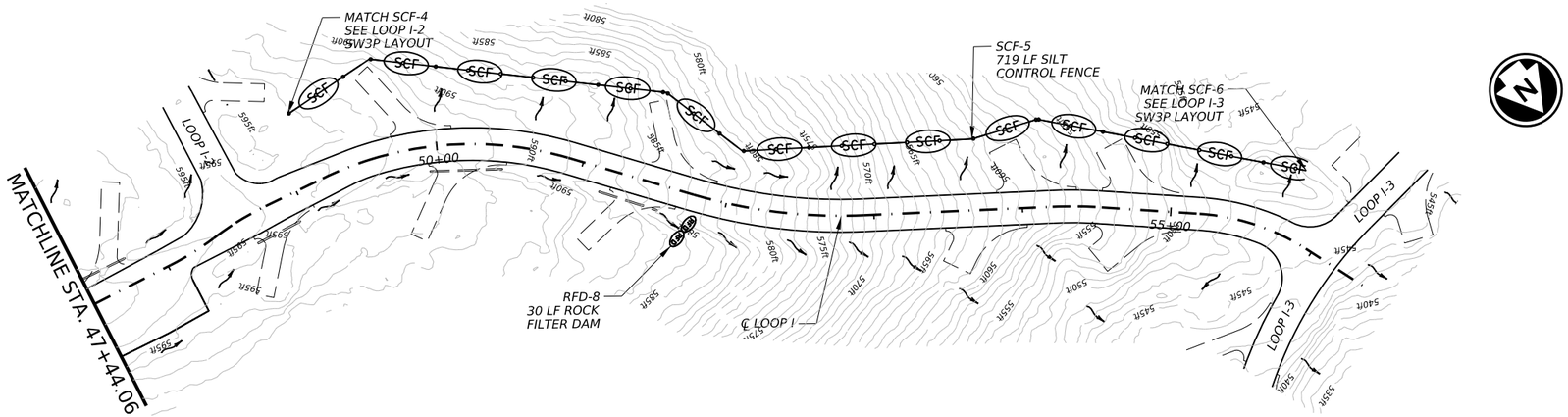

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CEDAR HILL STATE PARK

SW3P LAYOUT
SHADY RIDGE
LOOP I

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		106

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BMP INSTALL/REMOVE DATE		
BMP #	INSTALL DATE	REMOVE DATE
RFD-14		
SCF-2		
SCF-3		
SCF-4		
ECL-1		

DATE DISTURBED	DATE STABALIZED

0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
ECL	EROSION CONTROL LOG
	WATER DIRECTION

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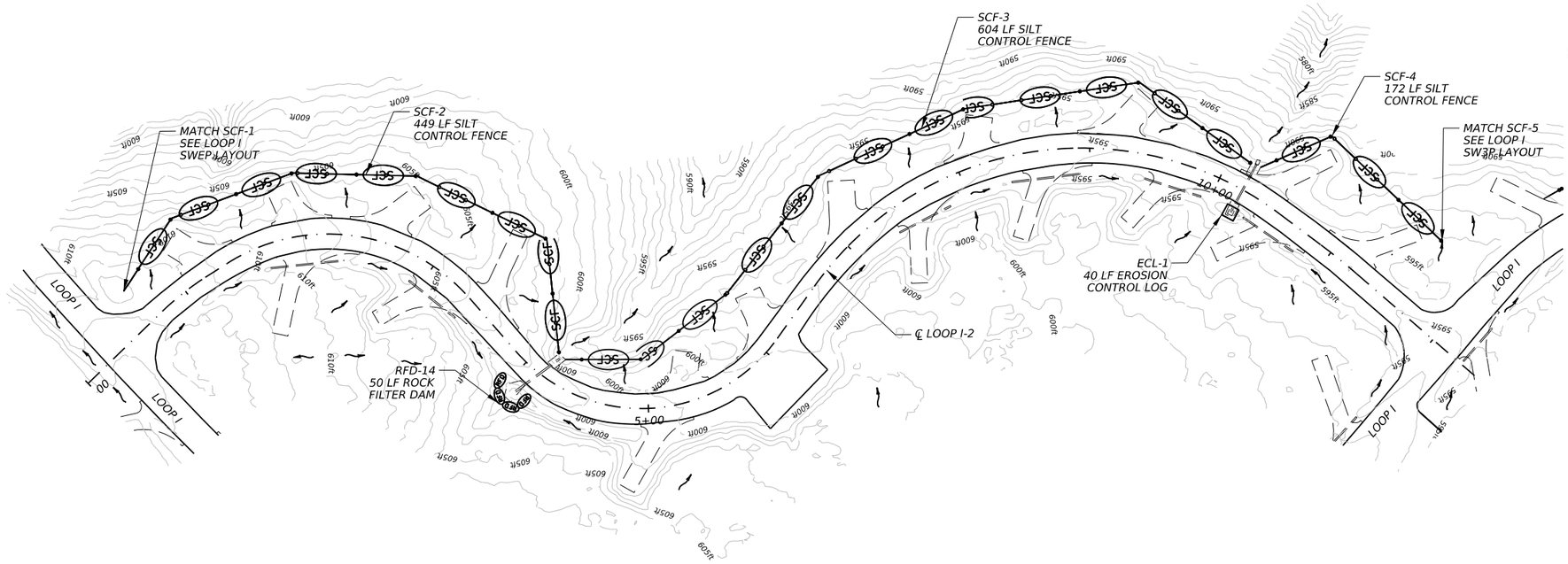

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CEDAR HILL STATE PARK

SW3P LAYOUT
SHADY RIDGE
LOOP I-2

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		107

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0 50 100

SCALE IN FEET

BMP INSTALL/REMOVE DATE

BMP #	INSTALL DATE	REMOVE DATE
RFD-9		
RFD-10		
RFD-11		
RFD-11A		
RFD-12		
RFD-13		
SCF-6		
SCF-7		
SCF-7A		

DATE DISTURBED	DATE STABALIZED

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
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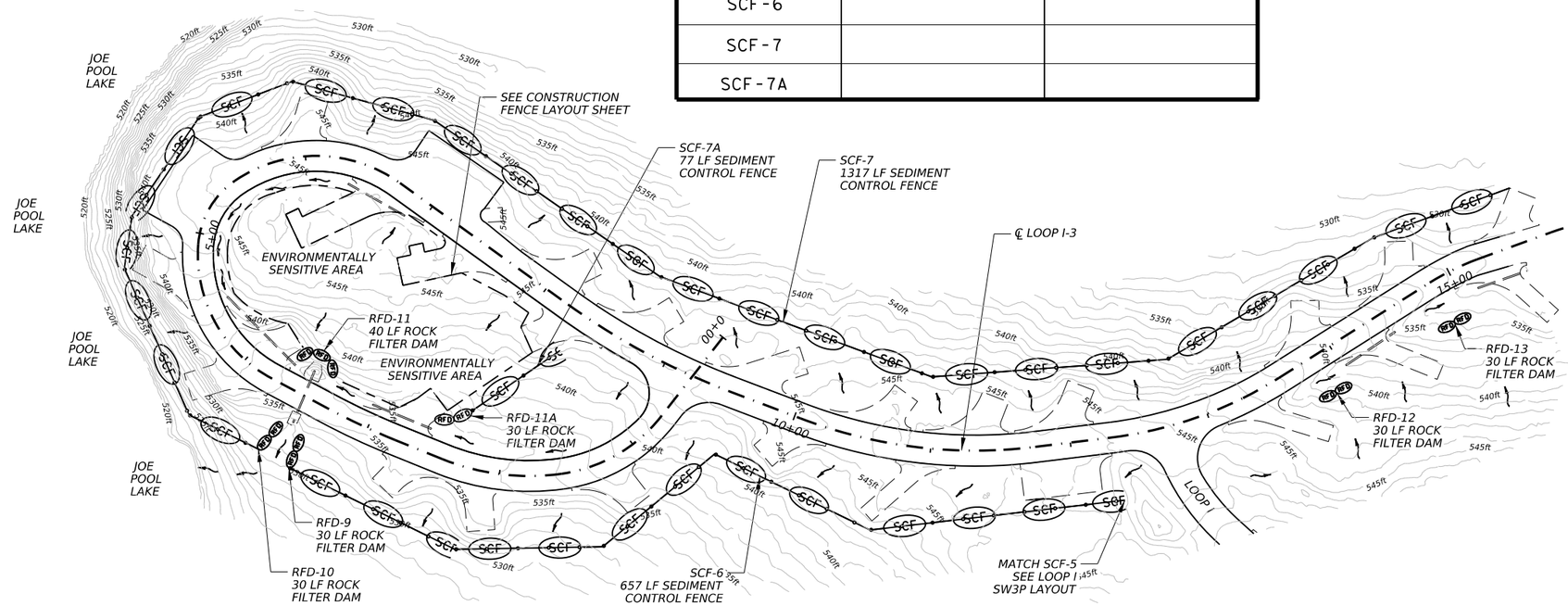

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CEDAR HILL STATE PARK

SW3P LAYOUT
SHADY RIDGE
LOOP I-3

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		108

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SCF-8			SCF-15			RFD-16		
SCF-9			ECL-2			RFD-17		
SCF-10			ECL-3			RFD-18		
SCF-11			RFD-15					

DATE DISTURBED	DATE STABALIZED

0 50 100
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
ECL	EROSION CONTROL LOG
	WATER DIRECTION

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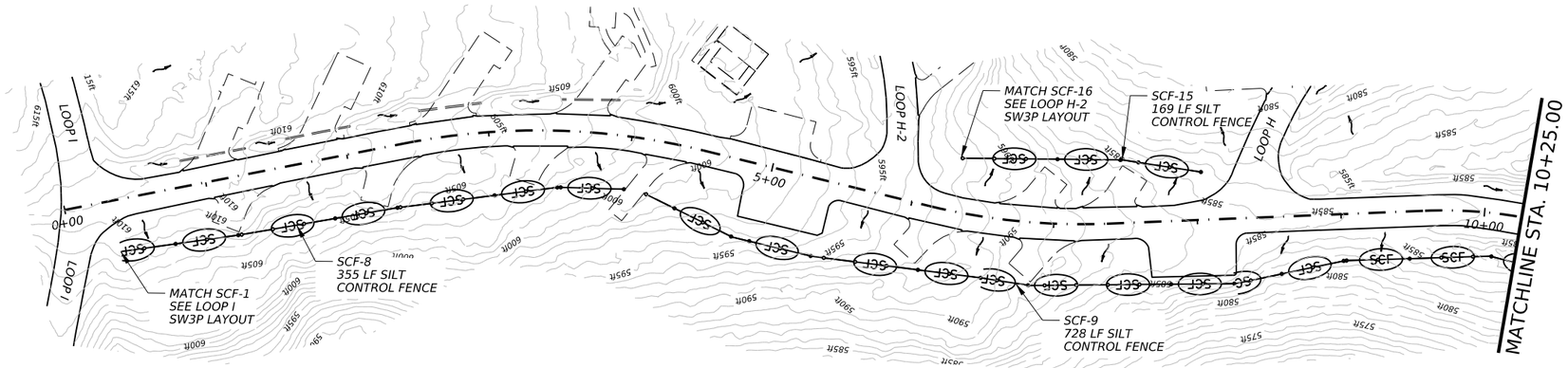

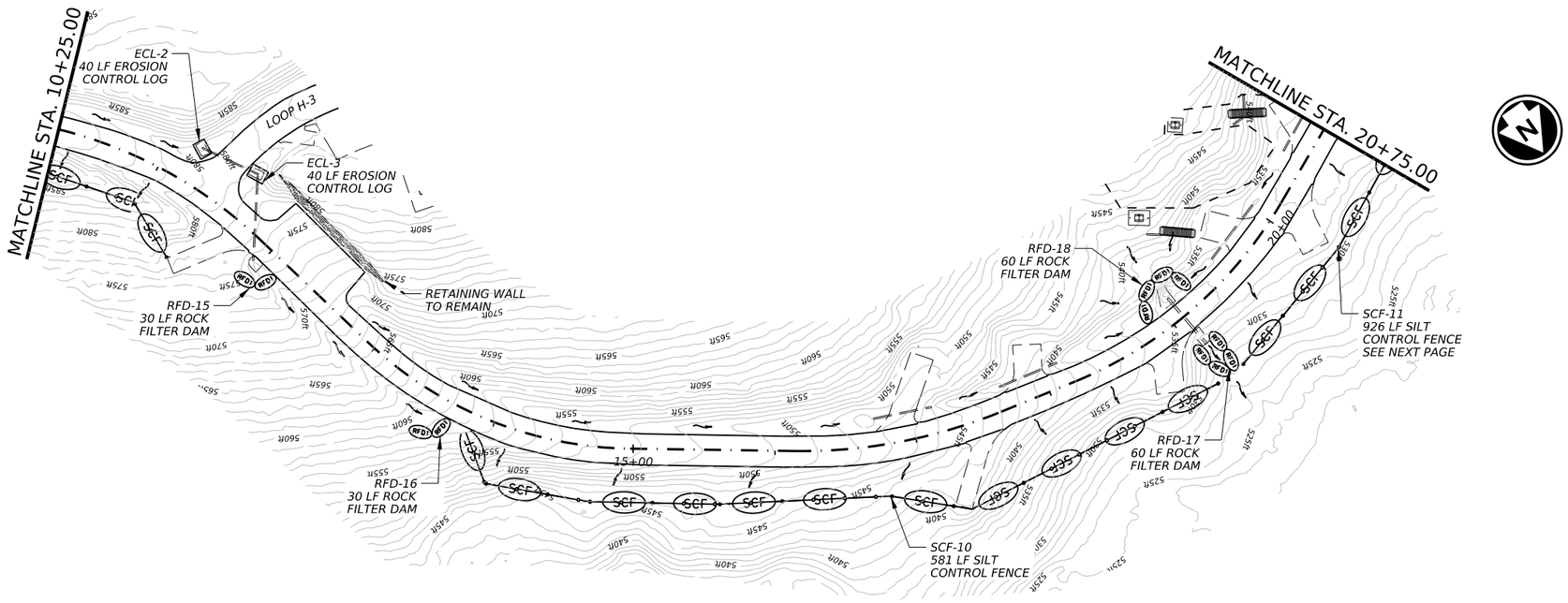

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SW3P LAYOUT
EAGLE FORD
LOOP H

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		109

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BMP INSTALL/REMOVE DATE

BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE	BMP #	INSTALL DATE	REMOVE DATE
SCF-12			RFD-19			RFD-23		
SCF-13			RFD-20					
SCF-14			RFD-21					
ECL-4			RFD-22					

DATE DISTURBED	DATE STABALIZED

0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
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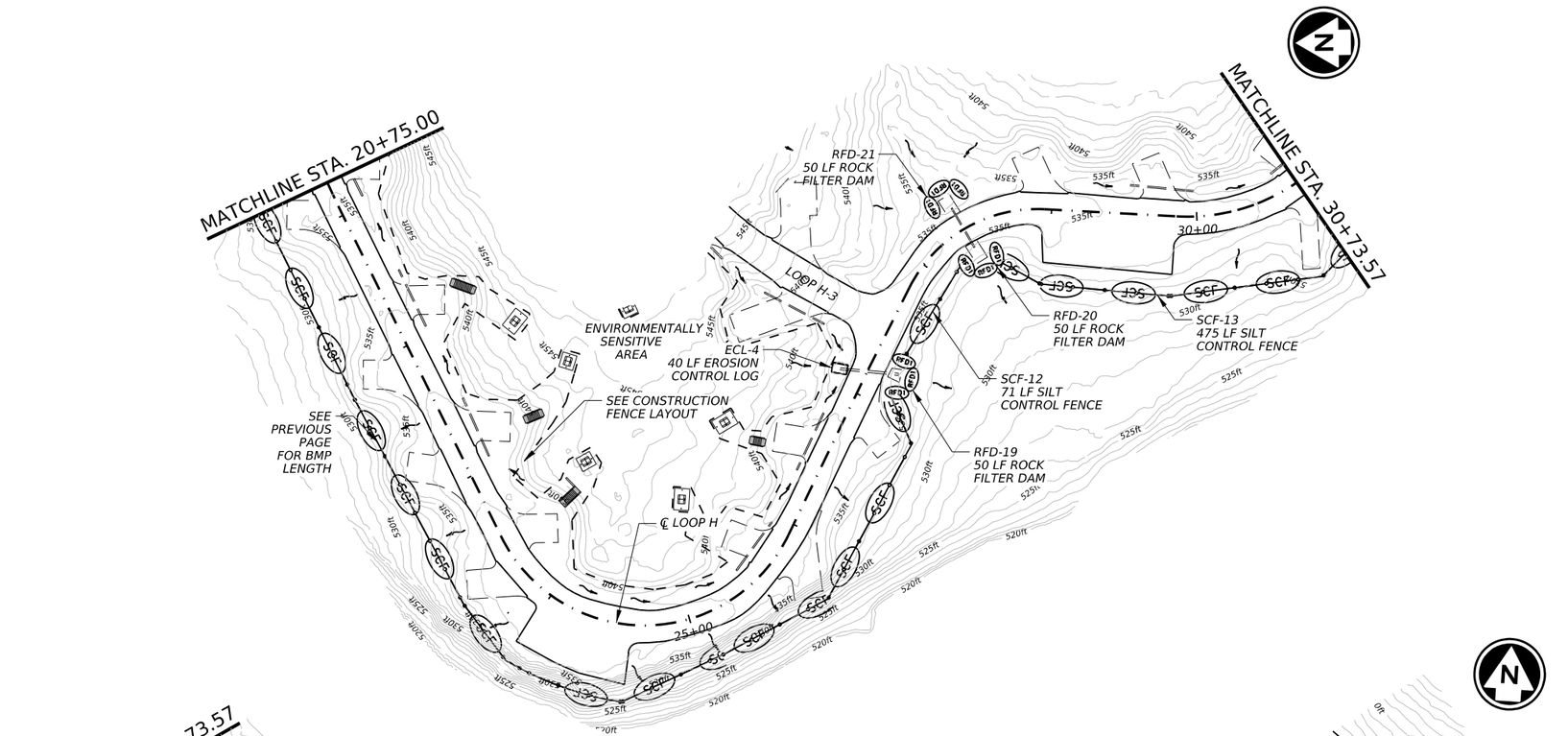

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CEDAR HILL STATE PARK

SW3P LAYOUT
EAGLE FORD
LOOP H

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		110

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BMP INSTALL/REMOVE DATE		
BMP #	INSTALL DATE	REMOVE DATE
ECL-5		
SCF-16		
SCF-17		
RFD-24		

DATE DISTURBED	DATE STABALIZED

0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
ECL	EROSION CONTROL LOG
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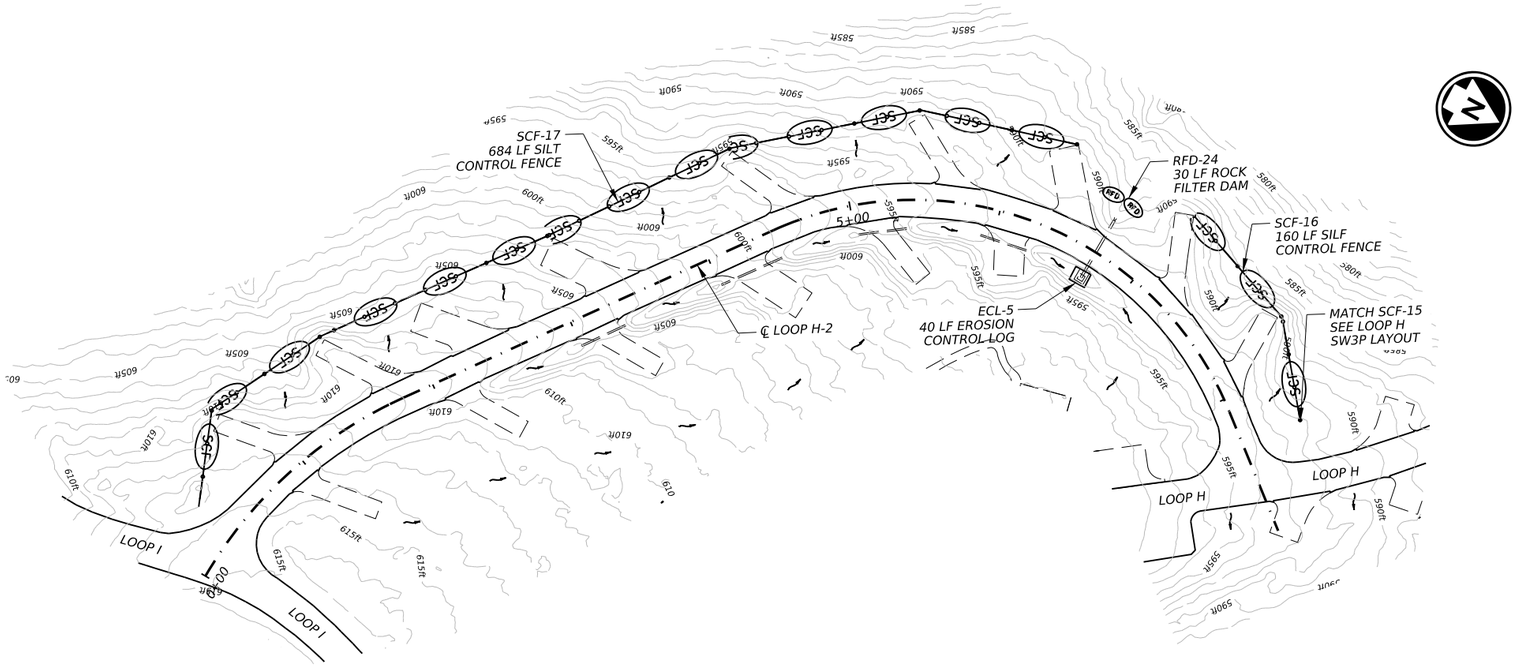

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6/12/2024

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Texas Department of Transportation

CEDAR HILL STATE PARK

SW3P LAOUT
EAGLE FORD
LOOP H-2

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		111

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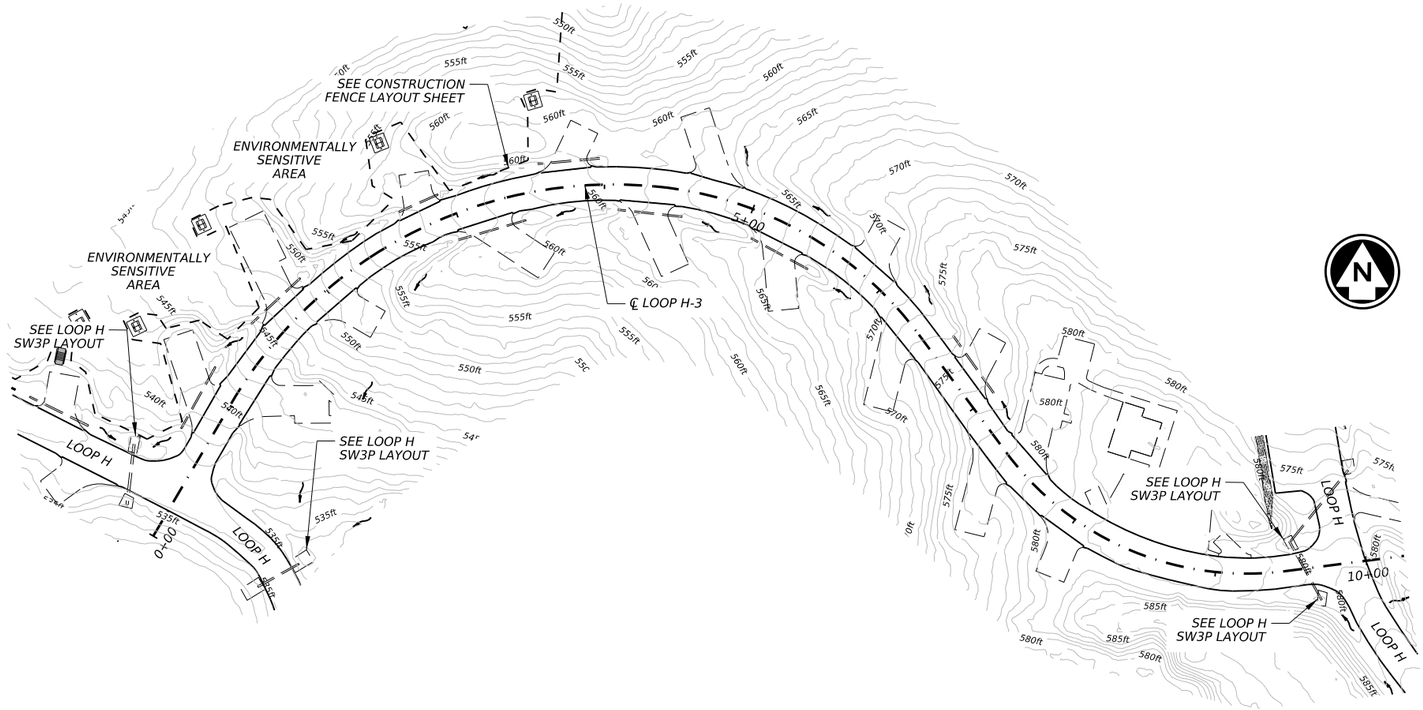

0 50 100

SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
SCF	SILT CONTROL FENCE
	CONSTRUCTION EXIT
RFD	ROCK FILTER DAM
ECL	EROSION CONTROL LOG
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6/12/2024

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2024
Texas Department of Transportation

CEDAR HILL STATE PARK

SW3P LAYOUT
EAGLE FORD
LOOP H-3

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		112

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0 50 100
SCALE IN FEET

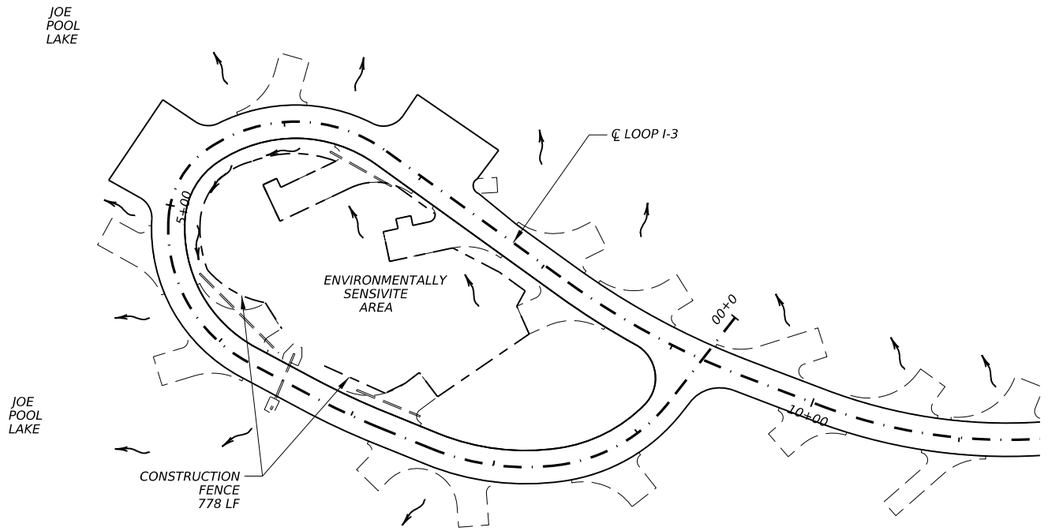
CONSTRUCTION FENCE

INSTALL DATE	REMOVE DATE

LEGEND	
SYMBOL	DESCRIPTION
~	WATER DIRECTION
– – ·	CONSTRUCTION FENCE

NOTES:
1. ORANGE CONSTRUCTION FENCE SHALL BE INSTALLED, MAINTAINED, AND REMAIN IN PLACE THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS.
2. AREA WITHIN CONSTRUCTION FENCE HAS BEEN IDENTIFIED AS ENVIRONMENTALLY SENSITIVE. NO MATERIAL/EQUIPMENT STORAGE, STAGING, TURNAROUNDS, OR ANY IMPACT OUTSIDE OF EXISTING ROAD FOOTPRINT.
3. ORANGE CONSTRUCTION FENCE SHALL BE 5 FT IN HEIGHT AND CONTINUOUS.
4. CONSTRUCTION FENCE REMOVAL WILL BE SUBSIDIARY TO ITEM 506-7034.

N



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6/28/2024
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2024
Texas Department of Transportation

CEDAR HILL STATE PARK

ENVIRONMENTALLY SENSITIVE AREA CONSTRUCTION FENCE LAYOUT (SHADY RIDGE)

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		113

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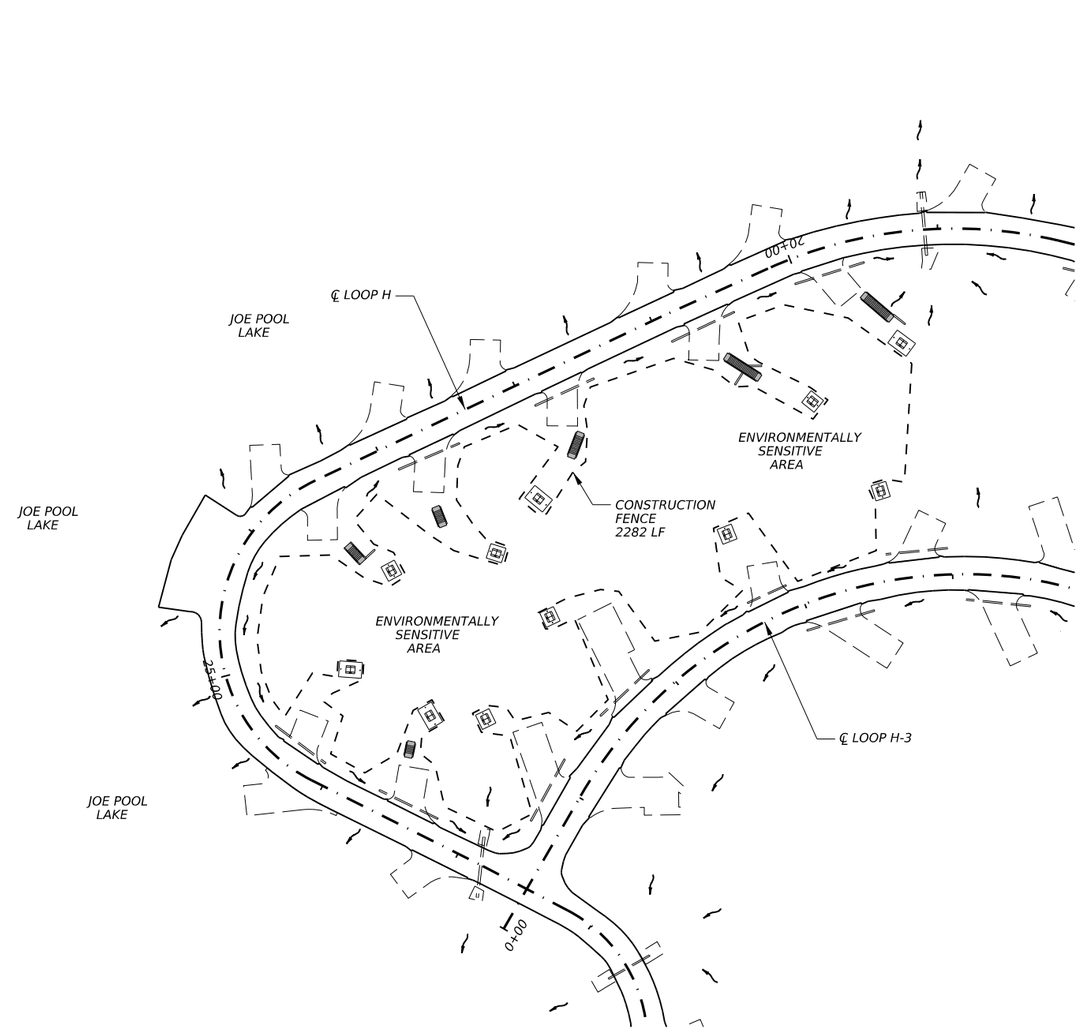
CONSTRUCTION FENCE	
INSTALL DATE	REMOVE DATE

0 50 100
SCALE IN FEET

LEGEND	
SYMBOL	DESCRIPTION
~	WATER DIRECTION
– – ·	CONSTRUCTION FENCE



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3. ORANGE CONSTRUCTION FENCE SHALL BE 5 FT IN HEIGHT AND CONTINUOUS.
4. CONSTRUCTION FENCE REMOVAL WILL BE SUBSIDIARY TO ITEM 506-7034.

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6/28/2024
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2024
Texas Department of Transportation

CEDAR HILL STATE PARK

ENVIRONMENTALLY SENSITIVE AREA CONSTRUCTION FENCE LAYOUT (EAGLE FORD)

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0918	47	360	FD 701241
DIST	COUNTY		SHEET NO.
DAL	DALLAS		114

DATE: 6/28/2024 4:16:04 PM
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SURFACE PREPARATION ITEM 160* FURN & PLACE TOPSOIL /TEM 161* COMPOST MANUF TOPSOIL (4") SY

SURFACE PREPARATION

Prepare planting area surface BEFORE placing Topsoil, Compost, Fertilizer, Seed and/or Sod.
Once project area has been completed to final lines, grade and compaction, remove objectionable materials from planting area surface and scarify existing surface to a depth of 4-inches, unless otherwise specified or directed.

Refer to Items 160 and 161 of TxDOT 2024 Standard Specifications* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.

TOPSOIL NOTES:
1. When Topsoil is specified under Item 160, use suitable material salvaged from the project ROW in accordance with Item 160 specifications, and/or secure additional good material from approved sources.
2. Topsoil shall include only the top 6-inches of its native surface, and be easily cultivated, fertile, erosion-resistant and free of objectionable materials.
3. Topsoil obtained from sites outside of the ROW must come from approved sources and have a pH between 5.5 and 8.5 su.
4. Place Topsoil on pre-scarified surface, spread to a uniform loose cover at thickness specified, and shape per plans. Water and roll the finished surface with a light roller or other suitable equipment per Item 160.3; do not over-compact.

COMPOST NOTES:
1. When Compost Manufactured Topsoil (4") is specified under Item 161, use compost meeting all requirements of Item 161.2 and Table 1. Provide quality control (QC) documentation and obtain Engineer approval prior to compost delivery.
2. Contractor shall provide tickets/invoices that document material type, quantity and placement for all compost delivered.
3. Additional topsoil may be required to be imported to achieve the compost/topsoil mix ratio. Topsoil must meet Item 160 specifications.

APPLICATION OF COMPOST MANUFACTURED TOPSOIL (4")

AFTER Surface Preparation, uniformly spread a 1-inch layer of compost on-grade with 3-inches topsoil over pre-scarified planting area. (25% compost and 75% topsoil = 1" compost and 3" topsoil.)
Then mix compost and topsoil together by cultivating the compost into the topsoil (by till or disk) to a 4-inch (4") depth. Roll the finished surface with a light corrugated drum; do not over-compact.

FERTILIZER ITEM 166* FERTILIZER TON

SOIL ANALYSIS FOR FERTILIZER APPLICATION RATE

Unless otherwise stated in the plans, Contractor shall perform at least one soil analysis on each project before fertilization, and submit results to Engineer with recommended fertilizer rates based on soil analysis. Engineer may direct sample location(s). Soil analysis may be waived if both compost and sod are used on entire project.

FERTILIZER NOTES:
1. Refer to Item 166 of TxDOT 2024 Standard Specifications* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
2. Apply fertilizer BEFORE seeding, or AFTER placing sod.
3. Use fertilizer containing nitrogen (N), phosphoric acid (P) and potash (K) nutrients, unless otherwise specified. At least 50% of the Nitrogen component shall be a slow-release sulfur-coated urea as described in Item 166.3. Do not apply more than 60-pounds (lbs) Nitrogen per acre without Engineer concurrence.
4. Deliver fertilizer in bags, clearly labeled to show contents, unless otherwise specified or approved prior to delivery. When non-bagged, loose fertilizer is approved, provide documentation for each load of material delivered, to validate authenticity of the material.
5. Apply fertilizer uniformly, as a dry, granular material, essentially dust-free, and do not mix with water for application as a slurry.
6. When both temporary and permanent seeding are specified for the same area, apply half of the required fertilizer before the temporary seeding operation and the other half before the permanent seeding operation.

SEEDING FOR EROSION CONTROL ITEM 164* DRILL SEED SY

PERMANENT SEEDING MIXES (ADD FLOWER SEEDING MIX TO PERMANENT SEED, ALL SOILS)

PERMANENT SEED PLANTING SEASON: FEB. 1 TO MAY 15

		Pure Live Seed Rate **	
RURAL CLAY SOILS (PERM*RURAL*CLAY)	Sideoats Grama (Haskell)	15%	1.5 lbs/AC
	Hooded Windmillgrass (Burnet)	15%	0.3 lbs/AC
	White Tridens (Guadalupe)	15%	0.3 lbs/AC
	Little Bluestem (OK Select)	15%	1.05lbs/AC
	Buffalograss (Texoka)***	10%	1.5 lbs/AC
	Silver Bluestem (Santiago)	05%	0.2 lbs/AC
	Green Sprangletop (Van Horn)	05%	0.2 lbs/AC
	Shortspike Windmillgrass (Welder)	05%	0.1 lbs/AC
	Canada Wildrye (Lavaca)	10%	2.0 lbs/AC
	Sand Dropseed (Taylor)	05%	0.1 lbs/AC
URBAN CLAY SOILS (PERM*URBAN*CLAY)	Green Sprangletop	0.3	lbs PLS per acre
	Sideoats Grama (El Reno)	3.6	lbs PLS per acre
	Buffalograss (Texoka)***	1.6	lbs PLS per acre

		Pure Live Seed Rate **	
RURAL SANDY SOILS (PERM*RURAL*SAND)	Shortspike Windmillgrass (Welder)	10%	0.2 lbs/AC
	Hairy Grama (Chaparral)	15%	0.6 lbs/AC
	Sand Dropseed (Taylor)	10%	0.2 lbs/AC
	Little Bluestem (OK Select)	15%	1.05lbs/AC
	Sideoats Grama (Haskell)	10%	1.0 lbs/AC
	Green Sprangletop (Van Horn)	10%	0.4 lbs/AC
	Hooded Windmillgrass (Burnet)	10%	0.2 lbs/AC
	Sand Lovegrass (Mason)	10%	0.4 lbs/AC
	Silver Bluestem (Santiago)	10%	0.4 lbs/AC
URBAN SANDY SOILS (PERM*URBAN*SAND)	Green Sprangletop	0.3	lbs PLS per acre
	Buffalograss (Texoka)***	1.6	lbs PLS per acre
	Sand Dropseed (Borden Co.)	0.4	lbs PLS per acre

SEEDING NOTES:
1. When seeding is specified under Item 164, refer to TxDOT 2024 Standard Specifications* for specifications, dimensions, volumes, and measurements that have been modified or not shown. Materials and construction shall meet all specifications.
2. Conduct seeding upon completion of each applicable construction stage (dependent upon planting season requirements), without compensation for additional move-ins.
3. Place seed AFTER preparing planting area surface. Refer to Surface Preparation detail this sheet, as well as Topsoil Item 160 and Compost Manufactured Topsoil Item 161 when specified. Apply fertilizer per Item 166 BEFORE seeding, per specifications and this sheet, to help drill the fertilizer into the soil.
4. When temporary grasses are well-established and more than 2-inches tall, mow planting area before seeding permanent grasses; mowing for this purpose will be subsidiary. When vegetation is not already well-established, scarify planting area to a depth as described in Item 164.3, before temporary seeding and before permanent seeding.
5. Seed material must be appropriate to the location, soil type and season. Use the seed mix species and pure live seed rates designated in Tables 1-5 of the TxDOT 2024 Standard Specifications* for Item 164, unless otherwise specified.
6. All seed shall meet labeling, delivery, analysis, and testing requirements described in Item 164.2.1. Deliver seed in labeled, unopened bags or containers to Engineer prior to planting.
7. Uniformly plant seed over the designated planting area, along the contour of slopes, and drill seed to a depth as described in Item 164.3.5.
8. Hydroseeding per Item 164.2.5.2 and 164.3.4 may be allowed, when specified or Engineer concurs. For hydroseeding, increase PLS rate by 25% and avoid microplastics.
9. Implement and continue Vegetative Watering per the schedule, rate and volume specified under Item 168.

TXDOT REFERENCE MATERIALS:

- *"STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES" 2024
- "A GUIDANCE TO ROADSIDE VEGETATION ESTABLISHMENT" 2004
- ONLINE TRAINING COURSE: MNT415 REVEGETATION DURING CONSTRUCTION
- DALLAS DISTRICT "VEGETATION ESTABLISHMENT GUIDELINES"

SODDING FOR EROSION CONTROL ITEM 162* BLOCK SODDING SY

	COMMON NAME	BOTANICAL NAME
BLOCK OR ROLL SOD	Common Bermuda Grass	Cynodon dactylon

SODDING NOTES:
1. Refer to Item 162 of TxDOT 2024 Standard Specifications* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
2. Place sod between the average date of the last freeze in the Spring and 6 weeks before the average date of the first freeze in the Fall, per the Texas Almanac for the project area.
3. Place sod only AFTER soil surface preparation is complete as detailed in this sheet. Dry soil may require pre-watering.
4. Place all sod (blocks or rolls) within 24-hours of delivery to the site, and keep moist from the time it is dug up until it is planted. Sod with dried roots will not be accepted.
5. Place sod with joints alternating on each row to prevent all joints from lining up, and place blocks firmly against adjacent blocks. Roll, tamp and trim sod per Item 162.3.
6. Place fertilizer promptly AFTER sodding operation is complete in each area.
7. Water sod immediately following placement, and continue Vegetative Watering per Item 168.

VEGETATIVE WATERING FOR ESTABLISHING SEED AND SOD ITEM 168* VEGETATIVE WATERING TGL

WATERING SCHEDULE

SEASON (Usual Months)	RATE	TIME SCHEDULE	TOTAL WATER ESTIMATE
SPRING & FALL (March, April, May, and October)	7,000 gallons/acre per working day	Vegetative watering for seed shall begin on the dayafter rainfall described below and continue for 60-consecutive working days.	420,000 gallons/acre (60 working days)
SUMMER (June through September)	12,000 gallons/acre per working day	Vegetative watering for sod shall begin on the day sod is placed and continue for a minimum of 15-consecutive working days.	720,000 gallons/acre (60 working days)
WINTER (November through February)	1,000 gallons/acre per working day	Vegetative watering for seed and/or sod shall begin on the day after placement and continue for 15-consecutive working days	15,000 gallons/acre (15 working days)

Notes: Watering rate and frequency may be adjusted, with the approval of the Engineer, to meet site conditions (especially with sod).
For informational purposes only: 1,000-gallons equals 1 TGL

VEGETATIVE WATERING NOTES:
1. Refer to Item 168 of TxDOT 2024 Standard Specifications* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
2. Use clean water, free of industrial waste and other substances harmful to vegetation growth, per Item 168.2.
3. For seeding, use Vegetative Watering to keep the seed bed moist during germination; not to provide initial watering. [After drill seeding, postpone watering operations until site receives at least 1/2-inch of natural rainfall in a single day. Also delay watering operations for warm season grasses until soil temperature exceeds 70 degrees F.]
4. For sod, water immediately.
5. All water distribution equipment shall be furnished and operated to provide water at a uniform and controllable rate. Use a metering device on all watering equipment.
6. Evenly distribute water over entire area designated for seeding and/or sodding, using even spray patterns that do not disturb seed bed and/or dislodge seed from seed bed.
7. Do not water between the hours of 12:00 p.m. and 6:00 p.m. when daytime temperatures exceed 95 degrees F.
8. After initial establishment period, continue intermittent watering of newly established seed or sod at a rate of approximately 1-inch water/week, during summer months until end of contract.
9. If 1/4-inch or more of rainfall occurs on site on any given working day, no vegetative watering will be needed on that working day. (Note: 1/4-inch of rain equals 7,000 gallons of water per acre.)
10. Should the Contractor fail to apply the specified amount of water within the time allowed, any seed or sod in poor condition shall be replaced, fertilized, and watered at Contractor's expense.

TEMPORARY SEEDING MIX DRILL SEED (TEMP*WARM*COOL)

		Pure Live Seed Rate **	
COOL SEASON (Sept.1 to Jan.31)	Brownton Millet	20.0	lbs/AC
WARM SEASON (Feb.1 to Aug.30)	Oats	30.0	lbs/AC
	Wheat	30.0	lbs/AC
	Little Barley	5.0	lbs/AC
	Western Wheatgrass	5.0	lbs/AC

FLOWER SEEDING MIX (INCLUDE WITH PERMANENT SEED, ALL SOILS)

Engelmann Daisy (Eldorado)	1.5	lbs/AC
Awnless Bushsunflower (Plateau)	1.5	lbs/AC
Partridge Pea	1.5	lbs/AC
Illinois Bundleflower (Sabine)	1.5	lbs/AC
Rio Grande Clammyweed (Zapata)	2.0	lbs/AC

STATE OF TEXAS
DANIEL DIAZ, JR
124907
LICENSED
PROFESSIONAL ENGINEER

7/23/2024
Signature of Registrant , P.E. & Date

** Note: The amount of Pure Live Seed (PLS) in one-pound (1 lb) of bulk seed is based on three factors: % Purity, % Germination, and % Dormant. Use the following formula to calculate PLS in bulk seed: PLS = % Purity X (% Germination + % Dormant) Ensure that the specified amount of pure live seed is placed.
*** Note: When Buffalograss is specified, use seed that is treated with potassium nitrate to overcome dormancy.

ROADSIDE MOWING ITEM 730* AC

MOWING NOTES:
1. During project construction, once seed is established, use mowing to promote permanent grasses by mowing any remaining temporary grasses.
2. Also mow established turf and ROW grasses in designated areas of project limits as specified or directed by Engineer.
3. Remove litter and debris prior to mowing.
4. Do not mow on wet ground when soil rutting can occur.
5. Hand-trim around obstructions and stormwater control devices as needed.
6. Maintain paved surfaces free of tracked soils and clipped vegetation.

SEQUENCE OF WORK:

- SCARIFY SURFACE SOIL.
- PREPARE / PLACE TOPSOIL, OR
- PREPARE / PLACE COMPOST MANUFACTURED TOPSOIL.
- APPLY FERTILIZER AND THEN PLACE SEEDING, OR
- PLACE SOD AND THEN APPLY FERTILIZER.
- CONDUCT VEGETATIVE WATERING.
- CONDUCT ROADSIDE MOWING, AS DIRECTED.

Texas Department of Transportation

VEGETATION ESTABLISHMENT SHEET MOD

(DALLAS DISTRICT)

TEMPLATE REVISION DATE: 07/17/24

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
XXX	6	C918-47-360		FD 701241
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
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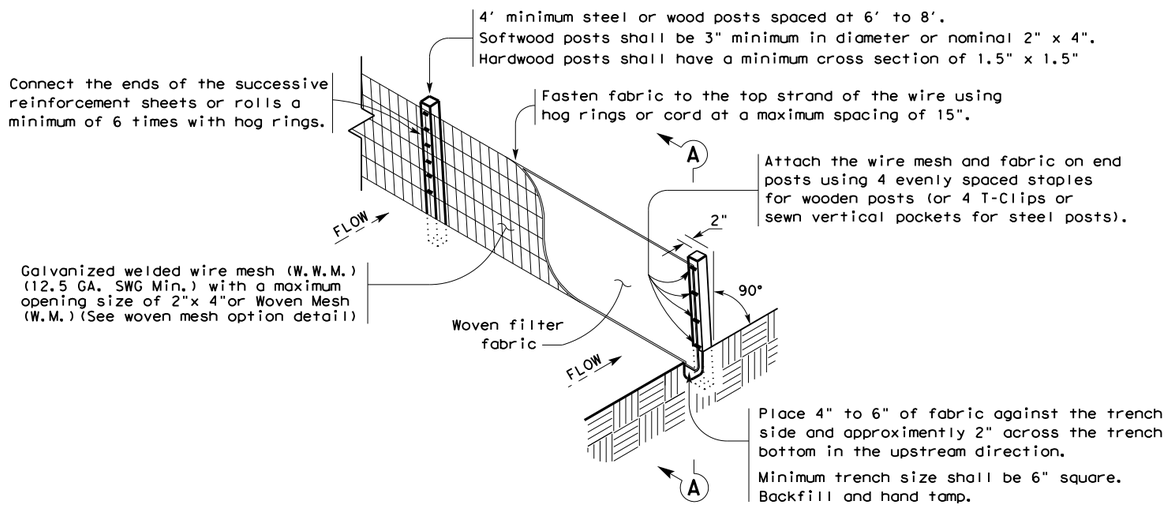
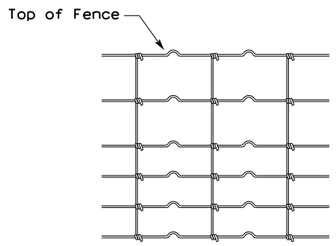
XXX	0918	47	360	
CHECK				

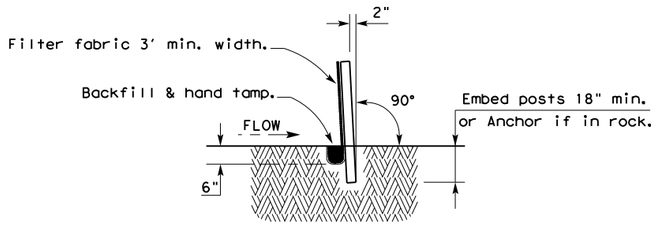
DATE



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.

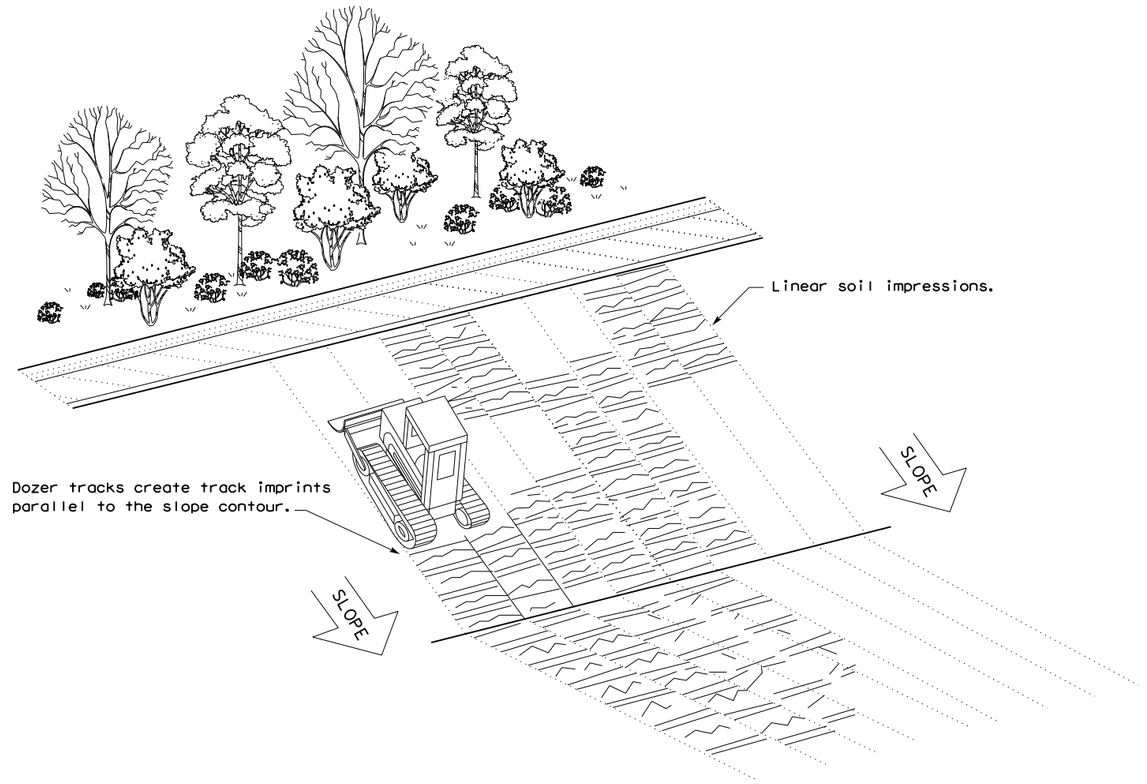
LEGEND

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		
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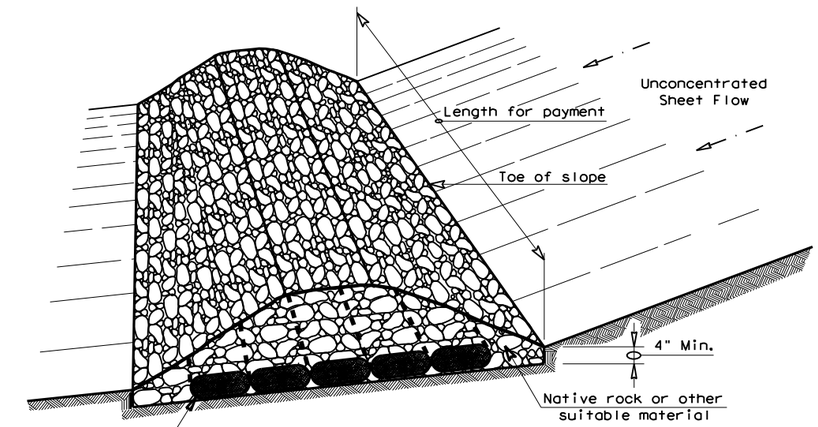
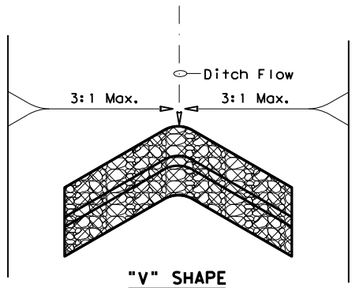
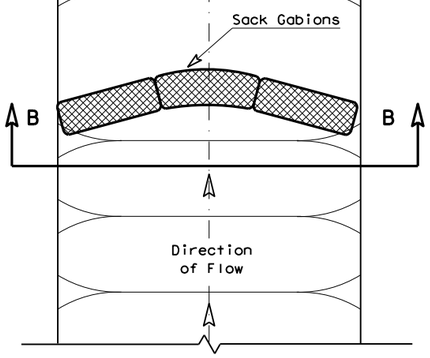


FILTER DAM AT TOE OF SLOPE

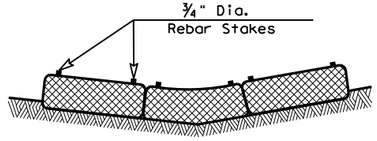
RFD1



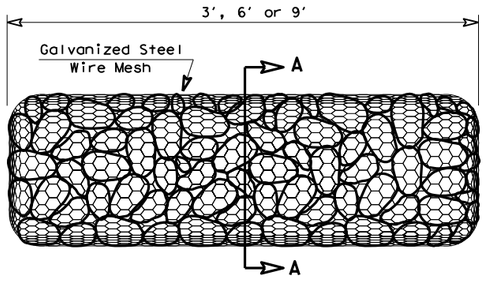
"V" SHAPE PLAN VIEW



PLAN VIEW

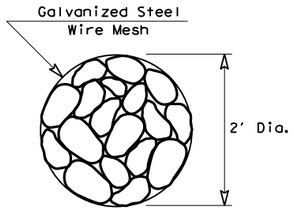


SECTION B-B

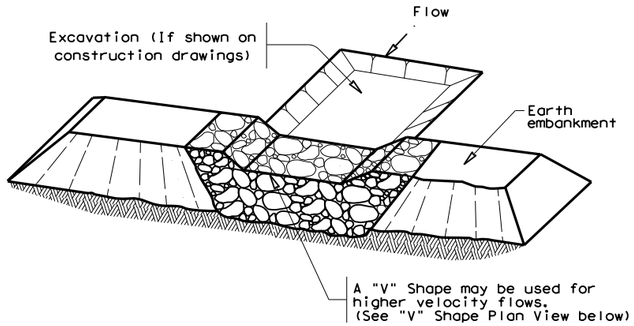


TYPE 4 (SACK GABIONS)

RFD4

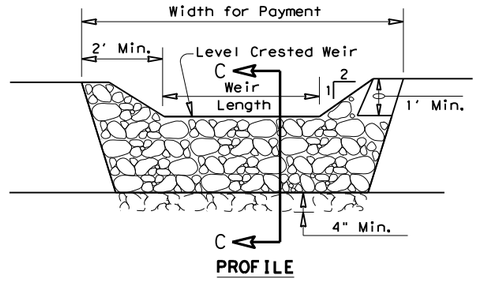


SECTION A-A



FILTER DAM AT SEDIMENT TRAP

RFD1 — OR — RFD2



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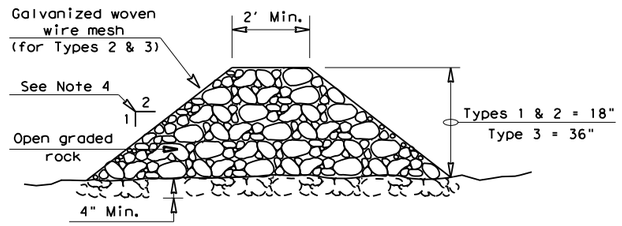
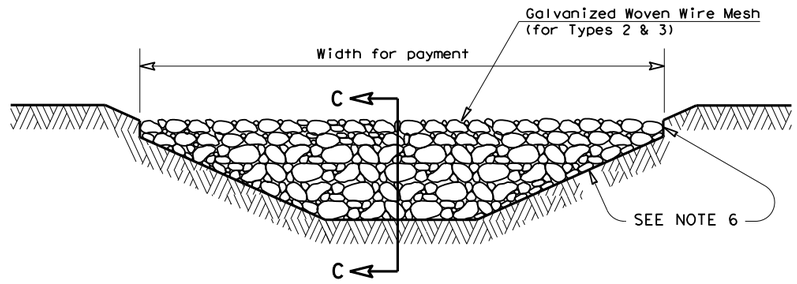


SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		117

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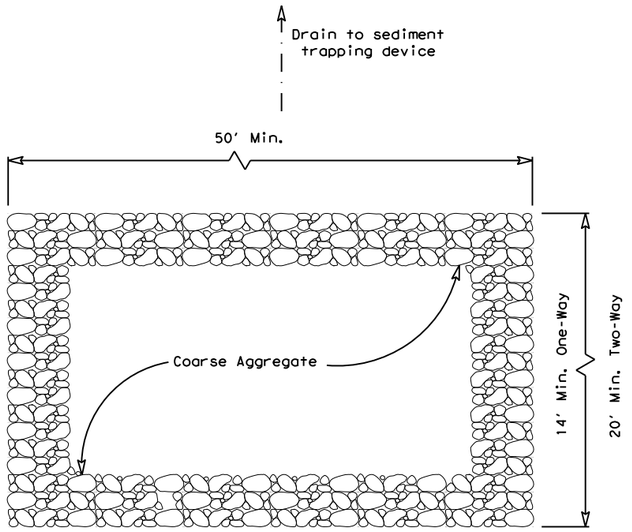
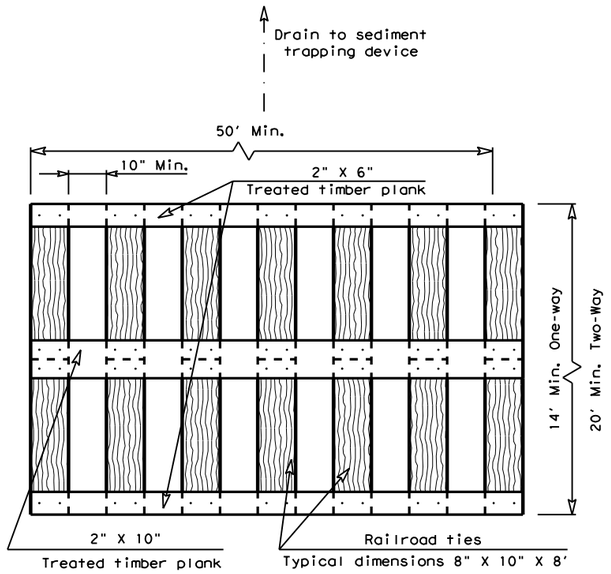


PLAN VIEW



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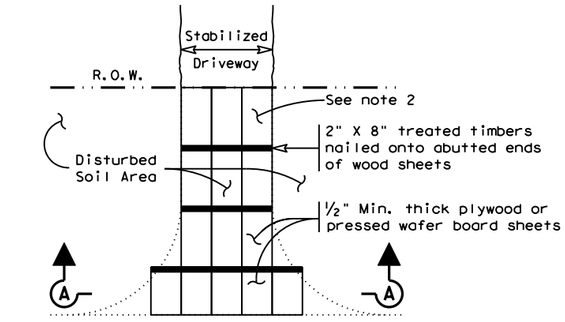

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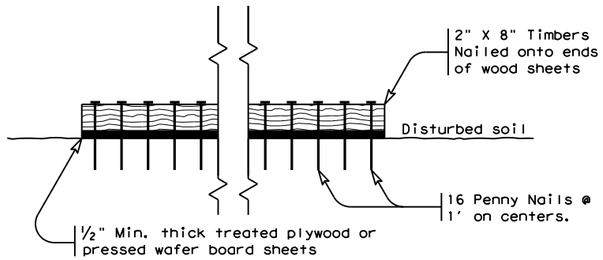
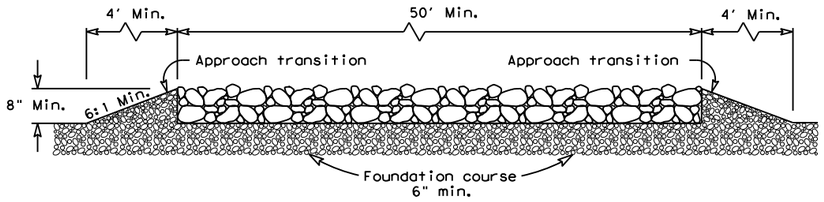


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

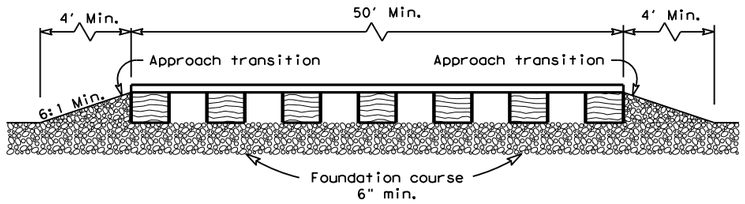
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

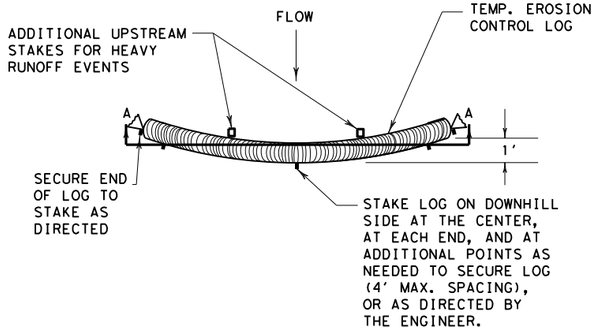
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

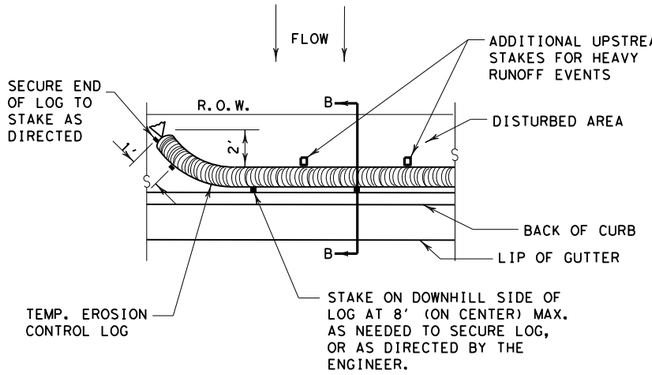
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	360	FD 701241
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		118

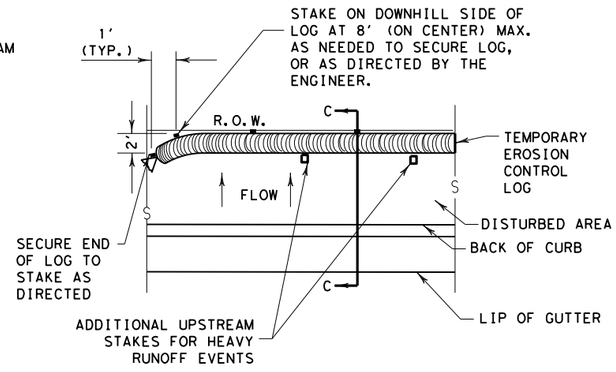
DATE: 6/28/2024
FILE: c:\txdot\pw_online\txdot5\siyoon.woo\d0811117\ec916.dgn



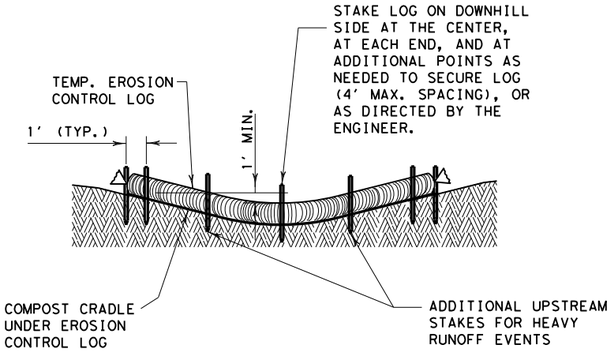
PLAN VIEW



PLAN VIEW



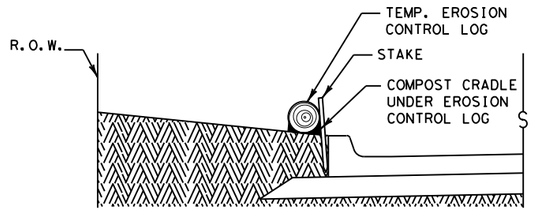
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

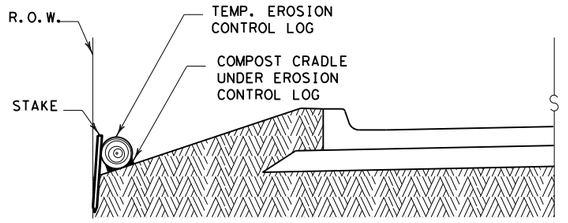
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

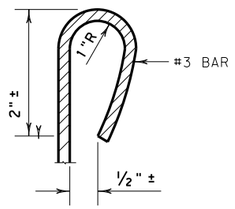
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



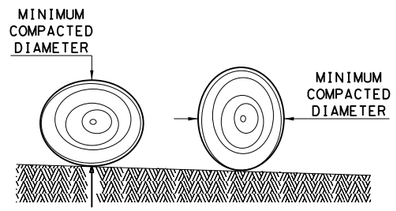
REBAR STAKE DETAIL

LEGEND

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

GENERAL NOTES:

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



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

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

Control logs should be placed in the following locations:

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

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

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

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916		DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0918	47	360		FD 701241		
	DIST	COUNTY			SHEET NO.		
	DAL	DALLAS			119		

DATE: 6/28/2024
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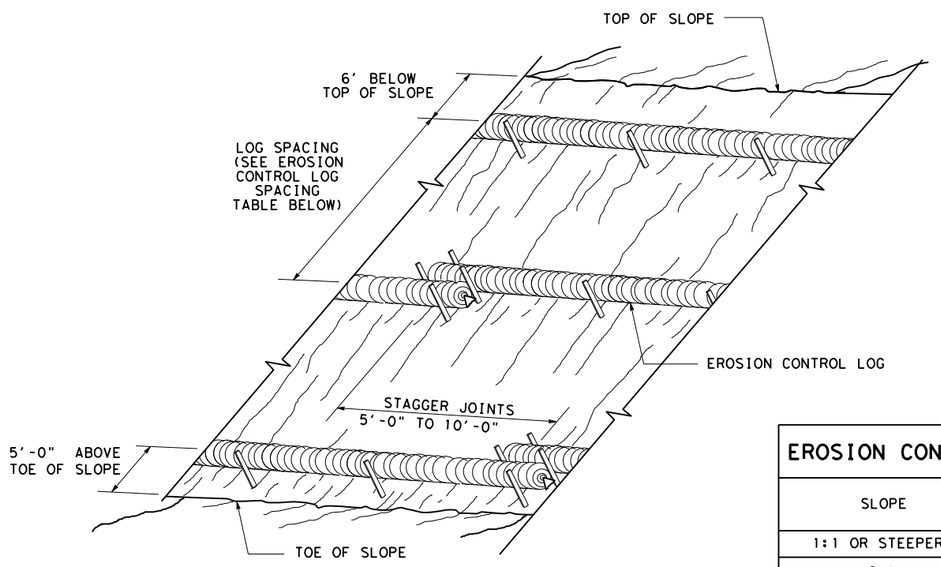
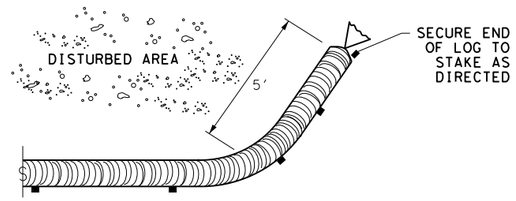


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

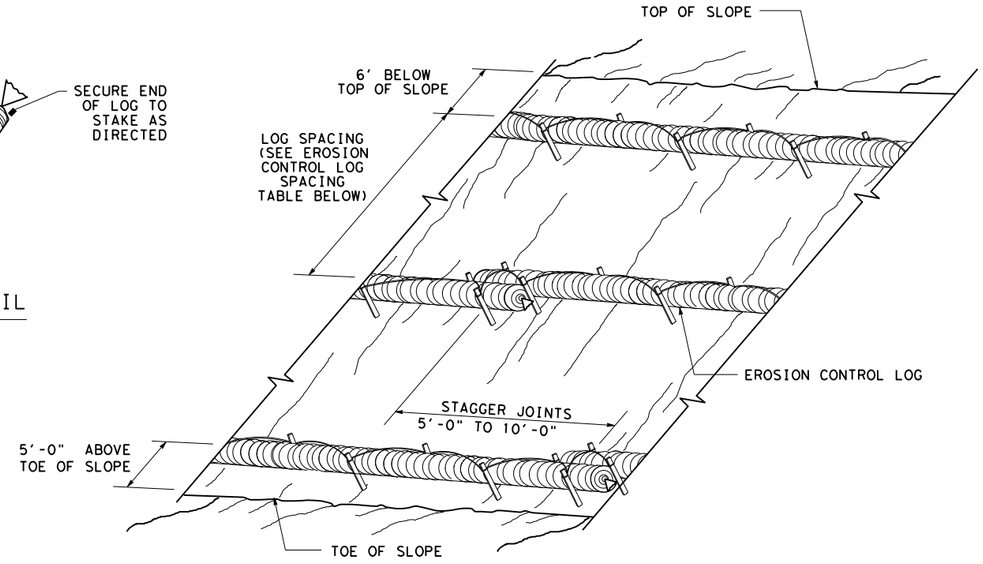
CL-SST



END SECTION RAP DETAIL

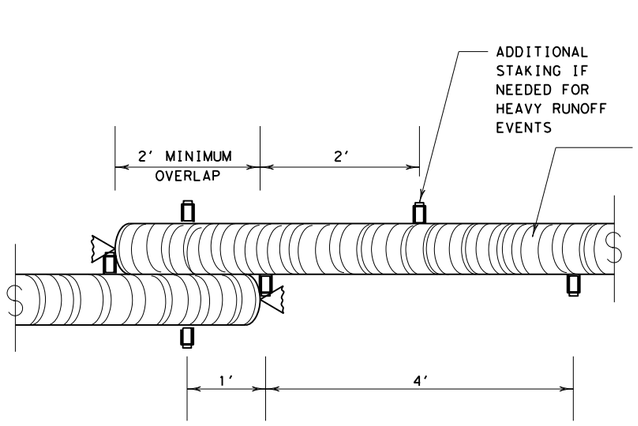
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

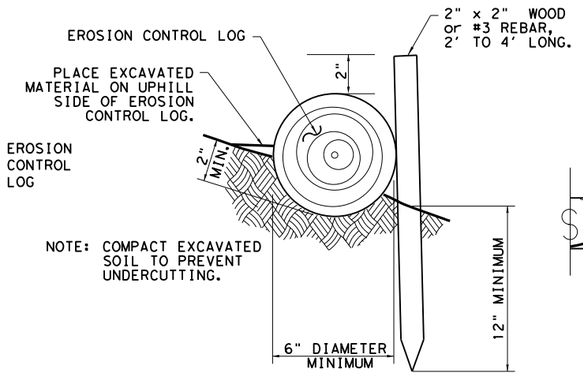
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

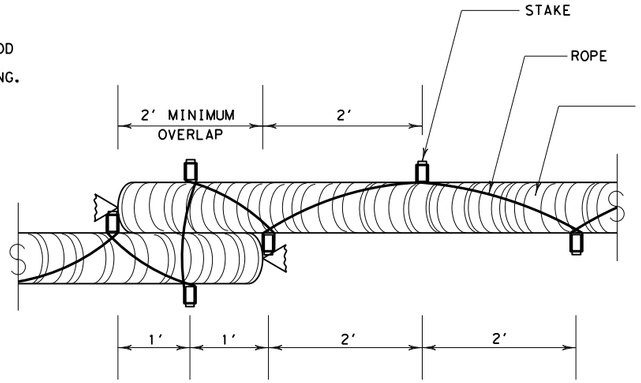


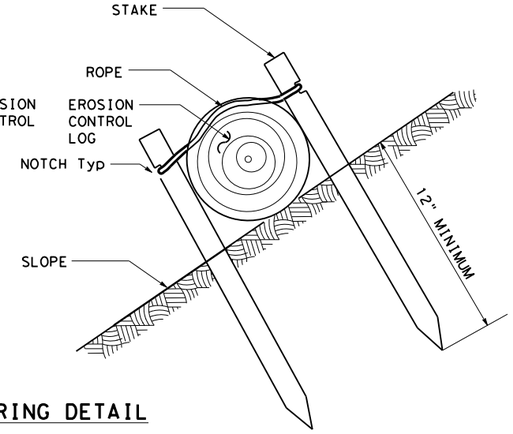


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

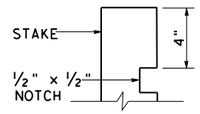
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation — Design Division Standard

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

FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0918	47	360		FD 701241	
	DIST	COUNTY			SHEET NO.	
	DAL	DALLAS			120	

DATE: 6/28/2024
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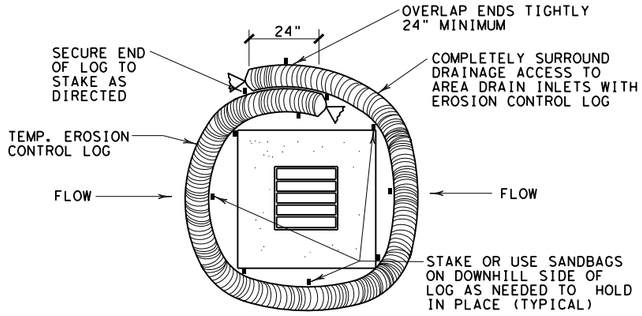
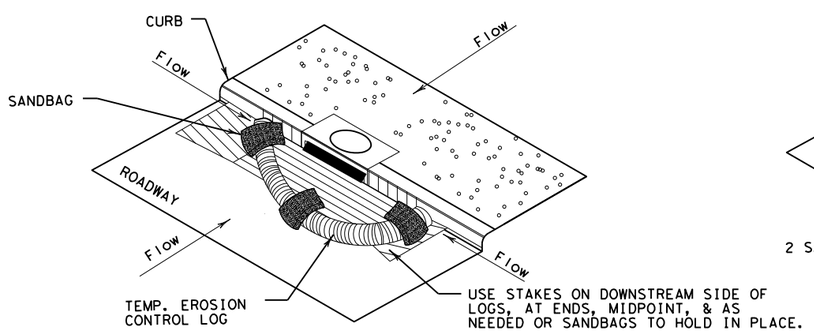


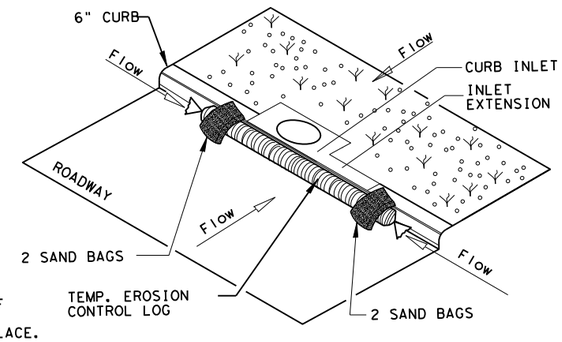
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

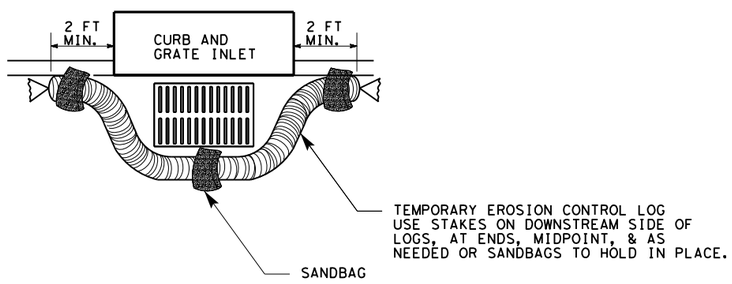
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

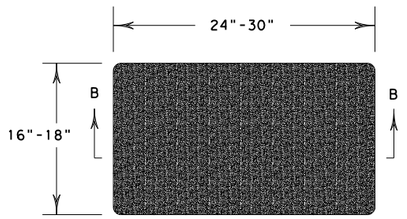
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

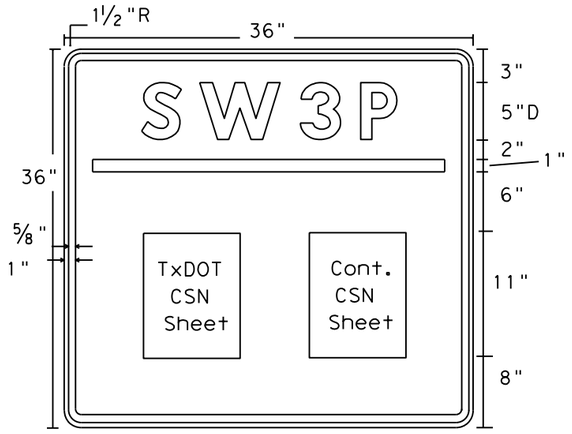
EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0918	47	360		FD 701241	
	DIST	COUNTY			SHEET NO.	
	DAL	DALLAS			121	

LEVELS DISPLAYED

PATH:



SW3P SIGN

TxDOT & Contractor Construction Site Note (CSN)

Sign Dimensions

36" X 36"

Letters - White
Numbers - White
Border - White
Background - Blue

GENERAL NOTES:

1. The alphabets and lateral spacing between letters and numerals shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways", (TMUTCD) latest edition, and the "Compliant Work Zone Traffic Control Devices List". Lateral spacing of text shall provide a balanced appearance. All materials shall conform to Department Specifications.
2. Legend and border may be applied by reverse screening process with transparent colored ink, cut-out white reflective sheeting applied to colored background or combination thereof. Background shall be reflective sheeting Type C.
3. CSN Sheets will be laminated and attached to the sign with an adhesive. Ensure sheets remain dry. (See Figure 1).
4. SW3P Signs should be placed just inside the ROW line at the project limits at a readable height. It may be placed perpendicular or parallel to ROW line. If the sign cannot be placed outside the clear zone, it will be mounted per TMUTCD requirements.
5. Final location of the signs will be as approved by the Engineer.

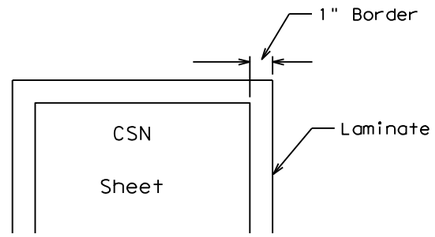
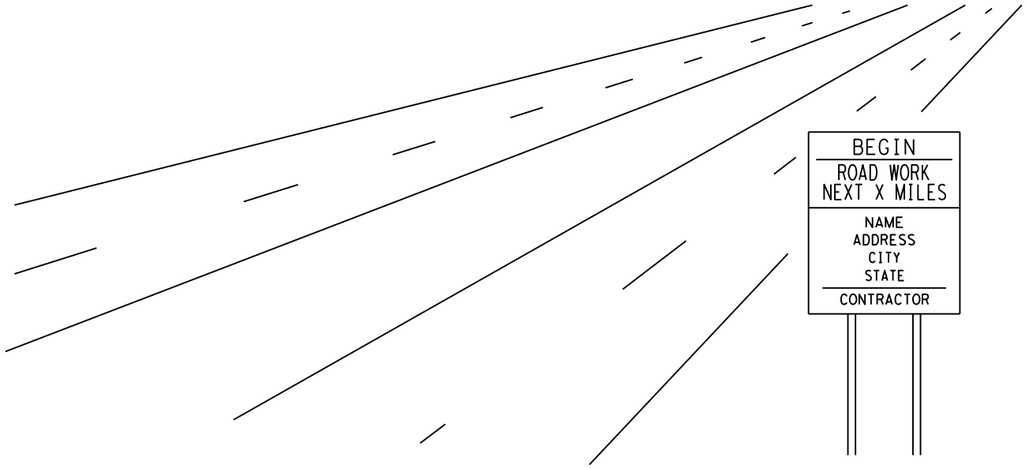
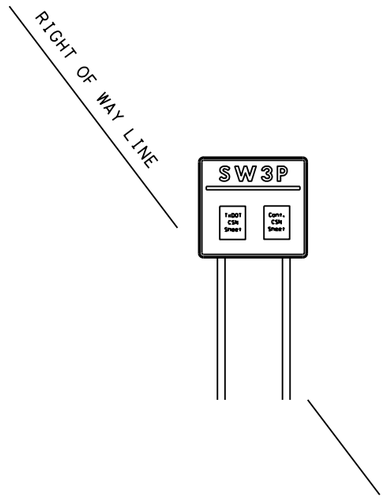


Figure 1





DEPARTMENT MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
FLAT SURFACE REFLECTIVE SHEETING	DMS-8300
VINYL NON-REFLECTIVE DECAL SHEETING	DMS-8320

COLOR	USAGE	REFLECTIVE SHEETING OR OTHER MATERIAL
BLUE	BACKGROUND	TYPE C (FLUORESCENT PRISMATIC)
WHITE	LEGEND & BORDERS	VINYL NON-REFLECTIVE DECAL SHEETING

Texas Department of Transportation
DALLAS DISTRICT STANDARD

SW3P SIGN SHEET

FILE:	DN: TxDOT	CK:	DW:	CK:
	DISTRICT	PROJECT NO.		SHEET
REVISION DATE: 10-16-15	18	C918-47-360		122
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	DALLAS	0918	47	360	FD 70124