DESIGN	FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
JRH	6	C 92-14-108			IH 45
GRAPHICS JRH	STATE	DISTRICT	COUNTY		SHEET NO.
CHECK DN	TEXAS	DALLAS	DALLAS		1
CHECK NP	CONTROL	SECTION	JOB		
	0092	14	108		

FINAL PLANS

NAME OF CONTRACTOR: ______________________

DATE OF LETTING: ______________________

DATE WORK BEGAN: ______________________

DATE WORK COMPLETED: ______________________

DATE WORK ACCEPTED: ______________________

SUMMARY OF CHANGE ORDERS:

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

STATE PROJECT
C 92-14-108
CSJ: 0092-14-108

IH 45
DALLAS COUNTY

FUNCTIONAL CLASSIFICATION = URBAN FREEWAY
DESIGN SPEEDS = N/A
AADT = 85,661 (2022)
119,925 (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: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000-008)

LIMITS: AT NEWTON CREEK
AND FIVE MILE CREEK

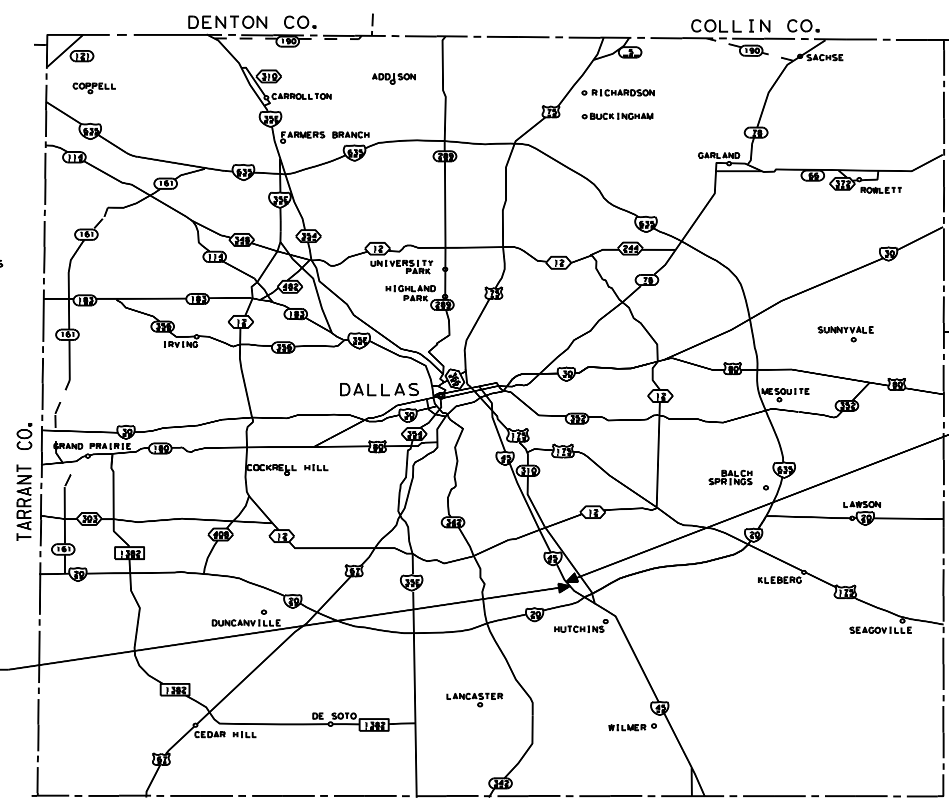
TOTAL LENGTH OF PROJECT =

ROADWAY =	200 FT. =	0.038 MI.
BRIDGE =	1,300 FT. =	0.246 MI.
TOTAL =	1,500 FT. =	0.284 MI.

FOR THE CONSTRUCTION OF BRIDGE MAINTENANCE
CONSISTING OF BRIDGE SCOUR REPAIR

N

DALLAS COUNTY
SCALE 0 1 2 3 4 MILES
DALLAS DISTRICT



BEGIN PROJECT
CSJ 0092-14-108
STA 203+00
TRM 277+0.374

END PROJECT
CSJ 0092-14-108
STA 218+00
TRM 277+0.658

EQUATIONS: NONE
EXCEPTIONS: NONE
RAILROAD CROSSINGS: NONE

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING: Oct. 25, 2023
______________________, P.E.
DESIGN ENGINEER

RECOMMENDED FOR LETTING: 10/25/2023
DocuSigned by:
______________________, P.E.
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

RECOMMENDED FOR LETTING: 10/25/2023
DocuSigned by:
______________________, P.E.
AREA ENGINEER

APPROVED FOR LETTING: 10/25/2023
DocuSigned by:
______________________, P.E.
DISTRICT ENGINEER

WORK WAS COMPLETED ACCORDING
TO THE PLANS AND CONTRACT.

______________________, P.E.
Signature of Registrant & Date

DATE: ____________

INDEX OF SHEETS

SHEET	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3	PROJECT LAYOUT
4,4A-4B	GENERAL NOTES
5	ESTIMATE & QUANTITY
6	QUANTITY SUMMARY
	TRAFFIC CONTROL PLAN
7	TRAFFIC CONTROL PLAN NARRATIVE
	TRAFFIC CONTROL PLAN STANDARDS
> 8-19	BC (1)-21 THRU BC (12)-21
> 20	TCP (5-1)-18
> 21	TCP (6-1)-12
22	TREATMENT FOR VARIOUS EDGE CONDITIONS
	ROADWAY DETAILS
	NONE
	DRAINAGE DETAILS
	NONE
	BRIDGE DETAILS
23	SURVEY CONTROL INDEX SHEET
24-25	PRIMARY HORIZONTAL AND VERTICA LCONTROL
26	HORIZONTAL ALIGNMENT REVIEW REPORT
27	OVERALL LAYOUT
28	QUANTITY SUMMARY
29-32	RIPRAP LAYOUT
33-34	TYPICAL SECTIONS & DETAILS
35	EARTHWORK COMPUTATIONS
36-37	GRADING CONTROL POINT DATA
38-41	HYDRAULIC DATA
	BRIDGE STANDARDS
> 42-43	STONE RIPRAP (SRR)

SHEET	DESCRIPTION
	TRAFFIC SIGNAL
	NONE
	SIGNING
	NONE
	PAVEMENT MARKINGS & DELINEATION
	NONE
	ENVIRONMENTAL ISSUES
44-45	STORMWATER POLLUTION PREVENTION PLAN (SWP3)
46	SW3P SITE PLAN
47	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS(EPIC) (DAL)
	ENVIRONMENTAL ISSUES STANDARDS
> 48-50	EC (1)-16 THRU EC (3)-16
> 51-53	EC(9)-16
> 54	VEGETATION ESTABLISHMENT SHEET (DAL)
> 55	SW3P SIGN SHEET (DAL)

STATE OF TEXAS
J.R.HUGHES
134954
LICENSED
PROFESSIONAL ENGINEER

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

P.E. , P.E. 10/26/2023
Signature of Registrant & Date

Texas Department of Transportation

INDEX OF SHEETS

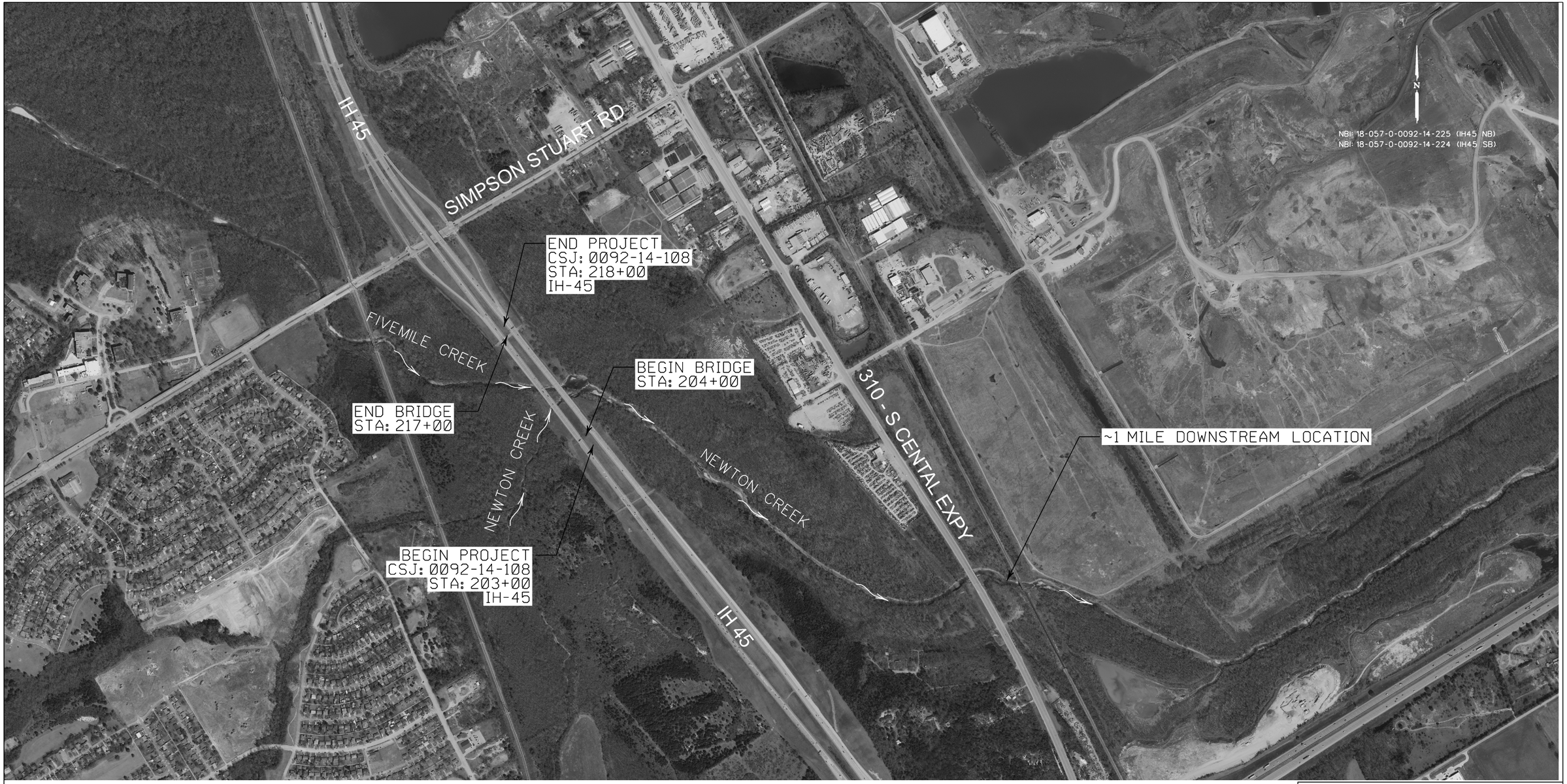
NOT TO SCALE

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
JRH	6	SEE TITLE SHEET		IH 45
GRAPHICS JRH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DAL	DALLAS	2
CHECK NP	CONTROL 0092	SECTION 14	JOB 108	

POL
The "POL" signifies to the Plans Online Office that this index Sheet was created with the Excel Workbook. Please do not delete.

DATE: 10/26/2023 TIME: 8:41:45 AM

10/26/2023
8:50:11 AM
$USER$



STATE OF TEXAS
J.R.HUGHES
134954
LICENSED
PROFESSIONAL ENGINEER

Signature of Registrant & Date

J. R. Hughes, P.E.
10/26/2023

Texas Department of Transportation

IH 45

PROJECT LAYOUT

NOT TO SCALE SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
IS	6	SEE TITLE SHEET		IH 45
GRAPHICS IS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK JH	TEXAS	DAL	DALLAS	
CHECK NP	CONTROL	SECTION	JOB	3
	0092	14	108	

$FILE$
$PLTDRV$ PEN

SPECIFICATION DATA

Table 1: Basis of Estimate for Permanent Construction					
Item	Description	Thickness	Rate		Quantity
162	Block Sod	N/A	See Specifications		2355 SY
166 *	Fertilizer (12-6-6)	N/A	500	Lbs./Ac	0.122 Ton
168	Vegetative Watering (Warm)**	N/A	12	MG/Ac/Day	87.66 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 2: Basis of Estimate for Temporary Erosion Control Items				
Item	Description	Rate		Quantity
164	Drill Seeding (Temp) (Warm or Cool)	See Specifications		2355 SY
166*	Fertilizer (12-6-6)	500	Lb/Ac	0.122 Ton
168	Vegetative Watering (Warm)**	12	MG/Ac/Day	350.64 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 2.594 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).

CSJ: 0092-14-108 **Sheet 4**

County: Dallas

Highway: IH 45

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

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

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address: https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

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

Nathan Petter: Nathan.Petter@txdot.gov
Dung Nguyen: Dung.Nguyen@txdot.gov

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

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

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

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

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

No significant traffic generator events identified.

ITEM 8
This Project will be a Standard Workweek.

Nighttime work is allowed in accordance with Article 8.3.3.

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

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

ITEM 100
The limits of preparing right of way will be measured from STA.207+00 to STA. 213+00 along the centerline of construction.

ITEM 110
Excavated shale is not an acceptable material for embankment.

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

CSJ: 0092-14-108 **Sheet 4A**

County: Dallas

Highway: IH 45

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.

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

Place barricades and signs in locations that do not obstruct the sight distance of drivers entering the highway from driveways or side streets.
Provide rectangular shape (CW12-2a) Temporary Clearance Signs on all bridges where the existing vertical clearance has changed. Install Signs to the satisfaction of the Engineer prior to opening to traffic. Plywood sign blanks will have minimum dimensions of 84" X 24". Work performed and materials are subsidiary to this item.

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

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

As approved by the Engineer, provide uniformed off duty police officers and squad cars during lane or ramp closures, night time work or other situations that indicate a need for additional traffic control to protect the traveling public or the construction workforce. Provide documentation such as payroll, log sheets with signatures and badge number, or invoices from the government entity providing the officers for reimbursement. Complete the weekly tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided. Reimbursement will not be made for coordination fees charged by any party.

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

Per Special Provision 008-045, this contract includes Lane Closure Assessment Fees for lane closures that remain in place and impeding traffic on the mainlanes of IH 45 after the specified closure time has elapsed. Lane closure times are addressed under item 502. Lane Closure Assessment Fees are outlined in table 8-1.

Table 8-1 – IH 45 General Purpose Lane Closure Assessment Fees.
(Fees will be charged in 15 min increments)

Liquidated Damages (Per Hour)	
1 Lane Closed	$3,500
2 or more Lanes Closed	$50,000

Lane closures Monday thru Sunday from 5:00 AM to 9:00 PM are not allowed. In the event that lanes are to be closed due to construction activities, liquidated damages will be charged. Additional lanes may be closed with the Engineer's approval. Liquidated damages are addressed under Item 8 and the hourly fee is outlined in table 8-1.

Traffic Control Plans with Lane Closures causing backups of 8 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

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

CSJ: 0092-14-108 **Sheet 4B**

County: Dallas

Highway: IH 45

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 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 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	
(6-6)-12 / (6-7)-12	All		1 Per Lane	

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

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

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0092-14-108 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY IH 45

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0092-14-108**			
		PROJECT ID		**A00201263**			
		COUNTY		**Dallas**			
		HIGHWAY		**IH 45**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	6.000		6.000	
	110-6002	EXCAVATION (CHANNEL)	CY	4,083.000		4,083.000	
	161-6017	COMPOST MANUF TOPSOIL (4")	SY	2,355.000		2,355.000	
	162-6002	BLOCK SODDING	SY	2,355.000		2,355.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	2,355.000		2,355.000	
	168-6001	VEGETATIVE WATERING	MG	438.300		438.300	
	432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	200.000		200.000	
	432-6035	RIPRAP (STONE PROTECTION)(24 IN)	CY	582.000		582.000	
	432-6036	RIPRAP (STONE PROTECTION)(30 IN)	CY	11,524.000		11,524.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	17.000		17.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	343.000		343.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	343.000		343.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	911.000		911.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	911.000		911.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	1,881.000		1,881.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	1,881.000		1,881.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	237.000		237.000	
	08	CONTRACTOR FORCE ACCOUNT LAW ENFORCEMENT (NON-PARTICIPATING)	LS	1.000		1.000	
		CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS	1.000		1.000	
		CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS	1.000		1.000	

DRAINAGE ITEMS ESTIMATED QUANTITIES
SEE SHEET 28 FOR SCOUR REPAIR QUANTITIES

EROSION CONTROL ESTIMATED QUANTITIES

ITEM NO.	161	162	164	168	506	506	506	506	506	506
DESCRIPTION CODE	6017	6002	6051	6001	6020	6024	6038	6039	6041	6043
ITEM DESCRIPTION	COMPOST MANUF TOPSOIL (4")	BLOCK SODDING	DRILL SEED (TEMP)(WARM OR COOL)	VEGETATIVE WATERING	CONSTRUCTION EXITS (INSTALL) (TY1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	SY	MG	SY	SY	LF	LF	LF	LF
CSJ: 0092-14-108	2,355	2,355	2,355	438.3	343	343	911	911	1,881	1,881
TOTALS	2355	2355	2355	438.3	343	343	911	911	1881	1881

NOTE:
ALL ITEM 506 ENVIROMENTAL ITEMS INCLUDE 10% ADDITIONAL QUANTITY TO ACCOMADATE CHANGING SITE CONDITION NEEDS
SEE GENERAL NOTES FOR VEGETATIVE WATERING APPLICATION RATES USED FOR WATERING MG QUANTITY DETERMINATION

WORK ZONE SAFETY ESTIMATED QUANTITIES

ITEM NO.	502	6001	6185
DESCRIPTION CODE	6001	6002	6002
ITEM DESCRIPTION	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)
	MO	EA	DAY
CSJ: 0092-14-108	17	2	237
TOTALS	17	2	237

QUANTITY SUMMARY

NOT TO SCALE

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
JRH	6	SEE TITLE SHEET		IH 45
GRAPHICS JRH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK DN	TEXAS	DAL	DALLAS	6
CHECK NP	CONTROL	SECTION	JOB	
	0092	14	108	

GENERAL

1 INSTALL BARRICADES AND ADVANCED WARNING SIGNS PER BC STANDARDS, TCP STANDARDS, WORK ZONE STANDARDS AND/OR AS DIRECTED BY THE ENGINEER.
THE SIGNS, BARRICADES, OR OTHER WARNING DEVICES SHALL BE CONSIDERED 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 SW3P CONTROL DEVICES (CBMPs) TO PROTECT RECEIVING WATERS PRIOR TO CONSTRUCTION ACTIVITIES IN THEIR VICINITY, AS NEEDED AND/OR AS APPROVED BY THE ENGINEER.
CONTRACTOR IS RESPONSIBLE FOR RE-VEGETATING SOILS DISTURBED BY PROJECT. DO NOT REMOVE BMPs UNTIL THEIR CONTROL AREA HAS BEEN STABILIZED.

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 SEQUENCE OF CONSTRUCTION (SEE BELOW).

4 SUBMIT ANY REQUEST TO ALTER SEQUENCE OF OPERATION OF TRAFFIC CONTROL PLANS TO THE ENGINEER FOR WRITTEN APPROVAL PRIOR TO BEGIN 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 APPLY LANE CLOSURES AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH TCP STANDARD SHEETS AND TMUTCD AND/OR AS DIRECTED BY THE ENGINEER

7 PLACE PORTABLE CHANGEABLE MESSAGE SIGNS TO INFORM THE TRAVELING PUBLIC OF THE INTENT TO CLOSE MAINLANES OR RAMPS 7 DAYS PRIOR TO CLOSURE.

SEQUENCE OF CONSTRUCTION

1 THE CONTRACTOR SHALL LIMIT WORKZONE ENTRANCES & EXITS TO ON ONE SIDE OF IH 45 (EB OR WB) AT A TIME, BEFORE PROCEEDING TO MOVE THE WORKZONE ENTRANCE & EXITS TO THE OTHER DIRECTION OF TRAVEL,
UNLESS OTHERWISE APPROVED BY THE ENGINEER

2 PREP ROW AND PERFORM CHANNEL EXCAVATION IN AREAS IDENTIFIED IN THE PLANS; UNLESS ADDITIONAL AREAS HAVE BEEN IDENTIFIED & APPROVED BY THE ENGINEER, NO WORK IS TO BE PERFORMED OUTSIDE IDENTIFIED AREAS

3 INSTALL ALL STONE PROTECTION RIPRAP WORK ITEMS

4 PLACE TEMP SEEDING ITEMS AS SHOWN IN THE PLANS TO RE-ESTABLISH VEGETATION, IN WORK AREAS WHERE ALL SCOUR REPAIR ITEMS OF WORK HAVE BEEN COMPLETED

5 PLACE BLOCK SODDING AS SHOWN IN THE PLANS TO RE-ESTABLISH PERMANANT VEGETATION, AFTER ALL SCOUR REPAIR ITEMS OF WORK WITHIN THE PROJECT HAVE BEEN COMPELETED

6 REMOVE TEMPORARY SW3P CONTROL MEASURES AS DIRECTED OR AUTHORIZED BY ENGINEER

7 FINAL PROJECT CLEAN UP.

TCP NOTES

~ PAVEMENT EDGE DROP-OFFS GREATER THAN 2" WILL NOT BE ALLOWED TO REMAIN. PROVIDE PAVEMENT EDGE DROP-OFFS WITH AN ACCEPTABLE MATERIAL TO FORM A 3:1 SLOPE OR FLATTER

~ THE CONTRACTOR SHOULD NOT MOVE TO ANOTHER LOCATION WITHOUT REPLACING ALL MBGF & SGTs AT THE CURRENT WORK LOCATION

~ TEMPORARY SW3P EROSION CONTROL MEASURES SHALL ONLY BE PLACED IN AREAS WHERE CONSTRUCTION ACTIVITIES ARE EXPECTED TO OCCUR WITHIN TWO WEEKS

~ MAINTAIN EXISTING DRAINAGE DURING ALL CONSTRUCTION ACTIVITIES

STATE OF TEXAS
J.R.HUGHES
134954
LICENSED
PROFESSIONAL ENGINEER

J. Rhus Hughes, P.E.
10/26/2023

Texas Department of Transportation

TRAFFIC CONTROL PLAN NARRATIVE

NOT TO SCALE

DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
JRH	6	SEE TITLE SHEET		IH 45
GRAPHICS JRH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK JRH	TEXAS	DAL	DALLAS	7
CHECK JRH	CONTROL	SECTION	JOB	
	0092	14	108	

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

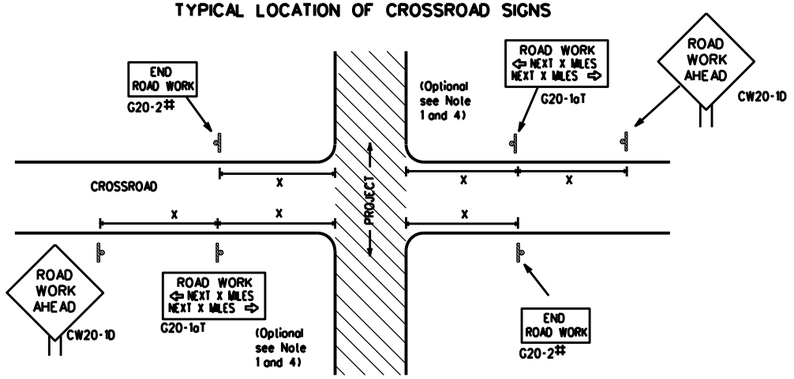
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	0092	14	108	IH 45
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		8

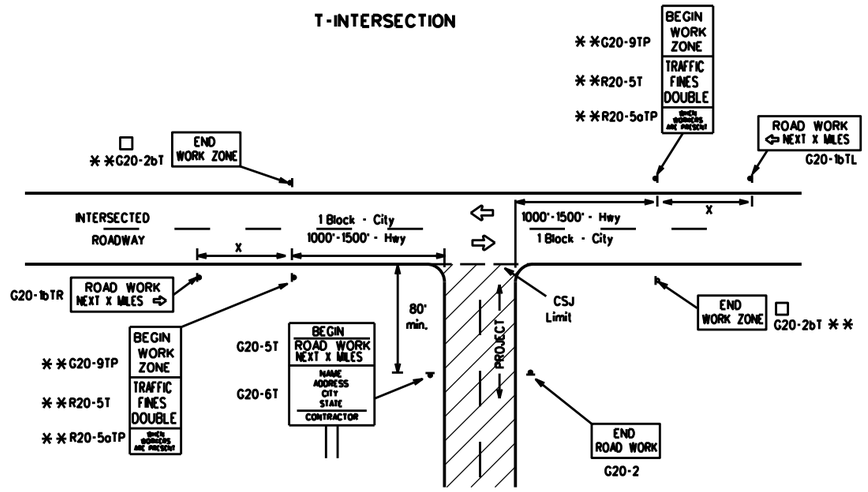
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

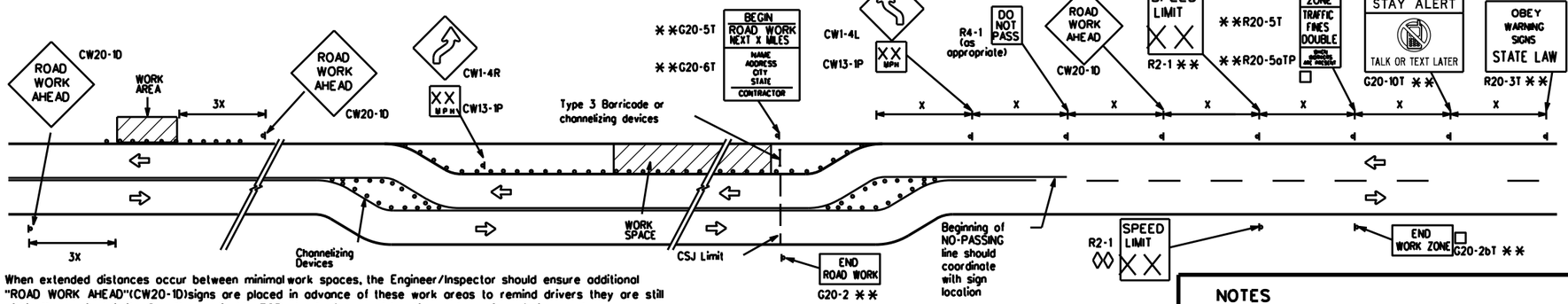
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

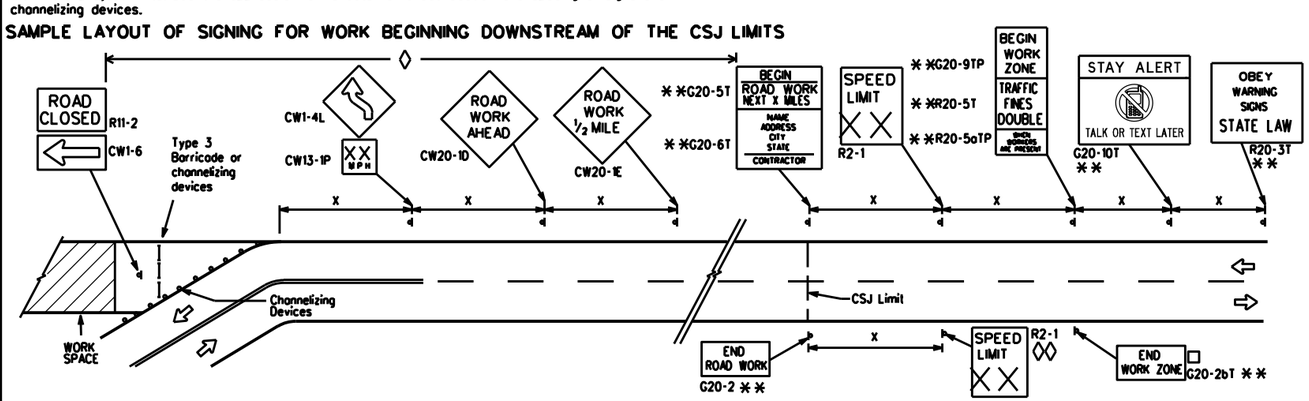
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

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

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

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

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

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

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

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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REVISIONS	0092	14	108	IH 45
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		9

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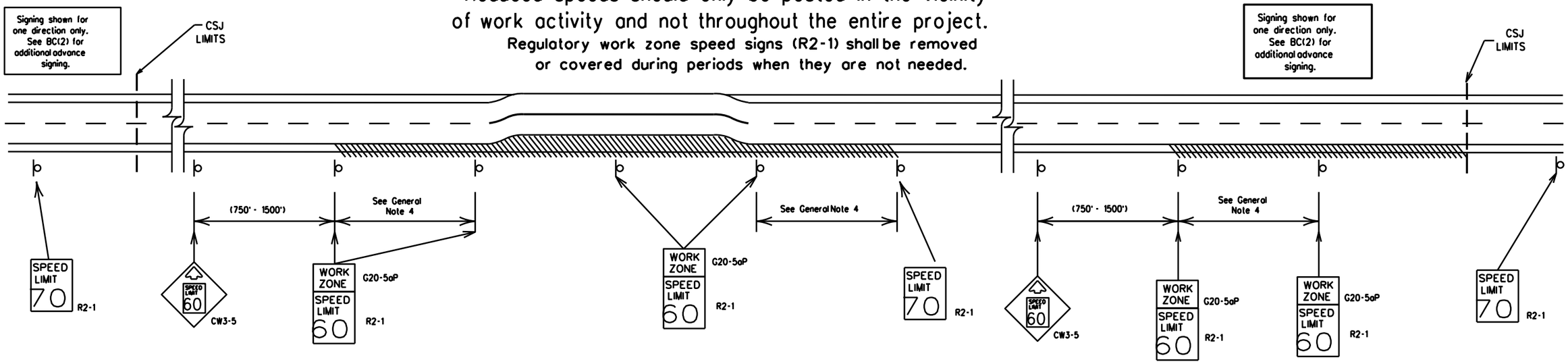
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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REVISIONS	0092	14	108	IH 45
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7-13 5-21	DAL	DALLAS		10

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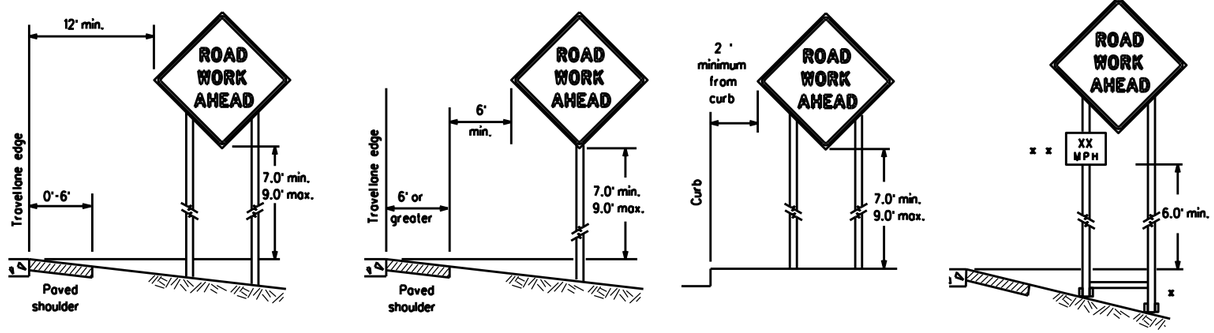
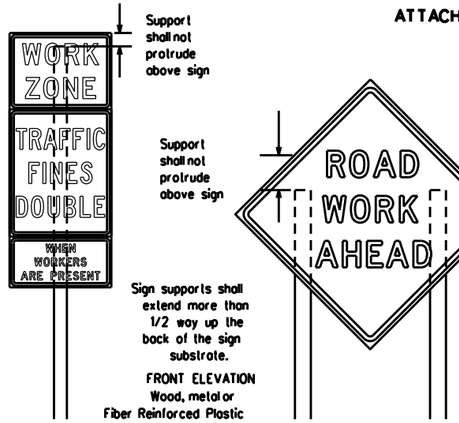
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



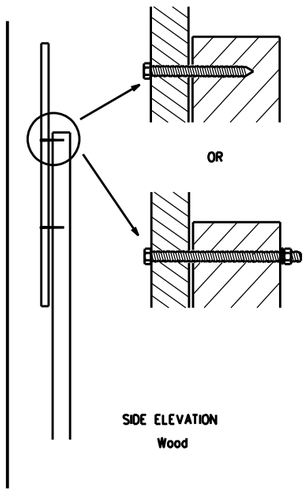
x When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



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.

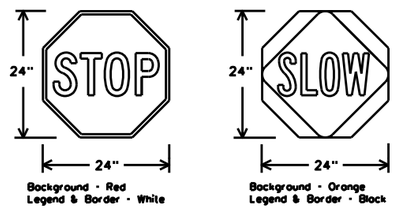


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.

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 lightness 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 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.

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BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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7-13 5-21	DAL	DALLAS		11

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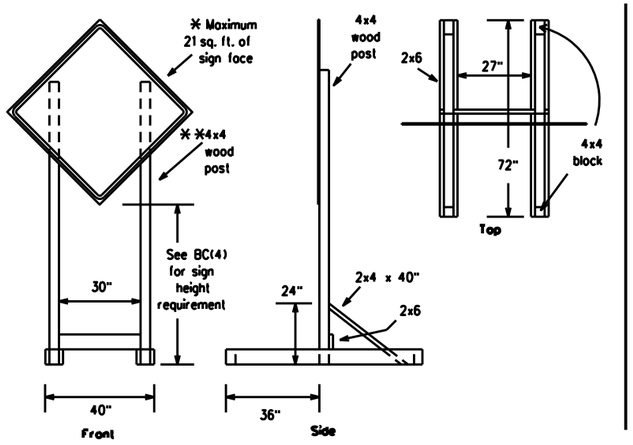
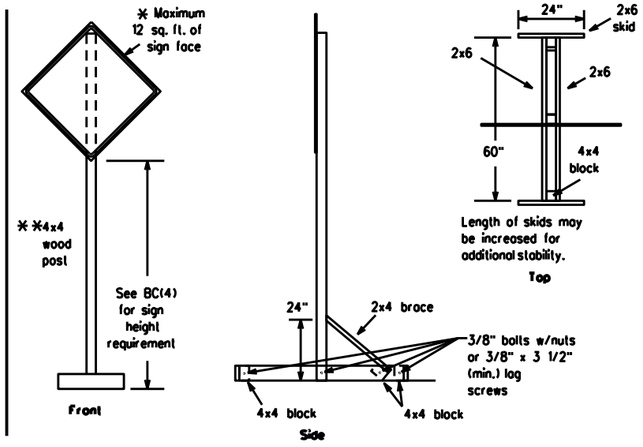
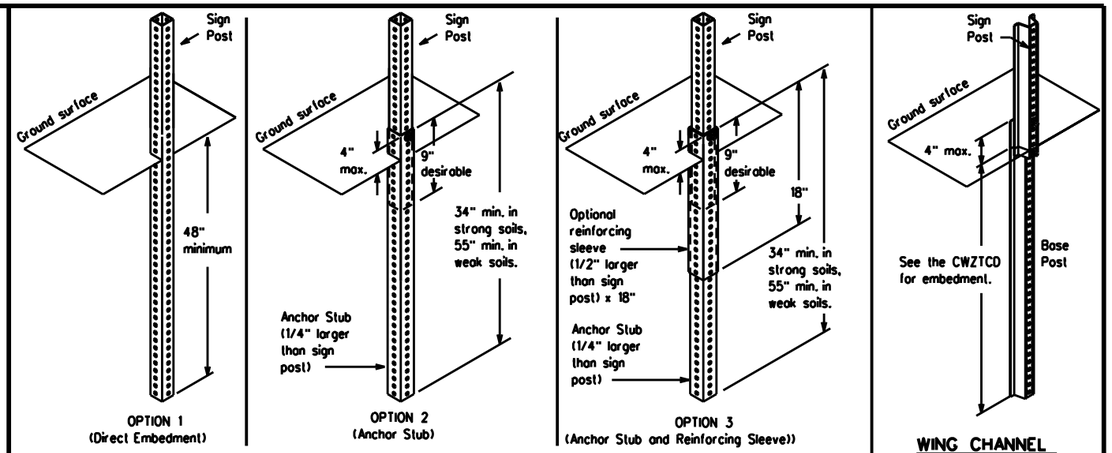




SKID MOUNTED WOOD SIGN SUPPORTS

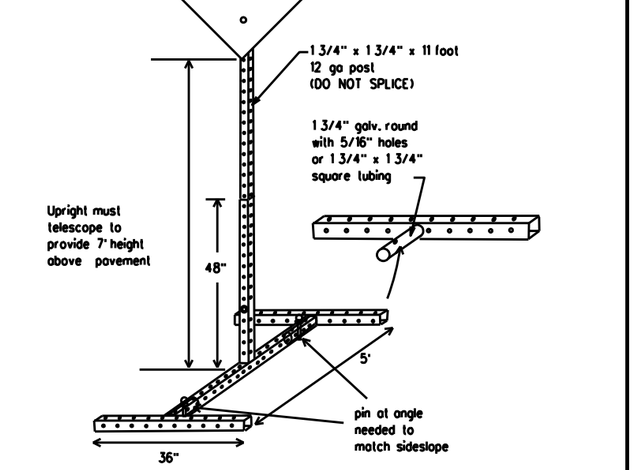
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

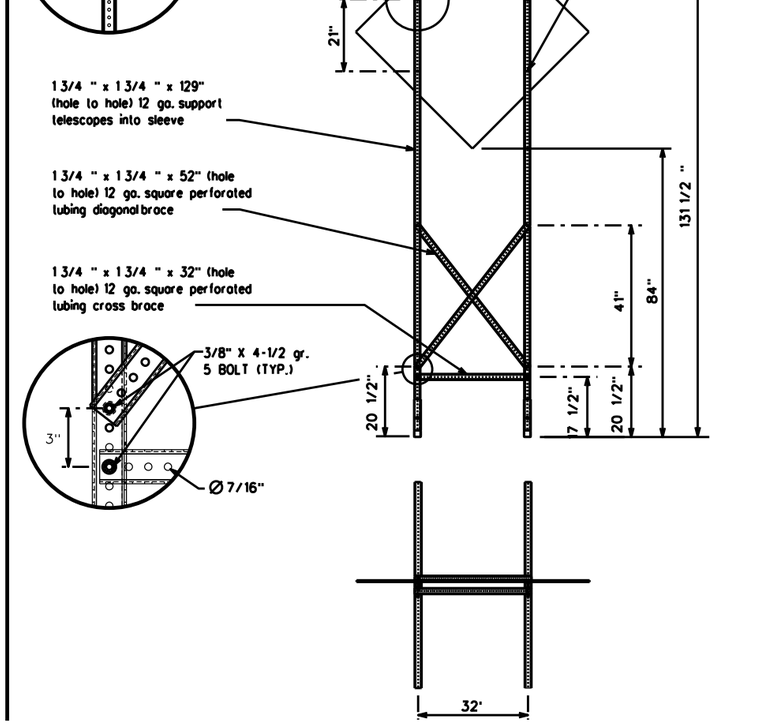


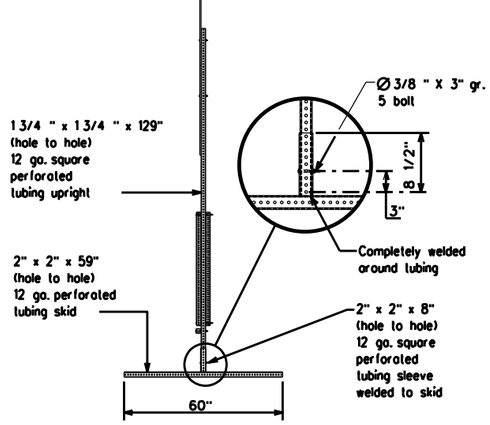
PERFORATED SQUARE METAL TUBING

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.

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BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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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	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major MAJ	
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLRS
High-Occupancy	HOV	Tuesday	TUES
Vehicle Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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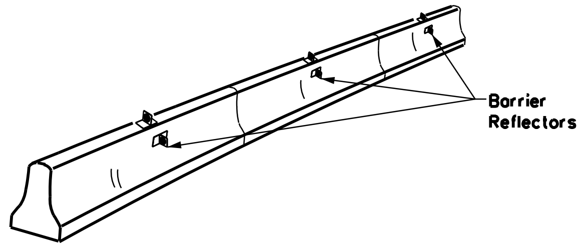
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		13

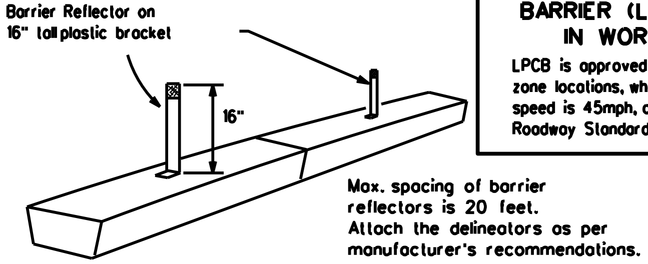
100

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



CONCRETE TRAFFIC BARRIER (CTB)

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

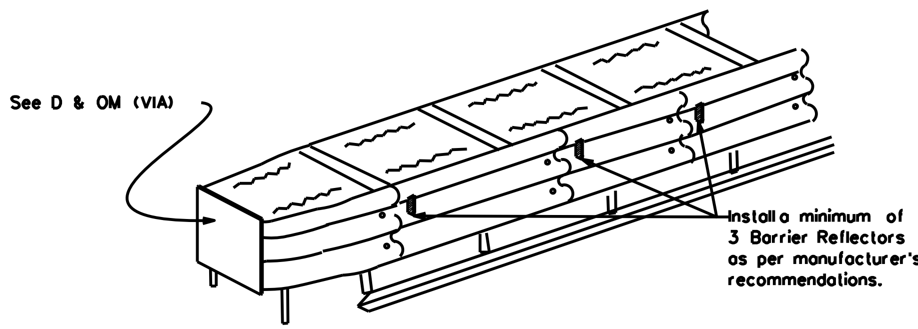


Max. spacing of barrier reflectors is 20 feet.
Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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



DELINEATION OF END TREATMENTS

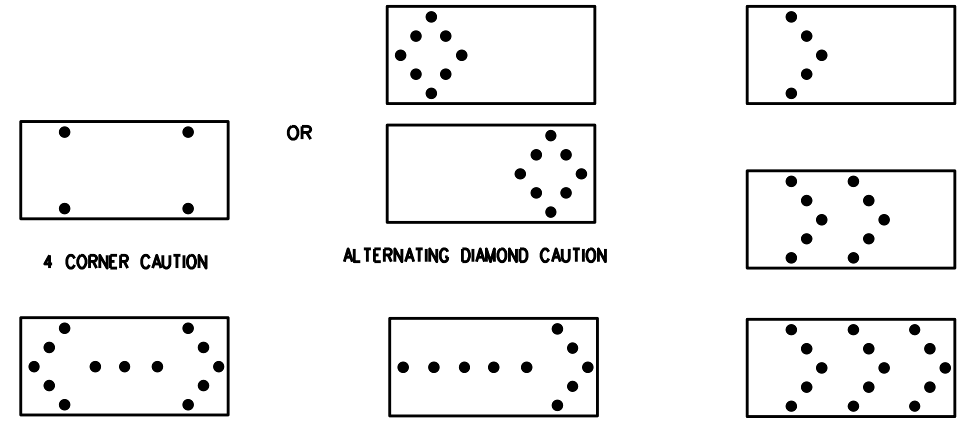
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the 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

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

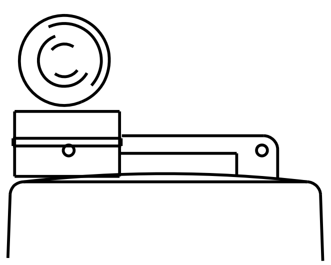
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

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



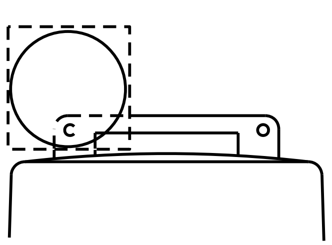
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



Warning 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.

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 on extended distance from the TMA.

SHEET 7 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

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REVISIONS	0092	14	108	IH 45
9-07 8-14	DIST		COUNTY	SHEET NO.
7-13 5-21	DAL		DALLAS	14

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

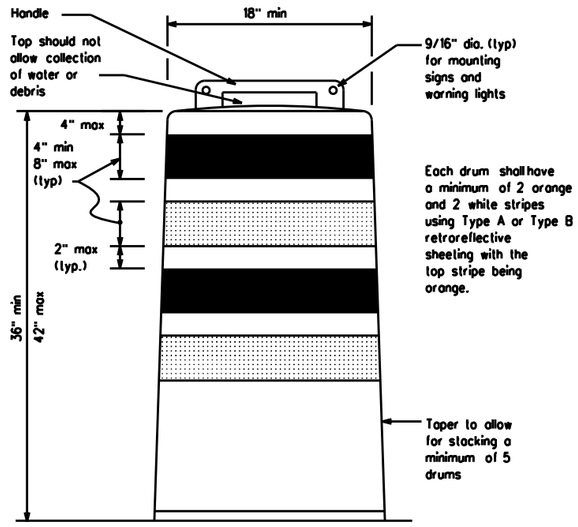
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

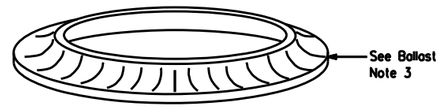
RETROREFLECTIVE SHEETING

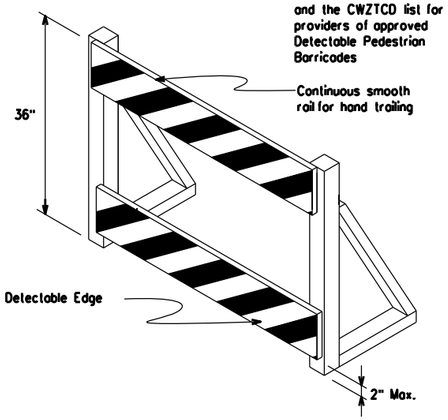
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

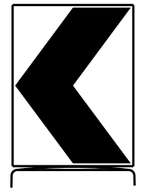




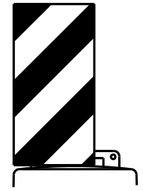


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B or Type C Orange$_{FL}$ 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

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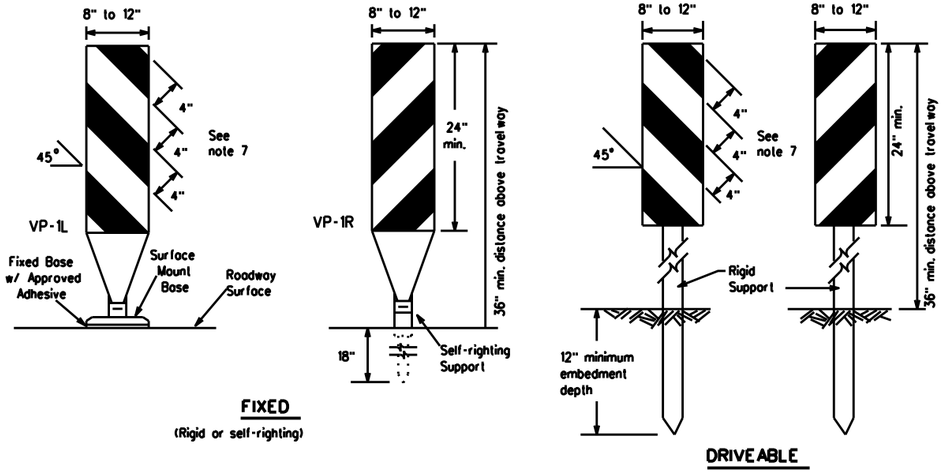
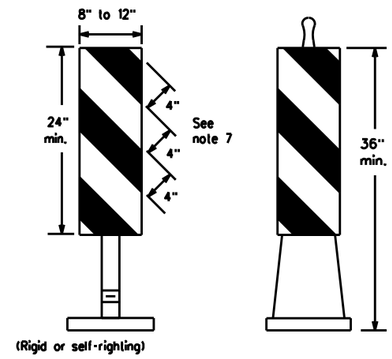
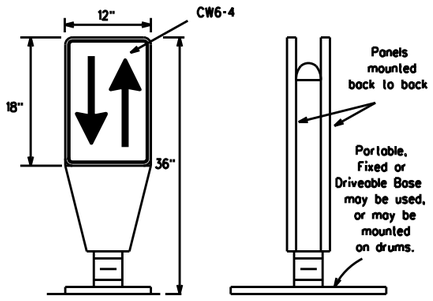




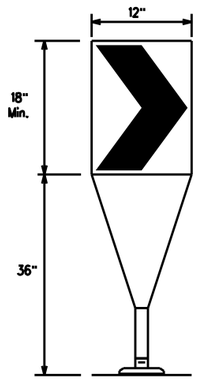
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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 or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

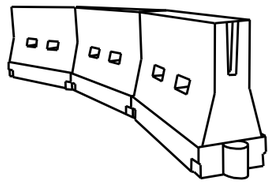


1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of 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 or Type C 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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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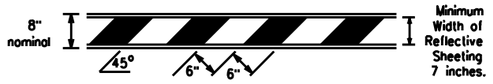
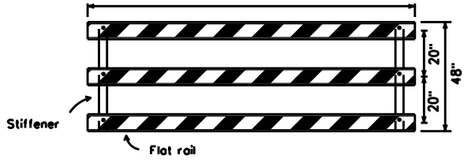
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



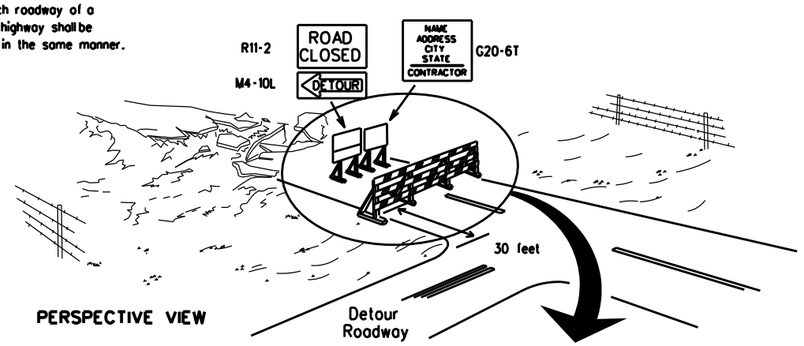
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

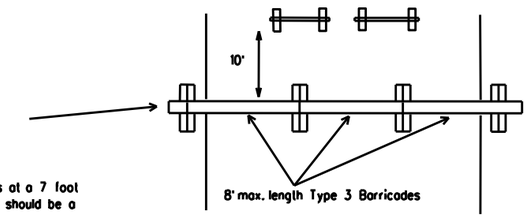
TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

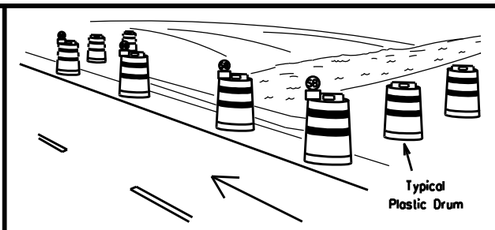
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

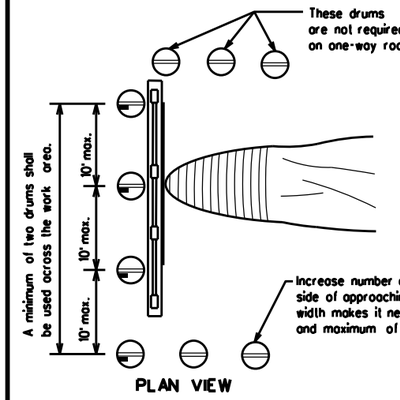
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

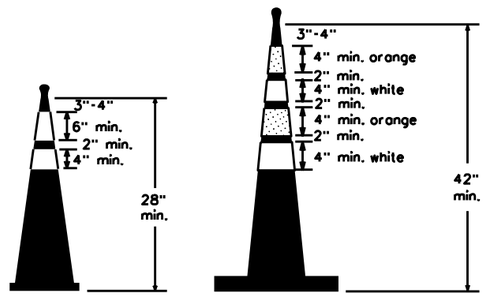
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



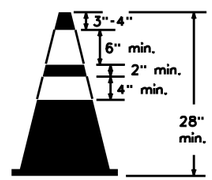
PLAN VIEW

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

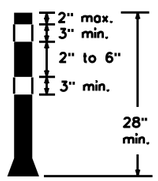
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

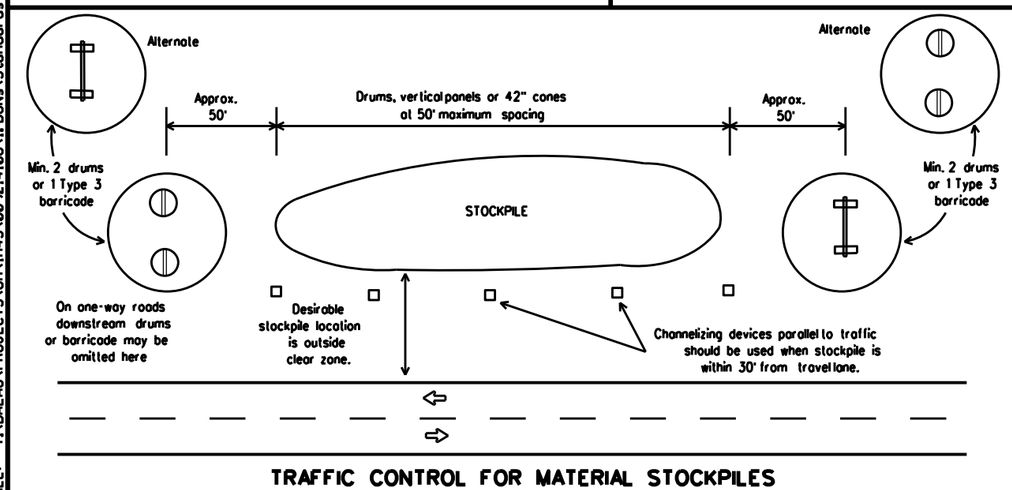


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0092	14	108	IH 45
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		17

DATE: 10/18/2023 11:35:48 AM
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

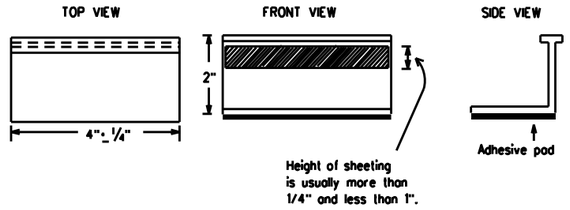
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0092	14	108	IH 45
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	DAL	DALLAS		18
11-02 8-14				

DATE: 10/18/2023 11:35:49 AM
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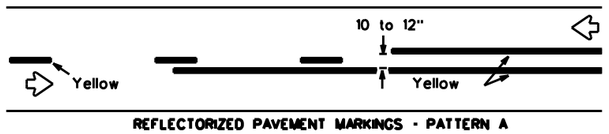
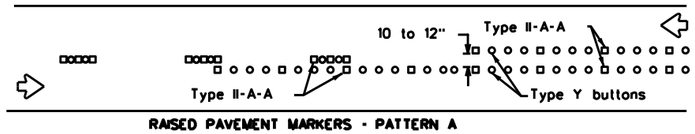
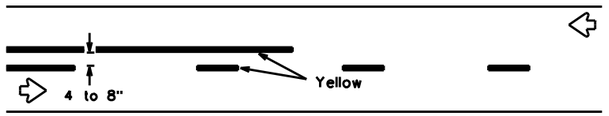
PAVEMENT MARKING PATTERNS



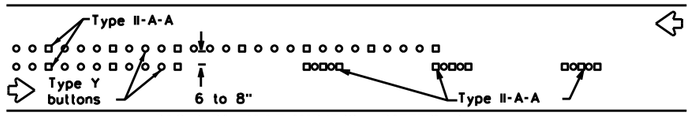
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



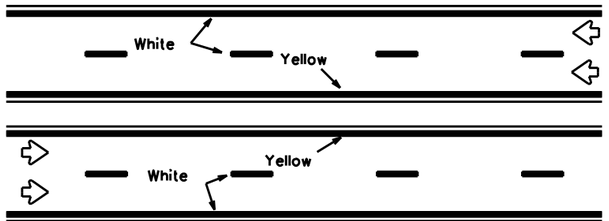
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



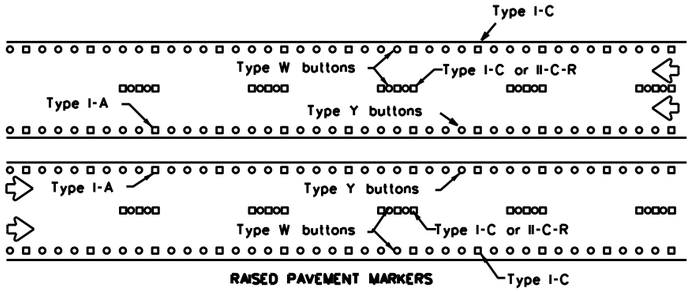
RAISED PAVEMENT MARKERS - PATTERN B

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

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



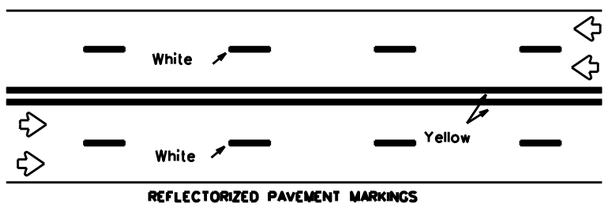
REFLECTORIZED PAVEMENT MARKINGS



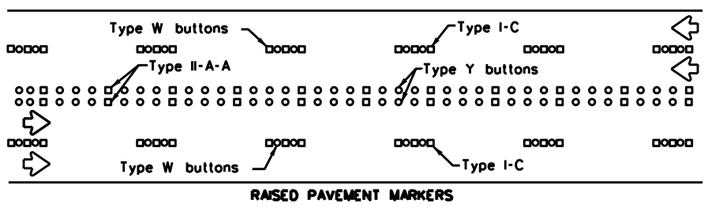
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



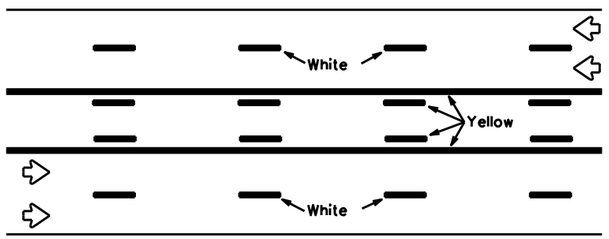
REFLECTORIZED PAVEMENT MARKINGS



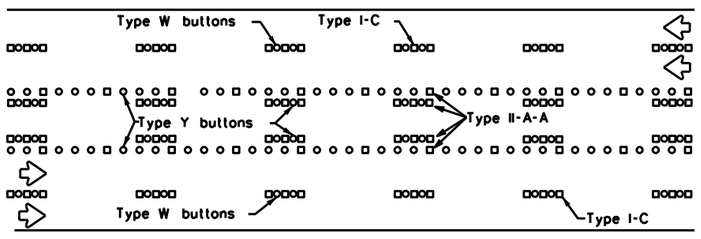
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

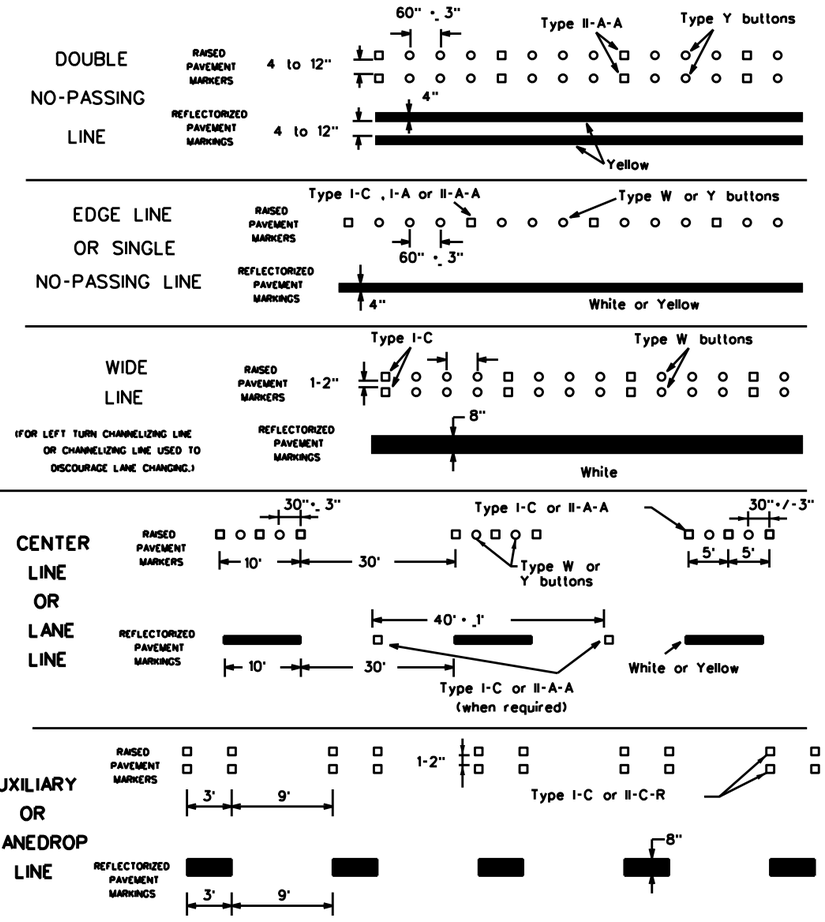


RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

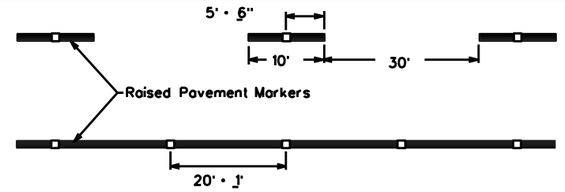
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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REVISIONS 1-97 9-07 5-21	0092	14	108	IH 45
2-98 7-13	DIST	COUNTY		SHEET NO.
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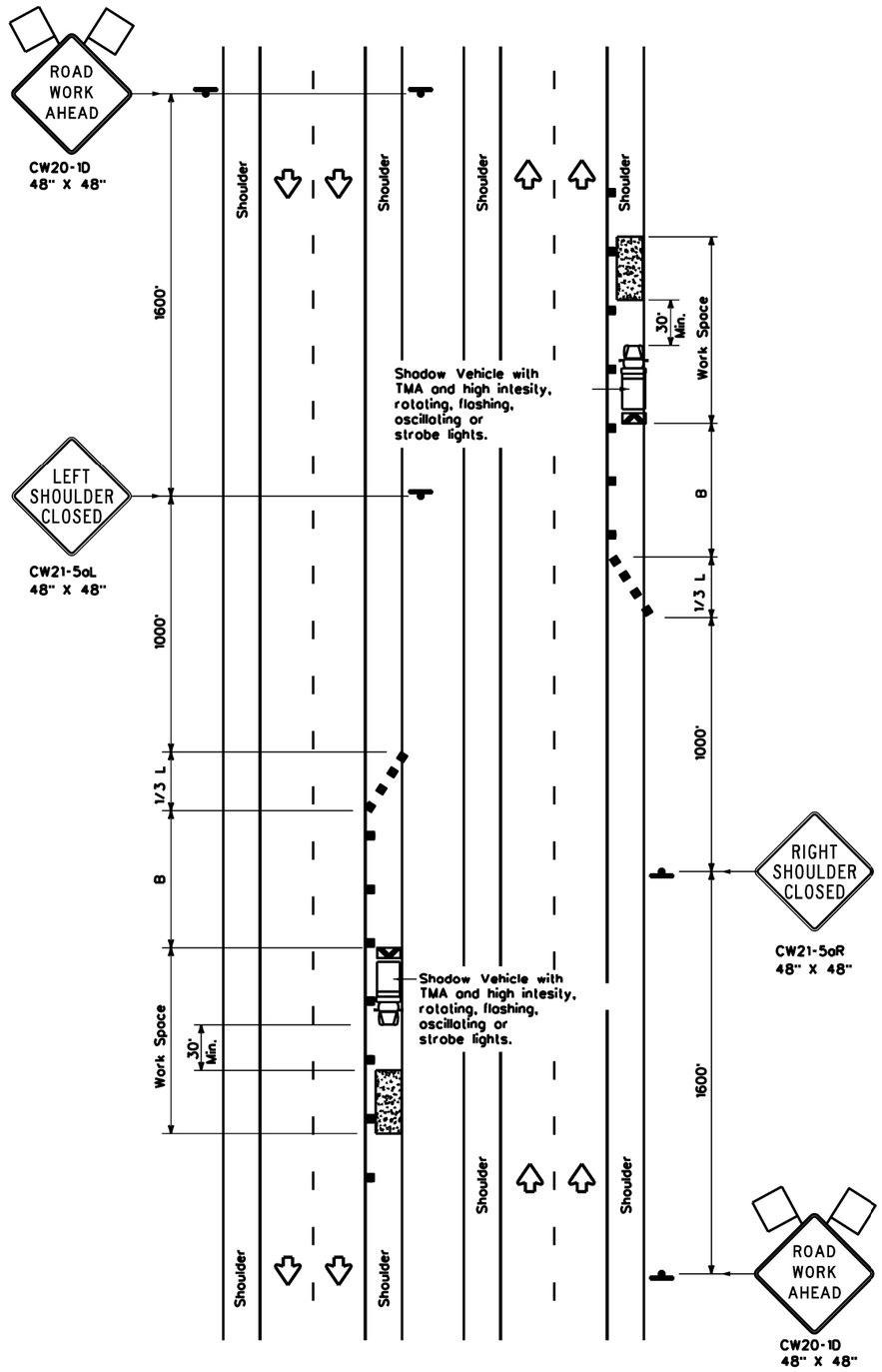
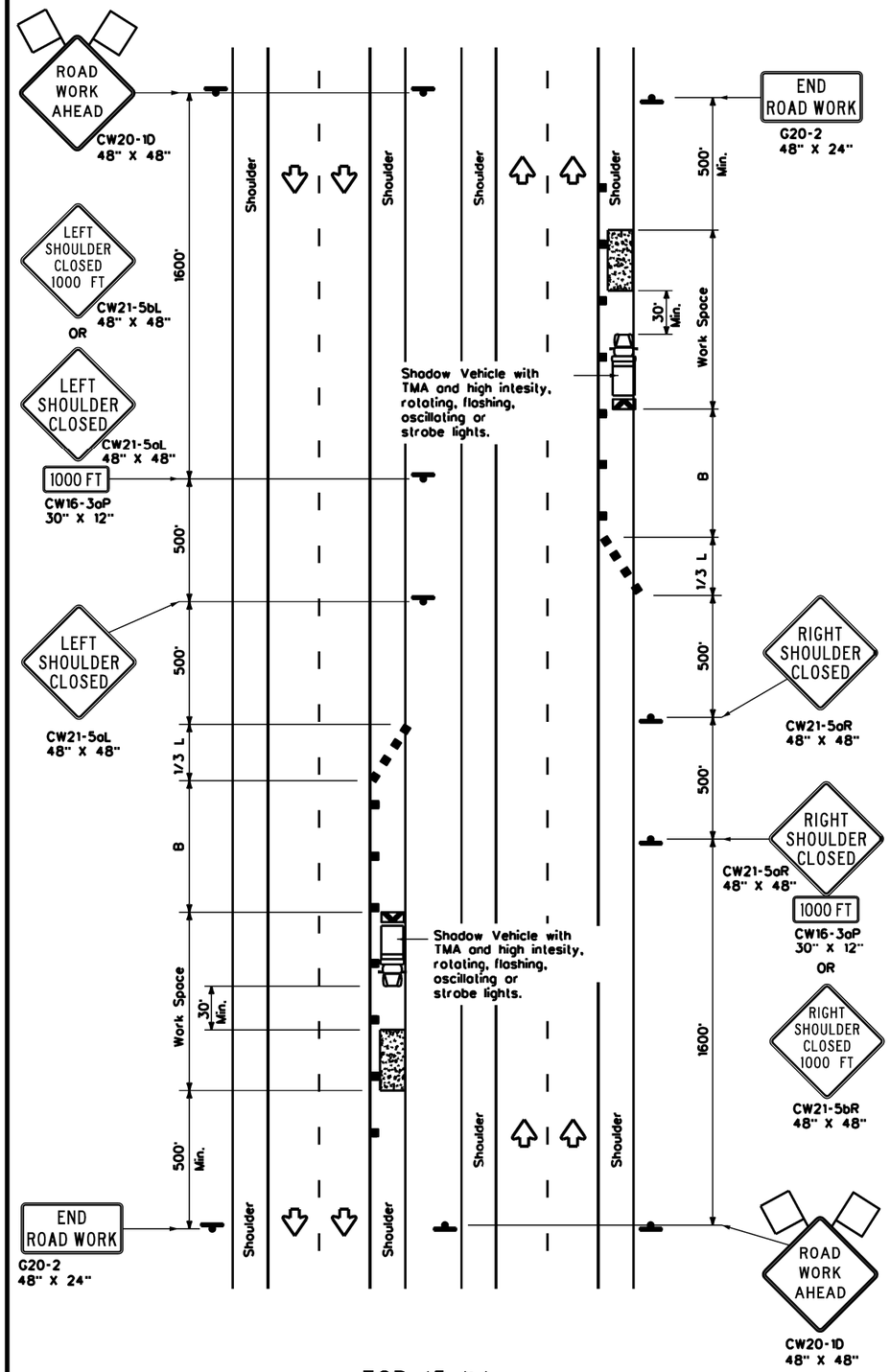


TCP (5-1a)

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

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2-18	DIST	COUNTY		SHEET NO.
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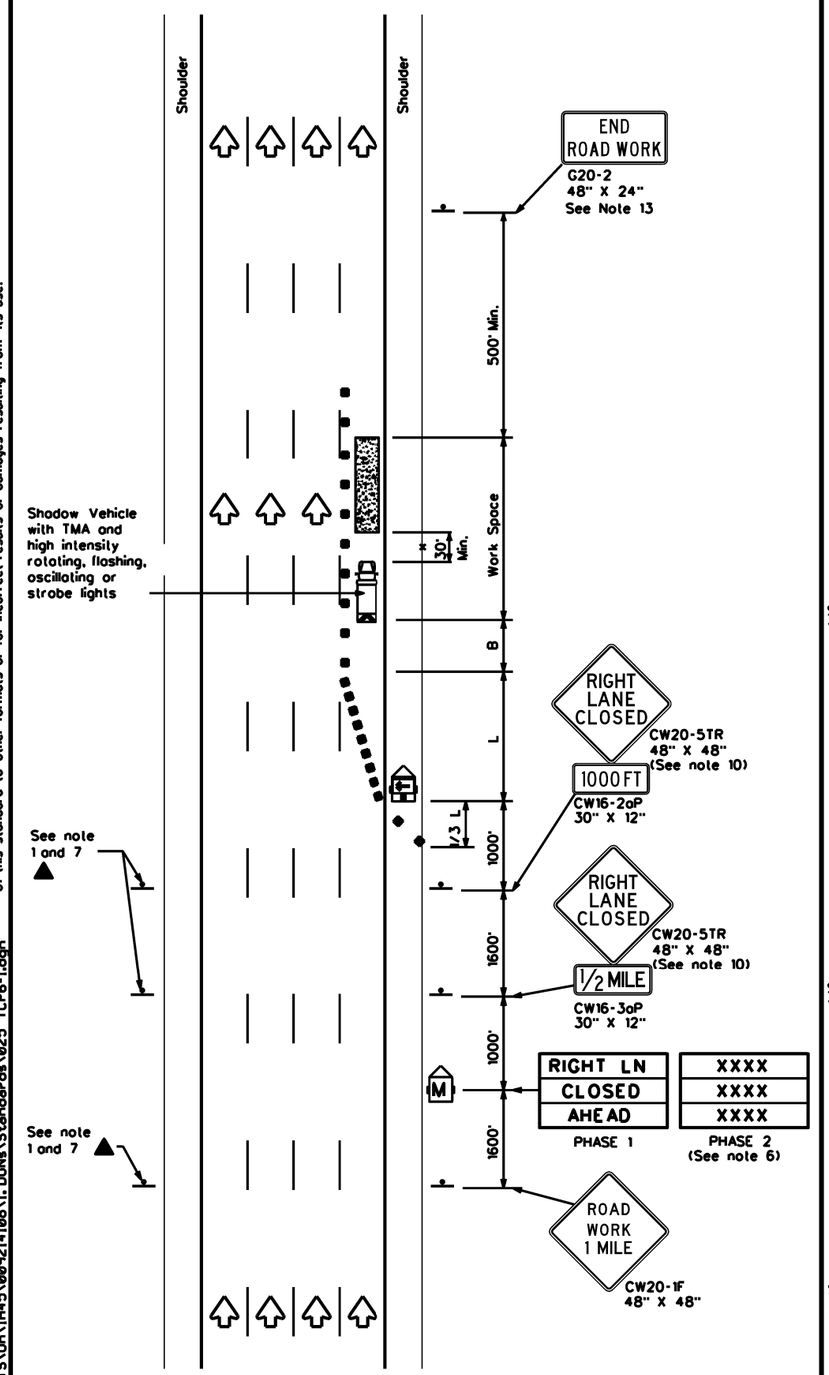
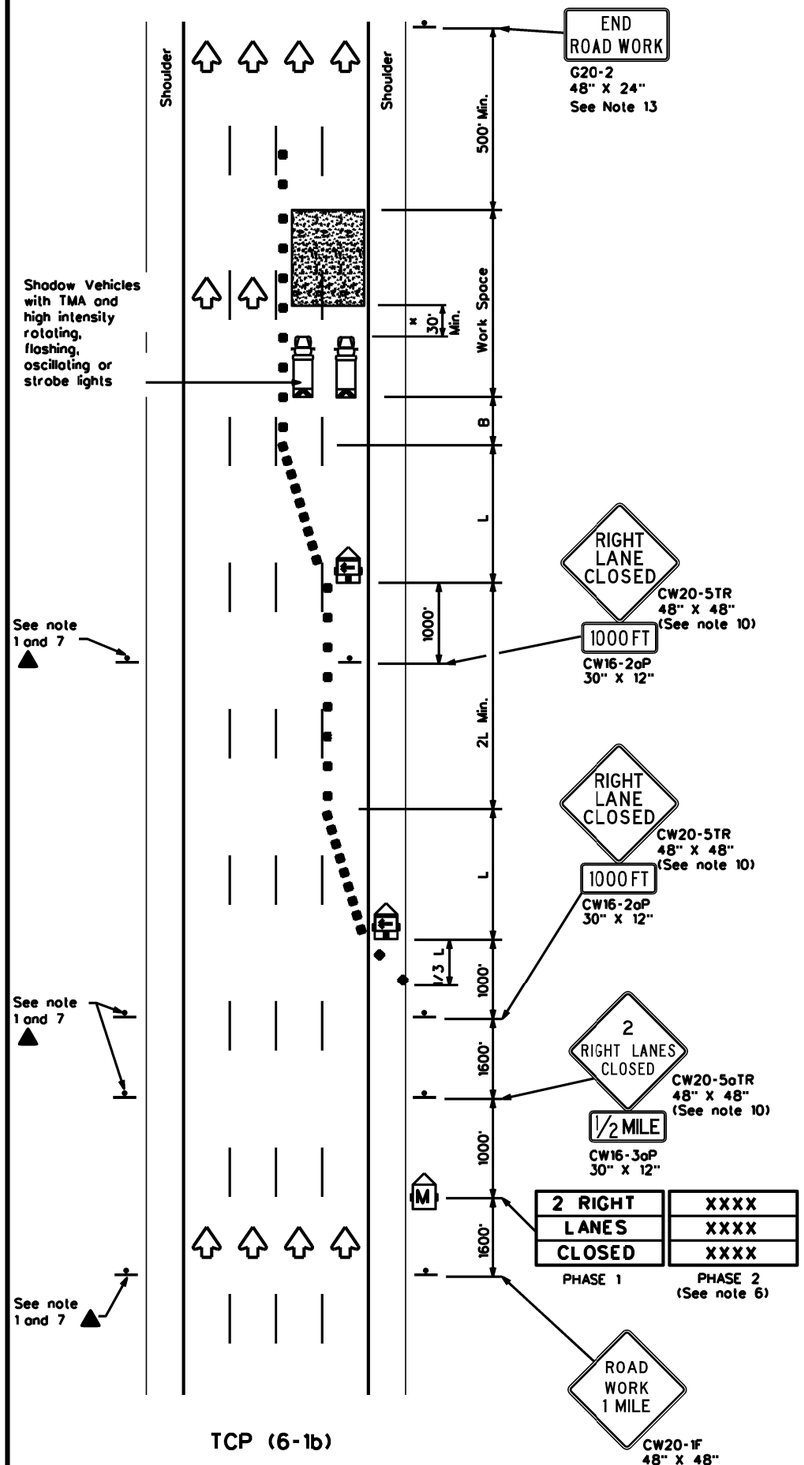


TCP (6-1a)

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

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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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DATE: 10/18/2023 3:39:30 PM
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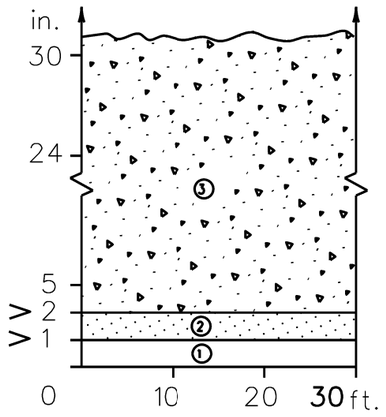
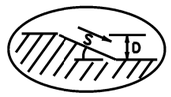
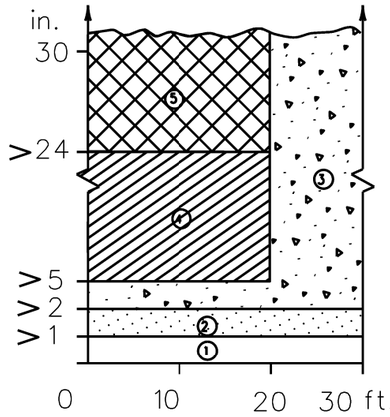
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

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

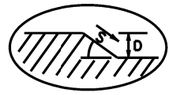


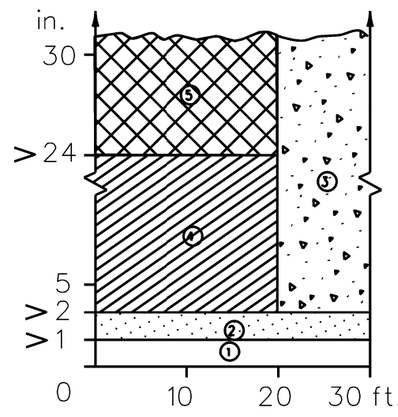
Edge Condition I
S = (3:1) (or flatter)



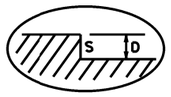


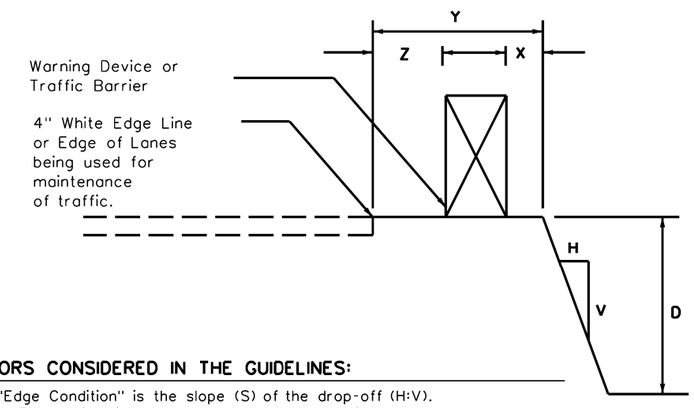
Edge Condition II
S = ((2.99):1) to (1:1)





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





FACTORS CONSIDERED IN THE GUIDELINES:

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

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

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

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

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

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

Edge Condition Notes:

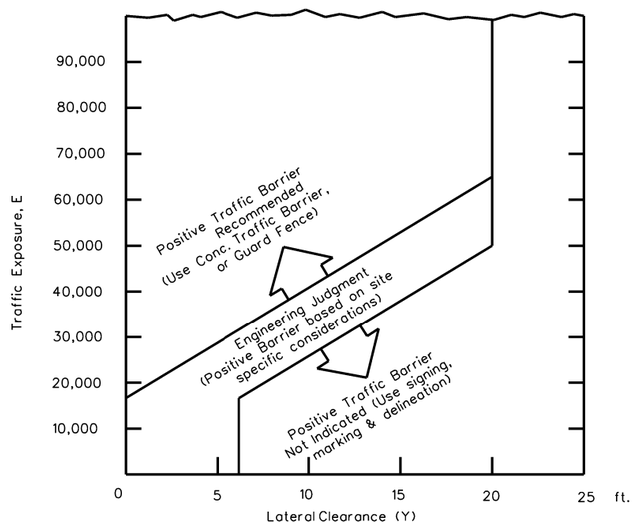
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

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

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

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

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



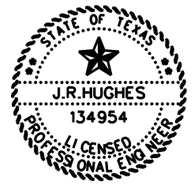
1. E = ADT x T
   Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.

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

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

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

Engineer's Seal



Date 10/20/2023

J.R. Hughes, P.E.

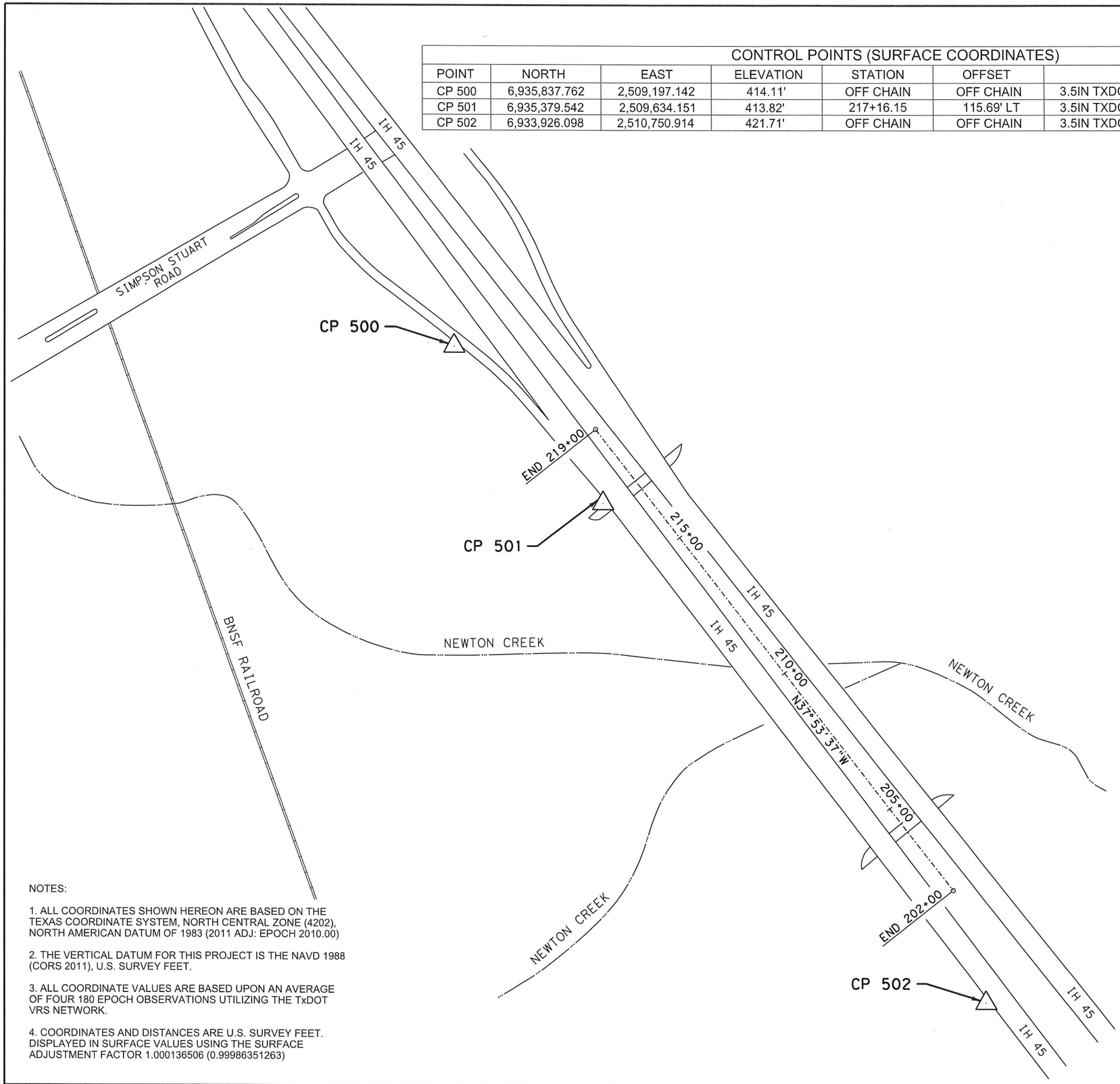
Texas Department of Transportation

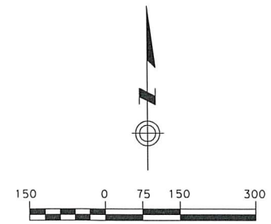
Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE: edgecon.dgn	DN:	CK:	DW:	CK:
©TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS	0092	14	108	IH 45
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		22

CONTROL POINTS (SURFACE COORDINATES)						
POINT	NORTH	EAST	ELEVATION	STATION	OFFSET	DESCRIPTION
CP 500	6,935,837.762	2,509,197.142	414.11'	OFF CHAIN	OFF CHAIN	3.5IN TXDOT ALUMINUM DISC IN CONCRETE SET
CP 501	6,935,379.542	2,509,634.151	413.82'	217+16.15	115.69' LT	3.5IN TXDOT ALUMINUM DISC IN CONCRETE SET
CP 502	6,933,926.098	2,510,750.914	421.71'	OFF CHAIN	OFF CHAIN	3.5IN TXDOT ALUMINUM DISC IN CONCRETE SET





GRAPHIC SCALE
1" = 300' (11"x17")
DALLAS
COUNTY, TEXAS

NOTES:

1. ALL COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE (4202), NORTH AMERICAN DATUM OF 1983 (2011 ADJ: EPOCH 2010.00)

2. THE VERTICAL DATUM FOR THIS PROJECT IS THE NAVD 1988 (CORS 2011), U.S. SURVEY FEET.

3. ALL COORDINATE VALUES ARE BASED UPON AN AVERAGE OF FOUR 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VRS NETWORK.

4. COORDINATES AND DISTANCES ARE U.S. SURVEY FEET. DISPLAYED IN SURFACE VALUES USING THE SURFACE ADJUSTMENT FACTOR 1.000136506 (0.99986351263)

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY SUPERVISION.

05/19/23

Eric A. Kreiner
Registered Professional Land Surveyor
No. 5320

TBPLS # 10064301

PRINT DATE	REVISION DATE
5/19/2023	

CONTROL POINT LEGEND

△ DENOTES PRIMARY CONTROL POINT AS NOTED (3 1/2" ALUMINUM DISK IN CONCRETE)

SAM™
Surveying and Mapping, LLC. (SAM)
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FIRM REGISTRATION NO. F-1937
TBPLS REGISTRATION NO. 10064301

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TBPE FIRM NO. F-10069

Texas Department of Transportation ©YR
Dallas District

IH 45 AT NEWTON AND FIVEMILE CREEK

SURVEY CONTROL INDEX SHEET

DALLAS COUNTY, TEXAS

SHEET 1 OF1

FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 23

REV DATE: 5/19/2023
CSJ: 0092-14 -*021
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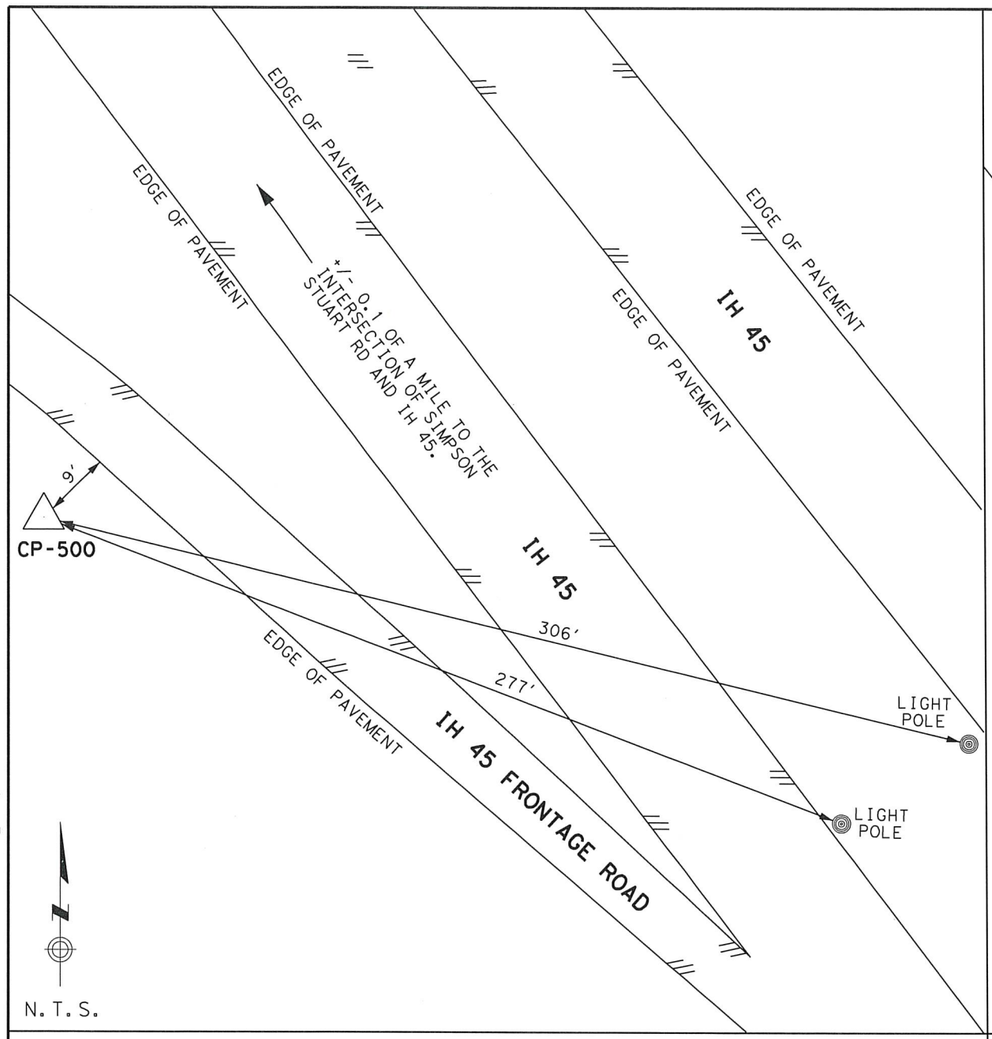
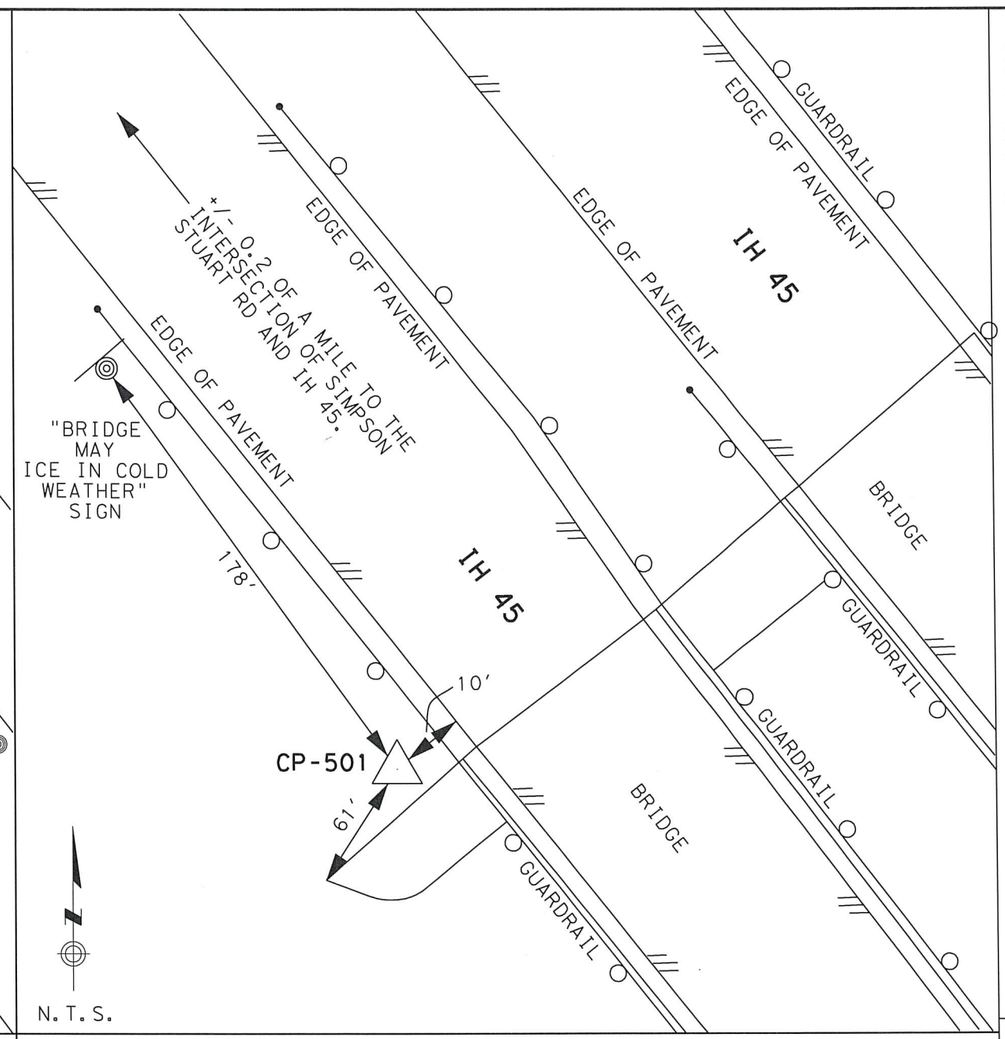
Addison Sant 5/19/2023 2:26:45 PM \\saminc\DAL\PROJECTS\102207210504Delivery\Final\2023-05-19 IH 45 @ Newton and Fivemile Creek\IH 45 at Newton and Five Mile Creek_INDEX.dgn





CONTROL POINT NO. CP-500
APPROXIMATE LOCATION:

3 1/2" ALUMINUM DISK SET IN CONCRETE STAMPED "CP-500", +/- 0.1 OF A MILE SOUTHEAST OF THE INTERSECTION OF SIMPSON STUART ROAD AND IH 45, 9' SOUTHWEST OF THE SOUTHWEST EDGE OF PAVEMENT OF IH 45 FRONTAGE ROAD, 277' NORTHWEST OF A LIGHT POLE, AND 306' NORTHWEST OF ANOTHER LIGHT POLE.

US SURVEY FEET
NAVD 88 ELEVATION = 414.11'
DATE SET: MARCH 14, 2023
MONUMENT: 3 1/2" ALUMINUM DISK SET IN CONCRETE STAMPED "CP-500"
DALLAS COUNTY SCALE FACTOR: 1.000136506
SURFACE ENGLISH CO-ORDS
NORTHING: 6,935,837.762
EASTING: 2,509,197.142
STATE PLANE ENGLISH CO-ORDS
NORTHING: 6,934,891.108
EASTING: 2,508,854.668
ELEVATIONS ARE NAVD 88 BASED UPON TXDOT VRS RTK NETWORK

CONTROL POINT NO. CP-501
APPROXIMATE LOCATION:

3 1/2" ALUMINUM DISK SET IN CONCRETE STAMPED "CP-501", +/- 0.2 OF A MILE SOUTHEAST OF THE INTERSECTION OF SIMPSON STUART ROAD AND IH 45, 10' SOUTHWEST OF THE SOUTHWEST EDGE OF PAVEMENT OF IH 45', 61' NORTHEAST OF THE SOUTHWEST CORNER OF A BRIDGE APRON, AND 178' SOUTHEAST OF A "BRIDGE MAY ICE IN COLD WEATHER" SIGN.

US SURVEY FEET
NAVD 88 ELEVATION = 413.82'
DATE SET: MARCH 14, 2023
MONUMENT: 3 1/2" ALUMINUM DISK SET IN CONCRETE STAMPED "CP-501"
DALLAS COUNTY SCALE FACTOR: 1.00036506
SURFACE ENGLISH CO-ORDS
NORTHING: 6,935,379.542
EASTING: 2,509,634.151
STATE PLANE ENGLISH CO-ORDS
NORTHING: 6,934,432.950
EASTING: 2,509,291.618
ELEVATIONS ARE NAVD 88 BASED UPON TXDOT VRS RTK NETWORK

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY ON MARCH 23, 2023 UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM RTK NETWORK AND IS CORRECTLY SHOWN HEREON.

STATE OF TEXAS
REGISTERED
ERIC A. KREINER
5320
PROFESSIONAL
LAND SURVEYOR

05/19/23

Eric A. Kreiner
Registered Professional Land Surveyor
No. 5320

TBPLS # 10064301

PRINT DATE	REVISION DATE
5/19/2023	

SAM
Surveying and Mapping, LLC. (SAM)
1341 W. Mockingbird Lane, Suite 400W
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FIRM REGISTRATION NO. F-1937
TBPLS REGISTRATION NO. 10064301

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TBPE FIRM NO. F-10069

Texas Department of Transportation
Dallas District
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IH-45 AT NEWTON AND FIVE MILE CREEK

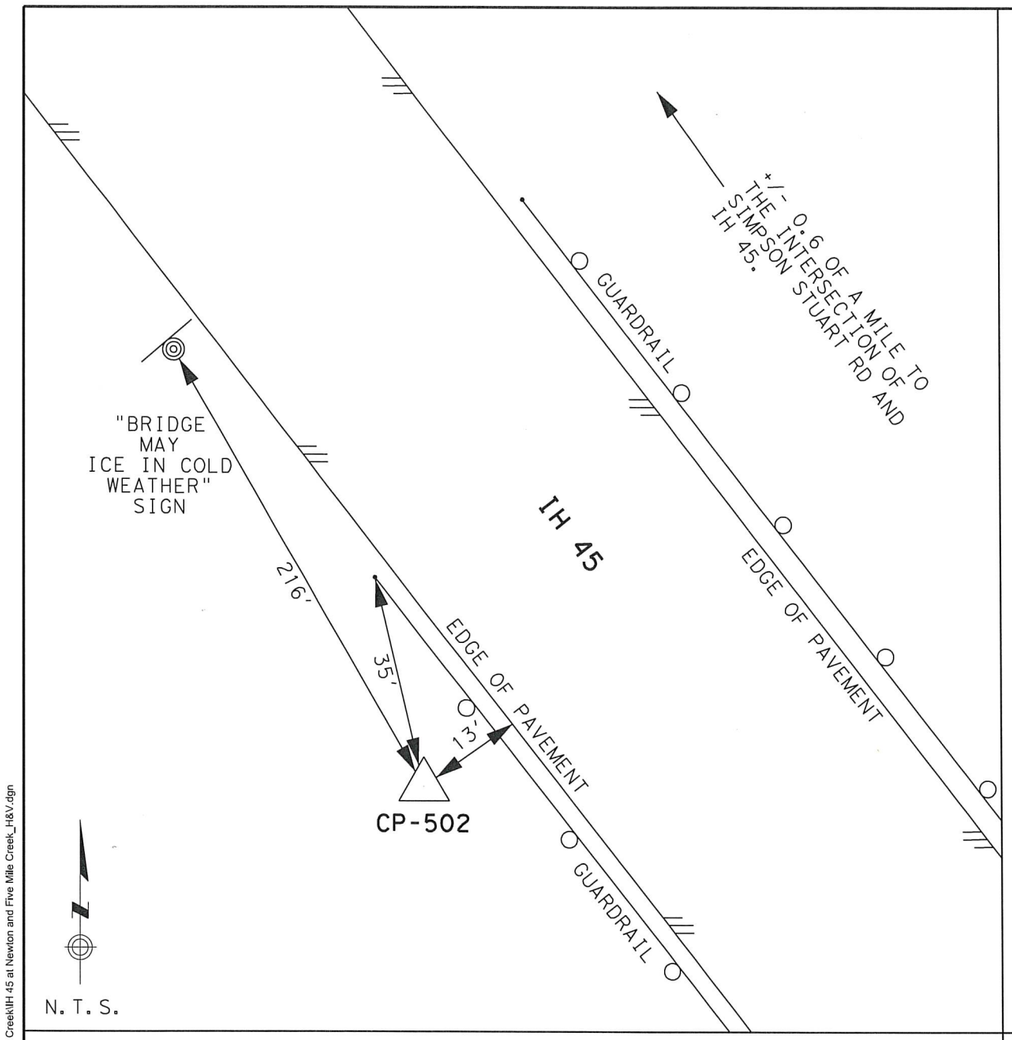
PRIMARY HORIZONTAL AND VERTICAL CONTROL

DALLAS COUNTY, TEXAS

FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	24

REV DATE: 5/19/2023
CSJ: 0092-14 -021
FILE LOCATION: \\saminc\DAL\PROJECTS\102207210S\04Delivery\Final\2023-05-19 IH 45 @ Newton and Fivemile Creek\IH 45 at Newton and Five Mile Creek_H&V.dgn

Addison Santos 5/19/2023 1:15:13 PM \\saminc\DAL\PROJECTS\102207210S\04Delivery\Final\2023-05-19 IH 45 @ Newton and Fivemile Creek\IH 45 at Newton and Five Mile Creek_H&V.dgn



CONTROL POINT NO. CP-502
APPROXIMATE LOCATION:

3 1/2" ALUMINUM DISK SET IN CONCRETE STAMPED "CP-502", +/- 0.6 OF A MILE SOUTHEAST OF THE INTERSECTION OF SIMPSON STUART ROAD AND IH 45 SOUTHBOUND FRONTAGE ROAD, 13' SOUTHWEST OF THE SOUTHWEST EDGE OF PAVEMENT OF IH 45, 35' SOUTH OF GUARDRAIL, AND 216' SOUTHEAST OF A "BRIDGE MAY ICE IN COLD WEATHER" SIGN.

US SURVEY FEET
NAVD 88 ELEVATION = 421.71'
DATE SET: MARCH 14, 2023
MONUMENT: 3 1/2" ALUMINUM DISK SET IN CONCRETE STAMPED "CP-502"
DALLAS COUNTY SCALE FACTOR: 1.000136506
SURFACE ENGLISH CO-ORDS
NORTHING: 6,933,926.098
EASTING: 2,510,750.914
STATE PLANE ENGLISH CO-ORDS
NORTHING: 6,932,979.705
EASTING: 2,510,408.228
ELEVATIONS ARE NAVD 88 BASED UPON TXDOT VRS RTK NETWORK

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY ON MARCH 23, 2023 UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM RTK NETWORK AND IS CORRECTLY SHOWN HEREON.

STATE OF TEXAS
REGISTERED
ERIC A. KREINER
5320
PROFESSIONAL
LAND SURVEYOR

05/19/23

Eric A. Kreiner
Registered Professional Land Surveyor
No. 5320

TBPLS # 10064301

PRINT DATE	REVISION DATE
5/19/2023	

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IH-45 AT NEWTON AND FIVE MILE CREEK

PRIMARY HORIZONTAL AND VERTICAL CONTROL

DALLAS COUNTY, TEXAS

FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	25

REV DATE: 5/19/2023
CSJ: 0092-14 -021
FILE LOCATION: \\saminc\DAL\PROJECTS\102207210\5\04Delivery\Final\2023-05-19 IH 45 @ Newton and Fivemile Creek\IH 45 @ Newton and Five Mile Creek_H&V.dgn

Addison Santos 5/19/2023 1:15:22 PM \\saminc\DAL\PROJECTS\102207210\5\04Delivery\Final\2023-05-19 IH 45 @ Newton and Fivemile Creek\IH 45 at Newton and Five Mile Creek H&V.dgn

Horizontal Alignment Review Report

Report Created: Thursday, May 11, 2023
Time: 9:12:41 AM

Project: *Default*

Description

PROJECT CENTERLINE IS APPROXIMATION OF IH 45 CENTERLINE AS SHOWN IN AS BUILT PLANS FOR PROJECT IH 45-3(29)276, CSJ 0092-14-021

Last Revised: *5/10/2023 17:21*

Note: All units in this report are in feet unless specified otherwise.

Alignment Name: CL IH 45
Alignment Description:
Alignment Style: Alignment\Baseline

		Station	Northing	Easting
Element: Linear				
	POT	( ) 20200.000 R1	6934254.122	2510656.662
	POT	( ) 21900.000 R1	6935595.680	2509612.526
	Tangential Direction:	N37.894°W		
	Tangential Length:	1700.00		

STATE OF TEXAS
JOHN A. TERRY
51729
LICENSED PROFESSIONAL ENGINEER
10/02/2023

PRINT DATE	REVISION DATE
9/29/2023	

3711 SOUTH MOPAC EXPRESSWAY
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www.structurepoint.com

AMERICAN STRUCTUREPOINT INC.

TBPE FIRM NO. F-10069

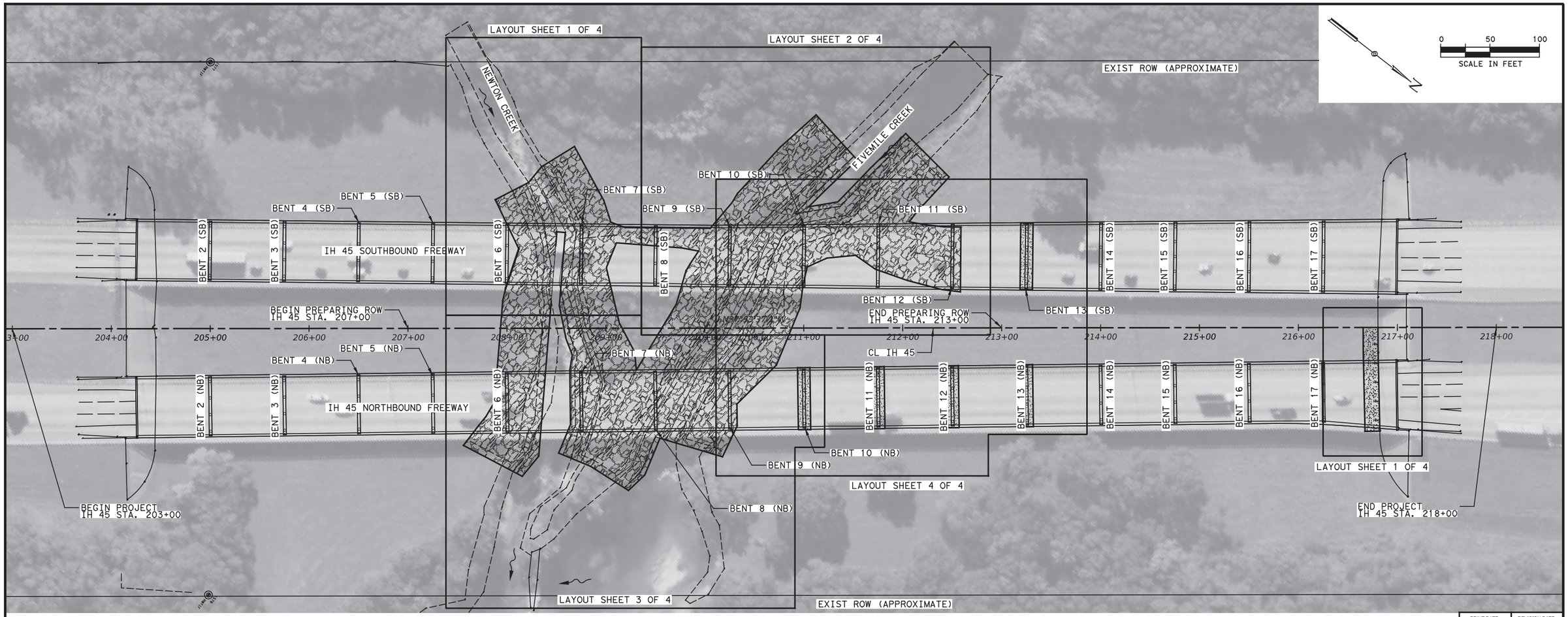
FIRM REGISTRATION NO. F-230

tnp

IH 45 AT NEWTON AND FIVEMILE CREEK
HORIZONTAL ALIGNMENT REPORT

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 26

REV DATE: 9/29/2023
CSJ:
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_ALIGN_01.dgn



NOTES:

1. SEE RIPRAP LAYOUT SHEETS FOR LOCATIONS AND LIMITS OF STONE PROTECTION RIPRAP.
2. PREPARING ROW INCLUDES ANY REQUIRED TREE REMOVAL, DEBRIS REMOVAL OR REMOVAL OF EXISTING CONCRETE RUBBLE.

NBI:18-057-0-0092-14-225 (IH45 NB)
NBI:18-057-0-0092-14-224 (IH45 SB)

STATE OF TEXAS
JOHN A. TERRY
51729
LICENSED
PROFESSIONAL ENGINEER

6/28/2023

PRINT DATE	REVISION DATE
6/28/2023	

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FIRM REGISTRATION NO. F-230
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Texas Department of Transportation

IH 45 AT NEWTON AND FIVEMILE CREEK

OVERALL LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 27

REV DATE: 6/28/2023
CSJ: -
FILE LOCATION: $FILE$

sgambrell 6/28/2023 4:06:22 PM $FILE$

ITEM	100	110	432	432	432
BID CODE	6002	6002	6031	6035	6036
ITEM DESCRIPTION	PREPARING ROW	EXCAVATION (CHANNEL)	RIPRAP (STONE PROTECTION) (12 IN)	RIPRAP (STONE PROTECTION) (24 IN)	RIPRAP (STONE PROTECTION) (30 IN)
UNIT	STA	CY	CY	CY	CY
LOCATION					
GENERAL LAYOUT	6	4083			
RIPRAP LAYOUT SHEET 1 OF 4			200		4446
RIPRAP LAYOUT SHEET 2 OF 4					7078
RIPRAP LAYOUT SHEET 3 OF 4					
RIPRAP LAYOUT SHEET 4 OF 4				582	
PROJECT TOTALS	6	4083	200	582	11524

NOTE: PAYMENT FOR PREPARING ROW INCLUDES ANY REQUIRED TREE REMOVAL, DEBRIS REMOVAL, AND REMOVAL OF EXISTING CONCRETE RUBBLE RIPRAP.

PRINT DATE	REVISION DATE
10/2/2023	

3711 SOUTH MOPAC EXPRESSWAY
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AMERICAN STRUCTUREPOINT INC.

TBPE FIRM NO. F-10069

FIRM REGISTRATION NO. F-230

tnp

Texas Department of Transportation

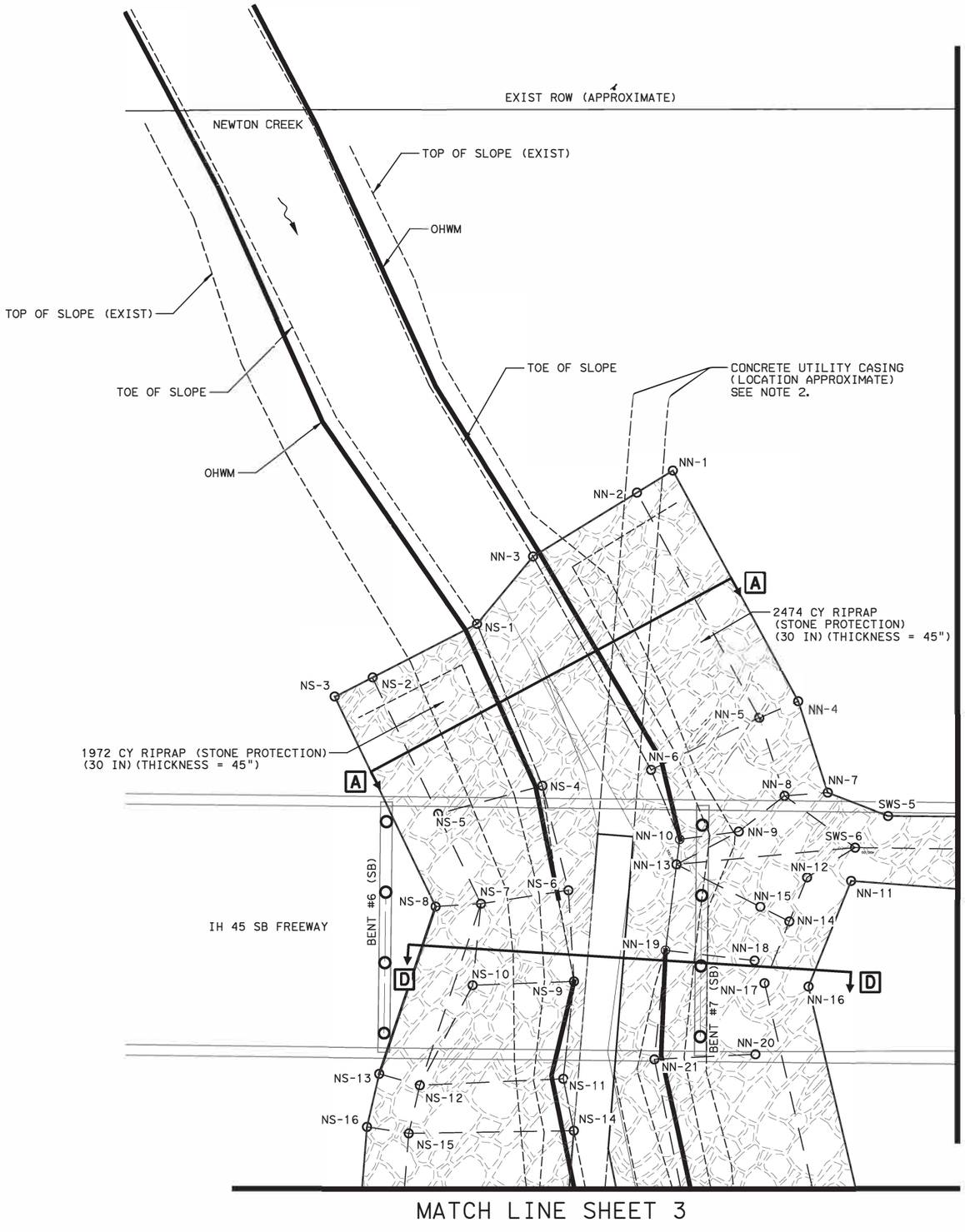
IH 45 AT NEWTON AND FIVEMILE CREEK

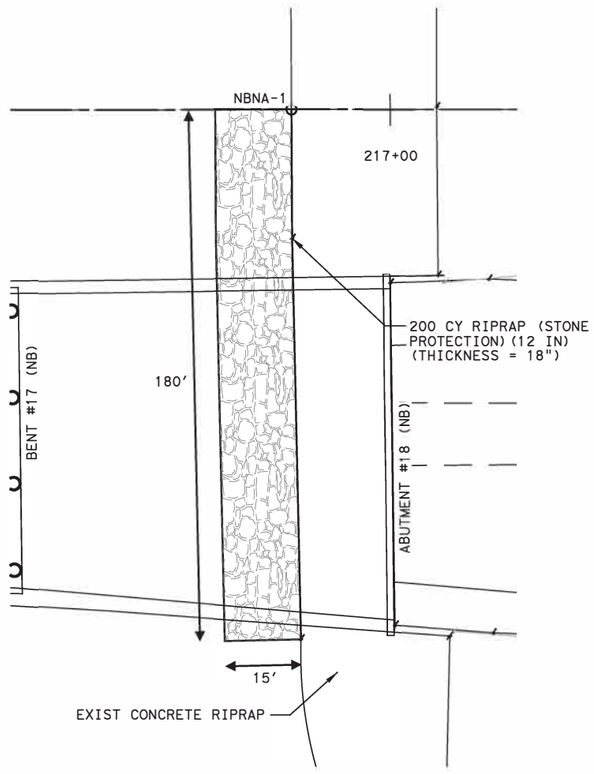
QUANTITY SUMMARY

SHEET 1 OF 1

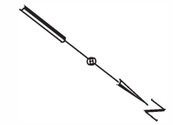
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 28

REV DATE: 10/2/2023
CSJ:
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_QUANTITIES_01.dgn





NORTHBOUND NORTH ABUTMENT



LEGEND

- A — A: TYPICAL SECTION ID
- RIP RAP (STONE PROTECTION) (30 IN)
- RIP RAP (STONE PROTECTION) (24 IN)
- RIP RAP (STONE PROTECTION) (12 IN)
- O XX-XX: GRADING DATA POINT & ID
- GRADING BREAK LINE
- ORDINARY HIGH WATER MARK

NOTES:
1. SEE GRADING CONTROL POINT DATA SHEETS FOR GRADING CONTROL POINT INFORMATION.
2. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF A CONCRETE UTILITY CASING AT THIS LOCATION. THE CONTRACTOR WILL TAKE APPROPRIATE MEASURES TO ENSURE THAT THE CASING AND UTILITY ARE NOT DAMAGED. ANY DAMAGE TO THE UTILITY WILL BE REPAIRED AT THE CONTRACTOR'S ENTIRE EXPENSE.
3. CONTRACTOR SHALL EXERCISE CAUTION WHILE EXCAVATING, GRADING AND PLACING STONE RIPRAP ADJACENT TO BRIDGE COLUMNS AND DRILLED SHAFTS. ANY DAMAGE TO COLUMNS OR DRILLED SHAFTS SHALL BE REPAIRED AS DIRECTED, AT THE CONTRACTOR'S ENTIRE EXPENSE.

10/02/2023

PRINT DATE	REVISION DATE
10/2/2023	

AMERICAN STRUCTUREPOINT INC.
3711 SOUTH MOPAC EXPRESSWAY
BUILDING ONE, SUITE 350
AUSTIN, TX 78703
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www.structurepoint.com
TBPE FIRM NO. F-10069

FIRM REGISTRATION NO. F-230
tnp

Texas Department of Transportation

IH 45 AT NEWTON AND FIVEMILE CREEK

RIPRAP LAYOUT

SHEET 1 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045

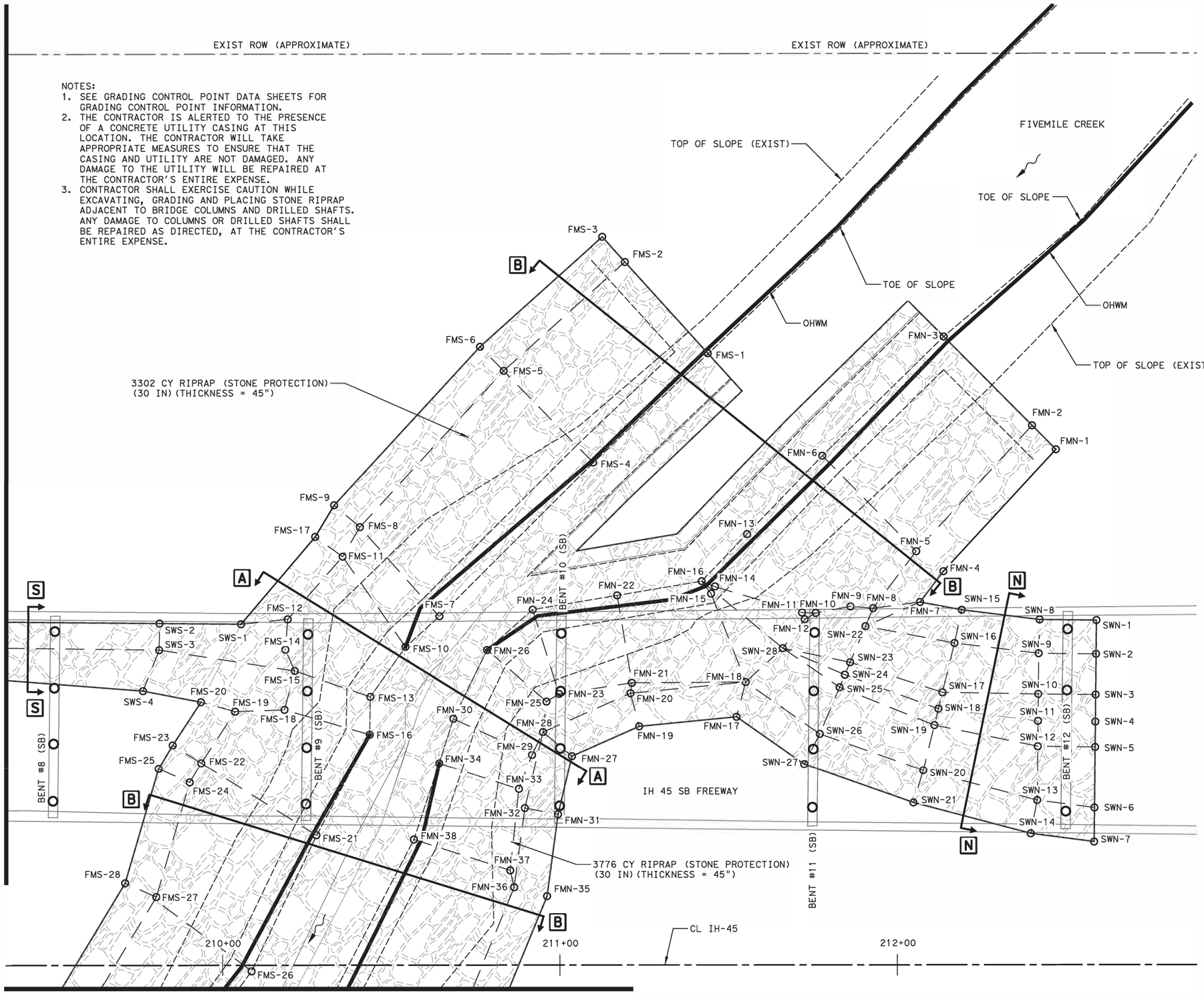
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS

CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	29

REV DATE: 10/2/2023
CSJ:
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_RIP RAP LYT_01.dgn

sliao 10/2/2023 11:15:26 AM T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_RIP RAP LYT_01.dgn

NOTES:
1. SEE GRADING CONTROL POINT DATA SHEETS FOR GRADING CONTROL POINT INFORMATION.
2. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF A CONCRETE UTILITY CASING AT THIS LOCATION. THE CONTRACTOR WILL TAKE APPROPRIATE MEASURES TO ENSURE THAT THE CASING AND UTILITY ARE NOT DAMAGED. ANY DAMAGE TO THE UTILITY WILL BE REPAIRED AT THE CONTRACTOR'S ENTIRE EXPENSE.
3. CONTRACTOR SHALL EXERCISE CAUTION WHILE EXCAVATING, GRADING AND PLACING STONE RIPRAP ADJACENT TO BRIDGE COLUMNS AND DRILLED SHAFTS. ANY DAMAGE TO COLUMNS OR DRILLED SHAFTS SHALL BE REPAIRED AS DIRECTED, AT THE CONTRACTOR'S ENTIRE EXPENSE.



0 15 30
SCALE IN FEET

LEGEND

A A	TYPICAL SECTION ID
	RIP RAP (STONE PROTECTION) (30 IN)
	RIP RAP (STONE PROTECTION) (24 IN)
	RIP RAP (STONE PROTECTION) (12 IN)
O XX-XX	GRADING DATA POINT & ID
— — —	GRADING BREAK LINE
	ORDINARY HIGH WATER MARK

STATE OF TEXAS
JOHN A. TERRY
51729
LICENSED PROFESSIONAL ENGINEER
10/02/2023

PRINT DATE	REVISION DATE
10/2/2023	

AMERICAN STRUCTUREPOINT INC.
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TBPE FIRM NO. F-10069

FIRM REGISTRATION NO. F-230
tnp

IH 45 AT NEWTON AND FIVEMILE CREEK
RIPRAP LAYOUT

SHEET 2 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	30

REV DATE: 10/2/2023
CSJ:
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_RIP RAP LYT_02.dgn

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MATCH LINE SHEET 1

MATCH LINE SHEET 2

CL IH-45

208+00

209+00

NN-22 NN-23 NN-24 NN-25 NN-26 NN-27 NN-28 NN-29 NN-30 NN-31

NS-17 NS-18 NS-19 NS-20 NS-21 NS-22 NS-23 NS-24 NS-25 NS-26 NS-27 NS-28 NS-29

FMS-29 FMS-30 FMS-31 FMS-32 FMS-34 FMS-35 FMS-36 FMS-37 FMS-38 FMS-39 FMS-40

FMN-39 FMN-40 FMN-41 FMN-42 FMN-43 FMN-44 FMN-45 FMN-46 FMN-47 FMN-48 FMN-49 FMN-50 FMN-51

NFM-1 NFM-2 NFM-3 NFM-4

BENT 6 (NB)

BENT 7 (NB)

BENT 8 (NB)

BENT 9 (NB)

BENT 10 (NB)

IH 45 NORTHBOUND FREEWAY

RIPRAP (STONE PROTECTION)
(30 IN) (THICKNESS = 45")
SEE SHEET 1 OF 4 FOR QUANTITY

RIPRAP (STONE PROTECTION) (24 IN)
SEE SHEET 4 OF 4

RIPRAP (STONE PROTECTION)
(30 IN) (THICKNESS = 45")
SEE SHEET 2 OF 4 FOR QUANTITY

TOP OF SLOPE (EXIST)

OHWM

NEWTON CREEK

FIVEMILE CREEK

TOE OF SLOPE

CONCRETE UTILITY CASING
(APPROXIMATE LOCATION)
SEE NOTE 2.

EXIST ROW (APPROXIMATE)

0 15 30
SCALE IN FEET

LEGEND

A A	TYPICAL SECTION ID
	RIP RAP (STONE PROTECTION) (30 IN)
	RIP RAP (STONE PROTECTION) (24 IN)
	RIP RAP (STONE PROTECTION) (12 IN)
XX-XX	GRADING DATA POINT & ID
	GRADING BREAK LINE
	ORDINARY HIGH WATER MARK

NOTES:
1. SEE GRADING CONTROL POINT DATA SHEETS FOR GRADING CONTROL POINT INFORMATION.
2. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF A CONCRETE UTILITY CASING AT THIS LOCATION. THE CONTRACTOR WILL TAKE APPROPRIATE MEASURES TO ENSURE THAT THE CASING AND UTILITY ARE NOT DAMAGED. ANY DAMAGE TO THE UTILITY WILL BE REPAIRED AT THE CONTRACTOR'S ENTIRE EXPENSE.
3. CONTRACTOR SHALL EXERCISE CAUTION WHILE EXCAVATING, GRADING AND PLACING STONE RIPRAP ADJACENT TO BRIDGE COLUMNS AND DRILLED SHAFTS. ANY DAMAGE TO COLUMNS OR DRILLED SHAFTS SHALL BE REPAIRED AS DIRECTED, AT THE CONTRACTOR'S ENTIRE EXPENSE.

STATE OF TEXAS
JOHN A. TERRY
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10/02/2023

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Texas Department of Transportation

IH 45 AT NEWTON AND FIVEMILE CREEK

RIPRAP LAYOUT

SHEET 3 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 31

REV DATE: 10/2/2023
CSJ:
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEETORD_I45_DRN_RIP RAP LYT_03.dgn

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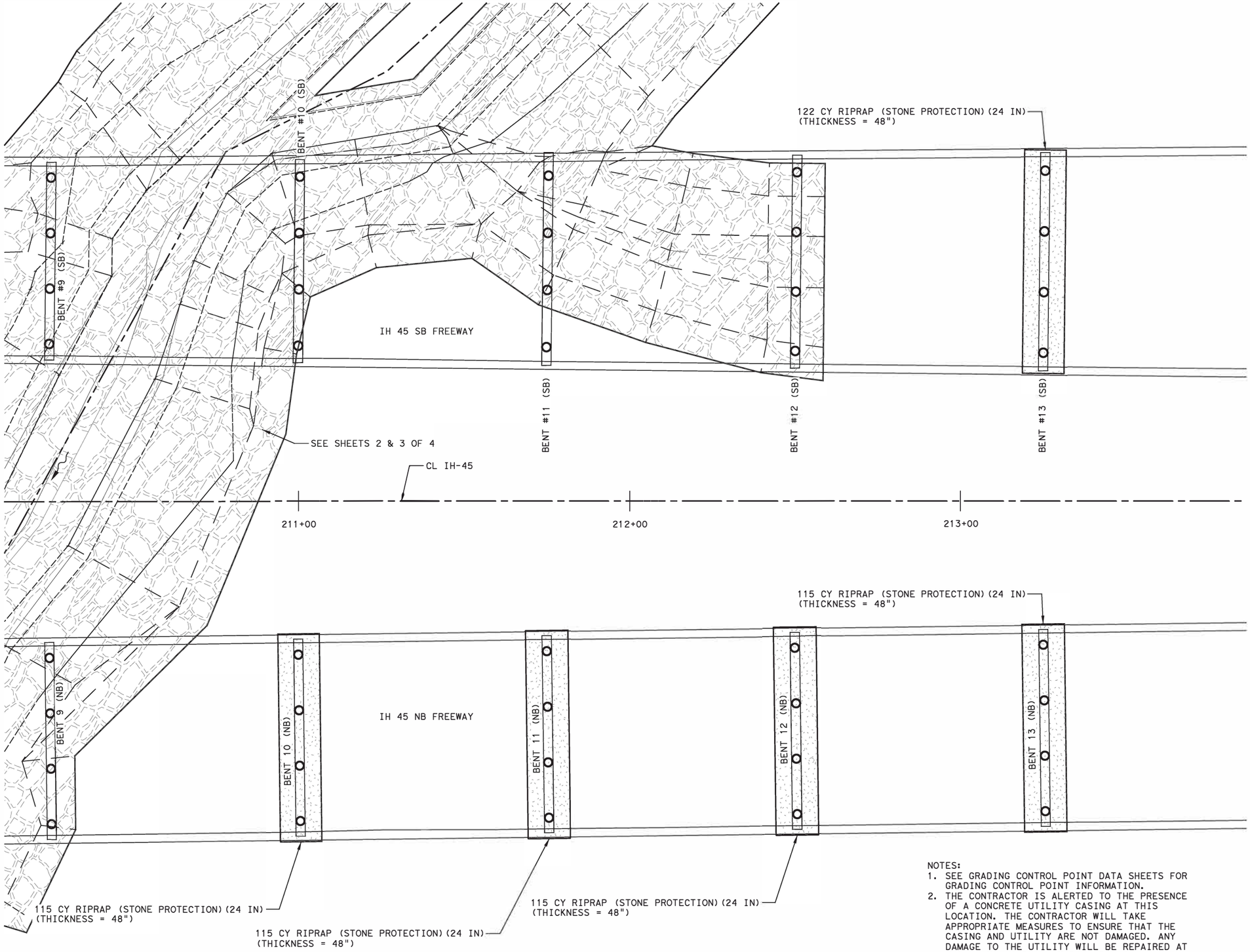

0 15 30
SCALE IN FEET

LEGEND

- A A — TYPICAL SECTION ID
- RIP RAP (STONE PROTECTION) (30 IN)
- RIP RAP (STONE PROTECTION) (24 IN)
- RIP RAP (STONE PROTECTION) (12 IN)
- O XX-XX — GRADING DATA POINT & ID
- GRADING BREAK LINE
- ORDINARY HIGH WATER MARK

NOTES:
1. SEE GRADING CONTROL POINT DATA SHEETS FOR GRADING CONTROL POINT INFORMATION.
2. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF A CONCRETE UTILITY CASING AT THIS LOCATION. THE CONTRACTOR WILL TAKE APPROPRIATE MEASURES TO ENSURE THAT THE CASING AND UTILITY ARE NOT DAMAGED. ANY DAMAGE TO THE UTILITY WILL BE REPAIRED AT THE CONTRACTOR'S ENTIRE EXPENSE.
3. CONTRACTOR SHALL EXERCISE CAUTION WHILE EXCAVATING, GRADING AND PLACING STONE RIPRAP ADJACENT TO BRIDGE COLUMNS AND DRILLED SHAFTS. ANY DAMAGE TO COLUMNS OR DRILLED SHAFTS SHALL BE REPAIRED AS DIRECTED, AT THE CONTRACTOR'S ENTIRE EXPENSE.

STATE OF TEXAS
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10/2/2023	

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Texas Department of Transportation

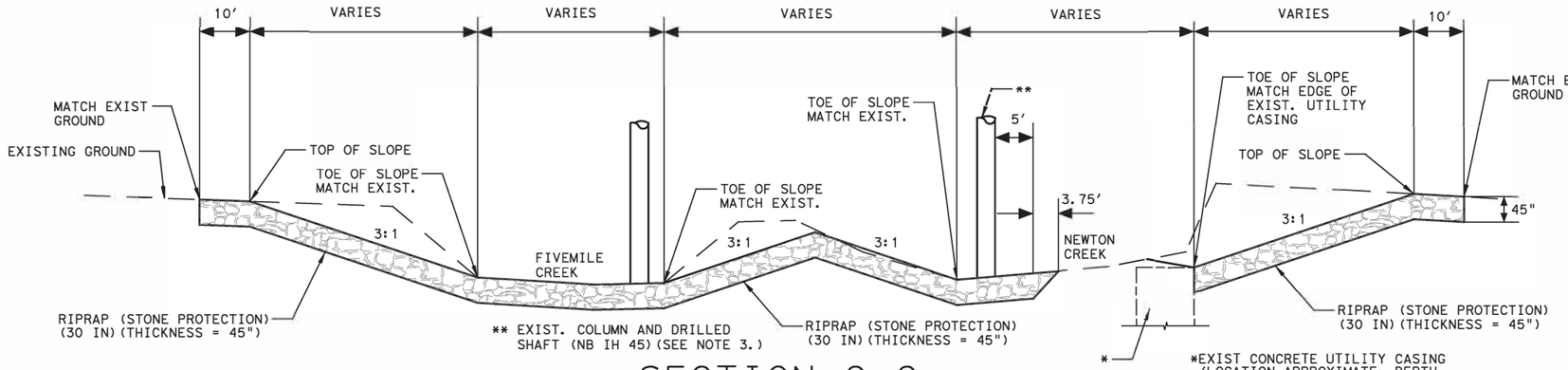
IH 45 AT NEWTON AND FIVEMILE CREEK

RIPRAP LAYOUT

SHEET 4 OF 4

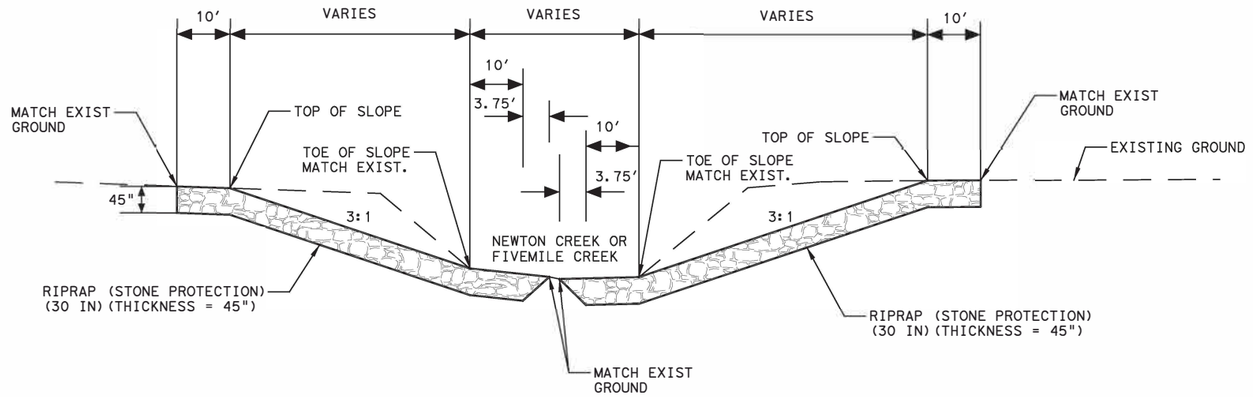
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	32

REV DATE: 10/2/2023
CSJ:
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_RIP RAP LYT_04.dgn

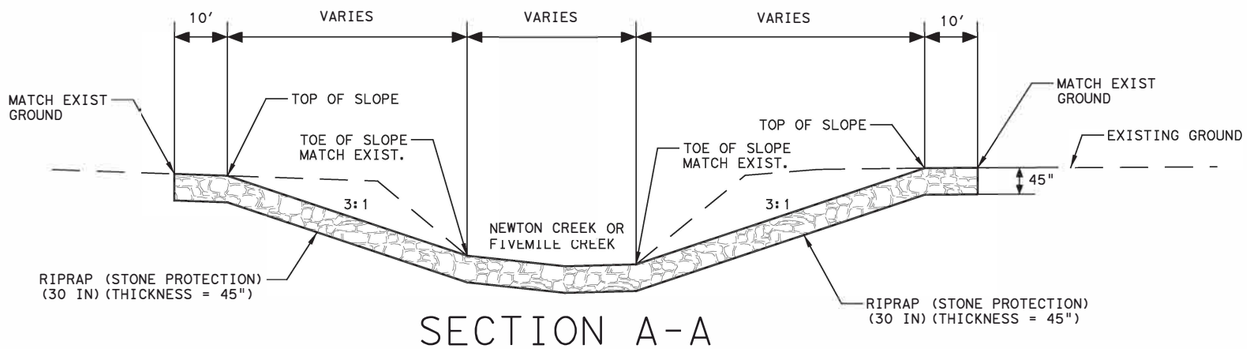


SECTION C-C

NOTES:
1. FOR VARIABLE DIMENSIONS AND SLOPES, REFER TO GRADING CONTROL POINT DATA SHEETS.
2. EXCAVATION BETWEEN EXISTING GROUND AND NOMINAL SURFACE OF STONE RIPRAP WILL BE PAID FOR AS CHANNEL EXCAVATION. EXCAVATION BELOW THE NOMINAL SURFACE OF STONE RIPRAP WILL NOT BE PAID FOR DIRECTLY, BUT IS INCLUDED UNDER PAYMENT FOR STONE RIPRAP IN ACCORDANCE WITH ARTICLE 432.5.
3. CONTRACTOR SHALL EXERCISE CAUTION WHILE EXCAVATING, GRADING AND PLACING STONE RIPRAP ADJACENT TO BRIDGE COLUMNS AND DRILLED SHAFTS . ANY DAMAGE TO COLUMNS OR DRILLED SHAFTS SHALL BE REPAIRED AS DIRECTED, AT THE CONTRACTOR'S ENTIRE EXPENSE.
4. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF AN EXISTING CONCRETE UTILITY CASING ALONG THE SOUTH BANK OF NEWTON CREEK. THE CONTRACTOR SHALLL EXERCISE CAUTION WHILE WORKING IN THIS AREA AND SHALL TAKE MEASURES TO PREVENT DAMAGE TO THE UTILITY OR THE CASING. ANY DAMAGE TO EITHER THE CASING OR UTILITY WILL BE REPAIRED AT THE CONTRACTOR'S ENTIRE EXPENSE.
5. SEE STANDARD SRR FOR EXTENDED ROCK FILLED TRENCH TOE OPTION.



SECTION B-B



SECTION A-A

NOT TO SCALE

STATE OF TEXAS
JOHN A. TERRY
51729
LICENSED PROFESSIONAL ENGINEER

10/02/2023

PRINT DATE	REVISION DATE
10/2/2023	

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AMERICAN STRUCTUREPOINT INC.

TBPE FIRM NO. F-10069

FIRM REGISTRATION NO. F-230

tnp

IH 45 AT NEWTON AND FIVEMILE CREEK

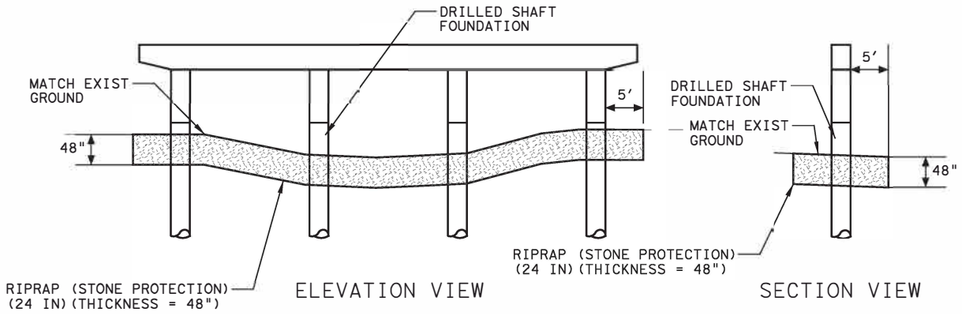
TYPICAL SECTIONS AND DETAILS

SHEET 1 OF 2

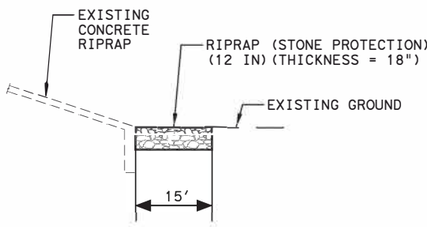
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 33

REV DATE: 10/2/2023
CSJ: -
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_TYPS_01.dgn

sliao 10/2/2023 11:21:45 AM T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_TYPS_01.dgn

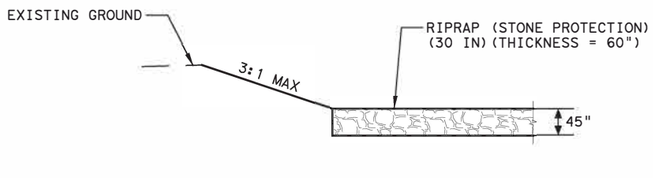


PIER PROTECTION DETAIL



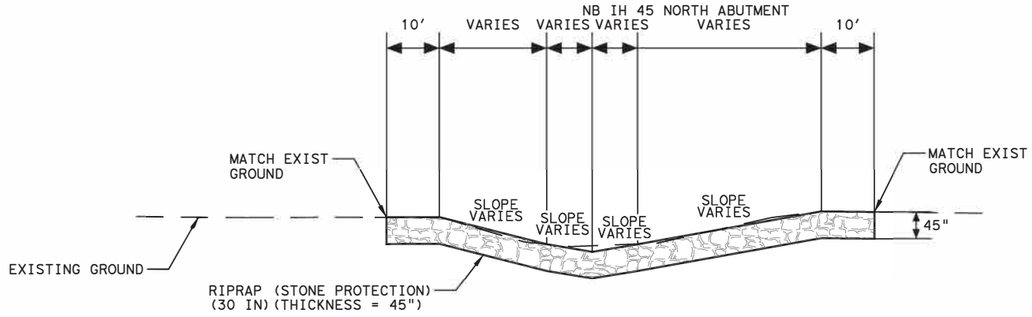
ABUTMENT TOE REPAIR DETAIL

NOTES:
1. FOR VARIABLE DIMENSIONS AND SLOPES, REFER TO GRADING CONTROL POINT DATA SHEETS.
2. EXCAVATION BETWEEN EXISTING GROUND AND NOMINAL SURFACE OF STONE RIPRAP WILL BE PAID FOR AS CHANNEL EXCAVATION. EXCAVATION BELOW THE NOMINAL SURFACE OF STONE RIPRAP WILL NOT BE PAID FOR DIRECTLY, BUT IS INCLUDED UNDER PAYMENT FOR STONE RIPRAP IN ACCORDANCE WITH ARTICLE 432.5.
3. CONTRACTOR SHALL EXERCISE CAUTION WHILE EXCAVATING, GRADING AND PLACING STONE RIPRAP ADJACENT TO BRIDGE COLUMNS AND DRILLED SHAFTS . ANY DAMAGE TO COLUMNS OR DRILLED SHAFTS SHALL BE REPAIRED AS DIRECTED, AT THE CONTRACTOR'S ENTIRE EXPENSE.
4. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF AN EXISTING CONCRETE UTILITY CASING ALONG THE SOUTH BANK OF NEWTON CREEK. THE CONTRACTOR SHALLL EXERCISE CAUTION WHILE WORKING IN THIS AREA AND SHALL TAKE MEASURES TO PREVENT DAMAGE TO THE UTILITY OR THE CASING. ANY DAMAGE TO EITHER THE CASING OR UTILITY WILL BE REPAIRED AT THE CONTRACTOR'S ENTIRE EXPENSE.
5. SEE STANDARD SRR FOR EXTENDED ROCK FILLED TRENCH TOE OPTION.

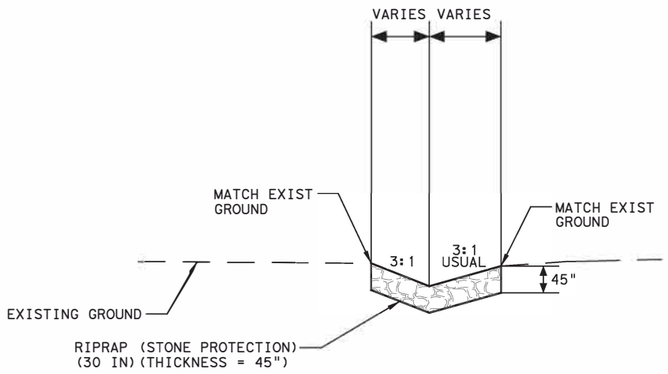


RIPRAP EDGE DETAIL

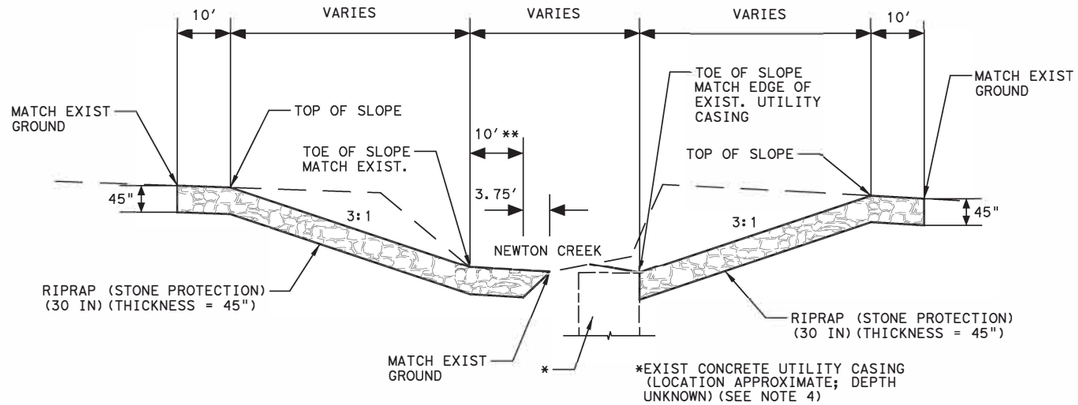
USE ALONG UPSTREAM AND DOWNSTREAM EDGES OF RIPRAP



SECTION N-N



SECTION S-S



SECTION D-D

** OR TO EDGE OF UTILITY CASING

NOT TO SCALE

STATE OF TEXAS
JOHN A. TERRY
51729
LICENSED PROFESSIONAL ENGINEER

10/02/2023

PRINT DATE	REVISION DATE
10/2/2023	

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TBPE FIRM NO. F-10069

FIRM REGISTRATION NO. F-230

tnp

Texas Department of Transportation

IH 45 AT NEWTON AND FIVEMILE CREEK
TYPICAL SECTIONS AND DETAILS

SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NUMBER		HIGHWAY NUMBER
6	SEE TITLE SHEET		IH0045
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	34

REV DATE: 10/2/2023
CSJ: -
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_TYPS_02.dgn

sliao 10/2/2023 11:24:28 AM T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_TYPS_02.dgn

FIVEMILE NORTH BANK							
GRADE CONTROL POINT	EXIST GROUND ELEVATION (FT)	FINISHED GRADE ELEVATION (FT)	ELEVATION DIFFERENCE (FT)	WIDTH (FT)	EXCAVATION END AREA (SF)	LENGTH (FT)	EXCAVATION VOLUME (CY)
FMN-3	404.1	397.5	6.6	27.6	91		
						50.4	126
FMN-6	399.1	396.9	2.2	39.7	44		
						32.2	53
FMN-13	399.1	396.4	2.7	32.9	44		
						44.8	72
FMN-22	400.1	397.2	2.9	29.2	42		
						25.4	32
FMN-24	400.1	398.6	1.5	34.6	26		
						18.1	18
FMN-26	400.1	398.3	1.8	31.9	29		
						22.6	29
FMN-30	401.0	398.0	3.0	27.2	41		
						13.9	18
FMN-34	401.1	399.0	2.1	27.9	29		
						23.8	28
FMN-38	402.2	400.0	2.2	31.8	35		
						56.8	117
FMN-42	402.0	398.0	4.0	38.2	76		
						36.3	93
FMN-44	400.6	397.0	3.6	34.5	62		
						83.3	179
FMN-51	401.3	398.5	2.8	38.7	54		
					SUB-TOTAL		766 CY

FIVEMILE SOUTH BANK							
GRADE CONTROL POINT	EXIST GROUND ELEVATION (FT)	FINISHED GRADE ELEVATION (FT)	ELEVATION DIFFERENCE (FT)	WIDTH (FT)	EXCAVATION END AREA (SF)	LENGTH (FT)	EXCAVATION VOLUME (CY)
FMS-1	402.5	393.7	8.8	36.5	161		
						46.9	266
FMS-4	402.0	394.3	7.7	37.9	146		
						64.5	240
FMS-7	402.1	399.0	3.1	35.3	55		
						13.5	43
FMS-10	402.5	395.4	7.1	32.5	115		
						17.9	53
FMS-13	401.0	397.3	3.7	23.6	44		
						11.3	15
FMS-16	401.0	399.0	2.0	26.3	26		
						33.7	70
FMS-21	402.3	398.0	4.3	40.3	87		
						44.4	124
FMS-26	401.1	397.5	3.6	35.6	64		
						45.1	110
FMS-29	400.5	396.2	4.3	31.3	67		
						42.6	109
FMS-30	398.5	394.0	4.5	31.7	71		
						39.2	112
FMS-37	398.7	393.8	4.9	34.0	83		
						34.1	77
FMS-39	401.3	399.0	2.3	33.1	38		
						23.3	49
FMS-40	402.0	397.0	5.0	29.8	75		
					SUB-TOTAL		1267 CY

NOTES:

1. EXISTING GROUND ELEVATION AND FINISHED GRADE ELEVATION TAKEN AT TOP OF EXISTING SLOPE.
2. WIDTH REPRESENTS DISTANCE FROM TOE OF SLOPE TO TOP OF PROPOSED SLOPE.
3. DISTANCES ARE MEASURED PERPENDICULAR TO TOE OF SLOPE.

NEWTON NORTH BANK							
GRADE CONTROL POINT	EXIST GROUND ELEVATION (FT)	FINISHED GRADE ELEVATION (FT)	ELEVATION DIFFERENCE (FT)	WIDTH (FT)	EXCAVATION END AREA (SF)	LENGTH (FT)	EXCAVATION VOLUME (CY)
NN-3	400.1	395.0	5.1	29.1	74		
						57.9	176
NN-6	402.1	395.8	6.3	28.6	90		
						17.8	54
NN-10	402.4	397.0	5.4	26.9	73		
						18.6	38
NN-13	399.0	396.4	2.6	30.0	39		
						20.6	29
NN-19	399.0	396.2	2.8	25.6	36		
						26.0	43
NN-21	400.6	397.0	3.6	30.0	54		
						51.7	141
NN-24	401.5	395.5	6.0	31.1	93		
						31.8	135
NN-27	402.0	394.2	7.8	35.0	137		
						21.1	107
NN-31	401.9	394.2	7.7	36.0	139		
						54.7	258
NN-32	402.6	394.0	8.6	27.0	116		
						14.7	59
NN-33	403.0	394.0	9.0	22.2	100		
						40.7	144
NN-34	402.5	393.4	9.1	20.1	91		
					SUB-TOTAL		1185 CY

NEWTON SOUTH BANK							
GRADE CONTROL POINT	EXIST GROUND ELEVATION (FT)	FINISHED GRADE ELEVATION (FT)	ELEVATION DIFFERENCE (FT)	WIDTH (FT)	EXCAVATION END AREA (SF)	LENGTH (FT)	EXCAVATION VOLUME (CY)
NS-1	401.0	398.7	2.3	27.9	32		
						41.5	37
NS-43	399.6	398.3	1.3	25.7	17		
						25.5	24
NS-6	401.2	397.9	3.3	21.0	35		
						21.7	33
NS-9	401.1	397.8	3.3	28.7	47		
						23.3	72
NS-11	402.1	395.2	6.9	34.4	119		
						48.9	257
NS-14	402.6	394.2	8.4	39.2	165		
						28.4	158
NS-17	403.0	396.4	6.6	41.2	136		
						38.3	139
NS-20	401.5	398.5	3.0	39.6	59		
						13.3	36
NS-23	400.6	397.0	3.6	47.5	86		
						28.7	109
NS-26	402.1	396.9	5.2	46.3	120		
					SUB-TOTAL		865 CY
					PROJECT TOTAL		4083 CY

JOHN A. TERRY
51729
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
10/02/2023

PRINT DATE	REVISION DATE
10/2/2023	

AMERICAN STRUCTUREPOINT INC.
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TBPE FIRM NO. F-10069
FIRM REGISTRATION NO. F-230
tnp

IH 45 AT NEWTON AND FIVEMILE CREEK

EARTHWORK COMPUTATIONS

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045

STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS

CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	35

REV DATE: 10/2/2023
CSJ: -
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_EARTHWORK_01.dgn

POINT ID	DESCRIPTION	STATION	OFFSET	X	Y	ELEVATION
FMN-1	CORNER OF RIPRAP	212+47.09	152.50 LT	2509893.1955	6934986.7656	MATCH EXIST
FMN-2	TOP OF SLOPE	212+40.03	159.60 LT	2509891.9292	6934976.8434	404.50
FMN-3	CORNER OF RIPRAP - TOE OF SLOPE	212+13.86	185.91 LT	2509887.2390	6934940.0270	390.70
FMN-4	EDGE OF RIPRAP	212+13.73	116.42 LT	2509942.1550	6934982.6005	MATCH EXIST
FMN-5	TOP OF SLOPE	212+05.67	122.34 LT	2509942.4377	6934972.6032	403.75
FMN-6	TOE OF SLOPE	211+77.88	150.64 LT	2509937.1740	6934933.2940	390.53
FMN-7	EDGE OF RIPRAP	212+06.80	107.29 LT	2509953.6169	6934982.7388	MATCH EXIST
FMN-8	TOP OF SLOPE	211+92.88	105.50 LT	2509963.5773	6934972.8582	403.76
FMN-9	POINT ON SLOPE	211+86.16	106.02 LT	2509967.2949	6934967.2372	403.00
FMN-10	POINT ON SLOPE	211+75.83	104.08 LT	2509975.1691	6934960.2761	401.00
FMN-11	POINT ON SLOPE	211+71.82	104.22 LT	2509977.5306	6934957.0212	400.00
FMN-12	POINT ON SLOPE	211+72.60	102.25 LT	2509978.6037	6934958.8538	400.00
FMN-13	TOE OF SLOPE	211+55.54	127.49 LT	2509969.1654	6934929.8868	390.72
FMN-14	POINT ON SLOPE	211+46.04	111.97 LT	2509987.2443	6934931.9131	392.00
FMN-15	POINT ON SLOPE	211+44.86	109.86 LT	2509989.6336	6934932.2826	392.00
FMN-16	TOE OF SLOPE	211+42.09	113.54 LT	2509988.4300	6934927.8350	390.83
FMN-17	EDGE OF RIPRAP	211+52.37	73.41 LT	2510013.7862	6934960.5926	MATCH EXIST
FMN-18	TOP OF SLOPE	211+55.08	83.72 LT	2510003.9842	6934956.4038	401.00
FMN-19	EDGE OF RIPRAP	211+23.54	70.64 LT	2510033.6808	6934939.5538	MATCH EXIST
FMN-20	TOP OF SLOPE	211+20.97	80.43 LT	2510027.5280	6934931.5059	401.00
FMN-21	POINT ON SLOPE	211+21.37	83.49 LT	2510024.8723	6934929.9480	400.00
FMN-22	TOE OF SLOPE	211+17.04	109.35 LT	2510007.1280	6934910.6460	391.28
FMN-23	POINT ON SLOPE	210+99.80	80.24 LT	2510040.6883	6934914.9198	400.00
FMN-24	TOE OF SLOPE	210.91.99	105.15 LT	2510025.8260	6934893.4570	391.40
FMN-25	POINT ON SLOPE	210+96.08	78.00 LT	2510044.7426	6934913.3571	400.00
FMN-26	TOE OF SLOPE	210+78.47	93.19 LT	2510043.5675	6934890.1283	392.51
FMN-27	EDGE OF RIPRAP	211+03.60	61.79 LT	2510052.9116	6934929.2439	MATCH EXIST
FMN-28	POINT ON SLOPE	210+95.03	68.93 LT	2510052.5406	6934918.0963	401.00
FMN-29	POINT ON SLOPE	210+91.78	62.19 LT	2510059.8556	6934919.6693	401.00
FMN-30	TOE OF SLOPE	210+68.49	72.89 LT	2510065.7186	6934894.7192	392.46
FMN-31	EDGE OF RIPRAP	210+99.45	44.54 LT	2510069.0749	6934936.5704	MATCH EXIST
FMN-32	TOP OF SLOPE	210+89.61	46.38 LT	2510073.6664	6934927.6723	402.00
FMN-33	POINT ON SLOPE	210+87.87	52.07 LT	2510070.2449	6934922.8041	401.00
FMN-34	TOE OF SLOPE	210+64.27	59.69 LT	2510078.7241	6934899.5031	392.74
FMN-35	EDGE OF RIPRAP	210+96.19	20.36 LT	2510090.1606	6934948.8446	MATCH EXIST
FMN-36	TOP OF SLOPE	210+86.45	22.98 LT	2510094.0738	6934939.5516	403.00
FMN-37	POINT ON SLOPE	210+85.27	27.99 LT	2510090.8443	6934935.5453	402.00
FMN-38	TOE OF SLOPE	210+56.73	37.12 LT	2510101.1690	6934907.4180	392.01
FMN-39	TOP OF SLOPE	210+71.32	13.69 RT	2510132.3061	6934950.1304	403.00
FMN-40	EDGE OF RIPRAP	210+72.31	37.49 RT	2510150.4773	6934965.5341	MATCH EXIST
FMN-41	TOP OF SLOPE	210+63.84	31.79 RT	2510151.1794	6934955.3526	403.00
FMN-42	TOE OF SLOPE	210+30.44	13.27 RT	2510157.0800	6934917.6180	390.31
FMN-43	POINT ON SLOPE	210+32.50	55.32 RT	2510189.0026	6934945.0699	399.00
FMN-44	TOE OF SLOPE	210+07.09	41.07 RT	2510193.3560	6934916.2660	388.98
FMN-45	EDGE OF RIPRAP	210+32.37	76.78 RT	2510206.0137	6934958.1470	MATCH EXIST
FMN-46	TOP OF SLOPE	210+16.46	78.41 RT	2510217.0721	6934946.5880	397.50
FMN-47	EDGE OF RIPRAP	210+32.64	99.03 RT	2510223.4085	6934972.0232	MATCH EXIST
FMN-48	TOP OF SLOPE	210+22.16	97.77 RT	2510228.8487	6934962.9748	402.00
FMN-49	CORNER OF RIPRAP	210+17.73	131.16 RT	2510257.1250	6934979.3791	MATCH EXIST
FMN-50	TOP OF SLOPE	210+08.05	127.23 RT	2510260.7599	6934969.9369	402.00
FMN-51	CORNER OF RIPRAP - TOE OF SLOPE	209+70.86	116.12 RT	2510274.8382	6934933.7623	389.25
FMS-1	CORNER OF RIPRAP - TOE OF SLOPE	211+43.96	181.03 LT	2509934.0230	6934887.8650	397.37
FMS-2	TOP OF SLOPE	211+19.42	208.04 LT	2509927.7760	6934851.9069	403.00
FMS-3	CORNER OF RIPRAP	211+12.71	215.46 LT	2509926.0504	6934842.0567	MATCH EXIST
FMS-4	TOE OF SLOPE	211+09.94	148.71 LT	2509980.4240	6934880.8660	391.28
FMS-5	TOP OF SLOPE	210+83.47	175.85 LT	2509975.2655	6934843.3106	403.00
FMS-6	EDGE OF RIPRAP	210+76.45	182.98 LT	2509973.9516	6934833.3859	MATCH EXIST
FMS-7	TOE OF SLOPE	210+64.36	103.22 LT	2510044.3194	6934872.8363	391.28
FMS-8	TOP OF SLOPE	210+40.80	129.63 LT	2510037.9441	6934838.0235	403.00
FMS-9	EDGE OF RIPRAP	210+33.18	136.12 LT	2510037.5044	6934828.0251	MATCH EXIST
FMS-10	TOE OF SLOPE	210+54.29	94.17 LT	2510057.6462	6934870.4462	392.69
FMS-11	POINT ON SLOPE	210+34.87	122.06 LT	2510047.5623	6934837.9875	403.00
FMS-12	TOP OF SLOPE	210+19.39	102.34 LT	2510072.6328	6934837.8935	403.00
FMS-13	TOE OF SLOPE	210+43.85	79.53 LT	2510075.6052	6934871.2027	392.53

POINT ID	DESCRIPTION	STATION	OFFSET	X	Y	ELEVATION
FMS-14	TOP OF SLOPE	210+18.70	93.35 LT	2510080.1499	6934842.8695	402.00
FMS-15	FLOW LINE OF SWALE	210+21.47	87.05 LT	2510083.4264	6934848.9186	400.00
FMS-16	TOE OF SLOPE	210+43.68	68.22 LT	2510084.6451	6934878.0127	392.58
FMS-17	OMITTED			2510048.3630	6934829.3345	MATCH EXIST
FMS-18	POINT ON SLOPE	210+18.44	75.60 LT	2510094.3183	6934853.5584	401.00
FMS-19	TOP OF SLOPE	210+03.79	75.07 LT	2510103.7354	6934842.3286	405.00
FMS-20	EDGE OF RIPRAP	209+93.68	77.89 LT	2510107.7180	6934832.6164	MATCH EXIST
FMS-21	TOE OF SLOPE	210+27.85	38.42 LT	2510117.8800	6934883.8300	391.53
FMS-22	TOP OF SLOPE	209+93.74	59.77 LT	2510121.9827	6934843.7950	405.00
FMS-23	EDGE OF RIPRAP	209+85.27	65.09 LT	2510122.9805	6934833.8429	MATCH EXIST
FMS-24	TOP OF SLOPE	209+90.32	54.08 LT	2510128.5708	6934844.5872	405.00
FMS-25	EDGE OF RIPRAP	209+81.09	58.13 LT	2510131.0449	6934834.8126	MATCH EXIST
FMS-26	TOE OF SLOPE	210+08.58	01.74 RT	2510161.4066	6934893.2870	390.16
FMS-27	TOP OF SLOPE	209+80.38	20.18 LT	2510161.4303	6934857.5649	402.00
FMS-28	EDGE OF RIPRAP	209+71.15	24.24 LT	2510163.8912	6934847.7851	MATCH EXIST
FMS-29	TOE OF SLOPE	209+81.84	37.97 RT	2510206.4196	6934894.4301	390.56
FMS-30	TOE OF SLOPE	209+59.97	74.65 RT	2510248.8039	6934899.7019	390.45
FMS-31	TOP OF SLOPE	209+35.53	59.70 RT	2510252.0154	6934871.2328	400.00
FMS-32	EDGE OF RIPRAP	209+30.73	42.50 RT	2510241.3855	6934856.8844	MATCH EXIST
FMS-33	OMITTED					
FMS-34	EDGE OF RIPRAP	209+54.47	111.34 RT	2510281.1306	6934917.8966	MATCH EXIST
FMS-35	TOP OF SLOPE	209+12.00	86.40 RT	2510287.5425	6934869.0640	401.00
FMS-36	POINT ON SLOPE	209+12.10	91.28 RT	2510291.3291	6934872.1402	400.00
FMS-37	TOE OF SLOPE	209+39.53	108.06 RT	2510287.7200	6934904.0970	389.28
FMS-38	POINT ON SLOPE	209+07.30	102.22 RT	2510302.9131	6934875.0727	400.00
FMS-39	TOE OF SLOPE	209+26.43	139.59 RT	2510320.6485	6934913.1186	389.50
FMS-40	TOE OF SLOPE	209+09.62	155.59 RT	2510343.5930	6934909.6830	387.47
SWN-1	CORNER OF RIPRAP	212+59.06	101.91 LT	2509925.7730	6935027.2881	MATCH EXIST
SWN-2	TOP OF SLOPE	212+58.94	91.91 LT	2509933.7338	6935033.3400	403.25
SWN-3	TOE OF SLOPE	212+58.81	79.91 LT	2509943.2868	6935040.6023	399.25
SWN-4	FLOW LINE OF SWALE	212+58.72	71.91 LT	2509949.6555	6935045.4438	398.75
SWN-5	TOE OF SLOPE	212+58.63	64.41 LT	2509955.6261	6935049.9827	399.25
SWN-6	TOP OF SLOPE	212+58.42	46.41 LT	2509969.9566	6935060.8747	403.25
SWN-7	CORNER OF RIPRAP	212+58.31	36.34 LT	2509977.9723	6935066.9706	MATCH EXIST
SWN-8	EDGE OF RIPRAP	212+42.23	102.11 LT	2509935.9455	6935013.8816	MATCH EXIST
SWN-9	TOP OF SLOPE	212+41.94	92.12 LT	2509944.0097	6935019.7973	403.35
SWN-10	TOE OF SLOPE	212+41.81	80.12 LT	2509953.5627	6935027.0596	399.35
SWN-11	FLOW LINE OF SWALE	212+41.72	72.12 LT	2509959.9314	6935031.9011	398.35
SWN-12	TOE OF SLOPE	212+41.63	64.62 LT	2509965.9020	6935036.4400	399.35
SWN-13	TOP OF SLOPE	212+41.45	48.62 LT	2509978.6415	6935046.1202	403.35
SWN-14	EDGE OF RIPRAP	212+39.52	38.78 LT	2509987.5851	6935050.6395	MATCH EXIST
SWN-15	EDGE OF RIPRAP	212+19.15	104.99 LT	2509947.8500	6934993.9043	MATCH EXIST
SWN-16	TOP OF SLOPE	212+17.00	95.18 LT	2509956.9129	6934998.2334	403.65
SWN-17	TOE OF SLOPE	212+13.41	80.61 LT	2509970.6123	6935004.3429	398.65
SWN-18	FLOW LINE OF SWALE	212+12.21	75.76 LT	2509975.1788	6935006.3793	397.65
SWN-19	TOE OF SLOPE	212+11.01	70.90 LT	2509979.7453	6935008.4158	398.65
SWN-20	TOP OF SLOPE	212+07.71	57.51 LT	2509992.3488	6935014.0365	403.25
SWN-21	EDGE OF RIPRAP	212+04.76	47.94 LT	2510001.7058	6935017.5883	MATCH EXIST
SWN-22	POINT ON SLOPE	211+90.61	100.17 LT	2509969.1848	6934974.3400	401.83
SWN-23	TOE OF SLOPE	211+86.06	89.50 LT	2509980.3999	6934977.3036	397.96
SWN-24	FLOW LINE OF SWALE	211+84.49	85.82 LT	2509984.2671	6934978.3255	396.96
SWN-25	TOE OF SLOPE	211+82.92	82.14 LT	2509988.1344	6934979.3475	397.96
SWN-26	TOP OF SLOPE	211+77.04	68.34 LT	2510002.6366	6934983.1797	402.96
SWN-27	EDGE OF RIPRAP	211+72.42	59.37 LT	2510012.5553	6934985.0467	MATCH EXIST
SWN-28	FLOW LINE OF SWALE	211+66.09	93.66 LT	2509989.3768	6934958.9893	396.50
NFM-1	TOP OF SLOPE	209+00.48	119.13 RT	2510320.4363	6934880.0777	400.00
NFM-2	TOP OF SLOPE	208+90.18	131.49 RT	2510336.5205	6934879.5361	399.00
NFM-3	POINT ON SLOPE	208+89.92	135.00 RT	2510339.4520	6934881.4858	397.00
NFM-4	TOP OF SLOPE	208+84.44	139.65 RT	2510346.4873	6934880.0270	397.00
NN-1	CORNER OF RIPRAP	208+68.44	183.78 LT	2510101.0749	6934668.7451	MATCH EXIST
NN-2	TOP OF SLOPE	208+59.91	178.54 LT	2510110.4518	6934665.2276	403.50
NN-3	TOE OF SLOPE	208+35.23	163.40 LT	2510137.5590	6934655.0590	392.36
NN-4	EDGE OF RIPRAP	208+98.12	128.93 LT	2510126.1339	6934725.8574	MATCH EXIST
NN-5	TOP OF SLOPE	208+88.89	124.98 LT	2510134.9214	6934720.9967	402.00

FMN = FIVEMILE CREEK NORTH BANK
FMS = FIVEMILE CREEK SOUTH BANK
SWN = NORTH SWALE
NFM = FIVEMILE/NEWTON CONFLUENCE AREA
NN = NEWTON CREEK NORTH BANK
NS = NEWTON CREEK SOUTH BANK
SWS = SOUTH SWALE
NBNA = NORTHBOUND NORTH ABUTMENT

ELEVATION REFERS TO FINISHED GRADE OR NOMINAL SURFACE OF STONE PRTECTION RIP RAP

STATE OF TEXAS
JOHN A. TERRY
51729
LICENSED PROFESSIONAL ENGINEER
6/29/2023

PRINT DATE	REVISION DATE
6/29/2023	-

AMERICAN STRUCTUREPOINT INC.
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FIRM REGISTRATION NO. F-230
tnp

IH 45 AT NEWTON AND FIVEMILE CREEK
GRADING CONTROL POINT DATA

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045

STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	36

REV DATE: 6/29/2023
CSJ#: -
FILE LOCATION: $FILE$

sgambrell 6/29/2023 10:31:15 AM $FILE$

POINT ID	DESCRIPTION	STATION	OFFSET	X	Y	ELEVATION
NN-6	TOE OF SLOPE	208+63.19	112.66 LT	2510160.4290	6934708.2840	392.50
NN-7	EDGE OF RIPRAP	209+05.13	107.22 LT	2510138.9615	6934744.7278	MATCH EXIST
NN-8	TOP OF SLOPE	208+94.87	106.46 LT	2510145.8643	6934737.0947	402.00
NN-9	POINT ON SLOPE	208+83.99	98.03 LT	2510159.1906	6934733.6840	402.61
NN-10	TOE OF SLOPE	208+69.97	96.19 LT	2510169.2618	6934723.7509	392.90
NN-11	CORNER OF RIPRAP	209+10.65	86.30 LT	2510152.0780	6934761.9327	MATCH EXIST
NN-12	TOP OF SLOPE	209+00.20	87.11 LT	2510157.8587	6934753.1807	400.00
NN-13	TOE OF SLOPE	208+69.20	90.26 LT	2510174.4142	6934726.7884	392.90
NN-14	POINT ON SLOPE	208+95.98	76.68 LT	2510168.6802	6934756.2599	400.50
NN-15	TOP OF SLOPE	208+89.08	80.17 LT	2510170.1627	6934748.6713	400.00
NN-16	EDGE OF RIPRAP	209+00.51	61.20 LT	2510178.1140	6934769.3412	MATCH EXIST
NN-17	TOP OF SLOPE	208+90.05	62.01 LT	2510183.8942	6934760.5890	401.00
NN-18	POINT ON SLOPE	208+87.72	67.39 LT	2510181.0856	6934755.4452	400.00
NN-19	TOE OF SLOPE	208+66.56	69.84 LT	2510192.1484	6934737.2434	392.90
NN-20	TOP OF SLOPE	208+87.88	45.11 LT	2510198.5646	6934769.2575	401.00
NN-21	TOE OF SLOPE	208+63.91	43.93 LT	2510214.2247	6934751.0706	393.00
NN-22	EDGE OF RIPRAP	209+13.49	05.45 LT	2510214.1356	6934813.8252	MATCH EXIST
NN-23	TOP OF SLOPE	209+04.04	01.94 LT	2510222.7099	6934808.5235	402.00
NN-24	TOE OF SLOPE	208+74.22	06.72 RT	2510247.8620	6934790.3170	391.65
NN-25	EDGE OF RIPRAP	209+29.02	24.20 RT	2510227.9934	6934844.2911	MATCH EXIST
NN-26	TOP OF SLOPE	209+19.25	27.09 RT	2510236.2799	6934838.3564	402.00
NN-27	TOE OF SLOPE	208+85.56	36.41 RT	2510264.3210	6934817.4950	MATCH EXIST
NN-28	EDGE OF RIPRAP	208+68.44	42.73 RT	2510279.5474	6934808.2911	389.10
NN-29	TOP OF SLOPE	209+21.17	47.63 RT	2510251.3075	6934852.4877	402.00
NN-30	TOP OF SLOPE	209+19.22	58.69 RT	2510261.2334	6934857.7420	401.00
NN-31	TOE OF SLOPE	208+89.23	57.19 RT	2510278.4678	6934833.1537	391.00
NN-32	TOE OF SLOPE	208+75.07	109.97 RT	2510328.8205	6934854.4030	391.10
NN-33	TOE OF SLOPE	208+69.42	123.54 RT	2510343.0018	6934858.2718	390.50
NN-34	CORNER OF RIPRAP - TOE OF SLOPE	208+65.92	131.93 RT	2510351.7698	6934860.6638	390.20
NS-1	TOE OF SLOPE	208+21.91	147.38 LT	2510158.3840	6934654.3790	392.69
NS-2	TOP OF SLOPE	207+98.66	134.70 LT	2510183.6160	6934642.6227	402.00
NS-3	EDGE OF RIPRAP	207+88.16	130.09 LT	2510192.7183	6934638.2933	MATCH EXIST
NS-4	TOE OF SLOPE	208+37.40	108.90 LT	2510179.2320	6934690.2360	392.46
NS-5	POINT ON SLOPE	208+15.55	103.05 LT	2510197.2689	6934676.5856	400.00
NS-6	TOE OF SLOPE	208+43.54	84.12 LT	2510195.0146	6934710.3095	394.00
NS-7	TOP OF SLOPE	208+22.79	80.94 LT	2510210.2705	6934695.8784	400.00
NS-8	EDGE OF RIPRAP	208+12.01	80.29 LT	2510217.4041	6934687.7768	MATCH EXIST
NS-9	TOE OF SLOPE	208+44.85	62.48 LT	2510211.2862	6934724.6340	393.97
NS-10	TOP OF SLOPE	208+20.78	61.59 LT	2510226.7777	6934706.1856	401.00
NS-11	TOE OF SLOPE	208+42.29	39.33 LT	2510231.1300	6934736.8270	391.50
NS-12	TOP OF SLOPE	208+08.23	37.82 LT	2510253.2379	6934710.8771	403.00
NS-13	EDGE OF RIPRAP	207+98.60	40.56 LT	2510256.9990	6934701.5982	MATCH EXIST
NS-14	TOE OF SLOPE	208+44.67	27.01 LT	2510239.3293	6934746.3561	390.00
NS-15	TOP OF SLOPE	208+05.59	26.41 LT	2510263.8690	6934715.8089	403.00
NS-16	EDGE OF RIPRAP	207+95.69	27.95 LT	2510268.7391	6934707.0445	MATCH EXIST
NS-17	TOE OF SLOPE	208+34.90	94.13 RT	2510340.9921	6934812.9650	390.00
NS-18	TOP OF SLOPE	207+97.11	77.71 RT	2510351.2502	6934773.0606	403.00
NS-19	EDGE OF RIPRAP	207+87.32	74.61 RT	2510354.8096	6934763.4374	MATCH EXIST
NS-20	TOE OF SLOPE	208+26.86	109.47 RT	2510358.0310	6934816.0460	387.84
NS-21	TOP OF SLOPE	207+86.94	94.95 RT	2510371.0976	6934775.6255	402.00
NS-22	EDGE OF RIPRAP	207+78.73	89.18 RT	2510371.5870	6934765.6056	MATCH EXIST
NS-23	TOE OF SLOPE	208+24.02	122.49 RT	2510370.0560	6934821.8020	387.13
NS-24	TOP OF SLOPE	207+81.33	101.72 RT	2510379.8855	6934775.3538	403.00
NS-25	EDGE OF RIPRAP	207+71.39	98.04 RT	2510383.0869	6934765.2500	MATCH EXIST
NS-26	CORNER OF RIPRAP - TOE OF SLOPE	208+05.85	144.65 RT	2510398.7045	6934821.0756	387.61
NS-27	TOP OF SLOPE	207+65.10	122.72 RT	2510406.4223	6934775.4473	403.00
NS-28	CORNER OF RIPRAP	207+55.84	118.36 RT	2510408.6724	6934765.4660	MATCH EXIST
SWS-1	TOP OF SLOPE - CORNER OF RIPRAP	210+05.57	100.91 LT	2510082.2536	6934827.8573	403.00
SWS-2	TOP OF SLOPE - EDGE OF RIPRAP	209+81.40	101.13 LT	2510096.9228	6934808.6525	403.70
SWS-3	FLOW LINE OF SWALE	209+81.30	93.25 LT	2510103.2061	6934813.4130	400.68
SWS-4	EDGE OF RIPRAP	209+76.48	81.18 LT	2510115.6873	6934817.0281	MATCH EXIST
SWS-5	TOP OF SLOPE - EDGE OF RIPRAP	209+19.43	101.69 LT	2510134.5418	6934759.4019	403.41
SWS-6	FLOW LINE OF SWALE	209+11.59	94.20 LT	2510145.2701	6934757.8203	400.00
NBNA-1	CORNER OF RIPRAP	216+80.45	00.00	2509747.3718	6935422.4238	MATCH CONC.

FMN = FIVEMILE CREEK NORTH BANK
FMS = FIVEMILE CREEK SOUTH BANK
SWN = NORTH SWALE
NFM = FIVEMILE/NEWTON CONFLUENCE AREA
NN = NEWTON CREEK NORTH BANK
NS = NEWTON CREEK SOUTH BANK
SWS = SOUTH SWALE
NBNA = NORTHBOUND NORTH ABUTMENT

ELEVATION REFERS TO FINISHED GRADE OR NOMINAL SURFACE OF STONE PRTECTION RIP RAP

STATE OF TEXAS
JOHN A. TERRY
51729
LICENSED PROFESSIONAL ENGINEER

6/29/2023

PRINT DATE	REVISION DATE
6/29/2023	

3711 SOUTH MOPAC EXPRESSWAY
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AMERICAN STRUCTUREPOINT INC.

TBPE FIRM NO. F-10069

FIRM REGISTRATION NO. F-230

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Texas Department of Transportation

IH 45 AT NEWTON AND FIVEMILE CREEK
GRADING CONTROL POINT DATA

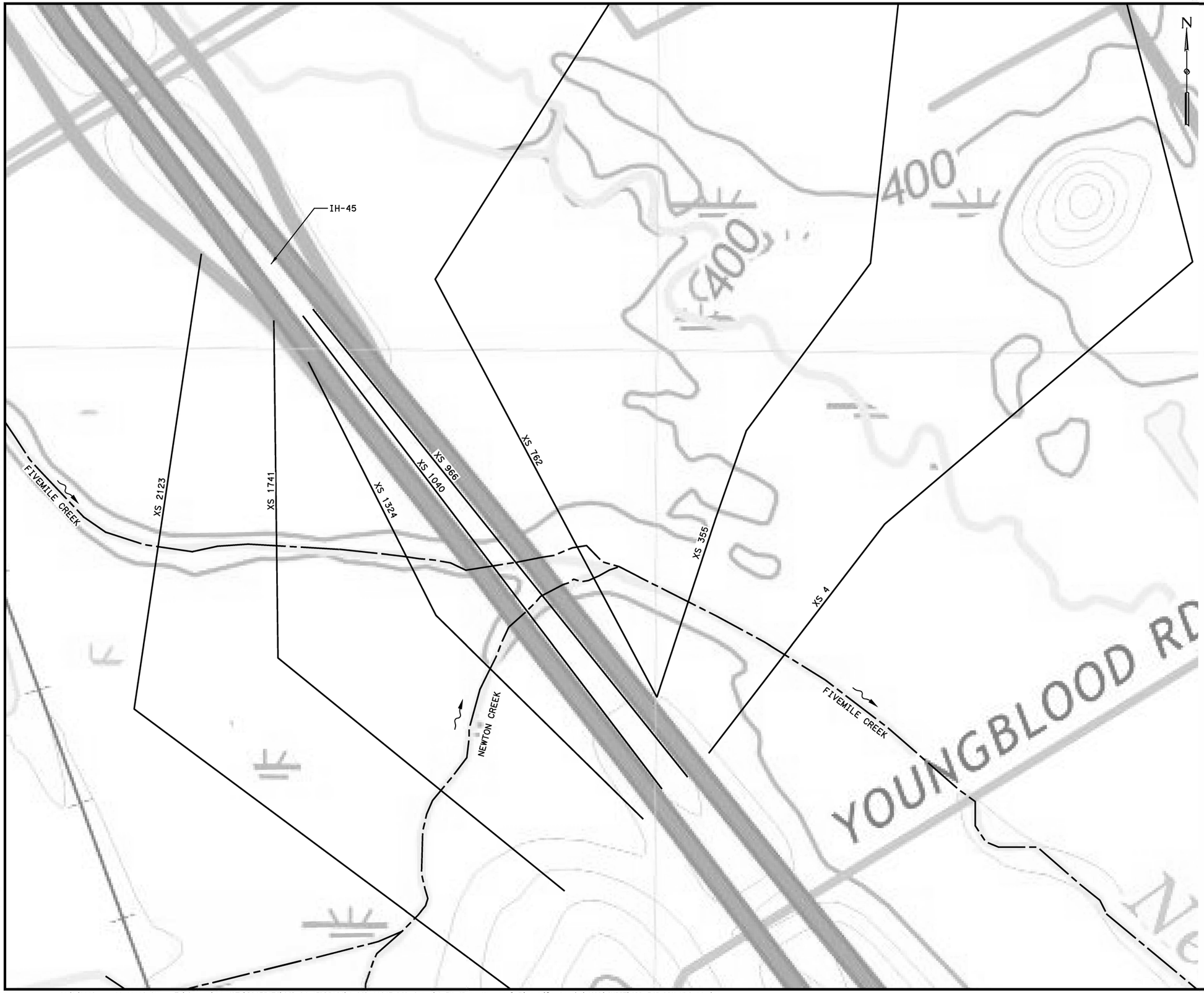
SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045

STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	37

REV DATE: 6/29/2023
CSJ:
FILE LOCATION: $FILE$

sgambrell 6/29/2023 10:34:07 AM $FILE$



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0 150 300
SCALE IN FEET

NOTES:

1. PEAK FLOWS WERE TAKEN FROM THE FIVEMILE CREEK DATA (BELOW THE CONFLUENCE OF NEWTON CREEK) WITHIN TABLE 4 OF THE FLOOD INSURANCE STUDY FOR DALLAS COUNTY, TEXAS AND INCORPORATED AREAS REVISED MARCH 21, 2019.
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4. SEE "HYDRAULIC AND SCOUR REPORT IH 45 AT NEWTON AND FIVEMILE CREEK" DATED JUNE 2023 FOR ADDITIONAL INFORMATION.
5. ALL ELEVATIONS BASED ON THE NAVD88 VERTICAL DATUM.
6. THE STARTING WATER SURFACE ELEVATION WAS BASED ON NORMAL DEPTH CALCULATION.
7. THIS SITE IS DESIGNATED AS A FEMA ZONE "AE", 100-YR FLOODPLAIN WITH BASE FLOOD ELEVATIONS DETERMINED AS SHOWN ON PANEL 48113C0511L FOR DALLAS COUNTY, TEXAS DATED JULY 7, 2014.
8. INFORMAL COORDINATION WITH THE CITY OF DALLAS FLOODPLAIN ADMINISTRATOR WAS COMPLETED ON 9/27/2023. INFORMATION SENT TO STEVE PARKER (214) 948-4666; STEVE.PARKER@DALLAS.GOV

EXISTING NBI:
18-057-0-0092-14-225 (IH 45 NB)
18-057-0-0092-14-224 (IH 45 SB)

STATE OF TEXAS
YU LIAO
136752
LICENSED PROFESSIONAL ENGINEER

10/02/2023

PRINT DATE	REVISION DATE
10/2/2023	

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FIRM REGISTRATION NO. F-230

tnp

Texas Department of Transportation

IH 45 AT NEWTON AND FIVEMILE CREEK
HYDRAULIC DATA

SHEET 1 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045

STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	38

REV DATE: 10/2/2023
CSJ:
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEETORD_I45_DRN_HDS_01.dgn

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HEC-RAS PLAN: EXIST RIVER: FIVEMILE CREEK REACH: FIVEMILE CREEK												
REACH	RIVER STA	PROFILE	Q TOTAL (CFS)	MIN CH EL (FT)	W.S. ELEV (FT)	CRIT W.S. (FT)	E.G. ELEV (FT)	E.G. SLOPE (FT/FT)	VEL CHNL (FT/S)	FLOW AREA (SQ FT)	TOP WIDTH (FT)	FROUDE # CHL
FIVEMILE CREEK	2123	10 yr	20300	392.34	407.96		408.07	0.001423	4.22	9949.30	2602.22	0.22
FIVEMILE CREEK	2123	50 yr	30100	392.34	409.20		409.32	0.001383	4.45	13226.77	2666.15	0.22
FIVEMILE CREEK	2123	100 yr	33200	392.34	409.55		409.67	0.001375	4.52	14151.37	2673.65	0.22
FIVEMILE CREEK	2123	500 yr	42900	392.34	410.54		410.67	0.001363	4.73	16807.64	2697.04	0.22
FIVEMILE CREEK	1741	10 yr	20300	393.63	407.32		407.42	0.002031	2.73	7951.38	1915.89	0.23
FIVEMILE CREEK	1741	50 yr	30100	393.63	408.53		408.67	0.002085	3.09	10301.88	1947.25	0.23
FIVEMILE CREEK	1741	100 yr	33200	393.63	408.87		409.02	0.002104	3.2	10961.96	1954.39	0.23
FIVEMILE CREEK	1741	500 yr	42900	393.63	409.84		410.02	0.002161	3.51	12855.61	1975.23	0.24
FIVEMILE CREEK	1324	10 yr	20300	390.98	406.27	404.23	406.57	0.001839	5.01	5886.49	1420.76	0.38
FIVEMILE CREEK	1324	50 yr	30100	390.98	407.30	405.12	407.69	0.002301	5.83	7347.06	1452.26	0.40
FIVEMILE CREEK	1324	100 yr	33200	390.98	407.59	405.32	408.00	0.002424	6.06	7755.47	1461.49	0.41
FIVEMILE CREEK	1324	500 yr	42900	390.98	408.41	405.90	408.91	0.002761	6.70	8919.70	1491.57	0.43
FIVEMILE CREEK	1092	IH 45 SOUTHBOUND BRIDGE										
FIVEMILE CREEK	1040	10 yr	20300	389.42	404.74	404.74	405.88	0.004657	9.71	3195.37	1245.79	0.68
FIVEMILE CREEK	1040	50 yr	30100	389.42	405.51	405.51	406.85	0.005663	11.07	4154.46	1249.56	0.73
FIVEMILE CREEK	1040	100 yr	33200	389.42	405.71	405.71	407.12	0.005966	11.46	4404.60	1250.54	0.75
FIVEMILE CREEK	1040	500 yr	42900	389.42	406.28	406.28	407.89	0.006770	12.53	5116.38	1253.33	0.79
FIVEMILE CREEK	966	10 yr	20300	388.45	403.81	403.81	405.09	0.004048	9.94	3092.48	1243.08	0.62
FIVEMILE CREEK	966	50 yr	30100	388.45	404.71	404.71	406.15	0.004720	11.24	4209.63	1247.42	0.67
FIVEMILE CREEK	966	100 yr	33200	388.45	404.92	404.92	406.44	0.004985	11.67	4474.12	1248.45	0.69
FIVEMILE CREEK	966	500 yr	42900	388.45	405.55	405.55	407.25	0.005584	12.76	5262.41	1251.50	0.72
FIVEMILE CREEK	924	IH 45 NORTHBOUND BRIDGE										
FIVEMILE CREEK	762	10 yr	20300	384.56	402.89	393.63	403.32	0.000699	5.38	4997.63	2451.79	0.26
FIVEMILE CREEK	762	50 yr	30100	384.56	404.04	395.85	404.71	0.001064	6.91	6456.74	3553.32	0.32
FIVEMILE CREEK	762	100 yr	33200	384.56	404.29	396.39	405.04	0.001192	7.38	6784.27	3809.30	0.34
FIVEMILE CREEK	762	500 yr	42900	384.56	404.92	398.06	405.95	0.001595	8.78	7637.09	3995.56	0.40
FIVEMILE CREEK	355	10 yr	20300	385.94	402.44		402.91	0.001440	6.89	6799.43	2046.78	0.36
FIVEMILE CREEK	355	50 yr	30100	385.94	403.70		404.09	0.001270	6.95	10087.62	3199.56	0.35
FIVEMILE CREEK	355	100 yr	33200	385.94	403.99		404.34	0.001197	6.85	11045.27	3415.47	0.34
FIVEMILE CREEK	355	500 yr	42900	385.94	404.77		405.06	0.001006	6.54	13863.36	3707.58	0.31
FIVEMILE CREEK	4	10 yr	20300	385.06	402.27	398.95	402.42	0.000850	4.95	9051.53	2787.53	0.27
FIVEMILE CREEK	4	50 yr	30100	385.06	403.50	400.21	403.65	0.000850	5.34	12798.53	3453.46	0.28
FIVEMILE CREEK	4	100 yr	33200	385.06	403.77	400.42	403.93	0.000850	5.42	13754.84	3524.83	0.28
FIVEMILE CREEK	4	500 yr	42900	385.06	404.53	401.24	404.69	0.000851	5.65	16582.56	3901.91	0.28

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AMERICAN STRUCTUREPOINT INC.

TBPE FIRM NO. F-10069

FIRM REGISTRATION NO. F-230

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IH 45 AT NEWTON AND FIVEMILE CREEK

HYDRAULIC DATA

SHEET 2 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 39

REV DATE: 10/2/2023
CSJ: -
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_HDS_02.dgn

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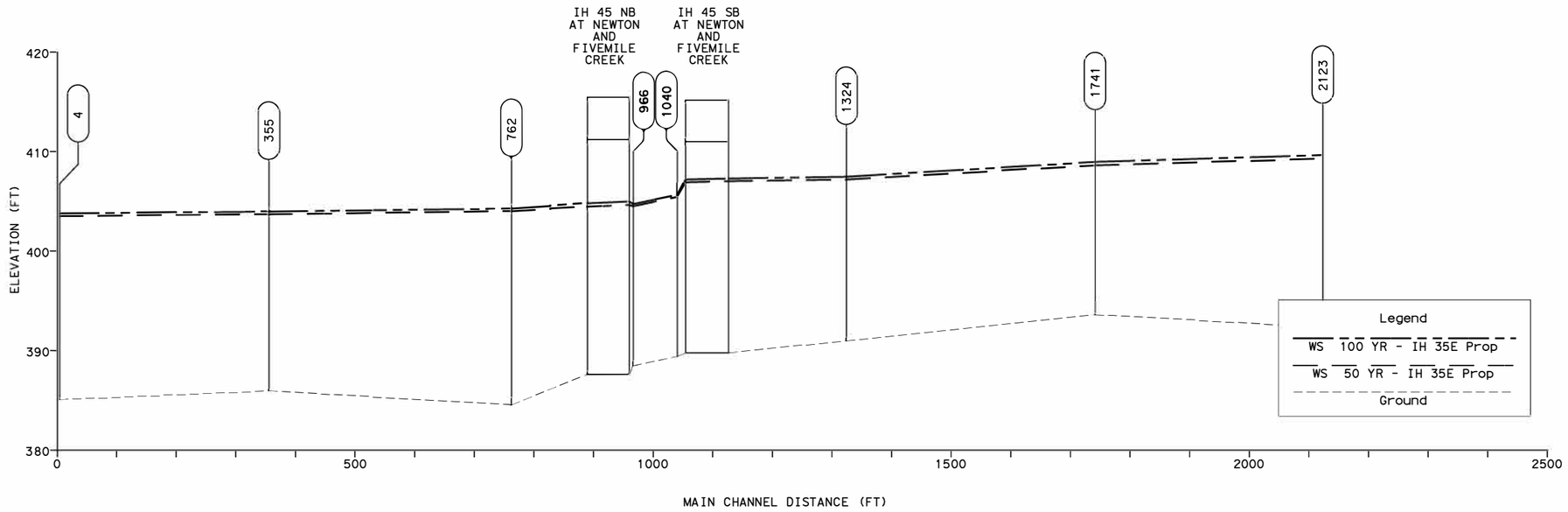

STREAM PROFILE - NEWTON AND FIVEMILE CREEK

NOTES:

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EXISTING NBI:
18-057-0-0092-14-225 (IH 45 NB)
18-057-0-0092-14-224 (IH 45 SB)

IH 45 SOUTHBOUND AT FIVEMILE AND NEWTON CREEK

RIVER: FIVEMILE CREEK PROFILE: 50 YR
REACH: FIVEMILE CREEK RS: 1092 PLAN: EXIST

PLAN: EXIST	FIVEMILE CREEK	FIVEMILE CREEK RS: 1092	PROFILE: 50 YR	
E.G. US. (FT)	407.69	ELEMENT	INSIDE BR US	INSIDE BR DS
W.S. US. (FT)	407.30	E.G. ELEV (FT)	407.30	407.21
Q TOTAL (CFS)	30100	W.S. ELEV (FT)	407.06	406.96
Q BRIDGE (CFS)	30100	CRIT W.S. (FT)	403.59	403.59
Q WEIR (CFS)		MAX CHL DPTH (FT)	17.29	17.19
WEIR STA LFT (FT)		VEL TOTAL (FT/S)	3.78	3.84
WEIR STA RGT (FT)		FLOW AREA (SQ FT)	7953.76	7835.28
WEIR SUBMERG		FROUDE # CHL	0.29	0.30
WEIR MAX DEPTH (FT)		SPECIF FORCE (CU FT)	33393.23	32682.36
MIN EL WEIR FLOW (FT)	415.56	HYDR DEPTH (FT)	6.54	6.44
MIN EL PRS (FT)	411.05	W.P. TOTAL (FT)	1429.97	1426.33
DELTA EG (FT)	0.84	CONV. TOTAL (CFS)	874682	855997.60
DELTA WS (FT)	1.79	TOP WIDTH (FT)	1216.91	1216.42
BR OPEN AREA (SQ FT)	11784.06	FRCTN LOSS (FT)	0.09	0.03
BR OPEN VEL (FT/S)	3.84	C & E LOSS (FT)	0.00	0.33
BR SLUICE COEF		SHEAR TOTAL (LB/SQ FT)	0.41	0.42
BR SEL METHOD	ENERGY ONLY	POWER TOTAL (LB/FT S)	1.56	1.63

RIVER: FIVEMILE CREEK PROFILE: 100 YR
REACH: FIVEMILE CREEK RS: 1092 PLAN: EXIST

PLAN: EXIST	FIVEMILE CREEK	FIVEMILE CREEK RS: 1094	PROFILE: 100 YR	
E.G. US. (FT)	408.00	ELEMENT	INSIDE BR US	INSIDE BR DS
W.S. US. (FT)	407.59	E.G. ELEV (FT)	407.59	407.49
Q TOTAL (CFS)	33200	W.S. ELEV (FT)	407.32	407.21
Q BRIDGE (CFS)	33200	CRIT W.S. (FT)	403.78	403.78
Q WEIR (CFS)		MAX CHL DPTH (FT)	17.55	17.44
WEIR STA LFT (FT)		VEL TOTAL (FT/S)	4.01	4.08
WEIR STA RGT (FT)		FLOW AREA (SQ FT)	8276.62	8146.75
WEIR SUBMERG		FROUDE # CHL	0.30	0.31
WEIR MAX DEPTH (FT)		SPECIF FORCE (CU FT)	36148.93	35344.23
MIN EL WEIR FLOW (FT)	415.56	HYDR DEPTH (FT)	6.79	6.69
MIN EL PRS (FT)	411.05	W.P. TOTAL (FT)	1439.87	1435.89
DELTA EG (FT)	0.89	CONV. TOTAL (CFS)	926320.1	905422.90
DELTA WS (FT)	1.88	TOP WIDTH (FT)	1218.22	1217.69
BR OPEN AREA (SQ FT)	11784.06	FRCTN LOSS (FT)	0.09	0.03
BR OPEN VEL (FT/S)	4.08	C & E LOSS (FT)	0.00	0.34
BR SLUICE COEF		SHEAR TOTAL (LB/SQ FT)	0.46	0.48
BR SEL METHOD	ENERGY ONLY	POWER TOTAL (LB/FT S)	1.85	1.94

IH 45 NORTHBOUND AT FIVEMILE AND NEWTON CREEK

RIVER: FIVEMILE CREEK PROFILE: 50 YR
REACH: FIVEMILE CREEK RS: 924 PLAN: EXIST

PLAN: EXIST	FIVEMILE CREEK	FIVEMILE CREEK RS: 924	PROFILE: 50 YR	
E.G. US. (FT)	406.15	ELEMENT	INSIDE BR US	INSIDE BR DS
W.S. US. (FT)	404.71	E.G. ELEV (FT)	405.1	404.95
Q TOTAL (CFS)	30100	W.S. ELEV (FT)	404.67	404.48
Q BRIDGE (CFS)	30100	CRIT W.S. (FT)	402.23	402.23
Q WEIR (CFS)		MAX CHL DPTH (FT)	17.05	16.86
WEIR STA LFT (FT)		VEL TOTAL (FT/S)	4.67	4.84
WEIR STA RGT (FT)		FLOW AREA (SQ FT)	6449.57	6221.49
WEIR SUBMERG		FROUDE # CHL	0.37	0.38
WEIR MAX DEPTH (FT)		SPECIF FORCE (CU FT)	28270.11	27266.79
MIN EL WEIR FLOW (FT)	415.49	HYDR DEPTH (FT)	5.34	5.16
MIN EL PRS (FT)	411.23	W.P. TOTAL (FT)	1392.23	1385.24
DELTA EG (FT)	1.44	CONV. TOTAL (CFS)	687199.8	655442.20
DELTA WS (FT)	0.67	TOP WIDTH (FT)	1207.24	1206.38
BR OPEN AREA (SQ FT)	13266.97	FRCTN LOSS (FT)	0.14	0.19
BR OPEN VEL (FT/S)	4.84	C & E LOSS (FT)	0.01	0.06
BR SLUICE COEF		SHEAR TOTAL (LB/SQ FT)	0.55	0.59
BR SEL METHOD	ENERGY ONLY	POWER TOTAL (LB/FT S)	2.59	2.86

RIVER: FIVEMILE CREEK PROFILE: 100 YR
REACH: FIVEMILE CREEK RS: 924 PLAN: EXIST

PLAN: EXIST	FIVEMILE CREEK	FIVEMILE CREEK RS: 924	PROFILE: 100 YR	
E.G. US. (FT)	406.44	ELEMENT	INSIDE BR US	INSIDE BR DS
W.S. US. (FT)	404.92	E.G. ELEV (FT)	405.47	405.32
Q TOTAL (CFS)	33200	W.S. ELEV (FT)	405.02	404.82
Q BRIDGE (CFS)	33200	CRIT W.S. (FT)	402.5	402.50
Q WEIR (CFS)		MAX CHL DPTH (FT)	17.40	17.20
WEIR STA LFT (FT)		VEL TOTAL (FT/S)	4.84	5.01
WEIR STA RGT (FT)		FLOW AREA (SQ FT)	6865.42	6631.33
WEIR SUBMERG		FROUDE # CHL	0.37	0.39
WEIR MAX DEPTH (FT)		SPECIF FORCE (CU FT)	31202.32	30106.60
MIN EL WEIR FLOW (FT)	415.49	HYDR DEPTH (FT)	5.68	5.49
MIN EL PRS (FT)	411.23	W.P. TOTAL (FT)	1404.97	1397.80
DELTA EG (FT)	1.40	CONV. TOTAL (CFS)	746837.2	712994.90
DELTA WS (FT)	0.64	TOP WIDTH (FT)	1208.82	1207.93
BR OPEN AREA (SQ FT)	13266.97	FRCTN LOSS (FT)	0.14	0.20
BR OPEN VEL (FT/S)	5.01	C & E LOSS (FT)	0.01	0.08
BR SLUICE COEF		SHEAR TOTAL (LB/SQ FT)	0.60	0.64
BR SEL METHOD	ENERGY ONLY	POWER TOTAL (LB/FT S)	2.92	3.22

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STATE OF TEXAS
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IH 45 AT NEWTON AND FIVEMILE CREEK

HYDRAULIC DATA

SHEET 3 OF 4

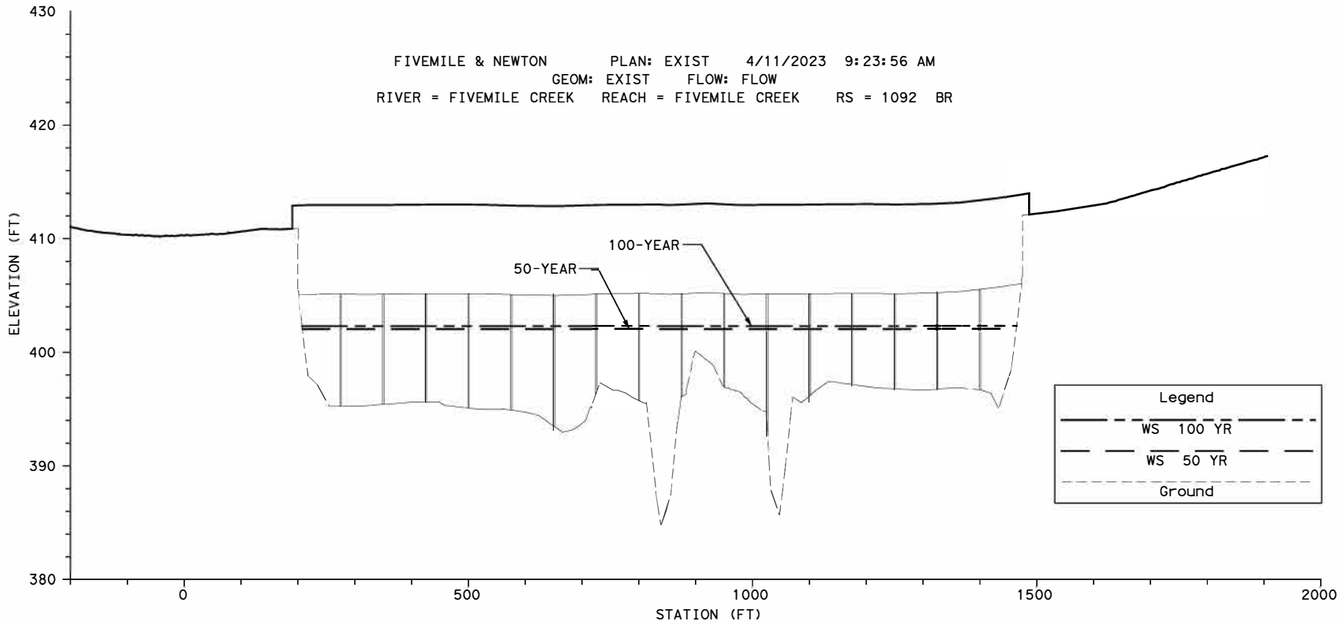
FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045

STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS

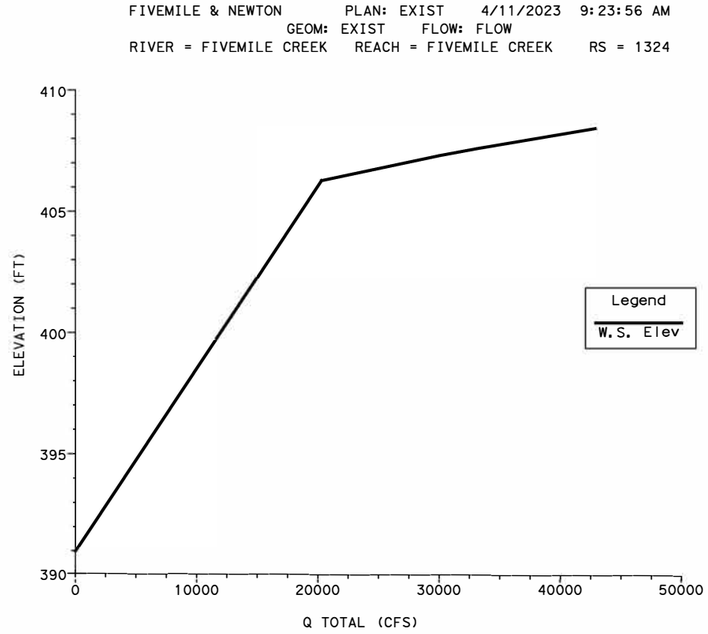
CONTROL	SECTION	JOB	SHEET NO.
0092	14	108	40

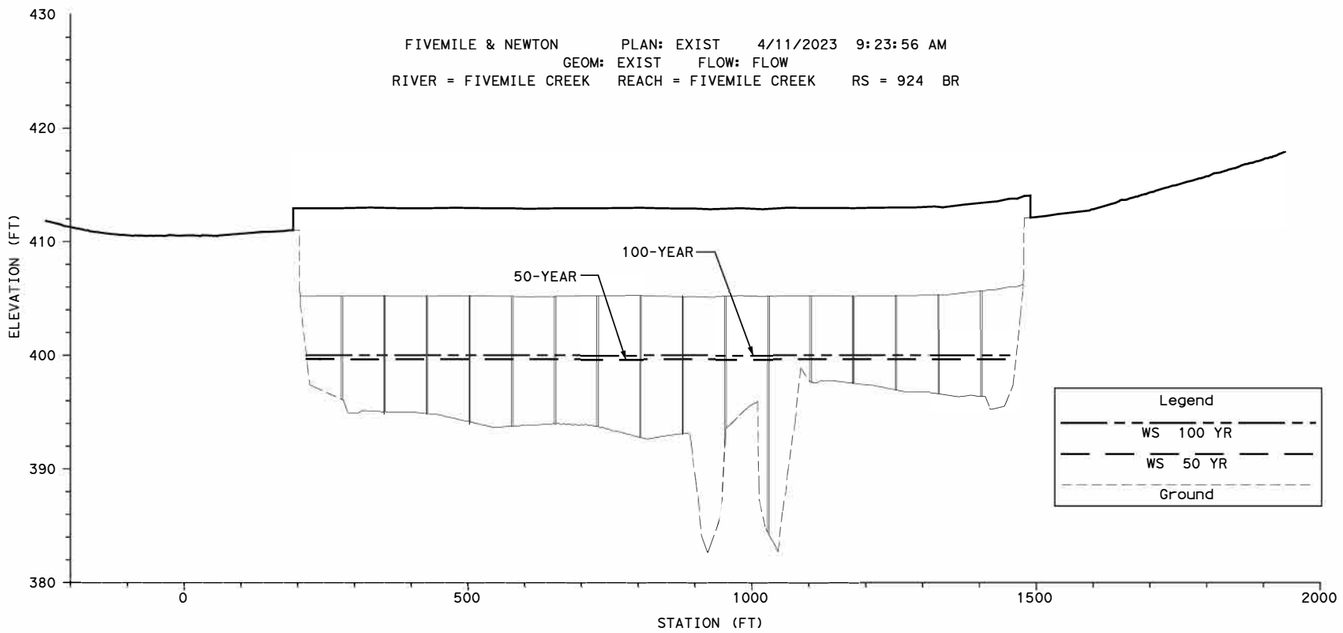
REV DATE: 10/2/2023
CSJ: -
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_HDS_03.dgn

sliao 10/2/2023 11:32:00 AM T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_HDS_03.dgn



EXISTING IH 45 SOUTHBOUND AT NEWTON AND FIVEMILE CREEK





EXISTING IH 45 NORTHBOUND AT NEWTON AND FIVEMILE CREEK

NOTES:

1. PEAK FLOWS WERE TAKEN FROM THE FIVEMILE CREEK DATA (BELOW THE CONFLUENCE OF NEWTON CREEK) WITHIN TABLE 4 OF THE FLOOD INSURANCE STUDY FOR DALLAS COUNTY, TEXAS AND INCORPORATED AREAS REVISED MARCH 21, 2019.
2. CROSS SECTION LOCATIONS WERE ADJUSTED FROM FIS LOCATIONS TO BETTER REPRESENT THE EXISTING CROSSING. CROSS SECTION DATA WAS ESTABLISHED USING RAS-MAPPER AND FIELD SURVEY.
3. HEC-RAS VERSION 6.3.1 WAS USED FOR THE HYDRAULIC ANALYSIS.
4. SEE "HYDRAULIC AND SCOUR REPORT IH 45 AT NEWTON AND FIVEMILE CREEK" DATED JUNE 2023 FOR ADDITIONAL INFORMATION.
5. ALL ELEVATIONS BASED ON THE NAVD88 VERTICAL DATUM.
6. THE STARTING WATER SURFACE ELEVATION WAS BASED ON NORMAL DEPTH CALCULATION.
7. THIS SITE IS DESIGNATED AS A FEMA ZONE "AE", 100-YR FLOODPLAIN WITH BASE FLOOD ELEVATIONS DETERMINED AS SHOWN ON PANEL 48113C0511L FOR DALLAS COUNTY, TEXAS DATED JULY 7, 2014.
8. INFORMAL COORDINATION WITH THE CITY OF DALLAS FLOODPLAIN ADMINISTRATOR WAS COMPLETED ON 9/27/2023. INFORMATION SENT TO STEVE PARKER (214) 948-4666; STEVE.PARKER@DALLAS.GOV

EXISTING NBI:
18-057-0-0092-14-225 (IH 45 NB)
18-057-0-0092-14-224 (IH 45 SB)

STATE OF TEXAS
YU LIAO
136752
LICENSED PROFESSIONAL ENGINEER
10/02/2023

PRINT DATE	REVISION DATE
10/2/2023	

3711 SOUTH MOPAC EXPRESSWAY
BUILDING ONE, SUITE 350
AUSTIN, TX 78703
TEL 512.494.6037 FAX 317.543.0270
www.structurepoint.com
AMERICAN STRUCTUREPOINT INC.
TBPE FIRM NO. F-10069
FIRM REGISTRATION NO. F-230
tnp

IH 45 AT NEWTON AND FIVEMILE CREEK
HYDRAULIC DATA

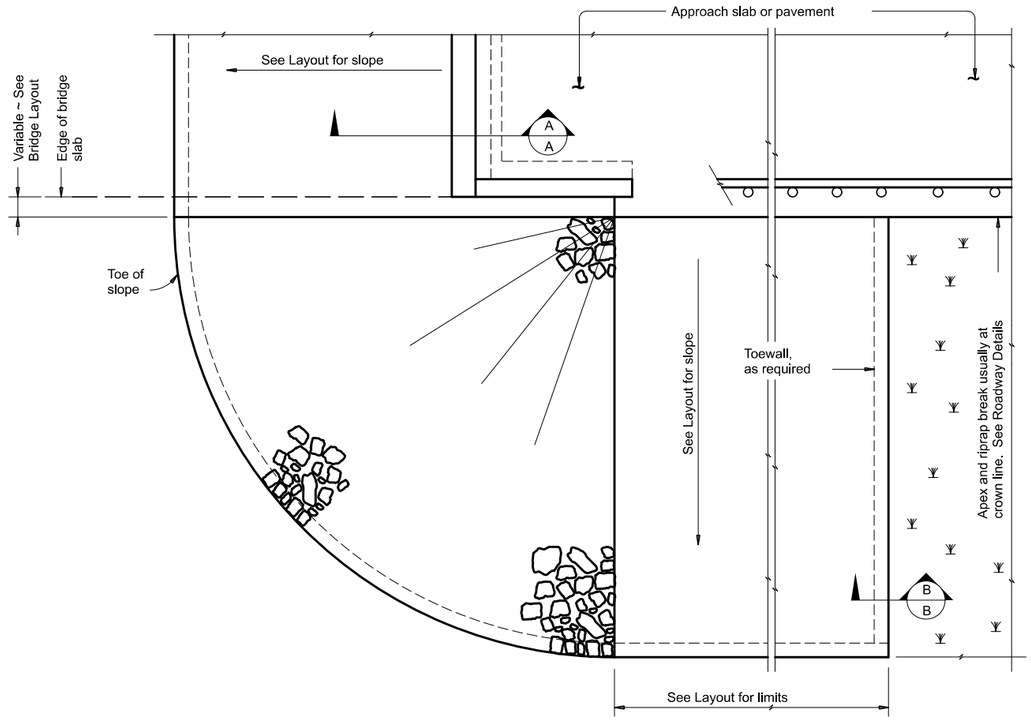
SHEET 4 OF 4

FED. RD. DIV. NO.	PROJECT NUMBER	HIGHWAY NUMBER
6	SEE TITLE SHEET	IH0045
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	DALLAS
CONTROL	SECTION	JOB / SHEET NO.
0092	14	108 / 41

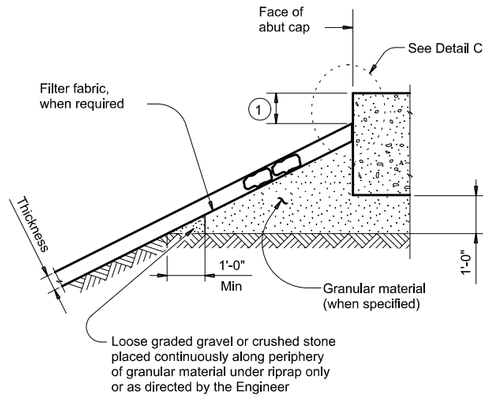
REV DATE: 10/2/2023
CSJ: -
FILE LOCATION: T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_HDS_04.dgn

sliao 10/2/2023 11:34:30 AM T:\Groups\00_KATY\PROJECTS\ASP 36-0IDP5086\1 ASP 20317 DAL Scour\1 IH 45 at Newton & Five Mile Creeks\CADD\SHEET\ORD_I45_DRN_HDS_04.dgn

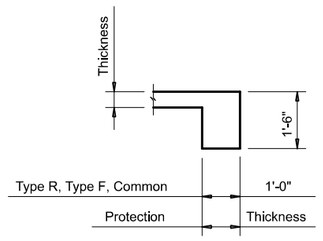
DATE:
FILE:



PLAN

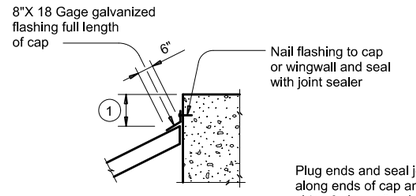


SECTION A-A AT CAP

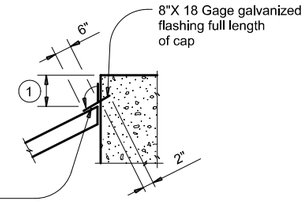


SECTION B-B

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

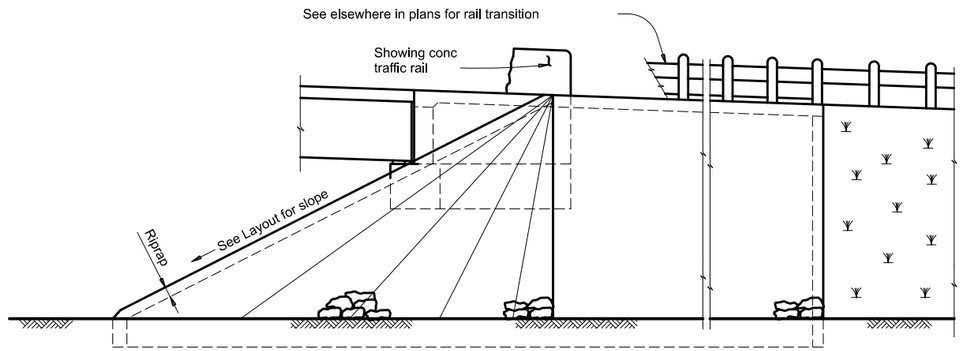


CAP OPTION A



CAP OPTION B

DETAIL C



ELEVATION

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

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

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0092	14	108	IH0045
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		42

DATE:
FILE:

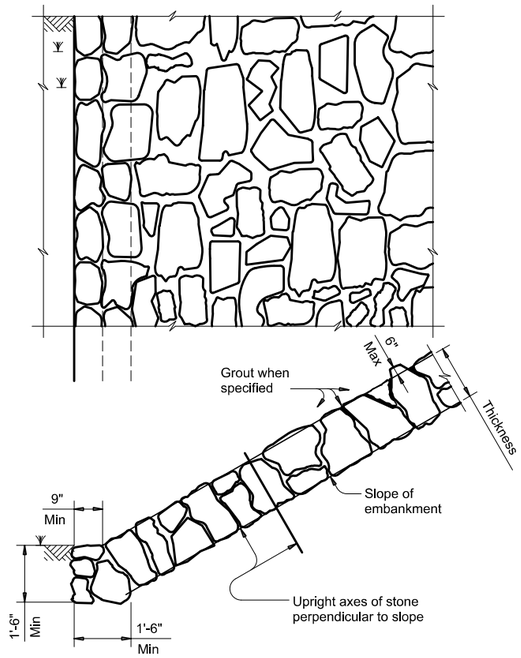


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

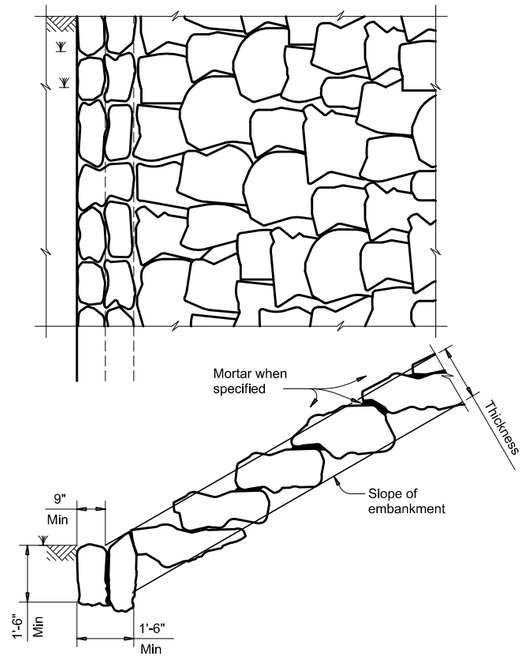


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

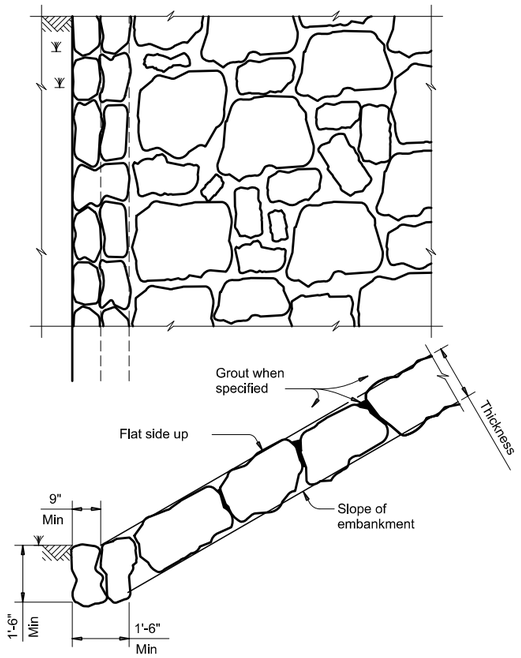


FIGURE 3 ~ TYPE F STONE RIPRAP

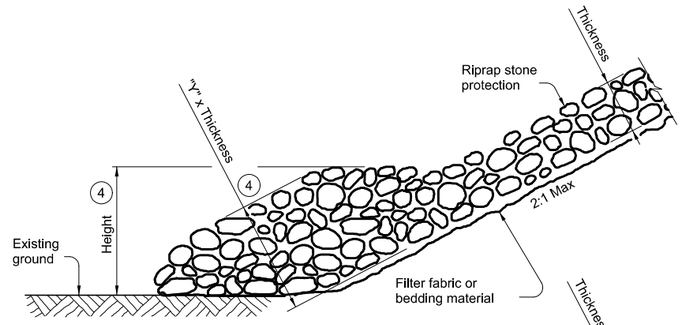
grouted

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

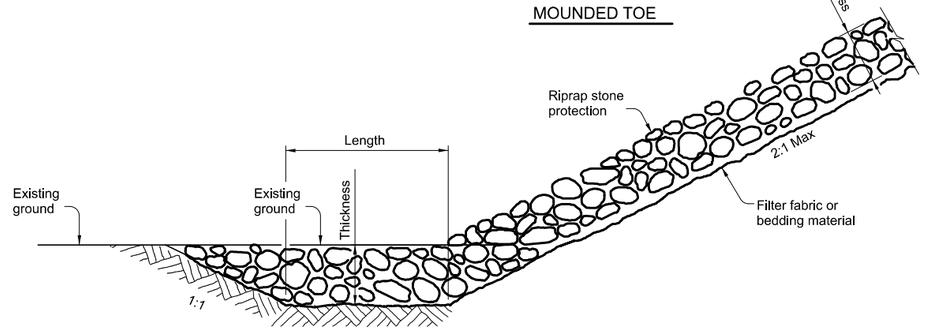
3 Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

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

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

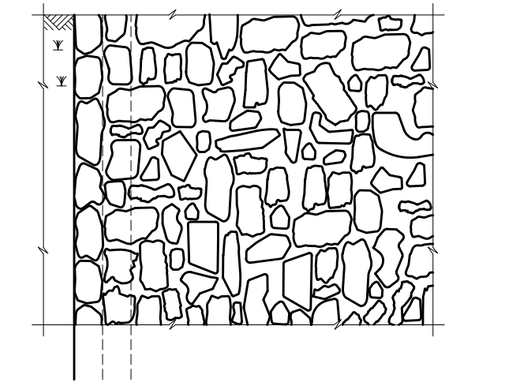


MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)



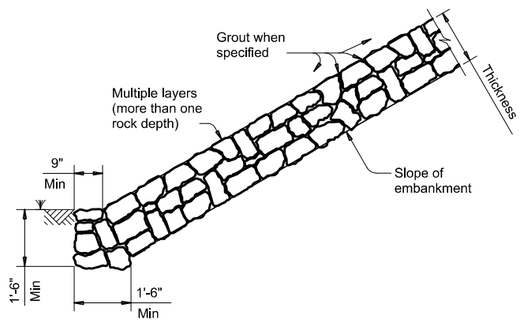
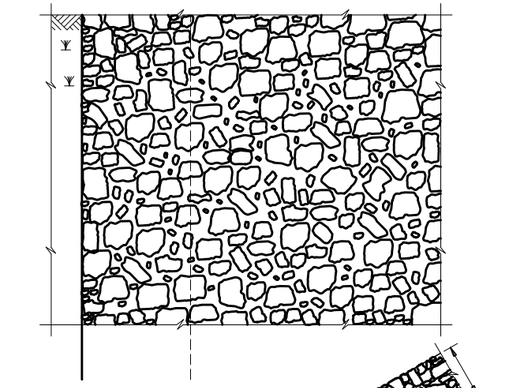


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted



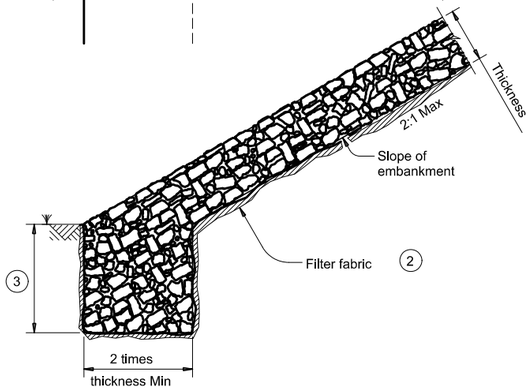


FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0092	14	108	IH0045
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		43

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0092-14-108 (IH-45)

1.2 PROJECT LIMITS:

From: AT NEWTON

To: AND FIVE MILE CREEKS

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 32.6767030 ,(Long) -96.7398423

END: (Lat) 32.6778616 ,(Long) -96.7408727

1.4 TOTAL PROJECT AREA (Acres): 12.95

1.5 TOTAL AREA TO BE DISTURBED (Acres): 2.594

1.6 NATURE OF CONSTRUCTION ACTIVITY:

BRIDGE MAINTENANCE WORK TO PERFORM SCOUR REPAIR ALONG NEWTON AND FIVE MILE CREEK

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Frio silty clay, 0 to 1% slopes, occasionally flooded	Frio, occasionally flooded, and similar soils: 85 percent Minor components: 15 percent

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- [X] PSLs determined during preconstruction meeting
- [ ] PSLs determined during construction
- [ ] No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- [X] Sediment laden stormwater from stormwater conveyance over disturbed area
- [X] Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- [ ] Solvents, paints, adhesives, etc. from various construction activities
- [X] Transported soils from offsite vehicle tracking
- [X] Construction debris and waste from various construction activities
- [X] Contaminated water from excavation or dewatering pump-out water
- [X] Sanitary waste from onsite restroom facilities
- [X] Trash from various construction activities/receptacles
- [X] Long-term stockpiles of material and waste
- [X]
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

1.11 RECEIVING WATERS:

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

Tributaries	Classified Waterbody
TRIBUTARIES TO FIVE MILE CREEK	FIVE MILE CREEK (SEGMENT 0805D)

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- [X] Development of plans and specifications
- [X] Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- [X] Post Construction Site Notice
- [X] Submit NOI/CSN to local MS4
- [X] Perform SWP3 inspections
- [X] Maintain SWP3 records and update to reflect daily operations
- [X] Complete and submit Notice of Termination to TCEQ
- [X] Maintain SWP3 records for 3 years
- [X] Other: SEE PLAN LAYOUT SHEETS FOR SW3P AND ENVIROMENTAL
- [ ] Other: _____
- [ ] Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- [X] Day To Day Operational Control
- [X] Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- [X] Post Construction Site Notice
- [X] Submit NOI/CSN to local MS4
- [X] Maintain schedule of major construction activities
- [X] Install, maintain and modify BMPs
- [X] Complete and submit Notice of Termination to TCEQ
- [X] Maintain SWP3 records for 3 years
- [X] Other: SEE PLAN LAYOUT SHEETS FOR SW3P AND ENVIROMENTAL
- [ ] Other: _____
- [ ] Other: _____

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

MS4 Entity
CITY OF DALLAS PHASE I MS4 CONTACT KEVIN HURLEY
CITY OF HUTCHINS PHASE II MS4 CONTACT SCOTT METCALF
CITY OF BALCH SPRINGS PHASE II MS4 CONTACT WILLIAM FREEMAN

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		44
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0092	14	108	IH 45

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- [X] [X] Protection of Existing Vegetation
- [ ] [ ] Vegetated Buffer Zones
- [ ] [ ] Soil Retention Blankets
- [ ] [ ] Geotextiles
- [ ] [ ] Mulching/ Hydromulching
- [ ] [ ] Soil Surface Treatments
- [X] [ ] Temporary Seeding
- [ ] [X] Permanent Planting, Sodding or Seeding
- [X] [ ] Biodegradable Erosion Control Logs
- [ ] [ ] Rock Filter Dams/ Rock Check Dams
- [ ] [ ] Vertical Tracking
- [ ] [ ] Interceptor Swale
- [ ] [X] Riprap
- [ ] [ ] Diversion Dike
- [ ] [ ] Temporary Pipe Slope Drain
- [ ] [X] Embankment for Erosion Control
- [ ] [ ] Paved Flumes
- [ ] [X] Other: VEGETATION LINED DITCHES (PERMANENT)
- [ ] [ ] Other: _____
- [ ] [ ] Other: _____
- [ ] [ ] Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- [X] [ ] Biodegradable Erosion Control Logs
- [ ] [ ] Dewatering Controls
- [ ] [ ] Inlet Protection
- [ ] [ ] Rock Filter Dams/ Rock Check Dams
- [ ] [ ] Sandbag Berms
- [X] [ ] Sediment Control Fence
- [X] [ ] Stabilized Construction Exit
- [ ] [ ] Floating Turbidity Barrier
- [ ] [ ] Vegetated Buffer Zones
- [ ] [ ] Vegetated Filter Strips
- [ ] [X] Other: VEGETATION LINED DITCHES (PERMANENT)
- [ ] [ ] Other: _____
- [ ] [ ] Other: _____
- [ ] [ ] Other: _____

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

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- [ ] [ ] Sediment Trap
  - [ ] Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - [ ] 3,600 cubic feet of storage per acre drained
- [ ] [ ] Sedimentation Basin
  - [X] Not required (<10 acres disturbed)
  - [ ] Required (>10 acres) and implemented.
    - [ ] Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - [ ] 3,600 cubic feet of storage per acre drained
  - [ ] Required (>10 acres), but not feasible due to:
    - [ ] Available area/Site geometry
    - [ ] Site slope/Drainage patterns
    - [ ] Site soils/Geotechnical factors
    - [ ] Public safety
    - [ ] Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
RIPRAP (STONE PROTECTION)	STA. 203+00	STA. 218+00

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

- [X] Chemical Management
- [X] Concrete and Materials Waste Management
- [X] Debris and Trash Management
- [X] Dust Control
- [X] Sanitary Facilities
- [X] Other:

• AVOID STORING PORTAB;E SANITARY UNITS, CONCRETE WASHOUTS, OR CHEMICALS WITHIN 50 FEET UPGRADIENT OF A RECIEVING WATER OR DRAINAGE CONVEYANCE, WITHOUT ADEQUATE POLLUTION CONTROLS

• MAINTAIN PAVED SURFACES FREE OF PROJECT SEDIMENTATION AND DEBRIS

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

2.9 INSPECTIONS:

2.10 MAINTENANCE:

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

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

 July 2023 Sheet 2 of 2

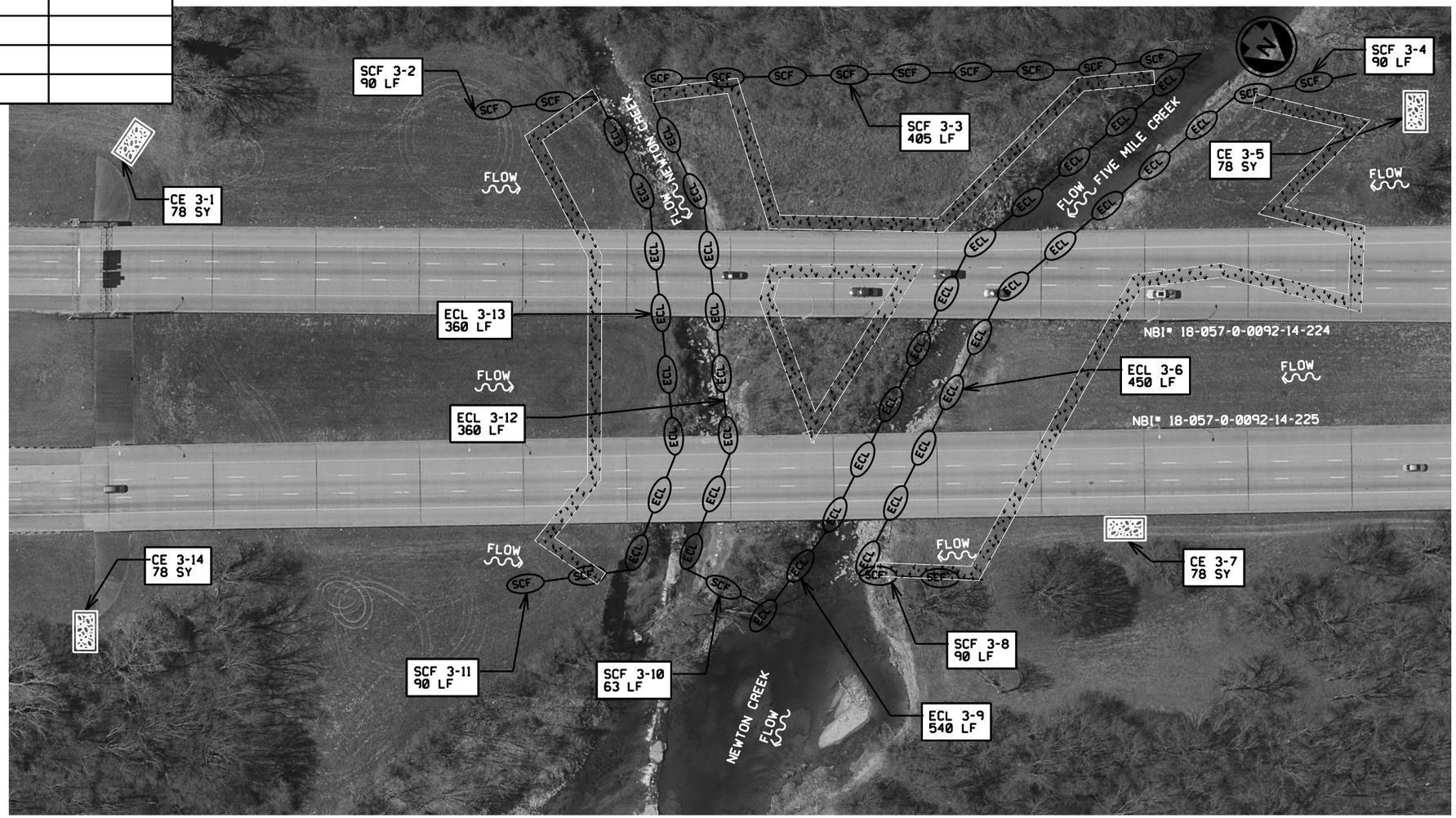
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		45
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0092	14	108	IH 45

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

DATE DISTURBED_____

DATE STABILIZED_____



0 50 100

LEGEND

- FLOW — CREEK DIRECTION FLOW
- BLOCK SODDING/TEMP SEEDING
- CONSTRUCTION EXIT (TY 1)
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOG

NOTES:

1. TEMPORARY SW3P EROSION CONTROL MEASURES SHALL ONLY BE PLACED IN AREAS WHERE SOIL DISTURBANCE OR POTENTIAL POLLUTANT-GENERATING ACTIVITIES EXPECTED TO OCCUR WITHIN 2 WEEKS.
2. CONSTRUCTION EXITS AND OTHER BMPs MAY BE ADJUSTED AS NEEDED, WITH ENGINEER'S APPROVAL OR DIRECTION.
3. 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 REPORTS FOR INITIAL STABILIZATION TIMEFRAMES.

STATE OF TEXAS
J.R. HUGHES
134954
LICENSED
PROFESSIONAL ENGINEER

J.R. Hughes, P.E. 10/26/2023
Signature of Registrant & Date

Texas Department of Transportation

IH 45

SW3P SITE MAP
(NEWTON & FIVE MILE CREEK)

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0092	14	108	IH 45
DIST	COUNTY		SHEET NO.
DAL	DALLAS		46

DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION PLAN-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.
List adjacent MS 4 Operator(s) that receive discharges from this project. They need to be notified prior to construction activities.
(Note: Leave blank only if no adjacent MS 4 Operator(s) are affected.)

1. City of Dallas Phase I MS4 contact Kevin Hurley
2. City of Hutchins Phase II MS4 contact Scott Metcalf
3. City of Balch Springs Phase II MS4 contact William Freeman

☐ 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. Bridge - STA 210+00 - IH 45 ML over Drow - Stream Impacts

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

II. 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

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

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: Woodhouse's toad, American eel, Mississippi silvery minnow, and swamp rabbit. Follow the special note on the EPIC sheet and the BMP's listed below to protect these species.

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

   a. Section 1.2 Vegetation BMP
   b. Section 1.4 Water Quality BMP
   c. Section 1.5 Stream Crossings BMP
   d. Section 1.6 Dewatering BMP
   e. Section 2.6.1 Aquatic Amphibian and Reptile BMP (barreir fecing not required)
   f. Section 2.6.2 Terrestrial Amphibian and Reptile BMP

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.

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

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)(DAL)

NOT TO SCALE — LAST REVISION: 1/15/15

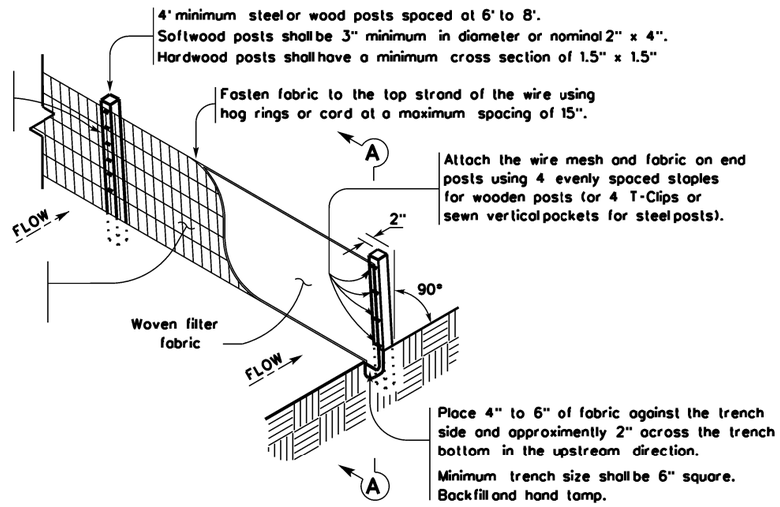
DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
JRH	6	SEE TITLE SHEET		IH 45
GRAPHICS JRH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK JRH	TEXAS	DAL	DALLAS	47
CHECK JRH	CONTROL	SECTION	JOB	
	0092	14	108	

Filed Out: 07/17/2023
Prepared by: J.R.HUGHES,P.E./DAL AO

DATE: 2023
FILE: I:\DGN\PROJECTS\0n\IH45\0092\14\08\1_DGNs\Standards\049_EC116.dgn

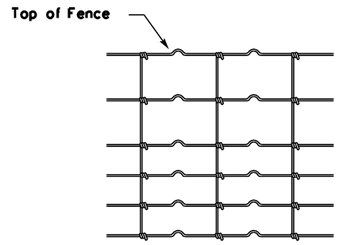
Connect the ends of the successive reinforcement sheets or rolls a minimum of 6 times with hog rings.

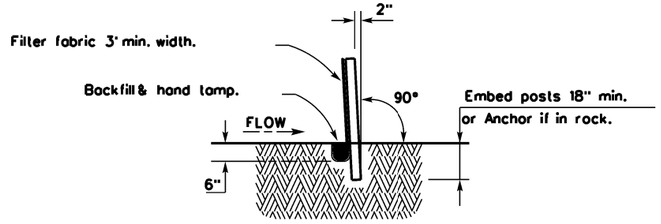
Galvanized welded wire mesh (W.W.M.) (12.5 GA. SWG Min.) with a maximum opening size of 2"x 4"or Woven Mesh (W.M.)(See woven mesh option detail)



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-B

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

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

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

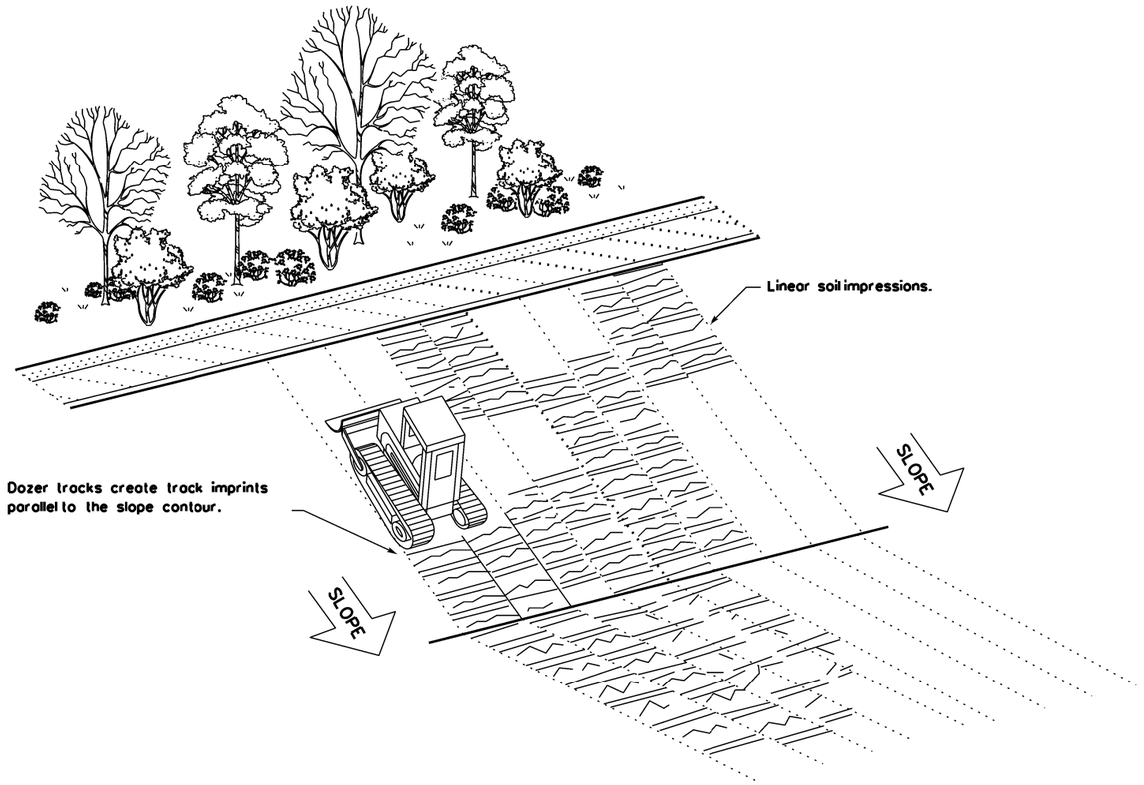
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

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



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY		
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	DIST	COUNTY		SHEET NO.		
	DAL	DALLAS		48		

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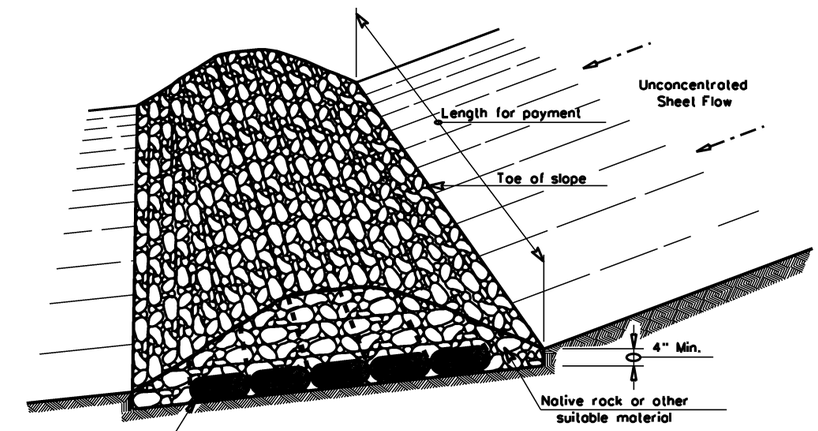
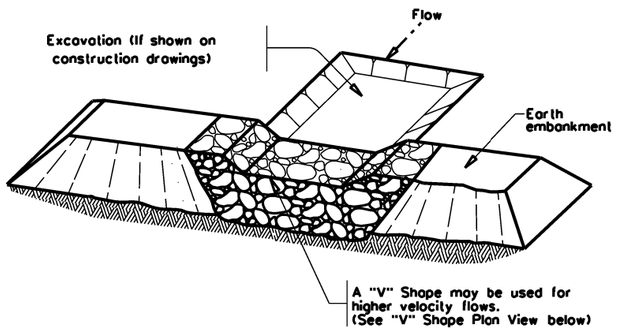


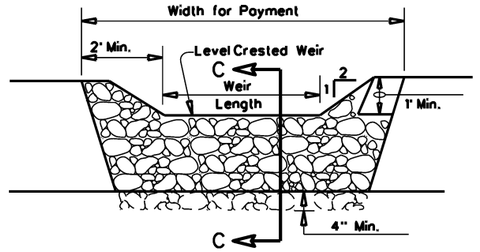
FILTER DAM AT TOE OF SLOPE

RFD1



FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



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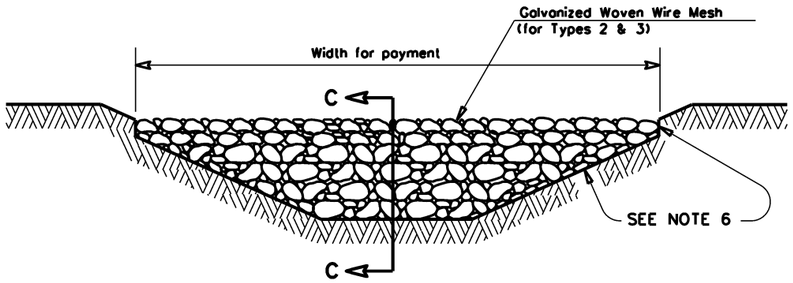
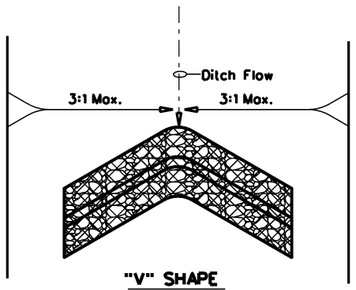
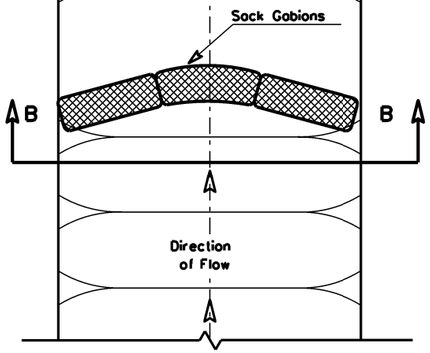


FILTER DAM AT CHANNEL SECTIONS

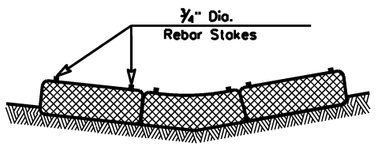
RFD1 OR RFD2 OR RFD3



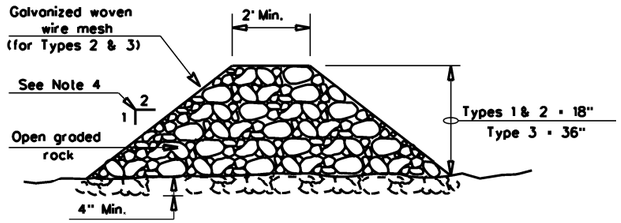
"V" SHAPE
PLAN VIEW



PLAN VIEW



SECTION B-B



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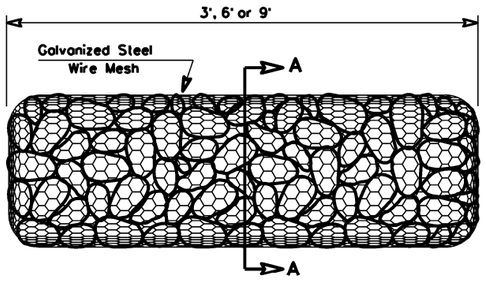
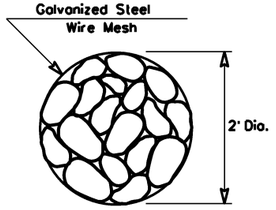


TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A

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

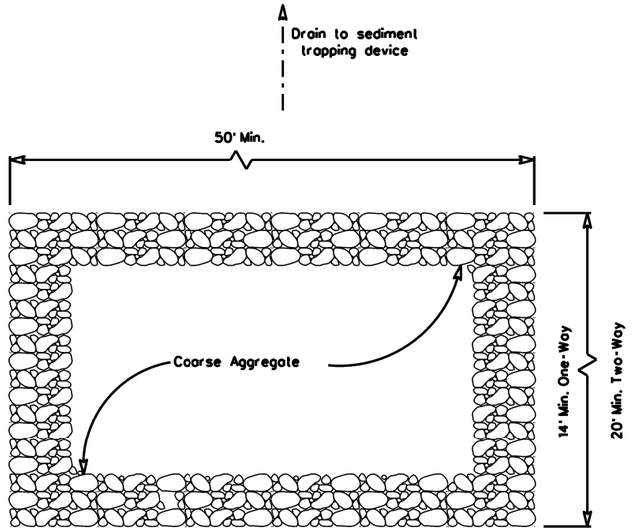
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

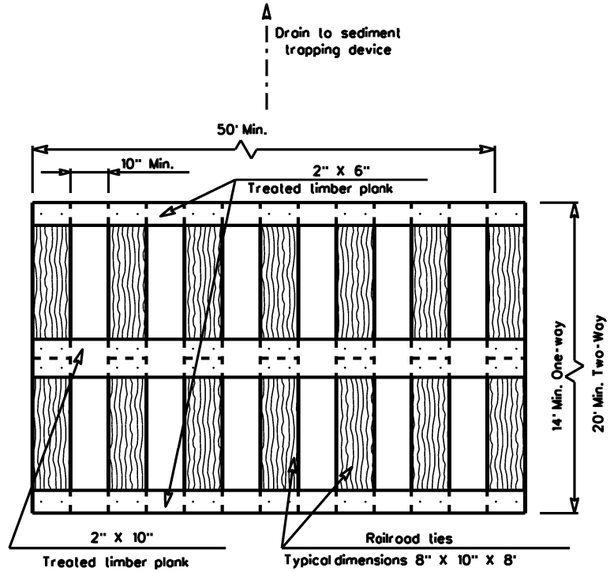
ROCK FILTER DAMS

EC(2)-16

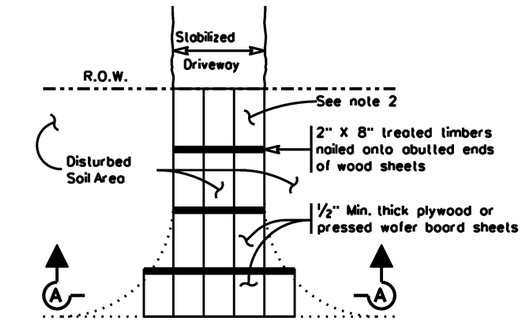
FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0092	14	108	IH 45
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		49



PLAN VIEW



PLAN VIEW



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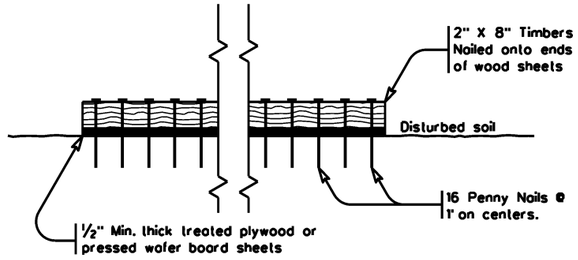
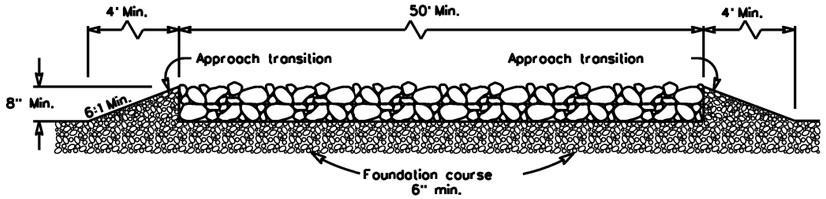


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

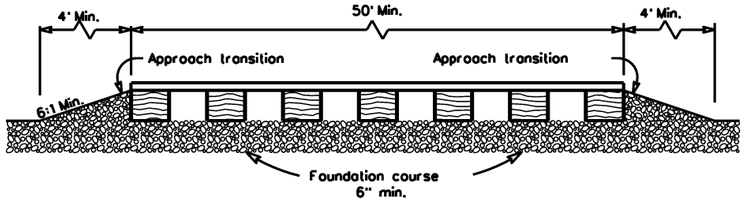
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials 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	0092	14	108	IH 45
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		50

DATE: 10/18/2023
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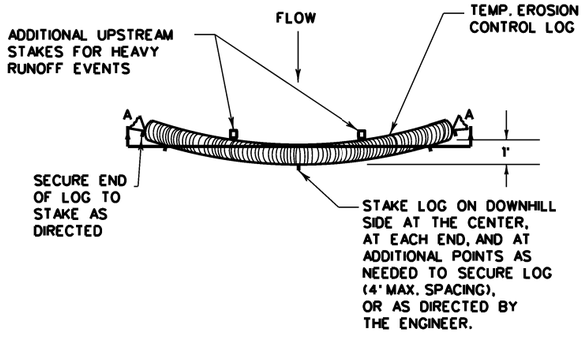
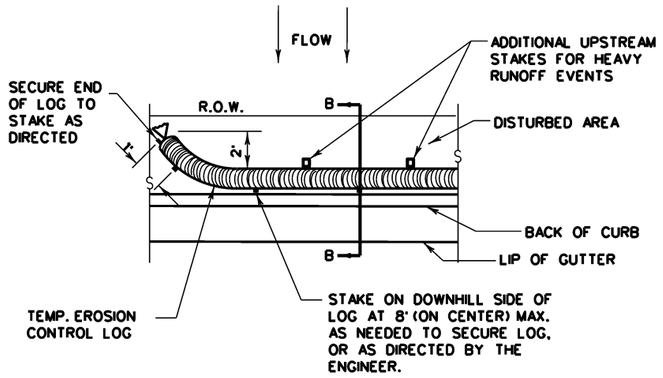
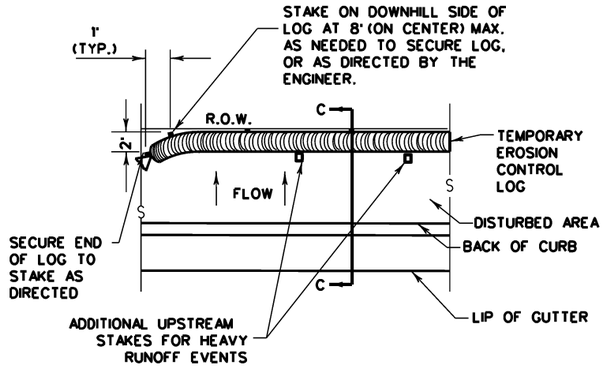


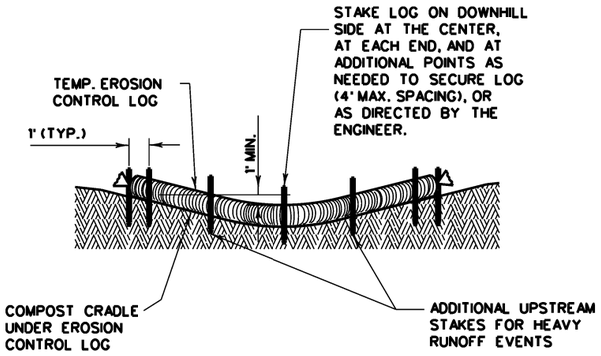
PLAN VIEW



PLAN VIEW



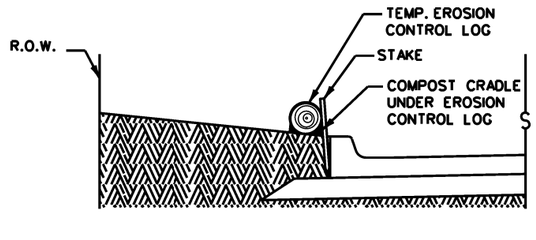
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

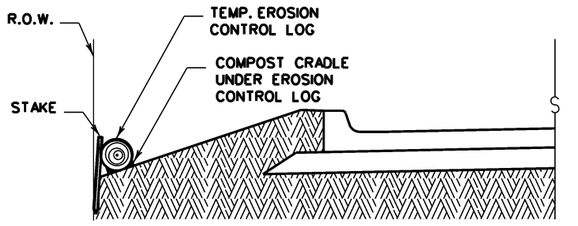
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



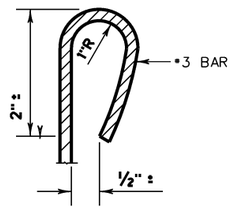
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

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



REBAR STAKE DETAIL

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.

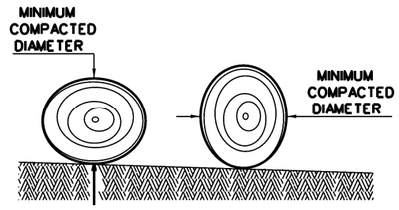
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

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

SHEET 1 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
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	DAL	DALLAS		51

DATE: 10/18/2023
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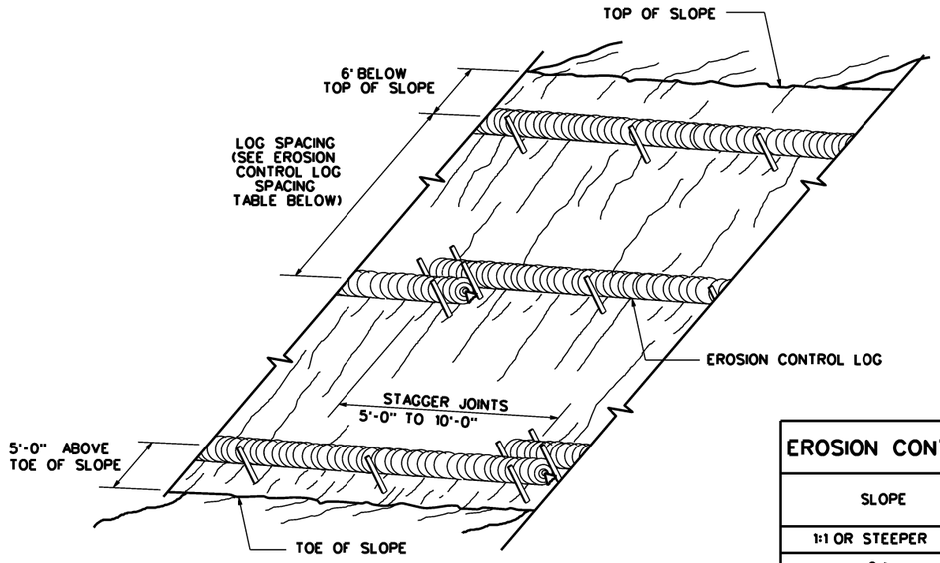
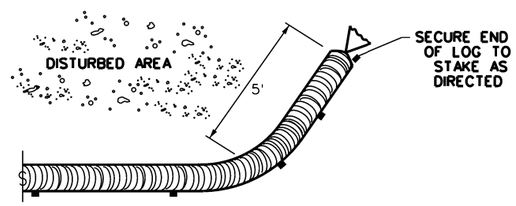


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

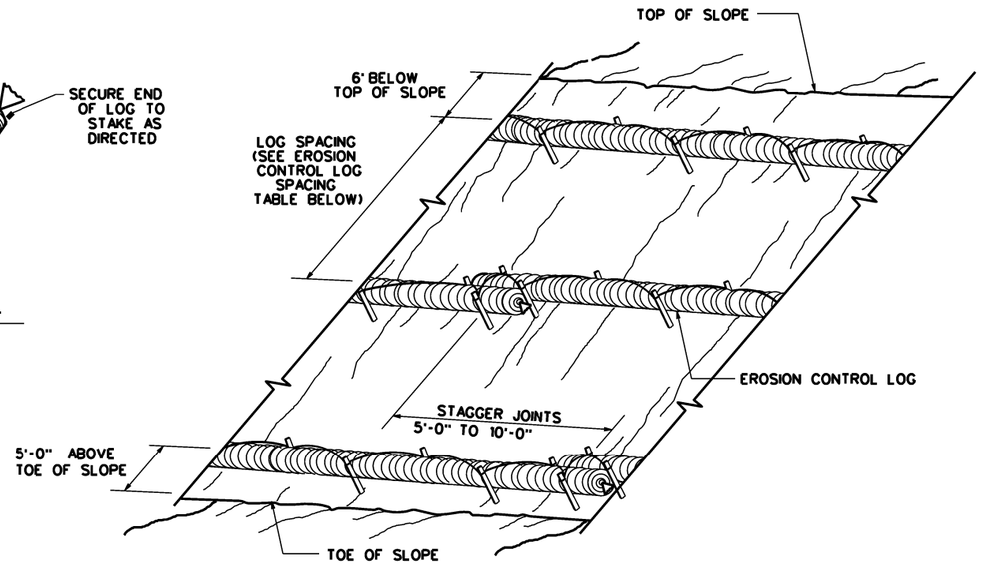
CL-SST



END SECTION RAP DETAIL

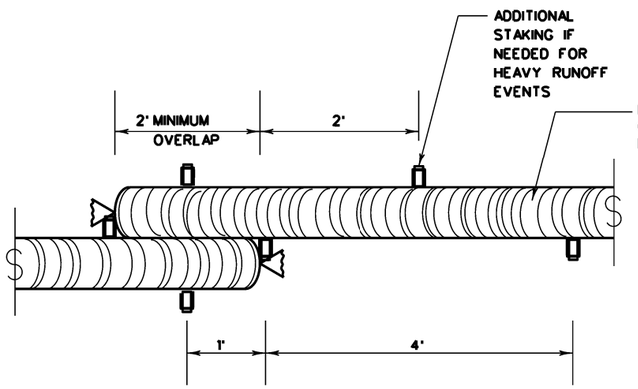
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

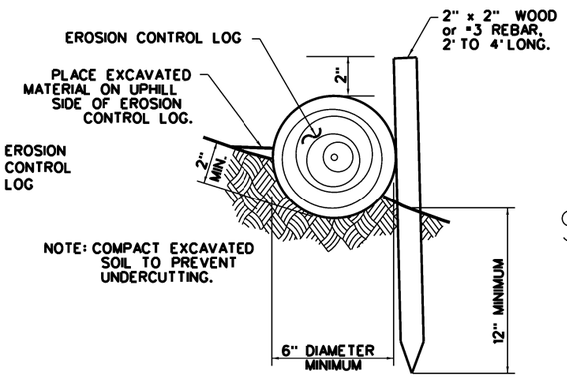
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER:
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

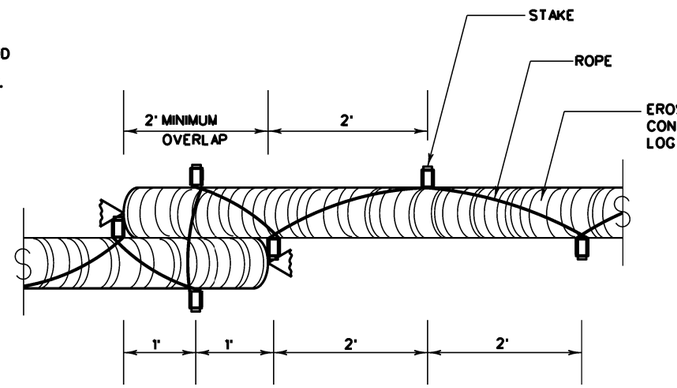


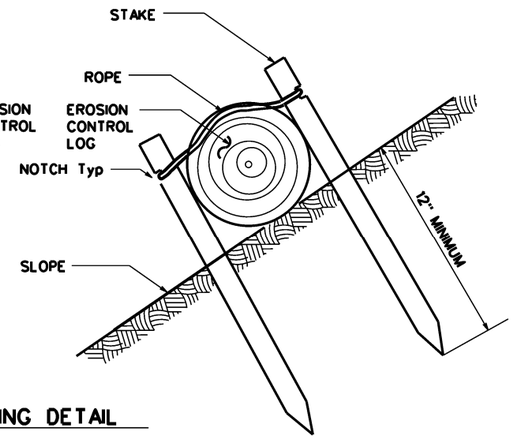


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

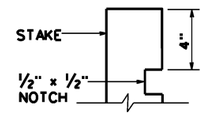
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

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

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
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	DIST	COUNTY		SHEET NO.
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DATE: 10/18/2023
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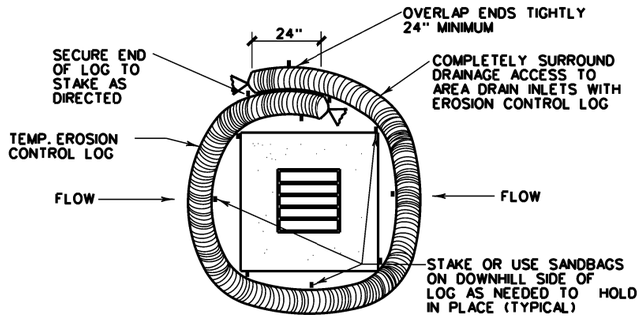
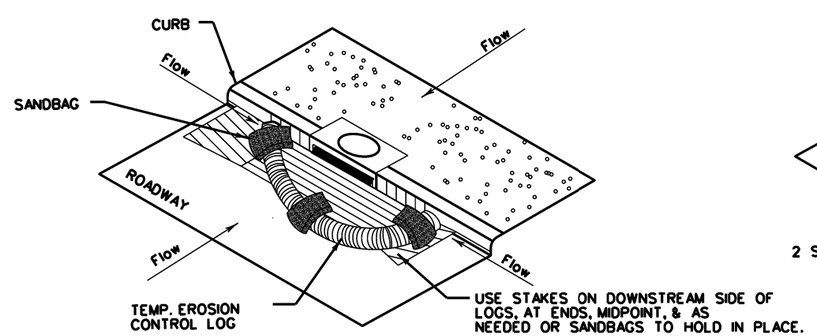


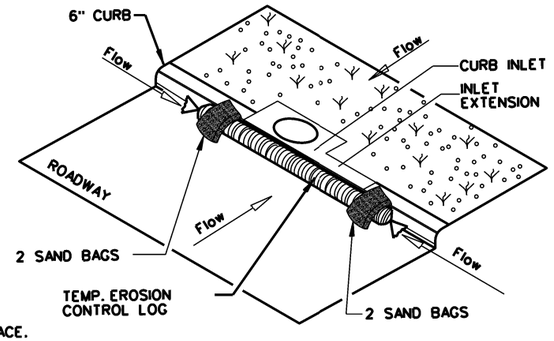
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

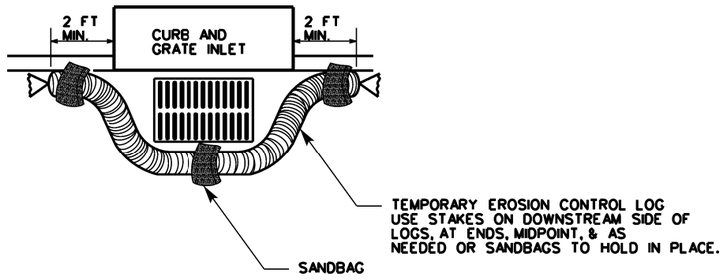
CL-CI



EROSION CONTROL LOG AT CURB INLET

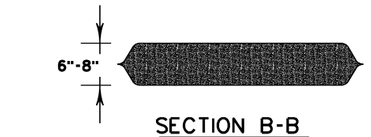
CL-CI

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

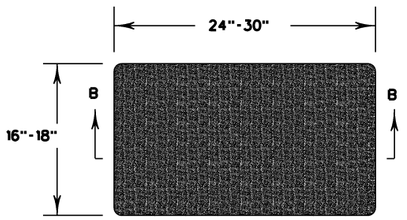


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

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	0092	14	108		IH 45		
	DIST	COUNTY				SHEET NO.	
	DAL	DALLAS				53	

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.

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.

SEEDING FOR EROSION CONTROL ITEM 164* DRILL SEEDING AC

RECOMMENDED PLANTING SEASON	PERMANENT RURAL SEED MIX ITEM 164 - DRILL SEEDING (PERM) (RURAL)(CLAY)	PERMANENT URBAN SEED MIX ITEM 164 - DRILL SEEDING (PERM) (URBAN)(CLAY)	TEMPORARY DRILL SEED MIX ITEM 164 - DRILL SEEDING (TEMP) (WARM OR COOL)
WARM SEASON Mar.15th, April, May, June, July, August, Sept. 15th	Pure Live Seed Rate ** Green Sprangletop (Van Horn) - 1.0 lbs/AC Sideoats Grama (Haskell) - 1.0 lbs/AC Texas Grama (Atascosa) - 1.0 lbs/AC Hairy Grama (Chaparral) - 0.4 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	Pure Live Seed Rate ** Green Sprangletop (Leptochloa dubia) - 0.3 lbs/AC Sideoats Grama (El Reno)(Bouteloua curtipendula) - 3.6 lbs/AC Buffalograss (Texoka)(Buchloe dactyloides) - 1.6 lbs/AC Bermudagrass (Cynodon dactylon) - 2.4 lbs/AC	Pure Live Seed Rate ** Foxtail Millet (Setaria italica) - 34 lbs/AC
COOL SEASON Sept 16th, Oct, Nov, Dec, Jan, Feb, Mar 14th			Pure Live Seed Rate ** Tall Fescue (Festuca arundinaceae) - 4.5 lbs/AC Western Wheatgrass (Agropyron smithii) - 5.6 lbs/AC Red Winter Wheat (Triticum aestivum) - 34 lbs/AC Cereal Rye - 34 lbs/AC

** 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.

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.

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"

ROADSIDE MOWING ITEM 730* PROJECT MAINTENANCE AC

MOWING NOTES:

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

SEQUENCE OF WORK:

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

Texas Department of Transportation

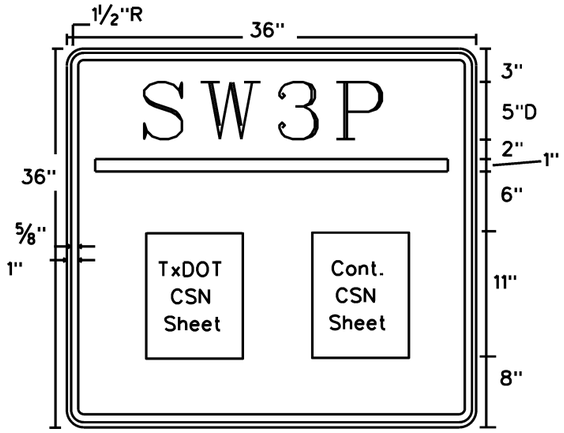
VEGETATION ESTABLISHMENT SHEET

(DALLAS DISTRICT)

TEMPLATE REVISION DATE: 02/21/19

DESIGN CPB	FED.RD. DIV.NO. 6	PROJECT NO. (See Title Sheet)		HIGHWAY NO. IH 45
GRAPHICS XXX	STATE TEXAS	DISTRICT DAL	COUNTY DALLAS	SHEET NO. 54
CHECK JRH	CONTROL 0092	SECTION 14	JOB 108	
CHECK XXX				

DATE: 10/18/2023
FILE: T:\DALAO\PROJECTS\On\IH45\0092141081\.DGNs\Standards\055 VEG ESTABLISH SHEET (DAL).dgn



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.

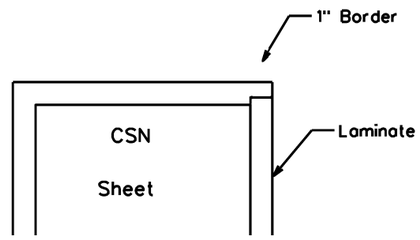
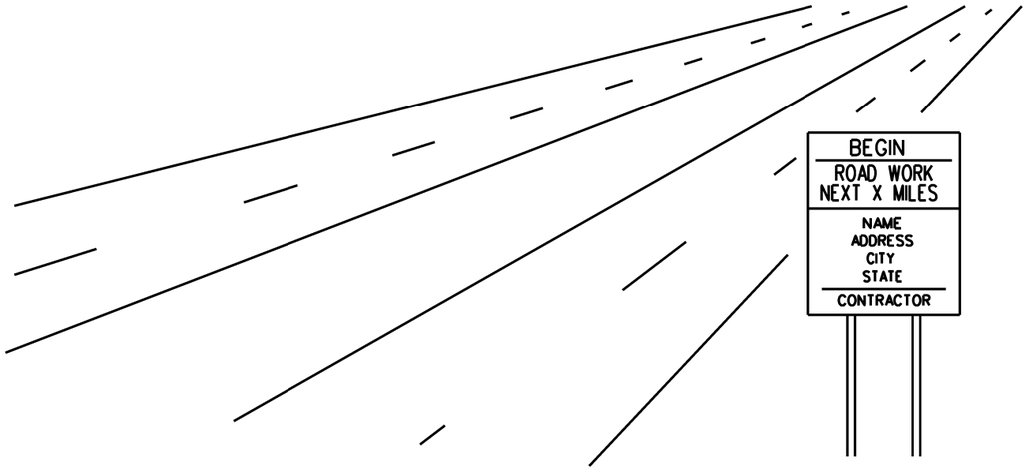
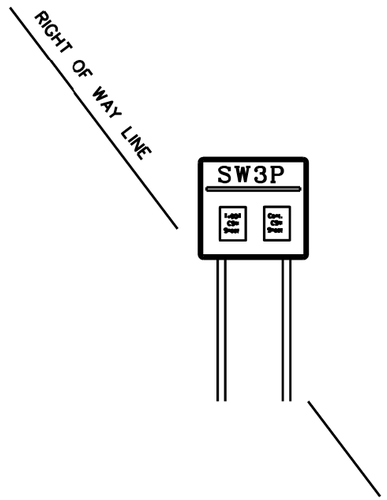


Figure 1





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	DAL	SEE TITLE SHEET		55
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	DALLAS	0092	14	108	IH 45

LEVELS DISPLAYED
PATH: