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

FEDERAL AID PROJECT
STP 2024(350)TP
CSJ: 1047-03-079

FM 1382

DALLAS COUNTY

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	STP 2024(350)TP		FM1382
GRAPHICS ARM	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SFI	TEXAS	DALLAS	DALLAS	1
CHECK CAN	CONTROL	SECTION	JOB	
	1047	03	079	

DESIGN SPEEDS = 20 MPH
FUNCTIONAL CLASSIFICATION:
URBAN PRINCIPAL ARTERIAL

LIMITS: FROM CAMP WISDOM INTERSECTION

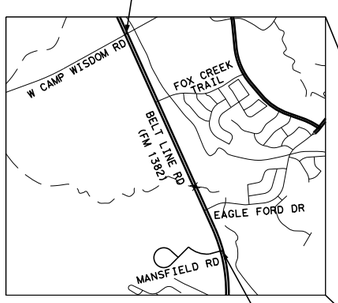
TO MANSFIELD ROAD

TOTAL LENGTH OF PROJECT =	ROADWAY	= 6,035.20 FT.	= 1.143 MI.
	BRIDGE	= 130.00 FT.	= 0.025 MI.
	TOTAL	= 6,165.20 FT.	= 1.168 MI.

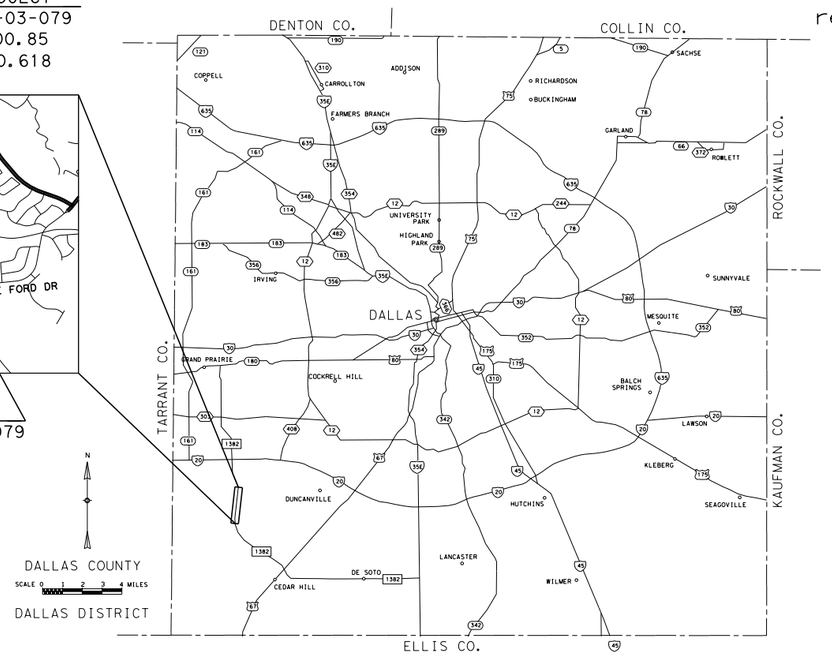
FOR THE CONSTRUCTION OF BICYCLE INFRASTRUCTURE IMPROVEMENTS.

CONSISTING OF: CONSTRUCT SHARED-USE PATH FOR BICYCLIST AND PEDESTRIANS INCLUDING CROSSWALKS AND SIGNAGE

BEGIN PROJECT
CSJ 1047-03-079
STA 141+00.85
TRM 274+0.618



END PROJECT
CSJ 1047-03-079
STA 79+35.65
TRM 274+1.781



EQUATIONS: NONE
EXCEPTIONS: NONE
RAILROAD CROSSINGS: NONE

WORK WAS COMPLETED ACCORDING TO THE PLANS AND CONTRACT.

_____, P.E.
Signature of Registrant & Date

NOTE:

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION , NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023)

Registered Accessibility Specialist (RAS) inspection required. TDLR No. TABS2021013783

Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

SUBMITTED FOR LETTING: Aug. 21, 2023
Carlos F. Negron, P.E.
CONSULTANT DESIGN ENGINEER OR PROJECT MANAGER

CONCURRENCE: Aug. 23, 2023
Alberta Blair
DALLAS COUNTY
DIRECTOR OF PUBLIC WORKS

CONCURRENCE: Sep 19, 2023
John Jenkins
CITY OF DALLAS
DIRECTOR OF PARK AND RECREATION DEPARTMENT

TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR LETTING: 9/21/2023
DocuSigned by: James T. Campbell, P.E.
04C4F05FAA0C4CF...
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

RECOMMENDED FOR LETTING: 9/21/2023
DocuSigned by: _____, P.E.
91B8F2112C2C405...
AREA ENGINEER

APPROVED FOR LETTING: 9/21/2023
DocuSigned by: Cesson Clemons, P.E.
A879E0D1D1D44AT...
DISTRICT ENGINEER

TIME: 7:32:45 PM
DATE: 8/24/2023

INDEX OF SHEETS

Jacobs Engineering Group — STATE OF TEXAS — EDWARD M. PENTON — 100190 — LICENSED PROFESSIONAL ENGINEER — F-2966 — 8/24/2023

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

_____, P.E. 8/24/2023
Signature of Registrant & Date

Jacobs Engineering Group — STATE OF TEXAS — CARLOS A. NEGRON — 89418 — LICENSED PROFESSIONAL ENGINEER — F-2966 — 8/24/2023

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

Carlos A. Negron, P.E. 8/24/2023
Signature of Registrant & Date

Jacobs Engineering Group — STATE OF TEXAS — JASON K. CHRISTIAN — 83469 — LICENSED PROFESSIONAL ENGINEER — F-2966 — 8/24/2023

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

_____, P.E. 8/24/2023
Signature of Registrant & Date

Jacobs Engineering Group — STATE OF TEXAS — JOHN P. PADILLA — 114468 — LICENSED PROFESSIONAL ENGINEER — F-2966 — 8/24/2023

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

_____, P.E. 8/24/2023
Signature of Registrant & Date

Jacobs
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DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

FM 1382-SIDEPATH

INDEX

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS BDG	TEXAS	DAL	DALLAS	2
CHECK CAN	CONTROL 1047	SECTION 03	JOB 079	

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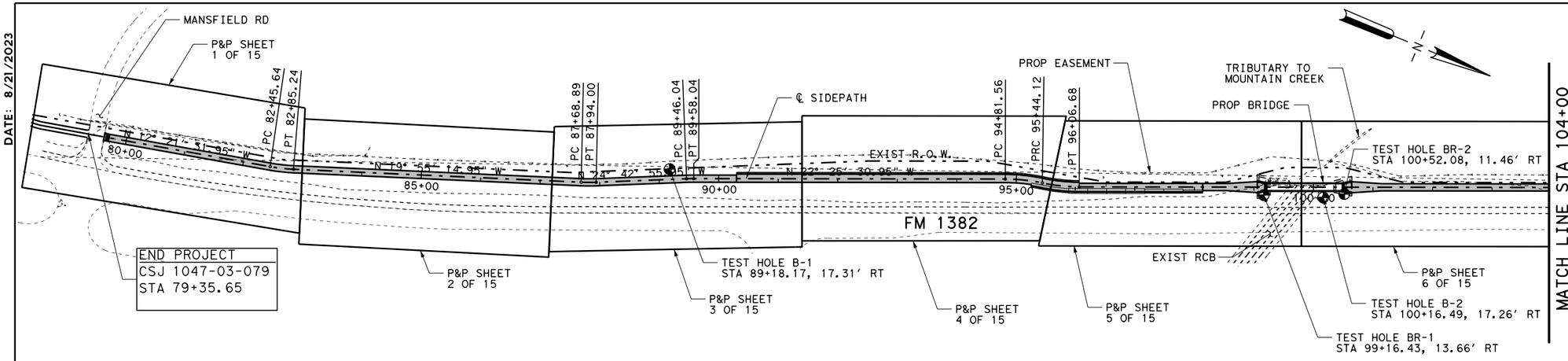


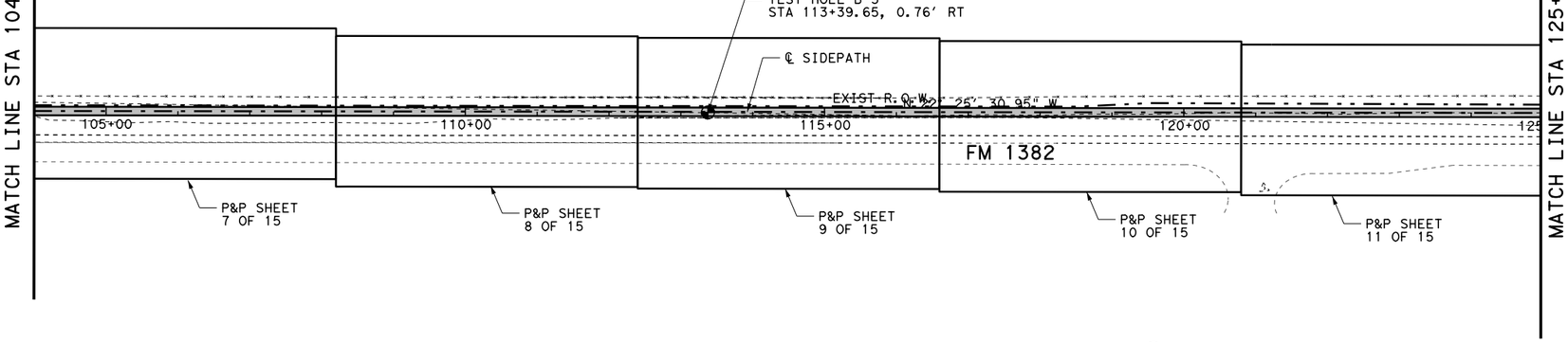
0 100 200
SCALE IN FEET

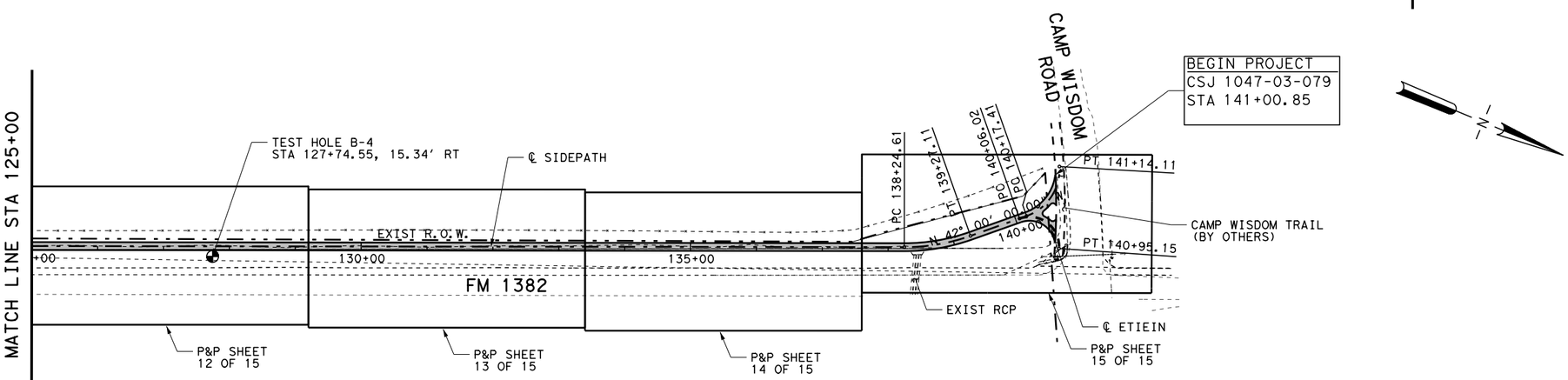
LEGEND

- EXIST RIGHT OF WAY (ROW)
- CONSTRUCTION
- TEST HOLE LOCATION

NOTES:

1. SEE "WALL BORING LOG" SHEET FOR INFORMATION REGARDING TEST HOLES.





Jacobs Engineering Group
STATE OF TEXAS
JOHN P. PADILLA
114468
LICENSED
PROFESSIONAL ENGINEER
F-2966
8/21/2023

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Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

PROJECT LAYOUT

SCALE: 1"=200' (H) SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS BDG	TEXAS	DAL	DALLAS	3
CHECK CAN	CONTROL	SECTION	JOB	
	1047	03	079	

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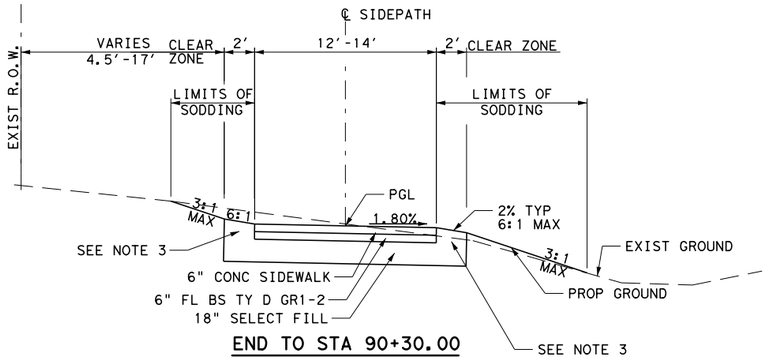
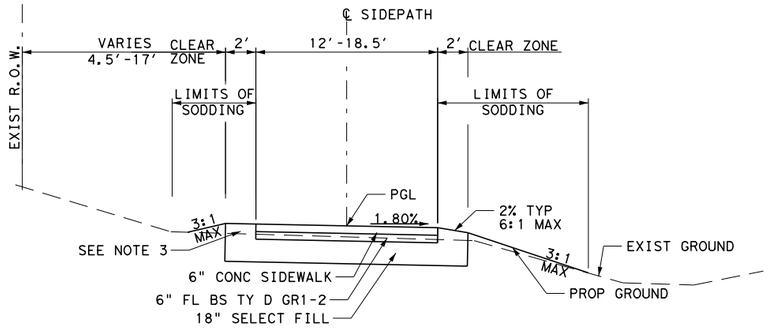


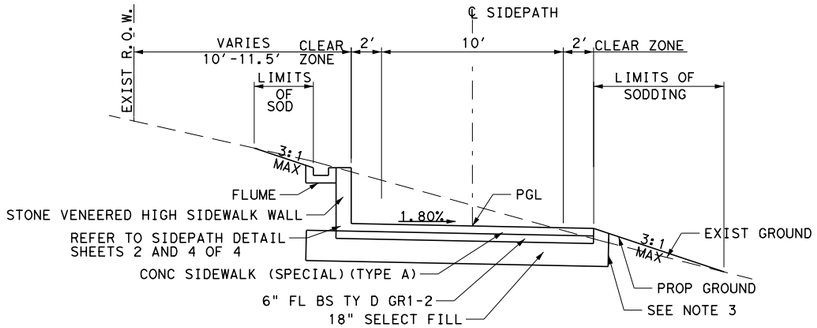
END TO STA 90+30.00



STA 98+14.00 TO STA 99+05.70
STA 100+64.30 TO STA 101+15.00

NOTES:

1. SEE PLAN & PROFILE SHEETS FOR SPECIFIC LIMITS OF RETAINING WALLS.
2. THE AXIS OF ROTATION FOR ALL PAVEMENTS IS LOCATED AT THE PGL; SEE PLAN & PROFILE SHEETS FOR SUPERELEVATION RATES AND TRANSITIONS.
3. SELECT FILL SHALL BE TYPE C WITH PI BETWEEN 8 AND 25. SELECT FILL WILL BE A 2' OFFSET FROM EDGE OF CONCRETE SIDEWALK.



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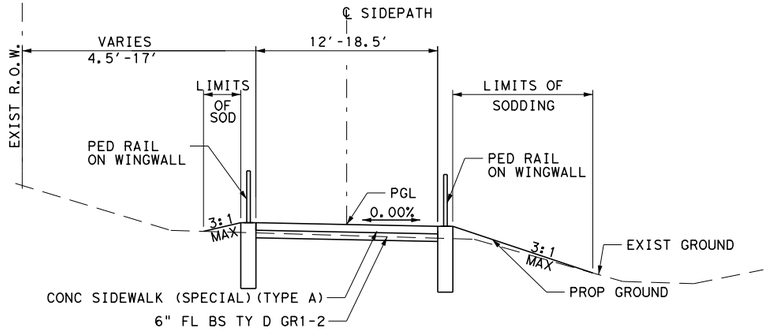
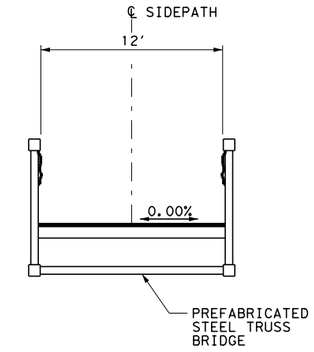


STA 99+05.70 TO STA 99+20.00
STA 100+50.00 TO STA 100+64.30



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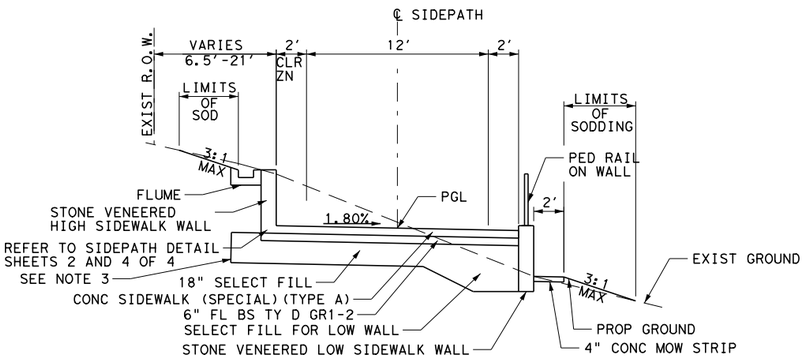

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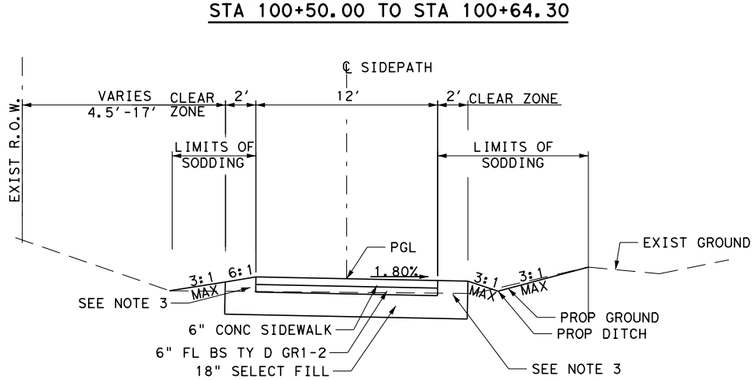
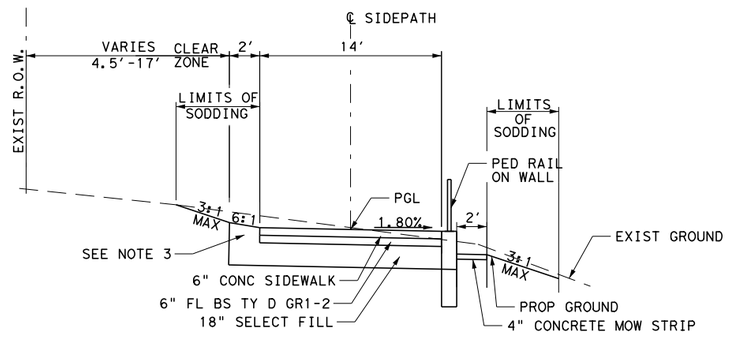


STA 101+15.00 TO STA 104+50.00
STA 112+25.00 TO STA 138+50.00



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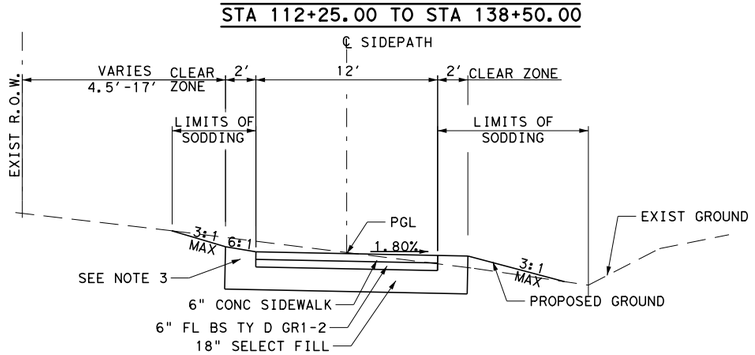

STA 104+50.00 TO STA 112+25.00

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Texas Department of Transportation

FM 1382-SIDEPATH

TYPICAL SECTIONS

SCALE: N.T.S. SHEET 1 OF 2

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	4
BDG	1047	03	079	
CHECK				
CAN				

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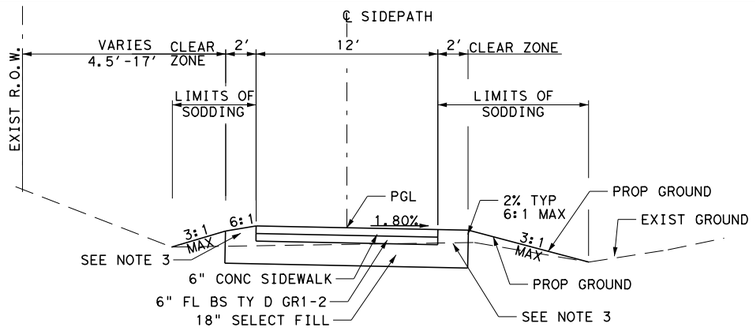
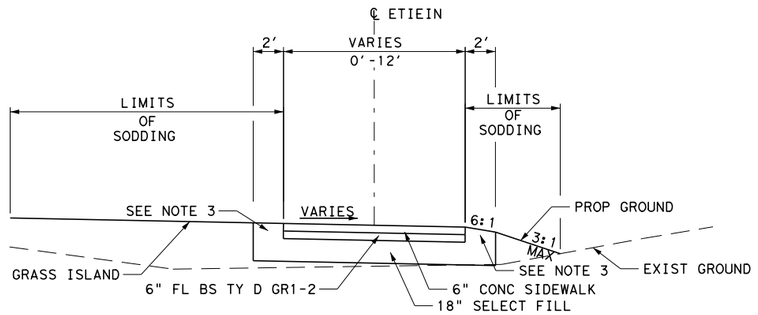
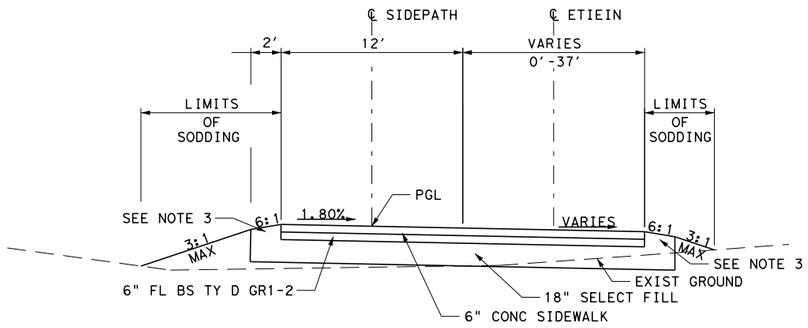
DATE: 8/21/2023



STA 138+50.00 TO STA 140+06.02



STA 140+39.18 TO STA 140+56.26
ALONG ℄ ETIEIN



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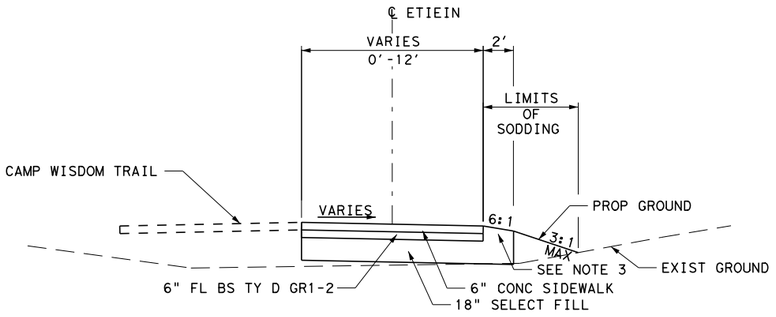

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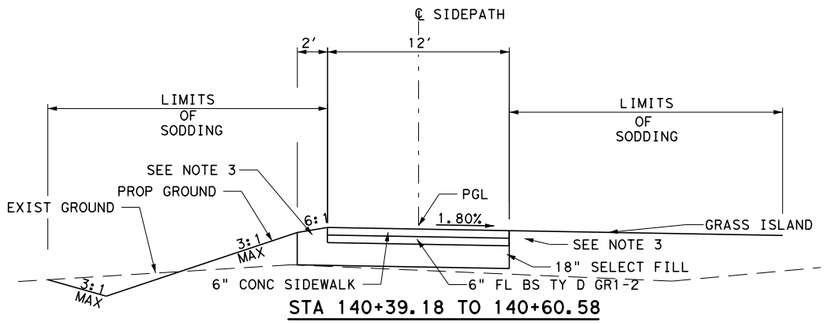
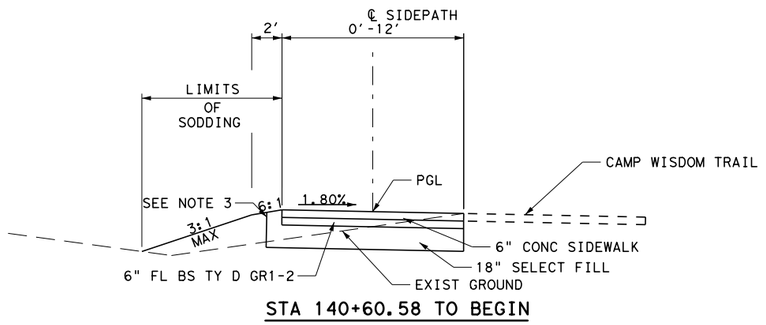
ALONG ℄ ETIEIN

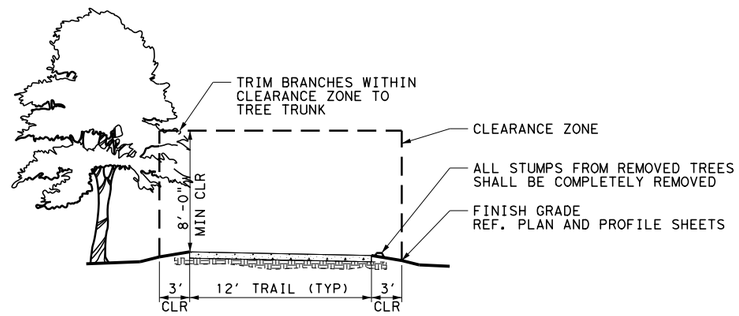


STA 140+39.18 TO 140+60.58



STA 140+60.58 TO BEGIN

CONSTRUCTION LIMITS NOTES:
1. EVERY EFFORT SHOULD BE TAKEN TO MINIMIZE TREE LOSS AS A RESULT OF TRAIL CONSTRUCTION. ALL VEGETATION WITHIN LIMITED CLEARING AREA FOR TRAIL SHALL NOT BE REMOVED OR DAMAGED UNLESS TREE TRIMMING OR GRADING IS REQUIRED. ONLY TREES DIRECTLY CONFLICTING W/CONSTRUCTION SHALL BE REMOVED, AND ONLY AT THE DIRECTION OF THE LANDSCAPE ARCHITECT FOR TxDOT, ANTHONY DIEP @ 214-320-6205
2. CONTRACTOR SHALL ENTER WOODED CONSTRUCTION AREA FROM DESIGNATED ACCESS POINTS AS APPROVED BY THE LANDSCAPE ARCHITECT.
3. CONTRACTOR SHOULD LIMIT CONSTRUCTION EQUIPMENT TO WORKING/CLEARING AREA AND AWAY FROM PROTECTED TREES TO PREVENT DAMAGE TO REMAINING TREES.
4. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY BARRICADES ALONG WORKING AREA TO PROTECT EXISTING VEGETATION, AS REQUIRED BY THE LANDSCAPE ARCHITECT. REF. TREE PROTECTION DETAIL



CONSTRUCTION LIMITS (TYP.)

NOTES:
1. SEE PLAN & PROFILE SHEETS FOR SPECIFIC LIMITS OF RETAINING WALLS.
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Jacobs Engineering Group
STATE OF TEXAS
JOHN P. PADILLA
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8/21/2023

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Texas Department of Transportation

FM 1382-SIDEPATH

TYPICAL SECTIONS

SCALE: N.T.S. SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	5
BDG				
CHECK	1047	03	079	
CAN				

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SPECIFICATION DATA

Table 1: Soil Constants Requirements				
Item	Description	Plasticity Index		Note
		Max	Min	
132	EMBANKMENT (FINAL)(DC)(TY C)	25	8	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. Material approved for use shall have a sulfate content less than 1,500 ppm. 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
162	Block Sod	N/A	See Specifications		17,634 SY
166 *	Fertilizer (12-6-6)	N/A	500	Lbs./Ac	0.91 Ton
168	Vegetative Watering (Warm)**	N/A	12	MG/Ac/Day	2,623 MG
*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)					

Table 3: Basis of Estimate for Temporary Erosion Control Items				
Item	Description	Rate		Quantity
164	Drill Seeding (Temp) (Warm or Cool)	See Specifications		17,634 SY
166*	Fertilizer (12-6-6)	500	Lb/Ac	0.91 Ton
168	Vegetative Watering (Warm)**	12	MG/Ac/Day	2,623 MG
*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.				

CSJ: 1047-03-079 **Sheet 6**

County: Dallas

Highway: FM 1382

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 5.43 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 permitting 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.

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
Dung Nguyen Dung.Nguyen@TxDOT.gov

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

All contractor questions will be reviewed by the Engineer. 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).

Item 5:
Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way on this project. For signal, illumination, surveillance, and communications & control maintained by TxDOT, call the TxDOT Traffic Signal Office (214-320-6682) for locates a minimum of 48 hours in advance of excavation. For irrigation systems, call TxDOT Landscape Office (214-320-6205) for locates a minimum of 48 hours in advance of excavation. If city or town owned irrigation facilities are present, call the appropriate department of the local city or town a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages when utilities are damaged due to Contractor's negligence including, but not limited to, repair or replacement at the Contractor's expense.

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 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 6:
To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

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

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

CSJ: 1047-03-079 **Sheet 6**A

County: Dallas

Highway: FM 1382

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

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 Standard Workweek.

Nighttime work is allowed in accordance with Article 8.3.3.

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.

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. 79+35.65 to Sta. 141+00.85 along the centerline of construction.

All trees to be removed shall be flagged and approved prior to removal. No trees shall be removed prior to approval by the Engineer.

Refer to Tree Protection Details and apply standards of ANSI A300 for arborilogical practices for root and canopy pruning.

Item 104:
Sawing of concrete is not paid for directly, but is considered subsidiary to this item.

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). If necessary, treat material with lime slurry in accordance with Item 260, “Lime Treatment (Road-Mixed)” in order to meet these requirements. Use Tex-121-E, figure 1, page 4 to calculate the amount of lime required. When lime treated subgrade is specified, 3000 PPM is the maximum allowed sulfate content in the top 3 feet when material comes from borrow source. Follow recommendations of 260.4.4 for mixing and mellowing. The engineer will test material placed or excavated to a depth of one foot below and laterally to one foot outside the proposed treatment limit. Lime treatment of this material will not be paid for directly, but will be considered subsidiary to this item.

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

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.

Hand till in areas with existing tree root zones.

CSJ: 1047-03-079 **Sheet 6**B

County: Dallas

Highway: FM 1382

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

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 400:
Structural Excavation is not paid for directly but is considered subsidiary to pertinent Items.

When placing concrete storm drain pipe on slopes of greater than 10 percent, provide cement stabilized backfill to a depth shown on the plans.

Item 416:
Provide a minimum of one core per bent, regardless of placement method.

Item 420:
Apply an ordinary surface finish to all concrete surfaces within 30 days after form removal.

Item 421:
Furnish mix designs to the Engineer in a format compatible to the latest version of the Department’s Construction Management System (Site Manager). Mix Design templates will be provided by the Engineer.

Provide High Performance Concrete (HPC) of the class specified for the following bridge components: approach slabs, abutments, bents, columns, slabs, sidewalks and medians.

Strength evaluation using maturity testing, Tex-426-A, may be used for all concrete elements except drilled shafts and mass concrete pours.

Provide a digital hydraulic compression testing Machine and accessories. The machine shall have a minimum testing range of 2500 pounds force to 250,000 pounds force with a hydraulic switching valve to allow for rapid advancing, hold, controlled advancing and rapid retracting. The machine shall have a load cell to measure compressive forces within the testing range and shall be calibrated and verified in accordance with ASTM latest version. The Machine can meet or exceed the following when approved by the Engineer:

ELE International ACCU-TEK250 Digital Compression Tester including accessories or Forney F-250EX Standard Compression Machine including accessories or TxDOT approved equal.

Supply the Engineer with a list of certified personnel and copies of their current ACI certificates before beginning production and when personnel changes are made. Supply hard copies of calibration reports for testing equipment when required by the Engineer.

Item 423:
Wall Aesthetic (Stone Veneer and Stone Coping) shall be considered subsidiary to this item.

All retaining walls will have a uniform texture and appearance.

Unless otherwise noted in the plans, the top of the leveling pad is located 2 feet below the proposed ground.

Square foot surface area of retaining wall is measured from the top of retaining wall to the top of the leveling pad. Footing adjustments made to accommodate the available optional retaining walls are not measured.

Supply drainage aggregate meeting the requirements of this item for use as filter material with the retaining wall.

Cement-Stabilized Backfill (CSB) is not permitted.

Unless otherwise noted on the plans, provide flowable backfill meeting the requirements of Item 401 between the back of panels and inlets or drainage pipes where the required compaction can not be achieved. Flowable backfill used for this purpose is subsidiary to this item.

Submit design calculations supporting the details necessary to incorporate coping, railing, inlets, drainage, electrical conduits and any additional necessary features.

For cut walls, the backfill between the select fill zone and the existing ground shall be select fill material. Place material in accordance with Item 132, Type C requirements. If existing ground is laid back (i.e. not vertical), the lay back shall be done as a series of equal height benches so as to prevent the formation of a smooth surface at the material interface.

Items 423 and 427:
For cast in place walls, cast the top two feet smooth.

Item 427:
Ensure that surfaces are free of weak surface material, curing compounds and other surface contaminants prior to coating.

Provide sample of stone veneer a minimum of ten days in advance of starting construction of the retaining walls.

Item 440:
Fiber Reinforced Concrete (FRC) can be used as a substitute for Non-Structural Class Reinforced Concrete in Mow-Strip and Rip Rap Items as approved. FRC may also be used for other Non-Structural Class Reinforced Concrete Items as approved.

Item 442:
Use temperature Zone 1 for CVN testing.

CSJ: 1047-03-079 **Sheet 6C**

County: Dallas

Highway: FM 1382

Item 464:
The concrete collars and the connections of pipes to existing or proposed concrete boxes or pipe will not be paid for directly but will be considered subsidiary to the various bid items.

Item 465:
All manholes, junction boxes and inlets will require inverts unless otherwise directed.

Item 471:
Tackweld all inlet grates and manhole covers to the frame with two 1-inch welds. Supply un-painted cast iron inlet grate and frame and/or cast iron manhole frame and cover.

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.

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

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

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 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.

As approved by the Engineer, provide uniformed off duty police officers and squad cars during lane or ramp closures, night time work or other situations that indicate a need for additional traffic control to protect the traveling public or the construction workforce. Provide documentation such as payroll, log sheets with signatures and badge number, or invoices from the government entity providing the officers for reimbursement. Complete the weekly tracking form provided by the department and submit invoices that agree with the tracking form for

payment at the end of each month approved services were provided. Reimbursement will not be made for coordination fees charged by any party.

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

Limit lane closures along FM 1382 to the hours between 9:00 am and 3:30 pm. Work in other areas of the project is not restricted to this time frame.

Traffic Control Plans with Lane Closures causing backups of 20 minutes or greater in duration will be modified by the Engineer up to and including removal of the lane closure and adjustment of lane closure times.

Additional lanes may be closed, started earlier, or extended later with written permission of the Engineer.

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.

CSJ: 1047-03-079 **Sheet 6D**

County: Dallas

Highway: FM 1382

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

Item 531:
Joint sealant is required when shown in the plans. This work will not be paid for directly but will be considered subsidiary to this Item.

Place construction, sawed and contraction joints in accordance with the pavement detail sheet and as directed. Joint locations other than as shown on the plans are subject to approval.

Detectable warning strips are required when shown in the plans. This work will not be paid for directly but will be considered subsidiary to this Item.

Item 556:
All underdrains and cleanouts shall be considered subsidiary to various bid items.

Underdrain cleanouts shall be located at every 300' and at the high ends of the underdrain.

Place bell and spigot type pipe with an open joint of approximately ¾ inch.

The requirements for decantation of filter material are deleted for this project.

Item 636:
Provide two (2) sets of shop drawings for signs. The shop drawings shall conform to the details shown on the plans. The shop drawings shall show the details of the panels, wind beams, stiffeners, joint backing plates, splices, fasteners, brackets, and sign support connections. The shop drawings shall show letter types and sizes, interline spacing and message arrangements.

Affix a sign identification decal to the back of all signs and mark out the installation date in accordance with Item 643.

Attach sheeting applied to extruded aluminum panels to each individual extrusion.

All new and or replaced sign panels shall be mounted flush (0º) on all sign structures. Furnish and obtain approval of all shop drawings detailing the method to accomplish this installation. All material and labor required for this special installation is considered subsidiary to Item 636.

Items 644:
Prior to taking elevations to determine lengths for fabrication of signposts 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.

Item 5116:
Natural fiber perimeter construction fencing shall meet the requirements of the EPIC sheet.

Item 6185:
The total number of truck mounted attenuators (TMAs) or trailer attenuators (TAs) required when utilizing the traffic control standards are shown in the tables below.

TCP 2 Series	Scenario	Required TMA/TA
(2-1)-18 / (2-2)-18 / (2-6)-18	All	1

TCP 5 Series	Scenario		Required TMA/TA
(5-1)-18	A	B	1

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

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

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 1047-03-079 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY FM 1382

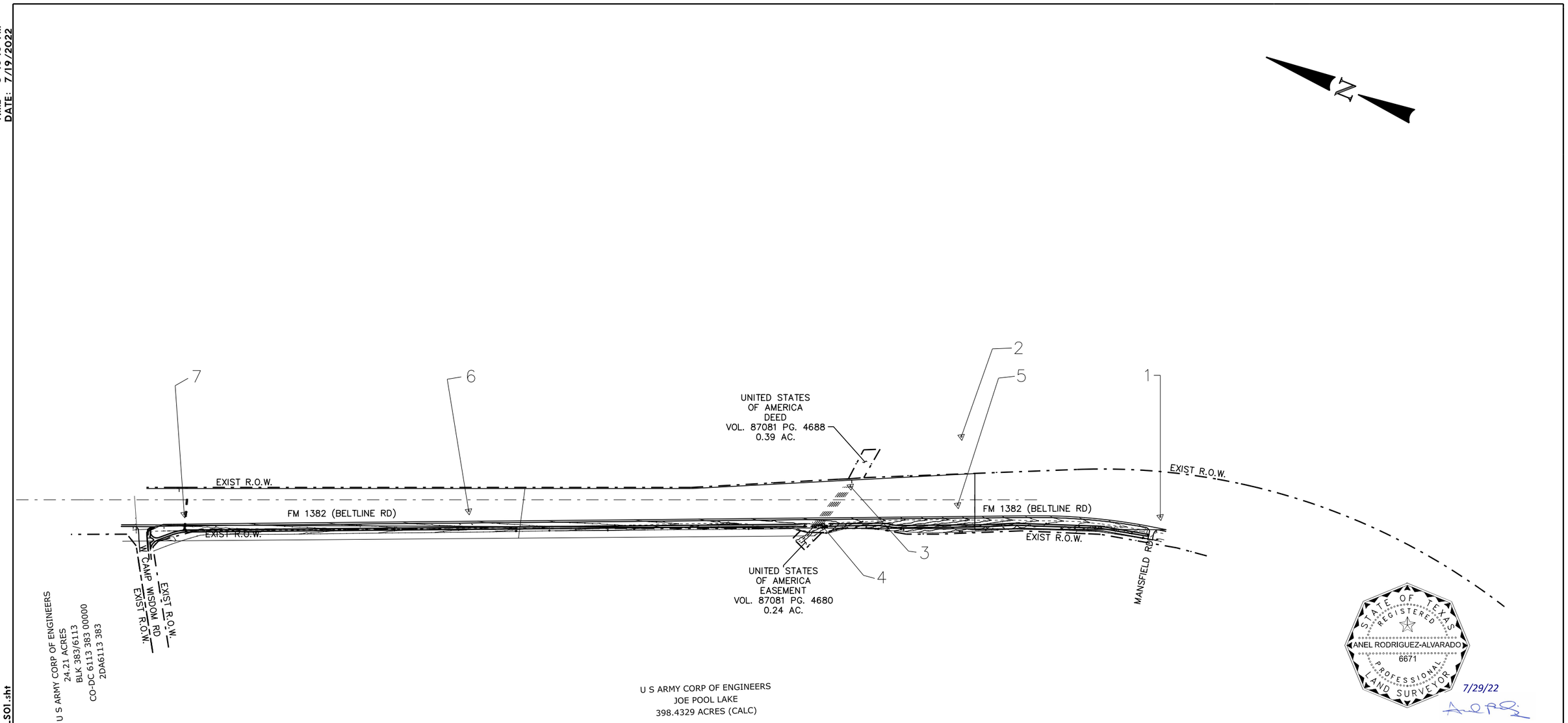
			CONTROL SECTION JOB		**1047-03-079**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00184757**		
			COUNTY		**Dallas**		
			HIGHWAY		**FM 1382**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	61.700		61.700	
	104-6009	REMOVING CONC (RIPRAP)	SY	43.000		43.000	
	110-6001	EXCAVATION (ROADWAY)	CY	13,949.000		13,949.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	10,731.000		10,731.000	
	161-6017	COMPOST MANUF TOPSOIL (4")	SY	17,522.000		17,522.000	
	162-6002	BLOCK SODDING	SY	17,522.000		17,522.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	17,522.000		17,522.000	
	168-6001	VEGETATIVE WATERING	MG	5,213.100		5,213.100	
	247-6053	FL BS (CMP IN PLC)(TYD GR1-2)(FNAL POS)	CY	1,390.000		1,390.000	
	403-6001	TEMPORARY SPL SHORING	SF	1,002.000		1,002.000	
	416-6001	DRILL SHAFT (18 IN)	LF	158.000		158.000	
	416-6002	DRILL SHAFT (24 IN)	LF	172.000		172.000	
	420-6018	CL C CONC (ABUT)(HPC)(SRC)	CY	27.000		27.000	
	423-6008	RETAINING WALL (CAST - IN - PLACE)	SF	2,180.000		2,180.000	
	423-6015	RETAINING WALL (SPECIAL)	SF	2,642.000		2,642.000	
	432-6030	RIPRAP (STONE COMMON)(GROUT)(12 IN)	CY	32.000		32.000	
	432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	260.000		260.000	
	432-6044	RIPRAP (CONC)(FLUME)	CY	31.000		31.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	8.000		8.000	
	450-6082	RAIL(PEDESTRIAN)(SPL)	LF	346.900		346.900	
	464-6003	RC PIPE (CL III)(18 IN)	LF	64.000		64.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	74.000		74.000	
	464-6007	RC PIPE (CL III)(30 IN)	LF	47.000		47.000	
	464-6008	RC PIPE (CL III)(36 IN)	LF	84.000		84.000	
	465-6152	INLET (COMPL)(PAZD)(RC)(3FTX3FT)	EA	1.000		1.000	
	466-6009	HEADWALL (CH - FW - 0) (DIA= 36 IN)	EA	1.000		1.000	
	467-6363	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EA	1.000		1.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA	1.000		1.000	
	467-6423	SET (TY II) (30 IN) (RCP) (6: 1) (P)	EA	1.000		1.000	
	481-6011	PIPE (PVC) (SCH 40) (4 IN)	LF	60.000		60.000	
	496-6006	REMOV STR (HEADWALL)	EA	1.000		1.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	13.000		13.000	
	506-6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF	110.000		110.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	110.000		110.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	983.000		983.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	983.000		983.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 1047-03-079 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY FM 1382

			CONTROL SECTION JOB		**1047-03-079**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00184757**		
			COUNTY		**Dallas**		
			HIGHWAY		**FM 1382**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1,006.000		1,006.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1,006.000		1,006.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	718.000		718.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	718.000		718.000	
	531-6003	CONC SIDEWALKS (6")	SY	7,009.000		7,009.000	
	531-6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	1,287.000		1,287.000	
	636-6007	REPLACE EXISTING ALUMINUM SIGNS(TY A)	SF	2.250		2.250	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	14.000		14.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	3.000		3.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	129.000		129.000	
	666-6174	REFL PAV MRK TY II (W) 6" (SLD)	LF	1,117.000		1,117.000	
	666-6180	REFL PAV MRK TY II (W) 12" (SLD)	LF	18.000		18.000	
	666-6182	REFL PAV MRK TY II (W) 24" (SLD)	LF	129.000		129.000	
	666-6208	REFL PAV MRK TY II (Y) 6" (BRK)	LF	1,518.000		1,518.000	
	666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	40.000		40.000	
	672-6011	TRAFFIC BUTTON TY I-A	EA	2.000		2.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	2,675.000		2,675.000	
	678-6006	PAV SURF PREP FOR MRK (12")	LF	18.000		18.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	129.000		129.000	
	678-6033	PAV SURF PREP FOR MRK (RPM)	EA	2.000		2.000	
	1004-6001	TREE PROTECTION	EA	5.000		5.000	
	4196-6002	PREFAB PED STL TRUSS BRG SPAN (130 FT)	EA	1.000		1.000	
	5116-6001	AMPHIBIAN/REPTILE EXCLUSION FENCE INST	LF	551.000		551.000	
	5116-6002	AMPHIBIAN/REPTILE EXCLUSION FENCE REM	LF	551.000		551.000	
	5154-6001	FOLDING BOLLARD	EA	1.000		1.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	1.000		1.000	
	6185-6002	TMA (STATIONARY)	DAY	203.000		203.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

TIME: 5:48:13 PM
DATE: 7/19/2022



POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	6,919,310.297	2,438,667.274	586.77	X CUT
2	6,920,617.947	2,438,668.891	533.28	X CUT
3	6,921,131.604	2,438,135.066	514.54	X CUT
4	6,921,204.506	2,437,849.139	513.35	X CUT
5	6,920,483.095	2,438,274.261	545.44	X CUT
6	6,923,234.944	2,437,128.253	492.27	SQUARE WITH X CUT
7	6,924,836.756	2,436,464.520	472.85	X CUT

NOTES:
1. ALL BEARING AND DISTANCES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83) , 2011 ADJUSTMENT (OPUS) . ALL COORDINATES AND DISTANCES AS SHOWN ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE SURFACE ADJUSTMENT FACTOR OF 1.000136506.

2. ALL ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) , GEOID 12A (OPUS).

3. UNIT OF MEASURE: U.S. SURVEY FOOT.

STATE OF TEXAS
REGISTERED
ANEL RODRIGUEZ-ALVARADO
6671
PROFESSIONAL
LAND SURVEYOR
7/29/22

ARA SURVEYING
3615 KARNAGHAN LANE
MELISSA, TEXAS 75454
TEL: (972) 946-4172
TBPELS NO. 10184713

DALTECH ENGINEERING, INC.
TEXAS FIRM 2223
17400 Dallas Parkway, Suite 110
Dallas, TX 75287
972.250.2727 (o)

FM 1382-SIDEPATH

SURVEY CONTROL

SCALE: 1"=600' (H) SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
EH	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	8
EP				
CHECK	1047	03	079	
GG				

FILE: \\USLAS0-APP385\ICS*workdir\163165\689489*3\1382SLS01.sht

TIME: 9:44:19 AM
DATE: 8/31/2023

SUMMARY OF REMOVAL ITEMS				
LOCATION	100 6002	104 6009	496 6006	1004 6001
	PREPARING ROW	REMOVING CONC (RIPRAP)	REMOV STR (HEADWALL)	TREE PROTECTION
	STA	SY	EA	EA
SHEET 1	3.6			
SHEET 2	4.2			
SHEET 3	4.2			
SHEET 4	4.2			
SHEET 5	4.2	43		5
SHEET 6	4.2			
SHEET 7	4.2			
SHEET 8	4.2			
SHEET 9	4.2			
SHEET 10	4.2			
SHEET 11	4.2			
SHEET 12	4.2			
SHEET 13	4.2			
SHEET 14	4.2			
SHEET 15	3.5		1	
PROJECT TOTALS	61.7	43	1	5

SUMMARY OF ROADWAY ITEMS				
LOCATION	247 6053	531 6003	531 6032	5154 6001
	FL BS (CMP IN PLC) (TYD GR1-2) (FNAL POS)	CONC SIDEWALKS (6")	CONC SIDEWALKS (SPECIAL) (TYPE A)	FOLDING BOLLARD
	CY	SY	SY	EA
SHEET 1	75	451		1
SHEET 2	94	560		
SHEET 3	98	413	171	
SHEET 4	111		661	
SHEET 5	95	141	430	
SHEET 6	82	466	25	
SHEET 7	94	560		
SHEET 8	94	560		
SHEET 9	94	560		
SHEET 10	94	560		
SHEET 11	94	560		
SHEET 12	94	560		
SHEET 13	94	560		
SHEET 14	94	560		
SHEET 15	83	498		
PROJECT TOTALS	1,390	7,009	1,287	1

NOTE: 0531-6032 CONC SIDEWALKS (SPECIAL)(TYPE A) IS A 7" CONCRETE SIDEWALK.

SUMMARY OF DRAINAGE ITEMS											
LOCATION	432 6030	432 6031	464 6003	464 6005	464 6007	464 6008	465 6152	466 6009	467 6363	467 6395	467 6423
	RIPRAP (STONE COMMON) (GR OUT) (12 IN)	RIPRAP (STONE PROTECTION) (12 IN)	RC PIPE (CL III) (18 IN)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL III) (36 IN)	INLET (COMPL) (PAZD) (RC) (3FTX 3FT)	HEADWALL (CH - FW - 0) (DIA= 36 IN)	SET (TY II) (18 IN) (RCP) (6: 1) (P)	SET (TY II) (24 IN) (RCP) (6: 1) (P)	SET (TY II) (30 IN) (RCP) (6: 1) (P)
	CY	CY	LF	LF	LF	LF	EA	EA	EA	EA	EA
SHEET 1	3		64				1		1		
SHEET 2											
SHEET 3											
SHEET 4											
SHEET 5	6	142									
SHEET 6		118									
SHEET 7											
SHEET 8											
SHEET 9											
SHEET 10											
SHEET 11											
SHEET 12											
SHEET 13											
SHEET 14											
SHEET 15	23			74	47	84		1		1	1
PROJECT TOTALS	32	260	64	74	47	84	1	1	1	1	1

SUMMARY OF RETAINING WALL ITEMS												
LOCATION	110 ** 6001	132 ** 6006	403 6001	423 6008	423 6015	432 6044	432 6045	450 ** 6082	481 6011	556 * 6012	1002 * 6001	1002 * 6002
	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)	TEMPORARY SPL SHORING	RETAINING WALL (CAST - IN - PLACE)	RETAINING WALL (SPECIAL)	RIPRAP (CONC) (FLUME)	RIPRAP (MOW STRIP) (4 IN)	RAIL (PEDESTRIAN) (SPL)	PIPE (PVC) (SCH 40) (4 IN)	PIPE UNDERDRAINS (TY 9) (4")	WALL AESTHETICS (STONE VENEER)	WALL AESTHETICS (STONE COPING)
	CY	CY	SF	SF	SF	CY	CY	LF	LF	LF	SF	LF
WALL A					2,642	31				576	2,642	576
WALL B	322	337	1,002	2,180			8	289.4	60	289	1,409	289
PROJECT TOTALS	322	337	1,002	2,180	2,642	31	8	289.4	60	865	4,051	865

* FOR CONTRACTOR'S INFORMATION ONLY.
** BID ITEM IS SHOWN IN MULTIPLE SUMMARY BOXES.

SUMMARY OF BRIDGE ITEMS					
LOCATION	416 6001	416 6002	420 6018	450 ** 6082	4196 6002
	DRILL SHAFT (18 IN)	DRILL SHAFT (24 IN)	CL C CONC (ABUT) (HPC) (SRC)	RAIL (PEDESTRIAN) (SPL)	PREFAB PED STL TRUSS BRG SPAN (130 FT)
	LF	LF	CY	LF	EA
TRIB TO MOUNTAIN CREEK	158	172	27.0	57.5	1
PROJECT TOTALS	158	172	27.0	57.5	1

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FM 1382-SIDEPATH

QUANTITY SUMMARIES

SCALE: N.T.S. SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	9
EMP				
CHECK	1047	03	079	
CAN				

TIME: 10:47:05 AM
DATE: 9/1/2023

SUMMARY OF SIGNING ITEMS			
LOCATION	636 6007	644 6001	644 6068
	REPLACE EXISTING ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	RELOCATE SM RD SN SUP&AM TY 10BWG
	SF	EA	EA
SHEET 1	2.25	5	
SHEET 2			
SHEET 3		1	1
SHEET 4			1
SHEET 5		1	
SHEET 6		1	
SHEET 7			
SHEET 8			
SHEET 9			
SHEET 10			
SHEET 11			
SHEET 12			
SHEET 13			
SHEET 14			
SHEET 15		6	1
PROJECT TOTALS	2.25	14	3

SUMMARY OF PAVEMENT MARKING ITEMS											
LOCATION	666 6048	666 6180	666 6182	666 6174	666 6208	666 6210	672 6011	678 6002	678 6006	678 6008	678 6033
	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	REFL PAV MRK TY II (W) 12" (SLD)	REFL PAV MRK TY II (W) 24" (SLD)	REFL PAV MRK TY II (W) 6" (SLD)	REFL PAV MRK TY II (Y) 6" (BRK)	REFL PAV MRK TY II (Y) 6" (SLD)	TRAFFIC BUTTON TY I-A	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (12")	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (RPM)
	LF	LF	LF	LF	LF	LF	EA	LF	LF	LF	EA
SHEET 1	129		129		84		2	84		129	2
SHEET 2					105			105			
SHEET 3				110	105			215			
SHEET 4				454	105			559			
SHEET 5				427	105			532			
SHEET 6				126	105			231			
SHEET 7					105			105			
SHEET 8					105			105			
SHEET 9					105			105			
SHEET 10					105			105			
SHEET 11					105			105			
SHEET 12					105			105			
SHEET 13					105			105			
SHEET 14					105			105			
SHEET 15		18			69	40		109	18		
PROJECT TOTALS	129	18	129	1,117	1,518	40	2	2,675	18	129	2

SUMMARY OF EROSION CONTROL ITEMS														
LOCATION	161 6017	162 6002	164 6051	168 6001	506 6001	506 6011	506 6020	506 6024	506 6038	506 6039	506 6040	506 6043	5116 6001	5116 6002
	COMPOST MANUF TOPSOIL (4")	BLOCK SODDING	DRILL SEED (TEMP) (WARM OR COOL)	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 1)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)	AMPHIBIAN REPTILE EXCLUSION FENCE INST	AMPHIBIAN REPTILE EXCLUSION FENCE REM
	SY	SY	SY	MG	LF	LF	SY	SY	LF	LF	LF	LF	LF	LF
SHEET 1	3,696	3,696	3,696	1,099.6			156	156	388	388	115	115		
SHEET 2	3,615	3,615	3,615	1,075.5	35	35	156	156			152	152	170	170
SHEET 3	2,334	2,334	2,334	694.4			156	156	220	220	147	147	180	180
SHEET 4	2,222	2,222	2,222	661.1			78	78			45	45		
SHEET 5	2,559	2,559	2,559	761.4			156	156			90	90		
SHEET 6	3,096	3,096	3,096	921.1	75	75	234	234	350	350	135	135	175	175
SEE NOTE BELOW							47	47	48	48	34	34	26	26
PROJECT TOTALS	17,522	17,522	17,522	5,213.1	110	110	983	983	1,006	1,006	718	718	551	551

NOTE: THE PRICE BID FOR ITEM 506 SHALL INCLUDE REFURBISHING THE BMP WHEN REQUIRED. QUANTITIES HAVE BEEN INCREASED BY 5% TO ACCOUNT FOR REPLACEMENTS NEEDED DUE TO NORMAL WEAR OR DIFFERING SITE CONDITIONS.

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS			
LOCATION	502 6001	6001 6002	6185 6002
	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)
	MO	EA	DAY
GENERAL	13	1	203
PROJECT TOTALS	13	1	203

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QUANTITY SUMMARIES

SCALE: N.T.S.

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	10
GRAPHICS	CONTROL	SECTION	JOB	
EMP	1047	03	079	
CHECK				
CAN				

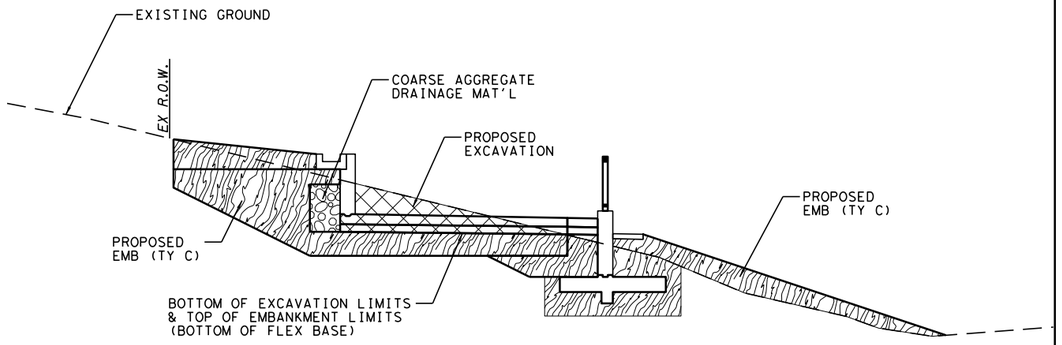
TIME: 9:29:28 AM
DATE: 9/1/2023

SIDEPATH EARTHWORK SUMMARY		
	110 ** 6001	132 ** 6006
STA	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
79+62.83	0	0
80+00.00	109	51
80+50.00	235	69
81+00.00	239	69
81+50.00	241	69
82+00.00	226	69
82+50.00	226	69
83+00.00	199	69
83+50.00	175	69
84+00.00	141	71
84+50.00	80	76
85+00.00	109	74
85+50.00	151	69
86+00.00	128	71
86+50.00	84	80
87+00.00	130	79
87+50.00	149	72
88+00.00	101	82
88+50.00	146	80
89+00.00	207	69
89+50.00	201	69
90+00.00	143	89
90+50.00	142	118
91+00.00	227	126
91+50.00	269	130
92+00.00	222	154
92+50.00	207	196
93+00.00	203	194
93+50.00	160	158
94+00.00	162	138
94+50.00	204	152
95+00.00	192	139
95+50.00	72	137
96+00.00	0	180
96+50.00	3	179
97+00.00	4	164
97+50.00	4	149
98+00.00	5	137
98+50.00	2	135
99+00.00	0	168
99+50.00	20	98
100+00.00	60	0
100+50.00	99	33
101+00.00	140	54
101+50.00	133	79
102+00.00	111	81
102+50.00	99	78
103+00.00	100	74
103+50.00	112	71
104+00.00	137	70
104+50.00	103	70
105+00.00	81	72
105+50.00	90	77
106+00.00	102	86
106+50.00	112	88
107+00.00	121	93
107+50.00	102	95
108+00.00	82	88
108+50.00	65	85
109+00.00	55	84
109+50.00	57	83
110+00.00	58	82
110+50.00	59	81

** BID ITEM IS SHOWN IN MULTIPLE SUMMARY BOXES.

SIDEPATH EARTHWORK SUMMARY		
	110 ** 6001	132 ** 6006
STA	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
111+00.00	68	77
111+50.00	78	74
112+00.00	69	76
112+50.00	69	75
113+00.00	83	71
113+50.00	91	70
114+00.00	94	69
114+50.00	95	69
115+00.00	93	69
115+50.00	90	69
116+00.00	97	69
116+50.00	113	69
117+00.00	119	69
117+50.00	115	69
118+00.00	111	69
118+50.00	108	69
119+00.00	105	69
119+50.00	90	69
120+00.00	87	69
120+50.00	96	69
121+00.00	94	69
121+50.00	95	69
122+00.00	98	69
122+50.00	105	69
123+00.00	111	69
123+50.00	113	69
124+00.00	110	69
124+50.00	97	69
125+00.00	95	69
125+50.00	96	69
126+00.00	95	69
126+50.00	97	69
127+00.00	95	69
127+50.00	99	69
128+00.00	104	69
128+50.00	104	69
129+00.00	105	69
129+50.00	109	69
130+00.00	108	69
130+50.00	112	69
131+00.00	118	69
131+50.00	122	69
132+00.00	131	69
132+50.00	132	69
133+00.00	128	69
133+50.00	125	69
134+00.00	128	69
134+50.00	133	69
135+00.00	138	69
135+50.00	146	69
136+00.00	150	69
136+50.00	146	69
137+00.00	149	69
137+50.00	130	69
138+00.00	88	71
138+50.00	38	82
139+00.00	7	97
139+50.00	27	102
140+00.00	43	92
140+50.00	30	116
141+00.00	9	88
TOTAL	13,627	10,394

** BID ITEM IS SHOWN IN MULTIPLE SUMMARY BOXES.



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FM 1382-SIDEPATH

QUANTITY SUMMARIES

SCALE: N.T.S.

SHEET 3 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	11
EMP				
CHECK	1047	03	079	
CAN				

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TIME: 6:06:58 AM
DATE: 8/11/2023

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
1	1	R1-5b		(36"X36")	✓		10BWG	1	SA	P		
1	2	R5-3		(24"X24")	✓		10BWG	1	SA	P		
1	3	R1-1		(18"X18")	✓		10BWG	1	SA	P		
1	4	R1-1		(18"X18")	✓		10BWG	1	REPLACE SIGN ON EXISTING ASSEMBLY			
1	5	R5-3		(24"X24")	✓		10BWG	1	SA	P		
1	6	R1-5b		(36"X36")	✓		10BWG	1	SA	P		
3	1	W7-5		(18"X18")	✓		10BWG	1	SA	P		
3	2	R6-1L		(EXISTING)	✓		RELOCATE 10BWG	1	SA	P		
		R3-1		(EXISTING)	✓							
4	1	R5-1		(EXISTING)	✓		RELOCATE 10BWG	1	SA	P		

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).

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SUMMARY OF SMALL SIGNS

SCALE: N.T.S. SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
AK	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
AK	TEXAS	DAL	DALLAS	12
GRAPHICS	CONTROL	SECTION	JOB	
SA	1047	03	079	
CHECK				
AM				

FILE: \\USLASO-APP385\ICS-workdir\163145\689499-17\FM1382_SIGN_Table.dgn

TIME: 6:06:44 AM
DATE: 8/11/2023

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
5	1	W8-10 W8-10P		(18"X18") (12"X9")	✓ ✓		10BWG	1	SA	P		
6	1	W8-10 W8-10P		(18"X18") (12"X9")	✓ ✓		10BWG	1	SA	P		
15	1	W1-2L		(18"X18")	✓		10BWG	1	SA	P		
15	2	W3-1		(18"X18")	✓		10BWG	1	SA	P		
15	3	W1-10bR W11-15P		(18"X18") (18"X12")	✓ ✓		10BWG	1	SA	P		
15	4	R1-1		(18"X18")	✓		10BWG	1	SA	P		
15	5	R1-1		(18"X18")	✓		10BWG	1	SA	P		
15	6	R1-1		(18"X18")	✓		10BWG	1	SA	P		
15	7	M3-3 M1-6F (1382)		(EXISTING) (EXISTING)	✓ ✓		RELOCATE 10BWG	1	SA	P		

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.

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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.
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FM 1382-SIDEPATH

SUMMARY OF SMALL SIGNS

SCALE: N.T.S. SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
AK	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
AK	TEXAS	DAL	DALLAS	13
GRAPHICS	CONTROL	SECTION	JOB	
SA	1047	03	079	
CHECK				
AM				

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DETOURS, BRRICADES, WARNING SIGNS, SEQUENCE OF WORK ETC.
THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC", OF THE STANDARD SPECIFICATIONS. IN ADDITION TO THESE REQUIREMENTS,THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

1. GENERAL

(1) TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC AS DIRECTED BY THE ENGINEER.
(2) THE CONTRACTOR MAY PROPOSE/RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS,IMPACT TO TRAFFIC, EFFECT OVERALL PROJECT IN TIME AND COST ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. IF AT ANY TIME DURING CONSTRUCTION THE CONTRUCTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.
(3) DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.
(4) THE CONTRACTOR WILL PROVIDE ADVANCE NOTIFICATION TO THE ENGINEER BY 1:00 P.M. THE BUSINESS DAY BEFORE AN IMPENDING/UPCOMING LANE CLOSURES FOR ALL TEMPORARY AND/OR PERMANENT LANE, RAMP, CONNECTOR, FRONTAGE, SHOULDER ETC. CLOSURE OR DETOURS, SEE GENERAL NOTES FOR NOTIFICATION REQUIREMENTS.
(5) ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.
(6) TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
(7) REMOVAL AND DISPOSAL OF EXISTING ABANDONED UTILITIES (EITHER PREVIOUSLY ABANDONED OR ABANDONED DURING THIS PROJECT) REQUIRED TO SUPPORT THIS PROJECT'S CONSTRUCTION SHALL BE PERFORMED UNDER THE OVERALL PREPARE RIGHT-OF-WAY ITEM (ITEM 100).
(8) COORDINATE WITH ADJACENT PROJECTS.
(9) COVER PERMANENT SIGNS IF NOT USED. THIS IS SUBSIDIARY TO ITEM 502.
(10) EXCAVATION WITHIN 5 FEET OF AN EXISTING CPS ENERGY POLE WILL REQUIRE POLE BRACING. THE ESTIMATED DURATION FOR THE POLE BRACING PROCESS IS APPROXIMATELY (6 TO 8 WEEKS).
(11) COORDINATE WITH THE CITY OF DALLAS OR TXDOT FOR SIGNAL TIMING REVISIONS, AS NECESSARY.

2. SEQUENCE OF WORK

(1) THIS PROJECT WILL BE CONSTRUCTED IN (1) PHASE. BEFORE THE COMMENCEMENT OF THIS PHASE, INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS AND BARRICADES AS SHOWN ON THE STANDARDS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. DROP OFF CONDITIONS OF GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY, AS WELL AS THROUGHOUT THE PROJECT WHERE ACCESS TO ADJACENT PROPERTIES IS ALLOWED TO DRIVEWAYS AND SIDE STREETS.
(2) INSTALL TRAFFIC CONTROL WARNING SIGNS, CHANNELIZATION DEVICES, BMP'S AND OTHER SW3P DEVICES.
(3) PREPARING ROW/REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURRING.
(4) CONSTRUCT STORM DRAIN PIPES AND APPURTENANCES.
(5) CONSTRUCT RETAINING WALLS, BRIDGE ABUTMENTS, AND ASSOCIATED PAVEMENT.
(6) INSTALL PREFABRICATED BRIDGE.
(7) CONSTRUCT TRAIL PAVEMENT. APPLY PAVEMENT MARKINGS, AND INSTALL SIGNS.
(8) PERFORM FINAL CLEANUP.
(9) REMOVE ADVANCE WARNING SIGNS AND BARRICADES.
(10) WORK CAN OCCUR CONCURRENTLY ON MULTIPLE ITEMS.

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Texas Department of Transportation

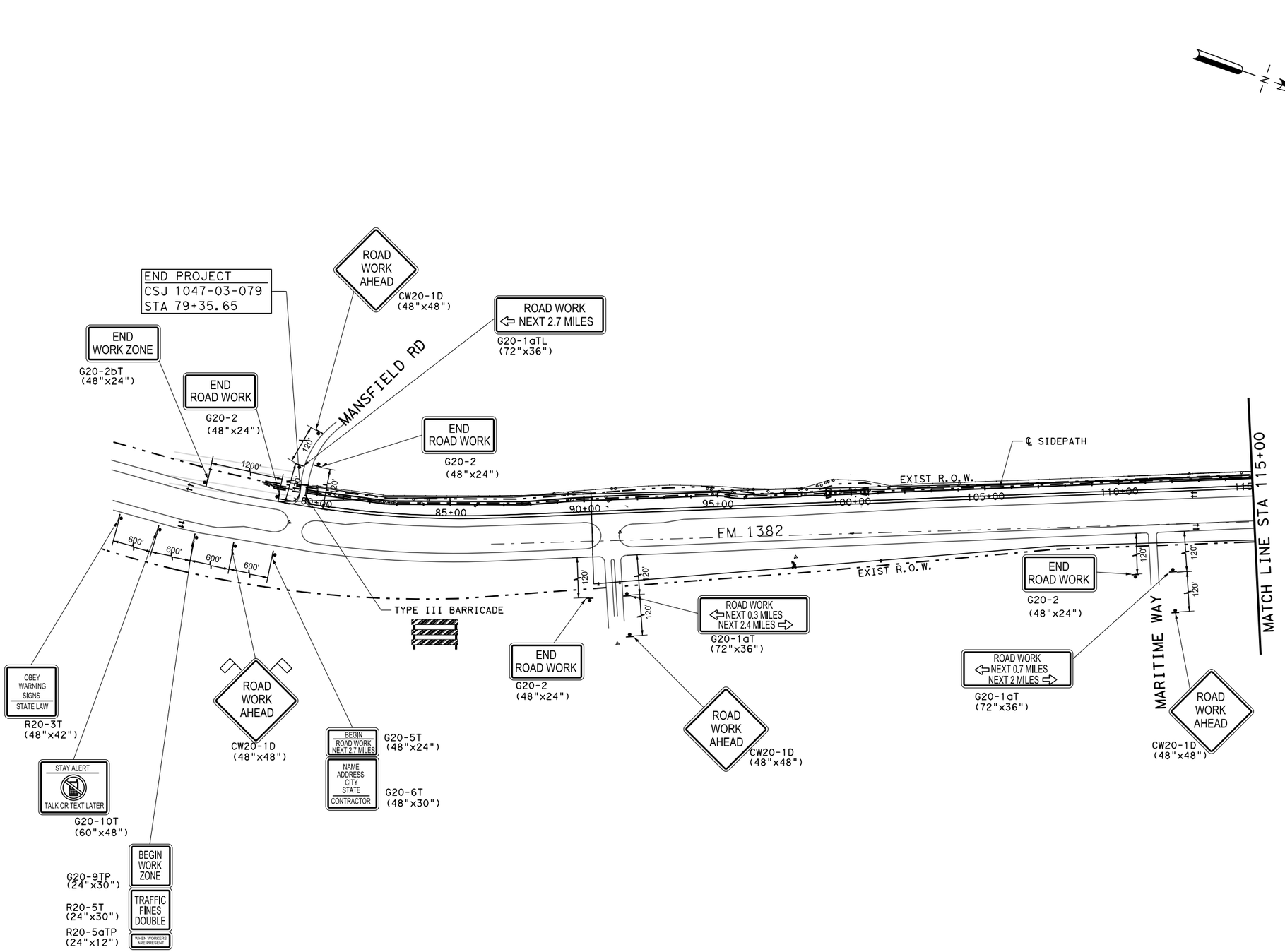
FM 1382-SIDEPATH

TRAFFIC CONTROL NARRATIVE

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	14
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
CHECK				
EMP				

TIME: 3:25:13 PM
DATE: 8/21/2023



LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
- TRAFFIC FLOW

NOTES:

1. REFER TO BC STANDARDS FOR FURTHER INFORMATION.
2. ADVANCE WARNING SIGNS TO REMAIN IN PLACE THROUGHOUT THE DURATION OF THE PROJECT.
3. ALL ADVANCED WARNING SIGNS SPACING SHALL BE A MINIMUM OF 600' UNLESS NOTED OTHERWISE.

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FM 1382-SIDEPATH

ADVANCE WARNING SIGNS

SCALE: 1"=400' (H) SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	15
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
CHECK				
EMP				

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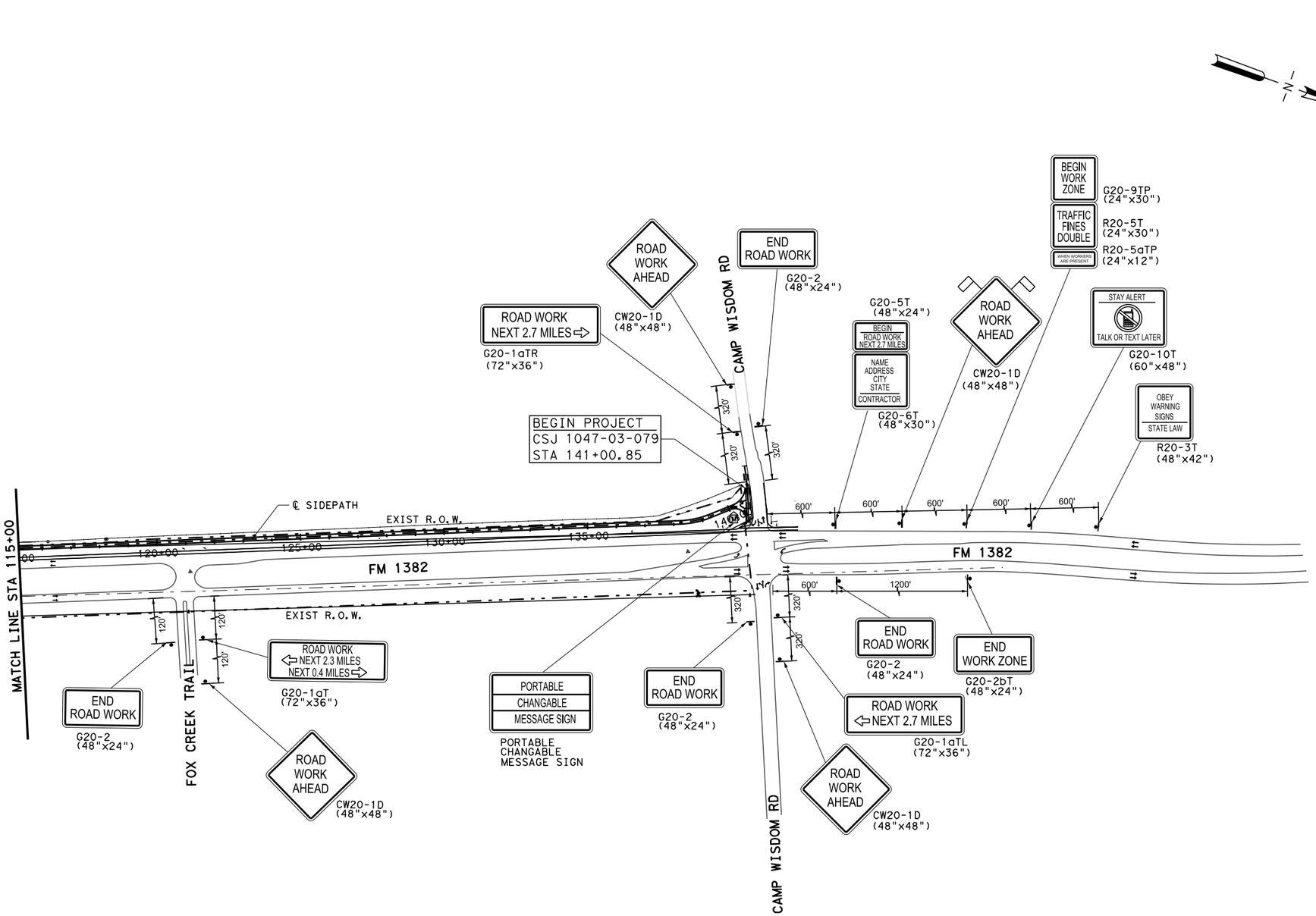

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
- TRAFFIC FLOW

NOTES:

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FM 1382-SIDEPATH

ADVANCE WARNING SIGNS

SCALE: 1"=400' (H) SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	16
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
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EMP				

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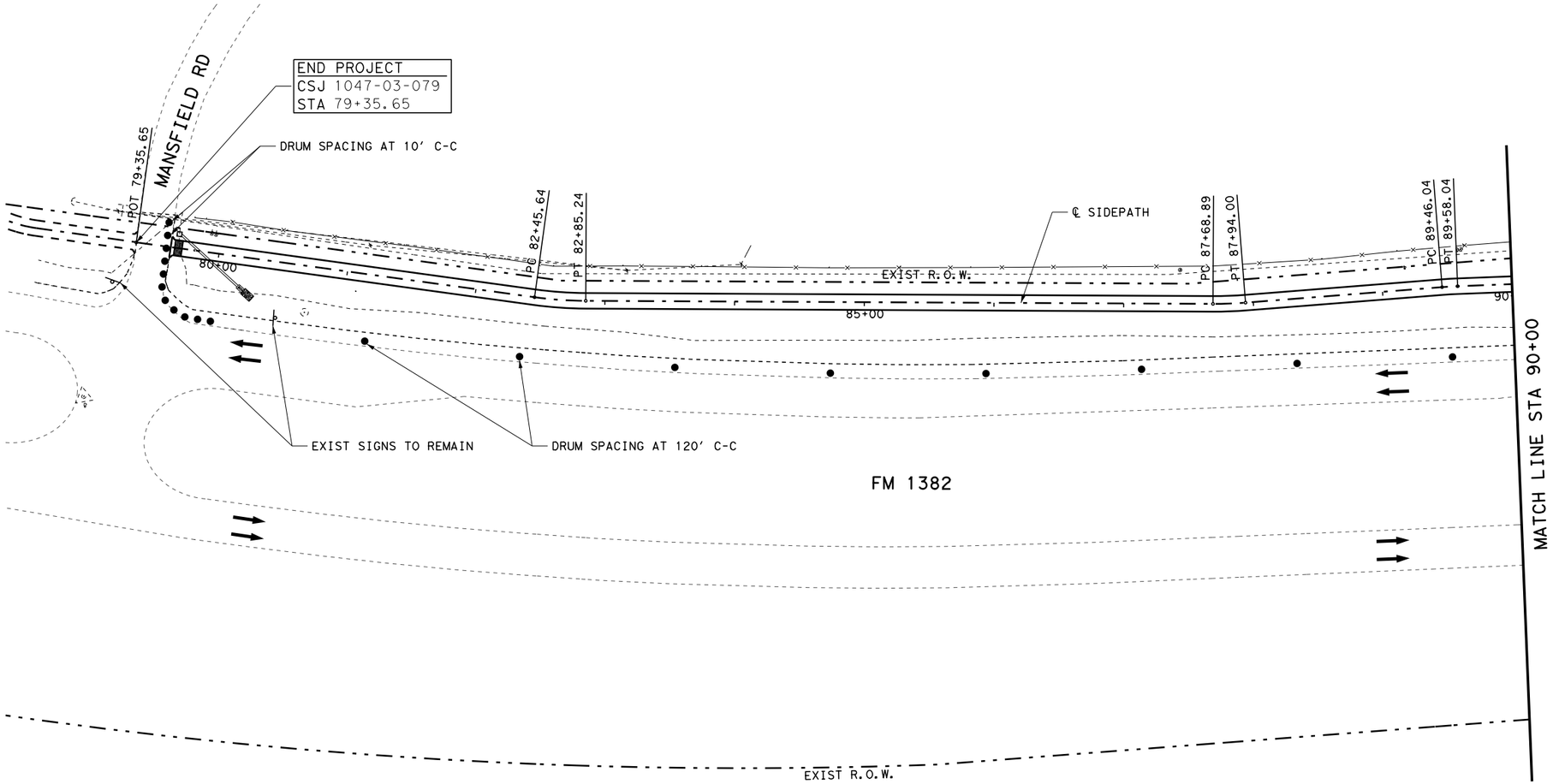

0 50 100
SCALE IN FEET

N

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
- TRAFFIC FLOW
- SIGNES TO BE RELOCATED

NOTES:

1. REFER TO BC STANDARDS FOR FURTHER INFORMATION.
2. ADVANCE WARNING SIGNS TO REMAIN IN PLACE THROUGHOUT THE DURATION OF THE PROJECT.
3. ALL ADVANCED WARNING SIGNS SPACING SHALL BE A MINIMUM OF 600' UNLESS NOTED OTHERWISE.

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FM 1382-SIDEPATH

TRAFFIC CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 1 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	17
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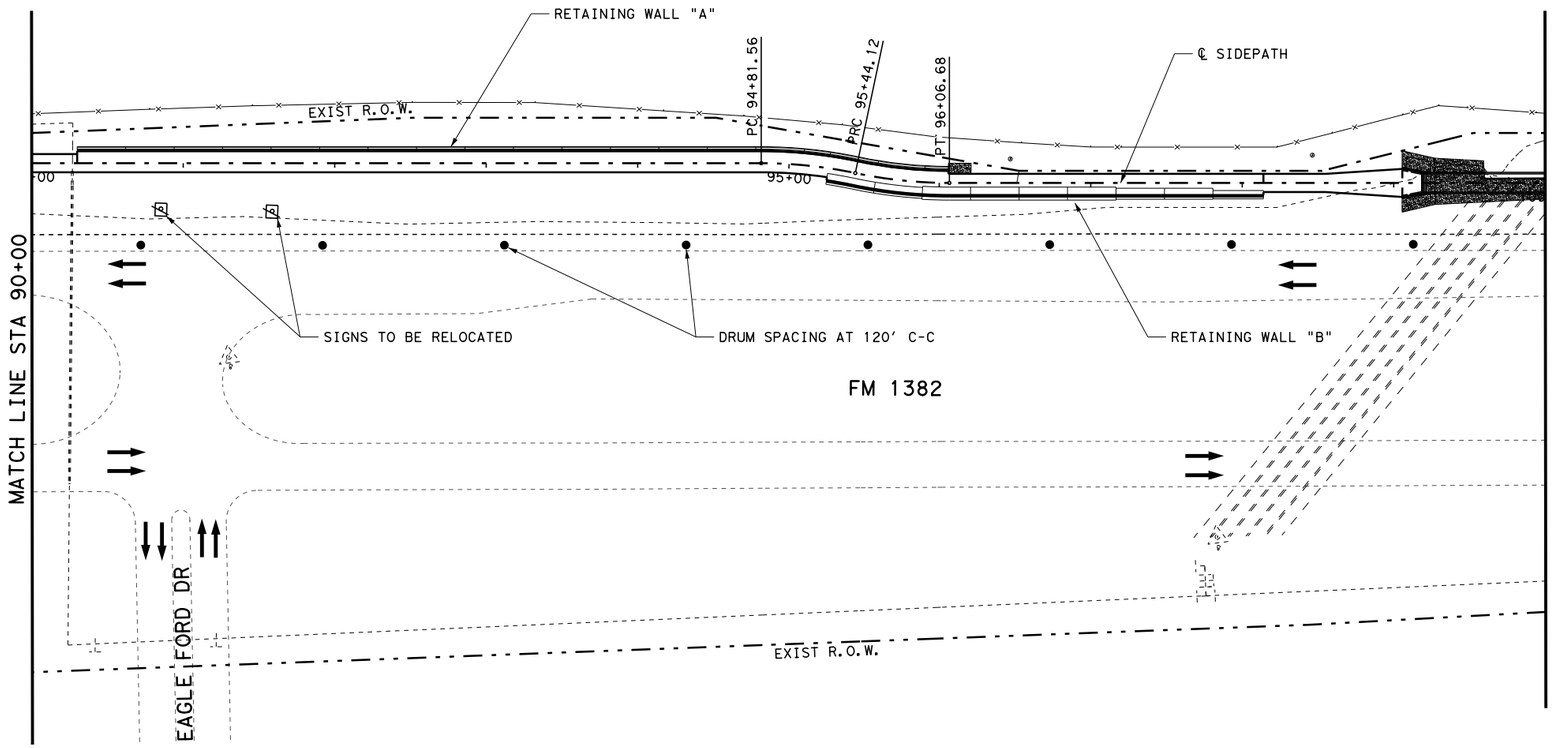

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SCALE IN FEET

N

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
- TRAFFIC FLOW
- SIGNES TO BE RELOCATED

NOTES:

1. REFER TO BC STANDARDS FOR FURTHER INFORMATION.
2. ADVANCE WARNING SIGNS TO REMAIN IN PLACE THROUGHOUT THE DURATION OF THE PROJECT.
3. ALL ADVANCED WARNING SIGNS SPACING SHALL BE A MINIMUM OF 600' UNLESS NOTED OTHERWISE.

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FM 1382-SIDEPATH

TRAFFIC CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 2 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	18
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CHECK	1047	03	079	
EMP				

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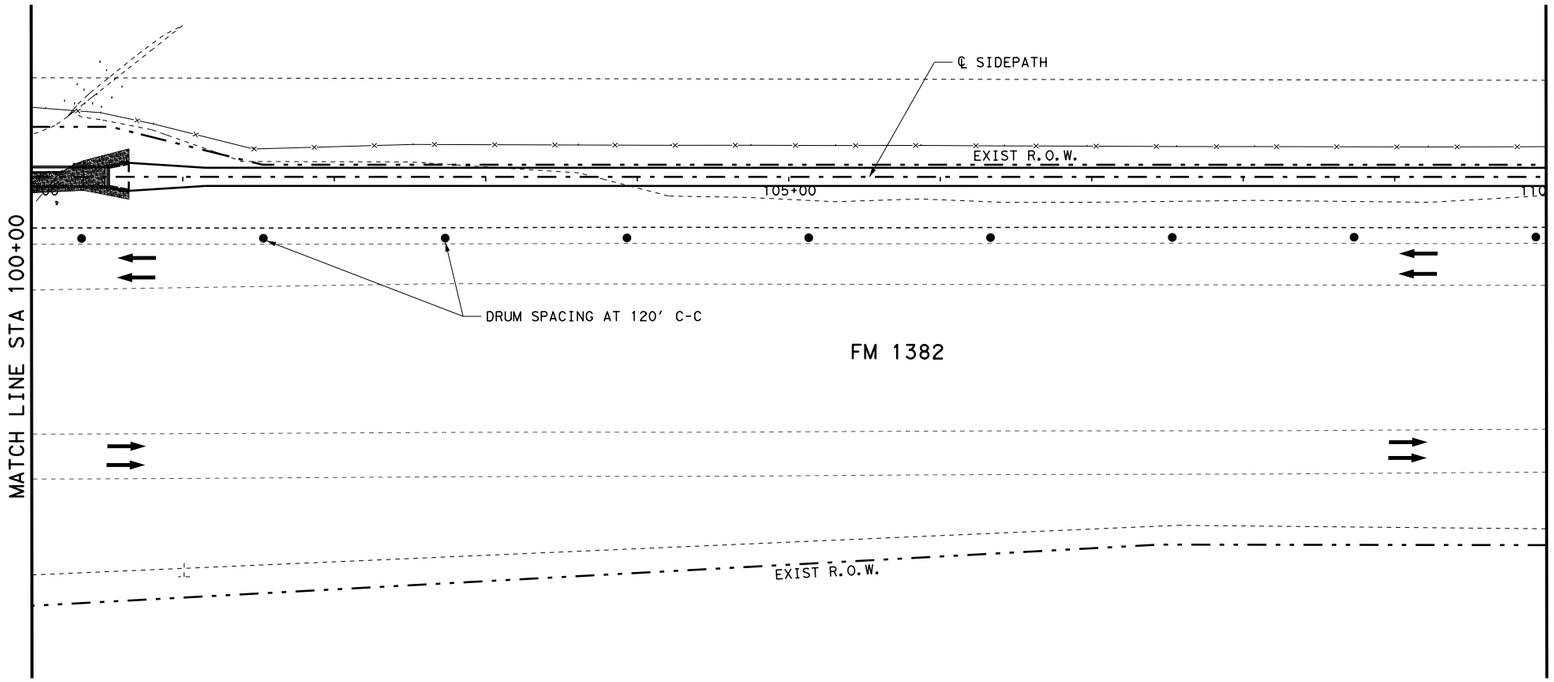

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
- TRAFFIC FLOW
- SIGNES TO BE RELOCATED

NOTES:

1. REFER TO BC STANDARDS FOR FURTHER INFORMATION.
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FM 1382-SIDEPATH

TRAFFIC CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 3 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	19
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
CHECK				
EMP				

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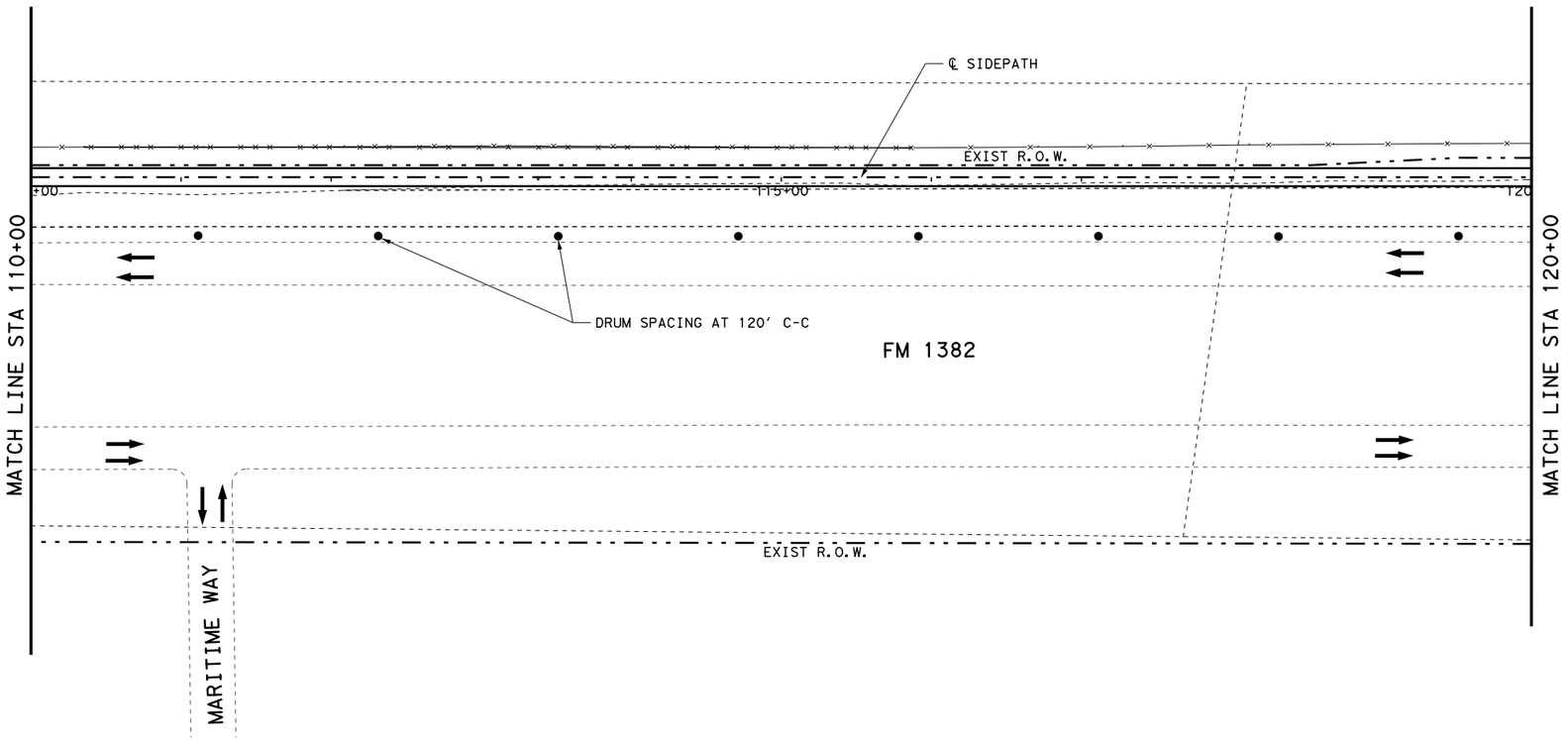

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
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- SIGNES TO BE RELOCATED

NOTES:

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FM 1382-SIDEPATH

TRAFFIC CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 4 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	20
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
CHECK				
EMP				

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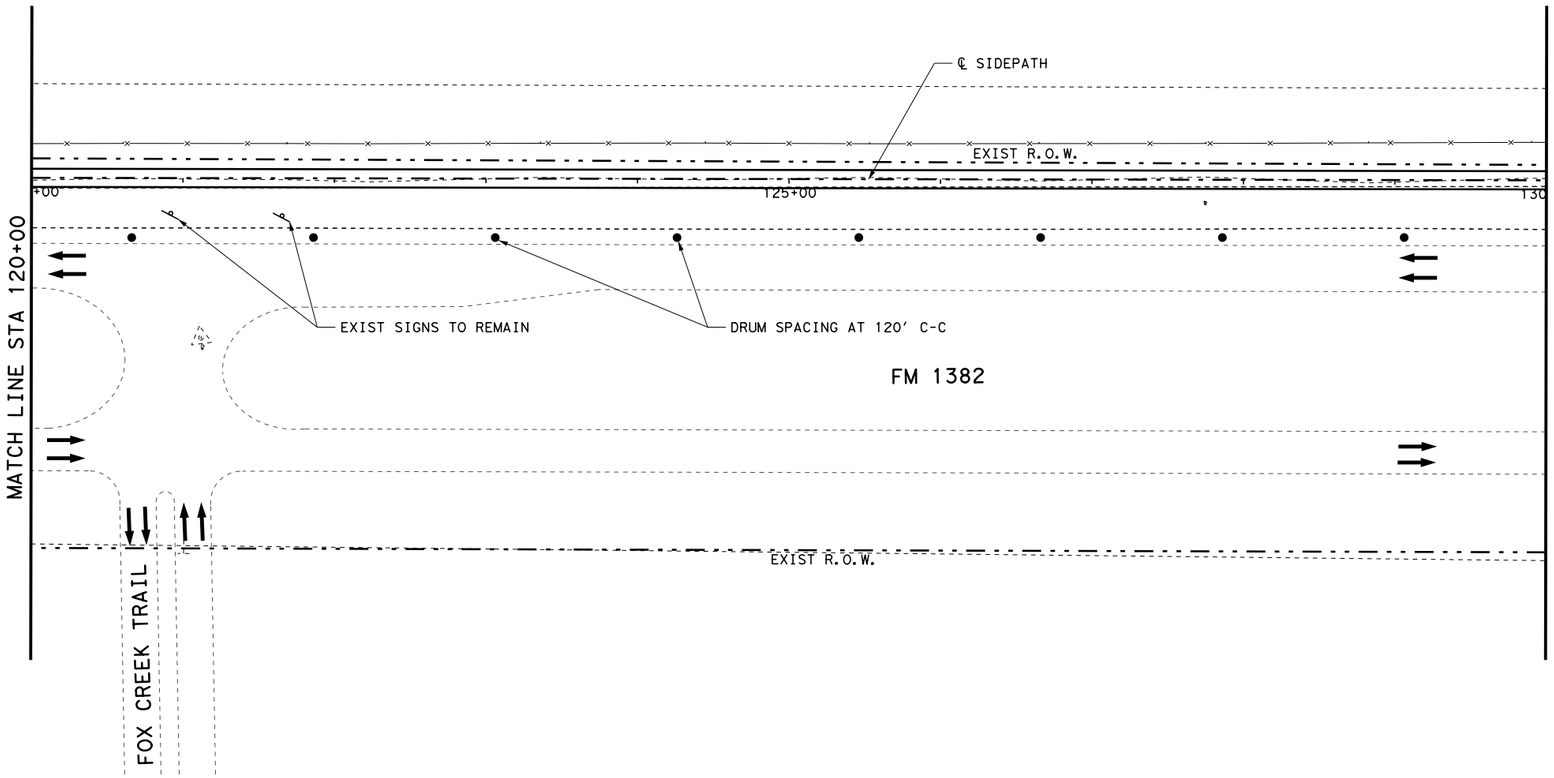

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
- TRAFFIC FLOW
- SIGNES TO BE RELOCATED

NOTES:

1. REFER TO BC STANDARDS FOR FURTHER INFORMATION.
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FM 1382-SIDEPATH

TRAFFIC CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 5 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	21
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
CHECK				
EMP				

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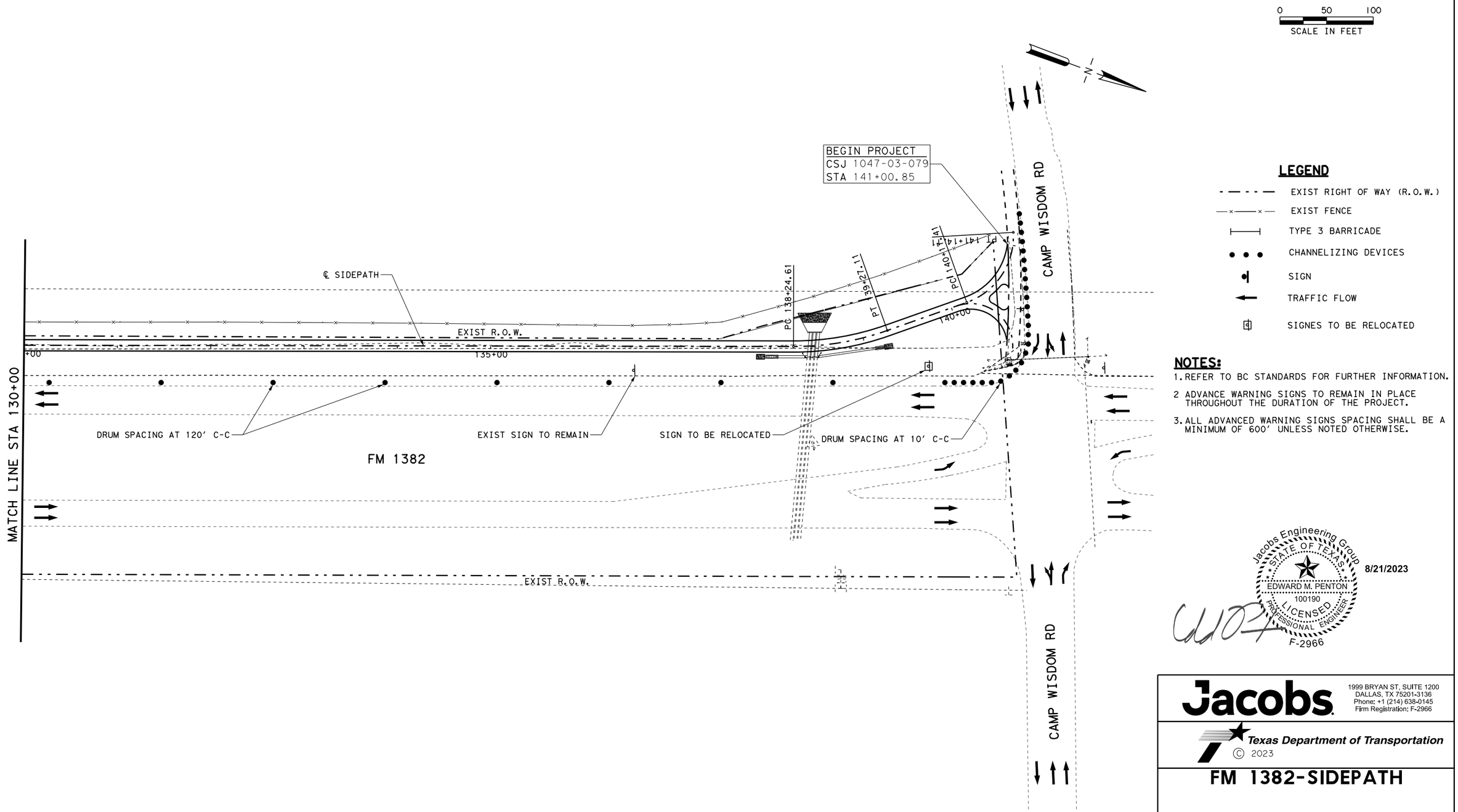

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES
- SIGN
- TRAFFIC FLOW
- SIGNES TO BE RELOCATED

NOTES:

1. REFER TO BC STANDARDS FOR FURTHER INFORMATION.
2. ADVANCE WARNING SIGNS TO REMAIN IN PLACE THROUGHOUT THE DURATION OF THE PROJECT.
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TRAFFIC CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 6 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	22
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
CHECK				
EMP				

FILE: \\USLASO-APP385\ICS*workdir\165984\689494*30\FM1382_TCP-06.dgn

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

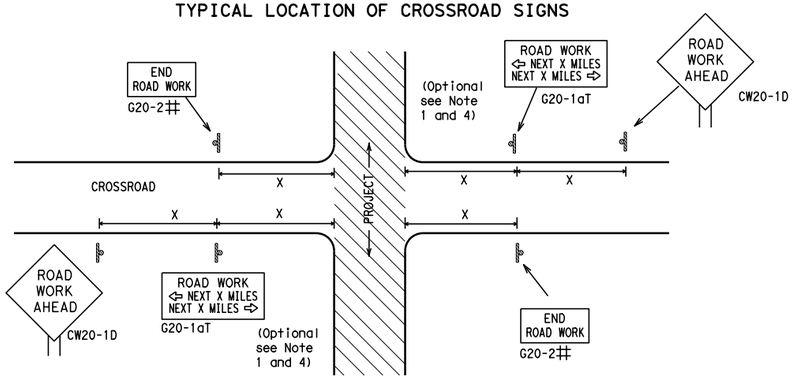
Traffic Safety Division Standard

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 4-03 7-13 9-07 8-14 5-10 5-21	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		23

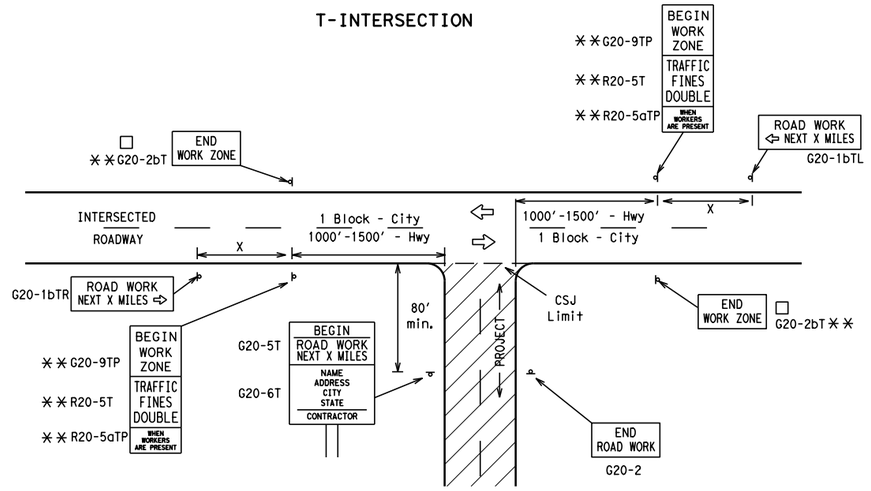
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

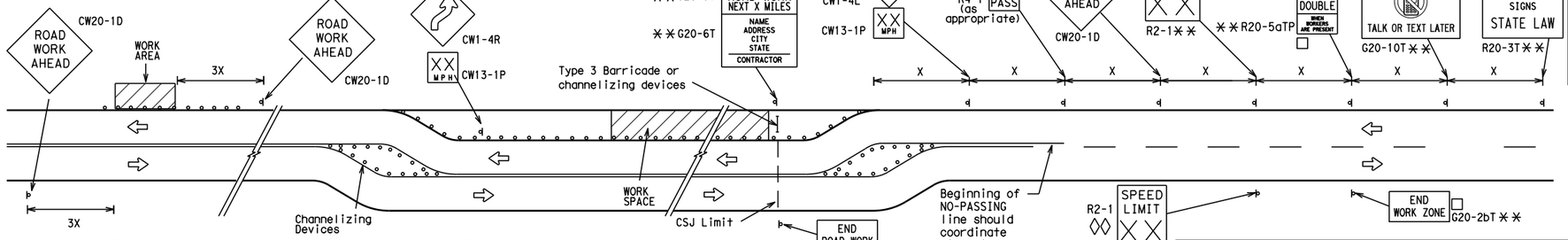
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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.

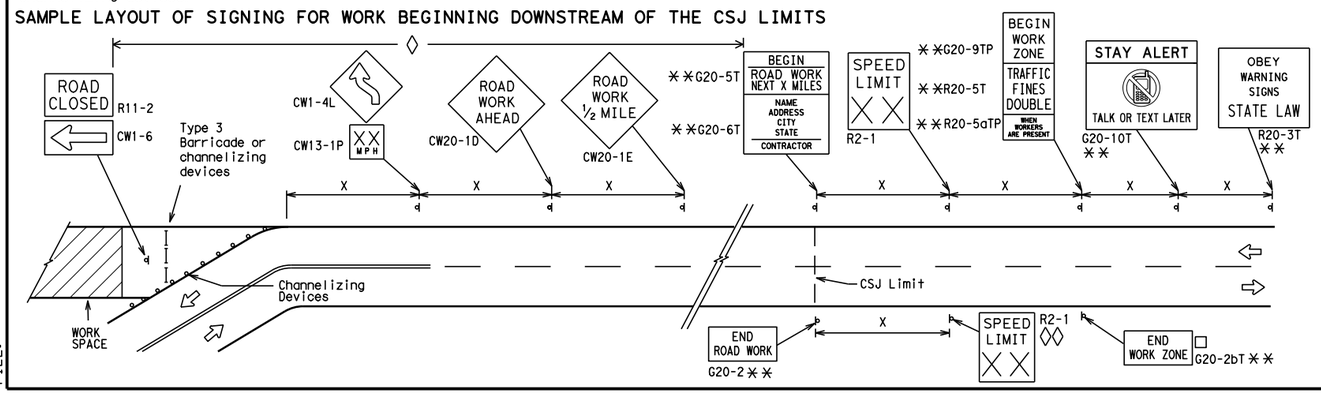
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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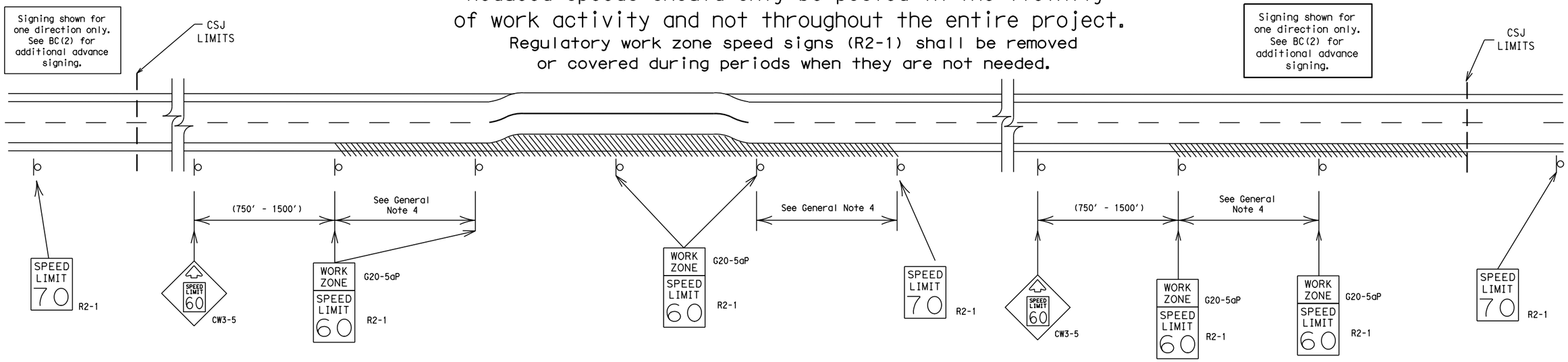
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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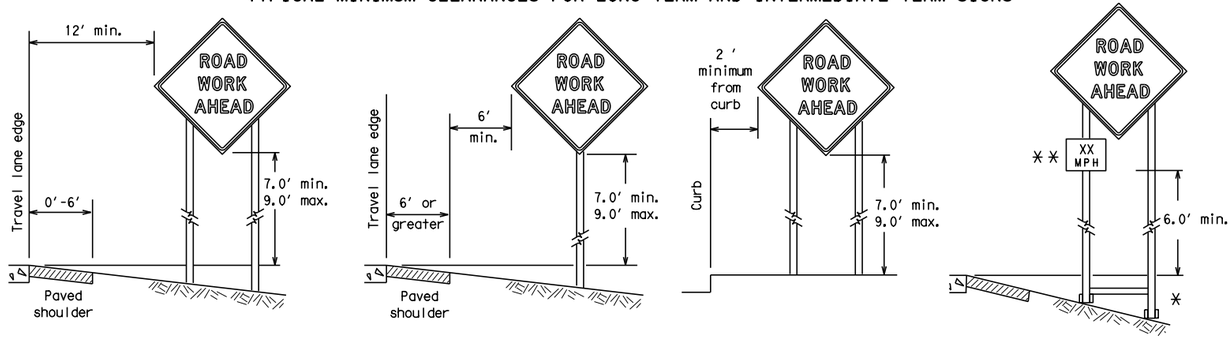
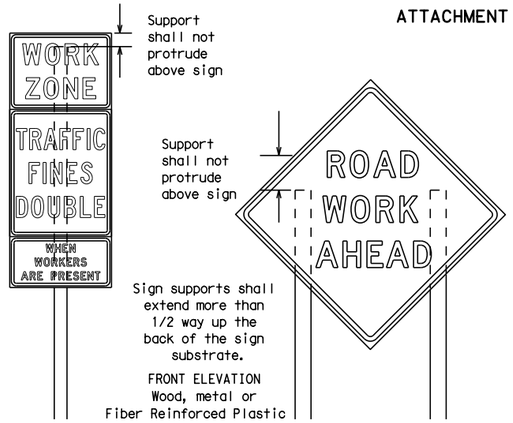
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

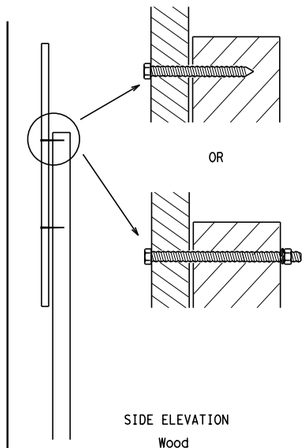


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





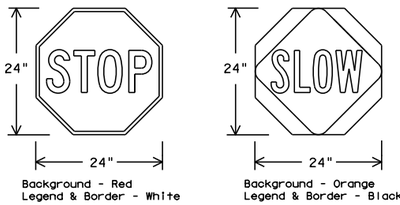
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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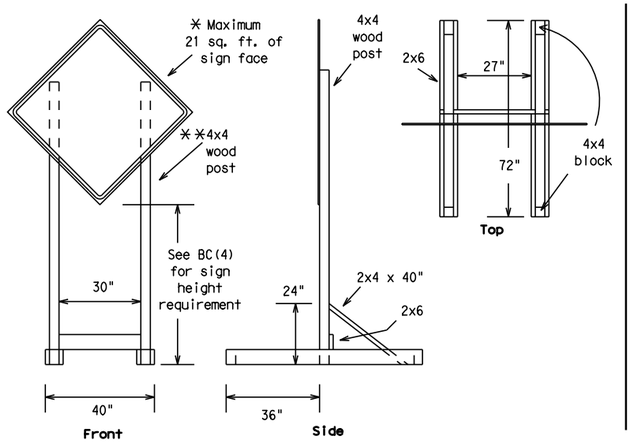
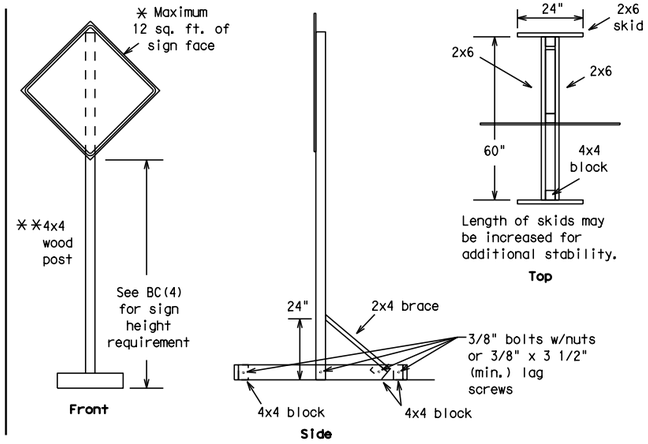
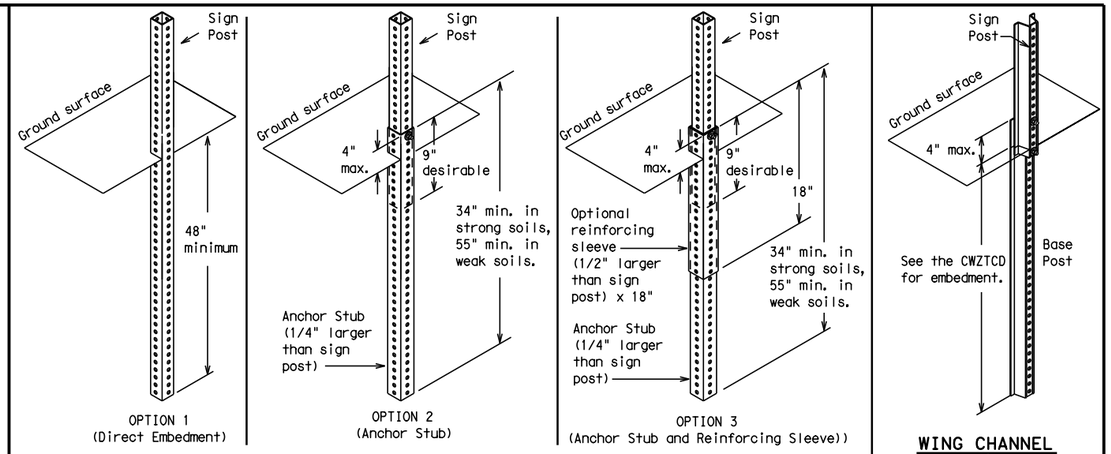




SKID MOUNTED WOOD SIGN SUPPORTS

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

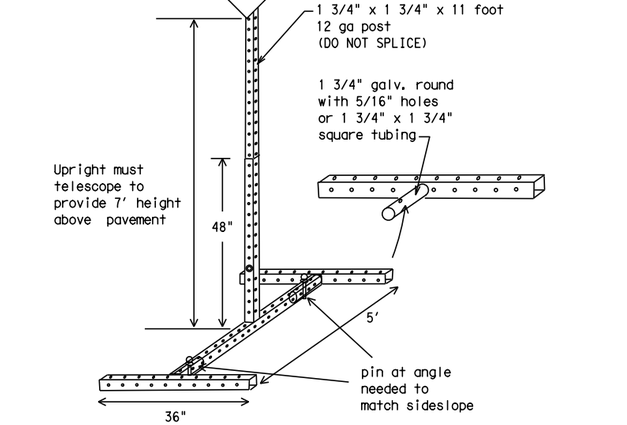


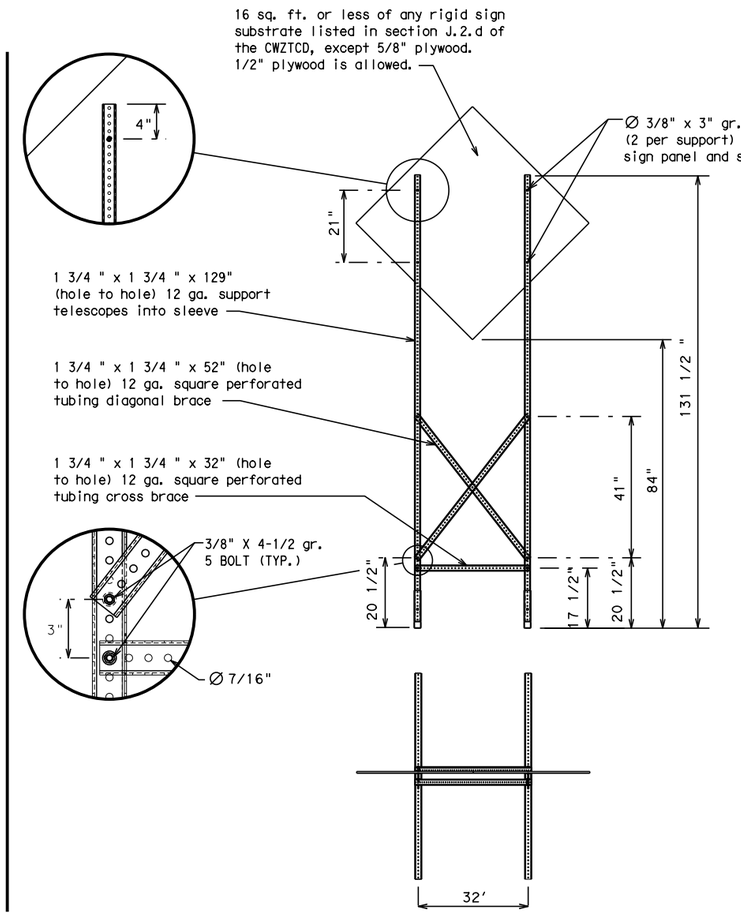
PERFORATED SQUARE METAL TUBING

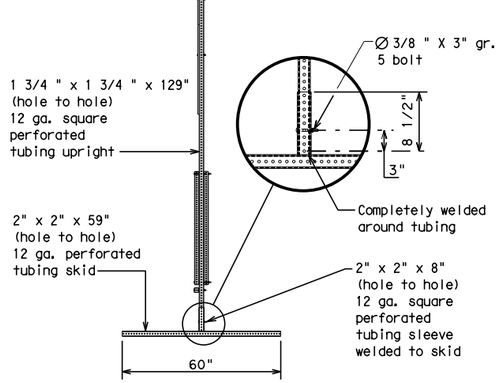
WING CHANNEL
Lap-splice/base bolted anchor

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
9-07 8-14	DIST	COUNTY		SHEET NO.
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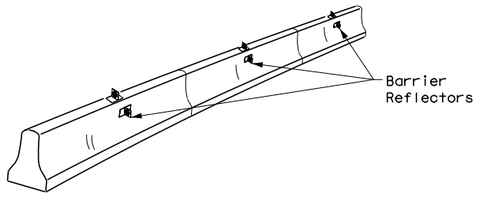
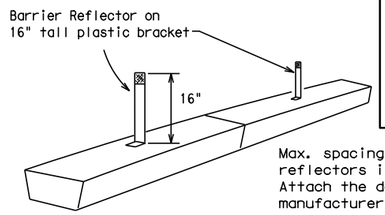
DATE:
FILE:

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



CONCRETE TRAFFIC BARRIER (CTB)

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

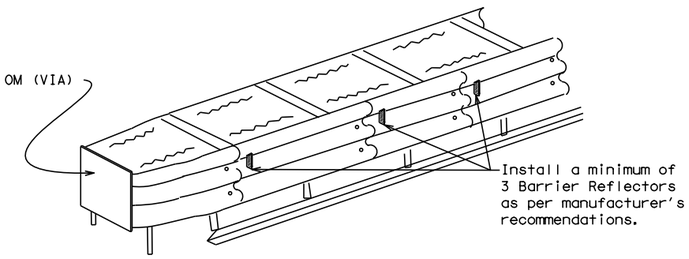


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

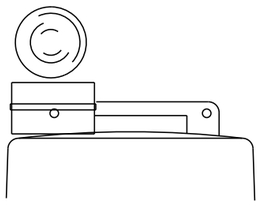


DELINEATION OF END TREATMENTS

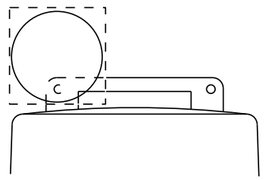
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

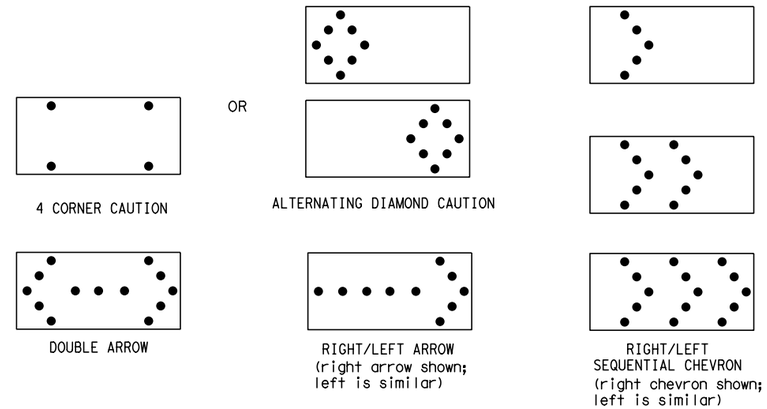
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	1047	03	079	FM1382
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DATE:
FILE:

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:

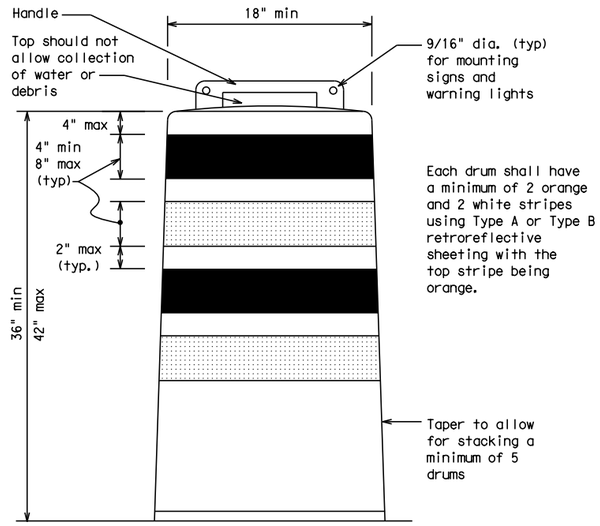
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

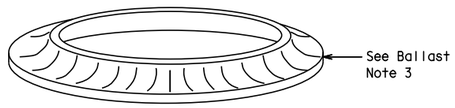
RETROREFLECTIVE SHEETING

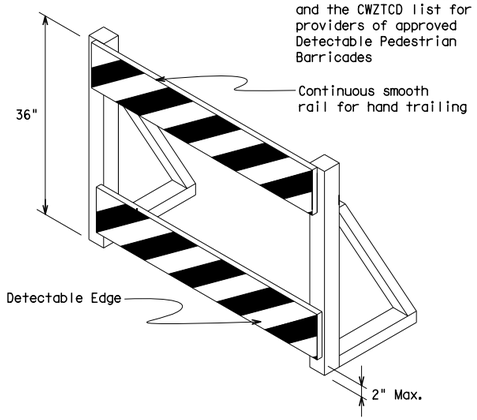
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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.

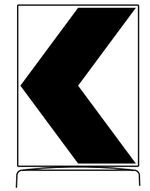




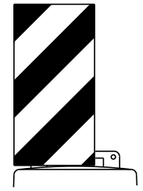


DETECTABLE PEDESTRIAN BARRICADES

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
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REVISIONS	1047	03	079	FM1382
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	DAL	DALLAS		30
7-13				

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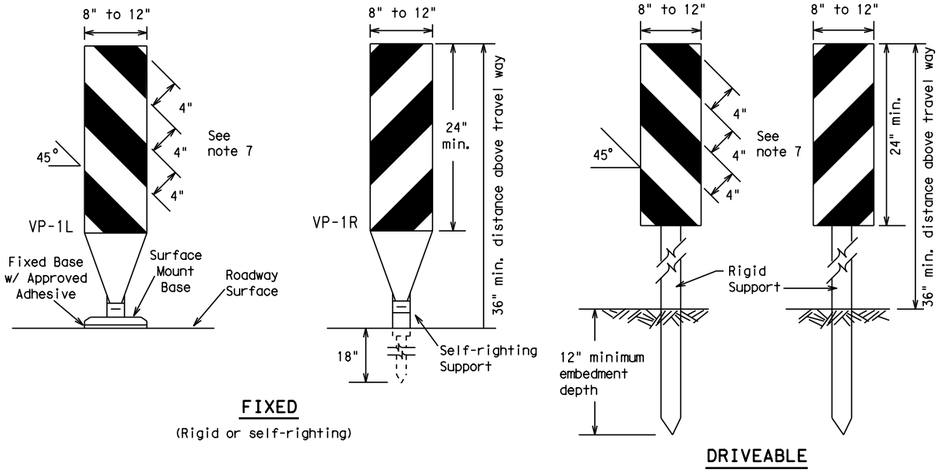
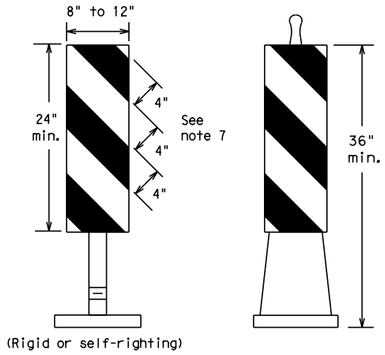


FIXED
(Rigid or self-righting)

DRIVEABLE

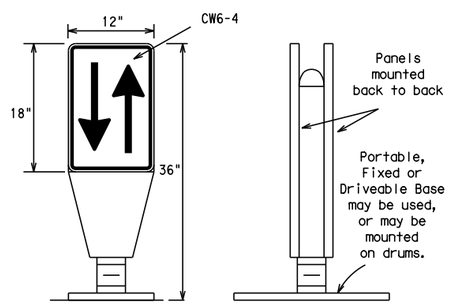


(Rigid or self-righting)

PORTABLE

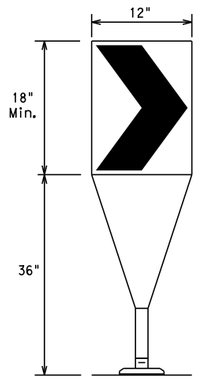
VERTICAL PANELS (VPs)

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



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.



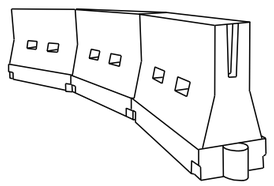
Fixed Base w/ Approved Adhesive
(Driveable Base, or Flexible Support can be used)

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

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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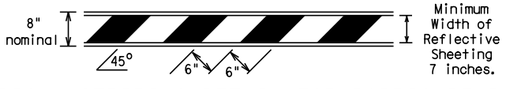
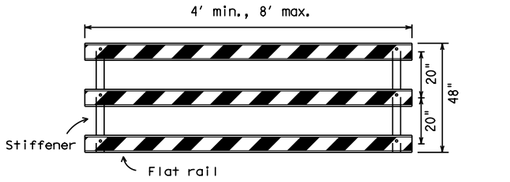
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



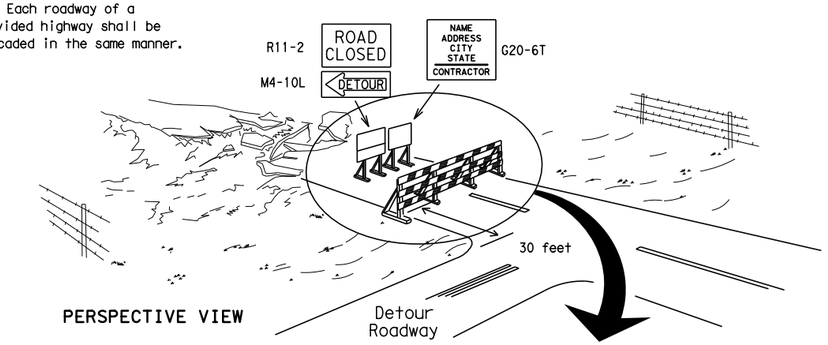
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

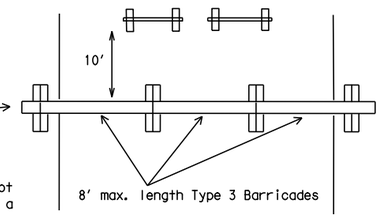
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

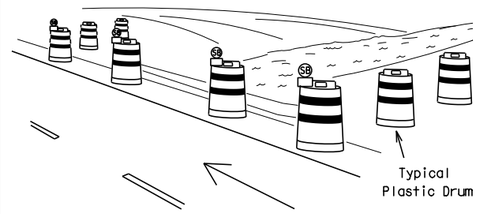
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

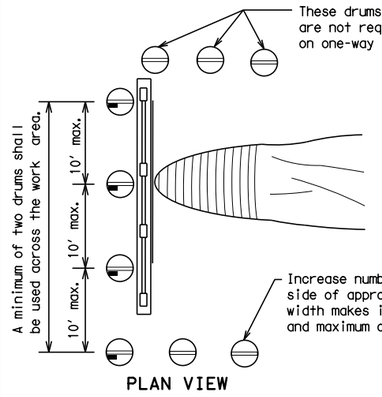
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

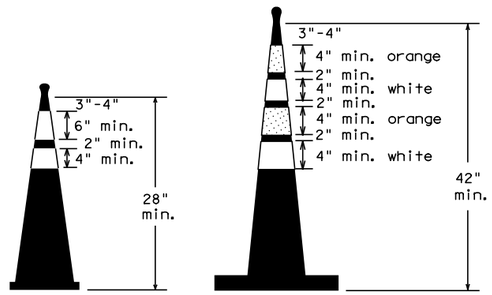
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

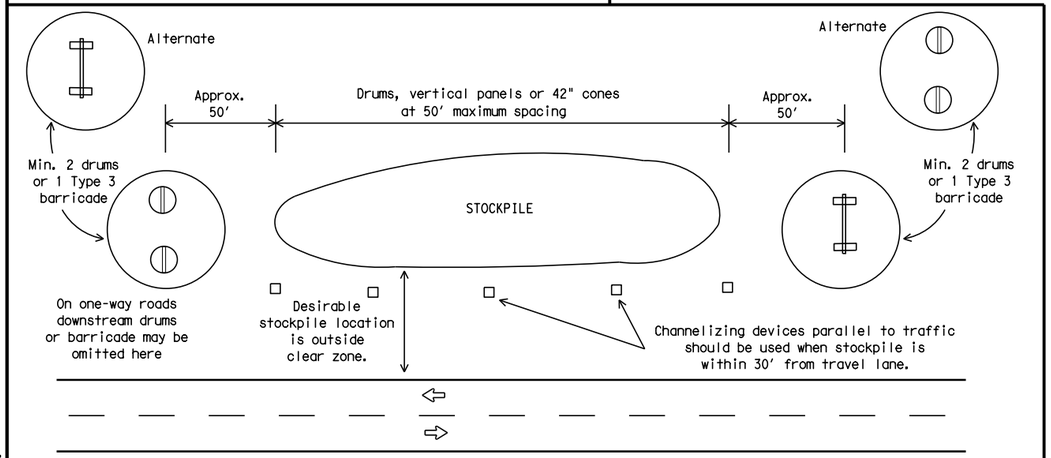
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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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.

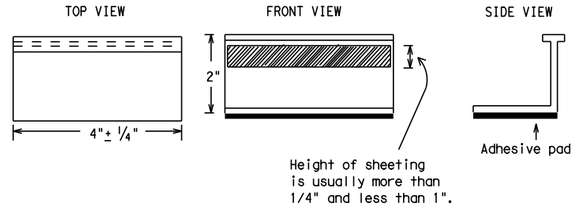
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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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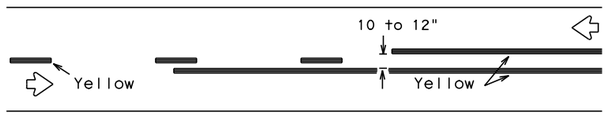
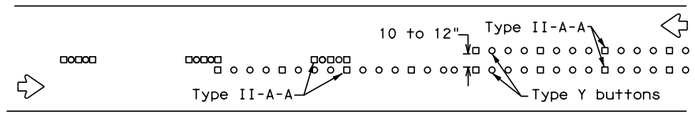
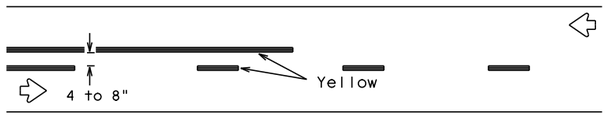
PAVEMENT MARKING PATTERNS



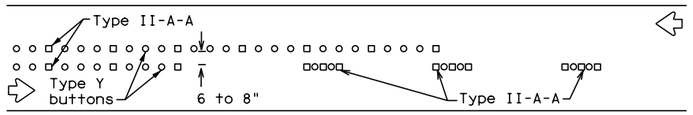
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



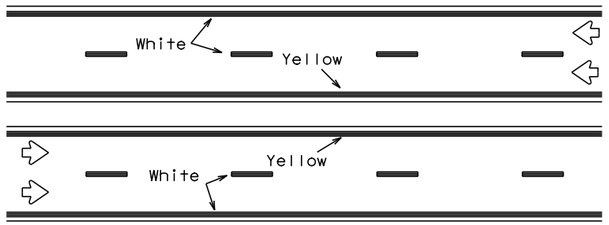
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



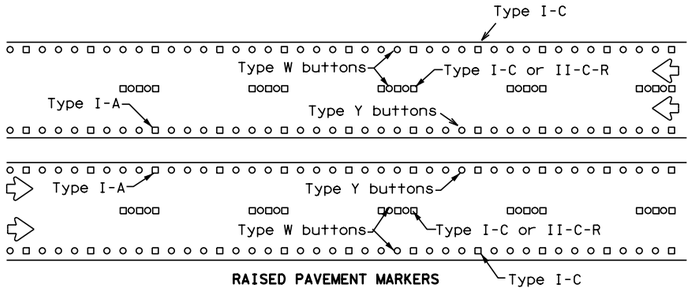
RAISED PAVEMENT MARKERS - PATTERN B

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



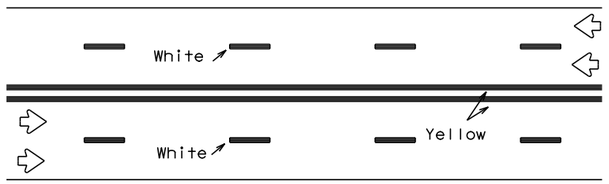
REFLECTORIZED PAVEMENT MARKINGS



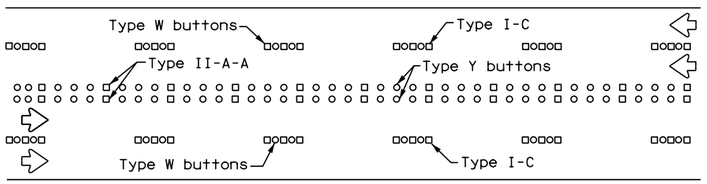
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



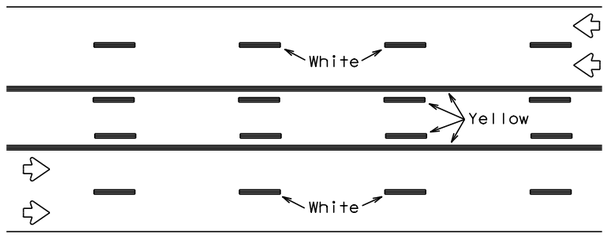
REFLECTORIZED PAVEMENT MARKINGS



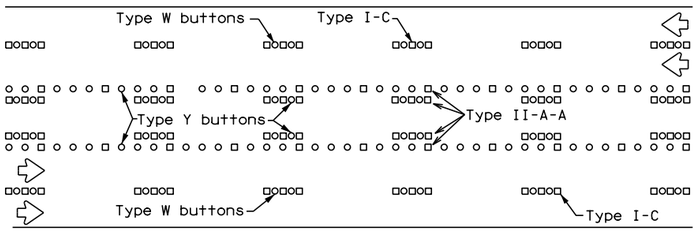
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

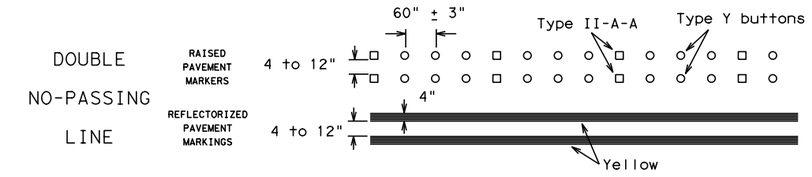


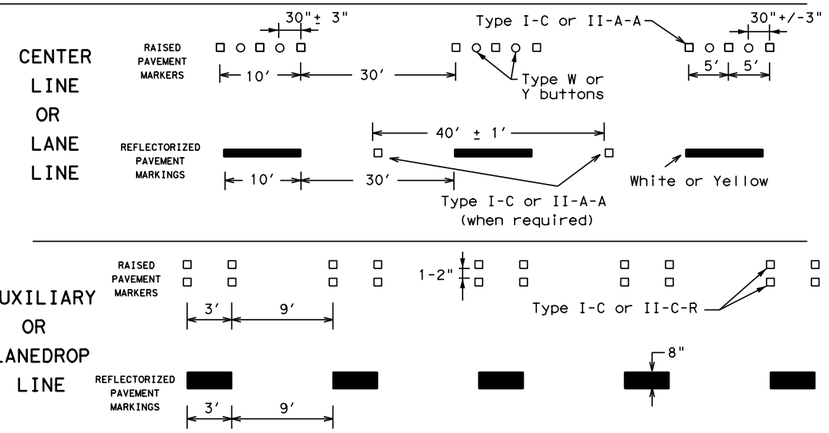
RAISED PAVEMENT MARKERS

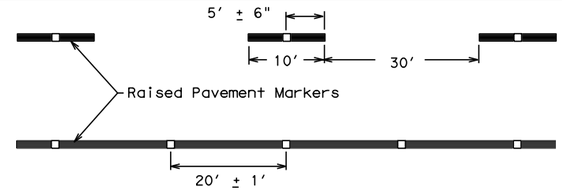
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS







REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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

Centerline only - not to be used on edge lines

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

Texas Department of Transportation

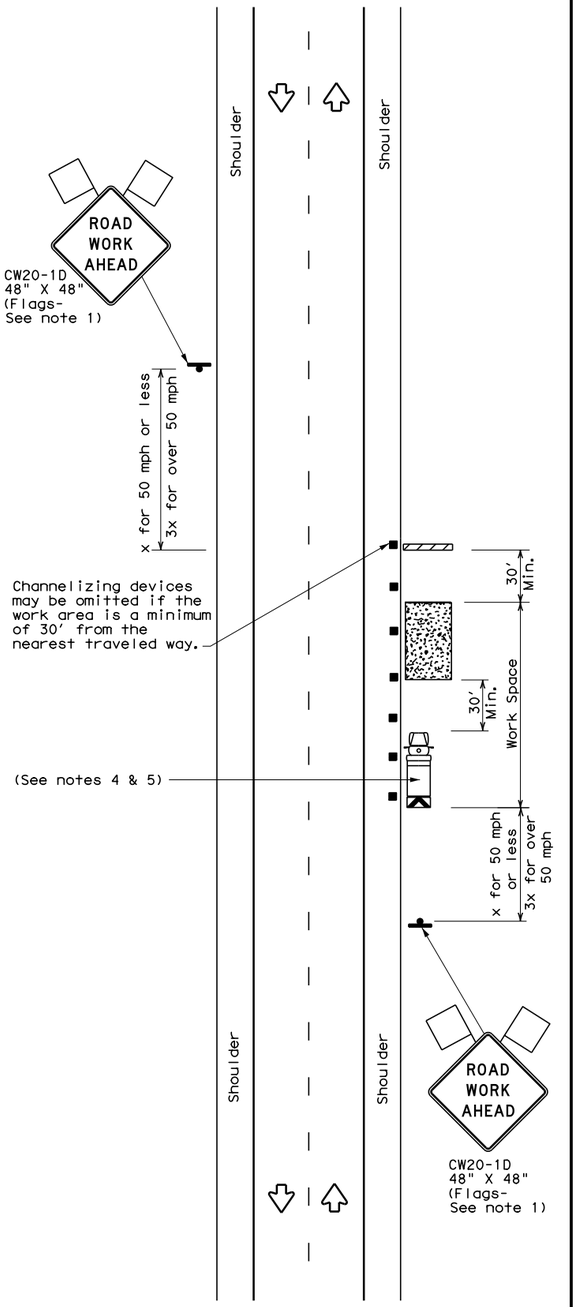
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		34

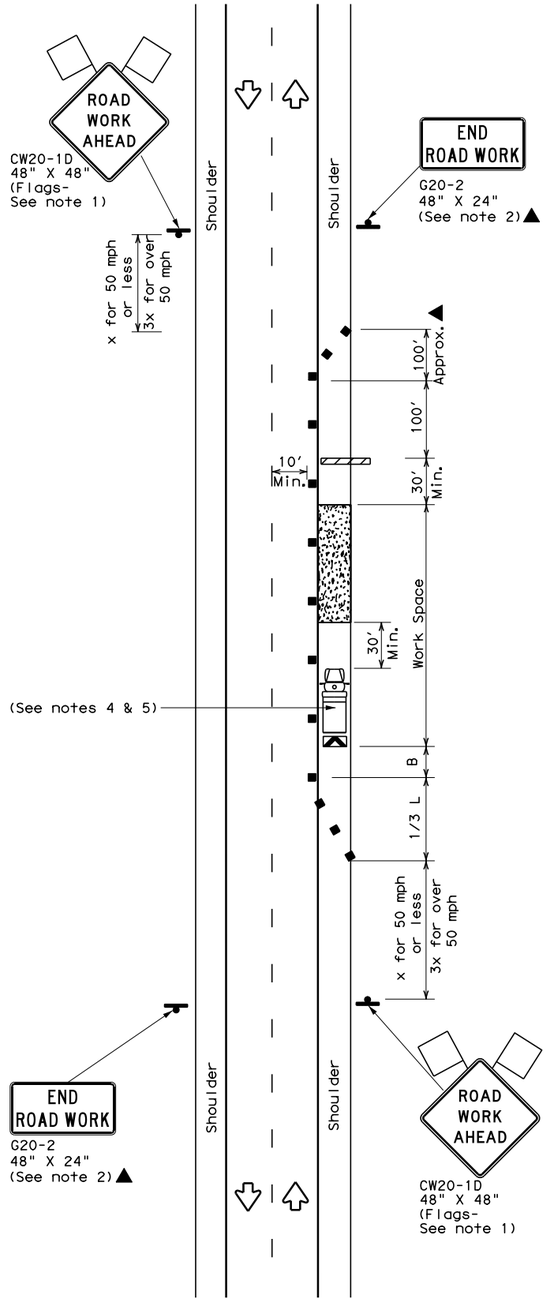
DATE:
FILE:



TCP (2-1a)

WORK SPACE NEAR SHOULDER

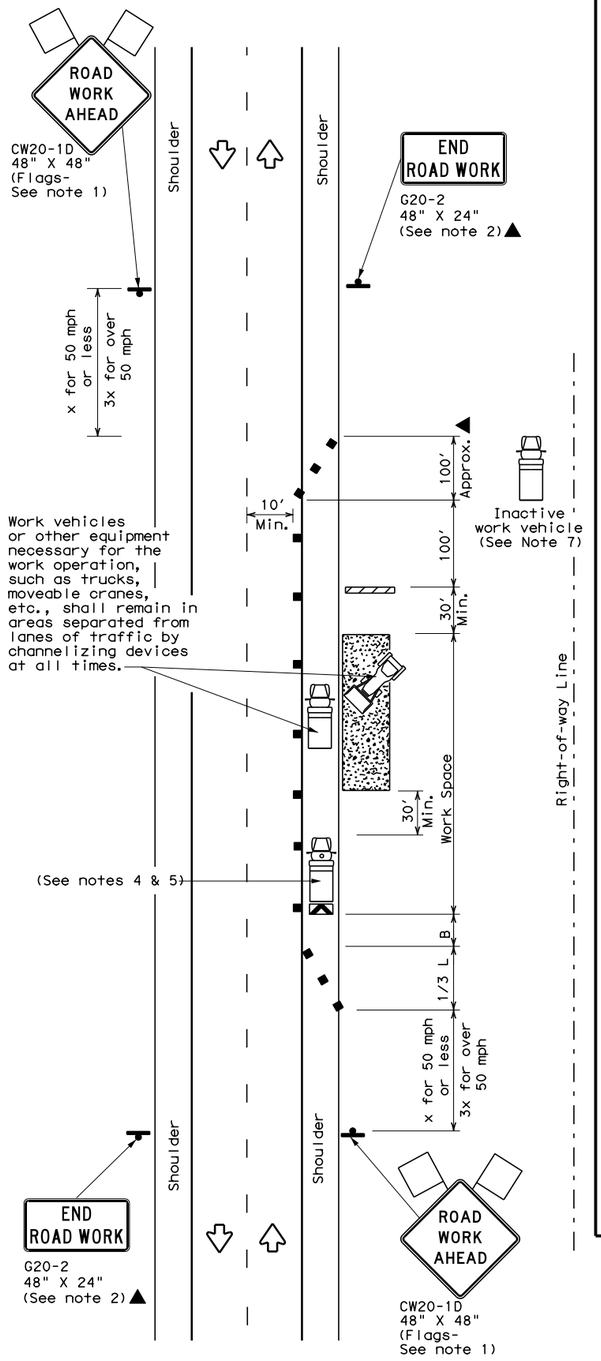
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER

Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER

Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

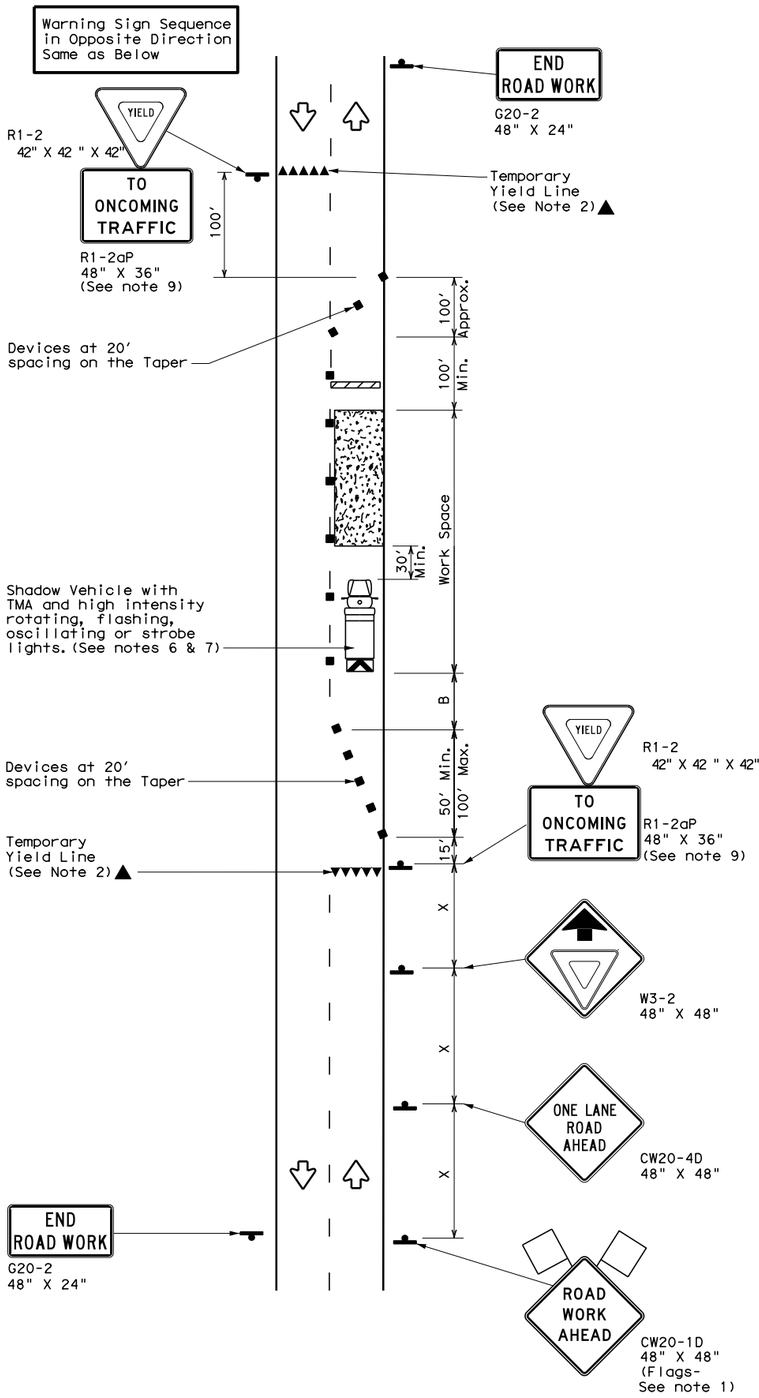
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

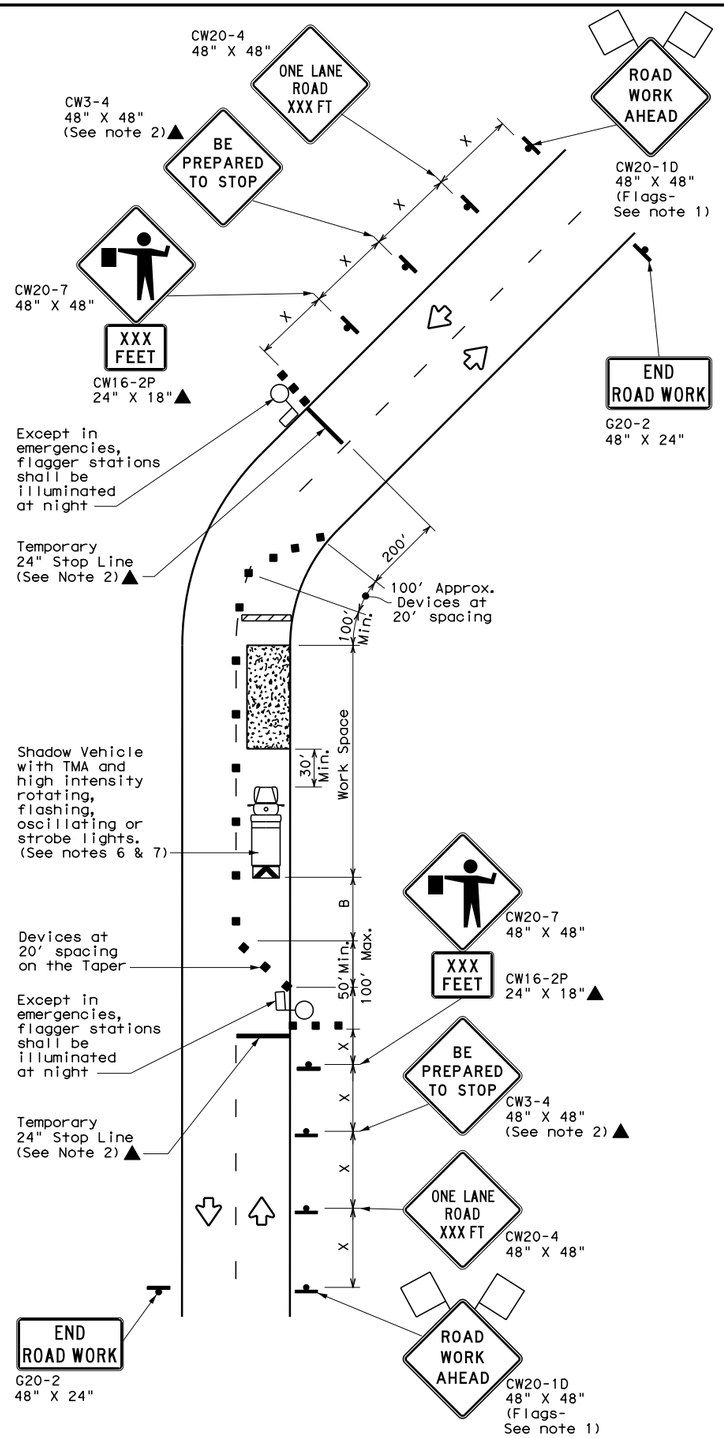
FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	DAL	DALLAS		35
1-97 2-18				

DATE:
FILE:



TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

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

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	DAL	DALLAS		36
4-98 2-18				

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DATE:
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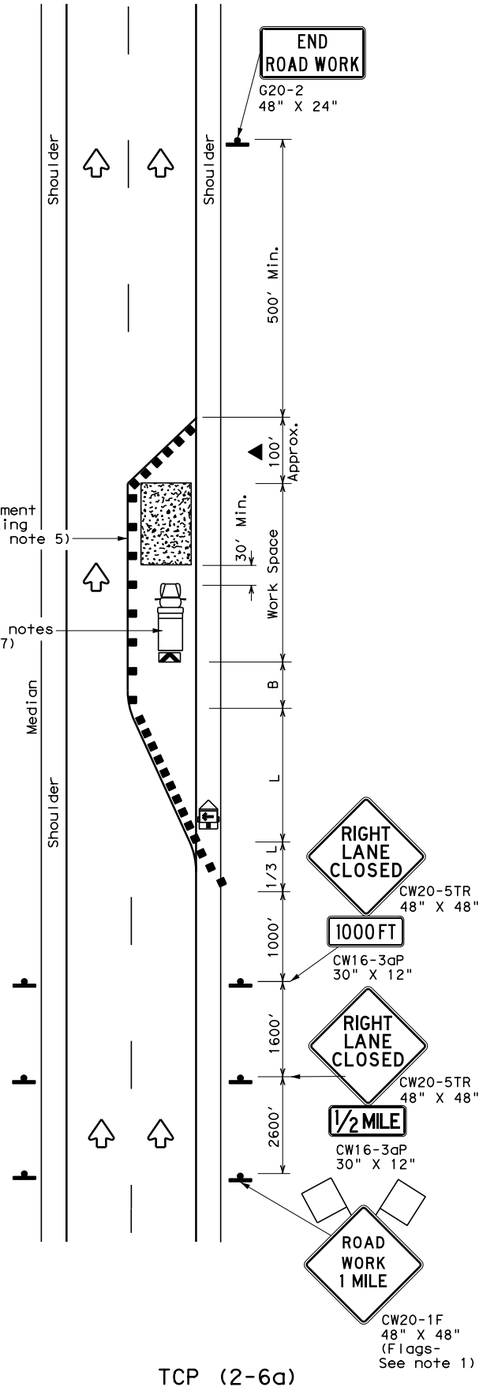
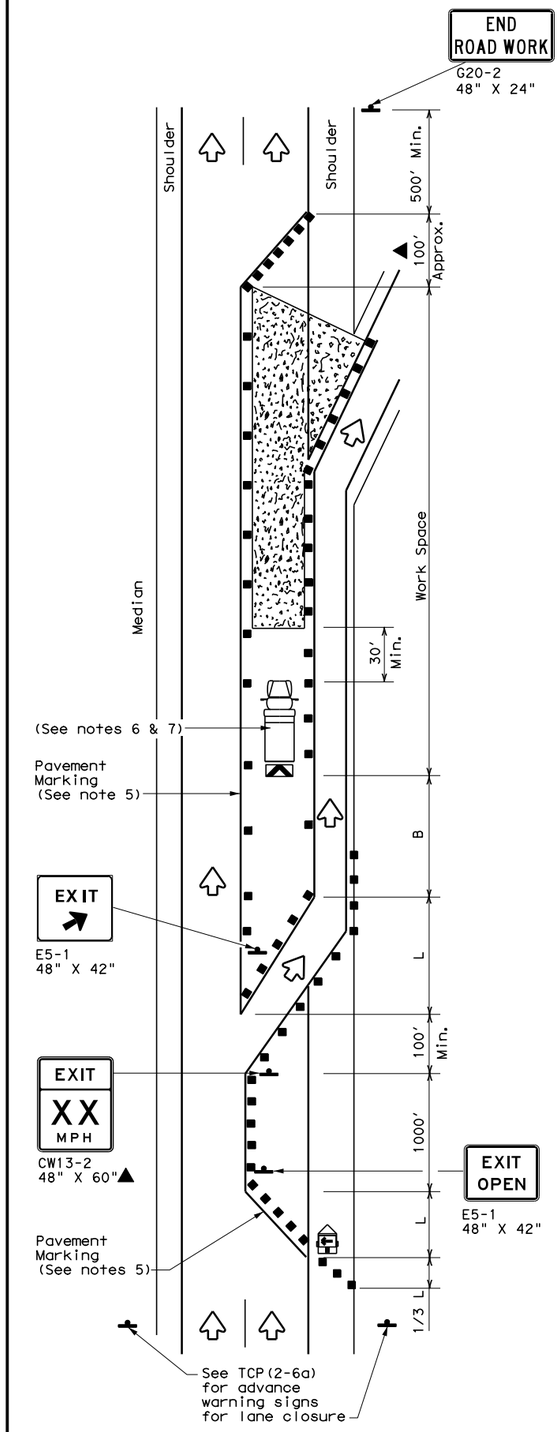


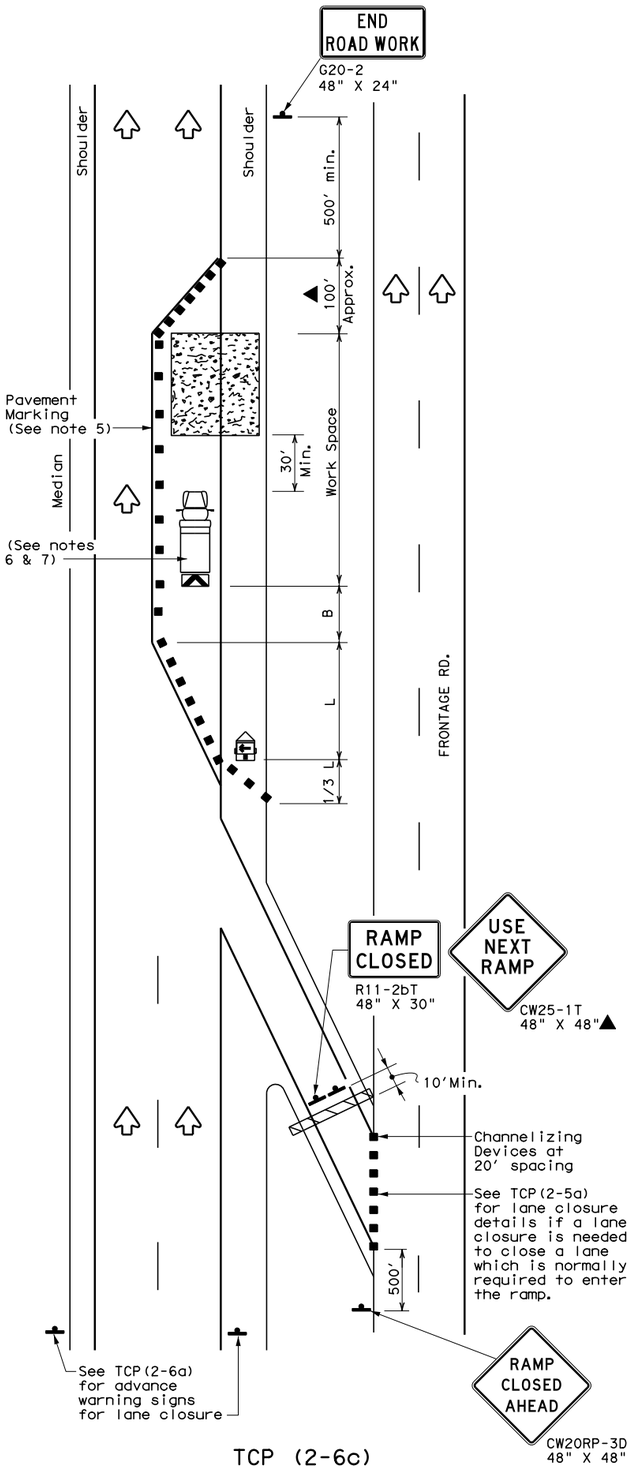
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

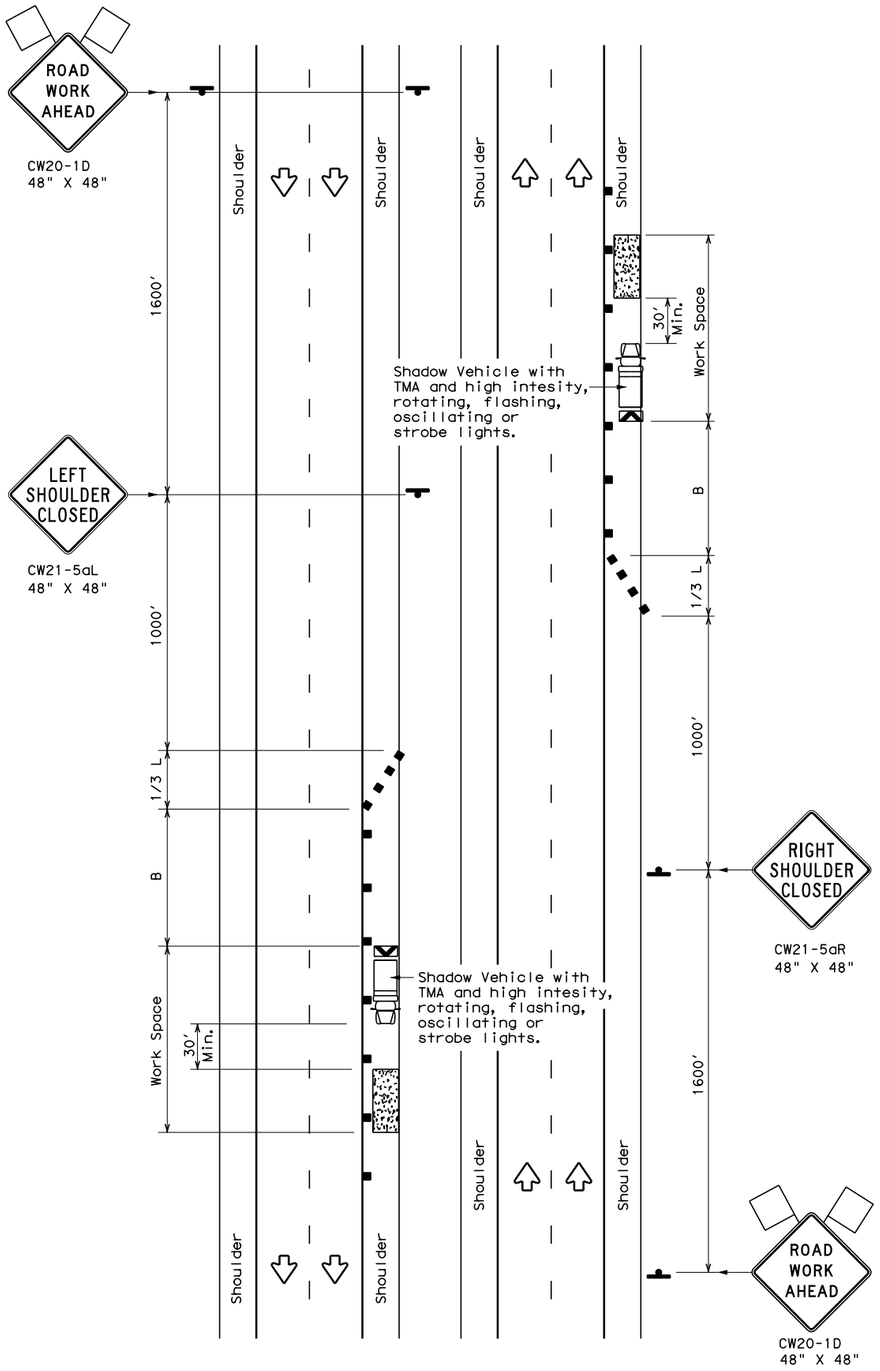
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

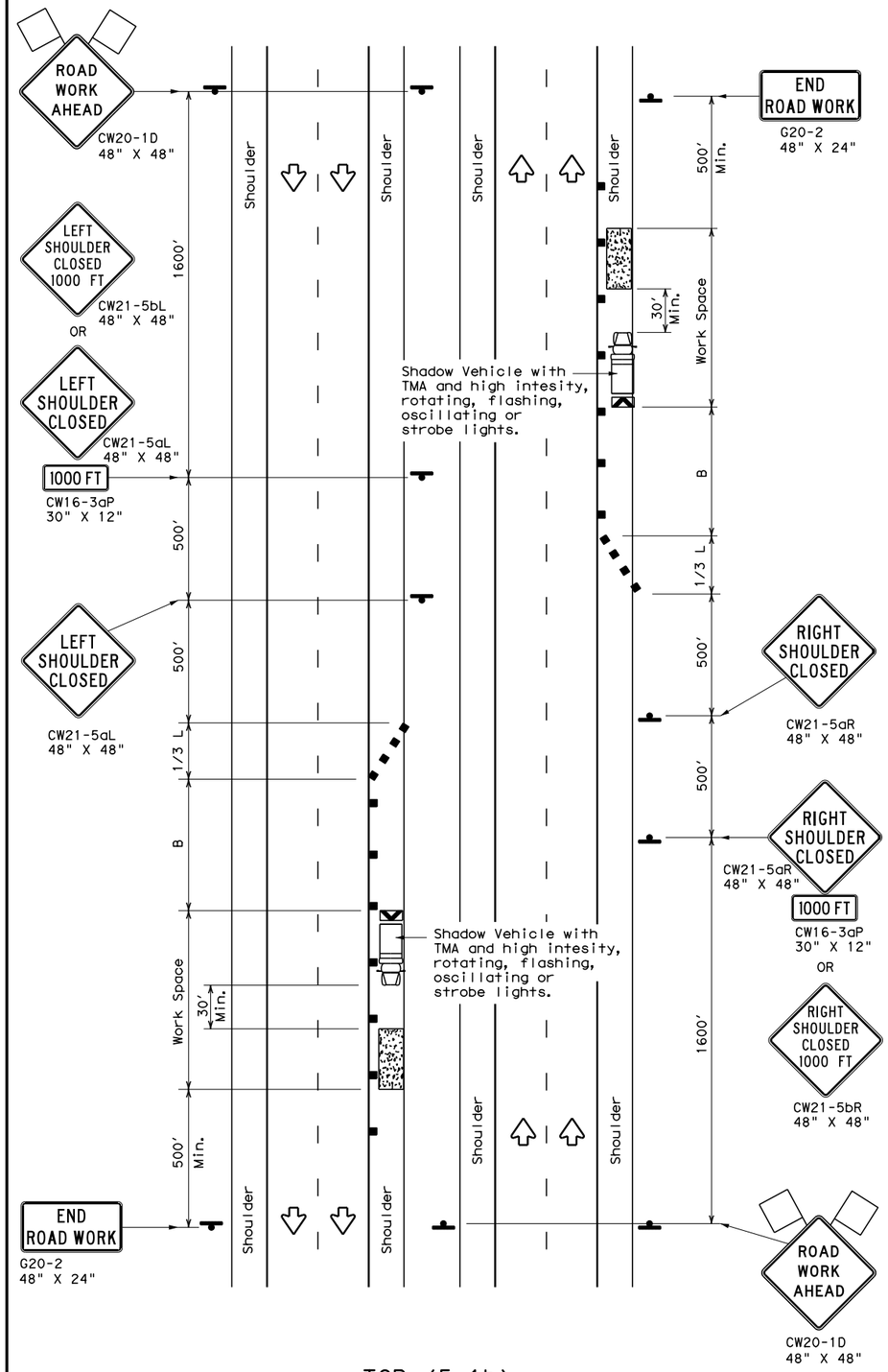
FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		37

DATE:
FILE:



TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

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

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

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

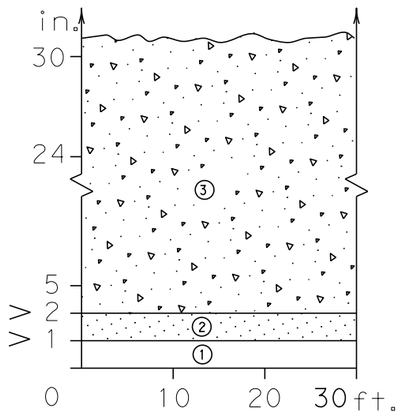
TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

TCP(5-1)-18

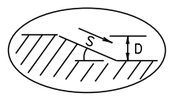
FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
2-18	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		38

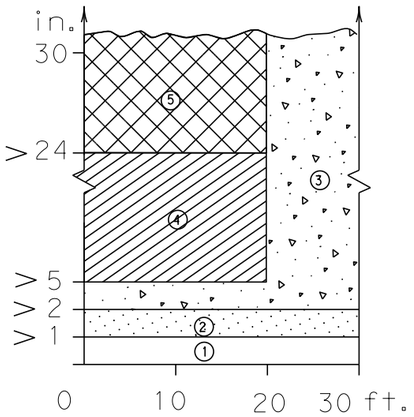
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

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

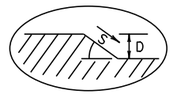


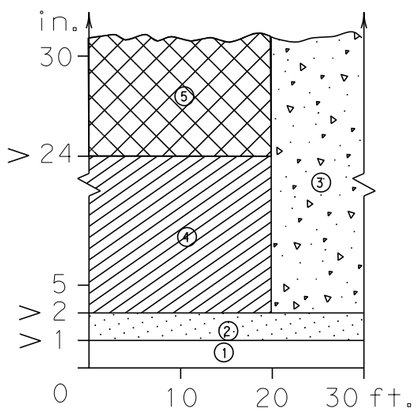
Edge Condition I
S = (3:1) (or flatter)



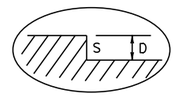


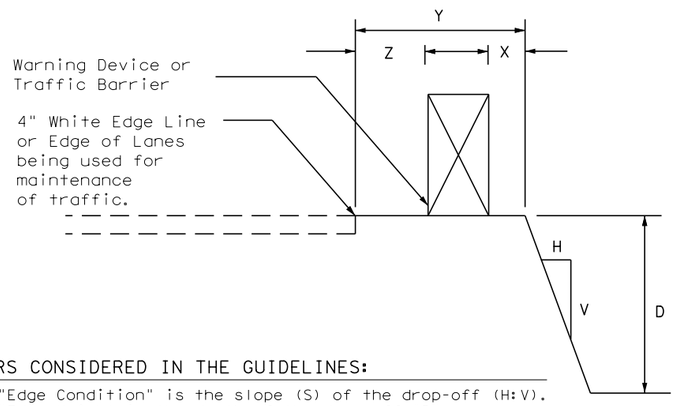
Edge Condition II
S = ((2.99):1) to (1:1)





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





FACTORS CONSIDERED IN THE GUIDELINES:

1. The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height is the depth of the drop-off "D".

2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.

3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.

4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.

5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

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

Edge Condition Notes:

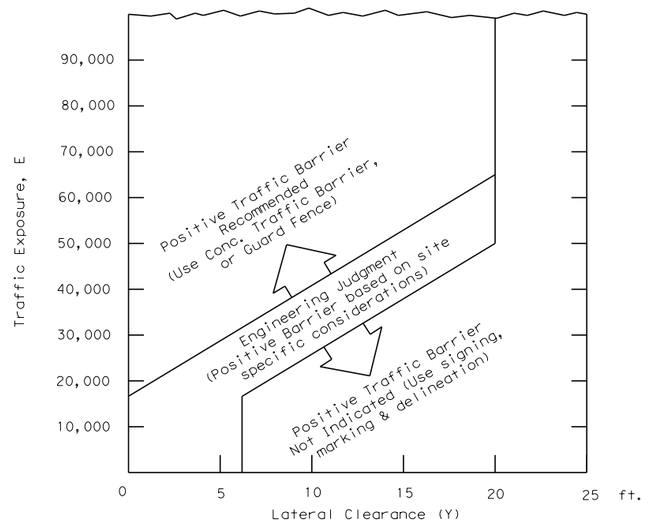
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exeeds 24 inches, the possibility for rollover is greater in most vehicles.

3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.

4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

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



1. E = ADT x T
   Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.

2. Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.

3. An approved end treatment should be provided for any positive barrier end located within the clear zone.

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

Engineer's Seal

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED
PROFESSIONAL ENGINEER
F-2966

8/11/2023

Date _____

_____

Texas Department of Transportation

Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE: edgecon.dgn	DN:	CK:	DW:	CK:
©TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		39

DATE:
FILE:

TIME: 6:22:16 AM
DATE: 8/11/2023

POINT SIDEPATHCL1 N 6,919,307.3288 E 2,438,541.6630 STA 79+35.65

COURSE FROM SIDEPATHCL1 TO PC CURVE 1 N 12 21′ 31.95" W DIST 309.9911

CURVE DATA

CURVE 1					
P.I. STATION	82+65.47	N	6,919,629.5027	E	2,438,471.0709
DELTA =	7 33′ 43.00"	(LT)			
DEGREE =	19 05′ 54.94"				
TANGENT =	19.8259				
LENGTH =	39.5942				
RADIUS =	300.0000				
EXTERNAL =	0.6544				
LONG CHORD =	39.5655				
MID. ORD. =	0.6530				
P.C. STATION	82+45.64	N	6,919,610.1363	E	2,438,475.3143
P.T. STATION	82+85.24	N	6,919,648.1423	E	2,438,464.3158
C.C.		N	6,919,545.9260	E	2,438,182.2665
BACK = N	12 21′ 31.95" W				
AHEAD = N	19 55′ 14.95" W				
CHORD BEAR = N	16 08′ 23.45" W				

COURSE FROM PT CURVE 1 TO PC CURVE 2 N 19 55′ 14.95" W DIST 483.6568

CURVE DATA

CURVE 2					
P.I. STATION	87+81.45	N	6,920,114.6676	E	2,438,295.2443
DELTA =	4 47′ 41.00"	(LT)			
DEGREE =	19 05′ 54.94"				
TANGENT =	12.5599				
LENGTH =	25.1051				
RADIUS =	300.0000				
EXTERNAL =	0.2628				
LONG CHORD =	25.0978				
MID. ORD. =	0.2626				
P.C. STATION	87+68.89	N	6,920,102.8592	E	2,438,299.5237
P.T. STATION	87+94.00	N	6,920,126.0769	E	2,438,289.9928
C.C.		N	6,920,000.6429	E	2,438,017.4744
BACK = N	19 55′ 14.95" W				
AHEAD = N	24 42′ 55.95" W				
CHORD BEAR = N	22 19′ 05.45" W				

COURSE FROM PT CURVE 2 TO PC CURVE 3 N 24 42′ 55.95" W DIST 152.0444

CURVE DATA

CURVE 3					
P.I. STATION	89+52.04	N	6,920,269.6407	E	2,438,223.9137
DELTA =	2 17′ 25.00"	(RT)			
DEGREE =	19 05′ 54.94"				
TANGENT =	5.9967				
LENGTH =	11.9919				
RADIUS =	300.0000				
EXTERNAL =	0.0599				
LONG CHORD =	11.9911				
MID. ORD. =	0.0599				
P.C. STATION	89+46.04	N	6,920,264.1933	E	2,438,226.4210
P.T. STATION	89+58.04	N	6,920,275.1839	E	2,438,221.6261
C.C.		N	6,920,389.6273	E	2,438,498.9394
BACK = N	24 42′ 55.95" W				
AHEAD = N	22 25′ 30.95" W				
CHORD BEAR = N	23 34′ 13.45" W				

COURSE FROM PT CURVE 3 TO PC CURVE 4 N 22 25′ 30.95" W DIST 523.5204

CURVE DATA

CURVE 4					
P.I. STATION	95+12.95	N	6,920,788.1347	E	2,438,009.9384
DELTA =	11 56′ 53.49"	(RT)			
DEGREE =	19 05′ 54.94"				
TANGENT =	31.3941				
LENGTH =	62.5606				
RADIUS =	300.0000				
EXTERNAL =	1.6382				
LONG CHORD =	62.4473				
MID. ORD. =	1.6293				
P.C. STATION	94+81.56	N	6,920,759.1147	E	2,438,021.9145
P.T. STATION	95+44.12	N	6,920,819.0055	E	2,438,004.2296
C.C.		N	6,920,873.5581	E	2,438,299.2279
BACK = N	22 25′ 30.95" W				
AHEAD = N	10 28′ 37.46" W				
CHORD BEAR = N	16 27′ 04.20" W				

CURVE DATA

CURVE 5					
P.I. STATION	95+75.51	N	6,920,849.8762	E	2,437,998.5208
DELTA =	11 56′ 53.49"	(LT)			
DEGREE =	57 17′ 44.81"	44.81"			
TANGENT =	31.3941				
LENGTH =	62.5606				
RADIUS =	300.0000				
EXTERNAL =	1.6382				
LONG CHORD =	62.4473				
MID. ORD. =	1.6293				
P.C. STATION	95+44.12	N	6,920,819.0055	E	2,438,004.2296
P.T. STATION	96+06.68	N	6,920,878.8962	E	2,437,986.5446
C.C.		N	6,920,764.4528	E	2,437,709.2313
BACK = N	10 28′ 37.46" W				
AHEAD = N	22 25′ 30.95" W				
CHORD BEAR = N	16 27′ 04.20" W				

COURSE FROM PT CURVE 5 TO PC CURVE 6 N 22 25′ 30.95" W DIST 4,217.9352

CURVE DATA

CURVE 6					
P.I. STATION	138+76.36	N	6,924,825.6998	E	2,436,357.7534
DELTA =	19 34′ 29.05"	(LT)			
DEGREE =	19 05′ 54.94"				
TANGENT =	51.7509				
LENGTH =	102.4931				
RADIUS =	300.0000				
EXTERNAL =	4.4309				
LONG CHORD =	101.9954				
MID. ORD. =	4.3664				
P.C. STATION	138+24.61	N	6,924,777.8624	E	2,436,377.4952
P.T. STATION	139+27.11	N	6,924,864.1582	E	2,436,323.1253
C.C.		N	6,924,663.4190	E	2,436,100.1819
BACK = N	22 25′ 30.95" W				
AHEAD = N	42 00′ 00.00" W				
CHORD BEAR = N	32 12′ 45.47" W				

COURSE FROM PT CURVE 6 TO PC CURVE 7 N 41 59′ 60.00" W DIST 90.2994

CURVE DATA

CURVE 7					
P.I. STATION	140+73.80	N	6,924,973.1720	E	2,436,224.9689
DELTA =	73 52′ 46.38"	(LT)			
DEGREE =	76 23′ 39.74"				
TANGENT =	56.3931				
LENGTH =	96.7081				
RADIUS =	75.0000				
EXTERNAL =	18.8359				
LONG CHORD =	90.1463				
MID. ORD. =	15.0549				
P.C. STATION	140+17.41	N	6,924,931.2638	E	2,436,262.7032
P.T. STATION	141+14.11	N	6,924,948.5575	E	2,436,174.2313
C.C.		N	6,924,881.0790	E	2,436,206.9673
BACK = N	42 00′ 00.00" W				
AHEAD = S	64 07′ 13.62" W				
CHORD BEAR = N	78 56′ 23.19" W				

==========

ENDING CHAIN SIDEPATHCL DESCRIPTION

CURVE DATA

CURVE 8					
P.I. STATION	140+74.63	N	6,924,973.7914	E	2,436,224.4111
DELTA =	113 28′ 50.62"	(RT) (RT)			
DEGREE =	127 19′ 26.24"	26.24"			
TANGENT =	68.6122				
LENGTH =	89.1276				
RADIUS =	45.0000				
EXTERNAL =	37.0518				
LONG CHORD =	75.2575				
MID. ORD. =	20.3205				
P.C. STATION	140+06.02	N	6,924,922.8033	E	2,436,270.3210
P.T. STATION	140+95.15	N	6,924,995.5839	E	2,436,289.4695
C.C.		N	6,924,952.9142	E	2,436,303.7625
BACK = N	42 00′ 00.00" W W				
AHEAD = N	71 28′ 50.62" E E				
CHORD BEAR = N	14 44′ 25.31" E E				

==========

ENDING CHAIN ETIEIN DESCRIPTION

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Texas Department of Transportation

FM 1382-SIDEPATH

HORIZONTAL ALIGNMENT DATA

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
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CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	40
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CHECK	1047	03	079	
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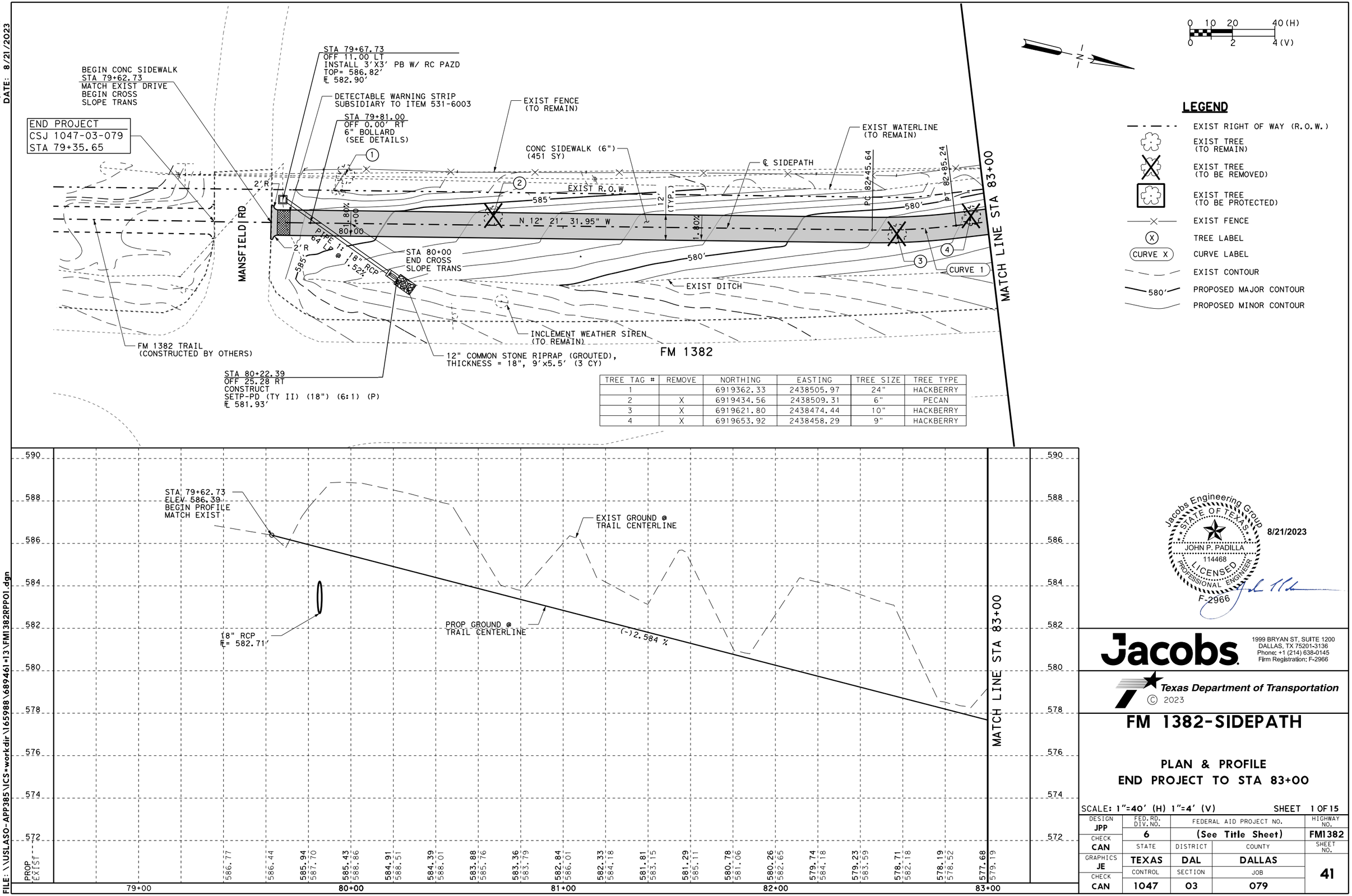

TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
1		6919362.33	2438505.97	24"	HACKBERRY
2	X	6919434.56	2438509.31	6"	PECAN
3	X	6919621.80	2438474.44	10"	HACKBERRY
4	X	6919653.92	2438458.29	9"	HACKBERRY

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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FM 1382-SIDEPATH

PLAN & PROFILE
END PROJECT TO STA 83+00

SCALE: 1"=40' (H) 1"=4' (V) SHEET 1 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
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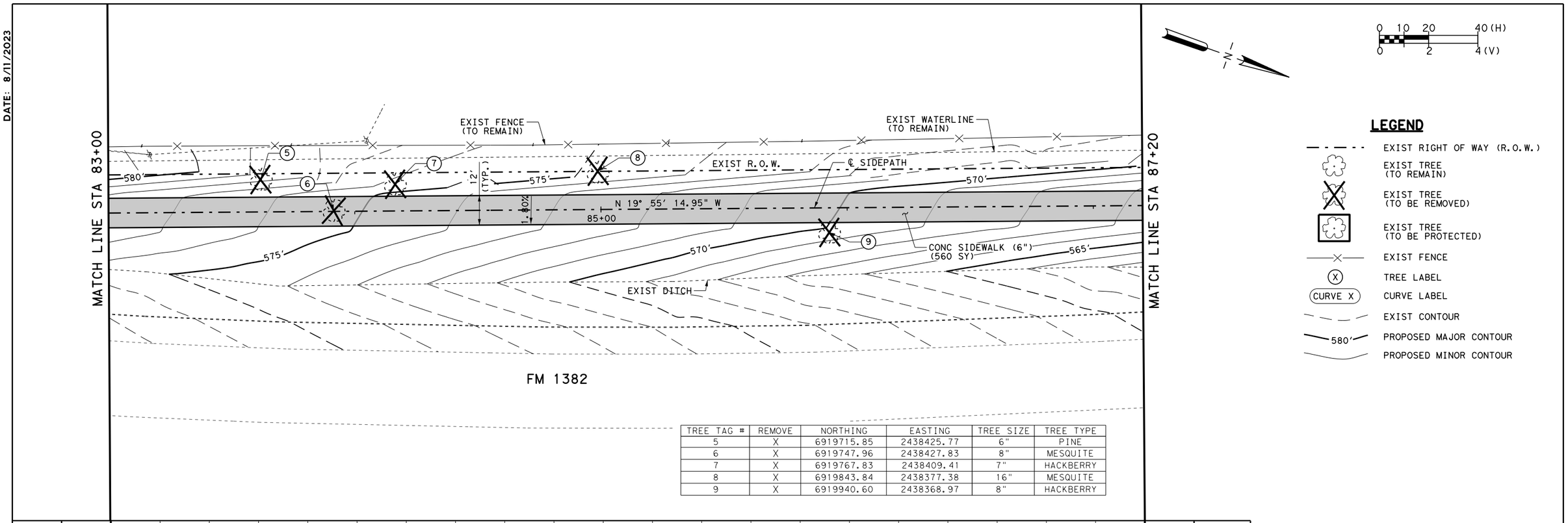

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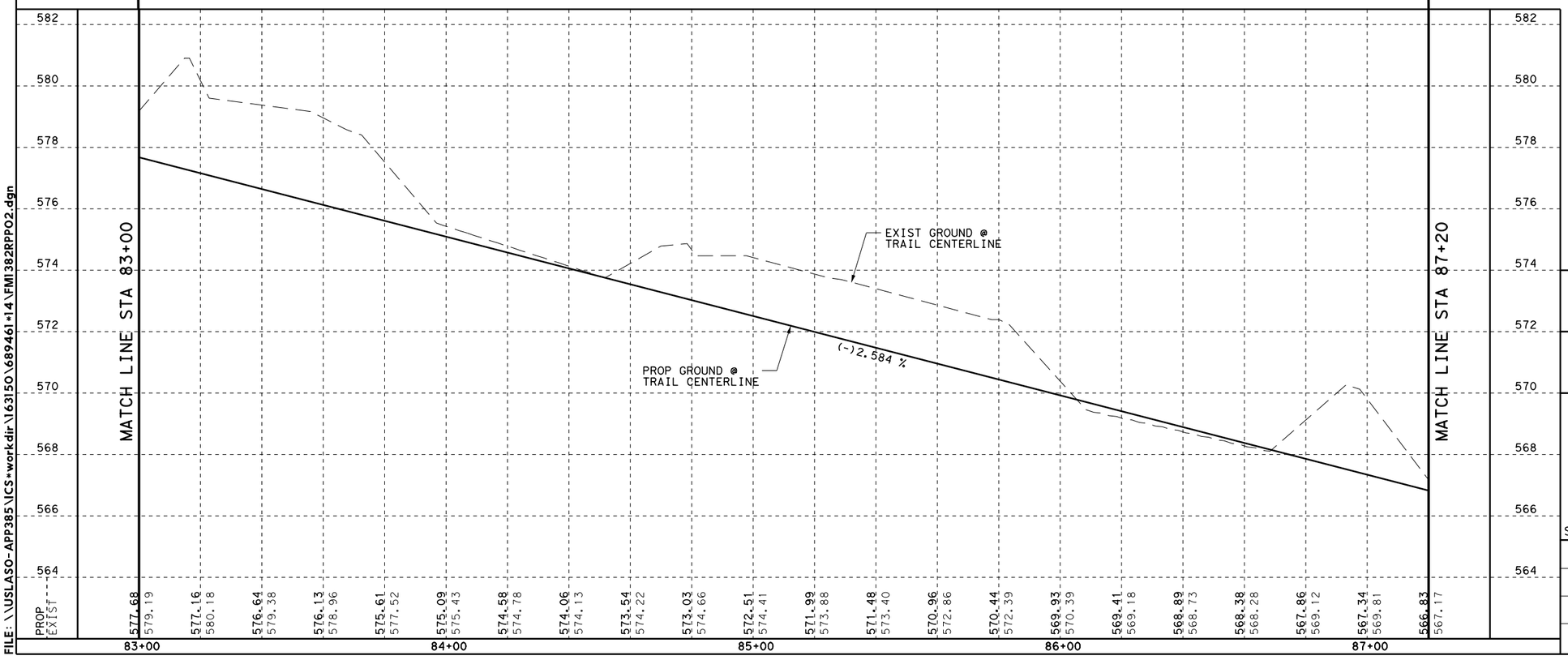
5	X	6919715.85	2438425.77	6"	PINE
6	X	6919747.96	2438427.83	8"	MESQUITE
7	X	6919767.83	2438409.41	7"	HACKBERRY
8	X	6919843.84	2438377.38	16"	MESQUITE
9	X	6919940.60	2438368.97	8"	HACKBERRY



0 10 20 40 (H)
0 2 4 (V)

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
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FM 1382-SIDEPATH

PLAN & PROFILE
STA 83+00 TO STA 87+20

SCALE: 1"=40' (H) 1"=4' (V) SHEET 2 OF 15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
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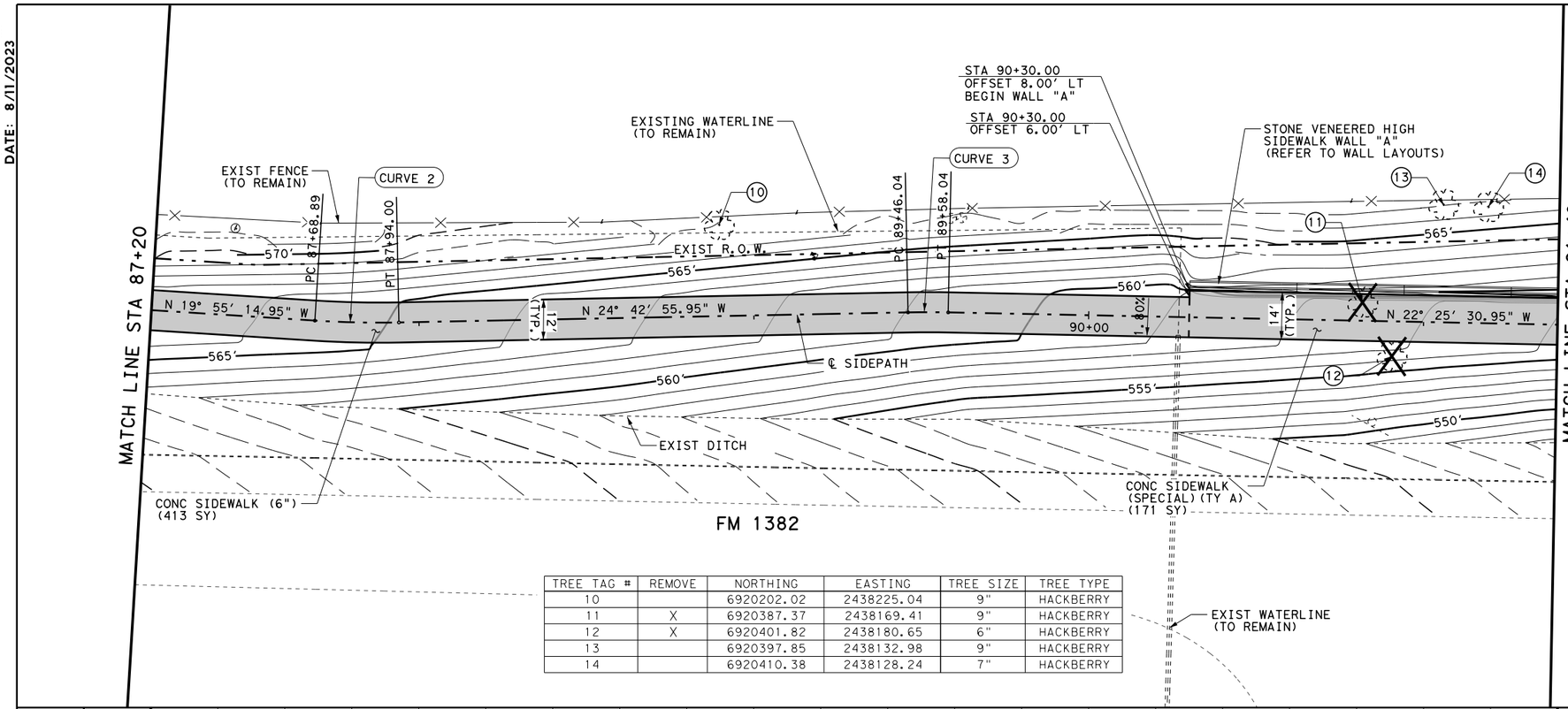
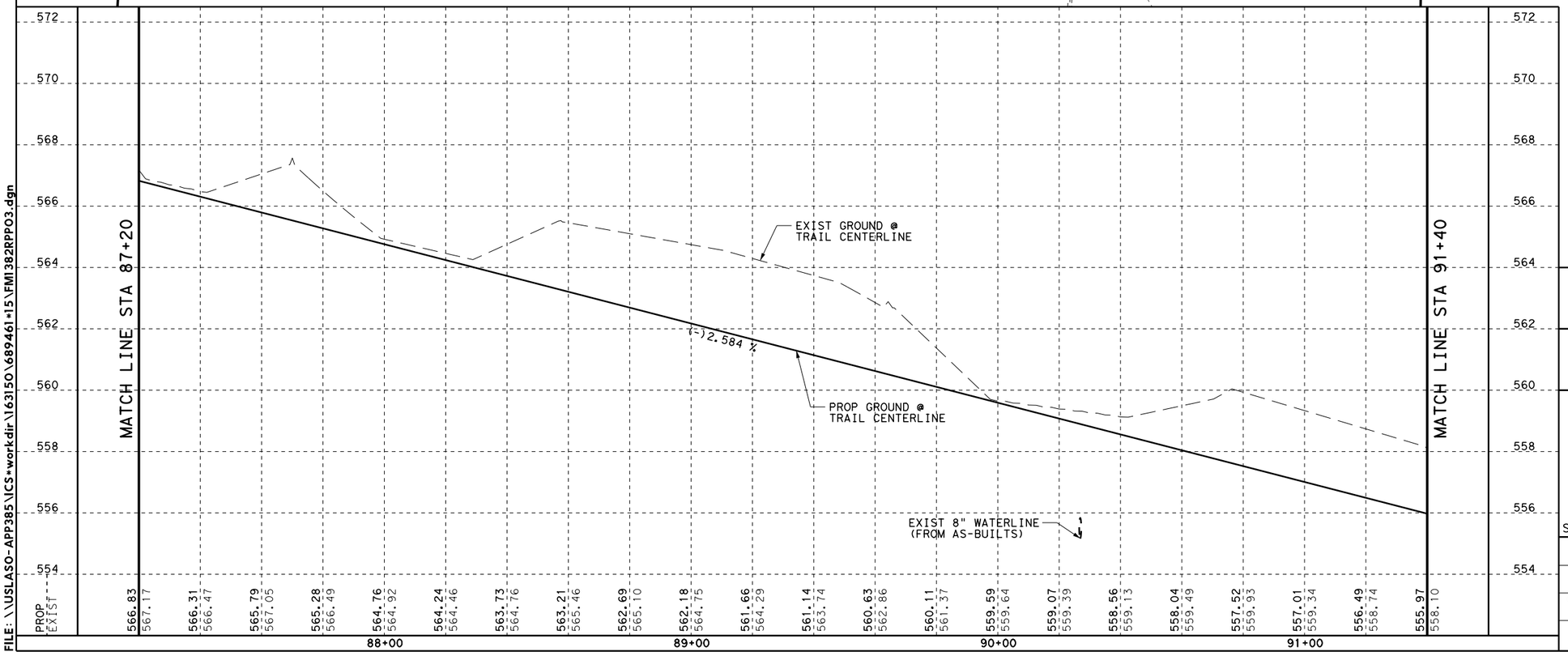


TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
10		6920202.02	2438225.04	9"	HACKBERRY
11	X	6920387.37	2438169.41	9"	HACKBERRY
12	X	6920401.82	2438180.65	6"	HACKBERRY
13		6920397.85	2438132.98	9"	HACKBERRY
14		6920410.38	2438128.24	7"	HACKBERRY



LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
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FM 1382-SIDEPATH

PLAN & PROFILE
STA 87+20 TO STA 91+40

SCALE: 1"=40' (H) 1"=4' (V) SHEET 3 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
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CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
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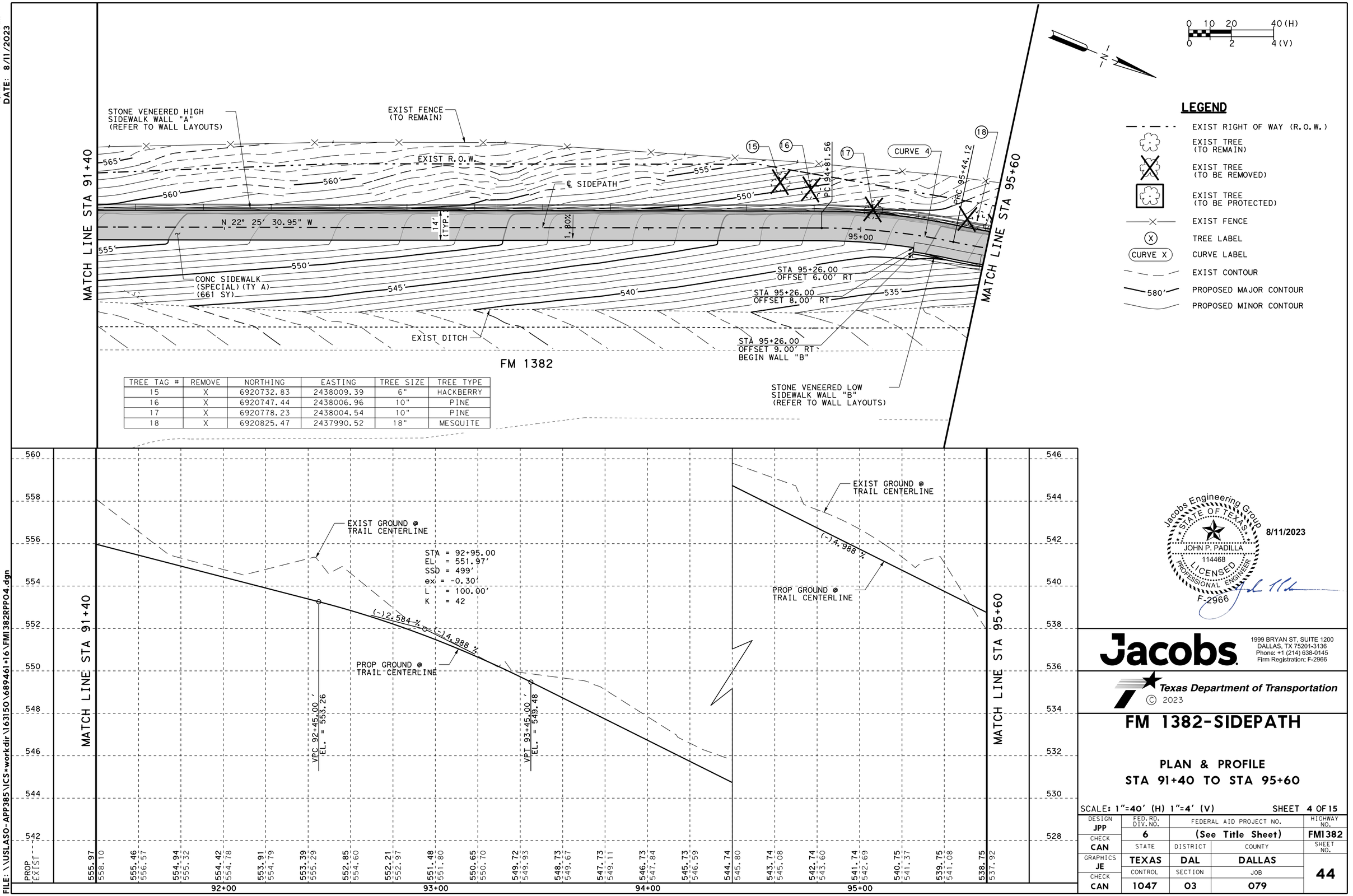

TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
15	X	6920732.83	2438009.39	6"	HACKBERRY
16	X	6920747.44	2438006.96	10"	PINE
17	X	6920778.23	2438004.54	10"	PINE
18	X	6920825.47	2437990.52	18"	MESQUITE

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
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Texas Department of Transportation

FM 1382-SIDEPATH

PLAN & PROFILE
STA 91+40 TO STA 95+60

SCALE: 1"=40' (H) 1"=4' (V) SHEET 4 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
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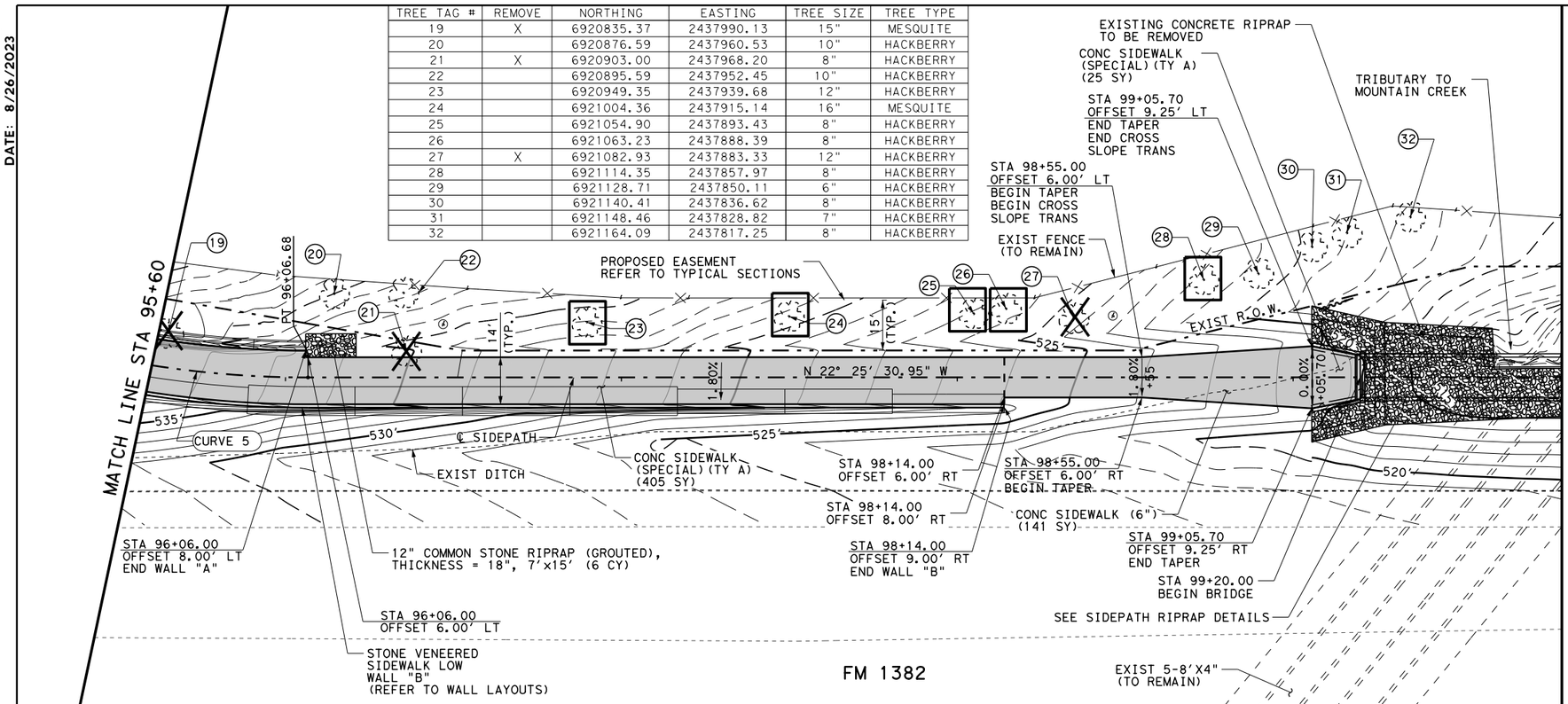
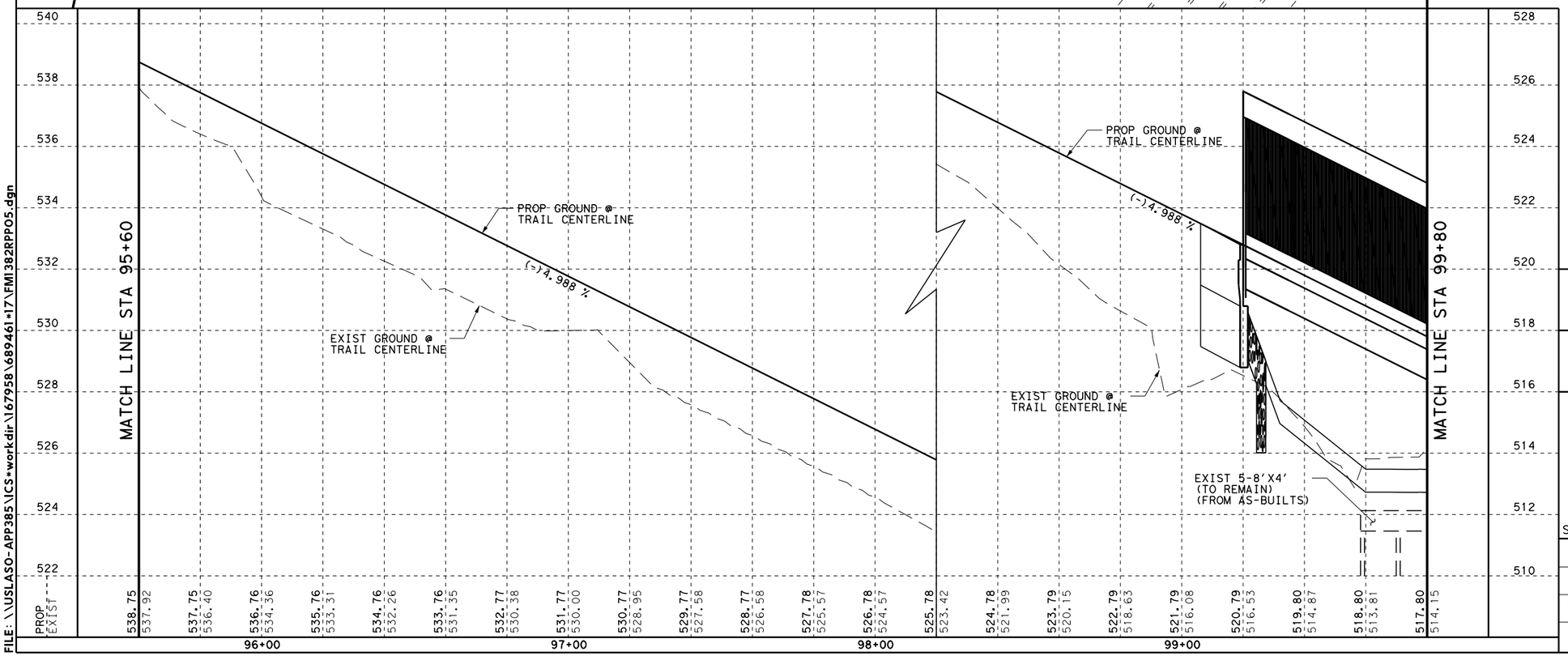
TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
19	X	6920835.37	2437990.13	15"	MESQUITE
20		6920876.59	2437960.53	10"	HACKBERRY
21	X	6920903.00	2437968.20	8"	HACKBERRY
22		6920895.59	2437952.45	10"	HACKBERRY
23		6920949.35	2437939.68	12"	HACKBERRY
24		6921004.36	2437915.14	16"	MESQUITE
25		6921054.90	2437893.43	8"	HACKBERRY
26		6921063.23	2437888.39	8"	HACKBERRY
27	X	6921082.93	2437883.33	12"	HACKBERRY
28		6921114.35	2437857.97	8"	HACKBERRY
29		6921128.71	2437850.11	6"	HACKBERRY
30		6921140.41	2437836.62	8"	HACKBERRY
31		6921148.46	2437828.82	7"	HACKBERRY
32		6921164.09	2437817.25	8"	HACKBERRY





0 10 20 40 (H)
0 2 4 (V)

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X CURVE LABEL
- EXIST CONTOUR
- 580' PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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Texas Department of Transportation

FM 1382-SIDEPATH

PLAN & PROFILE
STA 95+60 TO STA 99+80

SCALE: 1"=40' (H) 1"=4' (V) SHEET 5 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	45
JE				
CHECK	1047	03	079	
CAN				

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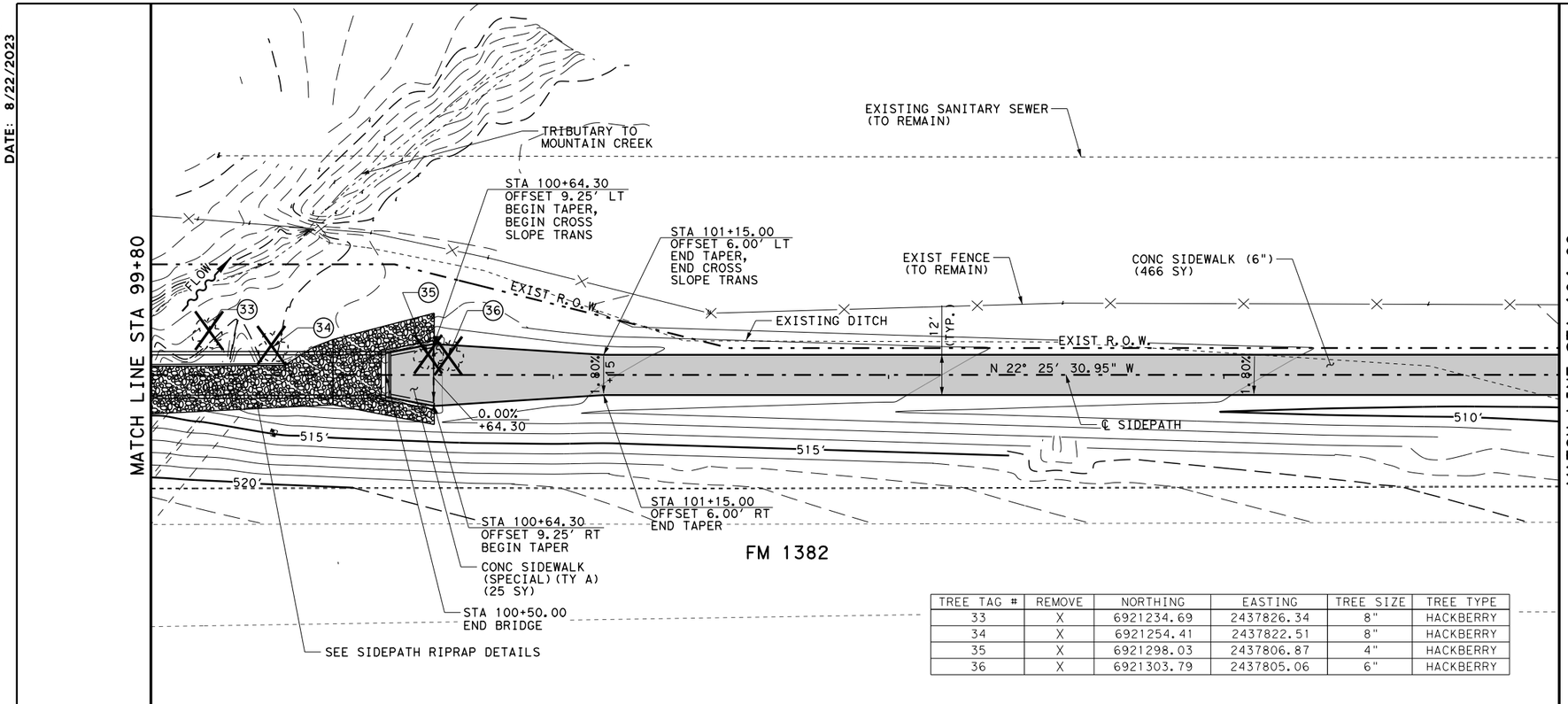
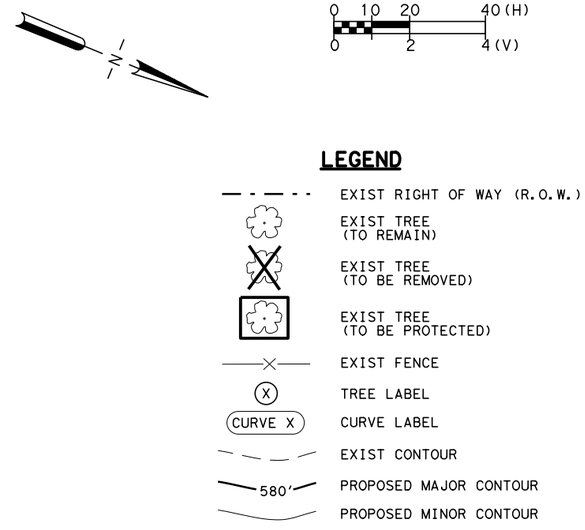
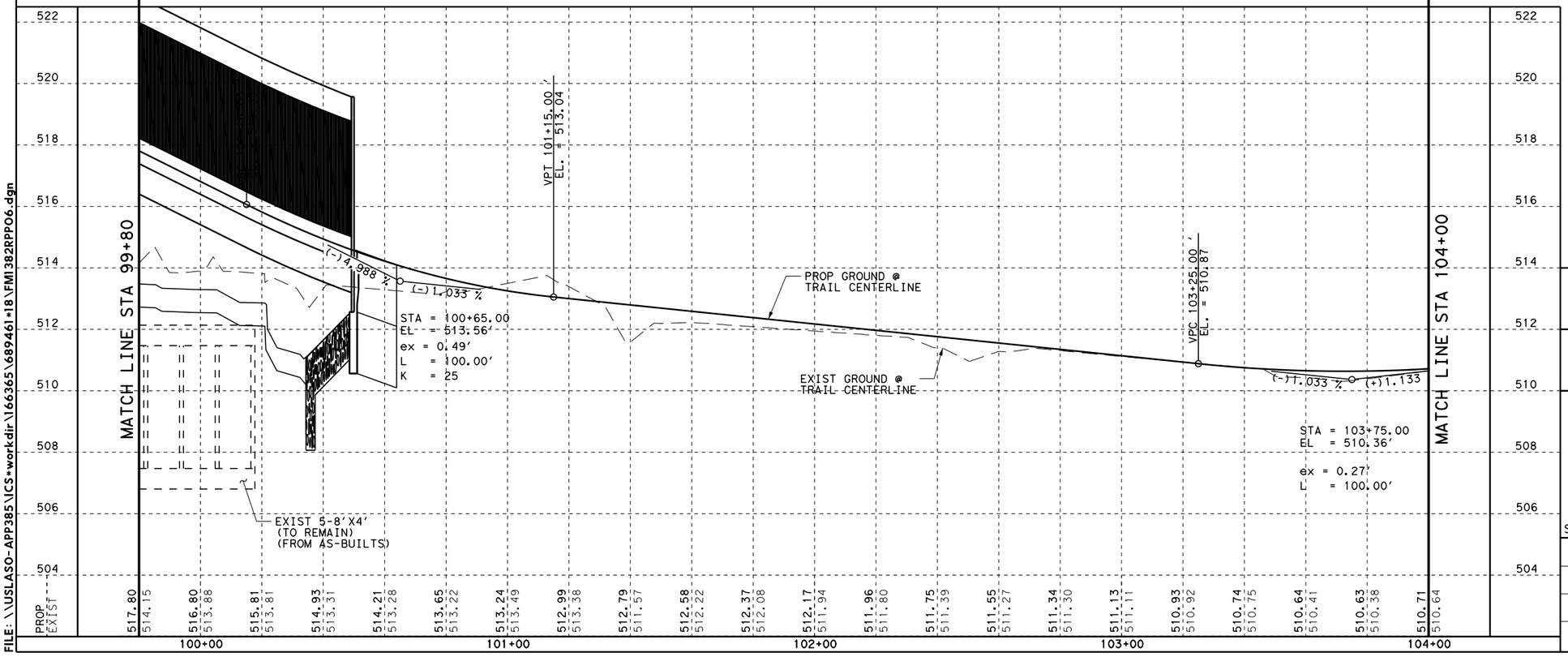
DATE: 8/22/2023



TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
33	X	6921234.69	2437826.34	8"	HACKBERRY
34	X	6921254.41	2437822.51	8"	HACKBERRY
35	X	6921298.03	2437806.87	4"	HACKBERRY
36	X	6921303.79	2437805.06	6"	HACKBERRY





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FM 1382-SIDEPATH

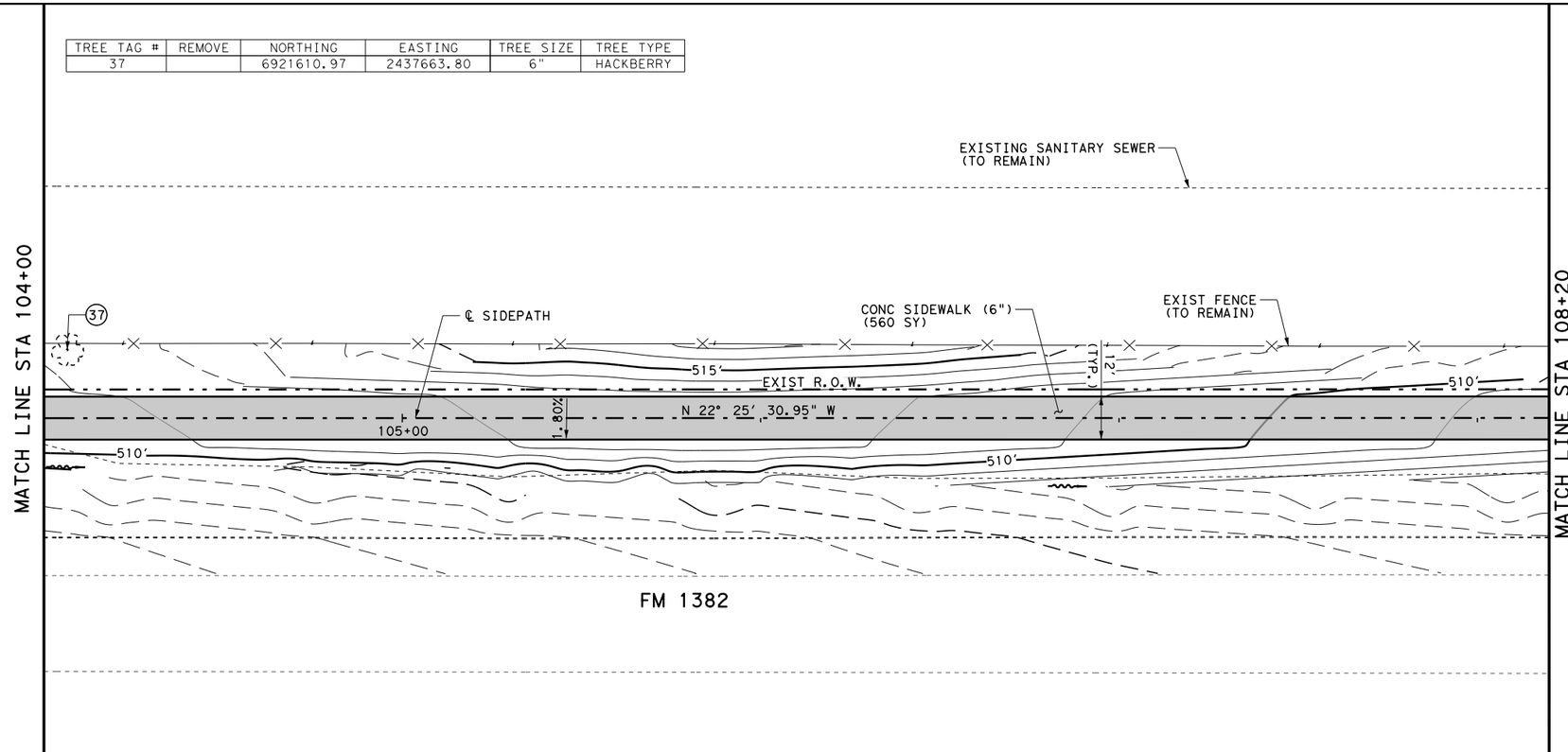
PLAN & PROFILE
STA 99+80 TO STA 104+00

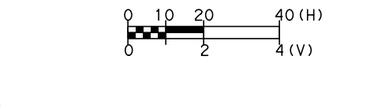
SCALE: 1"=40' (H) 1"=4' (V) SHEET 6 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	46
JE	1047	03	079	
CHECK				
CAN				

TIME: 6:08:46 AM
DATE: 8/11/2023

TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
37		6921610.97	2437663.80	6"	HACKBERRY





LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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Texas Department of Transportation

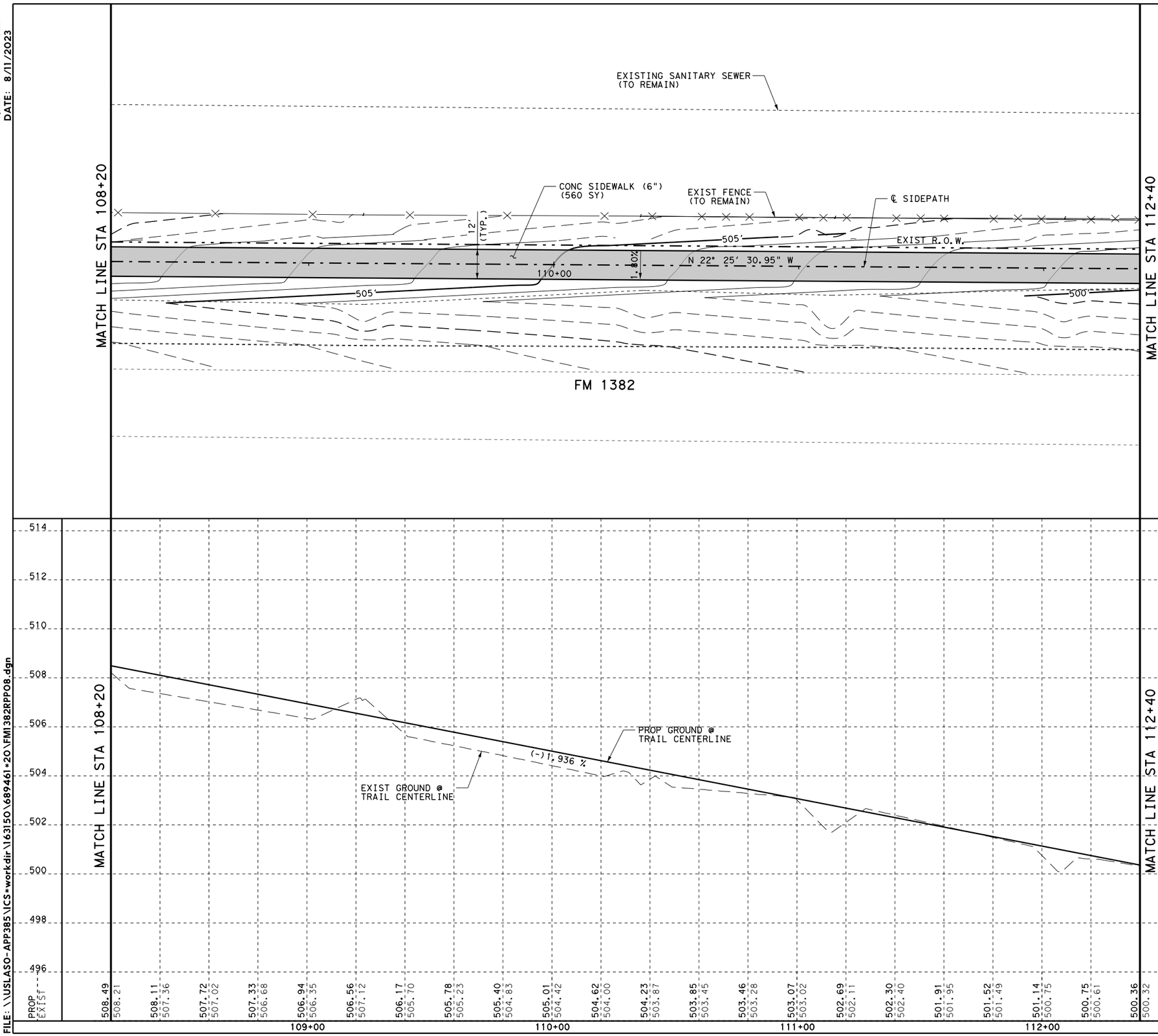
FM 1382-SIDEPATH

PLAN & PROFILE
STA 104+00 TO STA 108+20

SCALE: 1"=40' (H) 1"=4' (V) SHEET 7 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	47
JE				
CHECK	1047	03	079	
CAN				

TIME: 6:08:37 AM
DATE: 8/11/2023



0 10 20 40 (H)
0 2 4 (V)

N

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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FM 1382-SIDEPATH

PLAN & PROFILE
STA 108+20 TO STA 112+40

SCALE: 1"=40' (H) 1"=4' (V) SHEET 8 OF 15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	48
JE	1047	03	079	
CHECK				
CAN				

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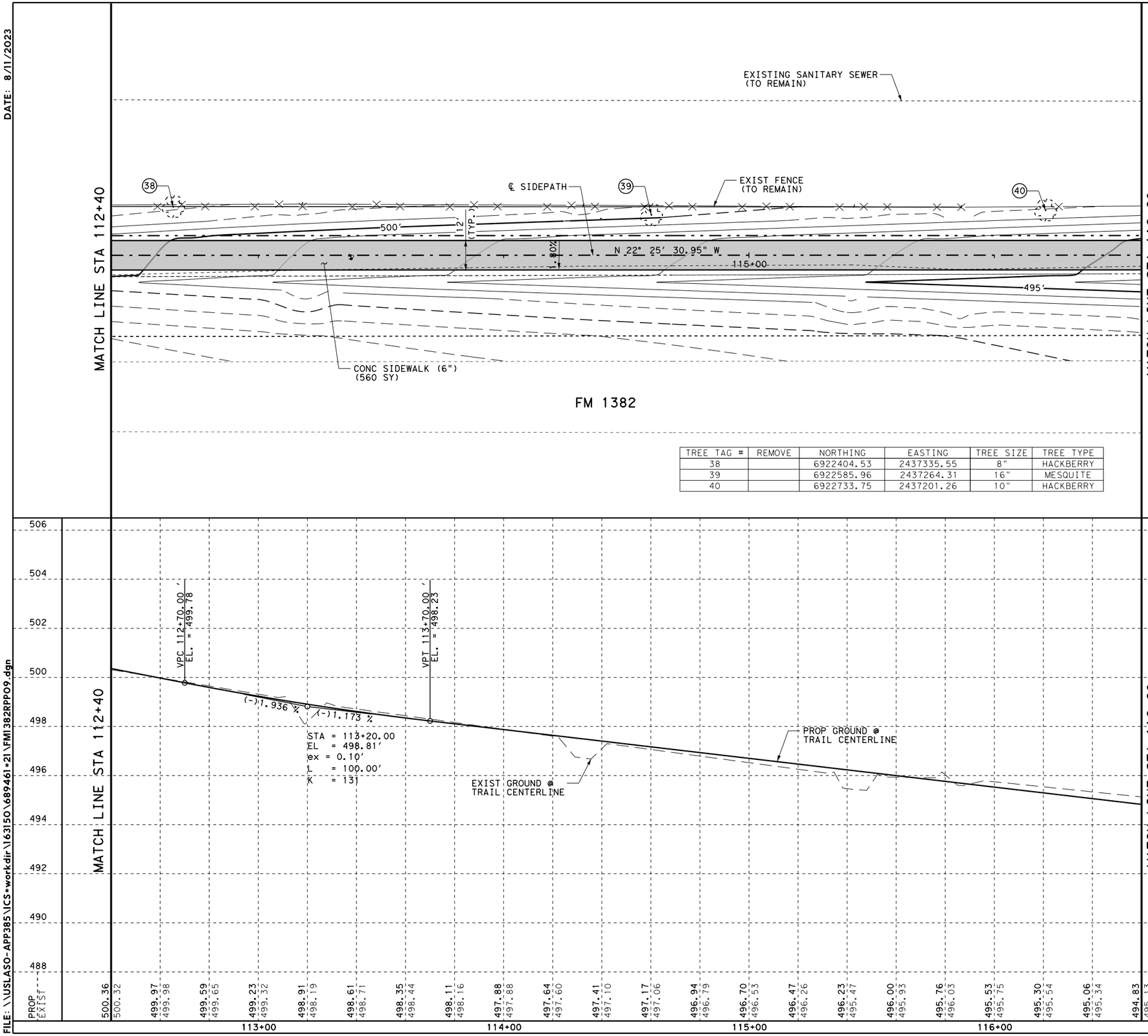

TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
38		6922404.53	2437335.55	8"	HACKBERRY
39		6922585.96	2437264.31	16"	MESQUITE
40		6922733.75	2437201.26	10"	HACKBERRY

0 10 20 40 (H)
0 2 4 (V)

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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FM 1382-SIDEPATH

PLAN & PROFILE
STA 112+40 TO STA 116+60

SCALE: 1"=40' (H) 1"=4' (V) SHEET 9 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	49
JE				
CHECK	1047	03	079	
CAN				

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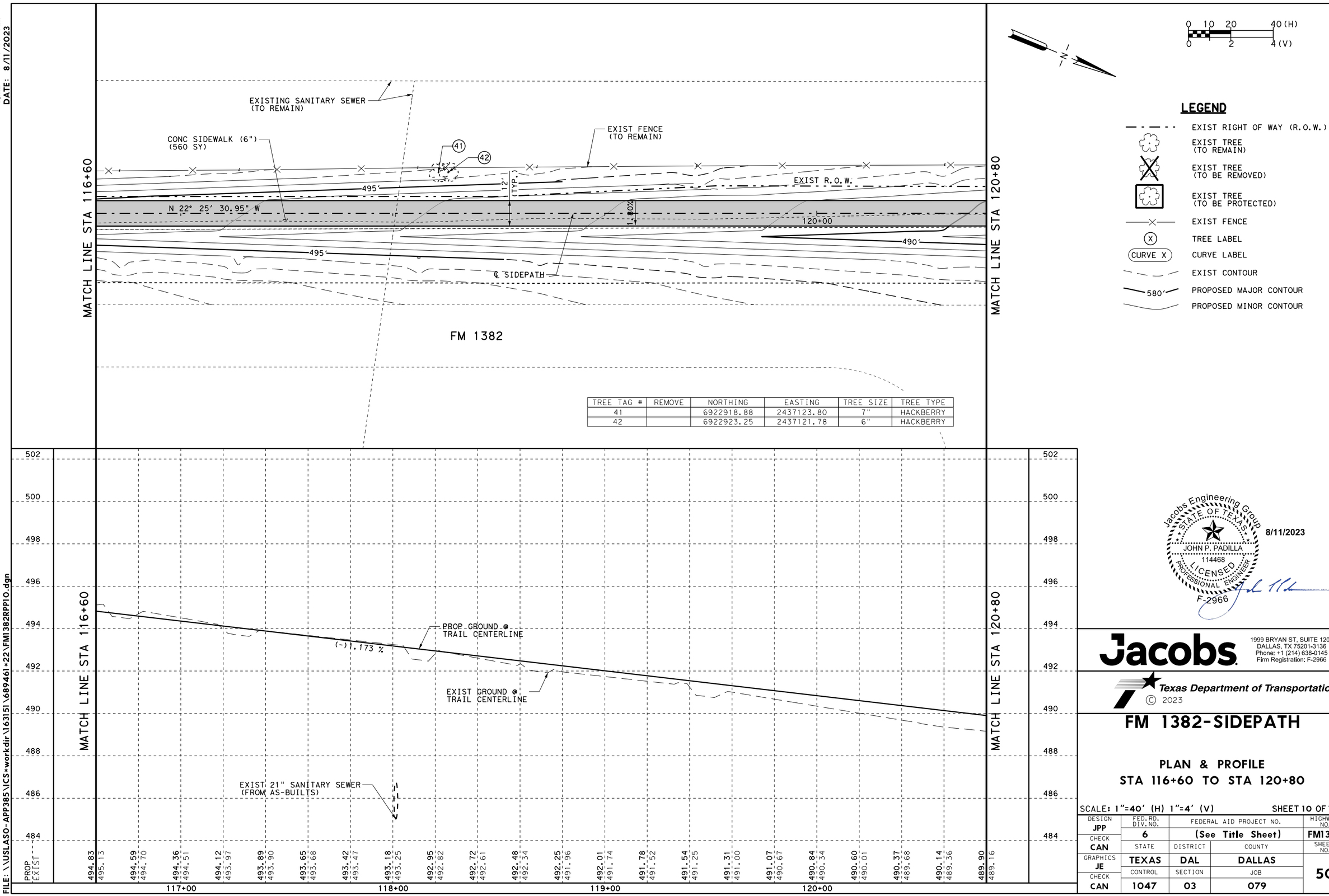

TREE TAG #	REMOVE	NORTHING	EASTING	TREE SIZE	TREE TYPE
41		6922918.88	2437123.80	7"	HACKBERRY
42		6922923.25	2437121.78	6"	HACKBERRY

0 10 20 40 (H)
0 2 4 (V)

N

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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Texas Department of Transportation

FM 1382-SIDEPATH

PLAN & PROFILE
STA 116+60 TO STA 120+80

SCALE: 1"=40' (H) 1"=4' (V) SHEET 10 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	50
JE				
CHECK	1047	03	079	
CAN				

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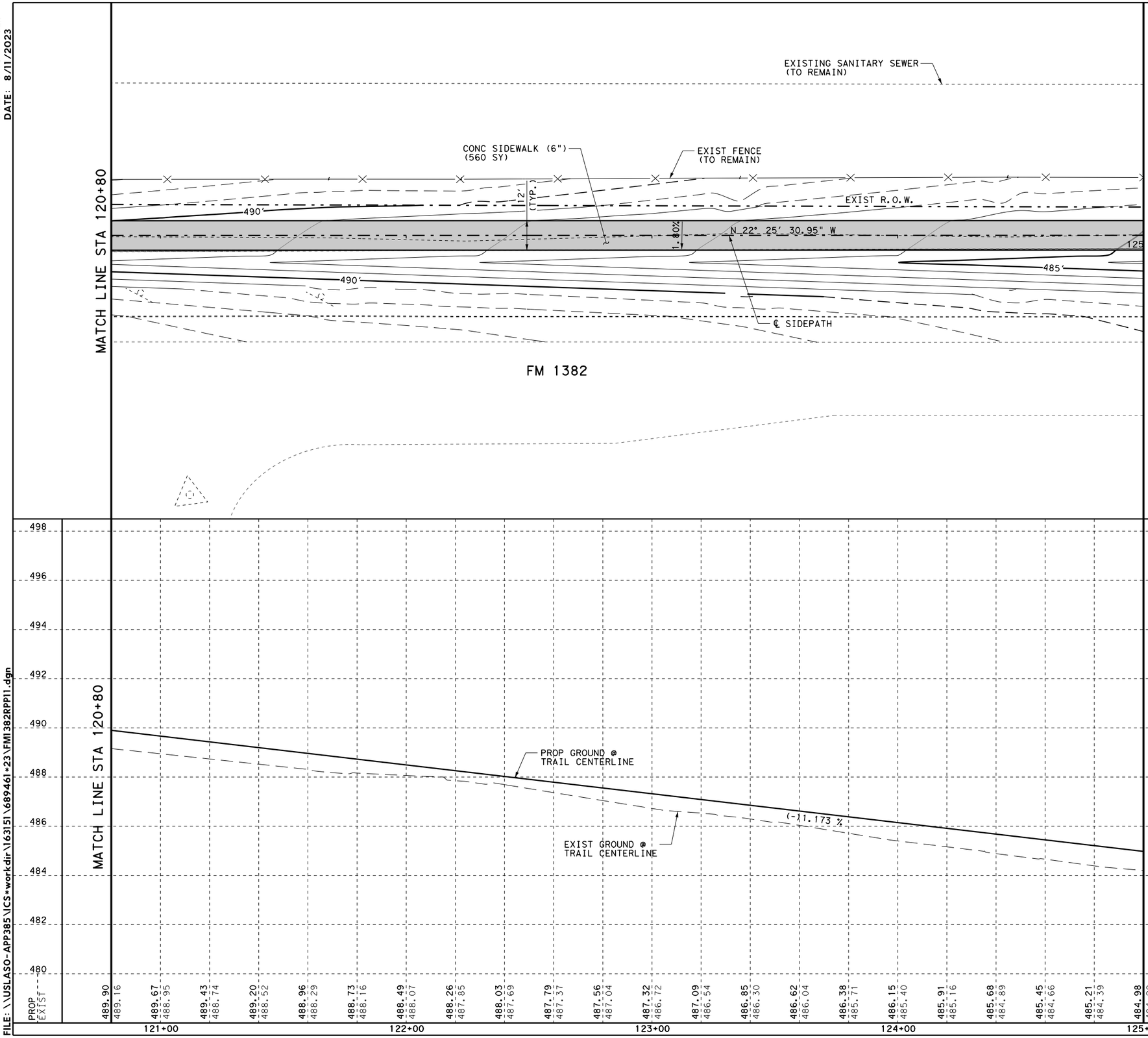

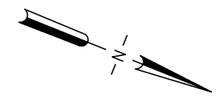

0 10 20 40 (H)
0 2 4 (V)

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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Texas Department of Transportation

FM 1382-SIDEPATH

PLAN & PROFILE
STA 120+80 TO STA 125+00

SCALE: 1"=40' (H) 1"=4' (V) SHEET 11 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	51
JE				
CHECK	1047	03	079	
CAN				

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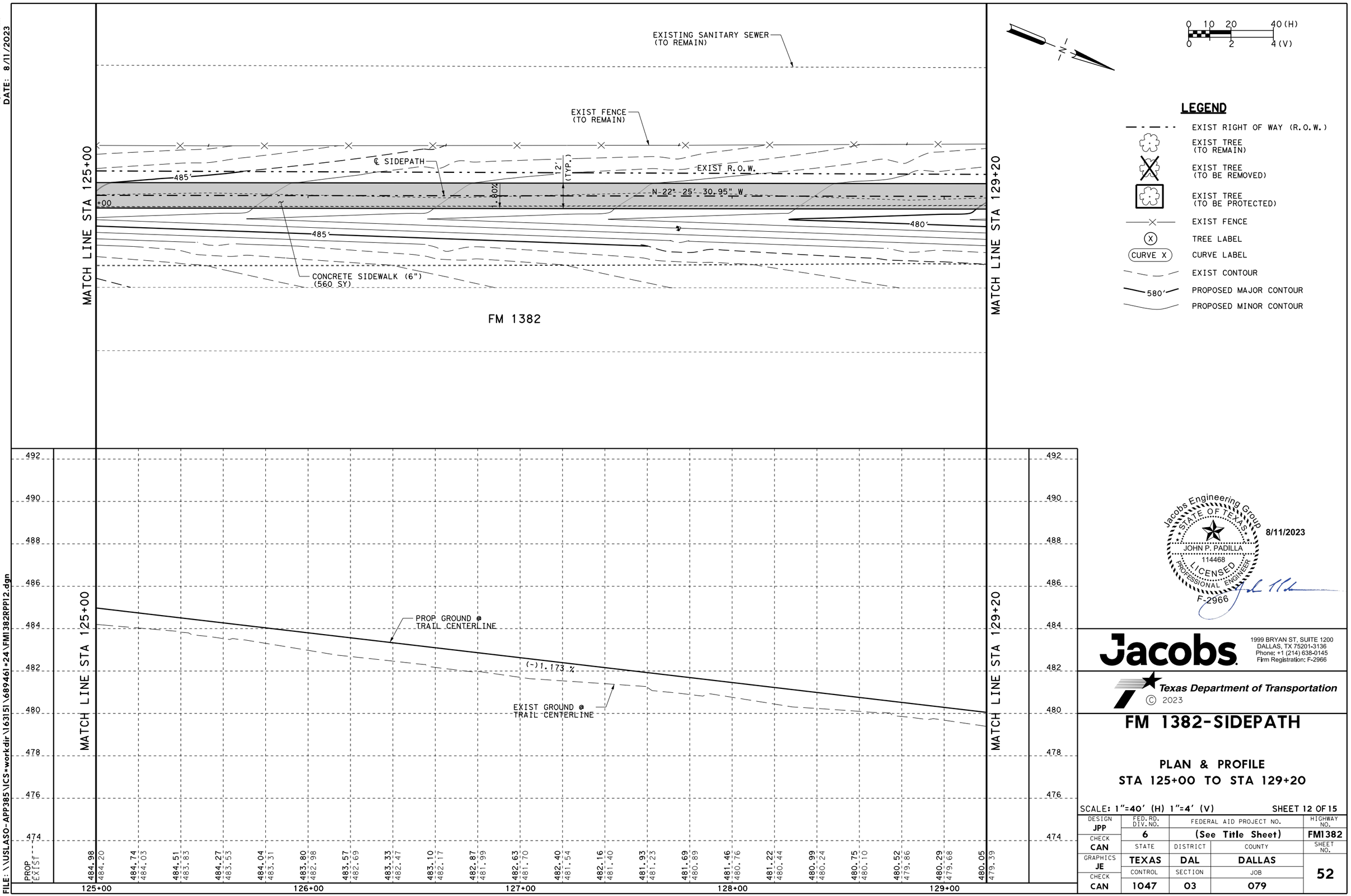
DATE: 8/11/2023



0 10 20 40 (H)
0 2 4 (V)

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

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Texas Department of Transportation

FM 1382-SIDEPATH

PLAN & PROFILE
STA 125+00 TO STA 129+20

SCALE: 1"=40' (H) 1"=4' (V) SHEET 12 OF 15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	52
JE				
CHECK	1047	03	079	
CAN				

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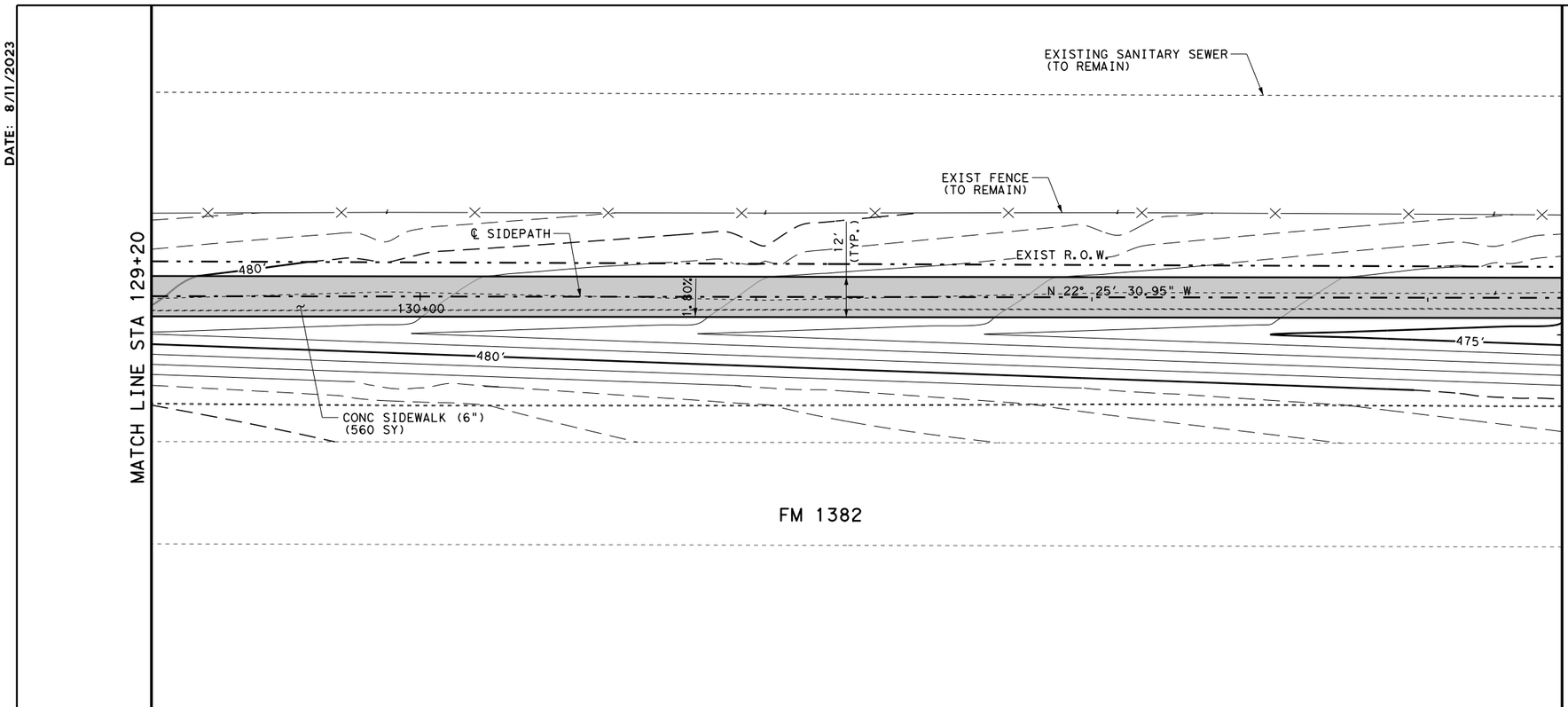

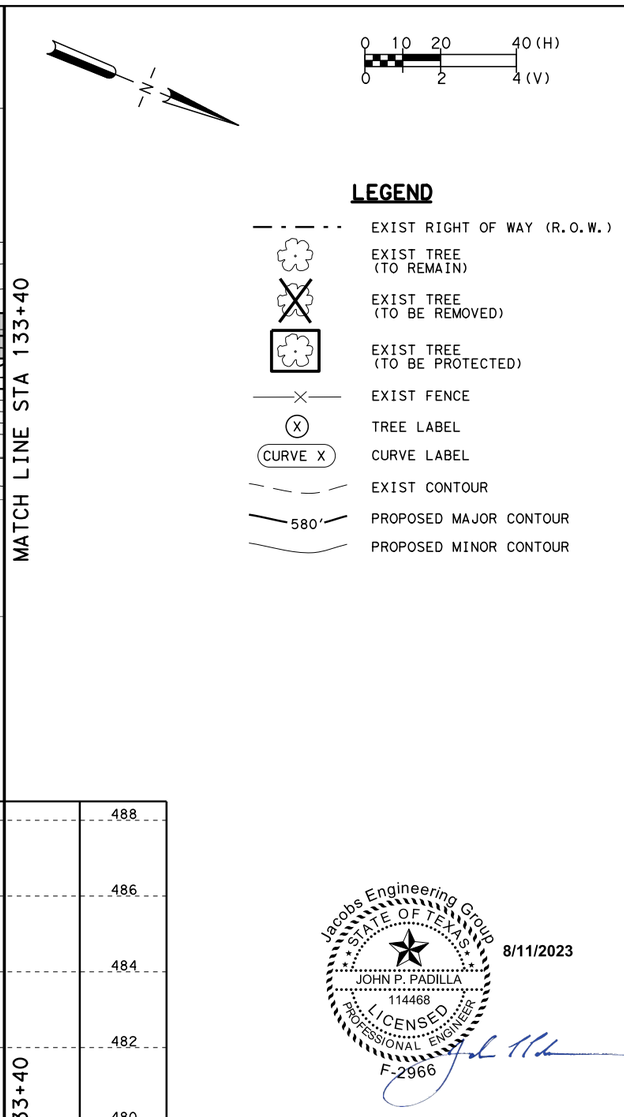

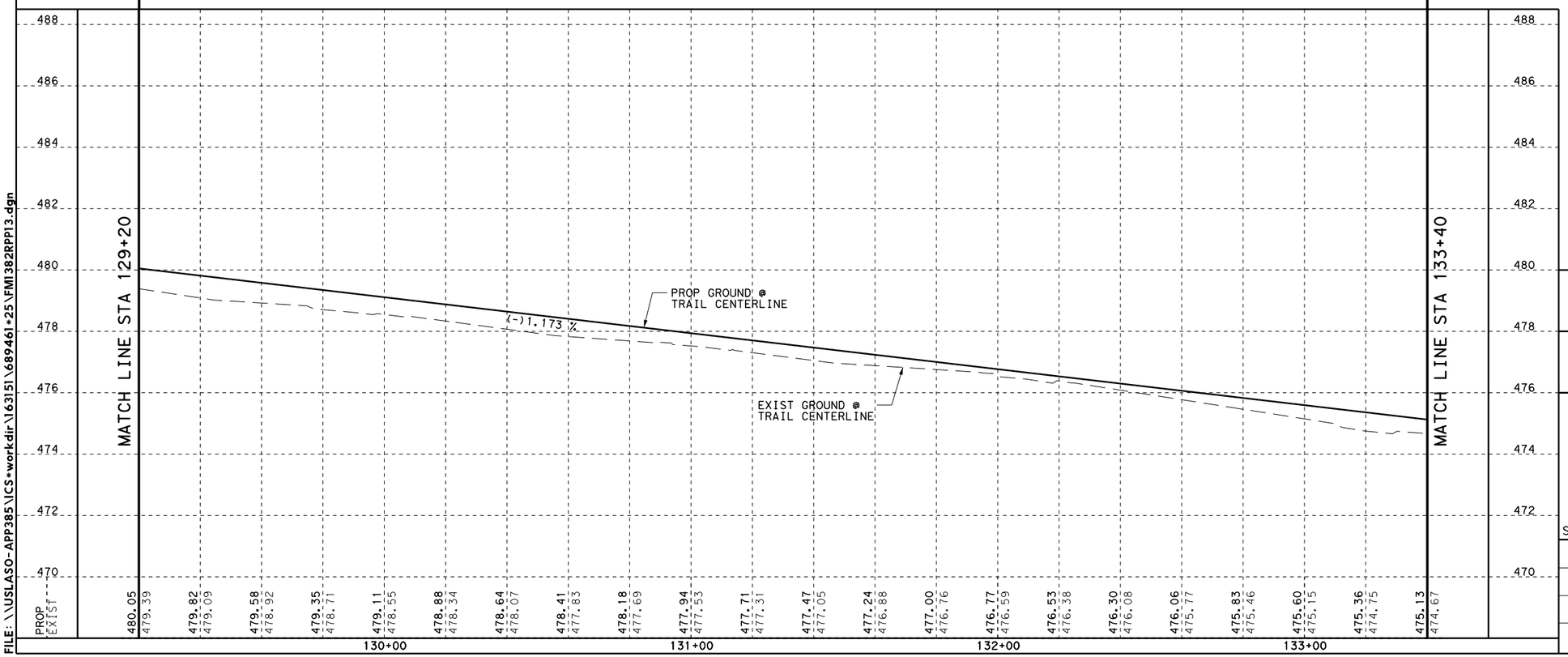

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FM 1382-SIDEPATH

PLAN & PROFILE
STA 129+20 TO STA 133+40

SCALE: 1"=40' (H) 1"=4' (V) SHEET 13 OF 15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	53
JE	1047	03	079	
CHECK				
CAN				

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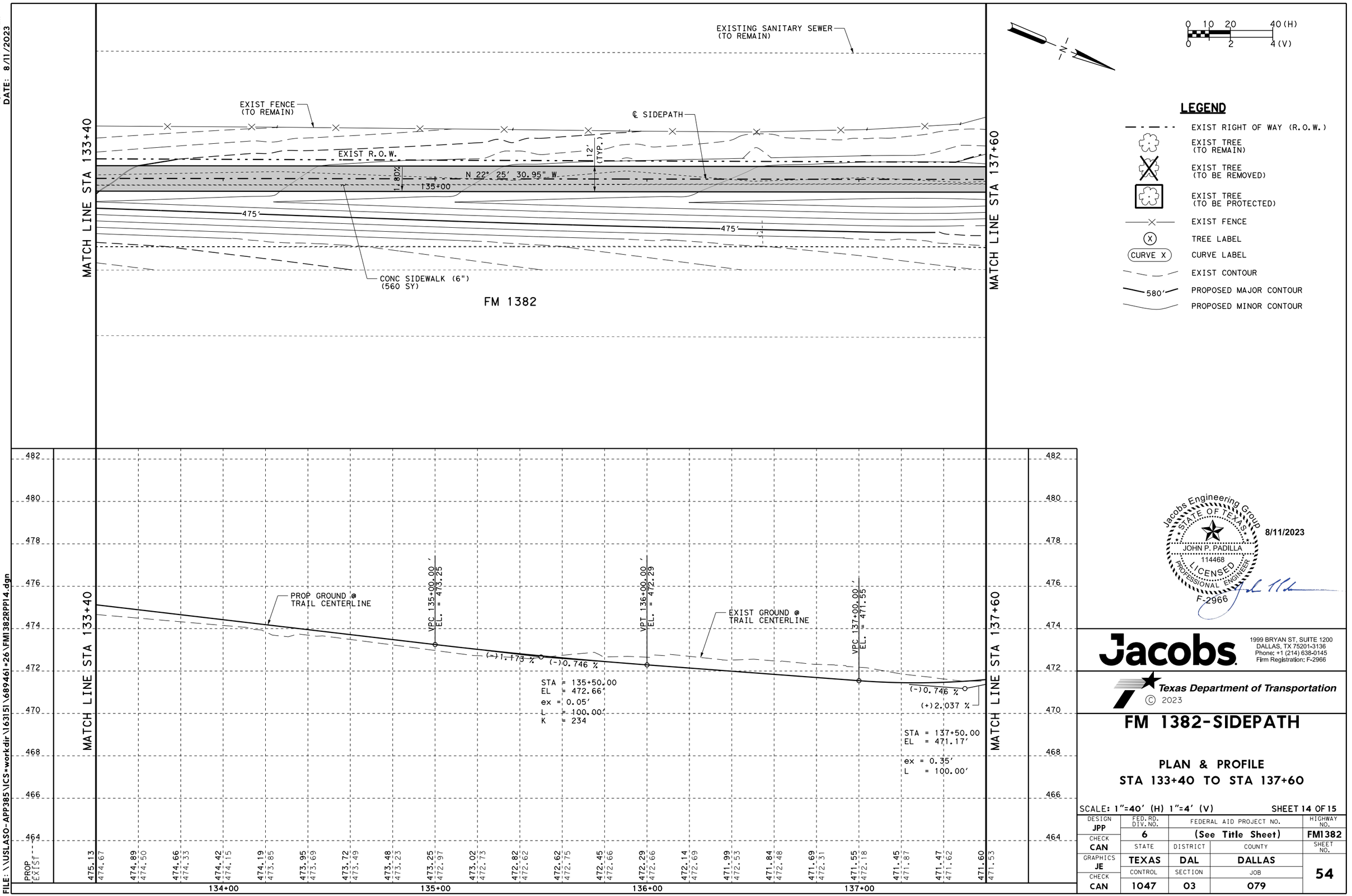

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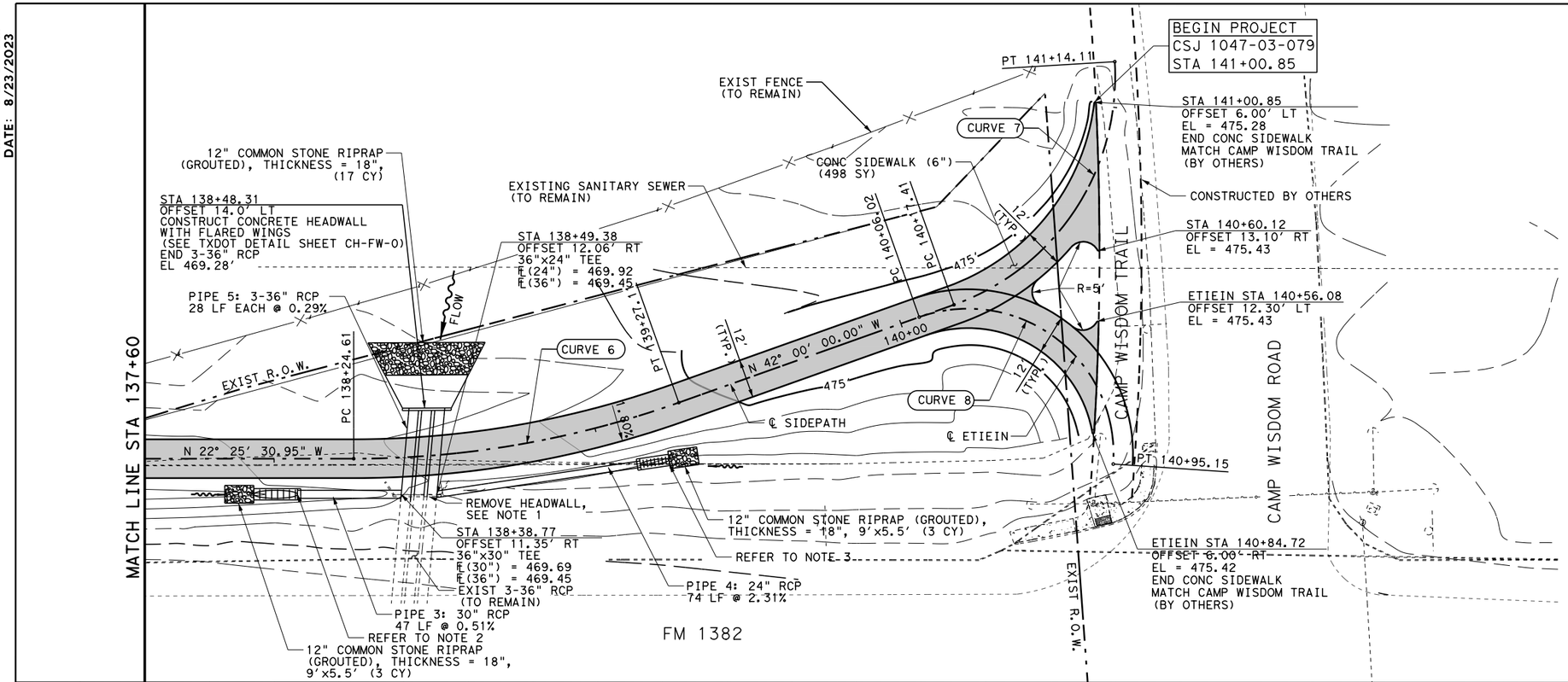
FM 1382-SIDEPATH

PLAN & PROFILE
STA 133+40 TO STA 137+60

SCALE: 1"=40' (H) 1"=4' (V) SHEET 14 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	54
JE				
CHECK	1047	03	079	
CAN				

TIME: 8:21:34 AM
DATE: 8/23/2023



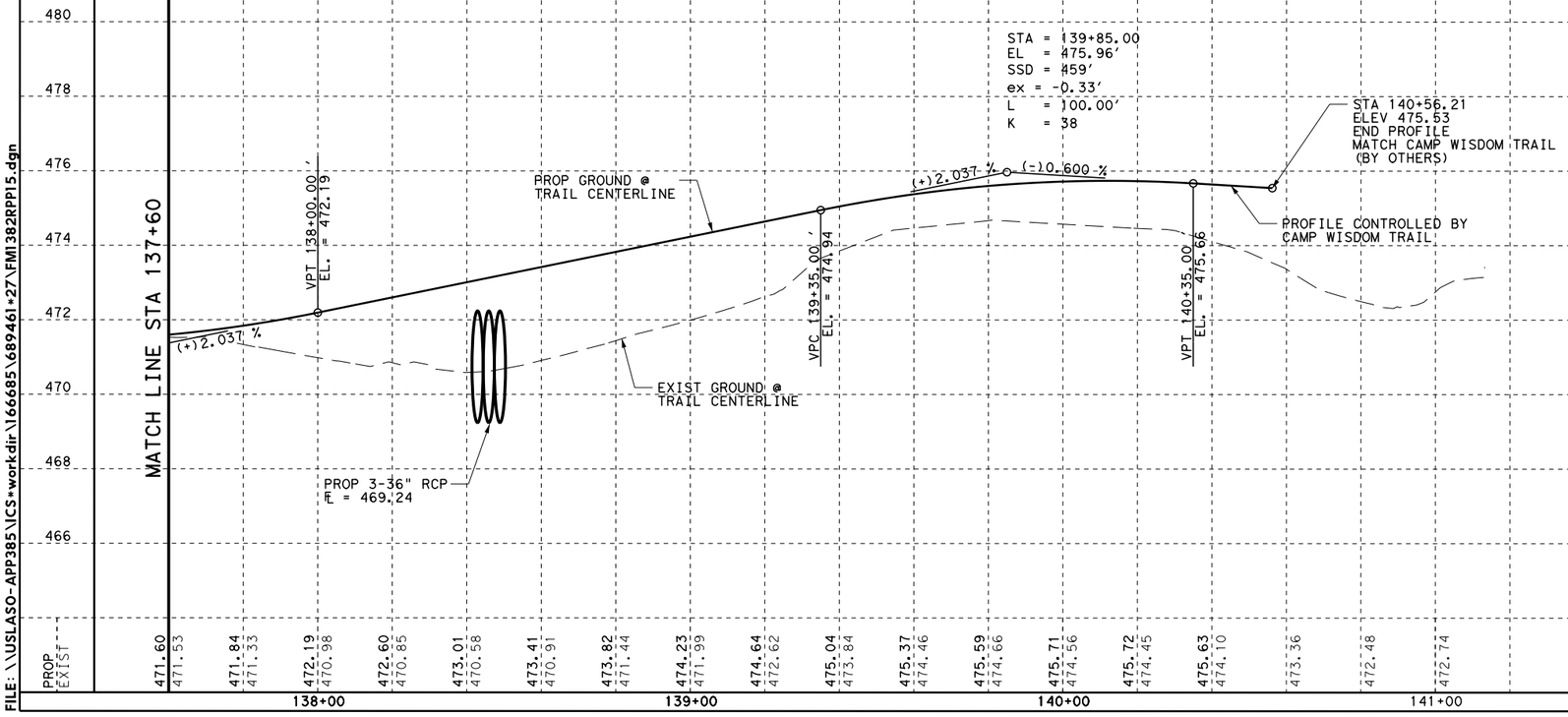
0 10 20 40 (H)
0 2 4 (V)

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST TREE (TO REMAIN)
- EXIST TREE (TO BE REMOVED)
- EXIST TREE (TO BE PROTECTED)
- EXIST FENCE
- (X) TREE LABEL
- CURVE X — CURVE LABEL
- EXIST CONTOUR
- 580' — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

NOTES

1. REMOVE EXIST HEADWALL. EXIST ELEVATION IS 469.20' BASED OFF AS BUILTS CONSTRUCTION, CONTRACTOR TO VERIFY EXIST ELEVATION.
2. STA 138+07.23 OFF 11.00' RT
   CONSTRUCT SETP-PD (TY II) (30") (6:1) (P).
   END 30" RCP, ℄ 469.67'
3. STA 139+10.00 OFF 14.60' RT
   CONSTRUCT SETP-PD (TY II) (24") (6:1) (P).
   END 24" RCP, ℄ 470.39'



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FM 1382-SIDEPATH

PLAN & PROFILE
STA 137+60 TO BEGIN PROJECT

SCALE: 1"=40' (H) 1"=4' (V) SHEET 15 OF 15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	55
GRAPHICS	CONTROL	SECTION	JOB	
JE	1047	03	079	
CHECK				
CAN				

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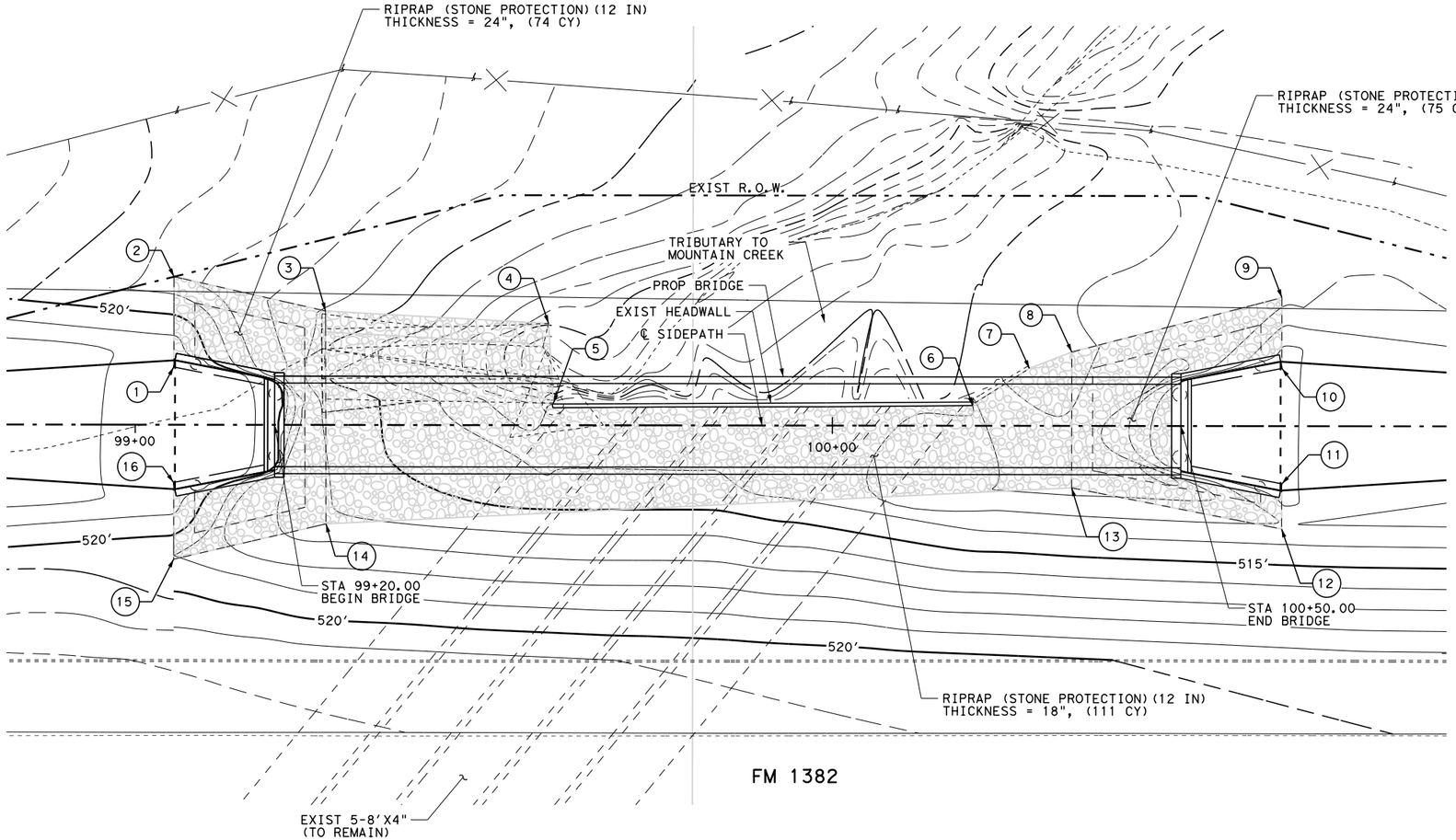
DATE: 8/26/2023



0 10 20
SCALE IN FEET

N

LEGEND

- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- (X) POINT LABEL
- EXIST CONTOUR
- 580' PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- STONE RIPRAP

NOTES

1. RIPRAP CONTROL IS APPROXIMATE AND MAY NEED TO BE ADJUSTED IN THE FIELD.
2. SEE BRIDGE LAYOUT FOR LIMITS OF STONE PROTECTION AT BRIDGE ABUTMENTS.
3. SEE TxDOT STANDARD SRR FOR RIPRAP DETAILS AND NOTES.

RIPRAP LIMITS		
POINT	STATION	OFFSET
1	99+05.50	8.30' LT
2	99+05.50	21.20' LT
3	99+27.30	16.30' LT
4	99+59.30	14.60' LT
5	99+59.80	3.00' LT
6	100+20.10	2.90' LT
7	100+28.30	8.20' LT
8	100+34.30	10.60' LT
9	100+64.50	18.40' LT
10	100+64.50	8.30' LT
11	100+64.50	8.30' RT
12	100+64.50	14.80' RT
13	100+34.30	8.90' RT
14	99+27.40	14.20' RT
15	99+05.50	19.30' RT
16	99+05.50	8.30' RT

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Texas Department of Transportation

FM 1382-SIDEPATH

SIDEPATH RIPRAP DETAILS

SCALE: 1"=20' (H) SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JPP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
JPP	TEXAS	DAL	DALLAS	56
GRAPHICS	CONTROL	SECTION	JOB	
JE	1047	03	079	
CHECK				
CAN				

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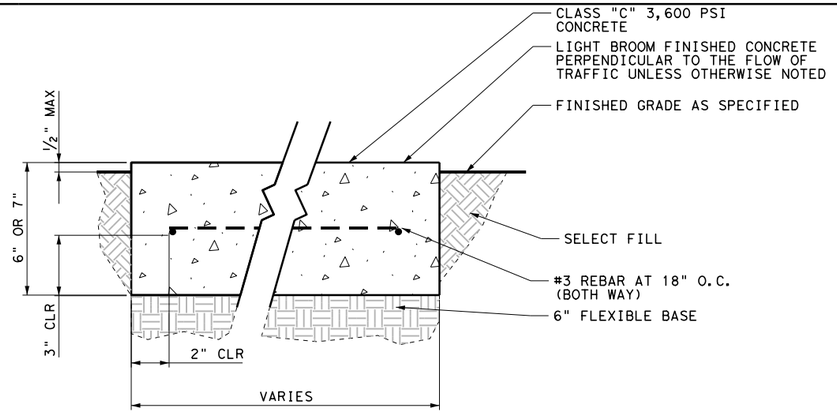
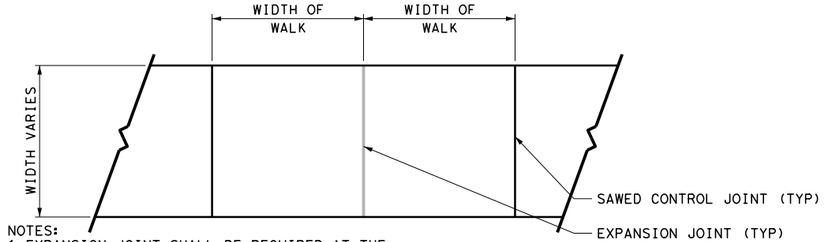
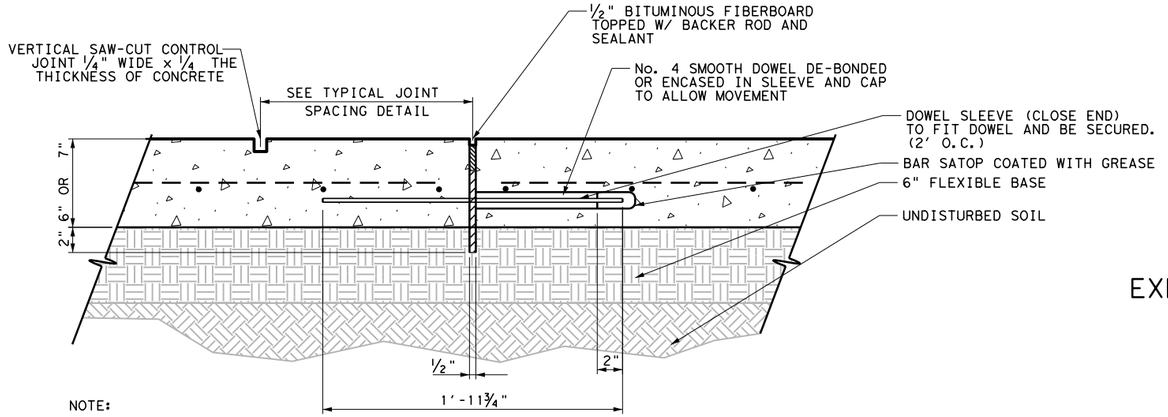


TYPICAL SIDEWALK PAVEMENT



NOTES:
1. EXPANSION JOINT SHALL BE REQUIRED AT THE POINT OF CURVE AND POINT OF TANGENT.
2. EXPANSION JOINTS WILL BE SPACED MAX. 96′ TO ALIGN WITH WALL EXPANSION JOINTS.
3. ALTERNATE METHODS TO SAWING MAY BE USED FOR FORMING CONTROL JOINTS. SUBJECT TO APPROVAL OF THE CONSTRUCTION ENGINEER. WORKMANSHIP SHALL BE COMPARABLE TO A SAWED JOINT.

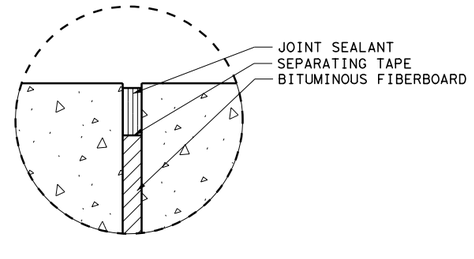
TYPICAL JOINT SPACING



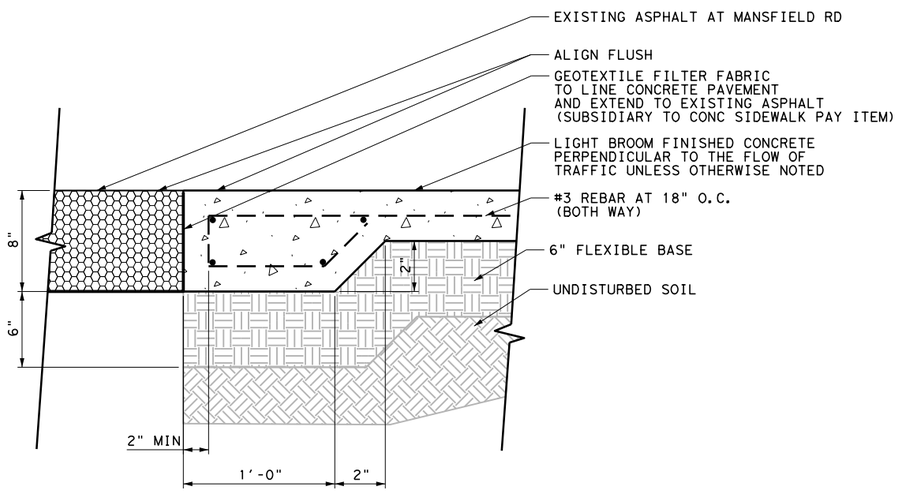
NOTE:

1. DOWEL SUPPORT SHALL BE A METHOD APPROVED BY THE ENGINNER. EXPANSION JOINT SPACING AS SPECIFIED.
2. EXPANSION JOINTS @ MAX. 60′ INTERVALS, MATERIAL AS NOTED.

TYPICAL FLATWORK W/ JOINTING



EXPANSION JOINT W/ SEALANT



ASPHALT W/ CONCRETE PAVEMENT EDGE

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FM 1382-SIDEPATH

SIDEPATH DETAILS

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS CAN	TEXAS	DAL	DALLAS	57
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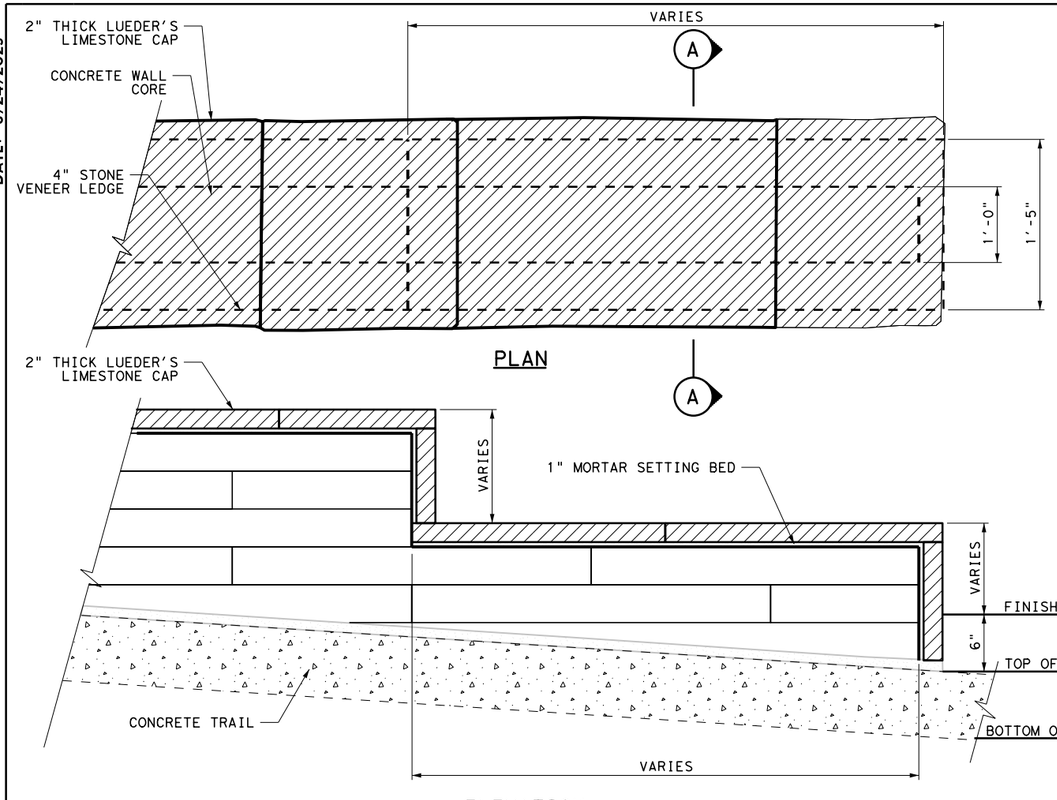
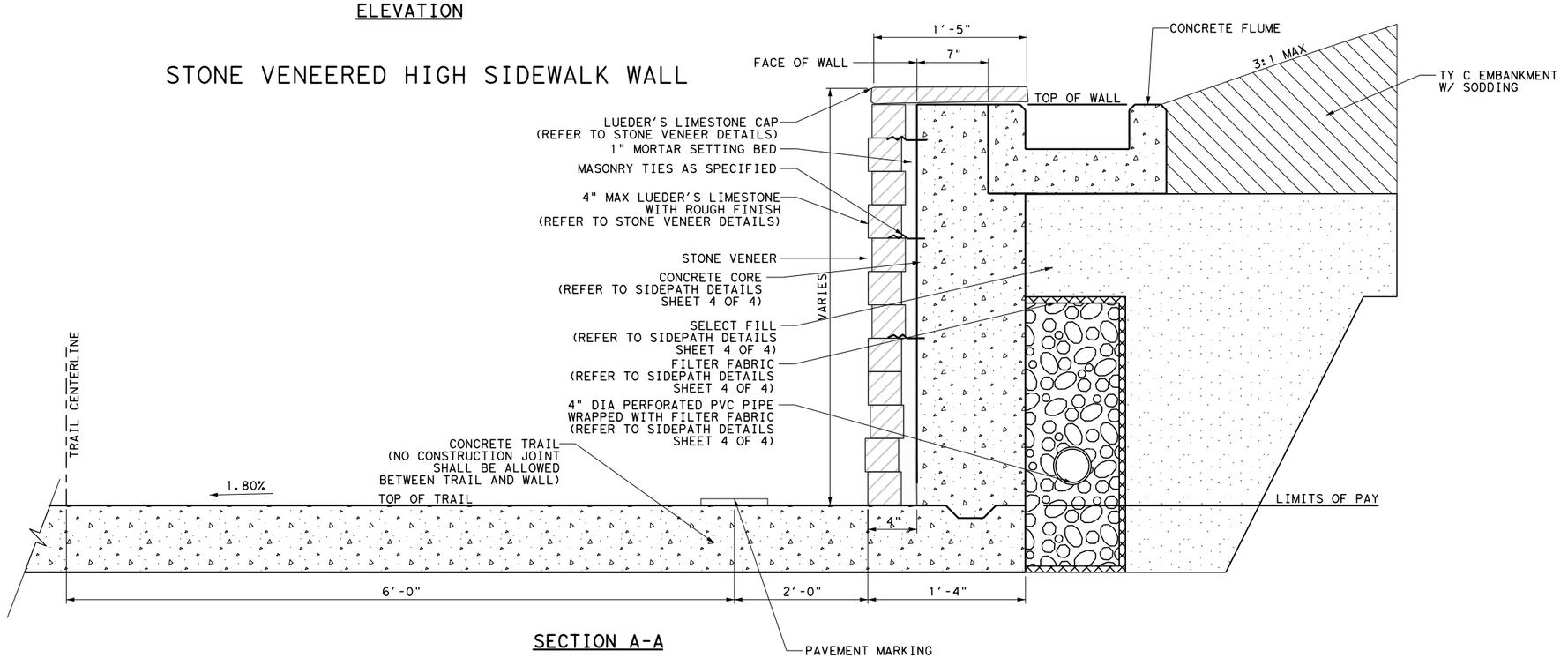


PLAN

ELEVATION

STONE VENEERED HIGH SIDEWALK WALL



SECTION A-A

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FM 1382-SIDEPATH

SIDEPATH DETAILS

SCALE: N.T.S.

SHEET 2 OF 4

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS CAN	TEXAS	DAL	DALLAS	58
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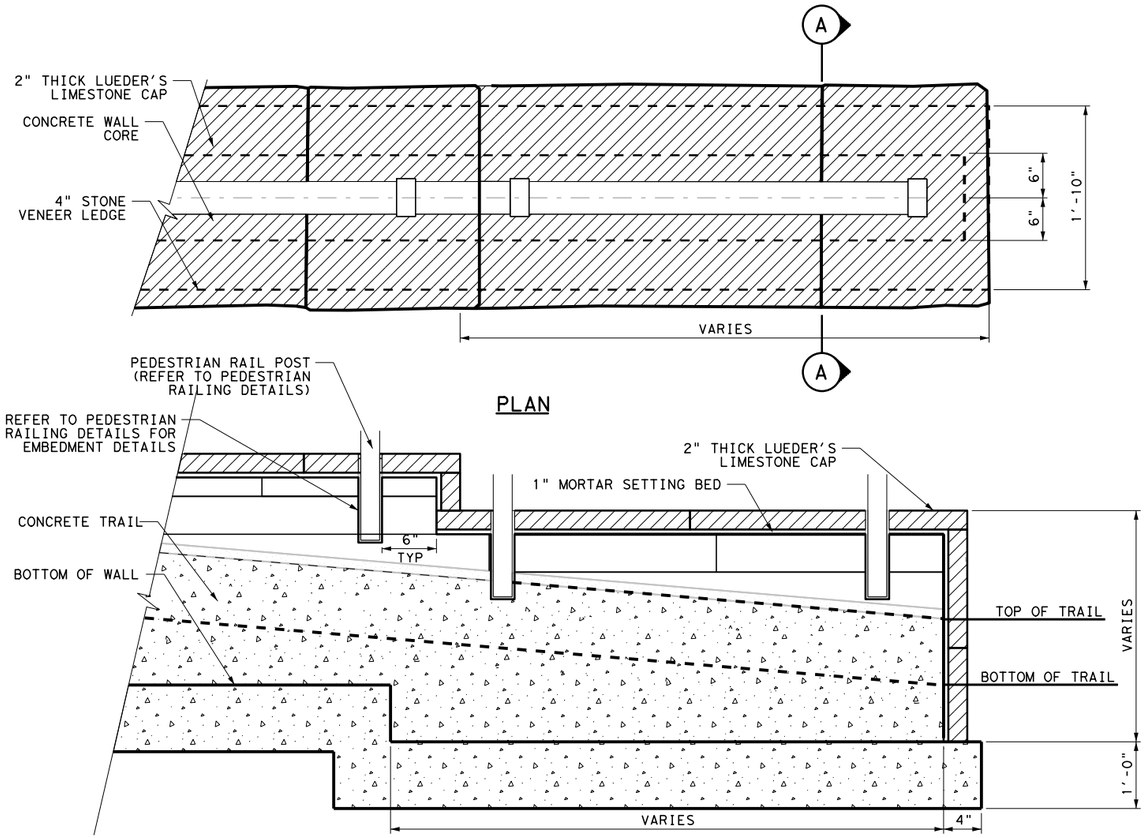
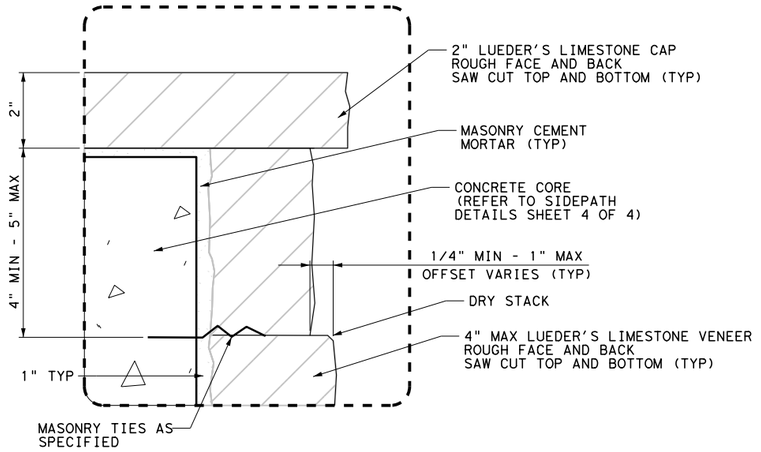
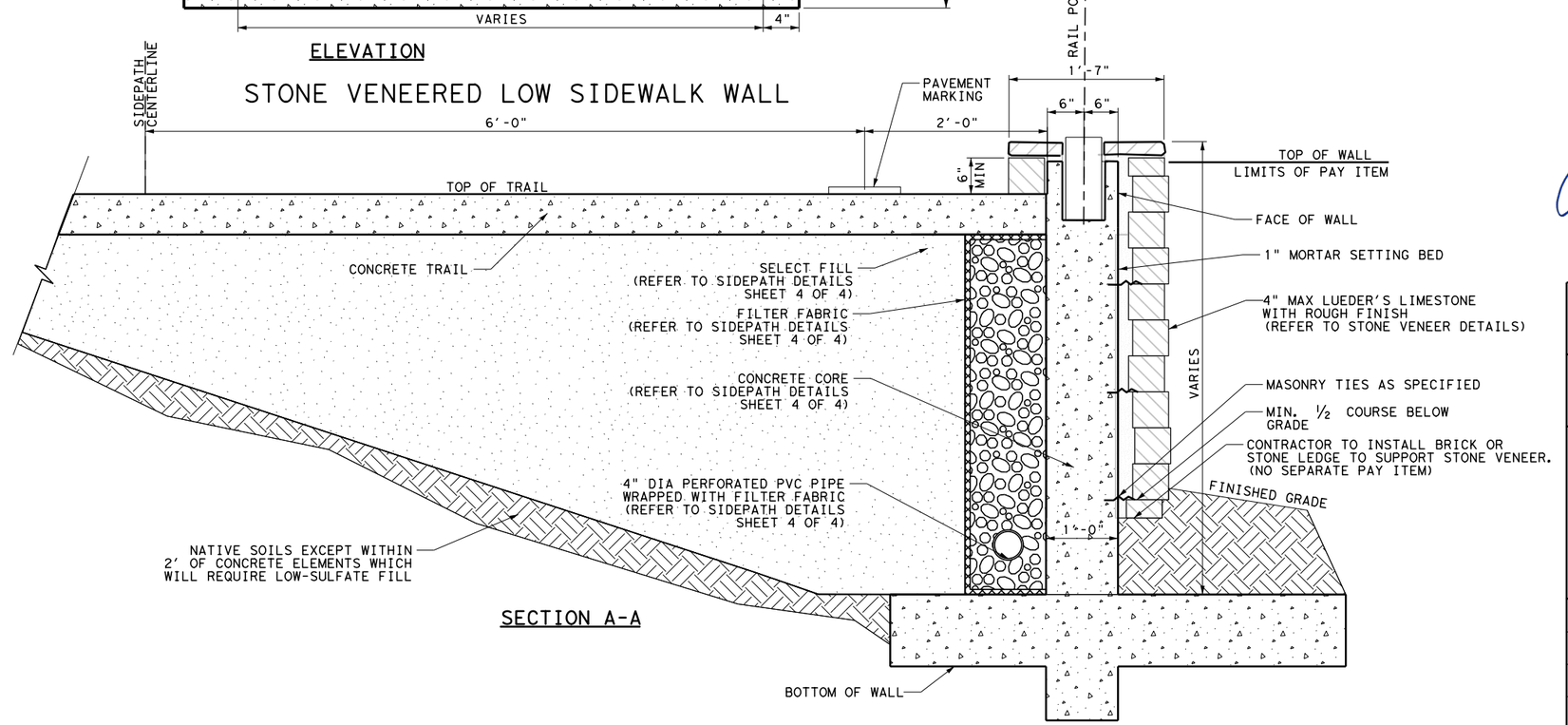




SIDEWALK WALL STONE VENEERED (TYP)



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FM 1382-SIDEPATH

SIDEPATH DETAILS

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS CAN	TEXAS	DAL	DALLAS	59
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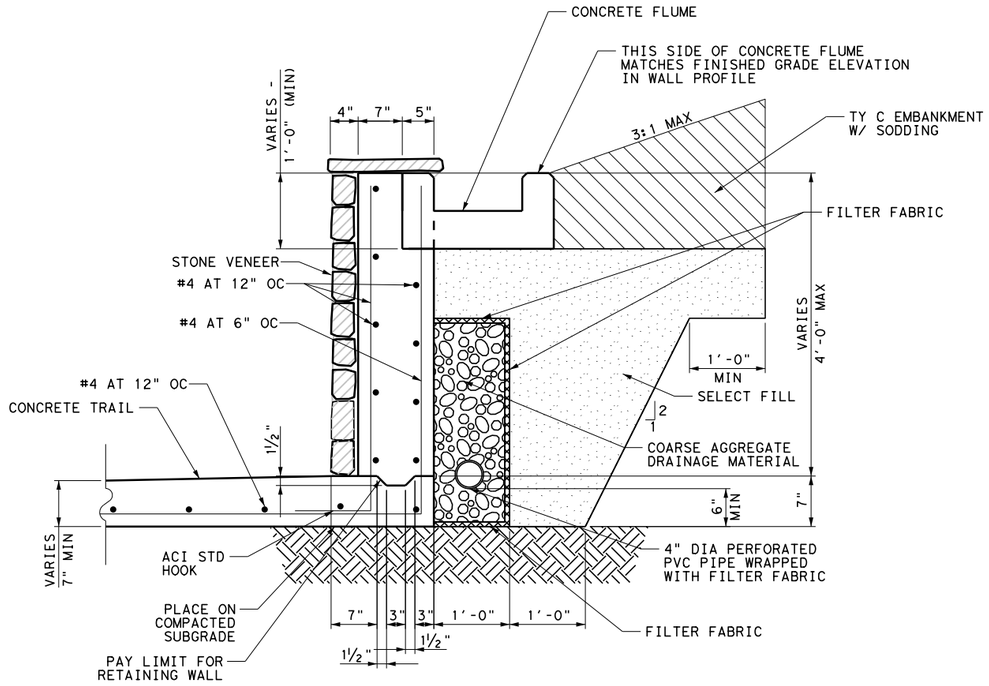
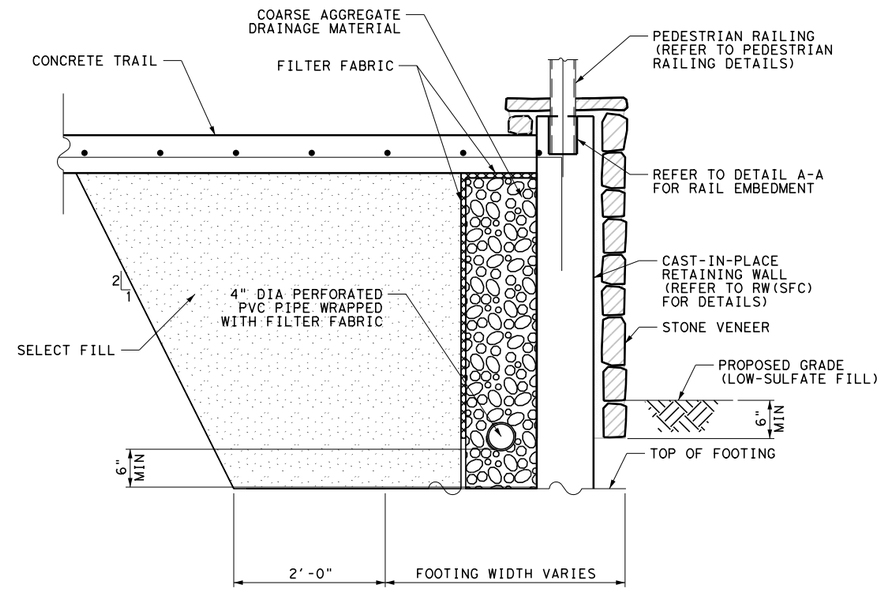
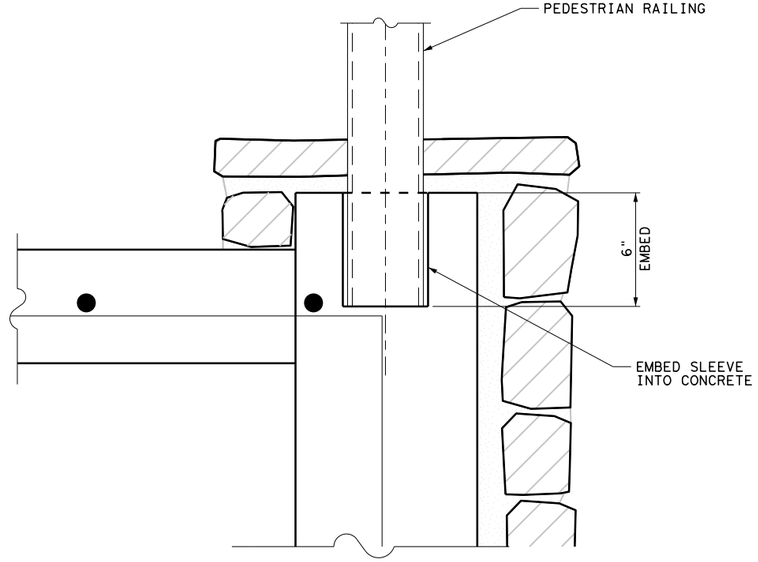


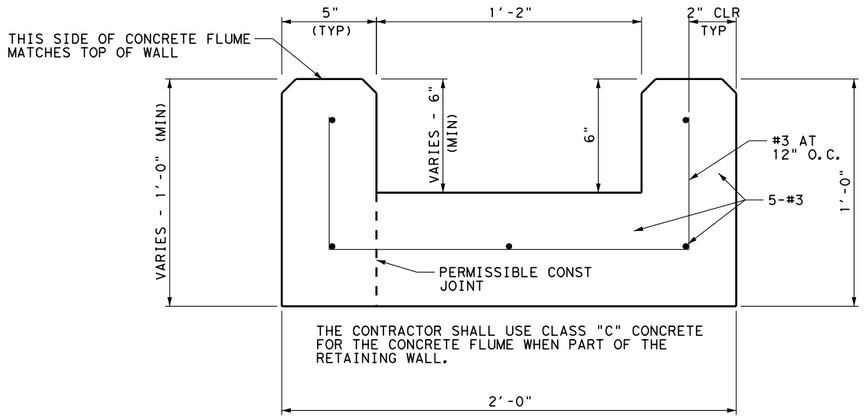
SIDEWALK WITH HIGH WALL



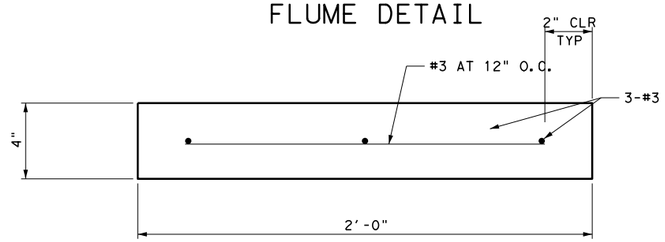
SIDEWALK WITH LOW WALL



DETAIL A-A



FLUME DETAIL



MOW STRIP DETAIL

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FM 1382-SIDEPATH

SIDEPATH DETAILS

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS CAN	TEXAS	DAL	DALLAS	60
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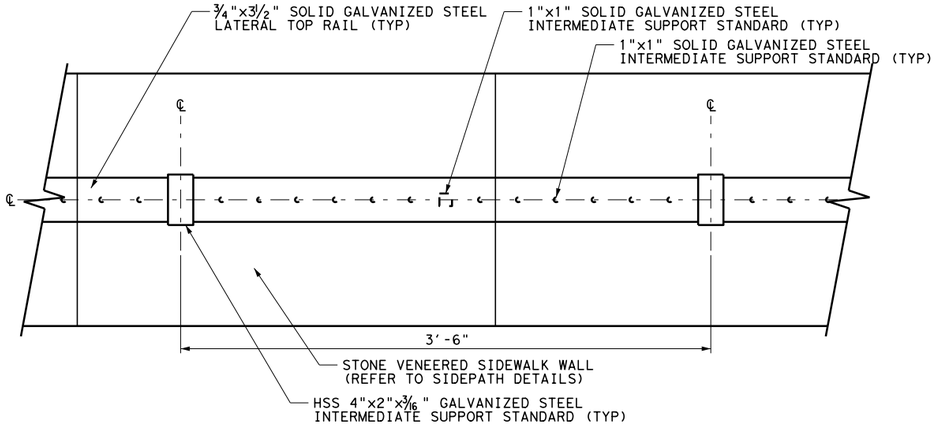
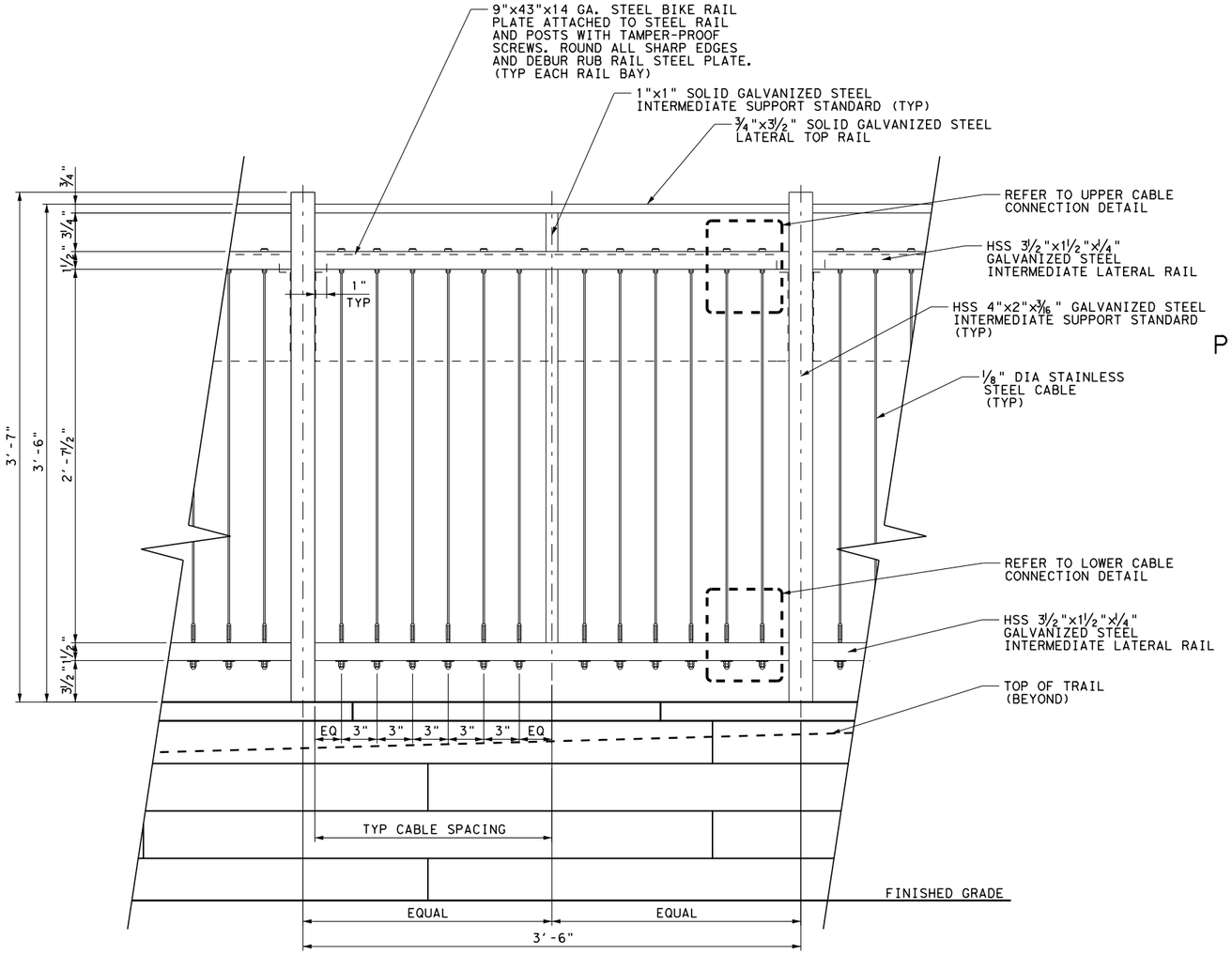
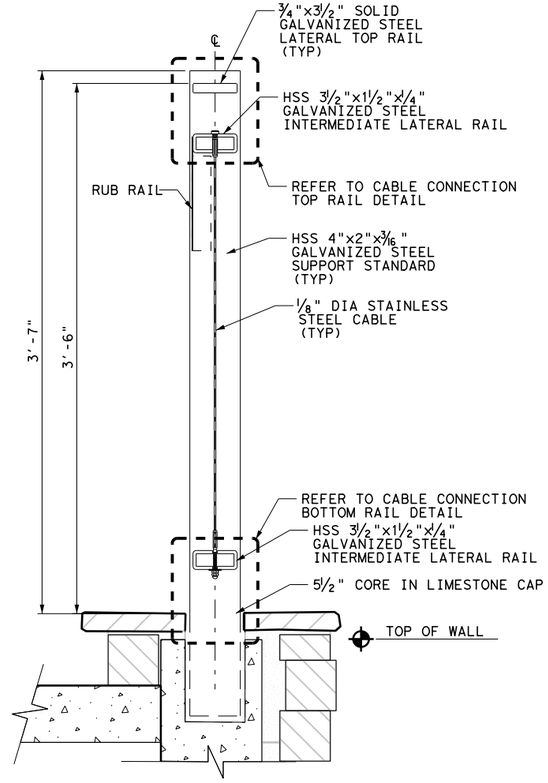


PEDESTRIAN RAIL PLAN



PEDESTRIAN RAIL ELEVATION



PEDESTRIAN RAIL TYPICAL SECTION

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FM 1382-SIDEPATH

PEDESTRIAN RAIL DETAILS

SCALE: N.T.S.

SHEET 1 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK: JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS: CAN	TEXAS	DAL	DALLAS	61
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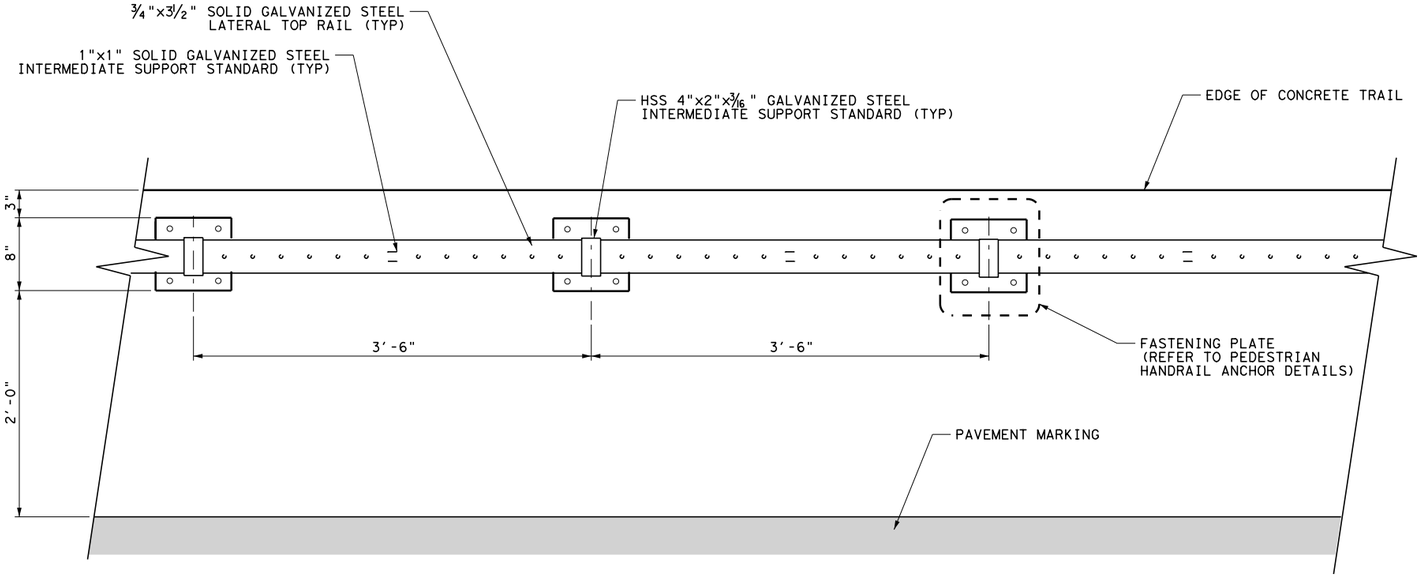
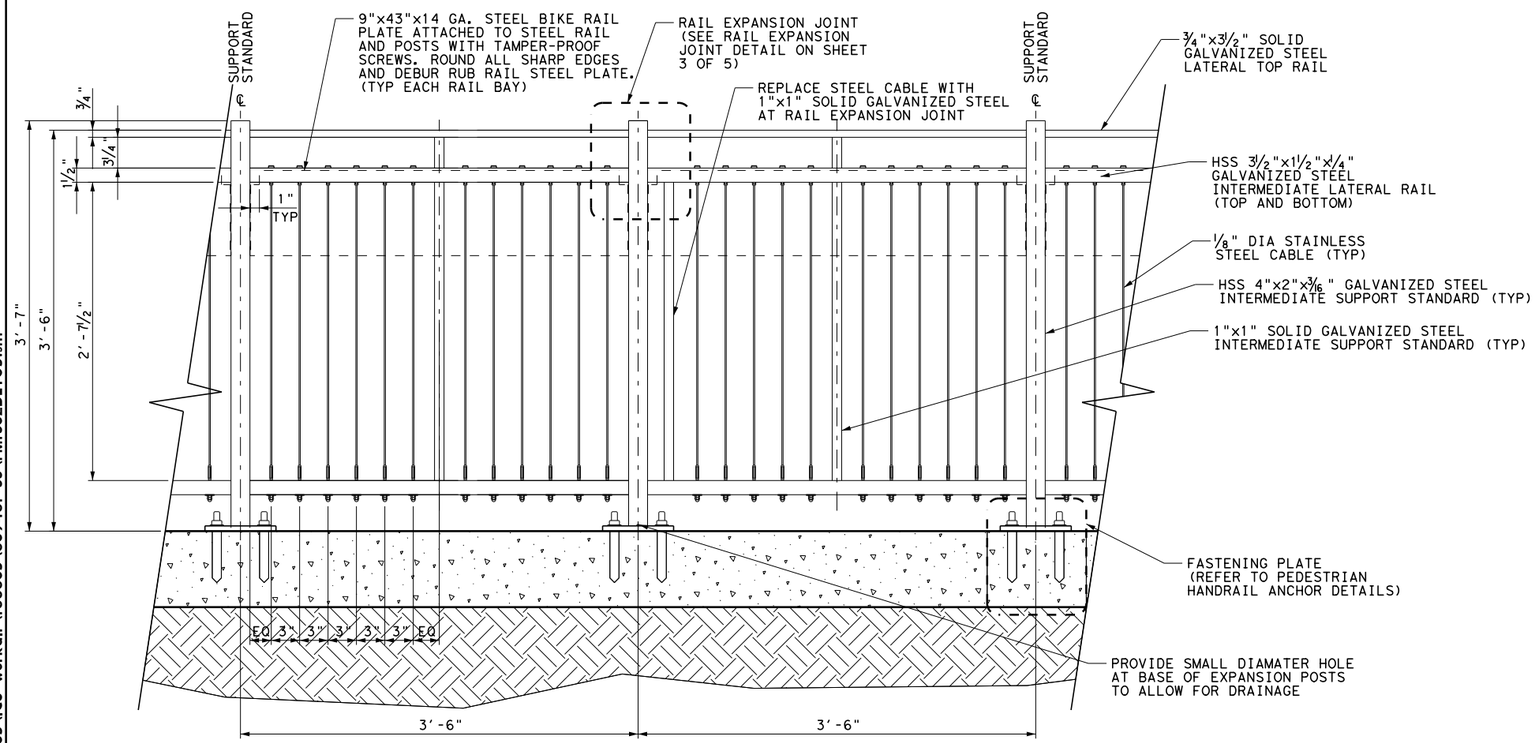
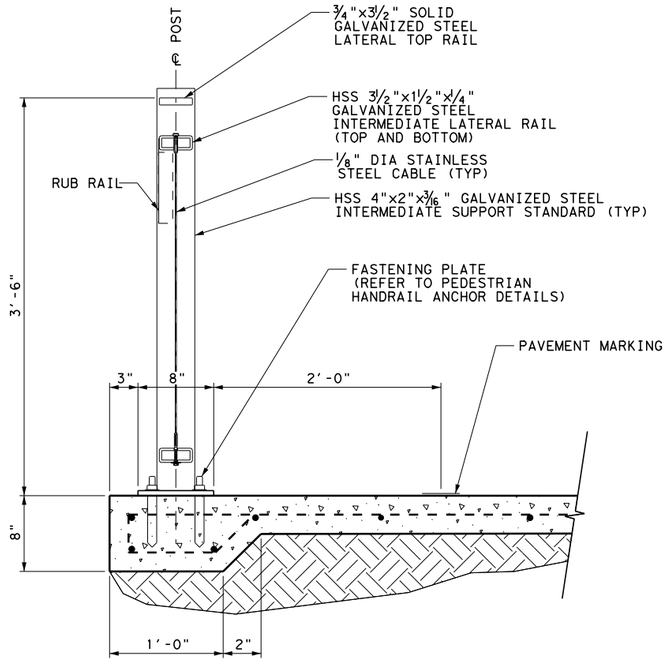


PEDESTRIAN RAIL WITH CONCRETE ANCHOR PLAN



PEDESTRIAN RAIL WITH CONCRETE ANCHOR ELEVATION



PEDESTRIAN RAIL TO CONCRETE SECTION

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FM 1382-SIDEPATH

PEDESTRIAN RAIL DETAILS

SCALE: N.T.S.

SHEET 2 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS CAN	TEXAS	DAL	DALLAS	62
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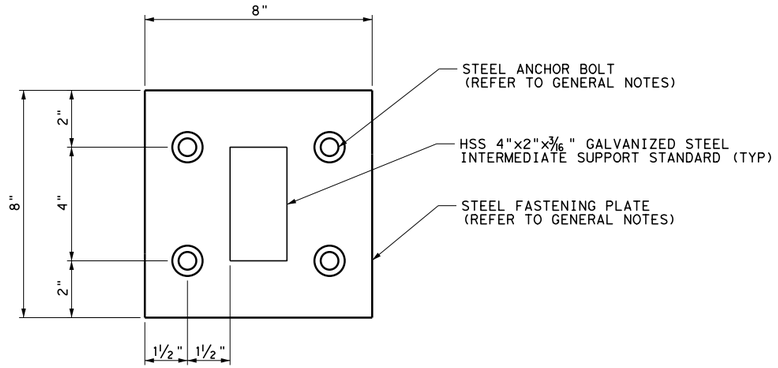
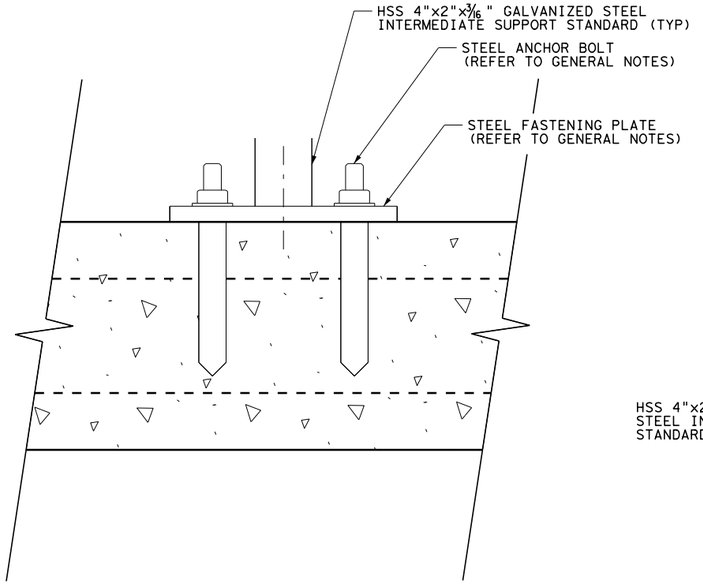


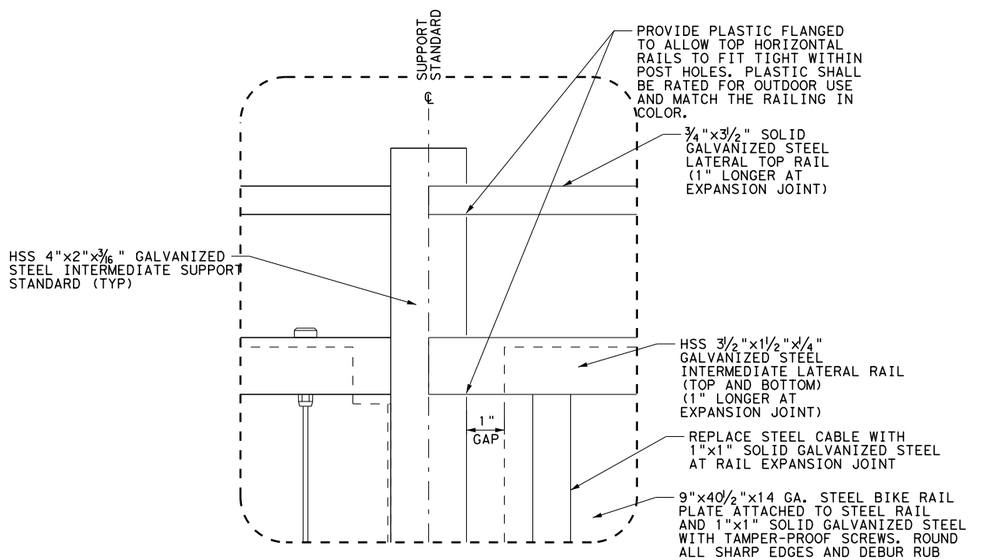
PEDESTRIAN RAIL ANCHOR PLAN

GENERAL NOTES

1. DESIGNED ACCORDING TO ADAAG, TEXAS ACCESSIBILITY STANDARDS, UNIFORM BUILDING CODE, AND AASHTO LRFD SPECIFICATIONS.
2. HANDRAIL ANCHORAGE DETAILS SHOWN ON THIS STANDARD MAY REQUIRE MODIFICATION FOR SELECT STRUCTURE TYPES. SEE APPROPRIATE DETAILS ELSEWHERE IN PLANS FOR THESE MODIFICATIONS.
3. STEEL PLATES AND STEEL BARS WILL CONFORM TO ASTM-A36. MECHANICAL TUBING (MT) WILL CONFORM TO ASTM A513 GRADE 1015 OR HIGHER. GALVANIZE ALL STEEL COMPONENTS EXCEPT REINFORCING STEEL UNLESS NOTED OTHERWISE.
4. CONCRETE FOR FOUNDATIONS WILL BE IN ACCORDANCE WITH ITEM 531 "SIDEWALKS". ALL REINFORCING STEEL MUST BE GRADE 60. BAR LAPS, WHERE REQUIRED, WILL BE AS FOLLOWS: UNCOATED ~ #4 = 1'-5" EPOXY COATED ~ #4 = 2'-1"
5. EPOXY ANCHOR BOLTS FOR WALL MOUNT AND POST BASE PLATE WILL BE 5/8" DIA. ASTM A36 THREADED RODS WITH ONE HEX NUT AND ONE HARDENED STEEL WASHER AT EACH BOLT. 5/8" DIA. THREADED ROD EMBEDMENT DEPTH FOR WALL MOUNTS IS 3½" AND EMBEDMENT DEPTH FOR POST BASE PLATE IS 5".
6. EMBED THREADED RODS INTO CONCRETE WITH A TYPE III (CLASS C) EPOXY MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES". MIX AND DISPENSE ADHESIVE WITH THE MANUFACTURER'S STATIC MIXING NOZZLE/DUAL CARTRIDGE SYSTEM. CORE DRILL HOLES (PERCUSSION DRILLING NOT PERMITTED).
7. AT THE CONTRACTOR'S OPTION THE POST BASE PLATE ANCHOR BOLTS MAY BE CAST WITH THE RAMP/SIDEWALK (SEE CAST-IN-PLACE ANCHOR BOLT OPTIONS).
8. OPTIONAL CAST-IN-PLACE ANCHOR BOLTS WILL BE 5/8" DIA ASTM A307 GRADE A BOLTS (OR A36 THREADED RODS WITH ONE TACK WELDED HEX NUT EACH) WITH ONE HEX NUT AND ONE HARDENED STEEL WASHER AT EACH BOLT. EMBEDMENT DEPTH OF CAST-IN-PLACE BOLT WILL BE 8" FOR POST BASE PLATE.
9. HANDRAILS AND ANY WALL OR OTHER SURFACE ADJACENT TO THEM WILL BE FREE OF ANY SHARP OR ABRASIVE ELEMENTS.
10. SUBMIT SHOP DRAWINGS TO THE ENGINEER UNLESS OTHERWISE NOTED. FOR CURVED HANDRAIL APPLICATIONS, FABRICATE THE HANDRAIL TO THE CURVE IF RADIUS IS LESS THAN 600 FT. SHOP DRAWINGS ARE REQUIRED WHEN RAIL IS FABRICATED TO THE CURVE.
11. FOR ALL HANDRAILS, SHOP DRAWINGS WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL TO ENSURE PROPER INSTALLATION.
12. SHOP DRAWINGS WILL SHOW HANDRAIL MOUNT LOCATIONS WITH BOLTS SETTING, SPACING, RAMP SLOPE, AND/OR SPLICE JOINT LOCATIONS, AND HANDRAIL LENGTHS WITH IDENTIFICATION SHOWING WHERE EACH HANDRAIL GOES ON THE LAYOUT.
13. PAYMENT FOR CONCRETE SIDEWALKS OR CURB RAMPS WILL BE PAID FOR IN ACCORDANCE WITH ITEM 531 "SIDEWALKS".
14. PAYMENT FOR ALL ITEMS SHOWN IS TO BE INCLUDED IN UNIT PRICE BID IN ACCORDANCE WITH ITEM 450 "RAILING" AS "PEDESTRIAN RAIL (SPL)".



PEDESTRIAN RAIL ANCHOR ELEVATION



PEDESTRIAN RAIL EXPANSION JOINT DETAIL

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FM 1382-SIDEPATH

PEDESTRIAN RAIL DETAILS

SCALE: N.T.S. SHEET 3 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
JPP	TEXAS	DAL	DALLAS	63
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CAN	1047	03	079	
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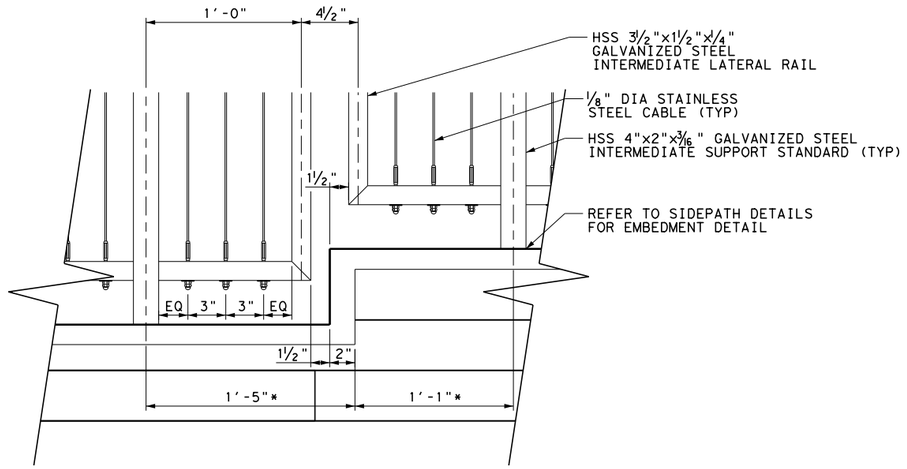
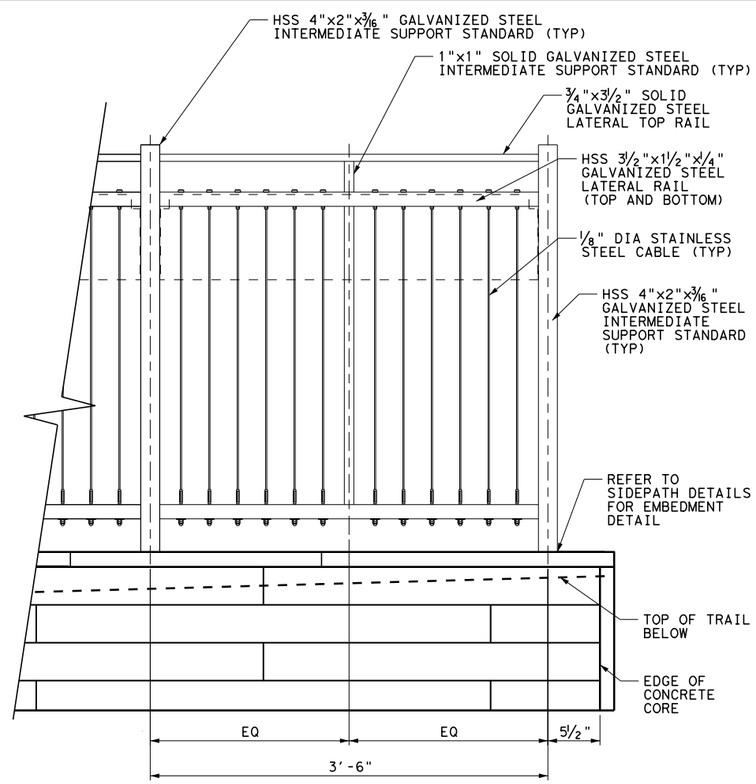
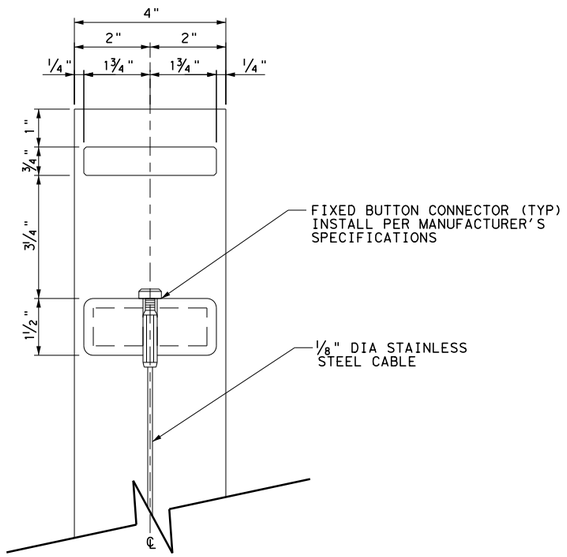


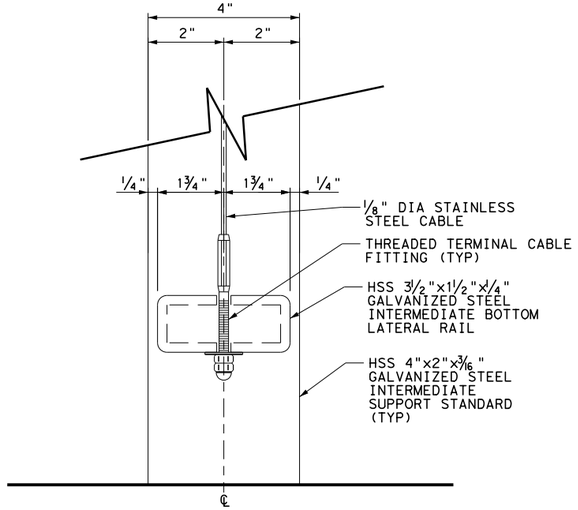
PEDESTRIAN RAIL STEP DETAIL



PEDESTRIAN RAIL TERMINUS



PEDESTRIAN RAIL TOP RAIL SECTION
(RUB RAIL NOT SHOWN)



PEDESTRIAN RAIL BOTTOM RAIL SECTION

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8/11/2023

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Texas Department of Transportation

FM 1382-SIDEPATH

PEDESTRIAN RAIL DETAILS

SCALE: N.T.S

SHEET 4 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS CAN	TEXAS	DAL	DALLAS	64
CHECK JPP	CONTROL	SECTION	JOB	
	1047	03	079	

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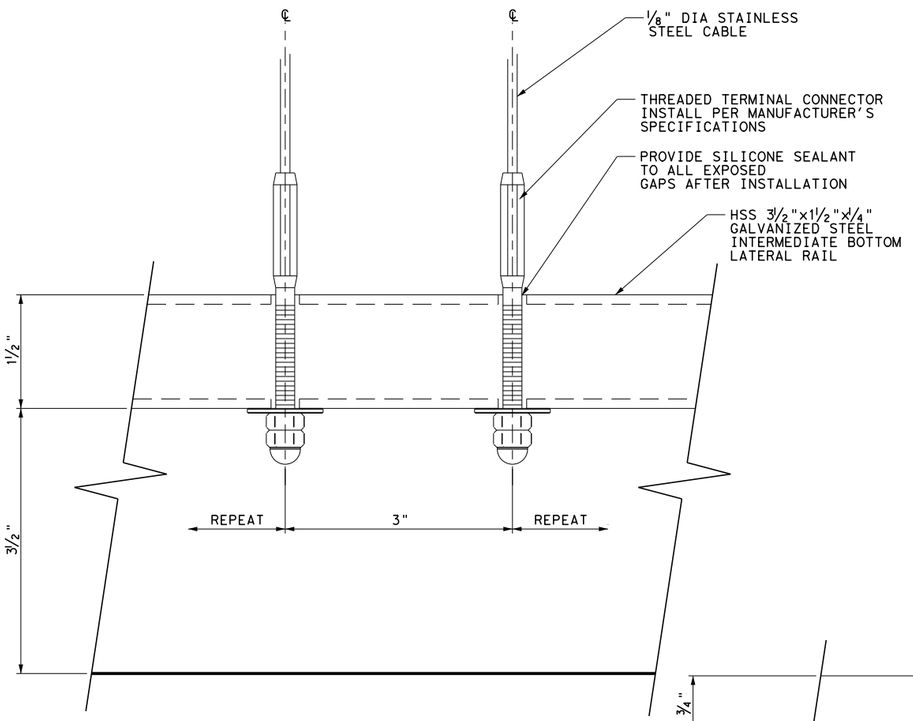
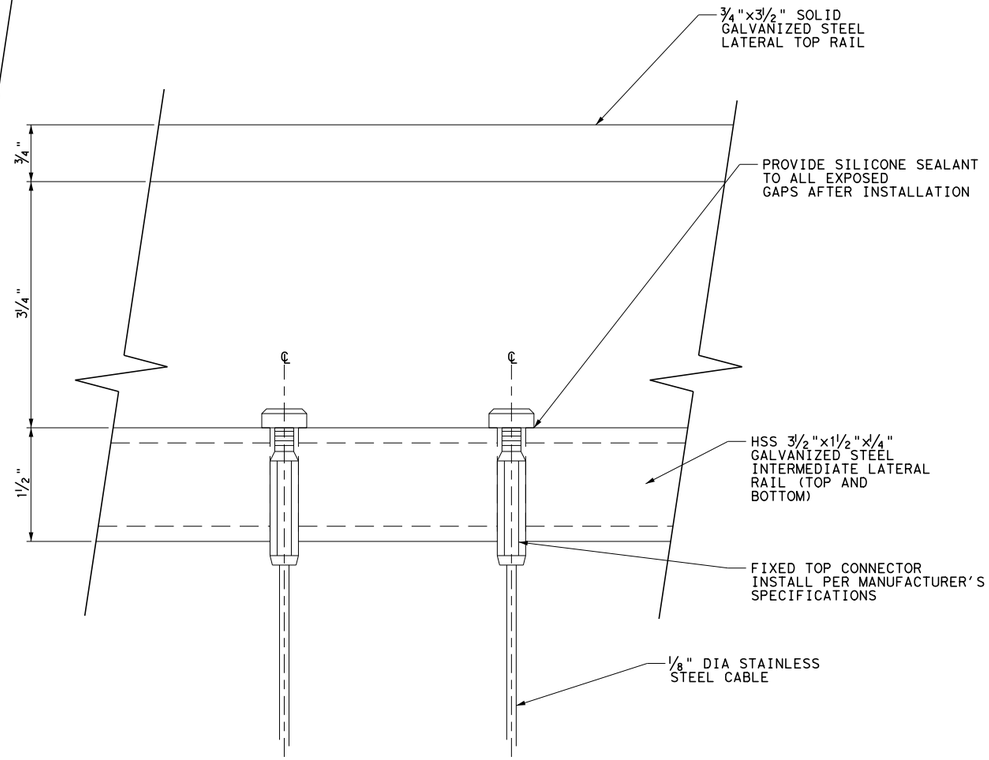


LOWER CABLE CONNECTION SECTION



UPPER CABLE CONNECTION SECTION
(RUB RAIL NOT SHOWN)

RAILING GENERAL NOTES

1. ALL STEEL COMPONENTS TO BE GALVANIZED UNLESS OTHERWISE NOTED.
2. EXPOSED EDGES OF ALL STEEL MEMBERS SHALL BE ROUNDED TO MIN. 1/16" BY GRINDING UNLESS OTHERWISE NOTED.
3. CONTRACTOR TO SUBMIT PEDESTRIAN RAIL SHOP DRAWINGS FOR APPROVAL.
4. MAXIMUM 4" SPACING BETWEEN ALL RAIL AND CABLE MEMBERS.
5. 3/16" WELD REQUIRED FOR ALL STEEL MEMBER CONNECTIONS UNLESS OTHERWISE NOTED.
6. REFER TO SIDPATH DETAILS FOR POST EMBEDMENT DETAILS.
7. CONTRACTOR TO PROVIDE A 20' CABLE RAIL MOCK-UP ON SITE FOR APPROVAL PRIOR TO WORK COMMENCEMENT.

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Texas Department of Transportation

FM 1382-SIDEPATH

PEDESTRIAN RAIL DETAILS

SCALE: N.T.S

SHEET 5 OF 5

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK: JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS: CAN	TEXAS	DAL	DALLAS	65
CHECK: JPP	CONTROL	SECTION	JOB	
	1047	03	079	

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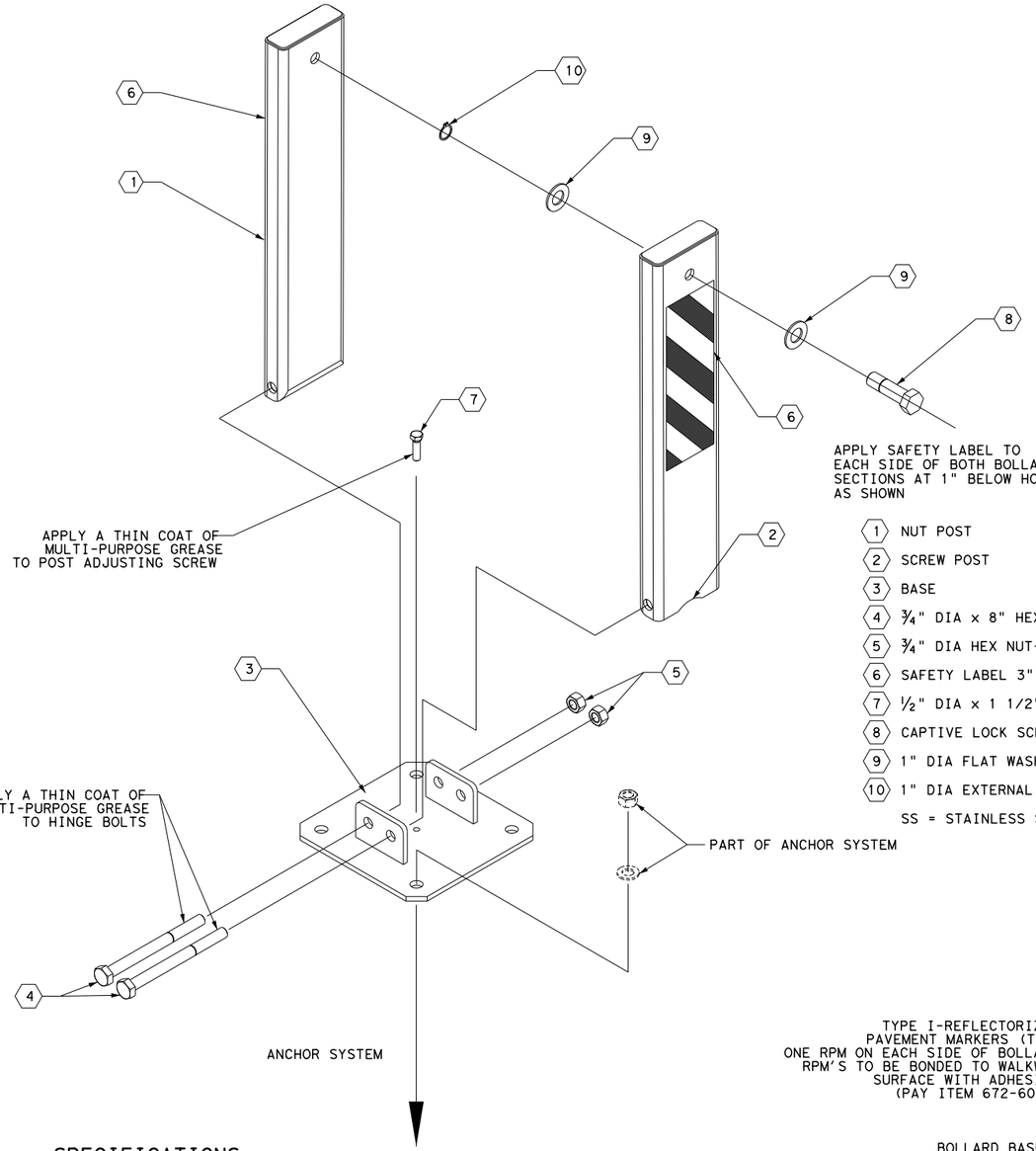
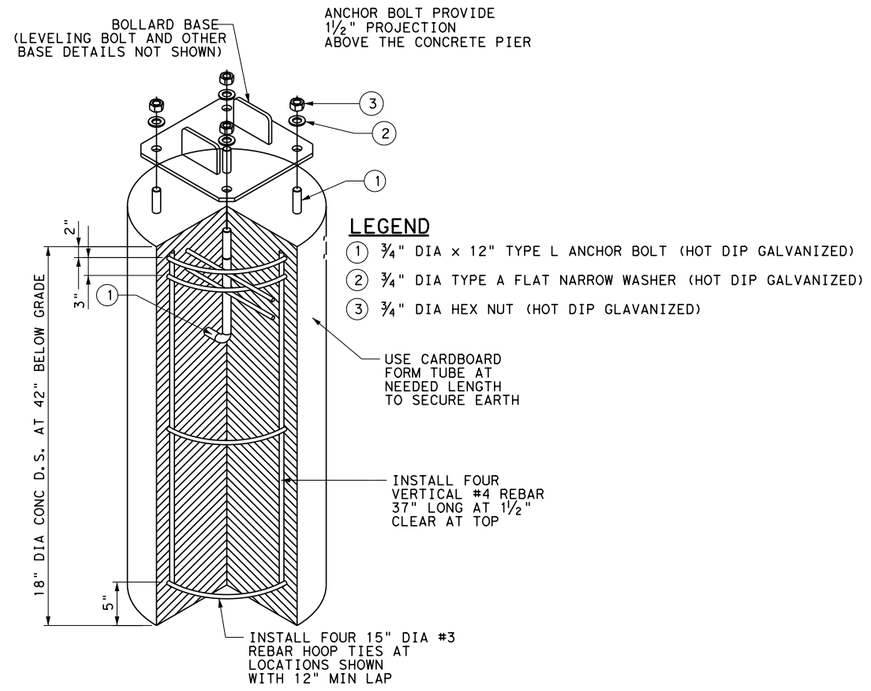


APPLY SAFETY LABEL TO EACH SIDE OF BOTH BOLLARD SECTIONS AT 1" BELOW HOLE AS SHOWN

1. NUT POST
2. SCREW POST
3. BASE
4. ¾" DIA x 8" HEX HEAD HINGE BOLT-18-8 SS
5. ¾" DIA HEX NUT-18-8 SS
6. SAFETY LABEL 3" x 12"
7. ½" DIA x 1 1/2" HEX HEAD CAP SCREW-18-8-SS
8. CAPTIVE LOCK SCREW-SS
9. 1" DIA FLAT WASHER-SS 18-8
10. 1" DIA EXTERNAL RETAINING RING-TYPE PH15-7 MO SS

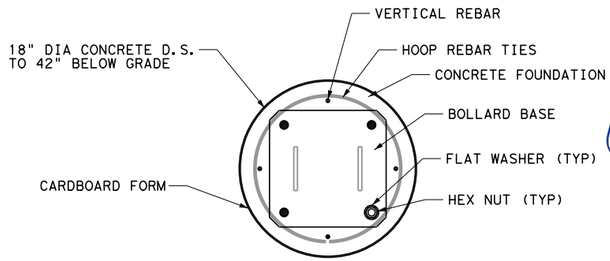
SS = STAINLESS STEEL



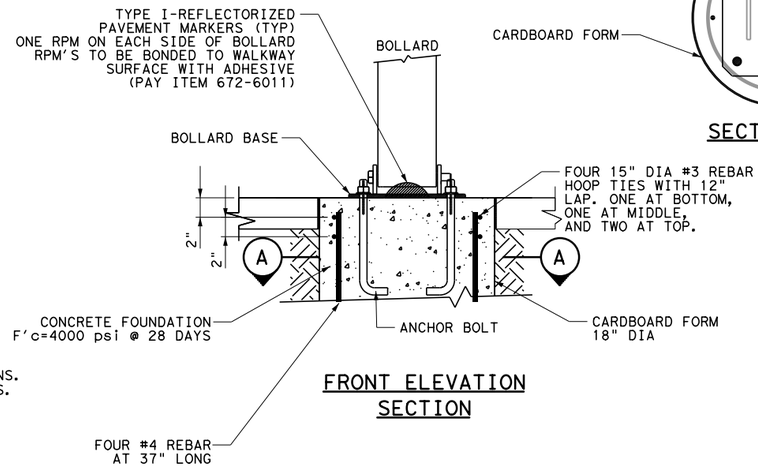
LEGEND

1. ¾" DIA x 12" TYPE L ANCHOR BOLT (HOT DIP GALVANIZED)
2. ¾" DIA TYPE A FLAT NARROW WASHER (HOT DIP GALVANIZED)
3. ¾" DIA HEX NUT (HOT DIP GLAVANIZED)

COLLAPSIBLE POST ANCHOR SYSTEM ASSEMBLY



SECTION A-A



FRONT ELEVATION SECTION

SPECIFICATIONS

WALL THICKNESS: ¼" WALL THICKNESS.
BASE: GALVANIZED GROUND SLEEVE.
MATERIAL: STEEL.
BOLLARD COLOR: POWDER COAT RAL#1028 (MELON YELLOW)
ACCESSORIES: STAINLESS STEEL SHIMS, TOOLS, GREASE AND PAD LOCK ARE NOT PROVIDED.

NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. ALL DIMENSIONS ARE CONSIDERED TRUE AND REFLECT MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. CONTRACTOR TO PROVIDE MASTER COMBINATION LOCK MODEL NO. 175 D FOR EACH INSTALLED REMOVABLE PIPE BOLLARD.

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BOLLARD DETAILS

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
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CHECK JPP	CONTROL	SECTION	JOB	
	1047	03	079	

PERMANENT DOUBLE POST BOLLARD

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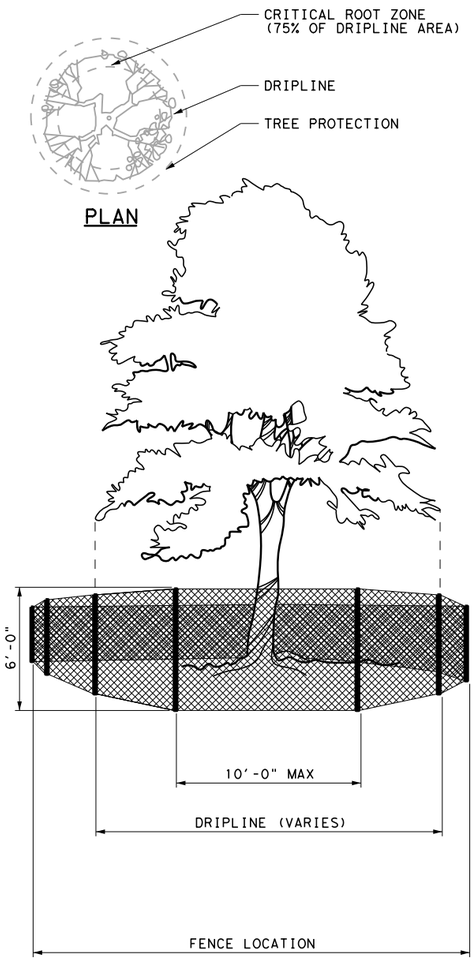

TREE PROTECTION DETAIL

STANDARD PRESERVATION NOTES FOR TREE AND NATURAL AREA PROTECTION

1. ALL TREES AND NATURAL AREAS SHOWN ON PLAN TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION WITH TEMPORARY FENCING AND OTHER MEASURES AS NEEDED WHICH MAY INCLUDE RETAINING WALLS, PRUNING OF LIMBS, ROOTS, ETC. AN ARBORIST SHALL INSPECT AND APPROVE ALL TREE AND ROOT PRUNING PRIOR TO COMMENCING WORK.
2. PROTECTIVE FENCES FOR TREE PROTECTION SHALL BE ERECTED AND MAINTAINED ACCORDING TO DIRECTION FROM ENGINEER.
3. PROTECTIVE FENCES SHALL BE INSTALLED PRIOR TO THE START OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING), AND SHALL BE MAINTAINED THROUGHOUT ALL PHASES OF THE CONSTRUCTION PROJECT.
4. EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE INSTALLED OR MAINTAINED IN A MANNER WHICH DOES NOT RESULT IN SOIL BUILD-UP WITHIN TREE DRIP LINES.
5. PROTECTIVE FENCES SHALL SURROUND THE TREES OR GROUP OF TREES, AND WILL BE LOCATED NO CLOSER THAN THE OUTERMOST LIMIT OF BRANCHES (DRIP LINE) PLUS AN ADDITIONAL 2'-0" AWAY FROM THE LIMITS OF DRIPLINE. FOR NATURAL AREAS, PROTECTIVE FENCES SHALL FOLLOW THE LIMIT OF CONSTRUCTION LINE, IN ORDER TO PREVENT THE FOLLOWING:
   - A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC OR STORAGE OF EQUIPMENT OR MATERIALS;
   - B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN 6 INCHES CUT OR FILL), OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY PARKS DEPARTMENT;
   - C. WOUNDS TO EXPOSED ROOTS, TRUNK OR LIMBS BY MECHANICAL EQUIPMENT;
   - D. OTHER ACTIVITIES DETRIMENTAL TO TREES SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING, AND FIRES.
6. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIP LINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   - A. WHERE THERE IS TO BE AN APPROVED GRADE CHANGE, IMPERMEABLE PAVING SURFACE, TREE WELL, OR OTHER SUCH SITE DEVELOPMENT, ERECT THE FENCE APPROXIMATELY 2 TO 4 FEET BEYOND THE AREA DISTURBED;
   - B. WHERE PERMEABLE PAVING IS TO BE INSTALLED WITHIN A TREE'S DRIP LINE, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA (PRIOR TO SITE GRADING SO THAT THIS AREA IS GRADED SEPARATELY BY HAND PRIOR TO PAVING INSTALLATION TO MINIMIZE ROOT DAMAGE);
   - C. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE TO ALLOW ROOT PRUNING IN THE WORK SPACE BETWEEN THE FENCE AND THE BUILDING, PRIOR TO DISTURBANCE. THE FENCE CAN BE ERECTED AT THE POINT OF ROOT PRUNING
   - D. WHERE THERE ARE SEVERE SPACE CONSTRAINTS DUE TO TRACT SIZE, OR OTHER SPECIAL REQUIREMENTS, CONTACT AN ARBORIST TO DISCUSS ALTERNATIVES.
   - E. ALL ROOT PRUNING AND CUT CHOULD BE CLEANLY DONE, NO TEARING OR RIPPED ROOTS WILL BE PERMITTED. ALL ROOT PRUNING SHALL BE SEALED WITH SPRAY TAR.

   SPECIAL NOTE: EXCEPTIONS ARE PERMITTED FOR AREAS OUTSIDE THE CRITICAL ROOT ZONE. NO DISTURBANCES ARE PERMITTED WITHIN THE CRITICAL ROOT ZONE (75% OF THE DRIPLINE AREA). FOR THE PROTECTION OF NATURAL AREAS, NO EXCEPTIONS TO INSTALLING FENCES AT THE LIMIT OF CONSTRUCTION LINE WILL BE PERMITTED, AND NO SILTING OF STOCK PILING OF MATERIAL OR DIRT IS ALLOWED AROUND TREES.
7. WHERE ANY OF THE ABOVE EXCEPTIONS RESULT IN A FENCE BEING CLOSER THAN 4 FEET TO A TREE TRUNK, PROTECT THE TRUNK WITH STRAPPED-ON PLANKING TO A HEIGHT OF 8 FT. IN ADDITION TO THE REDUCED FENCING PROVIDED.
8. TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER WHICH DOES NOT IMPACT TREES TO BE PRESERVED.
9. ANY ROOTS EXPOSED BY CONSTRUCTION ACTIVITY SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOP SOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT BACKFILLED WITHIN 2 DAYS, COVER THEM WITH ORGANIC MATERIAL IN A MANNER WHICH REDUCES SOIL TEMPERATURE AND MINIMIZES WATER LOSS DUE TO EVAPORATION.
10. TRENCHING REQUIRED FOR THE INSTALLATION OF IRRIGATION SHALL BE PLACED AS FAR FROM EXISTING TREE TRUNKS AS POSSIBLE.
11. NO LANDSCAPE TOPSOIL DRESSING GREATER THAN 2 INCHES SHALL BE PERMITTED WITHIN THE DRIP LINE OF TREES. NO SOIL OR MULCH IS PERMITTED ON THE ROOT FLARE OF ANY TREE.
12. LIMBING & PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, TRAFFIC AND EQUIPMENT SHALL TAKE PLACE BEFORE DAMAGE OCCURS.
13. ALL FINISHED PRUNING SHALL BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY (REFERENCE THE NATIONAL ARBORIST ASSOCIATION PRUNING STANDARDS FOR SHADE TREES). AN ARBORIST SHALL BE PRESENT FOR ALL ROOT PRUNING WORK. PRUNING (TREE TRIMMING) OF PROTECTED TREE SHALL BE CONSIDERED SUBSIDIARY TO ITEM 100 PREPARING RIGHT OF WAY.

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TREE PROTECTION DETAILS

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

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
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GRAPHICS: CAN	TEXAS	DAL	DALLAS	67
CHECK: JPP	CONTROL	SECTION	JOB	
	1047	03	079	

DATE:
FILE:

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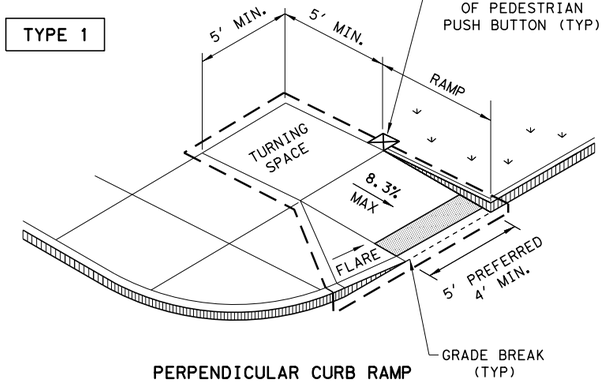
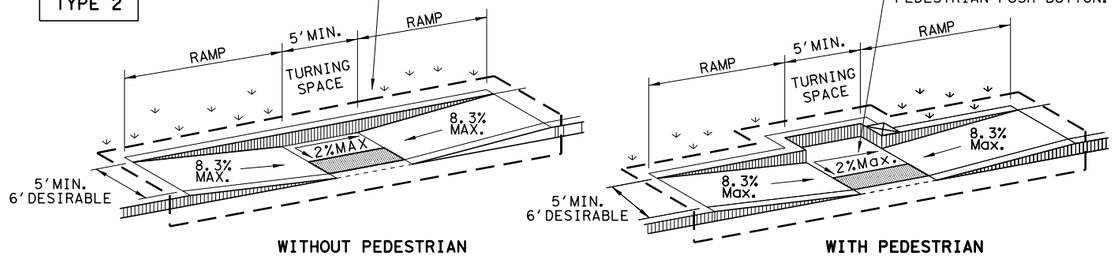


PERPENDICULAR CURB RAMP

TYPE 2

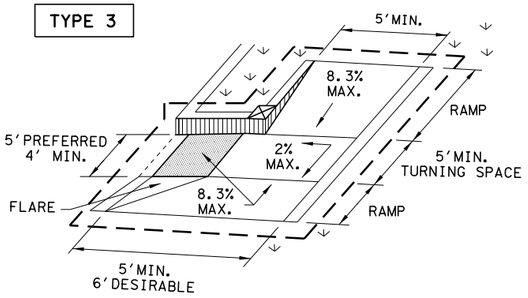


WITHOUT PEDESTRIAN PUSH BUTTON

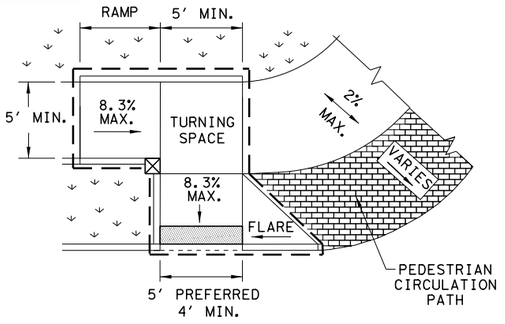
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

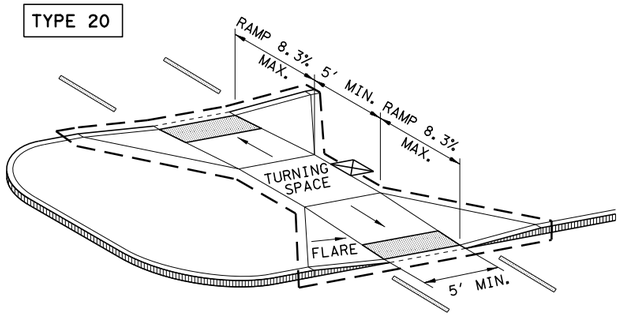


TYPE 6



COMBINATION CURB RAMPS

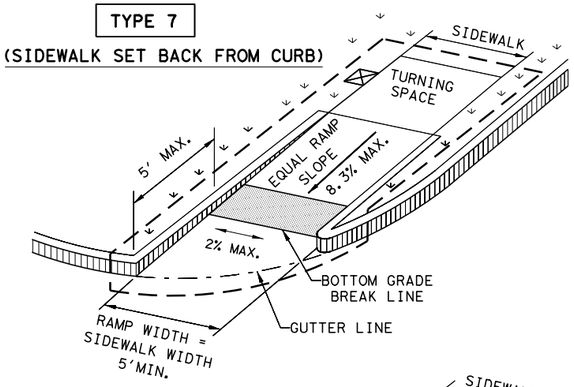
TYPE 20



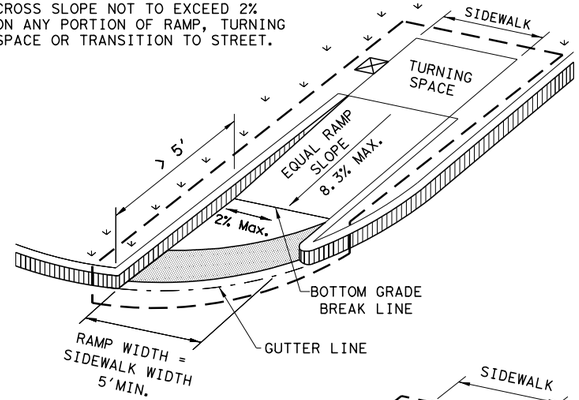
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

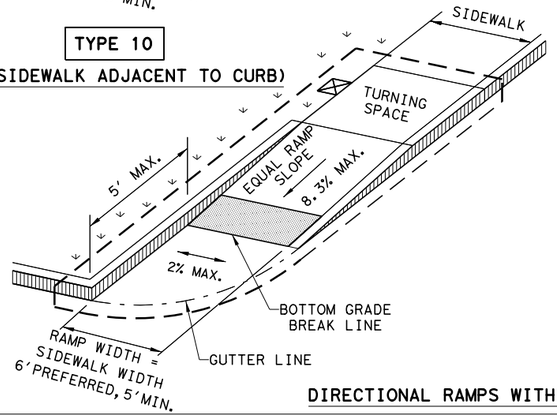


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

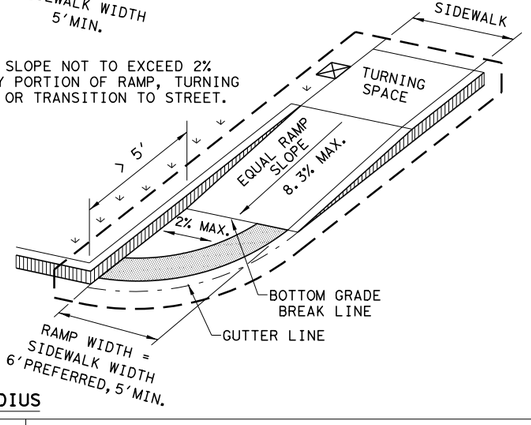


TYPE 10

(SIDEWALK ADJACENT TO CURB)

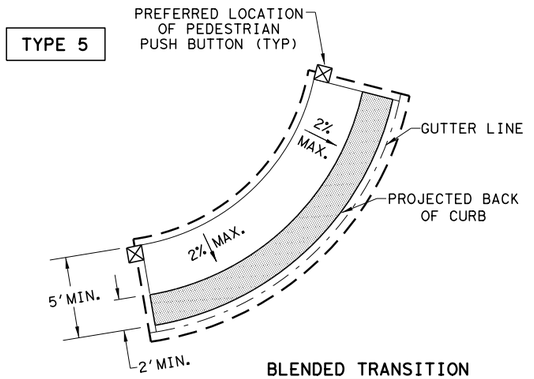


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

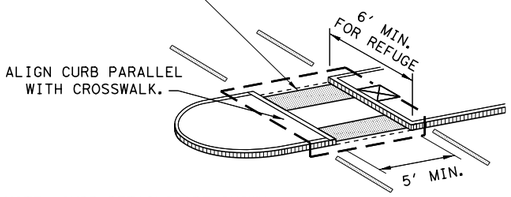
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

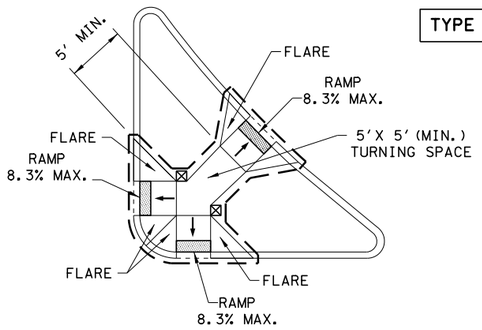
TYPE 21

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



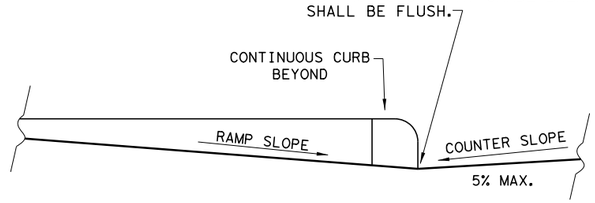
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		68

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

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

DETECTABLE WARNING MATERIAL

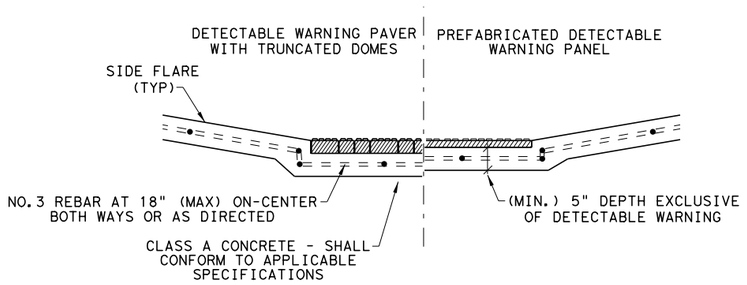
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

DETECTABLE WARNING PAVERS (IF USED)

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

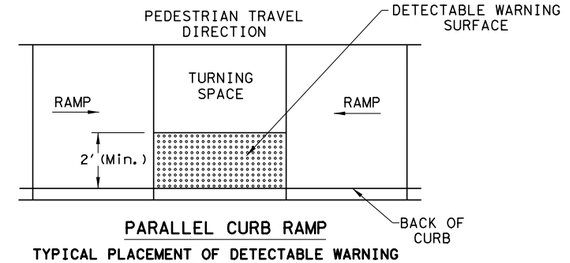
SIDEWALKS

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



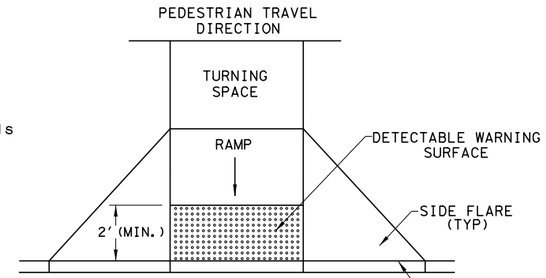
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



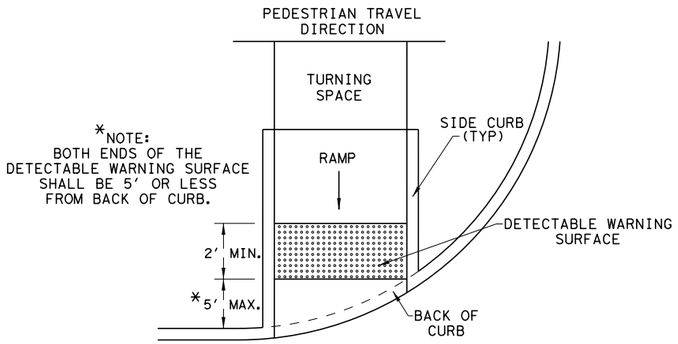
PARALLEL CURB RAMP

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



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation

Design Division Standard

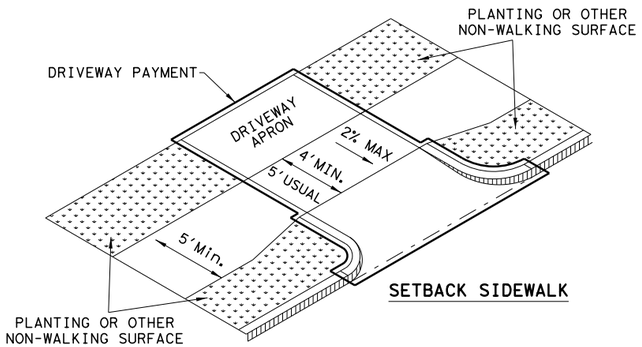
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

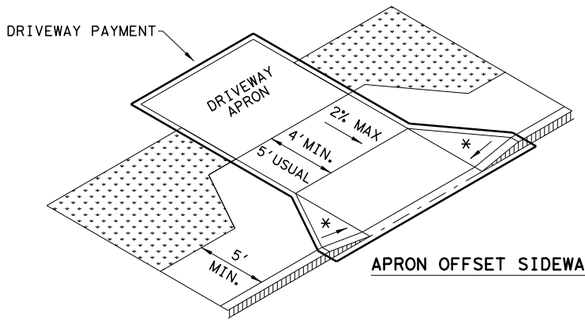
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	1047	03	079		FM1382
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	DAL	DALLAS			69

DATE:
FILE:

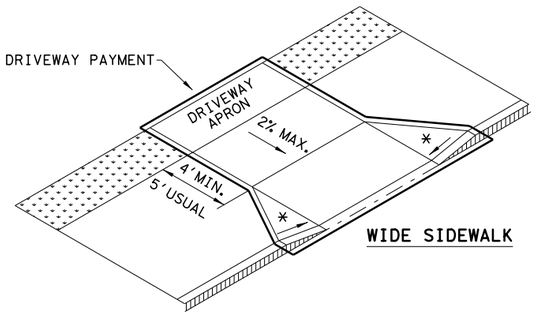
SIDEWALK TREATMENT AT DRIVEWAYS



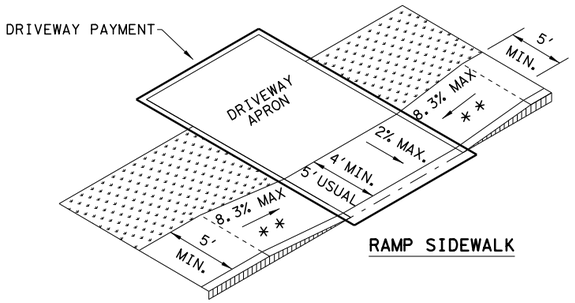
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

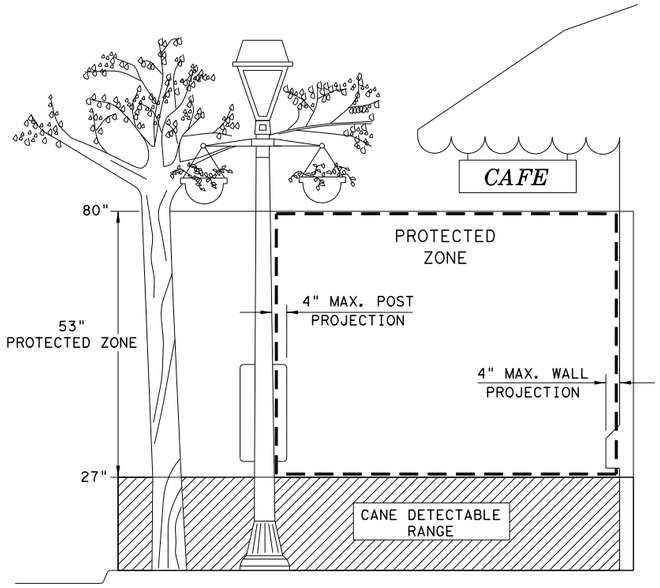


RAMP SIDEWALK

NOTES:

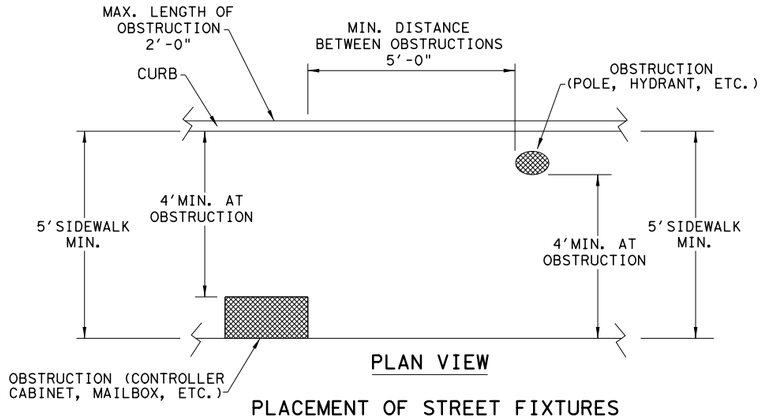
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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



PROTECTED ZONE

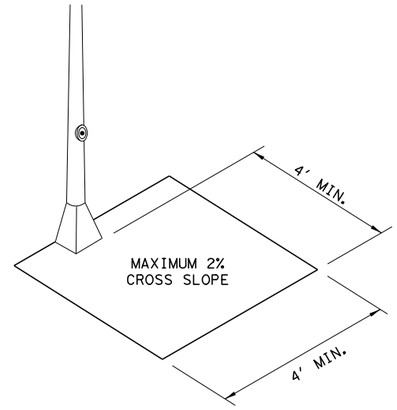
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



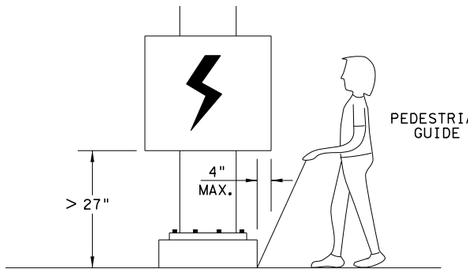
PLAN VIEW

PLACEMENT OF STREET FIXTURES

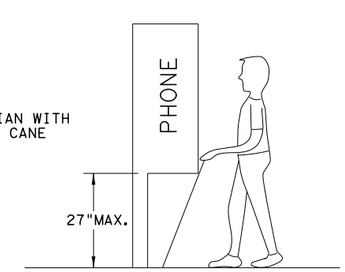
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

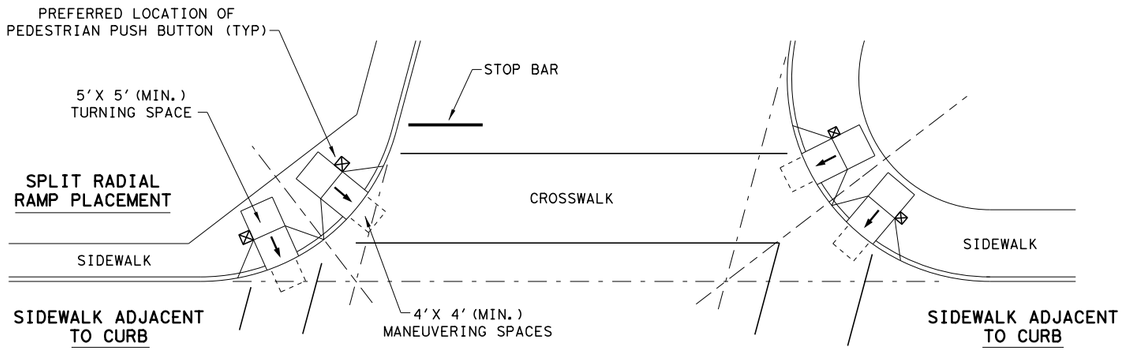
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY	
REVISIONS	1047	03	079		FM1382	
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.	
	DAL	DALLAS			70	

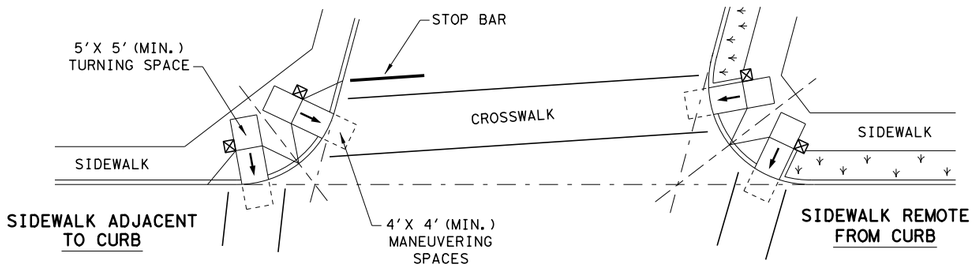
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

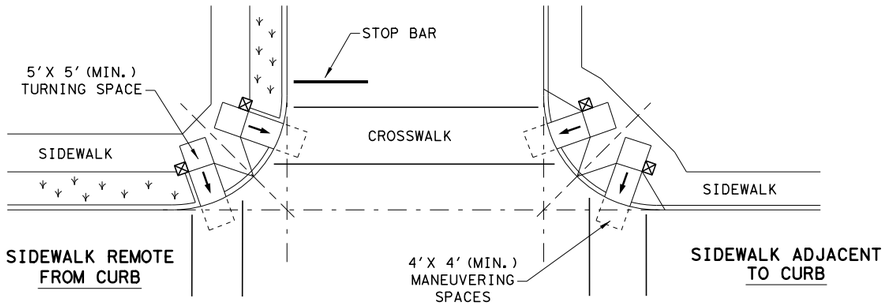
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



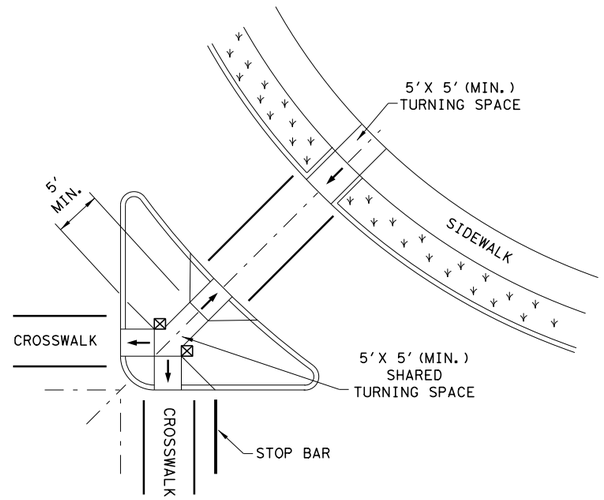
SKEWED INTERSECTION WITH "LARGE" RADIUS



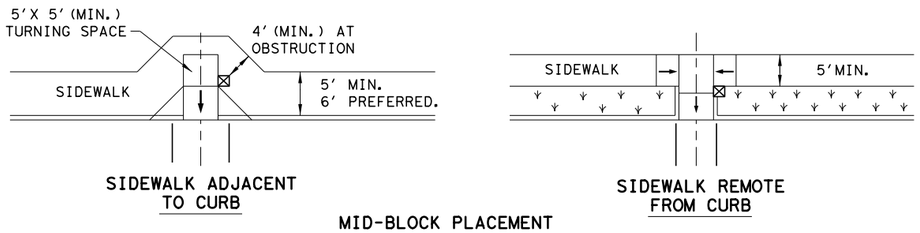
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		71

TIME: 5:50:36 PM
DATE: 7/19/2022

595 585 575 565 555 545 535 525 515 505

545 535 525 515 505 495 485 475 465 455

525 515 505 495 485 475 465 455 445

510 500 490 480 470 460 450 440 430

Test Hole No. B-1
El 567.5

5(6) 3(6)
2(6) 1(6)
3(6) 3(6)
15(6) 19(6)
5(6) 5(6)

CLAY, fat with sand, very soft to very stiff, moist, light brown to liight gray, trace organics and gravel

CLAY, fat, stiff to very stiff, moist, dark gray to gray

B/H = 536.5

Test Hole No. B-2
El 517.17

3(6) 2(6)
4(6) 4(6)
11(6) 25(6)

CLAY, fat, soft to stiff, moist, brown to light brown, trace organics

B/H = 496.17

Test Hole No. B-3
El 497.7

2(6) 1(6)
3(6) 2(6)
50(5) 50(4.5)
50(6) 50(5)

CLAY, fat, with sand, soft to firm, moist, brown to light brown, trace organics

CLAY, fat, firm, moist, brown

SHALE, soft, dark gray, laminated, very wearhered

B/H = 476.7

Test Hole No. B-4
El 483.07

8(6) 6(6)
8(6) 7(6)
4(6) 5(6)
4(6) 6(6)

CLAY, fat, soft to very stiff, moist, light brown to dark brown, trace organics

B/H = 462.07

0 10 20
SCALE IN FEET

NOTES:
1. SEE "PROJECT LAYOUT" SHEET FOR BORING LOCATION INFORMATION.

STATE OF TEXAS
DIPENDRA TIMALSINA SHARMA
136305
LICENSED
PROFESSIONAL ENGINEER
7/19/2022

HVJ ASSOCIATES
HVJ North Texas - Chelliah Consultants, Inc.
8701 John Carpenter Freeway
Suite 250
Dallas, Texas 75247
Firm Registration: F-17942

FM 1382-SIDEPATH

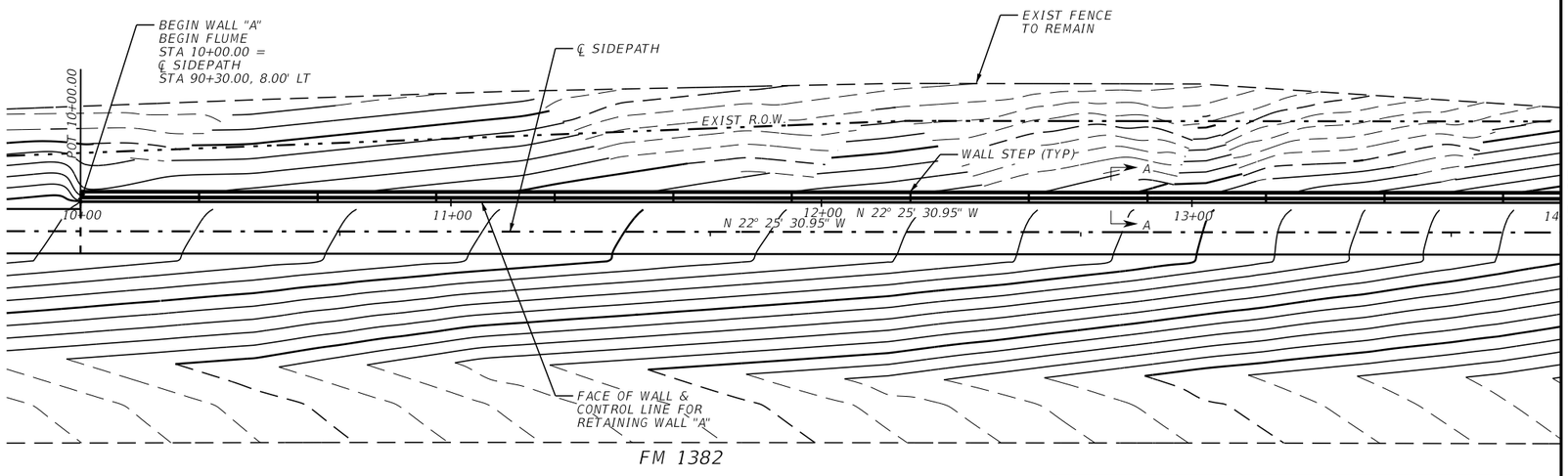
WALL BORING LOGS

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
JPP	TEXAS	DAL	DALLAS	72
GRAPHICS	CONTROL	SECTION	JOB	
BDG	1047	03	079	
CHECK				
JPP				

FILE: \\USLAS0-APP385\ICS*workdir\163140\689509*1\1382BOR01.sht

TIME: 3:14:56 PM
DATE: 8/16/2023



MATCH LINE STA 14+00

ESTIMATED QUANTITIES			
423 6015	RETAINING WALL (SPECIAL)	SF	2,642
432 6044	RIPRAP (CONC)(FLUME)	CY	31

EXIST WATERLINE
(TO REMAIN)

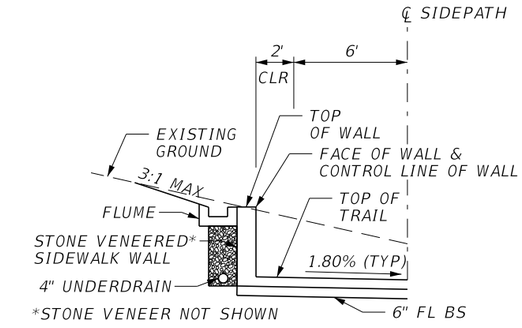
PLAN

0 20 40 (H)
0 5 10 (V)

N

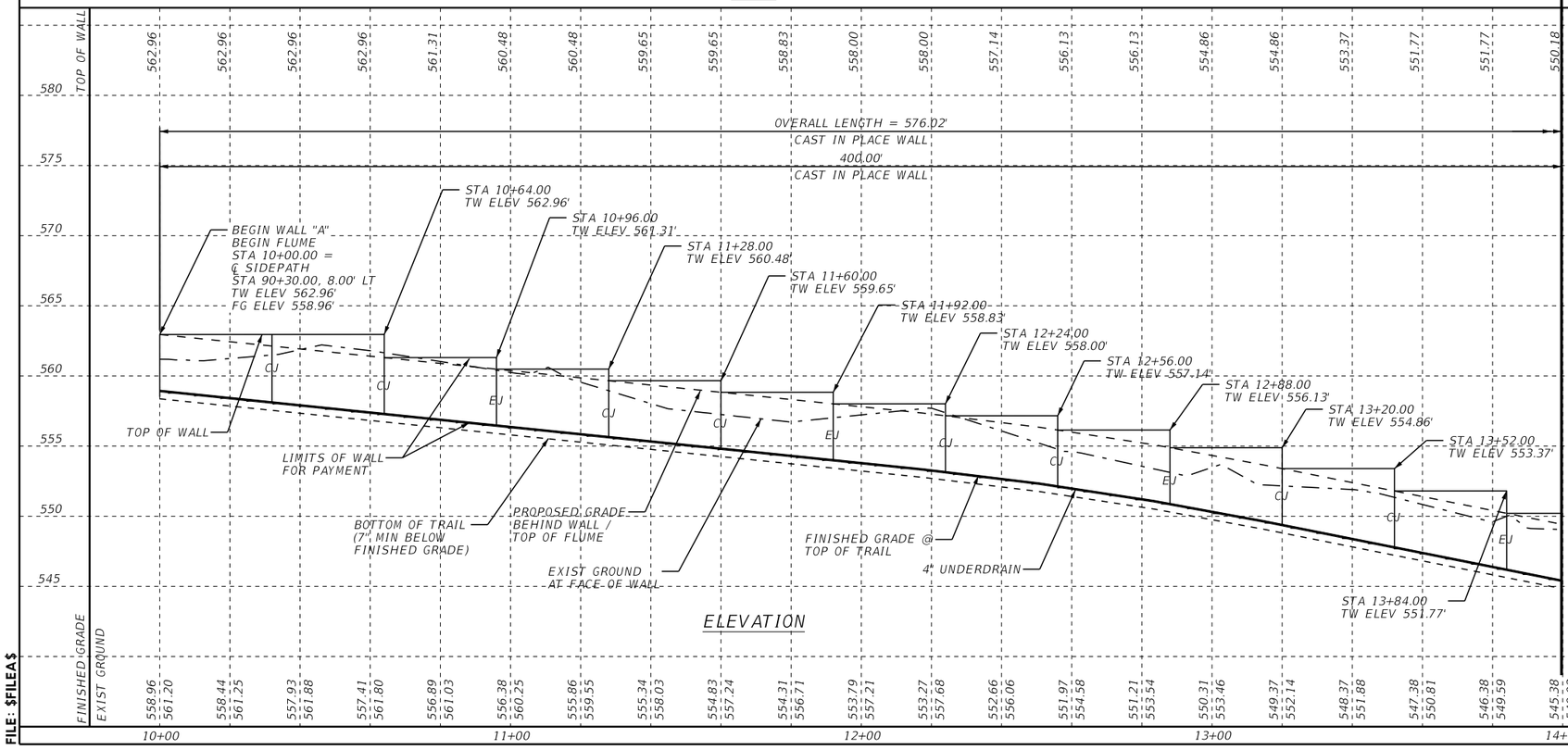
NOTES:

1. REFERENCE "SIDEPATH DETAILS" SHEETS FOR WALL SECTIONS.
2. TOP OF WALL IS TO BE AT TOP OF CONCRETE CORE.
3. WALL EXPANSION AND CONTROL JOINTS SHALL MATCH TRAIL JOINTING.



SECTION A-A

STA 10+00.00 TO STA 14+00.00
NTS



ELEVATION

Jacobs Engineering Group
STATE OF TEXAS
CARLOS A. NEGRON
89418
LICENSED
PROFESSIONAL ENGINEER
F-2966

8/16/2023

Carlos A. Negron

Jacobs
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DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

FM 1382-SIDEPATH

RETAINING WALL "A
PLAN & ELEVATION

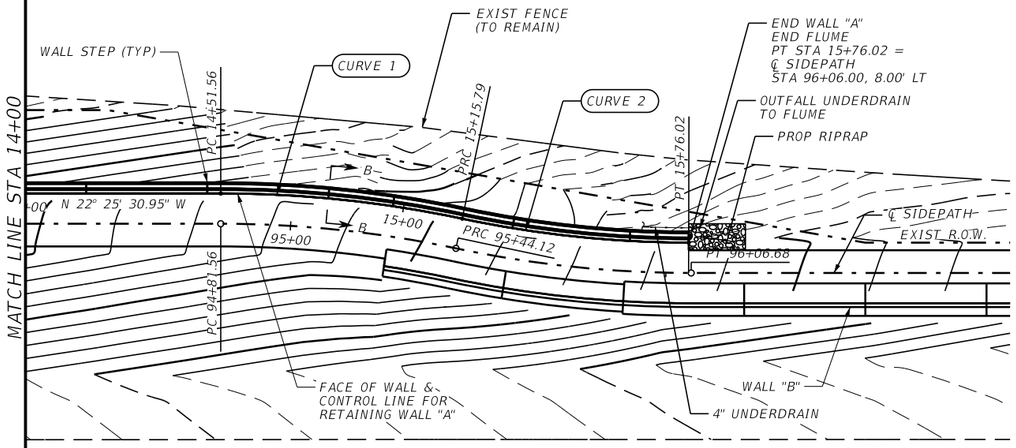
SCALE: 1"=40' (H) 1"=10' (V) SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
JPP	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	73
PAA				
CHECK	1047	03	079	
BSC				

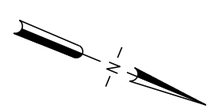
FILE: $FILEA$

TIME: 12:55:36 PM
DATE: 8/16/2023

CURVE 1		CURVE 2	
P.I. Station	14+83.79	P.I. Station	15+46.01
Delta =	11° 56' 53.49" (RT)	Delta =	11° 49' 07.52" (LT)
Degree =	18° 36' 09.09"	Degree =	19° 37' 18.63"
Tangent =	32.23'	Tangent =	30.22'
Length =	64.23'	Length =	60.23'
Radius =	308.00'	Radius =	292.00'
P.C. Station	14+51.56	P.R.C. Station	15+15.79
P.R.C. Station	15+15.79	P.T. Station	15+76.02



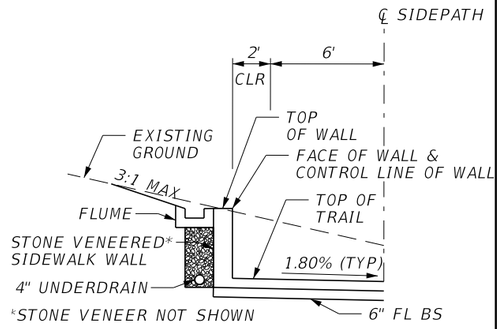
PLAN



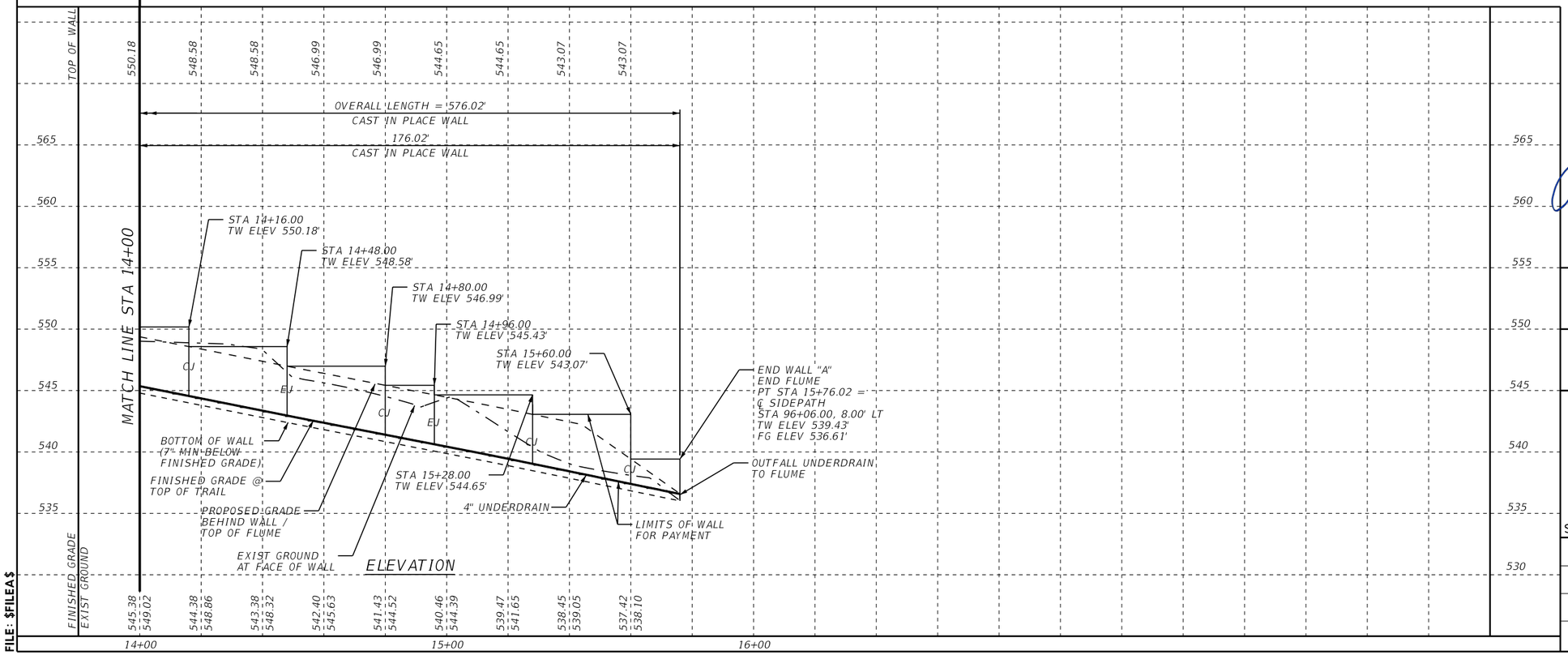
0 20 40 (H)
0 5 10 (V)

NOTES:

1. REFERENCE "SIDEPATH DETAILS" SHEETS FOR WALL SECTIONS.
2. TOP OF WALL IS TO BE AT TOP OF CONCRETE CORE.
3. WALL EXPANSION AND CONTROL JOINTS SHALL MATCH TRAIL JOINTING.



SECTION B-B
STA 14+00.00 TO STA 15+76.02
NTS



ELEVATION

FILE: $FILEA$

Jacobs Engineering Group
STATE OF TEXAS
CARLOS A. NEGRON
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PROFESSIONAL ENGINEER
F-2966
8/16/2023

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Firm Registration: F-2966

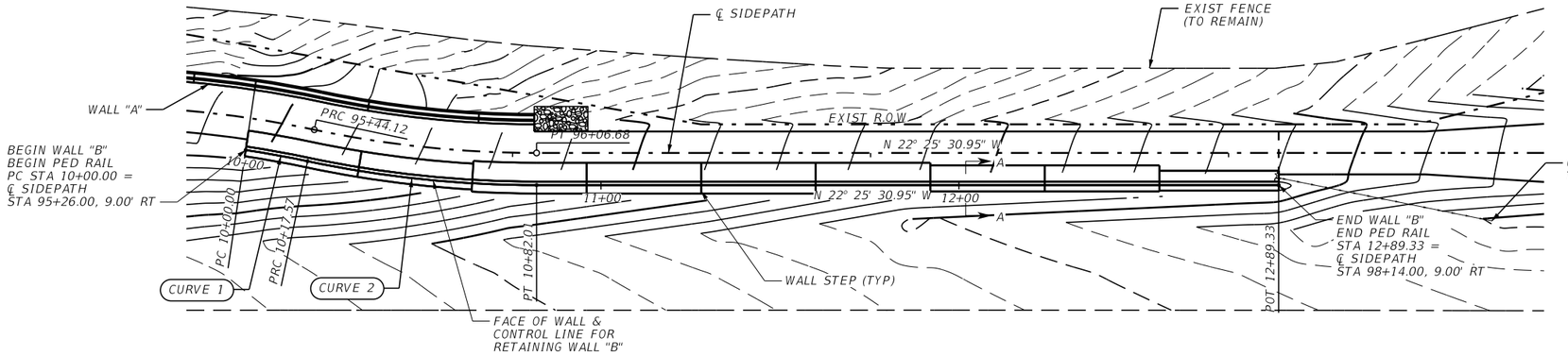
FM 1382-SIDEPATH

RETAINING WALL "A"
PLAN & ELEVATION

SCALE: 1"=40' (H) 1"=10' (V) SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
JPP	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	74
PAA				
CHECK	1047	03	079	
BSC				

TIME: 8:22:17 AM
DATE: 8/23/2023



FM 1382

<u>CURVE 1</u>

P.I.	Station	10+08.79
Delta	=	3° 27' 36.43" (RT)
Degree	=	19° 41' 21.38"
Tangent	=	8.7895
Length	=	17.5736
Radius	=	291.0000
P.C.	Station	10+00.00
P.R.C.	Station	10+17.57

<u>CURVE 2</u>

P.I.	Station	10+49.91
Delta	=	11° 56' 53.49" (LT)
Degree	=	18° 32' 32.36"
Tangent	=	32.3360
Length	=	64.4374
Radius	=	309.0000
P.R.C.	Station	10+17.57
P.T.	Station	10+82.01

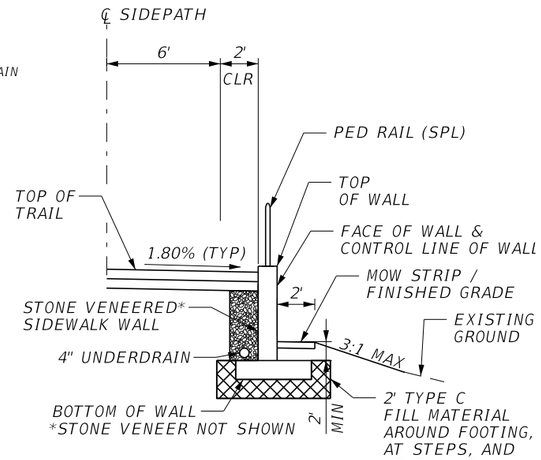
<u>PLAN</u>

ESTIMATED QUANTITIES			
110 6001	EXCAVATIONN (ROADWAY)	CY	322
132 6006	EMBANKMENT (FINAL) (DENS CONT) (TY C)	CY	337
403 6001	TEMPORARY SPL SHORING	SF	1,002
423 6008	RETAINING WALL (CAST-IN-PLACE)	SF	2,180
432 6045	RIPRAP (MOW STRIP) (4 IN)	CY	8
450 6082	RAIL (PEDESTRIAN) (SPL)	LF	289.4
481 6011	PIPE (PVC) (SCH 40) (4 IN)	LF	60

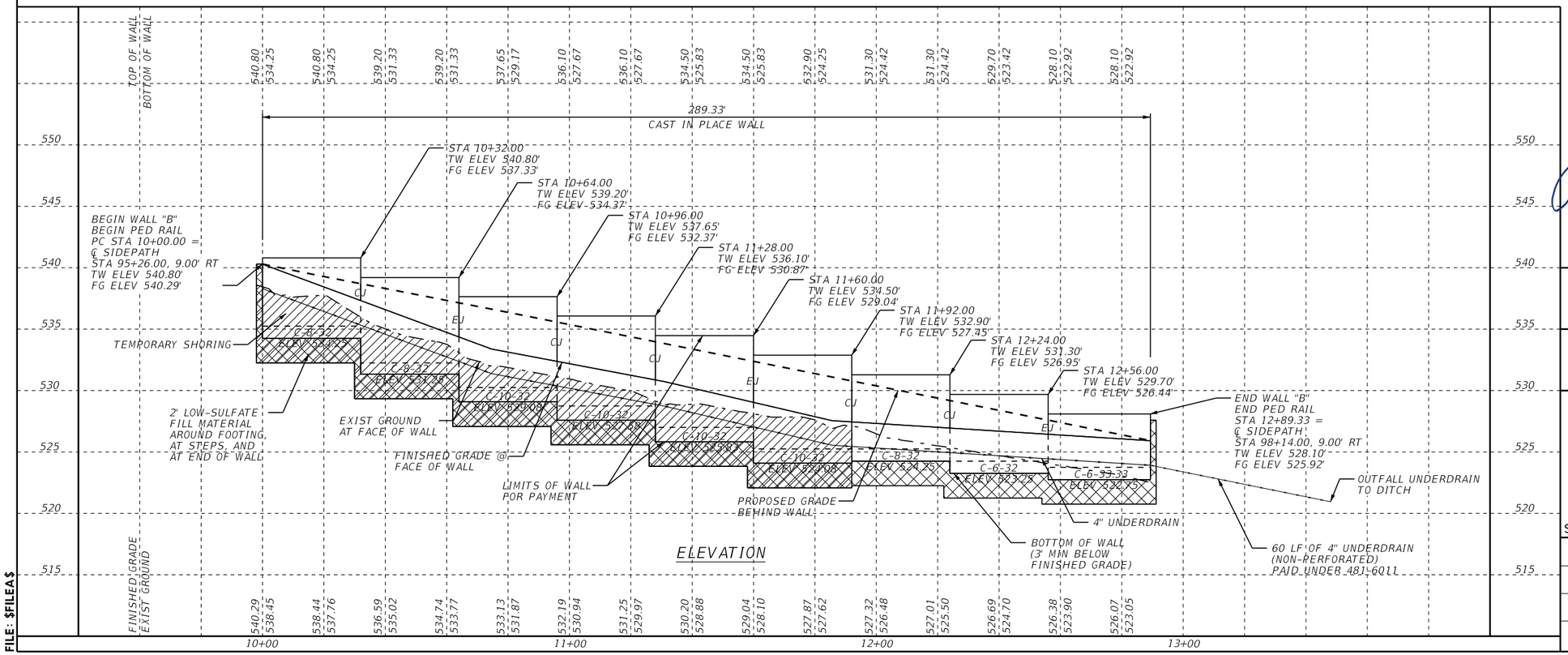
0 20 40 (H)
0 5 10 (V)

<u>NOTES:</u>

1. REFERENCE "SIDEPATH DETAILS" SHEETS FOR WALL SECTIONS.
2. TOP OF WALL IS TO BE AT TOP OF CONCRETE CORE.
3. WALL EXPANSION AND CONTROL JOINTS SHALL MATCH TRAIL JOINTING.



<u>SECTION A-A</u>
STA 10+00.00 TO STA 12+89.33
NTS



<u>ELEVATION</u>

Jacobs Engineering Group
STATE OF TEXAS
CARLOS A. NEGRON
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LICENSED
PROFESSIONAL ENGINEER
F-2966
8/23/2023

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Firm Registration: F-2966

FM 1382-SIDEPATH

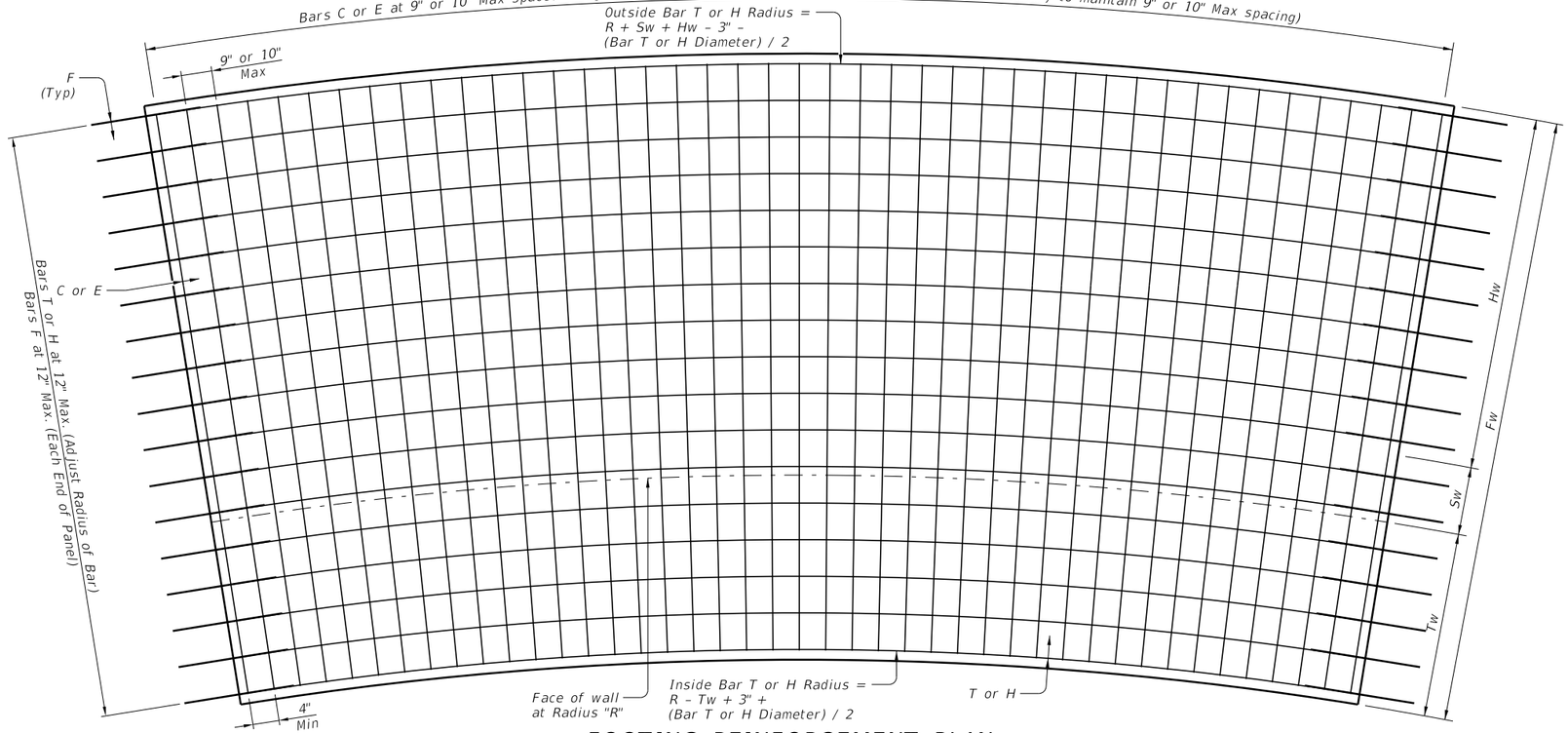
RETAINING WALL "B"
PLAN & ELEVATION

SCALE: 1"=40' (H) 1"=10' (V) SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
JPP	TEXAS	DAL	DALLAS	75
GRAPHICS	CONTROL	SECTION	JOB	
PAA	1047	03	079	
CHECK				
BSC				

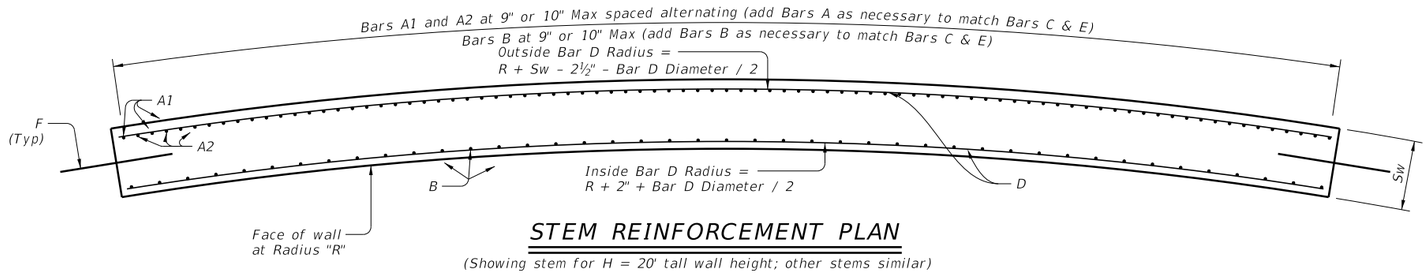
FILE: $FILEA$

TIME: 3:58:38 PM
DATE: 8/24/2023



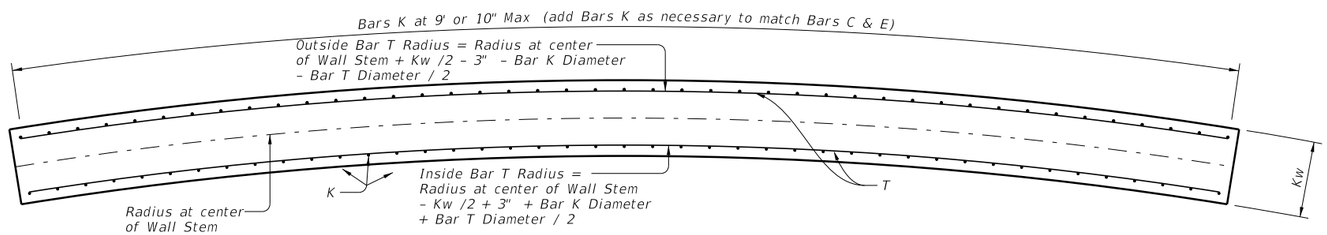
FOOTING REINFORCEMENT PLAN

(Showing footing for H = 20' tall wall height; other footings similar)



STEM REINFORCEMENT PLAN

(Showing stem for H = 20' tall wall height; other stems similar)



SHEAR KEY REINFORCEMENT PLAN

(Showing shear key for H = 20' tall wall height; other shear keys similar)

GENERAL NOTES:

See Spread Footing Wall standards RW(SFA), RW(SFB), or RW(SFC) for wall section, bar details, bar sizes, and notes not shown.

See Retaining Wall Miscellaneous Details (RW(SF)) standard for miscellaneous details and notes not shown.

Details shown on this sheet are for illustration of reinforcing layout of horizontal curved cast–in–place walls. Prior to ordering materials, the Contractor shall submit shop drawings of reinforcing placement layout for each wall panel in a horizontal curvature for review and approval to the Engineer. These shop drawings should include a bill of materials for each set of bars being manufactured. Additional bars required will be considered subsidiary to the retaining wall pay item.

If the horizontal curvature is opposite of what is shown on this sheet, reverse the addition (+) and subtraction (–) signs in the Bar radius equations. In addition, reverse the name of Inside and Outside Bars, Inside being the bars with the smaller radius and Outside being the bars with the higher radius.

Jacobs Engineering Group
STATE OF TEXAS
CARLOS A. NEGRON
89418
LICENSED PROFESSIONAL ENGINEER
F-2966

8/24/2023

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DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

FM 1382–SIDEPATH

SPREAD FOOTING RETAINING WALL REINFORCEMENT LAYOUT

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK MMK	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS CAN	TEXAS	DAL	DALLAS	76
CHECK VDP	CONTROL	SECTION	JOB	
	1047	03	079	

FILE: $FILEA$

DISCLAIMER:
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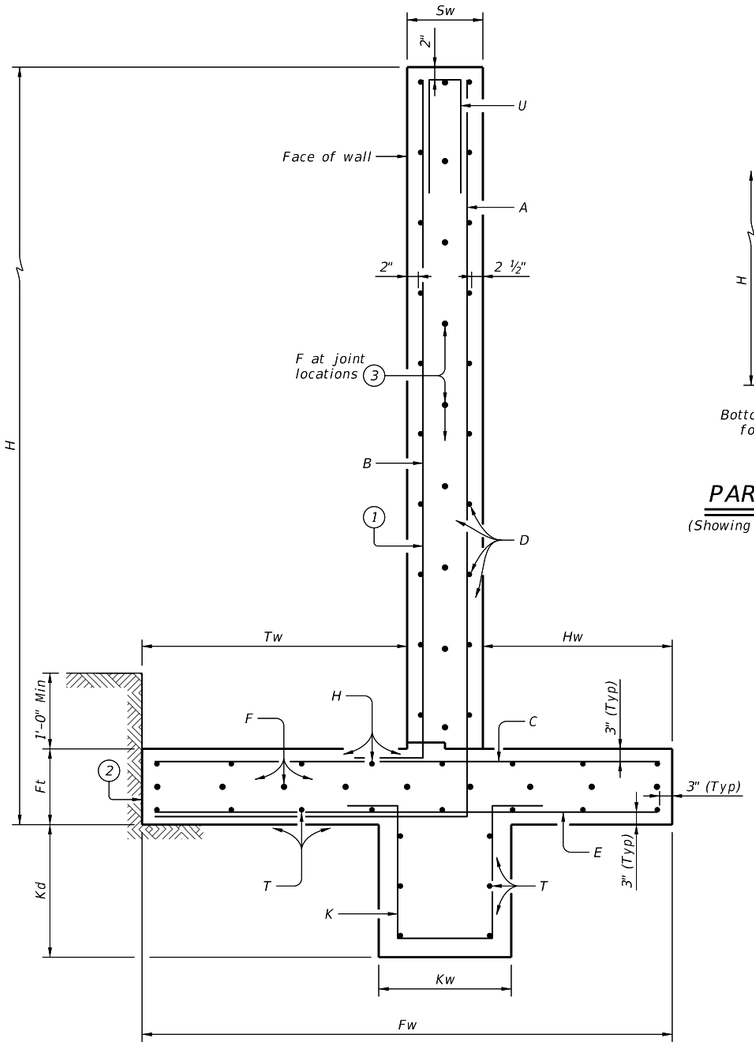
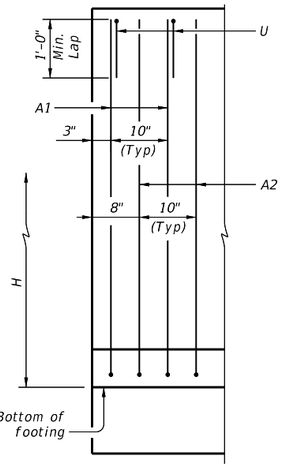
DATE:
FILE:

Wall Height "H"	PROPERTIES								REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)																																				QUANTITY FOR ONE 32' PANEL		Wall Height "H"
	WALL DIMENSIONS							MAX SOIL PRESS	Bars A1					Bars A2					Bars B					Bars C					Bars E					Bars K					D (#5) at 12" Max.		Dowel F at 12" Max.		H (#5) at 12" Max.		T (#5) at 12" Max.		U ~ 39 #5 at 10" Max				
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	Kd	T/SF	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Weight	No.	Weight	No.	Weight	No.	Weight	Length	Weight	Conc (CY)	REINF (LB)	(Ft)
2	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.218	39	#4	10"	3'-2"	83	39	#4	10"	3'-2"	83	39	#4	10"	1'-11"	50	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	4	132	8	65	6	198	6	198	2'-0"	82	8.3	1227	2
4	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.321	39	#4	10"	5'-2"	135	39	#4	10"	5'-2"	135	39	#4	10"	3'-11"	103	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	8	263	10	81	6	198	6	198	6'-0"	245	10.7	1694	4
6	5'-6"	1'-6"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.395	39	#4	10"	7'-8"	200	39	#4	10"	7'-8"	200	39	#4	10"	5'-11"	155	39	#4	10"	5'-0"	131	39	#4	10"	5'-0"	131	39	#4	10"	3'-10"	100	12	395	12	97	6	198	6	198	8'-5"	343	13.7	2148	6
8	7'-4"	1'-9"	1'-1"	4'-6"	1'-0"	1'-0"	1'-0"	0.500	39	#4	10"	10'-0"	261	39	#4	10"	10'-0"	261	39	#4	10"	7'-11"	207	39	#4	10"	6'-10"	179	39	#4	10"	6'-10"	179	39	#4	10"	3'-10"	100	16	526	16	129	8	263	8	263	8'-6"	346	18.9	2714	8
10	8'-8"	2'-4"	1'-1"	5'-3"	1'-2"	1'-6"	1'-6"	0.590	39	#5	10"	12'-7"	512	39	#4	10"	12'-7"	328	39	#4	10"	9'-9"	255	39	#5	10"	8'-2"	333	39	#4	10"	8'-2"	213	39	#4	10"	5'-4"	139	20	658	20	161	10	329	10	329	8'-6"	346	26.0	3603	10
12	10'-4"	2'-11"	1'-2"	6'-3"	1'-4"	1'-9"	1'-9"	0.684	39	#5	10"	15'-3"	621	39	#4	10"	15'-3"	398	39	#4	10"	11'-7"	302	39	#5	10"	9'-10"	400	39	#4	10"	9'-10"	257	39	#4	10"	6'-1"	159	24	789	23	185	11	362	11	362	8'-7"	350	34.8	4185	12
14	11'-8"	3'-6"	1'-4"	6'-10"	1'-7"	2'-0"	2'-0"	0.769	39	#5	10"	18'-0"	733	39	#4	10"	18'-0"	469	39	#4	10"	13'-4"	348	39	#5	10"	11'-2"	455	39	#4	10"	11'-2"	291	39	#4	10"	6'-10"	179	28	920	27	217	13	428	13	428	8'-9"	356	46.3	4824	14
16	13'-1"	4'-0"	1'-6"	7'-7"	1'-9"	2'-0"	2'-0"	0.853	39	#5	10"	20'-8"	841	39	#4	10"	20'-8"	841	39	#4	10"	15'-2"	396	39	#6	10"	12'-7"	738	39	#4	10"	12'-7"	329	39	#4	10"	6'-10"	179	32	1052	30	241	14	460	14	460	8'-11"	363	57.3	5900	16
18	14'-7"	4'-6"	1'-8"	8'-5"	1'-9"	2'-0"	2'-0"	0.937	39	#6	10"	23'-4"	1367	39	#5	10"	23'-4"	950	39	#4	10"	17'-2"	448	39	#7	10"	14'-1"	1124	39	#4	10"	14'-1"	368	39	#4	10"	6'-10"	179	36	1183	34	273	16	526	16	526	9'-1"	370	67.1	7314	18
20	16'-5"	5'-0"	1'-10"	9'-7"	2'-0"	2'-0"	2'-0"	1.039	39	#6	10"	26'-0"	1524	39	#6	10"	26'-0"	1524	39	#4	10"	18'-11"	493	39	#7	10"	17'-11"	1429	39	#4	10"	17'-11"	467	39	#4	10"	6'-10"	179	38	1249	36	289	17	559	17	559	9'-3"	377	82.8	8649	20

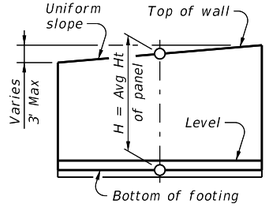


SECTION

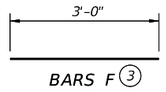


PARTIAL WALL ELEVATION

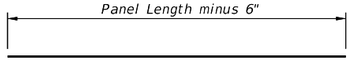
(Showing vertical reinforcing pattern in back face.)



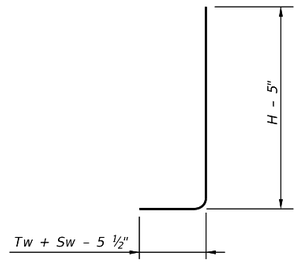
H DEFINITION



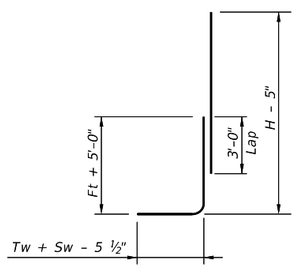
BARS F (3)



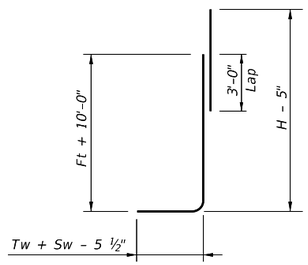
BARS D, H, and T



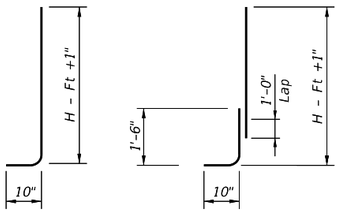
BARS A1 & A2



OPTIONAL BARS A1 (4)

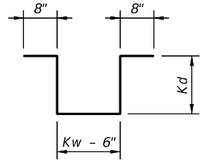


OPTIONAL BARS A2 (4)

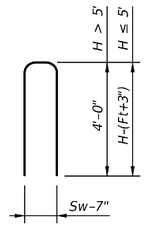


BARS B

OPTIONAL BARS B (4)



BARS K



BARS U

(1) Place vertical bars inside of horizontal bars (Typical both faces).

(2) Place footing toe against undisturbed soil.

(3) See Retaining Wall Miscellaneous Details (RW(SF)) standard for size.

(4) Optional bars splices not included in above table.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.

See Retaining Wall Miscellaneous Details (RW(SF)) standard for details and notes not shown.

These details provide designs for wall heights of 2 to 20 feet. For heights not shown, round up "H" to determine wall dimensions and reinforcing. (For example, a 9-foot high wall would use the 10-foot high dimensions and reinforcing.)

Quantities are based on "H" being average height of panel.

Retaining walls are designed to be coded as follows on Retaining Wall Layout Sheets:

C - 15 - 32
- 32 — Panel length ~ 32 ft. is standard; 28 ft. requires special quantities.
- 15 — Average height (H) of panel.
- C — Design A = No surcharge or slope above wall.
  Design B = No surcharge; slopes to 3:1.
  Design C = Traffic surcharge; no slope above wall.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

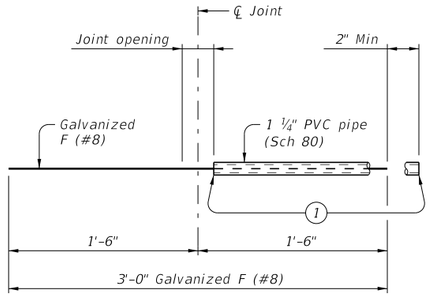
Bridge Division Standard

SPREAD FOOTING RETAINING WALL

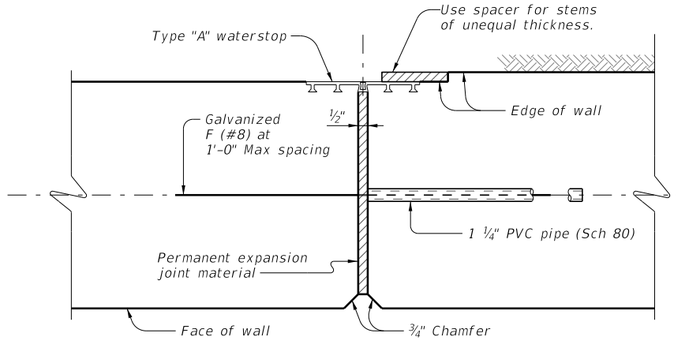
RW(SFC)

FILE: RW-SFC-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
8-22: Constructability update.	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		77

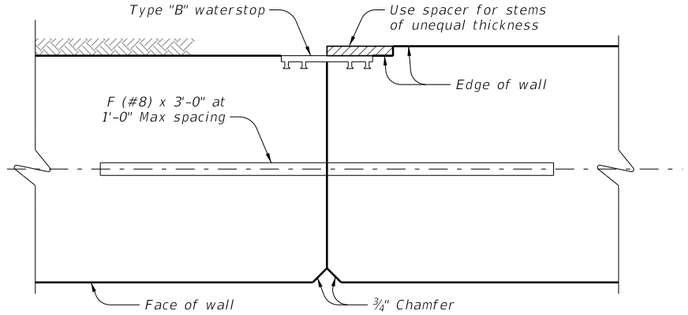
DATE:
FILE:



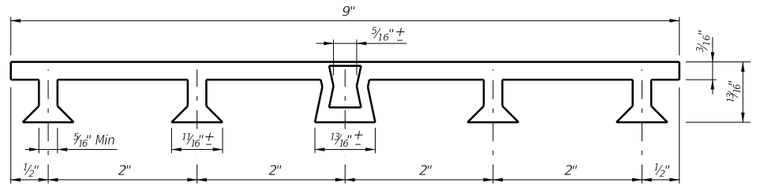
BAR F (#8) ASSEMBLY DETAIL



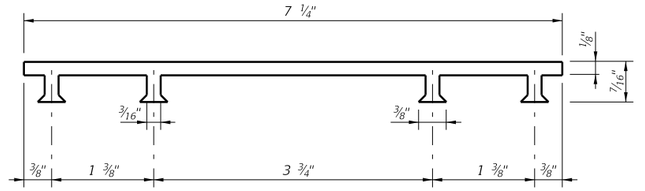
EXPANSION JOINT



CONSTRUCTION JOINT

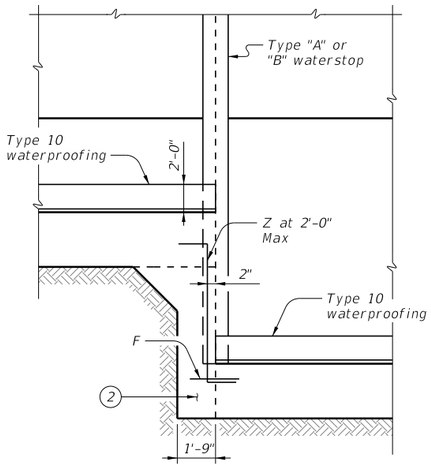


PVC WATERSTOP TYPE "A"

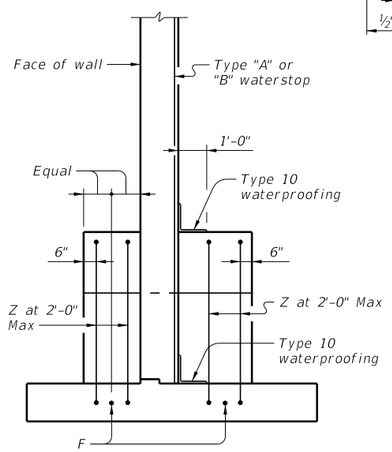


PVC WATERSTOP TYPE "B"

Note: Dimensions and shapes may vary slightly depending on manufacturer.

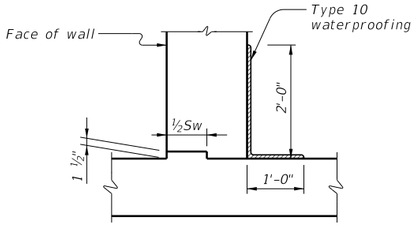


PARTIAL ELEVATION

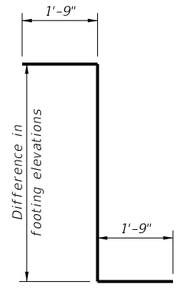


PARTIAL SECTION

SHOWING WATERSTOP AT FOOTING ELEVATION TRANSITION

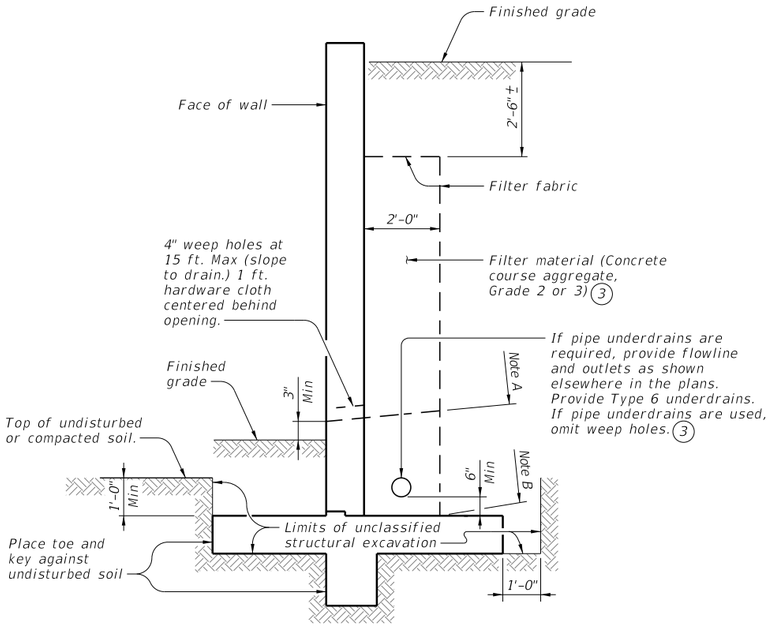


JOINT AND WATERSTOP DETAILS



BARS Z (#5)

(Omit Bars Z when difference in top of footing elevations is less than 2 ft).



DRAINAGE DETAILS AND EXCAVATION DIAGRAM

Note A: Stop coarse aggregate at this level when weep holes are used.

Note B: Use coarse aggregate to here when underdrains are used.

(1) Tape ends of 1 ¼" PVC Schedule 80 to prevent concrete or mortar from seeping in.

(2) Class C unreinforced concrete when difference in top of footing elevations is less than 2 feet. Omit when Dowel Bars F can be placed between adjacent footings with 4-inch cover top and bottom. Footing elevation difference not to exceed 4 feet.

(3) Underdrain pipe to be in accordance with Item 556, "Pipe Underdrains."

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.

The undisturbed or compacted soil depth in front of walls must not measure less than Kd + Ft + 1 foot as measured upwards from bottom of key.

Retaining walls are detailed to be placed on grades up to 10% with level footing, with no changes in reinforcing steel. Steeper grades can be accommodated by shortening Bars A and Bars B and increasing the length of legs of Bars U by the same amount. No change in quantities will be required.

Retaining walls may be placed on horizontal curves by adjusting lengths of Bars T and Bars H in the footing. Minor revisions to concrete quantities may be required as a result.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

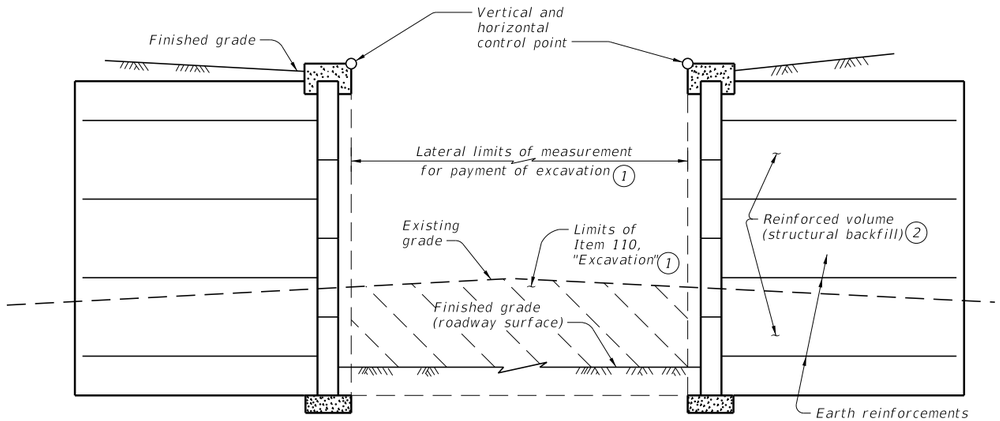
Bridge Division Standard

SPREAD FOOTING RETAINING WALL MISCELLANEOUS DETAILS

RW(SF)

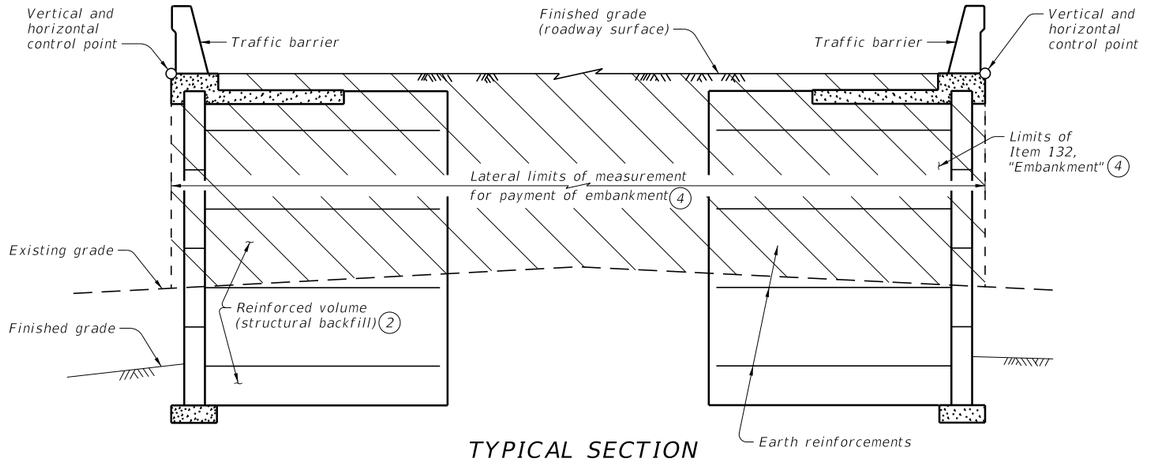
FILE: RW-SF-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
8-22: Updated underdrain requirements.	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		78

DATE:
FILE:



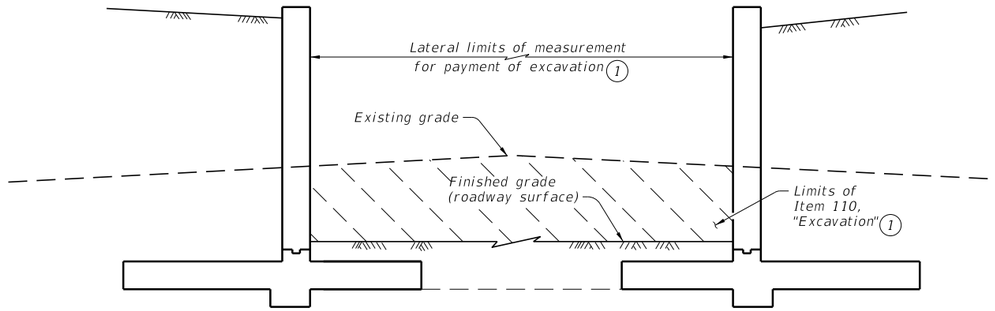
TYPICAL SECTION

(Excavation between MSE retaining walls.) (3)



TYPICAL SECTION

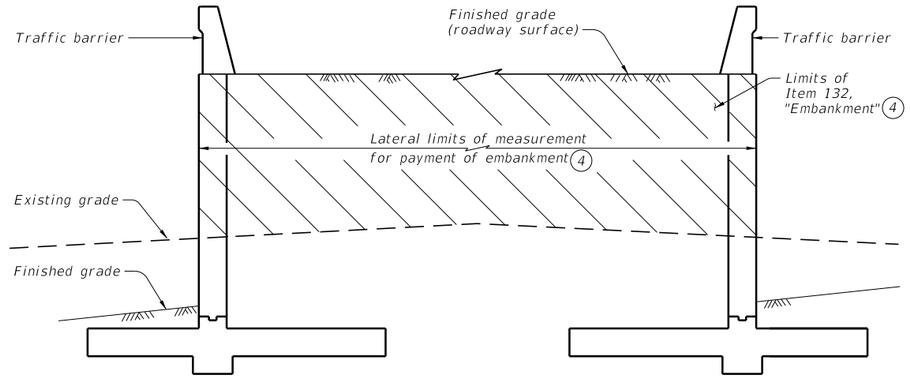
(Embankment between MSE retaining walls.) (3)



TYPICAL SECTION

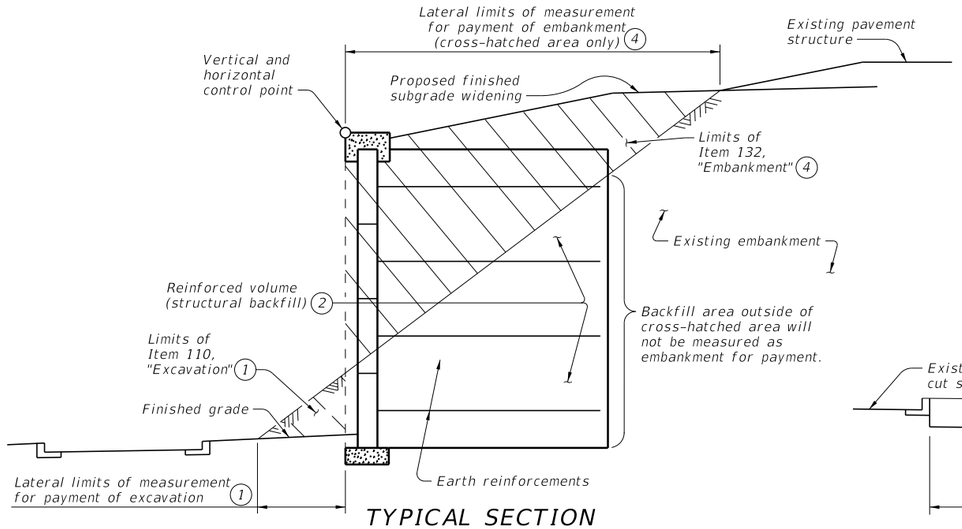
(Excavation between conventional retaining walls.)

1. Only the excavation above the proposed subgrade elevation will be measured for payment.
2. Meeting requirements for Item 423, "Retaining Walls."
3. Earthwork measurement with other retaining wall types will be made to the outside finished face in the same manner.
4. Only the embankment above the existing ground line will be measured for payment.



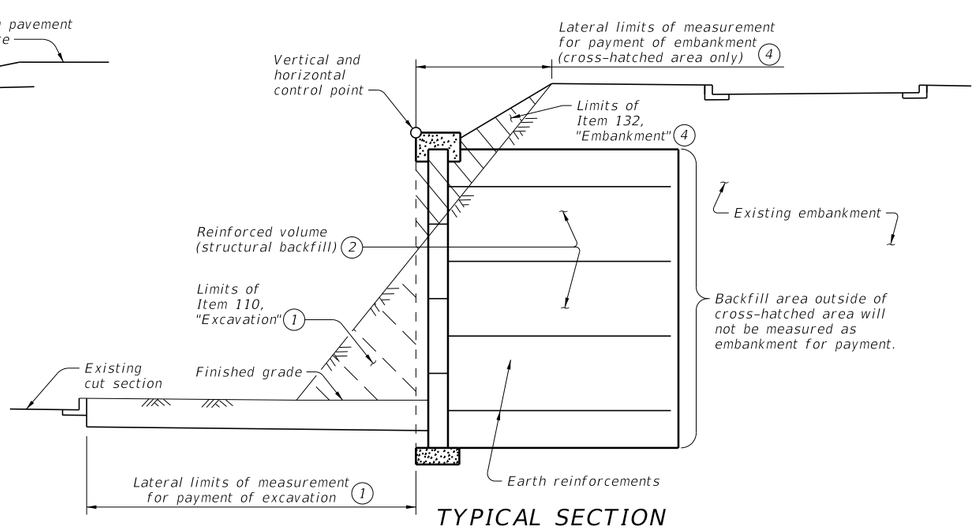
TYPICAL SECTION

(Embankment between conventional retaining walls.)



TYPICAL SECTION

(Widening embankment with MSE retaining walls.) (3)



TYPICAL SECTION

(Widening cut section with MSE retaining walls.) (3)

Texas Department of Transportation

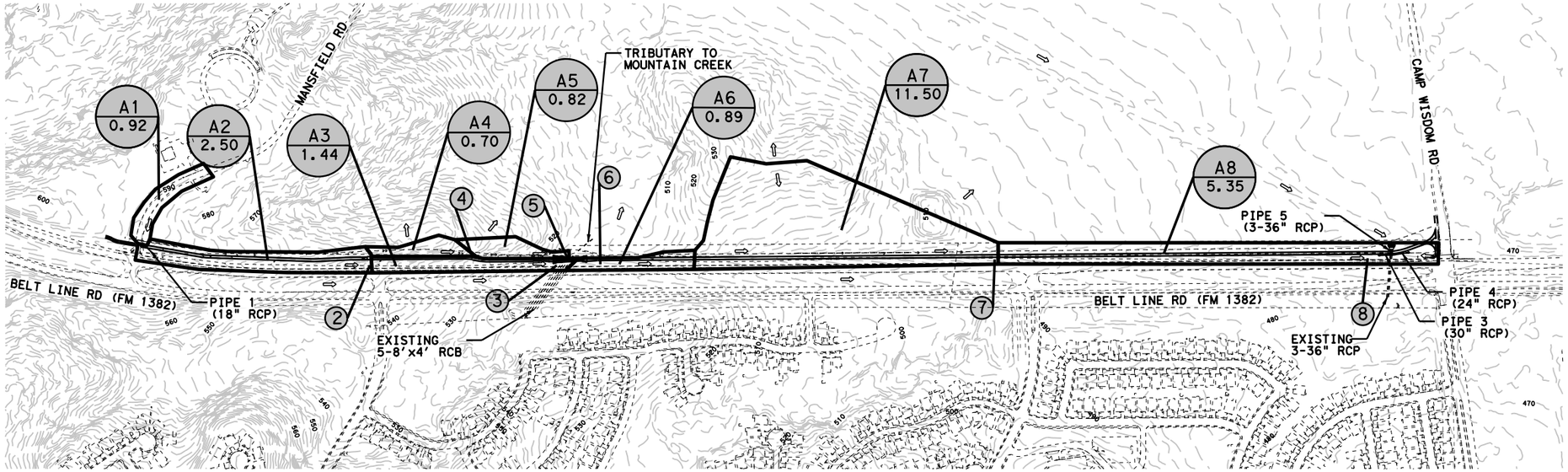
Bridge Division Standard

EARTHWORK MEASUREMENT AT RETAINING WALL

RW(EM)

FILE: RW-EM-22.dgn	DN: TxDOT	CK: TxDOT	DW: JER	RLE
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		79

TIME: 3:33:15 PM
DATE: 8/21/2023



0 300 600
SCALE IN FEET

N

LEGEND

XX / XXX — AREA NUMBER / AREA IN ACRES

DRAINAGE AREA

DRAINAGE FLOW ARROW

(X)

TIME OF CONCENTRATION CALCULATIONS

SHEET FLOW: $t_{sh} = \frac{0.007(n_{oi}L_{sh})^{0.8}}{(P_2)^{0.5}S_{sh}^{0.4}}$

SHALLOW CONCENTRATED FLOW: $t_{sc} = \frac{L_{sc}}{3600KS_{sc}^{0.5}}$

CHANNELIZED FLOW: $T_h = \frac{L_h}{60 \cdot V_h}$

TIME OF CONCENTRATION: $t_c = t_{sh} + t_{sc} + t_{ch}$, $T_{lag} = 0.6 \cdot T_c$

BASIN ID	BASIN AREA (ACRES)	SHEET FLOW: L	n	S	P2	Tt	Tt	SHALLOW CONCENTRATED FLOW: K	S	L	Tt	Tt	CHANNELIZED FLOW: V	L	Tt	TIME OF CONCENTRATION: Tc	Tlag
		ft	NA	ft/ft	inches	hrs	min	NA	ft/ft	ft	hrs	min	fps	ft	min	min	hours
A1	0.92	25	0.24	0.080	3.67	0.04	2.52	16.13	0.003	490	0.17	10.13				12.65	0.127
A2	2.50	100	0.24	0.038	3.67	0.17	10.31	16.13	0.003	30	0.01	0.57	3.58	935	4.35	15.23	0.152
A3	1.44												4.16	900	3.61	3.61	0.036
A4	0.70	48	0.24	0.125	3.67	0.06	3.56						10.74	480	0.74	4.30	0.043
A5	0.82	136	0.24	0.162	3.67	0.12	7.38						7.34	130	0.30	7.68	0.077
A6	0.89	15	0.24	0.010	3.67	0.06	3.85						2.27	464	3.41	7.26	0.073
A7	11.50	556	0.24	0.053	3.67	0.59	35.60						3.25	990	5.08	40.68	0.407
A8	5.35	105	0.24	0.019	3.67	0.24	14.14						3.45	1,770	8.55	22.69	0.227
A1 & A2	3.42	25	0.24	0.080	3.67	0.04	2.52	16.13	0.003	490	0.17	10.13	3.58	1,095	5.10	17.75	0.177
A1, A2 & A3	4.86	25	0.24	0.080	3.67	0.04	2.52	16.13	0.003	490	0.17	10.13	4.16	2,070	8.29	20.94	0.209
A4 & A5	1.52	48	0.24	0.125	3.67	0.06	3.56						7.34	440	1.00	4.56	0.046
A6 & A7	12.39	15	0.24	0.010	3.67	0.06	3.85						3.25	464	2.38	6.23	0.062
A6, A7 & A8	17.74	15	0.24	0.010	3.67	0.06	3.85						3.45	2,315	11.18	15.04	0.150

PROPOSED OPEN DITCH AND FLUME DESIGN

ID	Approximate Station From	Approximate Station To	'n' Value	Ditch Depth (Y)	Width (T or B)	Side Slope (Z)	Slope	Flow Area	Hyd Radius	Contributing Areas	V (FULL)	Q10	Qcap	Q10 Flow Depth
				ft	ft	H:V	ft/ft	sf	ft		fps	cfs	cfs	ft
1	U/S	D/S	0.04	0.75	4.50	3	0.050	1.688	0.356	A1	4.18	4.87	7.06	0.44
2	End	90+60	0.04	1.00	6.00	3	0.025	3.000	0.474	A1 & A2	3.58	5.96	10.75	0.80
3	90+60	100+20	0.04	1.25	7.50	3	0.025	4.688	0.593	A1, A2 & A3	4.16	7.89	19.48	0.89
4	90+60	95+50	0.013	0.50	2.00	0	0.038	1.000	0.333	A4	10.74	1.63	10.74	0.13
5	95+50	100+00	0.04	0.75	4.50	3	0.154	1.688	0.356	A4 & A5	7.34	3.02	12.38	0.44
6	100+20	105+95	0.04	1.00	6.00	3	0.010	3.000	0.474	A6	2.27	11.29	6.80	0.64
7	105+95	120+20	0.04	1.60	9.60	3	0.011	7.680	0.759	A6 & A7	3.25	24.95	24.96	1.60
8	120+20	Begin	0.04	1.75	10.50	3	0.011	9.188	0.830	A6, A7 & A8	3.45	31.55	31.70	1.75

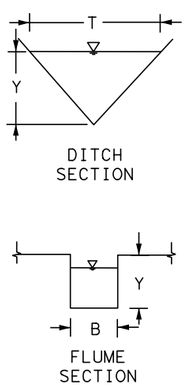
PROPOSED PIPE HYDRAULIC CALCULATIONS

PIPE ID	BASINS DRAINED	Q_o (cfs)	DIA (in)	n VALUE n	SLOPE (ft/ft)	FLOW AREA (sf)	HYD RAD (ft)	CAP (cfs)	VEL (fps)
1	A1	1.67	18	0.012	0.0152	1.77	0.375	14.03	7.94
2	NOT USED								
3	A6, A7 & A8	31.55	30	0.012	0.0051	4.91	0.625	31.73	6.46
4	A8*	0.35	24	0.012	0.0231	3.14	0.500	37.25	11.86
5	EXTENSION OF EXISTING 3-36" RCP CULVERTS								

Jacobs Engineering Group
STATE OF TEXAS
JASON K. CHRISTIAN
83469
LICENSED PROFESSIONAL ENGINEER
F-2966
8/21/2023

DESIGN STORM RUNOFF

AREA LABEL	ACRES (ac)	C	Tc, calc (min)	Tc, design (min)	I (5yr) (in/hr)	Q (5yr) (cfs)	I (10yr) (in/hr)	Q (10yr) (cfs)	I (100yr) (in/hr)	Q (100yr) (cfs)	DESCRIPTION
A1	0.92	0.30	12.65	12.65	5.17	1.43	6.04	1.67	8.84	2.44	FLOWS TO PIPE 1
A2	2.50	0.35	15.23	15.23	4.76	4.17	5.57	4.87	8.18	7.15	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO A3
A3	1.44	0.35	3.61	10.00	5.69	2.87	6.63	3.34	9.68	4.88	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO OUTFALL
A4	0.70	0.30	4.30	10.00	5.69	1.19	6.63	1.39	9.68	2.03	FLOWS IN CONC. FLUME (WEST OF TRAIL - TOP OF RETAINING WALL) TO A5
A5	0.82	0.30	7.68	10.00	5.69	1.40	6.63	1.63	9.68	2.38	FLOWS IN OPEN DITCH (WEST OF TRAIL) TO OUTFALL
A6	0.89	0.35	7.26	10.00	5.69	1.77	6.63	2.07	9.68	3.01	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO PIPE 2
A7	11.50	0.30	40.68	40.68	2.79	9.62	3.27	11.29	4.89	16.87	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO A8
A8	5.35	0.35	7.68	10.00	5.69	10.65	6.63	12.42	9.68	18.12	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO PIPE 3
A8*	0.15	0.35	8.50	10.00	5.69	0.30	6.63	0.35	9.68	0.51	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO PIPE 4
A1 & A2	3.42	0.34	17.75	17.75	4.43	5.10	5.18	5.96	7.63	8.78	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO A3
A1, A2 & A3	4.86	0.34	20.94	20.94	4.07	6.74	4.77	7.89	7.04	11.65	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO OUTFALL
A4 & A5	1.52	0.30	4.56	10.00	5.69	2.59	6.63	3.02	9.68	4.41	FLOWS IN OPEN DITCH (WEST OF TRAIL) TO OUTFALL
A6 & A7	12.39	0.30	6.23	10.00	5.69	21.39	6.63	24.95	9.68	36.39	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO A8
A6, A7 & A8	17.74	0.32	15.04	15.04	4.79	27.00	5.60	31.55	8.22	46.32	FLOWS IN OPEN DITCH (EAST OF TRAIL) TO PIPE 3



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Firm Registration: F-2966

FM 1382-SIDEPATH

DRAINAGE AREA MAP

SCALE: 1"=600' (H) SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JKC	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS BDG	TEXAS	DAL	DALLAS	80
CHECK JPP	CONTROL	SECTION	JOB	
	1047	03	079	

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TIME: 6:03:04 AM
DATE: 8/11/2023

DRAINAGE AREA 2 (STA BEGINNING TO 90+50)					
SIDEPATH CL STATION	OFFSET		FL ELEV	TYPE	LINING
80+00.00	27.86'	RT	577.30	V-EX	BLOCK SOD (BERMUDA)
80+50.00	25.97'	RT	581.02	V-EX	BLOCK SOD (BERMUDA)
81+00.00	27.97'	RT	579.97	V-EX	BLOCK SOD (BERMUDA)
81+50.00	24.59'	RT	578.52	V-EX	BLOCK SOD (BERMUDA)
82+00.00	22.79'	RT	577.37	V-EX	BLOCK SOD (BERMUDA)
82+50.00	21.30'	RT	576.53	V-EX	BLOCK SOD (BERMUDA)
83+00.00	22.92'	RT	575.49	V-EX	BLOCK SOD (BERMUDA)
83+50.00	27.99'	RT	574.50	V-EX	BLOCK SOD (BERMUDA)
84+00.00	29.93'	RT	573.03	V-EX	BLOCK SOD (BERMUDA)
84+50.00	29.56'	RT	571.27	V-EX	BLOCK SOD (BERMUDA)
85+00.00	29.42'	RT	569.58	V-EX	BLOCK SOD (BERMUDA)
85+50.00	28.75'	RT	567.90	V-EX	BLOCK SOD (BERMUDA)
86+00.00	27.12'	RT	566.20	V-EX	BLOCK SOD (BERMUDA)
86+50.00	25.93'	RT	564.70	V-EX	BLOCK SOD (BERMUDA)
87+00.00	24.81'	RT	563.19	V-EX	BLOCK SOD (BERMUDA)
87+50.00	25.33'	RT	561.52	V-EX	BLOCK SOD (BERMUDA)
88+00.00	26.17'	RT	559.78	V-EX	BLOCK SOD (BERMUDA)
88+50.00	28.75'	RT	558.11	V-EX	BLOCK SOD (BERMUDA)
89+00.00	30.75'	RT	556.05	V-EX	BLOCK SOD (BERMUDA)
89+50.00	31.97'	RT	553.75	V-EX	BLOCK SOD (BERMUDA)
90+00.00	33.38'	RT	551.89	V-EX	BLOCK SOD (BERMUDA)
90+50.00	35.59'	RT	550.19	V-EX	BLOCK SOD (BERMUDA)

DRAINAGE AREA 3 (STA 90+50 TO 100+20)					
SIDEPATH CL STATION	OFFSET		FL ELEV	TYPE	LINING
91+00.00	36.22'	RT	548.31	V-EX	BLOCK SOD (BERMUDA)
91+50.00	35.71'	RT	546.25	V-EX	BLOCK SOD (BERMUDA)
92+00.00	38.02'	RT	544.37	V-EX	BLOCK SOD (BERMUDA)
92+50.00	40.19'	RT	542.48	V-EX	BLOCK SOD (BERMUDA)
93+00.00	39.18'	RT	540.64	V-EX	BLOCK SOD (BERMUDA)
93+50.00	38.64'	RT	538.84	V-EX	BLOCK SOD (BERMUDA)
94+00.00	39.07'	RT	537.14	V-EX	BLOCK SOD (BERMUDA)
94+50.00	39.79'	RT	534.91	V-EX	BLOCK SOD (BERMUDA)
95+00.00	38.47'	RT	533.04	V-EX	BLOCK SOD (BERMUDA)
95+50.00	30.99'	RT	531.40	V-EX	BLOCK SOD (BERMUDA)
96+00.00	24.26'	RT	528.90	V-EX	BLOCK SOD (BERMUDA)
96+50.00	22.48'	RT	527.13	V-EX	BLOCK SOD (BERMUDA)
97+00.00	18.63'	RT	525.56	V-EX	BLOCK SOD (BERMUDA)
97+50.00	19.27'	RT	524.13	V-EX	BLOCK SOD (BERMUDA)
98+00.00	21.02'	RT	522.76	V-EX	BLOCK SOD (BERMUDA)
98+50.00	17.63'	RT	520.93	V-EX	BLOCK SOD (BERMUDA)
99+00.00	18.58'	RT	519.21	V-EX	BLOCK SOD (BERMUDA)
99+50.00	0.00'	RT	NG	V	STONE RIPRAP (GROUTED)
100+00.00	0.00'	RT	NG	V	STONE RIPRAP (GROUTED)

DRAINAGE AREA 4 (STA 90+60 TO 96+08)					
SIDEPATH CL STATION	OFFSET		FL ELEV	TYPE	LINING
90+50.00	9.66'	LT	561.96	FLUME	CONCRETE
91+00.00	9.66'	LT	560.64	FLUME	CONCRETE
91+50.00	9.66'	LT	559.30	FLUME	CONCRETE
92+00.00	9.66'	LT	558.03	FLUME	CONCRETE
92+50.00	9.66'	LT	556.73	FLUME	CONCRETE
93+00.00	9.66'	LT	555.06	FLUME	CONCRETE
93+50.00	9.66'	LT	553.71	FLUME	CONCRETE
94+00.00	9.66'	LT	550.24	FLUME	CONCRETE
94+50.00	9.66'	LT	547.77	FLUME	CONCRETE
95+00.00	9.66'	LT	545.30	FLUME	CONCRETE
95+50.00	9.66'	LT	542.80	FLUME	CONCRETE
96+00.00	9.66'	LT	537.04	FLUME	CONCRETE

DRAINAGE AREA 5 (STA 96+08 TO 100+20)					
SIDEPATH CL STATION	OFFSET		FL ELEV	TYPE	LINING
96+50.00	9.32'	LT	533.97	V-EX	BLOCK SOD (BERMUDA)
97+00.00	8.01'	LT	531.91	V-EX	BLOCK SOD (BERMUDA)
97+50.00	9.42'	LT	528.94	V-EX	BLOCK SOD (BERMUDA)
98+00.00	10.60'	LT	526.06	V-EX	BLOCK SOD (BERMUDA)
98+50.00	13.68'	LT	522.54	V-EX	BLOCK SOD (BERMUDA)
99+00.00	19.54'	LT	518.93	V-EX	BLOCK SOD (BERMUDA)
99+50.00	9.00'	LT	NG	V	STONE RIPRAP (GROUTED)
100+00.00	0.00'	LT	NG	V	STONE RIPRAP (GROUTED)

DRAINAGE AREA 6 (STA 100+20 TO 106+00)					
SIDEPATH CL STATION	OFFSET		FL ELEV	TYPE	LINING
100+50.00	9.10'	RT	512.02	V-EX	BLOCK SOD (BERMUDA)
101+00.00	11.96'	RT	512.13	V	BLOCK SOD (BERMUDA)
101+50.00	11.00'	RT	511.54	V	BLOCK SOD (BERMUDA)
102+00.00	11.00'	RT	511.02	V	BLOCK SOD (BERMUDA)
102+50.00	11.00'	RT	510.50	V	BLOCK SOD (BERMUDA)
103+00.00	11.00'	RT	509.99	V	BLOCK SOD (BERMUDA)
103+50.00	11.00'	RT	509.54	V	BLOCK SOD (BERMUDA)
104+00.00	12.69'	RT	509.00	V	BLOCK SOD (BERMUDA)
104+30.00	12.75'	RT	508.72	CULVERT	SETP-CP (TY II) (18") (P)
104+50.00	10.85'	RT	510.00	V	BLOCK SOD (BERMUDA)
105+00.00	14.89'	RT	509.90	V-EX	BLOCK SOD (BERMUDA)
105+50.00	16.41'	RT	509.39	V-EX	BLOCK SOD (BERMUDA)
106+00.00	17.68'	RT	509.07	V-EX	BLOCK SOD (BERMUDA)

DRAINAGE AREA 7 (STA 106+00 TO 120+20)					
SIDEPATH CL STATION	OFFSET		FL ELEV	TYPE	LINING
106+00.00	17.68'	RT	509.07	V-EX	BLOCK SOD (BERMUDA)
106+50.00	18.87'	RT	508.02	CULVERT	SETP-CP (TY II) (18") (P)
107+00.00	19.19'	RT	506.94	V-EX	BLOCK SOD (BERMUDA)
107+50.00	18.24'	RT	506.29	V-EX	BLOCK SOD (BERMUDA)
108+00.00	17.35'	RT	505.62	V-EX	BLOCK SOD (BERMUDA)
108+50.00	16.77'	RT	504.85	V-EX	BLOCK SOD (BERMUDA)
109+00.00	16.72'	RT	503.89	V-EX	BLOCK SOD (BERMUDA)
109+50.00	15.88'	RT	503.20	V-EX	BLOCK SOD (BERMUDA)
110+00.00	14.46'	RT	502.71	V-EX	BLOCK SOD (BERMUDA)
110+50.00	13.24'	RT	502.15	V-EX	BLOCK SOD (BERMUDA)
111+00.00	12.28'	RT	501.50	V-EX	BLOCK SOD (BERMUDA)
111+50.00	11.72'	RT	500.72	V-EX	BLOCK SOD (BERMUDA)
112+00.00	11.45'	RT	499.84	V-EX	BLOCK SOD (BERMUDA)
112+50.00	11.00'	RT	499.02	V	BLOCK SOD (BERMUDA)
113+00.00	11.00'	RT	498.09	V	BLOCK SOD (BERMUDA)
113+50.00	11.00'	RT	497.33	V	BLOCK SOD (BERMUDA)
114+00.00	11.00'	RT	496.73	V	BLOCK SOD (BERMUDA)
114+50.00	11.00'	RT	496.14	V	BLOCK SOD (BERMUDA)
115+00.00	11.00'	RT	495.56	V	BLOCK SOD (BERMUDA)
115+50.00	11.00'	RT	494.97	V	BLOCK SOD (BERMUDA)
116+00.00	11.00'	RT	494.39	V	BLOCK SOD (BERMUDA)
116+50.00	11.00'	RT	493.80	V	BLOCK SOD (BERMUDA)
117+00.00	11.00'	RT	493.21	V	BLOCK SOD (BERMUDA)
117+50.00	11.00'	RT	492.63	V	BLOCK SOD (BERMUDA)
118+00.00	11.00'	RT	492.04	V	BLOCK SOD (BERMUDA)
118+50.00	11.00'	RT	491.45	V	BLOCK SOD (BERMUDA)
119+00.00	11.00'	RT	490.87	V	BLOCK SOD (BERMUDA)
119+50.00	11.00'	RT	490.28	V	BLOCK SOD (BERMUDA)
120+00.00	11.00'	RT	489.70	V	BLOCK SOD (BERMUDA)

DRAINAGE AREA 8 (STA 120+20 TO END)					
SIDEPATH CL STATION	OFFSET		FL ELEV	TYPE	LINING
120+50.00	11.00'	RT	489.11	V	BLOCK SOD (BERMUDA)
121+00.00	11.00'	RT	488.52	V	BLOCK SOD (BERMUDA)
121+50.00	11.00'	RT	487.94	V	BLOCK SOD (BERMUDA)
122+00.00	11.00'	RT	487.35	V	BLOCK SOD (BERMUDA)
122+50.00	11.00'	RT	486.76	V	BLOCK SOD (BERMUDA)
123+00.00	11.00'	RT	486.18	V	BLOCK SOD (BERMUDA)
123+50.00	11.00'	RT	485.59	V	BLOCK SOD (BERMUDA)
124+00.00	11.00'	RT	485.01	V	BLOCK SOD (BERMUDA)
124+50.00	11.00'	RT	484.42	V	BLOCK SOD (BERMUDA)
125+00.00	11.00'	RT	483.83	V	BLOCK SOD (BERMUDA)
125+50.00	11.00'	RT	483.25	V	BLOCK SOD (BERMUDA)
126+00.00	11.00'	RT	482.66	V	BLOCK SOD (BERMUDA)
126+50.00	11.00'	RT	482.07	V	BLOCK SOD (BERMUDA)
127+00.00	11.00'	RT	481.49	V	BLOCK SOD (BERMUDA)
127+50.00	11.00'	RT	480.90	V	BLOCK SOD (BERMUDA)
128+00.00	11.00'	RT	480.31	V	BLOCK SOD (BERMUDA)
128+50.00	11.00'	RT	479.73	V	BLOCK SOD (BERMUDA)
129+00.00	11.00'	RT	479.14	V	BLOCK SOD (BERMUDA)
129+50.00	11.00'	RT	478.56	V	BLOCK SOD (BERMUDA)
130+00.00	11.00'	RT	477.97	V	BLOCK SOD (BERMUDA)
130+50.00	11.00'	RT	477.38	V	BLOCK SOD (BERMUDA)
131+00.00	11.00'	RT	476.80	V	BLOCK SOD (BERMUDA)
131+50.00	11.00'	RT	476.21	V	BLOCK SOD (BERMUDA)
132+00.00	11.00'	RT	475.62	V	BLOCK SOD (BERMUDA)
132+50.00	11.00'	RT	475.04	V	BLOCK SOD (BERMUDA)
133+00.00	11.00'	RT	474.45	V	BLOCK SOD (BERMUDA)
133+50.00	11.00'	RT	473.87	V	BLOCK SOD (BERMUDA)
134+00.00	11.00'	RT	473.28	V	BLOCK SOD (BERMUDA)
134+50.00	11.00'	RT	472.69	V	BLOCK SOD (BERMUDA)
135+00.00	11.00'	RT	472.11	V	BLOCK SOD (BERMUDA)
135+50.00	11.00'	RT	471.57	V	BLOCK SOD (BERMUDA)
136+00.00	11.00'	RT	471.15	V	BLOCK SOD (BERMUDA)
136+50.00	11.00'	RT	470.77	V	BLOCK SOD (BERMUDA)
137+00.00	11.00'	RT	470.40	V	BLOCK SOD (BERMUDA)
137+50.00	11.00'	RT	470.38	V	BLOCK SOD (BERMUDA)
138+00.00	11.00'	RT	471.05	V	BLOCK SOD (BERMUDA)
138+07.23	11.00'	RT	469.83	CULVERT	SETP-CP (TY II) (18") (P)
138+50.00	0.00'	RT	472.90	NA	BLOCK SOD (BERMUDA)
139+00.00	15.56'	RT	471.57	V-EX	BLOCK SOD (BERMUDA)
139+10.29	14.60'	RT	469.80	CULVERT	SETP-CP (TY II) (18") (P)
139+50.00	28.24'	RT	471.47	V-EX	BLOCK SOD (BERMUDA)
140+00.00	16.24'	RT	474.10	V-EX	BLOCK SOD (BERMUDA)
140+50.00	0.00'	RT	475.52	NA	BLOCK SOD (BERMUDA)

LP

NOTES:

1. V-EX= V DITCH FORMED BY PROPOSED FILL SLOPE AND EXISTING SLOPE.
2. V= DITCH FORMED BY PROPOSED FRONT SLOPE AND BACKSLOPE (3:1 EACH SIDE).
3. FLUME= FLUME ON TOP OF RETAINING WALL.
4. NG= NATURAL GROUND.

Jacobs Engineering Group
STATE OF TEXAS
JASON K. CHRISTIAN
83469
LICENSED
PROFESSIONAL ENGINEER
F-2966
8/11/2023

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Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

DITCH INFORMATION

SCALE: N.T.S.

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JKC	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
JPP	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	81
BDG	1047	03	079	
CHECK				
JPP				

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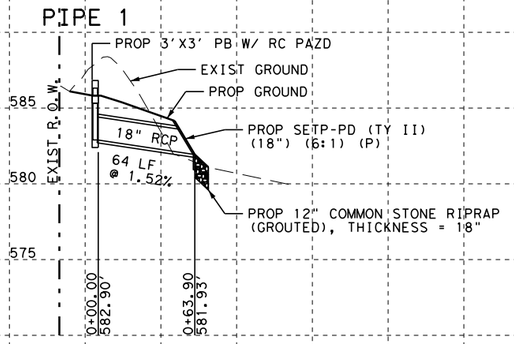
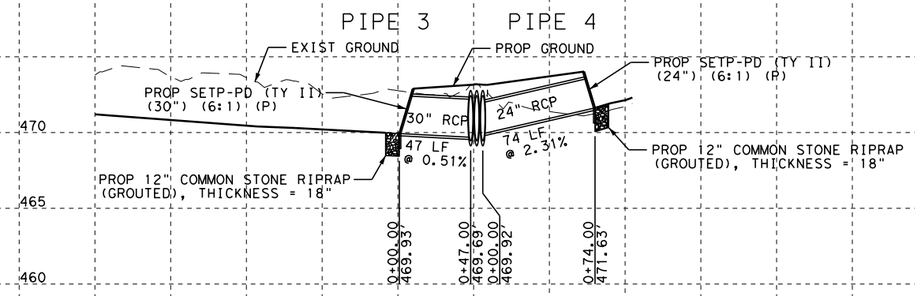
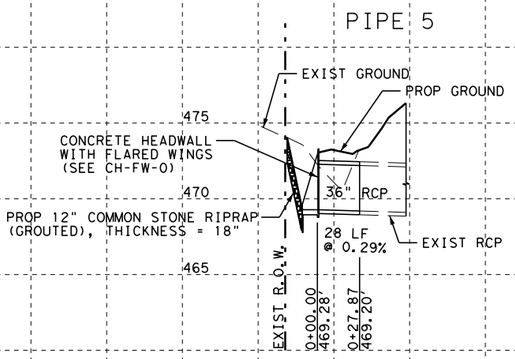
DATE: 8/21/2023







0 25 50 100 (H)
0 5 10 (V)

Jacobs Engineering Group
STATE OF TEXAS
JASON K. CHRISTIAN
83469
LICENSED
PROFESSIONAL ENGINEER
F-2966
8/21/2023

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Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

DITCH PROFILE

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

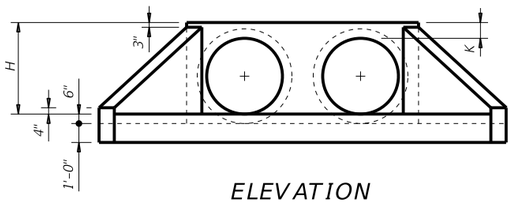
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
JKC	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS BHK	TEXAS	DAL	DALLAS	82
CHECK JPP	CONTROL	SECTION	JOB	
	1047	03	079	

FILE: \\USLASO-APP385\ICS*workdir\165990\689427-8\1382DR02.sht

DATE:
FILE:

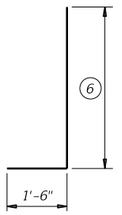
TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Dia of Pipe (D)	Values for One Pipe						Values to be Added for Each Addt'l Pipe		
		W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4' - 7 ½"	2' - 6"	2' - 10"	3' - 3 ¼"	88	0.6	1' - 9"	20	0.2
	15"	5' - 5 ¾"	2' - 9 ½"	3' - 4"	3' - 10 ¼"	103	0.7	2' - 2"	24	0.3
	18"	6' - 4 ¼"	3' - 1"	3' - 10"	4' - 5"	124	0.9	2' - 8"	32	0.3
	21"	7' - 2 ¾"	3' - 4 ½"	4' - 4"	5' - 0"	143	1.1	3' - 1"	43	0.4
	24"	8' - 2 ½"	3' - 9 ½"	4' - 10"	5' - 7"	164	1.3	3' - 7"	50	0.5
	27"	9' - 1"	4' - 1"	5' - 4"	6' - 2"	179	1.5	3' - 11"	56	0.6
	30"	9' - 11 ½"	4' - 4 ½"	5' - 10"	6' - 8 ¾"	079	1.7	4' - 4"	65	0.8
	33"	10' - 10"	4' - 8"	6' - 4"	7' - 3 ¾"	224	2.0	4' - 8"	71	0.9
	36"	11' - 8 ¼"	4' - 11 ½"	6' - 10"	7' - 10 ¾"	249	2.2	5' - 1"	81	1.0
	42"	13' - 5 ¼"	5' - 6 ½"	7' - 10"	9' - 0 ½"	298	2.8	5' - 10"	97	1.3
	48"	15' - 9"	6' - 1 ½"	9' - 4"	10' - 9 ¼"	360	3.8	6' - 7"	117	1.7
	54"	17' - 5 ¾"	6' - 8 ½"	10' - 4"	11' - 11 ¼"	427	4.5	7' - 6"	151	2.1
	60"	19' - 2 ¾"	7' - 3 ½"	11' - 4"	13' - 1"	481	5.3	8' - 3"	174	2.5
	66"	20' - 11 ½"	7' - 10 ½"	12' - 4"	14' - 3"	544	6.2	8' - 9"	194	2.9
	72"	22' - 8 ½"	8' - 5 ½"	13' - 4"	15' - 4 ¾"	601	7.1	9' - 4"	213	3.3
3:1	12"	6' - 3"	2' - 6"	4' - 3"	4' - 11"	118	0.8	1' - 9"	22	0.2
	15"	7' - 5"	2' - 9 ½"	5' - 0"	5' - 9 ¼"	137	1.1	2' - 2"	28	0.3
	18"	8' - 6 ¾"	3' - 1"	5' - 9"	6' - 7 ¾"	170	1.3	2' - 8"	37	0.5
	21"	9' - 8 ¾"	3' - 4 ½"	6' - 6"	7' - 6"	195	1.6	3' - 1"	48	0.6
	24"	11' - 0"	3' - 9 ½"	7' - 3"	8' - 4 ½"	227	2.0	3' - 7"	58	0.7
	27"	12' - 2"	4' - 1"	8' - 0"	9' - 2 ¾"	251	2.3	3' - 11"	67	0.8
	30"	13' - 4"	4' - 4 ½"	8' - 9"	10' - 1 ¼"	293	2.7	4' - 4"	77	1.0
	33"	14' - 5 ¾"	4' - 8"	9' - 6"	10' - 11 ¾"	318	3.1	4' - 8"	84	1.2
	36"	15' - 7 ¾"	4' - 11 ½"	10' - 3"	11' - 10"	351	3.5	5' - 1"	96	1.4
	42"	17' - 11 ½"	5' - 6 ½"	11' - 9"	13' - 6 ¾"	432	4.5	5' - 10"	119	1.7
	48"	21' - 1 ¾"	6' - 1 ½"	14' - 0"	16' - 2"	537	6.1	6' - 7"	146	2.3
	54"	23' - 5 ½"	6' - 8 ½"	15' - 6"	17' - 10 ¾"	630	7.3	7' - 6"	186	2.9
	60"	25' - 9 ¼"	7' - 3 ½"	17' - 0"	19' - 7 ½"	719	8.7	8' - 3"	219	3.4
	66"	28' - 1"	7' - 10 ½"	18' - 6"	21' - 4 ¼"	811	10.1	8' - 9"	242	3.9
	72"	30' - 4 ¾"	8' - 5 ½"	20' - 0"	23' - 1 ¼"	924	11.7	9' - 4"	272	4.4
4:1	12"	7' - 10 ¾"	2' - 6"	5' - 8"	6' - 6 ½"	148	1.1	1' - 9"	24	0.3
	15"	9' - 4"	2' - 9 ½"	6' - 8"	7' - 8 ½"	181	1.5	2' - 2"	32	0.4
	18"	10' - 9 ½"	3' - 1"	7' - 8"	8' - 10 ¼"	221	1.9	2' - 8"	42	0.5
	21"	12' - 2 ¾"	3' - 4 ½"	8' - 8"	10' - 0"	260	2.3	3' - 1"	57	0.7
	24"	13' - 9 ½"	3' - 9 ½"	9' - 8"	11' - 2"	301	2.8	3' - 7"	67	0.9
	27"	15' - 3"	4' - 1"	10' - 8"	12' - 3 ¾"	334	3.3	3' - 11"	77	1.0
	30"	16' - 8 ¼"	4' - 4 ½"	11' - 8"	13' - 5 ¾"	385	3.8	4' - 4"	89	1.3
	33"	18' - 1 ¾"	4' - 8"	12' - 8"	14' - 7 ½"	425	4.5	4' - 8"	101	1.4
	36"	19' - 7"	4' - 11 ½"	13' - 8"	15' - 9 ¼"	472	5.1	5' - 1"	115	1.7
	42"	22' - 5 ¾"	5' - 6 ½"	15' - 8"	18' - 1"	583	6.5	5' - 10"	141	2.1
	48"	26' - 6 ¼"	6' - 1 ½"	18' - 8"	21' - 6 ¾"	730	8.9	6' - 7"	175	2.8
	54"	29' - 5"	6' - 8 ½"	20' - 8"	23' - 10 ¼"	875	10.7	7' - 6"	226	3.6
	60"	32' - 3 ¾"	7' - 3 ½"	22' - 8"	26' - 2"	996	12.7	8' - 3"	264	4.3
	66"	35' - 2 ½"	7' - 10 ½"	24' - 8"	28' - 5 ¾"	1,140	14.9	8' - 9"	300	4.9
	72"	38' - 1 ¼"	8' - 5 ½"	26' - 8"	30' - 9 ½"	1,297	17.3	9' - 4"	334	5.6
6:1	12"	11' - 2"	2' - 6"	8' - 6"	9' - 9 ¾"	224	1.9	1' - 9"	28	0.4
	15"	13' - 2 ¼"	2' - 9 ½"	10' - 0"	11' - 6 ½"	268	2.5	2' - 2"	37	0.5
	18"	15' - 2 ½"	3' - 1"	11' - 6"	13' - 3 ¼"	330	3.2	2' - 8"	50	0.7
	21"	17' - 2 ¾"	3' - 4 ½"	13' - 0"	15' - 0 ¼"	387	3.9	3' - 1"	69	0.9
	24"	19' - 4 ½"	3' - 9 ½"	14' - 6"	16' - 9"	453	4.8	3' - 7"	80	1.2
	27"	21' - 4 ¾"	4' - 1"	16' - 0"	18' - 5 ¾"	512	5.7	3' - 11"	96	1.4
	30"	23' - 5 ¼"	4' - 4 ½"	17' - 6"	20' - 2 ½"	593	6.7	4' - 4"	110	1.7
	33"	25' - 5 ½"	4' - 8"	19' - 0"	21' - 11 ¼"	675	7.8	4' - 8"	127	2.0
	36"	27' - 5 ¾"	4' - 11 ½"	20' - 6"	23' - 8"	735	9.0	5' - 1"	144	2.3
	42"	31' - 6 ¼"	5' - 6 ½"	23' - 6"	27' - 1 ½"	922	11.5	5' - 10"	179	3.0
	48"	37' - 3 ½"	6' - 1 ½"	28' - 0"	32' - 4"	1,191	15.9	6' - 7"	231	4.0
	54"	41' - 4 ¼"	6' - 8 ½"	31' - 0"	35' - 9 ½"	1,424	19.2	7' - 6"	300	5.0
	60"	45' - 4 ¾"	7' - 3 ½"	34' - 0"	39' - 3"	1,631	22.9	8' - 3"	353	6.0

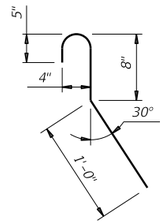


ELEVATION

(Showing dimensions.)



BARS V



BARS CL

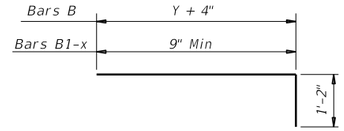
(Length = 2'-5")

TABLE OF (5) REINFORCING STEEL

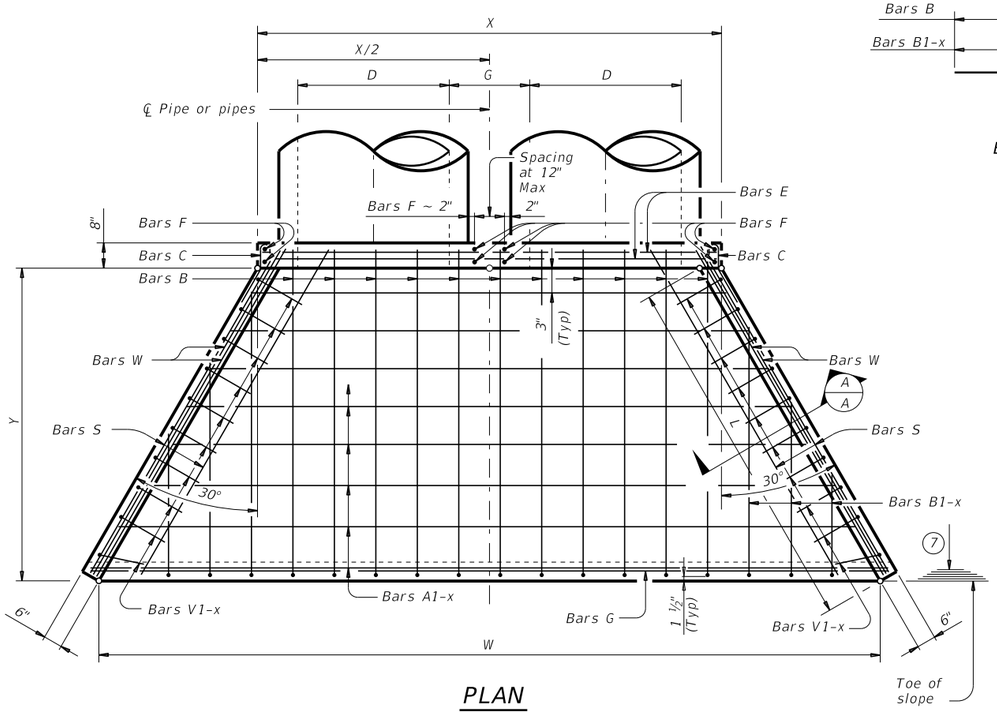
Bar	Size	Spa	No.
A	#4	1' - 0"	~
B	#3	1' - 6"	~
C	#4	1' - 0"	~
D	#3	1' - 0"	~
E	#5	~	4
F	#5	~	~
G	#3	~	2
S	#4	~	6
V	#4	1' - 0"	~
W	#5	~	4

TABLE OF CONSTANT DIMENSIONS

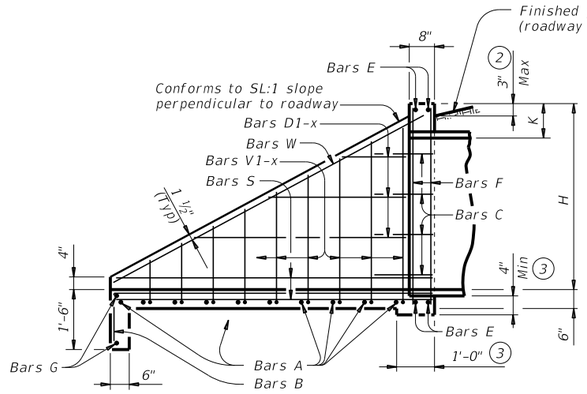
Dia of Pipe (D)	G	K (4)	H
12"	0' - 9"	1' - 0"	2' - 0"
15"	0' - 11"	1' - 0"	2' - 3"
18"	1' - 2"	1' - 0"	2' - 6"
21"	1' - 4"	1' - 0"	2' - 9"
24"	1' - 7"	1' - 0"	3' - 0"
27"	1' - 8"	1' - 0"	3' - 3"
30"	1' - 10"	1' - 0"	3' - 6"
33"	1' - 11"	1' - 0"	3' - 9"
36"	2' - 1"	1' - 0"	4' - 0"
42"	2' - 4"	1' - 0"	4' - 6"
48"	2' - 7"	1' - 3"	5' - 3"
54"	3' - 0"	1' - 3"	5' - 9"
60"	3' - 3"	1' - 3"	6' - 3"
66"	3' - 3"	1' - 3"	6' - 9"
72"	3' - 4"	1' - 3"	7' - 3"



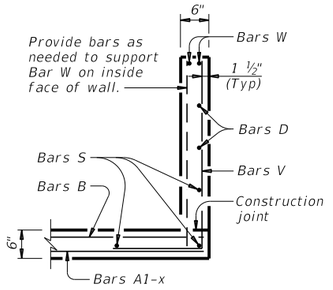
BARS B and B1-x



PLAN



TYPICAL WING ELEVATION



SECTION A-A

(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.

(4) Dimensions shown are usual and maximum.

(5) Quantities shown are for one structure end only (one headwall).

(6) Min Length = $6" + 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right)$

Max Length = $12 \times H - 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right) - 1"$

(7) Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation

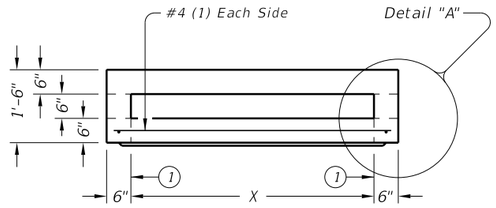
Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

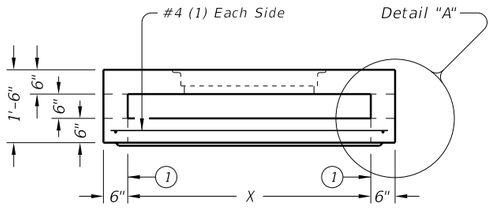
CH-FW-0

FILE: chfw00se-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		83

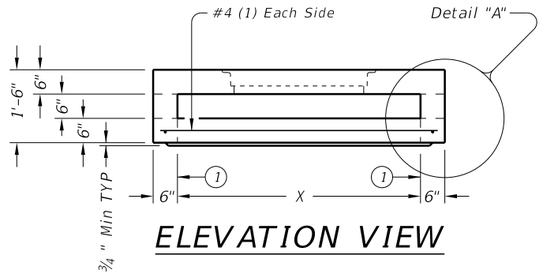
DATE:
FILE:



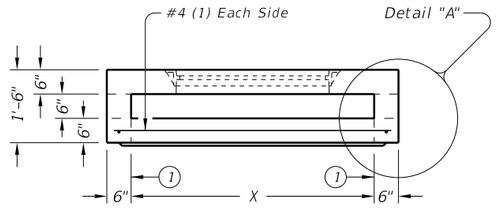
ELEVATION VIEW



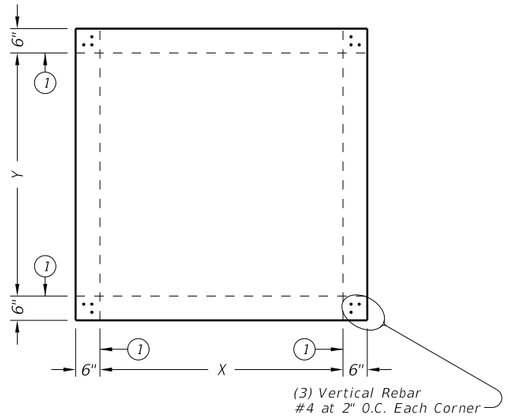
ELEVATION VIEW



ELEVATION VIEW

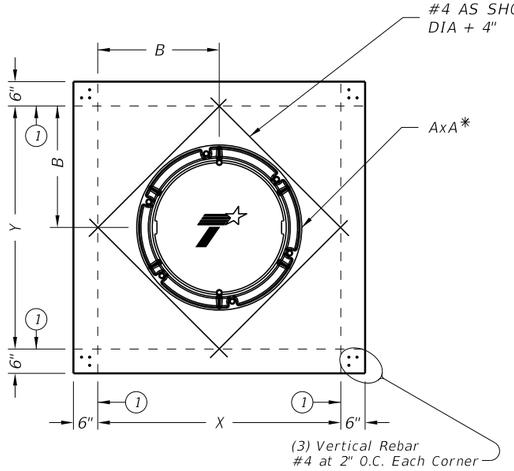


ELEVATION VIEW



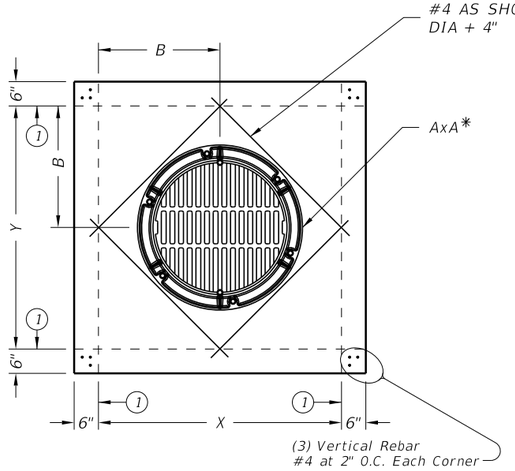
PLAN VIEW
NO OPENINGS

STYLE 'SL'



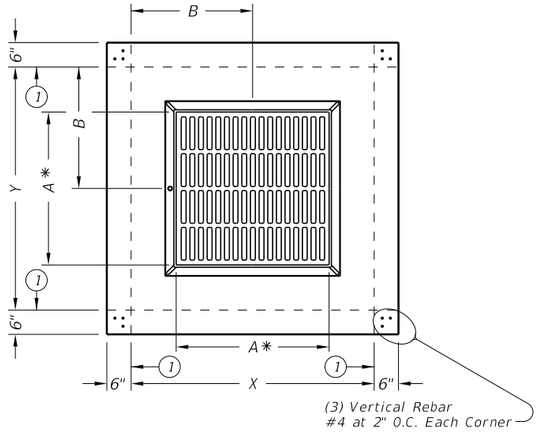
PLAN VIEW
32" DIA CAST-IN RING & COVER

STYLE 'RC'



PLAN VIEW
32" DIA CAST-IN RING & GRATE

STYLE 'RG'



PLAN VIEW
CAST-IN FRAME & GRATE

STYLE 'FG'

(1) Matches inside face of wall of precast base or riser below inlet.

Style	Size (X x Y)	A x A*	B x B	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	n/a	n/a	0.37 in²/ft	0.37 in²/ft
RC,RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
SL	4'x4'	n/a	n/a	0.34 in²/ft	0.34 in²/ft
RC,RG	4'x4'	32" Dia	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	3'x3'	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	4'x4'	2'x2'	0.34 in²/ft	0.34 in²/ft
SL	5'x5'	n/a	n/a	0.43 in²/ft	0.43 in²/ft
RC,RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in²/ft	0.68 in²/ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft

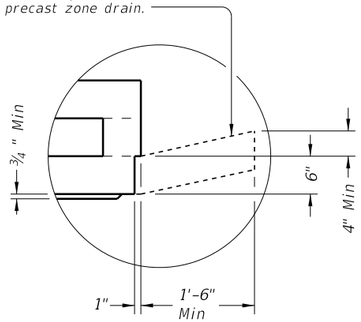
* Nominal frame/grate or ring/cover size.

FABRICATION NOTES:
1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide clear cover of ¾" to reinforcing from bottom of slab for structural reinforcement. Place short span reinforcing closest to surface.
4. No substitution is allowed for diagonal #4 bars around openings.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:
1. PAZD is for use in ditches and medians outside of the horizontal clearance (clear zone). Precast Area Zone Drain is not intended for direct traffic and may not be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:
1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Construct cast-in-place reinforced concrete apron when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PAZD. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)

When an apron is to be cast around PAZD, use detail above to create an apron ledge on all 4 sides.

Texas Department of Transportation

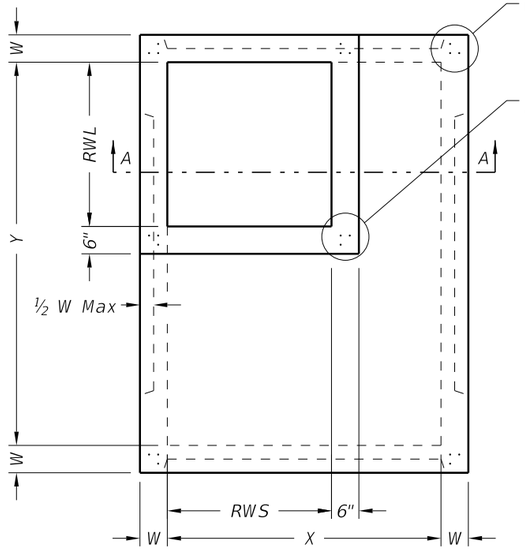
Bridge Division Standard

PRECAST AREA ZONE DRAIN

PAZD

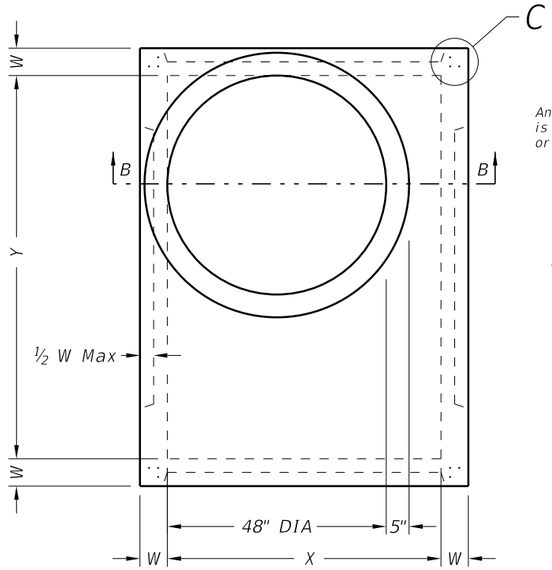
FILE: prestd08-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		84

DATE:
FILE:



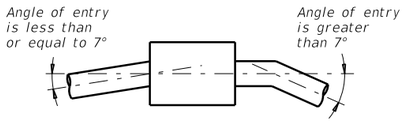
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



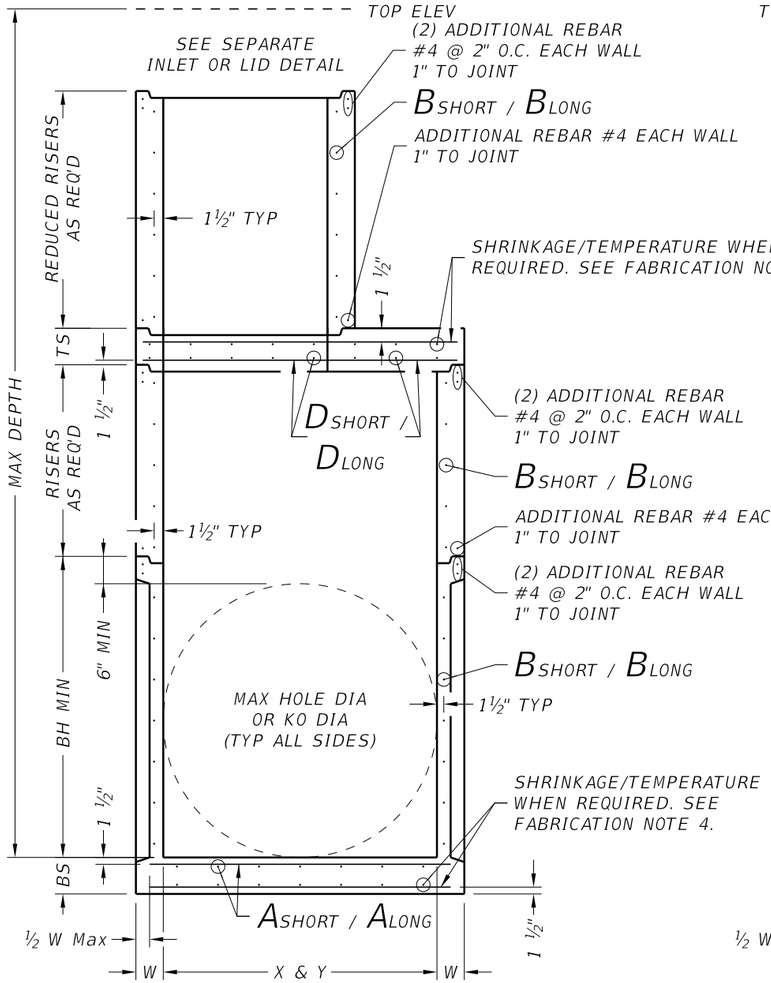
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



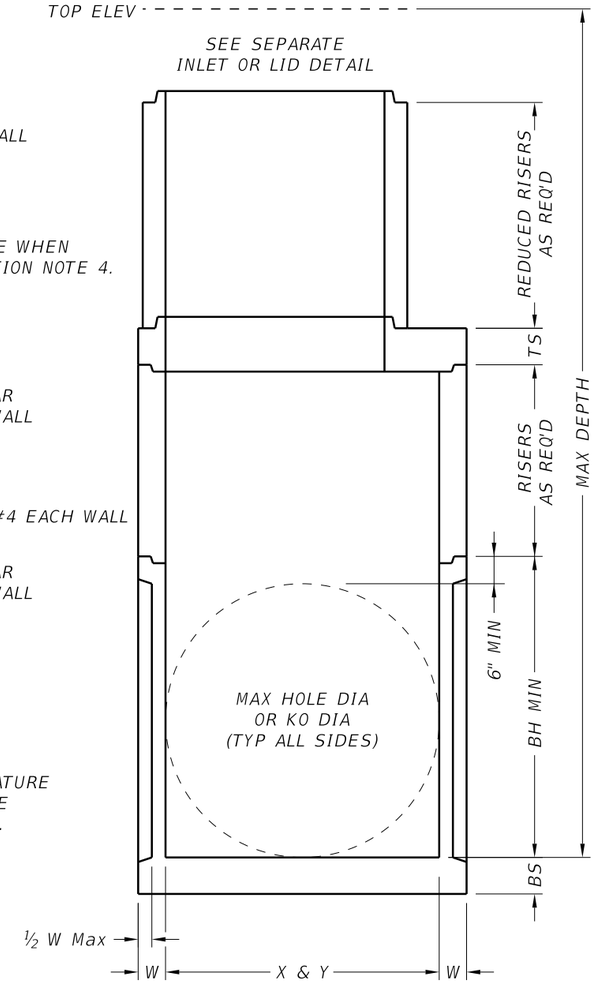
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

Cover dimensions are clear dimensions, unless noted otherwise.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

FILE: prestd01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		85

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DATE:
FILE:

		MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB												
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
	Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

Texas Department of Transportation

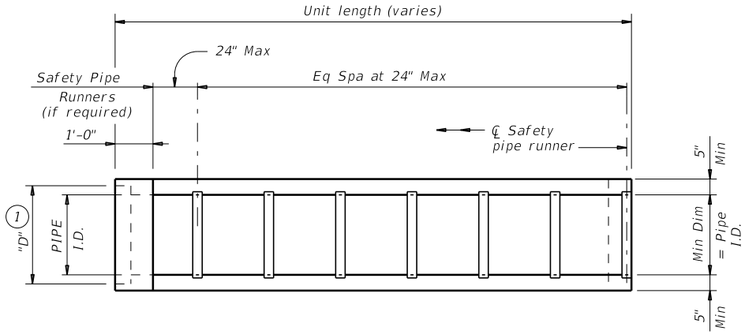
Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

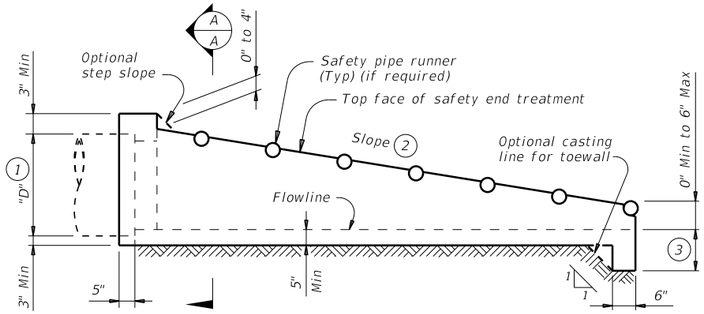
FILE: prestd10-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		86

DATE:
FILE:



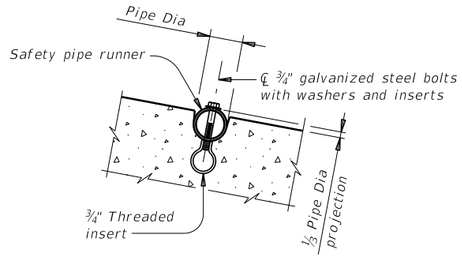
PLAN

(Showing bell end connection.)



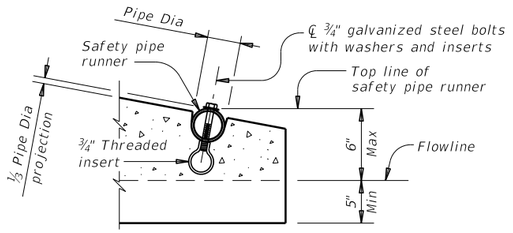
LONGITUDINAL ELEVATION

(Showing bell end connection.)

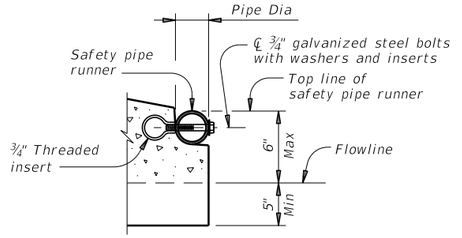


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



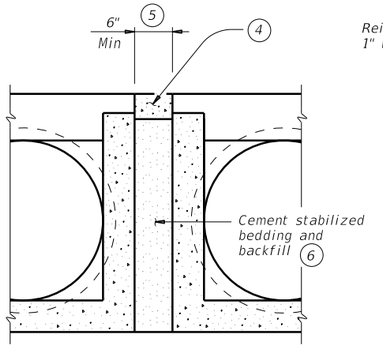
OPTION A



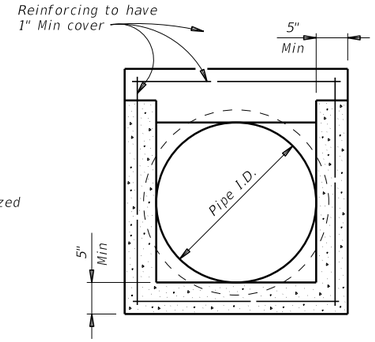
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

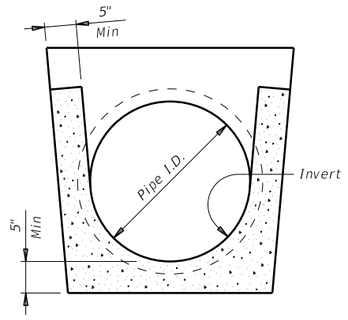
(If required)



MULTIPLE PIPE INSTALLATION

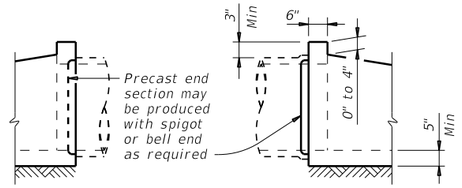


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' – 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 ¼"	1.30"	20.50"	6:1	6' – 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 ½"	1.60"	24.00"	6:1	8' – 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' – 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 ½"	2.65"	38.50"	6:1	14' – 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' – 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	2.7"	52.50"	6:1	21' – 2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C–76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" – D12 x D12 or 5"x5" – D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280–2F, "Safety Treatment of Roadside Parallel–Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe". Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation

Bridge Division Standard

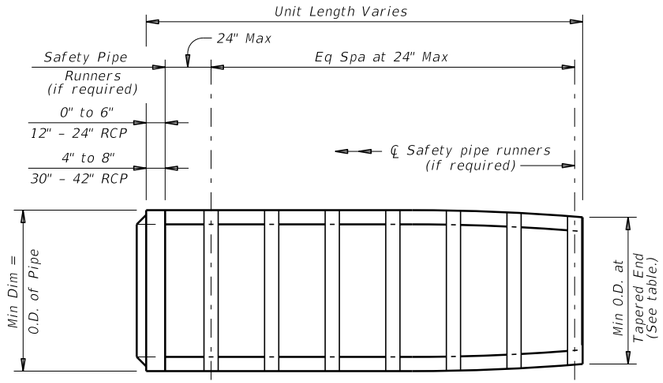
PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-SP

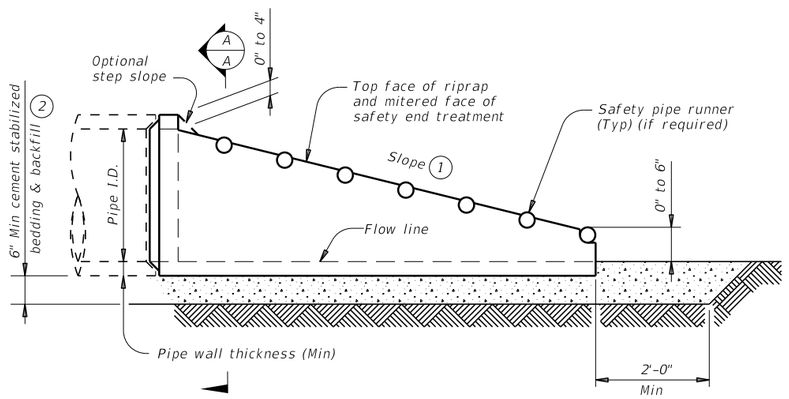
FILE: psetspss-21.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		87

DATE:
FILE:



PLAN VIEW – 12" THRU 24"

(Showing spigot end connection.)



LONGITUDINAL ELEVATION - 12" THRU 24"

(Showing spigot end connection.)

(1) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(2) Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

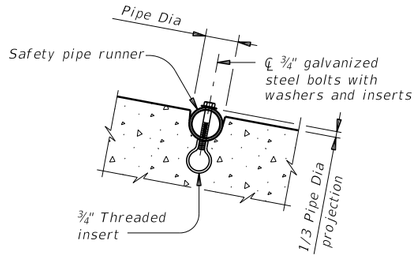
(3) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".

(4) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(5) Safety pipe runners are required for multiple pipe culverts with more than two pipes.

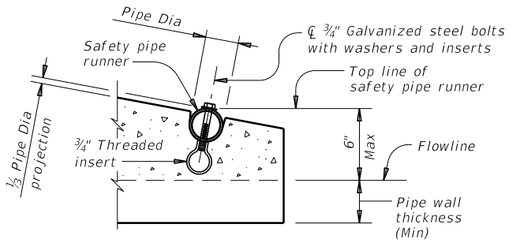
REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. per ft. of Pipe)	Max Slope	Min Length of Unit	Pipe Runner Requirements		Required Pipe Runner Sizes		
							Single Pipe	Multiple Pipe	Nominal Dia	O.D.	I.D.
12"	2"	16"	16"	0.07 Circ.	6:1	4'–0"	No	(5)	3" STD	3.500"	3.068"
15"	2 ¼"	19 ½"	19"	0.07 Circ.	6:1	5'–8"	No	(5)	3" STD	3.500"	3.068"
18"	2 ½"	23"	21 ½"	0.07 Circ.	6:1	7'–3"	No	(5)	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 Circ.	6:1	10'–6"	No	(5)	3" STD	3.500"	3.068"
30"	3 ½"	37"	31"	0.18 Circ.	6:1	12'–1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 Ellip.	6:1	15'–4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	51"	41 ½"	0.23 Ellip.	6:1	18'–7"	Yes	Yes	4" STD	4.500"	4.026"

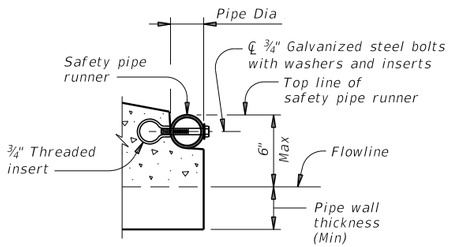


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



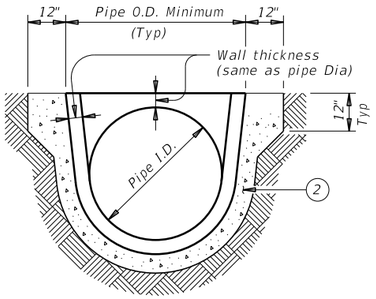
OPTION A



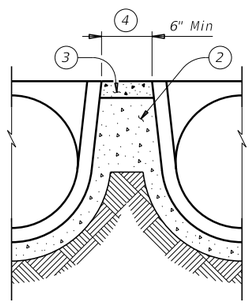
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)



SECTION A-A



MULTIPLE PIPE INSTALLATION

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Galvanize steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Texas Department of Transportation

Bridge Division Standard

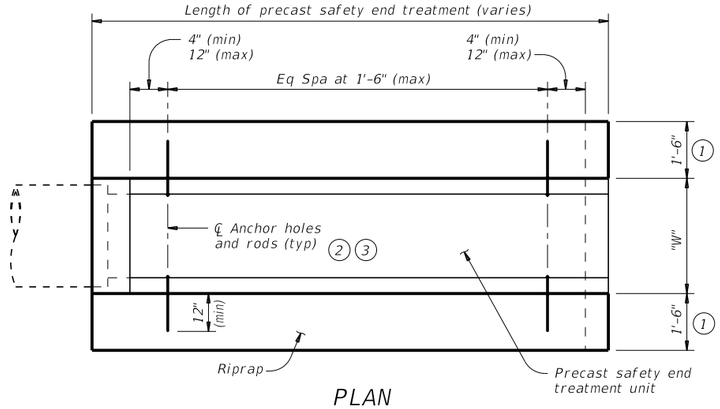
PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

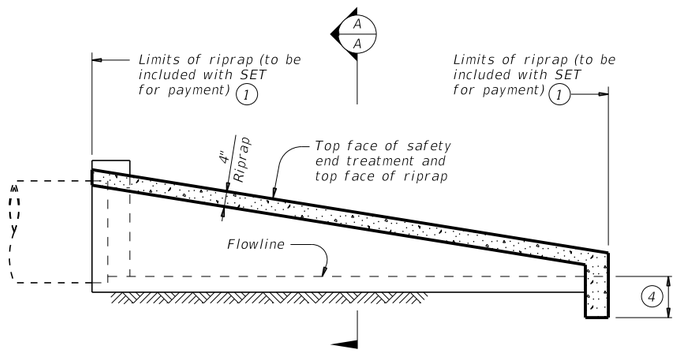
PSET-RP

FILE: psetrpss-20.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		88

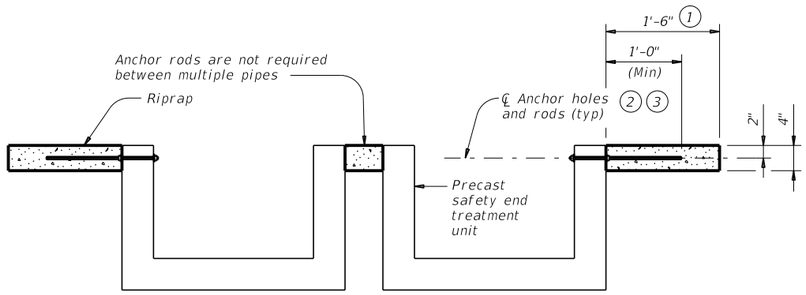
DATE:
FILE:



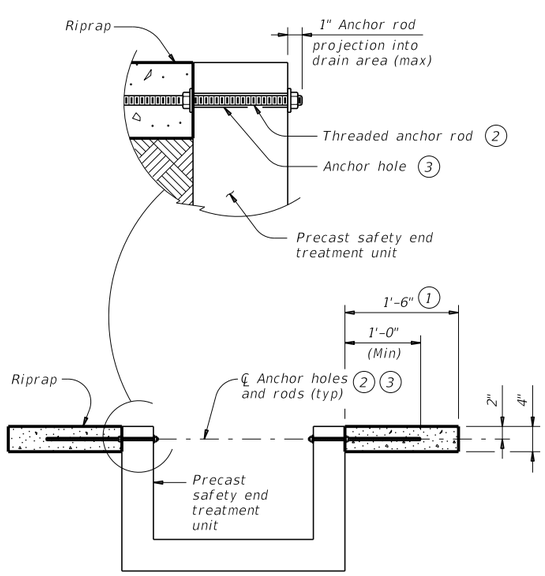
PLAN



LONGITUDINAL ELEVATION



MULTIPLE PIPE INSTALLATION



SINGLE PIPE INSTALLATION

SECTION A-A

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) 5

Nominal Culvert (Pipe) I.D.	PSET-SC and PSET-SP Standards				PSET-RC and PSET-RP Standards			
	Unit Width "W"	Side Slope			Unit Width "W"	Side Slope		
		3:1	4:1	6:1		3:1	4:1	6:1
12"	23.0"	0.1	0.2	0.2	16.0"	0.1	0.1	0.2
15"	26.5"	0.2	0.2	0.3	19.5"	0.1	0.2	0.2
18"	30.0"	0.2	0.2	0.3	23.0"	0.2	0.2	0.3
24"	37.0"	0.3	0.3	0.5	30.0"	0.2	0.3	0.4
30"	44.5"	0.3	0.4	0.6	37.0"	0.3	0.3	0.5
36"	51.5"	0.4	0.5	0.7	44.0"	0.3	0.4	0.6
42"	58.5"	0.5	0.6	0.8	51.0"	0.4	0.5	0.7

(1) Riprap placed beyond the limits shown will be paid as concrete riprap in accordance with Item 432, "Riprap". When riprap is cast integrally with the precast safety end treatment, this dimension is 1'-0" minimum.

(2) 1#2" Dia ASTM A307 Gr A threaded anchor rod with 2 nuts and 2 washers. Galvanize all components in accordance with Item 445, "Galvanizing". Repair galvanizing that is damaged during transport or construction in accordance with the specifications.

(3) 3#4" through holes in walls of safety end treatment for riprap anchor rods may be drilled with rotary (coring or masonry) type drilling equipment or may be formed. Do not use percussive (star) type drilling equipment. If holes are drilled, patch spalls in the inside face of the wall exceeding 1#2" from the holes.

(4) Provide riprap toe wall when dimension is shown elsewhere in the plans or when field conditions require a toe wall.

(5) Quantities shown are for one end of one reinforced concrete pipe culvert. For multiple pipe culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only. Quantities are based on the minimum unit lengths shown on the Precast Saftey End Treatment (SET) standard sheets.

MATERIAL NOTES:

Provide Class "B" riprap in accordance with Item 432, "Riprap".
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise. The anchor rods shown are always required.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment".
Refer to PSET-SC or PSET-SP standard sheets for details of square safety end treatments not shown. Refer to PSET-RC or PSET-RP standard sheets for details of round safety end treatments not shown.
For precast units with integrally cast riprap, substitute reinforcing steel in the amount on 0.26 in./ft. minimum for the threaded anchor rods shown. When requested, submit sealed engineering drawings for approval prior to construction. Shop drawings will not be required. Note that a proprietary precast unit with integral riprap is available from L&R Precast Concrete Works, Inc. (956) 583-6293 or www.lrprecast.com.
Payment for riprap and toewalls is included in the price bid for each safety end treatment.

These riprap details are only applicable when notes that require placement of riprap with precast safety end treatments are shown elsewhere in the plans.

Precast units with integrally cast riprap are permitted unless noted otherwise on the plans.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT
TYPE II
RIPRAP DETAILS

PSET-RR

FILE: psetrrse-20.dgn	DN: GAF	CK: TxDOT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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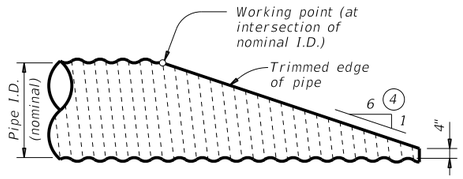
	DAL	DALLAS		89

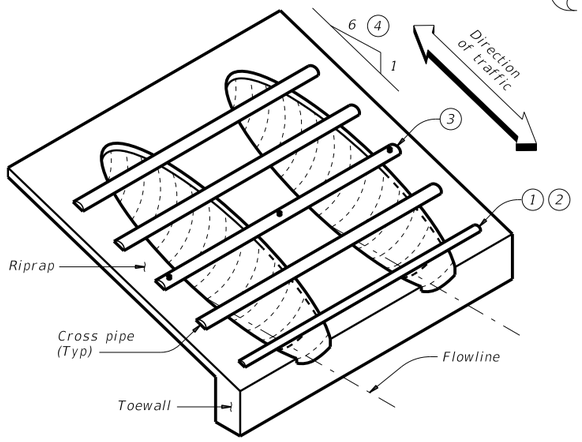
DATE:
FILE:



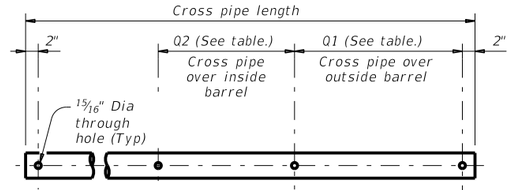
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

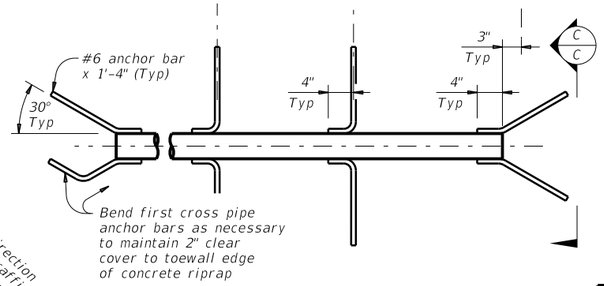
(Showing corrugated metal pipe (CMP) culvert Details at reinforced concrete pipe (RCP) culvert are similar.)



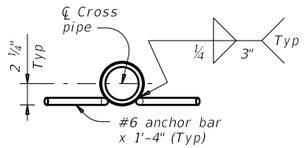
ISOMETRIC VIEW OF TYPICAL INSTALLATION



PIPE WITH BOLTED ANCHOR

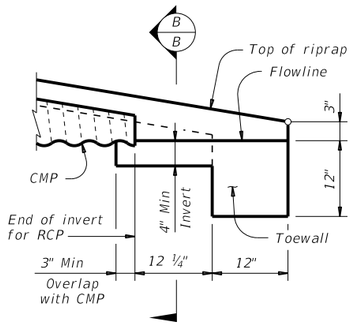


PIPE WITH ANCHOR BARS



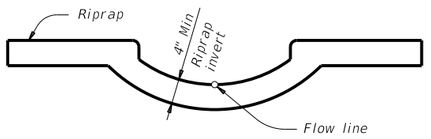
SECTION C-C

CROSS PIPE DETAILS



DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



SECTION B-B

(Cross pipes not shown for clarity.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES (2)

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' - 9"	N/A	2' - 1"	1' - 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' - 11"	N/A	2' - 5"	2' - 2"		
18"	0.8	1' - 2"	N/A	2' - 10"	2' - 8"		
21"	0.9	1' - 4"	N/A	3' - 2"	3' - 1"		
24"	0.9	1' - 7"	N/A	3' - 6"	3' - 7"		
27"	1.0	1' - 8"	N/A	3' - 10"	3' - 11"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
30"	1.1	1' - 10"	N/A	4' - 2"	4' - 4"	2 or more pipe culverts	
33"	1.2	1' - 11"	4' - 2"	4' - 5"	4' - 8"	All pipe culverts	
36"	1.3	2' - 1"	4' - 5"	4' - 9"	5' - 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' - 4"	4' - 11"	5' - 5"	5' - 10"		
48"	1.7	2' - 7"	5' - 5"	6' - 0"	6' - 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' - 0"	5' - 11"	6' - 9"	7' - 6"		
60"	2.2	3' - 3"	6' - 5"	7' - 4"	8' - 3"		
66"	2.4	3' - 3"	6' - 11"	7' - 10"	8' - 9"		
72"	2.7	3' - 4"	7' - 5"	8' - 5"	9' - 4"		

(1) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.

(2) Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1#2" standard pipe (4" O.D.) for the first bottom pipe.

(3) Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.

(4) Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.

(5) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

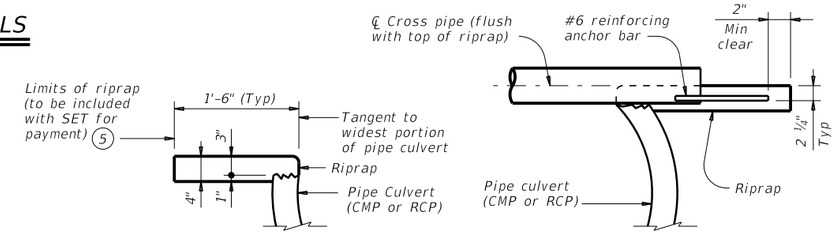
GENERAL NOTES:

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.

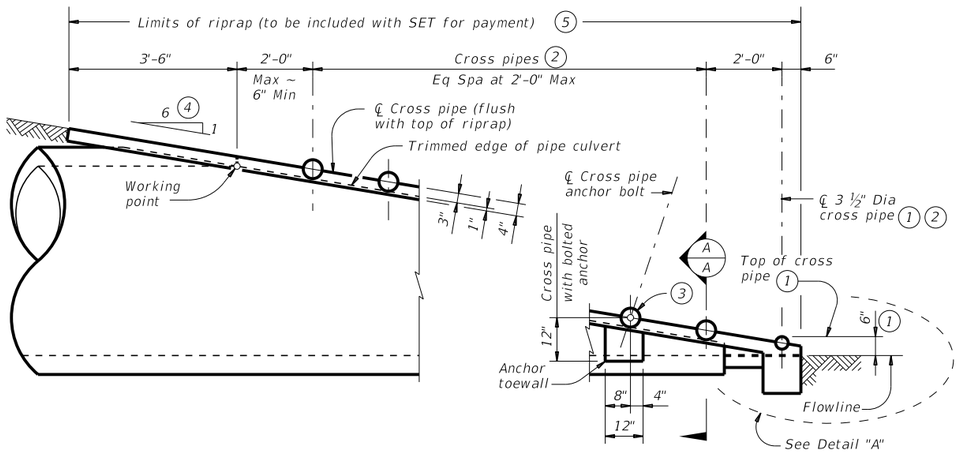
Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.



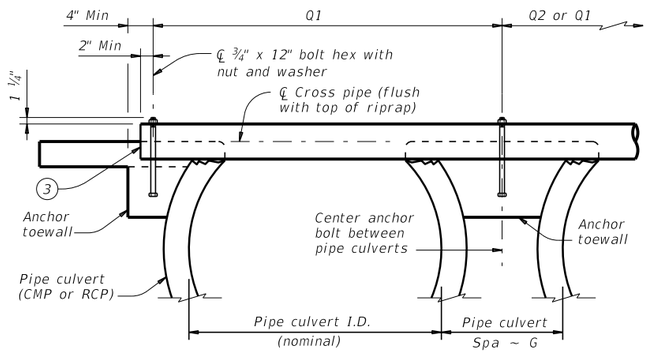
SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SHOWING CROSS PIPE WITH ANCHOR BAR



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA PIPE CULVERTS TYPE II ~ PARALLEL DRAINAGE

SETP-PD

FILE: setppdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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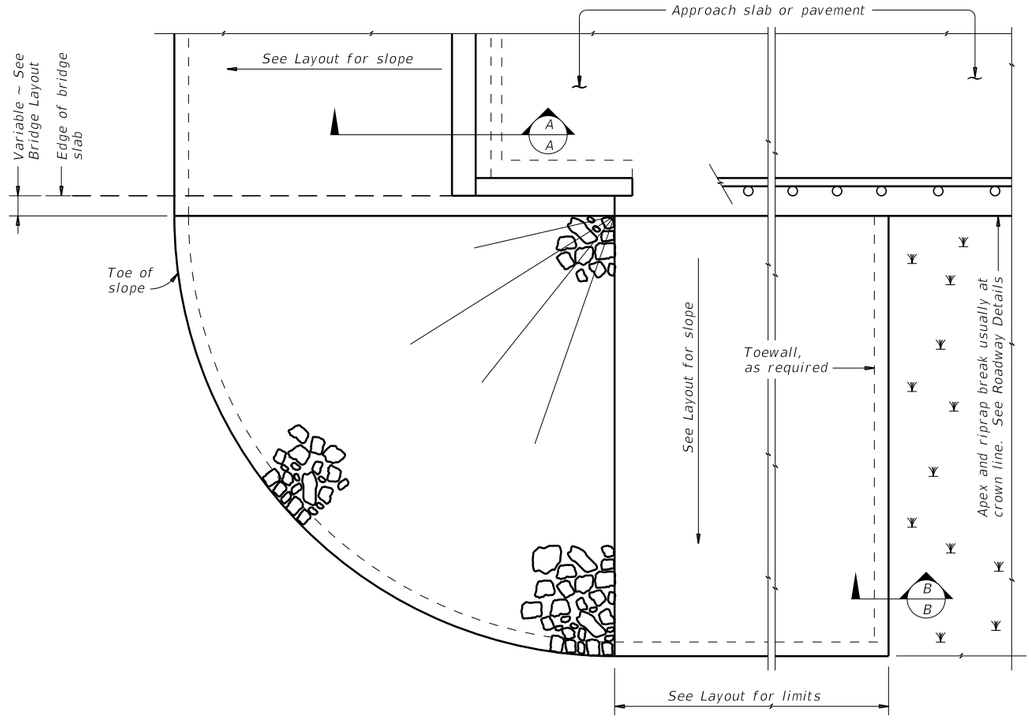
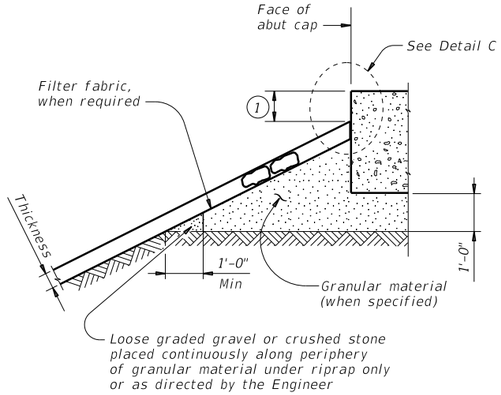
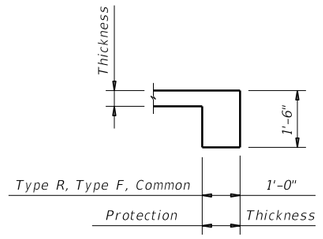


PLAN

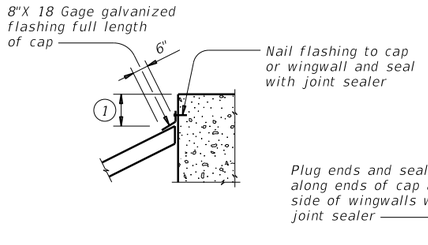


SECTION A-A AT CAP

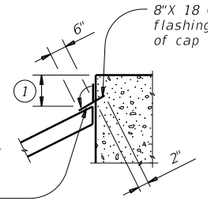


SECTION B-B

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".

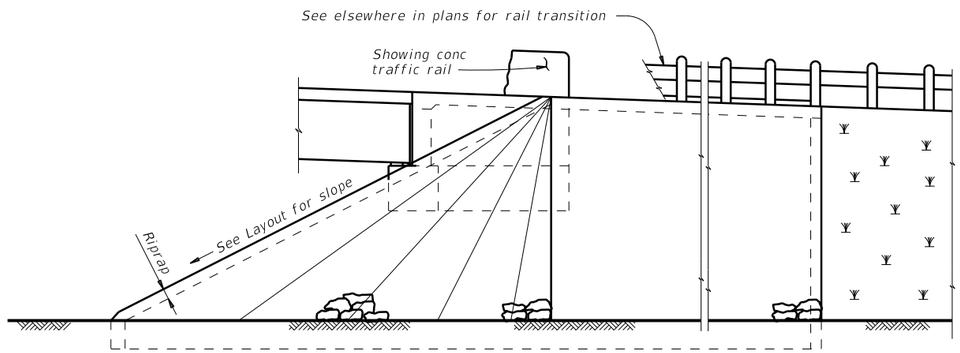


CAP OPTION A



CAP OPTION B

DETAIL C



ELEVATION

1 Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

GENERAL NOTES:
Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
See elsewhere in plans for locations and details of shoulder drains.

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

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©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
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	DAL	DALLAS		91

DATE:
FILE:

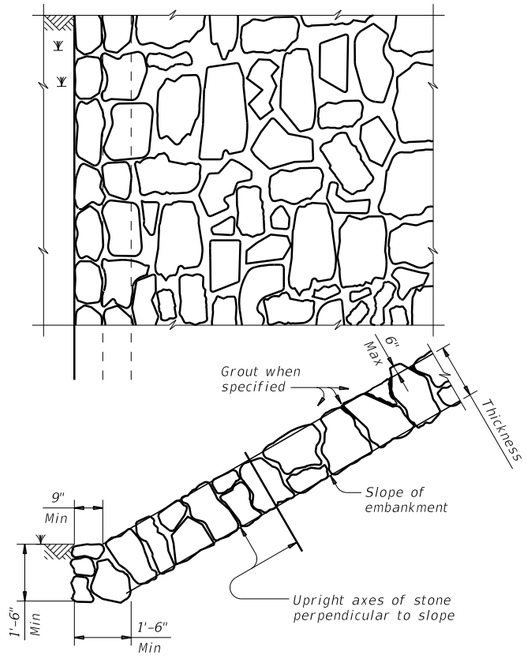


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

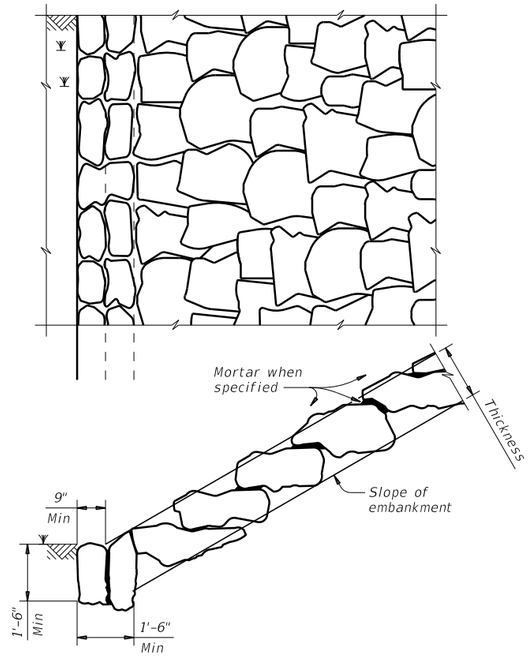


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

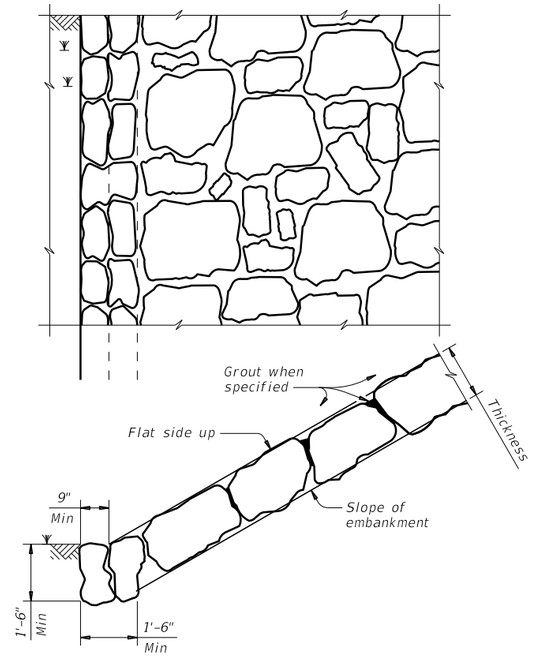


FIGURE 3 ~ TYPE F STONE RIPRAP

grouted

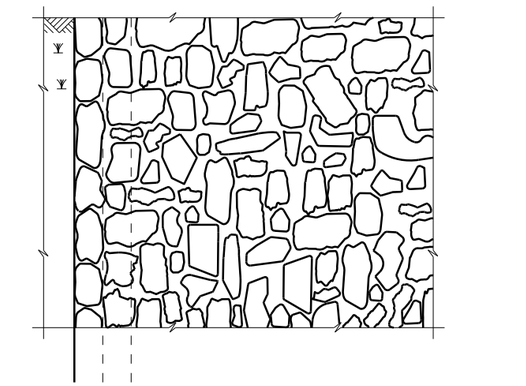


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

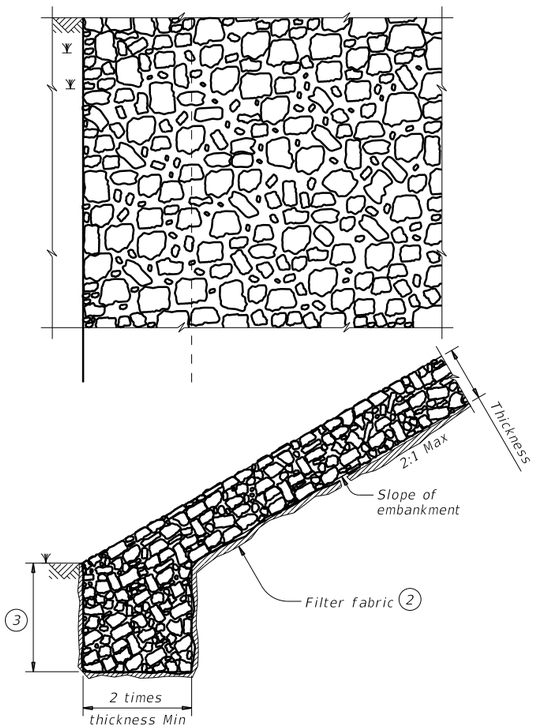


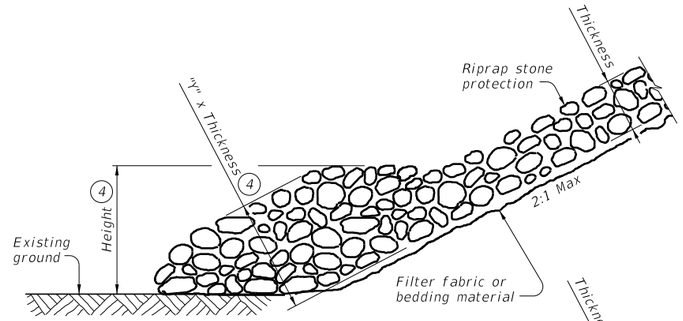
FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

(2) Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.

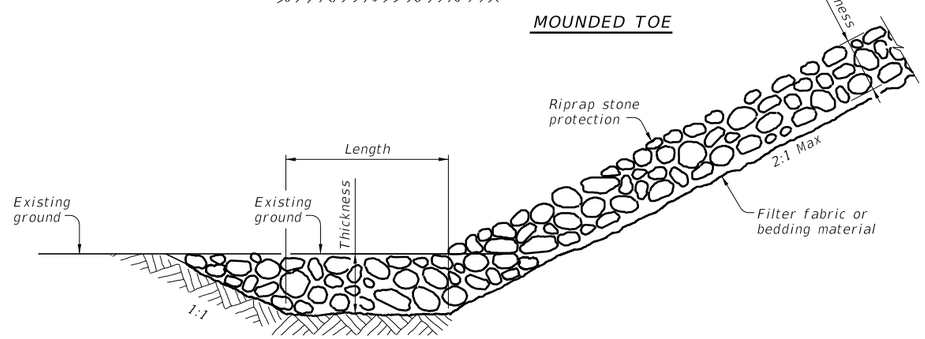
(3) Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

(4) "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.

(5) List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		92

TIME: $TIME$
DATE: $DATE$

SUMMARY OF STRUCTURAL ITEMS

ITEM NO.	416-6001	416-6002	420-6018	450-6082	4196-6002
SHEET	DRILL SHAFT (18 IN) (LF) *	DRILL SHAFT (24 IN) (LF) *	CL C CONC (ABUT) (HPC) (SRC) (CY)	(PEDESTRIAN RAIL) (SPL) (LF)	PREFAB PED STL TRUSS BRG SPAN (130 FT) (EA)
TOTAL FOR PROJECT CSJ 1047-03-079	158	172	27.0	57.5	1

* PROVIDE SULFATE RESISTANT CONCRETE

Jacobs Engineering Group
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THANG V. TRAN
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8/17/2023

Thang V. Tran

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Texas Department of Transportation

FM 1382-SIDEPATH

PEDESTRIAN BRIDGE QUANTITIES

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DAV	6	(See Title Sheet)		FM1382
CHECK TVT	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS VH	TEXAS	DAL	DALLAS	93
CHECK TVT	CONTROL	SECTION	JOB	
	1047	03	079	

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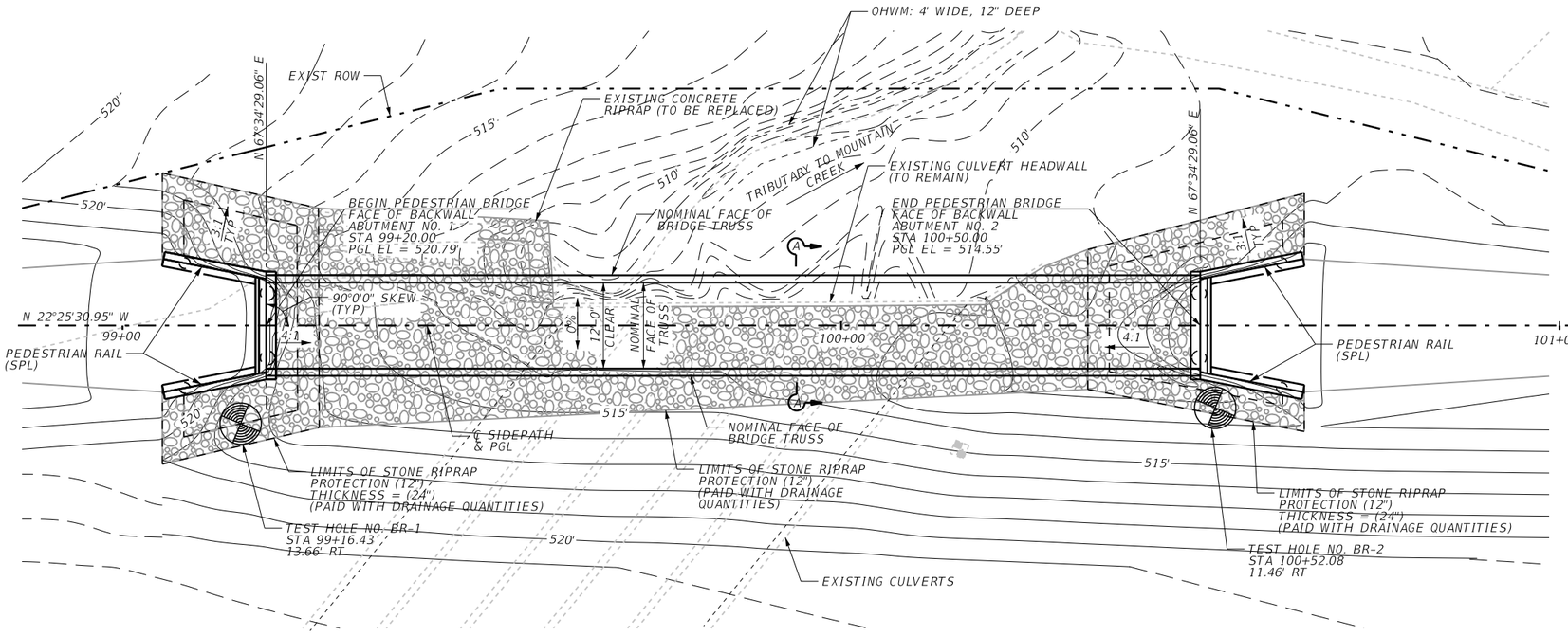
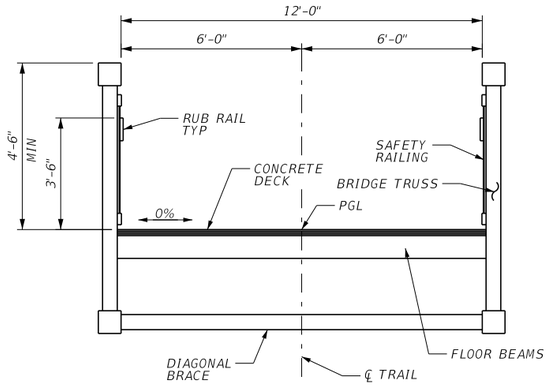
DATE: 8/11/2023



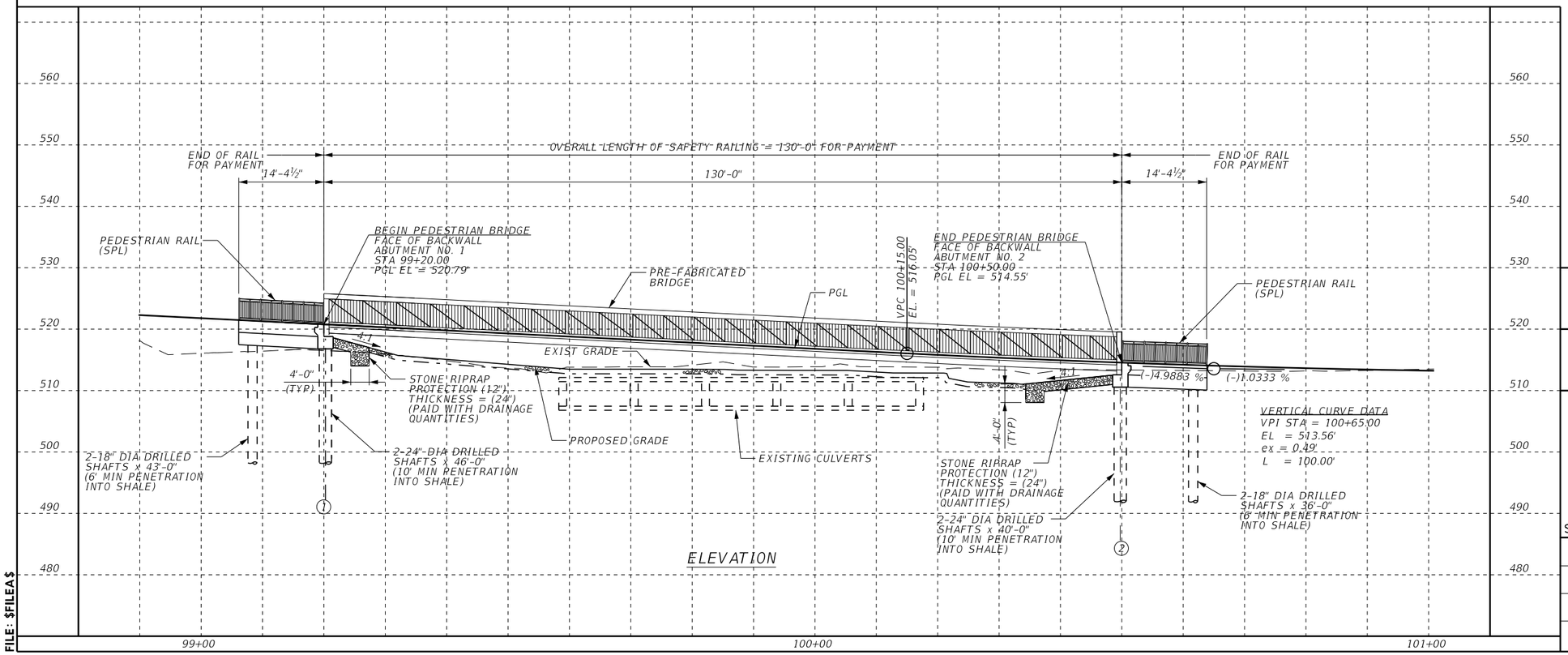
PLAN

NOTES:

1. PROVIDE PREFABRICATED PEDESTRIAN STEEL TRUSS BRIDGE SPAN PER SPECIAL SPECIFICATION 4196. THE BRIDGE SHOULD MATCH THE SAME AESTHETIC AS THE BRIDGE ON THE TRAIL SOUTH OF THE PROJECT IN THE CITY OF CEDAR HILL, TEXAS.
2. BRIDGE SHALL BE DESIGNED IN ACCORDANCE WITH AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, 2ND EDITION, WITH 2015 INTERIM REVISIONS.
3. SEE ABUTMENT DETAILS SHEET 2 OF 2 FOR GENERAL NOTES.
4. SEE STANDARD SRR FOR STONE RIPRAP DETAILS.



SECTION A-A
SCALE: NTS



ELEVATION

FILE: $FILEA$

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Texas Department of Transportation

FM 1382-SIDEPATH

PEDESTRIAN BRIDGE PLAN AND PROFILE

SCALE: 1"=20' (H) 1"=20' (V) SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DAV	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
TVT	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	
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TVT				

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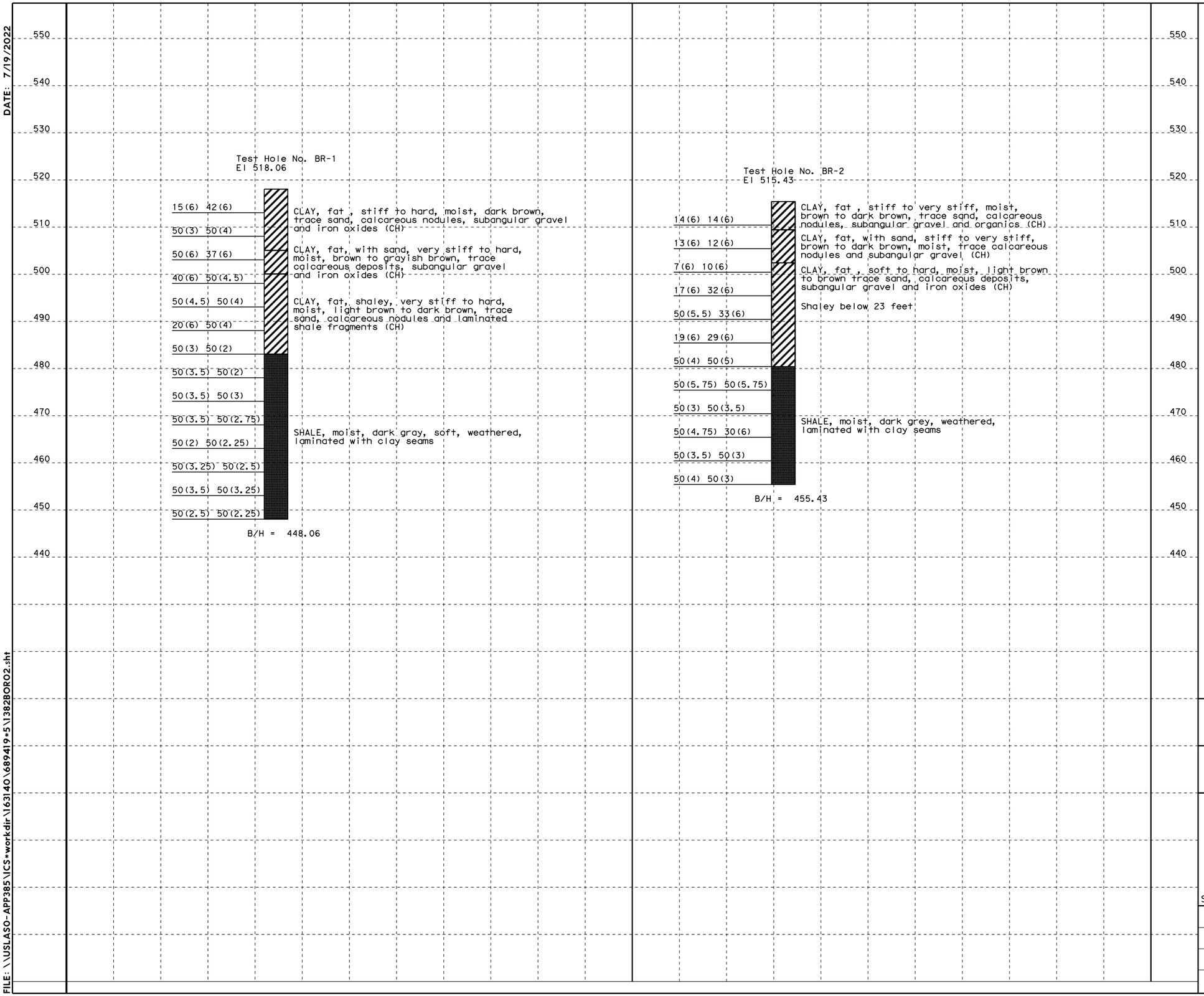
DATE: 7/19/2022



0 10 20
SCALE IN FEET

NOTES:
1. SEE "PROJECT LAYOUT" SHEET FOR BORING LOCATION INFORMATION.

STATE OF TEXAS
DIPENDRA TIMALSINA SHARMA
136305
LICENSED
PROFESSIONAL ENGINEER
7/19/2022

HVJ ASSOCIATES
HVJ North Texas - Chelliah Consultants, Inc.
8701 John Carpenter Freeway
Suite 250
Dallas, Texas 75247
Firm Registration: F-17942

FM 1382-SIDEPATH

PEDESTRIAN BRIDGE
BORING LOGS

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CAN	6	(See Title Sheet)		FM1382
CHECK JPP	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS BDG	TEXAS	DAL	DALLAS	95
CHECK JPP	CONTROL	SECTION	JOB	
	1047	03	079	

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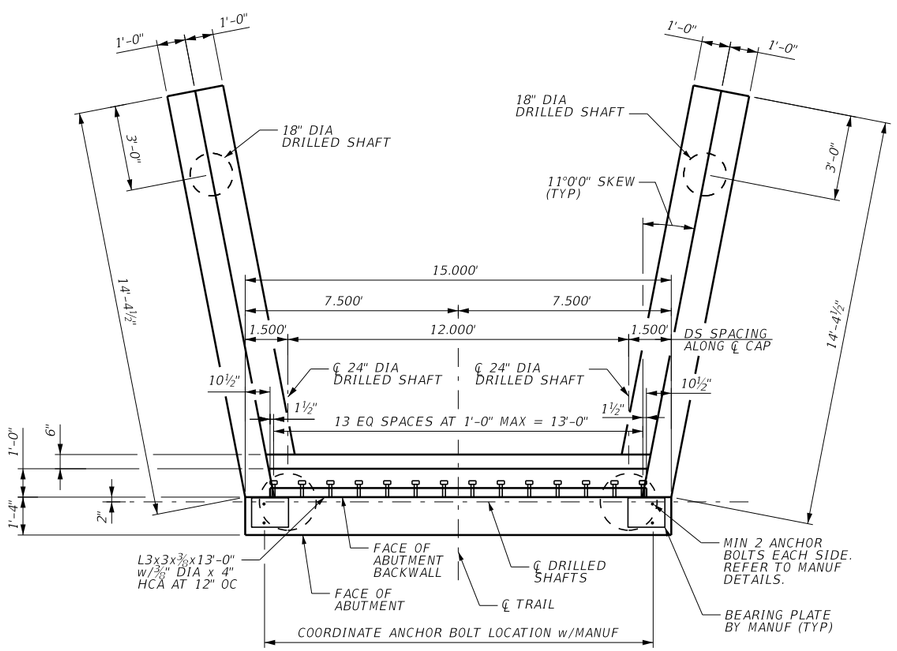
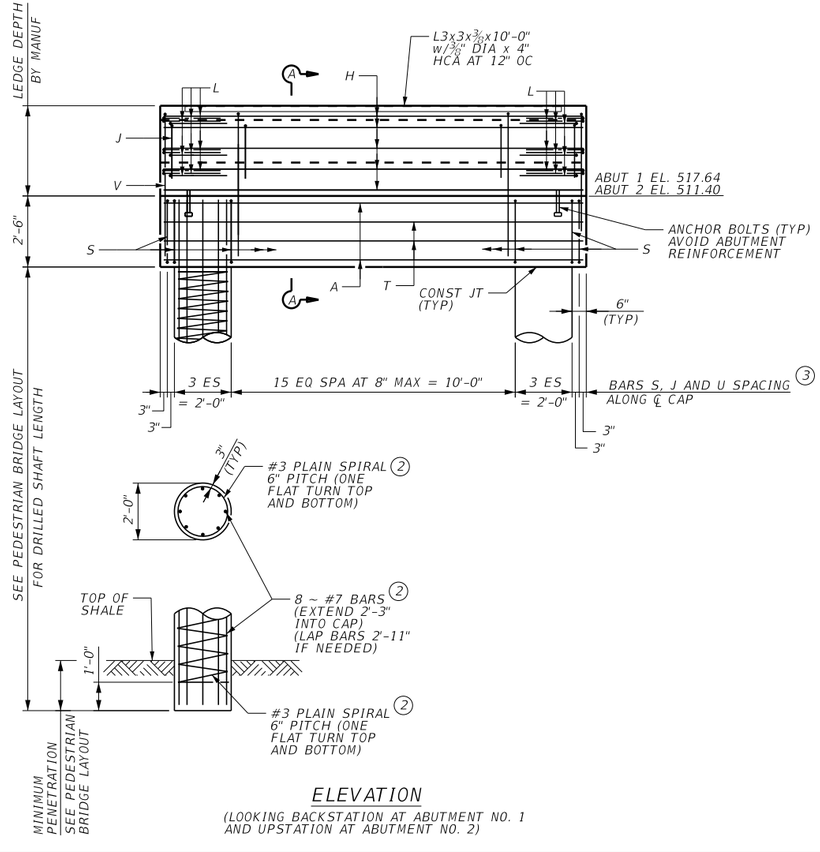
DATE: 8/23/2023



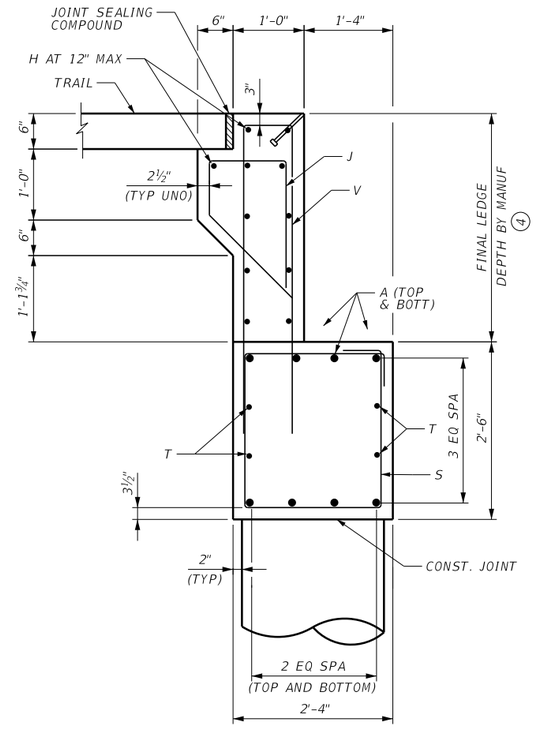
PLAN

(LOOKING BACKSTATION AT ABUTMENT NO. 1 AND UPSTATION AT ABUTMENT NO. 2)



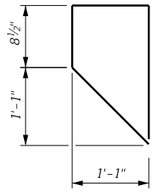
ELEVATION

(LOOKING BACKSTATION AT ABUTMENT NO. 1 AND UPSTATION AT ABUTMENT NO. 2)



NOTE: CONTRACTOR SHALL TAKE EXTRA PRECAUTION WHEN GRADING AT ABUTMENTS. DO NOT OVER EXCAVATE.

SECTION A-A



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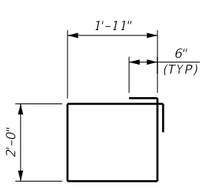

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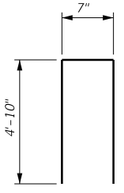

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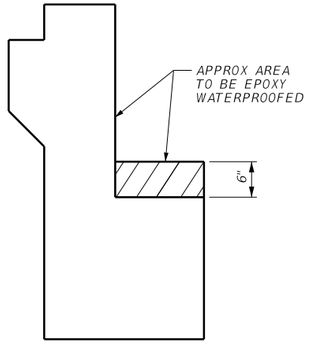
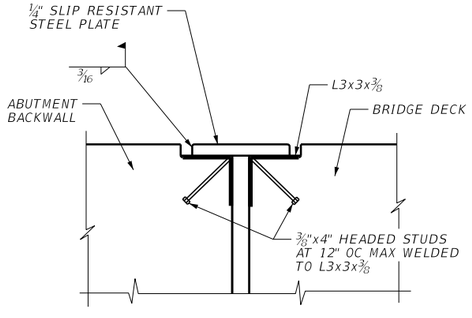


WATERPROOFING DETAIL

NOTE: THE FACE OF BACKWALL AND THE TOP, FRONT, AND ENDS OF THE CAP AS SHOWN SHALL BE EPOXY WATERPROOFED AS PER ITEM 427, "EPOXY WATERPROOFING". WATERPROOFING SHALL NOT BE CONSIDERED A SEPARATE PAY ITEM, BUT IT IS SUBSIDIARY TO CLASS "C" CONCRETE.



ARMOR JOINT DETAIL

NOTE: HEADED STUDS AND L-SHAPES SHALL BE HOT DIP GALVANIZED AFTER WELDING STUDS TO L-SHAPES. ARMOR JOINT SHALL NOT BE CONSIDERED A SEPARATE PAY ITEM, BUT IT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 421, CLASS "C" CONCRETE.

TABLE OF ESTIMATED QUANTITIES ①

BAR	NO.	SIZE	LENGTH	WEIGHT
A	8	#11	14'-8"	623
H	11	#6	14'-8"	242
J	24	#5	5'-2"	129
L	18	#6	4'-0"	108
S	20	#5	8'-10"	184
T	4	#5	14'-8"	61
V	24	#5	10'-3"	257
wH1	16	#6	15'-3"	366
wH2	20	#6	14'-0"	421
wS	30	#4	7'-6"	150
wV	30	#5	10'-3"	321
REINFORCING STEEL			LB	2,862
CL "C" CONC (ABUT) (HPC) (SRC) ④			CY	13.5

① QUANTITIES SHOWN ARE FOR ONE ABUTMENT ONLY.

② INCLUDED IN PRICE BID FOR DRILLED SHAFTS.

③ ELIMINATE BARS S OVER DRILLED SHAFTS.

④ ASSUMED LEDGE DEPTH = 3'-1¾". ENGINEER SHALL BE NOTIFIED IF LEDGE DEPTH DIFFERS.

FOR EACH LINEAR FOOT VARIATION IN BACKWALL AND WINGWALL DEPTH, MAKE THE FOLLOWING ADJUSTMENTS:
BARS V LENGTH, 2'-0"
TWO BARS H, 29'-4"
BARS wV LENGTH, 2'-0"
FOUR BARS wH2, 56'-0"

REINFORCING STEEL, 241 LB
CLASS "C" CONCRETE, 1.56 CY

COVER DIMENSIONS ARE CLEAR DIMENSIONS. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

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Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

PEDESTRIAN BRIDGE ABUTMENT DETAILS

SCALE: N.T.S. SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DAV	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
TVT	TEXAS	DAL	DALLAS	96
GRAPHICS	CONTROL	SECTION	JOB	
VH	1047	03	079	
CHECK				
TVT				

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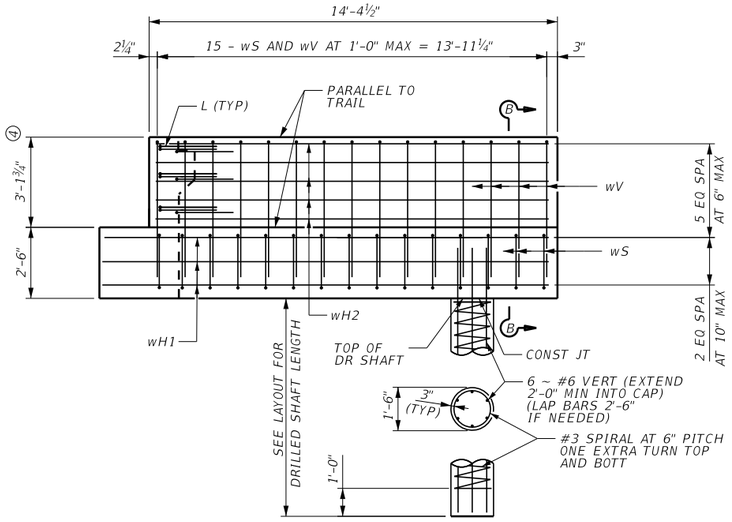
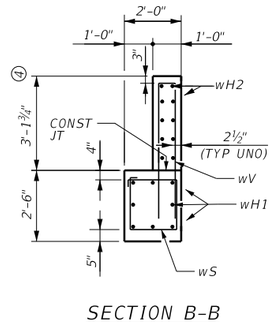


WINGWALL ELEVATION



SECTION B-B

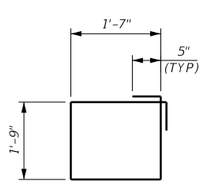
④ ESTIMATED LEDGE DEPTH = 3'-1¾" NOTIFY ENGINEER OF DISCREPANCY.

GENERAL NOTES:

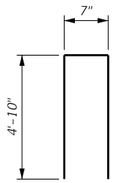
1. CONSTRUCTION OF PREFABRICATED BRIDGE ABUTMENTS AND SUPPORTING DRILLED SHAFTS SHALL BE IN ACCORDANCE WITH THESE DRAWINGS, THE 2014 TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES, AND SUPPLEMENTAL SPECIFICATIONS SUBMITTED HEREIN.
2. DESIGN LOADS:

BRIDGE DEAD LOAD (W/DECK)	180,000 LB
PEDESTRIAN LIVE LOADS	90 PSF
VEHICLE LIVE LOADS	H10

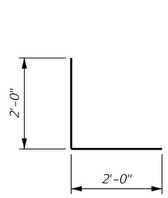
3. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ACTUAL BRIDGE DEAD LOAD EXCEEDS THE VALUE SHOWN.
4. CALCULATED FOUNDATION LOAD = 55 TON/DS AT ABUTMENTS.
5. CHAMFER ALL EXPOSED CONCRETE EDGES ¾" UNLESS NOTED OTHERWISE.
6. ALL DRILLING AND CONSTRUCTION OF DRILLED SHAFTS SHALL BE IN ACCORDANCE WITH A REPORT BY HVJ ASSOCIATES. DATED APRIL 1 PROJECT NO. DG-17-10419.1.2.
7. CONTRACTOR SHALL CONSTRUCT DRILLED SHAFTS IN ACCORDANCE WITH REQUIREMENTS OF TXDOT ITEM 416.
8. BAR DIMENSIONS ARE MEASURED TO CENTER OF BARS, UNLESS NOTED OTHERWISE.
9. BRIDGE MANUFACTURER SHALL PROVIDE WEATHERING STEEL BRIDGE STRUCTURE DESIGN INCLUDING CONCRETE DECK DESIGN THAT IS SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS.
10. BRIDGE MANUFACTURER SHALL PROVIDE ANCHOR BOLT DESIGN AND DETAILS. ALL DETAILING, INCLUDING EMBEDMENTS, SHALL BE CLEARLY DEPICTED ON THE SHOP DRAWINGS.
11. BRIDGE MANUFACTURER SHALL PROVIDE SAFETY RAIL AND RUB RAIL DETAILS AND SHOP DRAWINGS FOR REVIEW BY THE ENGINEER.
12. COMPLETE SHOP DRAWINGS FOR THE STRUCTURAL WORK SHALL BE SUBMITTED TO THE ENGINEER AT LEAST 10 WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTRACTOR SHALL REVIEW AND APPROVE ALL SHOP DRAWINGS PRIOR TO ENGINEER REVIEW. ENGINEER REVIEW DOES NOT RELIEVE CONTRACTOR OF FULL RESPONSIBILITY FOR CORRECT FABRICATION AND CONSTRUCTION OF THE WORK. THE CONTRACTOR NEEDS TO RECEIVE SHOP PLAN APPROVAL PRIOR TO STARTING THE WORK.



BARS wS



BARS wV



BARS L

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FM 1382-SIDEPATH

PEDESTRIAN BRIDGE ABUTMENT DETAILS

SCALE: N.T.S. SHEET 2 OF 2

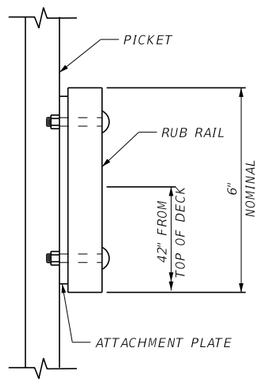
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DAV	6	(See Title Sheet)		FM1382
CHECK TVT	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS VH	TEXAS	DAL	DALLAS	97
CHECK TVT	CONTROL	SECTION	JOB	
	1047	03	079	

FILE: $FILEA$

TIME: 6:21:55 AM
DATE: 8/11/2023

EXAMPLE BRIDGE

(PEDESTRIAN BRIDGE ADJACENT TO FM 1382 IN CEDAR HILL, TEXAS)



RUB RAIL DETAIL

NOTE: FINAL RUB RAIL DETAIL TO BE PROVIDED BY PREFABRCATED TRUSS BRIDGE MANUFACTURER.

NOTE:

1. PROVIDE PREFABRICATED PEDESTRIAN STEEL TRUSS BRIDGE SPAN SIMILAR TO THE BRIDGE IMAGE SHOWN. SEE SPECIAL SPECIFICATION 4196 FOR INFORMATION.
2. THE IMAGE SHOWN ON THIS SHEET IS FOR ILLUSTRATIVE PURPOSES AND SHALL ONLY APPLY TO THIS PROJECT.

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CARLOS A. NEGRON
89418
LICENSED
PROFESSIONAL ENGINEER
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8/11/2023

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Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

PEDESTRIAN BRIDGE SPAN DETAILS

SCALE: N.T.S.

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DAV	6	(See Title Sheet)		FM1382
CHECK TVT	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS KAC	TEXAS	DAL	DALLAS	98
CHECK CAN	CONTROL	SECTION	JOB	
	1047	03	079	

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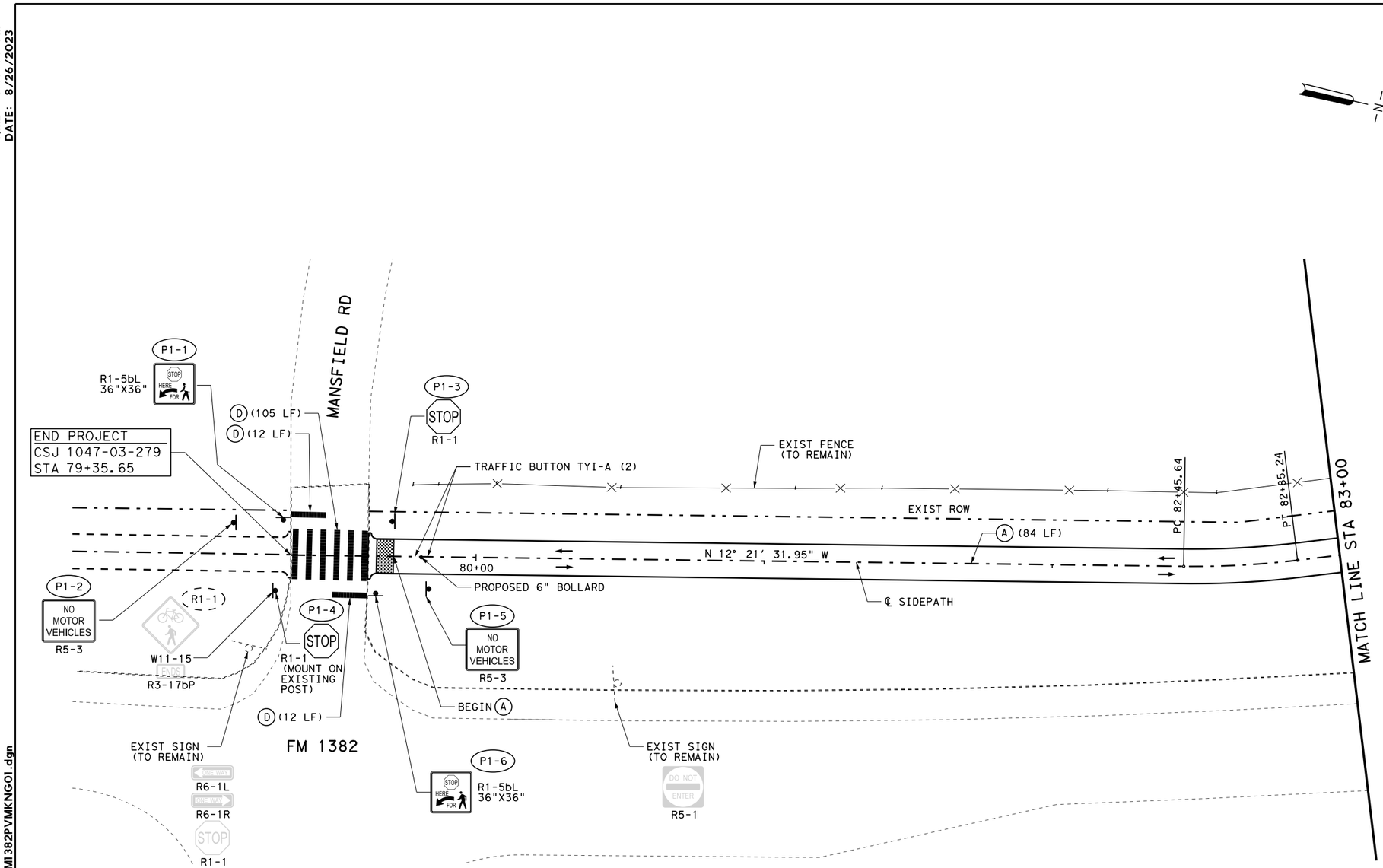
DATE: 8/26/2023



0 20 40
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY

Jacobs Engineering Group
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EDWARD M. PENTON
100190
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Texas Department of Transportation

FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
END PROJECT TO STA 83+00

SCALE: 1"=40' (H) SHEET 1 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	99
GRAPHICS PK	CONTROL	SECTION	JOB	
CHECK CAN	1047	03	079	

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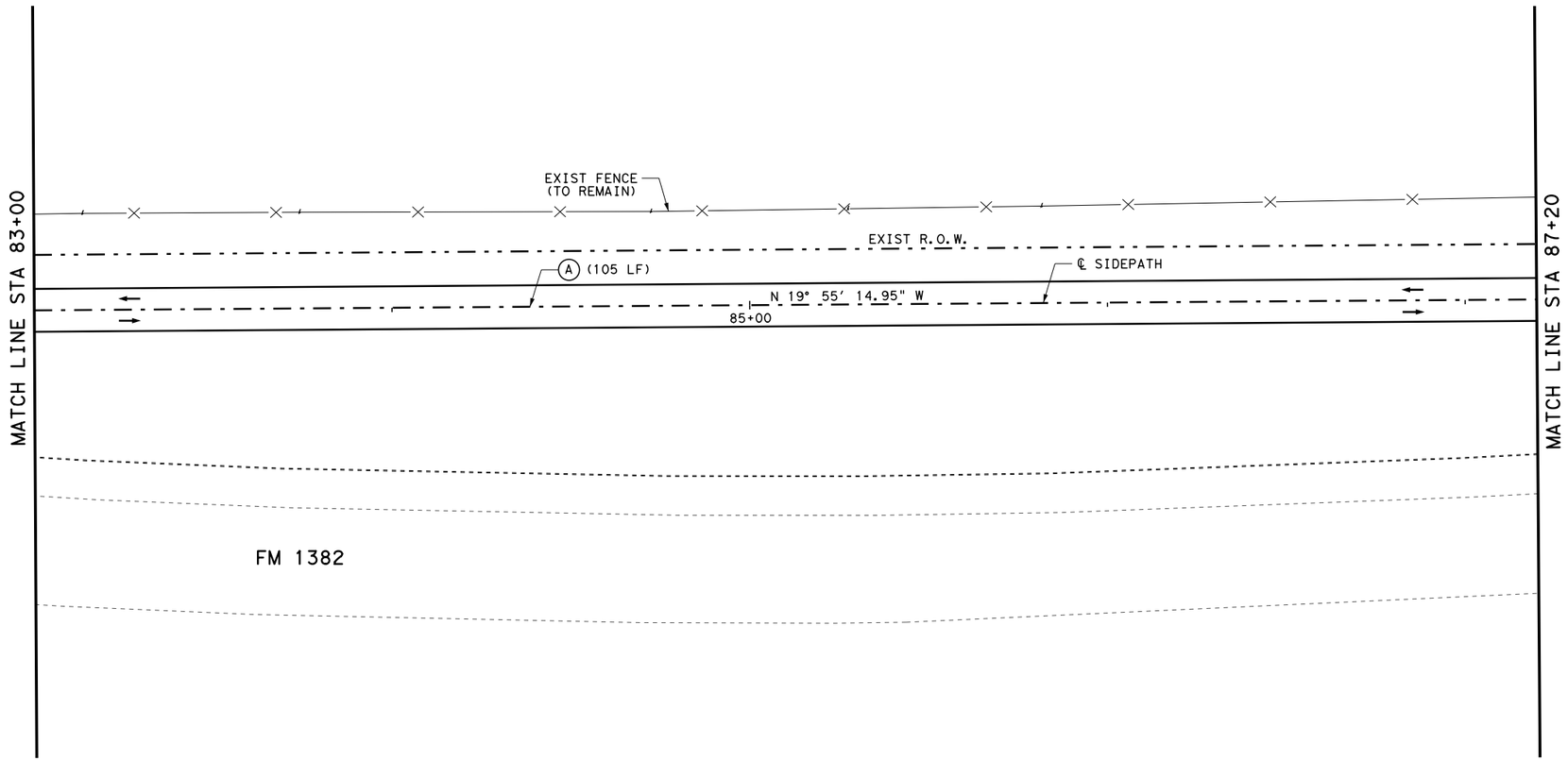
TIME: 1:05:46 PM
DATE: 8/26/2023

0 20 40
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



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8/26/2023

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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
STA 83+00 TO STA 87+20

SCALE: 1"=40' (H) SHEET 2 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	100
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CHECK	1047	03	079	
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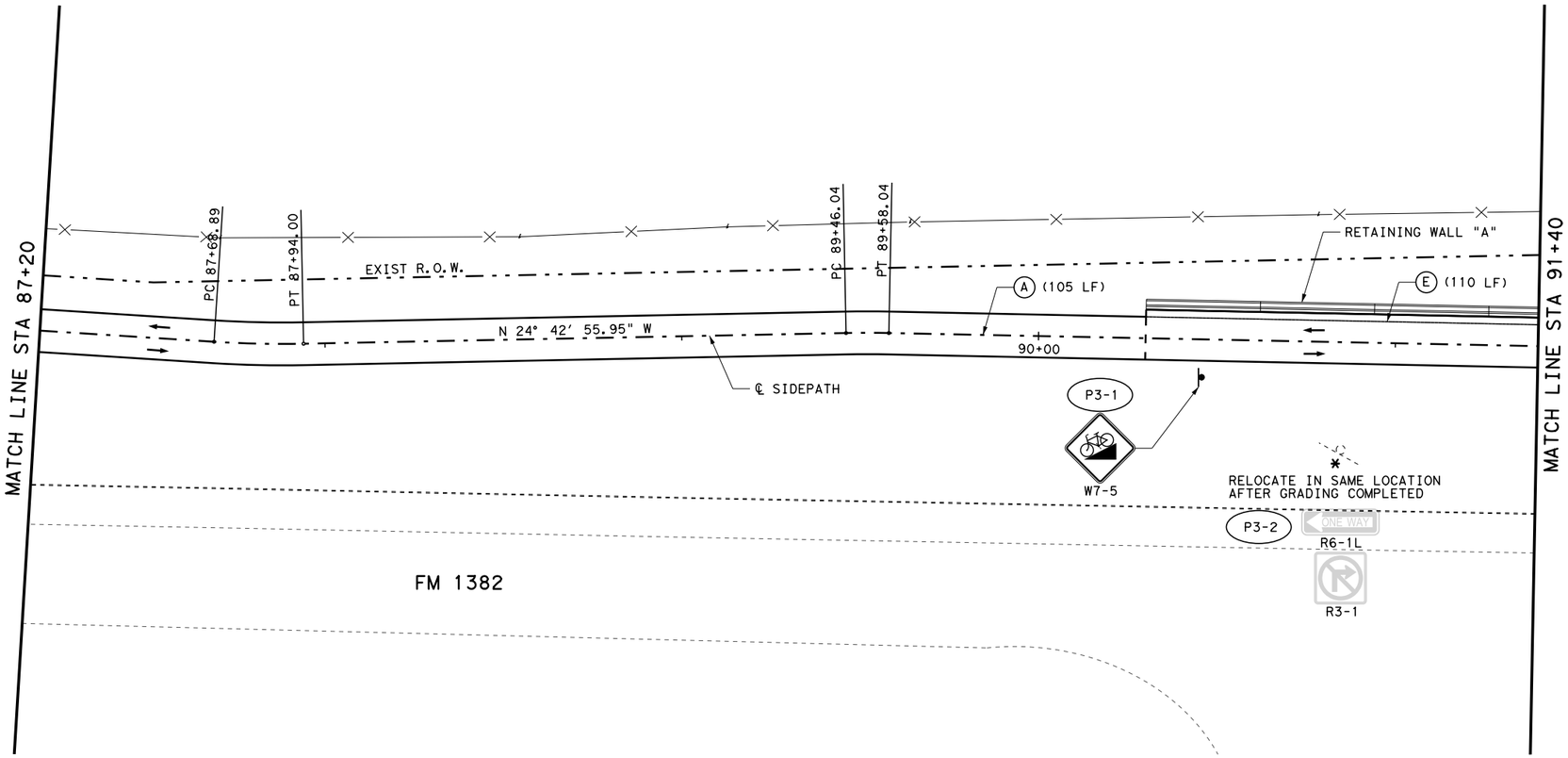
DATE: 8/26/2023



0 20 40
SCALE IN FEET

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED
PROFESSIONAL ENGINEER
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8/26/2023

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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS STA 87+20 TO STA 91+40

SCALE: 1"=40' (H) SHEET 3 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	101
GRAPHICS	CONTROL	SECTION	JOB	
PK	1047	03	079	
CHECK				
CAN				

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TIME: 1:05:47 PM
DATE: 8/26/2023

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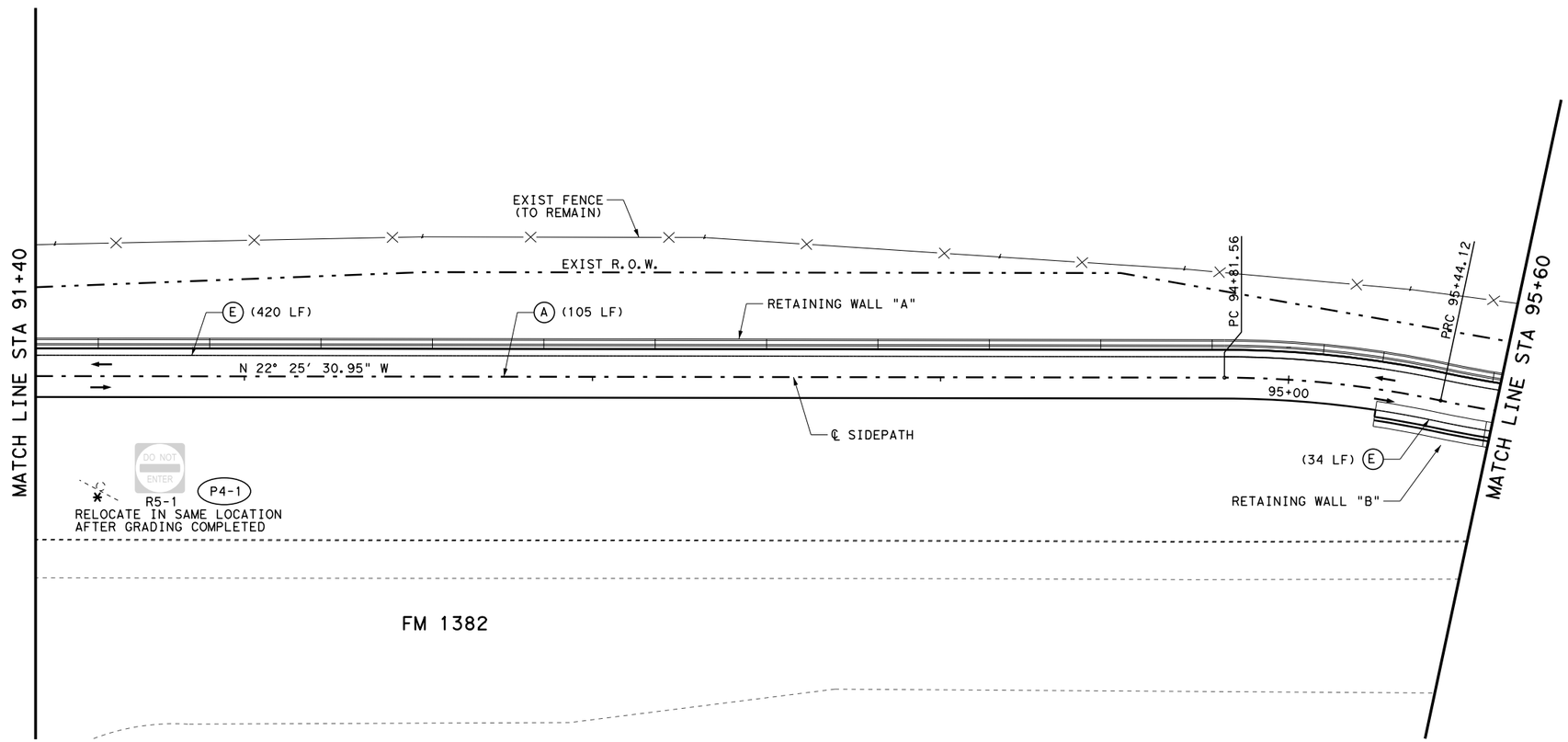
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS STA 91+40 TO STA 95+60

SCALE: 1"=40' (H) SHEET 4 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	102
GRAPHICS	CONTROL	SECTION	JOB	
PK	1047	03	079	
CHECK				
CAN				

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DATE: 8/26/2023

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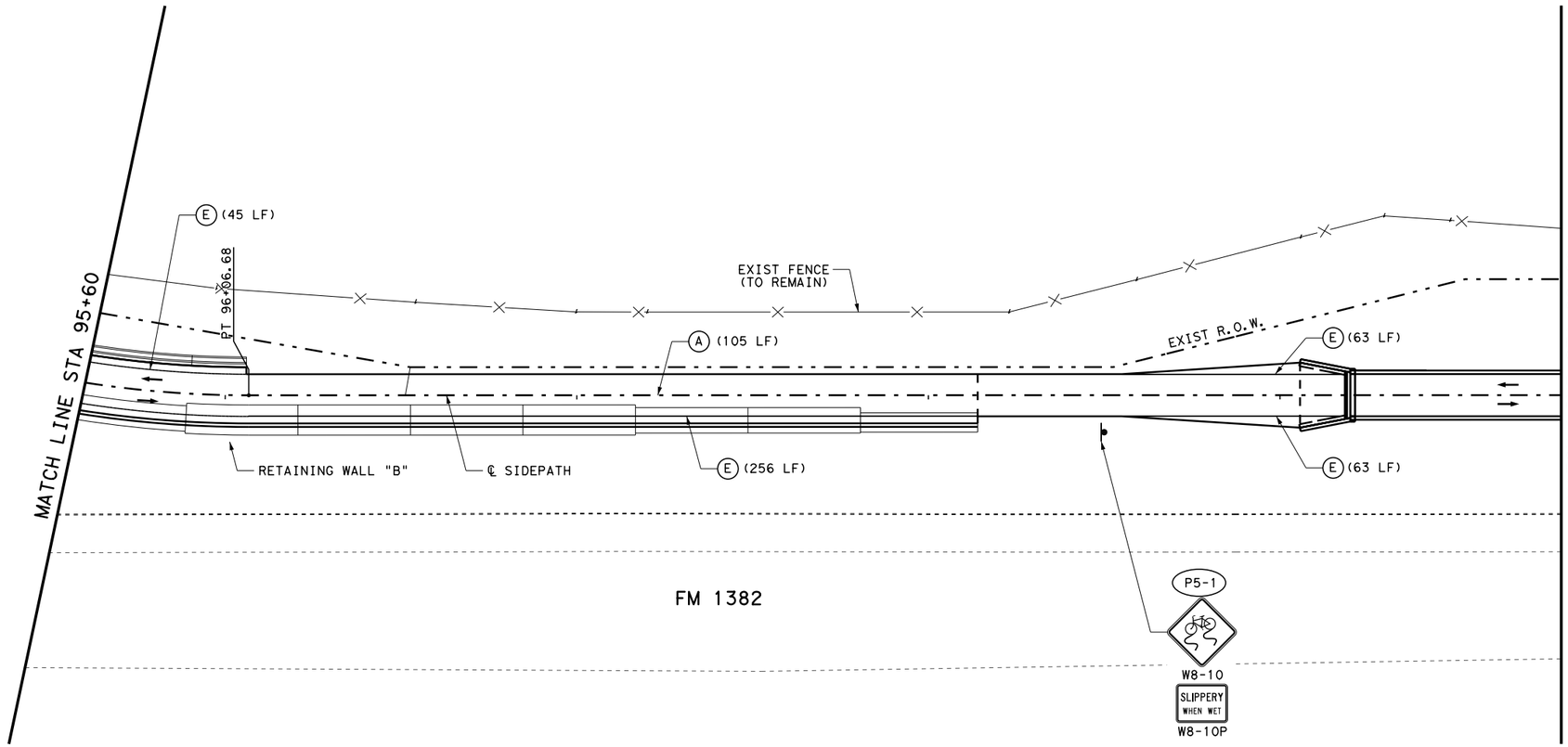
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS STA 95+60 TO STA 99+80

SCALE: 1"=40' (H) SHEET 5 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	103
PK	1047	03	079	
CHECK				
CAN				

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TIME: 1:06:54 PM
DATE: 8/26/2023

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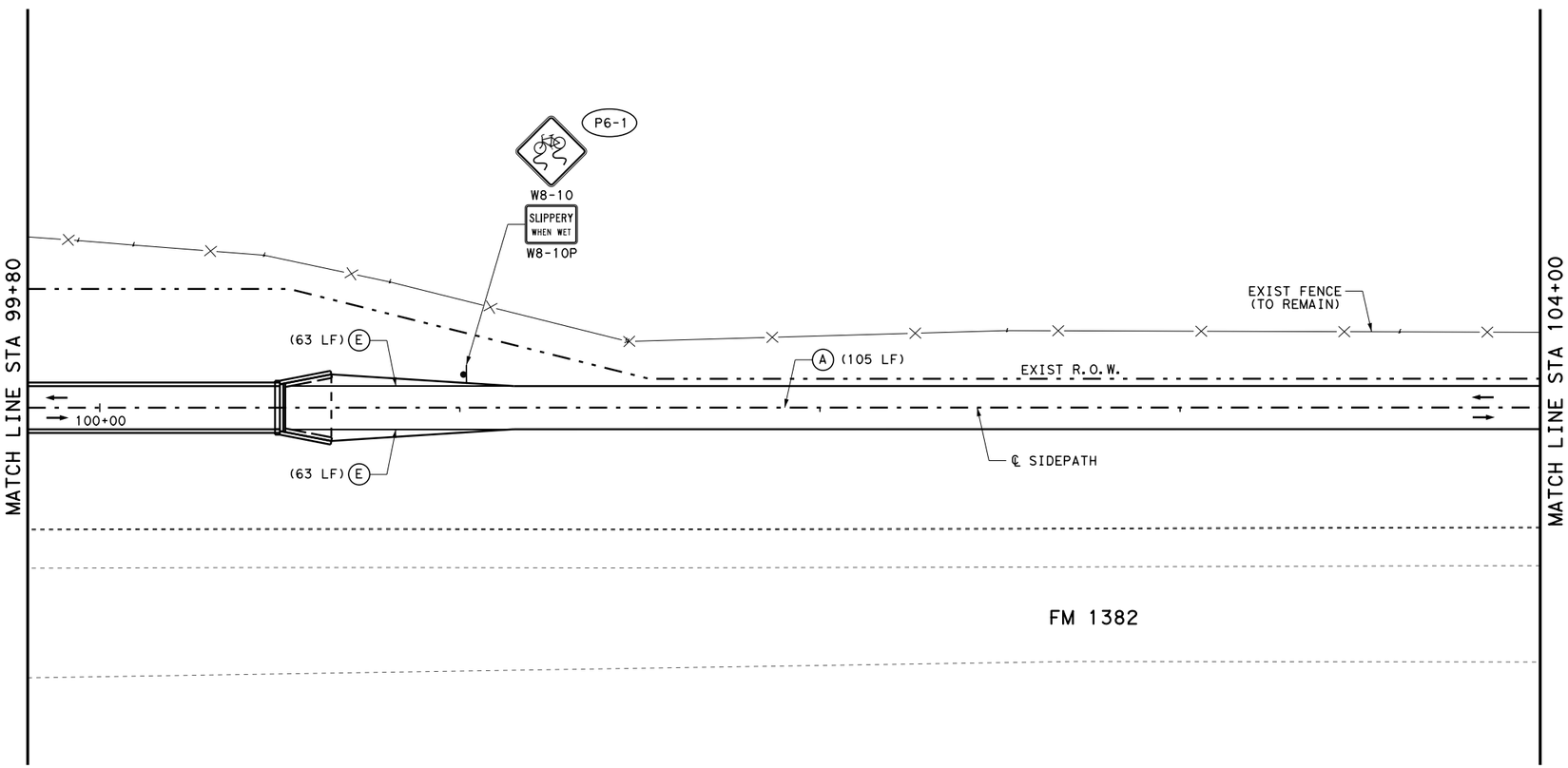
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS STA 99+80 TO STA 104+00

SCALE: 1"=40' (H) SHEET 6 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK CAN	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS PK	TEXAS	DAL	DALLAS	104
CHECK CAN	CONTROL	SECTION	JOB	
	1047	03	079	

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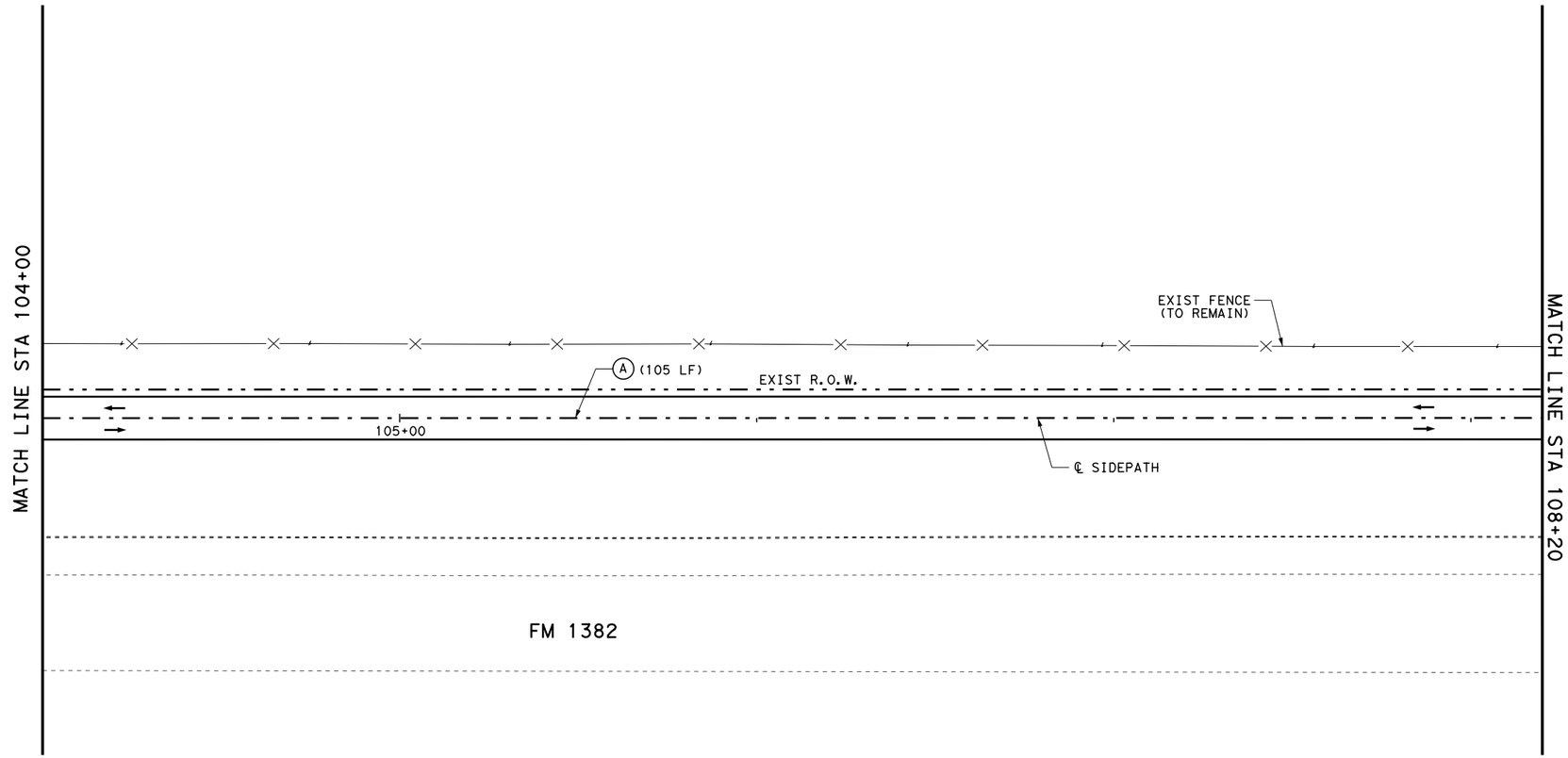

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SCALE IN FEET

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY

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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
STA 104+00 TO STA 108+20

SCALE: 1"=40' (H) SHEET 7 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	105
PK	1047	03	079	
CHECK				
CAN				

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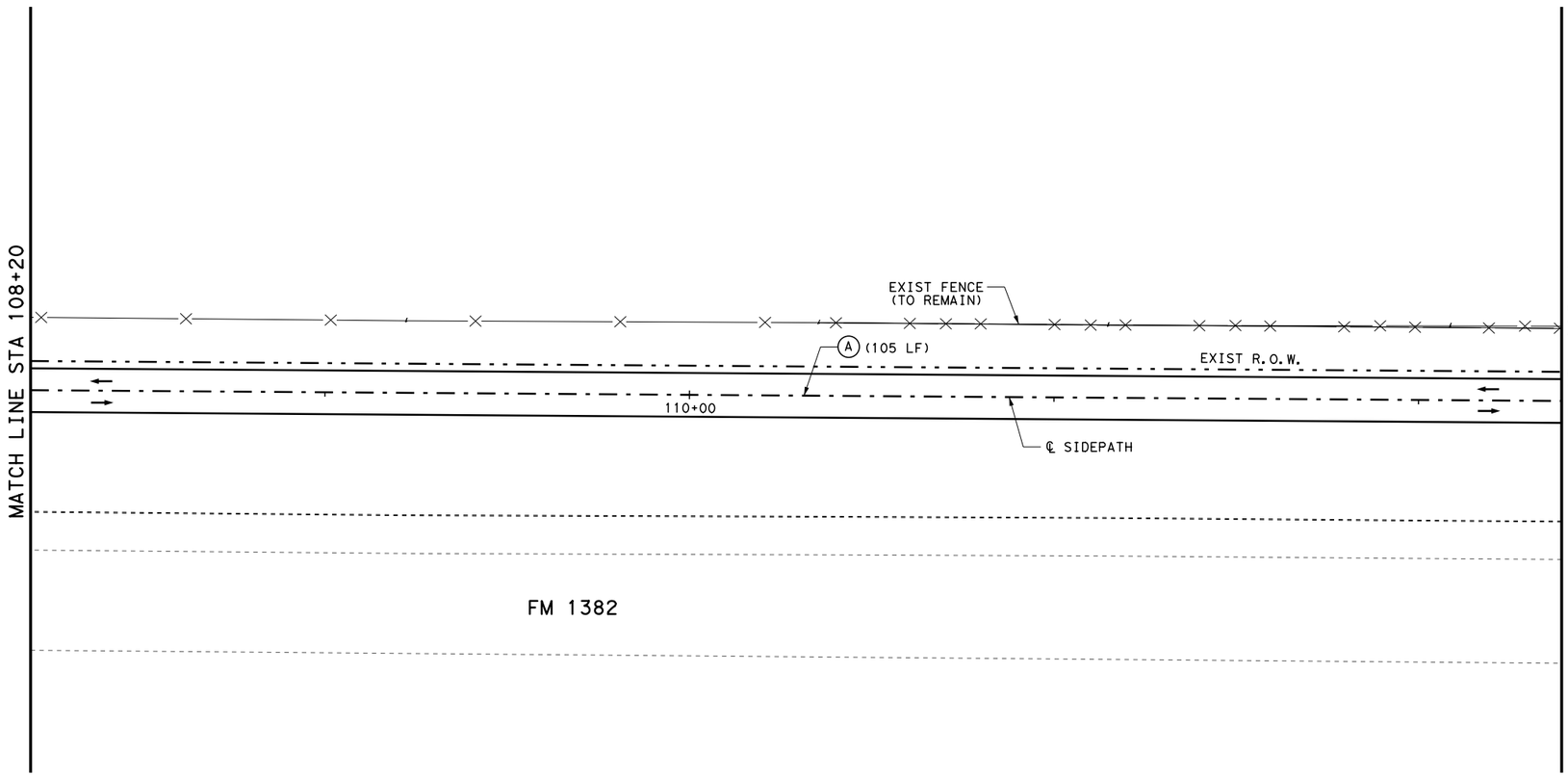

0 20 40
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY

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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
STA 108+20 TO STA 112+40

SCALE: 1"=40' (H) SHEET 8 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	106
GRAPHICS	CONTROL	SECTION	JOB	
PK	1047	03	079	
CHECK				
CAN				

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DATE: 8/26/2023

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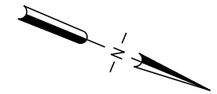
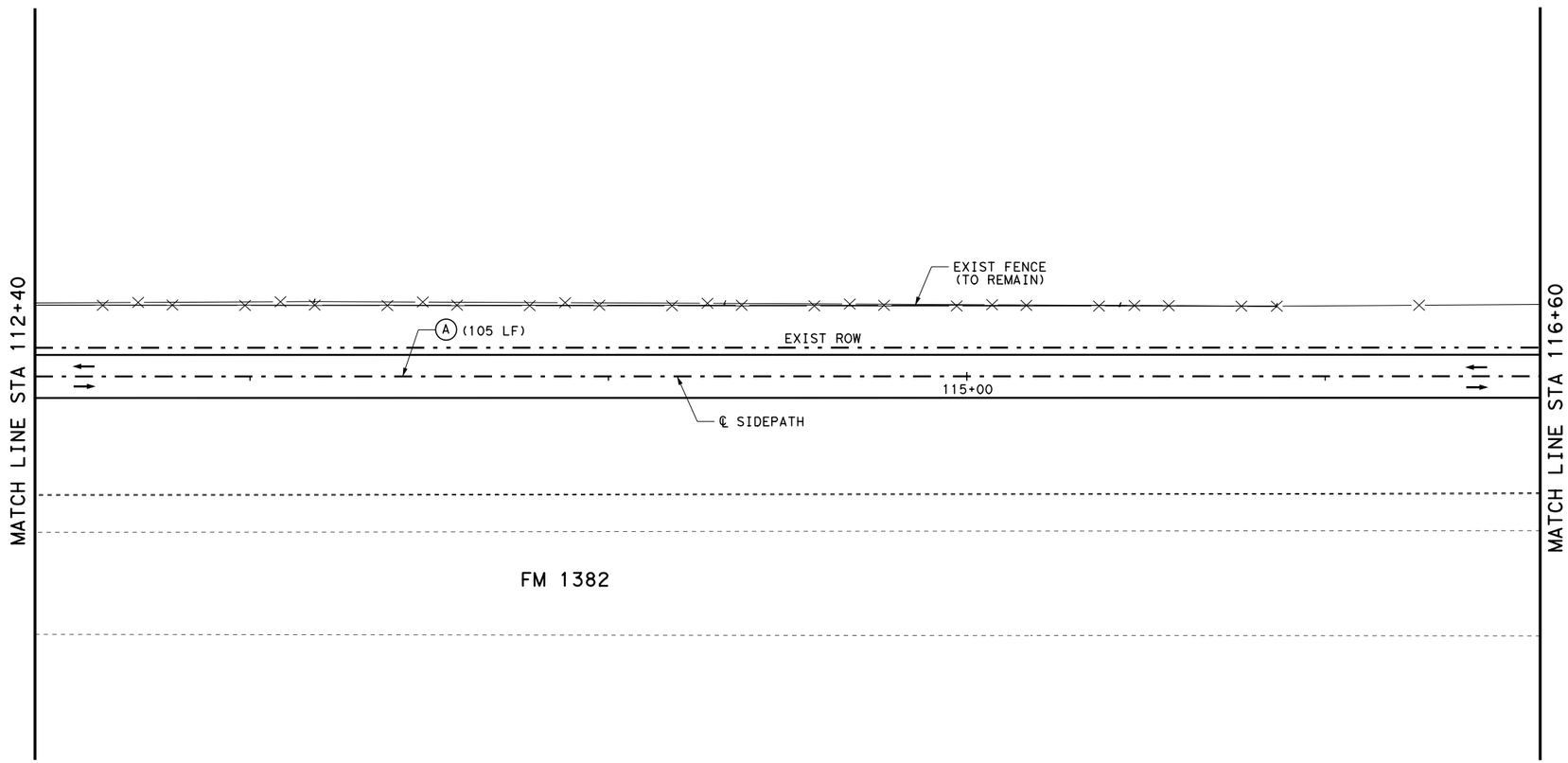


LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS STA 112+40 TO STA 116+60

SCALE: 1"=40' (H) SHEET 9 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	107
GRAPHICS	CONTROL	SECTION	JOB	
PK	1047	03	079	
CHECK				
CAN				

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DATE: 8/26/2023

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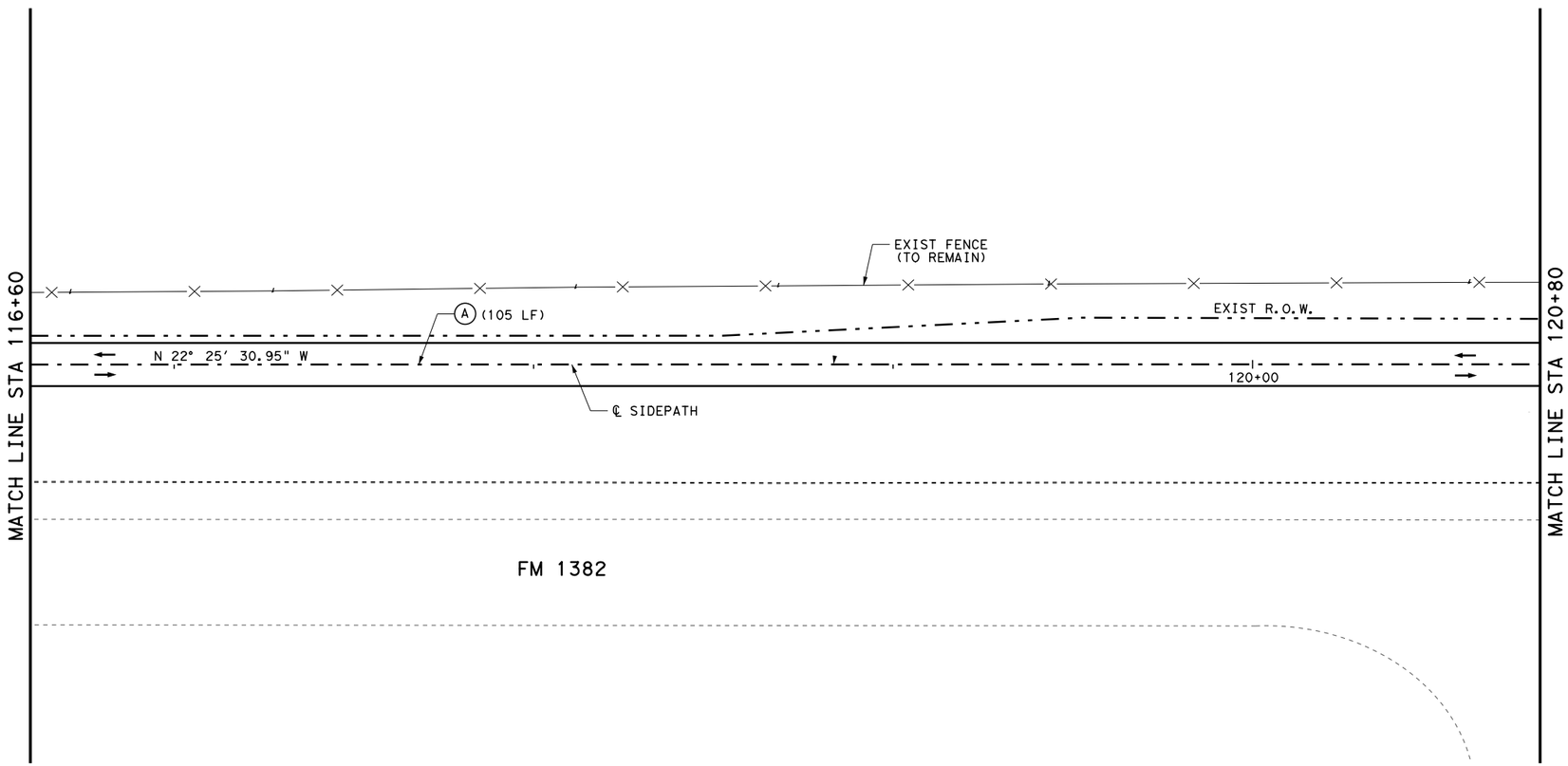
SCALE IN FEET



LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY

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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
STA 116+60 TO STA 120+80

SCALE: 1"=40' (H) SHEET 10 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	108
PK				
CHECK	1047	03	079	
CAN				

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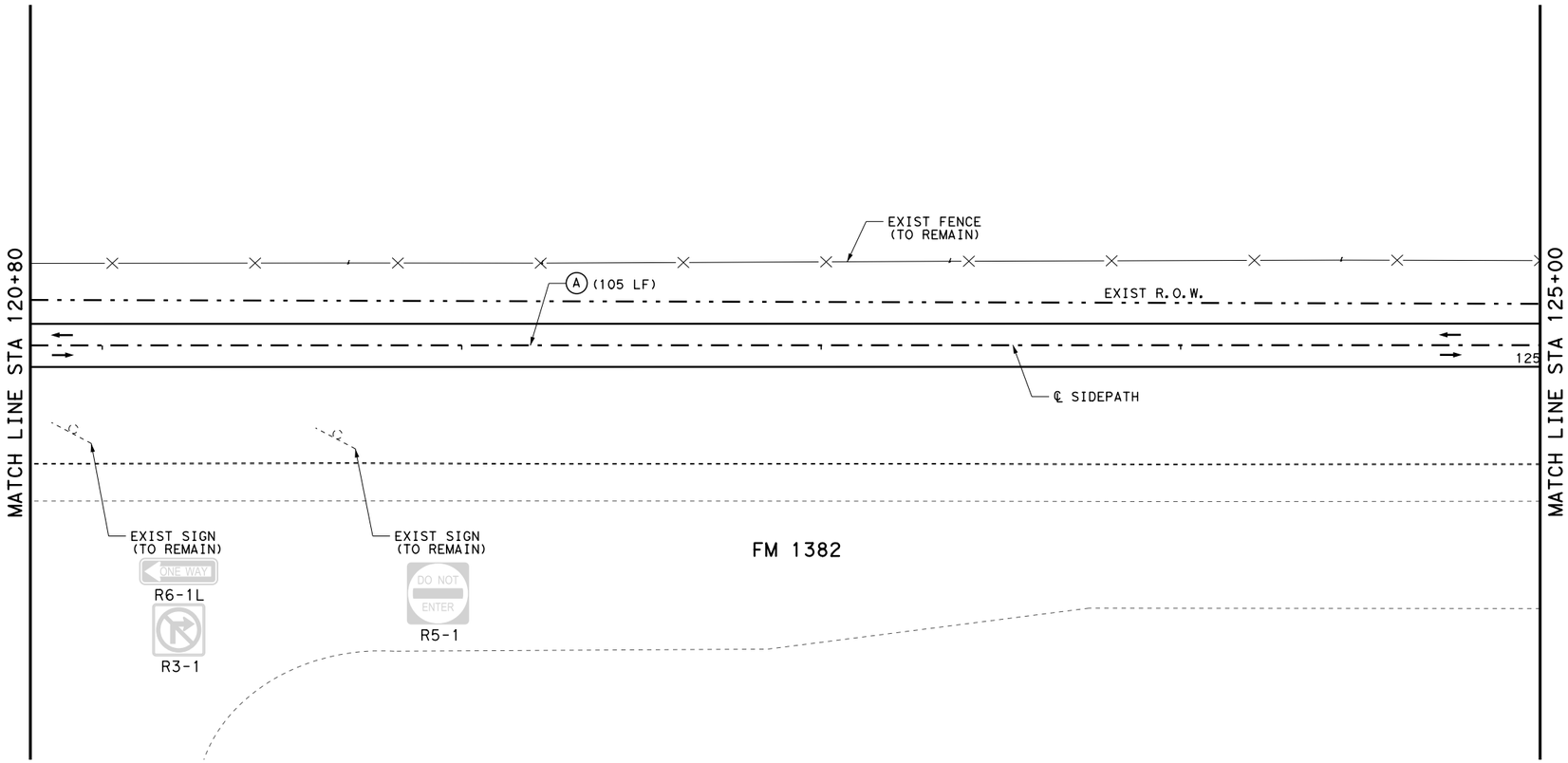
DATE: 8/26/2023



0 20 40
SCALE IN FEET

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY

Jacobs Engineering Group
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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS STA 120+80 TO STA 125+00

SCALE: 1"=40' (H) SHEET 11 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	109
PK				
CHECK	1047	03	079	
CAN				

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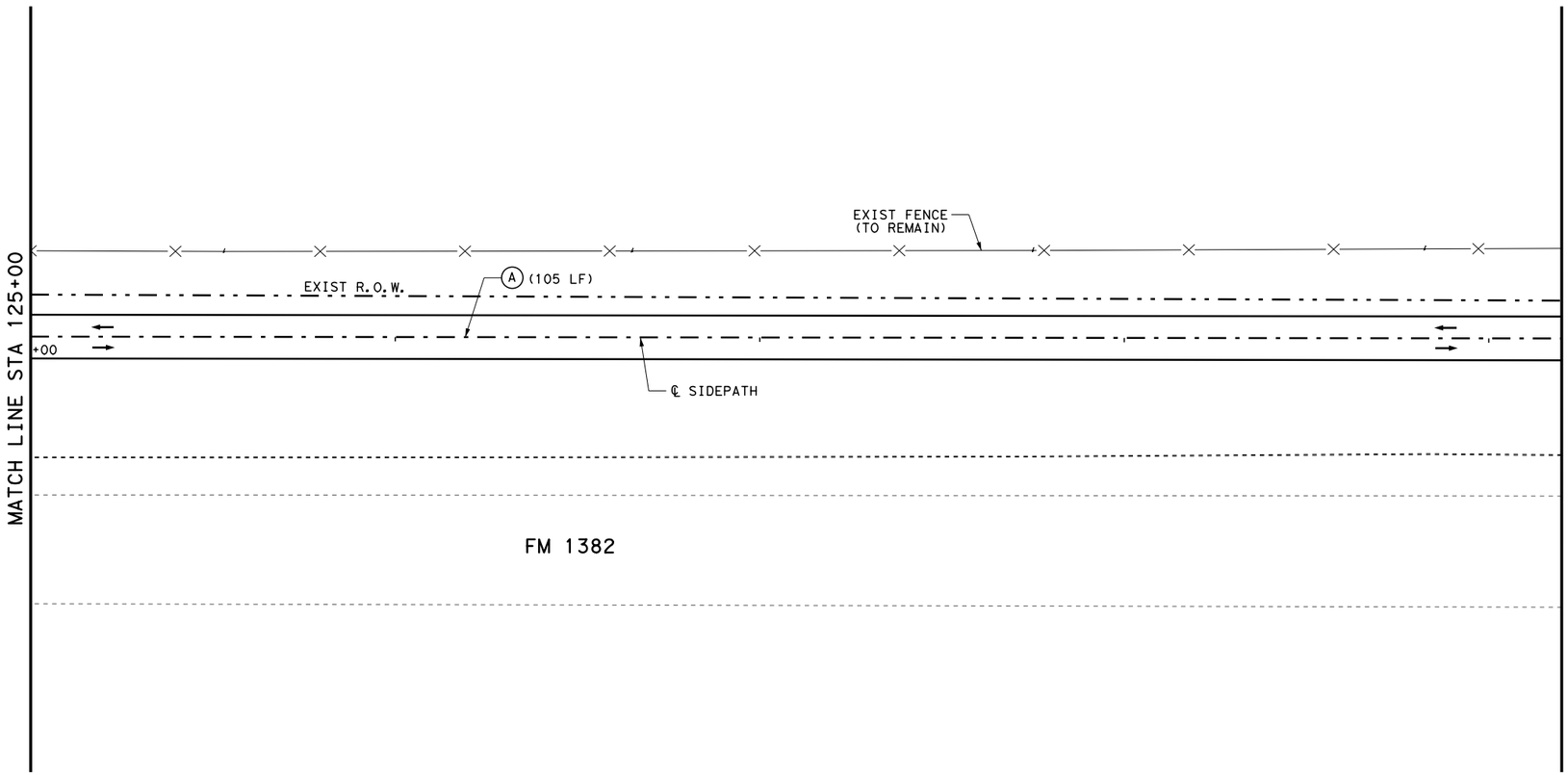
TIME: 1:06:13 PM
DATE: 8/26/2023

0 20 40
SCALE IN FEET

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



Engineering
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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
STA 125+00 TO STA 129+20

SCALE: 1"=40' (H) SHEET 12 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	110
GRAPHICS	CONTROL	SECTION	JOB	
PK	1047	03	079	
CHECK				
CAN				

FILE: \\USLASO-APP385\ICS*workdir\167964\689499*9\FM1382PVMKNG12.dgn

TIME: 1:05:49 PM
DATE: 8/26/2023

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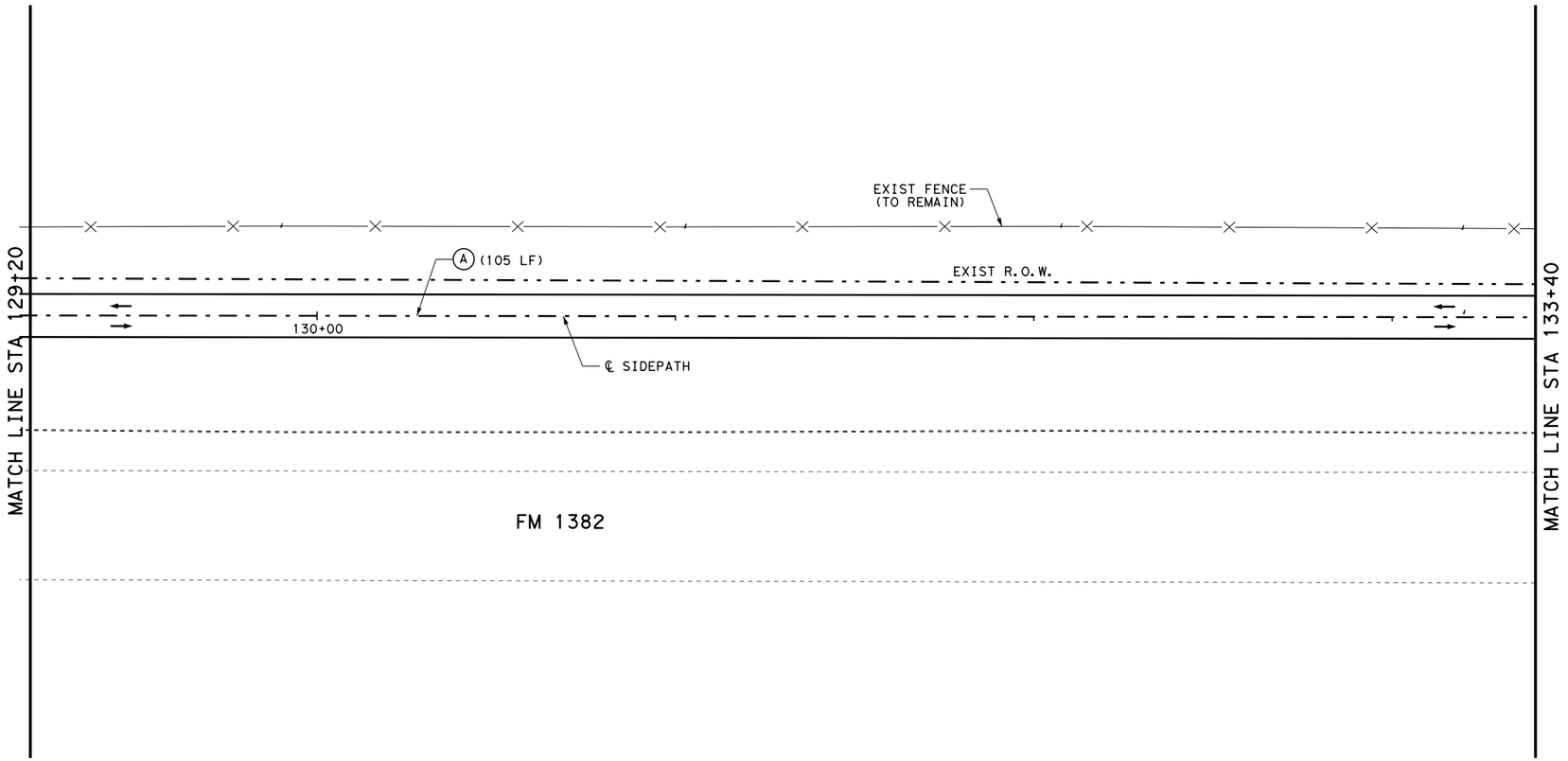
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



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Firm Registration: F-2966

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FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
STA 129+20 TO STA 133+40

SCALE: 1"=40' (H) SHEET 13 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK: CAN	STATE	DISTRICT	COUNTY	SHEET NO.
GRAPHICS: PK	TEXAS	DAL	DALLAS	111
CHECK: CAN	CONTROL	SECTION	JOB	
	1047	03	079	

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TIME: 1:06:13 PM
DATE: 8/26/2023

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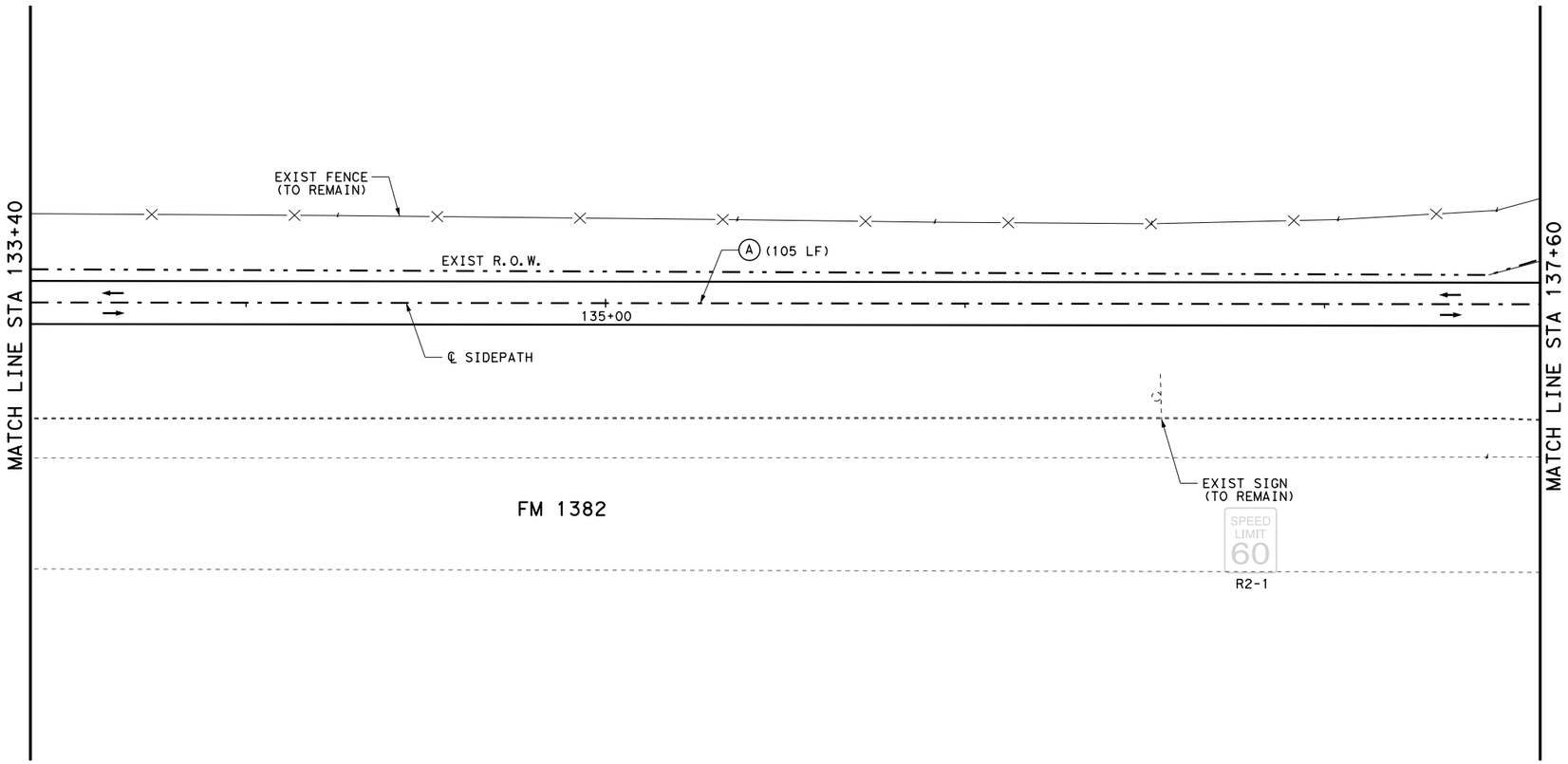
SCALE IN FEET

N

LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY



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FM 1382-SIDEPATH

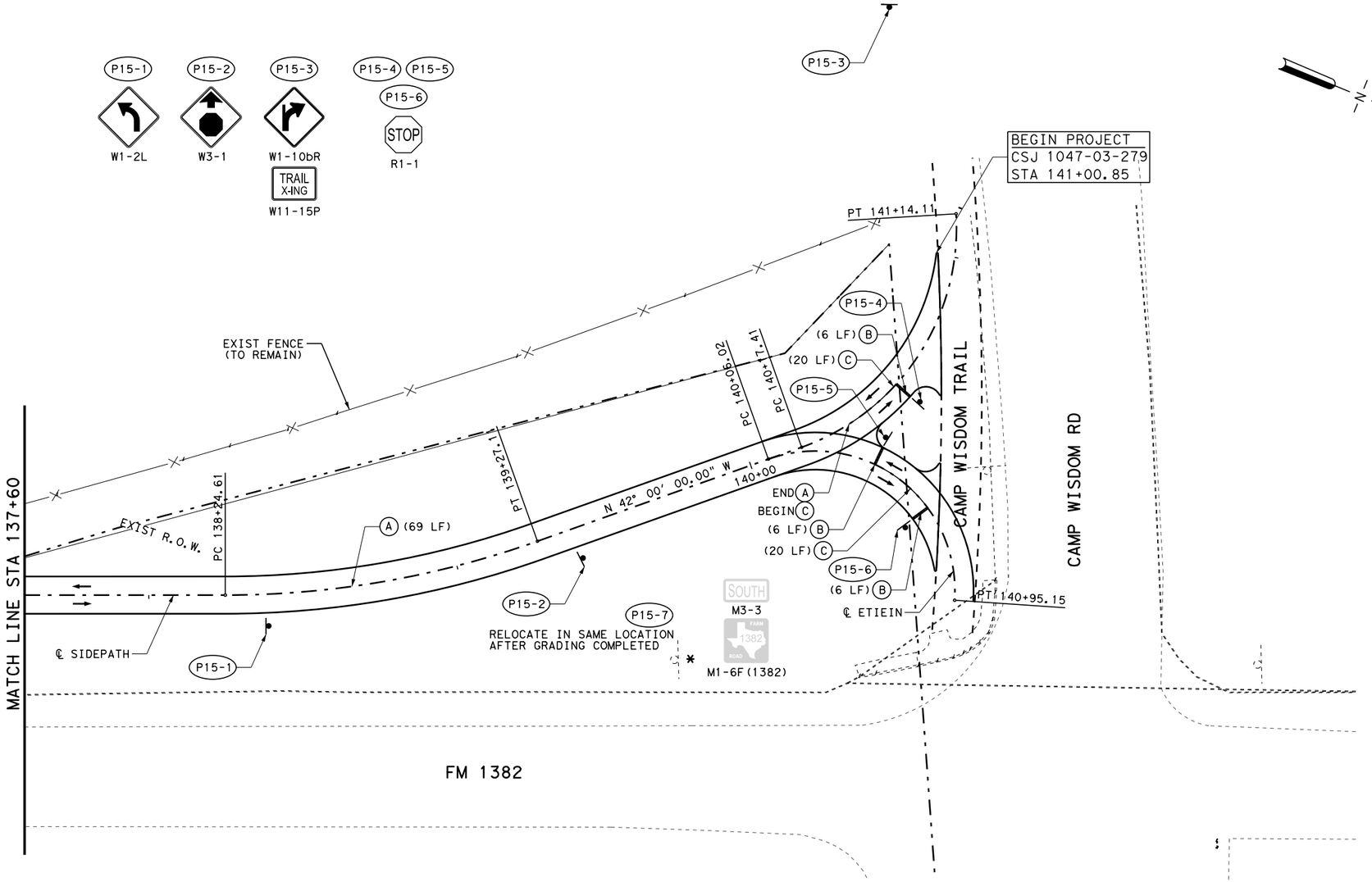
SIGNING & PAVEMENT MARKINGS
STA 133+40 TO STA 137+60

SCALE: 1"=40' (H) SHEET 14 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	112
PK				
CHECK	1047	03	079	
CAN				

FILE: \\USLASO-APP385\ICS*workdir\167964\689499*7\FM1382PVMKNGI4.dgn

TIME: 1:05:46 PM
DATE: 8/26/2023



LEGEND

- (A) REFL PM TY II & PAV SURF PREP (Y) 6" (BRK)
- (B) REFL PM TY II & PAV SURF PREP (W) 12" (SLD)
- (C) REFL PM TY II & PAV SURF PREP (Y) 6" (SLD)
- (D) REFL PM TY I & PAV SURF PREP (W) 24" (SLD)
- (E) REFL PM TY II & PAV SURF PREP (W) 6" (SLD)
- SIGN
- * EXIST SIGN ASSEMBLY TO BE RELOCATED
- (R1-1) EXIST SIGN TO BE REMOVED
- (P1-1) PROPOSED SIGN OR SIGN ASSEMBLY

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED PROFESSIONAL ENGINEER
F-2966
8/26/2023

Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

SIGNING & PAVEMENT MARKINGS
STA 137+60 TO BEGIN PROJECT

SCALE: 1"=40' (H) SHEET 15 OF 15

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	113
GRAPHICS	CONTROL	SECTION	JOB	
PK	1047	03	079	
CHECK				
CAN				

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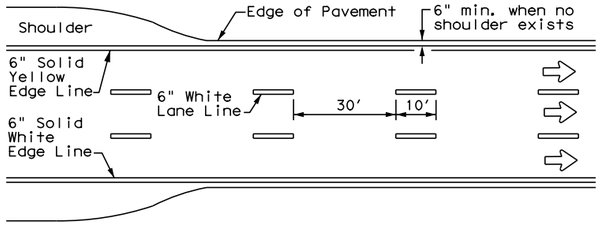
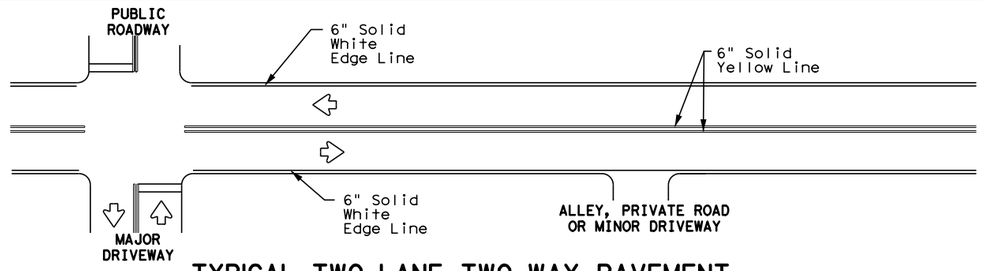
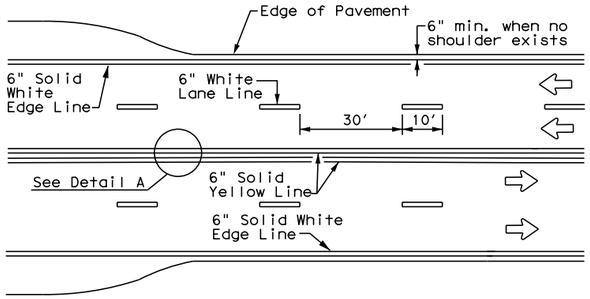
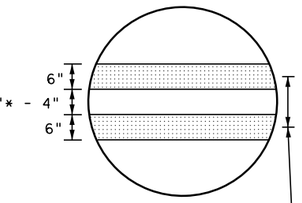


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





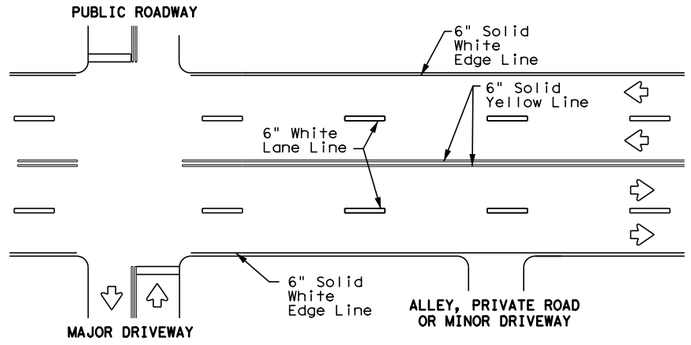
DETAIL "A"

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

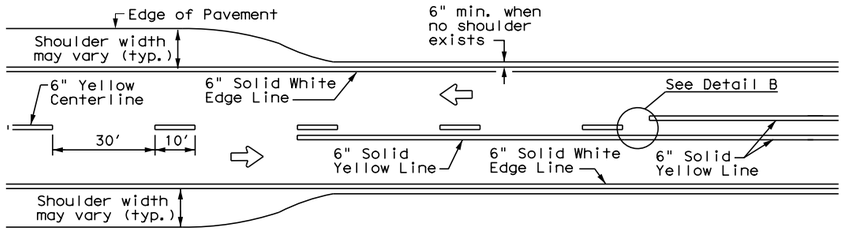
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

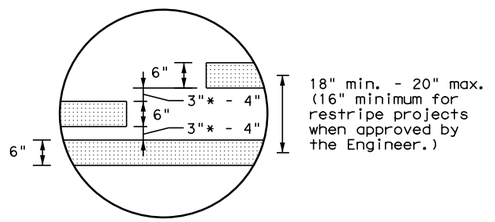
** 8" minimum for restripe projects when approved by the Engineer.



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

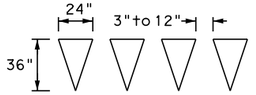


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



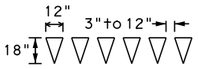
DETAIL "B"

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

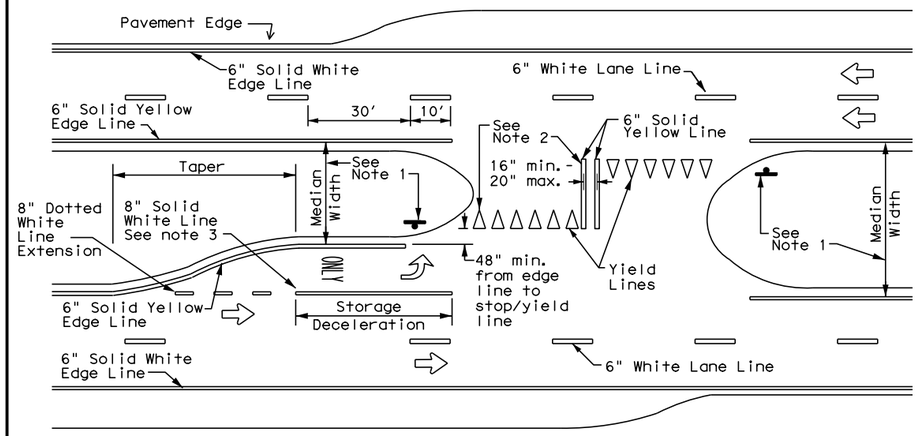


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

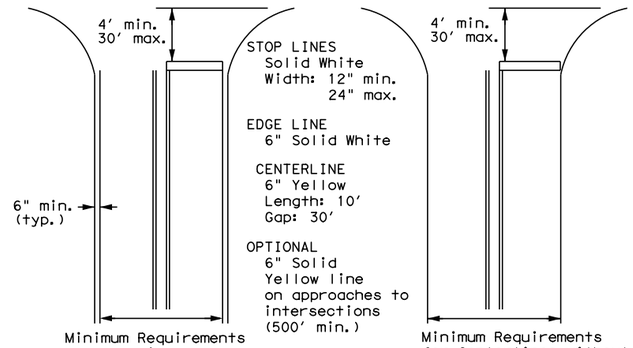
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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

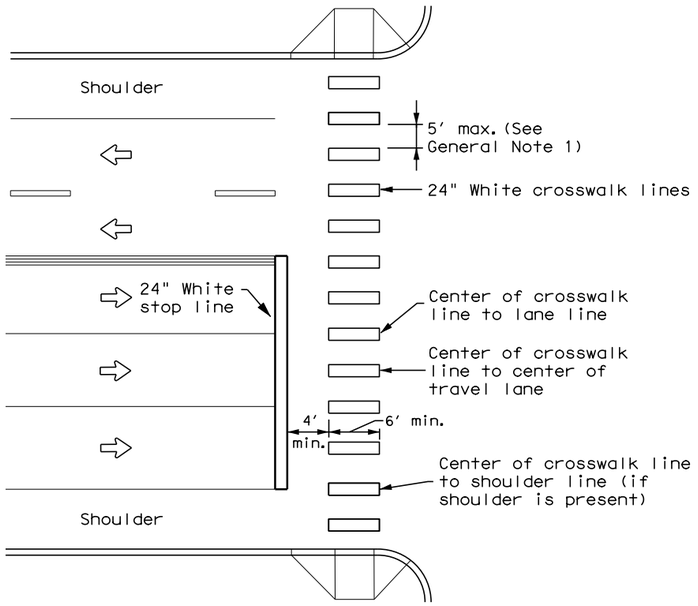
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
11-78 8-00 6-20	DIST	COUNTY		SHEET NO.
8-95 3-03 12-22	DAL	DALLAS		114
5-00 2-12				

22A

DATE:
FILE:

DATE:
FILE:



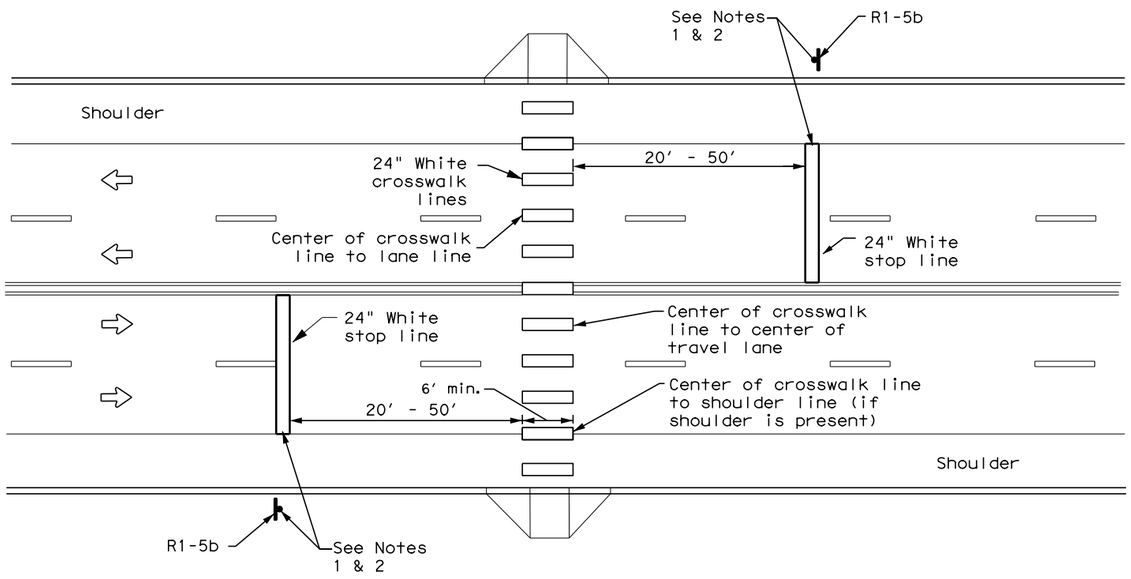
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

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

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

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

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

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
6-20	DIST	COUNTY		SHEET NO.
6-22	DAL	DALLAS		115
12-22				

220

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

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

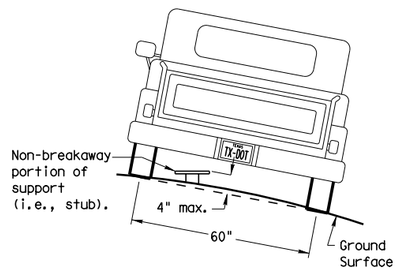
Anchor Type

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

Sign Mounting Designation

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

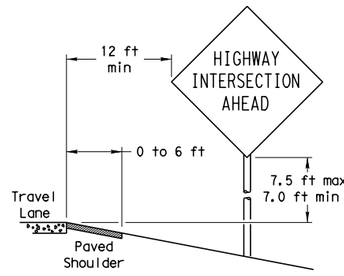
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

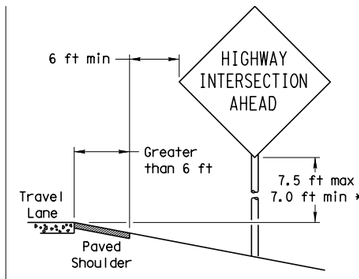
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

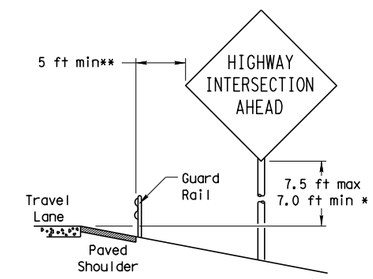
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



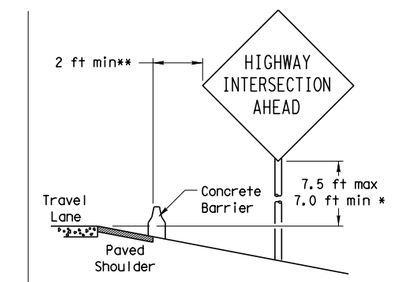
GREATER THAN 6 FT. WIDE

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.

BEHIND BARRIER



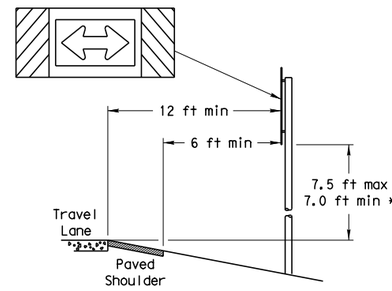
BEHIND GUARDRAIL



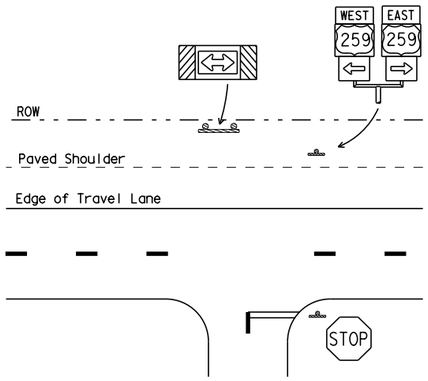
BEHIND CONCRETE BARRIER

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

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.



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

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

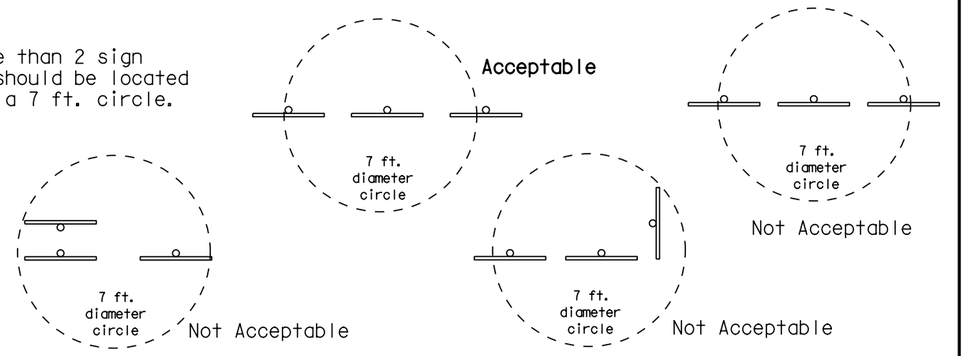
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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

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

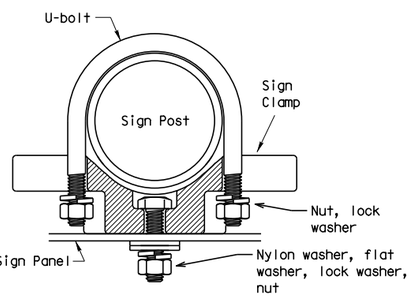
The website address is:
http://www.txdot.gov/publications/traffic.htm

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

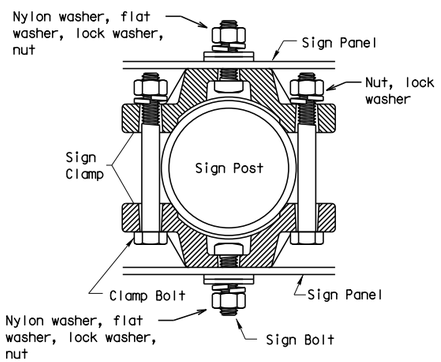


TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



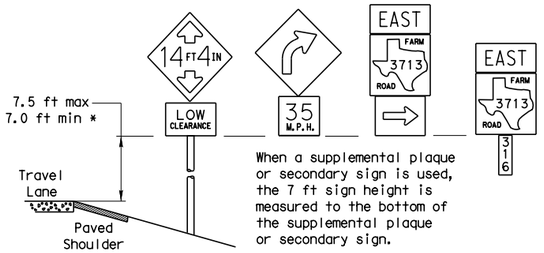
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

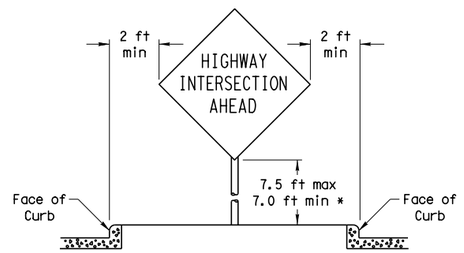
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



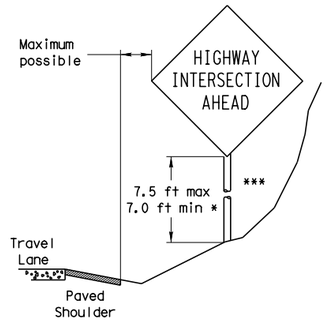
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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

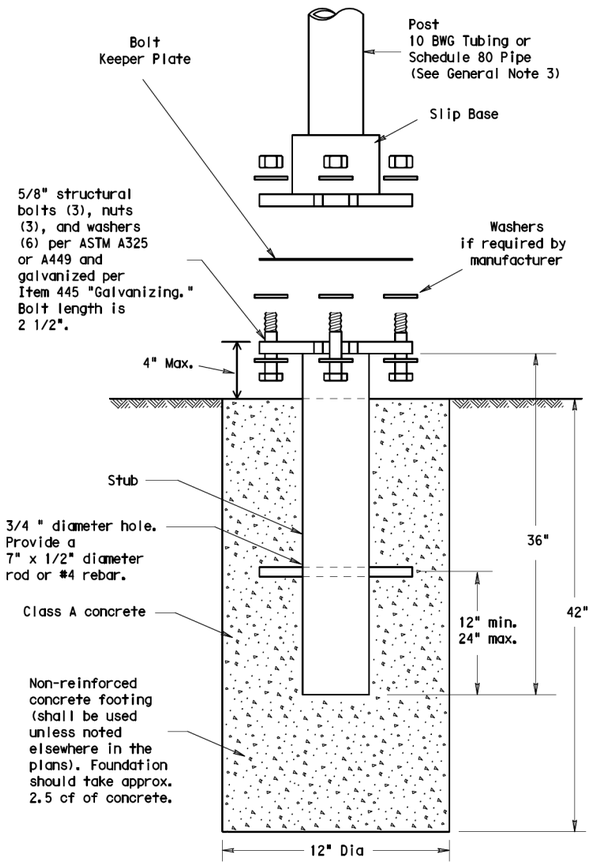
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		116

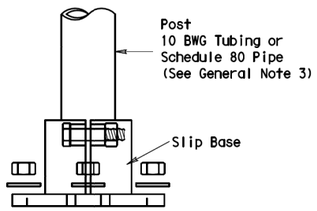
DATE:
FILE:

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

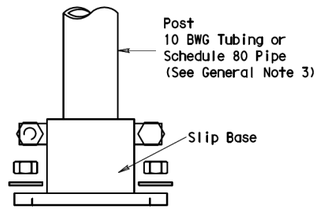


SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

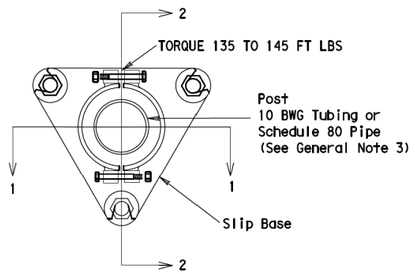
NOTE
The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.



SIDE VIEW 1-1



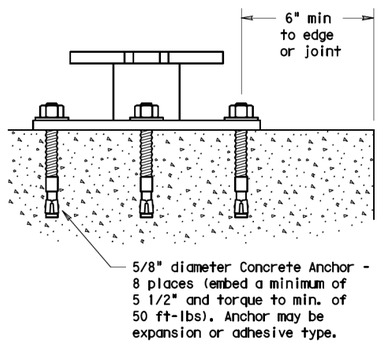
SIDE VIEW 2-2



TOP VIEW

DETAIL A

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.

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.

ADDED DETAIL A FOR CLAMP BASE
10-2010

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08(DAL)

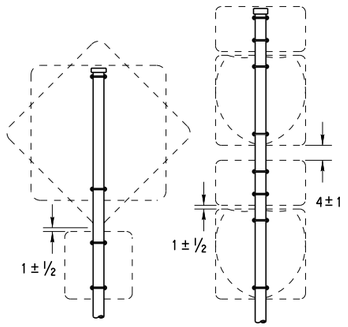
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

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

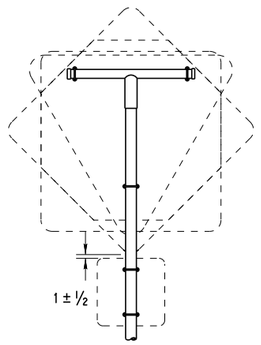
CONT	SECT	JOB	HIGHWAY
1047	03	079	FM1382

DIST	COUNTY	SHEET NO.
DAL	DALLAS	117

DATE:
FILE:



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



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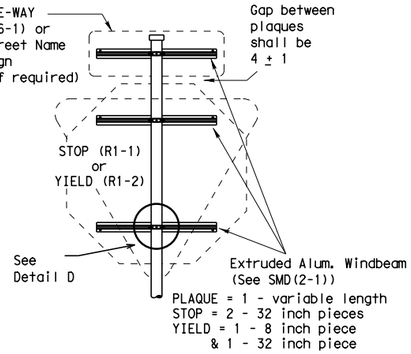

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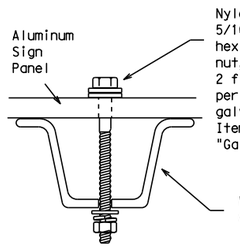
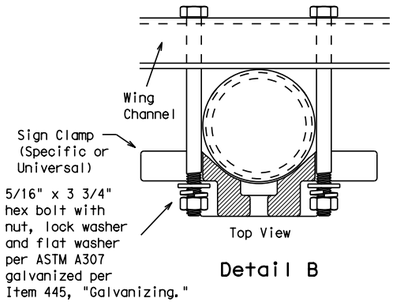
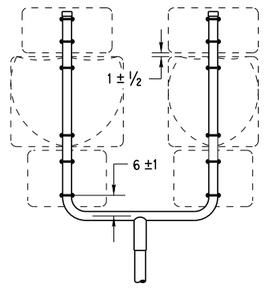


Detail A



Detail B



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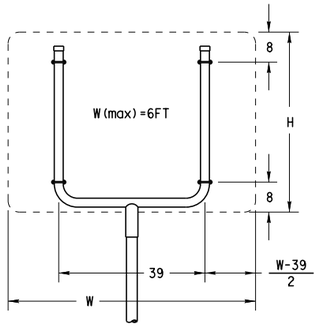

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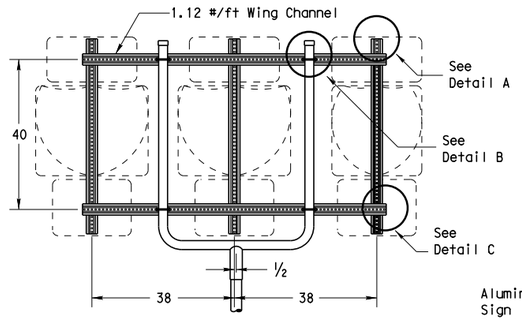
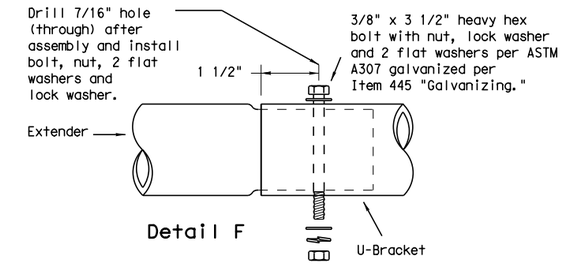
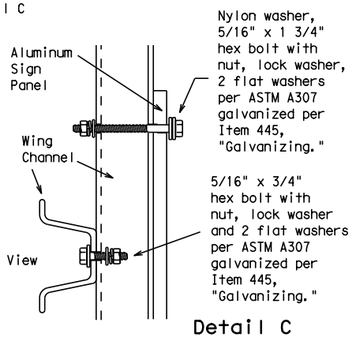


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

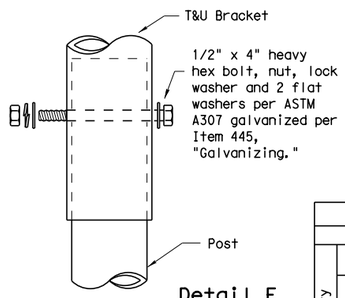


Detail F

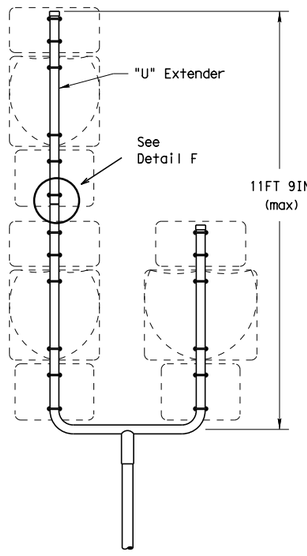
Splices shall only be allowed behind the sign substrate.



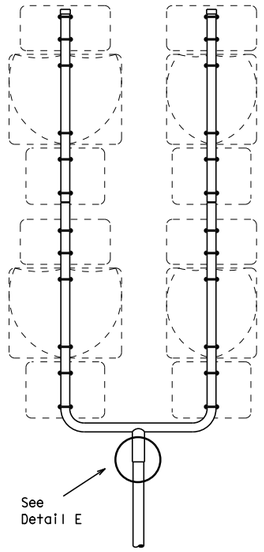
Detail C



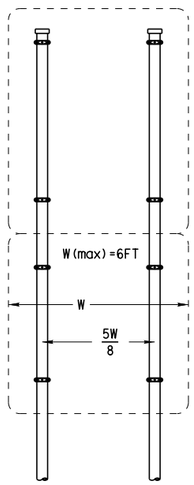
Detail E



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

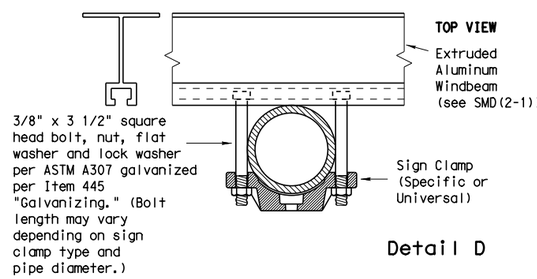


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

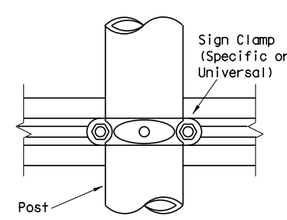


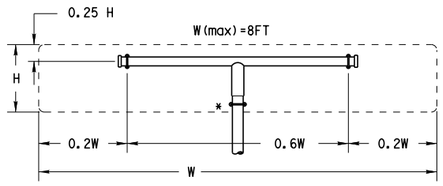
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

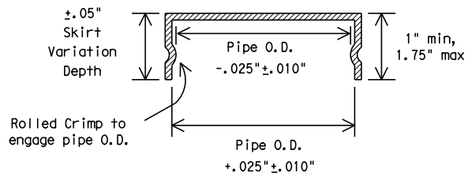




All dimensions are in english unless detailed otherwise.

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

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

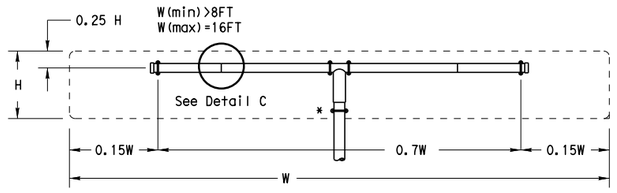
SMD(SLIP-2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
1047	03	079	FM1382
DIST	COUNTY		SHEET NO.
DAL	DALLAS		118

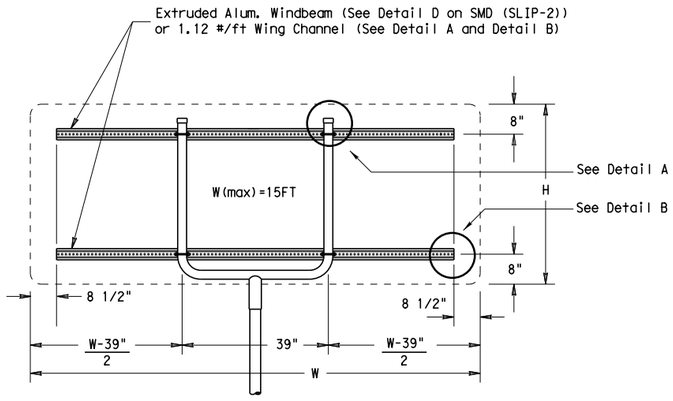
9-08 REVISIONS

DATE:
FILE:

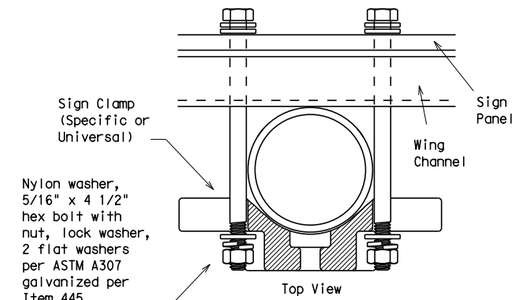
DATE:
FILE:



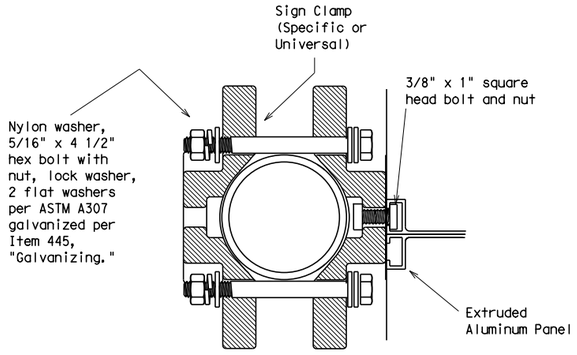
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



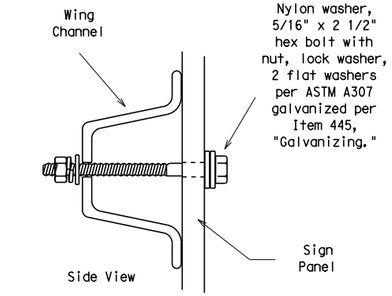
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



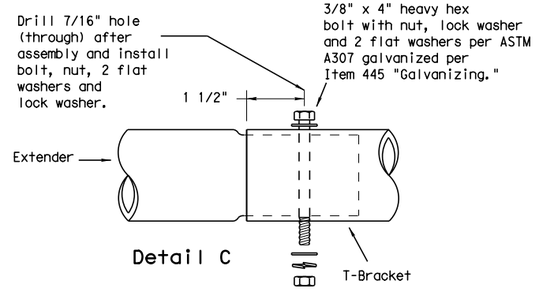
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

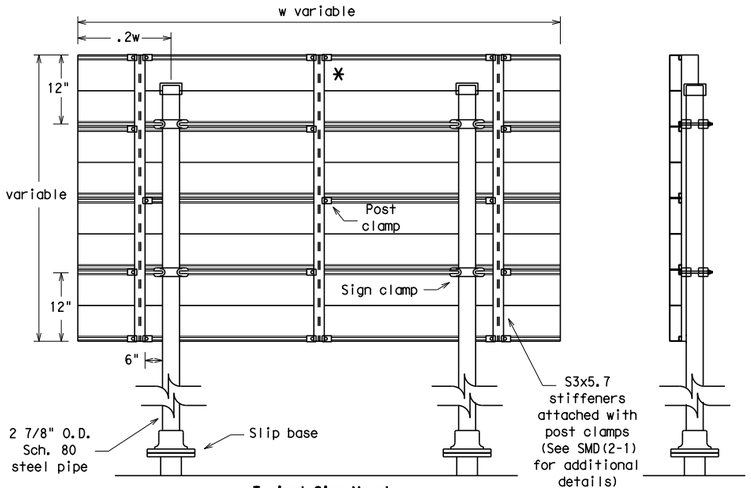


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

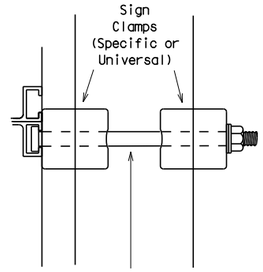


Typical Sign Mount

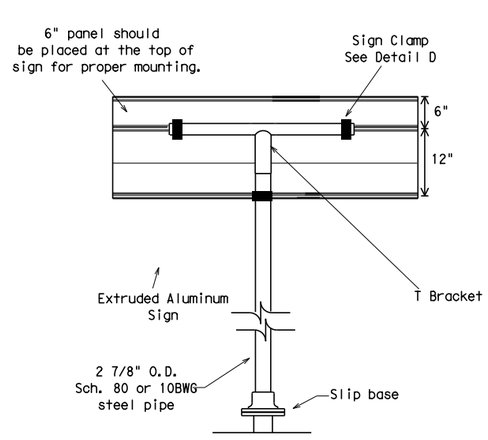
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

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

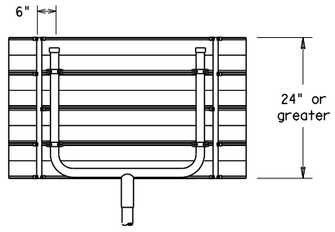
See Detail E
for clamp installation



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. 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.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. 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.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. 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.
6. 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.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. 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."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. 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.
11. 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

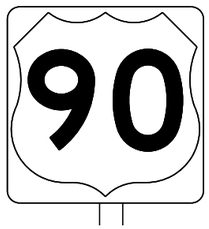
SMD(SLIP-3)-08

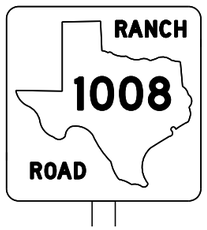
REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		119

DATE:
FILE:

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

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

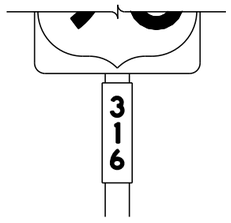


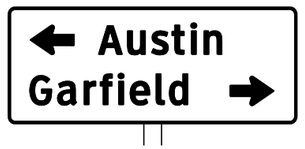


TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING





TYPICAL EXAMPLES

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. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. 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.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

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/

Texas Department of Transportation

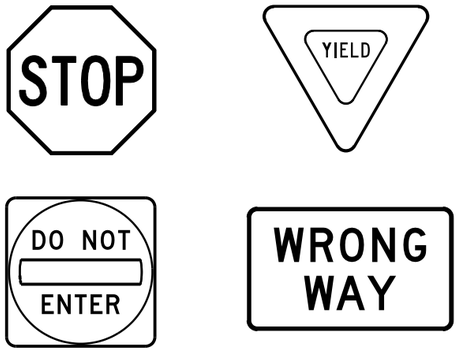
Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	DAL	DALLAS		120

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

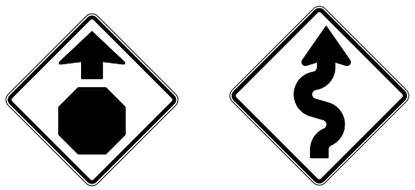
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

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

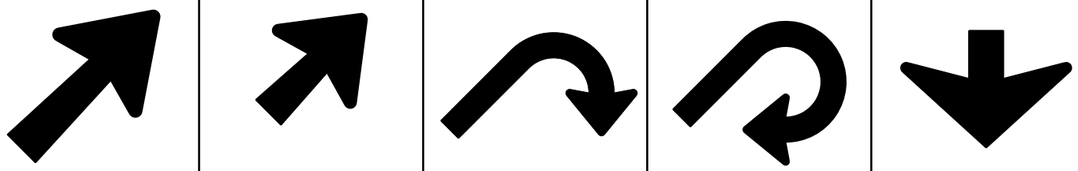
TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	DAL	DALLAS		121

DATE:
FILE:

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

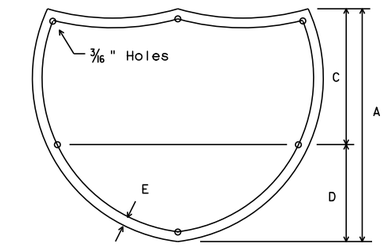
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

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

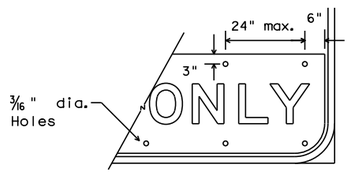
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

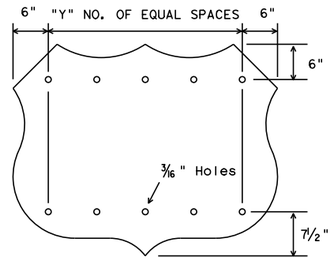


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4

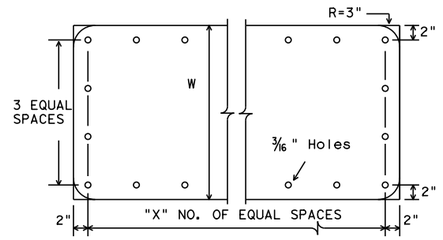


EXIT ONLY PANEL



U.S. ROUTE MARKERS

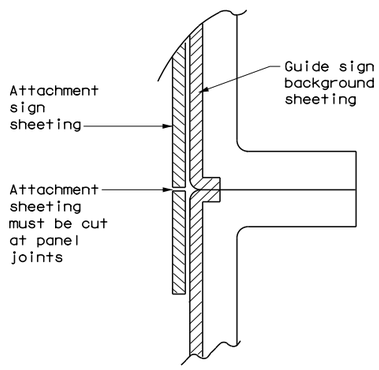
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

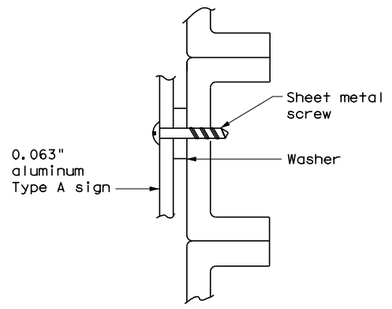
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



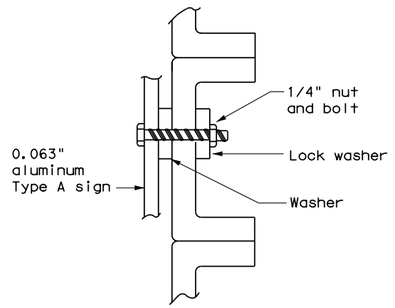
DIRECT APPLIED ATTACHMENT

NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT



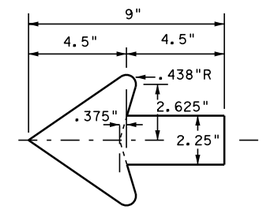
NUT/BOLT ATTACHMENT

NOTE:

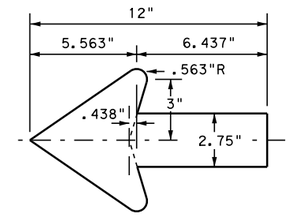
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

Traffic Operations Division Standard

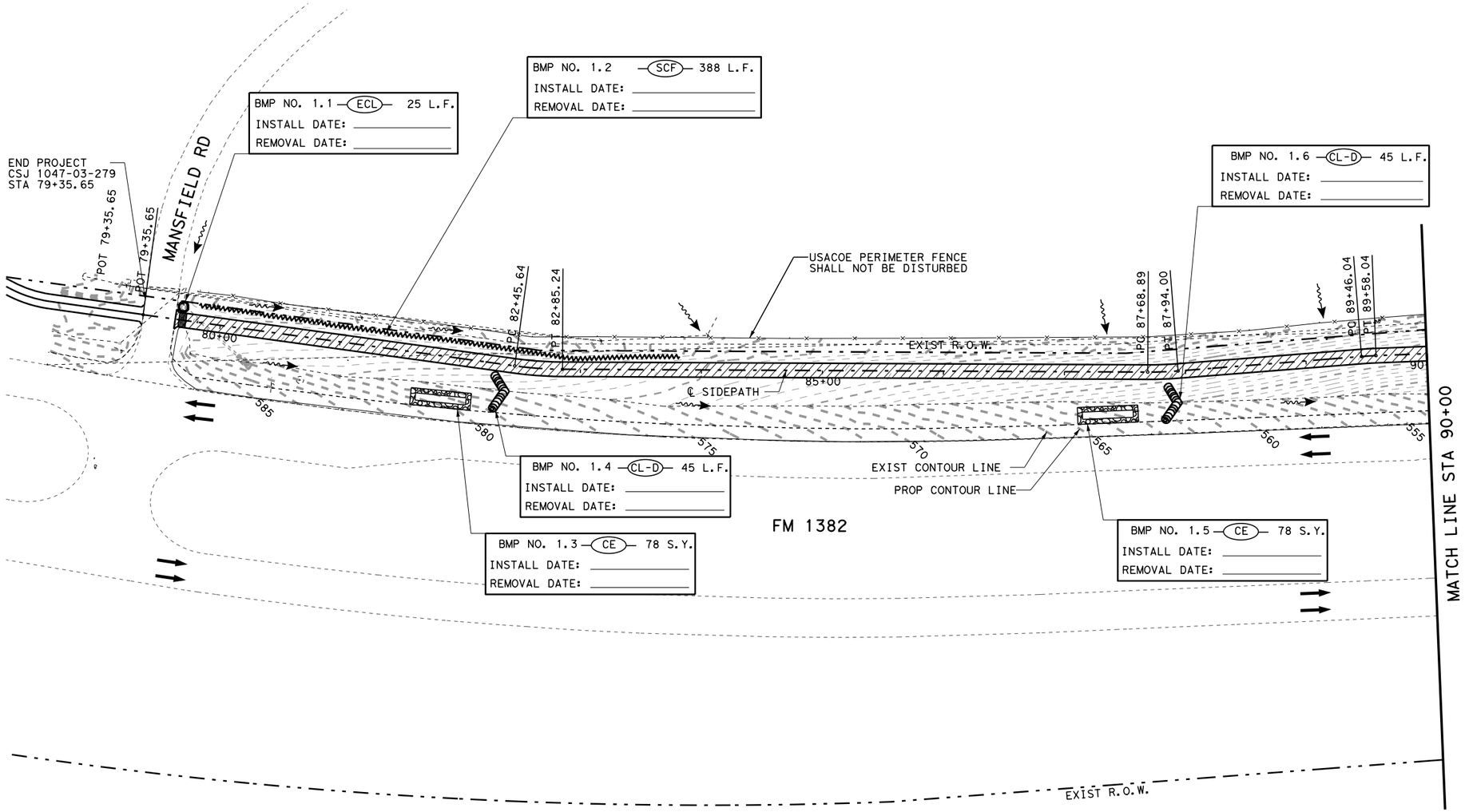
TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE:	tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		1047	03	079	FM1382
12-03 7-13		DIST	COUNTY		SHEET NO.
9-08		DAL	DALLAS		122

DATE:
FILE:

TIME: 12:22:17 PM
DATE: 8/31/2023



0 50 100
SCALE IN FEET

LEGEND

- CE — CONSTRUCTION ENTRANCE/EXIT
- SCF — SEDIMENT CONTROL FENCE
- RFD — ROCK FILTER DAM (TYPE 1)
- ECL — INLET PROTECTION EROSION CONTROL LOGS
- PERM PAVEMENT UNDER CONSTRUCTION
- DIRECTION OF DRAINAGE FLOW
- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- PROPOSED MBGF
- TRAFFIC FLOW
- CL-D — EROSION CONTROL LOGS DAMS
- AREF — AMPHIBIAN AND REPTILE EXCLUSION FENCE

NOTES:

1. BMPs SHALL BE INSTALLED NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA.
2. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.
3. SEE TYPICAL SECTION SHEETS FOR LIMITS OF SOIL DISTURBANCE AND REVEGETATION PLANS.

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED
PROFESSIONAL ENGINEER
F-2966
8/31/2023

SHEET 1				
ITEM NUMBER	SPEC NUMBER	DESCRIPTION	UNITS	QUANTITY
161	6017	COMPOST MANUF TOPSOIL (4")	SY	3,696
162	6002	BLOCK SODDING	SY	3,696
164	6041	DRILL SEEDING (TEMP) (WARM)	SY	3,696
168	6001	VEGETATIVE WATERING	MG	1099.6
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	156
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	388
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	388
506	6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	115
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	115

DATE DISTURBED: _____
DATE STABILIZED: _____

Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

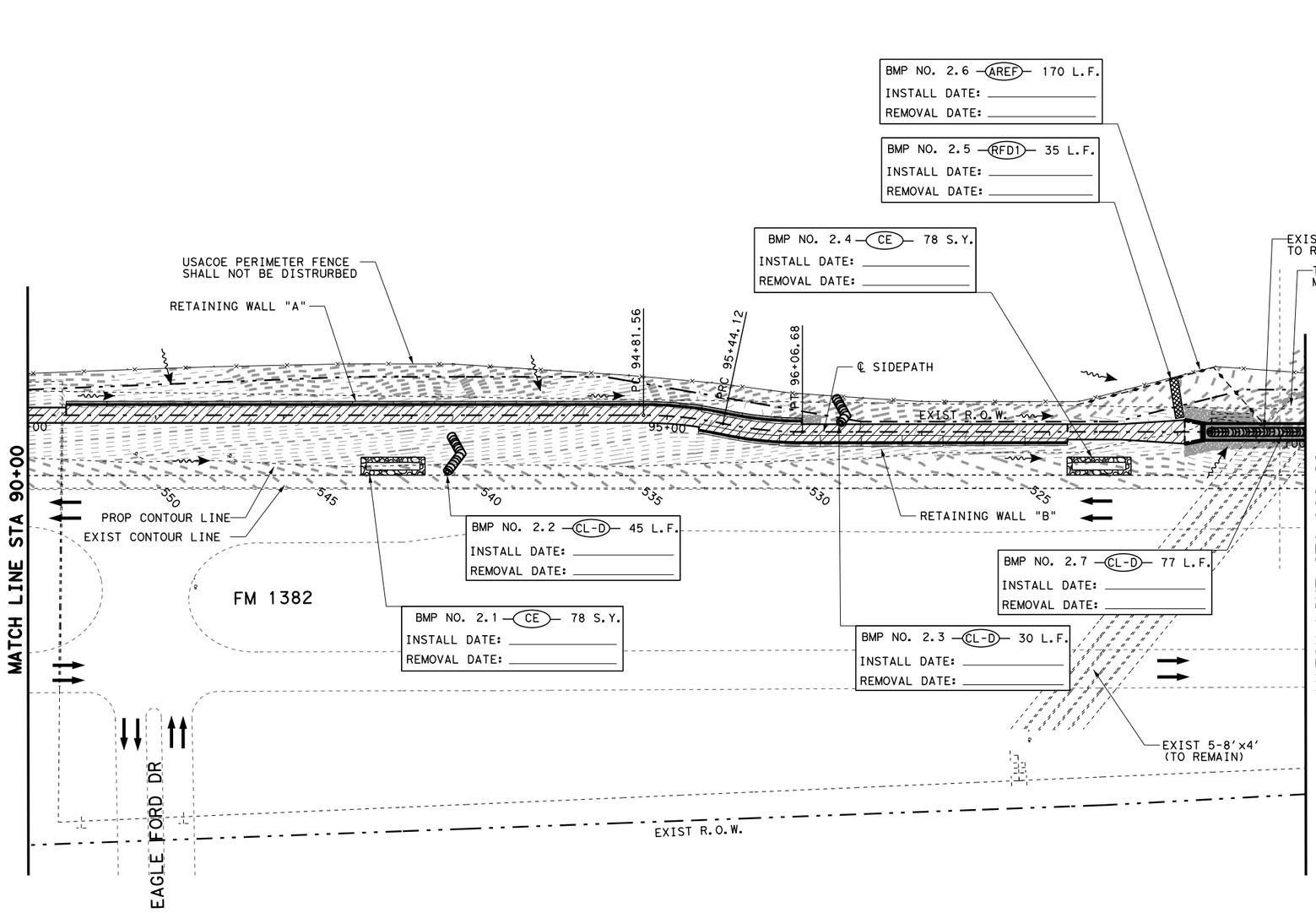
EROSION CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 1 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	123
BS				
CHECK	1047	03	079	
CAN				

FILE: \\USLASO-APP385\CS*workdir\169920\689428*18\FM1382_SWPPP-01.dgn

TIME: 12:21:15 PM
DATE: 8/31/2023



0 50 100
SCALE IN FEET

LEGEND

- CE — CONSTRUCTION ENTRANCE/EXIT
- SCF — SEDIMENT CONTROL FENCE
- RFD — ROCK FILTER DAM (TYPE 1)
- ECL — INLET PROTECTION EROSION CONTROL LOGS
- PERM PAVEMENT UNDER CONSTRUCTION
- DIRECTION OF DRAINAGE FLOW
- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- PROPOSED MBGF
- TRAFFIC FLOW
- CL-D — EROSION CONTROL LOGS DAMS
- AREF — AMPHIBIAN AND REPTILE EXCLUSION FENCE

NOTES:

1. BMPs SHALL BE INSTALLED NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA.
2. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.
3. SEE TYPICAL SECTION SHEETS FOR LIMITS OF SOIL DISTURBANCE AND REVEGETATION PLANS.

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED PROFESSIONAL ENGINEER
F-2966
8/31/2023

SHEET 2				
ITEM NUMBER	SPEC NUMBER	DESCRIPTION	UNITS	QUANTITY
161	6017	COMPOST MANUF TOPSOIL (4")	SY	3,615
162	6002	BLOCK SODDING	SY	3,615
164	6041	DRILL SEEDING (TEMP) (WARM)	SY	3,615
168	6001	VEGETATIVE WATERING	MG	1075.5
506	6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF	35
506	6011	ROCK FILTER DAMS (REMOVE)	LF	35
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	156
506	6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	152
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	152
5116	6001	AMPHIBIAN AND REPTILE EXCLUSION FENCE INST	LF	170
5116	6002	AMPHIBIAN AND REPTILE EXCLUSION FENCE REM	LF	170

DATE DISTURBED: _____
DATE STABILIZED: _____

Jacobs
1999 BRYAN ST. SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

FM 1382-SIDEPATH

EROSION CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 2 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	124
GRAPHICS	CONTROL	SECTION	JOB	
BS	1047	03	079	
CHECK				
CAN				

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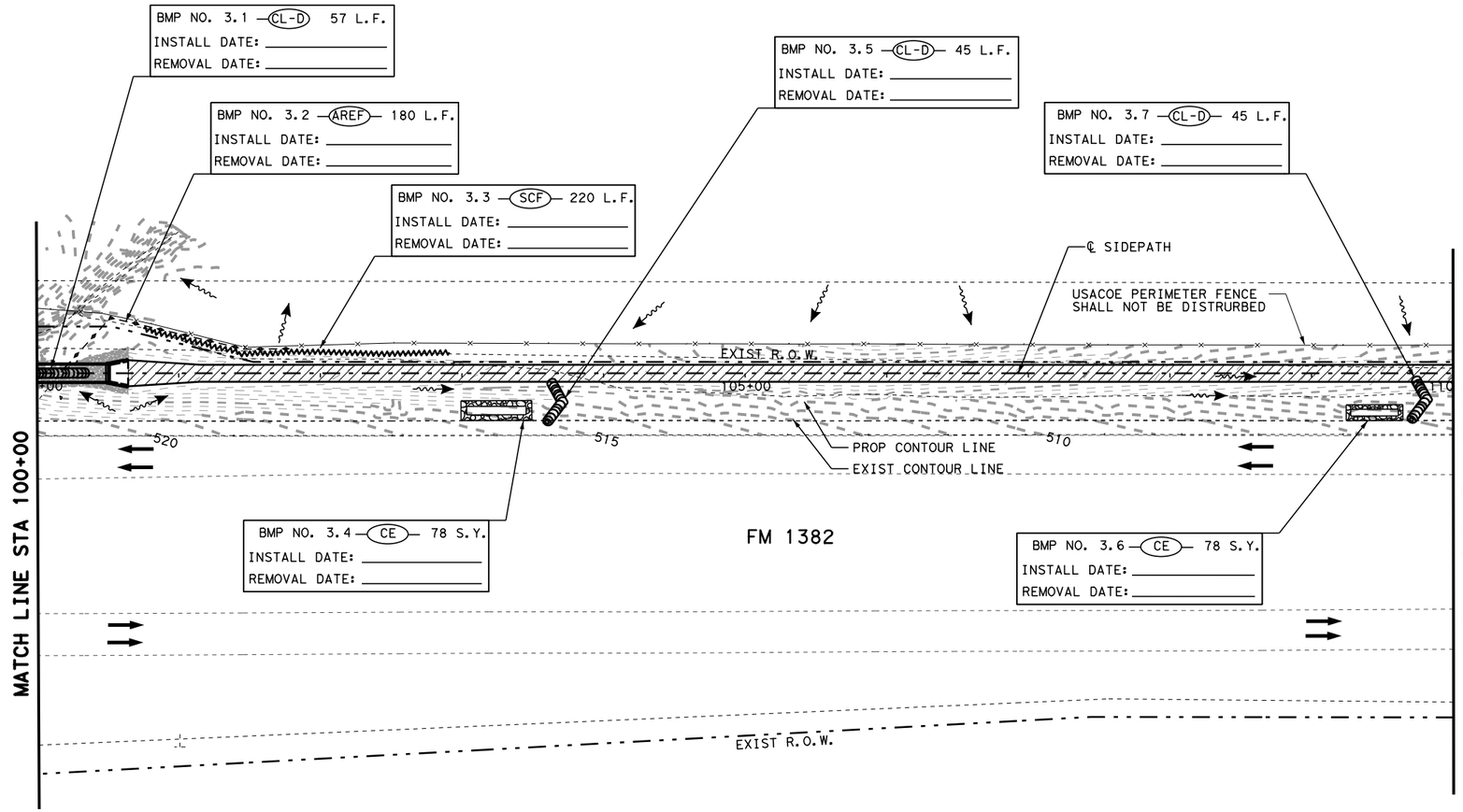
DATE: 8/31/2023



0 50 100
SCALE IN FEET

LEGEND

- CE — CONSTRUCTION ENTRANCE/EXIT
- SCF — SEDIMENT CONTROL FENCE
- RFD — ROCK FILTER DAM (TYPE 1)
- ECL — INLET PROTECTION EROSION CONTROL LOGS
- PERM PAVEMENT UNDER CONSTRUCTION
- DIRECTION OF DRAINAGE FLOW
- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- PROPOSED MBGF
- TRAFFIC FLOW
- CL-D — EROSION CONTROL LOGS DAMS
- AREF — AMPHIBIAN AND REPTILE EXCLUSION FENCE

NOTES:

1. BMPs SHALL BE INSTALLED NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA.
2. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.
3. SEE TYPICAL SECTION SHEETS FOR LIMITS OF SOIL DISTURBANCE AND REVEGETATION PLANS.

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED
PROFESSIONAL ENGINEER
F-2966
8/31/2023

SHEET 3				
ITEM NUMBER	SPEC NUMBER	DESCRIPTION	UNITS	QUANTITY
161	6017	COMPOST MANUF TOPSOIL (4")	SY	2,334
162	6002	BLOCK SODDING	SY	2,334
164	6041	DRILL SEEDING (TEMP) (WARM)	SY	2,334
168	6001	VEGETATIVE WATERING	MG	694.4
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	156
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	220
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	220
506	6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	147
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	147
5116	6001	AMPHIBIAN AND REPTILE EXCLUSION FENCE INST	LF	180
5116	6002	AMPHIBIAN AND REPTILE EXCLUSION FENCE REM	LF	180

DATE DISTURBED: _____
DATE STABILIZED: _____

Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

EROSION CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 3 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	
GRAPHICS	CONTROL	SECTION	JOB	125
BS				
CHECK	1047	03	079	
CAN				

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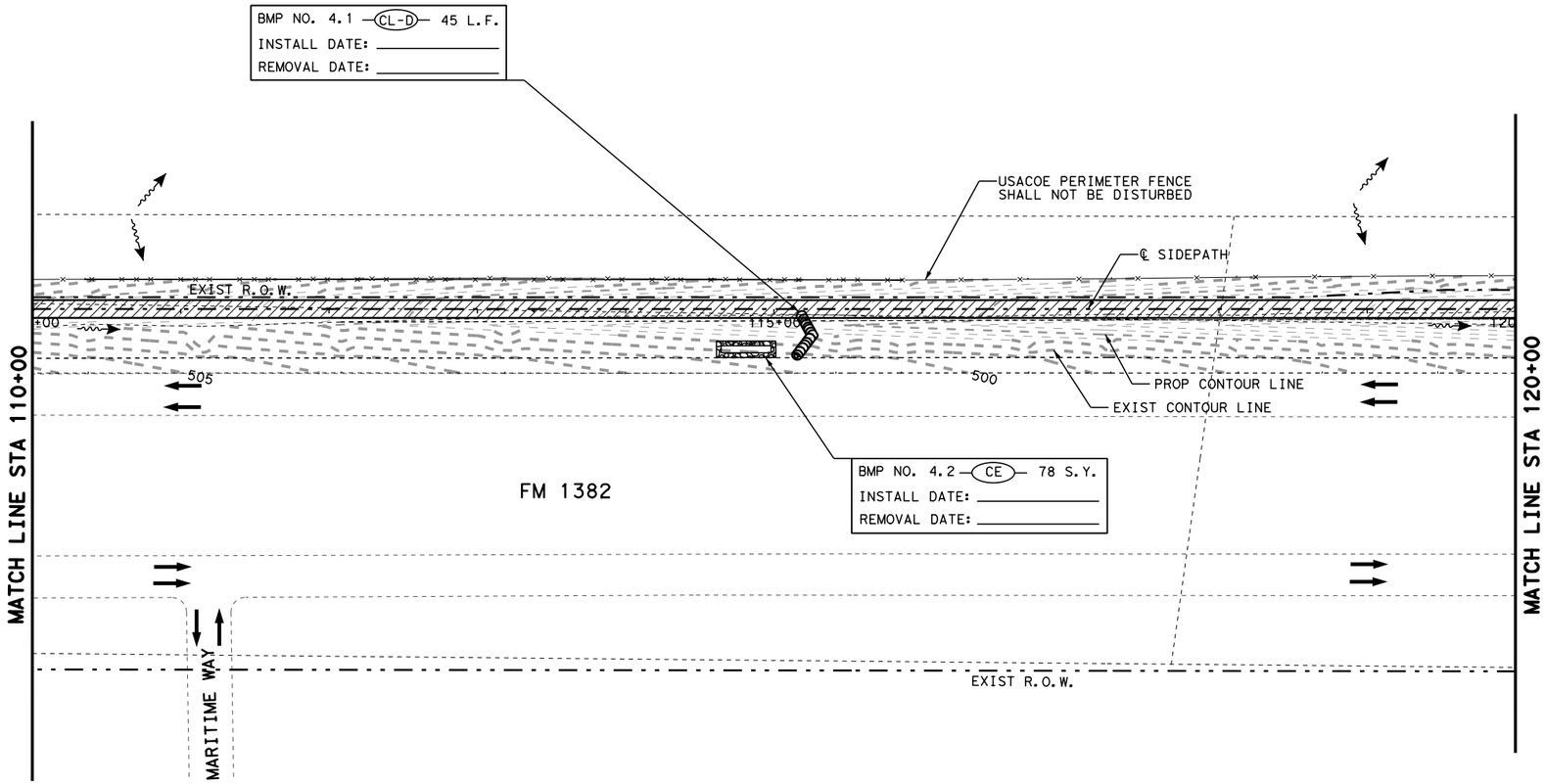

0 50 100
SCALE IN FEET

N

LEGEND

- CE — CONSTRUCTION ENTRANCE/EXIT
- SCF — SEDIMENT CONTROL FENCE
- RFD — ROCK FILTER DAM (TYPE 1)
- ECL — INLET PROTECTION EROSION CONTROL LOGS
- PERM PAVEMENT UNDER CONSTRUCTION
- DIRECTION OF DRAINAGE FLOW
- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- PROPOSED MBGF
- TRAFFIC FLOW
- CL-D — EROSION CONTROL LOGS DAMS
- AREF — AMPHIBIAN AND REPTILE EXCLUSION FENCE

NOTES:

1. BMPs SHALL BE INSTALLED NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA.
2. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.
3. SEE TYPICAL SECTION SHEETS FOR LIMITS OF SOIL DISTURBANCE AND REVEGETATION PLANS.

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED PROFESSIONAL ENGINEER
F-2966
8/31/2023

SHEET 4				
ITEM NUMBER	SPEC NUMBER	DESCRIPTION	UNITS	QUANTITY
161	6017	COMPOST MANUF TOPSOIL (4")	SY	2,222
162	6002	BLOCK SODDING	SY	2,222
164	6041	DRILL SEEDING (TEMP) (WARM)	SY	2,222
168	6001	VEGETATIVE WATERING	MG	661.1
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	78
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	78
506	6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	45
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	45

DATE DISTURBED: _____
DATE STABILIZED: _____

Jacobs
1999 BRYAN ST, SUITE 1200
DALLAS, TX 75201-3136
Phone: +1 (214) 638-0145
Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

EROSION CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 4 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	126
GRAPHICS	CONTROL	SECTION	JOB	
BS	1047	03	079	
CHECK				
CAN				

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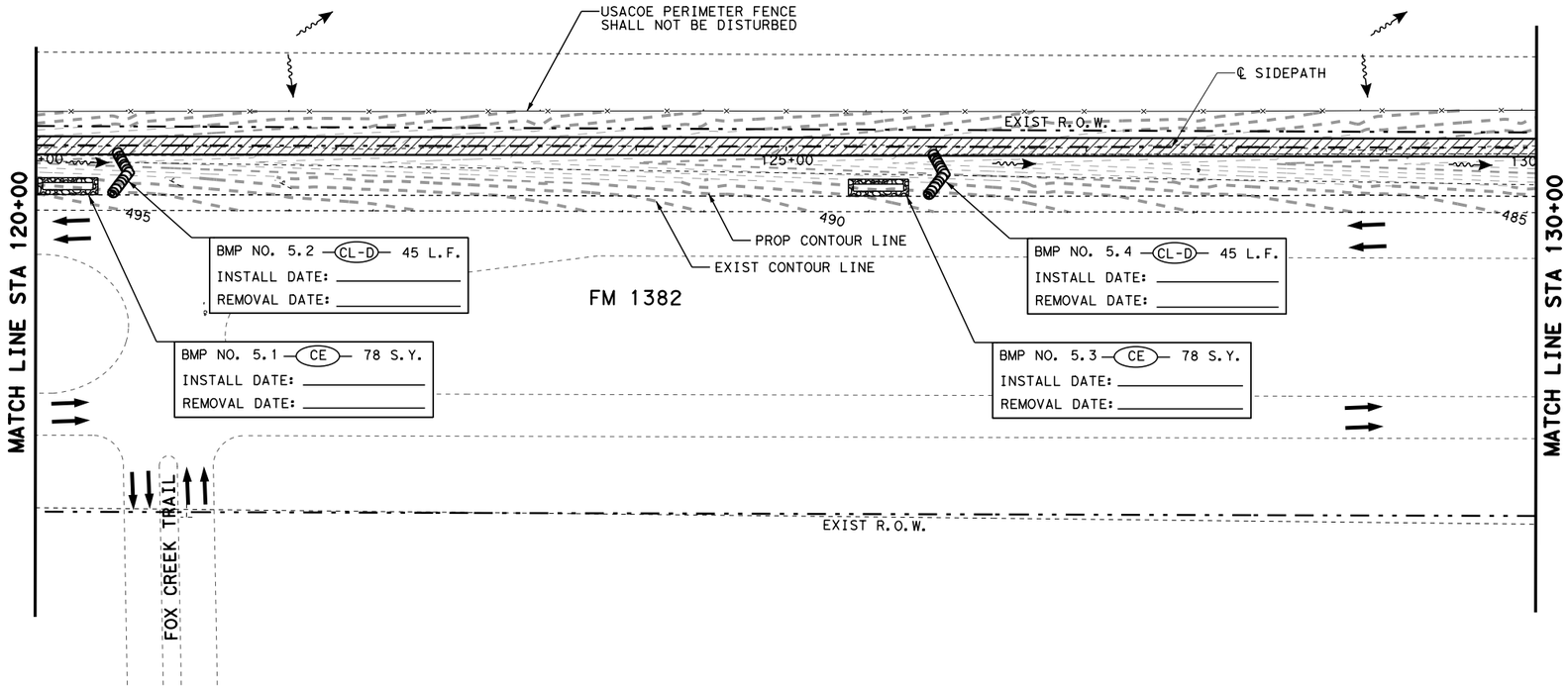
DATE: 8/31/2023



0 50 100
SCALE IN FEET

N

LEGEND

- CE — CONSTRUCTION ENTRANCE/EXIT
- SCF — SEDIMENT CONTROL FENCE
- RFD — ROCK FILTER DAM (TYPE 1)
- ECL — INLET PROTECTION EROSION CONTROL LOGS
- PERM PAVEMENT UNDER CONSTRUCTION
- DIRECTION OF DRAINAGE FLOW
- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- PROPOSED MBGF
- TRAFFIC FLOW
- CL-D — EROSION CONTROL LOGS DAMS
- AREF — AMPHIBIAN AND REPTILE EXCLUSION FENCE

NOTES:

1. BMPs SHALL BE INSTALLED NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA.
2. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.
3. SEE TYPICAL SECTION SHEETS FOR LIMITS OF SOIL DISTURBANCE AND REVEGETATION PLANS.

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED PROFESSIONAL ENGINEER
F-2966
8/31/2023

SHEET 5				
ITEM NUMBER	SPEC NUMBER	DESCRIPTION	UNITS	QUANTITY
161	6017	COMPOST MANUF TOPSOIL (4")	SY	2,559
162	6002	BLOCK SODDING	SY	2,559
164	6041	DRILL SEEDING (TEMP) (WARM)	SY	2,559
168	6001	VEGETATIVE WATERING	MG	761.4
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	156
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	156
506	6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	90
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	90

DATE DISTURBED: _____
DATE STABILIZED: _____

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Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

EROSION CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 5 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	127
GRAPHICS	CONTROL	SECTION	JOB	
BS	1047	03	079	
CHECK				
CAN				

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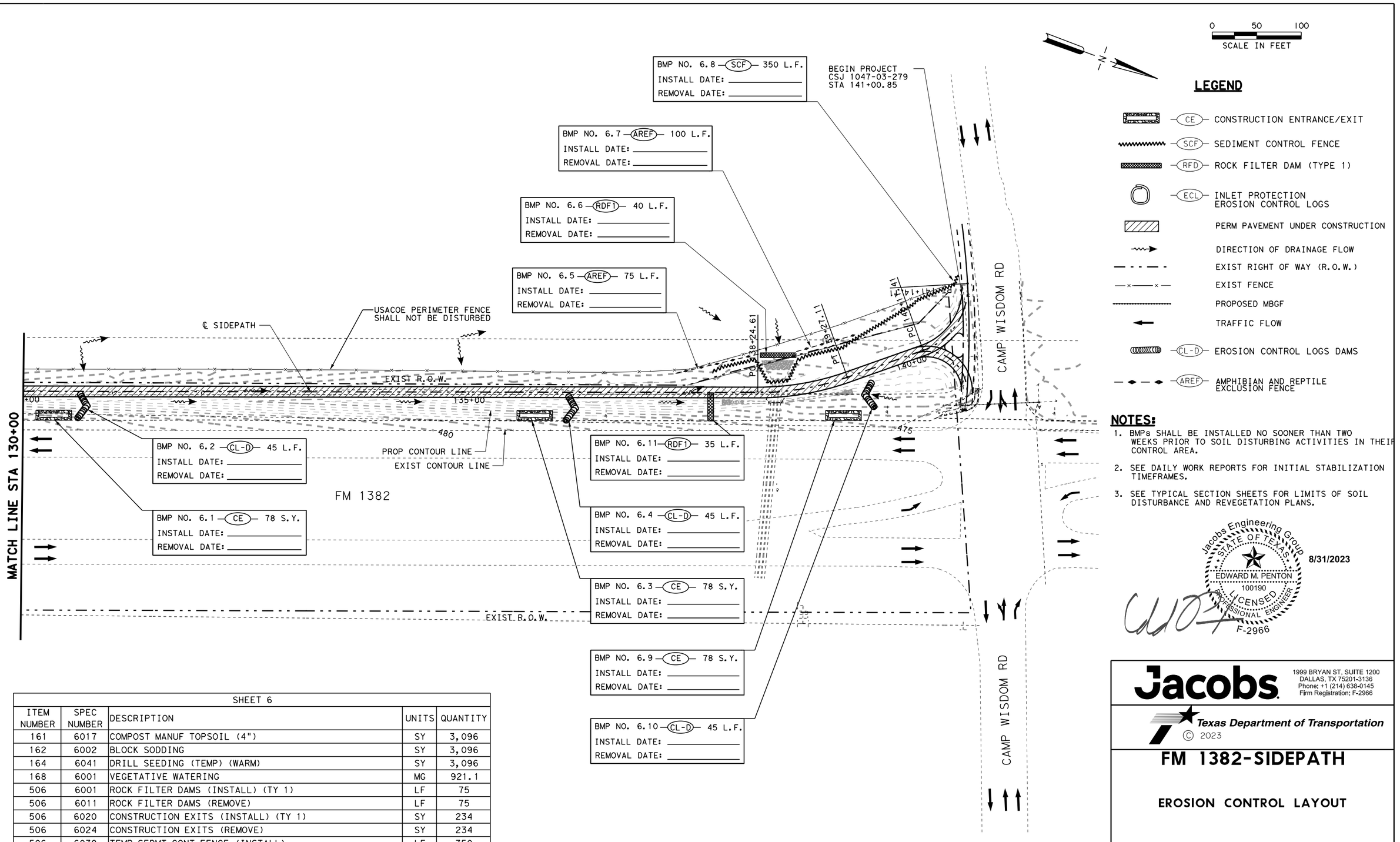

LEGEND

- CE — CONSTRUCTION ENTRANCE/EXIT
- SCF — SEDIMENT CONTROL FENCE
- RFD — ROCK FILTER DAM (TYPE 1)
- ECL — INLET PROTECTION EROSION CONTROL LOGS
- PERM PAVEMENT UNDER CONSTRUCTION
- DIRECTION OF DRAINAGE FLOW
- EXIST RIGHT OF WAY (R.O.W.)
- EXIST FENCE
- PROPOSED MBGF
- TRAFFIC FLOW
- CL-D — EROSION CONTROL LOGS DAMS
- AREF — AMPHIBIAN AND REPTILE EXCLUSION FENCE

NOTES:

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2. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.
3. SEE TYPICAL SECTION SHEETS FOR LIMITS OF SOIL DISTURBANCE AND REVEGETATION PLANS.

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED
PROFESSIONAL ENGINEER
F-2966
8/31/2023

SHEET 6				
ITEM NUMBER	SPEC NUMBER	DESCRIPTION	UNITS	QUANTITY
161	6017	COMPOST MANUF TOPSOIL (4")	SY	3,096
162	6002	BLOCK SODDING	SY	3,096
164	6041	DRILL SEEDING (TEMP) (WARM)	SY	3,096
168	6001	VEGETATIVE WATERING	MG	921.1
506	6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF	75
506	6011	ROCK FILTER DAMS (REMOVE)	LF	75
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	234
506	6024	CONSTRUCTION EXITS (REMOVE)	SY	234
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	350
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	350
506	6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	135
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	135
5116	6001	AMPHIBIAN AND REPTILE EXCLUSION FENCE INST	LF	175
5116	6002	AMPHIBIAN AND REPTILE EXCLUSION FENCE REM	LF	175

DATE DISTURBED: _____
DATE STABILIZED: _____

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Phone: +1 (214) 638-0145
Firm Registration: F-2966

Texas Department of Transportation

FM 1382-SIDEPATH

EROSION CONTROL LAYOUT

SCALE: 1"=100' (H) SHEET 6 OF 6

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
EMP	6	(See Title Sheet)		FM1382
CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CAN	TEXAS	DAL	DALLAS	128
GRAPHICS	CONTROL	SECTION	JOB	
BS	1047	03	079	
CHECK				
CAN				

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

Notes To Designer:
1. *Do not alter Sheet Design or Font style, size or weight - match text attributes.*
2. *If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from its relative position.*
3. *All areas should be addressed thoroughly and verify the necessary pay items are set up to support actions needed.*

Filled Out: XX/XX/XXXX
Prepared by: Name/Section

I. STORMWATER POLLUTION PREVENTION PLAN-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.
List adjacent MS 4 Operator(s) that receive discharges from this project. They need to be notified prior to construction activities.
(Note: Leave blank only if no adjacent MS 4 Operator(s) are affected.)

1. City of Dallas Phase I MS4 contact Kevin Hurley

2.

☐ No Action Required ☒ Required Action

Action Number:

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas. No equipment is allowed in any sream channel below the ordinary High Water Mark except on approved temporary stream crossings or drill pads.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☐ No Permit Required
☒ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# 3(a)

Required Actions: List Waters of the US Permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1. Unnamed tributary to Mountain Creek (lat/long: 32.645510, -96.975278)

2.

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

Best Management Practices for applicable 401 General Conditions:
(Note: If CORP Permit not required, do not check boxes.)

Erosion	Sedimentation	Post-Construction TSS
☒ Temporary Vegetation	☒ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☒ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action Number:

1.

2.

3.

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action Number:

1.

2.

3.

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

☐ No Action Required ☒ Required Action

Action Number:

1. Eastern spotted skunk and long-tailed weasel - Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.

2. Texas milk vetch - Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

CONTINUED ON SHEET 2 OF 2

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

Special Note: The Migratory Bird Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade or transport any migratory bird, nest, young, feather or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. The contractor would remove all old migratory bird nests from any structure or trees where work would be done from October 1 to February 15. In addition, the contractor would be prepared to prevent migratory birds from building nest(s) between February 15 to October 1. In the event that migratory birds are encountered on-site during project construction, efforts to avoid adverse impacts on protected birds, active nests, eggs and/or young would be observed.

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

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

Obtain and keep on-site Safety Data Sheets (SDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the SDS. In the event of a spill, take actions to mitigate the spill as indicated in the SDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

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

Does the project involve any bridge class structure rehabilitation(s) or replacement(s) (bridge class structures not including box culverts)?
☐ Yes ☒ No

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

Are the results of the asbestos inspection positive (is asbestos present)?
☐ Yes ☐ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action Number:

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action Number:

1.

GENERAL NOTE:

Any change orders and/or deviations from the final design must be reported to the Engineer prior to commencement of construction activities, as additional environmental clearance may be required.

LAST REVISION: 1/15/15

 Texas Department of Transportation
Dallas District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC) - Sheet 1 of 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		FM1382
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	Dallas	
CONTROL	SECTION	JOB	SHEET NO.
1047	03	079	129

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

Action Number:

CONTINUED FROM SHEET 2 OF 2

3. Western burrowing owl - Bird BMPs - In addition to complying with the Migratory Bird Treaty Act (MBTA) perform the following BMPs:
   a) Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.
   b) Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season.
   c) Avoid the removal of unoccupied, inactive nests, as practicable.
   d) Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
   e) Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

4. Woodhouse's toad - Amphibian BMPs:
   a) Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
   b) Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats.
   c) Maintain hydrologic regime and connections between wetlands and other aquatic features.
   d) N/A
   e) Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding area not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or contain only loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
   f) Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
   g) When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and overwinter sites (e.g., brush and debris piles, crayfish burrows) where feasible.
   h) Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refugia for terrestrial amphibians, where feasible.
   i) N/A

5. Slender glass lizard and Texas garter snake - Terrestrial reptile BMPs:
   a) Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or contain only loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
   b) For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
   c) Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
   d) Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
   e) Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
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NWP:	Nationwide Permit	USACE:	U.S. Army Corp of Engineers
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Dallas District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC) - Sheet 2 of 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		FM1382
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	Dallas	
CONTROL	SECTION	JOB	SHEET NO.
1047	03	079	130

LAST REVISION: 1/15/15

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3. All areas should be addressed thoroughly and verify the necessary pay items are set up to support actions needed.

Filled Out: XX/XX/XXXX
Prepared by: Name/Section

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
1047-03-079

1.2 PROJECT LIMITS:
From: Camp Wisdom Intersection

To: Mansfield Road

1.3 PROJECT COORDINATES:
BEGIN: (Lat) N 32.655883 ,(Long) W -96.980342

END: (Lat) N 32.640328 ,(Long) W -96.972906

1.4 TOTAL PROJECT AREA (Acres): 8.82 Acres

1.5 TOTAL AREA TO BE DISTURBED (Acres): 5.43 Acres

1.6 NATURE OF CONSTRUCTION ACTIVITY:
The construction of a sidepath adjacent to FM 1382 consisting of earthwork, grading, drainage, structures, sidewalk, signing, and pavement markings.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Houston black with native grasses and trees.	The approximate density of vegetation is about 95%. Mostly Bermuda grass and is in good conditions.

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

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

Tributaries	Classified Waterbody
Tributaries to Mountain Creek above Mountain Creek Lake (Segment 0841W).	Mountain Creek

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

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

MS4 Entity

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED
PROFESSIONAL ENGINEER
F-2966

8/23/2023

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	(SEE TITLE SHEET)		131
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
1047	03	079	FM1382

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

2.2 SEDIMENT CONTROL BMPs:

T / P

- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- X ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ Sediment Control Fence
- X ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- X ☐ Other: Velocity Control Devices
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

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

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - ☐ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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 INSPECTIONS:

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

2.9 MAINTENANCE:

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

Jacobs Engineering Group
STATE OF TEXAS
EDWARD M. PENTON
100190
LICENSED
PROFESSIONAL ENGINEER
F-2966

8/23/2023

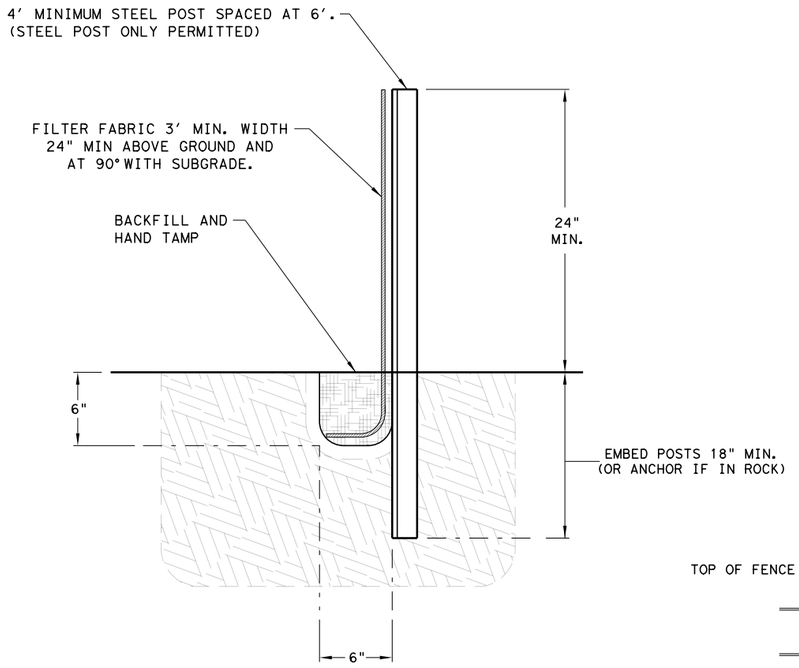
STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Sheet 2 of 2

Texas Department of Transportation

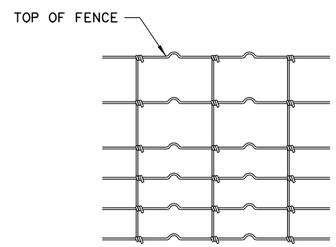
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	(SEE TITLE SHEET)		132
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
1047	03	079	FM1382

DATE:
FILE:



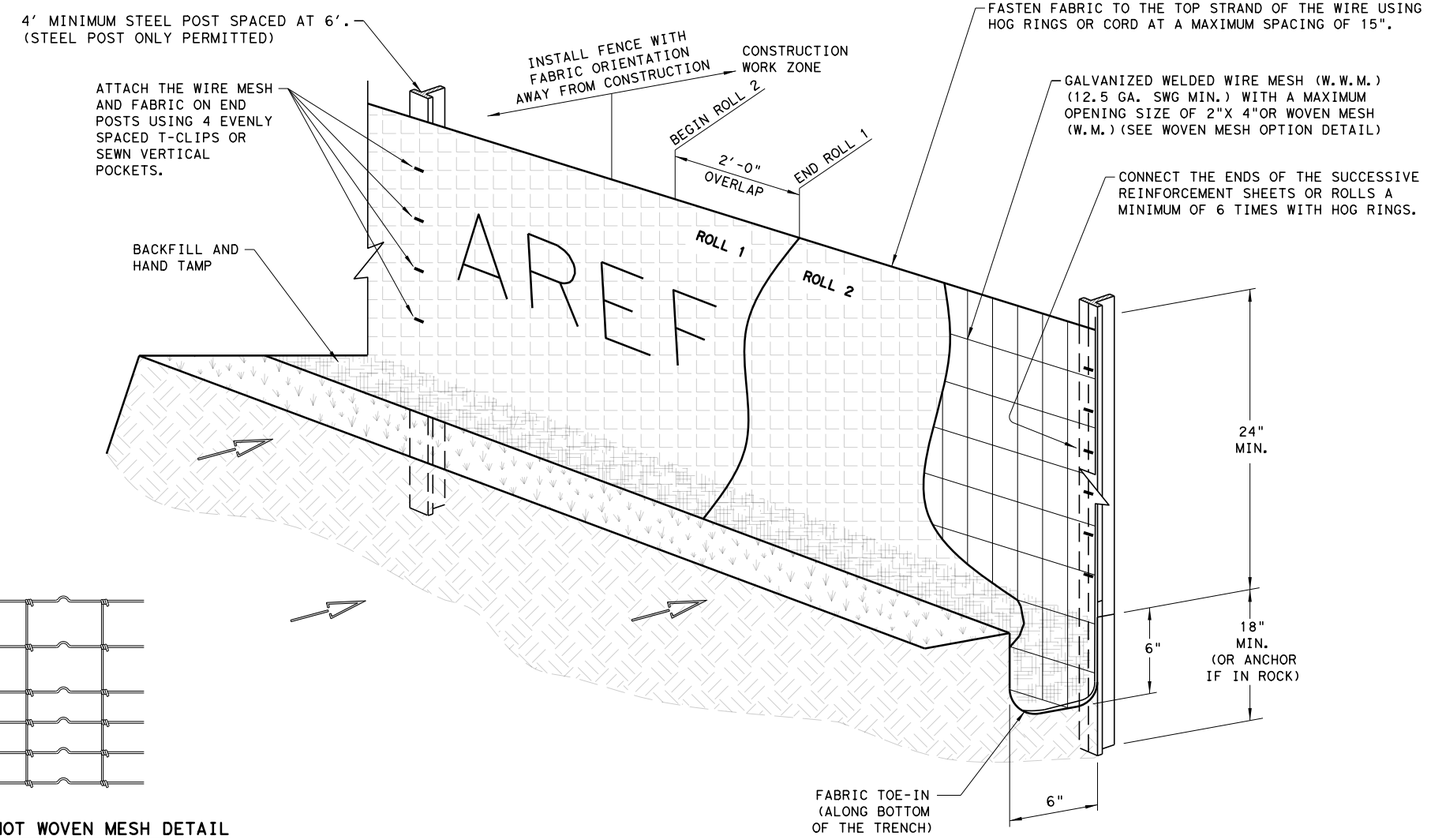
TRENCH SIDE VIEW DETAIL

FABRIC TOE-IN IS TO RUN DOWN THE TRENCH
AND ALONG THE BOTTOM OF THE TRENCH



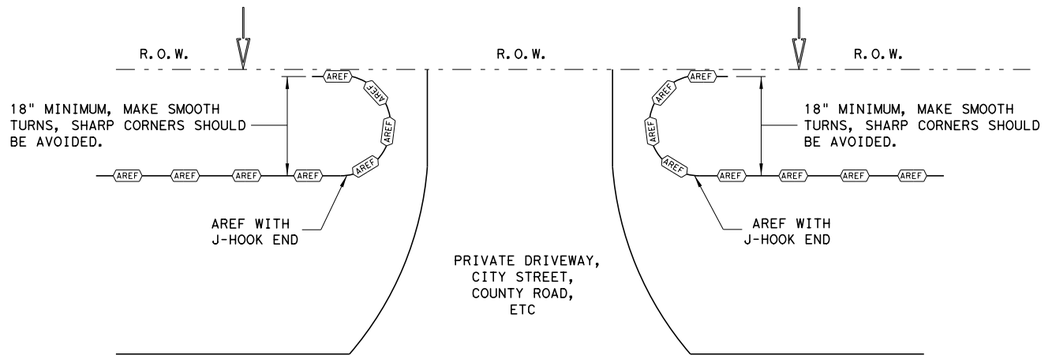
HINGE JOINT KNOT WOVEN MESH DETAIL

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.



GENERAL NOTES

1. REMOVE ALL ROOTS AND OTHER OBSTRUCTIONS FROM THE TRENCH BEFORE FABRIC PLACEMENT.
2. AMPHIBIAN AND REPTILE EXCLUSION FENCE MUST BE CHECKED DAILY, INCLUDING DAYS DURING RAINFALL SHUTDOWN PERIODS.
3. ANY DAMAGE TO FENCE, INCLUDING SMALL HOLES, MUST BE REPAIRED THE DAY IT IS OBSERVED BEFORE DARK.
4. SMALL HOLES (WITH THE ENGINEER'S DISCRETION) MAY BE REPAIRED WITH TAPE AS DIRECTED BY THE ENGINEER.
5. AS DIRECTED BY THE ENGINEER, SECTIONS OF FENCE WHERE THE DAMAGE IS DEEMED DETRIMENTAL TO THE FENCE WILL BE REPLACED RATHER THAN REPAIRED.
6. A MINIMUM OF 2' SHOULD BE OVERLAPPED WHEN JOINING FABRIC SECTIONS.
7. PAINT "AREF" OR "TEF" ON THE FABRIC IN BRIGHT COLOR EVERY 50' AND AT BREAKS.
8. REMOVE SEDIMENT, VEGETATION, OR OTHER DEBRIS TO MAINTAIN THE 24" AREF CLEARANCE.
9. FOR PAYMENT AND ADDITIONAL INFORMATION FOR AREF, SEE SPEC. 5116 (AMPHIBIAN AND REPTILE EXCLUSION FENCE).



J-HOOK END OF FENCE DETAIL (TOP VIEW)

TRENCH IS TO STAY 6 IN DEEP AND 6 IN WIDE WITH
FABRIC TOE-IN TO MATCH TRENCH DETAIL.

J-HOOK APPLIES AT DRIVEWAY BREAKS, ROADWAY
BREAKS, AND AT ANY LOCATION AS DIRECTED BY
THE ENGINEER.

LEGEND

AREF — AMPHIBIAN AND REPTILE EXCLUSION FENCE

AMPHIBIAN AND REPTILE DIRECTION OF TRAVEL

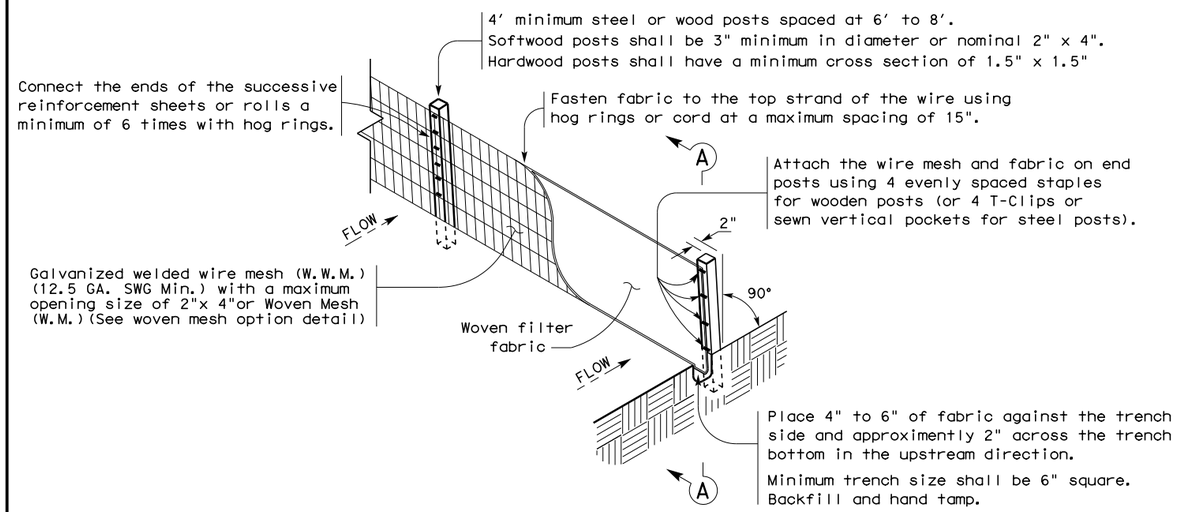
Texas Department of Transportation

Design Division Standard

AMPHIBIAN AND REPTILE EXCLUSION FENCE

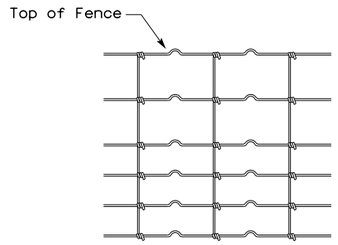
AREF-21

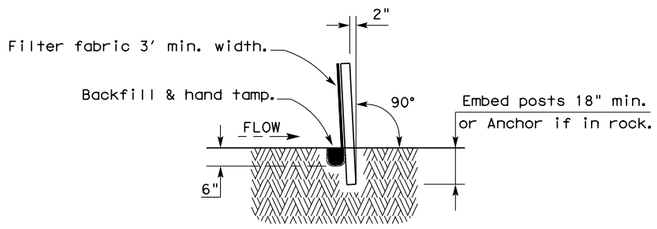
FILE: aref21.dgn	DN: TJ		CK: KM	DW: SS		CK: AG
© TxDOT: FEBRUARY 2021	CONT	SECT	JOB		HIGHWAY	
REVISIONS	1047	03	079		FM1382	
	DIST	COUNTY				SHEET NO.
	DAL	DALLAS				133



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.

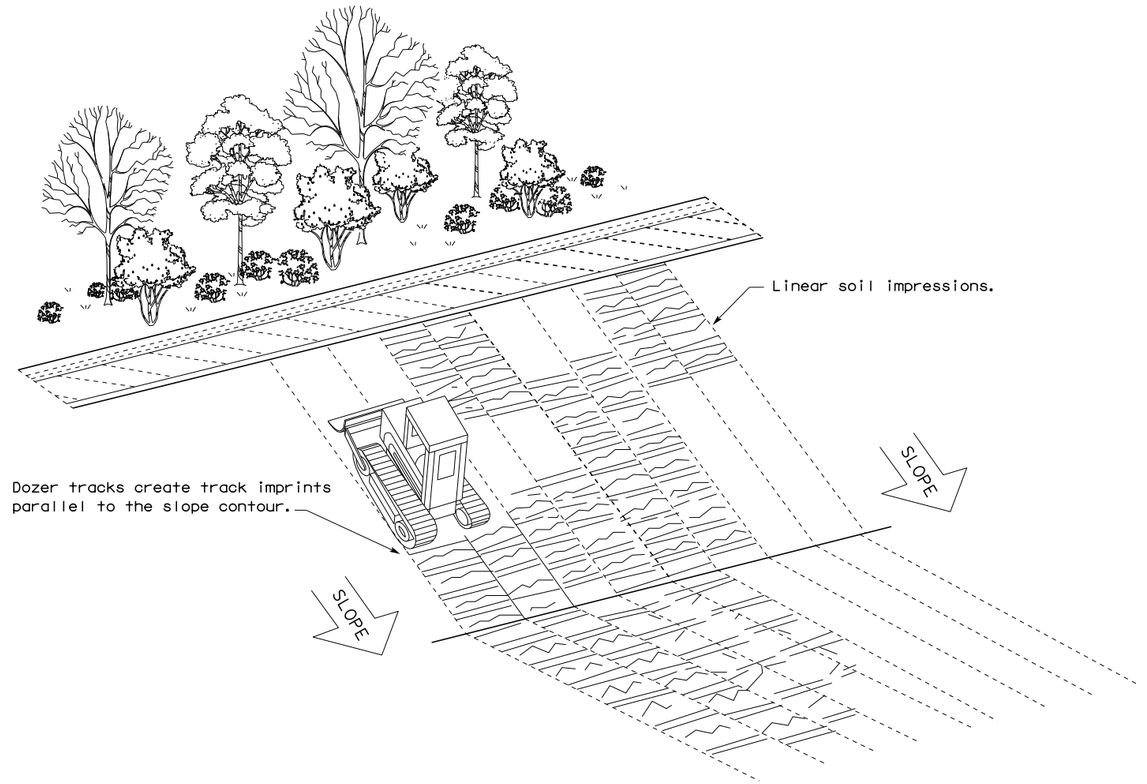
LEGEND

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
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REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		134

DATE
FILE

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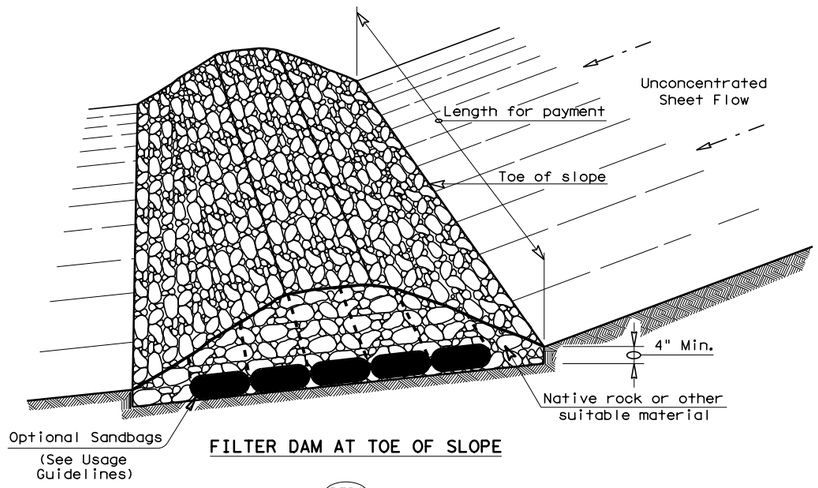
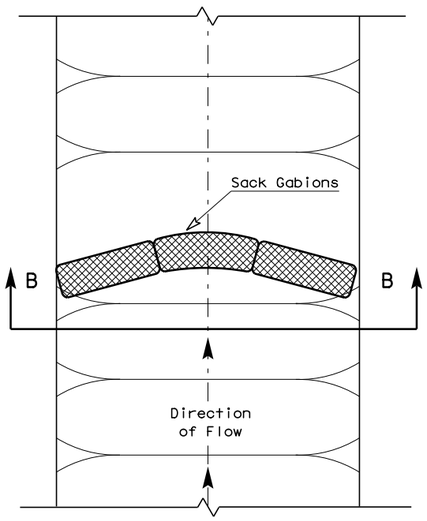
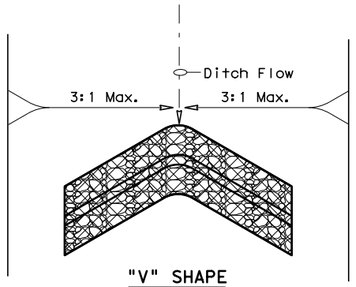


FILTER DAM AT TOE OF SLOPE

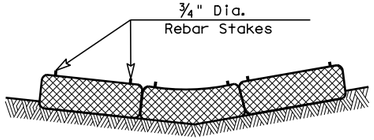
RFD1



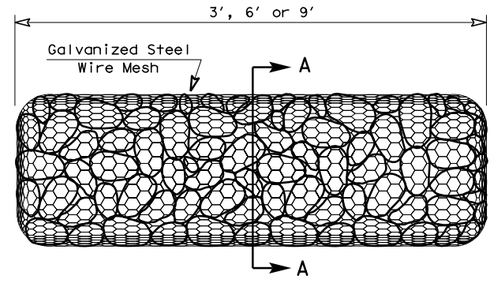
PLAN VIEW



"V" SHAPE
PLAN VIEW

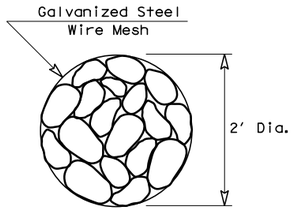


SECTION B-B

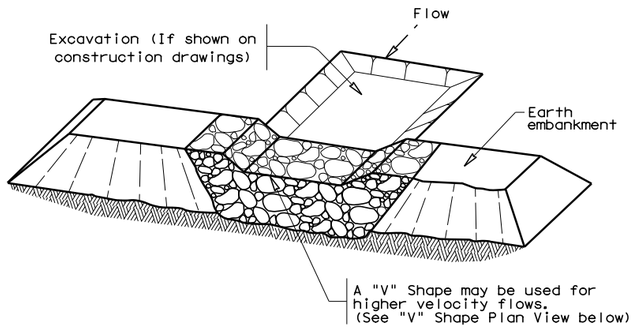


TYPE 4 (SACK GABIONS)

RFD4

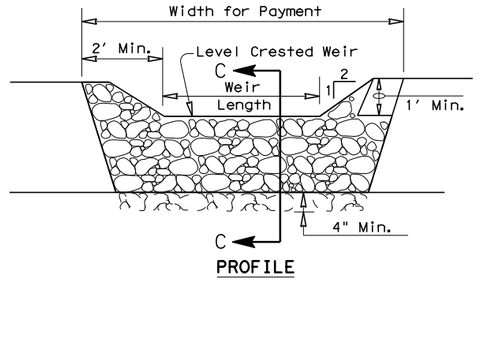


SECTION A-A

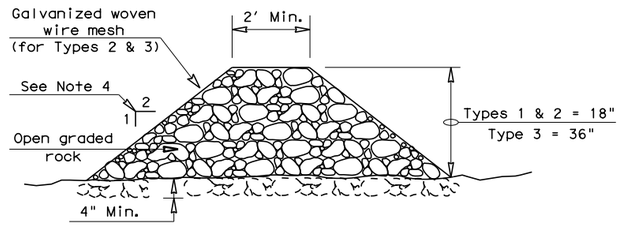


FILTER DAM AT SEDIMENT TRAP

RFD1 — OR — RFD2



PROFILE



SECTION C-C

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.

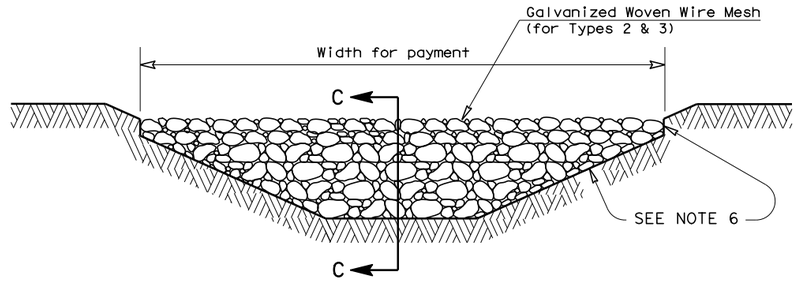
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity 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.



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

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		
REVISIONS	1047	03	079	FM1382		
	DIST	COUNTY		SHEET NO.		
	DAL	DALLAS		135		

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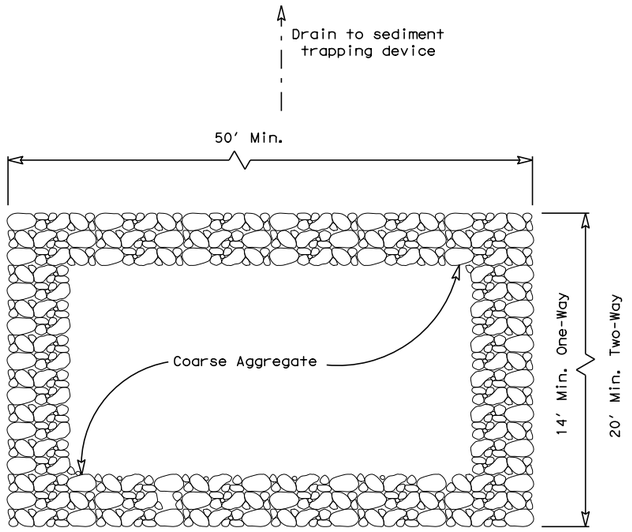
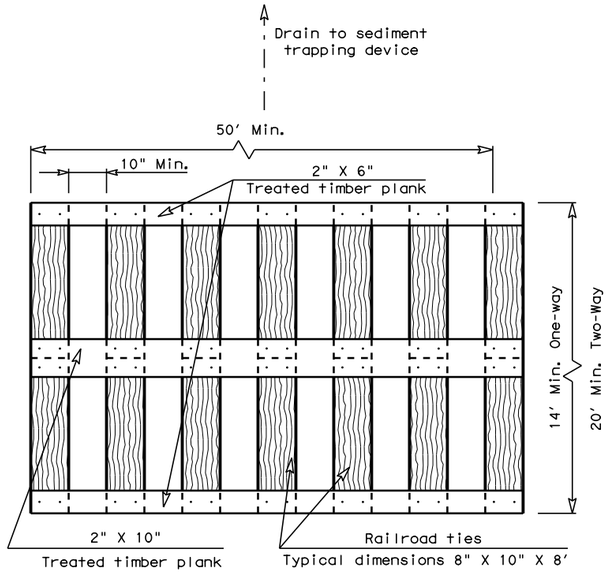
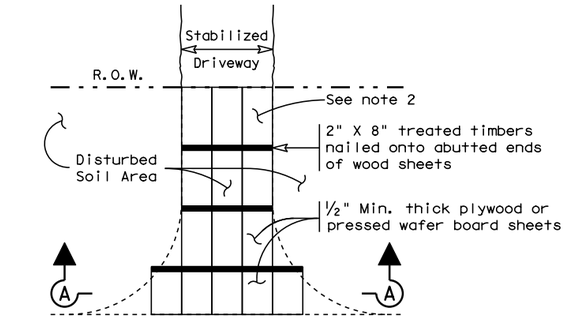


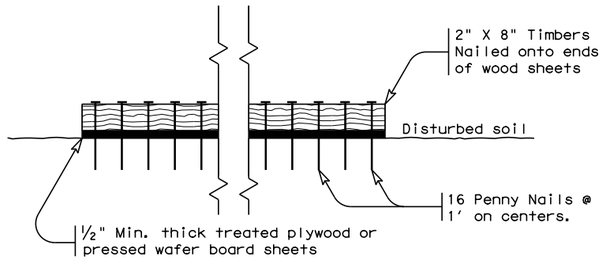
PLAN VIEW



PLAN VIEW



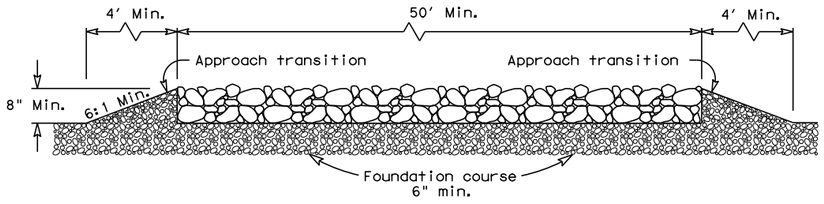
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

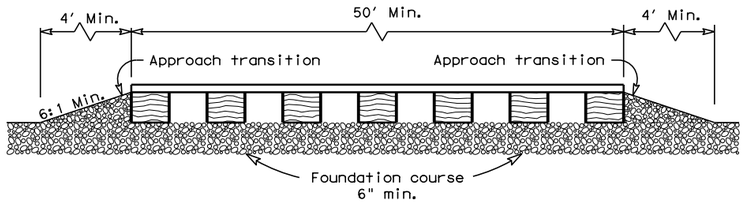
SHORT TERM



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

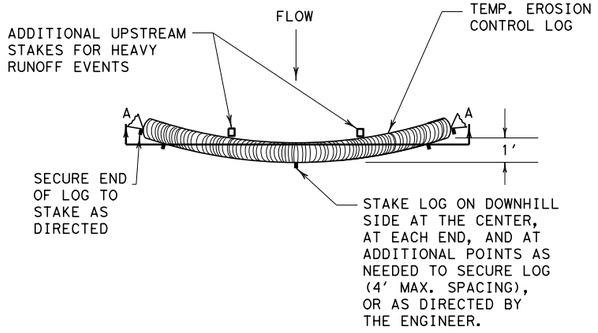
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

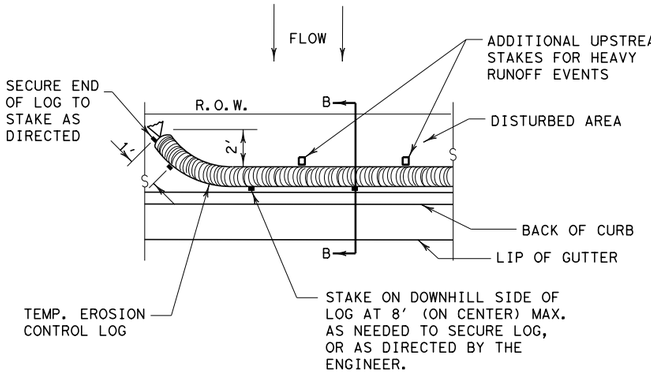
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
	CONT	SECT	JOB	HIGHWAY
REVISIONS	1047	03	079	FM1382
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		136

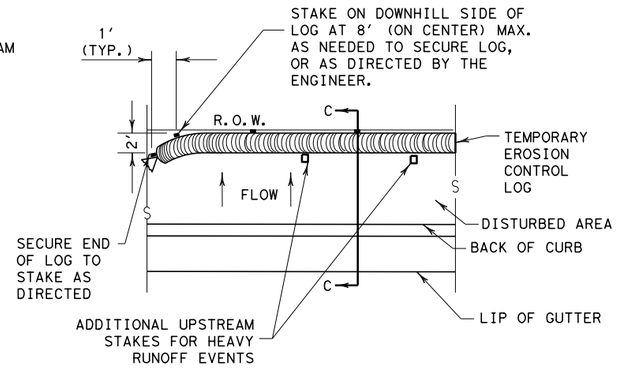
DATE:
FILE:



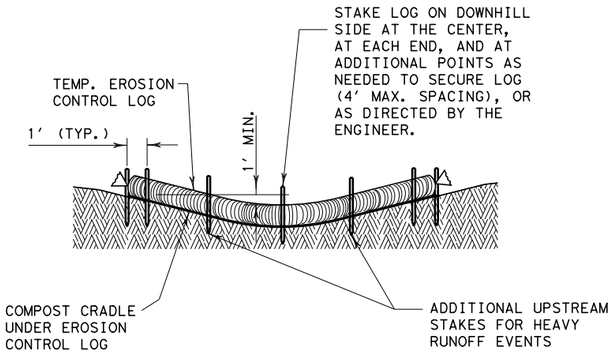
PLAN VIEW



PLAN VIEW



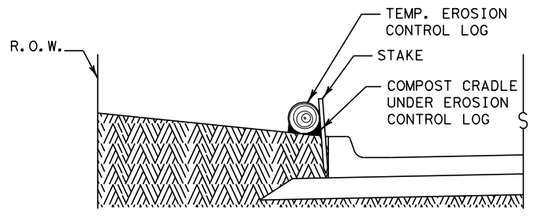
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

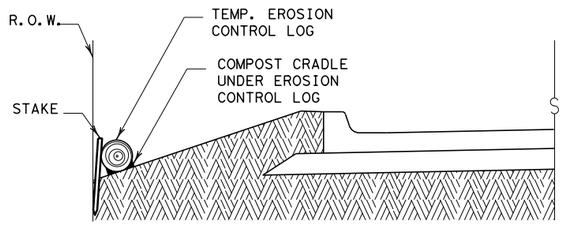
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

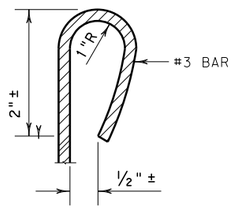
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



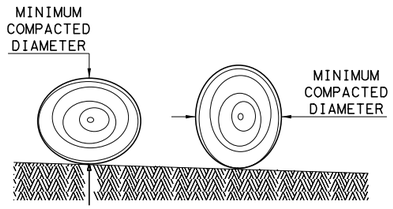
REBAR STAKE DETAIL

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
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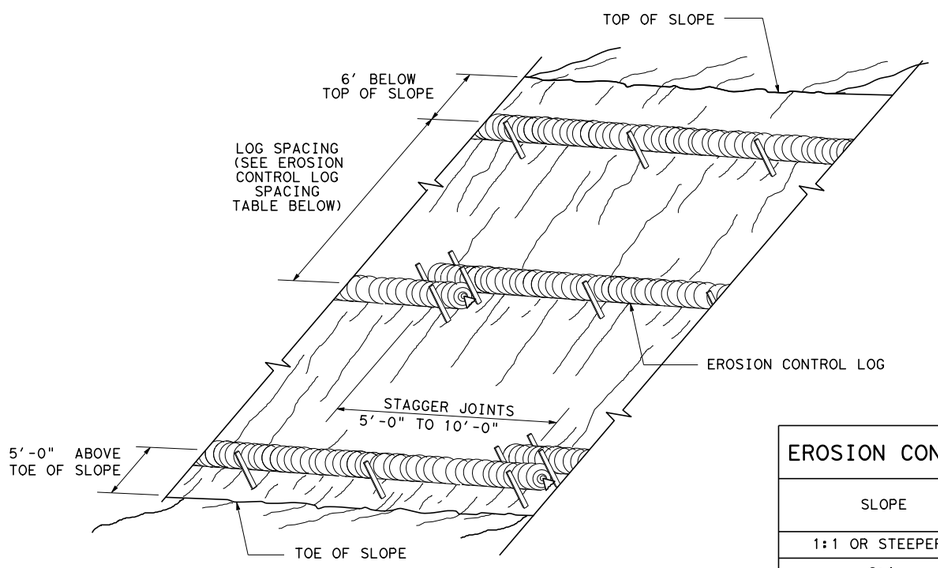
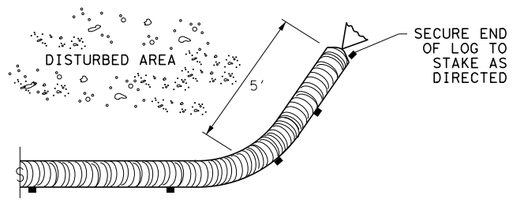
		DIST		COUNTY			SHEET NO.
		DAL		DALLAS			137

DATE:
FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

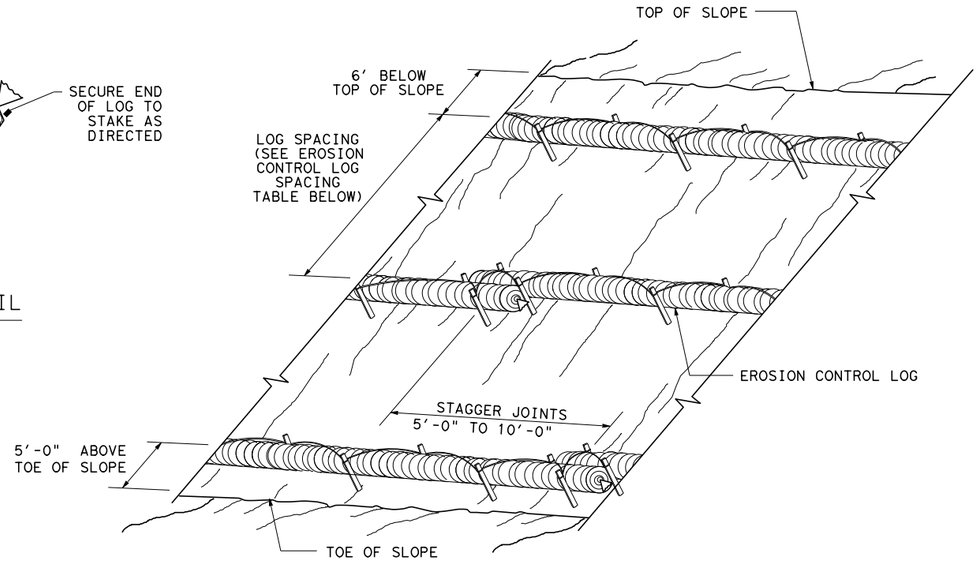
CL-SST



END SECTION RAP DETAIL

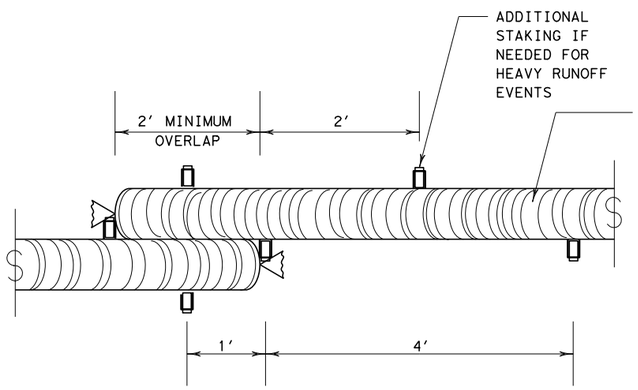
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5′	10′	15′	20′
2:1	10′	20′	30′	40′
3:1	15′	30′	45′	60′
4:1 OR FLATTER	20′	40′	60′	80′

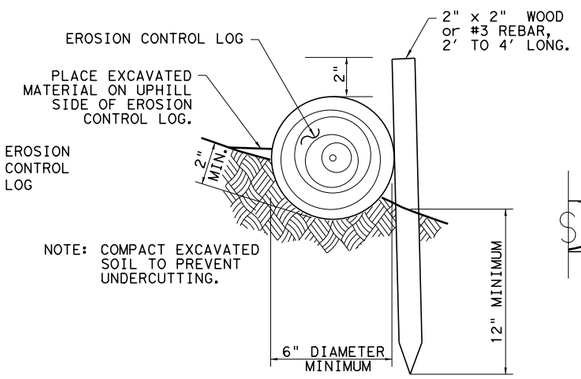
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

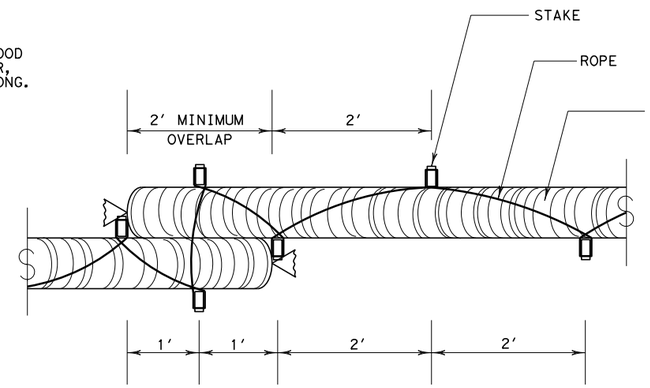


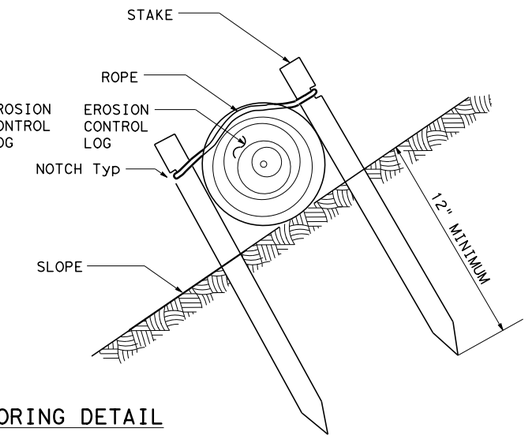


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

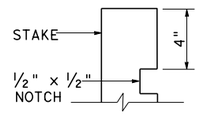
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





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	
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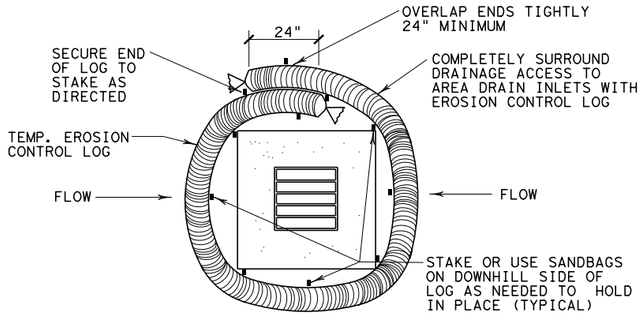
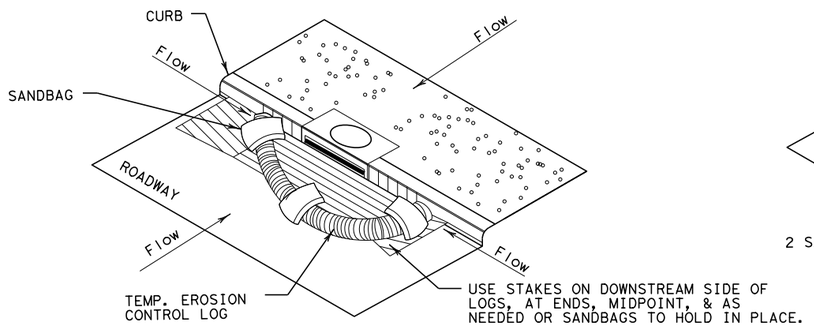
	DIST	COUNTY		SHEET NO.	
	DAL	DALLAS		138	

DATE:
FILE:



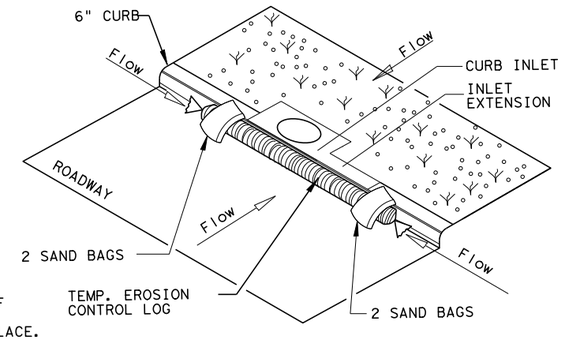
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

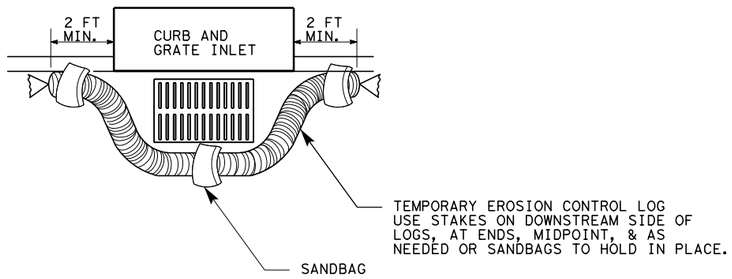
CL-CI



EROSION CONTROL LOG AT CURB INLET

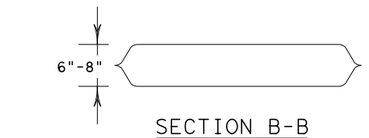
CL-CI

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

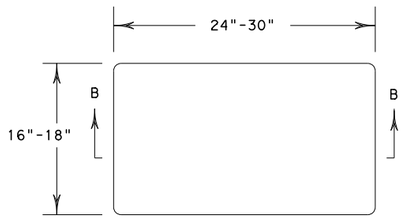


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

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
	CONT	SECT	JOB		HIGHWAY		
REVISIONS	1047	03	079		FM1382		
	DIST	COUNTY					SHEET NO.
	DAL	DALLAS					139

USER ID

SURFACE PREPARATION ITEM 160* TOPSOIL SY / ITEM 161* COMPOST MANUF. TOPSOIL (BOS) (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 cultivate existing surface to a depth of 4 inches, unless otherwise specified or directed.

Refer to Items 160 and 161 of TxDOT 2014 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-cultivated 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-cultivated 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 AC

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 2014 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 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 SEEDING AC

RECOMMENDED PLANTING SEASON	PERMANENT RURAL SEED MIX ITEM 164 - DRILL SEEDING (PERM) (RURAL)(CLAY)		PERMANENT URBAN SEED MIX ITEM 164 - DRILL SEEDING (PERM) (URBAN)(CLAY)		TEMPORARY DRILL SEED MIX ITEM 164 - DRILL SEEDING (TEMP) (WARM OR COOL)	
		Pure Live Seed Rate**		Pure Live Seed Rate**		Pure Live Seed Rate**
WARM SEASON Mar.15th, April, May, June, July, August, Sept. 15th	Green Sprangletop (Van Horn)	- 1.0 lbs/AC	Green Sprangletop (Leptochloa dubia)	- 0.3 lbs/AC	Foxtail Millet (Setaria italica)	- 34 lbs/AC
	Sideoats Grama (Haskell)	- 1.0 lbs/AC	Sideoats Grama (El Reno)(Bouteloua curtipendula)	- 3.6 lbs/AC		
	Texas Grama (Atascosa)	- 1.0 lbs/AC	Buffalograss (Texoka)(Buchloe dactyloides)	- 1.6 lbs/AC		
	Hairy Grama (Chaparral)	- 0.4 lbs/AC	Bermudagrass (Cynodon dactylon)	- 2.4 lbs/AC		
	Shortspike Windmillgrass (Welder)	- 0.2 lbs/AC				
	Little Bluestem (OK Select)	- 0.8 lbs/AC				
	Purple Prairie Clover (Cuero)	- 0.6 lbs/AC				
	Engelmann Daisy (Eldorado)	- 0.75lbs/AC				
	Illinois Bundleflower	- 1.3 lbs/AC				
	Awnless Bushsunflower (Plateau)	- 0.2 lbs/AC				
COOL SEASON Sept 16th, Oct, Nov, Dec, Jan, Feb, Mar 14th						Pure Live Seed Rate**
					Tall Fescue (Festuca arundinaceae)	- 4.5 lbs/AC
					Western Wheatgrass (Agropyron smithii)	- 5.6 lbs/AC
					Red Winter Wheat (Triticum aestivum)	- 34 lbs/AC
					Cereal Rye	- 34 lbs/AC

SEEDING NOTES:
1. When seeding is specified under Item 164, refer to TxDOT 2014 Standard Specifications* for specifications, dimensions, volumes, and measurements that have been modified or not shown. Materials and construction shall meet 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, cultivate 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 1-4 of the TxDOT 2014 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 164.3.4.
8. Hydroseeding may be allowed, when specified or Engineer concurs.
9. Implement and continue Vegetative Watering per the schedule, rate and volume specified under Item 168.

****Note:** The amount of Pure Live Seed (PLS) in one pound 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.

TXDOT REFERENCE MATERIALS:

- * "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES" 2014
- "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 SOD (BERMUDA) SY

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

SODDING NOTES:
1. Refer to Item 162 of TxDOT 2014 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 MG

WATERING SCHEDULE

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

Notes: 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 MG

VEGETATIVE WATERING NOTES:
1. Refer to Item 168 of TxDOT 2014 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. 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. 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 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.

ROADSIDE MOWING ITEM 730* PROJECT MAINTENANCE 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:

- CULTIVATE 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

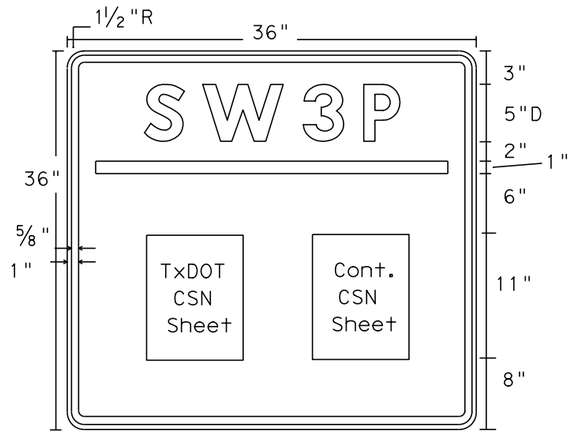
VEGETATION ESTABLISHMENT SHEET

(DALLAS DISTRICT)

TEMPLATE REVISION DATE: 02/21/19

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CPB	6	(See Title Sheet)		FM1382
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
BDG	TEXAS	DAL	DALLAS	
CHECK	CONTROL	SECTION	JOB	140
CAN	1047	03	079	
CHECK				
EMP				

DATE



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.

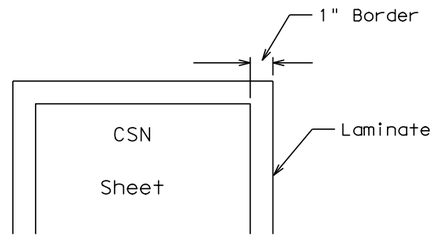
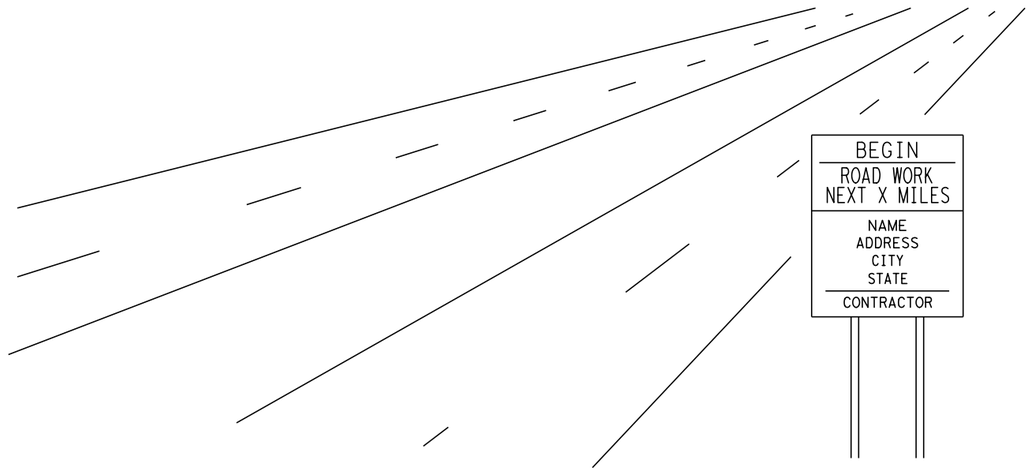
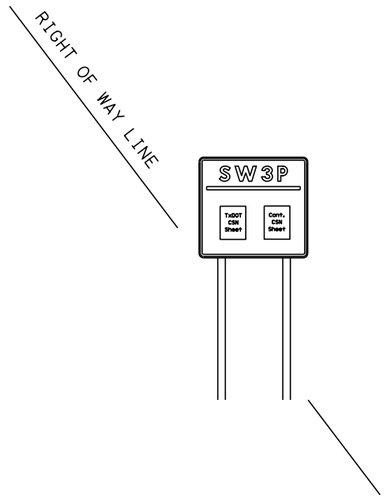


Figure 1





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

LEVELS DISPLAYED
1
PATH:

Texas Department of Transportation
DALLAS DISTRICT STANDARD

SW3P SIGN SHEET

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT 2016	DISTRICT	FEDERAL AID PROJECT		SHEET
	18	SEE TITLE SHEET		141
REVISION DATE: 10-16-15	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	DALLAS	1047	03	079	FM1382