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

BR 2023 (442)

CSJ: 0442-02-169

IH 35E
DALLAS COUNTY

LIMITS: IH 35E AT WOODY BRANCH

TOTAL LENGTH OF PROJECT =	ROADWAY	= 0.00	FT.	= 0.00	MI.
	BRIDGE	= 232.32	FT.	= 0.044	MI.
	TOTAL	= 232.32	FT.	= 0.044	MI.

FOR THE CONSTRUCTION OF BRIDGE MAINTANANCE

CONSISTING OF: BRIDGE SCOUR REPAIR

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
HA	6	BR 2023 (442)		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	1
CHECK AM	CONTROL	SECTION	JOB	
	0442	02	169	

DESIGN SPEEDS = N/A

FUNCTIONAL CLASSIFICATIOS:

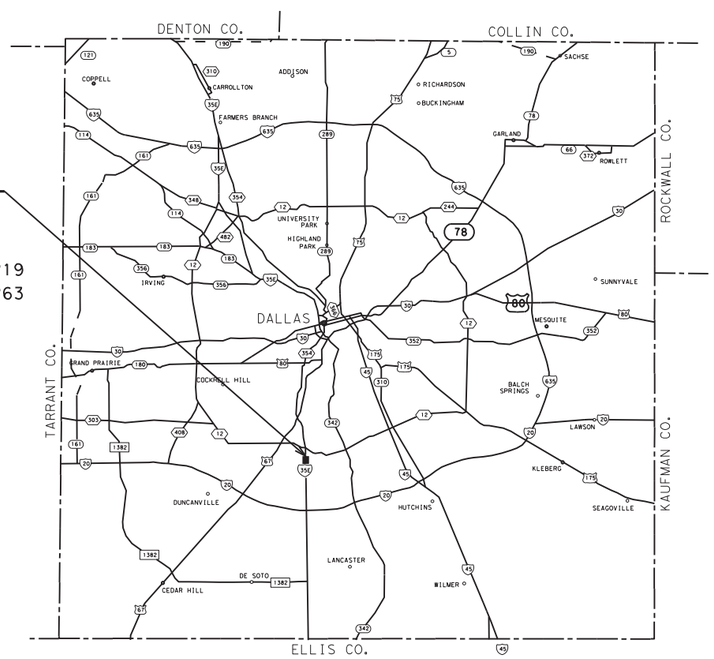
URBAN INTERSTATE

ADT: 115,193 (2022)
219,914 (2042)

NOTE:

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014, AND THE CONTRACT PROVISIONS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, JULY 5, 2022)

PROJECT LOCATION
CSJ 0442-02-169
IH 35E AT
WOODY BRANCH
Beg. TRM: 0421+0.219
End TRM: 0421+0.263



DALLAS COUNTY

SCALE 0 1 2 3 4 MILES

DALLAS DISTRICT

EQUATIONS: NONE
EXCEPTIONS: NONE
RAILROAD CROSSINGS: NONE

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING 11/11/2022

Doug Nguyen, P.E.
DESIGN ENGINEER

RECOMMENDED FOR LETTING 11/18/2022

DocuSigned by: John Hamm, P.E.
CD610F6E0D584EF...
DEPUTY DISTRICT ENGINEER

RECOMMENDED 11/18/2022

DocuSigned by: [illegible], P.E.
01F881A42AA240C...
AREA ENGINEER

APPROVED FOR LETTING: 11/18/2022

DocuSigned by: Cesson Clemens, P.E.
A879E0B10CED464...
DISTRICT ENGINEER

WORK WAS COMPLETED ACCORDING TO THE PLANS AND CONTRACT.

_____, P.E.
Signature of Registrant & Date

DATE:

INDEX OF SHEETS

I. GENERAL

	1	TITLE SHEET
	2	INDEX OF SHEETS
	3	PROJECT LAYOUT
	4, 4A-4D	GENERAL NOTES
	5	ESTIMATE & QUANTITY SHEET
	6	SUMMARY OF QUANTITIES

II. TRAFFIC CONTROL PLAN

	7	TCP/PHASE NARRATIVE
	8	TCP DETOUR
	9	TCP MISCELLANEOUS DETAILS
	10	CRASH CUSHION SUMMARY SHEET

STANDARDS

#	11-22	BC(1)-21 THRU BC(12)-21
#	23	TCP(1-5)-18
#	24	TCP(2-6)-18
#	25	TCP(5-1)-18
#	26-30	TCP(6-1)-12 THRU TCP(6-5)-12
#	31-32	TCP(6-8)-14 THRU TCP(6-9)-14
#	33-34	CSB(1)-10
#	35	ABSORB(M)-19
#	36	SLED-19

III. ROADWAY DETAILS

NONE

IV. RETAINING WALL DETAILS

NONE

V. DRAINAGE DETAILS

NONE

VI. UTILITIES

NONE

VII. BRIDGE

37	IH 35E SLOPE REPAIR AT WOODY BRANCH ESTIMATED QUANTITIES
38	IH 35E SLOPE REPAIR AT WOODY BRANCH KEY MAP
39	IH 35E SLOPE REPAIR AT WOODY BRANCH STONE RIPRAP LAYOUT
40	IH 35E SLOPE REPAIR AT WOODY BRANCH GENERAL NOTES
41	IH 35E SLOPE REPAIR AT WOODY BRANCH CONTROL LINE AND OFFSETS OF STONE PROTECTION RIPRAP AND GABION MATTRESS
42	IH 35E SLOPE REPAIR AT WOODY BRANCH TYPICAL SECTION DETAIL
43-59	IH 35E SLOPE REPAIR AT WOODY BRANCH CROSS SECTIONS
60	SRR
61	SRR (MOD)
62	IH 35E BRIDGE REPAIR GENERAL NOTES AND ESTIMATED REPAIR QUANTITIES
63	IH 35E BRIDGE REPAIR TABLE OF REPAIRS
64	IH 35E NBFR IH 35E OVERPASS ESTIMATED REPAIR QUANTITIES REPAIR LAYOUT
65	IH 35E BRIDGE REPAIR PICTURES NBI# 18-057-0-0442-02-055 NBFR
66	IH 35E NBML & SBML IH 35E OVERPASS ESTIMATED REPAIR QUANTITIES
67	IH 35E BRIDGE REPAIR PICTURES NBI# 18-057-0-0442-02-056 NBML AND NBI # 18-057-0442-02-074 SBML
68	IH 35E SBFR IH 35E OVERPASS ESTIMATED REPAIR QUANTITIES REPAIR LAYOUT
69	IH 35E BRIDGE REPAIR PICTURES NBI# 18-057-0-0442-02-057 SBFR
70	IH 35E CLEANING AND SEALING EXISTING BRIDGE JOINT DETAILS
71	IH 35E CONCRETE VERTICAL AND OVERHEAD REPAIR DETAILS
72	IH 35E SIDEWALK REMOVAL AND REPLACEMENT
73-74	C-RAIL-R (MOD)

STANDARDS

NONE

VIII. TRAFFIC ITEMS

NONE

IX. ENVIRONMENTAL ISSUES

	75	STORM WATER POLLUTION PREVENTION PLAN (SW3P)(DAL)
	76-77	Environmental Permits, Issues, and Commitments (EPIC)(DAL)
	78	SW3P SITE MAP

STANDARDS

#	79-81	EC(1)-16 THRU EC(3)-16
#	82-84	EC(9)-16
#	85	VEGETATIVE ESTABLISHMENT SHEET (DAL)
#	86	SW3P SIGN SHEET

X. MISCELLANEOUS ITEMS

NONE

XI. RAILROAD

NONE

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Dung Nguyen
AA814E3EC8AC415...
, P.E.
Signature of Registrant & Date

12/16/2022

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

Texas Department of Transportation

IH 35E

INDEX OF SHEETS

SCALE: NONE SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	
CHECK AM	CONTROL	SECTION	JOB	2
	0442	02	169	

11/10/2022
11:08:35 AM
TxDOT

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED
PROFESSIONAL ENGINEER

Signature of Registrant & P.E. 11/11/2022 Date

Texas Department of Transportation

IH 35E
PROJECT LAYOUT

SCALE: 1"=400' SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	
CHECK AM	CONTROL	SECTION	JOB	3
	0442	02	169	

T:\DALAO\PROJECTS\On\IH35E\0442021169\Base\Sheets\95%-PS&E\Plans\General\0442-PJ Layout 11.dgn
pdf-bw.pltcfg IH 35E PEN TABLE.tbl

SPECIFICATION DATA

Table 1: Soil Constants Requirements				
Item	Description	Plasticity Index		Note
		Max	Min	
132	EMBANKMENT (FINAL) (ORD COMP) (TY C2)(DS)	25	8	2

Note 2: Use as a non-select embankment backfill as defined under Item 423.2.4.1. Use as an embankment to backfill behind abutments to the extent of the approach slab or to backfill areas enclosed by an abutment and / or retaining walls or other locations as shown in the plans.

Table 2: Basis of Estimate for Permanent Construction					
Item	Description	Thickness	Rate		Quantity
161	Compost Manuf Topsoil	4”			1,881 SY
162	Block Sod	N/A	See Specifications		1,881 SY
166 *	Fertilizer (12-6-6)	N/A	500	Lbs./Ac	0.097 Ton
168	Vegetative Watering (Warm)**	N/A	12	MG/Ac/Day	280 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.

Table 3: Basis of Estimate for Temporary Erosion Control Items				
Item	Description	Rate		Quantity
164	Drill Seeding (Temp) (Warm or Cool)	See Specifications		1,881 SY
166*	Fertilizer (12-6-6)	500	Lb/Ac	0.097 Ton
168	Vegetative Watering (Warm)**	12	MG/Ac/Day	280 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.

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 1.00 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 no formal consultation or 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.

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

Amanda Miller: Amanda.Moser@txdot.gov
Nathan Petter: Nathan.Petter@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. Once a response is developed, it will be posted to TxDOT’s Public FTP at the following Address:
https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

All questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

The following standard detail sheets have been modified: C-Rail-R(MOD) and SRR(MOD).

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.

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.

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.
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.

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.

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.

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 C2, are 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.

Use embankment material Type C2 described in Table 1 “Soil Constants Requirements” for embankments behind bridge abutments to the extent of the bridge approach slabs, and other embankments enclosed by an abutment and / or retaining walls.

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

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

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

Item 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.

Provide High Performance Concrete (HPC) of the class specified for all railing and permanent concrete traffic barrier placed on bridges or approach slabs. HPC concrete is not required for portions of rail or concrete traffic barrier not located on a bridge.

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 440:
Provide reinforcing steel with epoxy coating meeting the requirements of item 440 for the following bridge components: approach slab, slab, sidewalk, median, concrete traffic barrier, and rail.

Epoxy coated reinforcing is not required for portions of rail or concrete traffic barrier not located on a bridge.

All ties, chairs and other appurtenances used with epoxy coated reinforcing shall be epoxy coated or non-metallic.

Item 442:
Use temperature Zone 1 for CVN testing.

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.

The Lane Closure Assessment Fee is shown on the following table. The fee applies to the Contractor for closures or obstructions that overlap into restricted hour traffic for each hour or portion thereof, regardless of the duration of the lane closure or obstruction.

Table 4
Lane Closure Assessment Fee Table

Roadway	Amount Per Lane Per Hour
IH 35E	$4,500

Limit lane closures along IH 35E to the hours between 9:00 am to 3:30 pm and 9:00 pm to 5:00 am.

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.

Work in other areas of the project is not restricted to this time frame.

Night time work is allowed between the hours of 9:00 PM and 5:00 AM with the Engineer's approval.

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.

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 512:
The contractor will furnish pre-cast F Shape Barriers for traffic control, and remove and retain possession of non-permanent barriers at the end of the project. Pre-cast F Shape Barriers must have drainage slots as detailed on the Concrete Safety Barrier Standards. Submit for approval the type of barrier joint connection proposed for the project.

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.

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

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

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

TCP 6 Series	Scenario		Required TMA/TA	
(6-1)-12	A	B	1	2
(6-2)-12 / (6-3)-12	All		1	
(6-4)-12	A	B	1	2
(6-5)-12	A	B	1	2
(6-8)-14 / (6-9)-14	All		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.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0442-02-169 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY IH 35E

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0442-02-169**			
		PROJECT ID		**A00187281**			
		COUNTY		**Dallas**			
		HIGHWAY		**IH 35E**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	132-6056	EMBANKMENT (FINAL)(ORD COMP)(TY C2)(DS)	CY	120.000		120.000	
	161-6017	COMPOST MANUF TOPSOIL (4")	SY	1,881.000		1,881.000	
	162-6002	BLOCK SODDING	SY	1,881.000		1,881.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	1,881.000		1,881.000	
	168-6001	VEGETATIVE WATERING	MG	560.000		560.000	
	429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	40.000		40.000	
	432-6035	RIPRAP (STONE PROTECTION)(24 IN)	CY	6,827.000		6,827.000	
	438-6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	2,150.500		2,150.500	
	451-6032	RETROFIT RAIL (TY C221)(HPC)	LF	831.000		831.000	
	451-6061	RETROFIT RAIL (TY T222)(HPC)	LF	510.000		510.000	
	459-6007	GABION MATTRESSES (GALV)(12 IN)	SY	52.000		52.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4.000		4.000	
	506-6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	1,350.000		1,350.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	1,350.000		1,350.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	312.000		312.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	312.000		312.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	360.000		360.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	360.000		360.000	
	506-6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	1,681.000		1,681.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	1,681.000		1,681.000	
	512-6005	PORT CTB (FUR & INST)(F-SHAPE)(TY 1)	LF	570.000		570.000	
	512-6029	PORT CTB (MOVE)(F-SHAPE)(TY 1)	LF	1,320.000		1,320.000	
	512-6053	PORT CTB (REMOVE)(F-SHAPE)(TY 1)	LF	570.000		570.000	
	531-6003	CONC SIDEWALKS (6")	SY	60.000		60.000	
	545-6003	CRASH CUSH ATTEN (MOVE & RESET)	EA	4.000		4.000	
	545-6005	CRASH CUSH ATTEN (REMOVE)	EA	2.000		2.000	
	545-6019	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	EA	2.000		2.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	136.000		136.000	
	7000-6001	REML & DISPL DRIFTWOOD & DEBRIS	CY	100.000		100.000	
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

SUMMARY OF BRIDGE ITEMS

LOCATION	429 6007	438 6004	451 6032	451 6061
	CONC STR REPAIR (VERTICAL & OVERHEAD)	CLEANING AND SEALING EXIST JOINTS(CL7)	RETROFIT RAIL (TY C221)(HPC)	RETROFIT RAIL (TY T222)(HPC)
	SF	LF	LF	LF
CSJ 0442-02-169				
18-057-0-0442-02-055		412	453	
18-057-0-0442-02-056	20	590		255
18-057-0-0442-02-057	10	364	378	
18-057-0-0442-02-074	10	784.5		255
PROJECT TOTALS	**40**	**2150.5**	**831**	**510**

SUMMARY OF ROADWAY ITEMS

LOCATION	132 6056	432 6035	459 6007	6001 6002	7000 6001
	EMBANKMENT (FINAL)(ORD COMP)(TY C2)(DS)	RIPRAP (STONE PROTECTION)(24 IN)	GABION MATTRESSES (GALV)(12 IN)	PORTABLE CHANGEABLE MESSAGE SIGN	REML & DISPL DRIFTWOOD & DEBRIS
	CY	CY	SY	EA	CY
CSJ 0442-02-169	120	6,827	52	2	100
PROJECT TOTALS	**120**	**6,827**	**52**	**2**	**100**

SUMMARY OF EROSION CONTROL ITEMS

LOCATION	161 6017	162 6002	164 6051	168 6001	506 6003	506 6011	506 6020	506 6024	506 6038	506 6039	506 6042	506 6043
	COMPOST MANUF TOPSOIL (4")	BLOCK SODDING	DRILL SEED (TEMP)(WARM OR COOL)	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 3)	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) (18")	BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	SY	MG	LF	LF	SY	SY	LF	LF	LF	LF
CSJ 0442-02-169												
SHEET 1 OF 1	1881	1881	1881	560	1350	1350	312	312	360	360	1681	1681
PROJECT TOTALS	**1,881**	**1,881**	**1,881**	**560**	**1,350**	**1350**	**312**	**312**	**360**	**360**	**1681**	**1681**

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

LOCATION	512 6005	512 6029	512 6053	545 6003	545 6005	545 6019	6185 6002
	PORT CTB (FUR & INST)(F-SHAPE)(TY 1)	PORT CTB (MOVE)(F-SHAPE)(TY 1)	PORT CTB (REMOVE)(F-SHAPE)(TY 1)	CRASH CUSH ATTEN (MOVE & RESET)	CRASH CUSH ATTEN (REMOVE)	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	TMA (STATIONARY)
	LF	LF	LF	EA	EA	EA	DAY
CSJ 0442-02-169							
18-057-0-0442-02-055		540	30	2			136
18-057-0-0442-02-056		330	450			1	
18-057-0-0442-02-057		450	90	2	2		
18-057-0-0442-02-074	570					1	
PROJECT TOTALS	**570**	**1320**	**570**	**4**	**2**	**2**	**136**

IH 35E

SUMMARY OF QUANTITIES

SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	
CHECK AM	CONTROL	SECTION	JOB	6
	0442	02	169	

CONSTRUCTION PHASE NARRATIVE

GENERAL NOTE

1. THE CONTRACTOR SHALL PLACE AND MAINTAIN ALL SIGNS, BARRICADES, PAVEMENT MARKINGS, AND OTHER WARNING DEVICES AS SHOWN IN THESE PLANS ACCORDING TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND ALL APPLICABLE STANDARDS. THE SIGNS, BARRICADES OR OTHER WARNING DEVICES SHOWN SHALL BE CONSIDERED A MINIMUM AND ADDITIONAL SIGNS, BARRICADES OR WARNING DEVICES DEEMED NECESSARY BY THE ENGINEER OR DICTATED BY FIELD CONDITIONS SHALL BE PROVIDED ACCORDING TO ALL APPLICABLE STANDARDS. ADDITIONAL SIGNS OR BARRICADES WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".
2. INSTALL TEMPORARY SW3P EROSION CONTROL MEASURES BEFORE (BUT NO SOONER THAN TWO WEEKS PRIOR TO) SOIL DISTURBANCE OR POTENTIAL POLLUTANT-GENERATING ACTIVITIES IN THEIR CONTROL AREA. TEMPORARY SW3P EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN TWO WEEKS OF VEGETATION ESTABLISHMENT IN THEIR CONTROL AREA, OR AS APPROVED BY THE ENGINEER.
3. SUBMIT A DETAILED SCHEDULE OF WORK TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE BEGINNING OF CONSTRUCTION WHICH GENERALLY CONFORMS TO THE SEQUENCE SHOWN ON THE TCP SUGGESTED SEQUENCE OF CONSTRUCTION (SHOWN BELOW).
4. SUBMIT ANY REQUEST TO ALTER SEQUENCE OF OPERATION OF TRAFFIC CONTROL PLANS TO THE ENGINEER FOR WRITTEN APPROVAL PRIOR TO BEGIN OF CONSTRUCTION. ADDITIONAL COST OR TIME IS AT THE EXPENSE OF THE CONTRACTOR.
5. MAINTAIN TEMPORARY SIGNS WITHIN THE PROJECT LIMITS AND COVER OR REMOVE ANY EXISTING SIGN OR PAVEMENT MARKING THAT CONFLICTS WITH TCP TO AVOID CONFUSION FOR THE TRAVELING PUBLIC. TEMPORARY SIGNING SHALL BE PLACED AS NEEDED DURING ALL PHASES. PAYMENT FOR THIS WORK SHALL BE SUBSIDIARY TO ITEM 502 BARRICADES.
6. THE COMPLETE CLOSURE OF ANY ROADWAY REQUIRES THE APPROVAL OF THE ENGINEER.
7. MAINTAIN TEMPORARY AND POSITIVE DRAINAGE THROUGHOUT ALL PHASES OF CONSTRUCTION. THIS WORK WILL BE SUBSIDIARY TO VARIOUS BID ITEMS.
8. PROVIDE ACCESS TO PRIVATE PROPERTY AT ALL TIMES. MATERIALS, MAINTENANCE AND LABOR IS SUBSIDIARY.

SUGGESTED SEQUENCE OF CONSTRUCTION

1. PLACE ADVANCED WARNING SIGNS AND BARRICADES WHERE NECESSARY IN ACCORDANCE WITH BC STANDARD SHEETS. ADVANCED WARNING SIGNS ARE TO BE PLACED ON THE IH 35E NORTHBOUND AND SOUTHBOUND MAINLANES & FRONTAGE ROADS.
2. PLACE SW3P DEVICES IN ACCORDANCE WITH THE STANDARDS SHEETS AND AS DIRECTED BY THE ENGINEER.
3. PERFORM BRIDGE REHABILITATION ITEMS AS SHOWN IN THE PLANS.
4. PERFORM BRIDGE SCOUR REPAIRS.
5. AFTER VEGETATION HAS RE-ESTABLISHED IN THEIR CONTROL AREA, AND UPON DIRECTION OR AUTHORIZATION OF THE ENGINEER, REMOVE SW3P DEVICES.
6. PERFORM FINAL PROJECT CLEAN UP OPERATION AND OPEN ROADWAY TO TRAFFIC.

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED
PROFESSIONAL ENGINEER

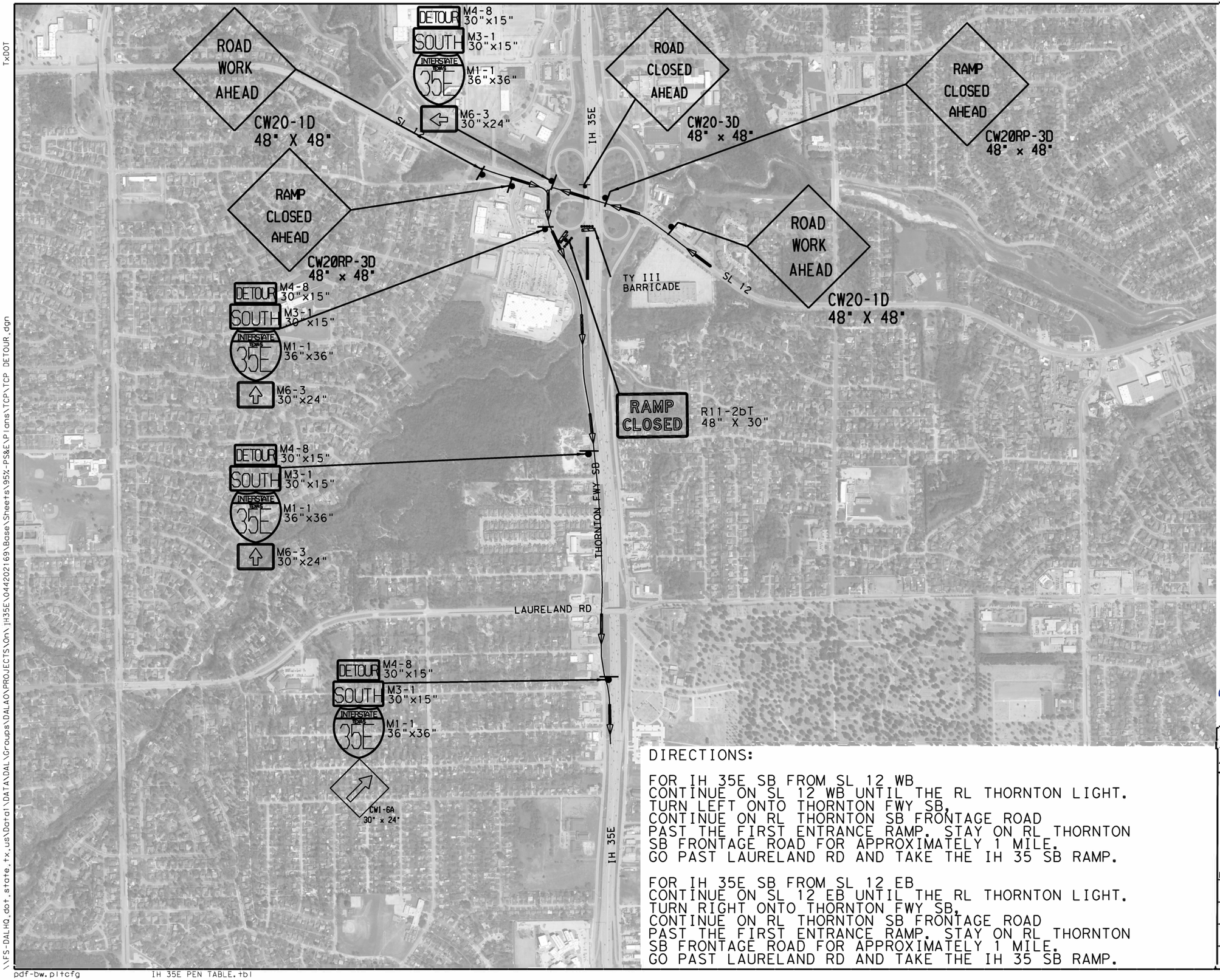
Signature of Registrant & Date: P.E. 11/11/2022

Texas Department of Transportation

IH 35E
TCP/PHASE NARRATIVE

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	
CHECK AM	CONTROL	SECTION	JOB	7
	0442	02	169	



LEGEND

WORK ZONE

DIRECTIONS:

FOR IH 35E SB FROM SL 12 WB
CONTINUE ON SL 12 WB UNTIL THE RL THORNTON LIGHT.
TURN LEFT ONTO THORNTON FWY SB,
CONTINUE ON RL THORNTON SB FRONTAGE ROAD
PAST THE FIRST ENTRANCE RAMP. STAY ON RL THORNTON
SB FRONTAGE ROAD FOR APPROXIMATELY 1 MILE.
GO PAST LAURELAND RD AND TAKE THE IH 35 SB RAMP.

FOR IH 35E SB FROM SL 12 EB
CONTINUE ON SL 12 EB UNTIL THE RL THORNTON LIGHT.
TURN RIGHT ONTO THORNTON FWY SB,
CONTINUE ON RL THORNTON SB FRONTAGE ROAD
PAST THE FIRST ENTRANCE RAMP. STAY ON RL THORNTON
SB FRONTAGE ROAD FOR APPROXIMATELY 1 MILE.
GO PAST LAURELAND RD AND TAKE THE IH 35 SB RAMP.

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED PROFESSIONAL ENGINEER

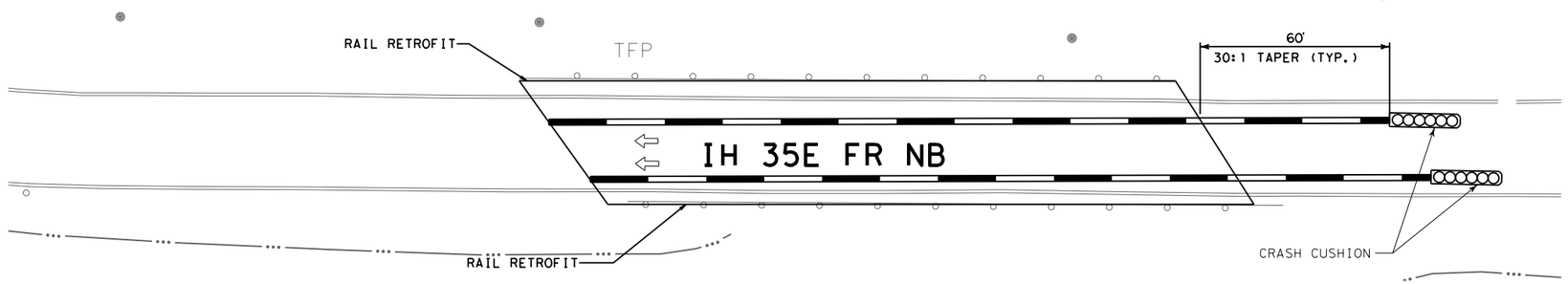
Signature of Registrant & P.E. 11/11/2022 Date

Texas Department of Transportation

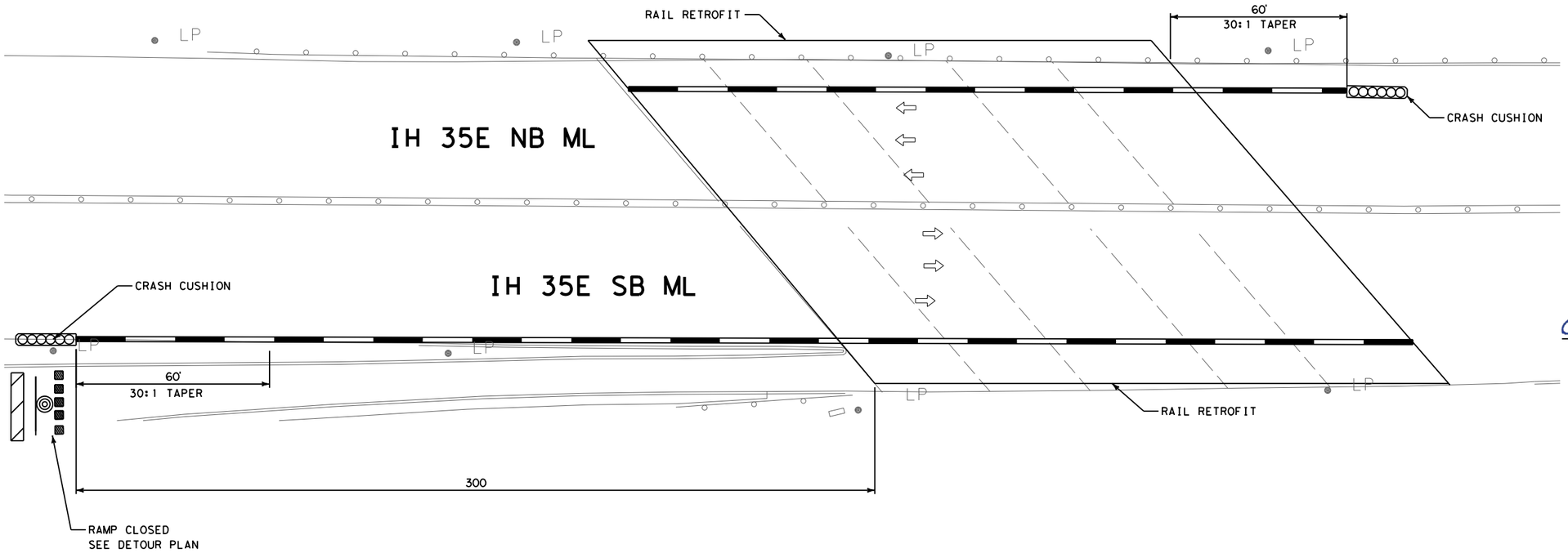
IH 35E
TCP DETOUR

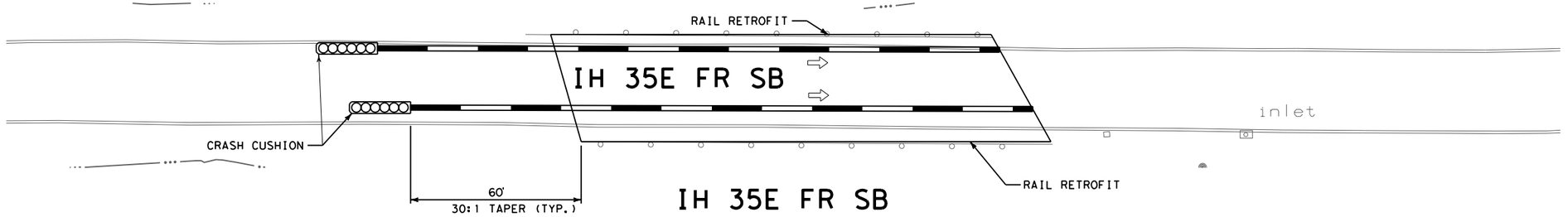
N. T. S. SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	
QA CHECK AM	CONTROL	SECTION	JOB	8
	0442	02	169	



IH 35E FR NB





IH 35E FR SB

NOTES:
LATERAL ADJUSTMENTS TO CSB MAY BE MADE DURING MAINLANE IH35E LANE CLOSURES. THESE LATERAL ADJUSTMENTS WILL BE CONSIDERED SUBSIDIARY TO THE INITIAL PLACEMENT AT EACH LOCATION.

DO NOT PLACE CSB ON INSIDE AND OUTSIDE SHOULDERS AT THE SAME TIME. SEE CRASH CUSHION SUMMARY SHEET FOR INSTALL, MOVE/RESET SEQUENCE.

LEGEND

PCTB

TRAFFIC DIRECTION

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED PROFESSIONAL ENGINEER

Signature of Registrant & P.E. Date 11/11/2022

IH 35E TCP MISCELLANEOUS DETAILS

N. T. S.

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	
CHECK AM	CONTROL	SECTION	JOB	9
	0442	02	169	

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION									
															MOVE / RESET		L	L	R	R	S	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE/ RESET	FROM LOC.#	N	W	N	W	N	W
1	PHASE 1	8	18-057-0-0442-02-056	N/A	TL-3	UNI	EXIST	N/A	PCTB	24"	32"		1								X	
2	PHASE 1	8	18-057-0-0442-02-074	N/A	TL-3	UNI	EXIST	N/A	PCTB	24"	32"		1								X	
3	PHASE 1	8	18-057-0-0442-02-055	N/A	TL-3	UNI	EXIST	N/A	PCTB	24"	32"				1	1					X	
4	PHASE 1	8	18-057-0-0442-02-055	N/A	TL-3	UNI	EXIST	N/A	PCTB	24"	32"				1	2					X	
5	PHASE 1	8	18-057-0-0442-02-057	N/A	TL-3	UNI	EXIST	N/A	PCTB	24"	32"			1	1	3					X	
6	PHASE 1	8	18-057-0-0442-02-057	N/A	TL-3	UNI	EXIST	N/A	PCTB	24"	32"			1	1	4					X	
												TOTALS	2	2	4							

LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwyise.htm

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED PROFESSIONAL ENGINEER

Signature of Registrant & P.E. 11/11/2022 Date

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		
	DAL	DALLAS		
	PROJECT NO.			SHEET NO.
	SEE TITLE SHEET			10

DATE: 9/1/2022 1:45:36 PM
FILE: T:\DALAO\PROJECTS\ON\IH35E\0442021 69\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

SHEET 1 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

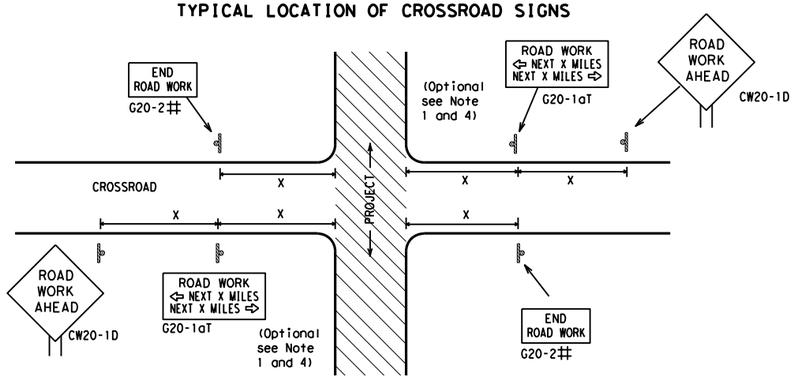
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	DAL	DALLAS		11
5-10 5-21				

DATE: 9/1/2022 1:45:36 PM
FILE: I:\DALAON\PROJECTS\ON\IH35E\04202169\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

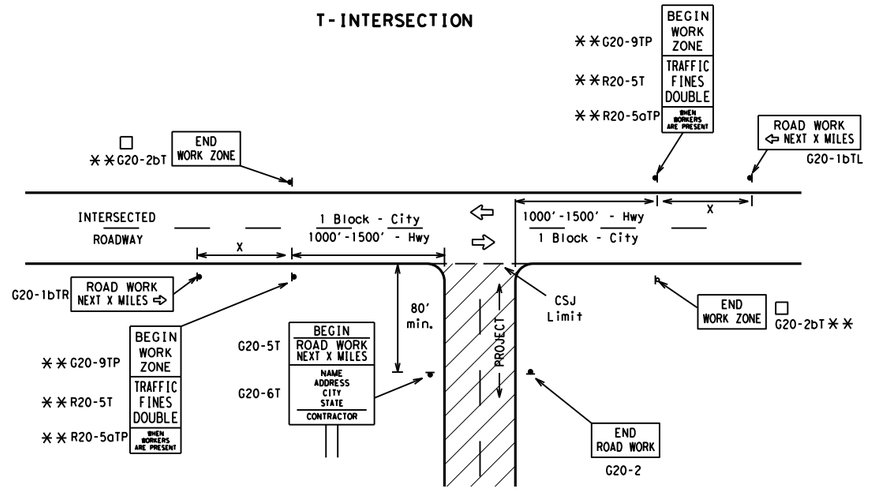
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

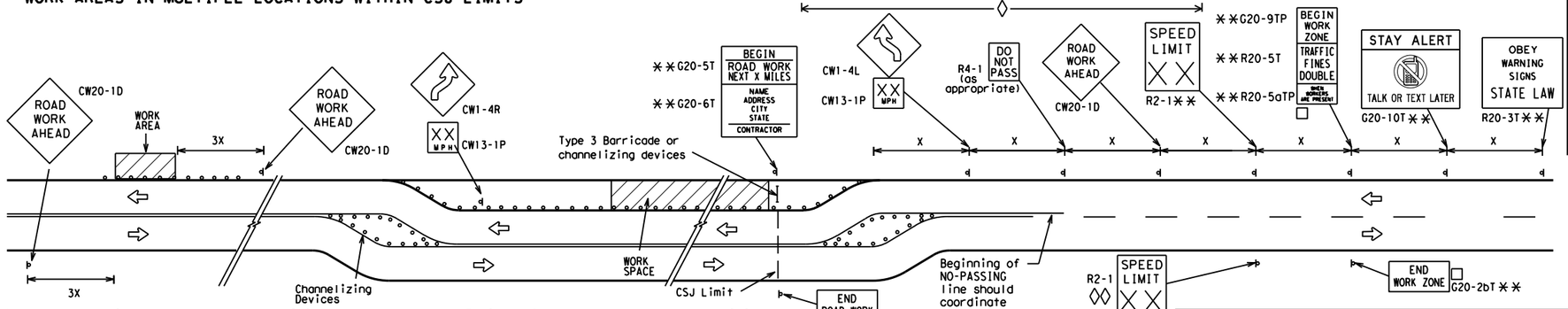
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

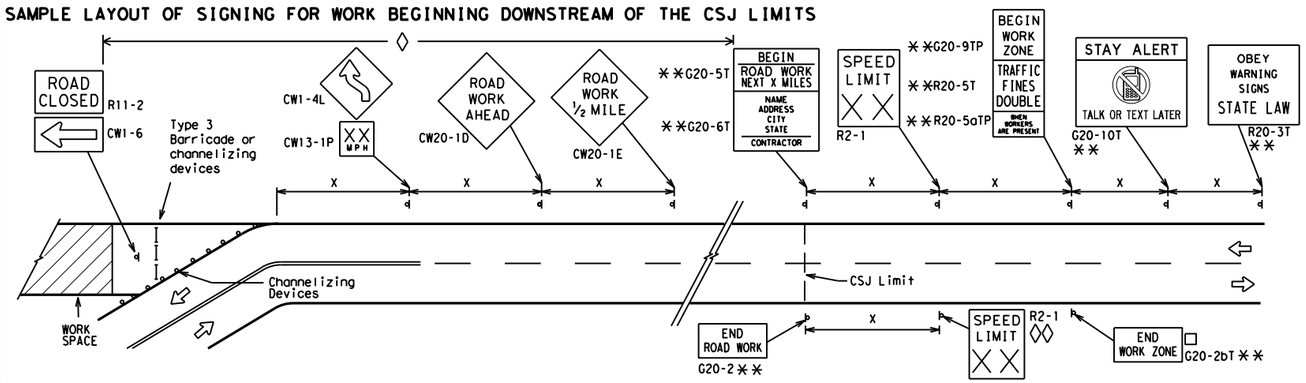
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may 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 DOWNSTREAM OF THE CSJ LIMITS



NOTES

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

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

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

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

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

LEGEND

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		12

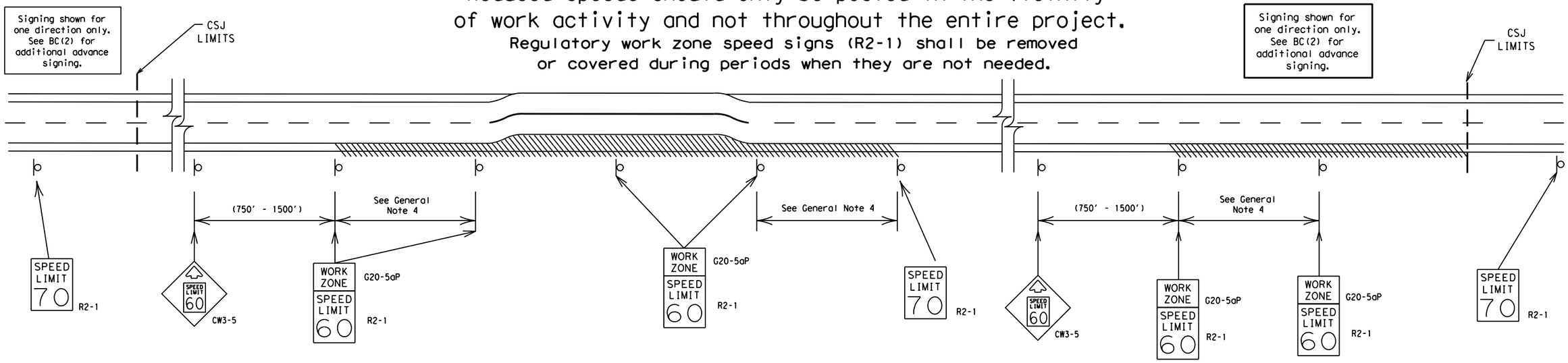
DATE: 9/1/2022 1:45:36 PM
FILE: I:\DALAO\PROJECTS\ON\IH35E\0442021 69\Base\Sheets\952-PS&E\STD'S\DGN\BC-21.dgn

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation | Traffic Safety Division Standard

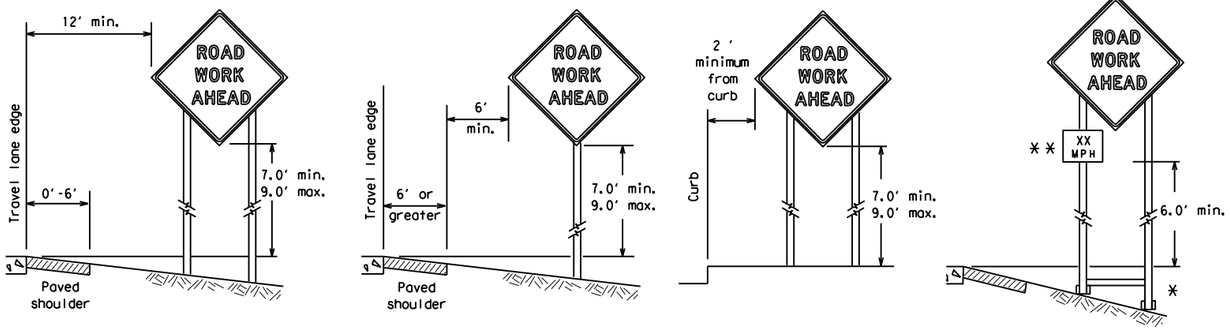
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		13

DATE: 9/1/2022 1:45:37 PM
FILE: T:\DALAO\PROJECTS\OM\IH35E\0442021691\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

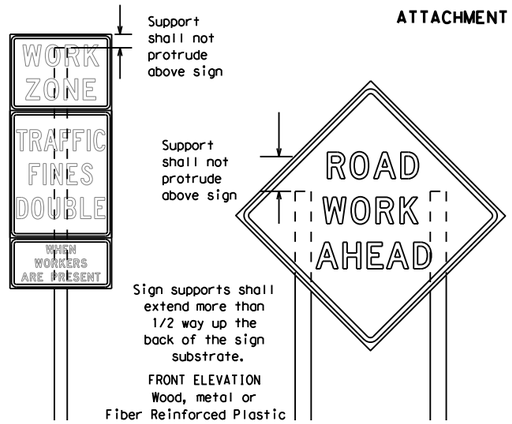
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

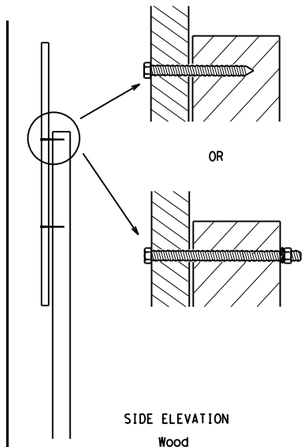


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





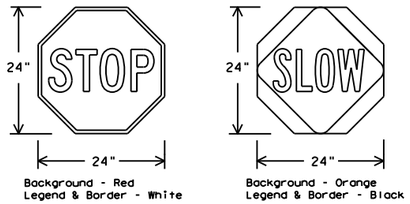
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

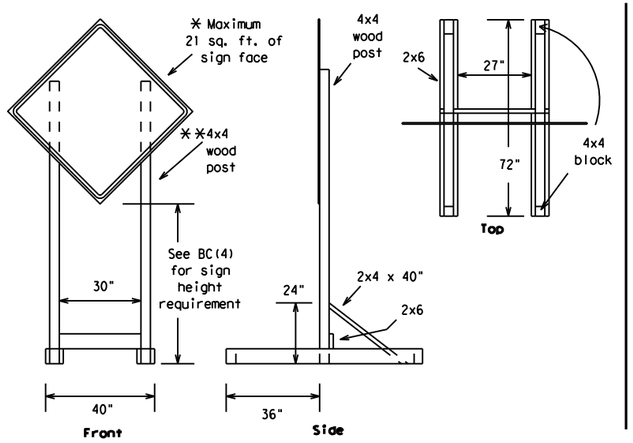
Traffic Safety Division Standard

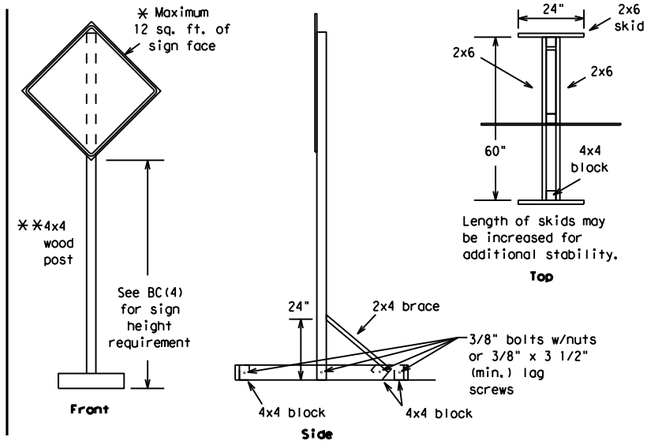
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		14

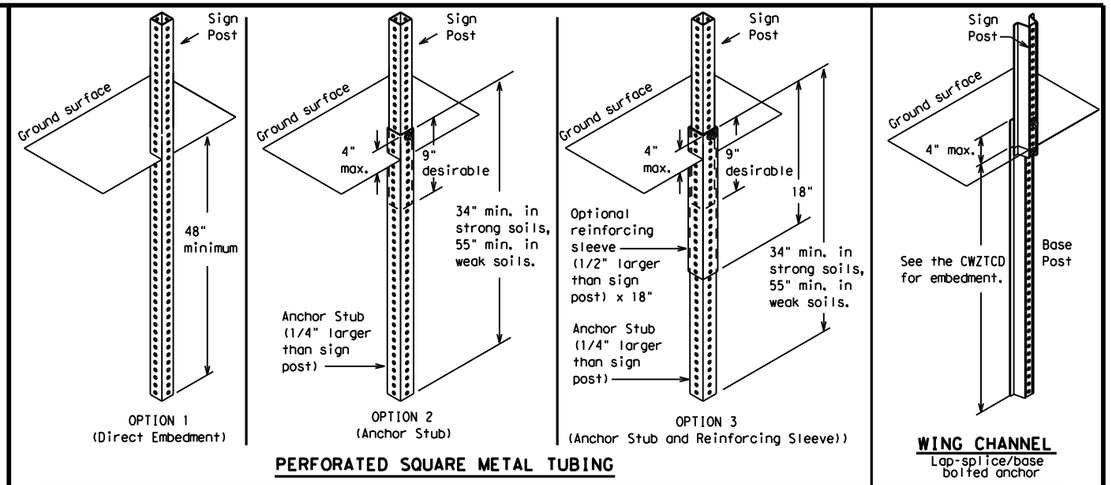
DATE: 9/1/2022 1:45:37 PM
FILE: T:\DALAO\PROJECTS\ON\IH35E\0442021 69\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn





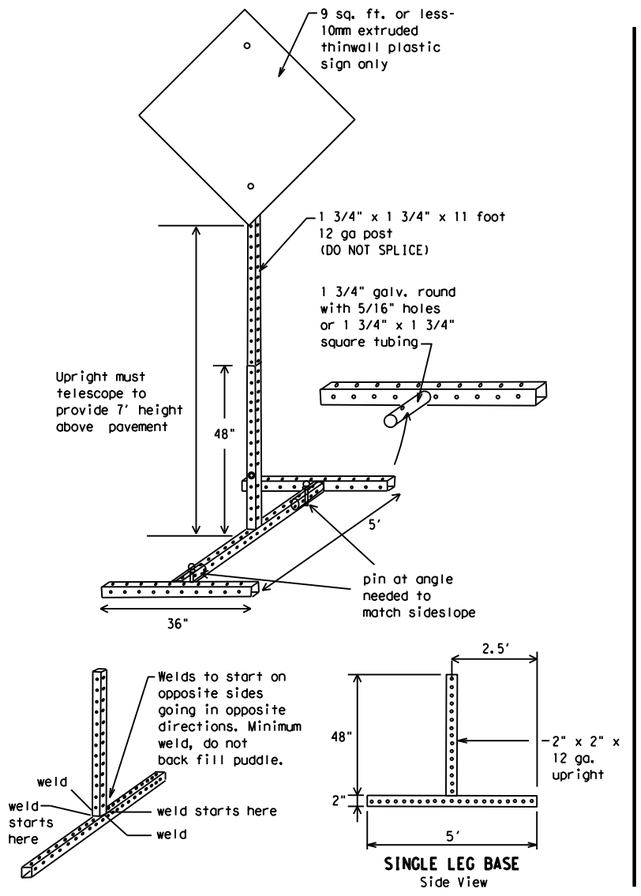
SKID MOUNTED WOOD SIGN SUPPORTS

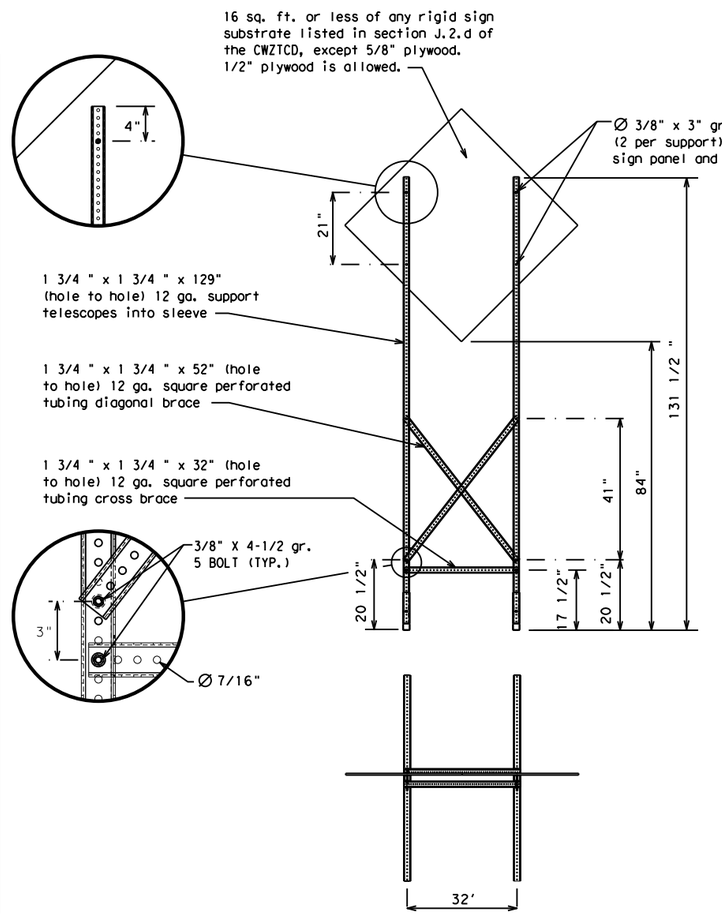
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

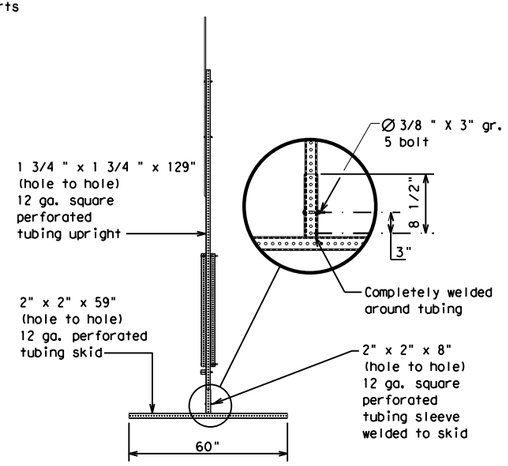


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		15

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

DATE: 9/1/2022 1:45:37 PM
FILE: T:\DALAO\PROJECTS\ON\1H35E\044202169\Base\Sheets\95%-PS&E\STD`S\DGN\bc-21.dgn

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

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

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

Phase 2: Possible Component Lists

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

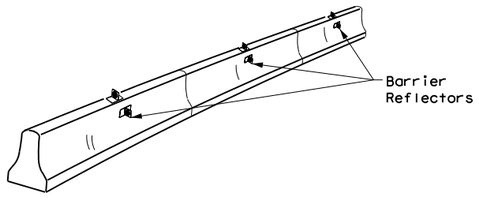
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		16

100

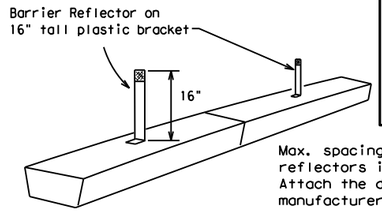
DATE: 9/1/2022 1:45:38 PM
FILE: T:\DALAO\PROJECTS\ON\IH35E\044202169\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

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



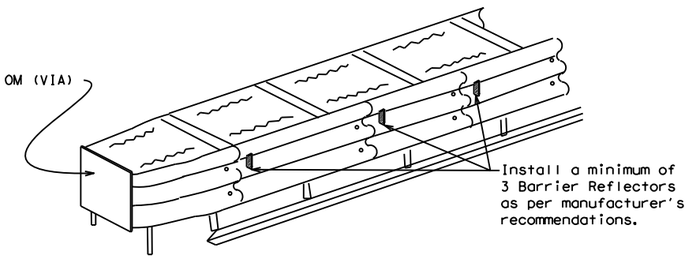
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

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.

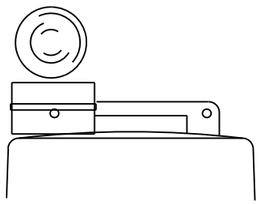
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

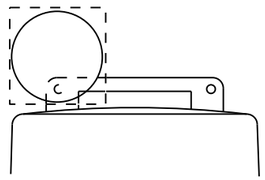
1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this 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.



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

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.



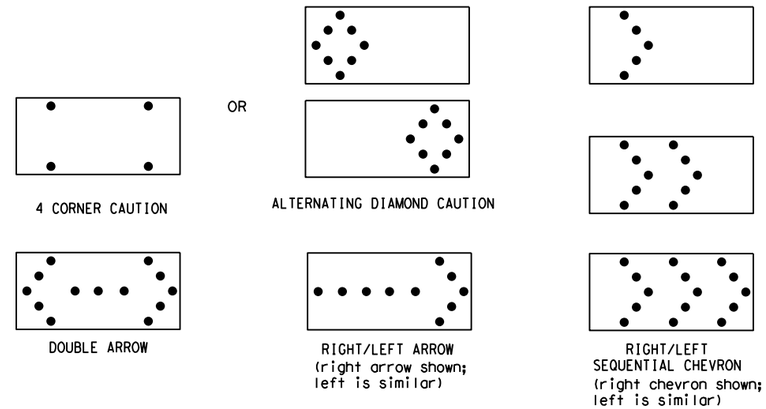
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		17

DATE: 9/1/2022 1:45:38 PM
FILE: T:\DALAO\PROJECTS\On\IH35E\0442\02169\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

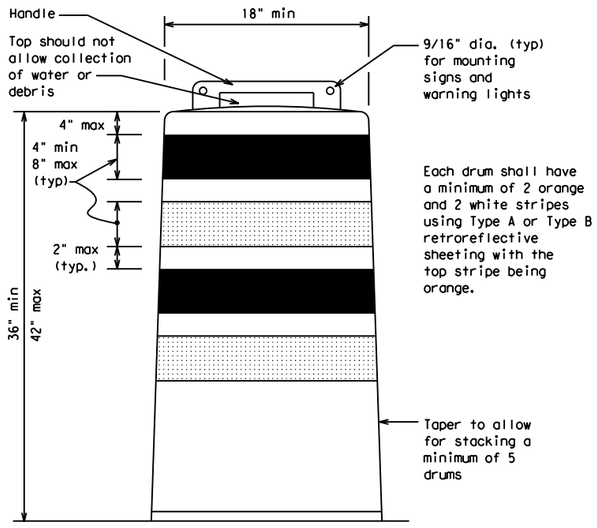
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

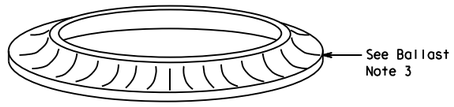
RETROREFLECTIVE SHEETING

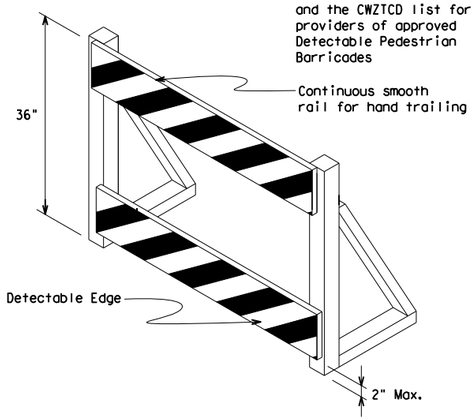
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

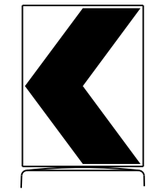




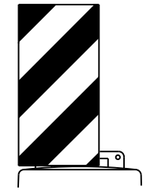


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

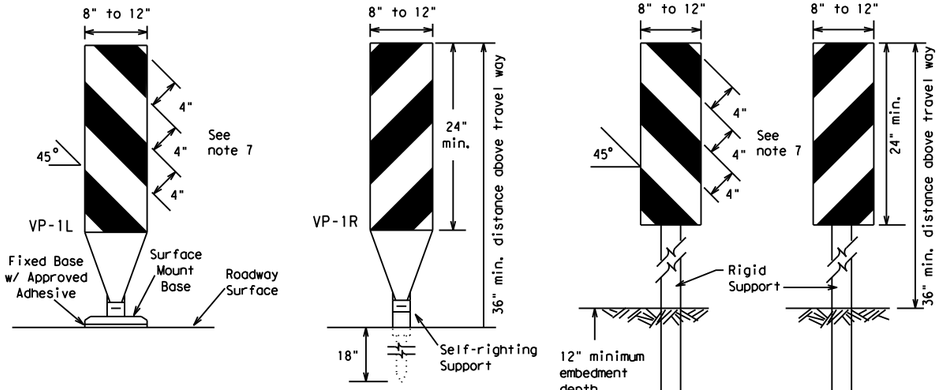
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	DAL	DALLAS		18
7-13				

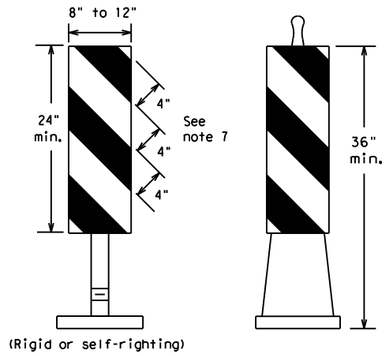
102

DATE: 9/1/2022 1:45:38 PM
FILE: T:\DALAO\PROJECTS\OnVIH35E\0442021 69\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn



FIXED
(Rigid or self-righting)

DRIVEABLE

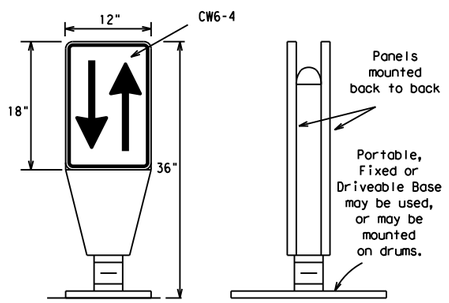


(Rigid or self-righting)

PORTABLE

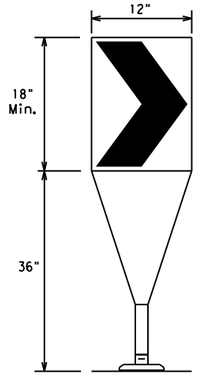
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



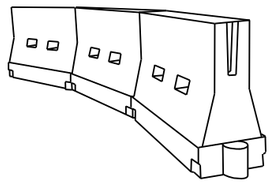
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

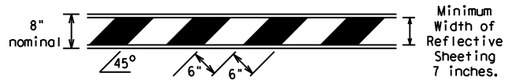
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		19

DATE: 9/1/2022 1:45:39 PM
FILE: T:\DALAO\PROJECTS\ON\IH35E\044202169\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

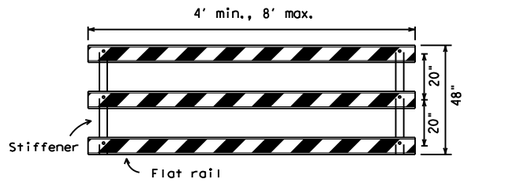
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



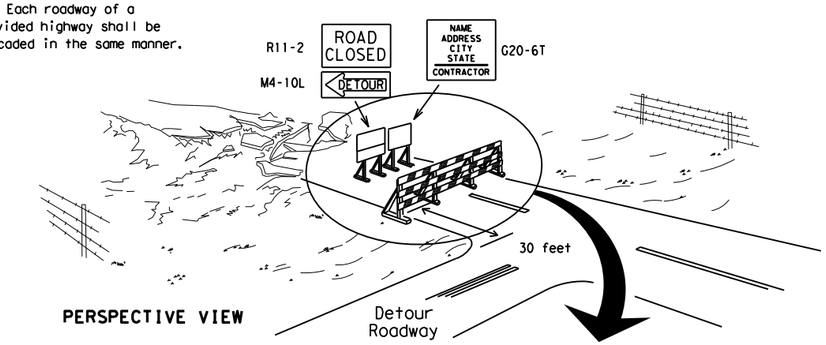
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

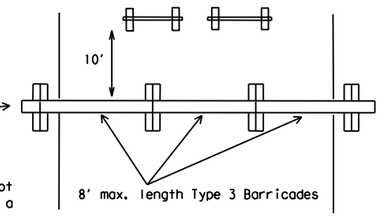
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

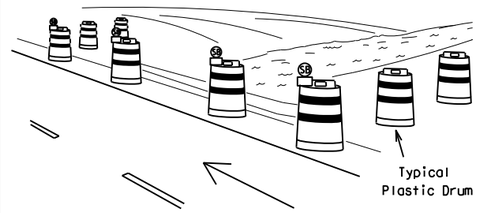
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

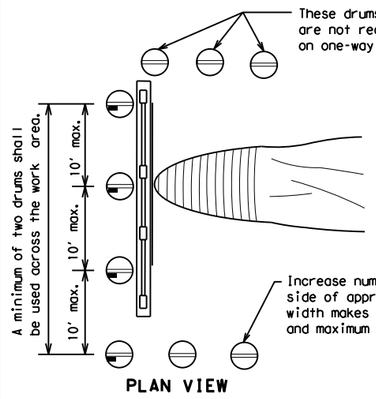
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

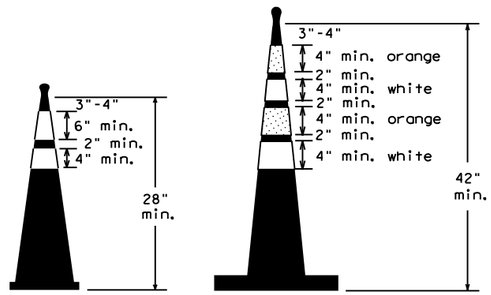
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



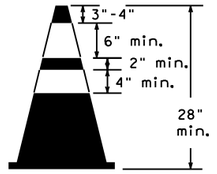
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

PLAN VIEW

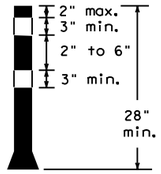
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

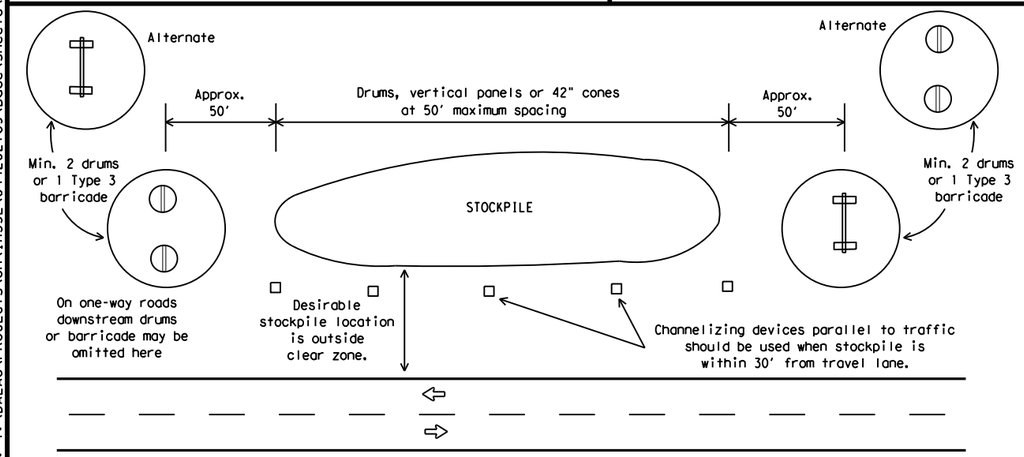


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		20

DATE: 9/1/2022 1:45:39 PM
FILE: T:\DALAO\PROJECTS\On\IH35E\0442021 69\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

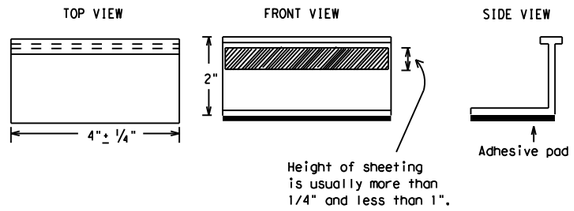
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

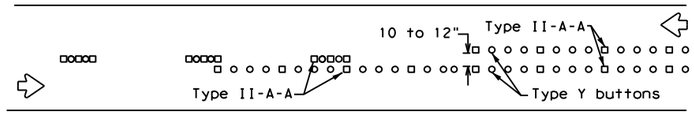
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	DAL	DALLAS		21
11-02 8-14				

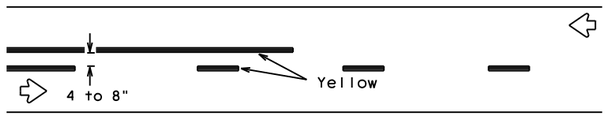
DATE: 9/1/2022 1:45:39 PM
FILE: T:\DALAO\PROJECTS\ON\IH35E\0442022169\Base\Sheets\95%-PS&E\STD'S\DGN\bc-21.dgn

PAVEMENT MARKING PATTERNS

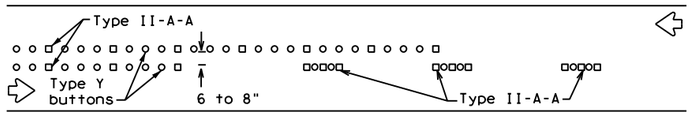
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



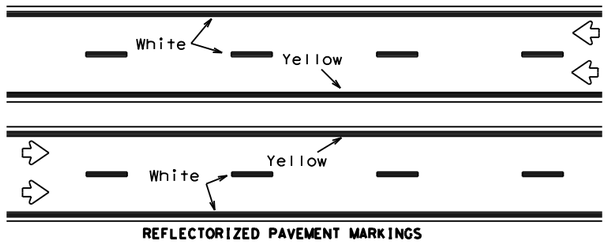
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



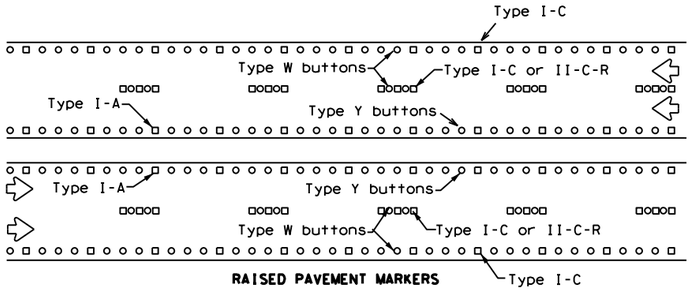
RAISED PAVEMENT MARKERS - PATTERN B

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

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



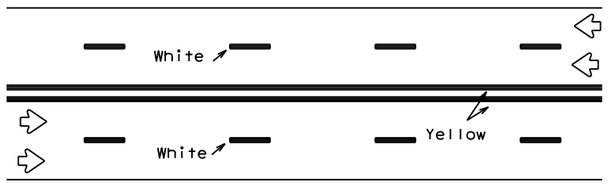
REFLECTORIZED PAVEMENT MARKINGS



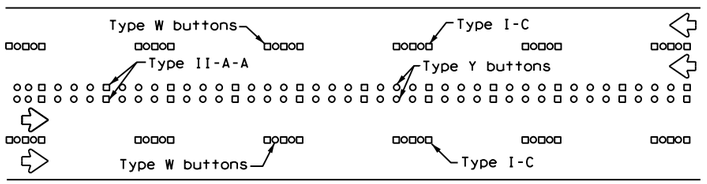
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



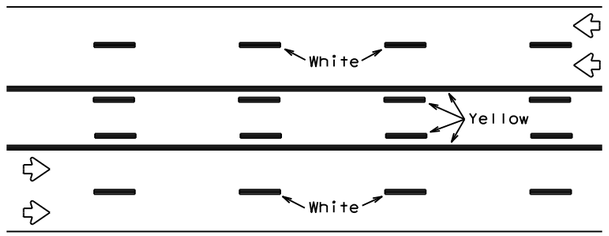
REFLECTORIZED PAVEMENT MARKINGS



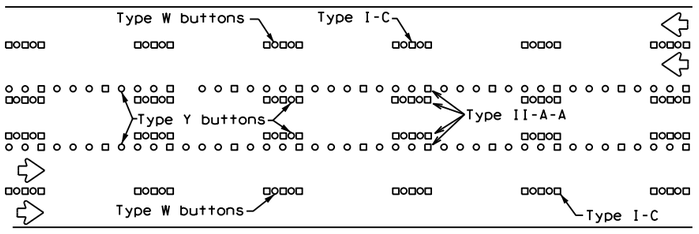
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

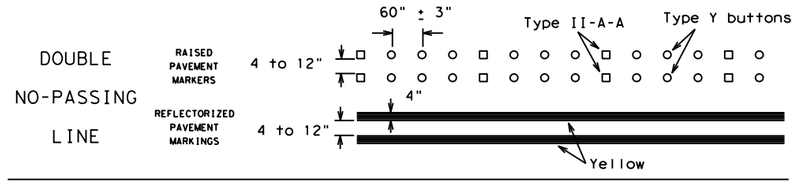
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

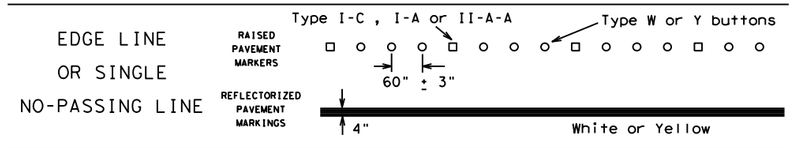
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

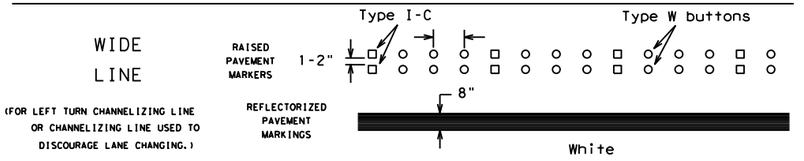


EDGE LINE OR SINGLE NO-PASSING LINE



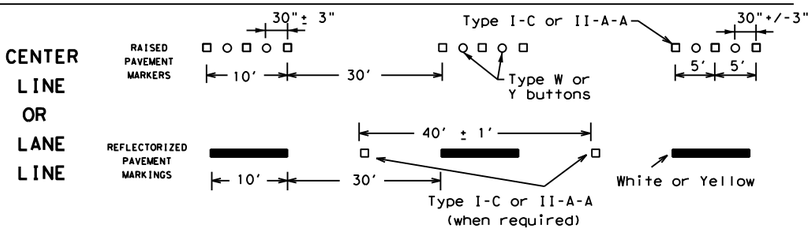
WIDE LINE

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

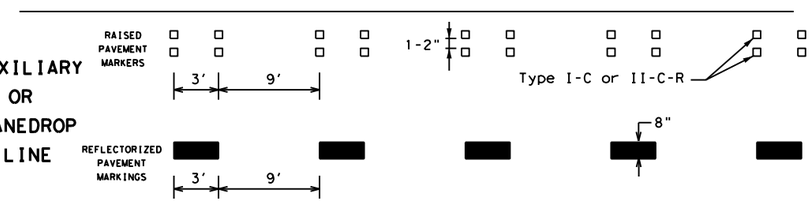


BROKEN LINES

CENTER LINE OR LANE LINE

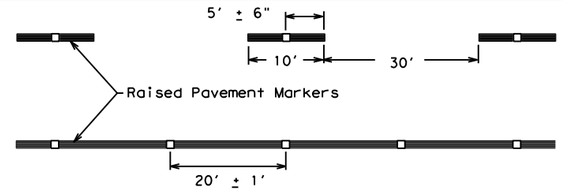


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

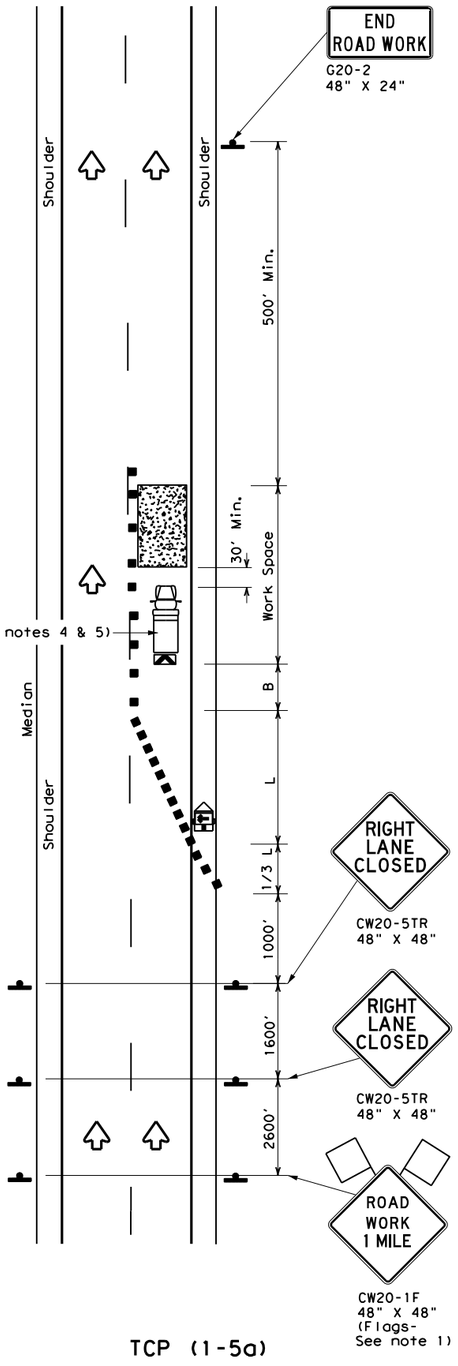
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		22

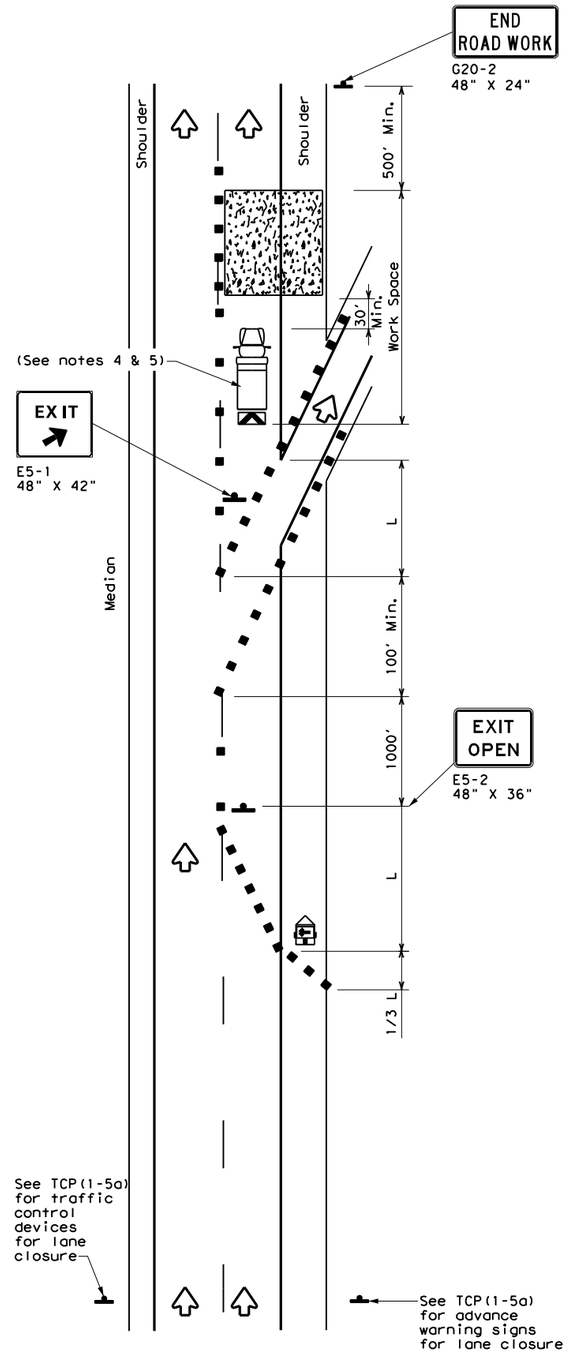
106

DATE: 9/1/2022 1:45:40 PM
FILE: T:\DALAON\PROJECTS\ON\IH35E\04202169\Base\Sheets\952-PS&E\STD'S\DGN\tcp1-5-18.dgn



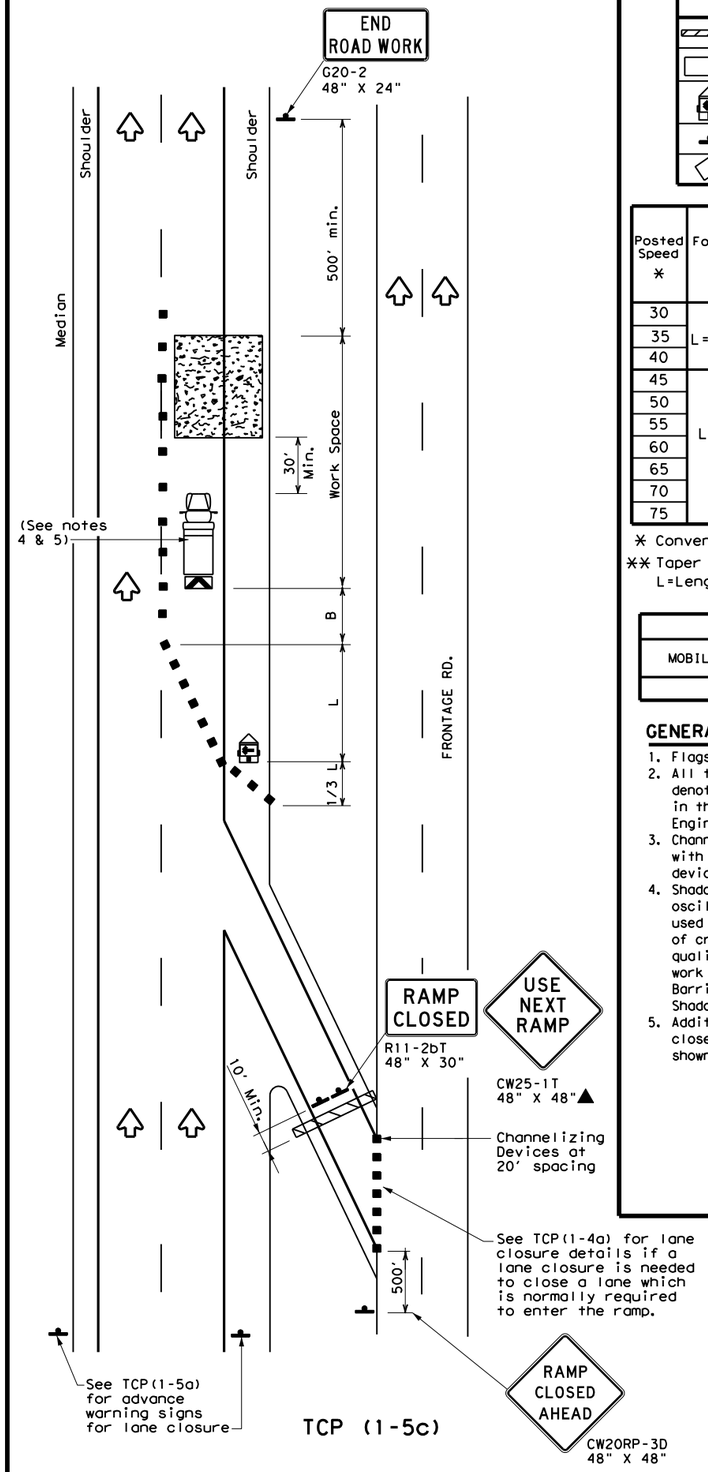
TCP (1-5a)

ONE LANE CLOSURE



TCP (1-5b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (1-5c)

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. 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 in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation

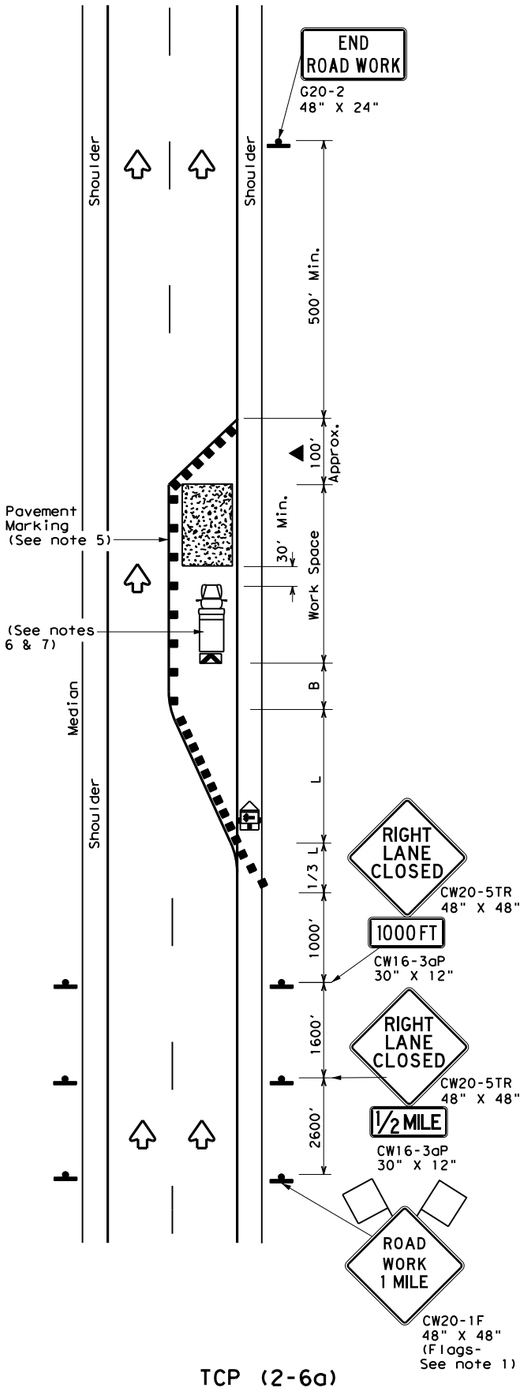
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES FOR DIVIDED HIGHWAYS

TCP(1-5)-18

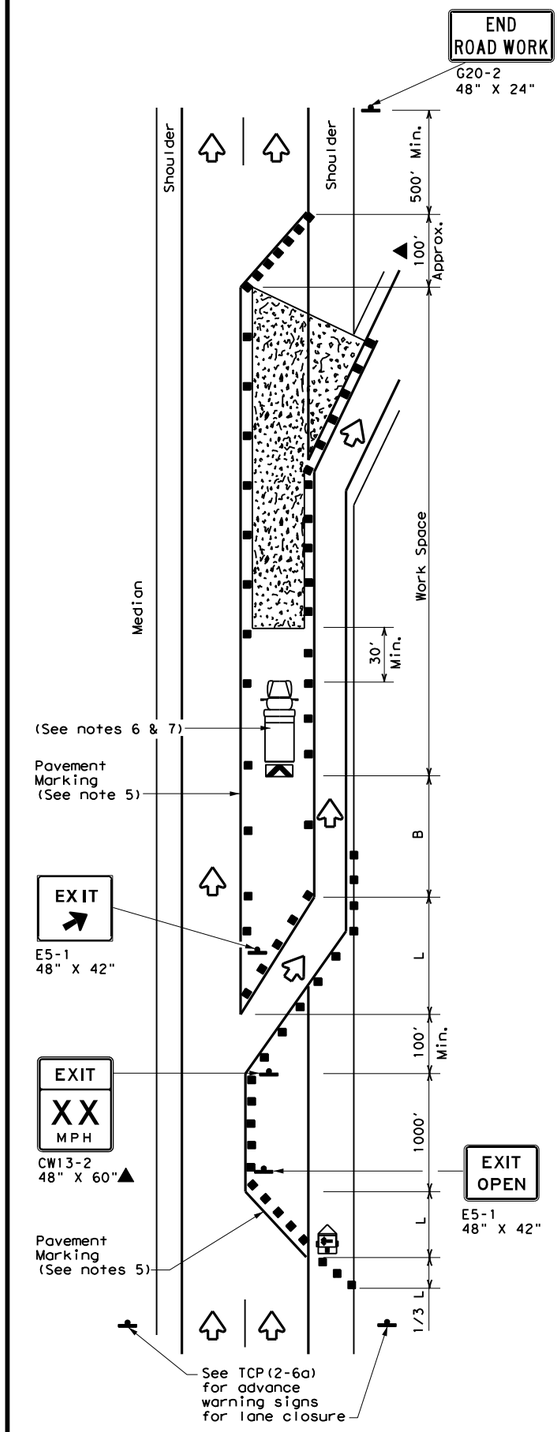
FILE: tcp1-5-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		23

DATE: 9/1/2022 1:45:40 PM
FILE: T:\DALAO\PROJECTS\On\IH35E\0442021 69\Base\Sheets\95%-PS&E\STD'S\DGN\tcp2-6-18.dgn



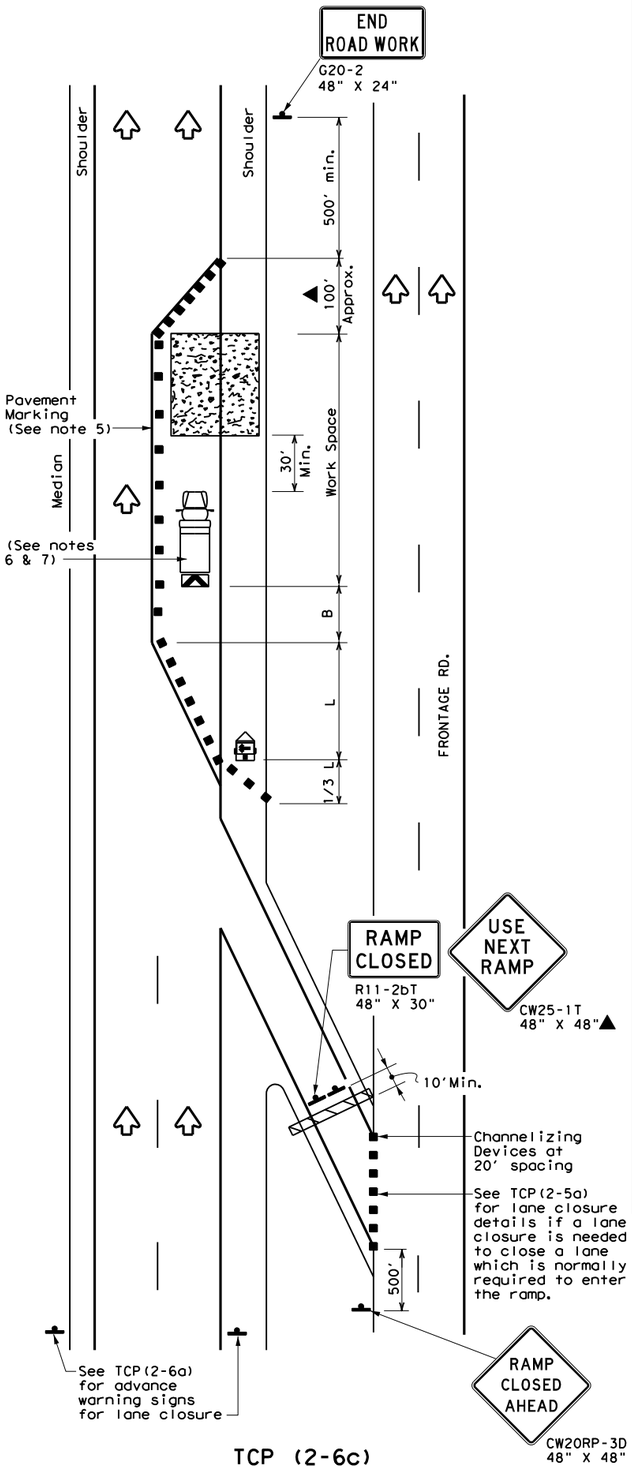
TCP (2-6a)

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

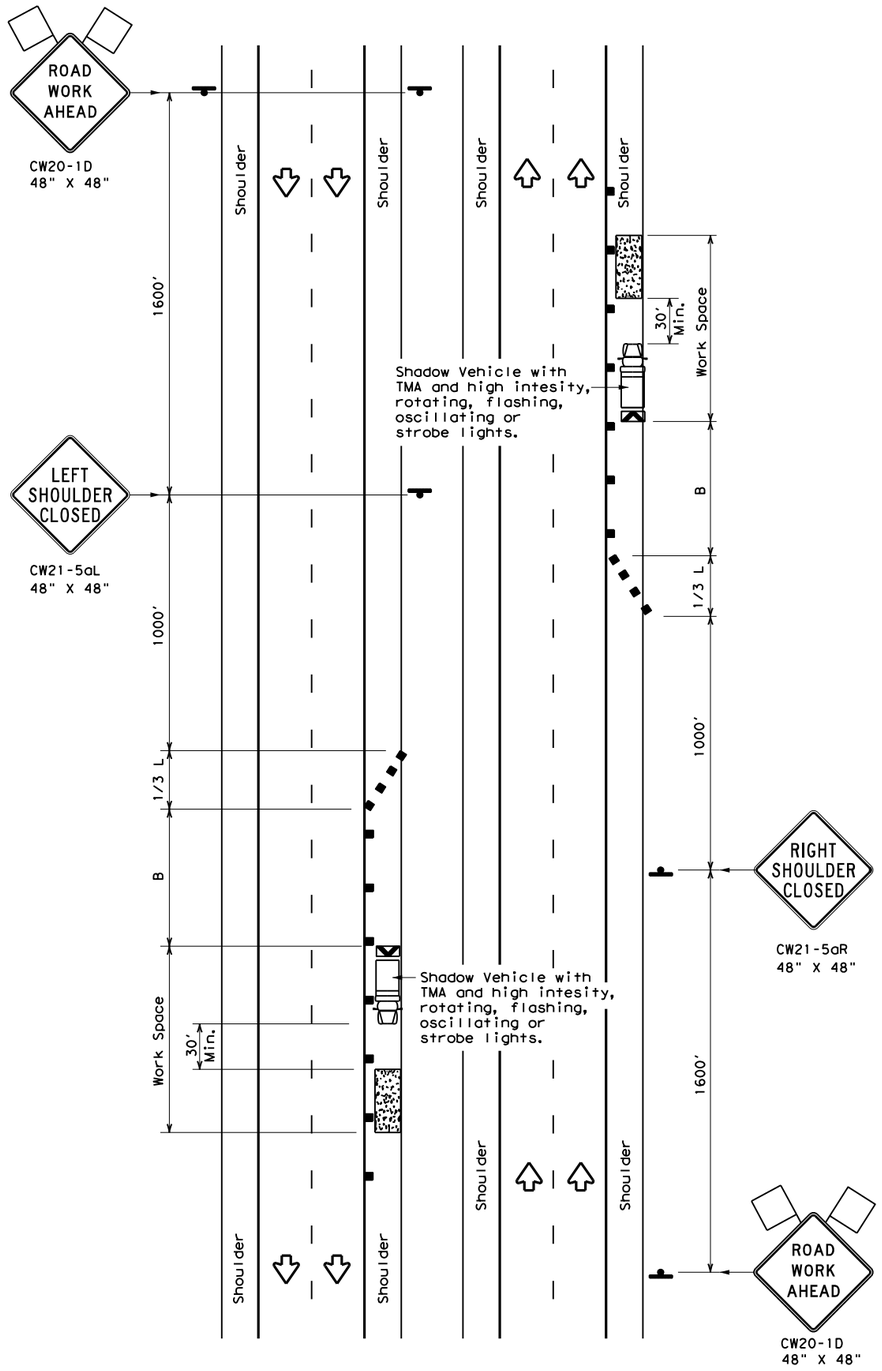
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

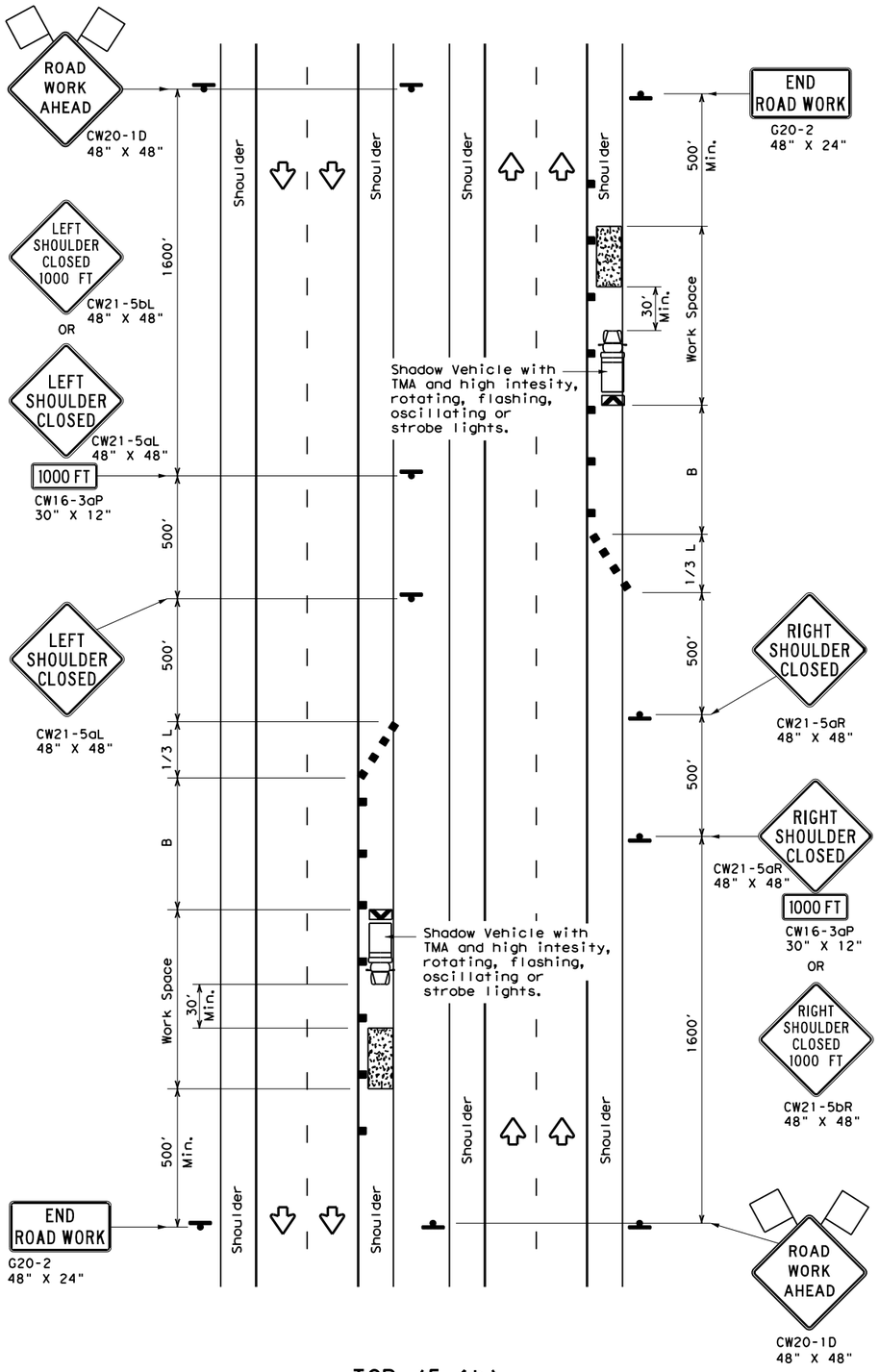
FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		24

DATE: 9/1/2022 1:45:41 PM
FILE: T:\DALA0\PROJECTS\0n\IH35E\0442o2169\Base\Sheets\95%-PS&E\STD'S\DGN\tcp5a1a.dgn



TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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.

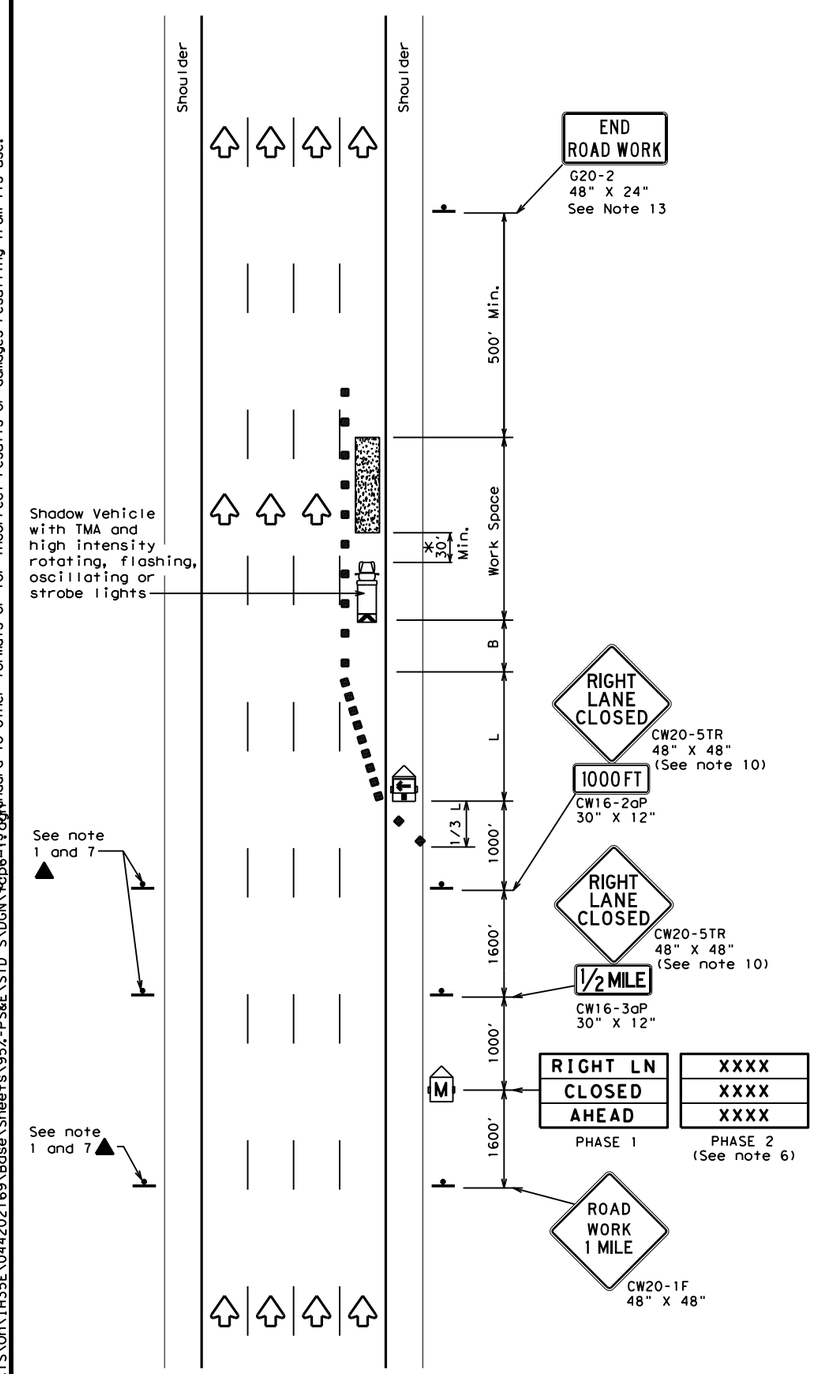
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN SHOULDER WORK FOR FREEWAYS / EXPRESSWAYS

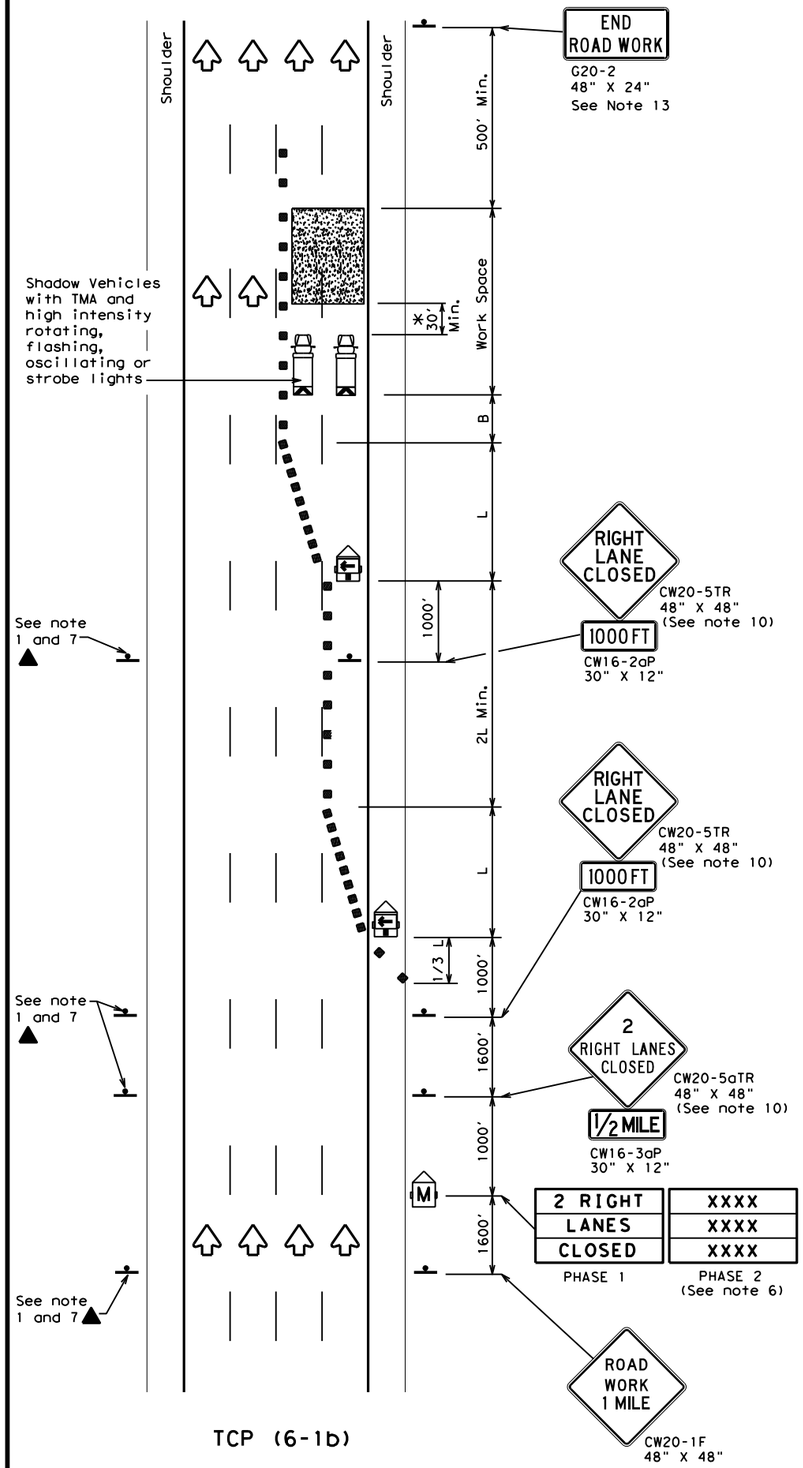
TCP(5-1)-18

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		25



TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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

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

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

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

GENERAL NOTES

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

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

Texas Department of Transportation
Traffic Operations Division Standard

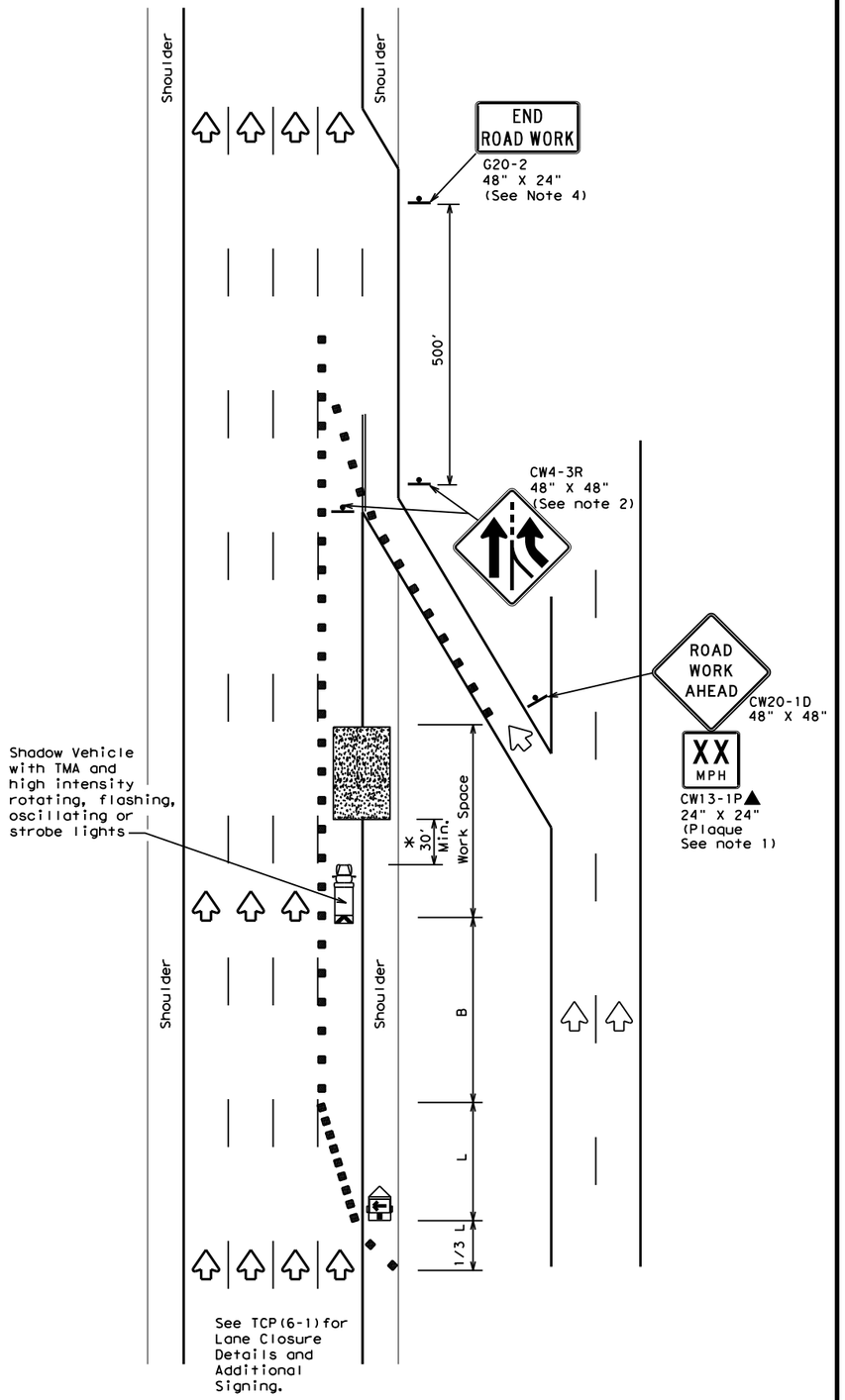
TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
8-12	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		26

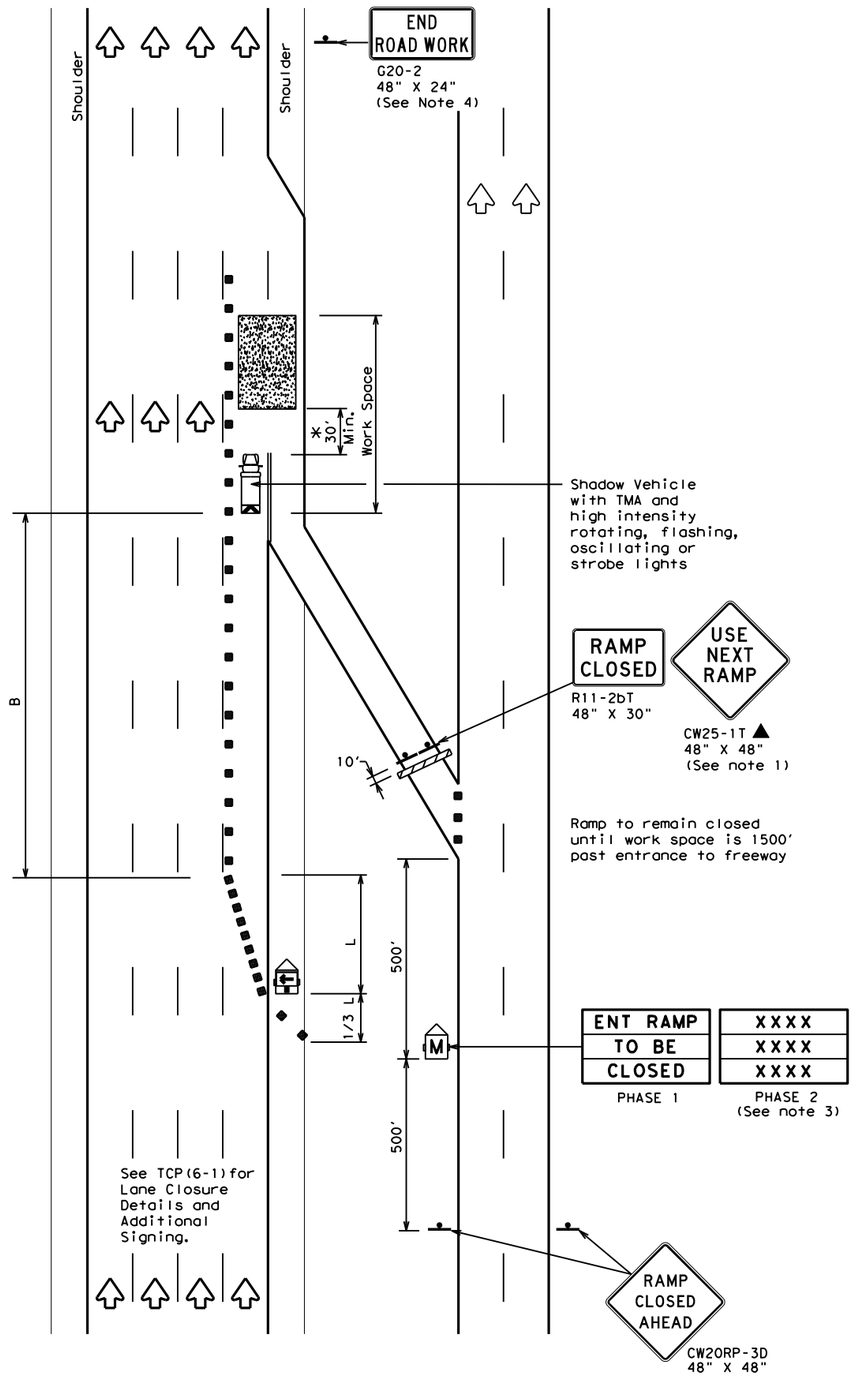
DATE: 9/1/2022 1:45:41 PM
FILE: T:\DALAO\PROJECTS\ON\IH35E\0442021169\Base\Sheets\95%-PS&E\STD'S\DGN\tcp6-1.dgn

DATE: 9/1/2022 1:45:41 PM
FILE: T:\DALAO\PROJECTS\ON\IH35E\0442021691\Base\Sheets\95%-PS&E\STD'S\DGN\tcp6-2.dgn



TCP (6-2a)

ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b)

ENTRANCE RAMP CLOSED

LEGEND

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

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

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

TYPICAL USAGE

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

GENERAL NOTES

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

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

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

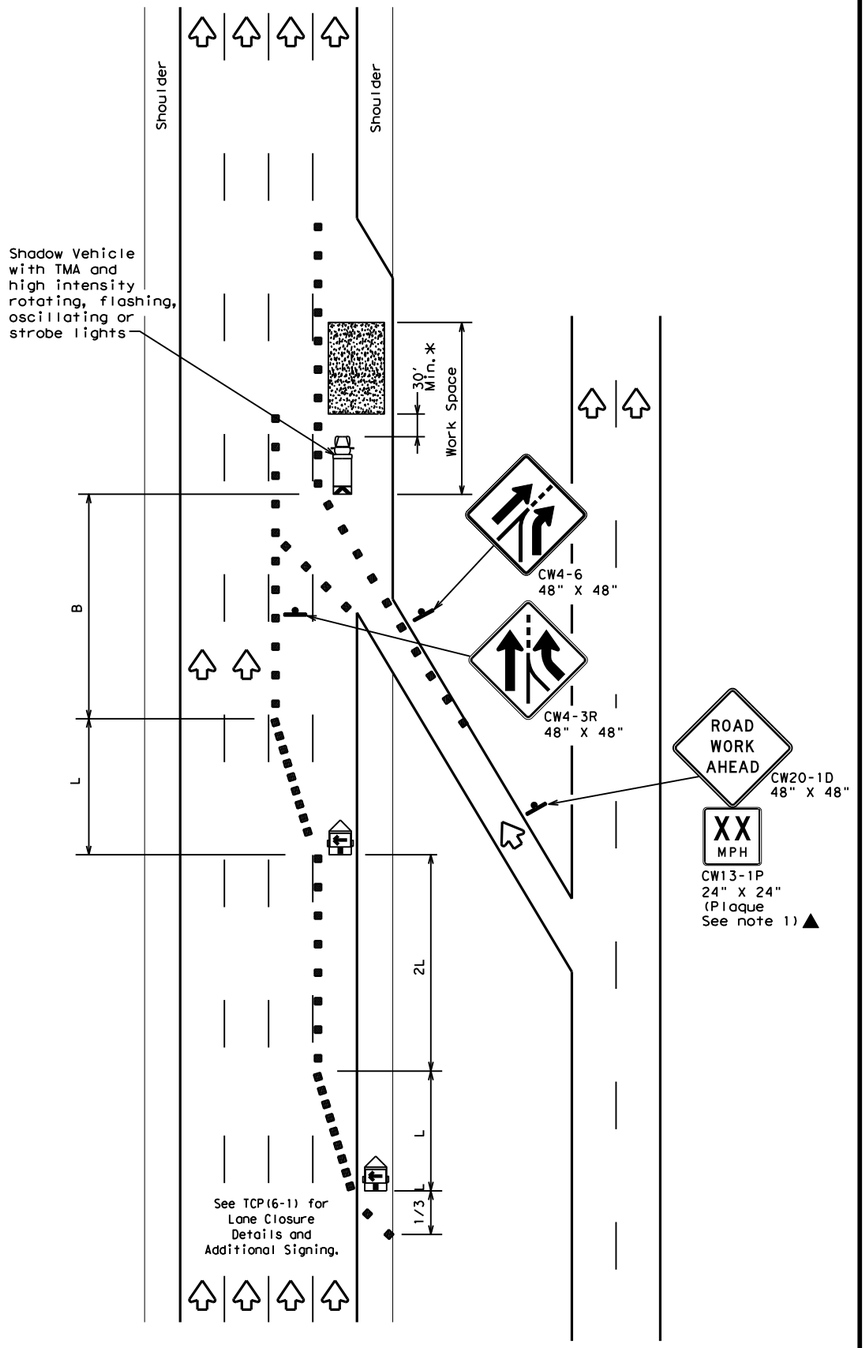
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP

TCP(6-2)-12

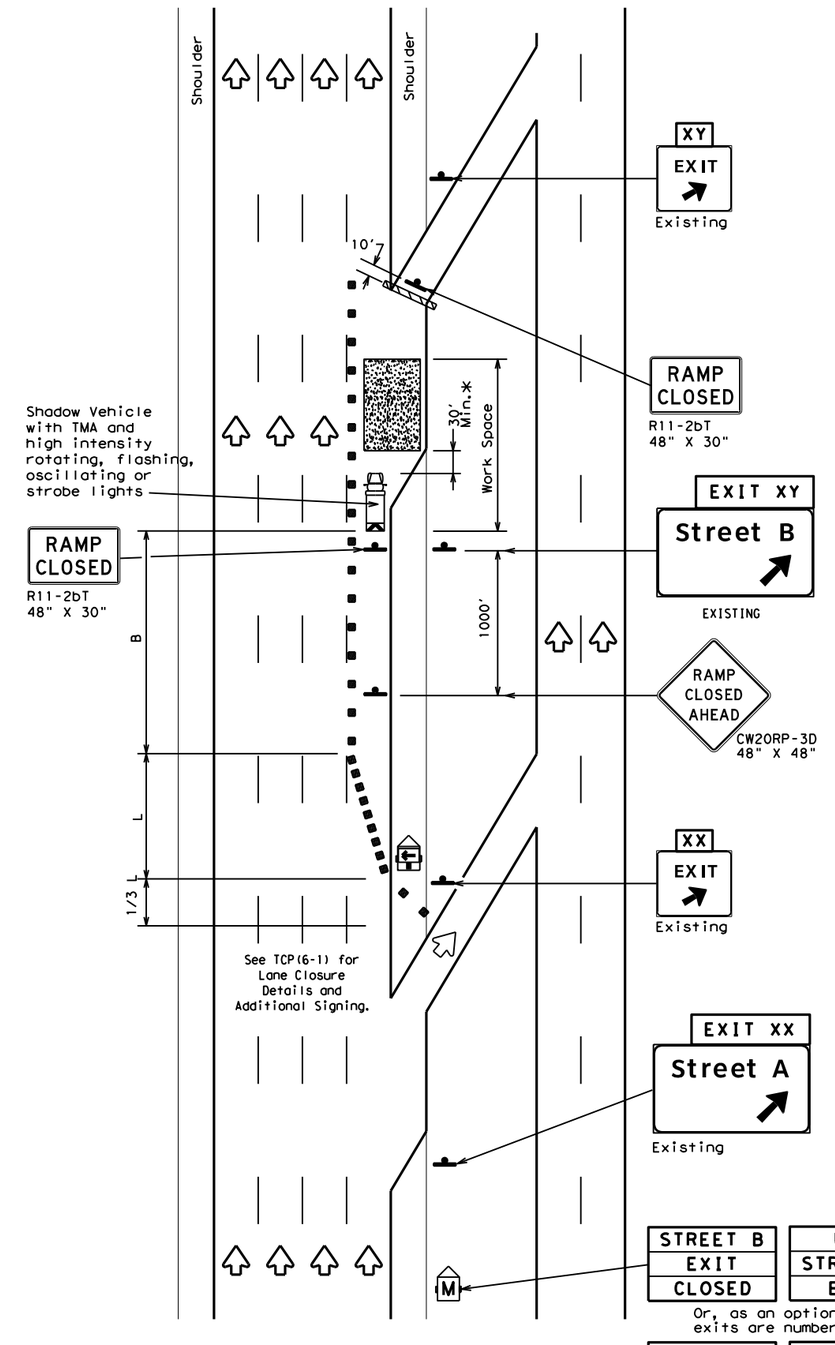
FILE: tcp6-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	DAL	DALLAS		27

DATE: 9/1/2022 1:45:42 PM
FILE: T:\DALAO\PROJECTS\ON\1H35E\0442021 69\Base\Sheets\95%-PS&E\STD'S\DGN\tcp6b15-12.dgn



TCP (6-3a)

ENTRANCE RAMP OPEN



STREET B	USE
EXIT	STREET A
CLOSED	EXIT

Or, as an option when exits are numbered

EXIT XY	USE
CLOSED	EXIT XX

Place 1 mile (approx.) in advance of Street A exit.

TCP (6-3b)

EXIT RAMP CLOSED
TRAFFIC EXITS PRIOR TO CLOSED RAMP

LEGEND

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

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

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

TYPICAL USAGE

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

GENERAL NOTES:

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

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

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

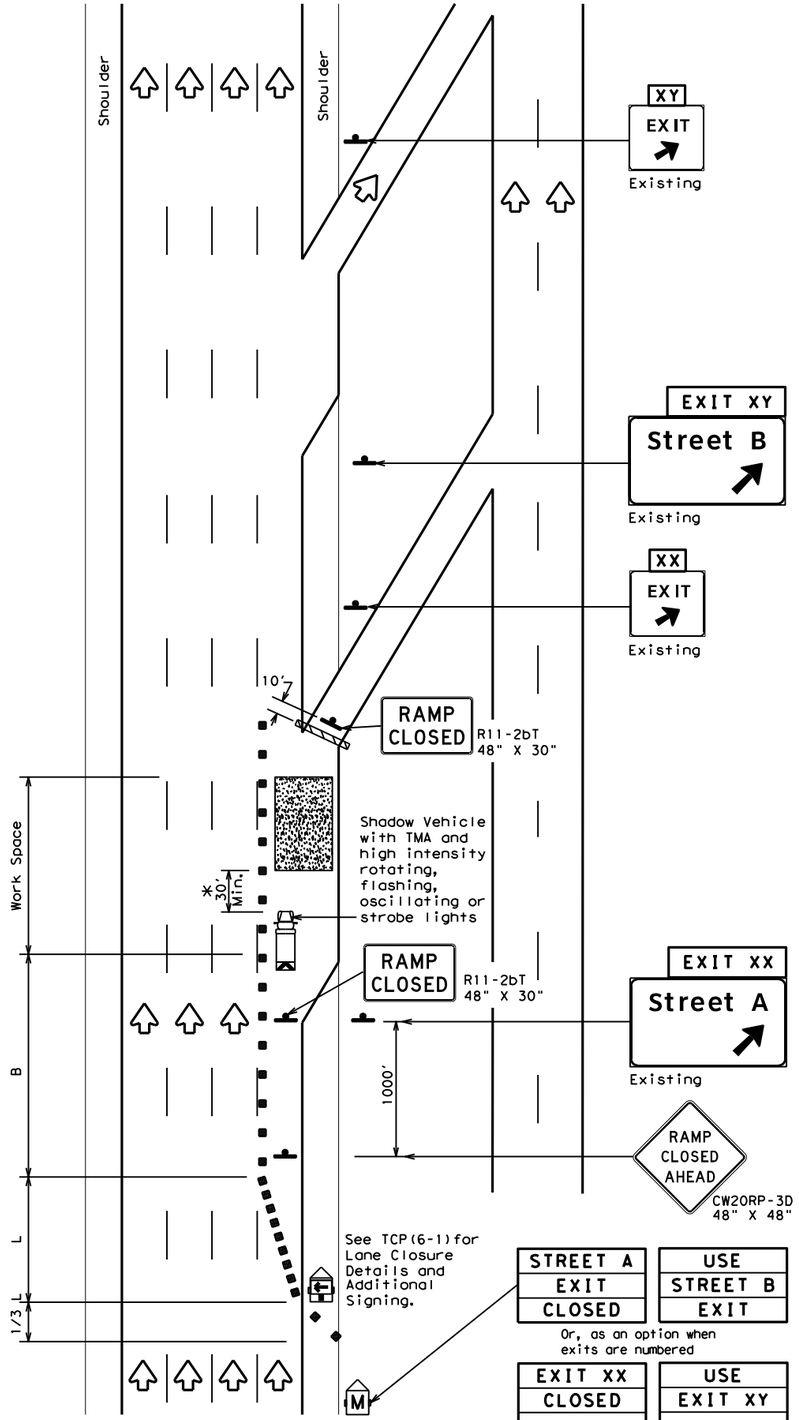
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP(6-3)-12

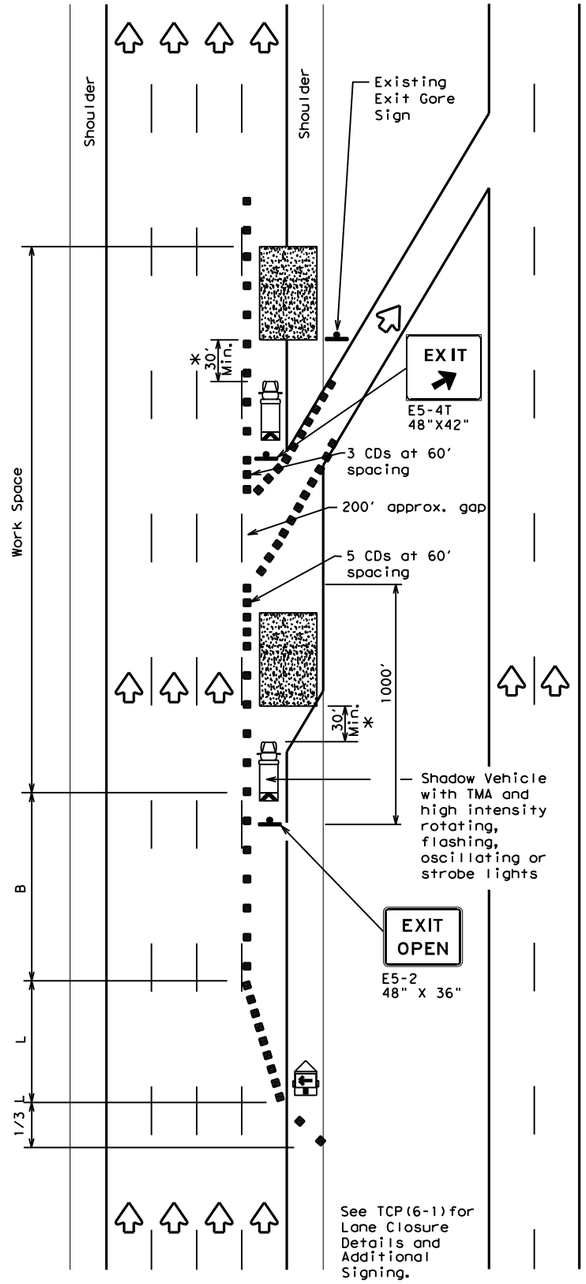
FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	DAL	DALLAS		28

DATE: 9/1/2022 1:45:42 PM
FILE: T:\DAL\AO\PROJECTS\ON\IH35E\044202169\Base\Sheets\95%-PS&E\STD'S\DGN\tcp6-4a.dgn



TCP (6-4a)

EXIT RAMP CLOSED
TRAFFIC EXITS PAST CLOSED RAMP



TCP (6-4b)

EXIT RAMP OPEN

LEGEND

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

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

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

TYPICAL USAGE

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

GENERAL NOTES

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

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

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

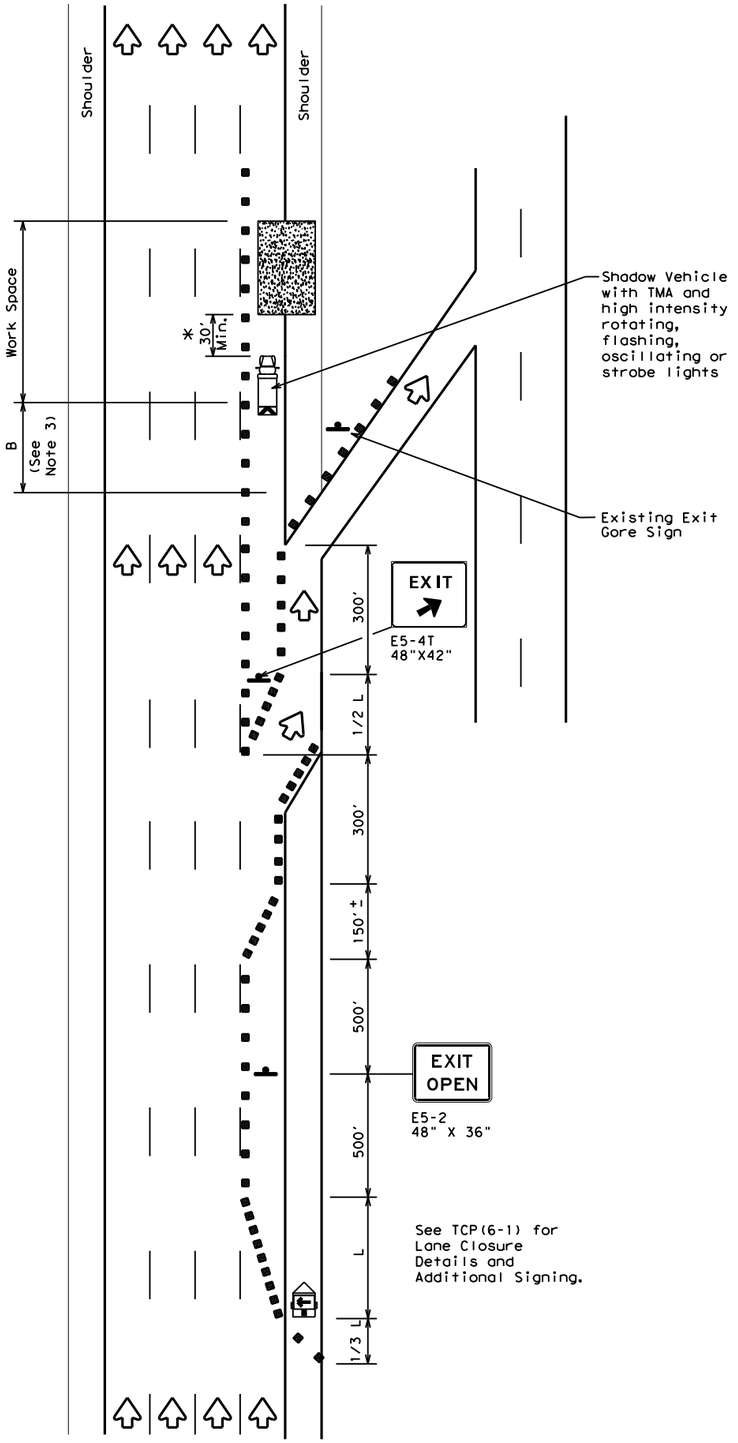
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA AT EXIT RAMP

TCP(6-4)-12

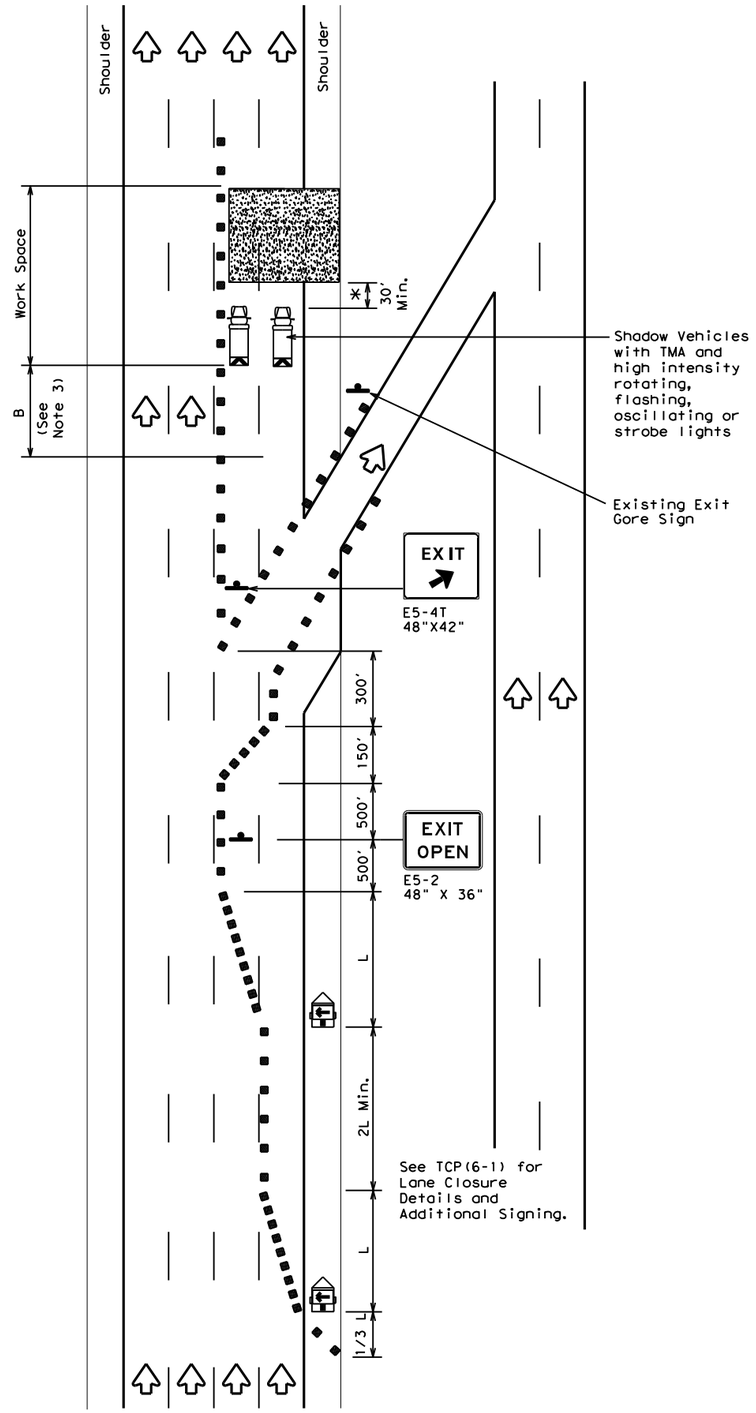
FILE: tcp6-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	DAL	DALLAS		29

DATE: 9/1/2022 1:45:43 PM
FILE: T:\DAL\O\PROJECTS\ON\IH35E\0442021169\Base\Sheets\95%-PS&E\STD'S\DGN\tcp6-5.dgn



TCP (6-5a)

EXIT RAMP OPEN



TCP (6-5b)

EXIT RAMP OPEN
TWO LANE CLOSURE WITHIN 1500' PAST EXIT RAMP

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

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

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

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

GENERAL NOTES

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

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

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

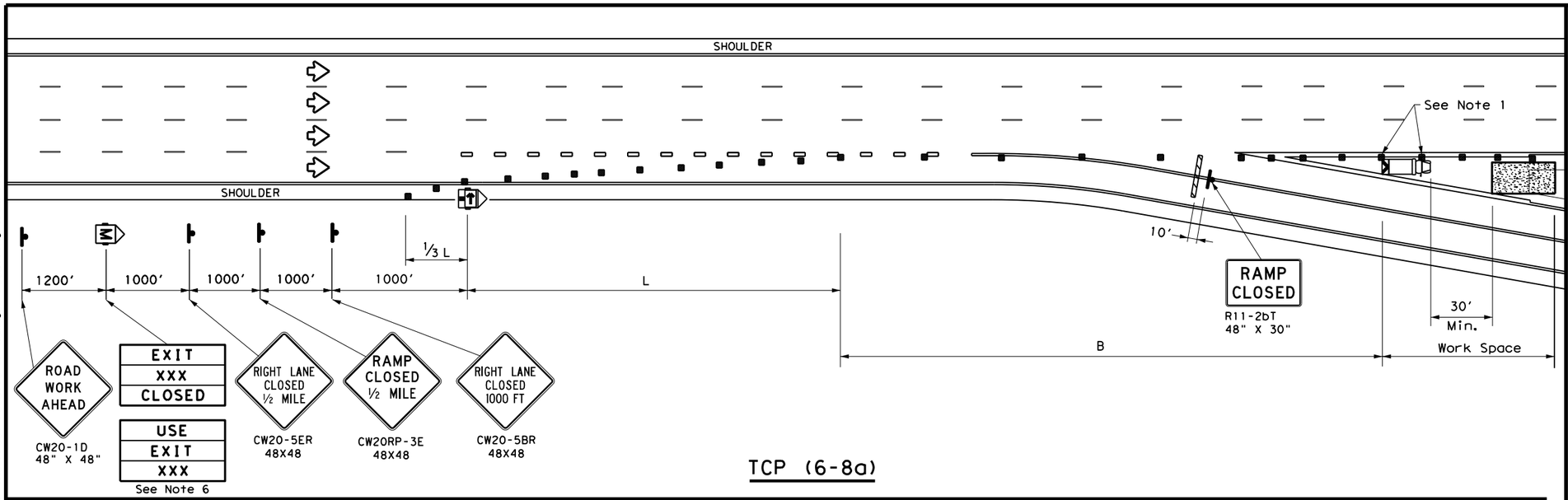
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND EXIT RAMP

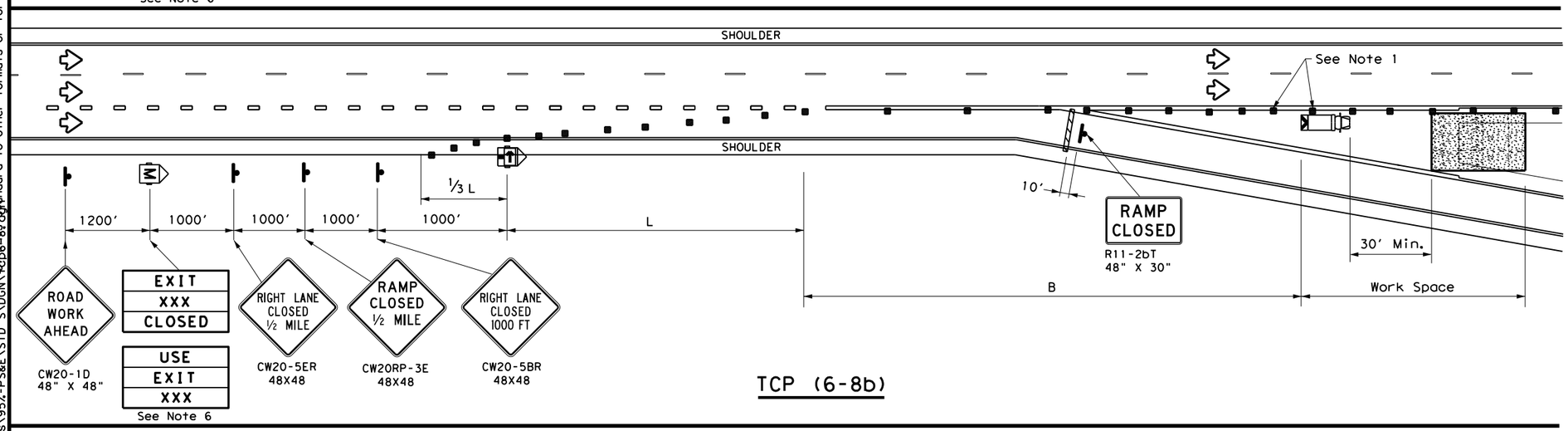
TCP(6-5)-12

FILE: tcp6-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	DAL	DALLAS		30

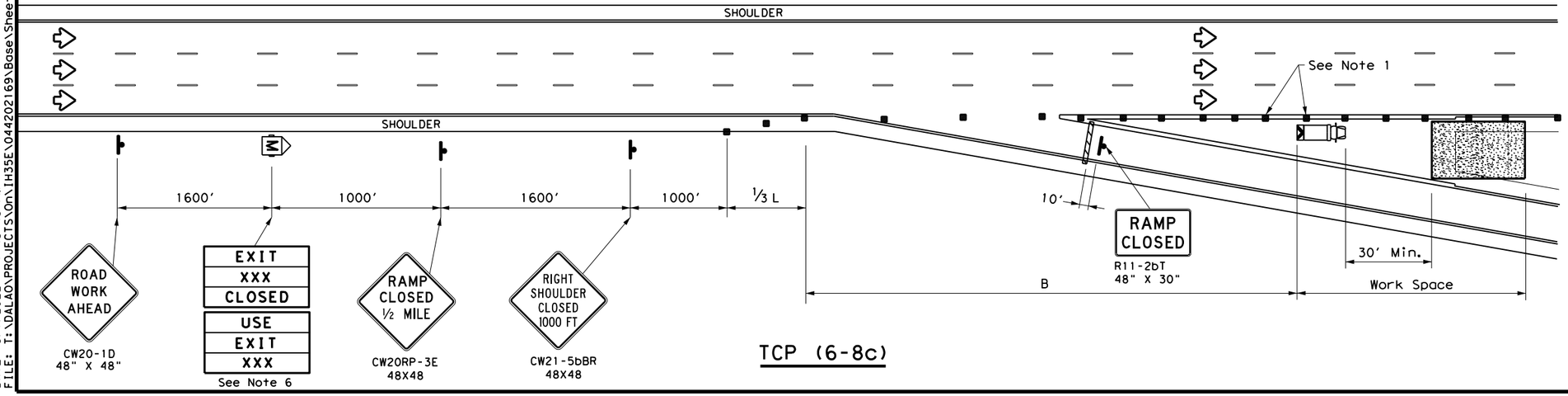
DATE: 9/1/2022 1:45:43 PM
FILE: T:\DALAO\PROJECTS\On\IH35E\04420169\Base Sheets\95%-PS&E\STD'S\DGN\tcp6-8.dgn



TCP (6-8a)



TCP (6-8b)



TCP (6-8c)

LEGEND

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

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

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

TYPICAL USAGE

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

GENERAL NOTES

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

Texas Department of Transportation

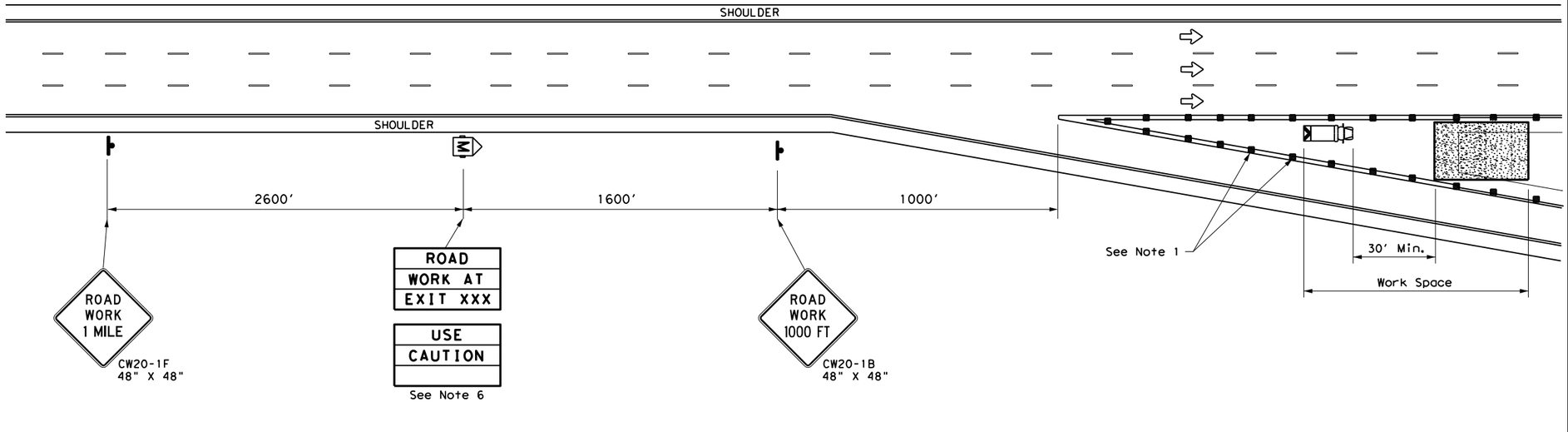
Traffic Operations Division Standard

WORK IN EXIT GORE FOR ADT GREATER THAN 10,000

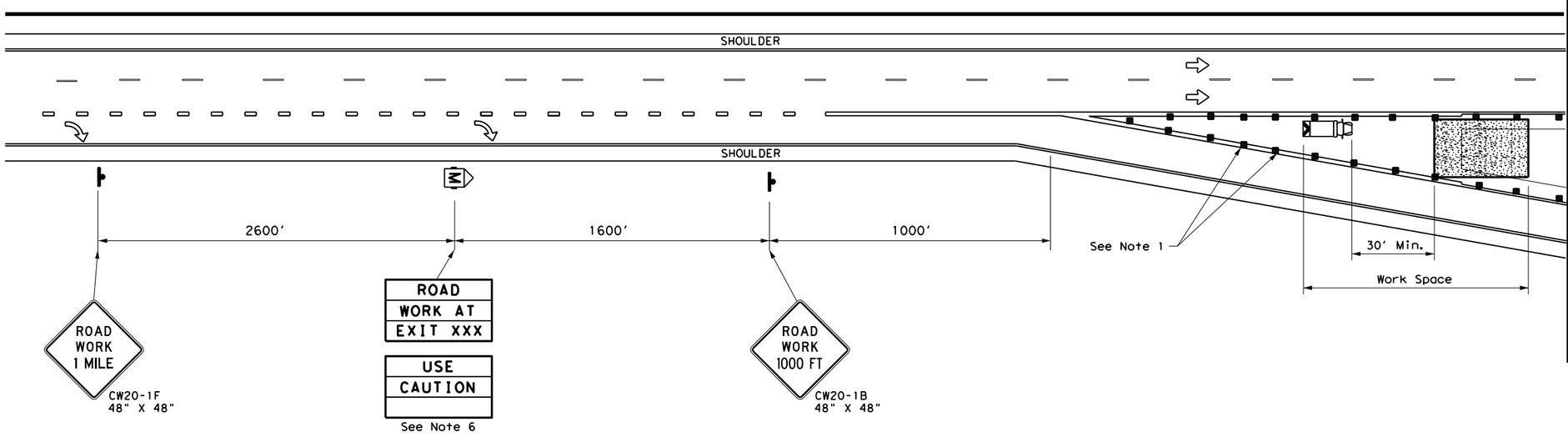
TCP(6-8)-14

FILE: tcp6-8.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		31

DATE: 9/1/2022 1:45:44 PM
FILE: T:\DAL\O\PROJECTS\ON\IH35E\0442021169\Base\Sheets\95%-PS&E\STD's\DGN\tcp6-9.dgn



TCP (6-9a)



TCP (6-9b)

LEGEND

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

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

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

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

GENERAL NOTES

1. Place channelizing devices in the gore at 20' spacing.
2. See the Standard Highway Sign Design for Texas (SHSD) for sign details.
3. The PCMS may be omitted when a permanent DMS sign is available in an appropriate location to display a similar message as called for on the PCMS.
4. When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) and TCP(6-8) for traffic control details.
5. Truck mounted attenuators are required.
6. The PCMS may be omitted if replaced with a "ROAD WORK ½ MILE" (CW20-1E).
7. Roadway ADT should be less than 10,000.

Texas Department of Transportation

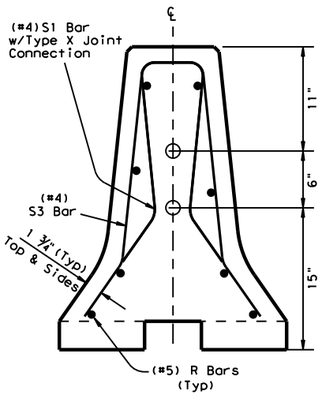
Traffic Operations Division Standard

WORK IN EXIT GORE FOR ADT LESS THAN 10,000

TCP(6-9)-14

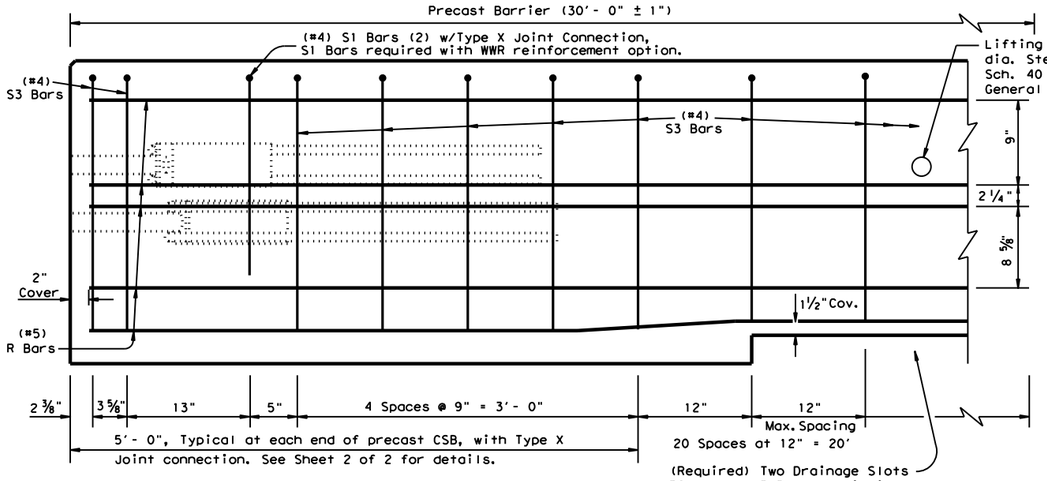
FILE: tcp6-9.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		32

DATE: 9/1/2022 1:45:44 PM
FILE: T:\DAL\OV\PROJECTS\OnVIH35E\0442021691Base\Sheets\95%-PS&E\STD'S\DGN\csb110.dgn



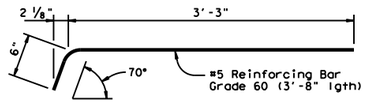
End View Precast Barrier

See sheet 2 of 3 for Joint connection Type X



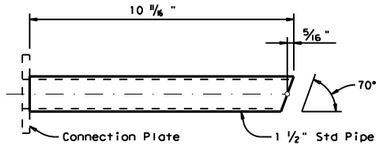
Reinforcement for Precast (CSB) Concrete Safety Barrier (Type 1)

Showing reinforcement for Joint Type X



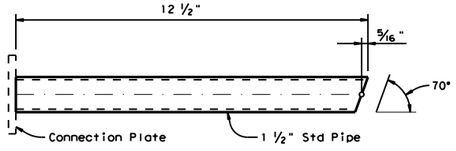
DEFORMED BAR ANCHOR DETAILS

Two (2) Bars required per assembly.
Eight (8) required per Joint.



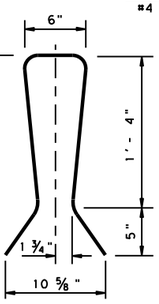
UPPER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Upper Assembly.
Two (2) required per Joint.



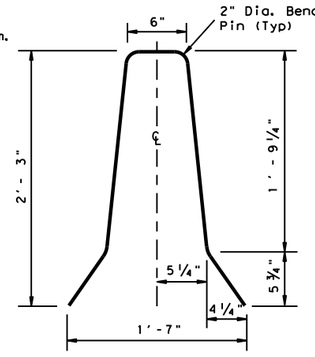
LOWER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Lower Assembly.
Two (2) required per Joint.



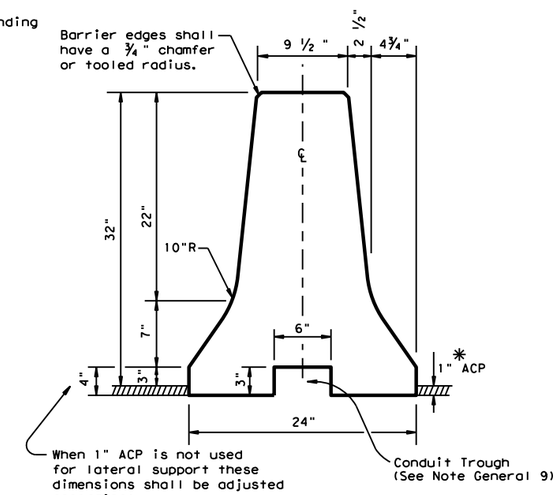
S1 Bar

#4 Bar (2)
(Joint Type X)



S3 Bar

#4 Bar

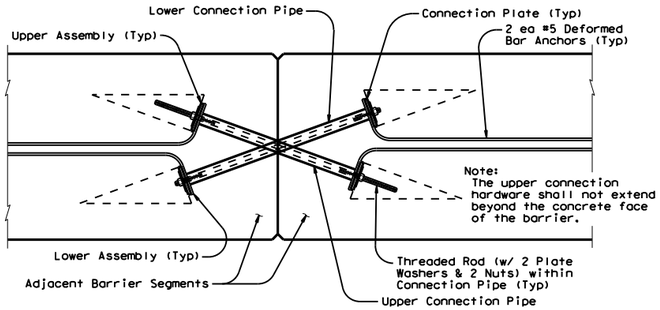


Concrete Safety Barrier

✱ When 1" ACP is "not" used as lateral support for permanent barrier placement. A permissible method of attaining the equivalent lateral support may be used, See CSB(6) sheet.

GENERAL NOTES

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a ¾" chamfer or tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. All steel assemblies for joint shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items involved.
9. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.



TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

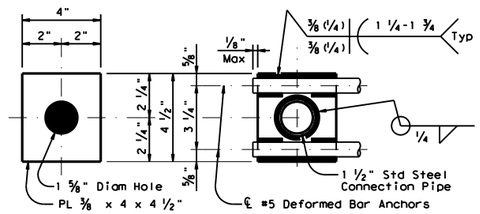
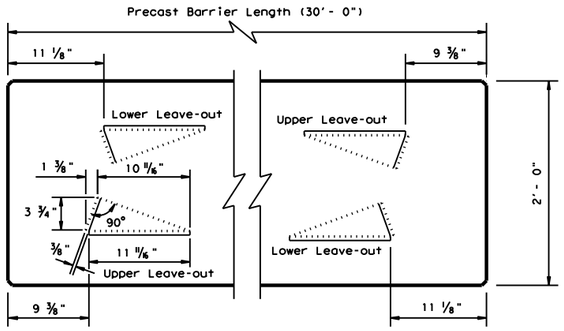


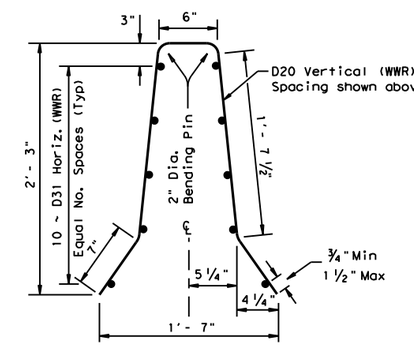
PLATE DIMENSIONS WELDING DETAILS

CONNECTION PLATE DETAILS

One (1) Plate required per assembly.
Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.



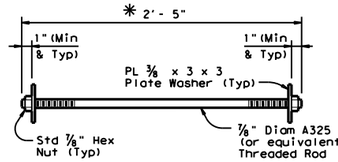
BARRIER PLAN AT END JOINTS



Welded Wire Reinforcement (WWR) Option for Bars R and S3

(WWR) General Notes

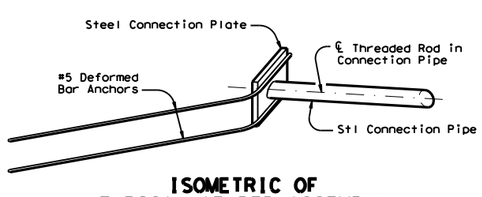
1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts) (w/ Two (2) PL ⅜ x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

✱ The connection hardware shall not extend beyond the concrete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.



ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

Weight of one Precast 30 ft. (CSB) segment = Approx. 6.5 Tons or 440 lbs per ft.

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

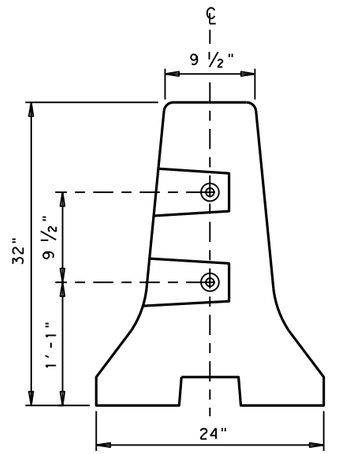
CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER (TYPE 1)

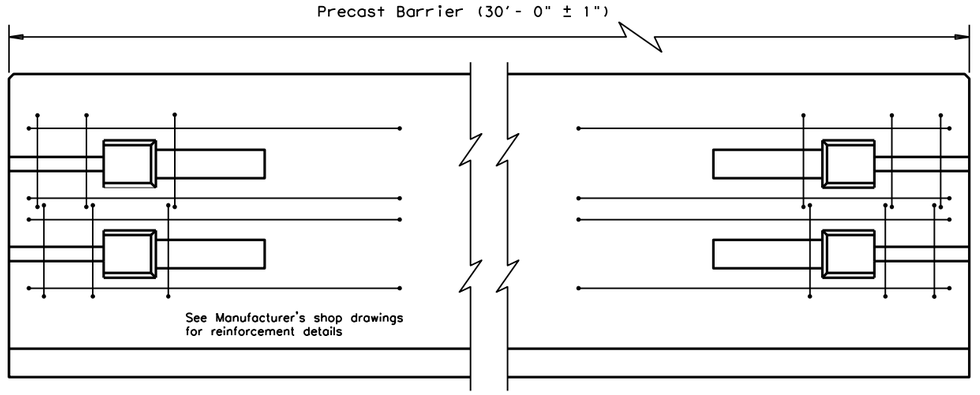
CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		33

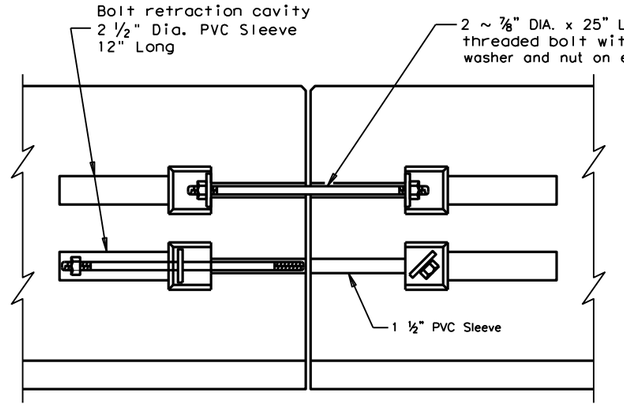
DATE: 9/1/2022 1:45:44 PM
FILE: T:\DALAO\PROJECTS\On\IH35E\0442O2169\Base\Sheets\95%-PS&E\STD'S\DGN\csb110.dgn



END VIEW (CSB) QUICK-BOLT
QUICK-BOLT POCKET LOCATIONS

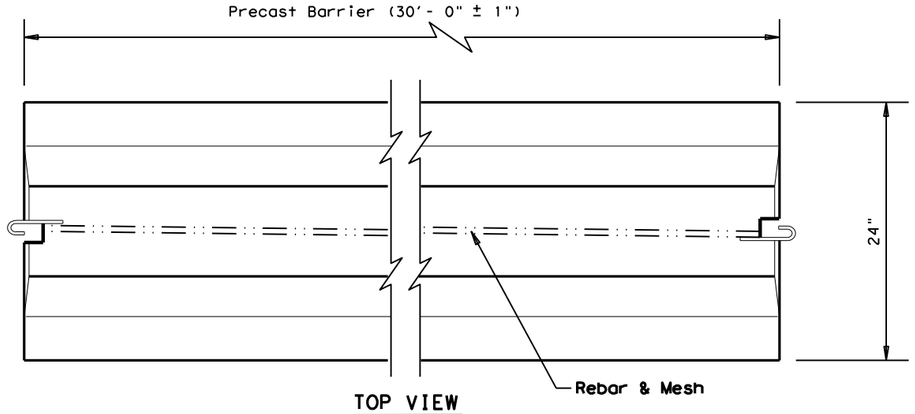


ELEVATION (CSB) QUICK-BOLT
See Manufacturer's shop drawing for additional details

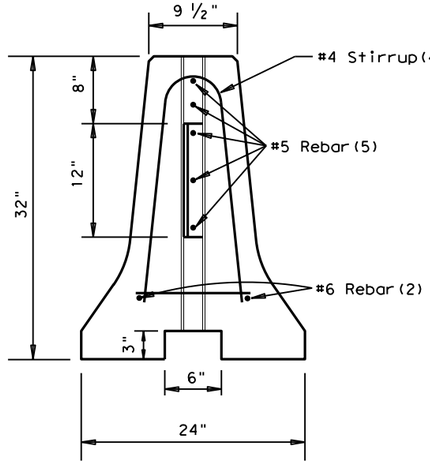


ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

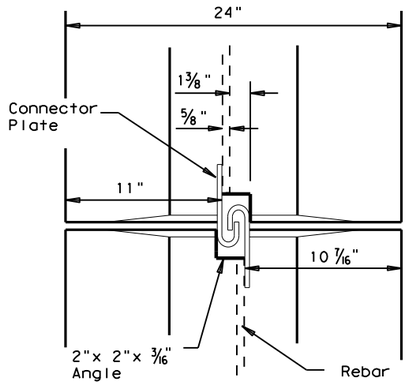
Joint Connection (Type Q)



TOP VIEW
PRECAST (CSB) WITH J-J HOOKS
See Manufacturer's shop drawing for additional details



END VIEW
J-J HOOK CONNECTION



VIEW FROM ABOVE
J-J HOOK CONNECTION

Joint Connection (Type J)

Proprietary Joint Connections (CSB)

Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.

Texas Department of Transportation | Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

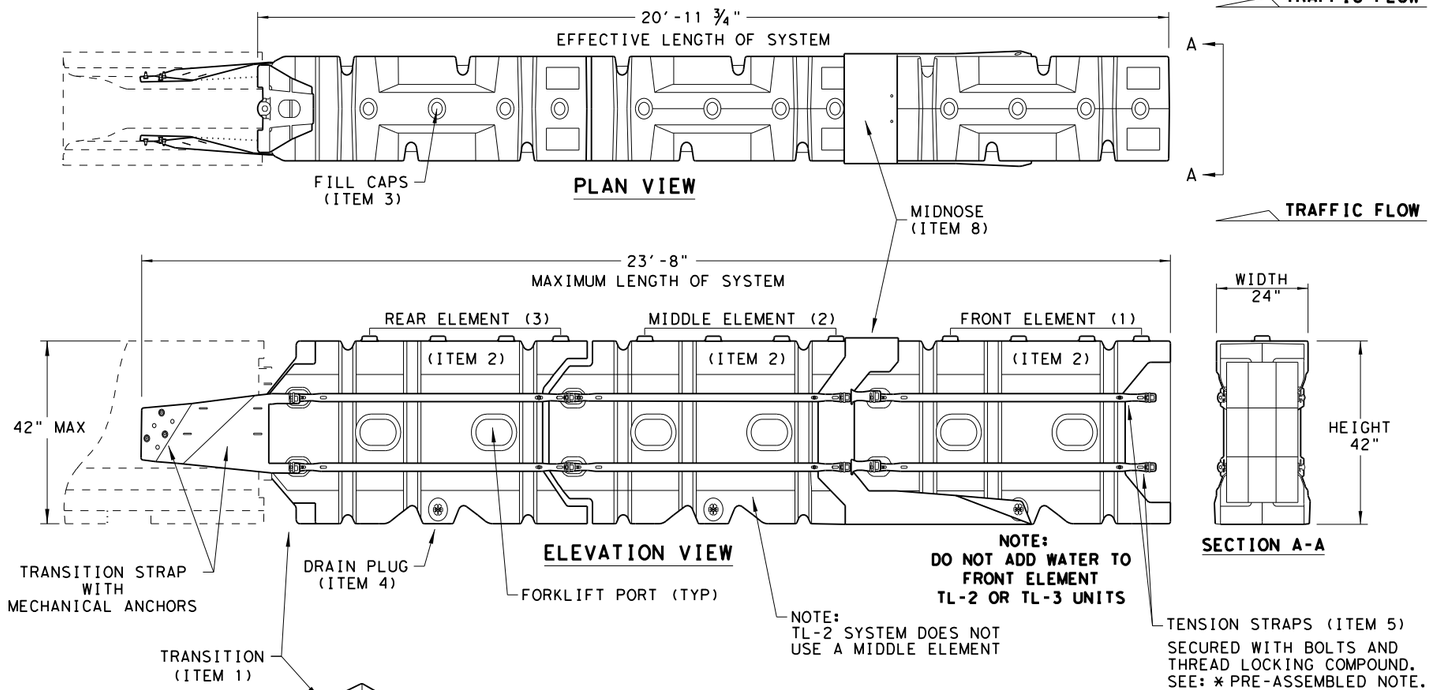
PRECAST BARRIER
(TYPE 1)

CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		34

DATE: 9/1/2022
FILE: T:\DALAO\PROJECTS\On\1H35E\0442021 69\Base\Sheets\95%-PS&E\STD'S\DGN\absorbm19.dgn

SYSTEM SHOWN - ABSORB-M TL-3



THE ABSORB-M IS A NON-REDIRECTIVE, GATING, CRASH CUSHION DESIGNED TO MEET THE LATEST TL-3 & TL-2 MASH REQUIREMENTS.

THE SYSTEM IS DESIGNED TO ACCOMMODATE A VARIETY OF F-SHAPE AND SINGLE SLOPE CONCRETE BARRIERS. CONTACT THE MANUFACTURER FOR GUIDANCE REGARDING OTHER ALLOWABLE SHAPES.

TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14'- 7 3/4"	17'- 4"
TL-3	3	20'- 11 3/4"	23'- 8"

NOTE:
CROSS SLOPES OF UP TO 8% (OR 1:12 SLOPE) CAN BE ACCOMMODATED WITH STANDARD HARDWARE SHOWN WITHIN THE INSTRUCTIONS MANUAL. FOR SLOPES WITH EXCESS OF 8% (OR 1:12) CONTACT, LINDSAY TRANSPORTATION SOLUTIONS.

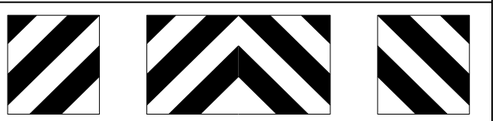
GENERAL NOTES

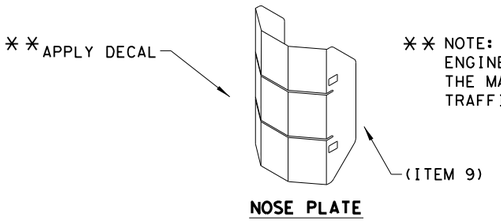
1. FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
2. THE ABSORB-M SYSTEM IS ONLY APPROVED FOR USE IN (TEMPORARY WORK ZONE) LOCATIONS.
3. THE ABSORB-M IS A WATER FILLED NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO A FOUNDATION AND CAN BE INSTALLED ON TOP OF CONCRETE, ASPHALT, OR ANY SURFACE CAPABLE OF BEARING THE WEIGHT OF THE SYSTEM.
4. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
5. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
6. THE ABSORB-M SHOULD BE LOCATED APPROXIMATELY PARALLEL WITH THE BARRIER.
7. THE USE OF THE ABSORB-M IS RESTRICTED TO A BARRIER HEIGHT OF UP TO 42 INCHES.
8. DO NOT ADD WATER TO FRONT ELEMENT (TL-2 OR TL-3 UNIT).

BILL OF MATERIALS (BOM) ABSORB-M TL-3 & TL-2 SYSTEMS			QTY	QTY
ITEM #	PART NUMBER	PART DESCRIPTION	TL-2 SYSTEM	TL-3 SYSTEM
1	BSI-1809036-00	TRANSITION-(GALV)	1	1
* 2	BSI-1808002-00	PRE-ASSEMBLED ABSORBING (ELEMENTS)	2	3
* 3	BSI-4004598	FILL CAPS	8	12
* 4	BSI-4004599	DRAIN PLUGS	2	3
* 5	BSI-1809053-00	TENSION STRAP-(GALV)	8	12
* 6	BSI-2001998	C-SCR FH 3/8-16 X 1 1/2 GR5 PLT	8	12
* 7	BSI-2001999	C-SCR FH 3/8-16 X 1 GR5 PLT	8	12
8	BSI-1809035-00	MIDNOSE-(GALV)	1	1
9	BSI-1808014-00	NOSE PLATE	1	1
10	BSI-1809037-00	TRANSITION STRAP (LEFT-HAND)-(GALV)	1	1
11	BSI-1809038-00	TRANSITION STRAP (RIGHT-HAND)-(GALV)	1	1
12	BSI-1808005-00	PIN ASSEMBLY	8	10
13	BSI-2002001	ANC MECH 5/8-11X5 (GALV)	6	6
14	ABSORB-M	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

*COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY

DELINEATION DECAL PLACEMENT GUIDE





NOSE PLATE

** NOTE: (PROVIDED BY OTHERS)
ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.

NOTE:
APPLY A HIGH REFLECTIVE DECAL TO THE NOSE PLATE. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALs ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

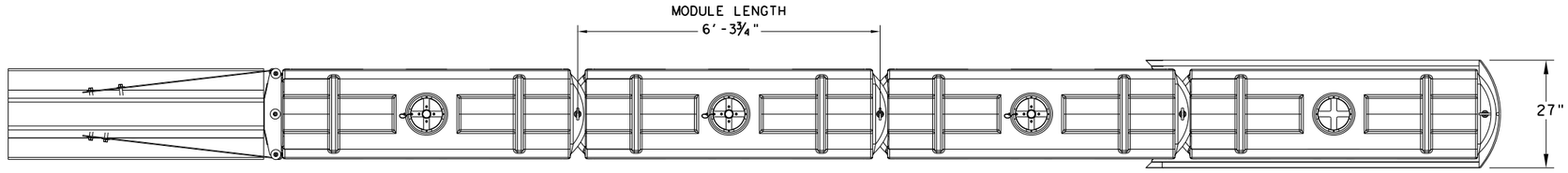
NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

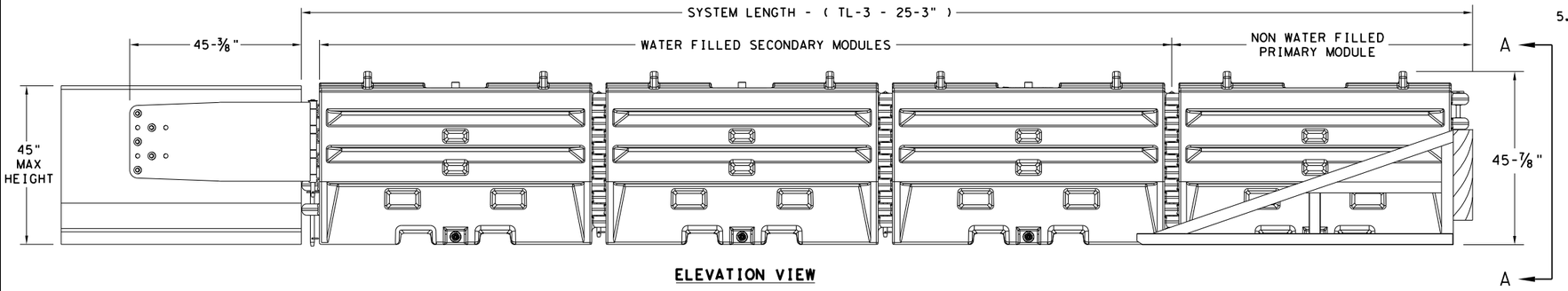
Texas Department of Transportation
Design Division Standard

LINDSAY TRANSPORTATION SOLUTIONS
CRASH CUSHION
(MASH TL-3 & TL-2)
TEMPORARY - WORK ZONE
ABSORB(M)-19

FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: JULY 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		35



PLAN VIEW



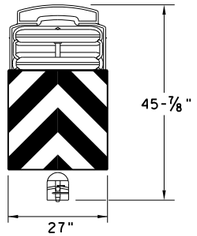
ELEVATION VIEW

GENERAL NOTES

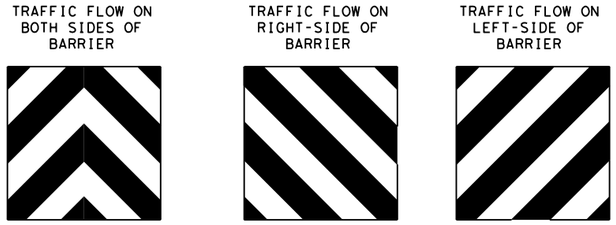
1. REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
2. THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO THE GROUND AND CAN BE INSTALLED ON CONCRETE, ASPHALT, GRAVEL OR COMPACTED SOIL.
3. MAXIMUM PERMISSIBLE CROSS SLOPE IS 8° (DEGREES) (14%).
4. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
5. THE SLED SYSTEM CAN BE ATTACHED TO:

- CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
- STEEL BARRIER
- PLASTIC BARRIER
- CONCRETE BRIDGE ABUTMENTS
- W-BEAM GUARD RAIL
- THRIE BEAM GUARD RAIL

TEST LEVEL	NUMBER OF SECONDARY MODULES	SYSTEM LENGTH
TL-3	3	25' 3"



SECTION A-A

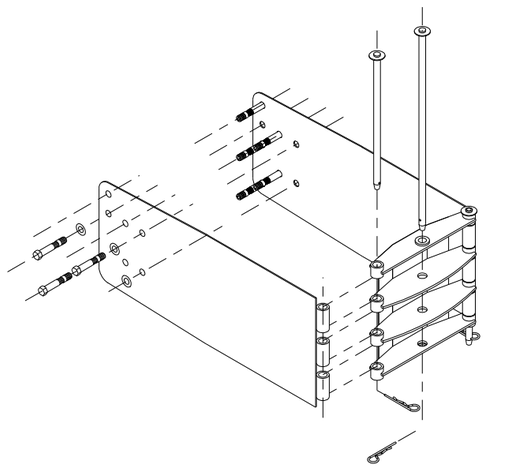


NOSE SHEETING PANEL DELINEATION

NOTE:
SEE INSTALLATION MANUAL FOR CUSTOMIZED DELINEATION NOSE SHEETING FOR DECAL PLACEMENT.

BILL OF MATERIAL

PART NUMBER	DESCRIPTION	QTY: TL-3
45131	TRANSITION FRAME, GALVANIZED	1
45150	TRANSITION PANEL, GALVANIZED	2
45147-CP	TRANSITION SHORT DROP PIN W/ KEEPER PIN, GALVANIZED	2
45148-CP	TRANSITION LONG DROP PIN W/ KEEPER PIN, GALVANIZED	1
45050	ANCHOR BOLTS	9
12060	WASHER, 3/4" ID X 2" OD	9
45044-Y	SLED YELLOW WATER FILLED MODULE	3
45044-YH	SLED YELLOW "NO FILL" MODULE	1
45044-S	CIS (CONTAINMENT IMPACT SLED), GALVANIZED	1
45043-CP	T-PIN W/ KEEPER PIN	4
18009-B-I	FILL CAP W/ "DRIVE BY" FLOAT INDICATOR	3
45033-RC-B	DRAIN PLUG	3
45032-DPT	DRAIN PLUG REMOVAL TOOL	1



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE:
SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

TRANSITION OPTIONS
SLED TRANSITION TO CONCRETE TRAFFIC BARRIER (TEMPORARY OR PERMANENT)
SLED TRANSITION TO STEEL TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO PLASTIC TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO W-BEAM OR THRIE BEAM GUARD RAIL (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO CONCRETE BRIDGE ABUTMENT

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SLED, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

Texas Department of Transportation — Design Division Standard

SLED
CRASH CUSHION
TL-3 MASH COMPLIANT
(TEMPORARY, WORK ZONE)
SLED-19

FILE: sled19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
©TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		36

DATE: 9/1/2022
FILE: T:\DALAO\PROJECTS\On\IH35E\0442O169\Base\Sheets\95%-PS&E\STD'S\DGN\sled19.dgn

SUMMARY OF ESTIMATED QUANTITIES

ITEMS & DESCRIPTIONS / BRIDGES	0132 6056 # EMBANKMENT (FINAL) (ORD COMP)(TY C2)(DS) CY	0432 6035 RIPRAP (STONE PROTECTION)(24 IN) CY	0459 6007 GABION MATTRESSES (GALV)(12 IN) SY
NBFR		2078.00	
NBML	120.00	1726.00	52.00
SBML		1522.00	
SBFR		1431.00	
GRAND TOTAL	120.00	6827.00	52.00

Select Backfill per Item 423 TY DS is paid for as 0132 6056 EMBANKMENT (FINAL)(ORD COMP)(TY C2)(DS)

NBFR Exist. NBI: 180570044202055
NBML Exist. NBI: 180570044202056
SBML Exist. NBI: 180570044202074
SBFR Exist. NBI: 180570044202057

Sheet 1 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH
ESTIMATED QUANTITIES

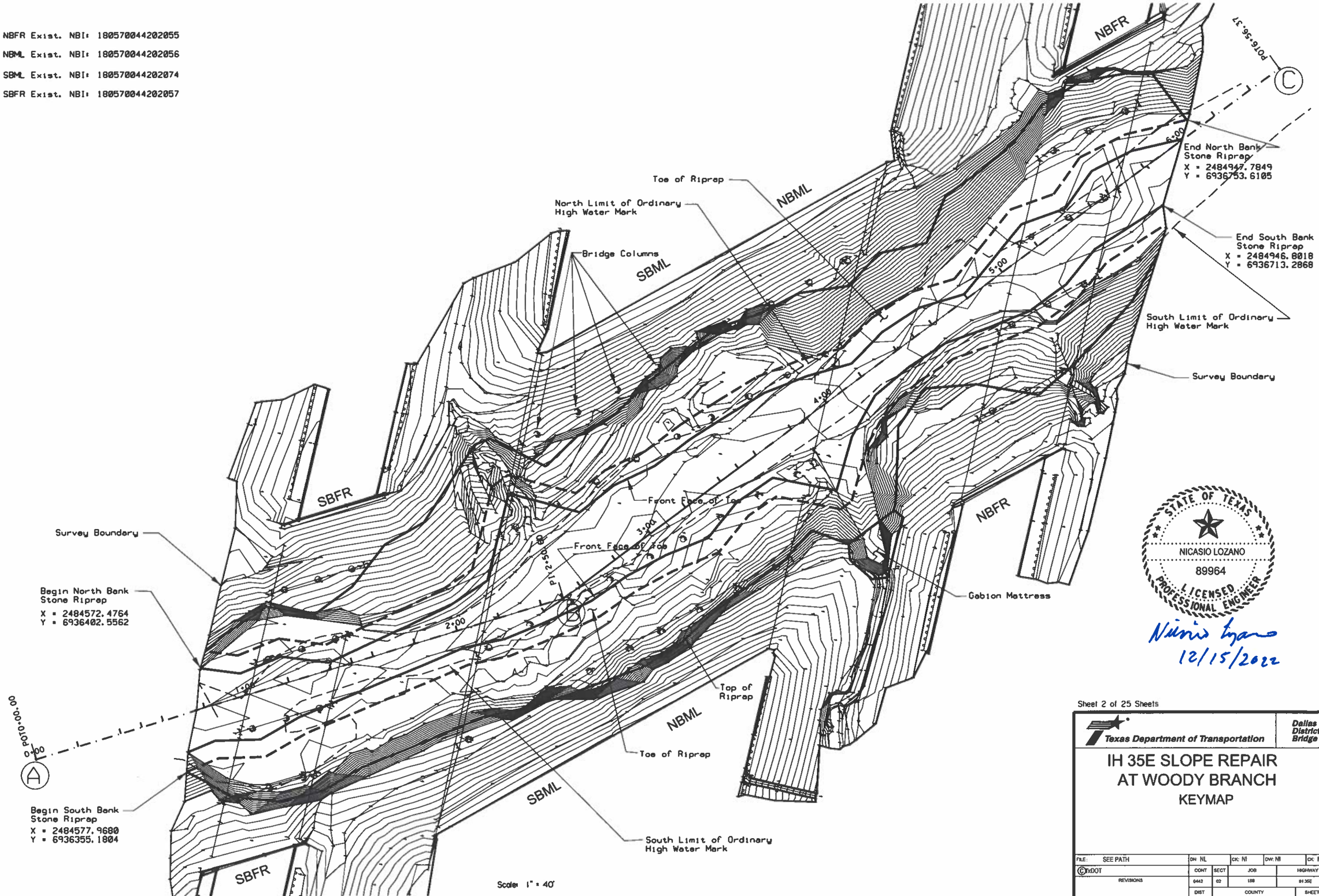
FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		37

NBFR Exist. NBI: 180570044202055

NBML Exist. NBI: 180570044202056

SBML Exist. NBI: 180570044202074

SBFR Exist. NBI: 180570044202057



Scale: 1" = 40'

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 2 of 25 Sheets

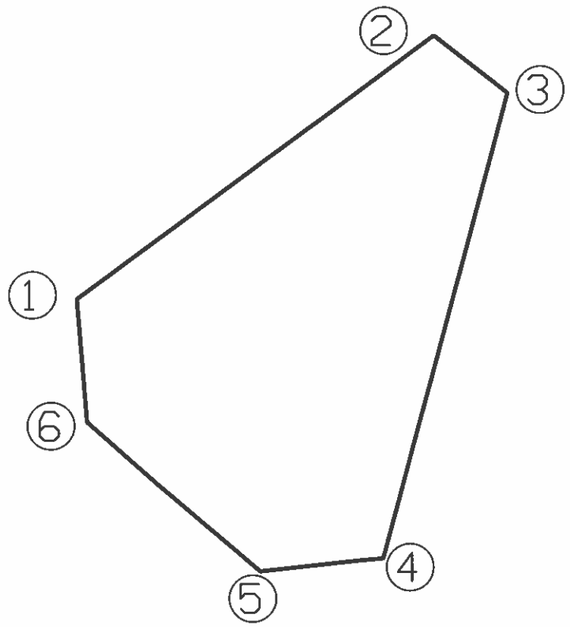
Texas Department of Transportation | Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

KEYMAP

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	188	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		38

DATE: 12/15/2022 TIME: 2:08:24 PM FILE: T:\DALBRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@sdgn dalbrdg



GABION MATTRESS BOUNDARY COORDINATE POINTS
NTS

Scale: 1" = 40'

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 3 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

STONE RIPRAP LAYOUT

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		39

DATE: 12/15/2022 TIME: 2:08:48 PM FILE: T:\DALBRDG\NICK*LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@sdgn dalbrdg

GENERAL NOTES:

1. Before beginning construction, contractor shall notify engineer of any discrepancies or conflicts found in the drawings and/or field dimensions and conditions.

2. The control line coordinates are tabulated in Table 1. The main control line line stations with their respective offsets and elevations of the bottom of the toe and top of the stone protection riprap are tabulated in tables 2 and 3 for the north and south banks.
The coordinates for the boundary limits of the gabion mattress are tabulated in table 4 (Control Line and Offsets of Stone Protection Riprap and Gabion Mattress sheet).

STONE PROTECTION RIPRAP

1. The stone protection riprap size shall be 24 inches per Item 432, Table 1 of 2014 TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges.

2. The minimum thickness of the riprap shall be 4.0 feet.

3. The minimum embedment of the toe from the existing ground shall be 5 feet deep and 8 feet wide.

4. Prior to installation of the stone protection riprap reconstruct the ground that will support the stone riprap as necessary.
   a. Remove all vegetation and any deleterious material from the proposed work area.
   b. Excavate the segments of slope that need to be excavated for the placement of stone protection riprap and it should be transitioned according to the existing topography from station to station.
   c. Grade and backfill depression areas with excavated material from the slope and the toe if needed.
   d. Excavate the toe to place the stone riprap and the excavated soil may be used for building the base of the riprap or used for backfilling depressions. The excavated soil from the toe shall be removed or compacted before placement of the filter fabric liner prior to stone protection riprap placement.
   e. The existing soil in front of the excavation for the stone riprap toe shall not be disturbed.
   f. Once the toe is excavated and the excavated soil is removed or graded and compacted, line the toe and graded surface with filter fabric per DMS - 6200 Type 2. The stone protection shall be separated with a filter fabric from the existing soil or recompacted soil.
   g. After the filter fabric is placed in the excavated toe, backfill with stone protection.
   h. After the Toe is filled with stone protection as shown in the cross sections, complete placing stone protection to the proposed horizontal limit and elevation as shown in the cross sections.
   h. At the beginning and end of the stone protection extend placing stones for a maximum distance of 5 feet to transition and match to the existing ground.

GABION MATTRESS AT SOUTH BANK (NBFR AND NBML).

1. Remove all vegetation, pipes and concrete debris from the gabion mattres footprint.

2. Grade, backfill, compact insitu existing or/and excavated soil within the proposed gabion mattres footprint. Once the footprint area is smoothed, place filter fabric over the compacted and graded surface.

3. Backffiill the the low area and over the filter fabric with soil Ty C2 that meets the properties per Item 423, Type DS and shape the channel to place the 12 inch thick gabion mattress.

4. Place the gabion mattress so that all sides shall match to the surrounding exisitng ground and the stone riprap. The mattress toe shall have a minimum embedment of 2 feet deep below the bottom of the gabion mattress.

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER
12/15/2022

Sheet 4 of 25 Sheets

Texas Department of Transportation
Dallas District Bridge

IH 35 SLOPE REPAIR AT WOODY BRANCH
GENERAL NOTES

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		40

DATE: 12/15/2022 TIME: 5:24:58 PM FILE: T:\DALBRDG\NICK*LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL0sdgn dolbrdg

TABLE 1. STATIONS AND COORDINATE POINTS ALONG CONTROL LINE

POINT	STATION	COORDINATES
Ⓐ	POT 0+00	X=2484510.2547 Y=6936344.3633
Ⓑ	PI 2+50.60	X=2484725.1124 Y=6936473.2181
Ⓒ	POT 6+56.37	X=2484982.6974 Y=6936786.7995

TABLE 2. CONTROL LINE AND OFFSETS OF TOE AND TOP OF STONE PROTECTION RIPRAP ALONG NORTH BANK

STATIONS	RIPRAP TOE OFFSET	RIPRAP TOE BOTTOM ELEVATION	TOP OF RIPRAP OFFSET	TOP OF RIPRAP ELEVATION
0+83.34	17.87' LT	456.50'	17.87' LT	461.50'
1+00	10.29' LT	456.71'	29.85' LT	467.05'
1+20	12.40' LT	455.95'	36.03' LT	468.32'
1+40	3.42' LT	453.79'	26.17' LT	465.71'
1+60	6.14' LT	455.40'	33.32' LT	469.53'
1+80	8.75' LT	455.04'	47.25' LT	474.94'
2+00	11.93' LT	454.48'	51.77' LT	474.98'
2+20	17.89' LT	455.77'	43.86' LT	469.32'
2+40	51.78' LT	459.75'	79.70' LT	469.27'
2+60	52.34' LT	458.71'	80.58' LT	468.39'
2+80	27.16' LT	454.94'	53.21' LT	468.53'
3+00	27.60' LT	454.10'	55.81' LT	468.76'
3+20	23.69' LT	453.82'	53.50' LT	469.31'
3+40	23.83' LT	453.34	56.07' LT	470.00'
3+60	22.39' LT	454.30'	57.40' LT	468.05'
3+80	20.62' LT	453.59'	57.38' LT	472.54'
4+00	15.15' LT	452.50'	51.03' LT	471.09'
4+20	7.50' LT	451.26'	47.77' LT	474.68'
4+40	10.74' LT	452.15'	36.87' LT	470.00'
4+60	9.58' LT	451.72'	40.49' LT	472.20'
4+80	2.34' LT	451.38'	31.41' LT	466.48'
5+00	7.27' LT	451.22'	43.70' LT	474.27'
5+20	12.50' LT	452.34'	43.21' LT	472.69'
5+40	6.37' LT	452.94'	44.87' LT	472.50'
5+60	13.05' LT	453.73'	50.56' LT	472.50'
5+80	9.60' LT	451.66'	49.40' LT	471.85'
6+00	1.01' LT	450.99'	39.05' LT	470.56'
6+08.5	6.15' LT	456.50'	33.55' LT	476.00'

TABLE 3. CONTROL LINE AND OFFSETS OF TOE AND TOP OF STONE PROTECTION RIPRAP ALONG SOUTH BANK

STATIONS	RIPRAP TOE OFFSET	RIPRAP TOE BOTTOM ELEVATION	TOP OF RIPRAP OFFSET	TOP OF RIPRAP ELEVATION
0+66.85	17.17' RT	456.00'	28.61' RT	468.00'
0+80	15.81' RT	455.60'	42.34' RT	469.44'
1+00	21.17' RT	455.34'	50.82' RT	470.71'
1+20	16.66' RT	455.00'	51.95' RT	473.23'
1+40	14.53' RT	454.76'	46.93' RT	471.63'
1+60	12.48' RT	454.73'	45.27' RT	471.70'
1+80	10.58' RT	454.57'	41.34' RT	470.56'
2+00	8.23' RT	453.77'	41.09' RT	470.77'
2+20	9.99' RT	453.25'	43.02' RT	470.33'
2+40	8.01' RT	453.68'	42.69' RT	471.60'
2+60	8.59' RT	455.00'	46.78' RT	474.71'
2+80	9.22' RT	453.64'	48.55' RT	473.88'
3+00	12.10' RT	454.38'	46.21' RT	472.01'
3+20	17.36' RT	457.22'	46.00' RT	472.22'
3+40	12.11' RT	455.14'	46.71' RT	472.98'
3+60	12.89' RT	454.42'	42.70' RT	469.90'
3+80	35.00' RT	456.98'	58.00' RT	473.94'
4+00	19.40' RT	453.27'	53.58' RT	470.93'
4+20	10.64' RT	451.44'	37.89' RT	470.00'
4+40	9.41' RT	451.42'	21.62' RT	462.36'
4+60	10.50' RT	452.50'	34.09' RT	468.79'
4+80	16.65' RT	452.50'	55.00' RT	472.25'
5+00	21.71' RT	452.37'	53.42' RT	468.79'
5+20	21.69' RT	450.99'	49.78' RT	469.81'
5+40	16.54' RT	450.28'	45.70' RT	465.43'
5+60	17.86' RT	456.62'	36.40' RT	469.46'
5+76.74	18.86' RT	456.62'	18.86' RT	469.46'

TABLE 4. BOUNDARY COORDINATES FOR GABION MATTRESS

POINTS	X COORDINATE	Y COORDINATE
1	2484845.5638	6936528.4617
2	2484862.0108	6936548.4632
3	2484867.0301	6936546.2205
4	2484866.6328	6936518.0309
5	2484859.8643	6936515.5706
6	2484847.8969	6936521.6096

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 5 of 25 Sheets

Texas Department of Transportation

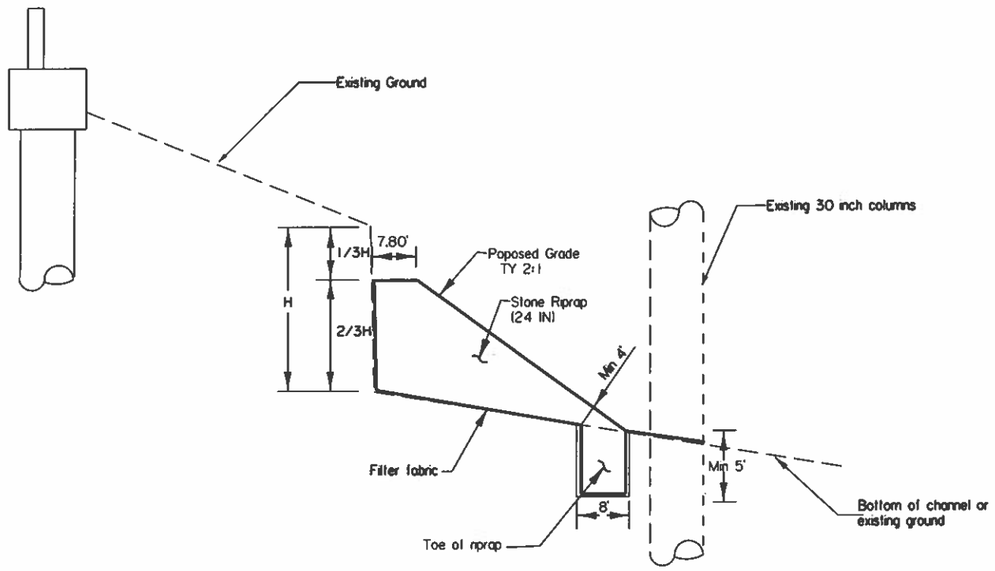
Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CONTROL LINE AND OFFSETS OF STONE PROTECTION RIPRAP AND GABION MATTRESS

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	109	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		41

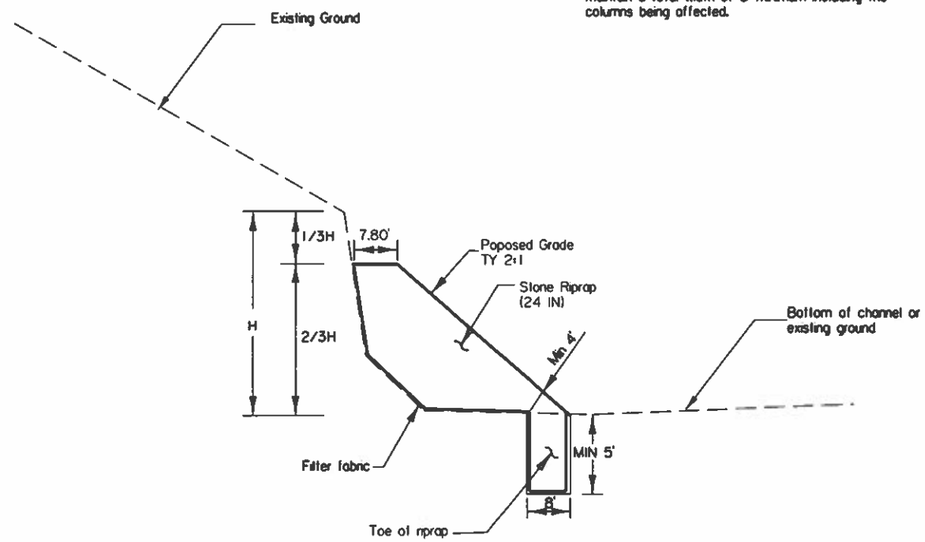
DATE: 12/15/2022 TIME: 2:09:22 PM FILE: T:\DALBRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@stdgn dolbrdg



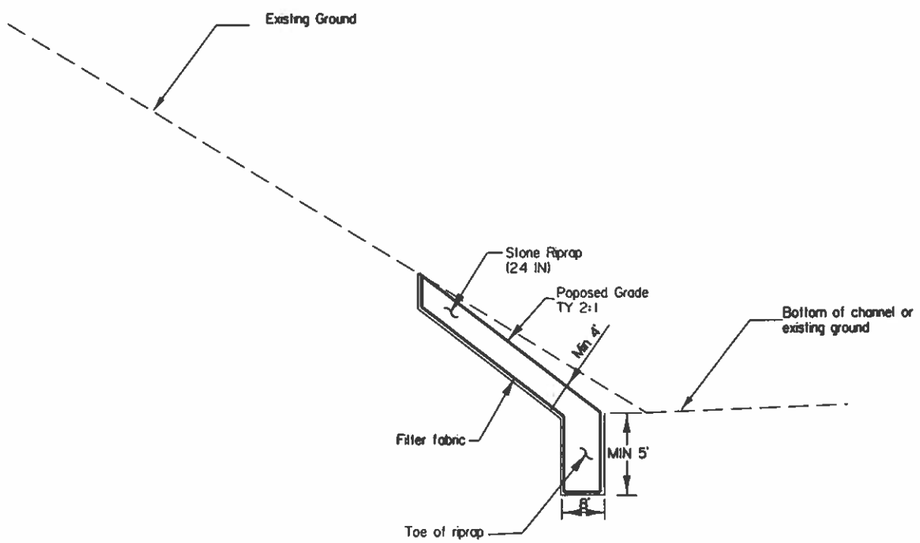
TYPICAL SECTION OF STONE RIPRAP WITH BRIDGE COLUMNS
NTS

NOTE

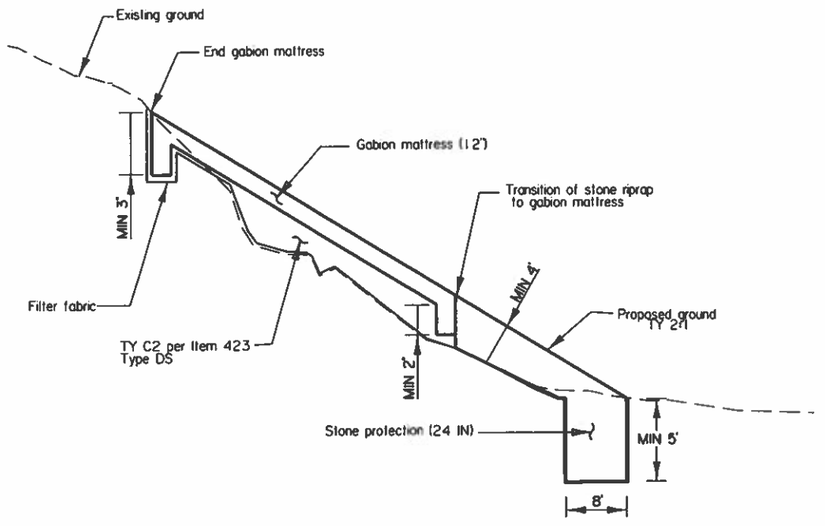
In case of a conflict between toe excavation path and existing columns, the width of the excavation may be reduced around the columns, but always maintain a total width of 8' minimum including the columns being affected.



TYPICAL SECTION OF STONE RIPRAP WITHOUT COLUMNS
NTS



TYPICAL SECTION OF EXCAVATED SEGMENTS
FOR PLACEMENT OF STONE RIPRAP
NTS



TRANSITION FROM STONE RIPRAP TO GABION MATTRESS
NTS

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 6 of 25 Sheets

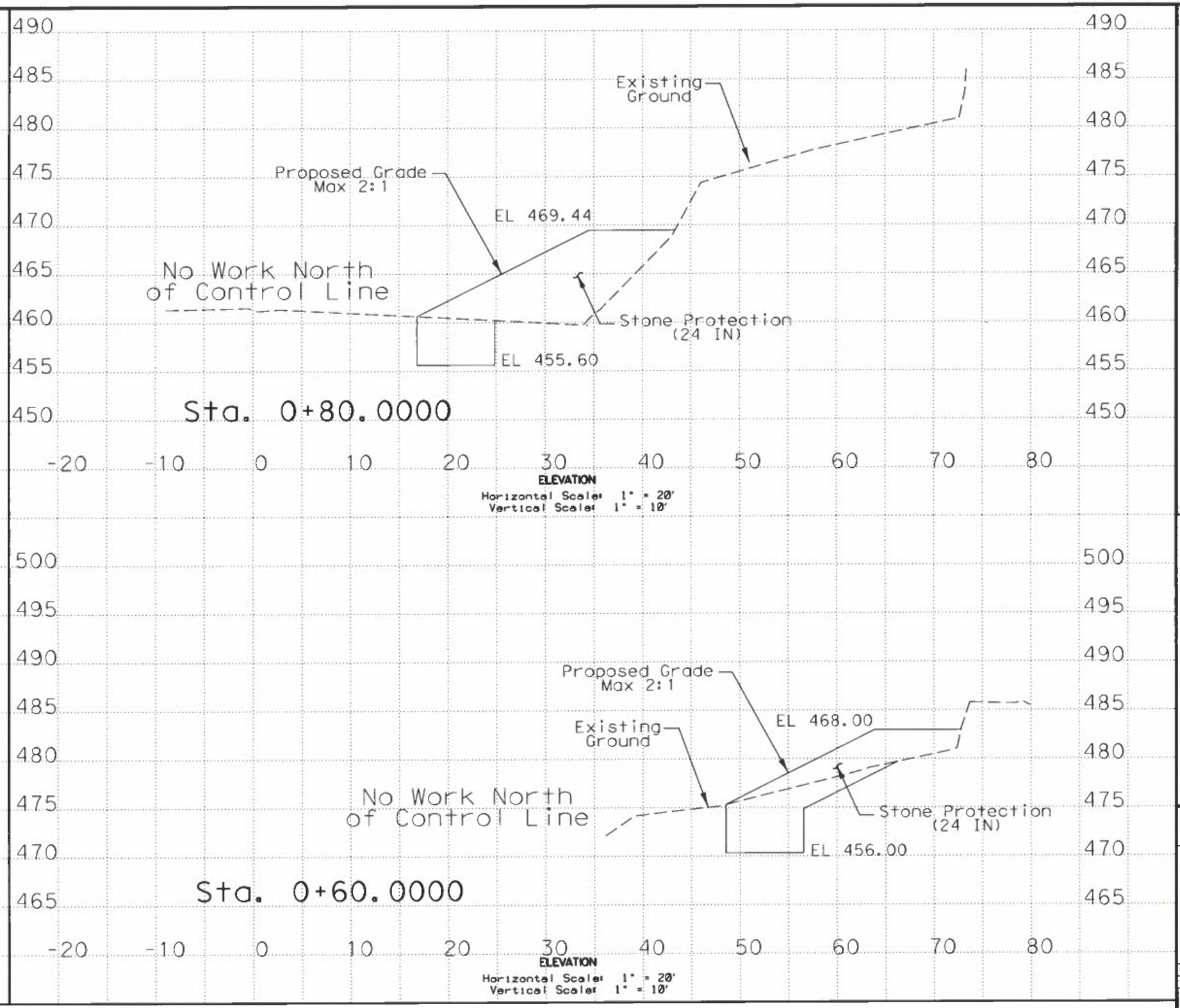
Texas Department of Transportation

Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH
TYPICAL SECTION DETAILS

FILE: SEE PATH	DW: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	100	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		42

DATE: 12/15/2022 TIME: 5:25:52 PM FILE: T:\DALBRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@design dalbridg



NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

12/15/2022

Sheet 7 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

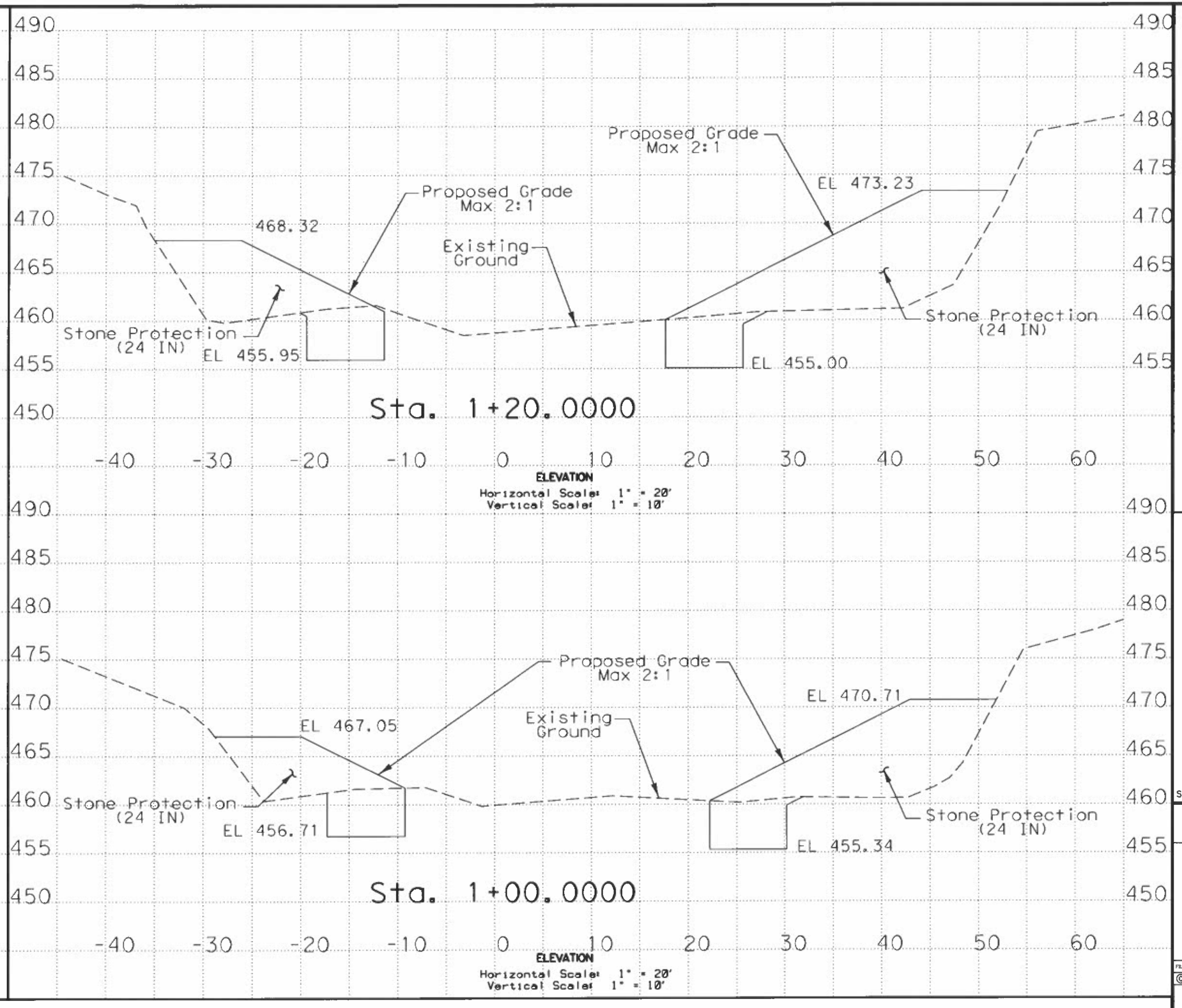
IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 0+60 TO 0+80

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	100	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		43

DATE: 12/15/2022 TIME: 2:10:29 PM FILE: T:\DALBRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12•SAL2.dgn dalbrdg



NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Nicasio Lozano
12/15/2022

Sheet 8 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

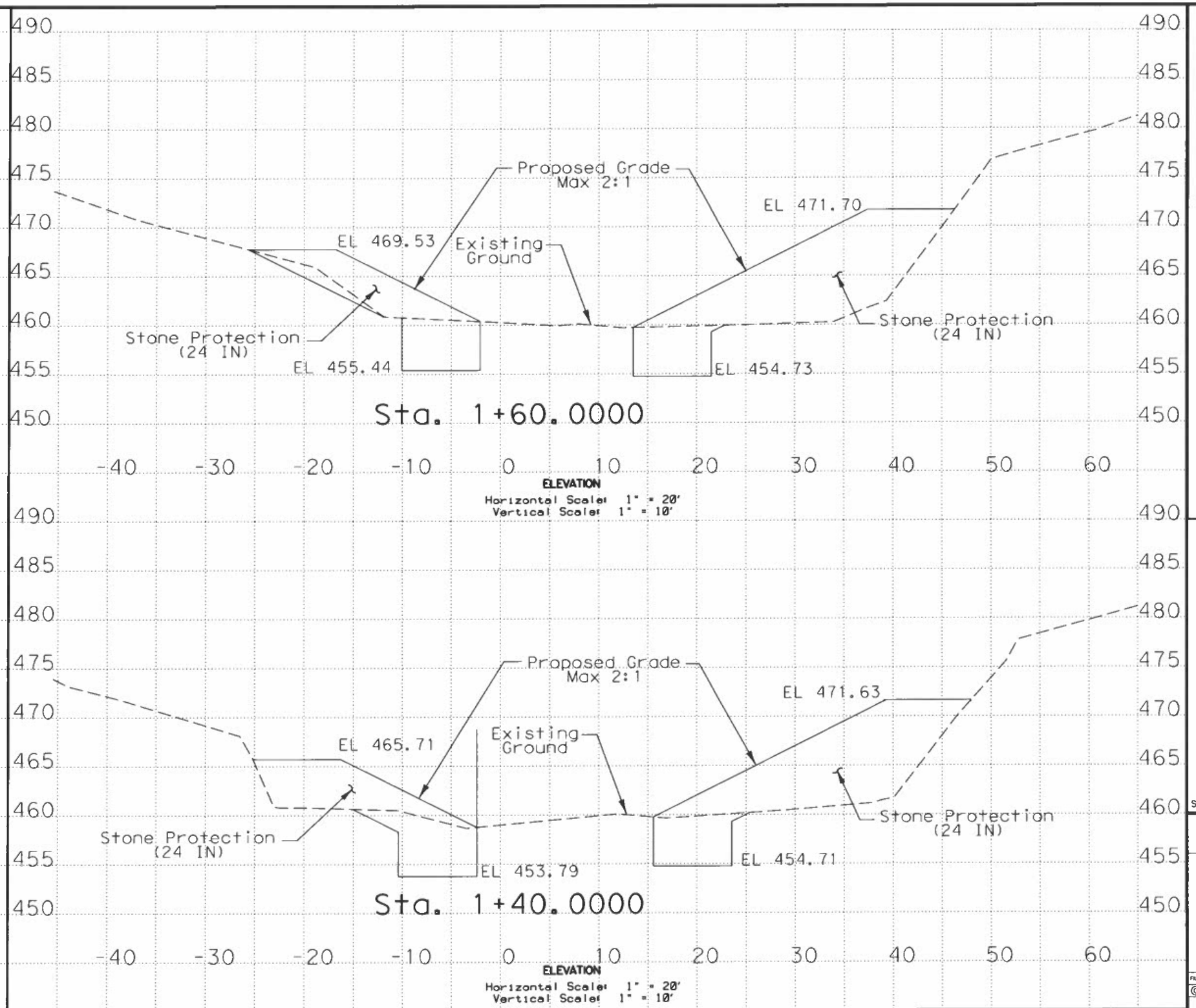
IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 1+00 TO 1+20

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	168	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		44

DATE: 12/15/2022 TIME: 2:10:52 PM FILE: T:\DALBRDG\NICK*LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL.dgn dalbrdg



DATE: 12/15/2022 TIME: 2:11:10 PM FILE: T:\DALBRDG\NICK*LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@sdgn dalbrdg

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 9 of 25 Sheets

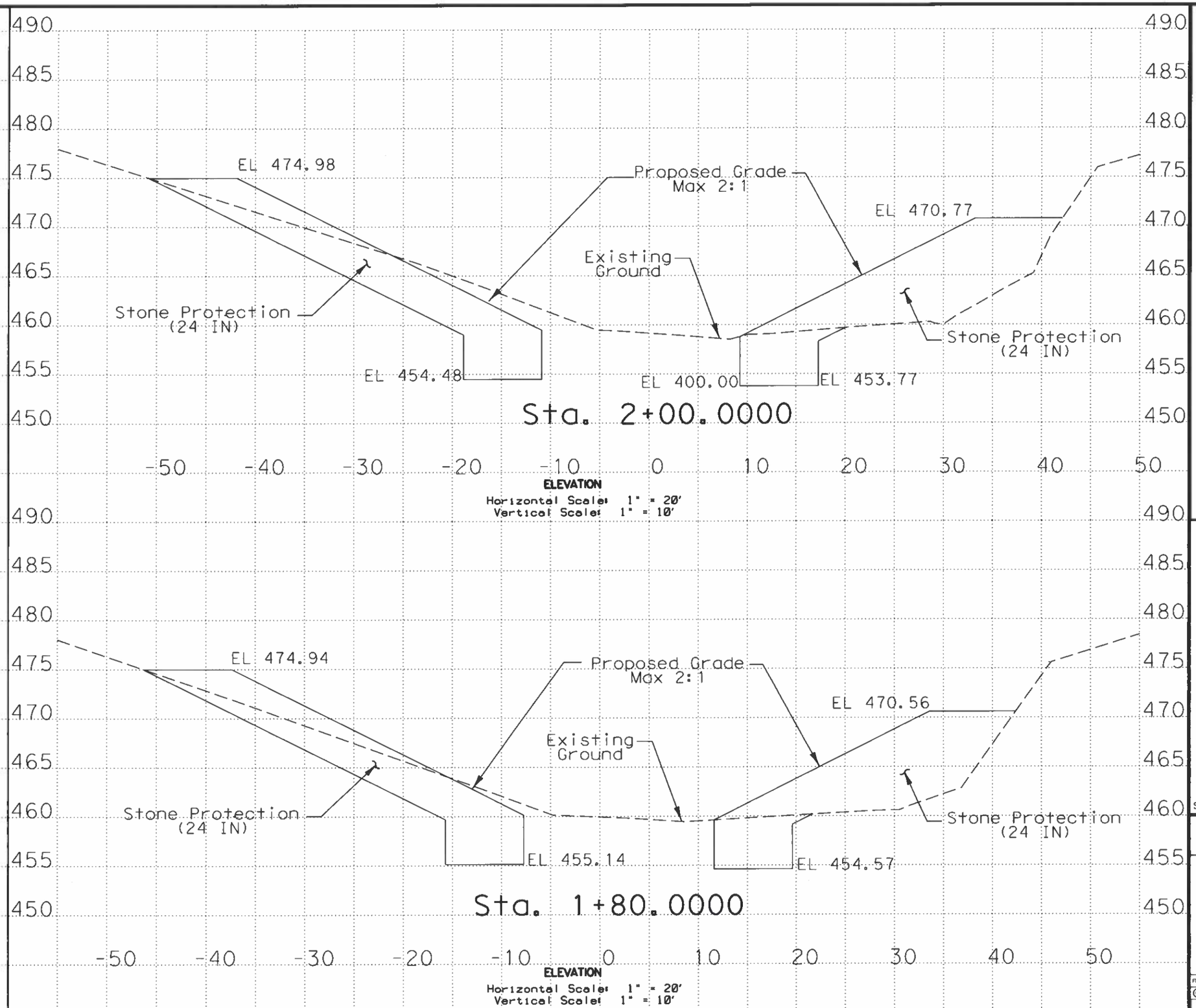
Texas Department of Transportation

Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS STA 1+40 TO 1+60

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		45



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 10 of 25 Sheets

Texas Department of Transportation

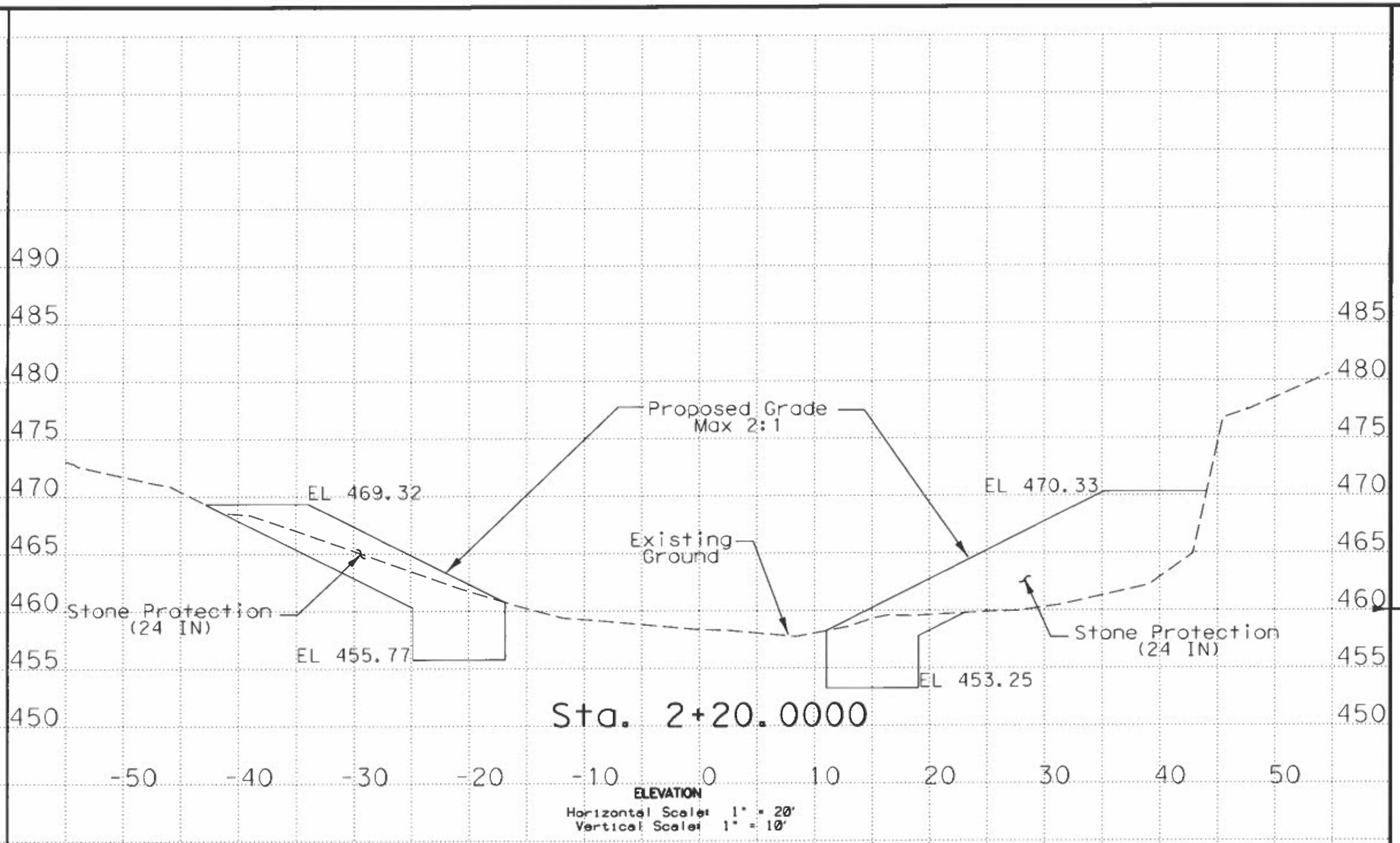
Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 1+80 TO 2+00

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	100	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		46



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 11 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

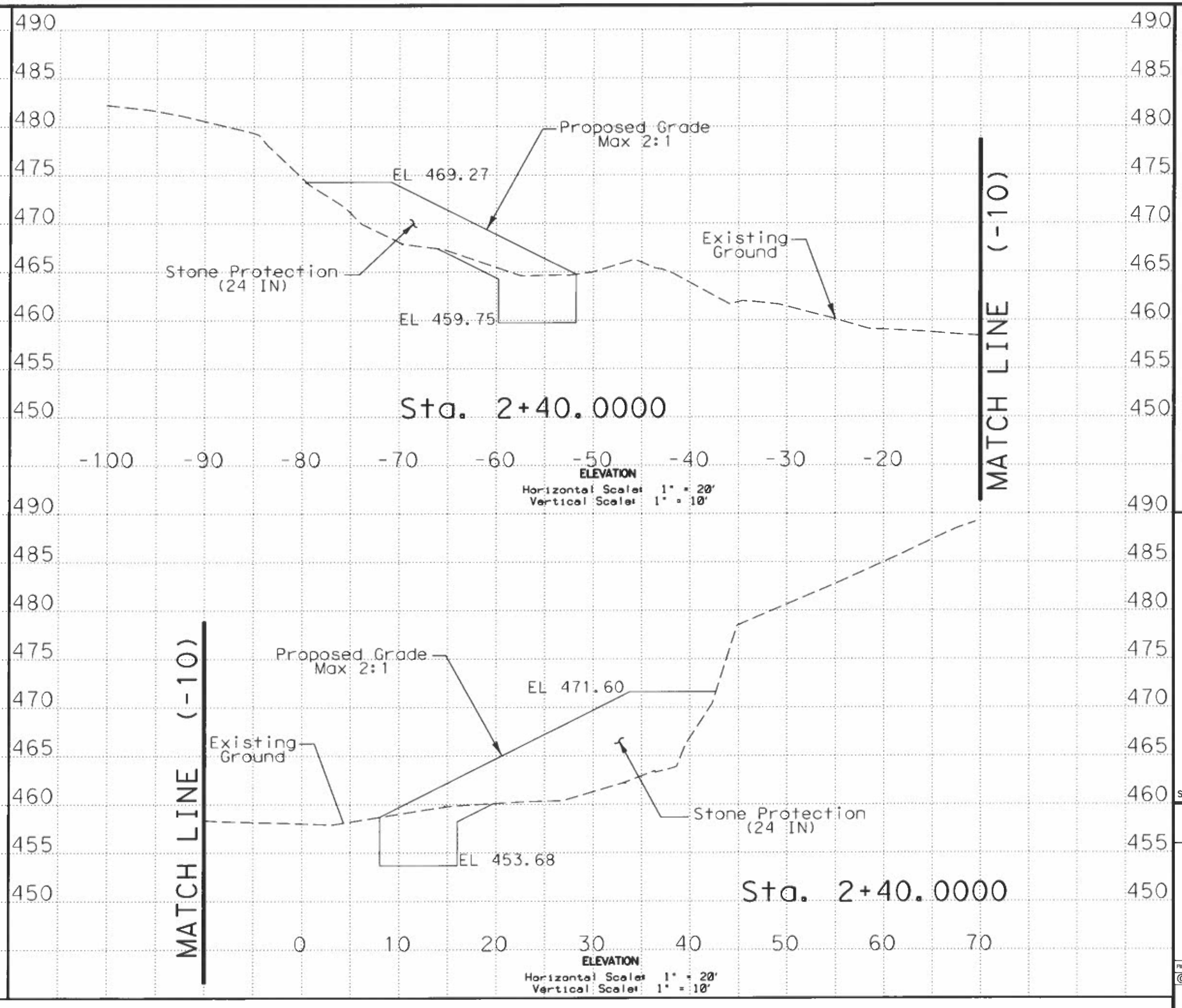
IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 2+20

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	188	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		47

DATE: 12/15/2022 TIME: 2:11:48 PM FILE: T:\DAL\BRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@design dalbrdg



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 12 of 25 Sheets

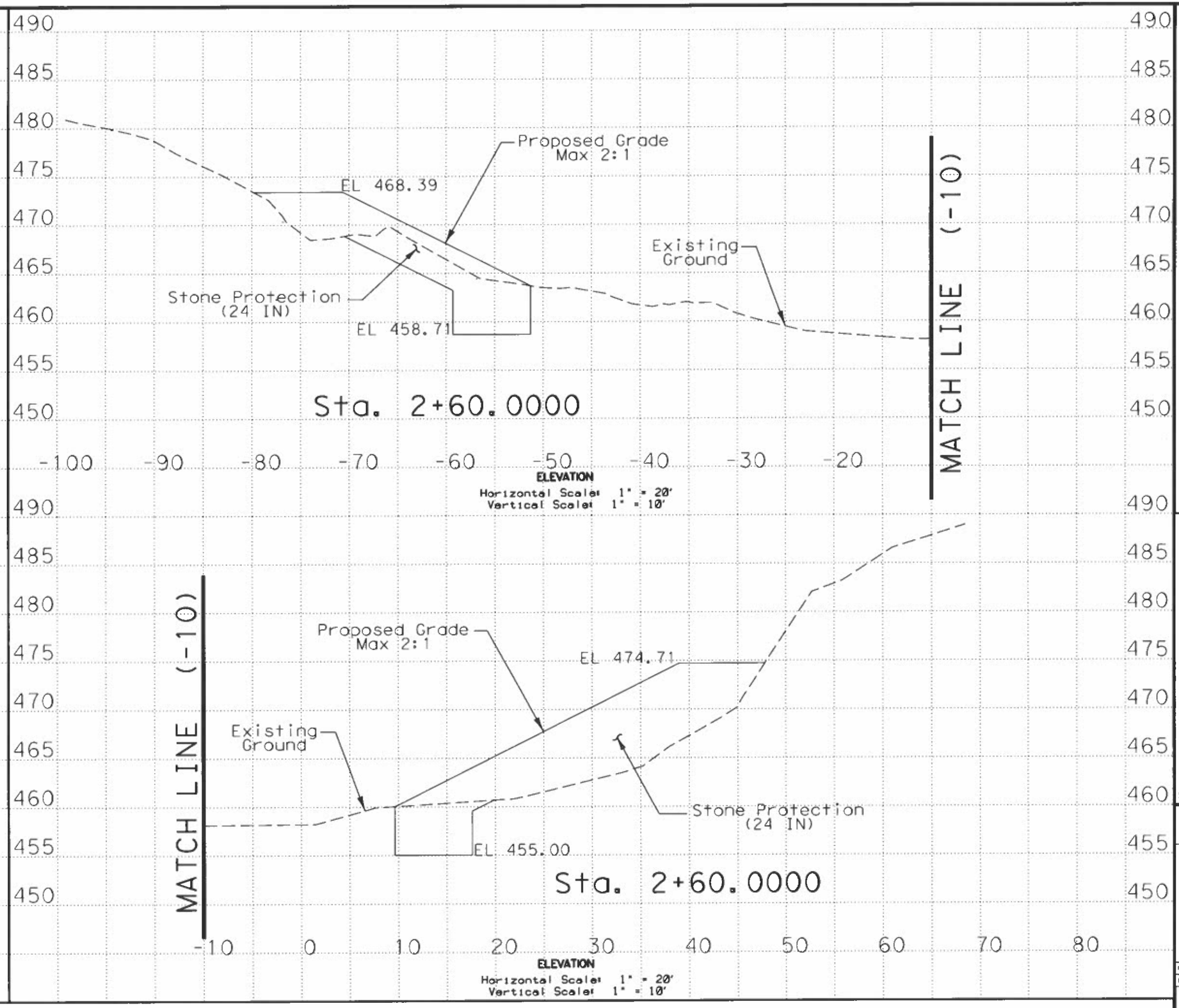
Texas Department of Transportation

Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS STA 2+40

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	168	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		48



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 13 of 25 Sheets

Texas Department of Transportation

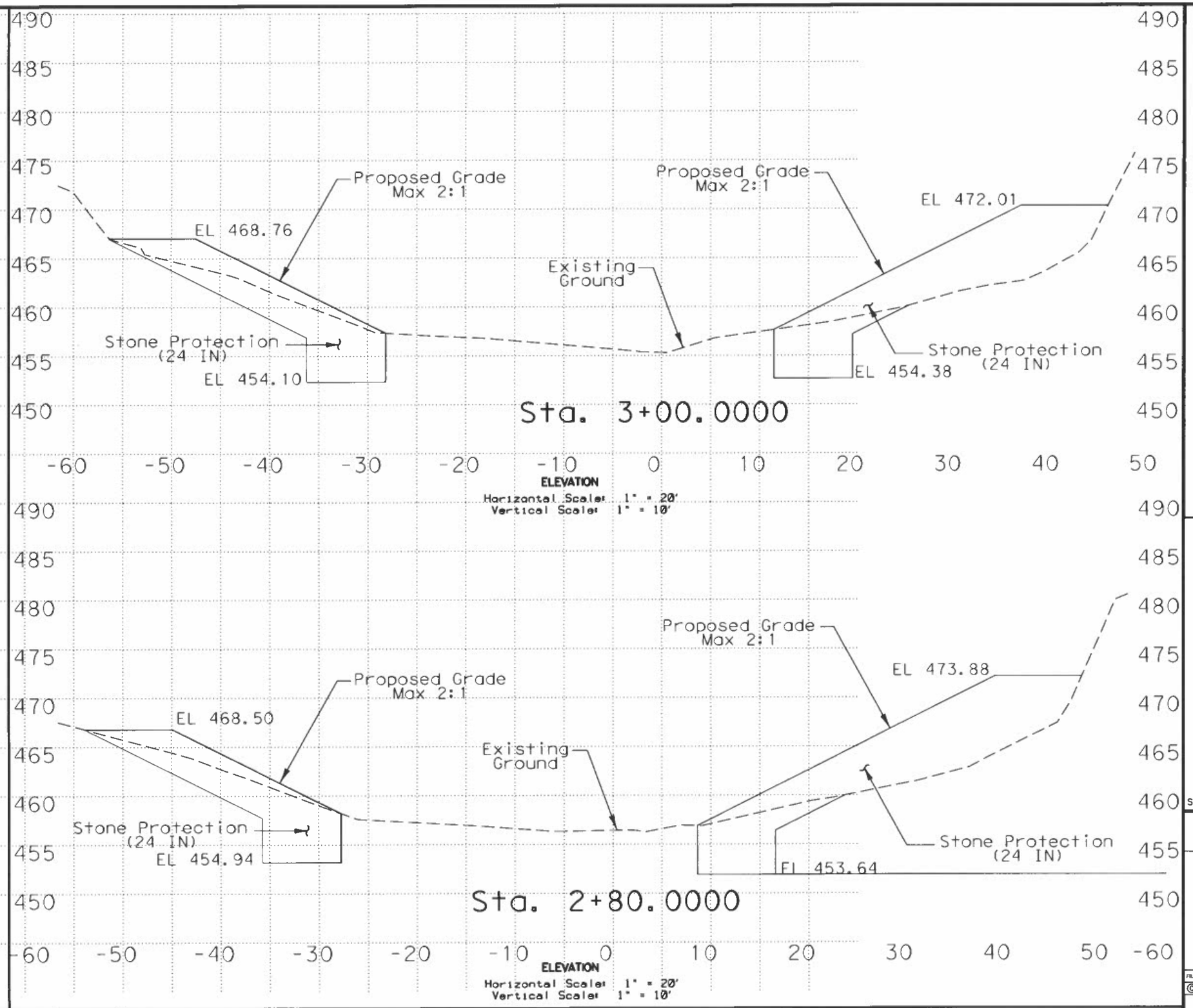
Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 2+60

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	100	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		49



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 14 of 25 Sheets

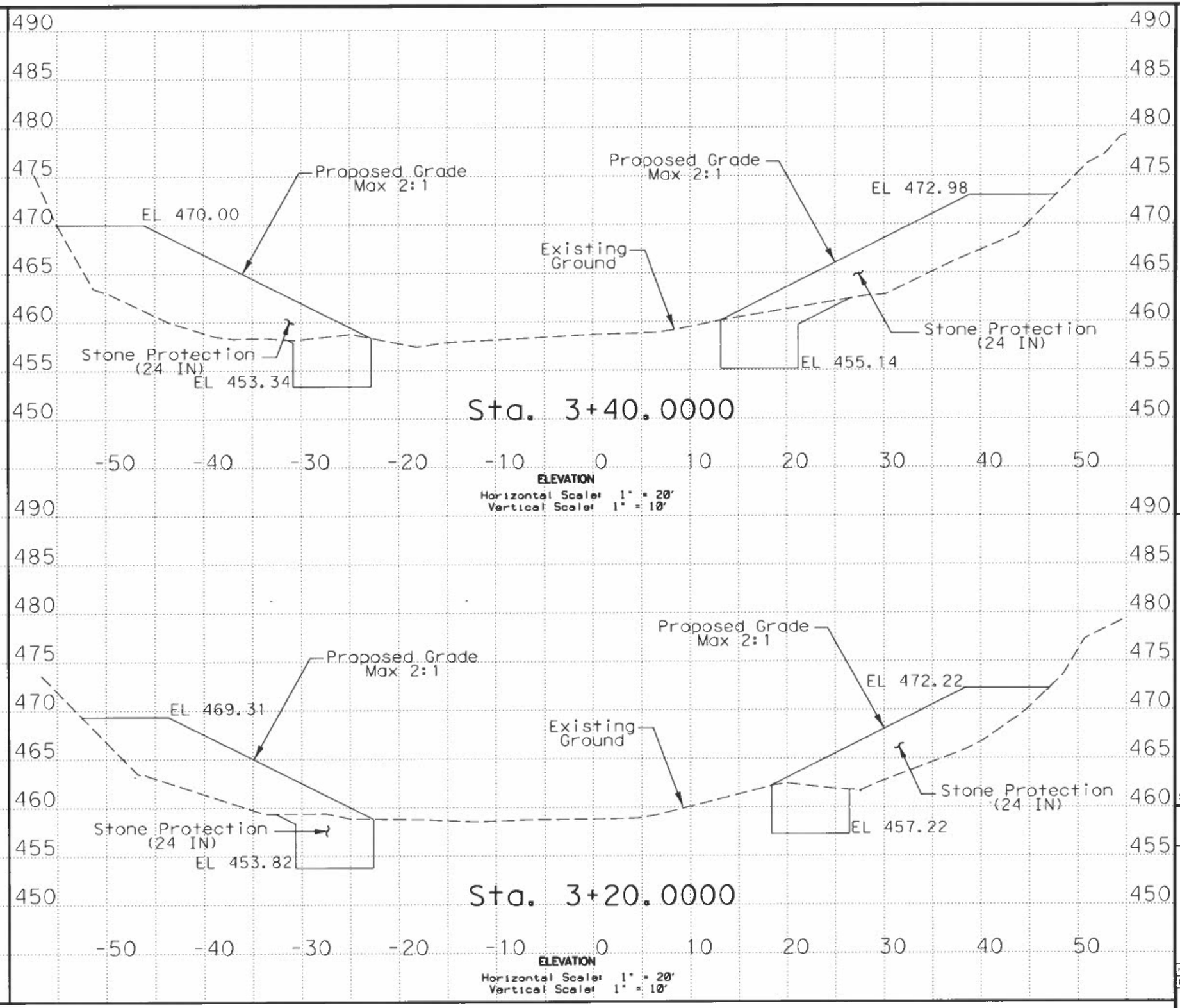
Texas Department of Transportation

Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH
CROSS SECTIONS
STA 2+80 TO 3+00

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		50

DATE: 12/15/2022 TIME: 2:13:01 PM FILE: T:\DALBRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12 SAL.dgn dalbrdg



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 15 of 25 Sheets

Texas Department of Transportation

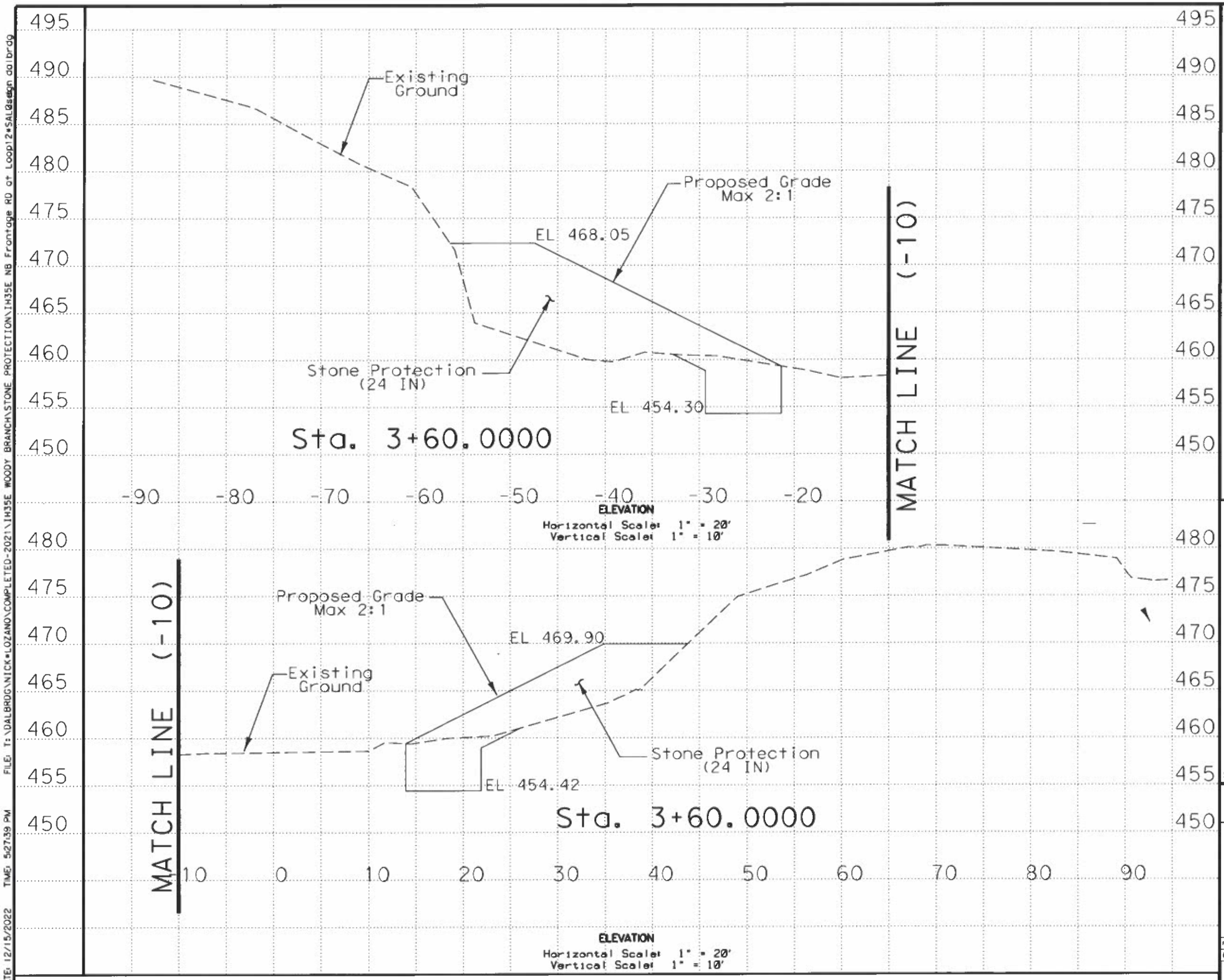
Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 3+20 TO 3+40

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO
	DAL	DALLAS		51



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 16 of 25 Sheets

Texas Department of Transportation

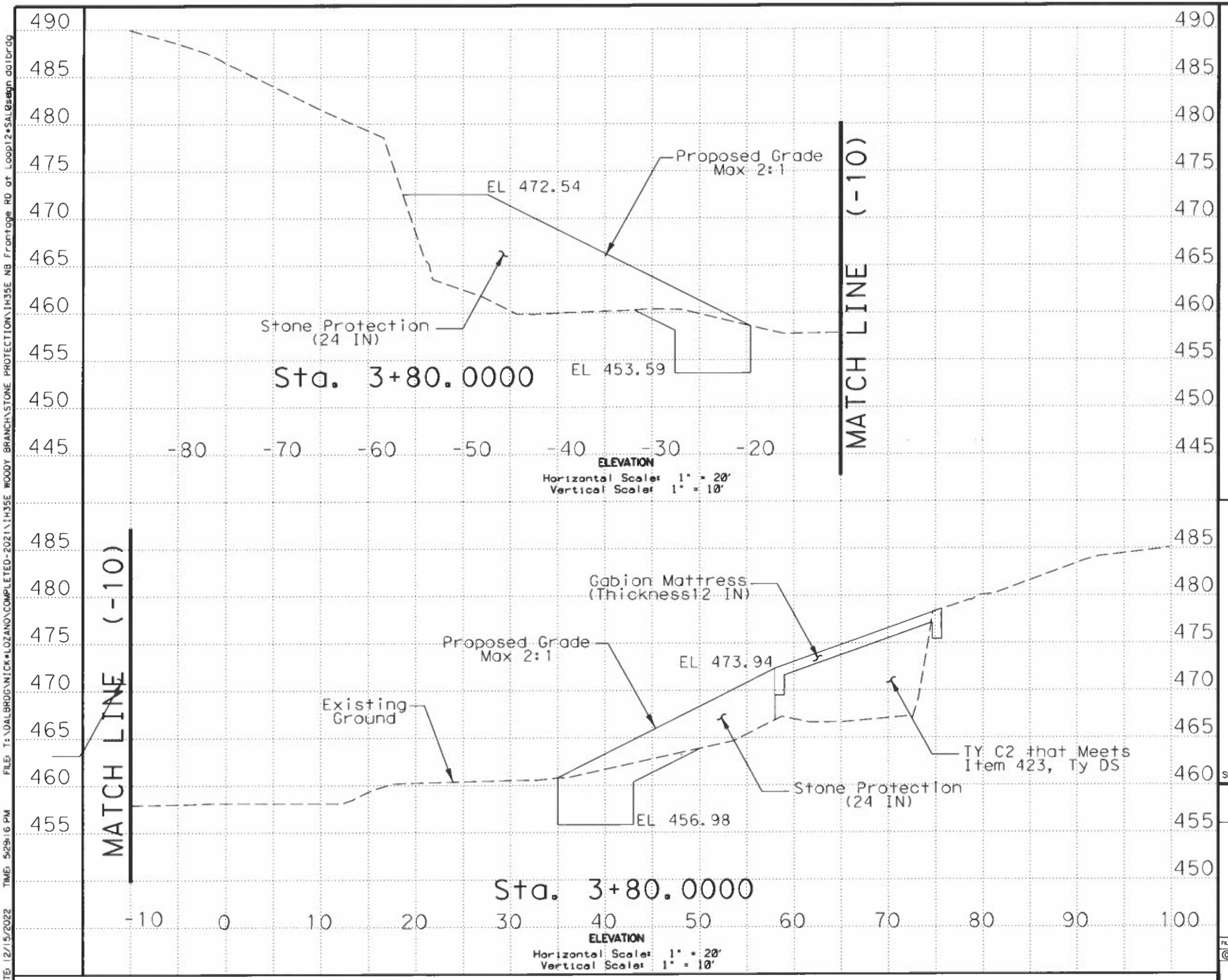
Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 3+60 TO 3+80

FILE: SEE PATH	DW: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	100	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		52



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 17 of 25 Sheets

Texas Department of Transportation

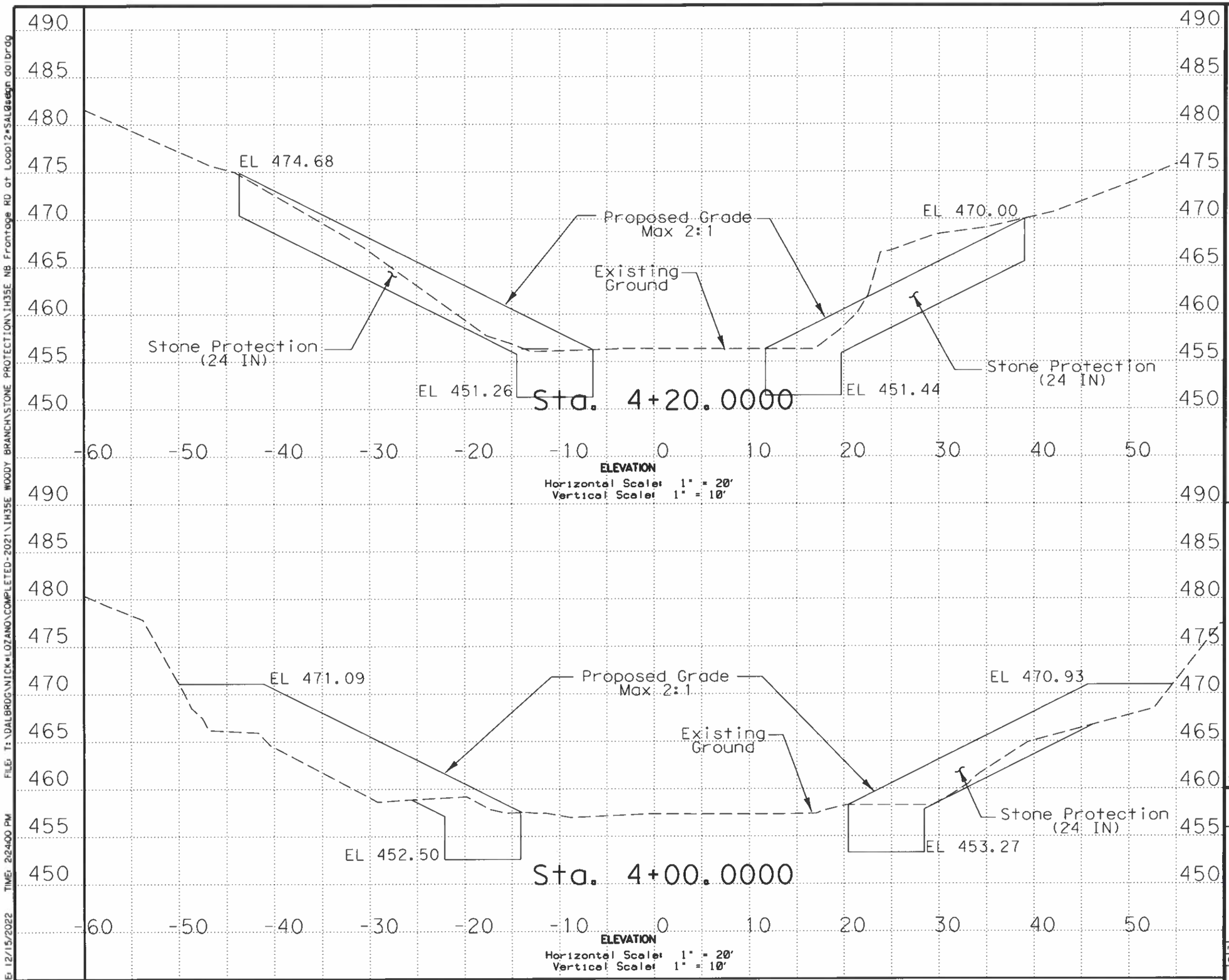
Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 3+60 TO 3+80

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	100	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		53



DATE: 12/15/2022 TIME: 2:24:00 PM FILE: T:\DALBRDG\NICK.LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12.SAL dgn dalbrdg

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 18 of 25 Sheets

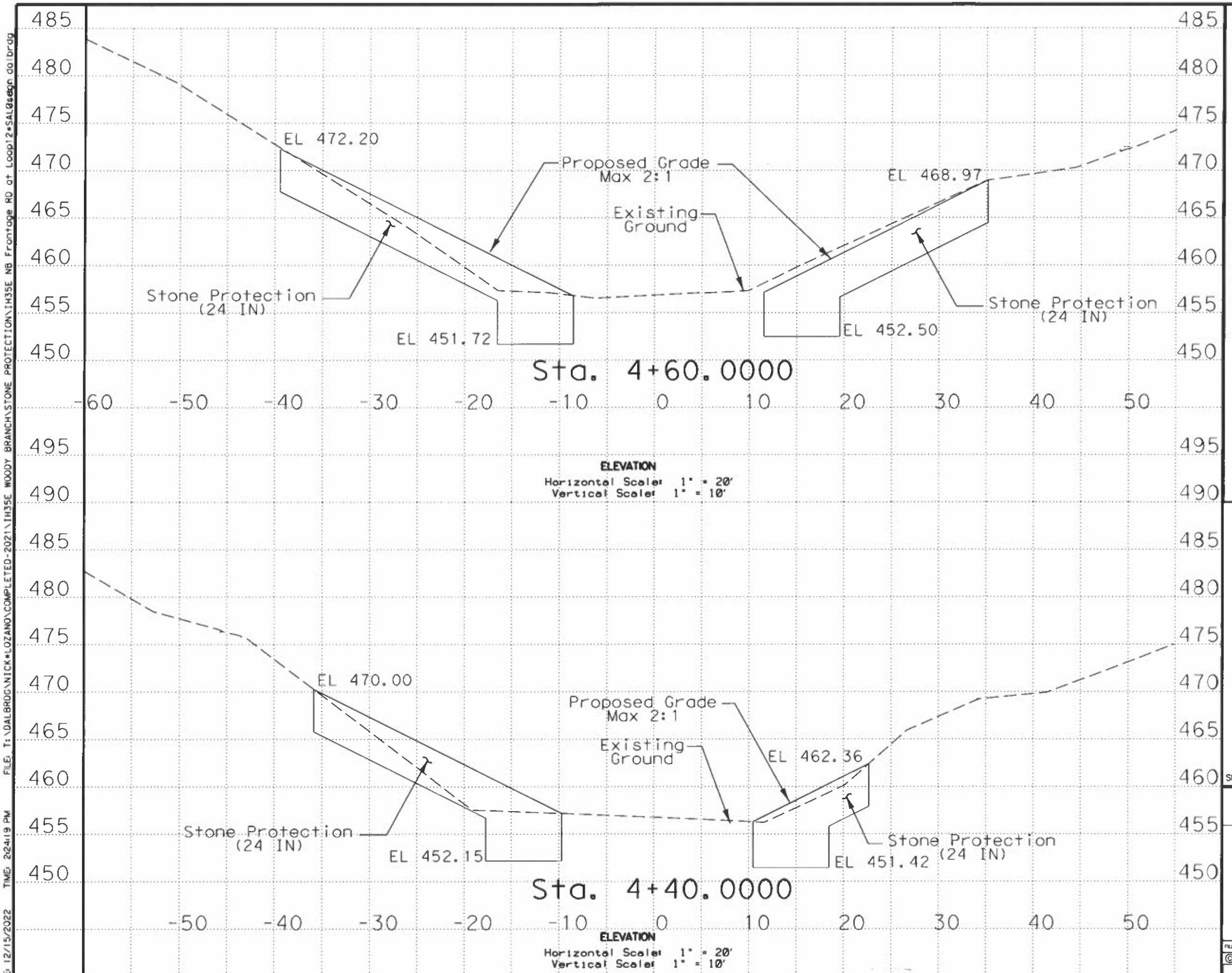
Texas Department of Transportation

Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS STA 4+00 TO 4+20

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	100	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		54



ELEVATION
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 10'

ELEVATION
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 10'

STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

12/15/2022

Sheet 19 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

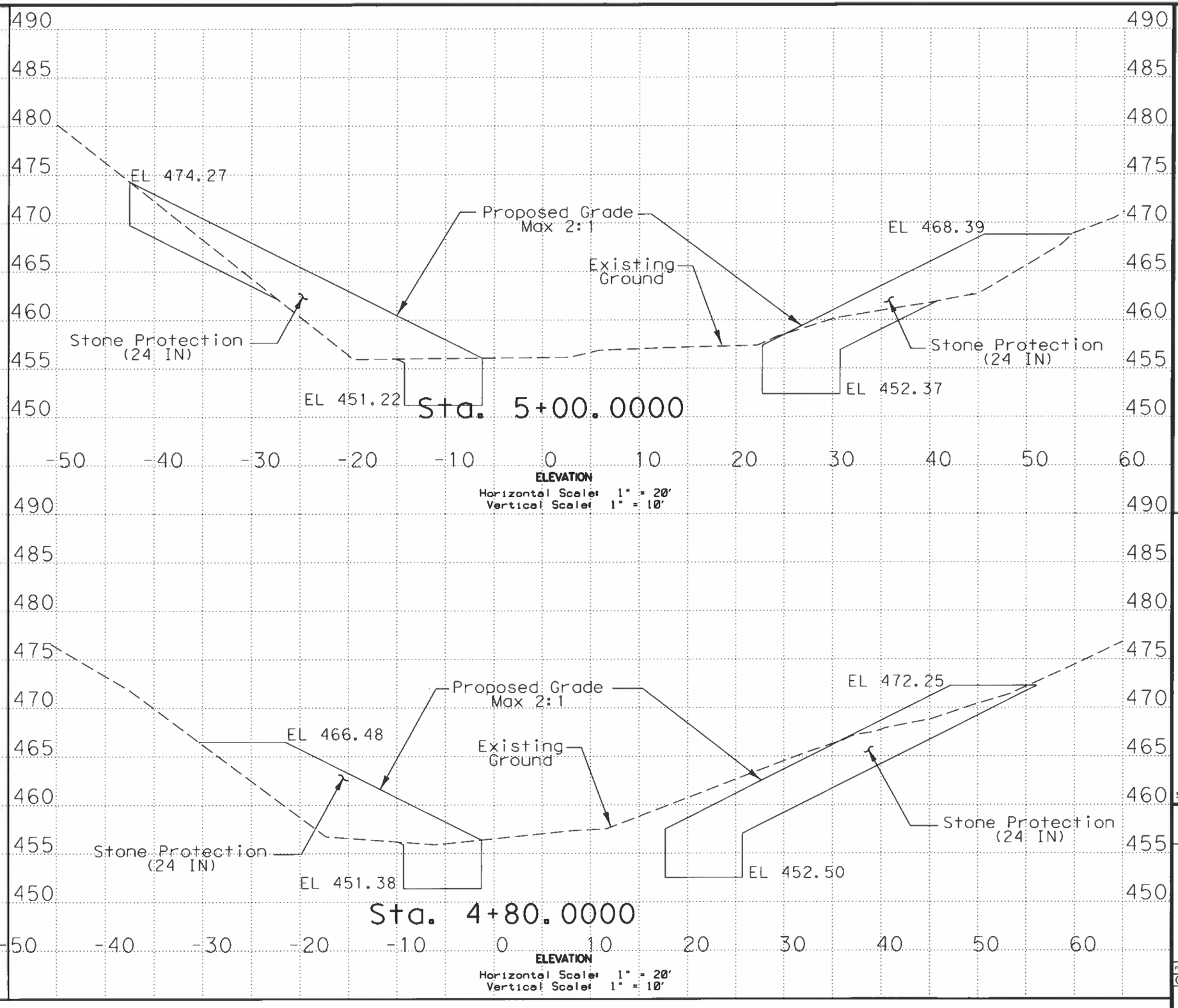
IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 4+40 TO 4+60

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		55

DATE: 12/15/2022 TIME: 2:24:19 PM FILE: T:\DALBRDG\NICK*LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@sdgn dolbrdg



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

12/15/2022

Sheet 20 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

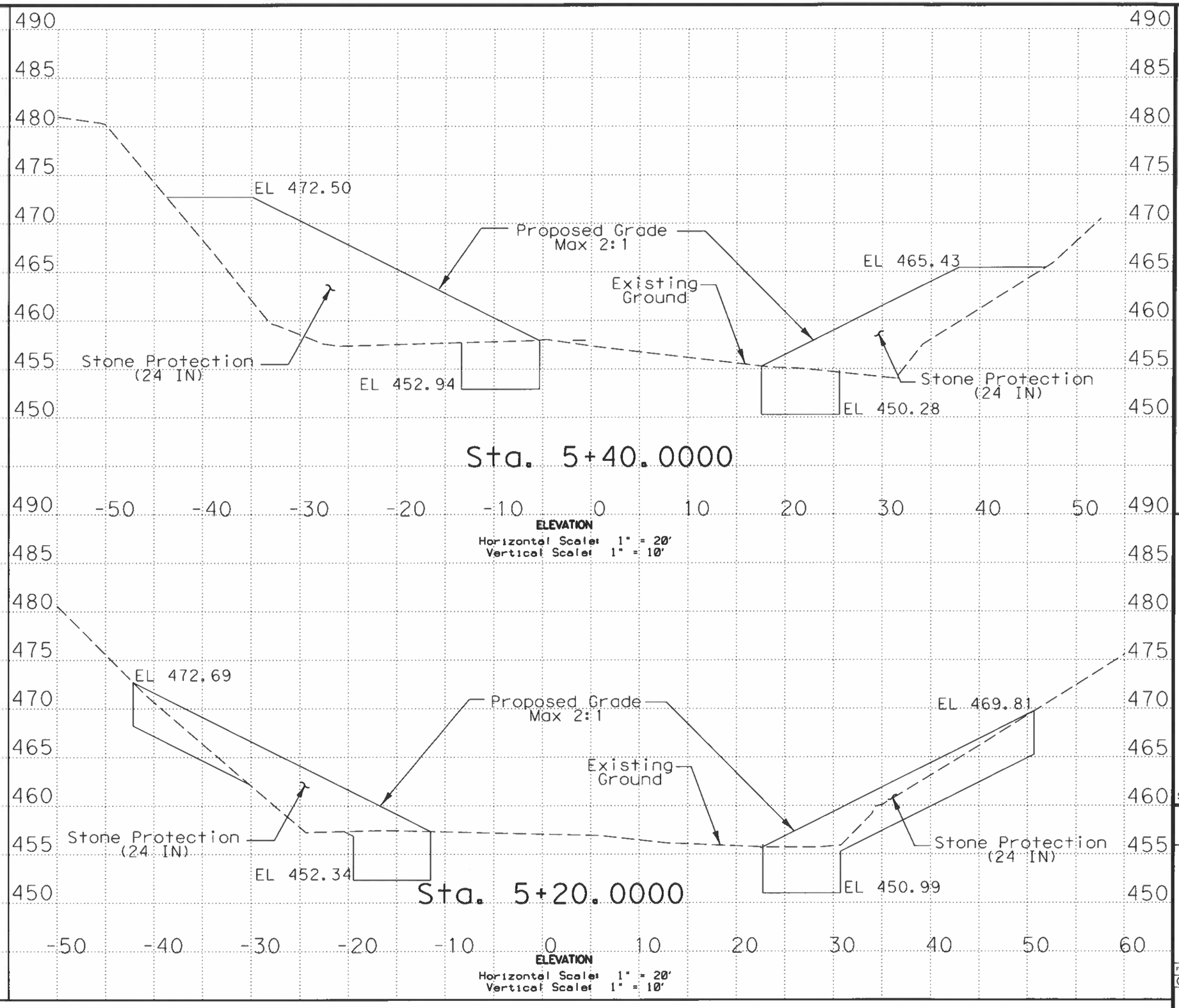
IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 4+80 TO 5+00

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		56

DATE: 12/15/2022 TIME: 2:24:33 PM FILE: T:\DAL\BRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12•SAL@sign dolbrdg



NICASIO LOZANO
89964
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Nicasio Lozano
12/15/2022

Sheet 21 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

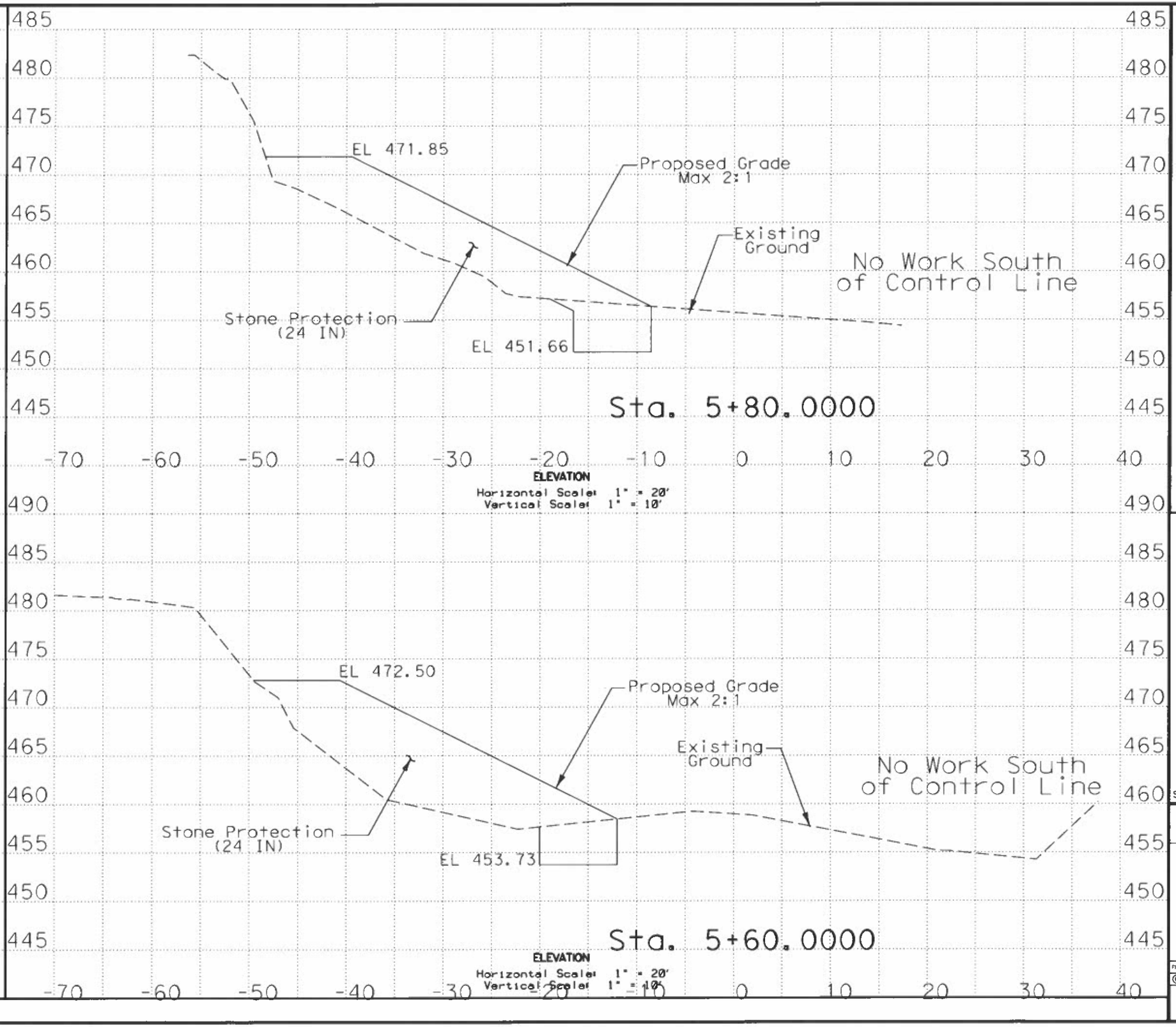
IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

STA 5+20 TO 5+40

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		57

DATE: 12/15/2022 TIME: 2:24:51 PM FILE: T:\DAL\BRDG\NICK\LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12.SAL design dalbrdg



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 22 of 25 Sheets

Texas Department of Transportation

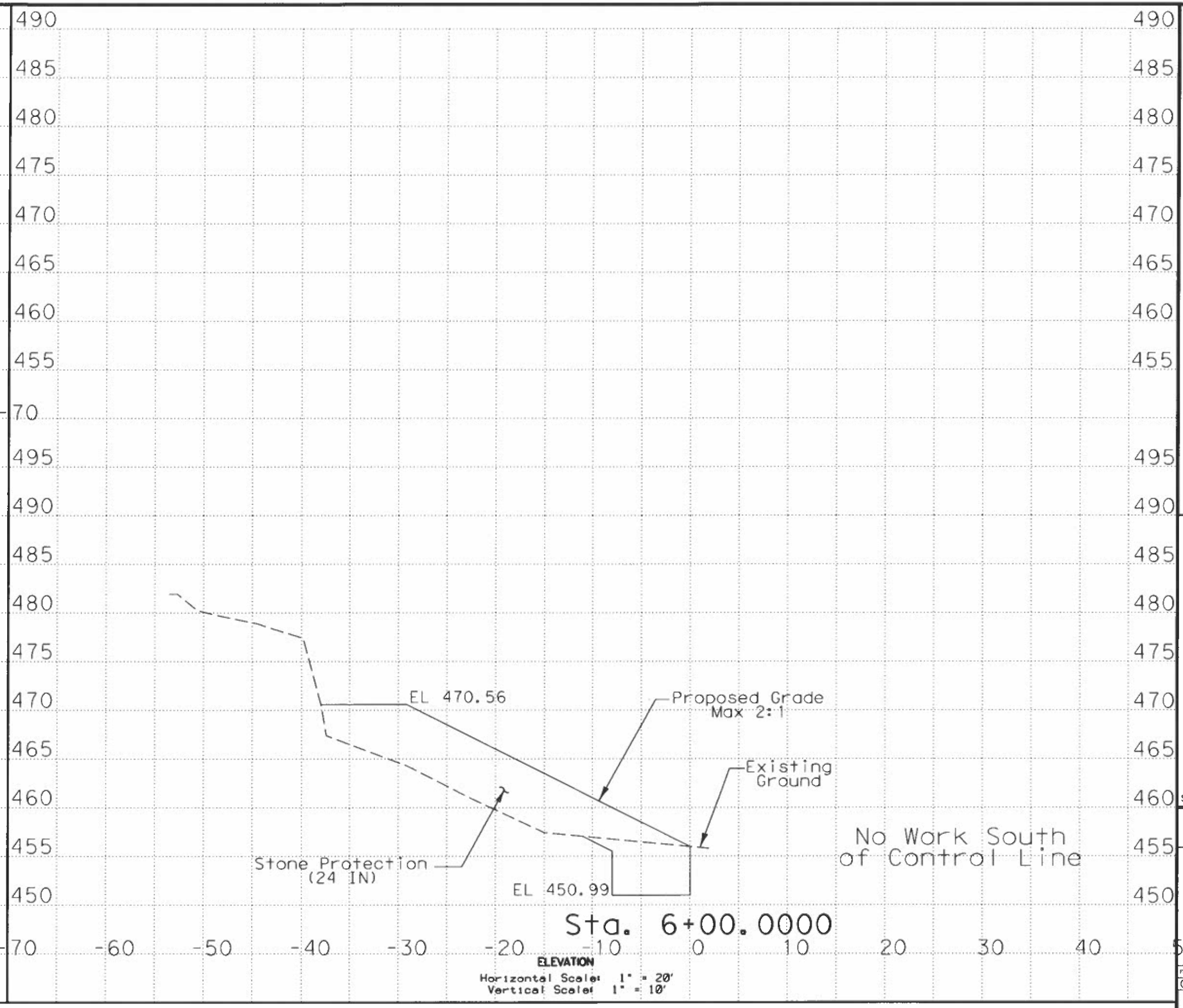
Dallas District Bridge

IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS
STA 5+60 TO 5+80

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		58

DATE: 12/15/2022 TIME: 2:25:06 PM FILE: T:\DALBROG\NICK*LOZANO\COMPLETED-2021\IH35E WOODY BRANCH\STONE PROTECTION\IH35E NB Frontage RD at Loop12*SAL@sdgn dolbrdg



STATE OF TEXAS
NICASIO LOZANO
89964
LICENSED
PROFESSIONAL ENGINEER

Nicasio Lozano
12/15/2022

Sheet 23 of 25 Sheets

Texas Department of Transportation

Dallas District Bridge

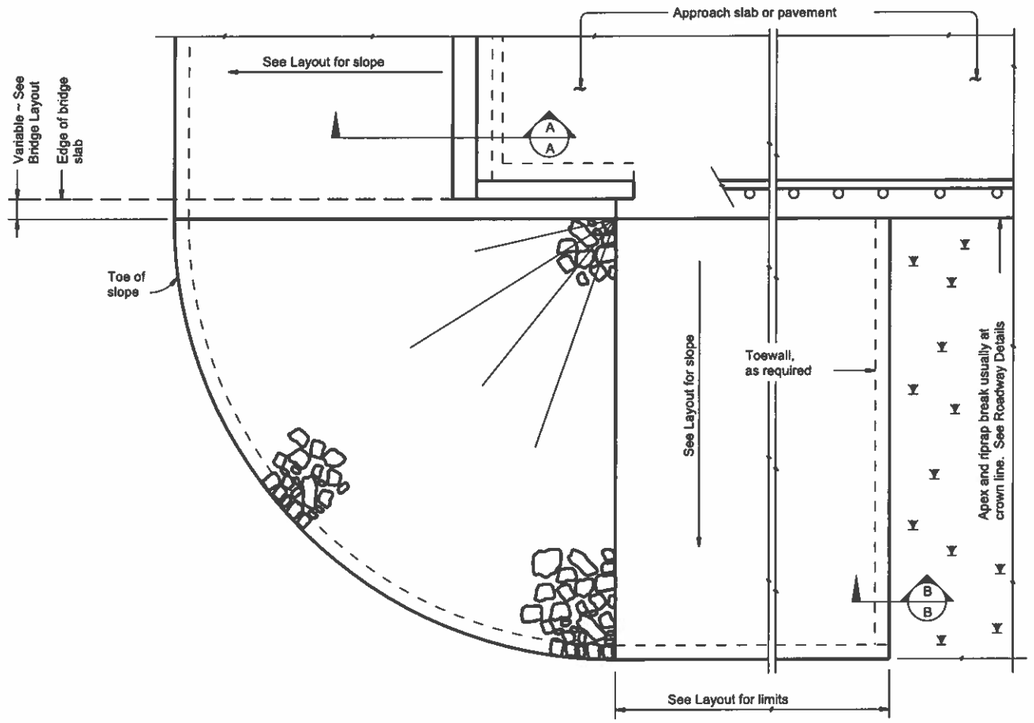
IH 35E SLOPE REPAIR AT WOODY BRANCH

CROSS SECTIONS

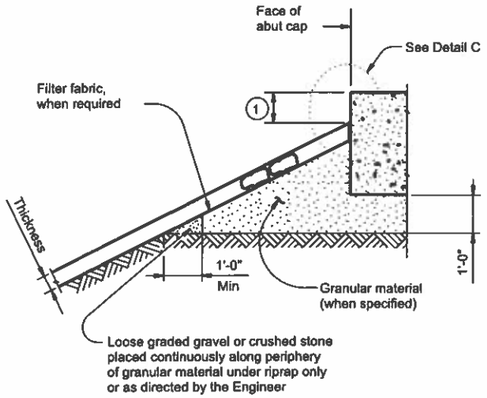
STA 6+00 TO 6+20

FILE: SEE PATH	DN: NL	CK: NI	DW: NI	CK: NL
©TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	189	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		59

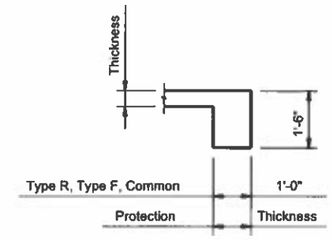
DATE:
FILE:



PLAN

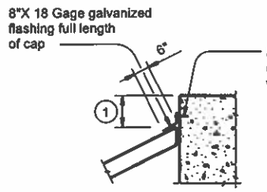


SECTION A-A AT CAP

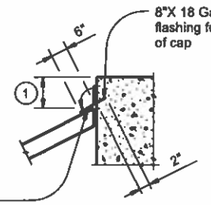


SECTION B-B

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

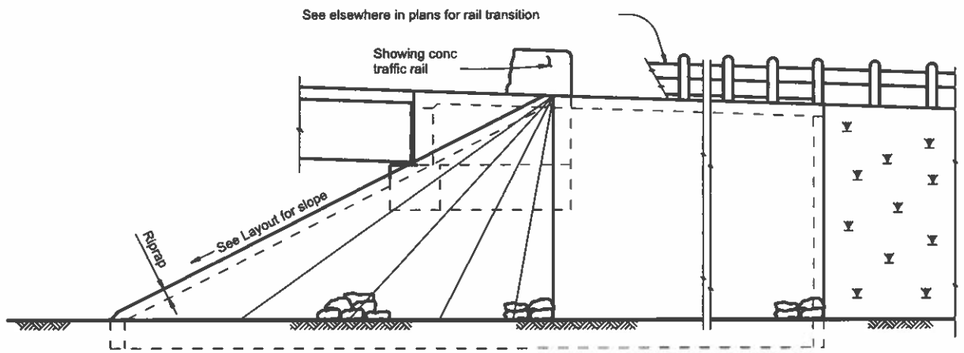


CAP OPTION A



CAP OPTION B

DETAIL C



ELEVATION

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.

(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.

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrside1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		60

DATE:
FILE:

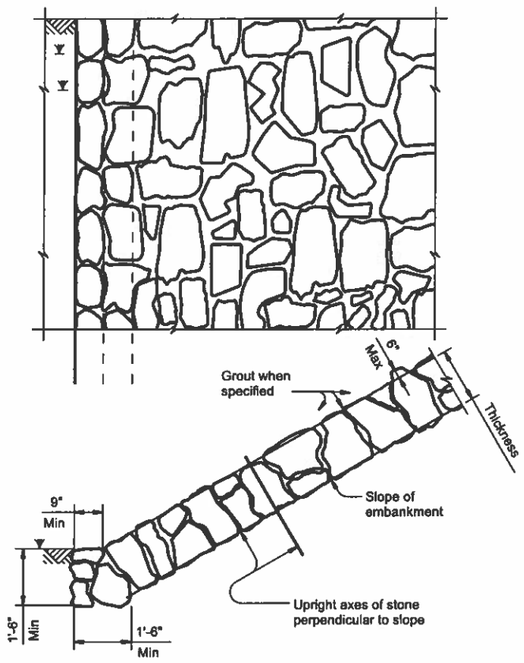


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

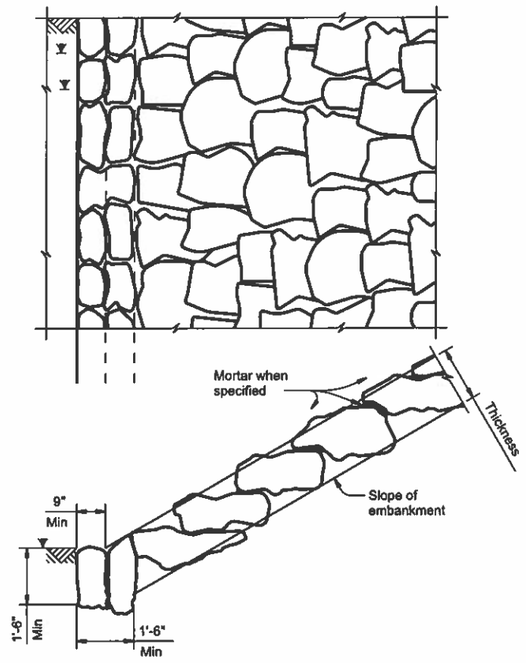


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

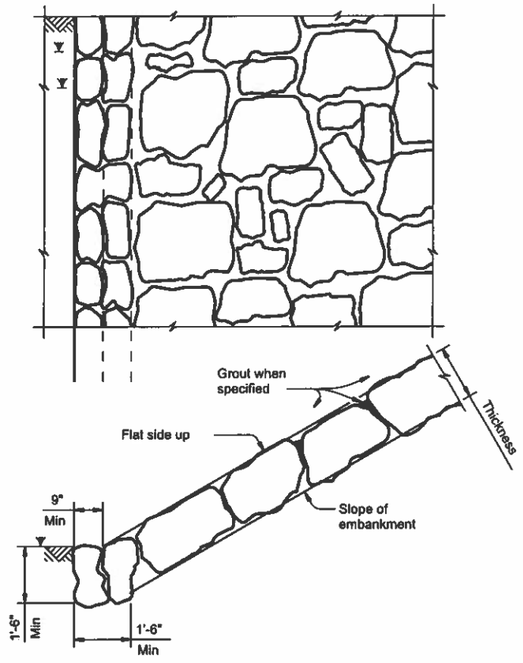


FIGURE 3 ~ TYPE F STONE RIPRAP

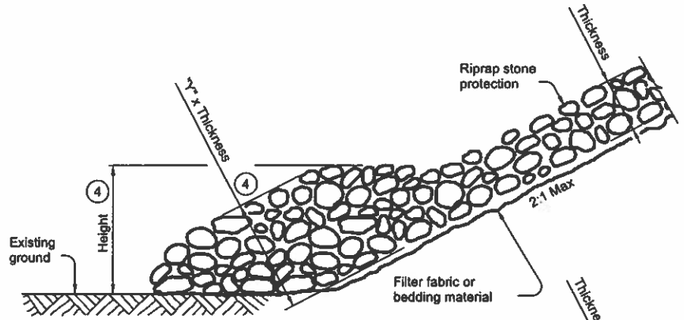
grouted

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

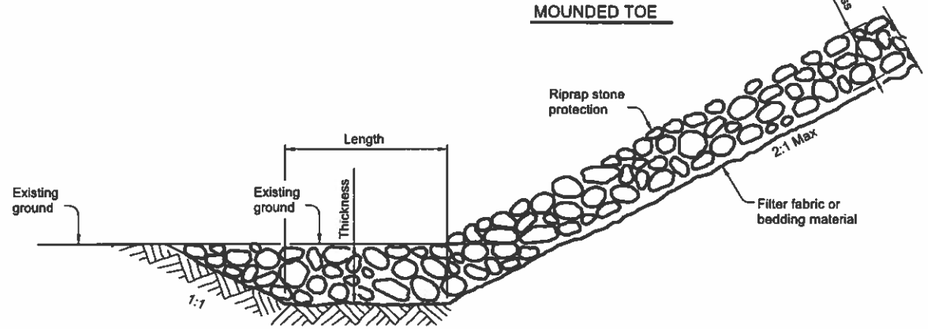
(3) Minimum toe depth is 5'.

(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)

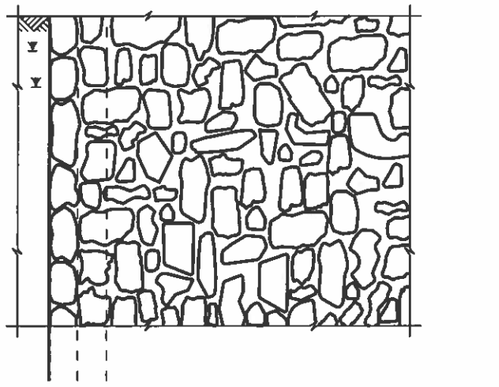


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

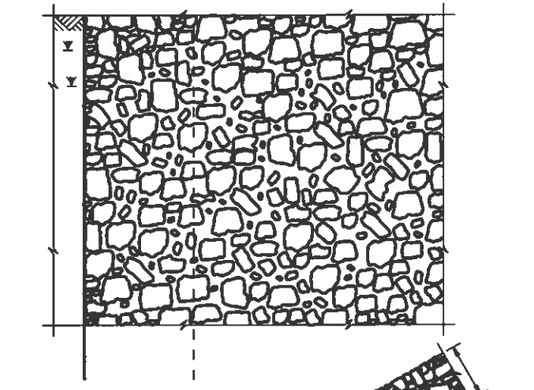


FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

Nicasio Lozano
12/15/2022

Only minimum toe depth is modified.

Sheet 25 of 25 SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

STONE RIPRAP

(MOD)

SRR (MOD)

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		61

SUMMARY OF ESTIMATED QUANTITIES

BID CODE	DESCRIPTION	UNIT	QUANTITY				Total
			18-057-0-0442-02-055 NBFR	18-057-0-0442-02-056 NBML	18-057-0-0442-02-057 SBFR	18-057-0-0442-02-074 SBML	
0429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SY	0	20	10	10	40
0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	412	590	364	784.5	2150.5
0451 6032	RETROFIT RAIL (TY C221)(HPC)	LF	453	0	378	0	831
0451 6061	RETROFIT RAIL (TY T222)(HPC)	LF	0	255	0	255	510
0531 6003	CONC SIDEWALKS (6")*	SY	20	0	40	0	60

*Roadway Bid Item

DETAILS OF ESTIMATED QUANTITIES

NBI	Feature Crossed	Facility Carried	Location	0429 6007 CONC STR REPAIR (VERTICAL & OVERHEAD) SY	0438 6004 CLEANING AND SEALING EXIST JOINTS(CL7) LF	0451 6032 RETROFIT RAIL (TY C221)(HPC) LF	0451 6061 RETROFIT RAIL (TY T222)(HPC) LF	0531 6003 CONC SIDEWALKS (6") SY
18-057-0-0442-02-055	Woody Branch	IH 35E NBFR	Approach slab		32	24		10
			Abutment 1		58			
			Span 1			81		
			Bent 2		58			
			Span 2			81		
			Bent 3		58			
			Span 3			81		
			Bent 4		58			
			Span 4			81		
			Bent 5		58			
			Span 5			81		
			Abutment 6		58			
			Approach slab		32	24		10
18-057-0-0442-02-056	Woody Branch	IH 35E NBML	Approach slab		58		13	
			Abutment 1		79			
			Span 1				43.5	
			Bent 2		79			
			Span 2				43.5	
			Bent 3	10	79			
			Span 3				57	
			Bent 4	10	79			
			Span 4				43.5	
			Bent 5		79			
			Span 5				43.5	
			Abutment 6		79			
			Approach slab		58		11	
18-057-0-0442-02-057	Woody Branch	IH 35E SBFR	Approach slab		32	24		20
			Abutment 1		50			
			Span 1			66		
			Bent 2		50			
			Span 2			66		
			Bent 3	10	50			
			Span 3			66		
			Bent 4		50			
			Span 4			66		
			Bent 5		50			
			Span 5			66		
			Abutment 6		50			
			Approach slab		32	24		20
18-057-0-0442-02-074	Woody Branch	IH 35E SBML	Approach slab		73		13	
			Abutment 1		103			
			Span 1				43.5	
			Bent 2		103.5			
			Span 2				43.5	
			Bent 3	10	104.5			
			Span 3				57	
			Bent 4		106			
			Span 4				43.5	
			Bent 5		107			
			Span 5				43.5	
			Abutment 6		108.5			
			Approach slab		79		11	

GENERAL NOTES:

QUANTITIES VARIATIONS:

1. Quantities shown are based on the best information available. Actual quantities shall be field measured and paid for at the unit price bid. Limits of work for surface repairs shall be as directed by the Engineer.
2. Field verify limits and quantities shown prior to beginning work. Report substantial discrepancies to the Engineer Of Record for resolution adjustment of quantities as deemed neccessary. Payment will be for the field measured repair at the unit price bid.

UNEXPECTED CONDITIONS:

1. If conditions other than those indicated are encountered, perform repairs in accordance with any applicable details provided in the plans. In the event that no details provided fit the situation encountered, place temporary protection over the location as directed by the Engineer and refer the problem to the District Bridge Section for resolution. Provide the District Bridge Section with appropriate photos, sketches with dimensions and other material necessary to fully describe the problem.

CONCRETE AND STEEL REQUIREMENTS:

1. For deck repair, use Class K concrete with aggregate grades 2-5 meeting a strength requirement of 4000 psi at 4 hours of curing time. Use Type A bagged materials in accordance with DMS 4655 as an alternative.
2. For concrete spalls repair, use Class "C" Concrete. Fc' = 3600 psi. Use Type C repair materials in accordance with DMS 4655 as an alternative.
3. All reinforcing steel shall be grade 60.
4. Concrete shall be of a low shrinkage or shrinkage controlled type.
5. Submit proposed repair material to the Engineer for approval.
6. Existing concrete shall be in saturated surface dry condition at the time of new concrete placement.
7. Provide repair materials and Perform all concrete repair work in accordance with Item 429 and TXDOT 2021 Concrete Repair Manual

STATE OF TEXAS
NAPAT INTHARASOMBAT
102136
LICENSED PROFESSIONAL ENGINEER

11/04/2022

Texas Department of Transportation

Dallas District Bridge

IH 35E
BRIDGE REPAIR

GENERAL NOTES AND ESTIMATED REPAIR QUANTITIES

FILE: SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		62

TABLE OF REPAIRS (NBI# 18-057-0442-02-055) NBFR						
Repair ID.	Item	Description	Unit	Quantity	Repair Description/Locator	Details/Notes
B	0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	412	Clean and reseal failed joints	See CLEANING AND SEALING EXISTING BRIDGE JOINT DETAILS
C	0451 6032	RETROFIT RAIL (TY C221)(HPC)	LF	453	Retrofit existing combination rail	See RETROFIT GUIDE FOR CONCRETE RAILS (T222, C221) SHEETS
E	0531 6003	CONC SIDEWALKS (6")	SY	20	NE & SE quadrants	See SIDEWALK REMOVAL AND REPLACEMENT SHEET

TABLE OF REPAIRS (NBI# 18-057-0442-02-056) NBML						
Repair ID.	Item	Description	Unit	Quantity	Repair Description/Locator	Details/Notes
A	0429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	20	Honeycombing at Columns on Bents 3 & 4	See CONCRETE VERTICAL AND OVERHEAD REPAIR DETAILS
B	0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	590	Clean and reseal failed joints	See CLEANING AND SEALING EXISTING BRIDGE JOINT DETAILS
D	0451 6061	RETROFIT RAIL (TY T222)(HPC)	LF	255	Retrofit existing traffic rail	See RETROFIT GUIDE FOR CONCRETE RAILS (T222, C221) SHEETS

TABLE OF REPAIRS (NBI# 18-057-0442-02-057) SBFR						
Repair ID.	Item	Description	Unit	Quantity	Repair Description/Locator	Details/Notes
A	0429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	10	Spalls at Bent 3	See CONCRETE VERTICAL AND OVERHEAD REPAIR DETAILS
B	0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	364	Clean and reseal failed joints	See CLEANING AND SEALING EXISTING BRIDGE JOINT DETAILS
C	0451 6032	RETROFIT RAIL (TY C221)(HPC)	LF	378	Retrofit existing combination rail	See RETROFIT GUIDE FOR CONCRETE RAILS (T222, C221) SHEETS
E	0531 6003	CONC SIDEWALKS (6")	SY	40	All quadrants	See SIDEWALK REMOVAL AND REPLACEMENT SHEET

TABLE OF REPAIRS (NBI# 18-057-0-0442-02-074) SBML						
Repair ID.	Item	Description	Unit	Quantity	Repair Description/Locator	Details/Notes
A	0429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	10	Honeycombing at Columns on Bent 3	See CONCRETE VERTICAL AND OVERHEAD REPAIR DETAILS
B	0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)	LF	784.5	Clean and reseal failed joints	See CLEANING AND SEALING EXISTING BRIDGE JOINT DETAILS
D	0451 6061	RETROFIT RAIL (TY T222)(HPC)	LF	255	Retrofit existing traffic rail	See RETROFIT GUIDE FOR CONCRETE RAILS (T222, C221) SHEETS

11/07/2022

Texas Department of Transportation

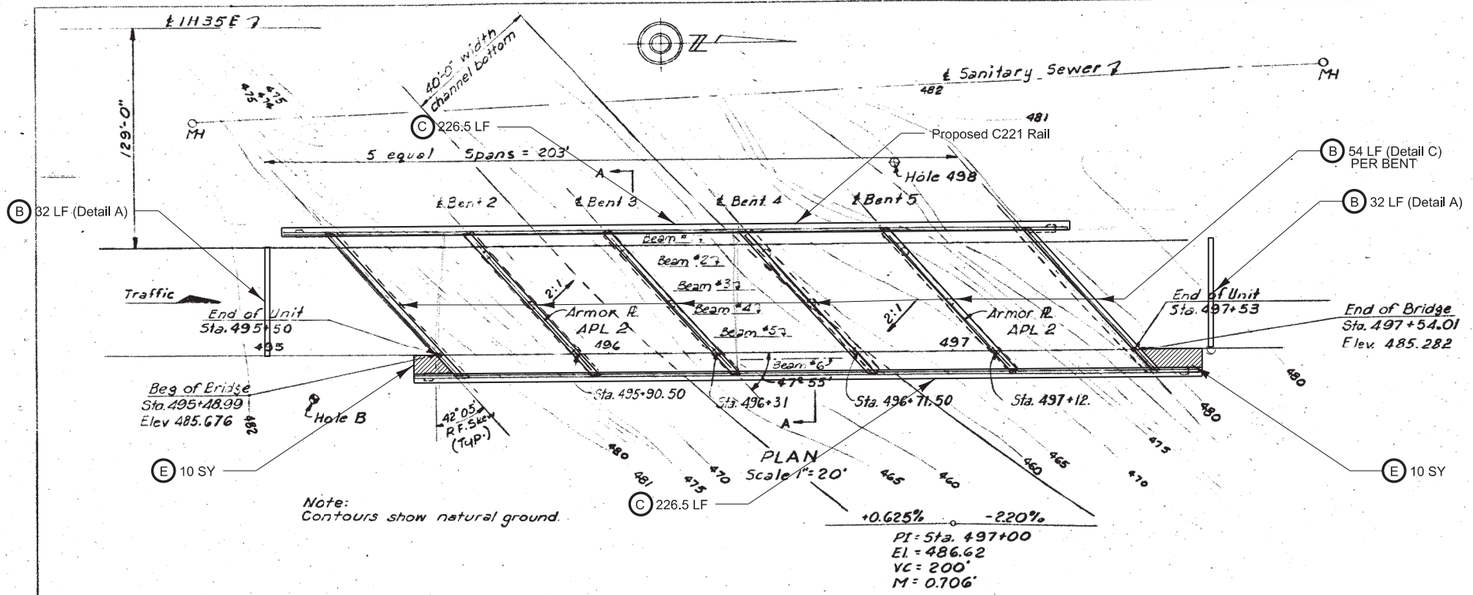
Dallas District Bridge

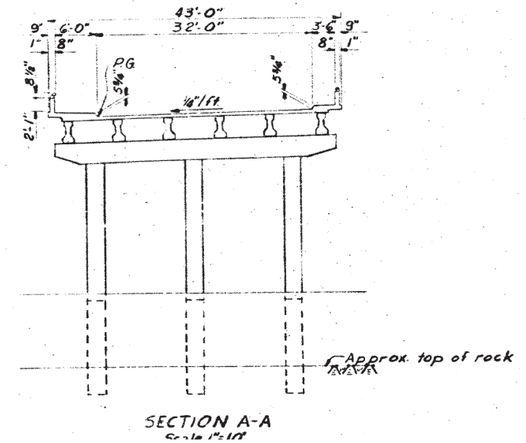
IH 35E
BRIDGE REPAIR

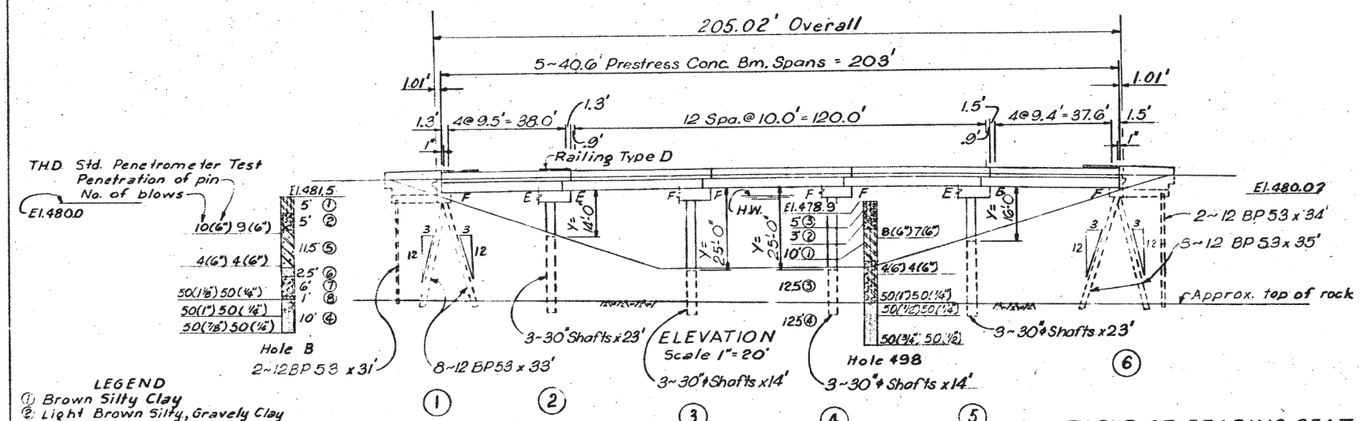
TABLE OF REPAIRS

FILE: SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		63

B	0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)
C	0451 6032	RETROFIT RAIL (TY C221)(HPC)
E	0531 6003	CONC SIDEWALKS (6")







LEGEND
1. Brown Silty Clay
2. Light Brown Silty, Gravely Clay
3. Brown Silty Clay - Chalk Aggregate
4. Austin Chalk
5. Yellow & Grey Clay - some Gravel
6. Yellow Clay - soft, damp
7. Yellow Sandy, Gravely Clay
8. Light Grey Shale

Note: Lengths of Drilled Shafts and Piling are estimated. All shafts and Piling(except those under wingwalls) shall be founded a minimum of 1'-0" into sound Austin Chalk.

TABLE OF BEARING SEAT ELEVATIONS

	Beam #1		Beam #2		Beam #3		Beam #4		Beam #5		Beam #6	
Abut. #1	482.702		482.594		482.487		482.379		482.271		482.164	
	South	North	South	North	South	North	South	North	South	North	South	North
Bent #2	482.944	482.956	482.836	482.848	482.728	482.740	482.621	482.633	482.513	482.525	482.406	482.418
Bent #3	483.197	483.209	483.086	483.096	482.969	482.977	482.846	482.852	482.717	482.722	482.583	482.585
Bent #4	483.330	483.330	483.182	483.180	483.028	483.025	482.868	482.863	482.702	482.696	482.531	482.523
Bent #5	483.229	483.219	483.044	483.032	482.853	482.839	482.657	482.641	482.455	482.437	482.247	482.227
Abut. #6	482.895		482.674		482.446		482.213		481.974		481.729	

Repair quantities and locations may vary in the field; limits of repair shall be as directed by the Engineer.

Rev 9-23-63

STATE OF TEXAS
NAPAT INTHARASOMBAT
102136
LICENSED
PROFESSIONAL ENGINEER
11/07/2022

NBI# 18-057-0-0442-02-055 NBFR

Design Notes:
Bridge designed for H20 loading under 1961 AASHO spec.

Texas Department of Transportation

Dallas District Bridge

IH 35E NBFR

IH 35E OVERPASS ESTIMATED REPAIR QUANTITIES REPAIR LAYOUT

FILE:	SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT	2021	CONT	SECT	JOB	HIGHWAY
REVISIONS		0442	02	169	IH 35E
		DIST	COUNTY		SHEET NO.
		DAL	DALLAS		64

(B) CLEANING AND SEALING EXIST JOINTS(CL7)

(C) RETROFIT RAIL (TY C221)(HPC)

(E) SIDEWALK REMOVAL AND REPLACE

NOTE:
Photographs are provided for Contractor's information and are intended to show a generalized idea of the structure's condition. Extent of damage may vary from what is shown in photos.

STATE OF TEXAS
NAPAT INTHARASOMBAT
102136
LICENSED PROFESSIONAL ENGINEER

11/04/2022

NBI# 18-057-0-0442-02-055 NBFR

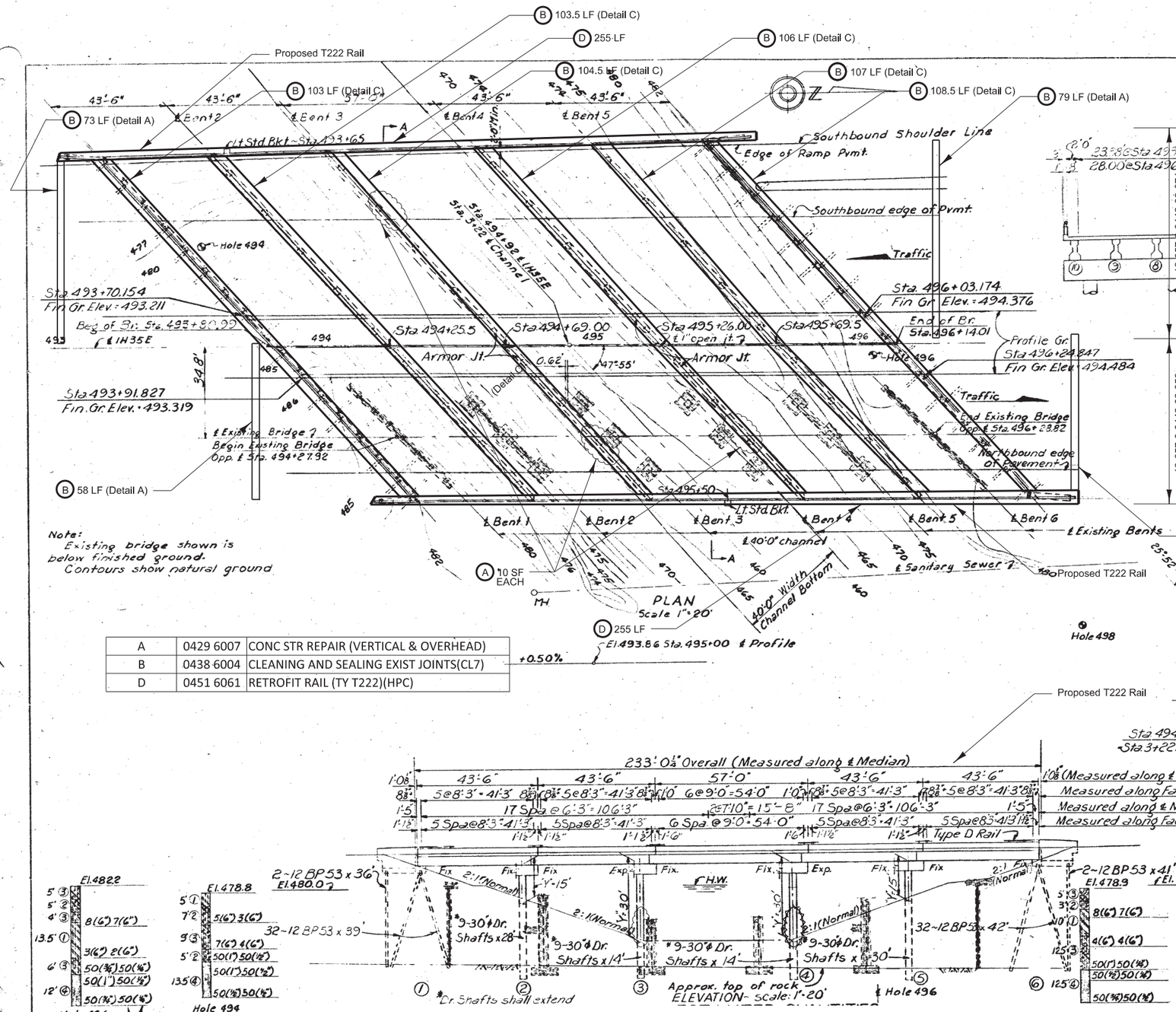
Texas Department of Transportation | Dallas District Bridge

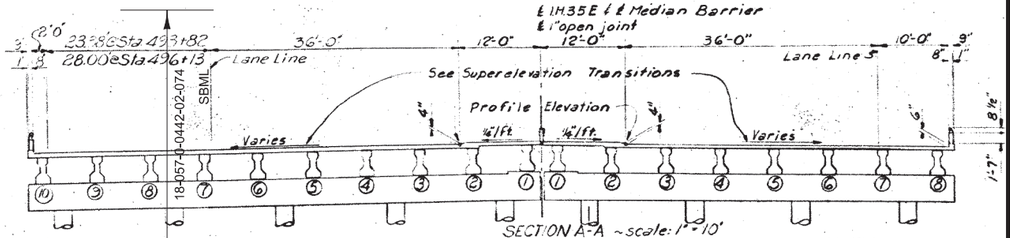
IH 35E

BRIDGE REPAIR PICTURES

NBI# 18-057-0-0442-02-055 NBFR

FILE: SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		65





BEARING SEAT ELEVATIONS ~ SOUTHBOUND ROADWAY

	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6	Beam 7	Beam 8	Beam 9	Beam
Abut #1	489.829	489.271	489.236	489.210	489.197	489.197	489.204	489.223	489.257	489.2
Bent 2 Bk.	490.037	489.487	489.417	489.359	489.311	489.274	489.251	489.235	489.235	489.2
2 Fwd	490.047	489.496	489.424	489.364	489.314	489.277	489.249	489.237	489.231	489.2
3 Bk	490.255	489.711	489.604	489.510	489.426	489.355	489.295	489.246	489.206	489.17
3 Fwd	490.264	489.719	489.609	489.511	489.427	489.352	489.291	489.238	489.201	489.1
4 Bk	490.540	490.002	489.848	489.703	489.572	489.450	489.343	489.248	489.160	489.0
4 Fwd	490.549	490.010	489.852	489.705	489.570	489.448	489.335	489.237	489.152	489.0
5 Bk	490.757	490.219	490.060	489.903	489.745	489.587	489.429	489.272	489.119	489.0
5 Fwd	490.767	490.226	490.066	489.906	489.746	489.587	489.428	489.268	489.103	489.0
Abut #6	490.975	490.434	490.274	490.114	489.955	489.795	489.636	489.476	489.316	489.1

18-057-0-0442-02-056 NBML

BEARING SEAT ELEVATIONS ~ NORTHBOUND ROADWAY

	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6	Beam 7	Beam
Abut #1	489.873	489.411	489.323	489.233	489.149	489.067	488.974	488.8
Bent 2 Bk.	490.083	489.618	489.531	489.445	489.362	489.278	489.196	489.1
2 Fwd	490.093	489.628	489.541	489.454	489.372	489.287	489.206	489.1
3 Bk	490.301	489.836	489.749	489.667	489.584	489.501	489.417	489.3
3 Fwd	490.310	489.845	489.759	489.677	489.594	489.511	489.427	489.3
4 Bk	490.586	490.120	490.037	489.953	489.870	489.786	489.702	489.6
4 Fwd	490.595	490.130	490.047	489.963	489.880	489.796	489.712	489.6
5 Bk	490.803	490.338	490.254	490.171	490.088	490.001	489.920	489.8
5 Fwd	490.813	490.347	490.264	490.180	490.097	490.013	489.929	489.8
Abut #6	491.021	490.555	490.412	490.388	490.305	490.221	490.137	490.0

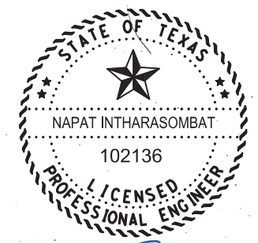
18-057-0-0442-02-074 SBML

A	0429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)
B	0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)
D	0451 6061	RETROFIT RAIL (TY T222)(HPC)

Repair quantities and locations may vary in the field; limits of repair shall be as directed by the Engineer.

NBI# 18-057-0-0442-02-056 NBML
18-057-0-0442-02-074 SBML

LEGEND
① Brown Silty Clay
② Light Brown Silty, Gravely Clay
③ Brown Silty Clay ~ Chalk Aggregate
④ Austin Chalk



HYDRAULIC DATA:
Drainage Area = 6584 Acres
Calculated Q50 = 11,850 c.f.s.
V50 = 7.0 f.p.s.
Elev. of high water (50 yr.) 20.8 above channel F.L.
Observed high water El. 481.8, April, 1957

Design Notes:
Bridge designed for H20-S16 loading under 1961 AASHO spec. & PPM 20-4 Sec. 4C.

Texas Department of Transportation | Dallas District Bridge

IH 35E NBML & SBML

IH 35E OVERPASS ESTIMATED REPAIR QUANTITIES REPAIR LAYOUT

FILE:	SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT	2021	CONT	SECT	JOB	HIGHWAY
REVISIONS		0442	02	169	IH 35E
		DIST	COUNTY		SHEET NO.
		DAL	DALLAS		66

A CONCRETE REPAIR (VERTICAL & OVERHEAD)

B CLEANING AND SEALING EXIST JOINTS(CL7)

D RETROFIT RAIL (TY T222)(HPC)

NOTE:
Photographs are provided for Contractor's information and are intended to show a generalized idea of the structure's condition.
Extent of damage may vary from what is shown in photos.

STATE OF TEXAS
NAPAT INTHARASOMBAT
102136
LICENSED PROFESSIONAL ENGINEER

11/04/2022

NBI# 18-057-0-0442-02-056 NBML
18-057-0-0442-02-074 SBML

Texas Department of Transportation

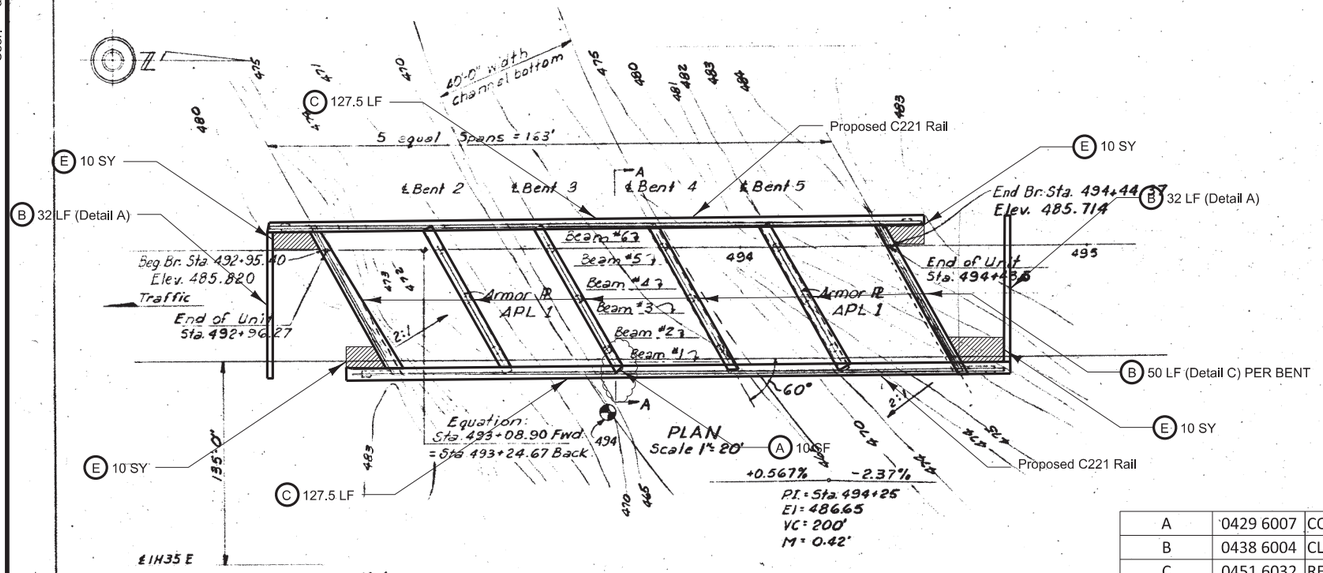
Dallas District Bridge

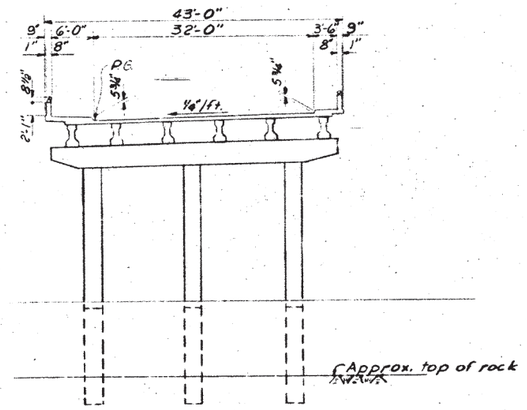
IH 35E

BRIDGE REPAIR PICTURES

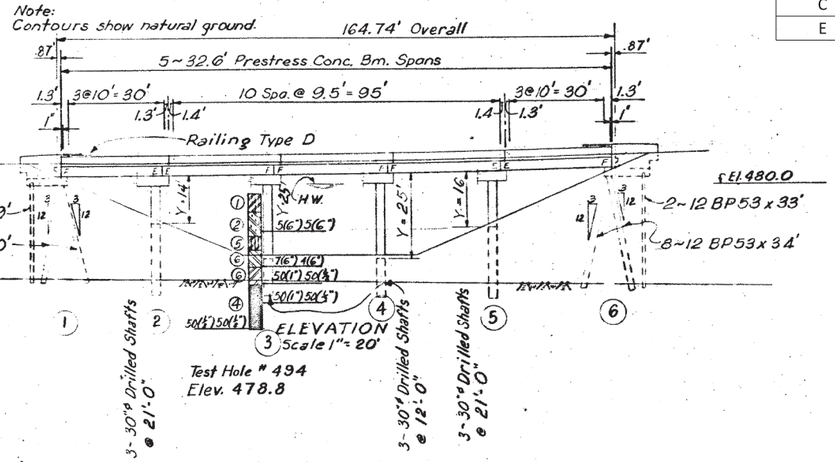
NBI# 18-057-0-0442-02-056 NBML 18-057-0-0442-02-074 SBML

FILE: SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		67





A	0429 6007	CONC STR REPAIR (VERTICAL & OVERHEAD)
B	0438 6004	CLEANING AND SEALING EXIST JOINTS(CL7)
C	0451 6032	RETROFIT RAIL (TY C221)(HPC)
E	0531 6003	CONC SIDEWALKS (6")



See sheet 2 of 3 for legend.

Note: Lengths of Drilled Shafts and Piling are estimated.
All shafts and piling (except those under wingwalls) shall be founded a minimum of 1'-0" into Austin Chalk.

NBI# 18-057-0-0442-02-057 SBFR

Repair quantities and locations may vary in the field; limits of repair shall be as directed by the Engineer.

Design Notes:
Bridge designed for H20 loading under 196
A.A.S.H.O. spec.

STATE OF TEXAS
NAPAT INTHARASOMBAT
102136
LICENSED PROFESSIONAL ENGINEER
11/07/2022

Rev 9-23-63

Texas Department of Transportation
Dallas District Bridge

IH 35E SBFR

IH 35E OVERPASS
ESTIMATED REPAIR QUANTITIES
REPAIR LAYOUT

FILE: SEE PATH		DN: NI		CK: KN	DW: NI		CK: KN
©TxDOT 2021		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0442	02	169		IH 35E	
		DIST	COUNTY			SHEET NO.	
		DAL	DALLAS			68	

(A) CONCRETE REPAIR (VERTICAL & OVERHEAD)

(B) CLEANING AND SEALING EXIST JOINTS(CL7)

(C) RETROFIT RAIL (TY C221)(HPC)

(E) SIDEWALK REMOVAL AND REPLACE

NOTE:
Photographs are provided for Contractor's information and are intended to show a generalized idea of the structure's condition. Extent of damage may vary from what is shown in photos.

STATE OF TEXAS
NAPAT INTHARASOMBAT
102136
LICENSED PROFESSIONAL ENGINEER

11/04/2022

NBI# 18-057-0-0442-02-057 SBFR

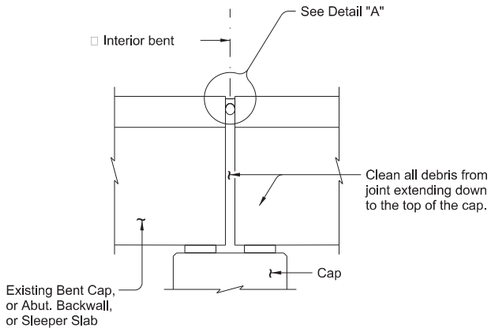
Texas Department of Transportation
Dallas District Bridge

IH 35E

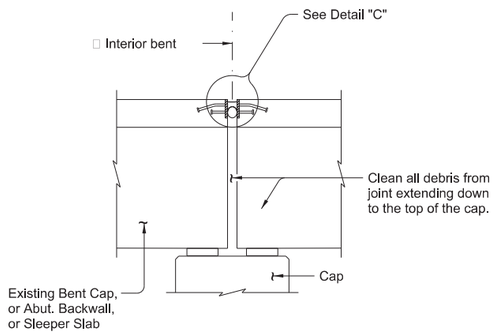
BRIDGE REPAIR PICTURES

NBI# 18-057-0-0442-02-057 SBFR

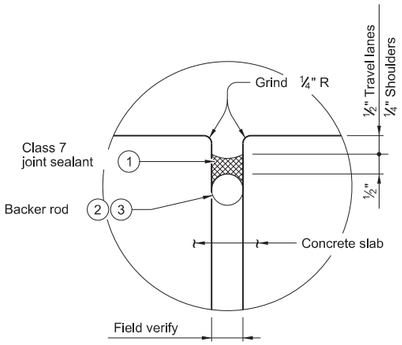
FILE: SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		69



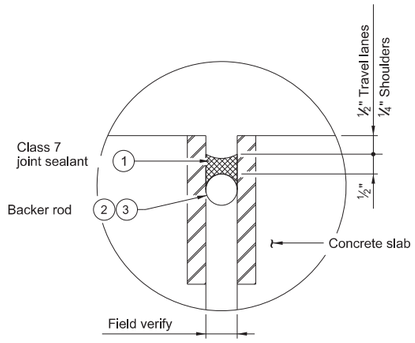
JOINT WITH SILICONE SEAL



ARMOR JOINT

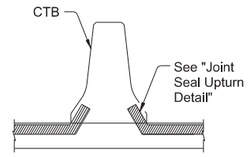


DETAIL "A"

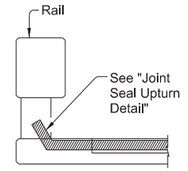


DETAIL "C"

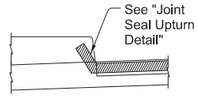
(Stud anchors not shown for clarity.)



AT CONCRETE TRAFFIC BARRIER



AT CONCRETE BRIDGE RAIL



AT SIDEWALK

JOINT SEALANT TERMINATION DETAILS

1. Use Class 7 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers." Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints."
2. Provide backer rod 25% larger than joint opening and compatible with the sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
3. Backer rod must be compatible with the hot poured rubber sealant and rated for a minimum of 400°F.

GENERAL NOTES:

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

Obtain approval for all tools, equipment, materials and techniques proposed to clean and seal the joint.

Provide Class 7 joint sealant in accordance with DMS-6310, "Joint Sealants and Fillers" for joints in concrete.

Extend sealant up into rail or curb 3 inches on low side or sides of deck. If the Class 7 joint sealant cannot be effectively placed in the vertical position, a Class 4 joint sealant compatible with the Class 7 joint sealant is allowed for the extension of the seal into the curb or rail. Prepare surfaces where sealant is to be placed in accordance with Manufacturer's specifications.

Repair quantities and locations may vary in the field; limits of repair shall be as directed by the Engineer.

PROCEDURE FOR CLEANING AND SEALING EXISTING JOINT WITH SILICONE SEAL:

1) Clean joint opening of all existing expansion materials/devices, dirt, and all other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.

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

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

4) Seal the joint opening with a Class 7 joint sealant. Recess seal ½" below top of concrete in travel lanes and ¼" below top of concrete in shoulders.

PROCEDURE FOR CLEANING AND SEALING EXISTING ARMOR JOINTS:

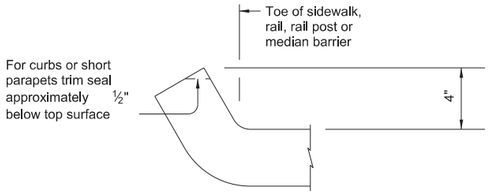
1) Remove existing seal, if present. Clean joint opening of all dirt and other deleterious materials in accordance with Item 438, "Cleaning and Sealing Joints." Clean joint out full depth of the joint.

2) Abrasive blast clean existing steel surface where silicone seal is to be placed.

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

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

5) Seal the joint opening with a Class 7 joint sealant. Recess seal ½" below top of concrete in travel lanes and ¼" below top of concrete in shoulders.



JOINT SEAL UPTURN DETAIL

NAPAT INTHARASOMBAT
102136
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

11/04/2022

Texas Department of Transportation

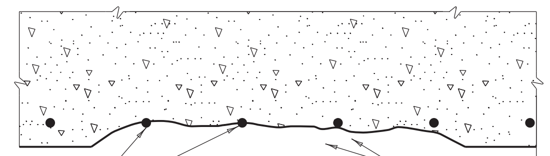
Bridge Division

IH 35E
CLEANING AND SEALING EXISTING BRIDGE JOINT DETAILS

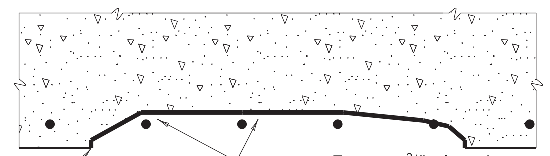
FILE: WD-CSBJ-22.dgn	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT August 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		70

DATE:
FILE:

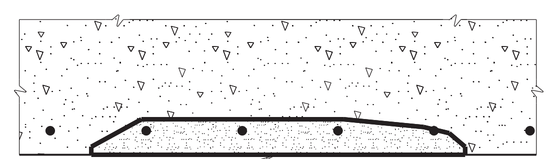
DATE: 11/4/2022 TIME: 3:19:58 PM FILE: T:\DALBRDG\Bridge Repair\Woody Branch\Sheets.dgn User: dalbrdg



SHOWING DAMAGED CONDITION



SHOWING EXCAVATION & PREPARATION



SHOWING PATCHING

CONCRETE STRUCTURE REPAIR (VERTICAL & OVERHEAD)

REPAIR PROCEDURE (CONCRETE, VERTICAL AND OVERHEAD):

1. Damage locations and quantities are based on March 2021 Assessment. Immediately notify TxDOT if any discrepancies are noted between the plans and actual conditions.

2. Submit detailed repair procedures, including proposed proprietary materials, for approval prior to commencing work.

3. Some repair areas indicated do not exhibit visible spalling and will need to be identified by sounding the concrete with hammers to determine the location and limits of repairs.

4. Sound all surfaces to identify and mark all delaminated areas for review and approval by the Engineer. Confirm square footage of repair areas prior to commencing removal and notify Engineer of any discrepancies. Provide access to Engineer for verification.

5. Remove delaminated, loose, and unsound concrete. Use only hand tools or power- driven chipping hammers (15 lb. max) to remove concrete and to excavate behind reinforcing bars.

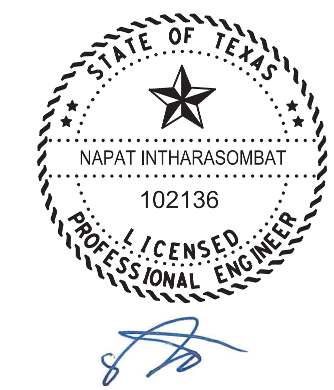
6. Remove rust, oil, and other contaminants from concrete and reinforcing steel surfaces. Prior to patching, abrasive blast the repair area.

7. Use Type C Repair Materials in accordance with DMS-4655.

8. Notify Engineer once existing concrete is removed and repair areas for each structure elements have been prepared. Provide access to the Engineer for verification of prepared repair areas.

9. Perform all repairs in accordance with the Section 3.2 of the "Concrete Repair Manual". Not all de laminations may be visible.

10. Abutments, bent cap, pan girder, bent column , concrete beam with minor repair and bridge deck overhang edge shall be repaired under pay item "CONC STR REPAIR (VERTICAL & OVERHEAD)"



11/04/2022

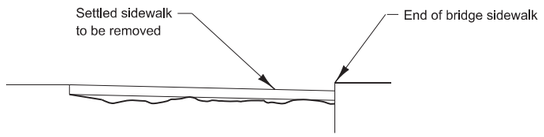
Texas Department of Transportation

Dallas District Bridge

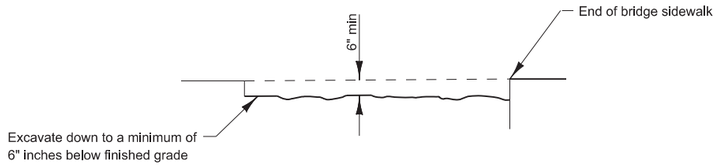
IH 35E

CONCRETE VERTICAL AND OVERHEAD REPAIR DETAILS

FILE: SEE PATH		DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT 2021		CONT	SECT	JOB	HIGHWAY
REVISIONS		0442	02	169	IH 35E
		DIST	COUNTY		SHEET NO.
		DAL	DALLAS		71

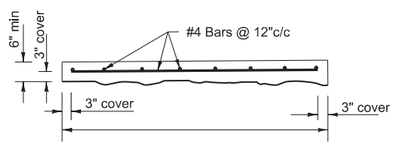


SHOWING DAMAGED CONDITION



SHOWING EXCAVATION & PREPARATION

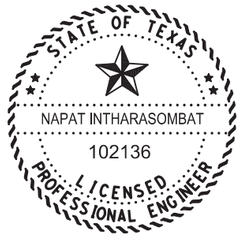
FINISHED SIDEWALK



REINFORCEMENT DETAILS

REPAIR PROCEDURE

1. Notify TxDOT if any discrepancies are noted between the plans and actual conditions.
2. Remove existing concrete sidewalk.
3. Excavate down to a minimum of 6 inches below finishe grade. Remove loose subgrade.
4. All concrete shall be Class "C". All reinforcing steel shall be Grade 60.



11/04/2022

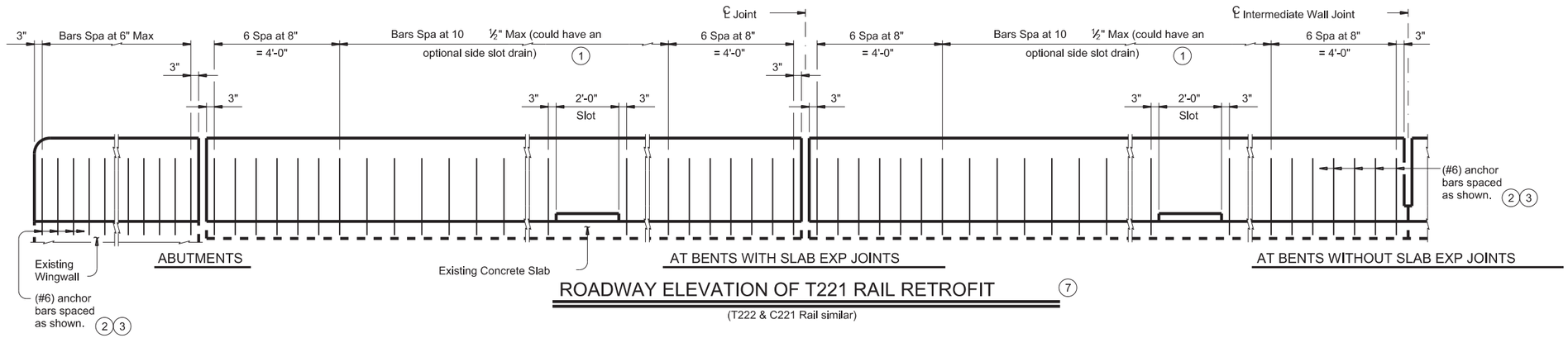
Texas Department of Transportation

Dallas District Bridge

IH 35E

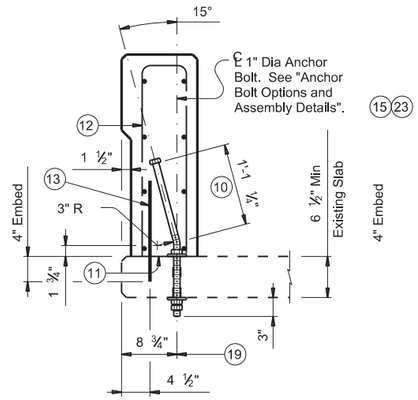
SIDEWALK REMOVAL AND REPLACEMENT

FILE: SEE PATH	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		72



ROADWAY ELEVATION OF T221 RAIL RETROFIT (7)

(T222 & C221 Rail similar)



T221, T222 & C221 RAIL

RAIL RETROFIT SECTIONS ON SLABS USING ANCHOR BOLTS (20)

(10) Increase by amount of existing overlay/seal coat thickness, not to exceed 2". If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over shoulder width to a thickness of 2" or less at toe of rail.

(11) Do not cast rails or parapet walls on top of overlays/seal coats.

(12) See appropriate rail standard for reinforcing steel. Modify length of vertical reinforcing bars as required to fit existing structure. Longitudinal reinforcing bars may be removed only if their position puts them in conflict with un-removed portions of existing structure.

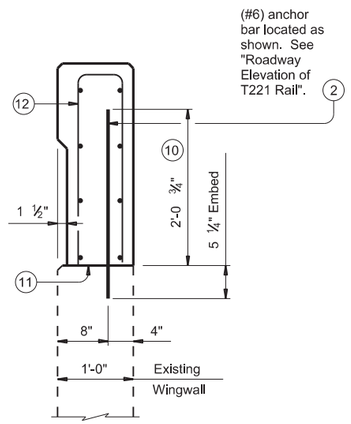
(13) Embed secondary (#4) anchor bars 1'-4" in length with a Type III Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 4". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 10 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing". (#4) anchor bars spaced longitudinally along rail at 4 ft Max (Spaced 3" longitudinally from outside edge and edge of side slot drains).

(15) ℄ 1" Dia Anchor Bolt Spaced longitudinally along rail at 18" Max (Spaced 6" longitudinally from outside edge and edge of optional side slot drains, if required).

(19) ℄ 1 1⁄16" to 1 ¼" Dia holes. Core drill holes through existing deck (percussion drilling not permitted). Concrete spalls in the bottom of the deck exceeding ½" from edge of holes will be patched in accordance with Item 429, "Concrete Structure Repair" at the Contractor's expense.

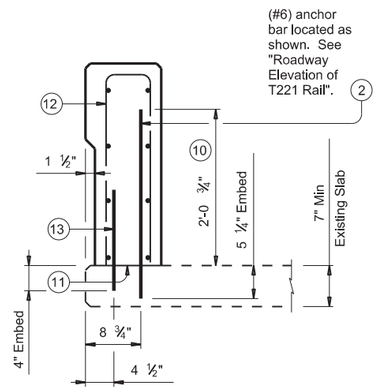
(20) Showing location of anchor bars and anchor bolts in a rail retrofit condition. See appropriate rail standard for details and notes not shown.

(23) Galvanize anchor bolts, nuts and plate washers.



T221, T222 & C221 RAIL

RAIL RETROFIT SECTIONS ON WINGWALLS USING ADHESIVE ANCHORS (9)



T221, T222 & C221 RAIL

RAIL RETROFIT SECTIONS ON CONCRETE SLABS USING ADHESIVE ANCHORS (9)

(2) Embed (#6) anchor bars with a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 5 ¼". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(10) Increase by amount of existing overlay/seal coat thickness, not to exceed 2". If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over shoulder width to a thickness of 2" or less at toe of rail.

(11) Do not cast rails or parapet walls on top of overlays/seal coats.

(12) See appropriate rail standard for reinforcing steel. Modify length of vertical reinforcing bars as required to fit existing structure. Longitudinal reinforcing bars may be removed only if their position puts them in conflict with un-removed portions of existing structure.

(13) Embed secondary (#4) anchor bars 1'-4" in length with a Type III Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 4". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 10 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing". (#4) anchor bars spaced longitudinally along rail at 4 ft Max (Spaced 3" longitudinally from outside edge and edge of side slot drains).

(1) When side slot drains are used, provide 8'-0" Min clear spacing between drain slots.

(2) Embed (#6) anchor bars with a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 5 ¼". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(3) See T221, T222 or C221 Rail Sections in "Rail Retrofit Section on Wingwalls using Adhesive Anchors" and/or "Rail Retrofit Section on Concrete Slabs using Adhesive Anchors".

(7) Showing spacing of (#6) adhesive anchor in a rail retrofit condition. Secondary (#4) adhesive anchor in a rail retrofit not shown for clarity. Reinforcing steel and terminal connections not shown for clarity. See rail standard for details and notes not shown.

CONSTRUCTION NOTES:

Field verify dimensions before commencing work and ordering materials.

By adding additional anchorage, welding can be performed at a minimum spacing of 3 ft between the cage and additional anchorage. By satisfying additional anchorage requirements slip forming is allowed. Do not weld to the required anchorage.

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if required elsewhere.

(#6) and (#4) anchor bars used for the adhesive anchorage system must not be epoxy coated within the required embedment.

GENERAL NOTES:

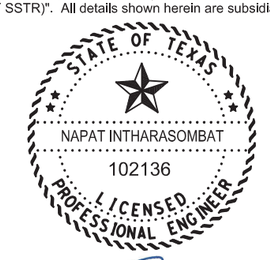
Use of these retrofit details will result in a railing acceptable for the MASH Test Level indicated on the applicable rail standard.

Do not remove any part of a curb until it has been evaluated to not be a load-carrying structural component.

These details are not for use at other locations.

Removal and replacement of backfill, subgrade, and asphalt or concrete pavement necessary for this installation is considered subsidiary to the retrofit railing.

Payment for a rail retrofit will be as per Item 451, "Retrofit Railing (TY SSTR)". All details shown herein are subsidiary to rail retrofit.



11/04/2022

Sheet 1 of 2

Texas Department of Transportation

Bridge Division Standard

RETROFIT GUIDE FOR CONCRETE RAILS

(T222, C221)

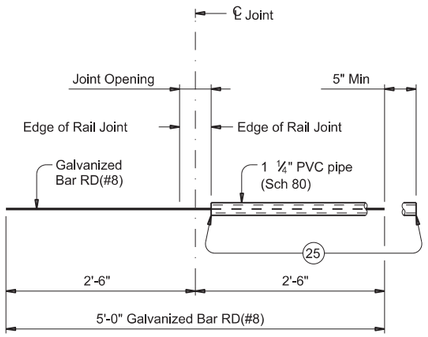
C-RAIL-R (MOD)

FILE: rlstd022-20.dgn	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
07-20: Text change from epoxy to adhesive and changed MASH Test Level note.	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		73

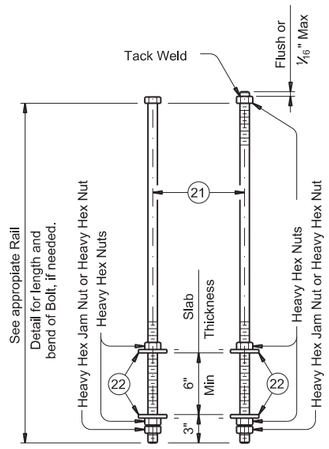
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: DATE, TIME
FILE: DOCUMENT NAME

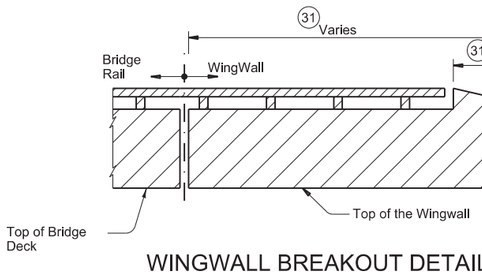
DATE:
FILE:



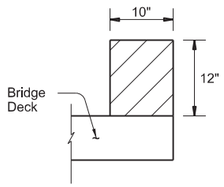
BAR RD(#8) ASSEMBLY DETAIL



ANCHOR BOLT OPTIONS AND ASSEMBLY DETAILS (23)

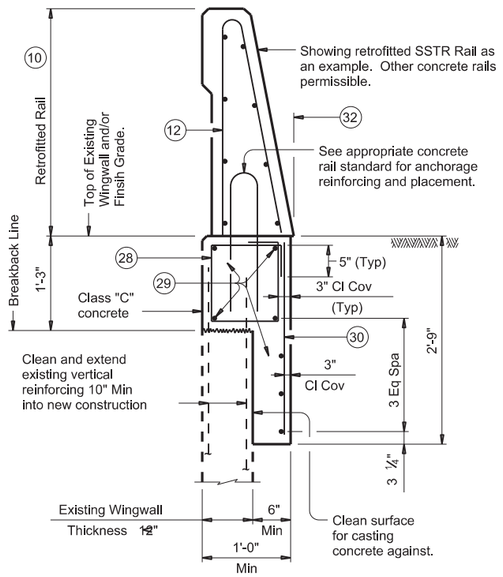


WINGWALL BREAKOUT DETAIL



~ Indicates portion of existing structures to be removed.

PARAPET BREAKOUT DETAIL



SECTION OF EXISTING PARALLEL WINGWALLS LESS THAN 12" THICK

(20) L 1" Dia ASTM F1554 Gr 55 Anchor Bolt or Threaded Rod. Nuts must conform to ASTM A563 requirements.

(21) Plate Washer ⅜ x 3 x 3 ASTM A36 with 1 1/16" Dia Hole centered.

(22) Galvanize anchor bolts, nuts and plate washers.

(24) See "Bar RD(#8) Assembly Detail".

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

(10) Increase by amount of existing overlay/seal coat thickness, not to exceed 2". If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over shoulder width to a thickness of 2" or less at toe of rail.

(12) See appropriate rail standard for reinforcing steel. Modify length of vertical reinforcing bars as required to fit existing structure. Longitudinal reinforcing bars may be removed only if their position puts them in conflict with un-removed portions of existing structure.

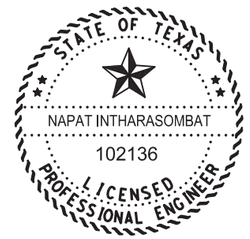
(28) Space (#4) stirrups at 8" Max. (Spaced 3 ¼" longitudinally from retrofitted ends of wingwall).

(29) 7 ~ (#5) bars with 3" end cover.

(30) Space (#4) bars at 8" Max with 3" end cover, spaced with (#4) stirrups.

(31) Remove all concrete and reinforcing steel from existing parapet wall. Existing reinforcing cut off from existing wingwall must be painted with two coats of a zinc-rich paint conforming to the Item "Galvanizing".

(32) Face of rail and/or toe of rail. Location or placement of rail retrofit must match face of rail and/or toe of rail on bridge.



11/04/2022

Texas Department of Transportation

Bridge Division Standard

RETROFIT GUIDE FOR CONCRETE RAILS

(T222, C221)

C-RAIL-R (MOD)

FILE: rlstd022-20.dgn	DN: NI	CK: KN	DW: NI	CK: KN
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
07-20: Text change from epoxy to adhesive and changed MASH Test Level note.	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		74

A. GENERAL SITE DATA

1. PROJECT LIMITS:

IH 35E AT WOODY BRANCH

Begin Project Coordinates : Latitude (N): 32.6831694 Longitude (W): -96.8230175

2. PROJECT SITE MAPS:

* Project Location Map: The Title Sheet and Project Layout Sheet (Sheet 3)
* Drainage Patterns: SW3P Site Map (Sheet 99)
* Slopes Anticipated After Major Gradings or Areas of Soil Disturbance: Slope Repair Sheets (Sheets 38-83)
* Location of Erosion and Sediment Controls: SW3P Site Map (Sheet 99)
* Surface Waters and Discharge Locations: SW3P Site Map (Sheet 99)
* Project Specific Location(s) (PSL): To be determined by the project Construction Personnel. Location(s) shown on SW3P Site Map (if PSL location(s) is within one mile of project) and information located in project SW3P Binder (Reference Item #10 below).

3. PROJECT DESCRIPTION:

BRIDGE SCOUR REPAIR

4. MAJOR SOIL DISTURBING ACTIVITIES:

SOIL DISTURBING ACTIVITIES WILL INCLUDE THE FOLLOWING: EXCAVATION AND BACKFILLING, GRADING, EROSION AND SEDIMENT CONTROL, AND SODDING.

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:

EXISTING FRIO-URBAN LAND COMPLEX WITH 0 TO 1 PERCENT SLOPES.
VARIOUS TREES IN GOOD CONDITION AND COVER 95% OF EXPOSED GROUND.

6. TOTAL PROJECT AREA: 2.45 Acres

7. TOTAL AREA TO BE DISTURBED: 1.00 Acres (41 %)

8. WEIGHTED RUNOFF COEFFICIENT

BEFORE CONSTRUCTION: 0.35
AFTER CONSTRUCTION: 0.35

9. NAME OF RECEIVING WATERS:

Woody Branch, which flows to Fivemile Creek (Segment 0805D). No water quality impairments.

10. PROJECT SW3P Binder:

A. For projects disturbing one to five acres, TxDOT will maintain a SW3P Binder at the project field office (if there is not a project field office, should be kept at the Area Office) which contains the following: Index Sheet, TCEQ Signature Authority, TxDOT's and Contractor's Small Construction Site Notice, SW3P Inspector Qualification Statements, EPIC Sheet, SW3P Sheet, Site Location Maps, Inspection and Maintenance Reports (Form 2118), Construction Stage Gate Checklists(s) (CSGC), Stored Material Lists specifying associated control measures and the Appendix which contains the TPDES Construction General Permit, TxDOT and Contractor MS4 Operator Notification(s) and the Construction PSL Permits per all applicable requirements.

B. For projects disturbing 5 acres or more, TxDOT will follow the actions listed in (10.A.) above with the addition of the following: TxDOT and Contractor Notice Of Intent (N.O.I.) and Fee Payment Form, TxDOT and Contractor Large Construction Site Notice (to be used instead of Small Site Notice), and TPDES Permit Coverage Notice.

C. For projects disturbing less than one acre, actions described in (10.A.) and (10.B.) above are not required. Acreage is calculated by adding Total Area To Be Disturbed Acres on project (See #7 above) and the PSL(s) acreage located within one mile of project.

B. EROSION AND SEDIMENT CONTROLS

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- T TEMPORARY SEEDING
- ___ MULCHING (Hay or Straw)
- ___ BUFFER ZONES
- ___ PLANTING
- ___ SEEDING
- P SODDING
- P PRESERVATION OF NATURAL RESOURCES
- ___ FLEXIBLE CHANNEL LINER
- ___ RIGID CHANNEL LINER
- ___ SOIL RETENTION BLANKET
- P COMPOST MANUFACTURED TOPSOIL
- T VERTICAL TRACKING
- ___ OTHER:

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- T SILT FENCES
- T EROSION CONTROL LOGS
- ___ EROSION CONTROL COMPOST BERMS (Low Velocity)
- T ROCK FILTER DAMS
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ___ DIVERSION DIKE AND SWALE COMBINATIONS
- ___ PIPE SLOPE DRAINS
- ___ PAVED FLUMES
- T ROCK BEDDING AT CONSTRUCTION EXIT
- ___ TIMBER MATTING AT CONSTRUCTION EXIT
- P CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET STRUCTURES
- ___ CURBS AND GUTTERS
- ___ STORM SEWERS
- ___ VELOCITY CONTROL DEVICES
- ___ OTHER:

NOTE: TOP OF BMP'S SHOULD NOT BE HIGHER THAN ROADWAY ELEVATION AS NOT TO FLOOD ROADWAY UNLESS PRIOR APPROVAL FROM ENGINEER IS OBTAINED.

3. STORM WATER MANAGEMENT:

A. Storm water drainage will be provided by ditches, inlets, and storm water systems which carry drainage within the R.O.W. to the lows within the roadway and project site which drains to natural facilities.

B. Other permanent erosion controls include hydraulic design to limit structure outlet velocities and grading design generally consisting of 4 :1 or flatter slopes with permanent vegetative cover.

4. STORM WATER MANAGEMENT ACTIVITIES: (Sequence of Construction)

A. PLACE ADVANCED WARNING AND WORK ZONE SIGNS.
AVOID STORING PORTABLE SANITARY UNITS, CONCRETE WASHOUTS OR CHEMICALS WITHIN 50 FEET UPGRADIENT OF A RECEIVING WATER OR DRAINAGE CONVEYANCE WITHOUT ADEQUATE POLLUTION CONTROLS.

B. INSTALL SW3P CONTROL DEVICES (BMP's) TO PROTECT STORMWATER DRAINAGE FEATURES (e.g., CURB INLETS, etc.), RECEIVING WATERS, DOWNSLOPE PERIMETERS, AND ACTIVE ROADWAYS PRIOR TO CONSTRUCTION ACTIVITIES IN THEIR VICINITY, AS NEEDED AND AS DIRECTED BY ENGINEER. DO NOT INSTALL BMP's MORE THAN TWO WEEKS PRIOR TO THE ACTIVITIES IN THEIR CONTROL AREA.

C. PERFORM BRIDGE SCOUR REPAIR.

D. PREVENT SEDIMENT AND DEBRIS FROM ENTERING CREEK. PROMPTLY CLEAN UP ANY UNAUTHORIZED MATERIALS THAT ENTER CREEK, AND IMMEDIATELY REPORT HAZARDOUS MATERIALS TO ENGINEER AS REQUIRED.

E. WHERE WORK HAS TEMPORARILY CEASED IN A DISTURBED AREA, TEMPORARILY STABILIZE SOILS WITH VERTICAL TRACKING, TEMPORARY SEEDING, AND/OR OTHER SOIL COVER, AND VELOCITY DOWNSLOPE PERIMETER CONTROLS, AS APPROPRIATE AND/OR AS DIRECTED BY THE ENGINEER.

F. RE-VEGETATE DISTURBED SOILS IN COMPLETED PROJECT AREAS AS SOON AS PRACTICABLE OR AS DIRECTED BY ENGINEER.

G. FINAL CLEAN UP. WHEN CONSTRUCTION ACTIVITY IS COMPLETE, PROJECT AREA IS STABILIZED, AND AS DIRECTED OR AUTHORIZED BY ENGINEER, REMOVE ALL TEMPORARY SW3P CONTROLS.

5. NON-STORM WATER DISCHARGES:

Filter non-storm water discharges, or hold in retention basins, before being allowed to mix with storm water. These discharges consist of, but not limited to, non-polluted ground water, spring water, foundation or footing drain water, water used for dust control or pavement washing and vehicle washwater containing no detergents.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

Maintain all erosion and sediment controls in good working order. Perform any necessary cleaning/repairs/replacements at the earliest possible date prior to next rain event, but no later than 7 calendar days. Ensure the surrounding ground has dried sufficiently to prevent damage from equipment. "Too Wet" is the only reason for not adhering to timeframes described. When construction activities permanently or temporarily cease and are not expected to resume for 14 or more days on a disturbed portion of the site, stabilization measures must be initiated immediately.

2. INSPECTION:

A TxDOT Inspector will perform a regularly scheduled SW3P inspection every 7 calendar days. An inspection and Maintenance Report, signed by the TxDOT Inspector and the Contractor, will be filed for each inspection. Revise/clean/repair/replace each BMP control device in accordance with the current Field Inspection and Maintenance Report (Form 2118) and Item 1 (Maintenance) above.

3. WASTE MATERIALS:

On a daily basis, or as may be directed, collect all waste materials, trash and debris from the construction site and deposit into a metal dumpster having a secure cover and which meets all state and local city solid waste management requirements. Empty the dumpster as required by regulation, or as may be directed, at a local approved landfill site. Do not bury construction waste on the construction project site.

4. HAZARDOUS WASTE & SPILL REPORTING:

As a minimum, any products in the following categories are considered to be hazardous: Paints, Acids, Solvents, Fuels, Asphalt Products, Chemical Additives for Soil Stabilization, and Concrete Curing Compounds or Additives. When storing hazardous material on the project site, or at a Project Specific Location, take all practicable precaution to prevent and/or contain any spillage of these materials. In the event of a spill, contact the spill coordinator immediately.

5. SANITARY WASTE:

Use a licensed sanitary waste management contractor to collect all sanitary waste from portable units as may be required by local regulation, or as directed.

6. CONSTRUCTION VEHICLE TRACKING:

On a regular basis, or as may be directed, dampen haul roads for dust control and construct construction entrances/exits. Provide for a motorized broom or vacuum type sweeper to be available on a daily basis, or as may be directed, to remove sediment from paved roadways on project, abutting and traversing the project site.

7. MANAGEMENT PRACTICES:

A. Construct disposal areas, stockpiles, haul roads and PSL's in a manner that will minimize and control the amount of sediment that may enter receiving waters. Do not locate disposal areas in any wetland, waterbody or streambed.

B. Locate construction staging areas, vehicle maintenance and PSL's areas in a manner to minimize the runoff of pollutants.

C. When working in or near a wetland, install and maintain operating soil erosion and sediment controls at all times during construction and isolate the work from the wetland.

D. Clear all waterways as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.

E. Procedures and/or practices should be taken to control dust.

F. Sediment to be removed from roadways daily or when work begins after weather events if construction activities have ceased due to weather event.

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED
PROFESSIONAL ENGINEER

Dung Nguyen, P.E. 11/29/22
Signature of Registrant & Date

Texas Department of Transportation

DALLAS DISTRICT ENVIRONMENTAL

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

TEMPLATE REVISION DATE: 02/07/18

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
HA	TEXAS	DALLAS	DALLAS	
CHECK	CONTROL	SECTION	JOB	75
DN	0442	02	169	
CHECK				
AM				

FILE NAME
DATE
DESIGNER

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 MS 4 - Contact Kevin Hurley

☐ 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. Woody Branch - STA. 0+00-5+00 - Stream Impacts - NWP 14 with PCN
2.
3.

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.

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.

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. The following species could occur in the project area: Monarch butterfly, Louisiana pigtoe, sandbank pocketbook, Texas fawnsfoot, Texas heelsplitter, Trinity pigtoe, Strecker's chorus frog, Woodhouse's toad, American eel, Mississippi silvery minnow, eastern spotted skunk, long-tailed weasel, swamp rabbit, and Texas garter snake. Follow the special note on the EPIC sheet and the BMPs listed below to protect these species.

2. Freshwater mussel survey is required for Louisiana pigtoe, sandbank pocketbook, Texas fawnsfoot, Texas heelsplitter, and Trinity pigtoe at Woody Branch (north bank STA 0+00 to 5+15.7955; south bank 0+00 to 5+039765). TxDOT to complete the survey during the months of April to October prior to the start of construction.

REFER TO EPIC SHEET 2 OF 2 FOR SECTION V - CONTINUATION

Special Notes:
1. Avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects.
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.
3. 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)

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		IH 35E
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	JOB	SHEET NO.
0442	02	169	76

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

(CONTINUATION FROM EPIC SHEET 1 OF 2)

3. Contractor to implement the following BMPs from "Beneficial Management Practices: Avoiding, Minimizing, and Mitigating Impacts of Transportation Projects on State Natural Resources" available at https://ftp.txdot.gov/pub/txdot-info/env/toolkit/300-01-bmp.pdf.

a) Section 2.4.3 Freshwater Mussel BMP

b) Section 2.3 Fish BMP

c) Section 2.6.1 Aquatic Amphibian and Reptile BMP (barrier fencing not required)

d) Section 2.6.2 Terrestrial Amphibian and Reptile BMP

e) Section 1.6 Dewatering BMP

f) Section 1.5 Stream Crossing BMP

g) Section 1.4 Water Quality BMP

h) Section 1.2 Vegetation BMP

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

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

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 2 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		IH 35E
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	JOB	SHEET NO.
0442	02	169	77

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.

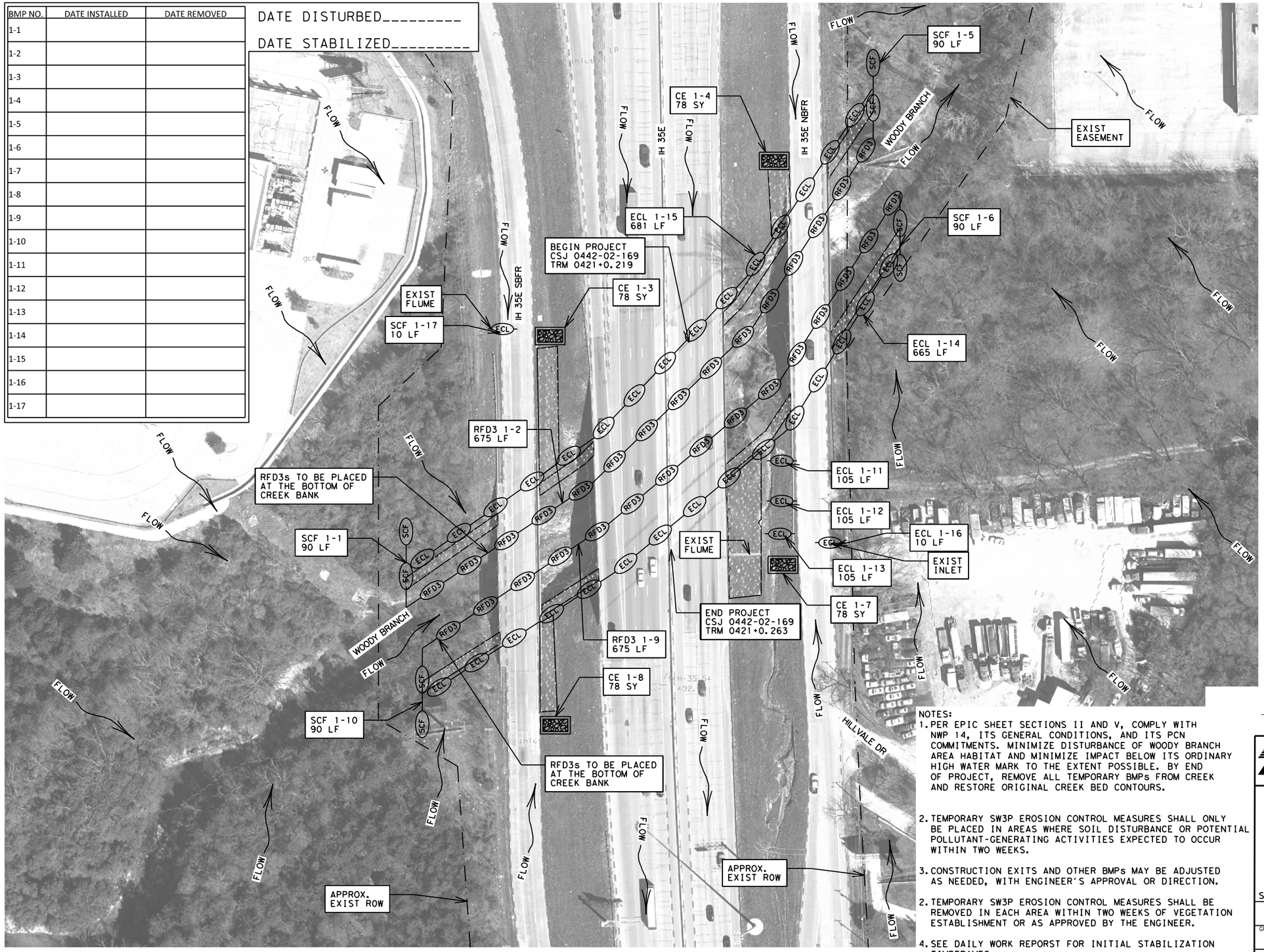
Notes To Designer:
1. *Do not alter Sheet Design or Font style, size or weight - match text attributes.*
2. *If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from its relative position.*
3. *All 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

BMP NO.	DATE INSTALLED	DATE REMOVED
1-1		
1-2		
1-3		
1-4		
1-5		
1-6		
1-7		
1-8		
1-9		
1-10		
1-11		
1-12		
1-13		
1-14		
1-15		
1-16		
1-17		

DATE DISTURBED_____

DATE STABILIZED_____



0 50 100

LEGEND:

- FLOW
- BLOCK SODDING/TEMPORARY SEEDING
- CONSTRUCTION EXIT (TY 1)
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOG
- RFD3 — ROCK FILTER DAM (TY 3)

NOTES:

1. PER EPIC SHEET SECTIONS II AND V, COMPLY WITH NWP 14, ITS GENERAL CONDITIONS, AND ITS PCN COMMITMENTS. MINIMIZE DISTURBANCE OF WOODY BRANCH AREA HABITAT AND MINIMIZE IMPACT BELOW ITS ORDINARY HIGH WATER MARK TO THE EXTENT POSSIBLE. BY END OF PROJECT, REMOVE ALL TEMPORARY BMPs FROM CREEK AND RESTORE ORIGINAL CREEK BED CONTOURS.
2. TEMPORARY SW3P EROSION CONTROL MEASURES SHALL ONLY BE PLACED IN AREAS WHERE SOIL DISTURBANCE OR POTENTIAL POLLUTANT-GENERATING ACTIVITIES EXPECTED TO OCCUR WITHIN TWO WEEKS.
3. CONSTRUCTION EXITS AND OTHER BMPs MAY BE ADJUSTED AS NEEDED, WITH ENGINEER'S APPROVAL OR DIRECTION.
2. TEMPORARY SW3P EROSION CONTROL MEASURES SHALL BE REMOVED IN EACH AREA WITHIN TWO WEEKS OF VEGETATION ESTABLISHMENT OR AS APPROVED BY THE ENGINEER.
4. SEE DAILY WORK REPORST FOR INITIAL STABILIZATION TIMEFRAMES.
5. SEE SLOPE REPAIR KEY MAP SHEET 38 FOR FINAL STABILIZATION PLANS FOR CREEK BANKS.

STATE OF TEXAS
DUNG HUY NGUYEN
128595
LICENSED
PROFESSIONAL ENGINEER

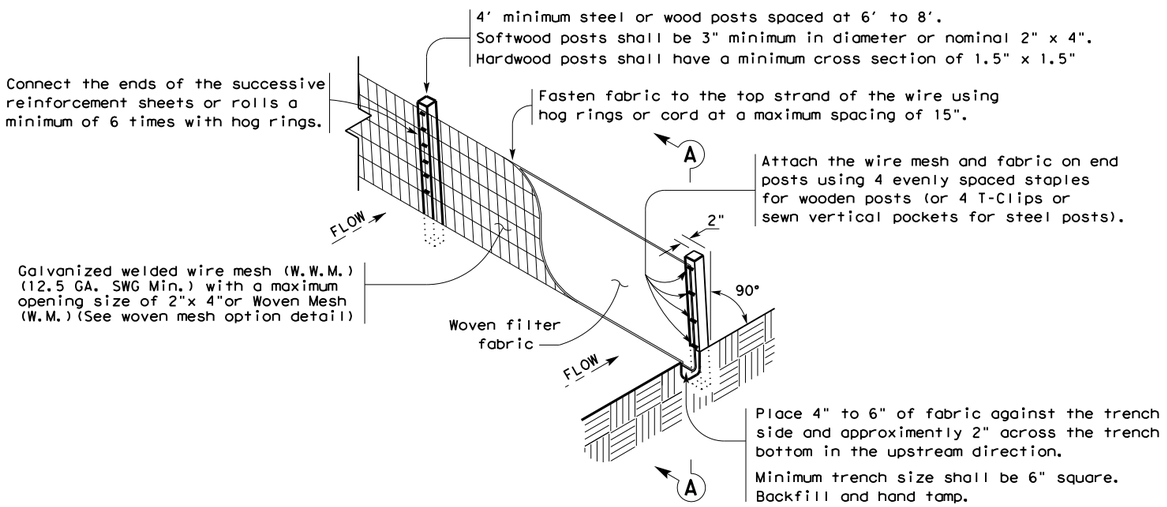
DocuSigned by:
AA914E3EC8AC415...
, P.E. 12/19/2022
Signature of Registrant & Date

Texas Department of Transportation

IH 35E
SW3P SITE MAP

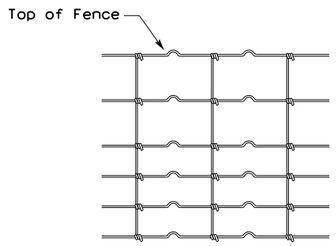
SCALE: 1"=100' SHEET 1 OF 1

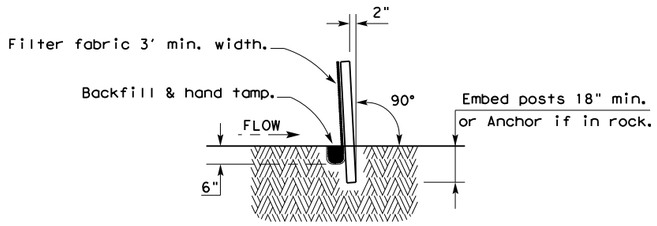
DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
HA	6	SEE TITLE SHEET		IH 35E
GRAPHICS HA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS	
CHECK AM	CONTROL	SECTION	JOB	78
	0442	02	169	



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

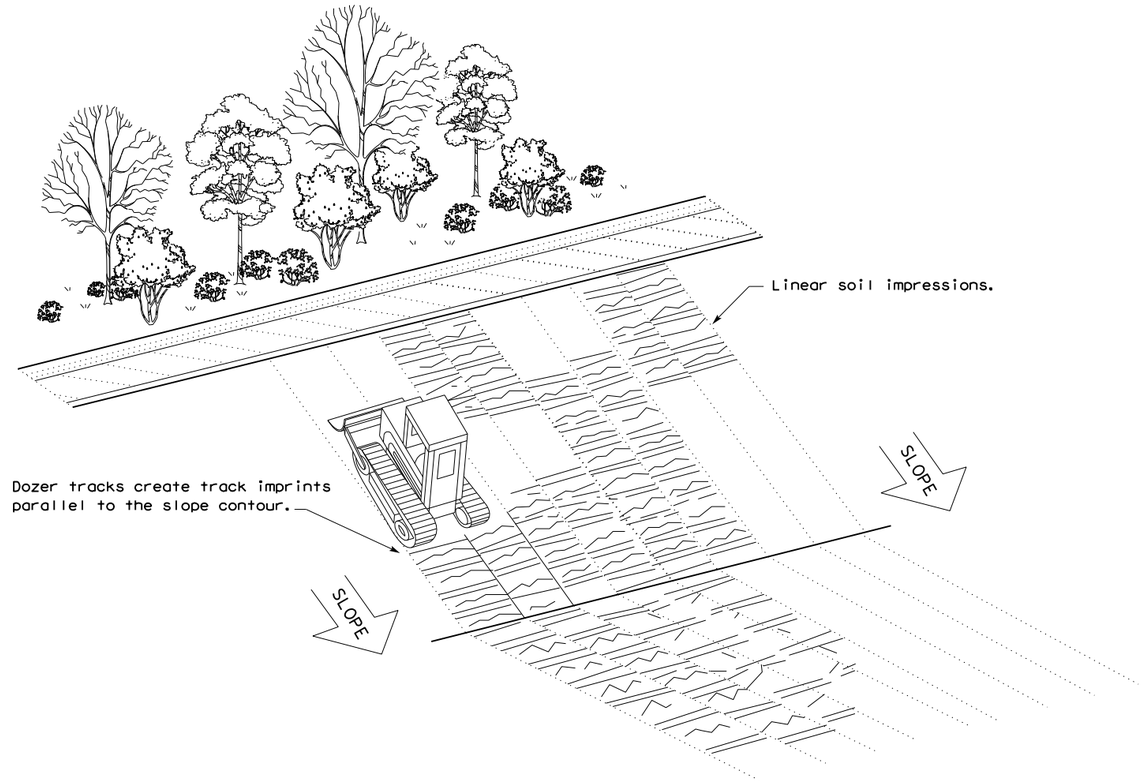
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

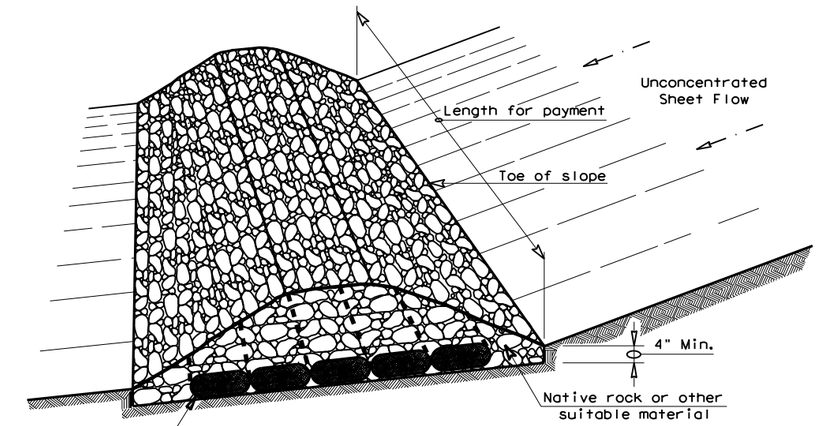
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0442	02	169		IH 35E	
	DIST	COUNTY			SHEET NO.	
	18	DALLAS			79	

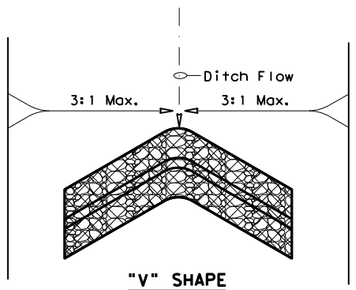
DATE
FILE

DATE:
FILE:

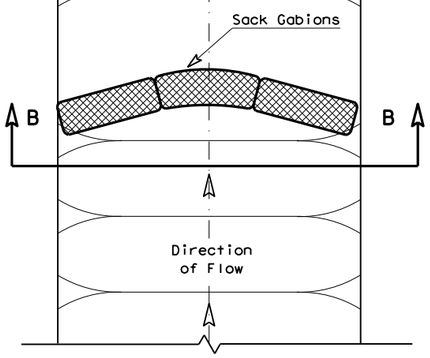


FILTER DAM AT TOE OF SLOPE

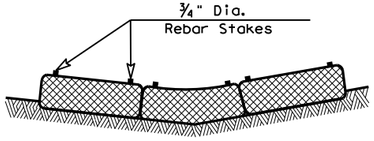
RFD1



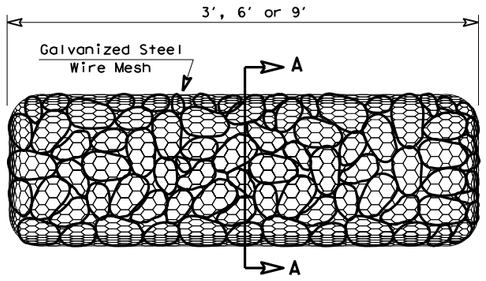
"V" SHAPE PLAN VIEW



PLAN VIEW

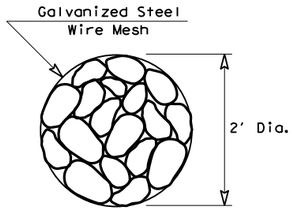


SECTION B-B

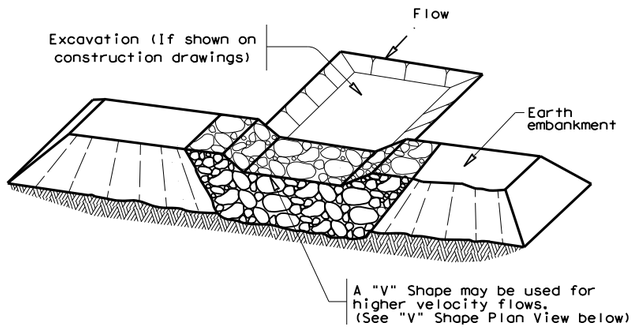


TYPE 4 (SACK GABIONS)

RFD4

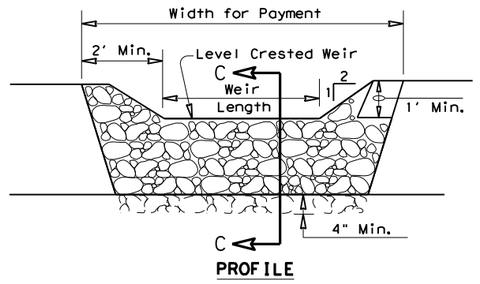


SECTION A-A

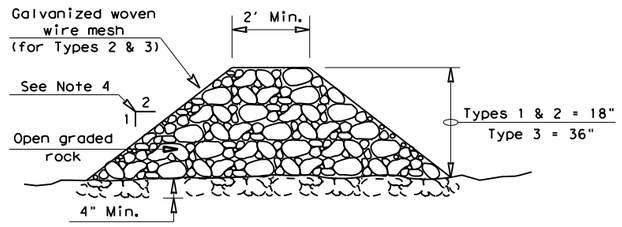


FILTER DAM AT SEDIMENT TRAP

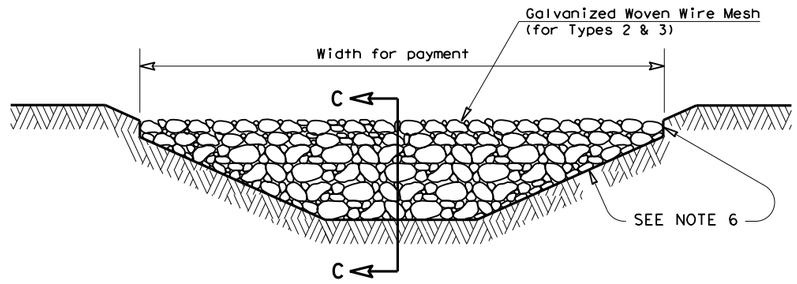
RFD1 OR RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

ROCK FILTER DAM USAGE GUIDELINES

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

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

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

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

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

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

GENERAL NOTES

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

PLAN SHEET LEGEND

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

Texas Department of Transportation — Design Division Standard

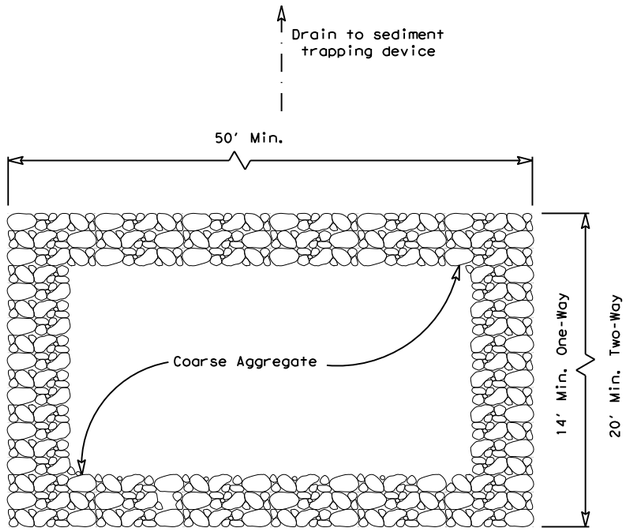
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

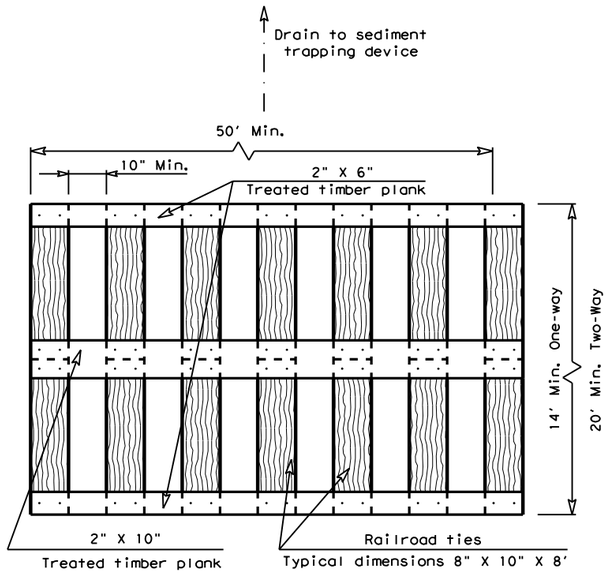
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0442	02	169		IH 35E	
	DIST	COUNTY			SHEET NO.	
	18	DALLAS			80	

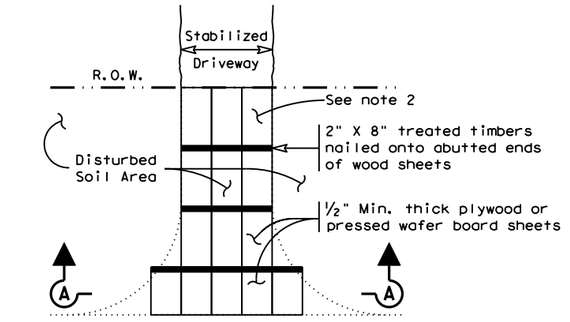
DATE:
FILE:



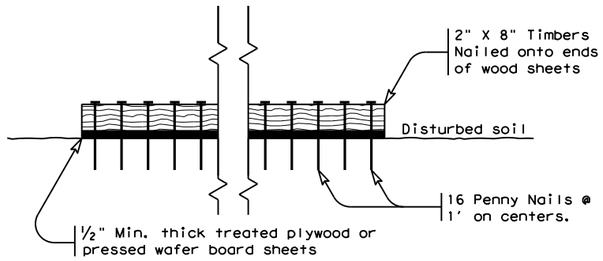
PLAN VIEW



PLAN VIEW



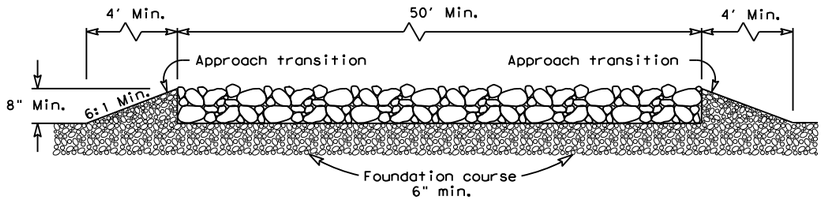
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

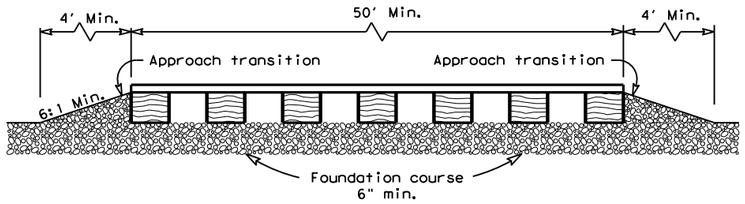
SHORT TERM



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

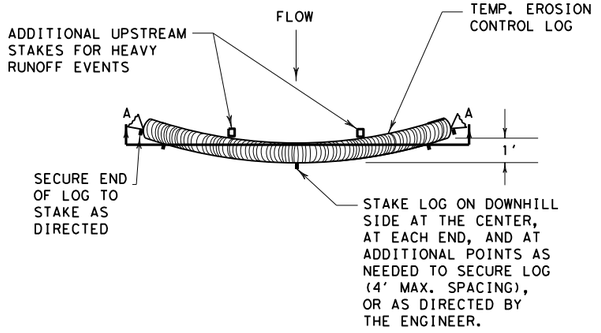
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

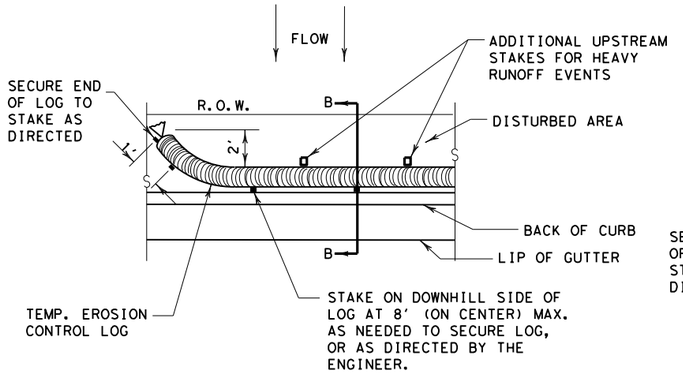
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0442	02	169	IH 35E
	DIST	COUNTY		SHEET NO.
	18	DALLAS		81

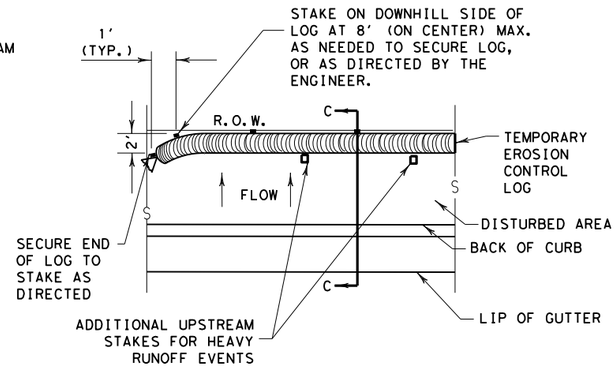
DATE:
FILE:



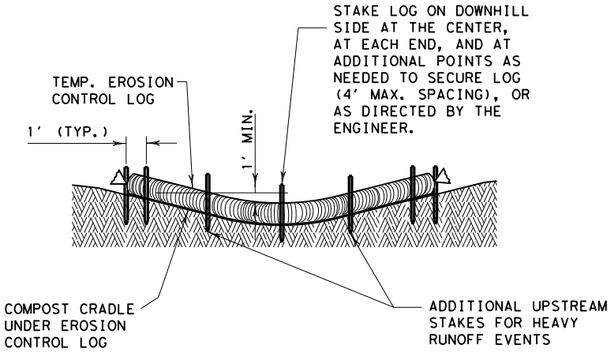
PLAN VIEW



PLAN VIEW



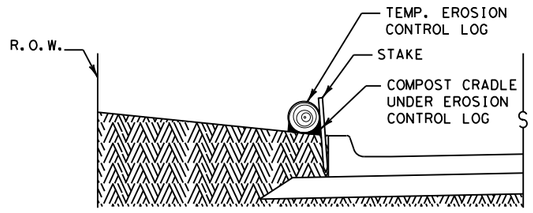
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

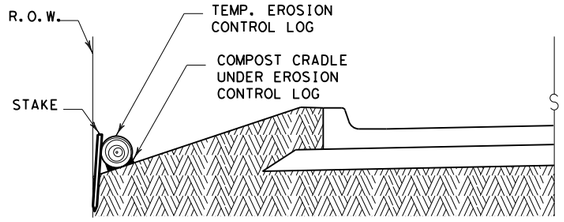
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

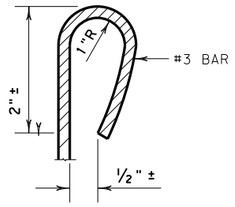
CL-BOC



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.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

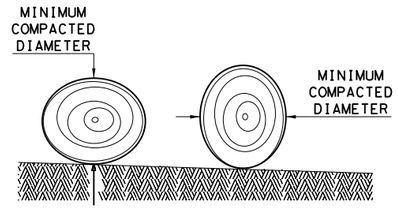
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation

Design Division Standard

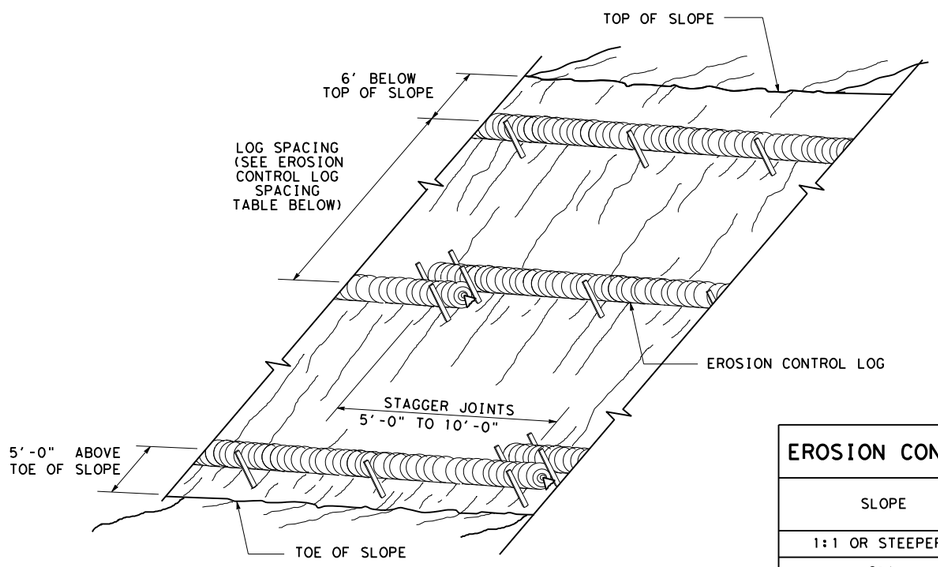
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

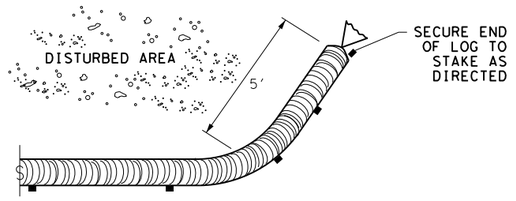
FILE: ec916		DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0442	02	169		IH 35E	
		DIST	COUNTY				SHEET NO.
		18	DALLAS				82

DATE:
FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

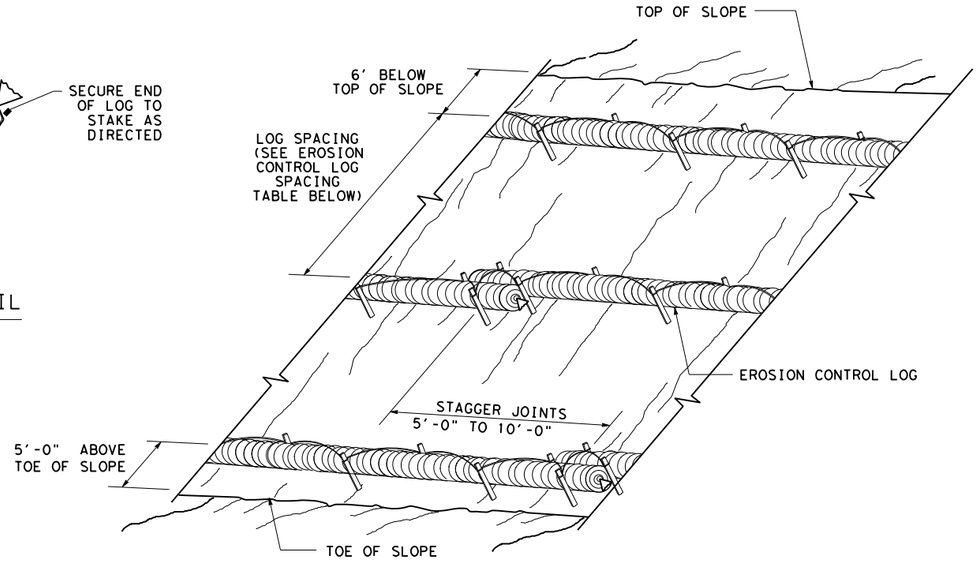
CL-SST



END SECTION RAP DETAIL

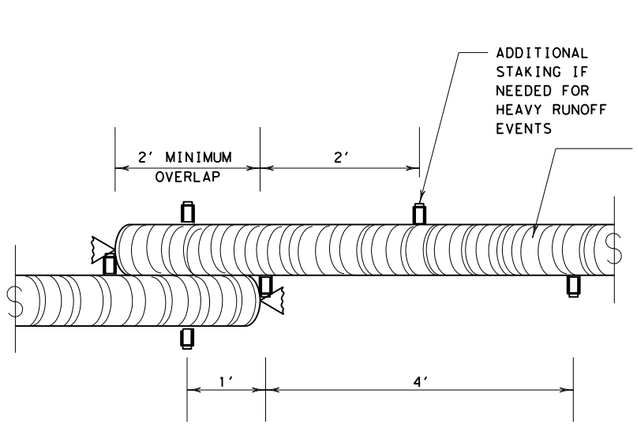
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

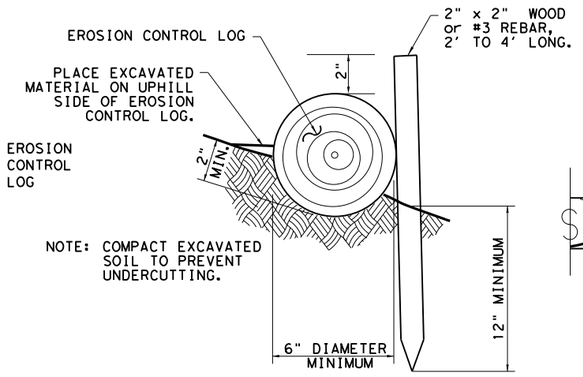
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

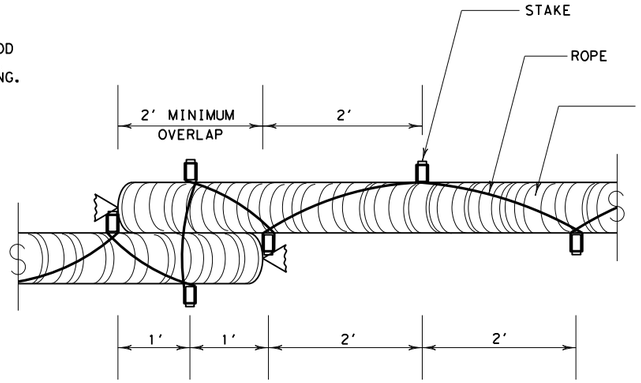


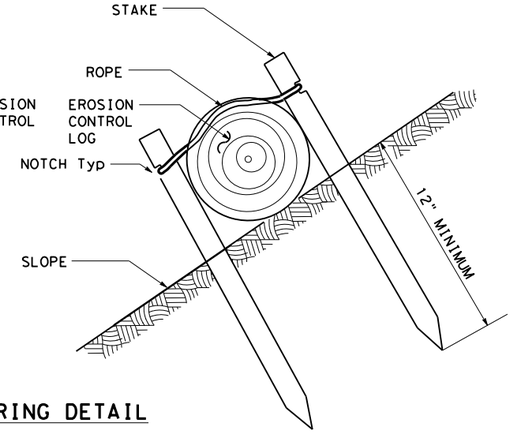


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

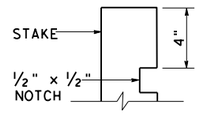
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

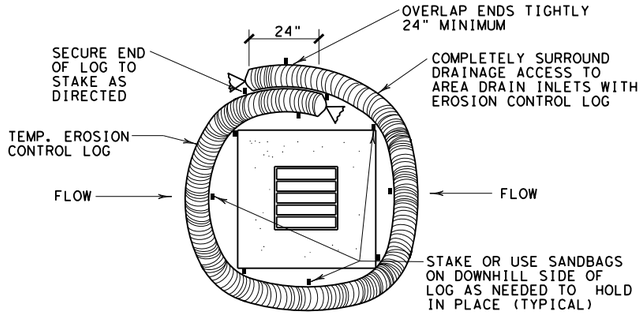
Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

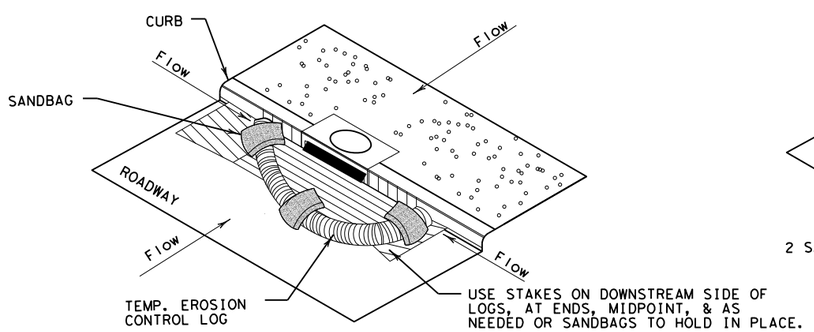
FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0442	02	169		IH 35E	
	DIST	COUNTY			SHEET NO.	
	18	DALLAS			83	

DATE:
FILE:



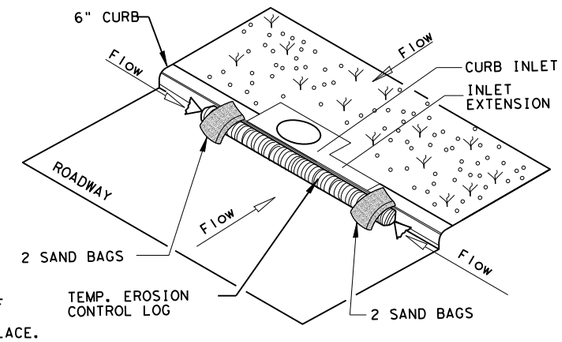
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

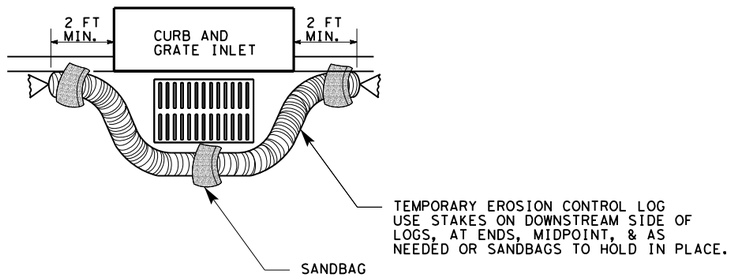
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

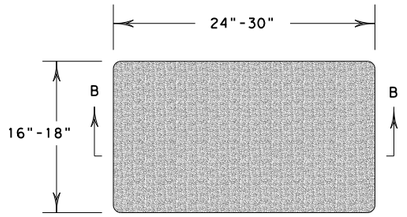
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0442	02	169		IH 35E	
	DIST	COUNTY			SHEET NO.	
	18	DALLAS			84	

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)	Pure Live Seed Rate**	PERMANENT URBAN SEED MIX ITEM 164 - DRILL SEEDING (PERM) (URBAN)(CLAY)	Pure Live Seed Rate**	TEMPORARY DRILL SEED MIX ITEM 164 - DRILL SEEDING (TEMP) (WARM OR COOL)	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					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.

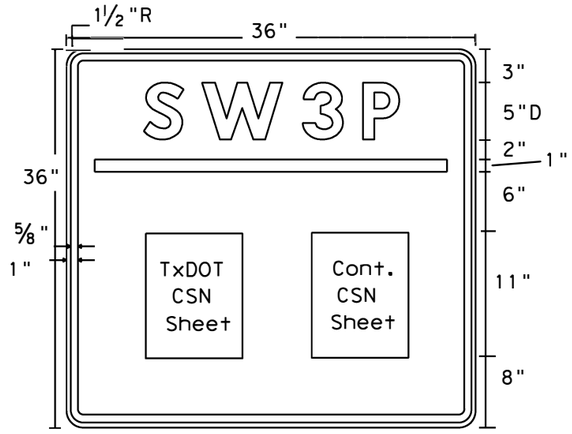
VEGETATION ESTABLISHMENT SHEET

(DALLAS DISTRICT)

TEMPLATE REVISION DATE: 02/21/19

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
CPB	6	(See Title Sheet)		IH 35E
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
XXX	TEXAS	DALLAS	DALLAS	
CHECK	CONTROL	SECTION	JOB	
XXX	0442	02	169	85
CHECK				
XXX				

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.

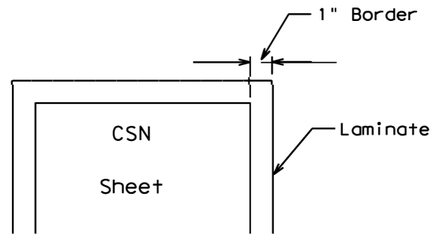
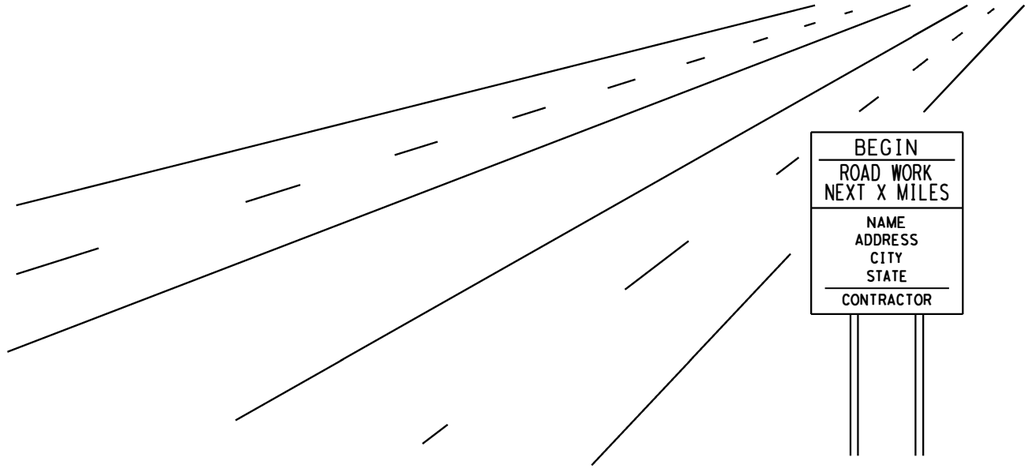
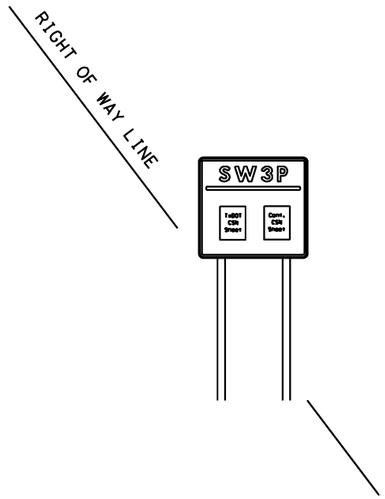


Figure 1





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

Texas Department of Transportation
DALLAS DISTRICT STANDARD

SW3P SIGN SHEET

FILE:	DN: TxDOT	CK:	DW:	CK:
© TxDOT 2016	DISTRICT	PROJECT NO.		SHEET
REVISION DATE: 10-16-15	18	SEE TITLE SHEET		86
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	DALLAS	0442	02	169	IH35E

LEVELS DISPLAYED
PATH: