

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
ES	6	F 2B24(408)		1
GRAPHICS				
ES	STATE	STATE DIST.	COUNTY	
CHECKED	TEXAS	WACO	MCLENNAN	
SF	CONT.	SECT.	JOB	HIGHWAY NO.
CHECKED	CW	0055	15	082 US 84

DESIGN SPEED = 45 MPH

ADT	YEAR
18809	2022
26333	2024

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX OF SHEETS

CITY OF WACO

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO: **F 2B24(408)**

CITY OF WACO

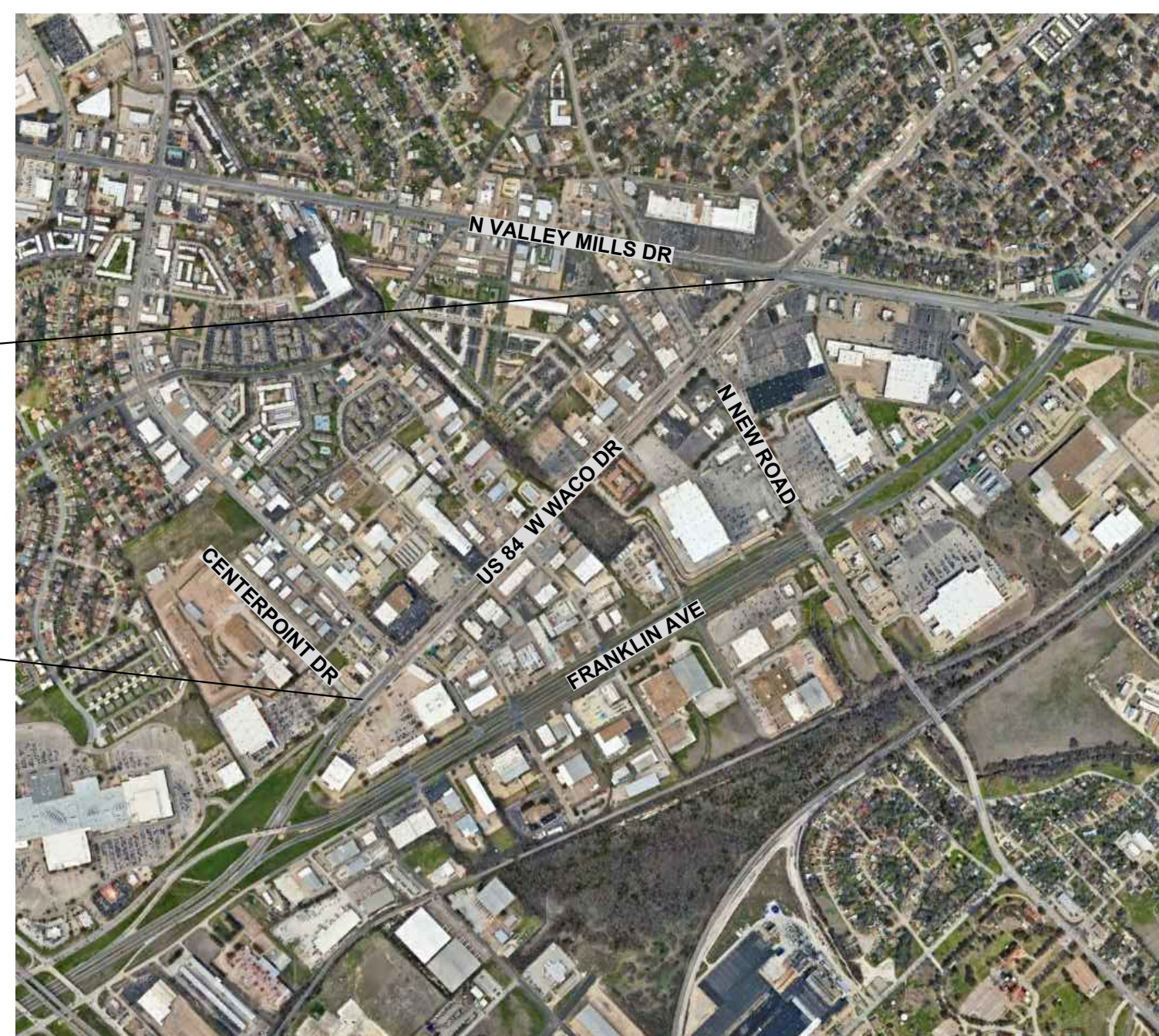
CSJ: 0055-15-082

W. WACO DRIVE 'GREEN RIBBON' MCLENNAN COUNTY

LIMITS: CENTERPOINT DRIVE
TO N. VALLEY MILLS DRIVE

TOTAL LENGTH OF PROJECT = 4,765.00 L.F. = 0.902 MI.

TYPE OF WORK: FOR THE CONSTRUCTION OF LANDSCAPE DEVELOPMENT
CONSISTING OF: LANDSCAPE DEVELOPMENT OF MEDIANS ON US 84



END PROJECT
END CSJ 0055-15-082
END STA 47+65
TRM 682+00.080

BEGIN PROJECT
BEGIN CSJ 0055-15-082
BEGIN STA 0+00
TRM 683+00.000

MCLENNAN COUNTY
NOT TO SCALE
WACO DISTRICT



NO EQUATIONS
NO EXCEPTIONS
NO RAILROAD CROSSINGS

Parkhill

TBAE # BR 743; TBPE # F-560; TBPLS # 10194091

SUBMITTED FOR LETTING 5/30/2024
 DocuSigned by:
Ephraim Strasser
D1D4B11161B84B1...
 REGISTERED LANDSCAPE ARCHITECT
 PARKHILL



RECOMMENDED FOR LETTING 5/31/2024
 DocuSigned by:
U. F. R. P.E.
6D9791C615CF49B...
 AREA ENGINEER

RECOMMENDED FOR LETTING 5/31/2024
 DocuSigned by:
Victor Gabel, P.E.
9AD8C743F95E4E3...
 DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

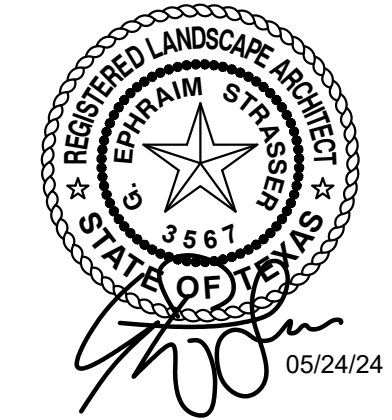
APPROVED FOR LETTING 5/31/2024
 DocuSigned by:
Stanley Swiatek
B69BD796DD564C9...
 DISTRICT ENGINEER

COUNTY _____ PROJ. NO. _____
 HWY. NO. _____ LETTING DATE _____
 DATE ACCEPTED _____

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

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

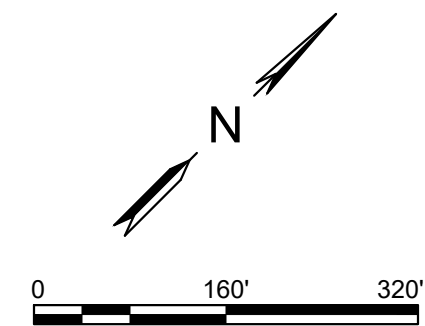
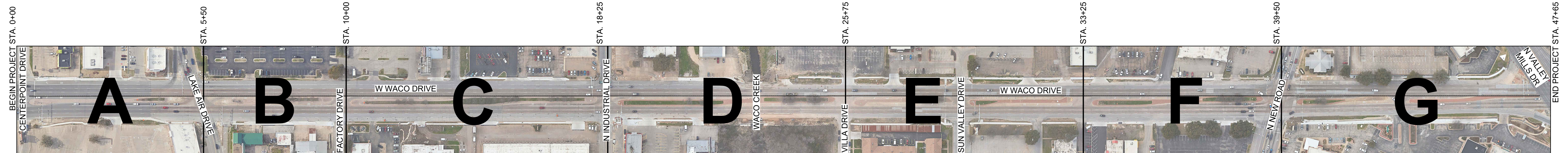
, P.E. 05/24/24
 Signature of Registrant & Date

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Texas Department of Transportation
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INDEX OF SHEETS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				
ES	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	WACO	MCLENNAN	2
SF	CONTROL	SECTION	JOB	
CW	0055	15	082	



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GENERAL LAYOUT OVERVIEW

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	3
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CW				

BASIS OF ESTIMATE TABLES

Table 1: Basis of Estimate for Erosion Control Items				
Item	Description	Rate	Basis	Quantities
168	VEGETATIVE WATERING (13 APPLICATIONS - TEMP)	13,100 GAL/AC/APP	0.99 AC	168 MG

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 0.99 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).

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.

Contractor questions on this project are to be emailed to the Waco District at the following address:

Bill Compton - Wacoprebid@txdot.gov, 254-867-2770, 100 S. Loop Dr., Waco, TX
 Carmen Chau - Wacoprebid@txdot.gov, 254-867-2794, 100 S. Loop Dr., Waco, TX

Or Via phone or in person to the following individual(s):
 Area Engineer's: Clayton Zacha, P.E., 254-772-2890
 Assistant Area Engineer's: Mohab Samuel, P.E., 254-772-2890

Contractor questions will be accepted through email, phone, and in person by the above individuals. Questions may also be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

<https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors>

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

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

Paper copies of cross-sections may be produced by using the provided .pdf file located on the above FTP Website at the bidders' expense and at copying companies. This data is for non-construction purposes only and it is the responsibility of the prospective bidder to validate the enclosed data with appropriate plans, specifications and estimate for the project(s).

GENERAL NOTES

ITEM 5: CONTROL OF THE WORK

Provide the Engineer with a weekly work schedule of planned activities including anticipated quantities of materials to be placed daily (CY of each concrete placement, tons of HMAC to be placed daily, etc.). Schedules will be provided for the following week as part of each week's project meetings or by 5PM on Thursday as approved by the Engineer. Failure to provide notifications are required here may be deemed as insufficient notice per item 5.10.

Provide the Engineer Daily by 3PM the planned activities for the following day including location, quantities of materials to be placed, etc. in a format acceptable to the Engineer.

Submit all fabrication and shop drawings per TxDOT's online shop drawing submittal system and copy the Area Engineer on the email submittal, unless otherwise directed.

Where a precast or cast-in-place concrete element is shown in the plans, Contractor may submit a precast concrete alternate in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at:

<https://www.txdot.gov/inside-txdot/forms-publications/consultants-Contractors/publications/bridge.html#design>.

Acceptance or denial of an alternate is at the sole discretion of the Department. Contractor is responsible for impacts to the project schedule and cost resulting from the use of alternates.

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 (254)867-2808 for locates a minimum of 48 hours in advance of excavation. For irrigation systems, call TxDOT Landscape Office (254)867-2726 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.

ITEM 6: CONTROL OF MATERIALS

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

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

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

References to manufacturer's trade name or catalog numbers are for the purpose of identification only and the Contractor will be permitted to furnish like materials of other manufacturers provided they are of equal quality and comply with specifications for this project.

ITEM 7: LEGAL RELATIONS AND RESPONSIBILITIES

No significant traffic generator events identified.

If utilizing private property for waste disposal sites, field office sites, equipment storage sites or for any other purpose involved with this project, provide to the Engineer written proof of the property owner's approval of the use of this property. This proof may be in the form of a letter or agreement signed by the property owner or other documents acceptable to the Engineer. Provide such proof prior to occupying the site.

Personal vehicles of the Contractor's employees will not be parked within the right of way at any time including any section closed to public traffic, unless the vehicle is being utilized for construction procedures. However, the Contractor's employees may park on the right of way at the sites where the Contractor has his office, equipment and materials storage yard.

Law Enforcement Personnel.

As approved by the Engineer, provide uniformed off duty police officers and squad cars during the following activities:

- Lane closures on controlled access facilities or 4 lane divided facilities with speed limits above 55mph,
- ramp closures,
- Roadway Closures,
- Support of phase construction traffic switches,
- nighttime work, or
- other situations that indicate a need for additional traffic control to protect the traveling public or the construction workforce.

Law Enforcement Personnel must have jurisdictional authority to act in the area of the project.

Law Enforcement Personnel will be paid when use is approved by the Engineer. The Contractor retains the right to have law enforcement personnel on sight at their own cost and discretion when note approved by the Engineer.

Submit charge summary and invoices using the Department form 318. Provide documentation such as payroll, log sheets with signatures and badge number, or invoices from the government entity providing the officers for reimbursement.

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. Windows / Windshields may not be blocked.

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site. A minimum number of hours is not guaranteed. Payment is for work performed.

Cancel law enforcement personnel when the event is canceled. Cancellation, minimums or "show up" fees will not be paid when cancellation is made 12 hours prior to beginning of the event. Failure to cancel within 12 hours will not be cause for payment for cancellation, minimums, or "show up" time. Payment of actual "show up" time to the event site due to cancellation will be on a case by case basis at a maximum of 2 hours per officer.

ITEM 8: PROSECUTION AND PROGRESS

This Project will be a Standard Workweek in accordance with Article 8.3.1.4.

Meet weekly or at intervals as agreed upon with the Engineer to notify him or her of planned work for the upcoming 3-week period.

For this project, provide a Bar Chart progress schedule.

ITEM 100: PREPARING RIGHT OF WAY

The limits of preparing right of way will be measured at the following locations:

From Sta. 0+00 to Sta. 47+65 along the centerline of construction.

Remove all trees within the right of way within station limits designated for Preparing Right of Way unless designated for preservation or as directed by the Engineer.

Trees to be removed near gas lines shall be cut and ground 1' below grade.

Preserve trees within temporary construction easements in accordance with Article 100.2., unless otherwise directed.

All trees and brush removed each day will be disposed of within the same day of removal unless otherwise approved. If removed vegetation is burned, ashes from burned vegetation will not be placed or allowed to be transported by storm water into any stream. Burn locations, if approved, will be no closer than 300 feet from a stream. Earth berms must be used around burn areas to keep ash in place.

The Contractor is prohibited from removing grass vegetation throughout the entire project limits and then ceasing construction for long periods, typically over three weeks. The Contractor schedule will be developed based on staged vegetation removal, limiting disturbed soil to no more than 25 percent at one time, unless otherwise approved. Should

the Contractor not be able to adequately control sediment and erosion for areas disturbed, TxDOT will substantially reduce the size of areas that the Contractor may disturb soil. Should the project be evaluated to have sediment control problems as a result of the Contractor disturbing excessive amounts of soil, the Contractor will be required to immediately re-vegetate (seed and water) those disturbed areas at no cost to TxDOT.

The Contractor will be responsible for leaving the project site clean and neat in appearance upon completion and before final acceptance by the Engineer.

Wood chips may be left on the right of way no deeper than two (2) inches outside of city limits. Do not trespass on private property while performing work on this contract. Do not cut or damage timber outside the right-of-way lines.

Remove all fallen parts of trees, damaged limbs, and dead limbs. This work will not be paid for directly but will be considered subsidiary to this item.

ITEM 161: COMPOST

Provide tickets representing quantity of compost delivered to site.

In addition to the other documents required by the specification, the STA-certified lab test report will be dated no more than four (4) months before the date of delivery.

ITEMS 192 & 193: LANDSCAPE PLANTING & LANDSCAPE ESTABLISHMENT

Provide forty-eight (48) hours notification to the Engineer of the time that plant maintenance will be conducted so that an inspector may be present during these activities. The Engineer may withhold monthly payment for landscape establishment if he is not adequately notified of the contractor's maintenance activities.

No planting will occur between June 1st and September 15th without written approval from the Engineer.

Perform soil percolation test at least 24 hours prior to planting trees in plant pits. Excavate plant pit and fill entirely with water. Inspect planting pit within 24 hours to verify water has percolated into surrounding soil. In the event the water is present after 24 hours, contact Engineer before continuing tree planting in pits.

Begin the 90-day maintenance period only after all live plant material and functional irrigation systems have been installed as shown on plans.

ITEM 427: SURFACE FINISHES FOR CONCRETE

Apply a rub finish to all Surface Area I within 30 days after form removal.

ITEM 500: MOBILIZATION

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

ITEM 502: BARRICADES, SIGNS, AND TRAFFIC HANDLING

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

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

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.

A meeting between the Contractor and Engineer to discuss upcoming changes in construction phasing and traffic switches is required at least fourteen (14) days prior to the phase change. Items to be discussed at this meeting include temporary signing, traffic control, pavement markings, the processes necessary for the phase change and subcontractor scheduling.

Place Barricade / long term traffic control signs with driven post / sleeve mount options for all projects with more than 9 months of project barricades. e in ground mount for project limits signs / long term signs. Upon sign removal, pull sleeve or drive to below ground line.

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

The Contractor Responsible Person(s) (CRP) for Work Zone Traffic Controls will inspect and ensure any deficiencies are corrected each and every day throughout the duration of this contract. Any misaligned or damaged traffic control devices will be repaired as soon as practical after deficiency is discovered.

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee(s) available to respond on the project for emergencies and for taking corrective measures within One (1) Hour.

Short Term Lane Closure Allowances:

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.

Traffic Control Plans with Lane Closures causing backups of 20 minutes or greater in duration will be modified to reduce delays to less than 20 minutes.

Lane Closure and Pilot Car Operations will be implemented to prevent conflicts with activities including school drop-off / dismissal, large employer shift changes, etc.

Lane Closures and Pilot Car Operations will not be allowed in nighttime work hours without approval of the Engineer.

ITEM 506: TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS

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.

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

No soil disturbing activities will begin on any section of TxDOT ROW without adequate sedimentation controls first being installed and functioning at adjacent drainage outfalls. Begin and continuously prosecute the repairs, additions and maintenance of erosion and sedimentation control devices within seven days after the Contractor receives each Form 2118, Field Inspection and Maintenance Report, from the Engineer. Failure of the Contractor to fulfill either of the above requirements places TxDOT in potential non-compliance with permit requirements and may result in withholding estimates or stopping work or both until all environmental permit requirements are fulfilled.

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 overflow. 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."

Cleaning and sweeping of open roadways due to material spillage or loss from Contractor equipment or tires will be the responsibility of the Contractor at no cost to TxDOT. This work will not be charged as Item 738, "Cleaning and Sweeping Highways". Cleaning and sweeping of roadways will be completed as directed, including multiple times per day, if necessary, to maintain acceptable roadways for the traveling public and to meet environmental regulations. Construction activities will cease when material deposited on the roadway is not properly removed or when equipment is not available as needed. Adequate construction exits will be planned, constructed, and maintained by the Contractor per Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls".

ITEM 618: CONDUIT

The locations of conduit as shown are for diagrammatic purposes only and may be varied to meet local conditions, subject to approval.

When backfilling bore pits, ensure that the conduit does not become damaged during installation or due to any settling of the backfill material. Compact select backfill in three equal lifts to the bottom of the conduit or if sand is used, place to a point two (2) inches above the conduit. Backfill density will be equal to the existing soil. Be careful to prevent any material from entering the conduit.

Backfill all open trenches before the end of the workday and do not leave any trench open overnight.

ITEM 6001: PORTABLE CHANGEABLE MESSAGE SIGN

This project will require "full matrix" type portable changeable message signs.

Ensure that the Contractor's Responsible Person for traffic control can revise messages within thirty (30) minutes of notification.

Furnish 2 portable changeable message signs. The portable changeable message sign(s) will be used for all lane closures and freeway closures as shown on the traffic control plan standard sheets.

Supply portable changeable message sign(s) in accordance with the Traffic Control Plan standard sheets and Article 6f.55 of the Texas Manual on Uniform Traffic Control Devices for Streets and Highways Part VI.

ITEM 6185: TRUCK MOUNTED ATTENUATORS

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.

The total number of truck mounted attenuators (TMA) required when utilizing the traffic control standards are shown in the tables below.

TCP 1 Series	Scenario	Required TMA
(1-4)-18 / (1-5)-18	All	1

TCP 2 Series	Scenario	Required TMA
(2-1)-18 / (2-4)-18 / (2-5)-18 / (2-6)-18	All	1

Shadow vehicles equipped for truck mounted attenuators (TMA) for stationary operations will be paid for by the day and must be available for use at any time as determined by the Engineer.

Mobile operations will be paid for by the hour, per specifications. For mobile operations, payment will be made only while the TMA is in use.

For mobile operations requiring multiple TMA's, judgement may be applied in lower speed, urban / in town traffic environments to reduce the numbers of TMA in use where the added TMA may pose a hazard for traffic entering and exiting driveways, side streets, etc.

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 TMA needed for the project for those times per plan requirements. Additional TMAs used that are not specified in the plans in which the Contractor expects compensation will require prior approval from the Engineer.



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0055-15-082

DISTRICT Waco
HIGHWAY US 84

COUNTY McLennan

CONTROL SECTION JOB				0055-15-082		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00206103			
COUNTY				McLennan			
HIGHWAY				US 84			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	100-6001	PREPARING ROW	AC	0.990		0.990	
	100-6013	PREP ROW (TREE) (2" TO 12" DIA)	EA	16.000		16.000	
	104-6011	REMOVING CONC (MEDIANS)	SY	27.000		27.000	
	104-6040	REMOVING CONC (PAVERS)	SY	4,043.000		4,043.000	
	161-6012	GENERAL USE COMPOST	CY	802.000		802.000	
	168-6001	VEGETATIVE WATERING	MG	168.000		168.000	
	170-6001	IRRIGATION SYSTEM	LS	1.000		1.000	
	192-6012	MULCH	CY	245.000		245.000	
	192-6016	PLANT BED PREPARATION	SY	4,815.000		4,815.000	
	192-6017	VEGETATION BARRIER	SY	1,892.000		1,892.000	
	192-6025	PLANT MATERIAL (45 GAL) (TREE)	EA	38.000		38.000	
	192-6026	PLANT MATERIAL (65 GAL) (TREE)	EA	9.000		9.000	
	192-6028	PLANT MATERIAL (1 GAL) (SHRUB)	EA	8,382.000		8,382.000	
	192-6030	PLANT MATERIAL (3 GAL) (SHRUB)	EA	1,053.000		1,053.000	
	192-6067	LANDSCAPE EDGE (TYPE I)	LF	560.000		560.000	
	192-6097	CONC LNDSCP EDG (12 IN WIDTH)	LF	2,375.000		2,375.000	
	192-6100	VEGETATION BARRIER (TREE ROOT)	SY	144.000		144.000	
	193-6001	PLANT MAINTENANCE	MO	3.000		3.000	
	193-6007	IRRIGATION SYSTEM OPER AND MAINT	MO	3.000		3.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	8.000		8.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	317.000		317.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	317.000		317.000	
	506-6044	SANDBAGS FOR EROSION CONTROL (8")	LF	41.000		41.000	
	528-6003	COLORED TEXTURED CONC (8")	SY	1,260.000		1,260.000	
	528-6008	COLORED TEXTURED CONC (5")	SY	481.000		481.000	
	618-6034	CONDT (PVC) (SCH 40) (4") (BORE)	LF	900.000		900.000	
	1004-6001	TREE PROTECTION	EA	26.000		26.000	
	1005-6002	LOOSE AGGR FOR GROUNDCOVER (TYPE II)	CY	84.000		84.000	
	1005-6003	LOOSE AGGR FOR GROUNDCOVER (TYPE III)	CY	126.000		126.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	30.000		30.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	240.000		240.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

DISTRICT	COUNTY	CCSJ	SHEET
Waco	McLennan	0055-15-082	5



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0055-15-082

DISTRICT Waco
HIGHWAY US 84

COUNTY McLennan

CONTROL SECTION JOB				0055-15-082		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00206103			
COUNTY				McLennan			
HIGHWAY				US 84			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

EROSION CONTROL & REMOVAL (CSJ 0055-15-082)

SHT. #	STATIONS	AREA	ITEM	ITEM	ITEM	ITEM	ITEM	ITEM	ITEM
			100-6013 PREP ROW (TREE) (2" TO 12" DIA)	104-6011 REMOVING CONCRETE (MEDIAN)	104-6040 REMOVING CONCRETE (PAVERS)	506-6040 BIODEG EROSN CONT LOGS (INSTALL)(8")	506-6043 BIODEG EROSN CONT LOGS (REMOVE)	506-6044 SANDBAGS FOR EROSION CONTROL (8")	1004-6001 TREE PROTECTION
			EA	SY	SY	LF	LF	EA	EA
7	STA. 0+00 TO STA. 5+50	A			515				3
8	STA. 5+50 TO STA. 10+00	B	1		393				6
9	STA. 10+00 TO STA. 18+25	C			877	100	100	10	17
10	STA. 18+25 TO STA. 25+75	D	6		559	78	78	10	
11	STA. 25+75 TO STA. 33+25	E	3	27	566				
12	STA. 33+25 TO STA. 39+50	F	4		496	89	89	13	
13	STA. 39+50 TO STA. 47+65	G	2		637	21	21	4	
	*****10% CONTINGENCY					29	29	4	
	TOTALS		16	27	4043	317	317	41	26

CONSTRUCTION & PLANTING (CSJ 0055-15-082)

SHT. #	STATIONS	AREA	ITEM	*ITEM	**ITEM	ITEM	***ITEM	ITEM	ITEM	ITEM	ITEM	ITEM	ITEM	ITEM	ITEM	ITEM	ITEM	****ITEM	****ITEM	
			100-6001 PREP ROW	161-6012 GENERAL USE COMPOST	168-6001 VEGETATIVE WATERING	192-6012 MULCH	192-6016 PLANT BED PREPARATION	192-6017 VEGETATION BARRIER	192-6025 45 GAL (TREE)	192-6026 65 GAL (TREE)	192-6028 1 GAL (SHRUB)	192-6030 3 GAL (SHRUB)	192-6067 LANDSCAPE EDGE	192-6097 CONC LNDS CP EDG (12" WIDTH)	192-6100 VEGETATION BARRIER (TREE ROOT)	193-6001 PLANT MAINTENANCE	528-6003 COLORED TEXTURED CONC (8")	528-6008 COLORED TEXTURED CONC (5")	1005-6002 LOOSE AGGR FOR GROUND COVER (TYPE II)	1005-6003 LOOSE AGGR FOR GROUND COVER (TYPE III)
			AC	CY	MG	CY	SY	SY	EA	EA	EA	EA	LF	LF	SY	MO	SY	SY	CY	CY
14	STA. 0+00 TO STA. 5+50	A	0.07	60	12	17	361	159	5		619	90	60	220			139	69	6	12
15	STA. 5+50 TO STA. 10+00	B	0.08	64	14	21	382	127			753	74	155	165			107	62	7	7
16	STA. 10+00 TO STA. 18+25	C	0.30	241	51	83	1445	455	3	2	2904	245	100	580	32		251	57	15	36
17	STA. 18+25 TO STA. 25+75	D	0.20	164	34	51	985	375	15	5	1530	223	80	515	80		222	56	21	20
18	STA. 25+75 TO STA. 33+25	E	0.09	74	15	18	446	233			645	154	45	210			197	100	9	17
19	STA. 33+25 TO STA. 39+50	F	0.15	117	25	34	702	295	10	2	1176	166	80	395	32		173	59	12	21
20	STA. 39+50 TO STA. 47+65	G	0.10	82	17	21	494	248	5		755	101	40	290			171	78	14	13
	TOTALS		0.99	802	168	245	4815	1892	38	9	8382	1053	560	2375	144	3	1260	481	84	126

IRRIGATION (CSJ 0055-15-082)

SHT. #	STATIONS	AREA	ITEM	ITEM	ITEM
			170-6001 IRRIGATION SYSTEM	193-6007 IRRIGATION SYSTEM OPER AND MAINT	618-6034 CONDT (PVC)(SCH 40) (4")(BORE)
			LS	MO	LF
23	STA. 0+00 TO STA. 5+50	A			200
24	STA. 5+50 TO STA. 10+00	B			170
25	STA. 10+00 TO STA. 18+25	C			130
26	STA. 18+25 TO STA. 25+75	D			65
27	STA. 25+75 TO STA. 33+25	E			145
28	STA. 33+25 TO STA. 39+50	F			115
29	STA. 39+50 TO STA. 47+65	G			75
	TOTALS		1	3	900

NOTES:

- * ITEM 161-6012 GENERAL USE COMPOST: PLACE 6 INCHES OF GENERAL USE COMPOST (GUC) ON PLANT BED AREAS. BLEND THE COMPOST INTO THE EXISTING SOIL BY INCORPORATING 1 INCH OF COMPOST WITH 2 INCHES OF ACCEPTABLE EXISTING TOPSOIL AS NOTED IN THE PLANS AND DETAILS TO A DEPTH OF 12 INCHES.
 - ** ITEM 168-6001 VEGETATIVE WATERING: INCLUDES ALL PLANTED AREAS.
 - *** ITEM 192-6016 PLANT BED PREPARATION: BED PREP TO BE 18 INCHES DEEP IN ALL PLANT BEDS. THE TOP 12 INCHES SHOULD HAVE 6 INCHES OF COMPOST MIXED INTO THE EXISTING SOIL AND THE BOTTOM 6 INCHES IS TO BE TILLED TO BREAK UP THE EXISTING SUBSOIL. WEED REMOVAL, HERBICIDE, AND EXCAVATION OF SOIL TO MEET REQUIRED DEPTH OF PLANT BED INCLUDING MULCH AND SOIL IS SUBSIDIARY TO ITEM 100-6001 PREP ROW.
 - **** ITEMS 1005-6002 & 1005-6003 LOOSE AGGR FOR GROUND COVER: LOOSE AGGREGATE TYPE II TO BE COLORADO RIVER ROCK. LOOSE AGGREGATE TYPE III TO BE BRAZOS RIVER ROCK. ALL RIVER ROCK AREAS TO BE 4" DEEP.
 - ***** 10% CONTINGENCY FOR PERISHABLE BMPS TO ALLOW FOR PERIODIC REPLACEMENT DUE TO NORMAL WEAR AND CHANGING SITE CONDITIONS.
- SEE PLANTING PLANS FOR INDIVIDUAL PLANT SPECIES AND QUANTITIES.



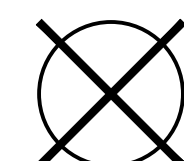



QUANTITY SUMMARY

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	6
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CW				

EROSION CONTROL NOTES

- A. BMP'S SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN 2 WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES.
- B. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
- C. CONTRACTOR MUST ADHERE TO TXDOT STANDARD SPECIFICATION ITEMS 7 & 506 & SPECIAL PROVISIONS 007-004, & 506-001.
- D. MAINTAIN ROADWAYS AND ACTIVE SIDEWALKS FREE OF SEDIMENTATION AND PROJECT DEBRIS AT ALL TIMES.
- E. REFERENCE PLANTING PLAN FOR LIMITS OF DISTURBED AREA AND FINAL STABILIZATION.

LEGEND

-  REMOVE AND DISPOSE OF EXISTING TREE
-  TREE PROTECTION FENCING
-  REMOVE AND DISPOSE OF EXISTING PAVERS
-  REMOVE AND DISPOSE OF EXISTING CONCRETE MEDIANS

SWP3 CHART

INLET NO.	TYPE	LENGTH	DATE INSTALLED	DATE REMOVED

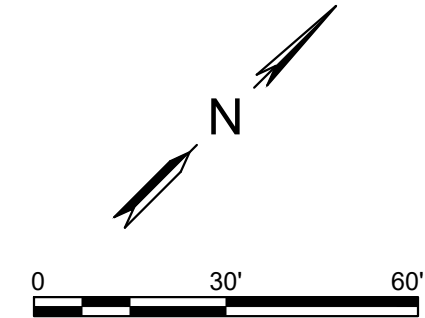
DATE DISTURBED: _____

DATE STABILIZED: _____


EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

EROSION CONTROL & REMOVAL ITEMS 'A'

ITEM	DESCRIPTION	QTY	UNIT
100-6013	PREP ROW (TREE) (2" TO 12" DIA)	-	-
104-6011	REMOVING CONC (MEDIANS)	-	-
104-6040	REMOVE CONCRETE (PAVERS)	515	SY
506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	-	-
506-6043	BIODEG EROSN CONT LOGS (REMOVE)	-	-
506-6044	SANDBAGS FOR EROSION CONTROL (8")	-	-
1004-6001	TREE PROTECTION	3	EA



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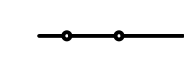


EROSION CONTROL & REMOVAL PLAN 'A'
STA. 0+00 TO STA. 5+50

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	7
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CW				

EROSION CONTROL NOTES

- A. BMP'S SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN 2 WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES.
- B. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
- C. CONTRACTOR MUST ADHERE TO TXDOT STANDARD SPECIFICATION ITEMS 7 & 506 & SPECIAL PROVISIONS 007-004, & 506-001.
- D. MAINTAIN ROADWAYS AND ACTIVE SIDEWALKS FREE OF SEDIMENTATION AND PROJECT DEBRIS AT ALL TIMES.
- E. REFERENCE PLANTING PLAN FOR LIMITS OF DISTURBED AREA AND FINAL STABILIZATION.

LEGEND

-  REMOVE AND DISPOSE OF EXISTING TREE
-  TREE PROTECTION FENCING
-  REMOVE AND DISPOSE OF EXISTING PAVERS
-  REMOVE AND DISPOSE OF EXISTING CONCRETE MEDIANS

SWP3 CHART

INLET NO.	TYPE	LENGTH	DATE INSTALLED	DATE REMOVED

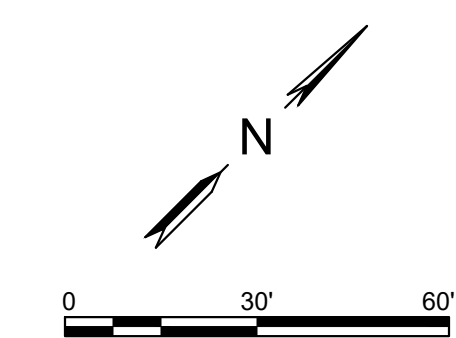
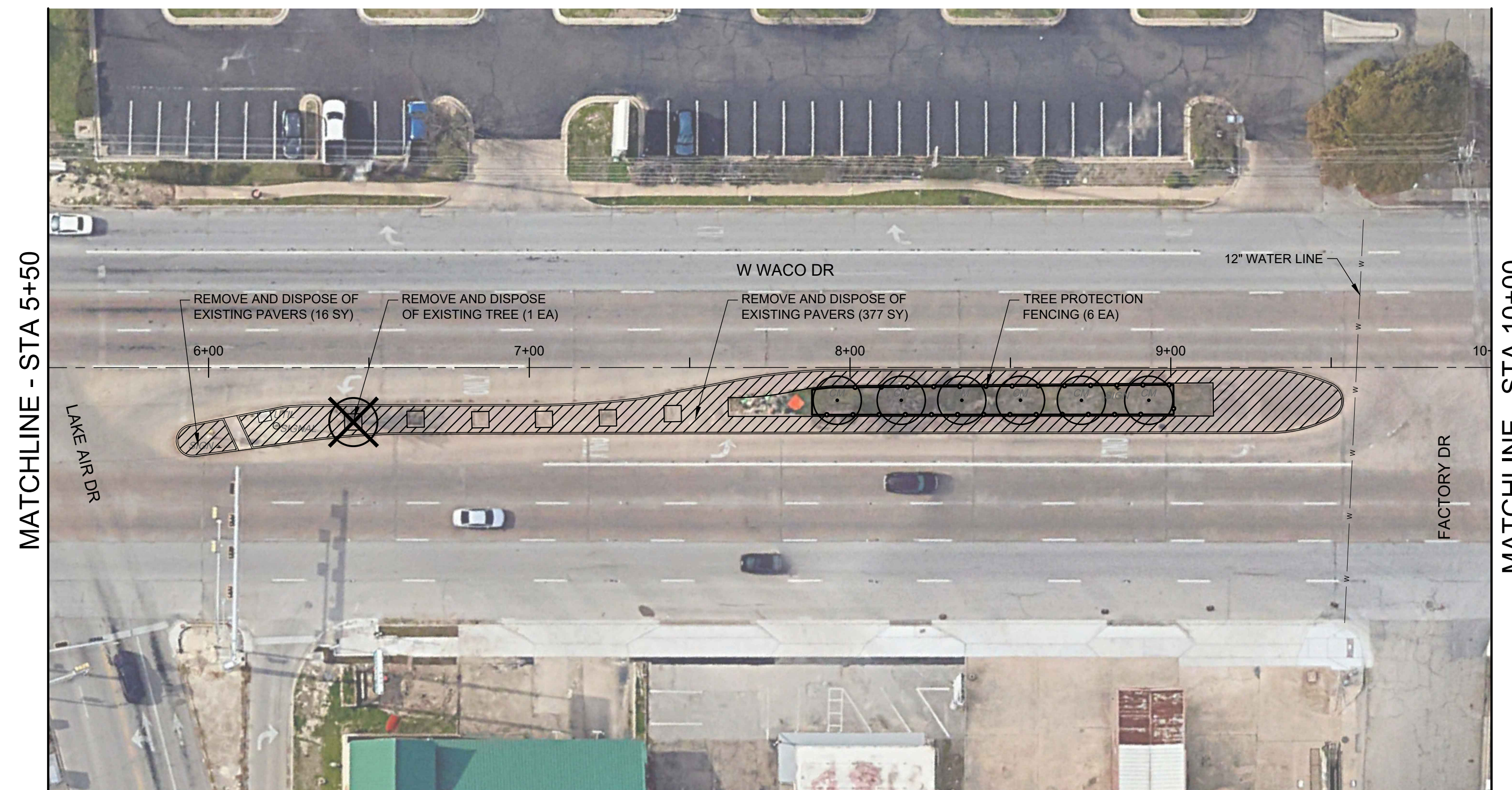
DATE DISTURBED: _____

DATE STABILIZED: _____

EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

EROSION CONTROL & REMOVAL ITEMS 'B'

ITEM	DESCRIPTION	QTY	UNIT
100-6013	PREP ROW (TREE) (2" TO 12" DIA)	1	EA
104-6011	REMOVING CONC (MEDIANS)	-	-
104-6040	REMOVE CONCRETE (PAVERS)	393	SY
506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	-	-
506-6043	BIODEG EROSN CONT LOGS (REMOVE)	-	-
506-6044	SANDBAGS FOR EROSION CONTROL (8")	-	-
1004-6001	TREE PROTECTION	6	EA



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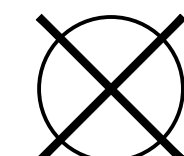
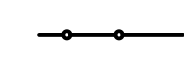


EROSION CONTROL & REMOVAL PLAN 'B'
 STA. 5+50 TO STA. 10+00

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	ES	STATE	DISTRICT	COUNTY
CHECK	SF	TEXAS	WACO	MCLENNAN
CHECK	SF	CONTROL	SECTION	JOB
CW	0055	15	082	8

EROSION CONTROL NOTES

- A. BMP'S SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN 2 WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES.
- B. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
- C. CONTRACTOR MUST ADHERE TO TxDOT STANDARD SPECIFICATION ITEMS 7 & 506 & SPECIAL PROVISIONS 007-004, & 506-001.
- D. MAINTAIN ROADWAYS AND ACTIVE SIDEWALKS FREE OF SEDIMENTATION AND PROJECT DEBRIS AT ALL TIMES.
- E. REFERENCE PLANTING PLAN FOR LIMITS OF DISTURBED AREA AND FINAL STABILIZATION.

LEGEND

-  REMOVE AND DISPOSE OF EXISTING TREE
-  TREE PROTECTION FENCING
-  REMOVE AND DISPOSE OF EXISTING PAVERS
-  REMOVE AND DISPOSE OF EXISTING CONCRETE MEDIANS

SWP3 CHART

INLET NO.	TYPE	LENGTH	DATE INSTALLED	DATE REMOVED
C1	CL-CI	20 FT		
C2	CL-CI	20 FT		
C3	CL-CI	20 FT		
C4	CL-CI	20 FT		
C5	CL-CI	20 FT		

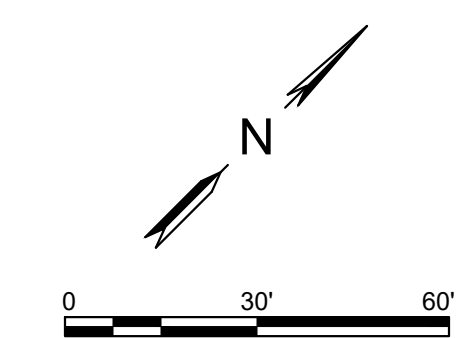
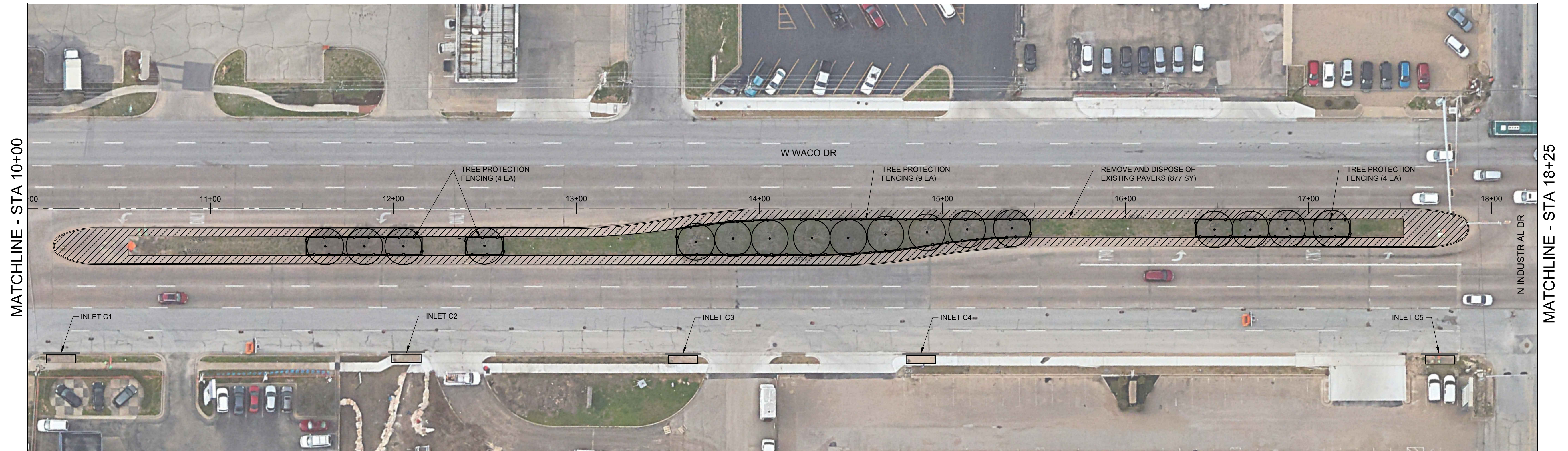
*CL-CI: EROSION CONTROL LOG AT CURB INLET (SEE SHEET 52C)

DATE DISTURBED: _____
 DATE STABILIZED: _____

EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

EROSION CONTROL & REMOVAL ITEMS 'C'

ITEM	DESCRIPTION	QTY	UNIT
100-6013	PREP ROW (TREE) (2" TO 12" DIA)	-	-
104-6011	REMOVING CONC (MEDIANS)	-	-
104-6040	REMOVE CONCRETE (PAVERS)	877	SY
506-6040	BIODEG EROSN CONT LOGS (INSL) (8")	100	LF
506-6043	BIODEG EROSN CONT LOGS (REMOVE)	100	LF
506-6044	SANDBAGS FOR EROSION CONTROL (8")	10	EA
1004-6001	TREE PROTECTION	17	EA



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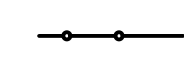


EROSION CONTROL & REMOVAL PLAN 'C'
 STA. 10+00 TO STA. 18+25

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				SHEET NO.
ES	STATE	DISTRICT	COUNTY	
CHECK	TEXAS	WACO	MCLENNAN	
SF	CONTROL	SECTION	JOB	9
CHECK	0055	15	082	
CW				

EROSION CONTROL NOTES

- A. BMP'S SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN 2 WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES.
- B. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
- C. CONTRACTOR MUST ADHERE TO TXDOT STANDARD SPECIFICATION ITEMS 7 & 506 & SPECIAL PROVISIONS 007-004, & 506-001.
- D. MAINTAIN ROADWAYS AND ACTIVE SIDEWALKS FREE OF SEDIMENTATION AND PROJECT DEBRIS AT ALL TIMES.
- E. REFERENCE PLANTING PLAN FOR LIMITS OF DISTURBED AREA AND FINAL STABILIZATION.

LEGEND

-  REMOVE AND DISPOSE OF EXISTING TREE
-  TREE PROTECTION FENCING
-  REMOVE AND DISPOSE OF EXISTING PAVERS
-  REMOVE AND DISPOSE OF EXISTING CONCRETE MEDIANS

SWP3 CHART

INLET/CULVERT NO.	TYPE	LENGTH	DATE INSTALLED	DATE REMOVED
D1	CL-CI	20 FT		
D2	CL-CI	16 FT		
D3	CL-CI	16 FT		
D4	CL-CI	16 FT		
D5	CL-D	10 FT		

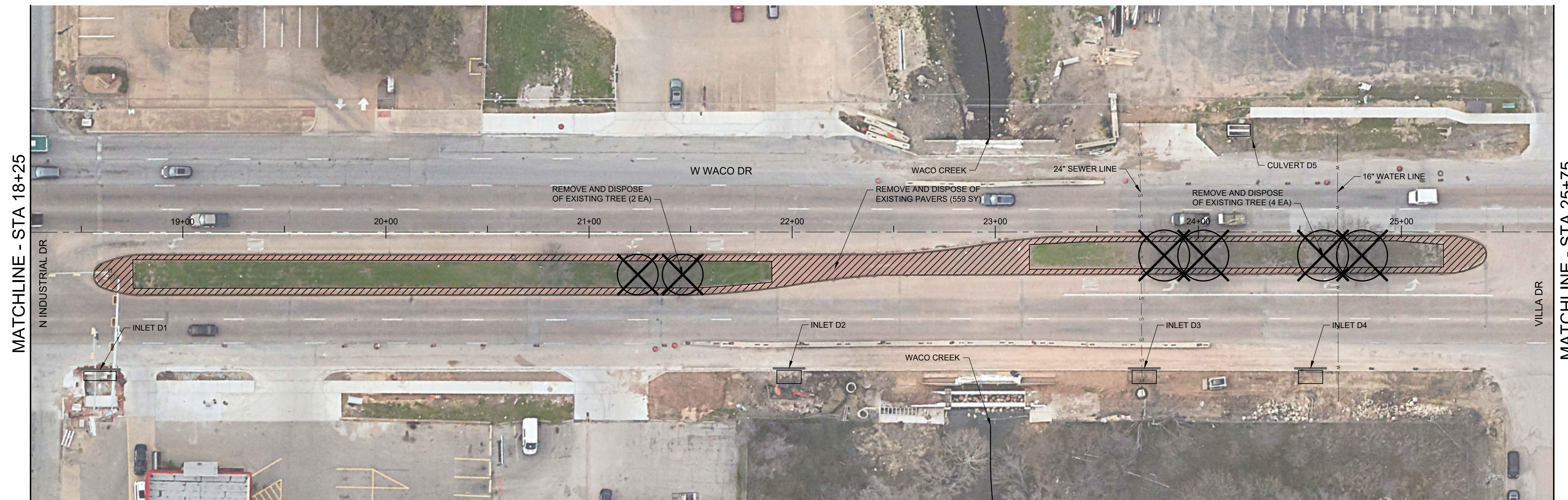
*CL-CI: EROSION CONTROL LOG AT CURB INLET (SEE SHEET 52C)
 *CL-D: EROSION CONTROL LOG DAM (SEE SHEET 52A)

DATE DISTURBED: _____
 DATE STABILIZED: _____

EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

EROSION CONTROL & REMOVAL ITEMS 'D'

ITEM	DESCRIPTION	QTY	UNIT
100-6013	PREP ROW (TREE) (2" TO 12" DIA)	6	EA
104-6011	REMOVING CONC (MEDIANS)	-	
104-6040	REMOVE CONCRETE (PAVERS)	559	SY
506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	78	LF
506-6043	BIODEG EROSN CONT LOGS (REMOVE)	78	LF
506-6044	SANDBAGS FOR EROSION CONTROL (8")	10	EA
1004-6001	TREE PROTECTION	-	

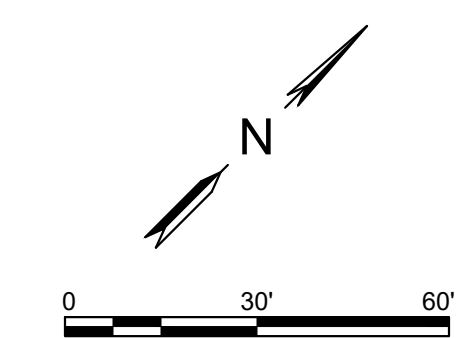


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EROSION CONTROL & REMOVAL PLAN 'D'
STA. 18+25 TO STA. 25+75


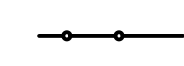


DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	10
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	



EROSION CONTROL NOTES

- A. BMP'S SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN 2 WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES.
- B. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
- C. CONTRACTOR MUST ADHERE TO TxDOT STANDARD SPECIFICATION ITEMS 7 & 506 & SPECIAL PROVISIONS 007-004, & 506-001.
- D. MAINTAIN ROADWAYS AND ACTIVE SIDEWALKS FREE OF SEDIMENTATION AND PROJECT DEBRIS AT ALL TIMES.
- E. REFERENCE PLANTING PLAN FOR LIMITS OF DISTURBED AREA AND FINAL STABILIZATION.

LEGEND

-  REMOVE AND DISPOSE OF EXISTING TREE
-  TREE PROTECTION FENCING
-  REMOVE AND DISPOSE OF EXISTING PAVERS
-  REMOVE AND DISPOSE OF EXISTING CONCRETE MEDIANS

SWP3 CHART

INLET NO.	TYPE	LENGTH	DATE INSTALLED	DATE REMOVED

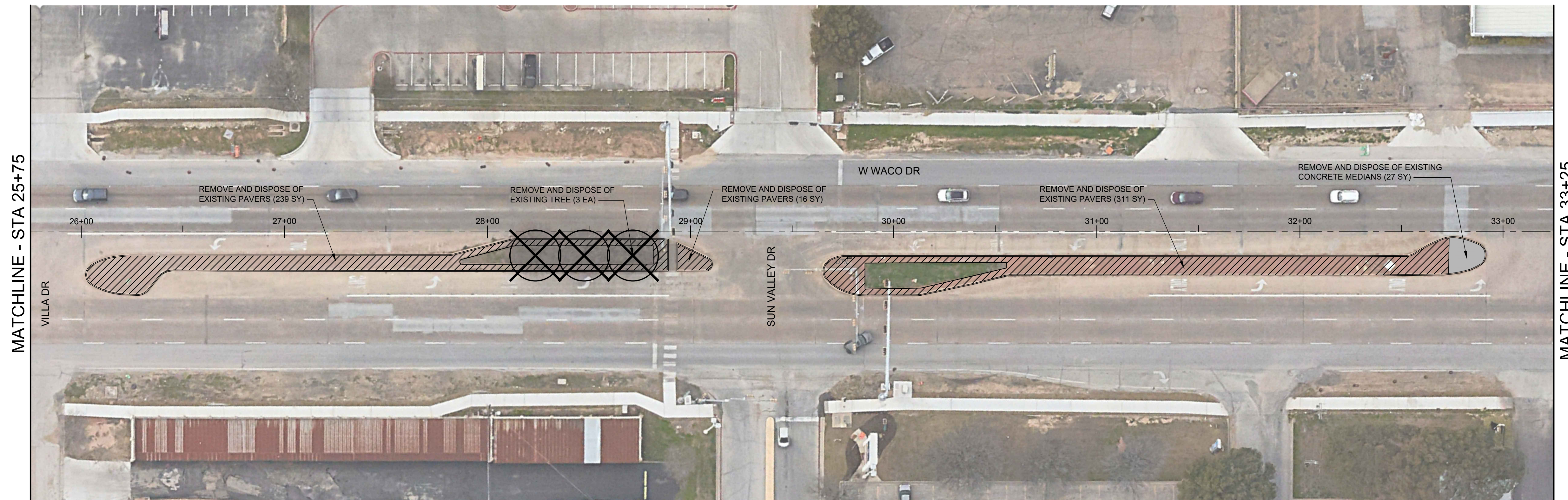
DATE DISTURBED: _____

DATE STABILIZED: _____

EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

EROSION CONTROL & REMOVAL ITEMS 'E'

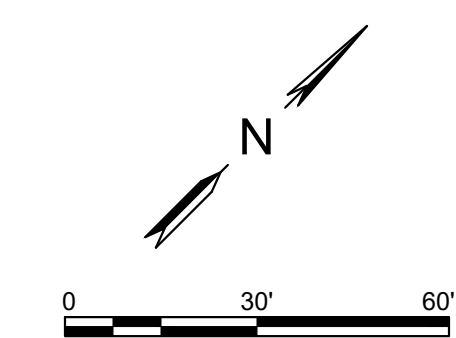
ITEM	DESCRIPTION	QTY	UNIT
100-6013	PREP ROW (TREE) (2" TO 12" DIA)	3	EA
104-6011	REMOVING CONC (MEDIANS)	27	SY
104-6040	REMOVE CONCRETE (PAVERS)	566	SY
506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	-	-
506-6043	BIODEG EROSN CONT LOGS (REMOVE)	-	-
506-6044	SANDBAGS FOR EROSION CONTROL (8")	-	-
1004-6001	TREE PROTECTION	-	-



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EROSION CONTROL & REMOVAL PLAN 'E'
 STA. 25+75 TO STA. 33+25


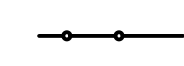




DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	ES	STATE	DISTRICT	COUNTY
CHECK	SF	TEXAS	WACO	MCLENNAN
CHECK	SF	CONTROL	SECTION	JOB
CW	0055	15	082	11

EROSION CONTROL NOTES

- A. BMP'S SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN 2 WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES.
- B. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
- C. CONTRACTOR MUST ADHERE TO TxDOT STANDARD SPECIFICATION ITEMS 7 & 506 & SPECIAL PROVISIONS 007-004, & 506-001.
- D. MAINTAIN ROADWAYS AND ACTIVE SIDEWALKS FREE OF SEDIMENTATION AND PROJECT DEBRIS AT ALL TIMES.
- E. REFERENCE PLANTING PLAN FOR LIMITS OF DISTURBED AREA AND FINAL STABILIZATION.

LEGEND

-  REMOVE AND DISPOSE OF EXISTING TREE
-  TREE PROTECTION FENCING
-  REMOVE AND DISPOSE OF EXISTING PAVERS
-  REMOVE AND DISPOSE OF EXISTING CONCRETE MEDIANS

SWP3 CHART

INLET NO.	TYPE	LENGTH	DATE INSTALLED	DATE REMOVED
A1	CL-CI	16 FT		
A2	CL-CI	16 FT		
A3	CL-CI	16 FT		
A4	CL-GI	15 FT		
A5	CL-GI	26 FT		

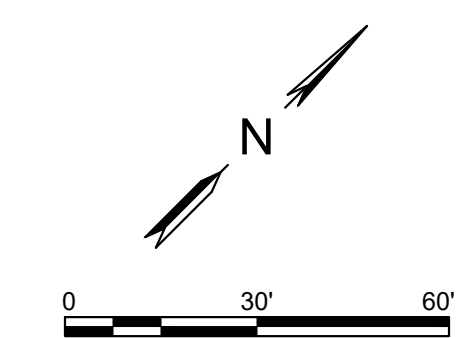
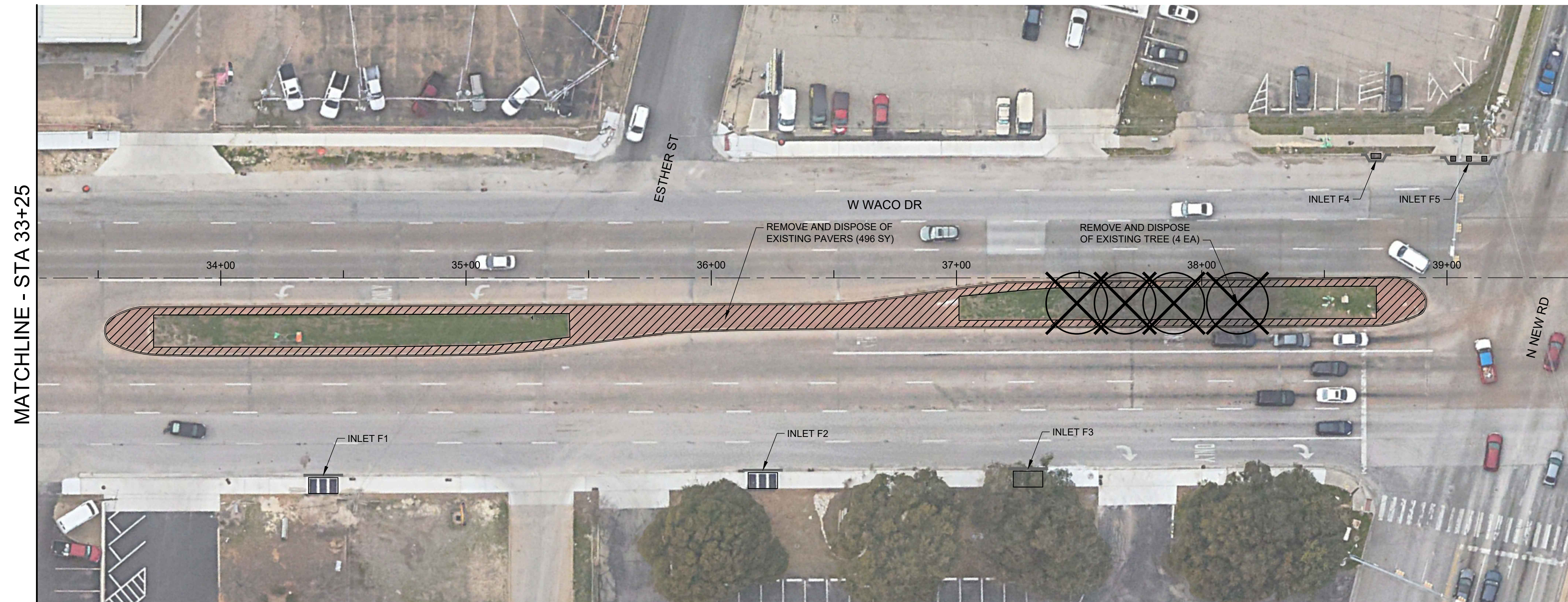
*CL-CI: EROSION CONTROL LOG AT CURB INLET (SEE SHEET 52C)
 *CL-GI: EROSION CONTROL LOG AT GRATE INLET (SEE SHEET 52C)

DATE DISTURBED: _____
 DATE STABILIZED: _____


EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

EROSION CONTROL & REMOVAL ITEMS 'F'

ITEM	DESCRIPTION	QTY	UNIT
100-6013	PREP ROW (TREE) (2" TO 12" DIA)	4	EA
104-6011	REMOVING CONC (MEDIANS)	-	
104-6040	REMOVE CONCRETE (PAVERS)	496	SY
506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	89	LF
506-6043	BIODEG EROSN CONT LOGS (REMOVE)	89	LF
506-6044	SANDBAGS FOR EROSION CONTROL (8")	13	EA
1004-6001	TREE PROTECTION	-	



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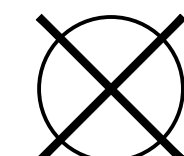
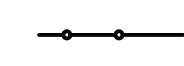


EROSION CONTROL & REMOVAL PLAN 'F'
 STA. 33+25 TO STA. 39+50

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	12
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CW				

EROSION CONTROL NOTES

- A. BMP'S SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN 2 WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES.
- B. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
- C. CONTRACTOR MUST ADHERE TO TXDOT STANDARD SPECIFICATION ITEMS 7 & 506 & SPECIAL PROVISIONS 007-004, & 506-001.
- D. MAINTAIN ROADWAYS AND ACTIVE SIDEWALKS FREE OF SEDIMENTATION AND PROJECT DEBRIS AT ALL TIMES.
- E. REFERENCE PLANTING PLAN FOR LIMITS OF DISTURBED AREA AND FINAL STABILIZATION.

LEGEND

-  REMOVE AND DISPOSE OF EXISTING TREE
-  TREE PROTECTION FENCING
-  REMOVE AND DISPOSE OF EXISTING PAVERS
-  REMOVE AND DISPOSE OF EXISTING CONCRETE MEDIANS

SWP3 CHART

INLET NO.	TYPE	LENGTH	DATE INSTALLED	DATE REMOVED
G1	CL-CI	14 FT		
G2	CL-DI	7 FT		

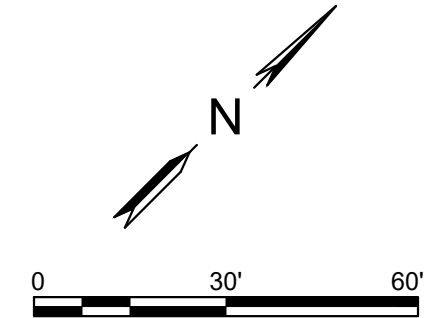
*CL-CI: EROSION CONTROL LOG AT CURB INLET (SEE SHEET 52C)
 *CL-DI: EROSION CONTROL LOG AT DROP INLET (SEE SHEET 52C)

DATE DISTURBED: _____
 DATE STABILIZED: _____

EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

EROSION CONTROL & REMOVAL ITEMS 'G'

ITEM	DESCRIPTION	QTY	UNIT
100-6013	PREP ROW (TREE) (2" TO 12" DIA)	2	EA
104-6011	REMOVING CONC (MEDIANS)	-	
104-6040	REMOVE CONCRETE (PAVERS)	637	SY
506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	21	LF
506-6043	BIODEG EROSN CONT LOGS (REMOVE)	21	LF
506-6044	SANDBAGS FOR EROSION CONTROL (8")	4	EA
1004-6001	TREE PROTECTION	-	



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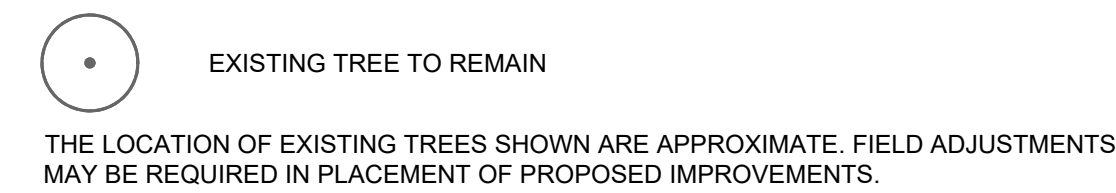
**EROSION CONTROL & REMOVAL PLAN 'G'
 STA. 39+50 TO STA. 47+65**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	13
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	

PLANTING GENERAL NOTES

- A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE TXDOT STANDARDS.
- B. ALL PLANTS SHALL BE NURSERY GROWN. REFER TO PLANT LIST FOR QUANTITIES AND SPECIFICATIONS.
- C. ALL TREES SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
- D. THE SITE SHALL BE FINE GRADED PRIOR TO ANY PLANT INSTALLATION. ANY AREAS DISTURBED BY PLANTING SHALL BE REGRADED AND SMOOTHED PRIOR TO GRASS PLANTING.
- E. THE CONTRACTOR SHALL FLAG UNDERGROUND UTILITY LOCATIONS AND MAINTAIN THESE LOCATIONS UNTIL ALL TREE LOCATIONS ARE APPROVED. AND PLANT PITS EXCAVATED.
- F. THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE ALL PLANT LOCATIONS PRIOR TO PLANTING.
- G. NO TREE SUBSTITUTIONS, SPECIES OR SIZE, WILL BE ACCEPTED WITHOUT THE PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
- H. ALL TREES SHALL BE PLANTED PER PLANTING DETAIL SHEETS.
- I. CONTRACTOR SHALL ESTABLISH GRASS ON ALL AREAS DISTURBED BY CONSTRUCTION.

CONSTRUCTION LAYOUT & PLANTING LEGEND



KEY NOTES

- AS INDICATED BY: (O)
1. MEDIAN NOSE STAMPED CONCRETE PAVING PER DET 1/22B (ITEM 528-6008)
 2. 18" EDGE STAMPED CONCRETE PAVING PER DET 2/22B (ITEM 528-6003)
 3. 12" CONCRETE MOW CURB PER DET 3/22B (ITEM 192-6097)
 4. METAL LANDSCAPE EDGE PER DET 4/22B (ITEM 192-6067)

PLANT SCHEDULE 'A'

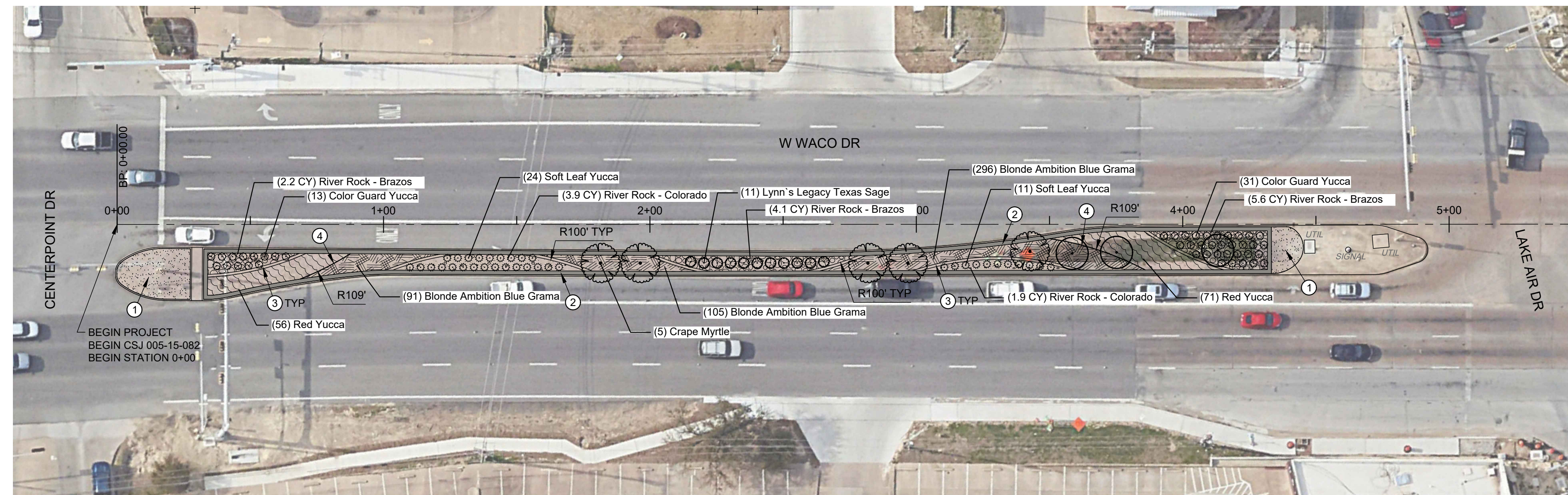
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING
TREES				
	5	LAGERSTROEMIA INDICA CRAPE MYRTLE	45 GAL	
SHRUBS				
	11	LEUCOPHYLLUM LANGMANIAE 'LYNN'S LEGACY' LYNN'S LEGACY TEXAS SAGE	3 GAL	60" o.c.
	44	YUCCA FILAMENTOSA 'COLOR GUARD' COLOR GUARD YUCCA	3 GAL	48" o.c.
	35	YUCCA RECURVIFOLIA SOFT LEAF YUCCA	3 GAL	48" o.c.
SHRUB AREAS				
	492	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL	18" o.c.
	127	HESPERALOE PARVIFLORA RED YUCCA	1 GAL	30" o.c.
AGGREGATE				
	6 CY	RIVER ROCK - COLORADO LOOSE AGGR FOR GROUND COVER (TYPE II)		
	12 CY	RIVER ROCK - BRAZOS LOOSE AGGR FOR GROUND COVER (TYPE III)		

RIVER ROCK MULCH TO BE 4" DEEP
BLONDE AMBITION AND RED YUCCA SHRUB AREAS TO RECEIVE SHREDDED HARDWOOD MULCH 3" DEEP

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

CONSTRUCTION & PLANTING ITEMS 'A'

ITEM	DESCRIPTION	QTY	UNIT
100-6011	PREP ROW	0.07	AC
161-6022	GENERAL USE COMPOST (4")	60	CY
168-6001	VEGETATIVE WATERING	12	MG
192-6012	MULCH	17	CY
192-6016	PLANT BED PREPARATION	361	SY
192-6017	VEGETATION BARRIER	159	SY
192-6025	45 GAL (TREE)	5	EA
192-6026	65 GAL (TREE)	-	EA
192-6028	1 GAL (SHRUB)	619	EA
192-6030	3 GAL (SHRUB)	90	EA
192-6067	LANDSCAPE EDGE	60	LF
192-6097	CONC LNDSACP EDG (12" WIDTH)	220	LF
528-6003	COLORED TEXTURED CONC (8")	139	SY
528-6008	COLORED TEXTURED CONC (5")	69	SY
1005-6002	LOOSE AGGR FOR GROUND COVER (TYPE II)	6	CY
1005-6003	LOOSE AGGR FOR GROUND COVER (TYPE III)	12	CY



MATCHLINE - STA 5+50



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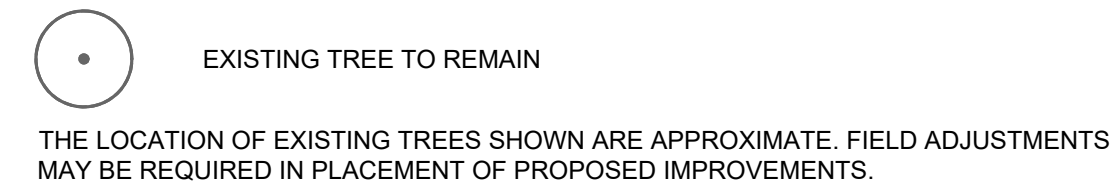
CONSTRUCTION LAYOUT & PLANTING PLAN 'A'
STA. 0+00 TO STA. 5+50

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	14
CHECK	SF	CONTROL	SECTION	
CHECK	CW	0055	15	

PLANTING GENERAL NOTES

- A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE TXDOT STANDARDS.
- B. ALL PLANTS SHALL BE NURSERY GROWN. REFER TO PLANT LIST FOR QUANTITIES AND SPECIFICATIONS.
- C. ALL TREES SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
- D. THE SITE SHALL BE FINE GRADED PRIOR TO ANY PLANT INSTALLATION. ANY AREAS DISTURBED BY PLANTING SHALL BE REGRADED AND SMOOTHED PRIOR TO GRASS PLANTING.
- E. THE CONTRACTOR SHALL FLAG UNDERGROUND UTILITY LOCATIONS AND MAINTAIN THESE LOCATIONS UNTIL ALL TREE LOCATIONS ARE APPROVED. AND PLANT PITS EXCAVATED.
- F. THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE ALL PLANT LOCATIONS PRIOR TO PLANTING.
- G. NO TREE SUBSTITUTIONS, SPECIES OR SIZE, WILL BE ACCEPTED WITHOUT THE PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
- H. ALL TREES SHALL BE PLANTED PER PLANTING DETAIL SHEETS.
- I. CONTRACTOR SHALL ESTABLISH GRASS ON ALL AREAS DISTURBED BY CONSTRUCTION.

CONSTRUCTION LAYOUT & PLANTING LEGEND



KEY NOTES

- AS INDICATED BY: (0)
1. MEDIAN NOSE STAMPED CONCRETE PAVING PER DET 1/22B (ITEM 528-6008)
 2. 18" EDGE STAMPED CONCRETE PAVING PER DET 2/22B (ITEM 528-6003)
 3. 12" CONCRETE MOW CURB PER DET 3/22B (ITEM 192-6097)
 4. METAL LANDSCAPE EDGE PER DET 4/22B (ITEM 192-6067)

PLANT SCHEDULE 'B'

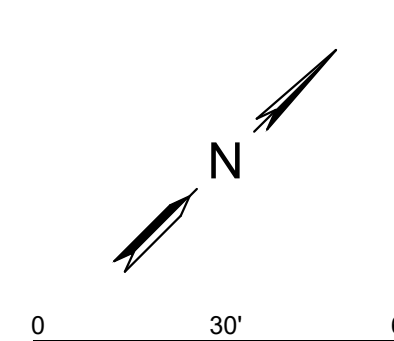
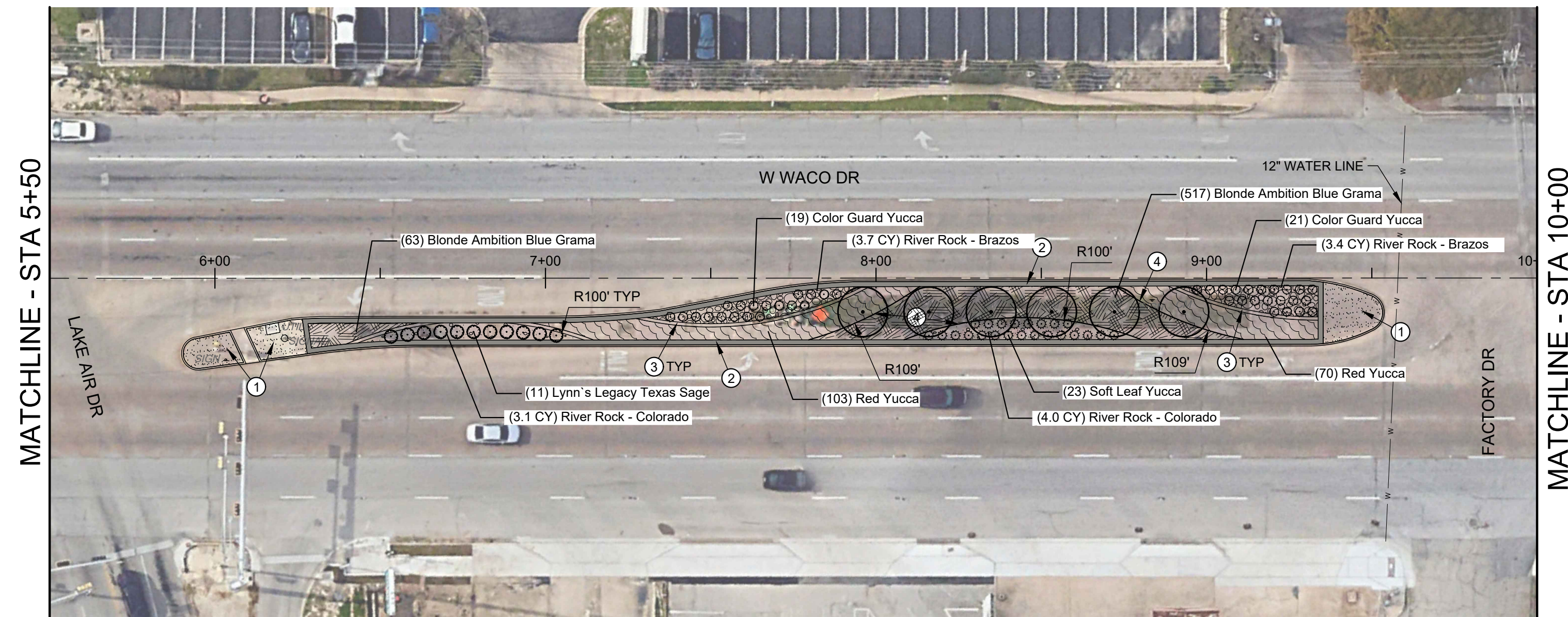
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING
SHRUBS				
	11	LEUCOPHYLLUM LANGMANIAE 'LYNN'S LEGACY' LYNN'S LEGACY TEXAS SAGE	3 GAL	60" o.c.
	40	YUCCA FILAMENTOSA 'COLOR GUARD' COLOR GUARD YUCCA	3 GAL	48" o.c.
	23	YUCCA RECURVIFOLIA SOFT LEAF YUCCA	3 GAL	48" o.c.
SHRUB AREAS				
	580	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL	18" o.c.
	173	HESPERALOE PARVIFLORA RED YUCCA	1 GAL	30" o.c.
AGGREGATE				
	7 CY	RIVER ROCK - COLORADO LOOSE AGGR FOR GROUND COVER (TYPE II)	-	
	7 CY	RIVER ROCK - BRAZOS LOOSE AGGR FOR GROUND COVER (TYPE III)	-	

RIVER ROCK MULCH TO BE 4" DEEP
BLONDE AMBITION AND RED YUCCA SHRUB AREAS TO RECEIVE SHREDDED HARDWOOD MULCH 3" DEEP

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

CONSTRUCTION & PLANTING ITEMS 'B'

ITEM	DESCRIPTION	QTY	UNIT
100-6011	PREP ROW	0.08	AC
161-6022	GENERAL USE COMPOST (4")	64	CY
168-6001	VEGETATIVE WATERING	14	MG
192-6012	MULCH	21	CY
192-6016	PLANT BED PREPARATION	382	SY
192-6017	VEGETATION BARRIER	127	SY
192-6025	45 GAL (TREE)	-	EA
192-6026	65 GAL (TREE)	-	EA
192-6028	1 GAL (SHRUB)	753	EA
192-6030	3 GAL (SHRUB)	74	EA
192-6067	LANDSCAPE EDGE	155	LF
192-6097	CONC LNDSACP EDG (12" WIDTH)	165	LF
528-6003	COLORED TEXTURED CONC (8")	107	SY
528-6008	COLORED TEXTURED CONC (5")	62	SY
1005-6002	LOOSE AGGR FOR GROUND COVER (TYPE II)	7	CY
1005-6003	LOOSE AGGR FOR GROUND COVER (TYPE III)	7	CY



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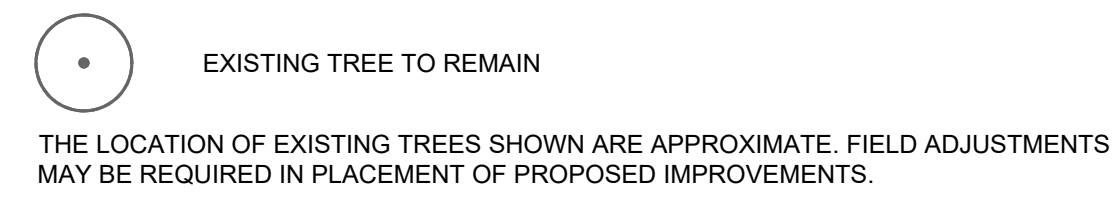
CONSTRUCTION LAYOUT & PLANTING PLAN 'B'
STA. 5+50 TO STA. 10+00

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				SHEET NO.
ES	STATE	DISTRICT	COUNTY	
CHECK	TEXAS	WACO	MCLENNAN	
SF	CONTROL	SECTION	JOB	
CHECK	0055	15	082	15
CW				

PLANTING GENERAL NOTES

- A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE TXDOT STANDARDS.
- B. ALL PLANTS SHALL BE NURSERY GROWN. REFER TO PLANT LIST FOR QUANTITIES AND SPECIFICATIONS.
- C. ALL TREES SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
- D. THE SITE SHALL BE FINE GRADED PRIOR TO ANY PLANT INSTALLATION. ANY AREAS DISTURBED BY PLANTING SHALL BE REGRADED AND SMOOTHED PRIOR TO GRASS PLANTING.
- E. THE CONTRACTOR SHALL FLAG UNDERGROUND UTILITY LOCATIONS AND MAINTAIN THESE LOCATIONS UNTIL ALL TREE LOCATIONS ARE APPROVED, AND PLANT PITS EXCAVATED.
- F. THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE ALL PLANT LOCATIONS PRIOR TO PLANTING.
- G. NO TREE SUBSTITUTIONS, SPECIES OR SIZE, WILL BE ACCEPTED WITHOUT THE PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
- H. ALL TREES SHALL BE PLANTED PER PLANTING DETAIL SHEETS.
- I. CONTRACTOR SHALL ESTABLISH GRASS ON ALL AREAS DISTURBED BY CONSTRUCTION.

CONSTRUCTION LAYOUT & PLANTING LEGEND



KEY NOTES

- AS INDICATED BY: (0)
1. MEDIAN NOSE STAMPED CONCRETE PAVING PER DET 1/22B (ITEM 528-6008)
 2. 18" EDGE STAMPED CONCRETE PAVING PER DET 2/22B (ITEM 528-6003)
 3. 12" CONCRETE MOW CURB PER DET 3/22B (ITEM 192-6097)
 4. METAL LANDSCAPE EDGE PER DET 4/22B (ITEM 192-6067)

PLANT SCHEDULE 'C'

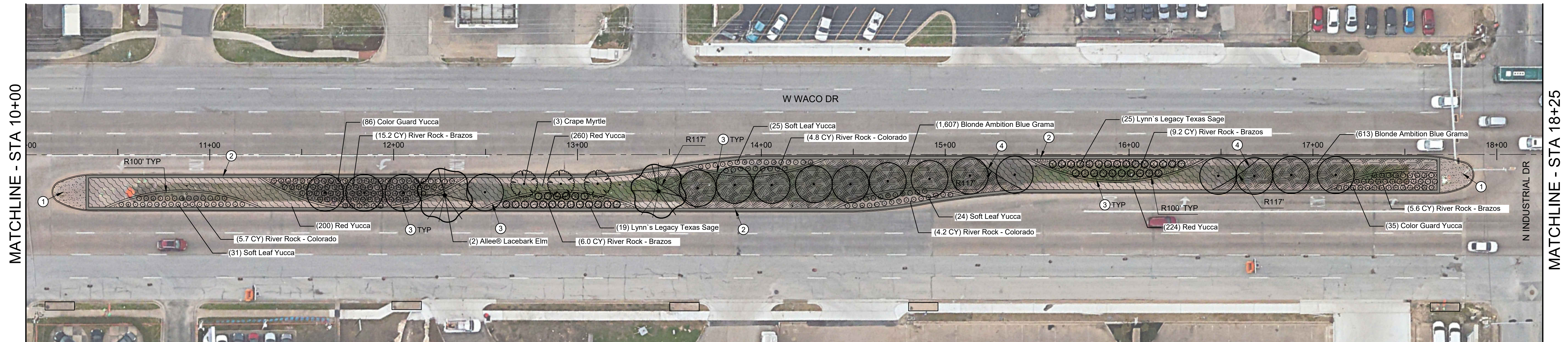
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING
TREES				
	3	LAGERSTROEMIA INDICA CRAPE MYRTLE	45 GAL	
	2	ULMUS PARVIFOLIA 'ALLEE' ALLEE® LACEBARK ELM	65 GAL, 3" CAL	
SHRUBS				
	44	LEUCOPHYLLUM LANGMANIAE 'LYNN'S LEGACY' LYNN'S LEGACY TEXAS SAGE	3 GAL	60" o.c.
	121	YUCCA FILAMENTOSA 'COLOR GUARD' COLOR GUARD YUCCA	3 GAL	48" o.c.
	80	YUCCA RECURVIFOLIA SOFT LEAF YUCCA	3 GAL	48" o.c.
SHRUB AREAS				
	2,220	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL	18" o.c.
	684	HESPERALOE PARVIFLORA RED YUCCA	1 GAL	30" o.c.
AGGREGATE				
	15 CY	RIVER ROCK - COLORADO LOOSE AGGR FOR GROUND COVER (TYPE II)		
	36 CY	RIVER ROCK - BRAZOS LOOSE AGGR FOR GROUND COVER (TYPE III)		

RIVER ROCK MULCH TO BE 4" DEEP
BLONDE AMBITION AND RED YUCCA SHRUB AREAS TO RECEIVE SHREDDED HARDWOOD MULCH 3" DEEP

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

CONSTRUCTION & PLANTING ITEMS 'C'

ITEM	DESCRIPTION	QTY	UNIT
100-6011	PREP ROW	0.30	AC
161-6022	GENERAL USE COMPOST (4")	241	CY
168-6001	VEGETATIVE WATERING	51	MG
192-6012	MULCH	83	CY
192-6016	PLANT BED PREPARATION	1,445	SY
192-6017	VEGETATION BARRIER	455	SY
192-6025	45 GAL (TREE)	3	EA
192-6026	65 GAL (TREE)	2	EA
192-6028	1 GAL (SHRUB)	2,904	EA
192-6030	3 GAL (SHRUB)	245	EA
192-6067	LANDSCAPE EDGE	100	LF
192-6097	CONC LANDSCP EDG (12" WIDTH)	580	LF
528-6003	COLORED TEXTURED CONC (8")	251	SY
528-6008	COLORED TEXTURED CONC (5")	57	SY
1005-6002	LOOSE AGGR FOR GROUND COVER (TYPE II)	15	CY
1005-6003	LOOSE AGGR FOR GROUND COVER (TYPE III)	36	CY

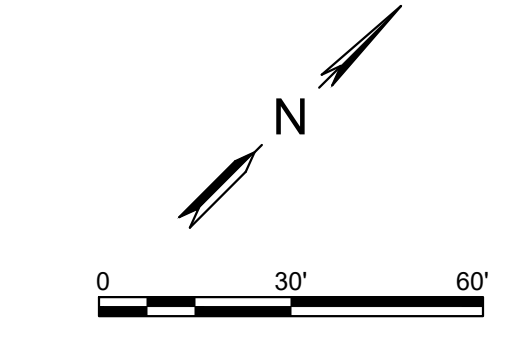


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CONSTRUCTION LAYOUT & PLANTING PLAN 'C' STA. 10+00 TO STA. 18+25

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				SHEET NO.
ES	STATE	DISTRICT	COUNTY	
CHECK	TEXAS	WACO	MCLENNAN	
SF	CONTROL	SECTION	JOB	
CHECK	0055	15	082	16
CW				



PLANTING GENERAL NOTES

- A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE TXDOT STANDARDS.
- B. ALL PLANTS SHALL BE NURSERY GROWN. REFER TO PLANT LIST FOR QUANTITIES AND SPECIFICATIONS.
- C. ALL TREES SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
- D. THE SITE SHALL BE FINE GRADED PRIOR TO ANY PLANT INSTALLATION. ANY AREAS DISTURBED BY PLANTING SHALL BE REGRADED AND SMOOTHED PRIOR TO GRASS PLANTING.
- E. THE CONTRACTOR SHALL FLAG UNDERGROUND UTILITY LOCATIONS AND MAINTAIN THESE LOCATIONS UNTIL ALL TREE LOCATIONS ARE APPROVED, AND PLANT PITS EXCAVATED.
- F. THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE ALL PLANT LOCATIONS PRIOR TO PLANTING.
- G. NO TREE SUBSTITUTIONS, SPECIES OR SIZE, WILL BE ACCEPTED WITHOUT THE PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
- H. ALL TREES SHALL BE PLANTED PER PLANTING DETAIL SHEETS.
- I. CONTRACTOR SHALL ESTABLISH GRASS ON ALL AREAS DISTURBED BY CONSTRUCTION.

CONSTRUCTION LAYOUT & PLANTING LEGEND

EXISTING TREE TO REMAIN

THE LOCATION OF EXISTING TREES SHOWN ARE APPROXIMATE. FIELD ADJUSTMENTS MAY BE REQUIRED IN PLACEMENT OF PROPOSED IMPROVEMENTS.

KEY NOTES

- AS INDICATED BY: (0)
1. MEDIAN NOSE STAMPED CONCRETE PAVING PER DET 1/22B (ITEM 528-6008)
 2. 18" EDGE STAMPED CONCRETE PAVING PER DET 2/22B (ITEM 528-6003)
 3. 12" CONCRETE MOW CURB PER DET 3/22B (ITEM 192-6097)
 4. METAL LANDSCAPE EDGE PER DET 4/22B (ITEM 192-6067)

PLANT SCHEDULE 'D'

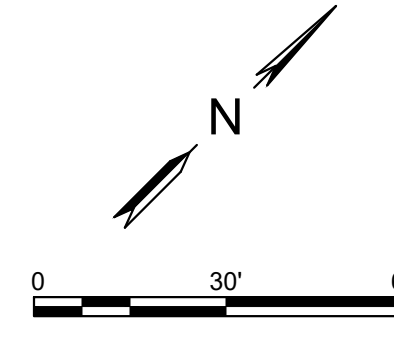
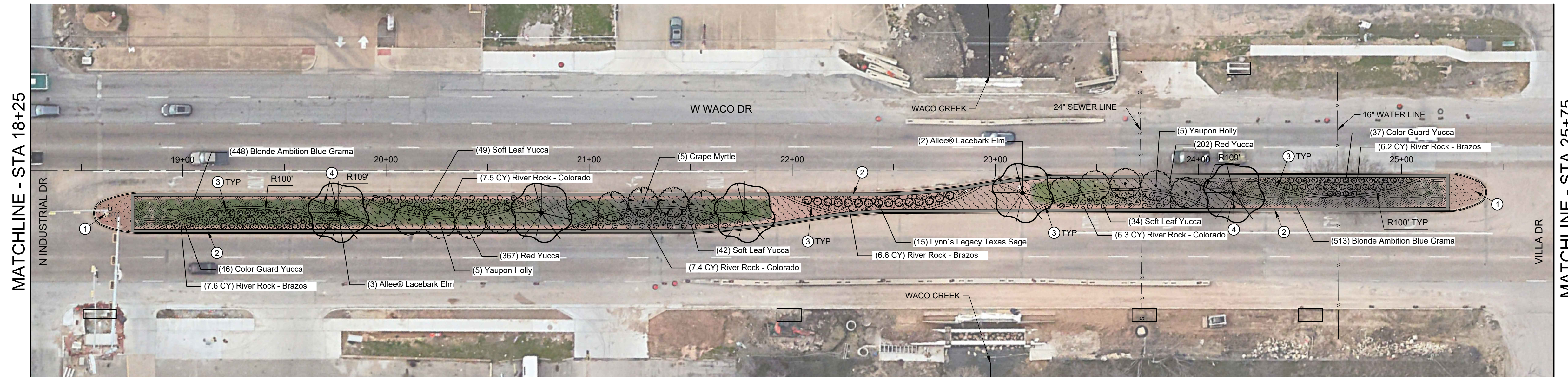
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING
TREES				
	10	ILEX VOMITORIA YAUPON HOLLY	45 GAL	
	5	LAGERSTROEMIA INDICA CRAPE MYRTLE	45 GAL	
	5	ULMUS PARVIFOLIA 'ALLEE' ALLEE@ LACEBARK ELM	65 GAL, 3" CAL	
SHRUBS				
	15	LEUCOPHYLLUM LANGMANIAE 'LYNN'S LEGACY' LYNN'S LEGACY TEXAS SAGE	3 GAL	60" o.c.
	83	YUCCA FILAMENTOSA 'COLOR GUARD' COLOR GUARD YUCCA	3 GAL	48" o.c.
	125	YUCCA RECURVIFOLIA SOFT LEAF YUCCA	3 GAL	48" o.c.
SHRUB AREAS				
	961	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL	18" o.c.
	569	HESPERALOE PARVIFLORA RED YUCCA	1 GAL	30" o.c.
AGGREGATE				
	21 CY	RIVER ROCK - COLORADO LOOSE AGGR FOR GROUND COVER (TYPE II)	-	
	30 CY	RIVER ROCK - BRAZOS LOOSE AGGR FOR GROUND COVER (TYPE III)	-	

RIVER ROCK MULCH TO BE 4" DEEP
BLONDE AMBITION AND RED YUCCA SHRUB AREAS TO RECEIVE SHREDDED HARDWOOD MULCH 3" DEEP

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

CONSTRUCTION & PLANTING ITEMS 'D'

ITEM	DESCRIPTION	QTY	UNIT
100-6011	PREP ROW	0.20	AC
161-6022	GENERAL USE COMPOST (4")	164	CY
168-6001	VEGETATIVE WATERING	34	MG
192-6012	MULCH	51	CY
192-6016	PLANT BED PREPARATION	985	SY
192-6017	VEGETATION BARRIER	375	SY
192-6025	45 GAL (TREE)	15	EA
192-6026	65 GAL (TREE)	5	EA
192-6028	1 GAL (SHRUB)	1,530	EA
192-6030	3 GAL (SHRUB)	223	EA
192-6067	LANDSCAPE EDGE	80	LF
192-6097	CONC LNDSACP EDG (12" WIDTH)	515	LF
528-6003	COLORLED TEXTURED CONC (8")	222	SY
528-6008	COLORLED TEXTURED CONC (5")	56	SY
1005-6002	LOOSE AGGR FOR GROUND COVER (TYPE II)	21	CY
1005-6003	LOOSE AGGR FOR GROUND COVER (TYPE III)	20	CY



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CONSTRUCTION LAYOUT & PLANTING PLAN 'D'
STA. 18+25 TO STA. 25+75

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	17
CHECK	SF	CONTROL	SECTION	
CHECK	CW	0055	15	

PLANTING GENERAL NOTES

- A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE TXDOT STANDARDS.
- B. ALL PLANTS SHALL BE NURSERY GROWN. REFER TO PLANT LIST FOR QUANTITIES AND SPECIFICATIONS.
- C. ALL TREES SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
- D. THE SITE SHALL BE FINE GRADED PRIOR TO ANY PLANT INSTALLATION. ANY AREAS DISTURBED BY PLANTING SHALL BE REGRADED AND SMOOTHED PRIOR TO GRASS PLANTING.
- E. THE CONTRACTOR SHALL FLAG UNDERGROUND UTILITY LOCATIONS AND MAINTAIN THESE LOCATIONS UNTIL ALL TREE LOCATIONS ARE APPROVED. AND PLANT PITS EXCAVATED.
- F. THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE ALL PLANT LOCATIONS PRIOR TO PLANTING.
- G. NO TREE SUBSTITUTIONS, SPECIES OR SIZE, WILL BE ACCEPTED WITHOUT THE PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
- H. ALL TREES SHALL BE PLANTED PER PLANTING DETAIL SHEETS.
- I. CONTRACTOR SHALL ESTABLISH GRASS ON ALL AREAS DISTURBED BY CONSTRUCTION.

CONSTRUCTION LAYOUT & PLANTING LEGEND

EXISTING TREE TO REMAIN

THE LOCATION OF EXISTING TREES SHOWN ARE APPROXIMATE. FIELD ADJUSTMENTS MAY BE REQUIRED IN PLACEMENT OF PROPOSED IMPROVEMENTS.

KEY NOTES

- AS INDICATED BY: (O)
1. MEDIAN NOSE STAMPED CONCRETE PAVING PER DET 1/22B (ITEM 528-6008)
 2. 18" EDGE STAMPED CONCRETE PAVING PER DET 2/22B (ITEM 528-6003)
 3. 12" CONCRETE MOW CURB PER DET 3/22B (ITEM 192-6097)
 4. METAL LANDSCAPE EDGE PER DET 4/22B (ITEM 192-6067)

PLANT SCHEDULE 'E'

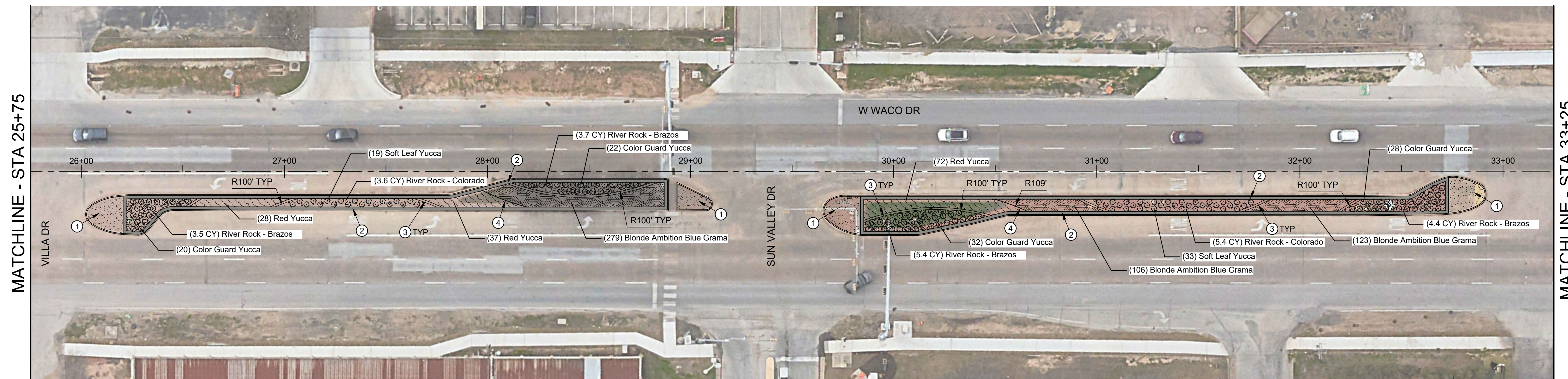
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING
SHRUBS				
	102	YUCCA FILAMENTOSA 'COLOR GUARD' COLOR GUARD YUCCA	3 GAL	48" o.c.
	52	YUCCA RECURVIFOLIA SOFT LEAF YUCCA	3 GAL	48" o.c.
SHRUB AREAS				
	508	BOUTELOULA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL	18" o.c.
	137	HESPERALOE PARVIFLORA RED YUCCA	1 GAL	30" o.c.
AGGREGATE				
	9 CY	RIVER ROCK - COLORADO LOOSE AGGR FOR GROUND COVER (TYPE II)		
	17 CY	RIVER ROCK - BRAZOS LOOSE AGGR FOR GROUND COVER (TYPE III)		

RIVER ROCK MULCH TO BE 4" DEEP
BLONDE AMBITION AND RED YUCCA SHRUB AREAS TO RECEIVE SHREDDED HARDWOOD MULCH 3" DEEP

EXISTING UTILITIES
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CONSTRUCTION & PLANTING ITEMS 'E'

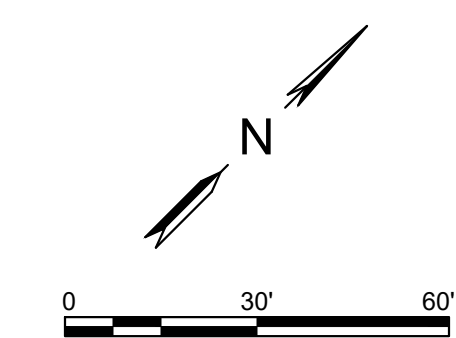
ITEM	DESCRIPTION	QTY	UNIT
100-6011	PREP ROW	0.09	AC
161-6022	GENERAL USE COMPOST (4")	74	CY
168-6001	VEGETATIVE WATERING	15	MG
192-6012	MULCH	18	CY
192-6016	PLANT BED PREPARATION	446	SY
192-6017	VEGETATION BARRIER	233	SY
192-6025	45 GAL (TREE)	-	EA
192-6026	65 GAL (TREE)	-	EA
192-6028	1 GAL (SHRUB)	645	EA
192-6030	3 GAL (SHRUB)	154	EA
192-6067	LANDSCAPE EDGE	45	LF
192-6097	CONC LANDSCP EDG (12" WIDTH)	210	LF
528-6003	COLORED TEXTURED CONC (8")	197	SY
528-6008	COLORED TEXTURED CONC (5")	100	SY
1005-6002	LOOSE AGGR FOR GROUND COVER (TYPE II)	9	CY
1005-6003	LOOSE AGGR FOR GROUND COVER (TYPE III)	17	CY



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CONSTRUCTION LAYOUT & PLANTING PLAN 'E'
STA. 25+75 TO STA. 33+25



DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	18
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	

PLANTING GENERAL NOTES

- A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE TXDOT STANDARDS.
- B. ALL PLANTS SHALL BE NURSERY GROWN. REFER TO PLANT LIST FOR QUANTITIES AND SPECIFICATIONS.
- C. ALL TREES SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
- D. THE SITE SHALL BE FINE GRADED PRIOR TO ANY PLANT INSTALLATION. ANY AREAS DISTURBED BY PLANTING SHALL BE REGRADED AND SMOOTHED PRIOR TO GRASS PLANTING.
- E. THE CONTRACTOR SHALL FLAG UNDERGROUND UTILITY LOCATIONS AND MAINTAIN THESE LOCATIONS UNTIL ALL TREE LOCATIONS ARE APPROVED, AND PLANT PITS EXCAVATED.
- F. THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE ALL PLANT LOCATIONS PRIOR TO PLANTING.
- G. NO TREE SUBSTITUTIONS, SPECIES OR SIZE, WILL BE ACCEPTED WITHOUT THE PRIOR APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
- H. ALL TREES SHALL BE PLANTED PER PLANTING DETAIL SHEETS.
- I. CONTRACTOR SHALL ESTABLISH GRASS ON ALL AREAS DISTURBED BY CONSTRUCTION.

CONSTRUCTION LAYOUT & PLANTING LEGEND

EXISTING TREE TO REMAIN

THE LOCATION OF EXISTING TREES SHOWN ARE APPROXIMATE. FIELD ADJUSTMENTS MAY BE REQUIRED IN PLACEMENT OF PROPOSED IMPROVEMENTS.

KEY NOTES

- AS INDICATED BY: (O)
1. MEDIAN NOSE STAMPED CONCRETE PAVING PER DET 1/22B (ITEM 528-6008)
 2. 18" EDGE STAMPED CONCRETE PAVING PER DET 2/22B (ITEM 528-6003)
 3. 12" CONCRETE MOW CURB PER DET 3/22B (ITEM 192-6097)
 4. METAL LANDSCAPE EDGE PER DET 4/22B (ITEM 192-6067)

PLANT SCHEDULE 'F'

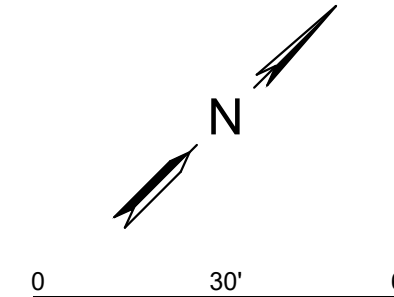
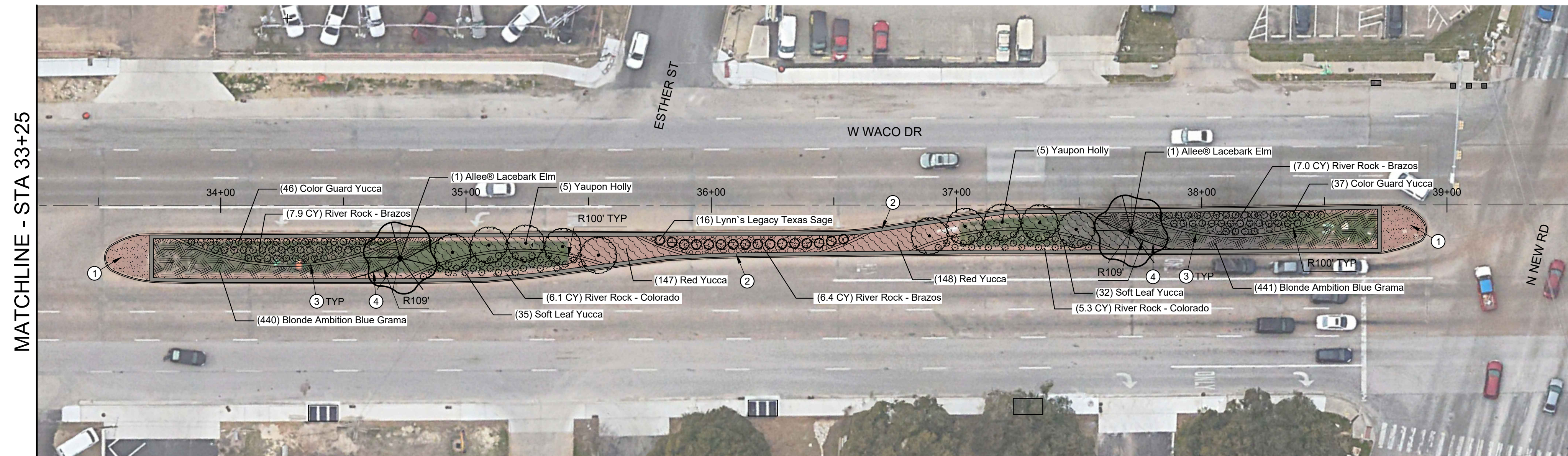
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING
TREES				
	10	ILEX VOMITORIA YAUPON HOLLY	45 GAL	
	2	ULMUS PARVIFOLIA 'ALLEE' ALLEE® LACEBARK ELM	65 GAL, 3" CAL	
SHRUBS				
	16	LEUCOPHYLLUM LANGMANIAE 'LYNN'S LEGACY' LYNN'S LEGACY TEXAS SAGE	3 GAL	60" o.c.
	83	YUCCA FILAMENTOSA 'COLOR GUARD' COLOR GUARD YUCCA	3 GAL	48" o.c.
	67	YUCCA RECURVIFOLIA SOFT LEAF YUCCA	3 GAL	48" o.c.
SHRUB AREAS				
	881	BOUTELLOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL	18" o.c.
	295	HESPERALOE PARVIFLORA RED YUCCA	1 GAL	30" o.c.
AGGREGATE				
	11 CY	RIVER ROCK - COLORADO LOOSE AGGR FOR GROUND COVER (TYPE II)		
	21 CY	RIVER ROCK - BRAZOS LOOSE AGGR FOR GROUND COVER (TYPE III)		

RIVER ROCK MULCH TO BE 4" DEEP
BLONDE AMBITION AND RED YUCCA SHRUB AREAS TO RECEIVE SHREDDED HARDWOOD MULCH 3" DEEP

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CONSTRUCTION & PLANTING ITEMS 'F'

ITEM	DESCRIPTION	QTY	UNIT
100-6011	PREP ROW	0.15	AC
161-6022	GENERAL USE COMPOST (4")	117	CY
168-6001	VEGETATIVE WATERING	25	MG
192-6012	MULCH	34	CY
192-6016	PLANT BED PREPARATION	702	SY
192-6017	VEGETATION BARRIER	295	SY
192-6025	45 GAL (TREE)	10	EA
192-6026	65 GAL (TREE)	2	EA
192-6028	1 GAL (SHRUB)	1,176	EA
192-6030	3 GAL (SHRUB)	166	EA
192-6067	LANDSCAPE EDGE	80	LF
192-6097	CONC LANDSCP EDG (12" WIDTH)	395	LF
528-6003	COLORED TEXTURED CONC (8")	173	SY
528-6008	COLORED TEXTURED CONC (5")	59	SY
1005-6002	LOOSE AGGR FOR GROUND COVER (TYPE II)	12	CY
1005-6003	LOOSE AGGR FOR GROUND COVER (TYPE III)	21	CY



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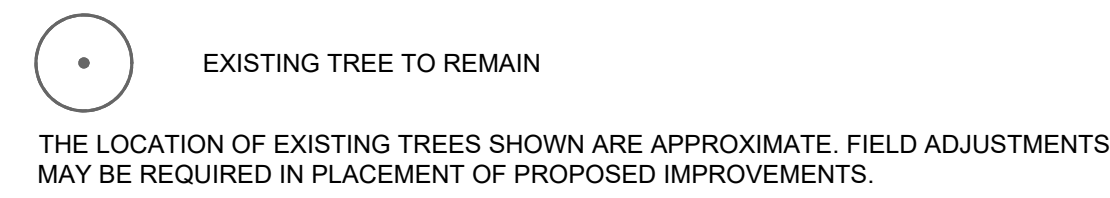
CONSTRUCTION LAYOUT & PLANTING PLAN 'F'
STA. 33+25 TO STA. 39+50

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				
ES	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	WACO	MCLENNAN	19
SF	CONTROL	SECTION	JOB	
CW	0055	15	082	

PLANTING GENERAL NOTES

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CONSTRUCTION LAYOUT & PLANTING LEGEND



KEY NOTES

- AS INDICATED BY: (O)
1. MEDIAN NOSE STAMPED CONCRETE PAVING PER DET 1/22B (ITEM 528-6008)
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 4. METAL LANDSCAPE EDGE PER DET 4/22B (ITEM 192-6067)

PLANT SCHEDULE 'G'

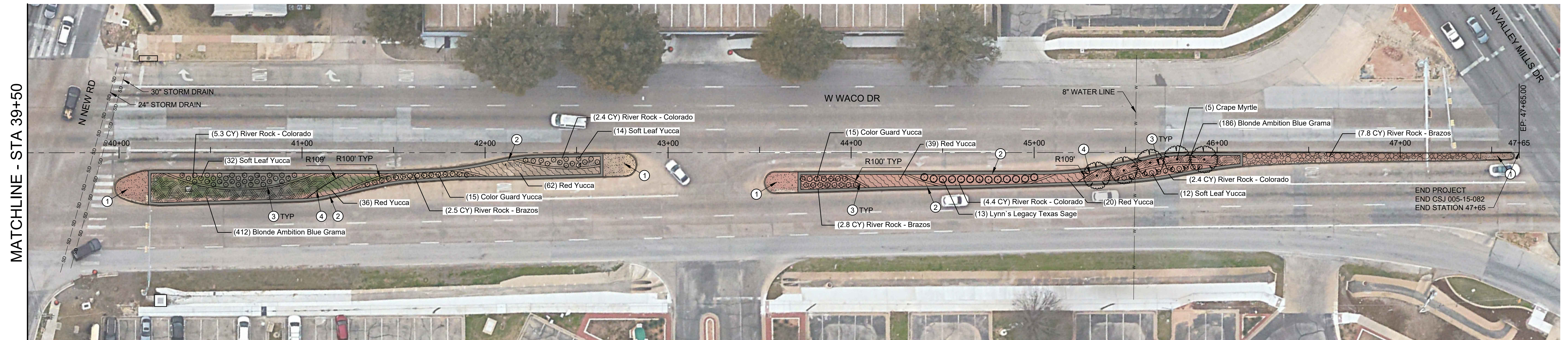
SYMBOL	QTY	BOTANICAL / COMMON NAME	CONTAINER	SPACING
TREES				
	5	LAGERSTROEMIA INDICA CRAPE MYRTLE	45 GAL	
SHRUBS				
	13	LEUCOPHYLLUM LANGMANIAE 'LYNN'S LEGACY' LYNN'S LEGACY TEXAS SAGE	3 GAL	60" o.c.
	30	YUCCA FILAMENTOSA 'COLOR GUARD' COLOR GUARD YUCCA	3 GAL	48" o.c.
	58	YUCCA RECURVIFOLIA SOFT LEAF YUCCA	3 GAL	48" o.c.
SHRUB AREAS				
	598	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL	18" o.c.
	157	HESPERALOE PARVIFLORA RED YUCCA	1 GAL	30" o.c.
AGGREGATE				
	14 CY	RIVER ROCK - COLORADO LOOSE AGGR FOR GROUND COVER (TYPE II)		
	13 CY	RIVER ROCK - BRAZOS LOOSE AGGR FOR GROUND COVER (TYPE III)		

RIVER ROCK MULCH TO BE 4" DEEP
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CONSTRUCTION & PLANTING ITEMS 'G'

ITEM	DESCRIPTION	QTY	UNIT
100-6011	PREP ROW	0.10	AC
161-6022	GENERAL USE COMPOST (4")	82	CY
168-6001	VEGETATIVE WATERING	17	MG
192-6012	MULCH	21	CY
192-6016	PLANT BED PREPARATION	494	SY
192-6017	VEGETATION BARRIER	248	SY
192-6025	45 GAL (TREE)	5	EA
192-6026	65 GAL (TREE)	-	EA
192-6028	1 GAL (SHRUB)	755	EA
192-6030	3 GAL (SHRUB)	101	EA
192-6067	LANDSCAPE EDGE	40	LF
192-6097	CONC LANDSCP EDG (12" WIDTH)	290	LF
528-6003	COLORED TEXTURED CONC (8")	171	SY
528-6008	COLORED TEXTURED CONC (5")	78	SY
1005-6002	LOOSE AGGR FOR GROUND COVER (TYPE II)	14	CY
1005-6003	LOOSE AGGR FOR GROUND COVER (TYPE III)	13	CY

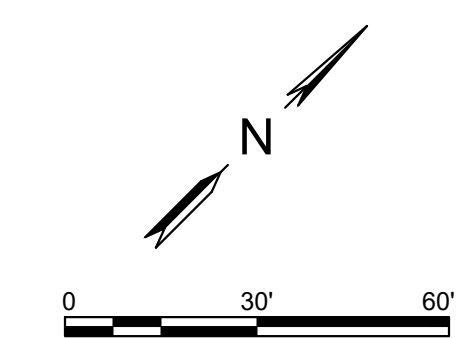


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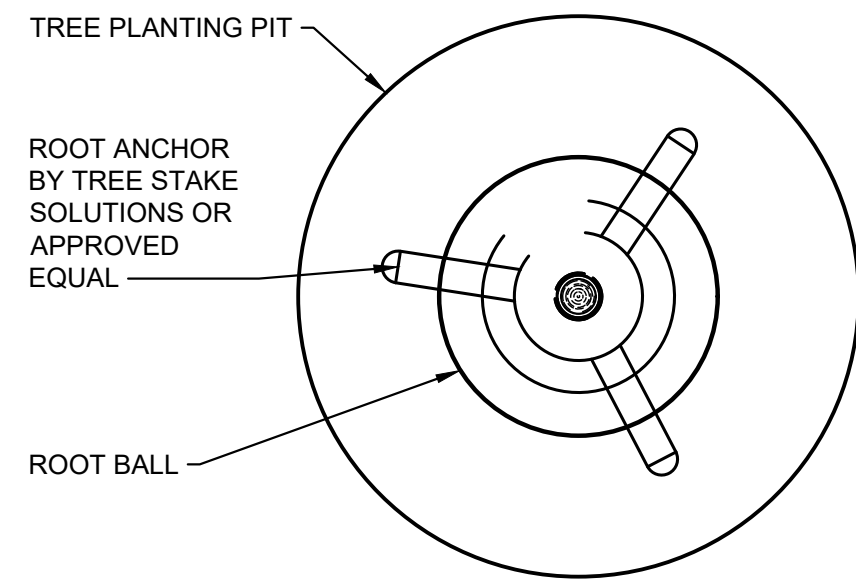
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**CONSTRUCTION LAYOUT & PLANTING PLAN 'G'
STA. 39+50 TO STA. 47+65**

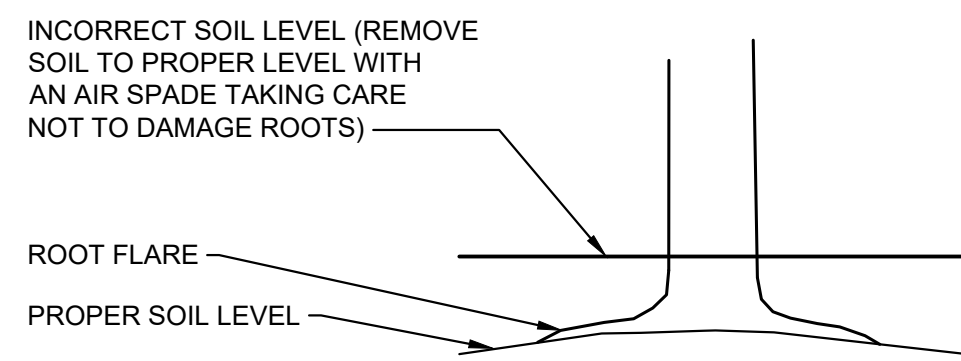
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				
ES	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	WACO	MCLENNAN	20
SF	CONTROL	SECTION	JOB	
CW	0055	15	082	



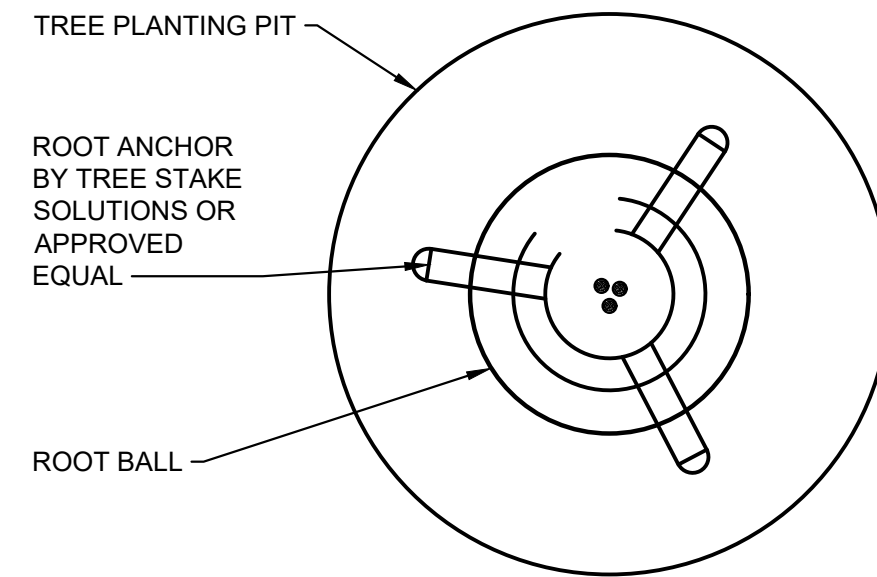
TYPICAL TREE CALIPER MEASUREMENTS (ANSI-Z60.1)			
TREE TYPE	TREE CALIPER SPECIFIED	METHOD OF CALIPER MEASUREMENT	DISTANCE (D)
SINGLE TRUNK	LESS THAN 4 1/2"	CALIPER AT (D) ABOVE SOIL LINE	0'-6"
SINGLE TRUNK	4 1/2" AND LARGER	CALIPER AT (D) ABOVE SOIL LINE	1'-0"



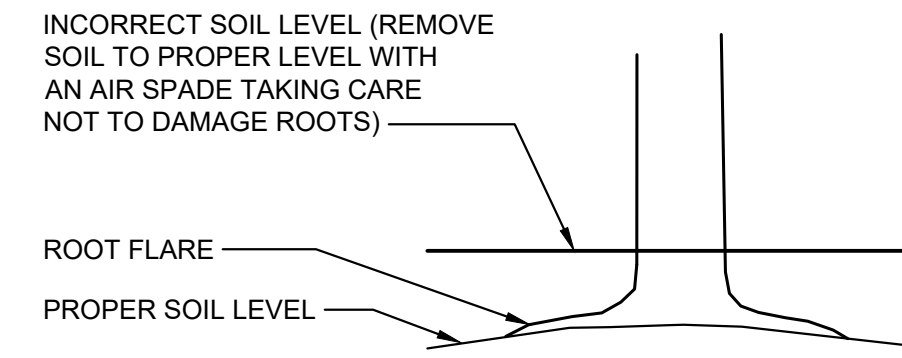
PLAN VIEW



EXPOSED COVERED ROOT FLARE



PLAN VIEW



EXPOSED COVERED ROOT FLARE

* AFTER PLANTING, PRUNE ONLY CROSSING BRANCHES, BROKEN BRANCHES, DEAD BRANCHES AND/OR BRANCHES THAT POSE A HAZARD TO PARK USERS/PEDESTRIANS OR CLEARANCE OBSTRUCTIONS AT PARKING AND ALONG ROADWAYS.

TREE MUST BE PLANTED SUCH THAT THE ROOT FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL. TREES WHERE THE ROOT FLARE IS NOT VISIBLE WILL BE REJECTED.

ROOT ANCHOR OR APPROVED EQUAL, PROVIDE AND INSTALL THE APPROPRIATE SIZE STAKE AS RECOMMENDED BY THE MANUFACTURER.

1/2 ROOT BALL WIDTH (MINIMUM)

3" SHREDDED HARDWOOD MULCH. MULCH SHALL NOT BE PILED AROUND TRUNK, ROOT FLARE SHALL BE VISIBLE.

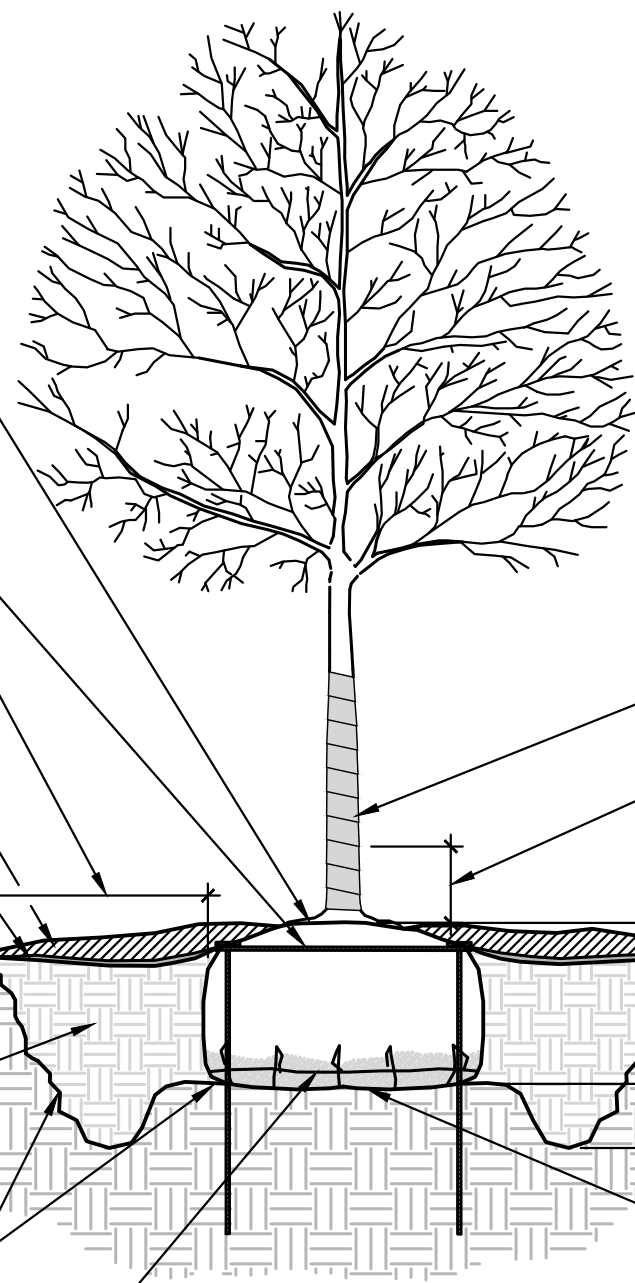
1" COMPOST, AS SPEC'D

BACKFILL PLANTING PIT WITH NATIVE TOPSOIL AND AMENDMENT AS SPECIFIED; MIX SOIL THOROUGHLY PRIOR TO BACKFILLING. SATURATE WITH WATER TO ELIMINATE VOIDS AND ENSURE FULL CONTACT WITH ROOT BALL.

UNDISTURBED SOIL

SCARIFY BOTTOM AND SIDES OF PLANTING PIT.

CUT AWAY AND REMOVE ALL GALVANIZED WIRE BASKET, TWINE, ROPE AND BURLAP FROM THE TOP TWO-THIRDS OF THE ROOT BALL BEFORE BACKFILLING THE PLANTING PIT. ALL TWINE, ROPE AND BURLAP MUST BE BIODEGRADABLE.



NOTES:

- TOP OF ROOT BALL SHALL BE TWO-INCHES (2") ABOVE FINISHED GRADE. ROOT FLARE MUST BE VISIBLE AFTER PLANTING AND MULCHING.
- DO NOT CONSTRUCT A WATER BASIN AROUND THE PLANTING PIT.
- DO NOT PILE MULCH AROUND THE TREE TRUNK.
- ROOT BOUND TREES WILL NOT BE ACCEPTED.
- TREES PLANTED TOO LOW, OR WITH THE ROOT FLARE COVERED, WILL NOT BE ACCEPTED.
- APPLY TREE WRAPPING MATERIAL ON SMOOTH BARKED TREES (i.e. MAPLES & RED OAK) INSTALLED DURING THE SPRING SEASON. WRAP TRUNK FROM GUYING STRAPS TO THE ROOT BALL. USE A WATERPROOF TAPE OR ADHESIVE TO AFFIX THE PRODUCT TO ITSELF. TREE WRAP IS TO BE REMOVED BY THE CONTRACTOR AT THE END OF OCTOBER THAT SAME YEAR.
- TREE WRAP SHALL BE CLARK'S TREE WRAP BY WALTER E. CLARK & SON, INC. OR APPROVED EQUAL.
- TREE STAKING IS TO BE REMOVED BY THE CONTRACTOR AFTER ONE (1) YEAR.
- REFERENCE PLANS AND PROJECT MANUAL FOR SPECIFICATIONS DEFINING SIZE, TYPE, QUALITY, ETC.

CLARK'S TREE WRAP AS NOTED, OR APPROVED EQUAL, SEE NOTES FOR MORE INFORMATION.

TREE CALIPER MEASURED ABOVE TOP OF ROOT BALL (6" FOR TREES LESS OR EQUAL TO 4" CALIPER AND 12" FOR TREES GREATER THAN 4" CALIPER)

SEE NOTES

ROOT BALL TO BE PLACED ON UNDISTURBED SOIL. IF THE PLANTING PIT IS OVER-EXCAVATED, ADD FILL TO ACHIEVE THE PROPER PLANTING DEPTH AND COMPACT PRIOR TO PLANTING

NOTE: UPON COMPLETION OF ROUGH GRADING THE CONTRACTOR SHALL DIG TEST TREE PITS ACROSS THE SITE. THE TEST PITS WILL BE FILLED WITH WATER AND OBSERVED FOR DRAINAGE. IF THE PIT HOLDS WATER FOR GREATER THAN 24 HOURS THE TREE LOCATIONS AND/OR SPECIES WILL BE REVISED.

* AFTER PLANTING, PRUNE ONLY CROSSING BRANCHES, BROKEN BRANCHES, DEAD BRANCHES AND/OR BRANCHES THAT POSE A HAZARD TO PARK USERS/PEDESTRIANS OR CLEARANCE OBSTRUCTIONS AT PARKING AND ALONG ROADWAYS.

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ROOT ANCHOR OR APPROVED EQUAL, PROVIDE AND INSTALL THE APPROPRIATE SIZE STAKE AS RECOMMENDED BY THE MANUFACTURER.

1/2 ROOT BALL WIDTH (MINIMUM)

3" SHREDDED HARDWOOD MULCH. MULCH SHALL NOT BE PILED AROUND TRUNK, ROOT FLARE SHALL BE VISIBLE.

1" COMPOST, AS SPEC'D.

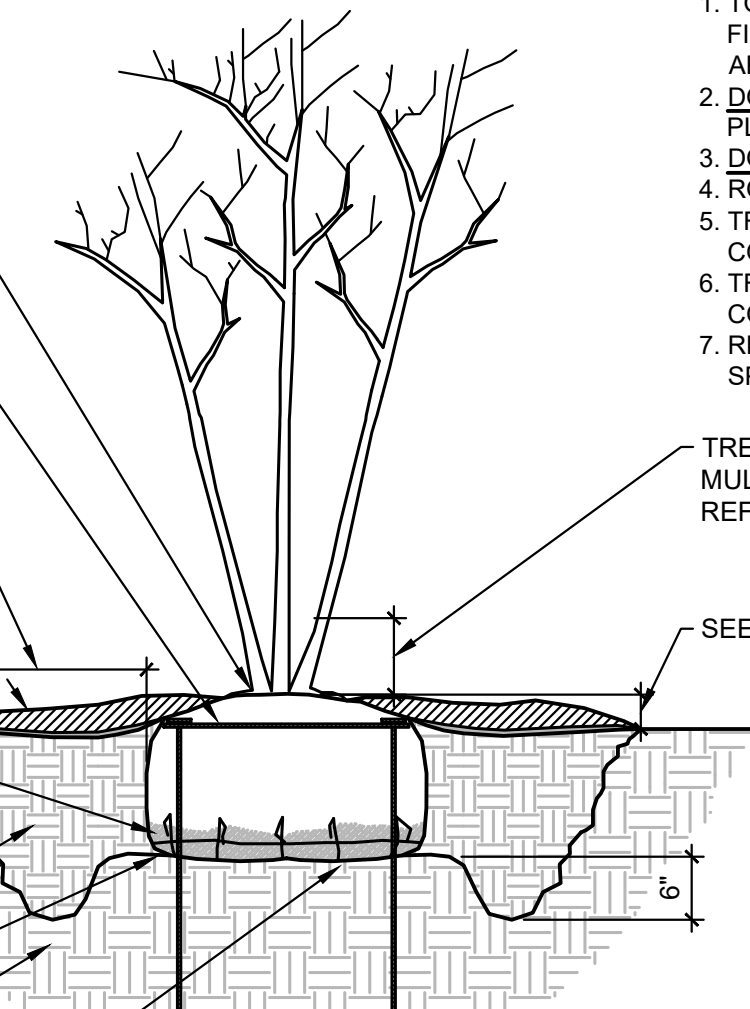
CUT AWAY AND REMOVE ALL GALVANIZED WIRE BASKET, TWINE, ROPE AND BURLAP FROM THE TOP TWO-THIRDS OF THE ROOT BALL BEFORE BACKFILLING THE PLANTING PIT. ALL TWINE, ROPE AND BURLAP MUST BE BIODEGRADABLE.

BACKFILL PLANTING PIT WITH NATIVE SOIL AND AMENDMENT AS SPEC'D. MIX SOIL THOROUGHLY PRIOR TO BACKFILLING. SATURATE WITH WATER TO ELIMINATE VOIDS AND ENSURE FULL CONTACT WITH ROOT BALL.

SCARIFY BOTTOM AND SIDES OF PLANTING PIT.

UNDISTURBED SOIL

ROOT BALL TO BE PLACED ON UNDISTURBED SOIL. IF THE PLANTING PIT IS OVER-EXCAVATED, ADD FILL TO ACHIEVE THE PROPER PLANTING DEPTH AND TAMP THE SOIL TO COMPACT PRIOR TO PLANTING.



NOTES:

- TOP OF ROOT BALL SHALL BE TWO-INCHES (2") ABOVE FINISHED GRADE. ROOT FLARE MUST BE VISIBLE AFTER PLANTING AND MULCHING.
- DO NOT CONSTRUCT A WATER BASIN AROUND THE PLANTING PIT.
- DO NOT PILE MULCH AROUND THE TREE TRUNK.
- ROOT BOUND TREES WILL NOT BE ACCEPTED.
- TREES PLANTED TOO LOW, OR WITH THE ROOT FLARE COVERED, WILL NOT BE ACCEPTED.
- TREE STAKING IS TO BE REMOVED BY THE CONTRACTOR AFTER ONE (1) YEAR.
- REFERENCE PLANS AND PROJECT MANUAL FOR SPECIFICATIONS DEFINING SIZE, TYPE, QUALITY, ETC.

TREE CALIPER FOR MULTI-TRUNK TREE TO REFER TO ANSI-Z60.1

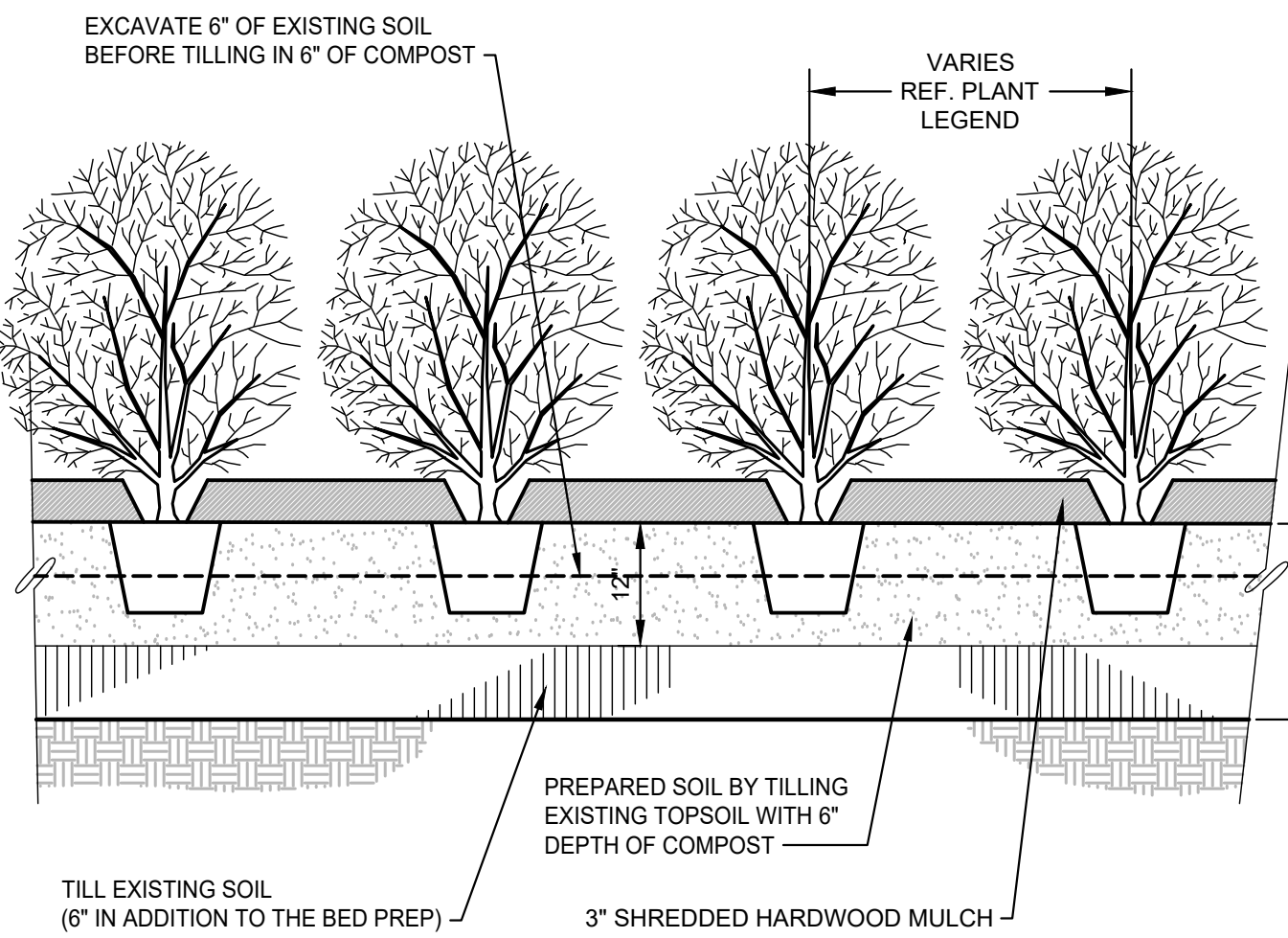
NOTE: UPON COMPLETION OF ROUGH GRADING THE CONTRACTOR SHALL DIG TEST TREE PITS ACROSS THE SITE. THE TEST PITS WILL BE FILLED WITH WATER AND OBSERVED FOR DRAINAGE. IF THE PIT HOLDS WATER FOR GREATER THAN 24 HOURS THE TREE LOCATIONS AND/OR SPECIES WILL BE REVISED.

1 TREE PLANTING AND BELOW GRADE STAKING 1/2"=1'-0"

L_PLANTING_TREE_STANDARD

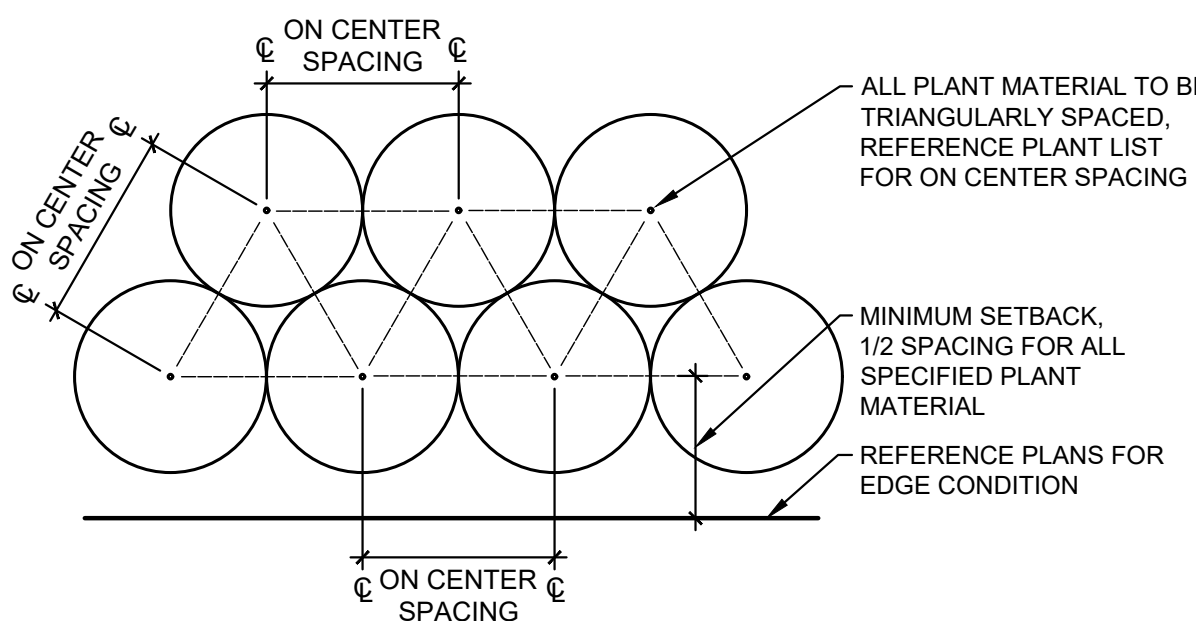
2 MULTI-TRUNK TREE PLANTING 1/2"=1'-0"

L_PLANTING_TREE_MULTITRUNK 2



NOTES:

- APPLY PRE-EMERGENT HERBICIDE AS SPEC'D.
- SMALL ROOTS (1/4" OR LESS) THAT GROW AROUND, UP, OR DOWN THE ROOT BALL PERIPHERY ARE CONSIDERED A NORMAL CONDITION IN CONTAINER PRODUCTION AND ARE ACCEPTABLE; HOWEVER, THEY SHOULD BE ELIMINATED AT THE TIME OF PLANTING. ROOTS ON THE PERIPHERY CAN BE REMOVED AT THE TIME OF PLANTING. (SEE ROOT BALL SHAVING CONTAINER DETAIL)
- PLANT ID TAG TO REMAIN
- ON EACH PLANT UNTIL INSPECTED BY LANDSCAPE ARCHITECT. TO BE REMOVED AFTER SUBSTANTIAL COMPLETION ACCEPTANCE
- CONTAINER TO BE TOTALLY REMOVED ON CONTAINER-GROWN STOCK. REMOVE ANY WRAPPINGS, TWINE, WIRES, ETC.
- BACKFILL TO BE TAMPED AND WATER SETTLED TO REMOVE ALL POCKETS OF AIR. TOP OF PLANT ROOT BALL TO BE FLUSH WITH ADJACENT FINISH GRADE.
- MULCH SHALL BE SHREDDED HARDWOOD MULCH, FREE OF STICKS, CLAY OR OTHER FOREIGN MATERIAL.



4 PLANT SPACING DIAGRAM NOT TO SCALE

L_PLANT_SPACING

3 SHRUB & ORNAMENTAL GRASS PLANTING 1"=1'-0"

L_PLANTING_SHRUB



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LANDSCAPE DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	ES	STATE	DISTRICT	COUNTY
CHECK	SF	TEXAS	WACO	MCLENNAN
CHECK	CW	CONTROL	SECTION	JOB
	0055	15	082	22A

SURFACE COLORING MATERIALS

- A. PIGMENTED MINERAL DRY-SHAKE HARDENER: FACTORY-PACKAGED DRY COMBINATION OF PORTLAND CEMENT, GRADED QUARTZ AGGREGATE, COLORING PIGMENTS, AND PLASTICIZING ADMIXTURE. USE COLORING PIGMENTS THAT ARE FINELY GROUND, NONFADING MINERAL OXIDES INTERGROUND WITH CEMENT.
- AVAILABLE PRODUCTS:
 - BOMANITE CORPORATION; COLOR HARDENER.
 - SCOFIELD, L. M. COMPANY; LITHOCHROME COLOR HARDENER.
 - APPROVED EQUAL.
 - PIGMENTED-POWDER RELEASE AGENT: FACTORY-PACKAGED DRY COMBINATION OF SURFACE-CONDITIONING AND DISPERSING AGENTS INTERGROUND WITH COLORING PIGMENTS THAT FACILITATES RELEASE OF STAMP MATS. USE COLORING PIGMENTS THAT ARE FINELY GROUND, NONFADING MINERAL OXIDES INTERGROUND WITH CEMENT.
 - AVAILABLE PRODUCTS:
 - BOMANITE CORPORATION; RELEASE AGENT.
 - SCOFIELD, L. M. COMPANY; ANTIQUING RELEASE.
 - APPROVED EQUAL.
 - LIQUID RELEASE AGENT: MANUFACTURER'S STANDARD CLEAR, EVAPORATING FORMULATION THAT FACILITATES RELEASE OF STAMP MATS AND TEXTURE ROLLERS.
 - AVAILABLE PRODUCTS:
 - SCOFIELD, L. M. COMPANY; LITHOTEX LIQUID RELEASE.
 - APPROVED EQUAL.

IMPRINTING TOOLS

- A. STAMP MATS: SEMIRIGID POLYURETHANE MATS WITH PROJECTING TEXTURED AND RIDGED UNDERSIDE CAPABLE OF IMPRINTING TEXTURE AND JOINT PATTERNS ON PLASTIC CONCRETE.
- AVAILABLE MANUFACTURERS:
 - BOMANITE CORPORATION.
 - SCOFIELD, L. M. COMPANY.
 - APPROVED EQUAL.
 - TEXTURE:
 - ENGLISH SLATE.
 - SLATE REGULAR.

CURING AND SEALING MATERIALS

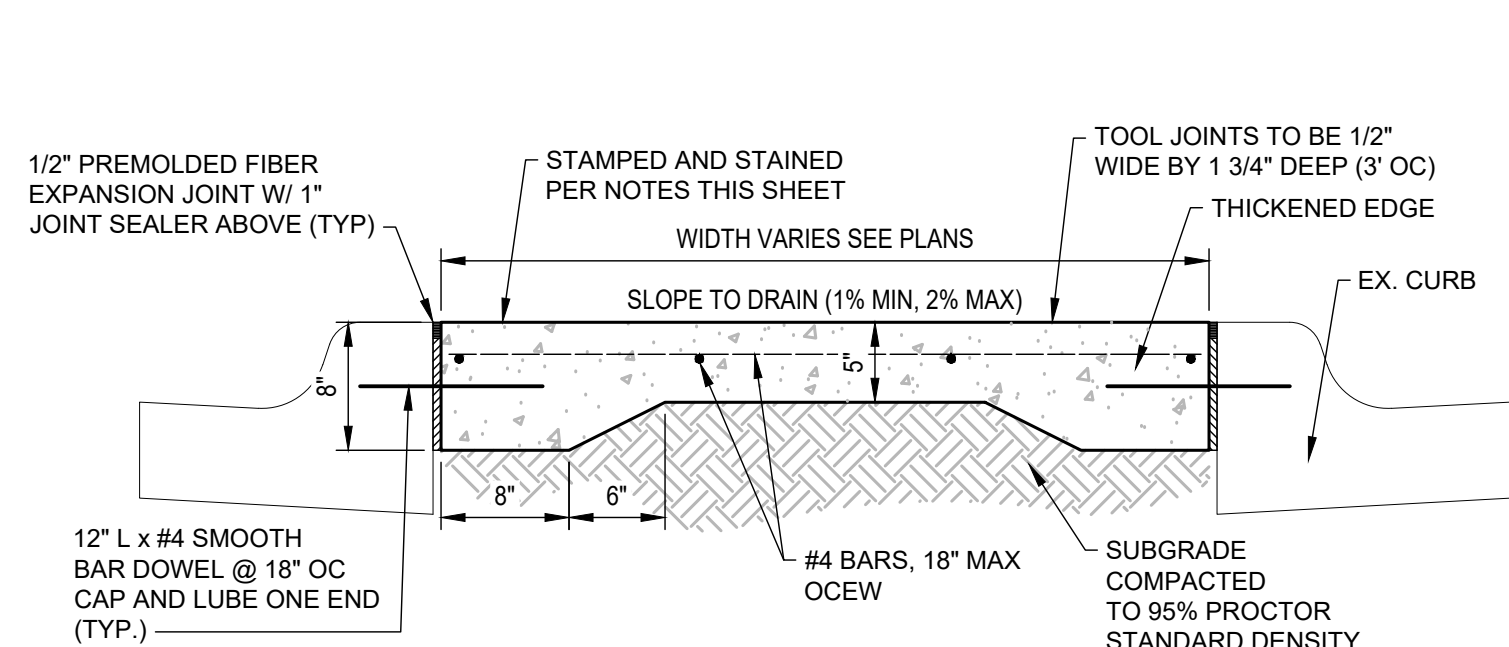
- A. WATERBORNE, MEMBRANE-FORMING CURING COMPOUND: ASTM C 309, TYPE 1, CLASS B, SPECIFICALLY MANUFACTURED FOR COLORED CONCRETE.
- FOR INTEGRALLY COLORED CONCRETE, CURING COMPOUND SHALL BE PIGMENTED TYPE APPROVED BY COLORING ADMIXTURE MANUFACTURER.
 - FOR CONCRETE INDICATED TO BE SEALED, CURING COMPOUND SHALL BE COMPATIBLE WITH SEALER.
 - PRODUCTS:
 - INCRETE SYSTEMS INC.; CURE CRETE.
 - CC CONSTRUCTION PRODUCTS; COLOR CURE.
- B. CLEAR ACRYLIC SEALER: MANUFACTURER'S STANDARD WATERBORNE, MEMBRANE-FORMING, MEDIUM-GLOSS, ACRYLIC COPOLYMER EMULSION SOLUTION, SPECIFICALLY MANUFACTURED FOR COLORED CONCRETE, CONTAINING NOT LESS THAN 15 PERCENT SOLIDS BY VOLUME, NONYELLOWING, AND UV RESISTANT.
- PRODUCTS:
 - BOMANITE CORPORATION; SEALER - WATER-BASED (C-27).
 - SCOFIELD, L. M. COMPANY; CEMENTONE CLEAR SEALER.
 - W. R. MEADOWS; TEAH.
 - APPROVED EQUAL.

SEALER

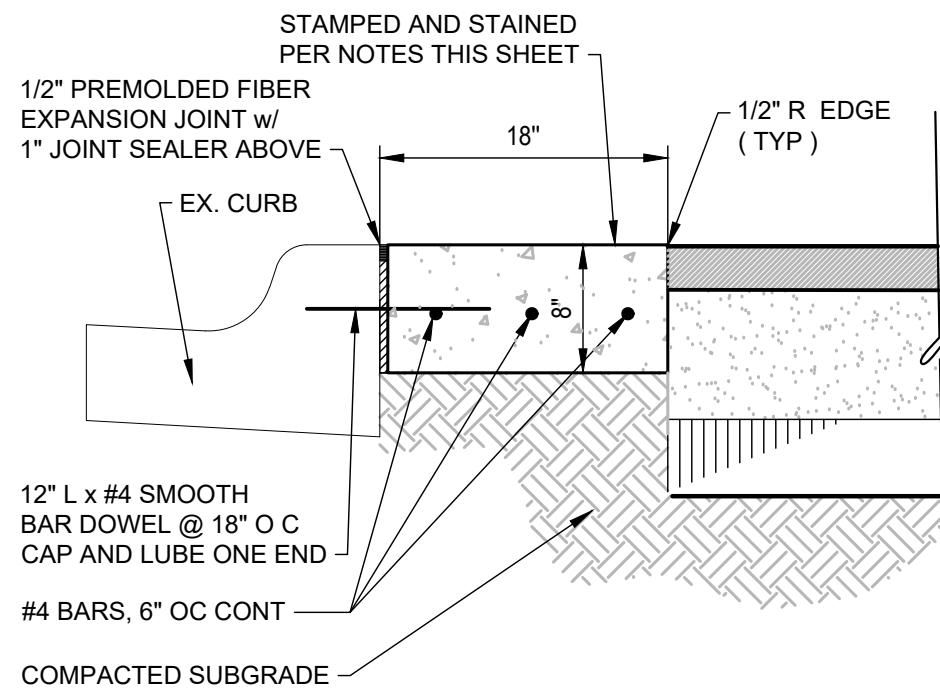
- A. CLEAR ACRYLIC SEALER: APPLY UNIFORMLY IN TWO COATS IN CONTINUOUS OPERATIONS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. ALLOW FIRST COAT TO DRY BEFORE APPLYING SECOND COAT, AT 90-DEGREES TO THE DIRECTION OF THE FIRST COAT USING SAME APPLICATION METHODS AND RATES.
- BEGIN SEALING DRY SURFACE NO SOONER THAN 3 DAYS AFTER CONCRETE PLACEMENT.
 - MIX SLIP-RESISTANT ADDITIVE THOROUGHLY IN SEALER BEFORE APPLICATION ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. STIR SEALER OCCASIONALLY DURING APPLICATION TO MAINTAIN EVEN DISTRIBUTION OF ADDITIVE.

DECORATIVE CEMENT CONCRETE PAVEMENT SCHEDULE

- A. MEDIAN NOSE STAMPED CONCRETE PAVING - COLORING METHOD: COLORED AND PIGMENTED MINERAL DRY-SHAKE HARDENER AS INDICATED BY MANUFACTURER'S DESIGNATION. MATCH ARCHITECT'S SAMPLE AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE. COLOR TO BE APPROVED IN SUBMITTAL AND MOCKUPS. ALLOW FOR FOUR (4) COLOR MOCKUPS.
- COLOR:
 - COLOR HARDENER - CARMEL (CH-00047-60) BOMANITE CHART
 - RELEASE AGENT - HARVEST AMBER (CH-00119-60) BOMANITE CHART
 - PATTERN:
 - PATTERN SHALL BE SLATE REGULAR TEXTURE
- B. 18" EDGE STAMPED CONCRETE PAVING - COLORING METHOD: COLORED AND PIGMENTED MINERAL DRY-SHAKE HARDENER AS INDICATED BY MANUFACTURER'S DESIGNATION. MATCH ARCHITECT'S SAMPLE AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE. COLOR TO BE APPROVED IN SUBMITTAL AND MOCKUPS. ALLOW FOR FOUR (4) COLOR MOCKUPS.
- COLOR:
 - COLOR HARDENER - GUNMETAL GRAY BOMANITE CHART
 - RELEASE AGENT - COOL MAUVE BOMANITE CHART
 - PATTERN:
 - PATTERN SHALL BE SLATE REGULAR TEXTURE WITH TOOL JOINTS



1 MEDIAN NOSE STAMPED CONCRETE PAVING
1"=1'-0" PVMT_CONC_STAMPED

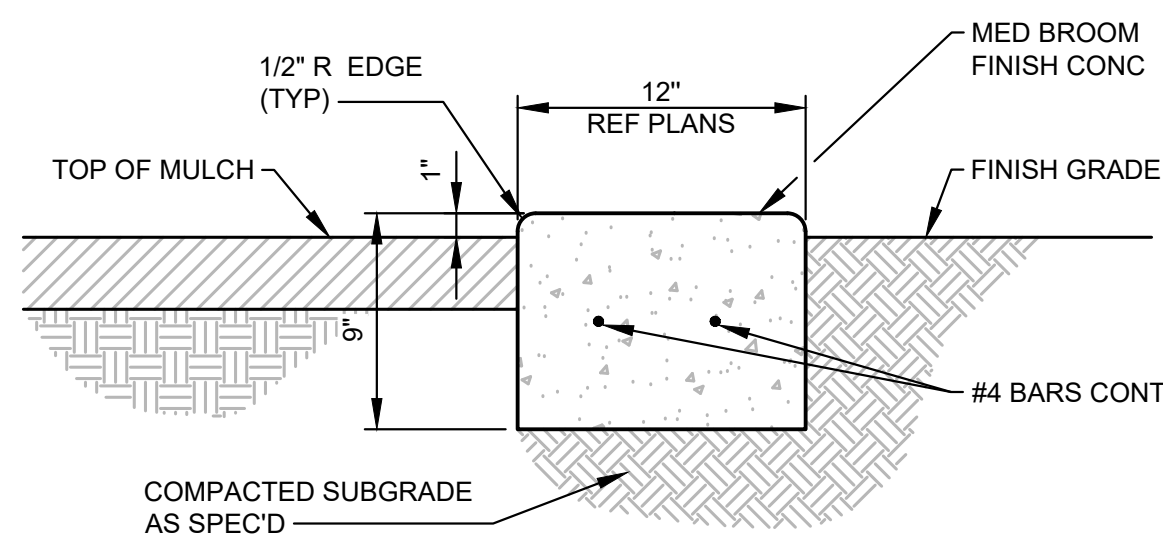


2 18" EDGE STAMPED CONCRETE PAVING
1"=1'-0" PVMT_CONC_STAMPED_EDGE

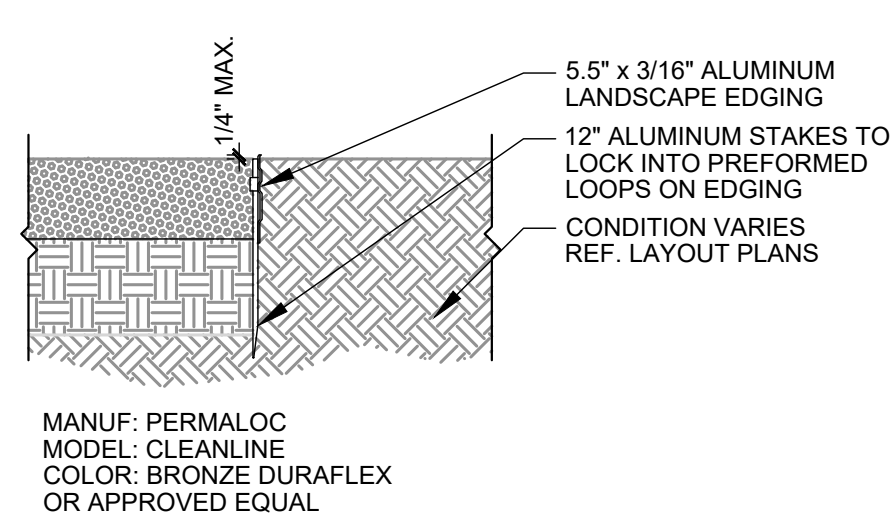
- NOTES:
- 18" STAMPED CONCRETE EDGE TO BE DOWELED INTO EDGE OF EXISTING CURB
 - CONTROL JOINTS TO BE 1/8" WIDE X 1 3/4" DEEP, SPACED 3' OC
 - DOWELED EXPANSION JOINTS TO BE 50' O C, AND AT ENDS.
 - DOWELS TO BE 12" L W/ #4 SMOOTH BAR DOWEL, CAP AND LUBE ONE END. JOINT IS TO BE 1/2" PREMOLDED FIBER EXPANSION JOINT MATERIAL WITH 1" JOINT SEALER ABOVE.

NOTE:

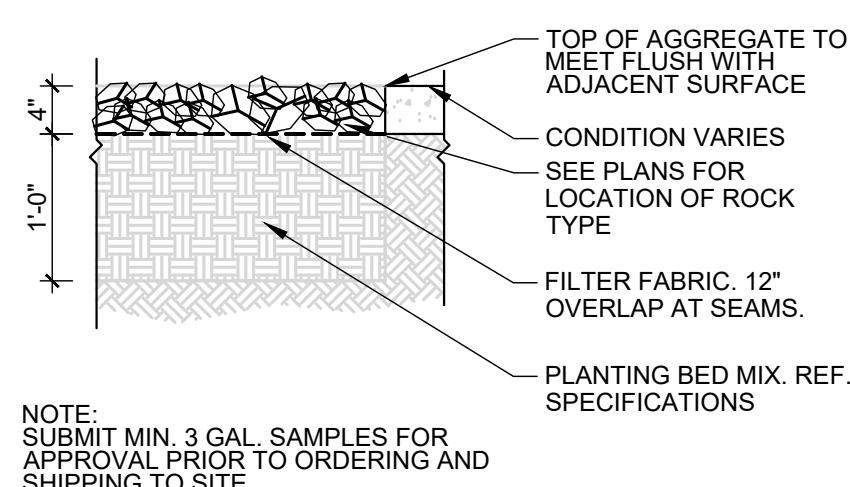
- MOWSTRIP TO BE DOWELED INTO EDGE OF CONC PAVING
- CONTROL JOINTS TO BE 1/8" WIDE X 1 3/4" DEEP, SPACED 5' OC
- DOWELED EXPANSION JOINTS TO BE 50' OC, AND AT ENDS. DOWELED EXPANSION JOINTS TO BE 12" L W/ #4 SMOOTH BAR DOWEL, CAP AND LUBE ONE END. JOINT IS TO BE 1/2" PREMOLDED FIBER EXPANSION JOINT MATERIAL WITH 1" JOINT SEALER ABOVE.
- CONTRACTOR SHALL STAKE LAYOUT OF EDGING FOR APPROVAL BY ARCHITECT / ENGINEER



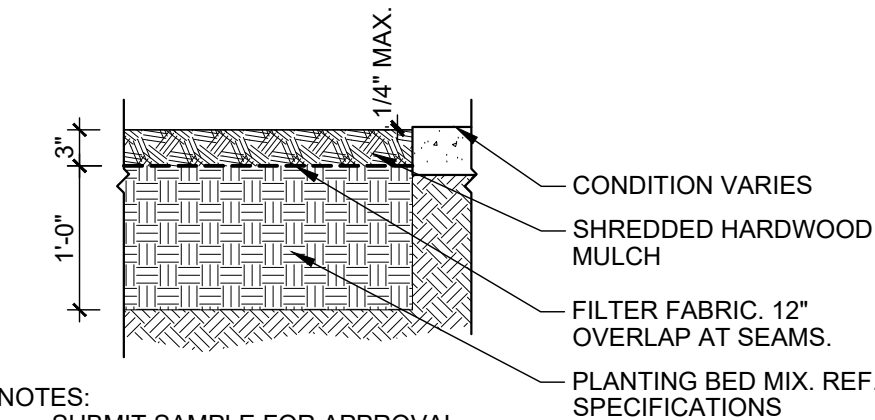
3 12" CONCRETE LANDSCAPE EDGE
1 1/2"=1'-0" PVMT_CONC_MOWSTRIP_LANDSCAPE_EDGE



4 METAL LANDSCAPE EDGE
1"=1'-0" L_ALUMINUM_EDGING



5 DECORATIVE ROCK MULCH
3/4"=1'-0" L_RIVER_ROCK



6 SHREDDED HARDWOOD MULCH
3/4"=1'-0" L_MULCH

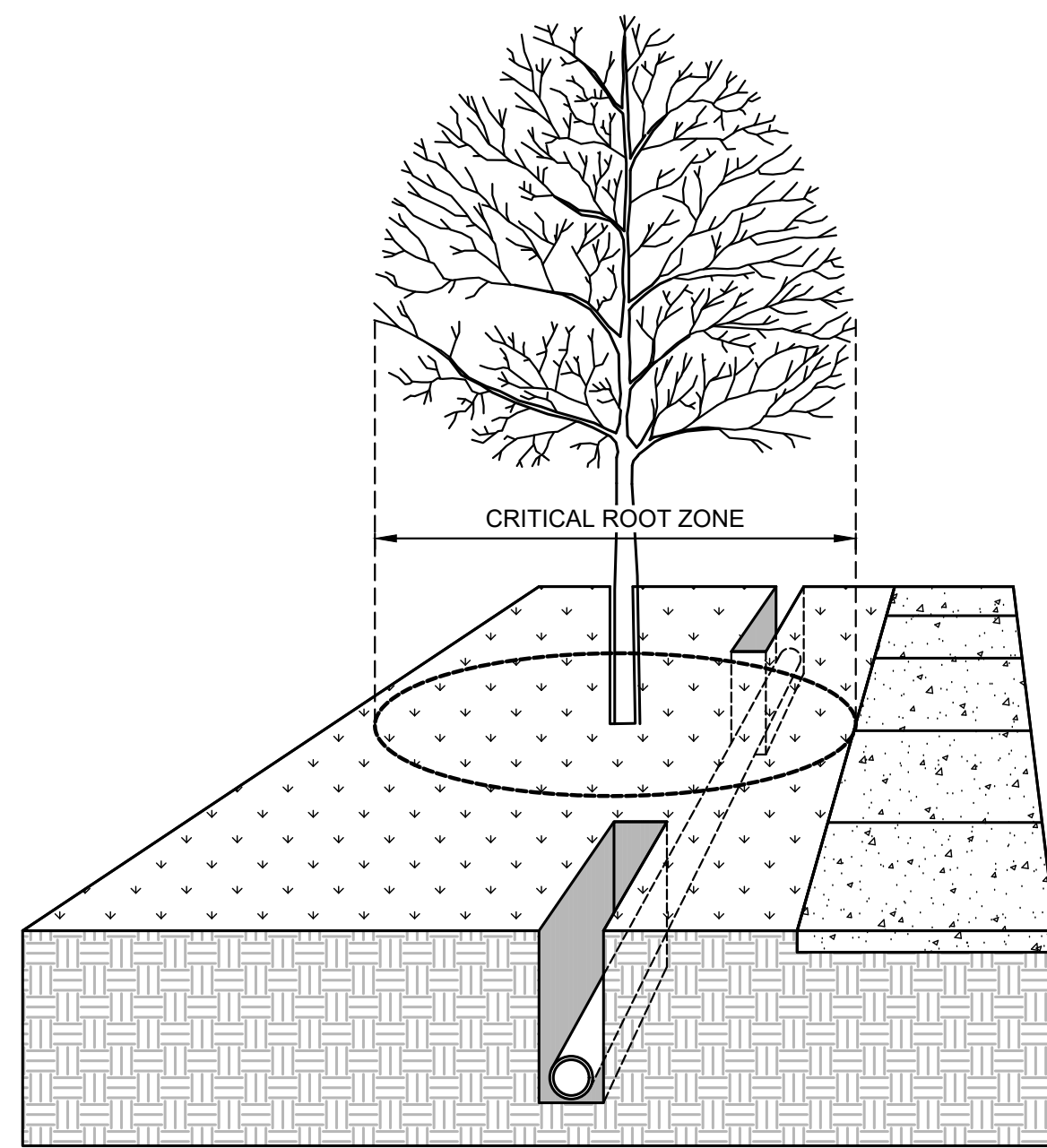


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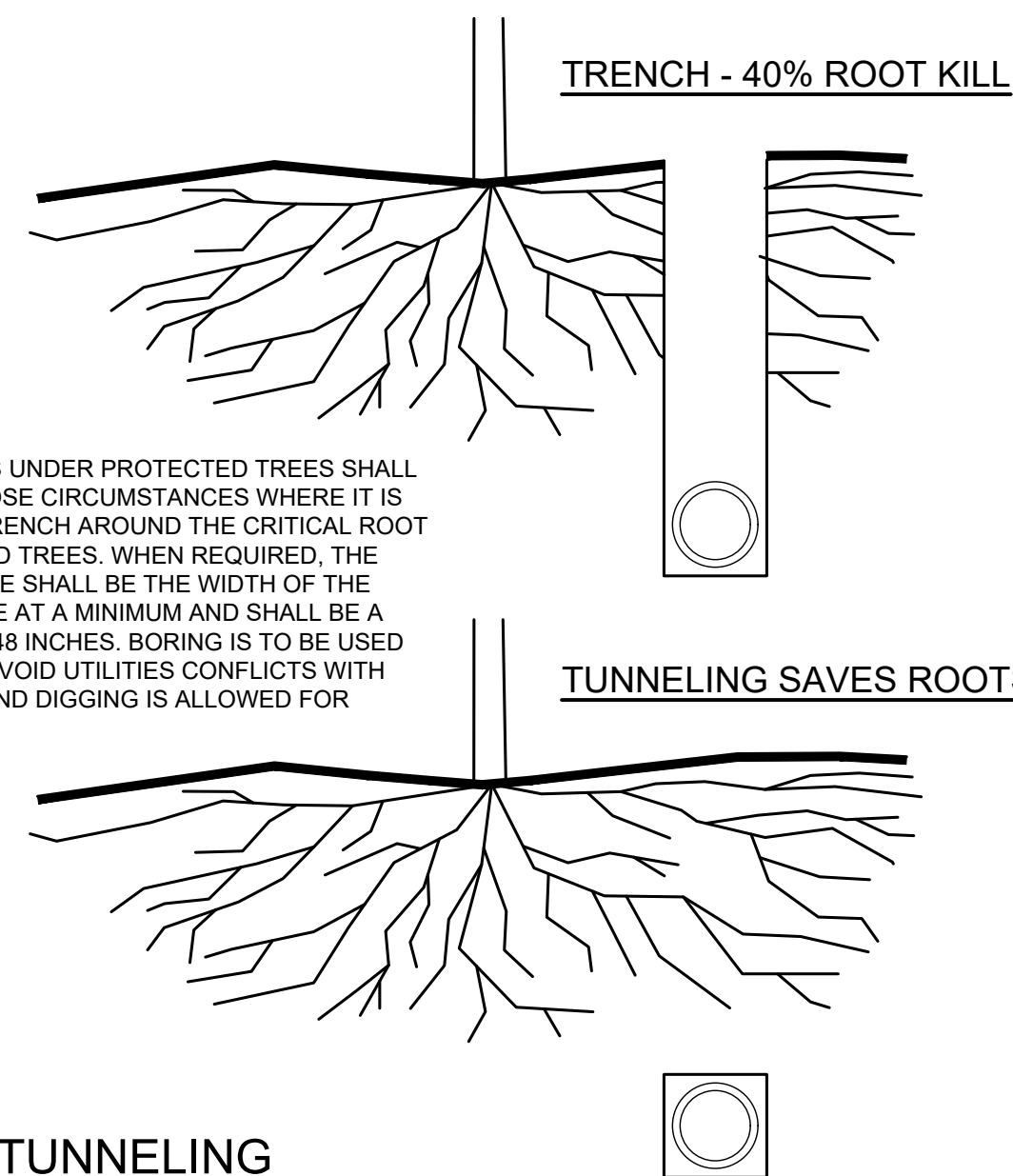
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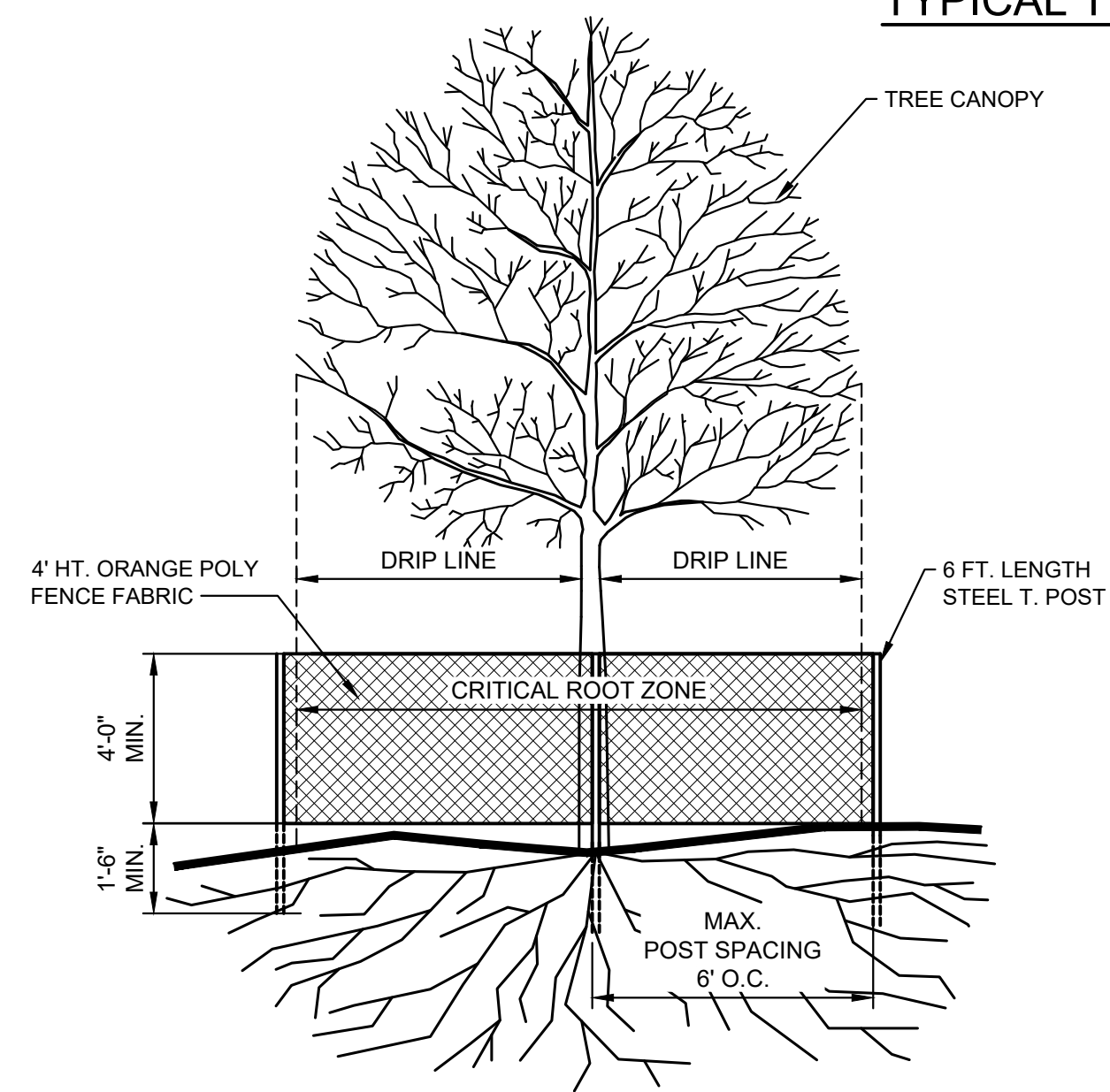
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ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	22B
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	



TYPICAL TREE BORING AND TUNNELING



BORING:
BORING OF UTILITIES UNDER PROTECTED TREES SHALL BE REQUIRED IN THOSE CIRCUMSTANCES WHERE IT IS NOT POSSIBLE TO TRENCH AROUND THE CRITICAL ROOT ZONE OF PROTECTED TREES. WHEN REQUIRED, THE LENGTH OF THE BORE SHALL BE THE WIDTH OF THE CRITICAL ROOT ZONE AT A MINIMUM AND SHALL BE A MINIMUM DEPTH OF 48 INCHES. BORING IS TO BE USED FOR MAINLINES TO AVOID UTILITIES CONFLICTS WITH THE ROOT ZONE. HAND DIGGING IS ALLOWED FOR LATERAL LINES.



CRITICAL ROOT ZONE:

THE AREA OF UNDISTURBED NATURAL SOIL AROUND A TREE DEFINED BY A CONCENTRIC CIRCLE WITH A RADIUS TO THE DISTANCE FROM THE TREE TRUNK TO THE OUTERMOST PORTION OF THE DRIP LINE.

DRIP LINE:

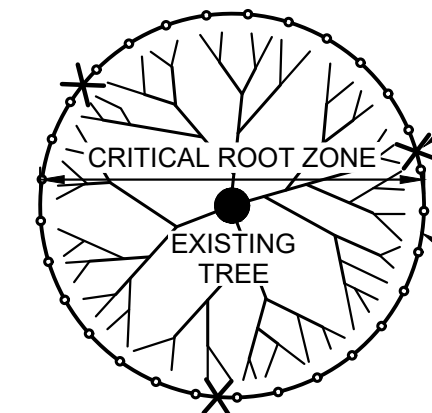
A VERTICAL LINE RUN THROUGH THE OUTERMOST PORTION OF THE CANOPY OF A TREE AND EXTENDING TO THE GROUND.

THE FOLLOWING ACTIVITIES ARE PROHIBITED WITHIN THE LIMITS OF THE CRITICAL ROOT ZONE OF ANY TREES TO REMAIN.

1. MATERIAL STORAGE: NO STORAGE OR PLACEMENT OF MATERIALS INTENDED FOR USE IN CONSTRUCTION OR WASTE MATERIALS ACCUMULATED DUE TO EXCAVATION OR DEMOLITION SHALL BE PLACED WITHIN THE LIMITS OF THE CRITICAL ROOT ZONE OF ANY PROTECTED TREE. EQUIPMENT CLEANING LIQUID DISPOSAL: NO EQUIPMENT SHALL BE CLEANED OR OTHER LIQUIDS, INCLUDING, WITHOUT LIMITATION, PAINT, OIL, SOLVENTS, ASPHALT, CONCRETE, MORTAR OR SIMILAR MATERIALS DEPOSITED OR ALLOWED TO FLOW INTO THE CRITICAL ROOT ZONE OF A PROTECTED TREE.
2. TREE ATTACHMENTS: NO SIGNS, WIRES OR OTHER ATTACHMENTS, OTHER THAN THOSE OF A PROTECTIVE NATURE, SHALL BE ATTACHED TO ANY PROTECTED TREE.
3. VEHICULAR TRAFFIC: NO VEHICULAR AND/OR CONSTRUCTION EQUIPMENT TRAFFIC OR PARKING SHALL TAKE PLACE WITHIN THE CRITICAL ROOT ZONE OF ANY PROTECTED TREE OTHER THAN ON EXISTING STREET PAVEMENT. THIS RESTRICTION DOES NOT APPLY TO SINGLE INCIDENT ACCESS WITHIN THE CRITICAL FOR PURPOSES OF ESTABLISHING THE BUILDING PAD AND ASSOCIATED LOT GRADING, VEHICULAR TRAFFIC NECESSARY FOR ROUTINE UTILITY MAINTENANCE, EMERGENCY RESTORATION OF UTILITY SERVICE, OR ROUTINE MOWING OPERATIONS.
4. GRADE CHANGES: NO GRADE CHANGES SHALL BE ALLOWED WITHIN MORE THAN 75 PERCENT OF THE LIMITS OF THE CRITICAL ROOT ZONE OF ANY PROTECTED TREE UNLESS ADEQUATE PROTECTIVE CONSTRUCTION METHODS ARE APPROVED IN ADVANCE IN WRITING BY THE ADMINISTRATIVE OFFICIAL.
5. IMPERVIOUS PAVING: NO PAVING WITH ASPHALT, CONCRETE OR OTHER IMPERVIOUS MATERIAL SHALL BE PLACED WITHIN THE LIMITS OF THE CRITICAL ROOT ZONE.
6. NO HEAVY EQUIPMENT, INCLUDING BUT NOT LIMITED TO TRUCKS, TRACTORS, TRAILERS, BULLDOZERS, BOBCAT TRACTORS, TRENCHERS, COMPRESSORS, AND HOISTS, SHALL BE ALLOWED INSIDE THE DRIP-LINE OF ANY PROTECTED TREE ON ANY CONSTRUCTION SITE WITHOUT PRIOR WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
7. ROOT PRUNING: ALL ROOTS TWO INCHES OR LARGER IN DIAMETER WHICH ARE EXPOSED AS A RESULT OF TRENCHING OR OTHER EXCAVATION SHALL BE CUT OFF SQUARE WITH A SHARP MEDIUM TOOTH SAW AND COVERED WITH PRUNING COMPOUND WITHIN TWO HOURS OF INITIAL EXPOSURE.

PROTECTIVE FENCING:

ORANGE VINYL CONSTRUCTION FENCING, CHAIN LINK FENCING, SNOW FENCING OR OTHER SIMILAR FENCING AT LEAST FOUR FEET (4') HIGH AND SUPPORTED AT A MAXIMUM OF TEN-FOOT (10') INTERVALS BY APPROVED METHOD SUFFICIENT ENOUGH TO KEEP THE FENCE UPRIGHT AND IN PLACE. THIS FENCING SHALL BE OF A HIGHLY VISIBLE MATERIAL.



TYP. STEEL DRIVE IN POSTS & NON-CLIMB FENCE MAY BE SQUARE OR ROUND. POSTS TO BE APPROX. 8' O.C. LOCATE FENCE NO CLOSER TO TREE TRUNK THAN DRIP LINE.

FENCING SHALL BE HIGH DENSITY POLYETHYLENE SAFETY FENCING, MIN. 4 FEET, BRIGHT ORANGE AS MFG'D BY SA-SO OR APPROVED EQUAL.

TREE PROTECTION NOTES

1. MINIMUM OF 75 PERCENT OF THE CRITICAL ROOT ZONE (CRZ) OF EACH TREE SHALL BE PRESERVED AT NATURAL GRADE, WITH NATURAL GROUND COVER.
2. NO DISTURBANCE OF THE SOIL GREATER THAN 4 INCHES WILL BE LOCATED CLOSER TO THE TREE AND ONE-HALF CRITICAL ROOT ZONE RADIUS DISTANCE.
3. THE CONTRACTOR SHALL INSTALL AND MAINTAIN THE SPECIFIED TREE PROTECTION FENCING.
4. NO DUMPING OF SOIL, DEBRIS OR CHEMICALS OR STORAGE OF ANY EQUIPMENT, MATERIALS OR DEBRIS SHALL BE ALLOWED WITHIN THE DRIP LINE OF ANY TREE, OTHER THAN ON EXISTING OR PROPOSED PAVEMENT.
5. NO JOB SHACKS, TRAILERS OR OTHER TEMPORARY FACILITIES SHALL BE ALLOWED TO BE PLACED UNDER THE DRIP LINE OF ANY PROTECTED TREE, OTHER THAN ON EXISTING OR PROPOSED PAVEMENT.
6. NO VEHICLES OF ANY KIND SHALL BE ALLOWED TO PARK WITHIN THE DRIP LINE OF ANY TREE, OTHER THAN ON EXISTING OR PROPOSED PAVEMENT.



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LANDSCAPE DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	22C
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CW				

1 TREE PROTECTION
1/2"=1'-0"

L_TREE_PROTECTION

2 TREE PROTECTION FENCE
1 1/2"=1'-0"

L_TREE_PROTECTION_FENCE

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	ARC	PSI	GPM	RADIUS	DETAIL
	RAIN BIRD I/M-PCA GLOBE 1IN. 1-1/2IN. 2IN. ELECTRIC REMOTE CONTROL SMART VALVE, GLOBE. W/ FACTORY INSTALLED I/M-SOL.	18	4131		RAIN BIRD 1804-SAM-1400 FLOOD 1402 FLOOD BUBBLER ON FLEXIBLE RISER	26	360	20	0.5	3'	2/31
	RAIN BIRD 44-NP 1IN. BRASS QUICK-COUPING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 2-PIECE BODY.	9	6/31		AREA TO RECEIVE DRIPLINE RAIN BIRD XPCV-06-16 XPCV ON SURFACE LANDSCAPE DRIPLINE WITH A HEAVY-DUTY 3.5 PSI CHECK VALVE, 0.6 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN, INSTALL WITH XF INSERT FITTINGS.	37,193 L.F.		20			10/31
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4IN. - 3IN.	4	2/31		IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	3,254 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		IRRIGATION MAINLINE: PVC SCHEDULE 40	4,541 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		PIPE SLEEVE: PVC CLASS 200 SDR 21 INSTALL PVC CONDUIT/SLEEVE BY BORING BELOW EXISTING PAVING AS PER TX-007 ITEM 018 AND 476, TYP	882.6 L.F.					N/A
	WEATHERMATIC SL4824-1YR-BDL SMARTLINE 24-ZONE CONTROLLER, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 800 MHZ RANGE, SMARTLINK AIRCARD WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY, SWAT TESTED	1	8/31		Valve Callout # - Valve Number # - Valve GPM # - Valve Size						
	WEATHERMATIC SLPED-4800 STAINLESS STEEL ECONOMY PEDESTAL MOUNT FOR SL4800 SERIES, CAM STYLE KEYLOCK, WEATHER-RESISTANT	1	8/31								
	WEATHERMATIC SLW WIRED WEATHER SENSOR FOR ET BASED WATERING, 35FT. OF CABLE PROVIDED	1	N/A								
	RAIN BIRD QKCHK-120M BASKET FILTER WITH 1IN. INLET/OUTLET W/ 120 MESH STAINLESS STEEL SCREEN+ GREEN	15	4/31								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION, SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION, SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

IRRIGATION ITEMS 'A'

ITEM	DESCRIPTION	QTY	UNIT
618-6034	CONDUIT (PVC) (SCH 40) (4") (BORE)	200	LF



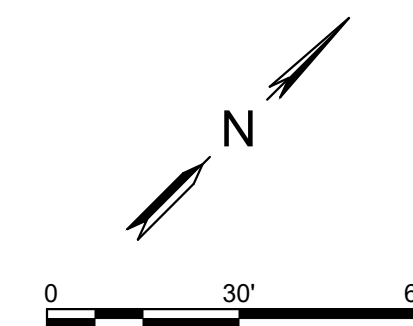
MATCHLINE - STA 5+50



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IRRIGATION PLAN 'A'
STA. 0+00 TO STA. 5+50



DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	23
CHECK	SF	CONTROL	SECTION	
CHECK	CW	0055	15 082	

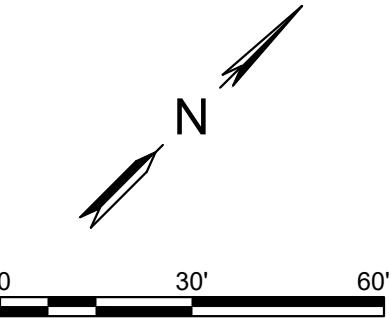
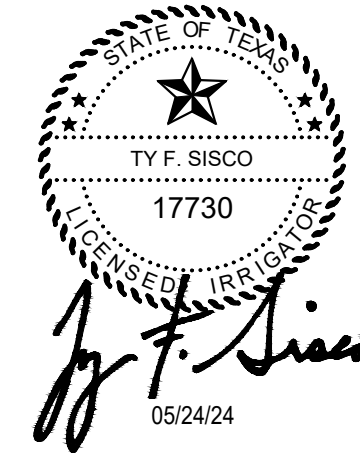
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	ARC	PSI	GPM	RADIUS	DETAIL
	RAIN BIRD IVM-PGA GLOBE 1IN. 1-1/2IN. 2IN. ELECTRIC REMOTE CONTROL SMART VALVE, GLOBE. W/ FACTORY INSTALLED IVM-SOL.	18	4131		RAIN BIRD 1804-SAM-1400 FLOOD 1402 FLOOD BUBBLER ON FLEXIBLE RISER	26	360	20	0.5	3'	2/31
	RAIN BIRD 44-NP 1IN. BRASS QUICK-COUPLING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 2-PIECE BODY.	9	6/31		AREA TO RECEIVE DRIPLINE RAIN BIRD XFDV-06-16 XFV ON SURFACE LANDSCAPE DRIPLINE WITH A HEAVY-DUTY 3.5 PSI CHECK VALVE, 0.6 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN, INSTALL WITH XF INSERT FITTINGS.	37,193		20			10/31
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4IN. - 3IN.	4	2/31		IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	3,254					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		IRRIGATION MAINLINE: PVC SCHEDULE 40	4,541					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		PIPE SLEEVE: PVC CLASS 200 SDR 21 INSTALL PVC CONDUIT/SLEEVE BY BORING BELOW EXISTING PAVING AS PER TP-307 ITEM 018 AND 476. TYP	882.6					N/A
	WEATHERMATIC SL4824-1YR-BDL SMARTLINE 24-ZONE CONTROLLER, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 800 MHz RANGE, SMARTLINK AIRCARD WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY. SWAT TESTED	1	8/31		Valve Callout						
	WEATHERMATIC SLPED-4800 STAINLESS STEEL ECONOMY PEDESTAL MOUNT FOR SL4800 SERIES, CAM STYLE KEYLOCK, WEATHER-RESISTANT	1	8/31		Valve Number						
	WEATHERMATIC SLWS WIRED WEATHER SENR FOR ET BASED WATERING, 35FT. OF CABLE PROVIDED	1	N/A		Valve GPM						
	RAIN BIRD QKCHK-120M BASKET FILTER WITH 1IN. INLET/OUTLET W/ 120 MESH STAINLESS STEEL SCREEN+ GREEN	15	4/31		Valve Size						
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

IRRIGATION ITEMS 'B'

ITEM	DESCRIPTION	QTY	UNIT
618-6034	CONDUIT (PVC) (SCH 40) (4") (BORE)	170	LF



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IRRIGATION PLAN 'B'
STA. 5+50 TO STA. 10+00

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	24
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	

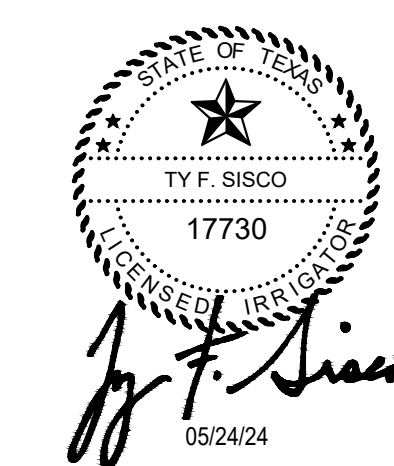
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	ARC	PSI	GPM	RADIUS	DETAIL
	RAIN BIRD I/M-PCA GLOBE 1/2", 1-1/2", 2" IN. ELECTRIC REMOTE CONTROL SMART VALVE, GLOBE. W/ FACTORY INSTALLED I/M-SOL.	18	4131		RAIN BIRD 1804-SAM-1400 FLOOD 1402 FLOOD BUBBLER ON FLEXIBLE RISER	26	360	20	0.5	3'	2/31
	RAIN BIRD 44-NP 1/2" BRASS QUICK-COUPING VALVE, WITH CORROSION RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 2-PIECE BODY.	9	6/31		AREA TO RECEIVE DRIPLINE RAIN BIRD XFDV-06-16 XFCV ON SURFACE LANDSCAPE DRIPLINE WITH A HEAVY-DUTY 3.5 PSI CHECK VALVE, 0.6 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN, INSTALL WITH XF INSERT FITTINGS.	37,193	L.F.		20		10/31
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4" - 3".	4	2/31		IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	3,254	L.F.				9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		IRRIGATION MAINLINE: PVC SCHEDULE 40	4,541	L.F.				9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		PIPE SLEEVE: PVC CLASS 200 SDR 21 INSTALL PVC CONDUIT/SLEEVE BY BORING BELOW EXISTING PAVING AS PER TX-DOT ITEM 018 AND 476, TYP	882.6	L.F.				N/A
	WEATHERMATIC SL4824-1YR-BDL SMARTLINE 24-ZONE CONTROLLER, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 800 MHz RANGE, SMARTLINK AIRCARD WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY. SWAT TESTED	1	8/31		Valve Callout						
	WEATHERMATIC SLPED-4800 STAINLESS STEEL ECONOMY PEDESTAL MOUNT FOR SL4800 SERIES, CAM STYLE KEYLOCK, WEATHER-RESISTANT	1	8/31		Valve Number						
	WEATHERMATIC SLW1 WIRED WEATHER SENS FOR ET BASED WATERING, 35FT. OF CABLE PROVIDED	1	N/A		Valve GPM						
	RAIN BIRD QKCHK-120M BASKET FILTER WITH 1/2" INLET/OUTLET W/ 120 MESH STAINLESS STEEL SCREEN= GREEN	15	4/31		Valve Size						
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								

EXISTING UTILITIES
 CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

IRRIGATION ITEMS 'C'

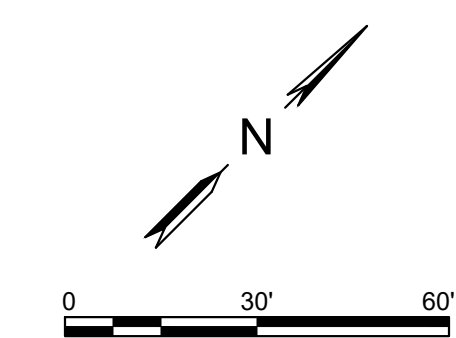
ITEM	DESCRIPTION	QTY	UNIT
618-6034	CONDUIT (PVC) (SCH 40) (4") (BORE)	130	LF



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IRRIGATION PLAN 'C'
 STA. 10+00 TO STA. 18+25



DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				SHEET NO.
ES	STATE	DISTRICT	COUNTY	
CHECK	TEXAS	WACO	MCLENNAN	
SF	CONTROL	SECTION	JOB	25
CHECK	0055	15	082	
CW				

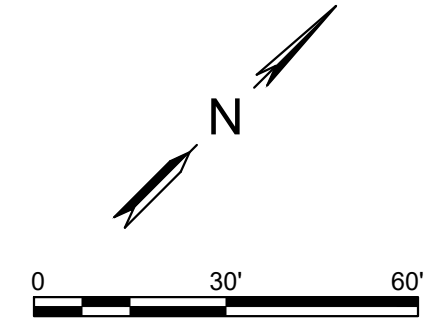
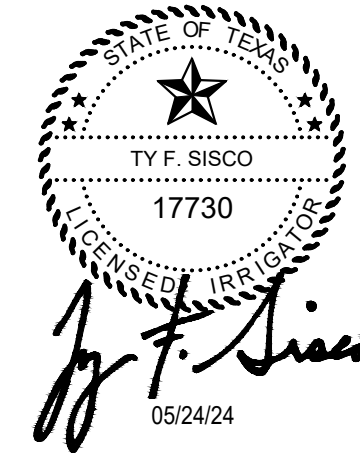
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	ARC	PSI	GPM	RADIUS	DETAIL
	RAIN BIRD IVM-PGA GLOBE 1IN. 1-1/2IN. 2IN. ELECTRIC REMOTE CONTROL SMART VALVE, GLOBE. W/ FACTORY INSTALLED IVM-SOL.	18	4131		RAIN BIRD 1804-SAM-1400 FLOOD 1402 FLOOD BUBBLER ON FLEXIBLE RISER	26	360	20	0.5	3'	2/31
	RAIN BIRD 44-NP 1IN. BRASS QUICK-COUPLING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 2-PIECE BODY.	9	6/31		AREA TO RECEIVE DRIPLINE RAIN BIRD XFDV-06-16 XFDV ON-SURFACE LANDSCAPE DRIPLINE WITH A HEAVY-DUTY 3.5 PSI CHECK VALVE, 0.6 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN, INSTALL WITH XF INSERT FITTINGS.	37,193 L.F.					10/31
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4IN. - 3IN.	4	2/31		IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	3,254 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		IRRIGATION MAINLINE: PVC SCHEDULE 40	4,541 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		PIPE SLEEVE: PVC CLASS 200 SDR 21 INSTALL PVC CONDUIT/SLEEVE BY BORING BELOW EXISTING PAVING AS PER TP-307 ITEM 018 AND 476, TYP.	882.6 L.F.					N/A
	WEATHERMATIC SL4824-1YR-BDL SMARTLINE 24-ZONE CONTROLLER, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 800 MHz RANGE, SMARTLINK AIRCARD WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY. SWAT TESTED	1	8/31		Valve Number Valve GPM Valve Size						
	WEATHERMATIC SLPED-4800 STAINLESS STEEL ECONOMY PEDESTAL MOUNT FOR SL4800 SERIES, CAM STYLE KEYS, WEATHER-RESISTANT	1	8/31								
	WEATHERMATIC SLWS WIRED WEATHER SENSOR FOR ET BASED WATERING, 35FT. OF CABLE PROVIDED	1	N/A								
	RAIN BIRD QKCHK-120M BASKET FILTER WITH 1IN. INLET/OUTLET W/ 120 MESH STAINLESS STEEL SCREEN+ GREEN	15	4/31								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP.	1	N/A								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP.	1	N/A								

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

IRRIGATION ITEMS 'D'

ITEM	DESCRIPTION	QTY	UNIT
618-6034	CONDUIT (PVC) (SCH 40) (4") (BORE)	65	LF



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IRRIGATION PLAN 'D'
STA. 18+25 TO STA. 25+75

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	26
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CW				

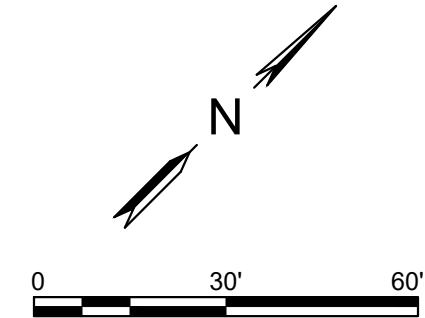
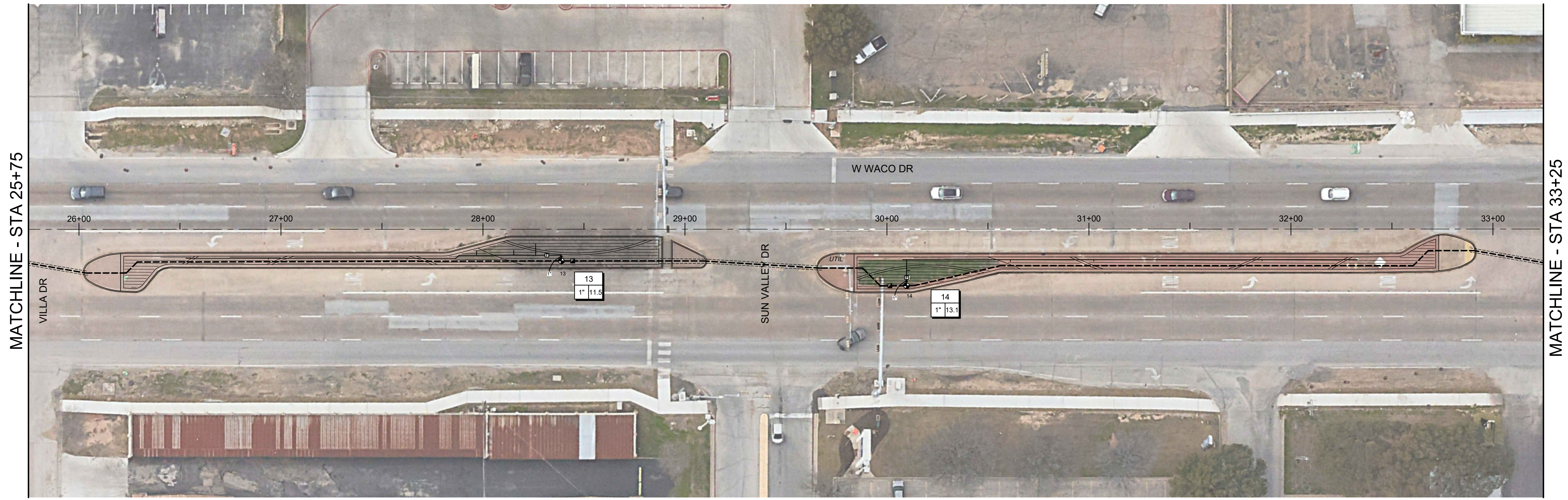
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	ARC	PSI	GPM	RADIUS	DETAIL
	RAIN BIRD I/M-PGA GLOBE 1/4", 1-1/2", 2"IN. ELECTRIC REMOTE CONTROL SMART VALVE, GLOBE, W/ FACTORY INSTALLED I/M-SOL	18	4131		RAIN BIRD 1804-SAM-1400 FLOOD 1402 FLOOD BUBBLER ON FLEXIBLE RISER	26	360	20	0.5	3'	2/31
	RAIN BIRD 44-NP 1/4" BRASS QUICK-COUPING VALVE, WITH CORROSION RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 2-PIECE BODY.	9	6/31		AREA TO RECEIVE DRIPLINE RAIN BIRD XPCV-06-10 XPCV ON SURFACE LANDSCAPE DRIPLINE WITH A HEAVY-DUTY 3.5 PSI CHECK VALVE, 0.6 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN, INSTALL WITH XF INSERT FITTINGS.	37,193		20			10/31
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4IN. - 3IN.	4	2/31		IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	3,254					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		IRRIGATION MAINLINE: PVC SCHEDULE 40	4,541					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		PIPE SLEEVE: PVC CLASS 200 SDR 21 INSTALL PVC CONDUIT/SLEEVE BY BORING BELOW EXISTING PAVING AS PER TX-DOT ITEM 618 AND 476. TYP	882.6					N/A
	WEATHERMATIC SL4824-1YR-BDL SMARTLINE 24-ZONE CONTROLLER, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 800 MHz RANGE, SMARTLINK AIRCARD WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY. SWAT TESTED	1	8/31		Valve Callout						
	WEATHERMATIC SLPED-4800 STAINLESS STEEL ECONOMY PEDESTAL MOUNT FOR SL4800 SERIES, CAM STYLE KEYLOCK, WEATHER-RESISTANT	1	8/31		Valve Number						
	WEATHERMATIC SLWS WIRED WEATHER SENS FOR ET BASED WATERING, 35FT. OF CABLE PROVIDED	1	N/A		Valve GPM						
	RAIN BIRD QKCHK-120M BASKET FILTER WITH 1/4" INLET/OUTLET W/ 120 MESH STAINLESS STEEL SCREEN+ GREEN	15	4/31		Valve Size						
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP	1	N/A								

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

IRRIGATION ITEMS 'E'

ITEM	DESCRIPTION	QTY	UNIT
618-6034	CONDUIT (PVC) (SCH 40) (4") (BORE)	145	LF



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IRRIGATION PLAN 'E'
STA. 25+75 TO STA. 33+25

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				SHEET NO.
ES	STATE	DISTRICT	COUNTY	
CHECK	TEXAS	WACO	MCLENNAN	
SF	CONTROL	SECTION	JOB	27
CHECK	0055	15	082	
CW				

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	ARC	PSI	GPM	RADIUS	DETAIL
	RAIN BIRD IVM-PGA GLOBE 1IN. 1-1/2IN. 2IN. ELECTRIC REMOTE CONTROL SMART VALVE, GLOBE. W/ FACTORY INSTALLED IVM-SOL.	18	4131		RAIN BIRD 1804-SAM-1400 FLOOD 1402 FLOOD BUBBLER ON FLEXIBLE RISER	26	360	20	0.5	3'	2/31
	RAIN BIRD 44-NP 1IN. BRASS QUICK-COUPLING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 2-PIECE BODY.	9	6/31		AREA TO RECEIVE DRIPLINE RAIN BIRD XPCV-06-16 XPCV ON-SURFACE LANDSCAPE DRIPLINE WITH A HEAVY-DUTY 3.5 PSI CHECK VALVE, 0.6 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN, INSTALL WITH XF INSERT FITTINGS.	37,193 L.F.		20			10/31
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4IN. - 3IN.	4	2/31		IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	3,254 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		IRRIGATION MAINLINE: PVC SCHEDULE 40	4,541 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		PIPE SLEEVE: PVC CLASS 200 SDR 21 INSTALL PVC CONDUIT/SLEEVE BY BORING BELOW EXISTING PAVING AS PER TYPICAL ITEM 618 AND 476, TYP.	882.6 L.F.					N/A
	WEATHERMATIC SL4824-1YR-BDL SMARTLINE 24-ZONE CONTROLLER, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 800 MHz RANGE, SMARTLINK AIRCARD WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY. SWAT TESTED	1	8/31		Valve Callout						
	WEATHERMATIC SLPED-4800 STAINLESS STEEL ECONOMY PEDESTAL MOUNT FOR SL4800 SERIES, CAM STYLE KEYLOCK, WEATHER-RESISTANT	1	8/31		Valve Number						
	WEATHERMATIC SLWS WIRED WEATHER SENS FOR ET BASED WATERING, 35FT. OF CABLE PROVIDED	1	N/A		Valve GPM						
	RAIN BIRD QKCHK-120M BASKET FILTER WITH 1IN. INLET/OUTLET W/ 120 MESH STAINLESS STEEL SCREEN+ GREEN	15	4/31		Valve Size						
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP.	1	N/A								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP.	1	N/A								

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

IRRIGATION ITEMS 'F'

ITEM	DESCRIPTION	QTY	UNIT
618-6034	CONDUIT (PVC) (SCH 40) (4") (BORE)	115	LF



MATCHLINE - STA 33+25

MATCHLINE - STA 39+50

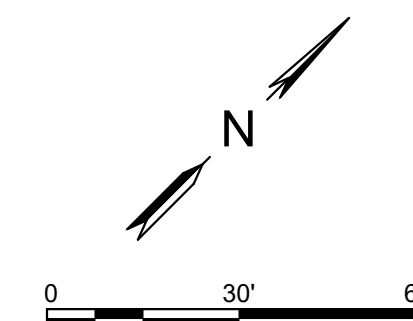


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IRRIGATION PLAN 'F'
STA. 33+25 TO STA. 39+50

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS				
ES	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	WACO	MCLENNAN	28
SF	CONTROL	SECTION	JOB	
CW	0055	15	082	



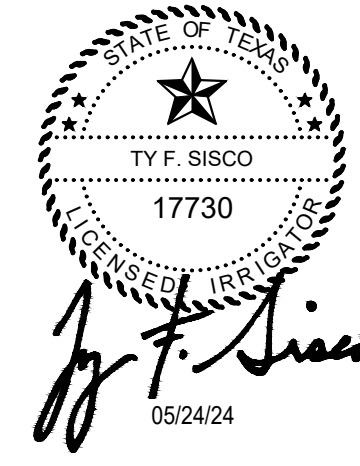
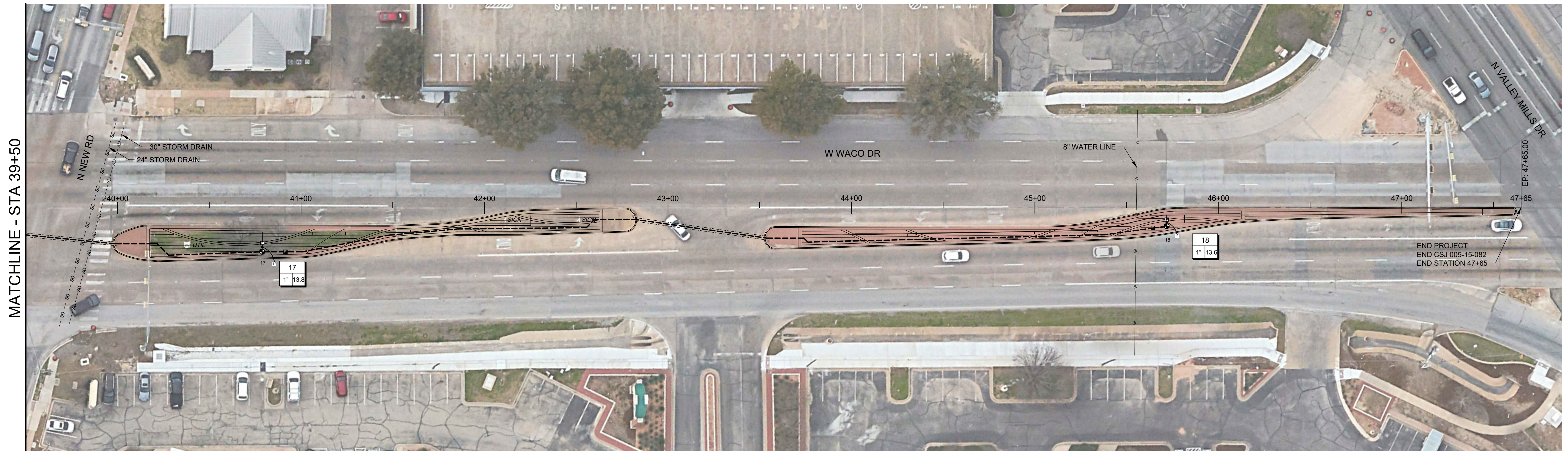
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	ARC	PSI	GPM	RADIUS	DETAIL
	RAIN BIRD I/M-PCA GLOBE 1IN. 1-1/2IN. 2IN. ELECTRIC REMOTE CONTROL SMART VALVE, GLOBE. W/ FACTORY INSTALLED I/M-SOL.	18	4131		RAIN BIRD 1804-SAM-1400 FLOOD 1402 FLOOD BUBBLER ON FLEXIBLE RISER	26	360	20	0.5	3'	2/31
	RAIN BIRD 44-NP 1IN. BRASS QUICK-COUPING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 2-PIECE BODY.	9	6/31		AREA TO RECEIVE DRIPLINE RAIN BIRD XPCV-06-16 XPCV ON-SURFACE LANDSCAPE DRIPLINE WITH A HEAVY-DUTY 3.5 PSI CHECK VALVE, 0.6 GPH EMITTERS AT 18" O.C. DRIPLINE LATERALS SPACED AT 18" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN, INSTALL WITH XF INSERT FITTINGS.	37,193 L.F.		20			10/31
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4IN. - 3IN.	4	2/31		IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	3,254 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		IRRIGATION MAINLINE: PVC SCHEDULE 40	4,541 L.F.					9/31
	WATTS 007 DOUBLE CHECK VALVE 1" INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND PROVIDE SUFFICIENT CLEARANCE TO FACILITATE TESTING	1	1/31		PIPE SLEEVE: PVC CLASS 200 SDR 21 INSTALL PVC CONDUIT/SLEEVE BY BORING BELOW EXISTING PAVING AS PER TP-307 ITEM 618 AND 476, TYP.	882.6 L.F.					N/A
	WEATHERMATIC SL4824-1YR-BDL SMARTLINE 24-ZONE CONTROLLER, INTERNAL 120VAC/230VAC TRANSFORMER, LARGE BACKLIT LCD DISPLAY, WIRELESS WEATHER SENSOR FOR ET BASED WATERING, 800 MHz RANGE, SMARTLINK AIRCARD WITH 1-YEAR SERVICE PLAN PLUS EXTENDED WARRANTY, SWAT TESTED	1	8/31		Valve Number Valve GPM Valve Size						
	WEATHERMATIC SLPED-4800 STAINLESS STEEL ECONOMY PEDESTAL MOUNT FOR SL4800 SERIES, CAM STYLE KEYLOCK, WEATHER-RESISTANT	1	8/31								
	WEATHERMATIC SLWS WIRED WEATHER SENS FOR ET BASED WATERING, 35FT. OF CABLE PROVIDED	1	N/A								
	RAIN BIRD QKCHK-120M BASKET FILTER WITH 1IN. INLET/OUTLET W/ 120 MESH STAINLESS STEEL SCREEN= GREEN	15	4/31								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION, SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP.	1	N/A								
	WATER METER 1" CONTRACTOR SHALL VERIFY LOCATION AND PRESSURE. REPORT RESULTS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION, SEE CITY OF WACO STANDARD DETAILS ON SHEET 30 IRRIGATION DETAILS, TYP.	1	N/A								

EXISTING UTILITIES
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH TOWN OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL CALL TEXAS 811, 1-800-344-8377.

IRRIGATION ITEMS 'G'

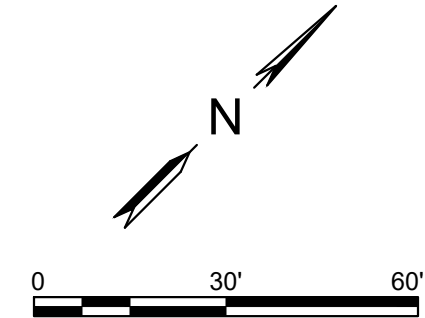
ITEM	DESCRIPTION	QTY	UNIT
618-6034	CONDUIT (PVC) (SCH 40) (4") (BORE)	75	LF



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IRRIGATION PLAN 'G'
STA. 39+50 TO STA. 47+65



DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	29
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CW				

IRRIGATION GENERAL NOTES	TCEQ GENERAL NOTES
TEXAS 811: CONTRACTOR SHALL COORDINATE WITH CITY OFFICIALS AND UTILITY COMPANIES IN LOCATING UTILITIES. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR LOSSES DUE TO DAMAGE TO UTILITIES. LOCATION FOR ALL UTILITIES SHOWN ON PLANS ARE APPROXIMATE, DIAL 811 FROM ANY PHONE IN TEXAS OR (800) 344-8377	THIS IRRIGATION SYSTEM HAS BEEN DESIGNED AND SHALL BE INSTALLED ACCORDING TO TEXAS ADMINISTRATIVE CODE, TITLE 30 - ENVIRONMENTAL QUALITY, PART 1 - TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ), CHAPTER 344 - LANDSCAPE IRRIGATION; THE FOLLOWING INFORMATION IS PROVIDED AS A COURTESY AND IS NOT A COMPLETE LIST OF TCEQ REQUIREMENTS
CONTRACTOR MUST VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION	THE MAXIMUM SPACING BETWEEN EMISSION DEVICES MUST NOT EXCEED THE MANUFACTURER'S PUBLISHED RADIUS OR SPACING OF THE DEVICE
THIS IRRIGATION SYSTEM HAS BEEN DESIGNED FOR THE USE OF POTABLE WATER	NEW IRRIGATION SYSTEMS SHALL NOT UTILIZE ABOVE-GROUND SPRAY EMISSION DEVICES IN LANDSCAPES THAT ARE LESS THAN 48 INCHES NOT INCLUDING THE IMPERVIOUS SURFACES IN EITHER LENGTH OR WIDTH AND WHICH CONTAIN IMPERVIOUS PEDESTRIAN OR VEHICULAR TRAFFIC SURFACES ALONG TWO OR MORE PERIMETERS
THIS IRRIGATION SYSTEM WAS DESIGNED FOR A MINIMUM STATIC PRESSURE AT THE POINT OF CONNECTION AS LISTED ON THE PLANS. THE CONTRACTOR SHALL VERIFY ACTUAL PSI AND DELIVER RESULTS TO THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION. IN THE EVENT THE ACTUAL PSI IS LESS THAN THE LISTED DESIGN PRESSURE, THE CONTRACTOR SHALL RECEIVE DIRECTION FROM THE LANDSCAPE ARCHITECT REGARDING DESIGN MODIFICATIONS IF NECESSARY	EMISSION DEVICES MUST BE INSTALLED TO OPERATE AT THE MINIMUM AND NOT ABOVE THE MAXIMUM SPRINKLER HEAD PRESSURE AS PUBLISHED BY THE MANUFACTURER FOR THE NOZZLE AND HEAD SPACING THAT IS USED
ALL IRRIGATION EQUIPMENT TO BE USED ON THE PROJECT SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO DELIVERY AND INSTALLATION	IRRIGATION SYSTEMS SHALL NOT SPRAY WATER OVER SURFACES MADE OF CONCRETE, ASPHALT, BRICK, WOOD, STONES SET WITH MORTAR, OR ANY OTHER IMPERVIOUS MATERIAL, SUCH AS, BUT NOT LIMITED TO, WALLS, FENCES, SIDEWALKS, STREETS, ETC
IRRIGATION PLAN SHOWN IS DIAGRAMMATIC IN NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DRIP EMITTERS AT EACH PLANT LOCATION AND FULL COVERAGE OF ALL TURF AREAS. ANY DISCREPANCIES IN THE PLANS SHOULD BE BROUGHT TO THE LANDSCAPE ARCHITECT'S ATTENTION PRIOR TO BID	ALL NEW IRRIGATION SYSTEMS THAT ARE INSTALLED USING PVC PIPE AND FITTINGS SHALL BE PRIMED WITH A COLORED PRIMER PRIOR TO APPLYING THE PVC CEMENT
WHEN BACKFLOW PREVENTION IS SHOWN TO BE INSTALLED BELOW GRADE, A WYE STRAINER THE SAME SIZE AS THE BACKFLOW DEVICE SHALL BE INSTALLED UPSTREAM	THE IRRIGATION SYSTEM MUST INCLUDE AN ISOLATION VALVE BETWEEN THE WATER METER AND THE BACKFLOW PREVENTION DEVICE
ALL FITTINGS AND NECESSARY EQUIPMENT REQUIRED TO MAKE THIS IRRIGATION SYSTEM OPERATE PROPERLY AND TO COMPLY WITH LOCAL AND STATE CODES ARE INCIDENTAL TO THESE PLANS AND ARE THE CONTRACTOR'S RESPONSIBILITY	WATER CONTAINED WITHIN THE PIPING OF AN IRRIGATION SYSTEM IS DEEMED TO BE NON-POTABLE. NO DRINKING OR DOMESTIC WATER USAGE, SUCH AS, BUT NOT LIMITED TO, FILLING SWIMMING POOLS OR DECORATIVE FOUNTAINS, SHALL BE CONNECTED TO AN IRRIGATION SYSTEM
CONTRACTOR WILL BE HELD LIABLE FOR GAINING ACCESS UNDER ALL PAVEMENTS, SLEEVES SHOWN ON THE PLANS SHOULD BE VERIFIED FOR ACCESSIBILITY AND PASSIBILITY BEFORE BID IS MADE	HOSE BIBS MUST BE INSTALLED USING A QUICK COUPLER KEY ON A QUICK COUPLER INSTALLED IN A COVERED PURPLE VALVE BOX AND THE HOSE BIB AND ANY HOSES CONNECTED TO THE BIB MUST BE LABELED "NON-POTABLE. NOT SAFE FOR DRINKING." AN ISOLATION VALVE MUST BE INSTALLED UPSTREAM OF A QUICK COUPLER CONNECTING A HOSE BIB TO AN IRRIGATION SYSTEM
IRRIGATION SLEEVES SHALL BE SIZED TWO FULL PIPE SIZES LARGER THAN PIPE INSTALLED INSIDE THE SLEEVE. FITTINGS SHALL BE INSTALLED INSIDE SLEEVES IF POSSIBLE. TAPE BOTH ENDS OF SLEEVES WITH TWO LAYERS OF DUCT TAPE	A LICENSED IRRIGATOR OR A LICENSED IRRIGATION TECHNICIAN SHALL BE ON-SITE AT ALL TIMES WHILE THE LANDSCAPE IRRIGATION SYSTEM IS BEING INSTALLED
THE CONTRACTOR SHALL LOCATE AND VERIFY EACH WATER TAP TO WHICH THIS THE IRRIGATION SYSTEM WILL CONNECT	UPON COMPLETION OF THE IRRIGATION SYSTEM, THE IRRIGATOR OR IRRIGATION TECHNICIAN WHO PROVIDED SUPERVISION FOR THE ON-SITE INSTALLATION SHALL BE REQUIRED TO COMPLETE FOUR ITEMS: (1) A FINAL "WALK THROUGH" WITH THE IRRIGATION SYSTEM'S OWNER OR THE OWNER'S REPRESENTATIVE TO EXPLAIN THE OPERATION OF THE SYSTEM; (2) THE MAINTENANCE CHECKLIST ON WHICH THE IRRIGATOR OR IRRIGATION TECHNICIAN SHALL OBTAIN THE SIGNATURE OF THE IRRIGATION SYSTEM'S OWNER OR OWNER'S REPRESENTATIVE AND SHALL SIGN, DATE, AND SEAL THE CHECKLIST; (3) A PERMANENT STICKER WHICH CONTAINS THE IRRIGATOR'S NAME, LICENSE NUMBER, COMPANY NAME, TELEPHONE NUMBER AND THE DATES OF THE WARRANTY PERIOD SHALL BE AFFIXED TO EACH AUTOMATIC CONTROLLER INSTALLED BY THE IRRIGATOR OR IRRIGATION TECHNICIAN; (4) THE IRRIGATION PLAN INDICATING THE ACTUAL INSTALLATION OF THE SYSTEM MUST BE PROVIDED TO THE IRRIGATION SYSTEM'S OWNER OR OWNER REPRESENTATIVE
ALL EQUIPMENT AND INSTALLATION METHODS SHALL COMPLY WITH LOCAL AND STATE CODES AND THE PLANS AND SPECIFICATIONS	THE ITEMS ON THE MAINTENANCE CHECKLIST SHALL INCLUDE BUT ARE NOT LIMITED TO: (A) THE MANUFACTURER'S MANUAL FOR THE AUTOMATIC CONTROLLER, IF THE SYSTEM IS AUTOMATIC; (B) A SEASONAL (SPRING, SUMMER, FALL, WINTER) WATERING SCHEDULE BASED ON EITHER CURRENT/REAL TIME EVAPOTRANSPIRATION OR MONTHLY HISTORICAL REFERENCE EVAPOTRANSPIRATION (HISTORICAL ET) DATA, MONTHLY EFFECTIVE RAINFALL ESTIMATES, PLANT LANDSCAPE COEFFICIENT FACTORS, AND SITE FACTORS; (C) A LIST OF COMPONENTS, SUCH AS THE NOZZLE, OR PUMP FILTERS, AND OTHER SUCH COMPONENTS; THAT REQUIRE MAINTENANCE AND THE RECOMMENDED FREQUENCY FOR THE SERVICE; AND (D) THE STATEMENT, "THIS IRRIGATION SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL LAWS, ORDINANCES, RULES, REGULATIONS OR ORDERS. I HAVE TESTED THE SYSTEM AND DETERMINED THAT IT HAS BEEN INSTALLED ACCORDING TO THE IRRIGATION PLAN AND IS PROPERLY ADJUSTED FOR THE MOST EFFICIENT APPLICATION OF WATER AT THIS TIME."
CONTRACTOR IS RESPONSIBLE FOR ALL CONNECTIONS AND METERS REQUIRED FOR THE FULL IMPLEMENTATION OF THE SYSTEM	THE IRRIGATOR SHALL PRESENT THE IRRIGATION SYSTEM'S OWNER OR OWNER'S REPRESENTATIVE WITH A WRITTEN WARRANTY COVERING MATERIALS AND LABOR FURNISHED IN THE NEW INSTALLATION OF THE IRRIGATION SYSTEM. THE IRRIGATOR SHALL BE RESPONSIBLE FOR ADHERING TO TERMS OF THE WARRANTY. IF THE IRRIGATOR'S WARRANTY IS LESS THAN THE MANUFACTURER'S WARRANTY FOR THE SYSTEM COMPONENTS, THEN THE IRRIGATOR SHALL PROVIDE THE IRRIGATION SYSTEM'S OWNER OR THE OWNER'S REPRESENTATIVE WITH APPLICABLE INFORMATION REGARDING THE MANUFACTURER'S WARRANTY PERIOD. THE WARRANTY MUST INCLUDE THE IRRIGATOR'S SEAL, SIGNATURE, AND DATE. WRITTEN WARRANTY ON NEW IRRIGATION SYSTEMS MUST SPECIFY THE IRRIGATOR'S NAME, BUSINESS ADDRESS, AND BUSINESS TELEPHONE NUMBER(S). MUST CONTAIN THE SIGNATURE OF THE IRRIGATION SYSTEM'S OWNER OR OWNER'S REPRESENTATIVE CONFIRMING RECEIPT OF THE WARRANTY AND MUST INCLUDE THE STATEMENT: "IRRIGATION IN TEXAS IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ), MC-178, P.O. BOX 130897, AUSTIN, TEXAS 78711-3087. TCEQ'S WEBSITE IS: WWW.TCEQ.STATE.TX.US
CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO INITIATING WORK CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE OR INTERRUPTION IN SERVICE CAUSED BY EXCAVATIONS AND/OR WORK	ON ALL MAINTENANCE, ALTERATIONS, REPAIRS, OR SERVICE TO EXISTING IRRIGATION SYSTEMS, AN IRRIGATOR SHALL PRESENT THE IRRIGATION SYSTEM'S OWNER OR OWNER'S REPRESENTATIVE A WRITTEN DOCUMENT THAT IDENTIFIES THE MATERIALS FURNISHED IN THE MAINTENANCE, ALTERATION, REPAIR, OR SERVICE AND ALL APPLICABLE WARRANTIES
EACH CONTROLLER WILL HAVE AN INDEPENDENT COMMON WIRE	
ALL REMOTE CONTROL VALVE WIRES NEED TO BE LABELED AT VALVE W/ WEATHER (WATER) PROOF LABELS, AND AT CONTROLLER WITH CORRESPONDING LABEL	
SPlicing OF REMOTE CONTROL VALVE WIRES IS NOT ALLOWED BETWEEN CONTROLLER AND VALVE BOX FOR REMOTE CONTROL VALVES, WIRES MUST BE CONTINUOUS FROM CONTROLLER TO REMOTE CONTROL VALVE WITHOUT SPlicing	
CONTRACTOR SHALL PROVIDE A SINGLE 120-VOLT, 20 AMP CIRCUIT FROM ELECTRICAL PANEL TO IRRIGATION CONTROLLER. ALL WORK AND MATERIALS SHALL MEET LOCAL CODES AND THE NATIONAL ELECTRIC CODE (N.E.C.)	
CONTRACTOR SHALL SIZE VALVE BOXES TO HOUSE THE ENTIRE ASSEMBLY OF BACKFLOW PREVENTION, VALVE, FILTER AND PRESSURE REDUCER	
CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CONSTRUCT PROPOSED IRRIGATION SYSTEM IN ACCORDANCE WITH PLANS, WRITTEN SPECIFICATIONS AND DETAILS	
PIPE SLEEVES SHOWN CROSSING EXISTING PAVING SHALL BE BORED TO AVOID DAMAGE TO EXISTING ROADWAYS	
WHEN A BOOSTER PUMP IS SHOWN ON THE PLANS, THE CONTRACTOR SHALL PROVIDE AN ELECTRICAL CIRCUIT, CONDUIT, AND WIRING AS REQUIRED FOR FULL FUNCTIONALITY OF THE PUMP SYSTEM. ALL WORK AND MATERIALS SHALL MEET LOCAL CODES AND THE NATIONAL ELECTRIC CODE (N.E.C.)	
WHEN A HEATED BACKFLOW ENCLOSURE IS SHOWN ON THE PLANS, THE CONTRACTOR SHALL PROVIDE AN ELECTRICAL CIRCUIT, CONDUIT, AND WIRING AS REQUIRED FOR FULL FUNCTIONALITY OF THE HEATER SYSTEM. ALL WORK AND MATERIALS SHALL MEET LOCAL CODES AND THE NATIONAL ELECTRIC CODE (N.E.C.)	
PRIOR TO A REQUEST FOR PUNCH LIST REVIEW, THE CONTRACTOR SHALL CYCLE THE ENTIRE IRRIGATION SYSTEM, CHECK FOR/REPAIR LEAKS, ADJUST HEAD RADII AND PATTERNS, FILL SETTLED TRENCHES, BRING VALVE BOXES AND HEADS TO FINISH GRADE, CREATE ZONE CHART, INSTALL GRAVEL IN VALVE BOXES, LABEL VALVES, INSTALL SENSORS, INSTALL PROPER WIRE CONNECTORS, INSTALL UNION VALVES, AND PROVIDE AS-BUILT DRAWINGS. SHOULD A PUNCH LIST REVIEW BE REQUESTED AND PERFORMED PRIOR TO THESE ITEMS BEING PERFORMED, THE CONTRACTOR SHALL PAY FOR ADDITIONAL TIME AND TRAVEL EXPENSES REQUIRED BY THE LANDSCAPE ARCHITECT FOR A FOLLOW-UP SITE VISIT	

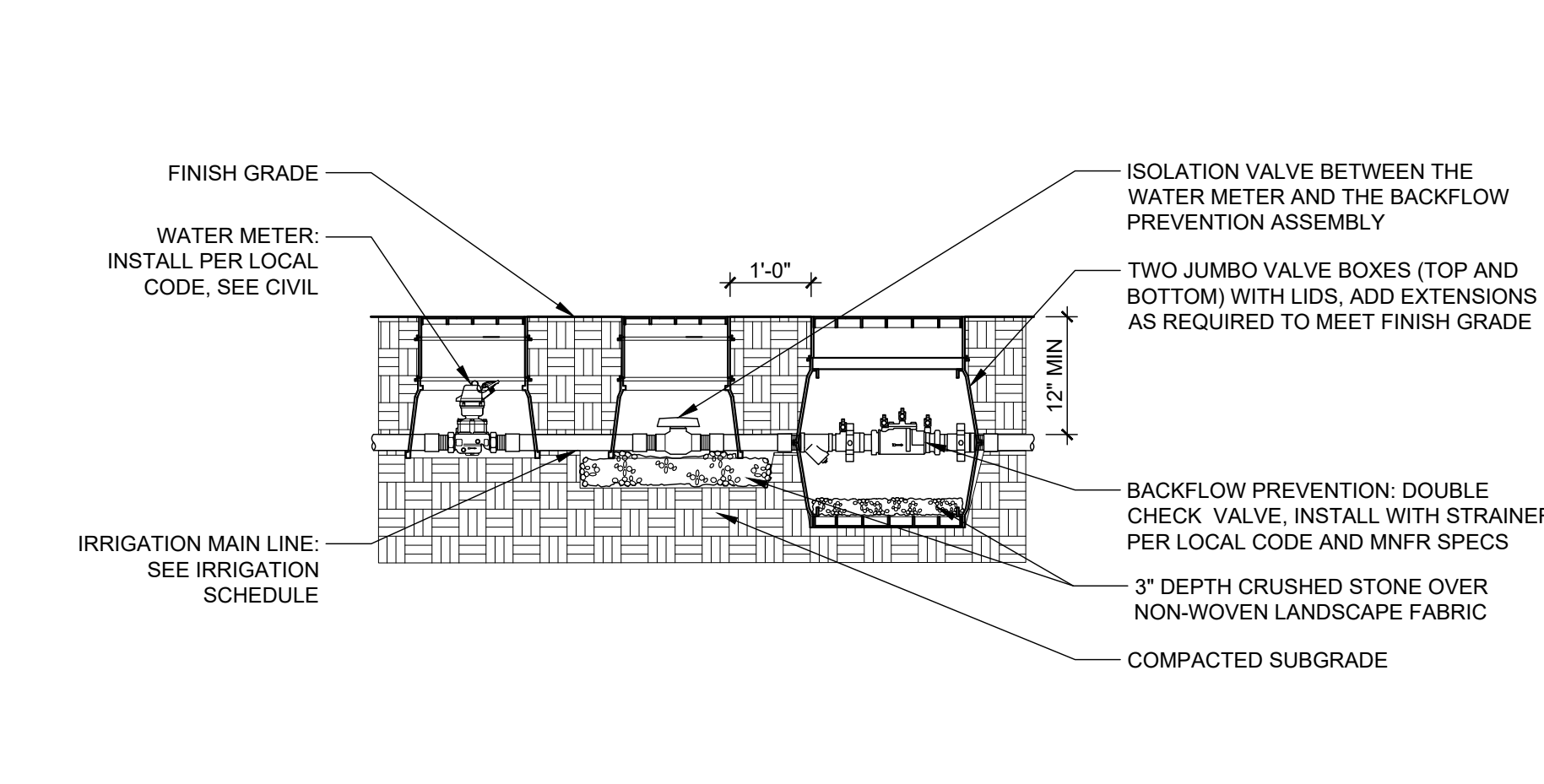


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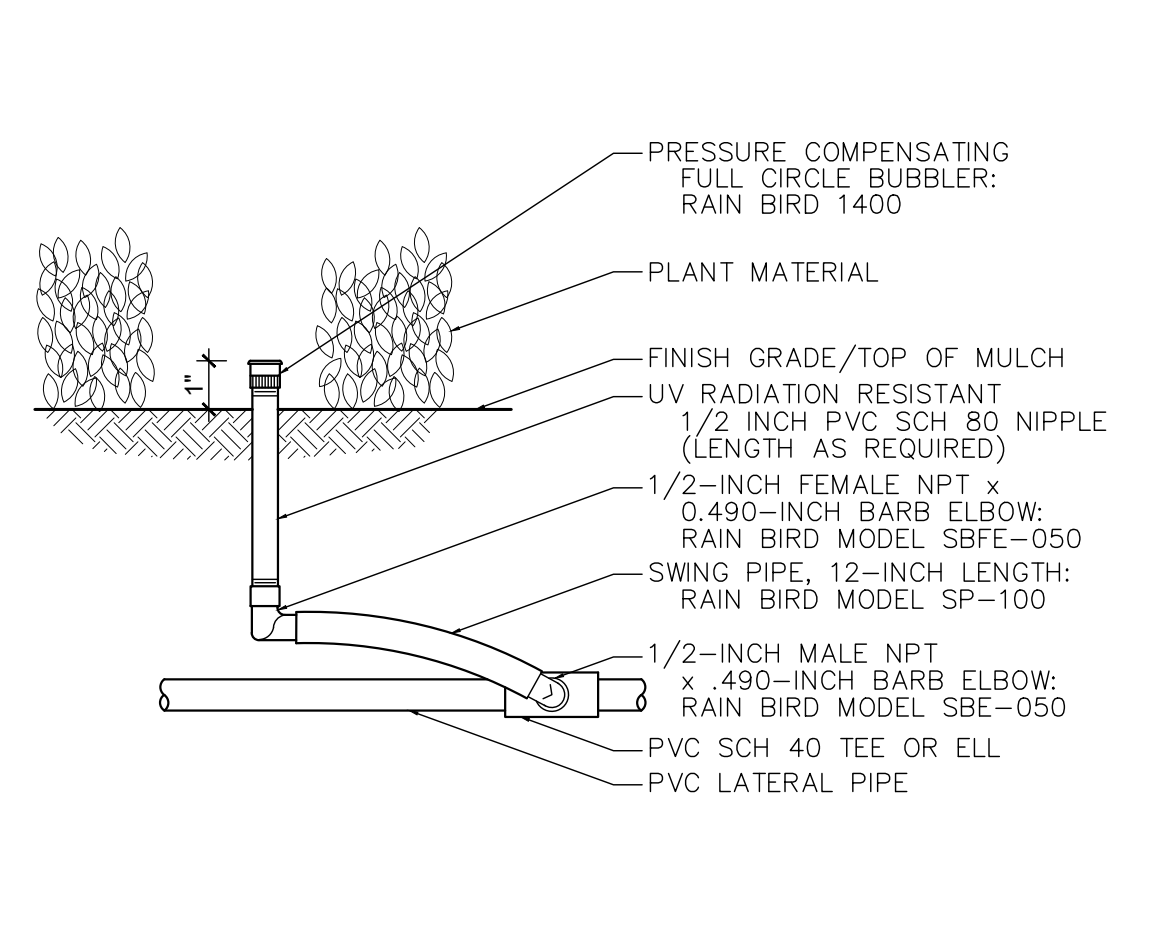
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IRRIGATION NOTES

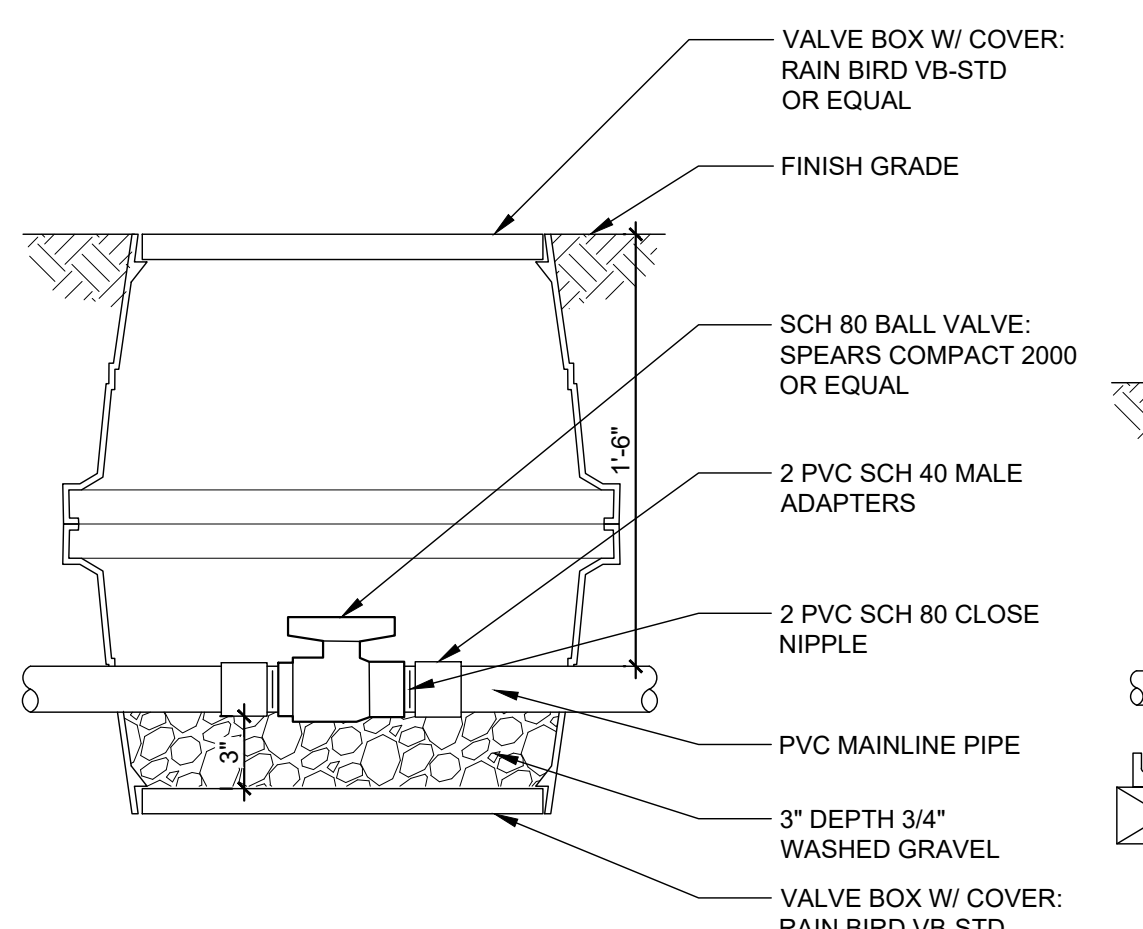
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GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	WACO	MCLENNAN	30
SF	CONTROL	SECTION	JOB	
CHECK	0055	15	082	



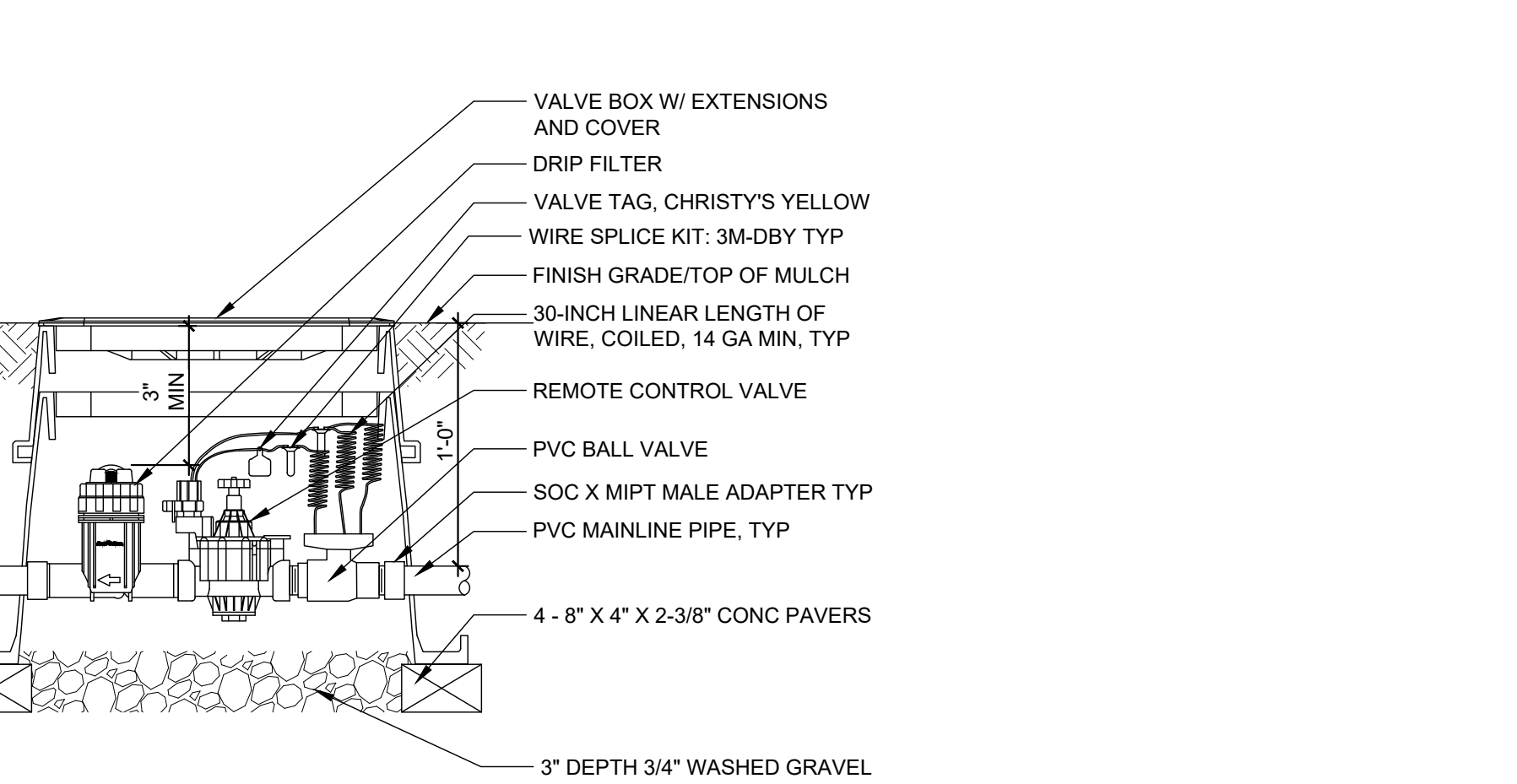
1 BACKFLOW PREVENTION - DOUBLE CHECK
 1/2" = 1'-0" PSC-ARL-WAC-328409-13



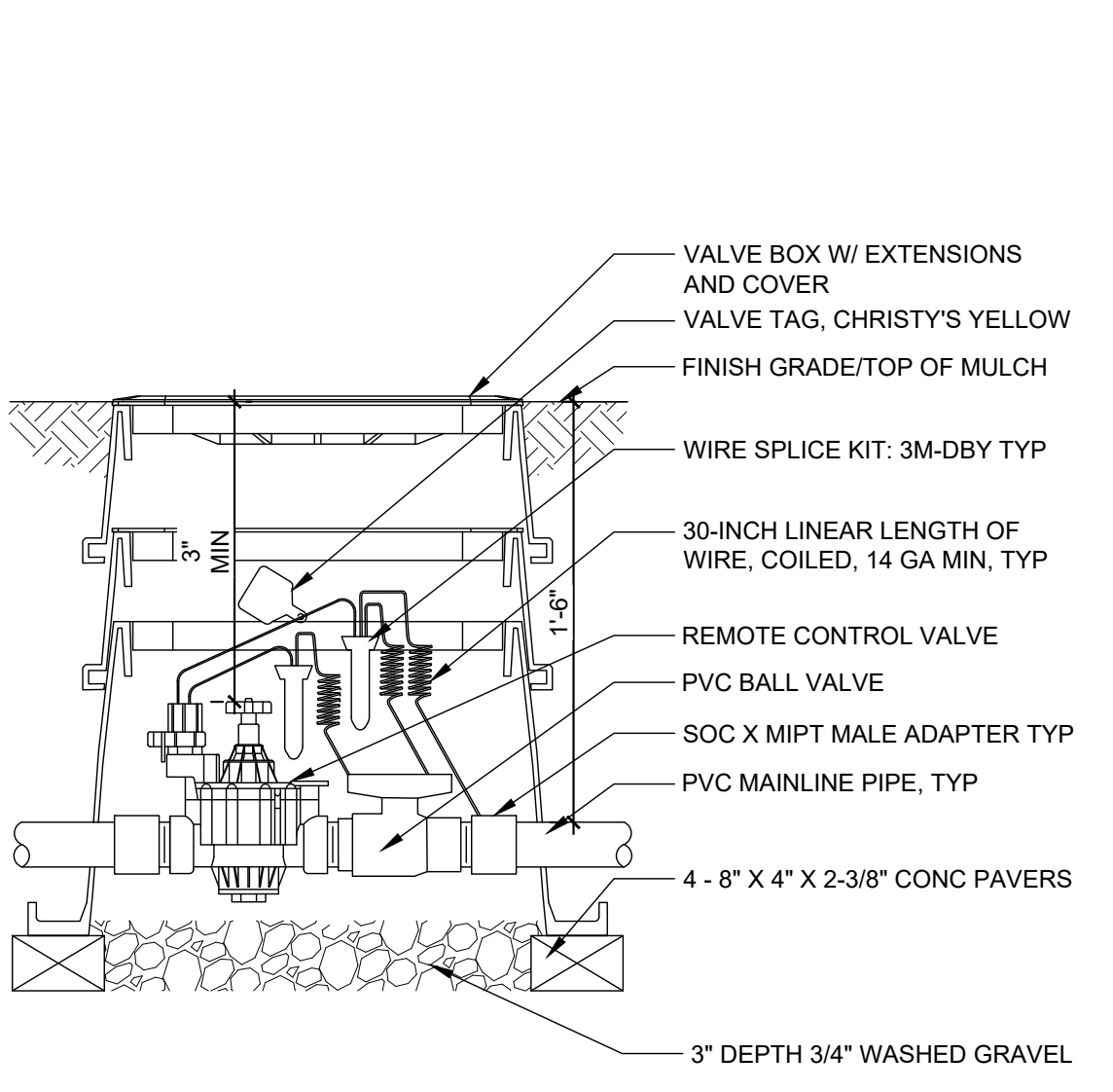
2 BUBBLER ON RISER
 3" = 1'-0" PSC-ARL-WAC-328403-01



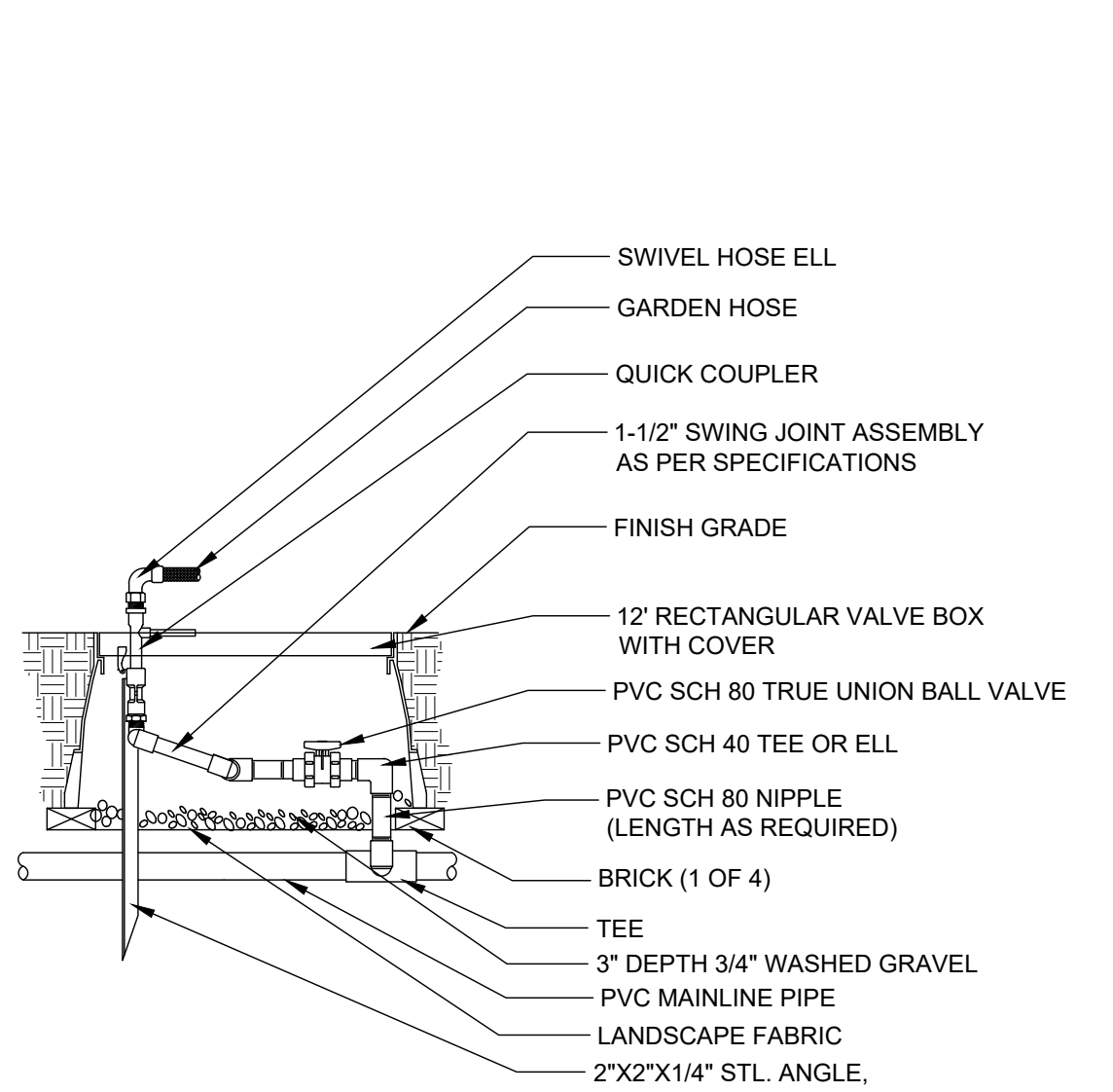
3 PVC BALL VALVE
 1 1/2" = 1'-0" PSC-ARL-WAC-328406-04



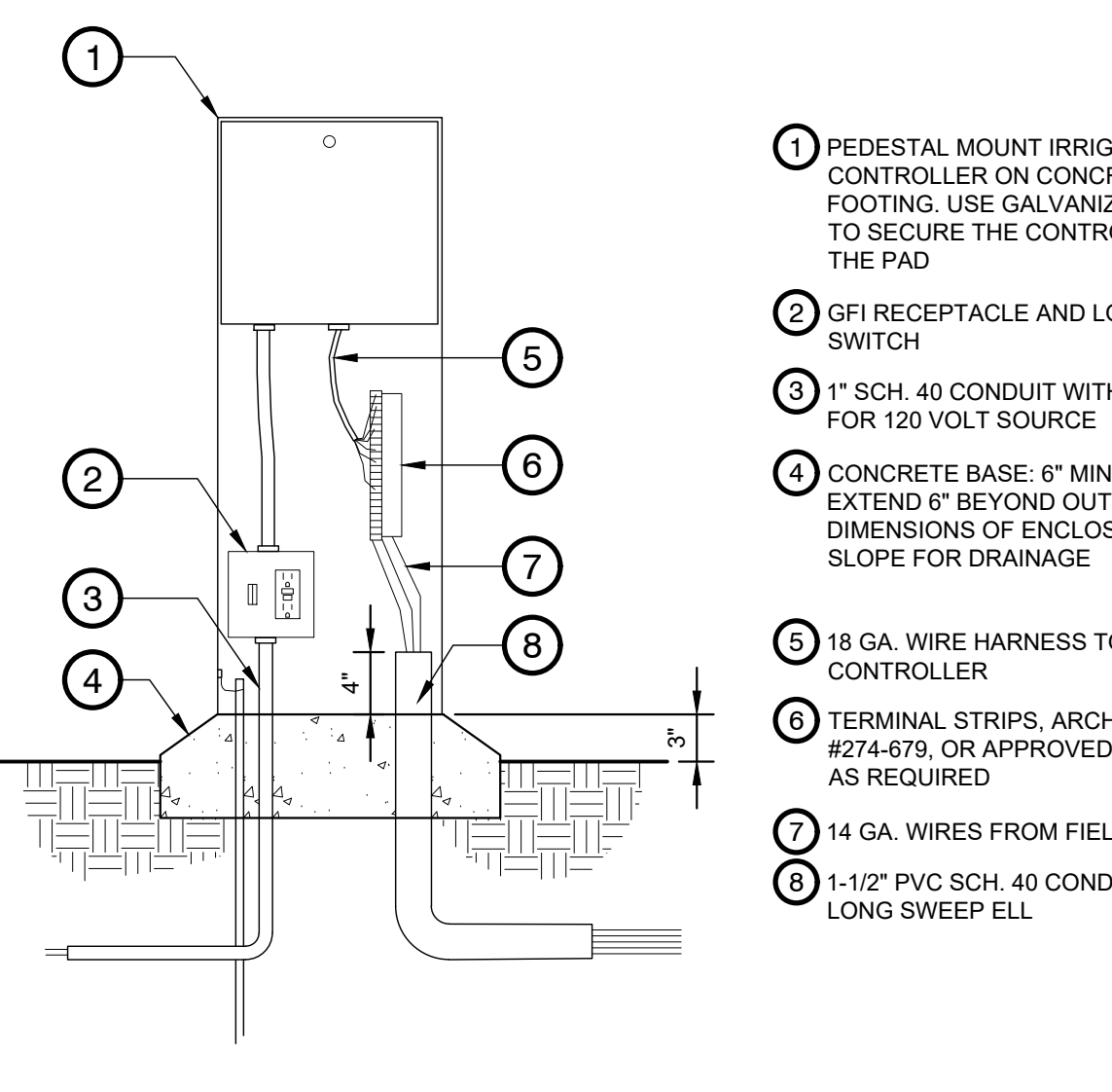
4 DRIP VALVE
 1 1/2" = 1'-0" PSC-ARL-WAC-328406-08



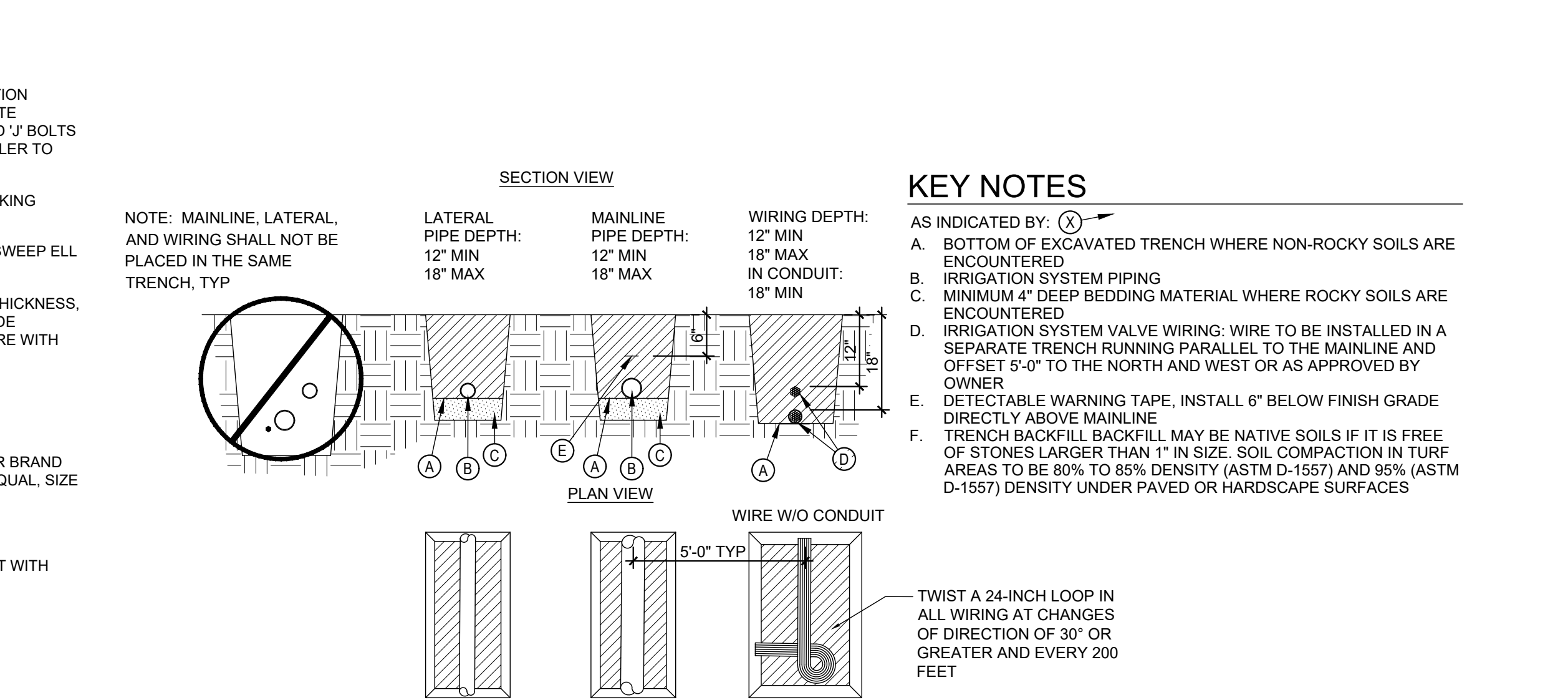
5 MASTER VALVE WITH BALL VALVE
 1 1/2" = 1'-0" PSC-ARL-WAC-328406-06



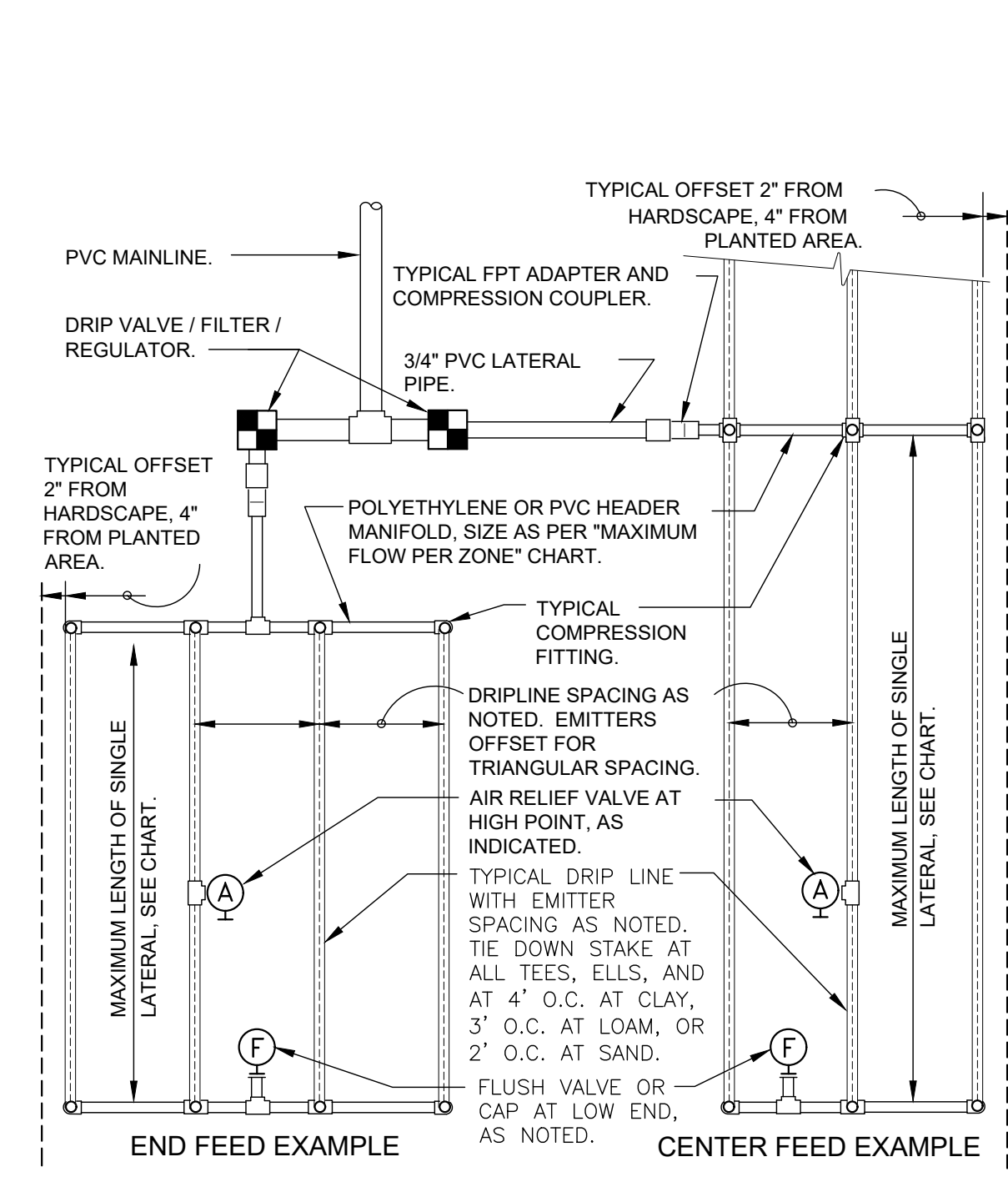
6 QUICK-COUPLER VALVE
 1/2" = 1'-0" PSC-ARL-WAC-328406-03



7 PEDESTAL MOUNT CONTROLLER
 1" = 1'-0" PSC-ARL-WAC-08



8 TRENCHING
 1" = 1" PSC-ARL-WAC-328409-04

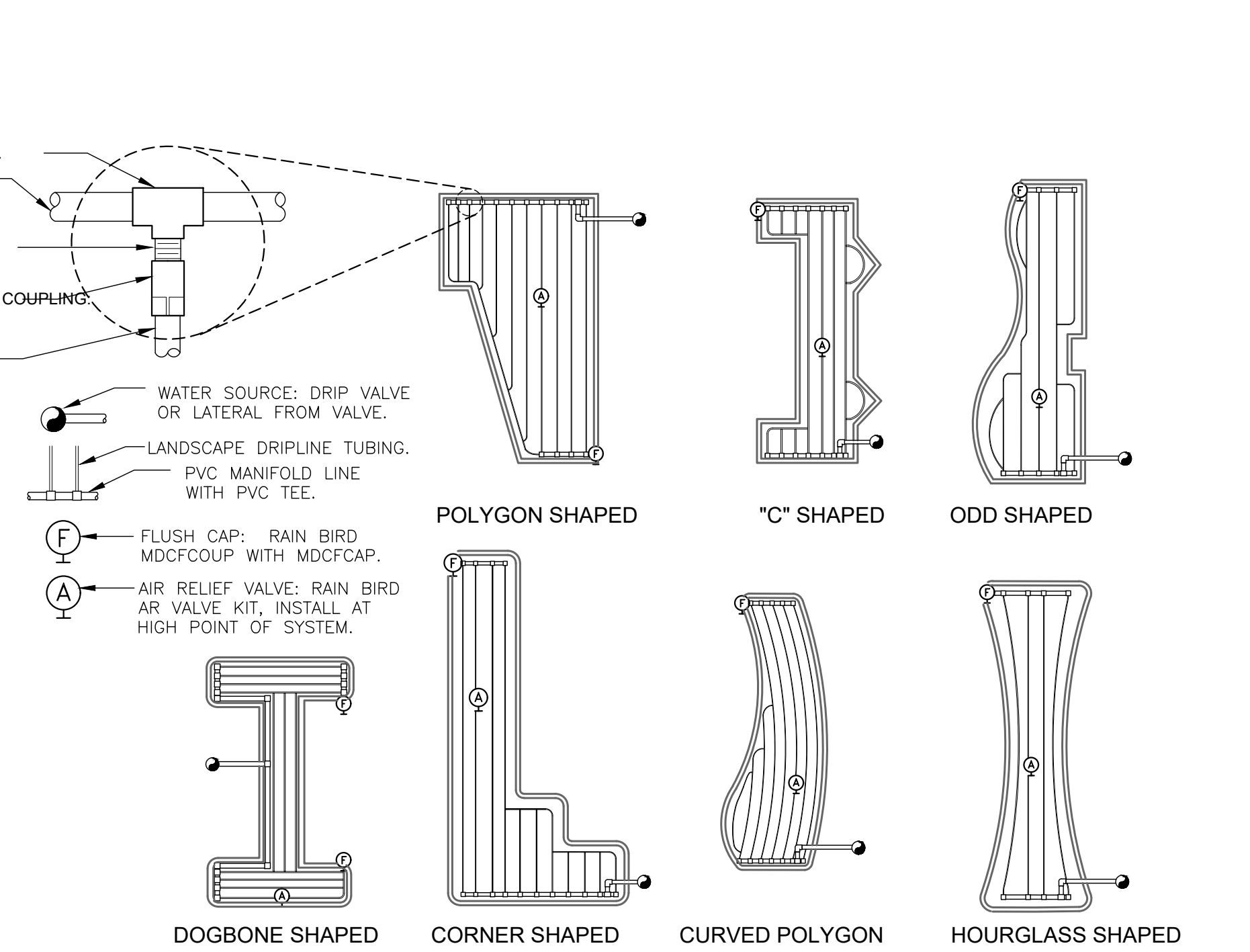


9 TYPICAL RAIN BIRD DRIPLINE REQUIREMENTS
 N.T.S. PSC-ARL-WAC-25

MAXIMUM LATERAL LENGTH (FEET)			
EMITTER FLOW RATE GPH			
12" SPACING	18" SPACING	24" SPACING	
10	125	96	175
20	249	191	350
30	307	236	434
40	359	268	495
50	412	301	560
60	465	335	627
70	518	370	695
80	571	405	765
90	624	440	835
100	677	475	905

GRID PRECIPITATION RATES (IN/HR)			
EMITTER FLOW RATE			
EMITTER SPACING	12"	18"	24"
0.6	0.96	1.44	
0.9	1.44	2.16	
1.2	1.92	2.88	
1.5	2.40	3.60	
1.8	2.88	4.32	
2.1	3.36	5.04	
2.4	3.84	5.76	

LATERAL FLOW PER 100 FT (GPM)			
EMITTER FLOW RATE			
EMITTER SPACING	12"	18"	24"
0.6	0.96	1.44	
0.9	1.44	2.16	
1.2	1.92	2.88	
1.5	2.40	3.60	
1.8	2.88	4.32	
2.1	3.36	5.04	
2.4	3.84	5.76	



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IRRIGATION DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	31
CHECK	CONTROL	SECTION	JOB	
SF				
CW	0055	15	082	

WATER GENERAL NOTES

- PVC WATER MAIN COLOR SHALL BE BLUE.
- ALL WATER LINES SHALL BE COMPLETE IN PLACE INCLUDING ALL BENDS, BLOCKS, FITTINGS, SERVICES AND APPURTENANCES BEFORE PRESSURE TESTING.
- SURFACE REPLACEMENT SHALL BE INCLUDED IN THE UNIT PRICE FOR WATER SERVICES.
- PLACE METALLIC TRACER WIRE ON TOP OF TRENCH EXCAVATION PRIOR TO PLACEMENT OF EMBEDMENT AND WATER LINE AND CONNECT TO EACH SERVICE, VALVE AND FIRE HYDRANT. SEE DETAIL [W-34](#).
- METALLIC TRACER WIRE SHALL BE #12 AWG SOLID WIRE WITH A BLUE COATING. LOCATOR WIRE MUST TERMINATE IN AN APPROVED TRACER WIRE BOX. SEE DETAIL [W-34](#).
- ALL DUCTILE IRON WATER PIPE AND FITTINGS MUST BE POLY-WRAPPED PER CITY SPECIFICATIONS.
- A STAMPED "W" OF 4 IN. IN HEIGHT AND 3/8 IN. IN DEPTH SHALL BE PLACED IN THE CENTER OF CURB AT EACH NEW SERVICE LOCATION AND IN ANY NEW CURB AT EXISTING SERVICES.
- ALL COPPER SERVICE PIPE MUST BE TYPE K-SOFT.
- ALL POLYETHYLENE SERVICE PIPE SHALL BE SDR-9 WITH EXTERIOR BLUE COLOR. CONTRACTOR SHALL USE 1 IN. OR 2 IN. CTS TUBING WITH STAINLESS STEEL INSERTS. ALL PIPE MUST MEET NSF 61, AWWA C901, ASTM D3350 AND ASTM D2737 STANDARD SPECIFICATIONS.
- 3/4 IN. WASHED ROCK SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM A.2.a, CRUSHED STONE EMBEDMENT, OF SECTION 4.2 PART 2, EXCEPT THE GRADATION SHALL BE:

3/4 IN. WASHED ROCK	
SIEVE	PERCENTAGE RETAINED
1 1/2 IN.	0%
3/4 IN.	100%

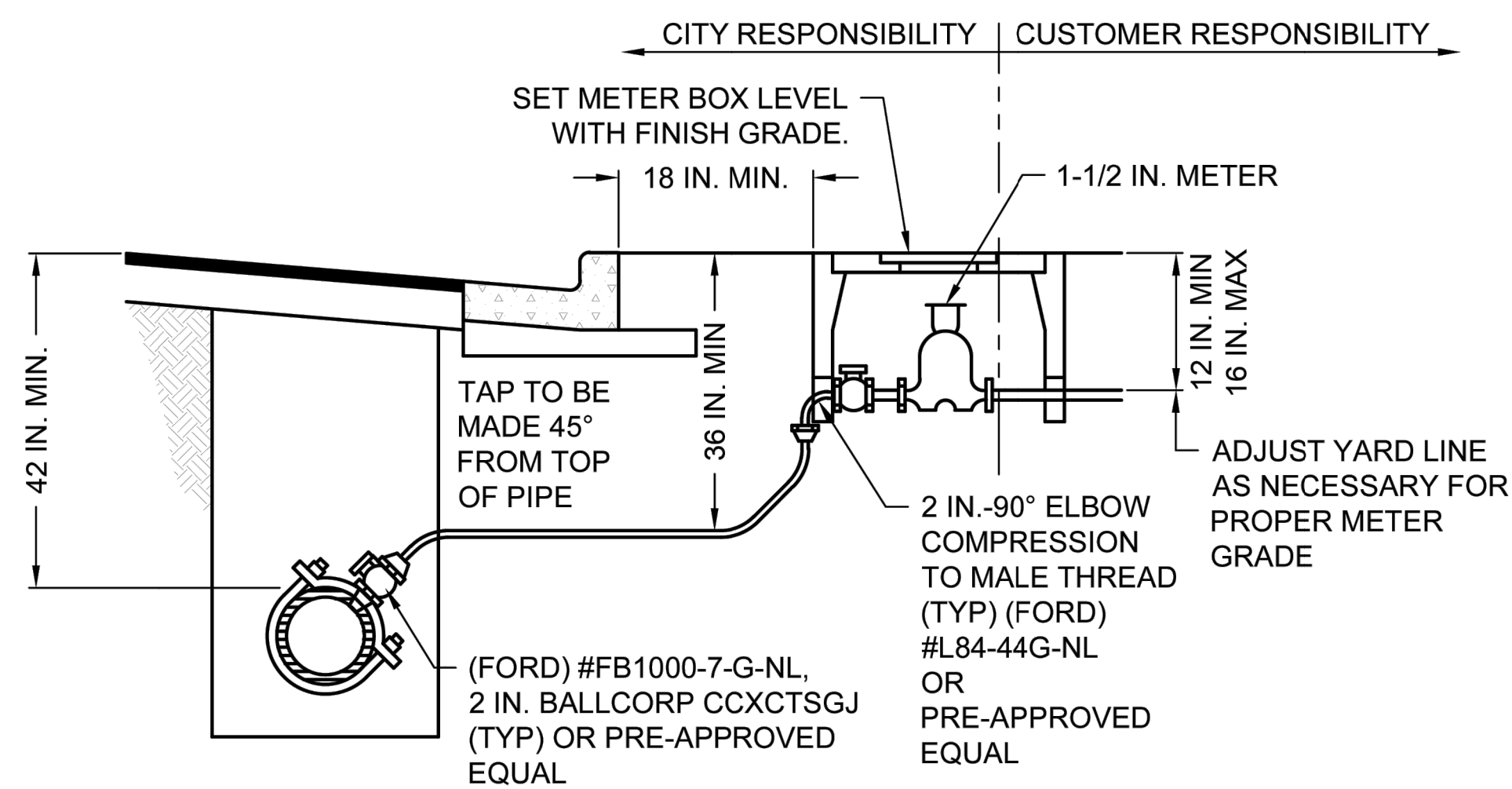
- ALL SUBSTITUTIONS FOR USE AS A PRE-APPROVED EQUAL MUST BE SUBMITTED IN WRITING, AND APPROVED BY CITY ENGINEER, IN ADVANCE, IN ACCORDANCE WITH THE CURRENT VERSION OF THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- ANY DEVIATION FROM STANDARD DETAILS MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER AND APPROVED IN WRITING BY CITY ENGINEER.
- IN ACCORDANCE WITH [G-7](#) NOTE 6, PRIOR TO PLACEMENT OF CONCRETE FOR A DIAMOND IN PAVEMENT FOR A WATER VALVE, MATERIAL BELOW SHALL BE COMPACTED / RE-COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ±2% OPTIMAL MOISTURE CONTENT.
- IDENTIFICATION NON-DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED 24 IN. ABOVE TOP OF THE PIPE FOR ENTIRE LENGTH OF ALL WATER MAINS. TAPE SHALL BE A MINIMUM 4 MIL OVERALL THICKNESS AND BE 6 IN. WIDE, APWA BLUE IN COLOR, COLORFAST, CHEMICALLY INERT, AND WITH BLACK LETTERING IMPRINTED LEGEND "CAUTION BURIED WATER LINE BELOW." SEE [G-8](#) NOTE 7.

WATER SERVICE TAP NOTES

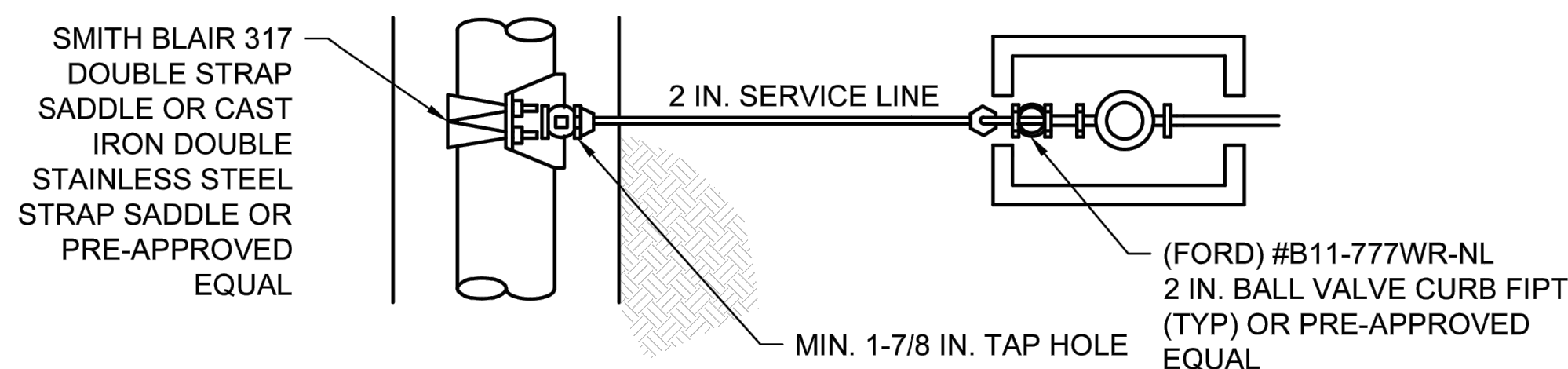
- WHERE NEW WATER SERVICES ARE INSTALLED UNDER EXISTING CURB AND GUTTER, THE CONTRACTOR WILL HAVE THE FOLLOWING OPTIONS:
 - REMOVE AND REPLACE CURB AND GUTTER SECTION FROM JOINT TO JOINT, TYPICALLY 10 FT.
 - CONSTRUCT MINIMUM SIZE TUNNEL NECESSARY TO INSTALL NEW WATER SERVICE AND THEN PLACE CONTROLLED LOW STRENGTH MATERIAL BENEATH THE EXISTING CURB AND GUTTER.
 - INSTALL SERVICE THROUGH A HOLE AT THE SAME LOCATION AS THE EXISTING PIPE, AND APPROXIMATELY THE SAME DIAMETER AS THE EXISTING PIPE.
- ALL SERVICE TAPS MUST BE MADE UNDER PRESSURE AND FLUSHED, OR TAPPED DRY AND THEN HAVE A SWAB PULLED THROUGH THE PIPE BEFORE CONNECTING THE TAPPED PIPE TO THE MAIN.
- 1-1/2 IN. AND 2 IN. METERS MUST BE BROUGHT TO THE WATER OFFICE TO BE TESTED. 3 IN. AND LARGER ARE TESTED IN THE FIELD BEFORE SERVICE IS APPROVED.
- ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
- ALL EXTERNAL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL.
- ALL SERVICE TAPS MUST BE APPROVED IN ADVANCE BY THE CITY OF WACO AND MUST BE PERFORMED UNDER THE DIRECT SUPERVISION OF A DESIGNATED CITY OF WACO UTILITY INSPECTOR. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN.

NOTES:

- THE STANDARD METER BOX FOR 1-1/2 IN. METERS IS AN OLDCASTLE CHRISTY B65 SERIES METER BOX WITH DFW65C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
- METERS 2 IN. AND LARGER SHALL BE INSTALLED IN A CONCRETE VAULT.
- SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. JOINTS ARE ONLY ALLOWED AT THE CORPORATION STOP AND THE CURB STOP.
- SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
- THE METER IS TO BE LOCATED IN A NON-TRAFFIC GREEN SPACE IN THE RIGHT OF WAY. ALL OTHER LOCATIONS MUST BE APPROVED BY THE CITY ENGINEER. WITH PRIOR APPROVAL FROM THE CITY, A METER MAY BE LOCATED IN AN AREA EXPOSED TO TRAFFIC. IN THIS CASE THE STANDARD BOX FOR METERS OF THESE SIZES IS AN OLDCASTLE CHRISTY N30 SERIES METER BOX WITH DFW1324C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
- ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
- CITY'S RESPONSIBILITY FOR LEAK REPAIR ENDS AT CONNECTION ON DOWNSTREAM SIDE OF THE METER UP TO AND INCLUDING THE METER BRASS.
- MINIMUM COMMERCIAL SERVICE SIZE SHALL BE 2 IN.



SECTION VIEW



PLAN VIEW

TYPICAL COMMERCIAL OR LARGE RESIDENTIAL WATER METER SERVICE CONNECTION (NO SCALE)

	ENGINEERING DIVISION		REVISIONS		DATE
	NO.	COMMENTS	BY	DATE	01/01/2024
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	1	ADD NOTE 13 & 14; RENUMBER 15-20	MZ	04/19/2024	W-1
	##	DESCRIPTION	FL	MM/DD/YYYY	

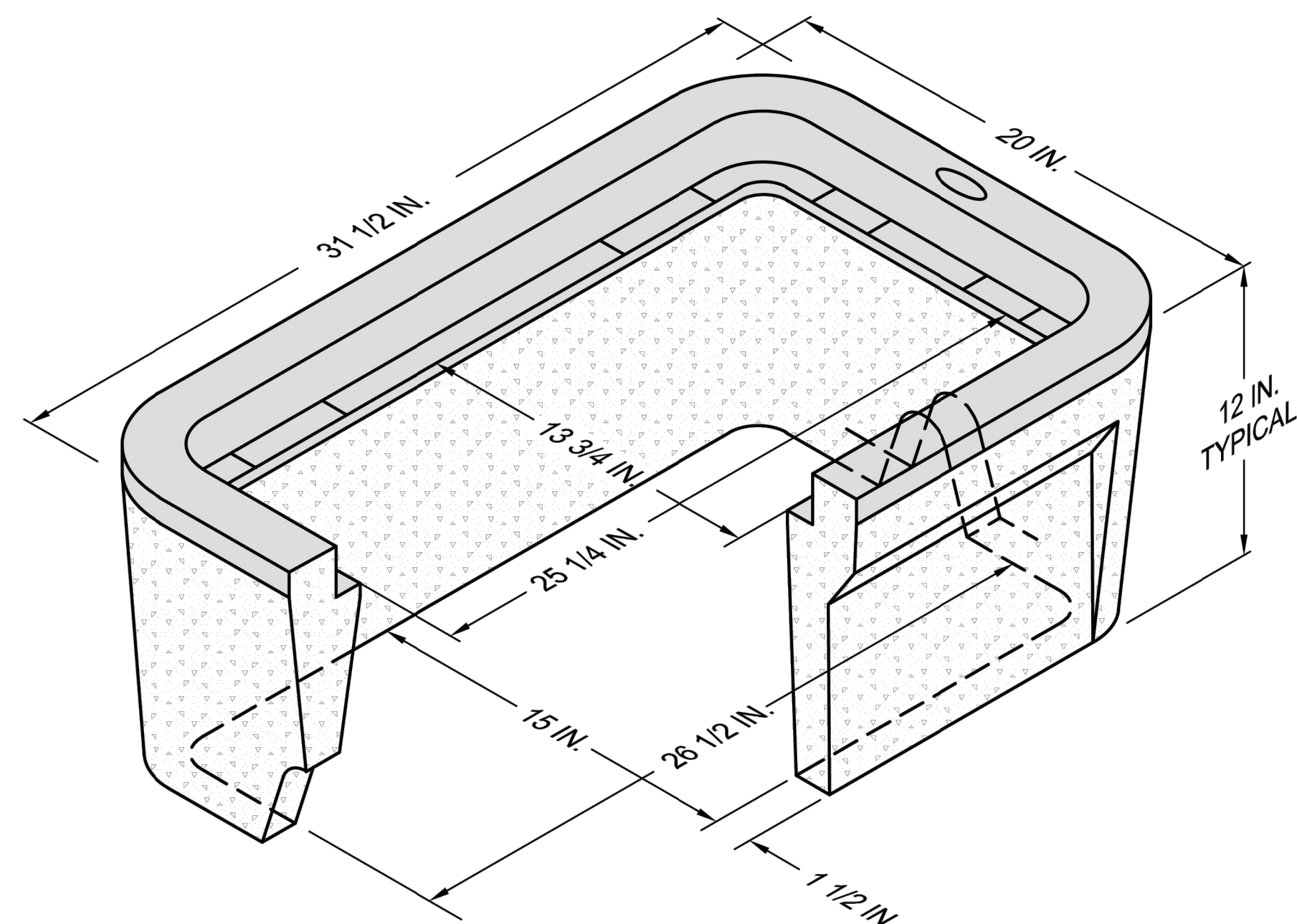
	ENGINEERING DIVISION		REVISIONS		DATE
	NO.	COMMENTS	BY	DATE	01/01/2024
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CITY OF WACO STANDARD DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	31A
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CHECK				
CW				



NOTES:

- FOR USE IN TRAFFIC AREAS, SIDEWALKS AND GREENSPACE.
- REFERENCE OLDCASTLE INFRASTRUCTURE CHRISTY® B65
- BODY:
 - MATERIAL: REINFORCED CONCRETE WITH COMPOSITE CAP.
 - MODEL: 20 IN. X 31 IN.
 - WEIGHT: 160 LBS.
 - WALL TYPE: STRAIGHT
 - MOUSEHOLES: 0
 - PERFORMANCE: ASTM C 857, WUC 3.6
- EXTENSION:
 - MATERIAL: REINFORCED CONCRETE
 - DEPTH: 12 IN.
 - WEIGHT: 104 LBS.
- WEIGHTS AND DIMENSIONS MAY VARY SLIGHTLY.
- ACTUAL LOAD RATING IS DETERMINED BY THE BOX AND COVER COMBINATION.

CONCRETE WATER METER BOX FOR 1-1/2 IN. METER (CHRISTY B65)
(NO SCALE)

	ENGINEERING DIVISION			REVISIONS NO. COMMENTS BY DATE	DATE 01/01/2024
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					W-18

WATER METER VAULT AND LID - NOTES

- METERS 2 IN. AND LARGER SHALL BE INSTALLED IN A CONCRETE VAULT.
- METERS 8 IN. AND LARGER REQUIRE PROJECT SPECIFIC DESIGN PLANS SEALED BY A PROFESSIONAL ENGINEER.
- VAULTS SHALL HAVE A MINIMUM 12 IN. WORKING CLEARANCE, EXCEPT FOR PENETRATIONS WHICH SHALL HAVE 6 IN. OF CLEARANCE BETWEEN FIRST FITTING AND INSIDE FACE OF WALL.
- CONCRETE VAULTS SHALL HAVE VAULT WALLS AND FOUNDATIONS OF A MINIMUM THICKNESS OF 6 INCHES.
- SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
- THE METER IS TO BE LOCATED IN A NON-TRAFFIC GREEN SPACE IN THE RIGHT OF WAY. ALL OTHER LOCATIONS MUST BE APPROVED BY THE CITY ENGINEER.
- WITH PRIOR APPROVAL FROM THE CITY, A METER MAY BE LOCATED IN AN AREA EXPOSED TO TRAFFIC. IN THIS CASE THE STANDARD BOX FOR METERS OF THESE SIZES IS AN OLDCASTLE SERIES 30 METER BOX WITH 1324 DFW POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL WHERE METER BOX IS EXPOSED TO TRAFFIC, OR IN SIDEWALK, USE A CONCRETE BOX WITH DFW POLYMER LID WITH AMI HOLE.
- ALL METER BY-PASS INSTALLATIONS SHALL BE LOCKABLE.

MINIMUM VAULT CHARACTERISTICS

MAIN SIZE	BY PASS	L	W	H	INSIDE DIMENSIONS
2 IN.	1 IN.	6'-0"	6'-0"	4'-5"	5'-0" X 5'-0" X 3'-5"
3 IN.	2 IN.	8'-6"	5'-6"	5'-6"	7'-6" X 4'-6" X 4'-6"
4 IN.	2 IN.	8'-6"	5'-6"	5'-6"	7'-6" X 4'-6" X 4'-6"
6 IN.	4 IN.	13'-0"	7'-0"	6'-0"	12'-0" X 6'-0" X 5'-0"

NON-TRAFFIC LOCATION

- STANDARD ACCESS DOOR IS 2.5 FT. X 4 FT. CLEAR, ALUMINUM HATCHWAY AND SPRING ASSISTED. DOOR SHALL BE CAST IN AND MOUNTED FLUSH HINGED 1/4 IN. ALUMINUM DIAMOND PLATE COVER, WITH 1/4 IN. EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH STAINLESS STEEL HARDWARE.
- CONCRETE: CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. ALL CONCRETE JOINTS SEALED WATERTIGHT WITH MANUFACTURERS GASKET.
- ALL WALLS AND SLABS SHALL BE DESIGNED FOR HS20 LOADING.

TRAFFIC LOCATION - REQUIRES PRIOR APPROVAL OF CITY OF WACO ENGINEER

- STANDARD ACCESS DOOR IS 2.5 FT. X 4 FT. CLEAR, AND SPRING ASSISTED. DOOR SHALL BE CAST IN FLUSH.
- SINGLE OR DOUBLE LEAF STEEL LID, DESIGNED TO WITHSTAND AASHTO HS20 LOADINGS.
- VAULT SHALL BE PLACED ON A 6 IN. BASE OF 1 IN. WASHED ROCK.
- CONCRETE DESIGN IN ACCORDANCE WITH AASHTO HS20 TRAFFIC LOADING USING 4200 PSI COMPRESSIVE STRENGTH ASTM A-706 STEEL REINFORCEMENT PER CALCULATION NUMBER. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. ALL CONCRETE JOINTS SEALED WATERTIGHT WITH MANUFACTURERS GASKET.

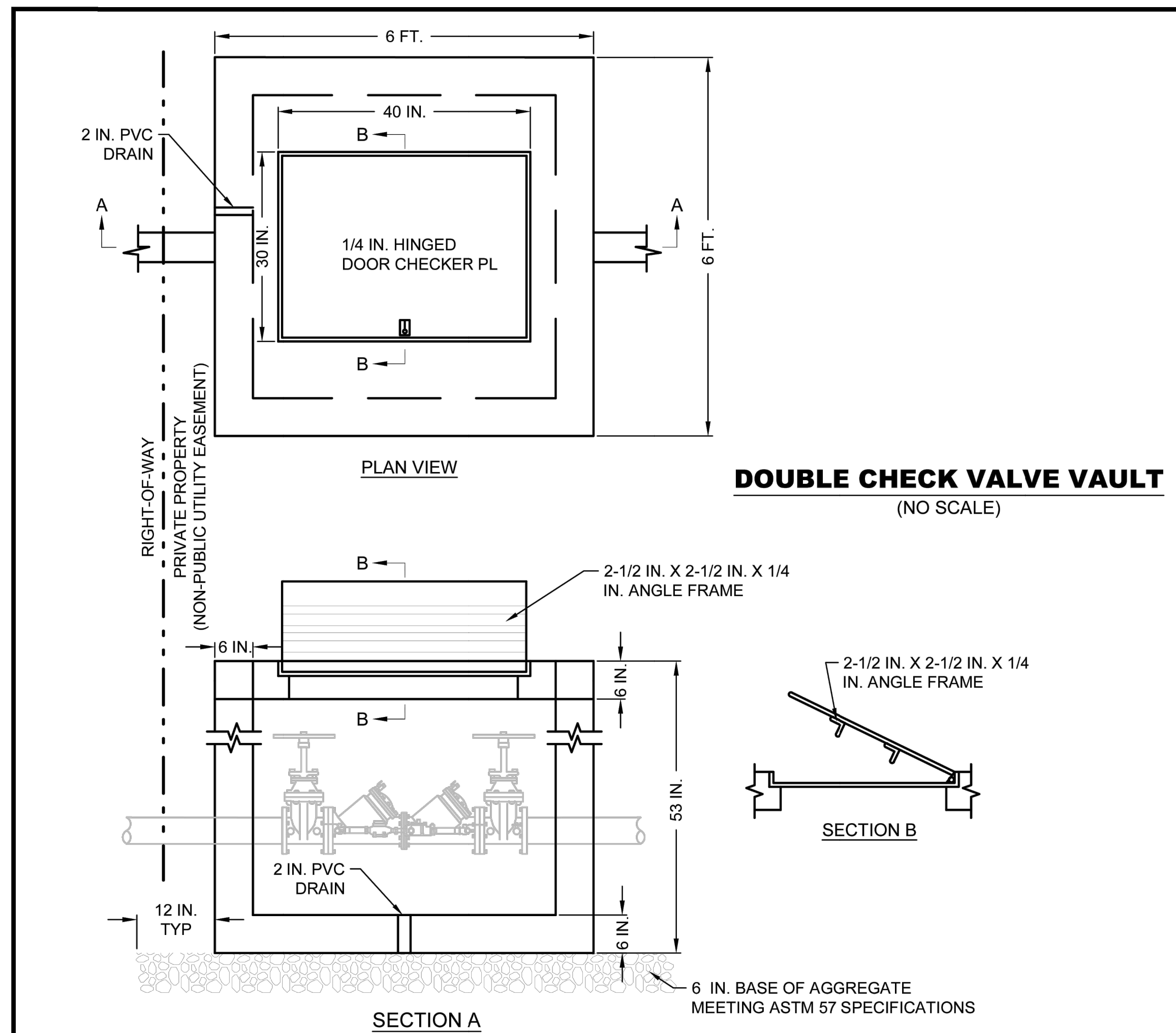
	ENGINEERING DIVISION			REVISIONS NO. COMMENTS BY DATE	DATE 01/01/2024
	<small>DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF WACO FOR ANY PURPOSE WHATSOEVER. THE CITY OF WACO ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.</small>				
					W-19

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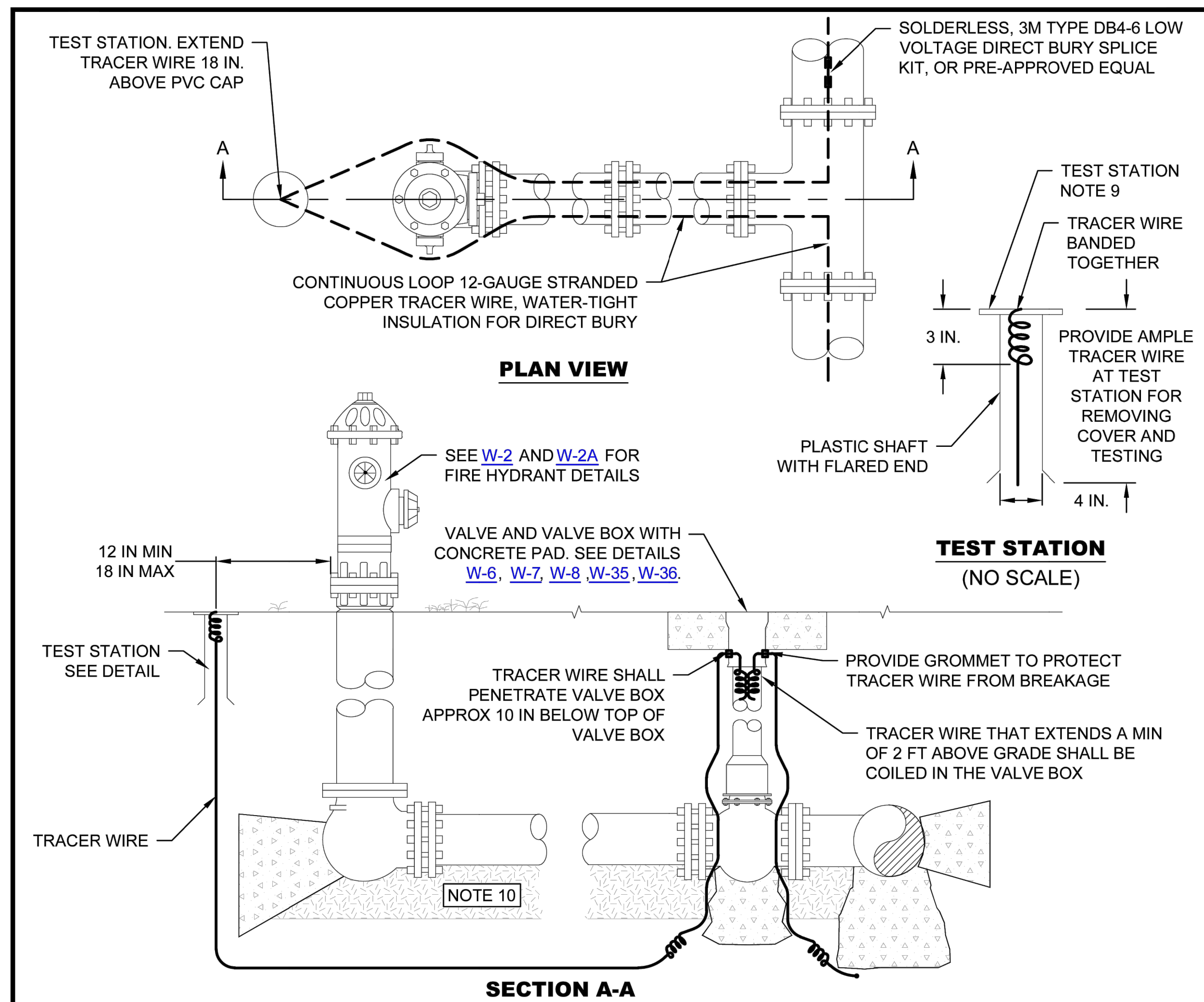
CITY OF WACO
STANDARD DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	31B
CHECK	CONTROL	SECTION	JOB	
SF	0055	15	082	
CHECK				
CW				



- NOTES:**
1. ALL DOUBLE DETECTOR CHECK ASSEMBLIES SHALL BE HOUSED IN A PRECAST METER VAULT AND, FOR BELOW GROUND LEVEL ASSEMBLIES, THE VAULT SHALL BE RATED HS20.
 2. ASSEMBLIES 2 IN. AND SMALLER SHALL HAVE AT LEAST A 6 IN. CLEARANCE BELOW AND ON BOTH SIDES OF THE ASSEMBLY. ALL ASSEMBLIES LARGER THAN 2 IN. SHALL HAVE A MINIMUM CLEARANCE OF 12 IN. ON THE BACK SIDE, 24 IN. ON THE TEST PORT SIDE, AND 12 IN. BELOW THE ASSEMBLY.
 3. ALL TEST PORTS SHALL FACE UPWARD AND SHALL HAVE PROTECTIVE CAPS.
 4. UPON INSTALLATION, ASSEMBLY MUST BE TESTED BY CERTIFIED TESTER AND RESULTS FURNISHED TO THE CITY OF WACO, UTILITY DEPARTMENT. TEST RESULTS SHALL BE FURNISHED BY OWNER ON ANNUAL BASIS.
 5. ALL NEW FIRE LINE SERVICES, AND THOSE ENCOUNTERED IN A CONSTRUCTION PROJECT SHALL HAVE INSTALLED A BACKFLOW DEVICE BASED ON THE DEGREE OF HAZARD. ALL FIRE LINES ARE REQUIRED, AT A MINIMUM, TO HAVE A DOUBLE DETECTOR CHECK ASSEMBLY. THE AUXILIARY LINE SHALL CONSIST OF AN APPROVED BACKFLOW PREVENTER AND WATER METER WITH ITRON CONNECTOR.
 6. THE DOUBLE DETECTOR CHECK ASSEMBLY AND VALVE VAULT, IF APPLICABLE, SHALL BE LOCATED ON PRIVATE PROPERTY AS NEAR THE PROPERTY LINE AS PRACTICAL AND WITHIN 150 FEET OF THE FIRE SYSTEM STAND PIPE. ALTERNATIVELY, THE CHECK ASSEMBLY CAN BE IN A BUILDING IF THE BUILDING IS WITHIN 150 FT OF THE WATER MAIN. DO NOT LOCATE WITHIN PUBLIC UTILITY EASEMENT.
 7. FOR ABOVE GROUND LEVEL VAULTS, THE ADDITION OF SIDE ACCESS DOOR MAY BE SUBMITTED FOR REVIEW.
 8. FOR ABOVE GROUND LEVEL ASSEMBLIES, THE VAULT SHALL BE LOCATED OUTSIDE OF THE CLEAR ZONE AND APPROACH AND DEPARTURE SITE TRIANGLE DISTANCES FOR INTERSECTIONS AND DRIVEWAYS.

	ENGINEERING DIVISION	REVISIONS			DATE	
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		##	DESCRIPTION	FL	MM/DD/YYYY	W-21



- NOTES:**
1. SEE [W-2](#) AND [W-2A](#) FOR FIRE HYDRANT REQUIREMENTS.
 2. TRACER WIRE SHALL BE TIED INTO EVERY VALVE, BLOW-OFF, ARV AND OTHER DEVICES.
 3. TRACER LEADS SHALL BE INSTALLED IN APPROVED VALVE BOXES OR TRACER WIRE ACCESS BOXES. ACCESS BOX STYLE (LIGHT DUTY, DRIVEWAY, OR ROADWAY) SHALL BE DETERMINED BY BOX LOCATION.
 4. VALVE BOXES SHALL BE INSTALLED FLUSH WITH GROUND.
 5. TRACER LEADS SHALL HAVE ADEQUATE SLACK THROUGHOUT THE INSTALLATION TO REDUCE BREAKAGE FROM PULLING.
 6. TRACER WIRE THAT EXTENDS A MIN OF 2 FT. ABOVE GRADE SHALL BE COILED IN THE VALVE BOX AND WIRES SHALL BE PROPERLY CONNECTED TO THE THE VALVE BOX PER MANUFACTURES SPECIFICATIONS. ALL TRACER WIRES SHALL BE OF #12 TW SOLID COPPER WIRE.
 7. CONTRACTOR SHALL PROTECT THE LEADS, BOXES AND ALL TRACER WIRES THROUGHOUT THE PROJECT.
 8. PROVIDE ONE TRACER WIRE IN EACH DIRECTION UNLESS OTHERWISE NOTED.
 9. TEST STATION. "CP" TYPE COLUMN 4. TEST STATION AT EACH FIRE HYDRANT. HEAVY CAST IRON LOCKING COVER WITH 4 TERMINALS. 4 IN. ID X 18 IN. SHAFT LENGTH.
 10. EMBEDMENT PER STANDARD DETAILS [G-8](#). TRACER WIRE TO BE PLACED ON TOP OF TRENCH EXCAVATION PRIOR TO PLACEMENT OF EMBEDMENT.

TRACER WIRE DETAILS
(NO SCALE)

	ENGINEERING DIVISION	REVISIONS			DATE	
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		##	DESCRIPTION	FL	MM/DD/YYYY	W-34

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**CITY OF WACO
STANDARD DETAILS**

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ES	6	SEE TITLE SHEET		US 84
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
ES	TEXAS	WACO	MCLENNAN	
CHECK	CONTROL	SECTION	JOB	
SF				
CHECK	0055	15	082	31C
CW				

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DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:



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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

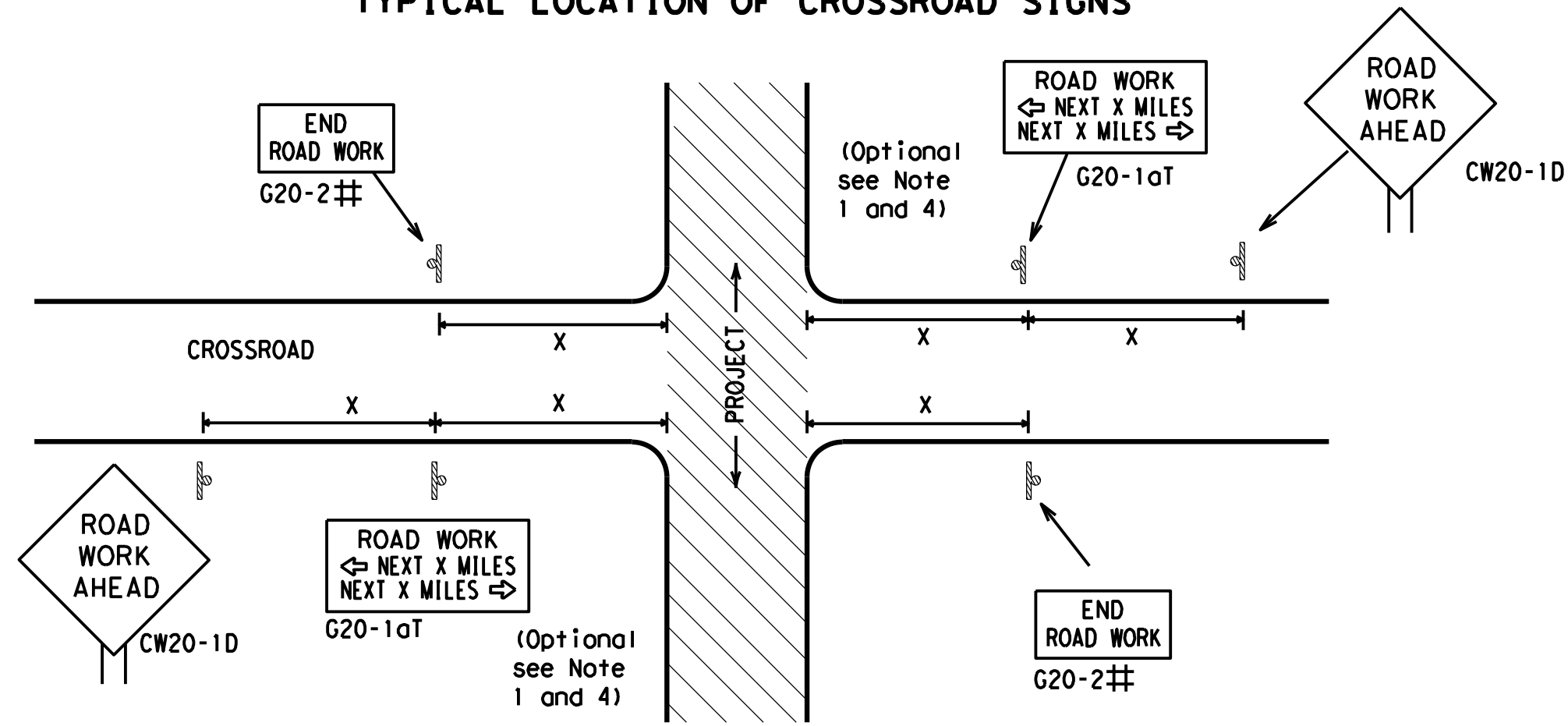
<p>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov</p>
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)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

SHEET 1 OF 12

 Texas Department of Transportation		 Traffic Safety Division Standard	
<p>BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS</p> <p>BC (1) - 21</p>			
FILE:	bc-21.dgn	DN:	TxDOT
© TxDOT	November 2002	CONT:	0055
REVISIONS	7-13	SECT:	15
4-03	7-13	JOB:	082
9-07	8-14	HIGHWAY:	US 84
5-10	5-21	DIST:	COUNTY
		WAC:	MCLENNAN
		SHEET NO.:	32

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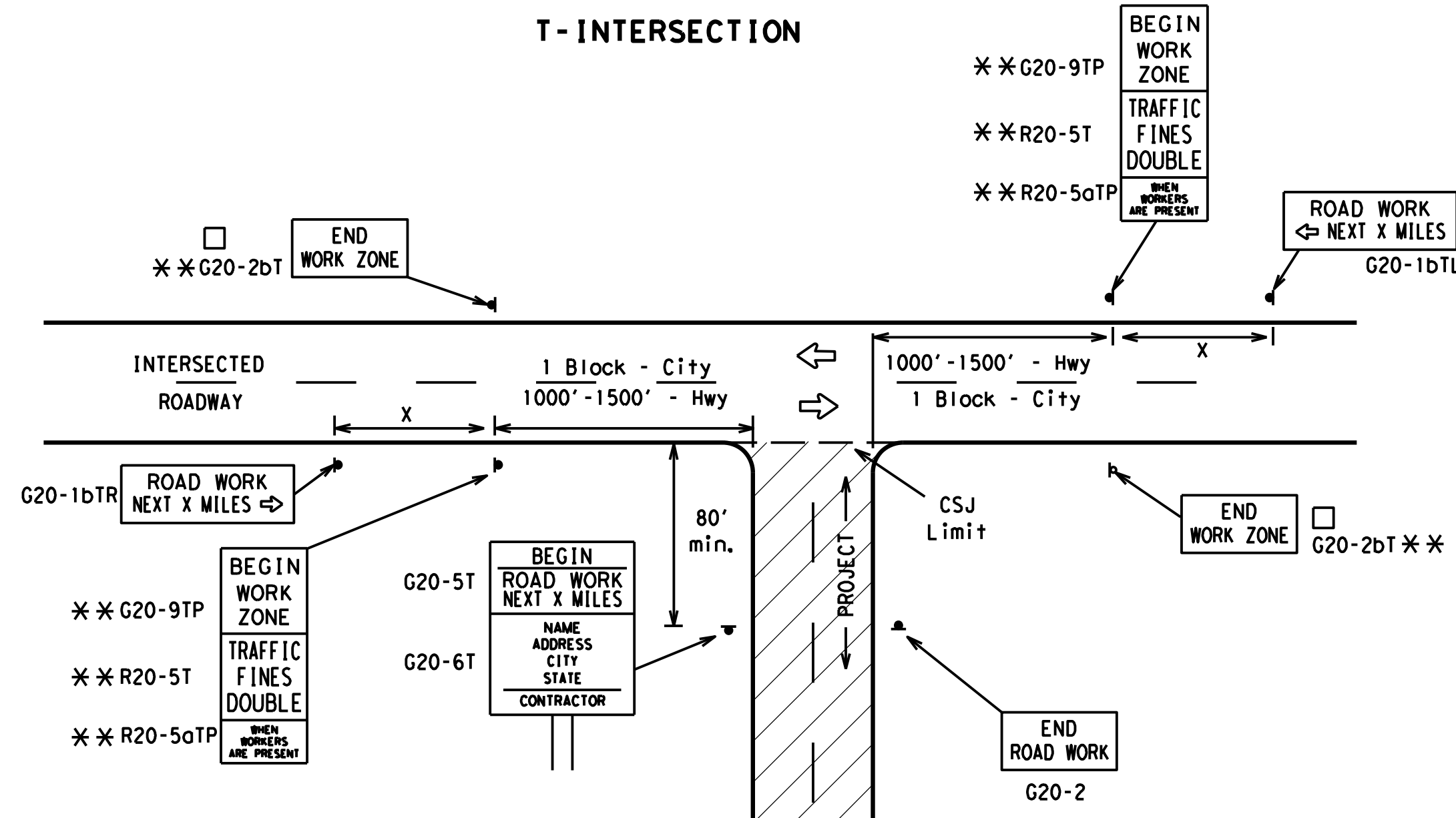
TYPICAL LOCATION OF CROSSROAD SIGNS



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

- 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.
- 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.
- 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.
- 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.
- Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
- 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

- 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.
- 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}

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Δ Spacing "x" Feet (Apprx.)
CW20 ⁴	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	55	500 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	60	600 ²
			65	700 ²
			70	800 ²
			75	900 ²
			80	1000 ²
			*	* ³

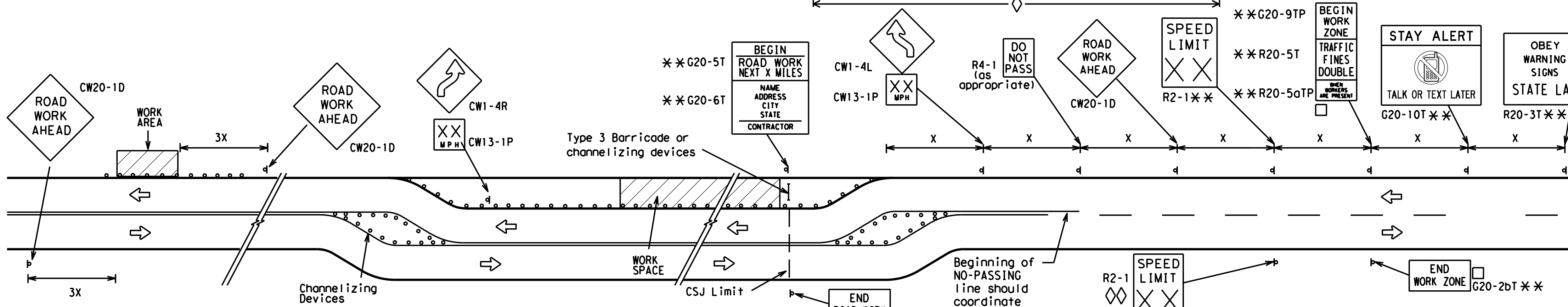
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

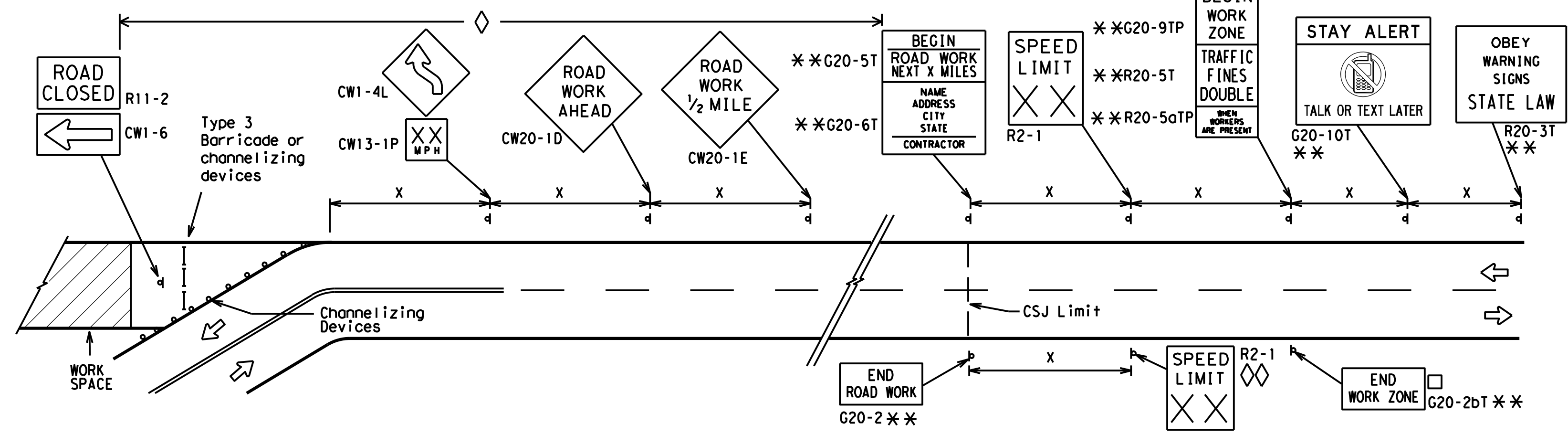
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be 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".
- Only diamond shaped warning sign sizes are indicated.
- See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-1aT) sign for each specific project. This distance shall replace the "x" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
- CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
- Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
- Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC (2) - 21

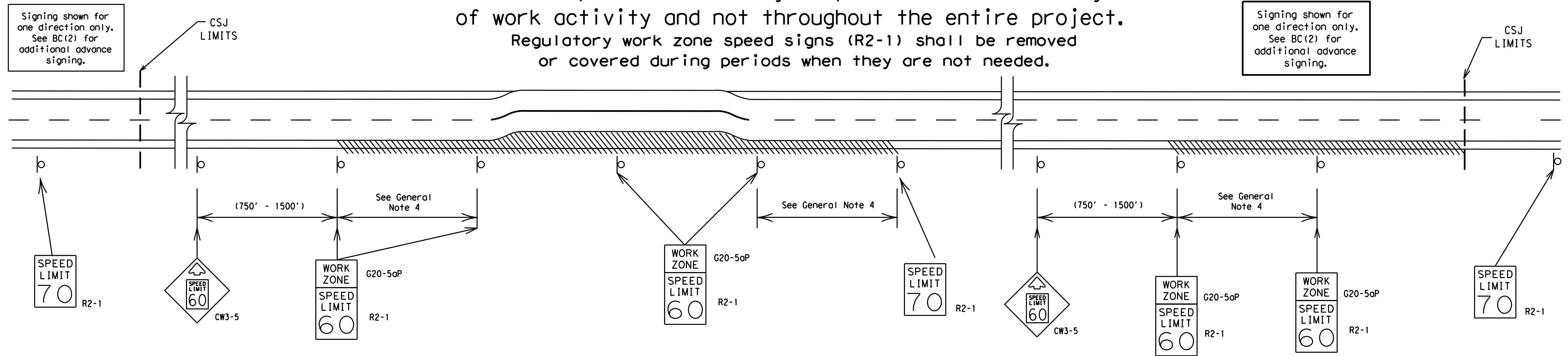
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0055	15	082	US 84
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	WAC	MCLENNAN	33	

DATE: FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project. Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- 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

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- 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
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- 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.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- 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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SHEET 3 OF 12



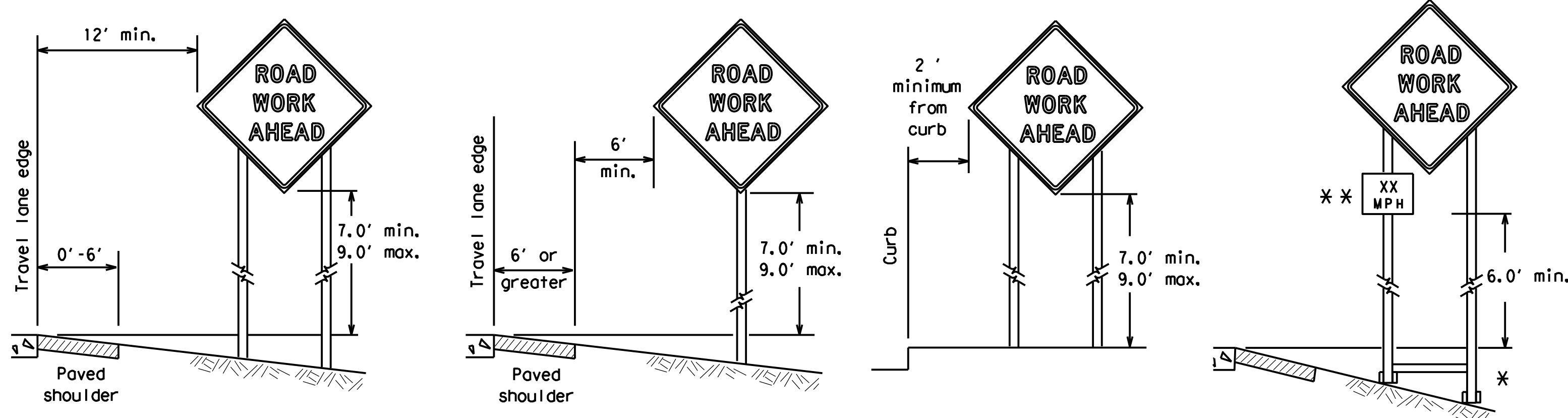
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) - 21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0055	15	082	US 84				
9-07	8-14	DIST	COUNTY	SHEET NO.					
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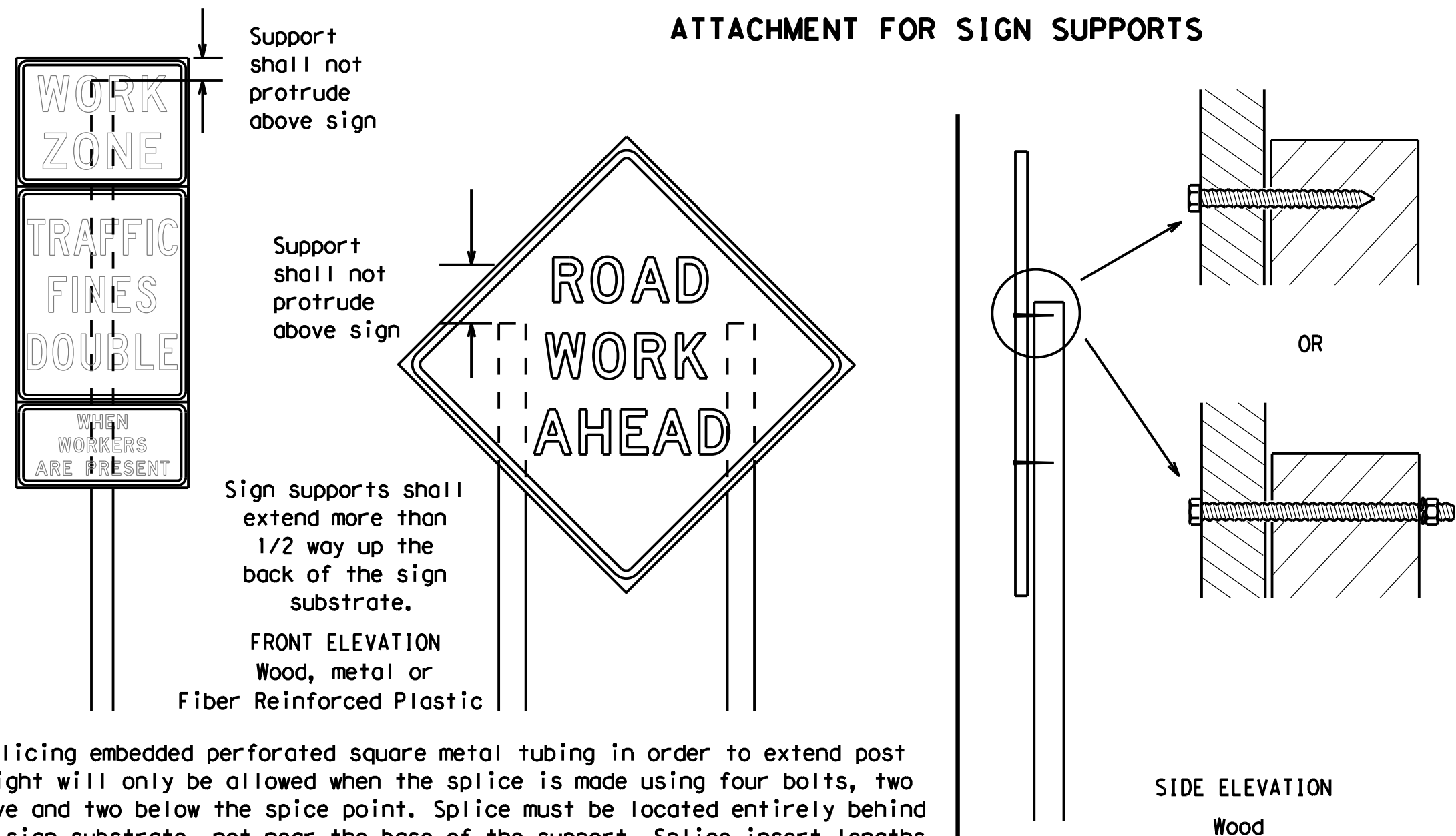
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

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

ATTACHMENT FOR SIGN SUPPORTS



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

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice 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.

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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)

- 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.
 - Long-term stationary - work that occupies a location more than 3 days.
 - 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.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- 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.
- 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.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- 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.
- 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

- 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

- 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.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- 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

- 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).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

- 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

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- 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.
- 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.
- 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.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

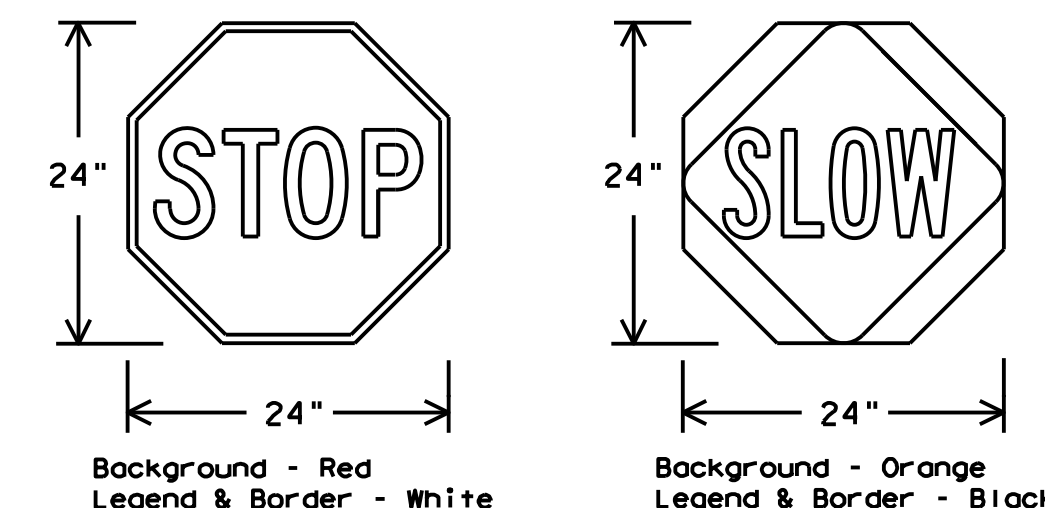
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- 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.
- 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.
- 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.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

- 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.

STOP/SLOW PADDLES

- STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
- STOP/SLOW paddles shall be retroreflectORIZED when used at night.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- 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

- 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.
- 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.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- 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.
- 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.
- 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.

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Texas Department of Transportation Traffic Safety Division Standard

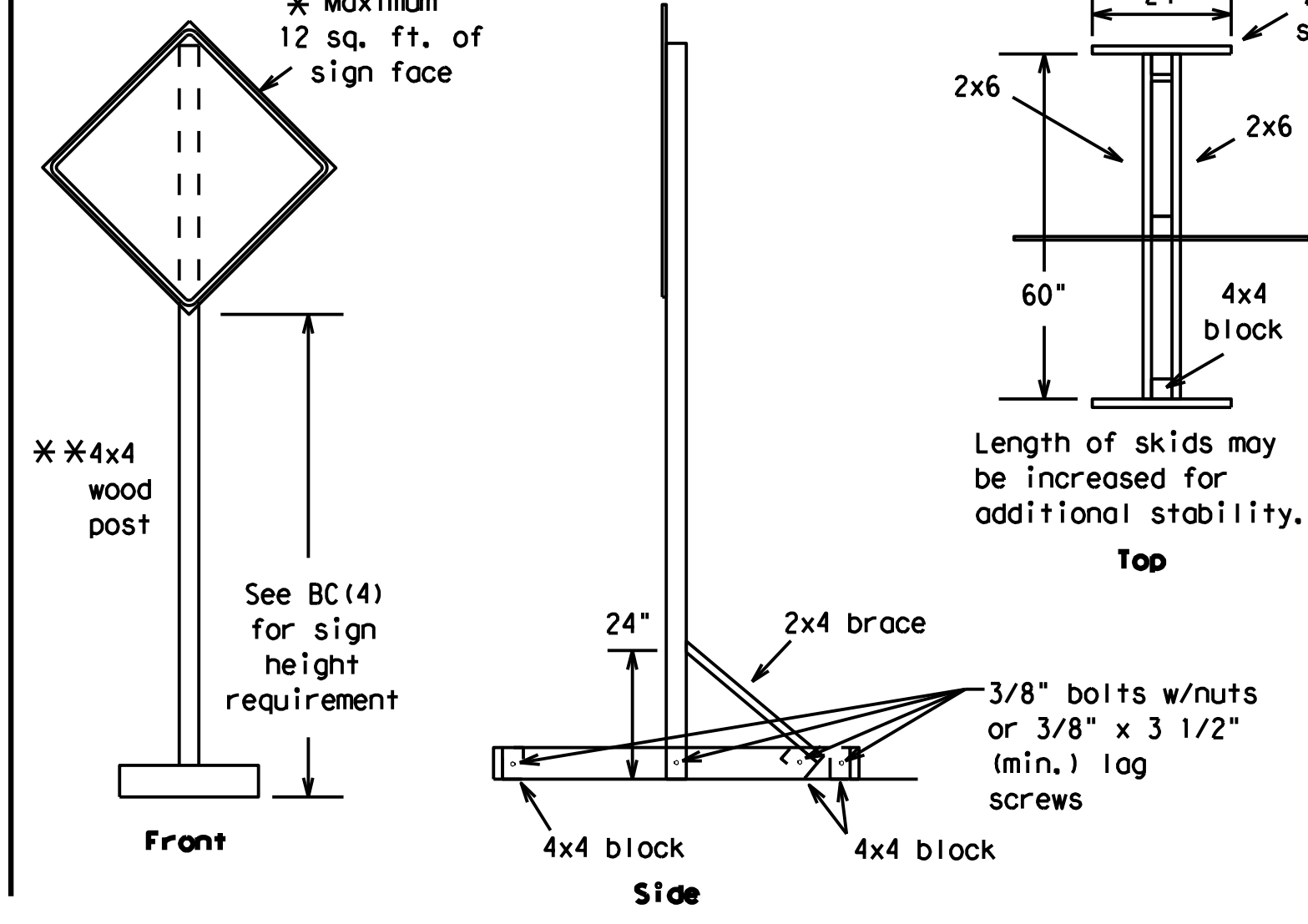
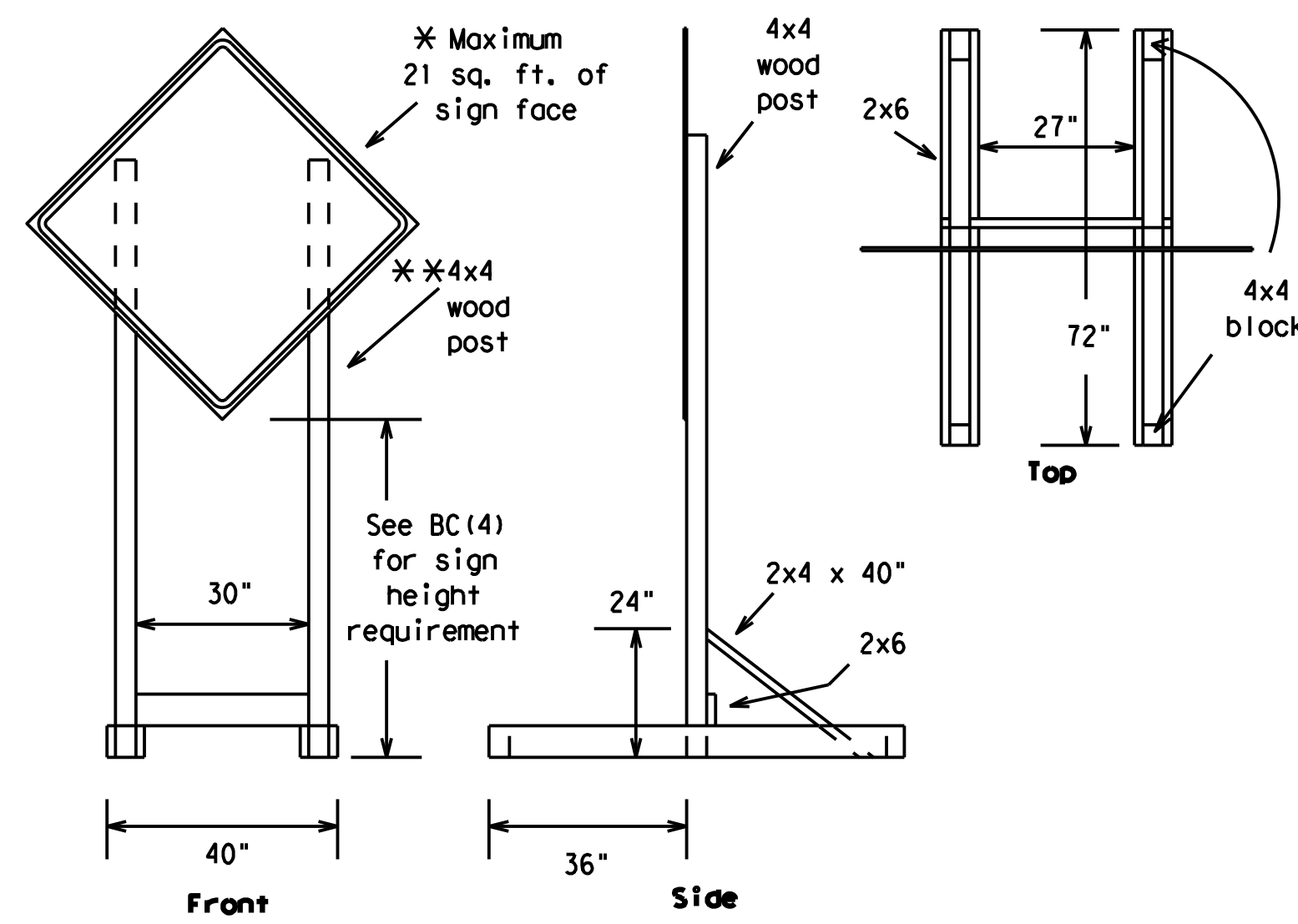
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC (4) - 21

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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	WAC	MCLENNAN	35	

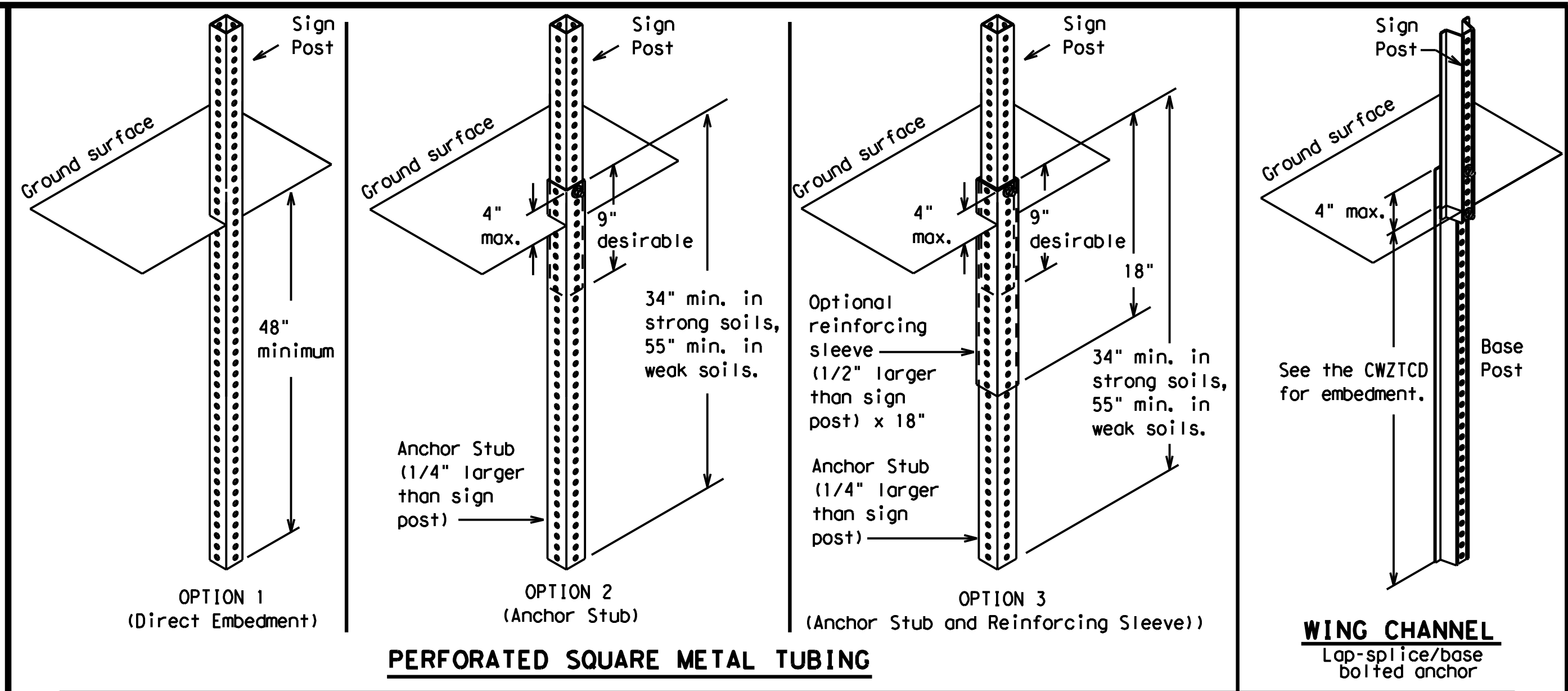
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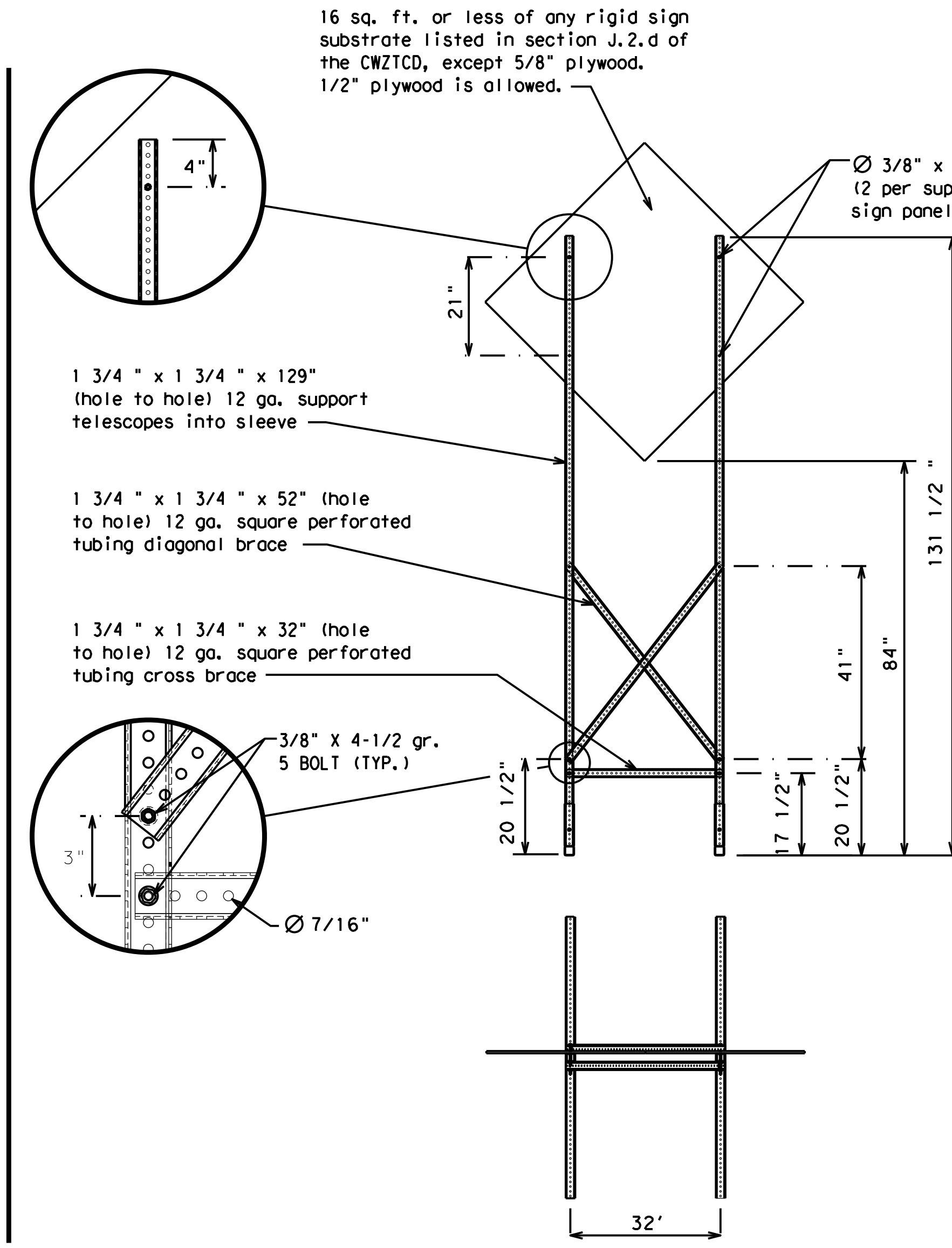
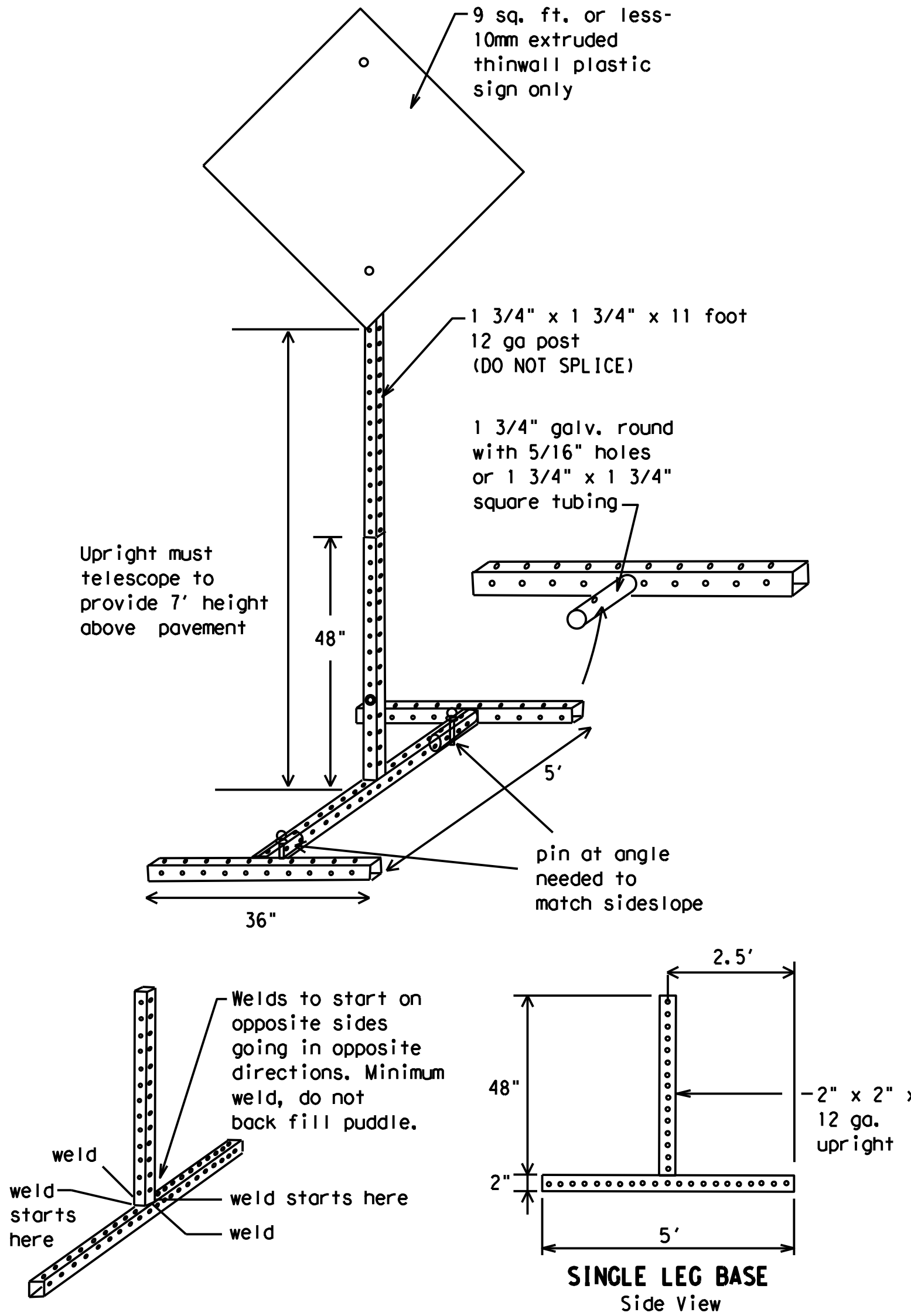
SKID MOUNTED WOOD SIGN SUPPORTS

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



GROUND MOUNTED SIGN SUPPORTS

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



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

- 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.
- No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
- 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

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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

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- 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.
- 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.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- 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.
- 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.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- 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.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- 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.
- 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.
- Each line of text should be centered on the message board rather than left or right justified.
- 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 Vehicle	HOV	Tuesday	TUES
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		Other Condition List	
FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXXX BLVD CLOSED			

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

Phase 2: Possible Component Lists

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- 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.
- 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

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- 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

- 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.
- 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.
- 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.
- A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.


 Texas Department of Transportation
 Traffic Safety Division Standard

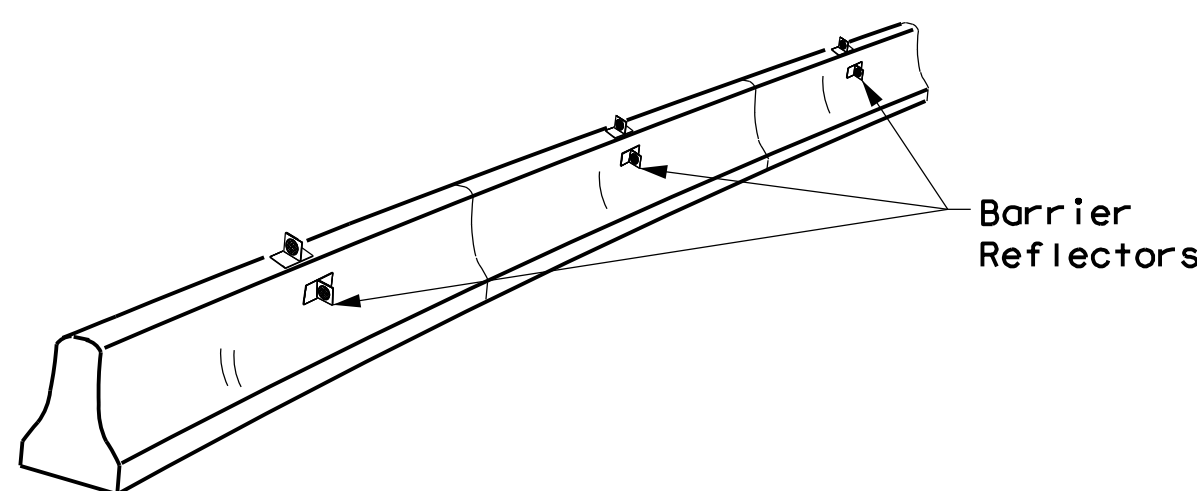
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC (6) - 21

FILE: bc-21.dgn	DWG: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT November 2002		CONT: 0055	SECT: 15	JOB: 082
REVISIONS: 9-07 8-14		DIST: WAC	COUNTY: MCLENNAN	HIGHWAY: US 84
7-13 5-21				SHEET NO.: 37

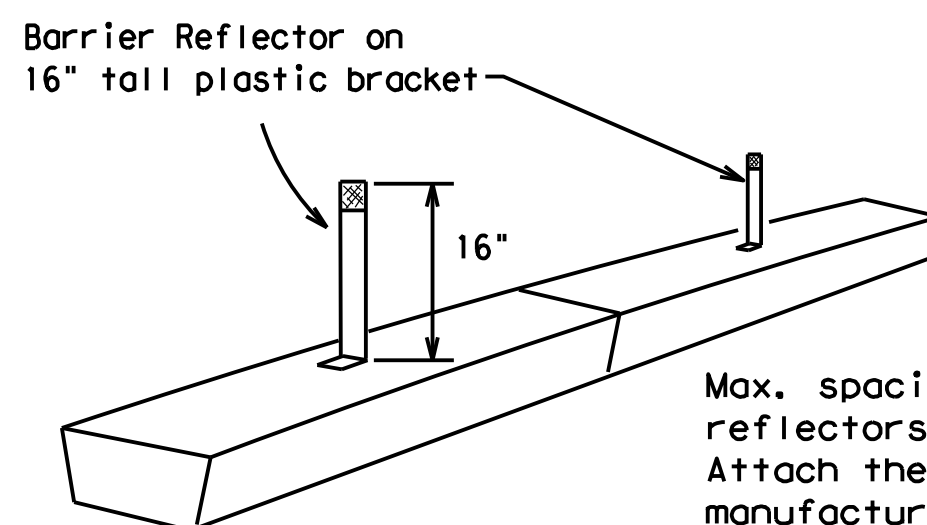
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



CONCRETE TRAFFIC BARRIER (CTB)

- 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.
- 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.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.

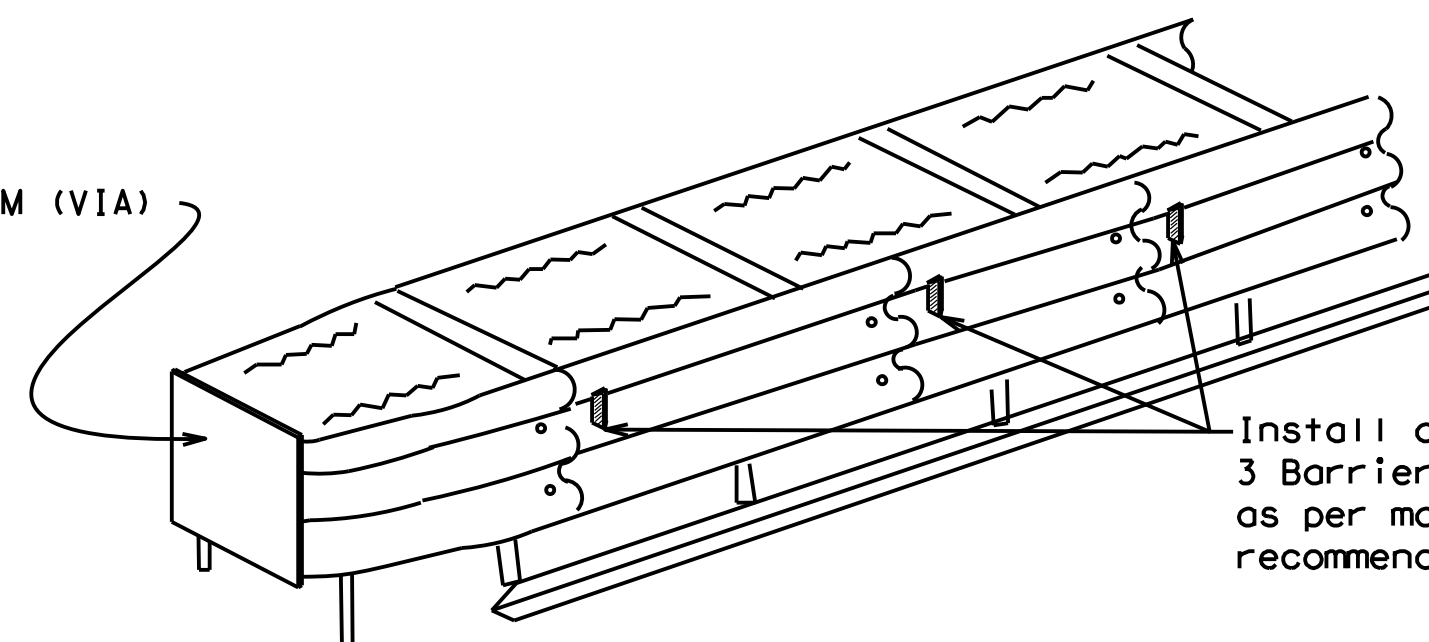


LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

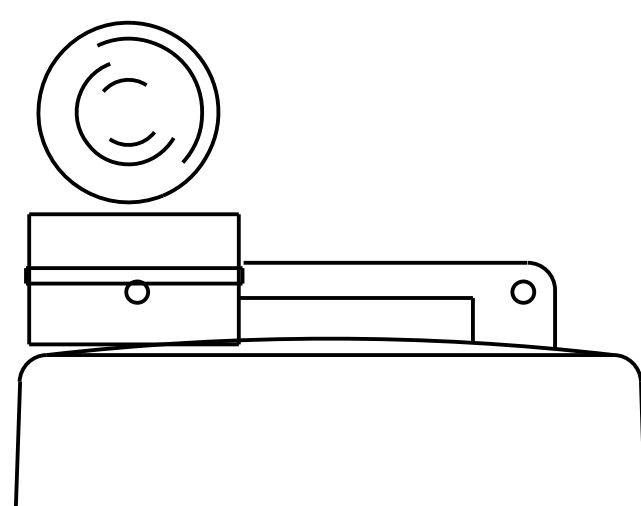
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- 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.
- 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.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

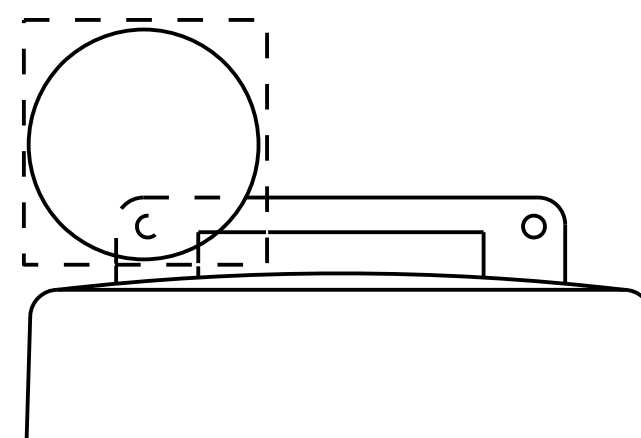
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing 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.
- 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.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

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

- 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.
- 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.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- 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.
- 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.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.



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

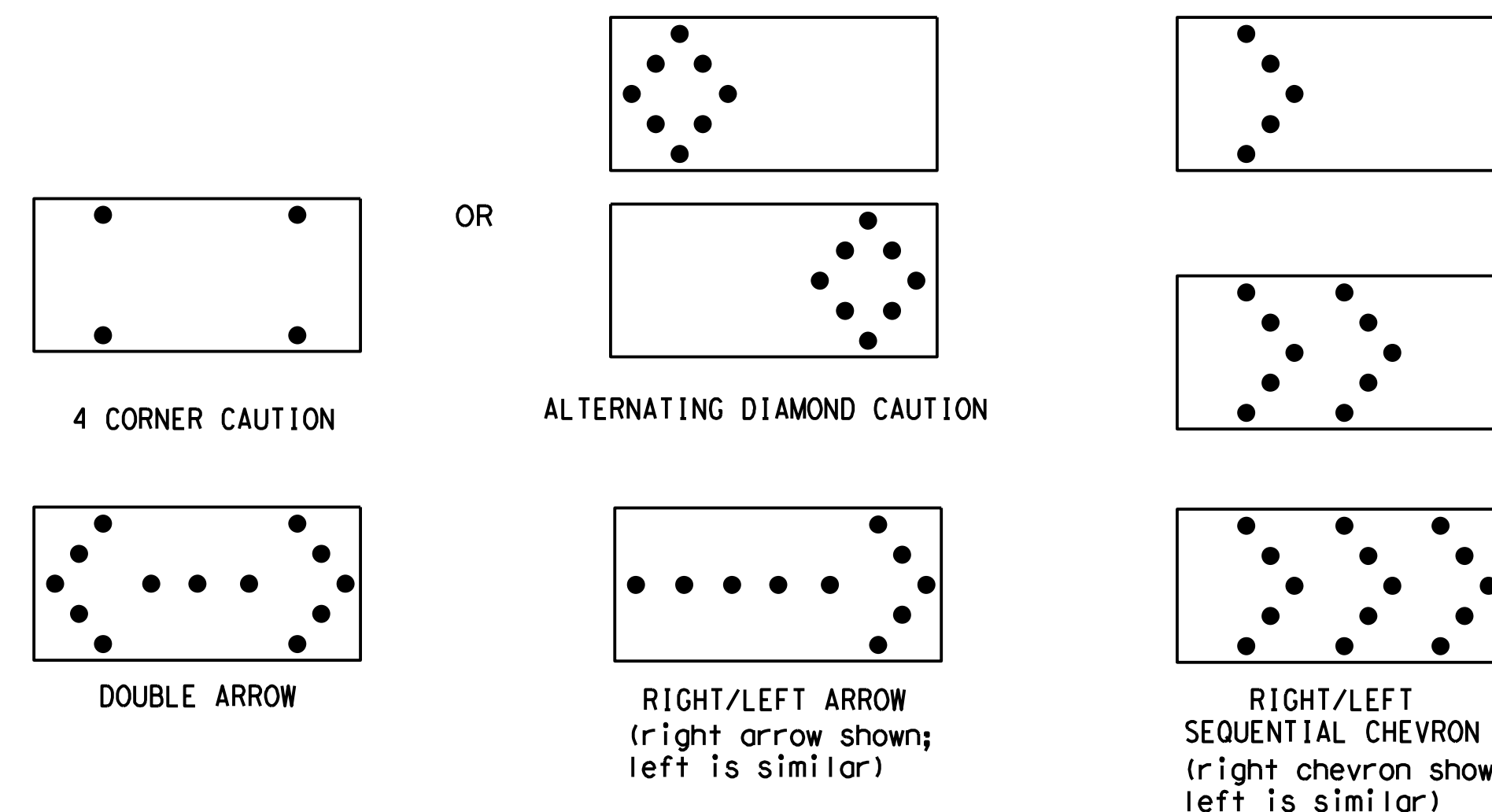


Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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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.

- 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.
- 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.
- 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.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- 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.
- 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.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- 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.
- 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

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- 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.
- The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.



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

BC (7) -21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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7-13	5-21	WAC	MCLENNAN	38					

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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- 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).
- 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.
- 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:

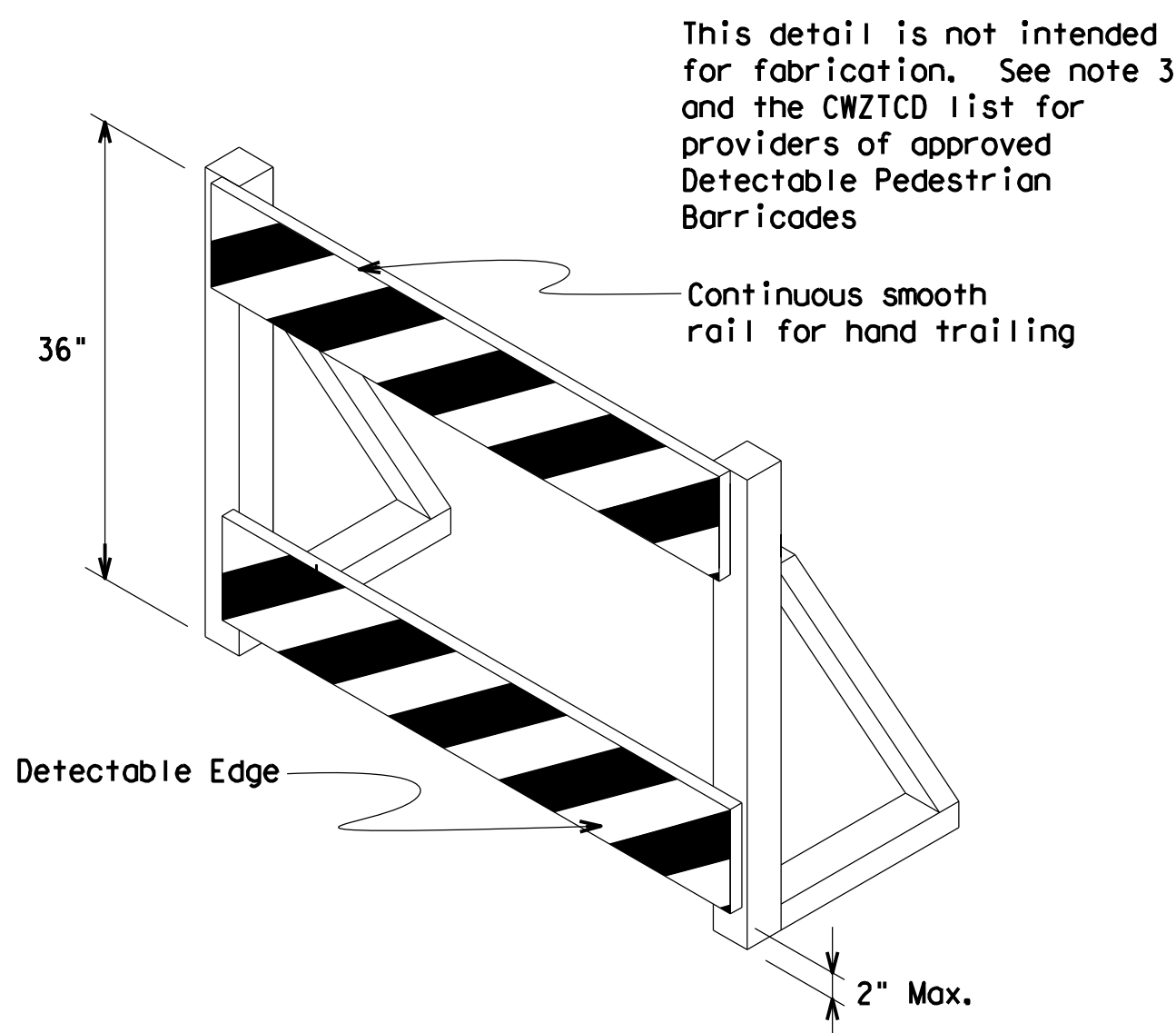
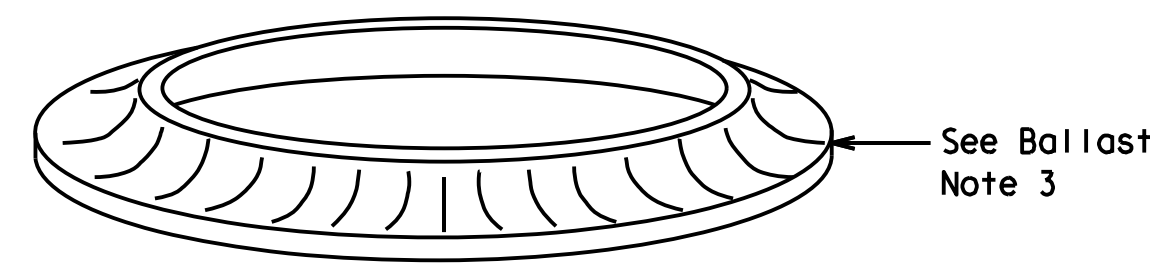
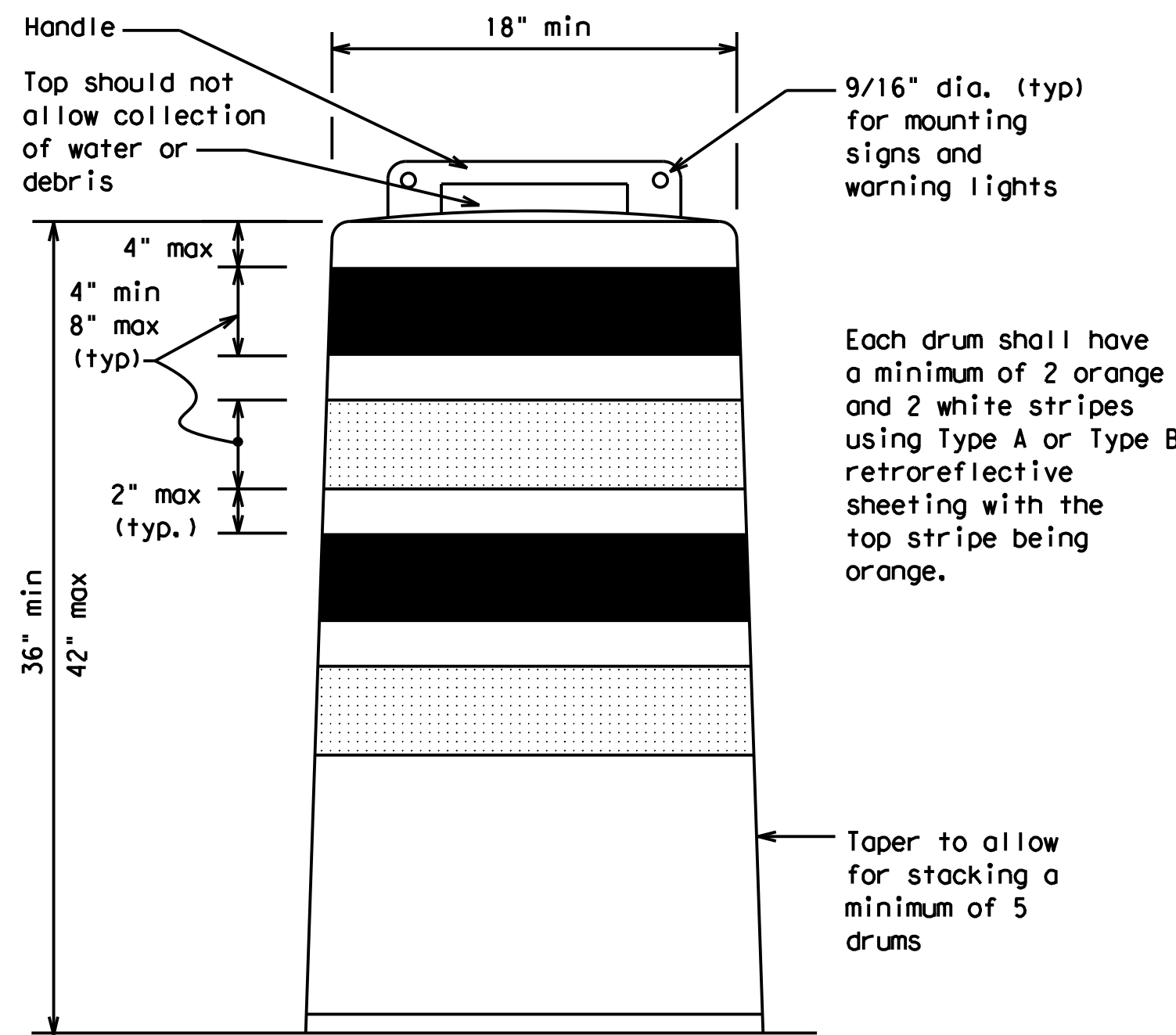
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- 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.
- 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.
- 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.
- 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.
- 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.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

- 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.
- 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.

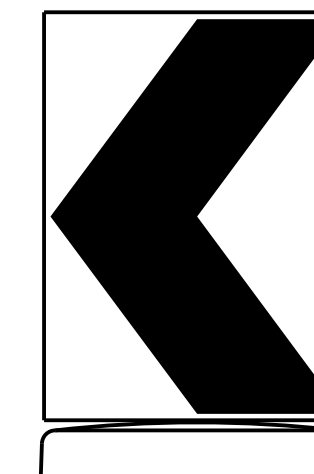
BALLAST

- 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.
- 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.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 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.
- 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.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

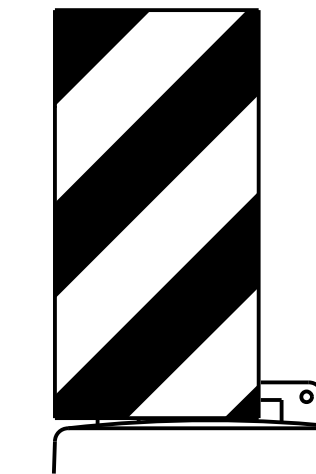


DETECTABLE PEDESTRIAN BARRICADES

- 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.
- 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.
- 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.
- 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.
- Warning lights shall not be attached to detectable pedestrian barricades.
- 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

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- 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.
- 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.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 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.
- 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.

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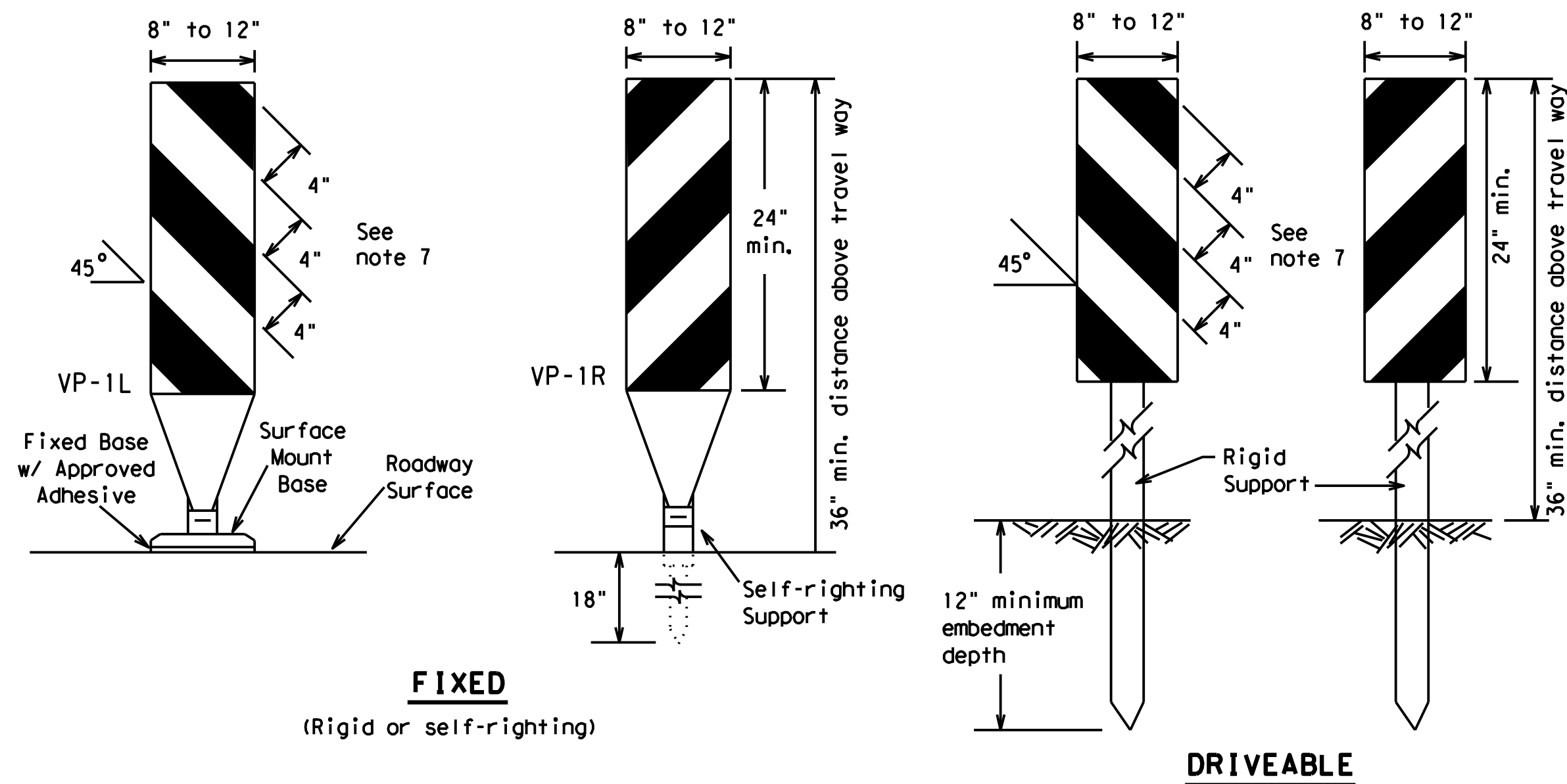


BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 21

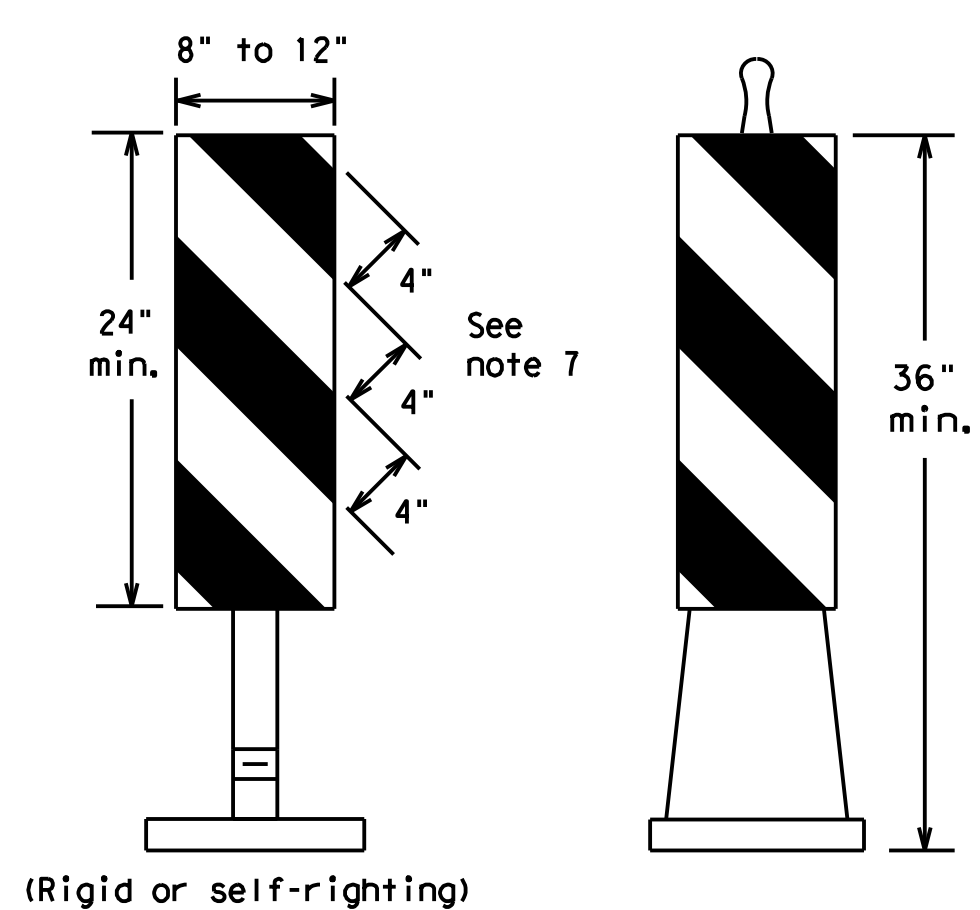
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FIXED
(Rigid or self-righting)

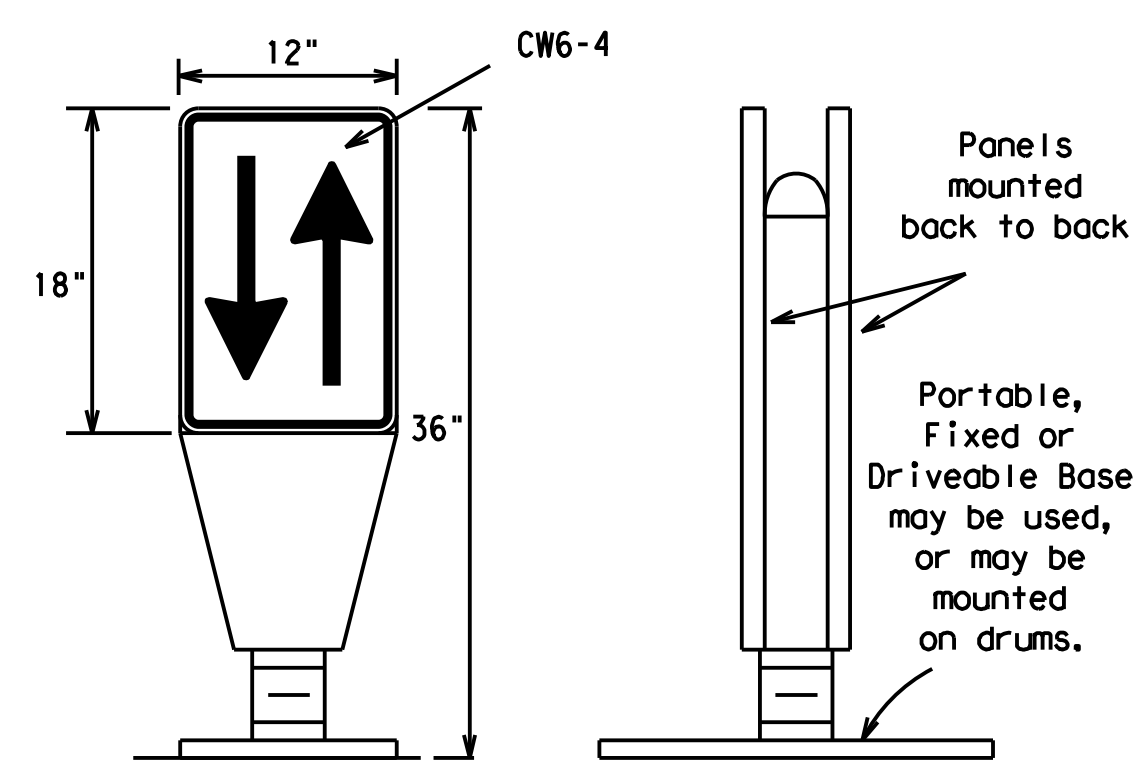
DRIVEABLE



PORTABLE

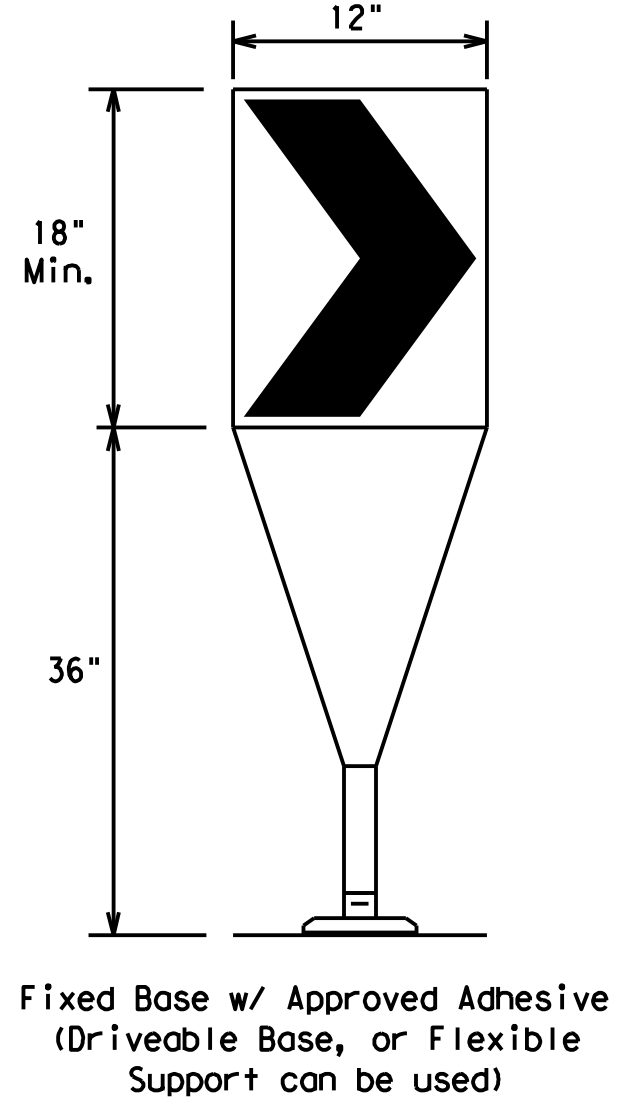
VERTICAL PANELS (VPs)

- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- 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.
- 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.
- VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



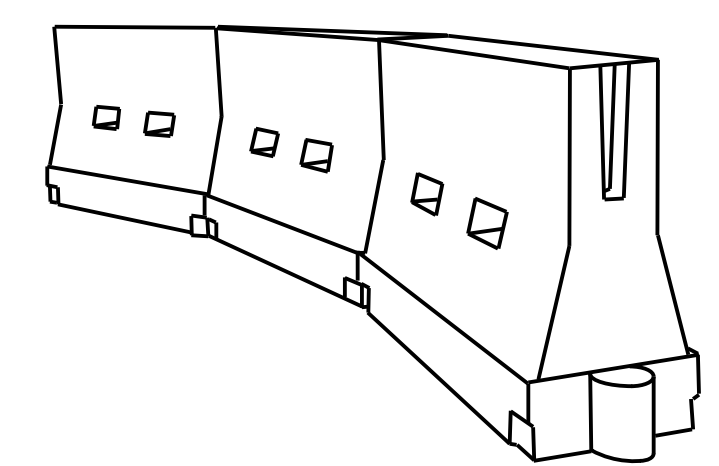
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

- 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.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 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.
- 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.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- 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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- 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.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- 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

- 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.
- 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.
- 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.
- 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.
- 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

GENERAL NOTES

- 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).
- 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.
- 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).
- 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.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- 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.
- 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.

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 21

FILE: bc-21.dgn	DN: TxDOT	CR: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0055	15	082	US 84
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	WAC	MCLENNAN	40	

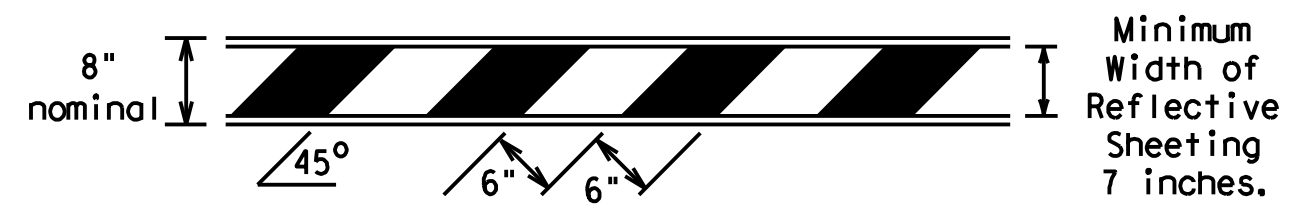
DATE: FILE:

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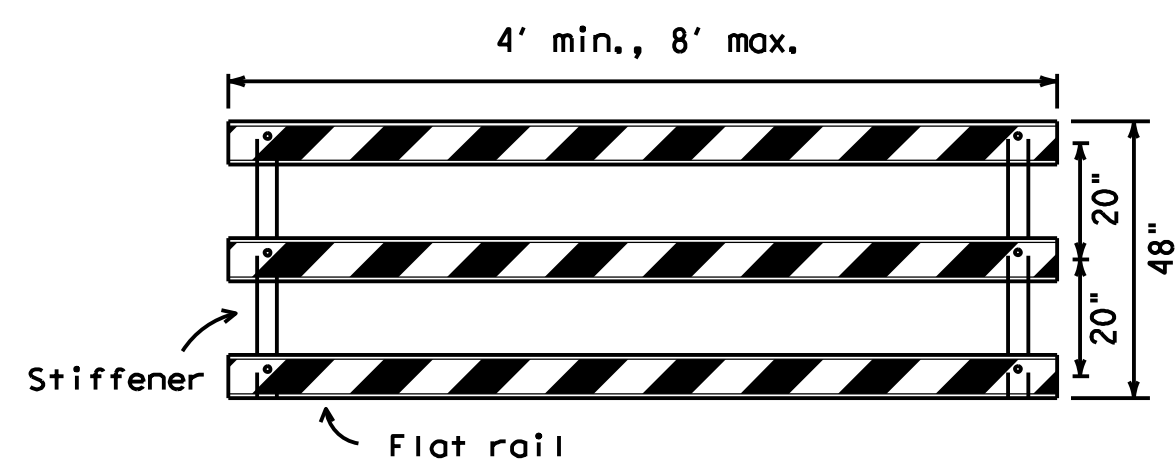
TYPE 3 BARRICADES

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.

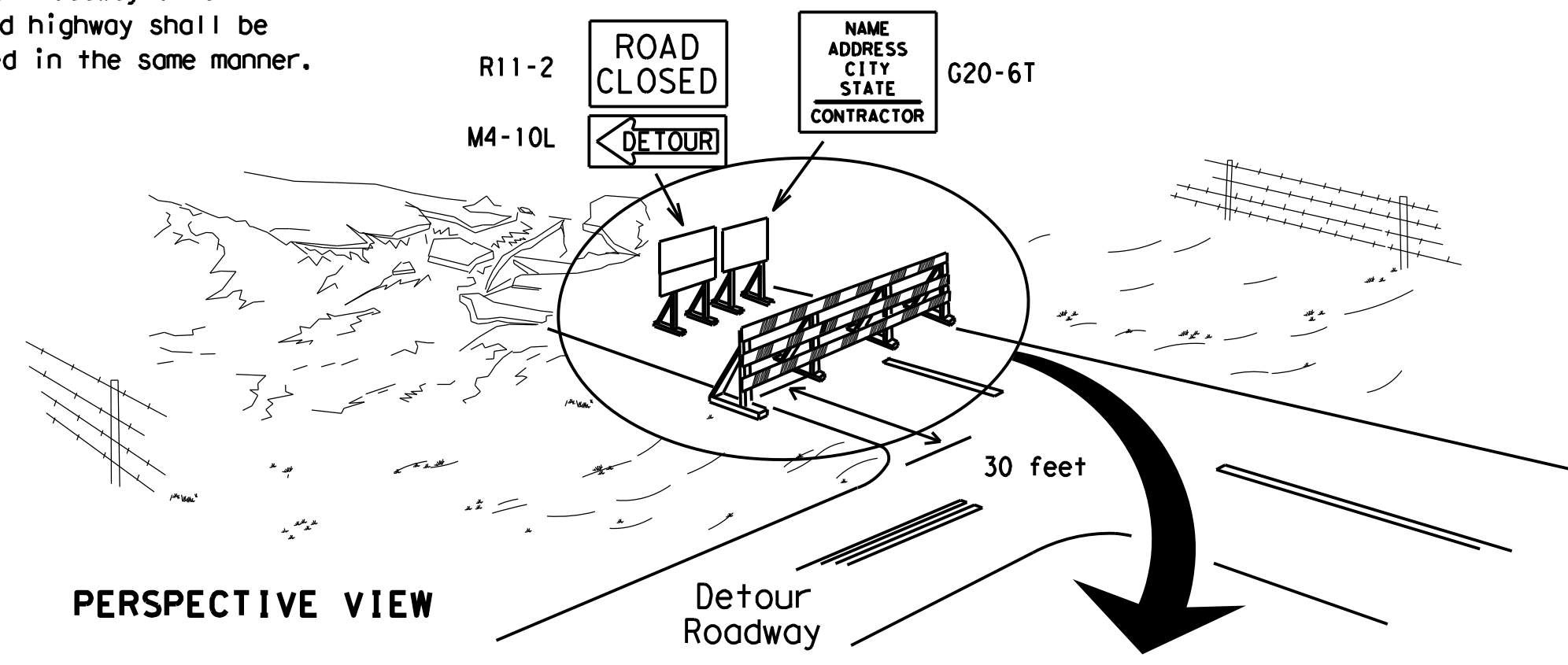


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



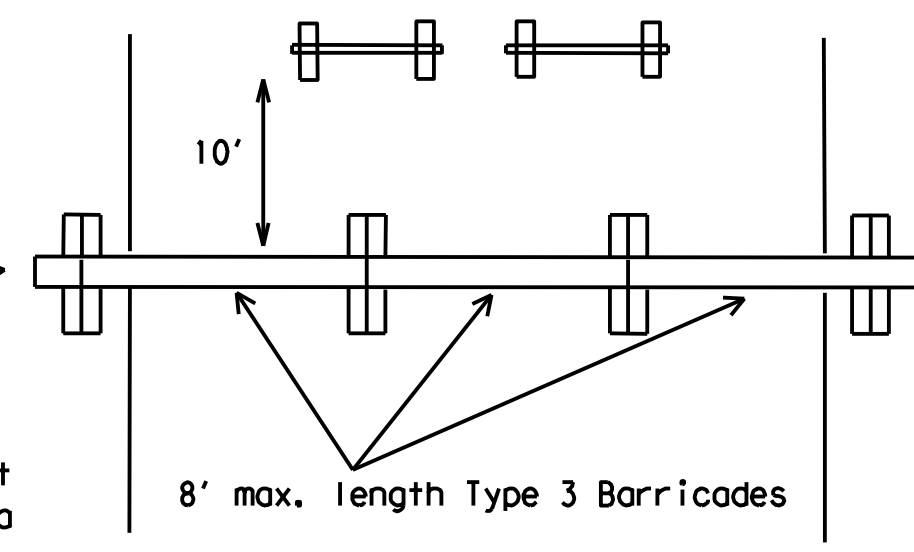
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

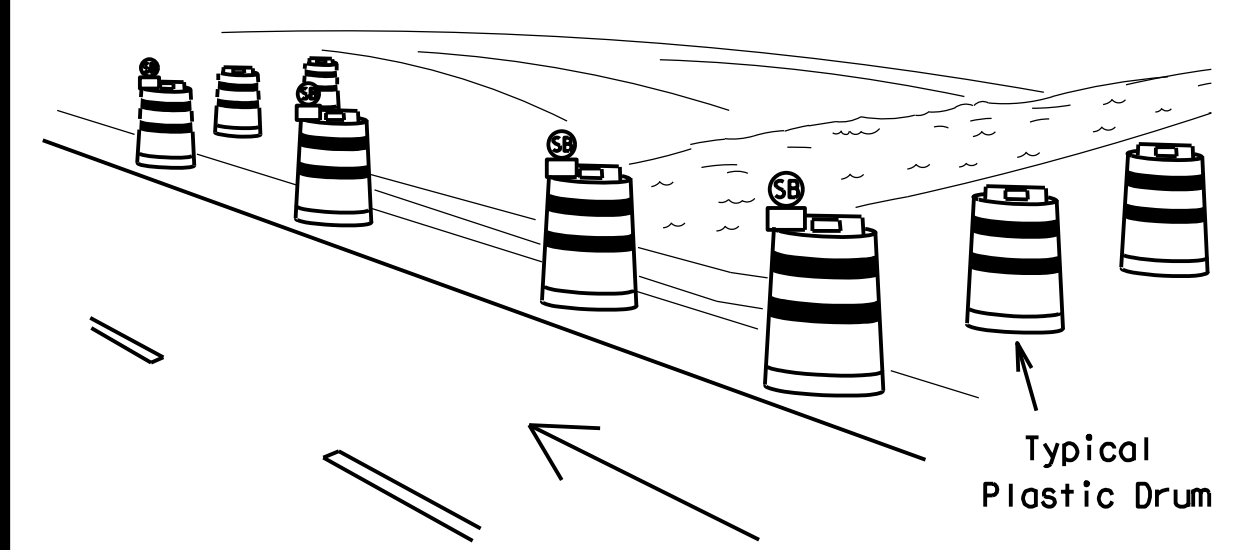
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



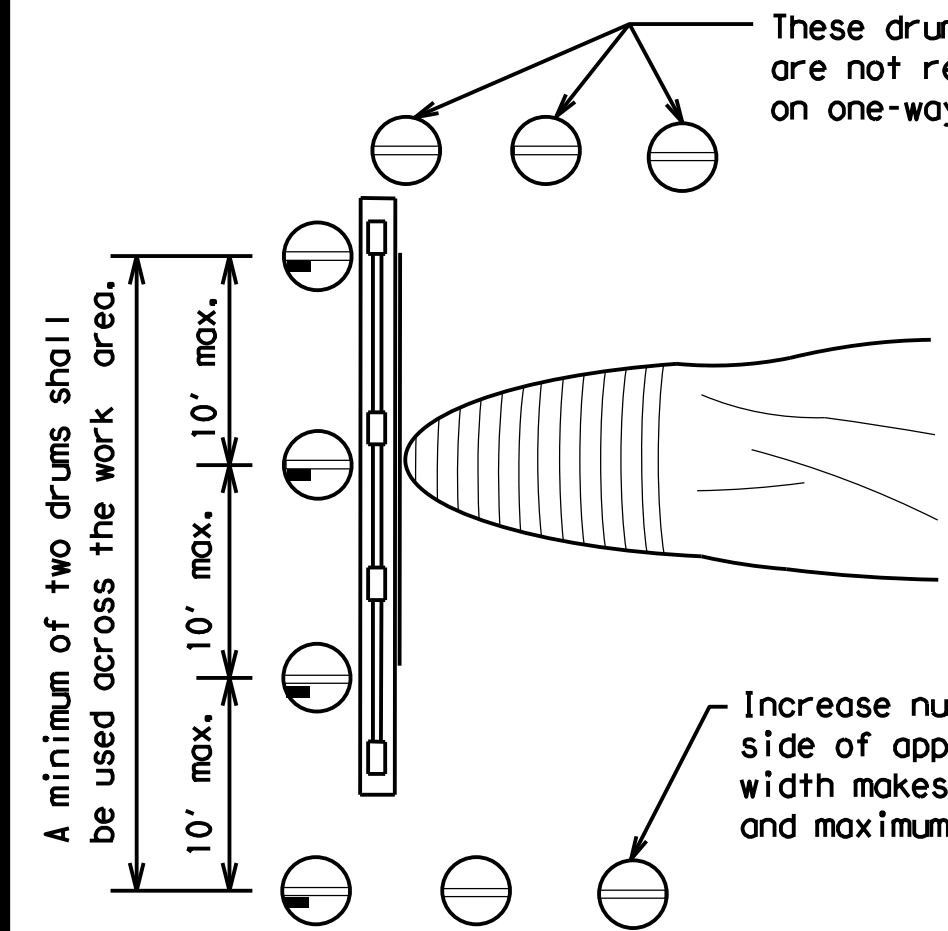
PLAN VIEW

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

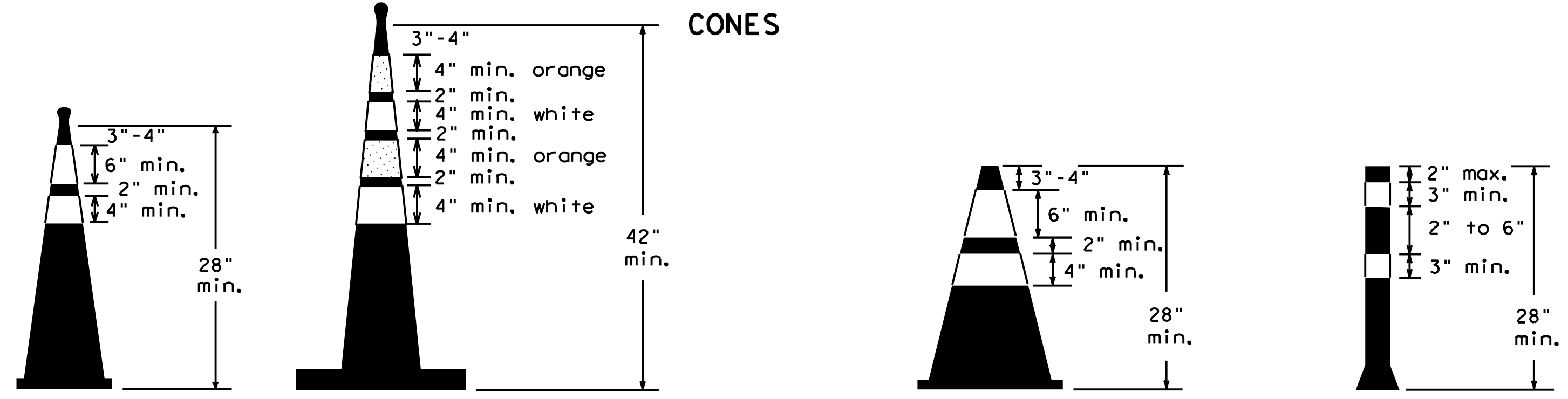


PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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

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



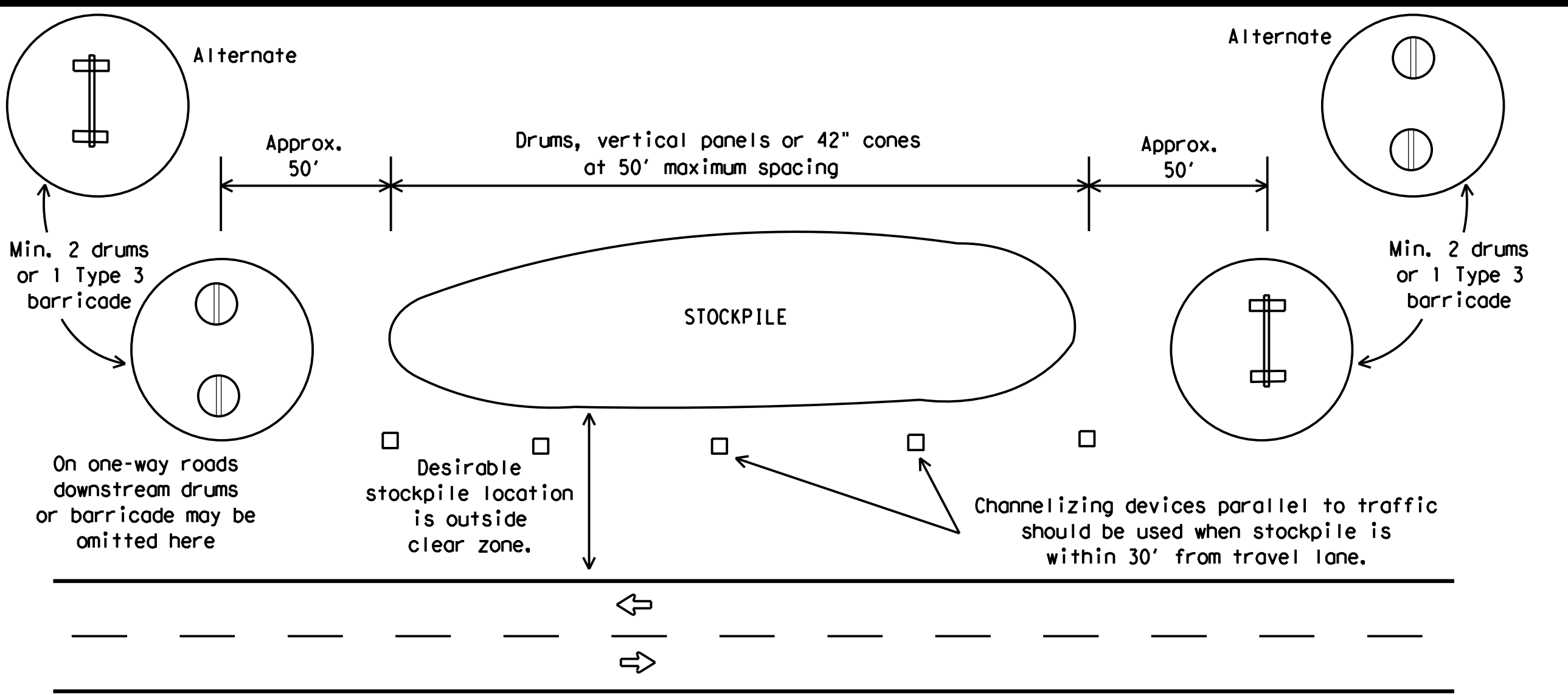
Two-Piece cones

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



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (10) - 21

FILE: bc-21.dgn	DN: TxDOT	CR: TxDOT	OW: TxDOT	CK: TxDOT
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REVISIONS	0055	15	082	US 84
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	WAC	MCLENNAN	41	

DATE: FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

- 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.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- 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).
- 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.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- 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

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

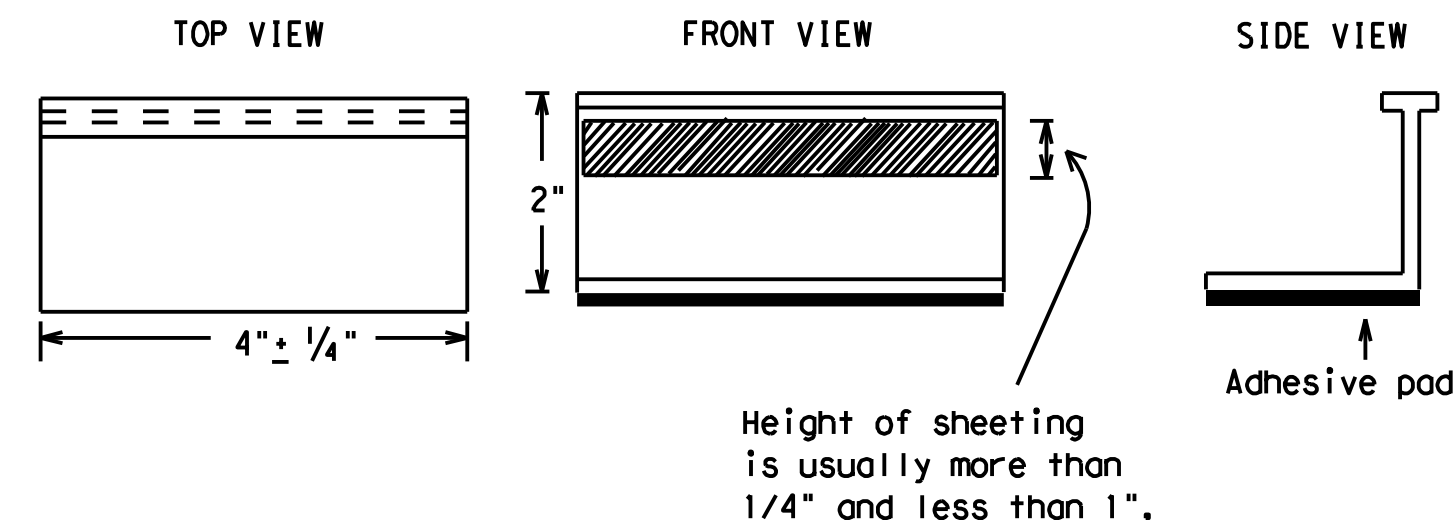
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- 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.
- 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.
- 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

- 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.
- 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.
- 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".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- 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.
- 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**

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- 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.
 - 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.
 - 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.
- Small design variances may be noted between tab manufacturers.
- 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

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- 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).

SHEET 11 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

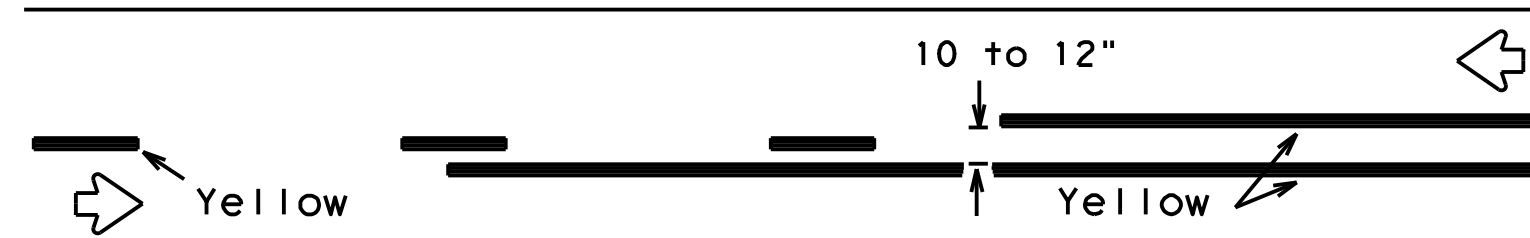
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0055	15	082	US 84
2-98 9-07 5-21	DIST	COUNTY	SHEET NO.	
1-02 7-13	WAC	MCLENNAN	42	
11-02 8-14				

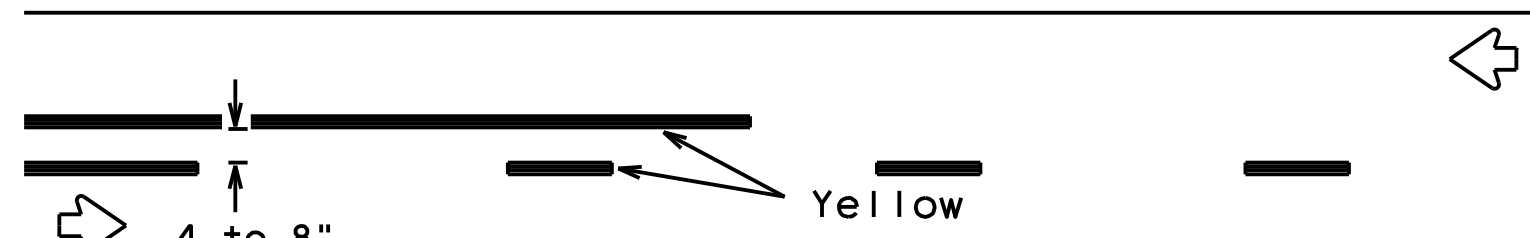
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PAVEMENT MARKING PATTERNS

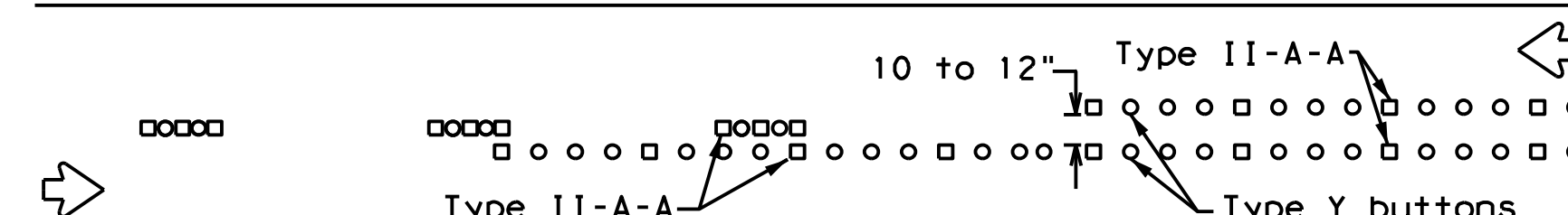


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

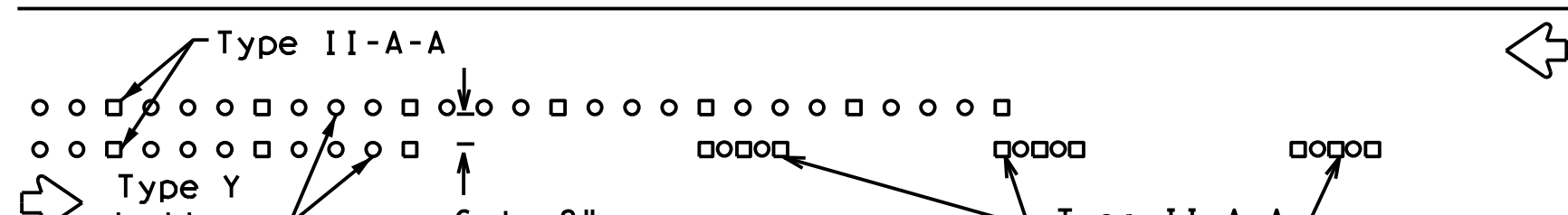


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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.

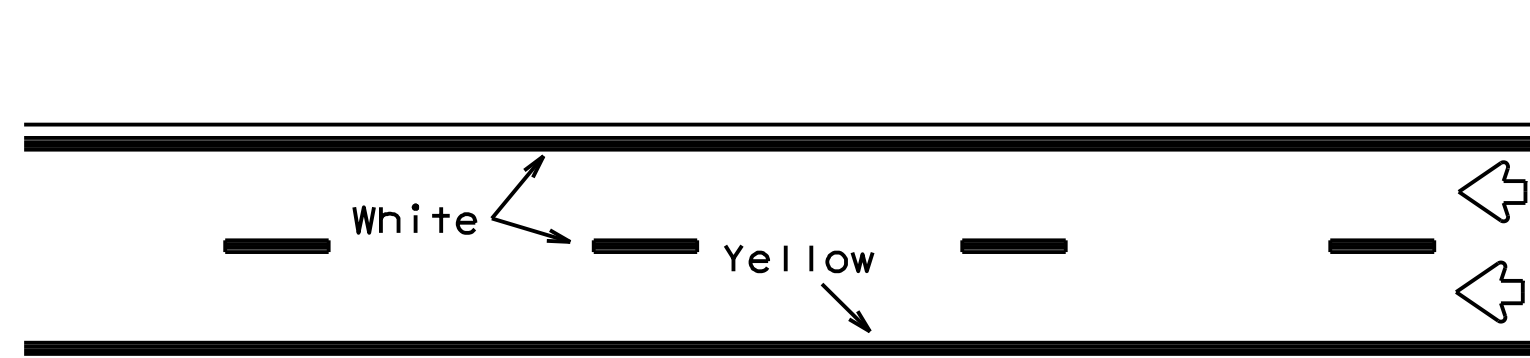


RAISED PAVEMENT MARKERS - PATTERN A



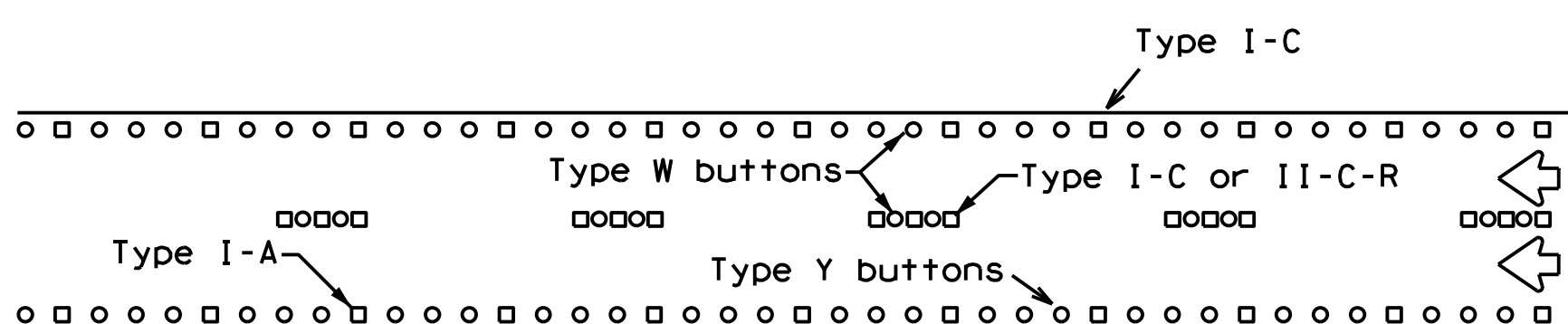
RAISED PAVEMENT MARKERS - PATTERN B

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



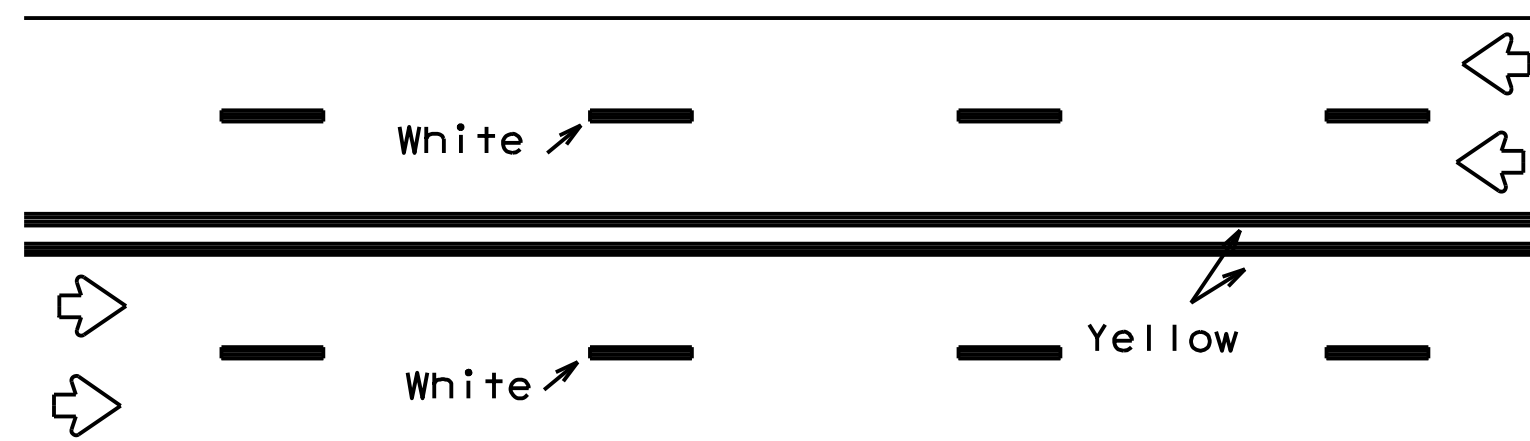
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



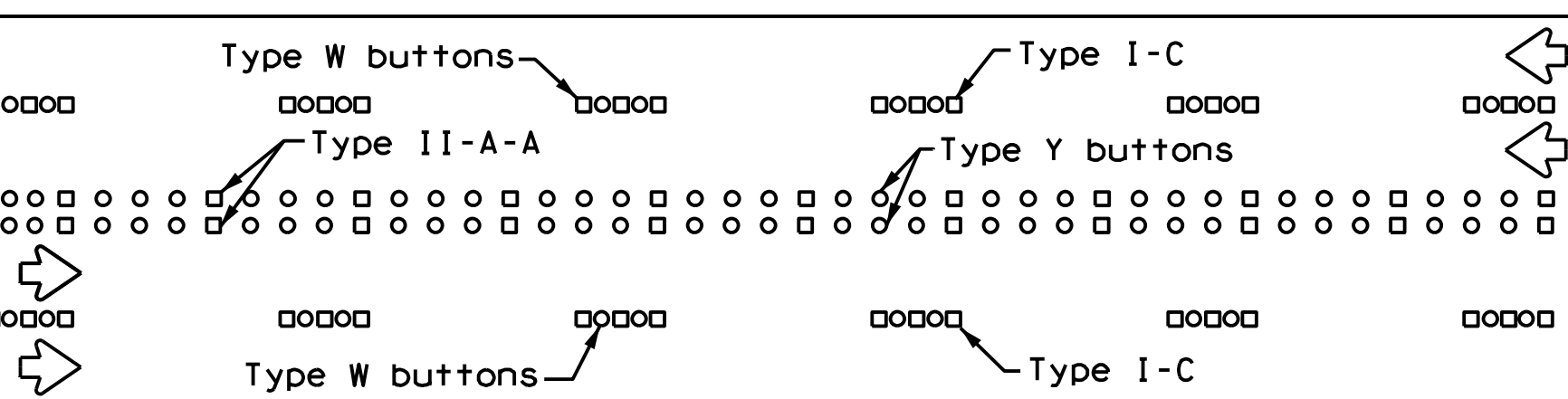
RAISED PAVEMENT MARKERS

EDGE & LANE LINES FOR DIVIDED HIGHWAY



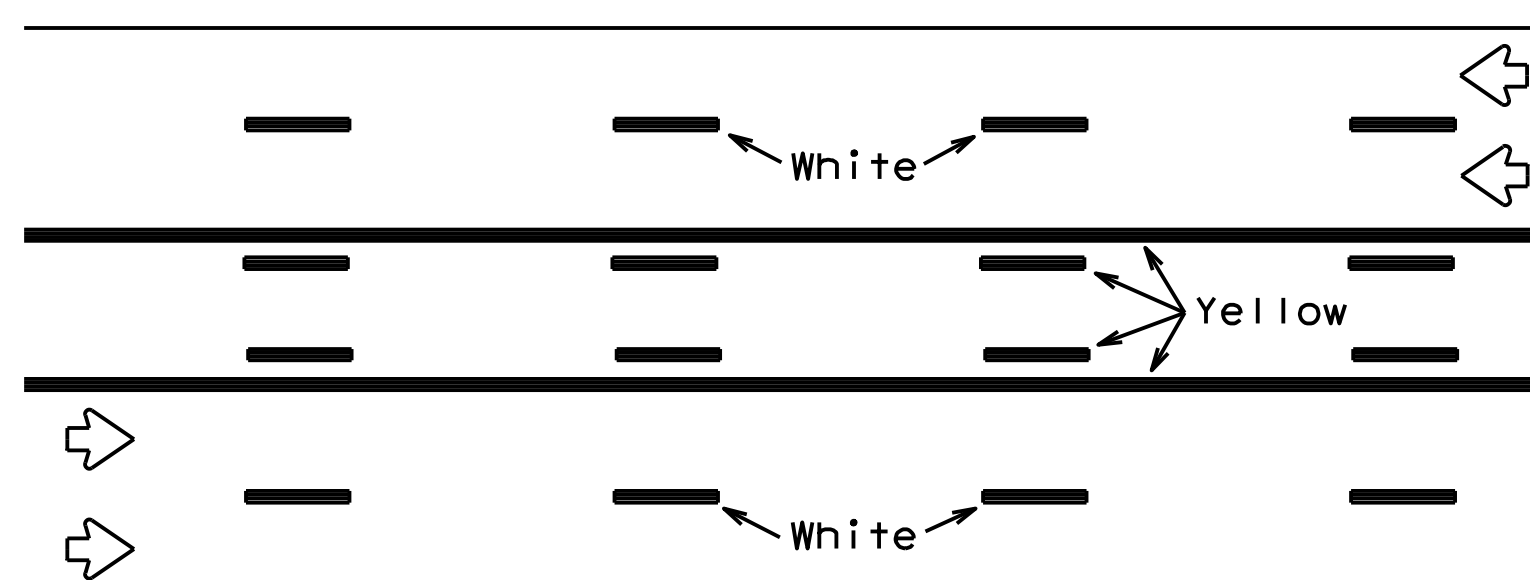
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



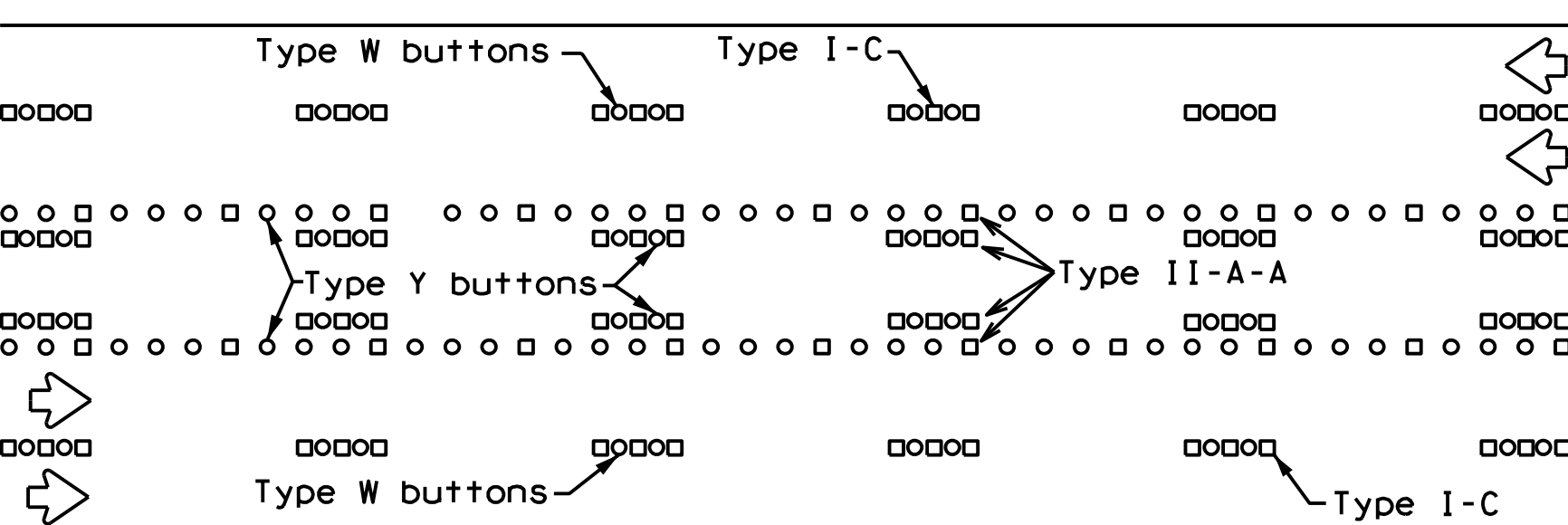
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

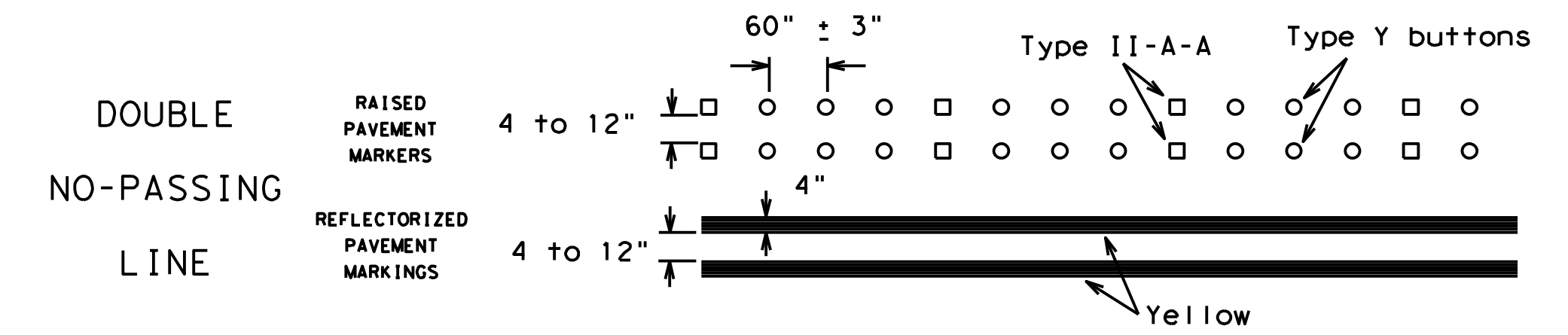
Prefabricated markings may be substituted for reflectORIZED pavement markings.



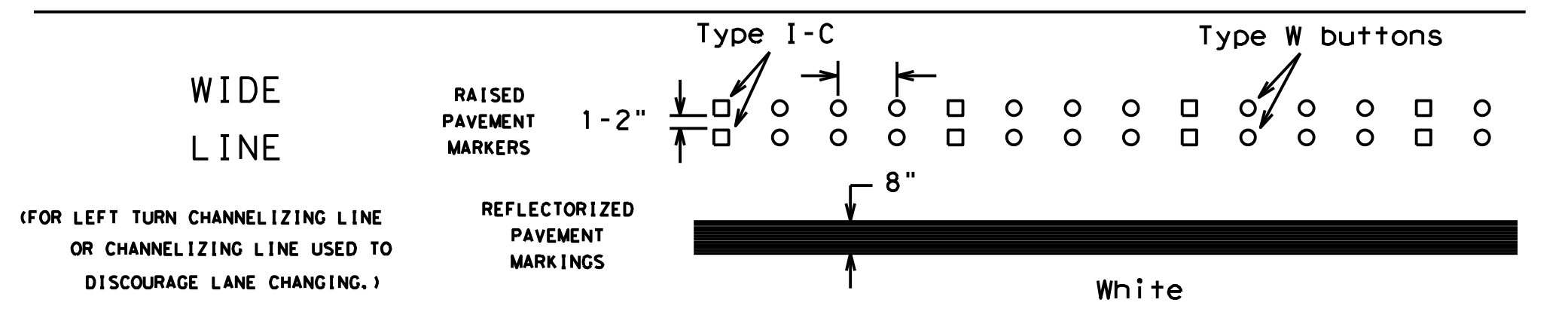
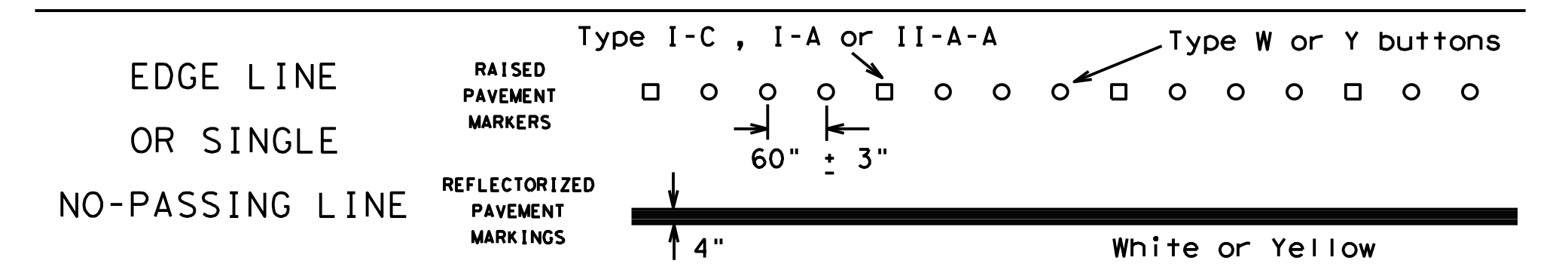
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE

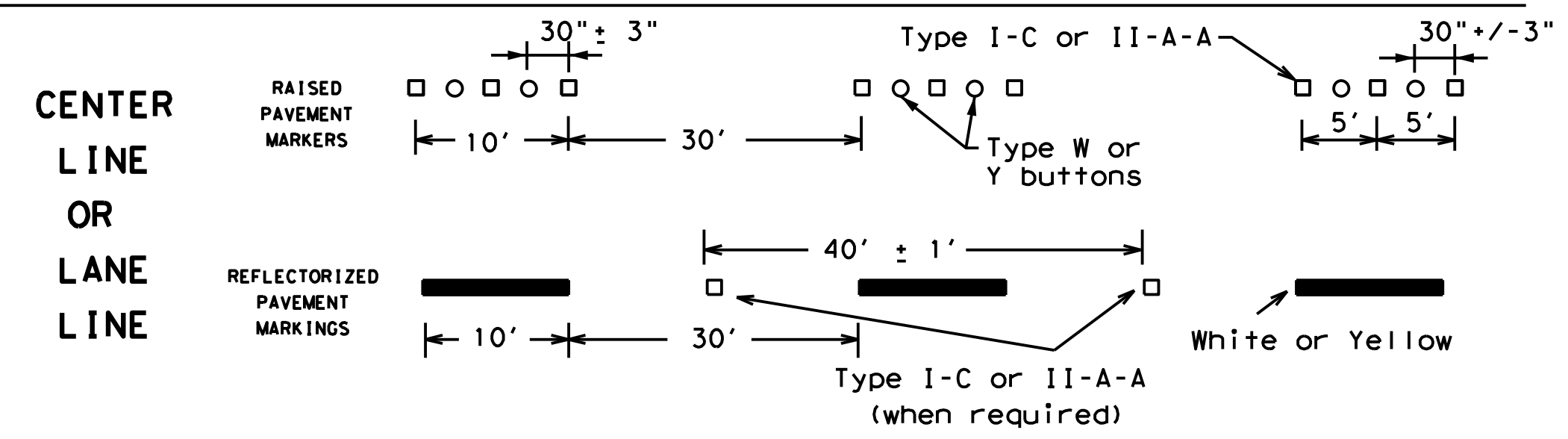
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



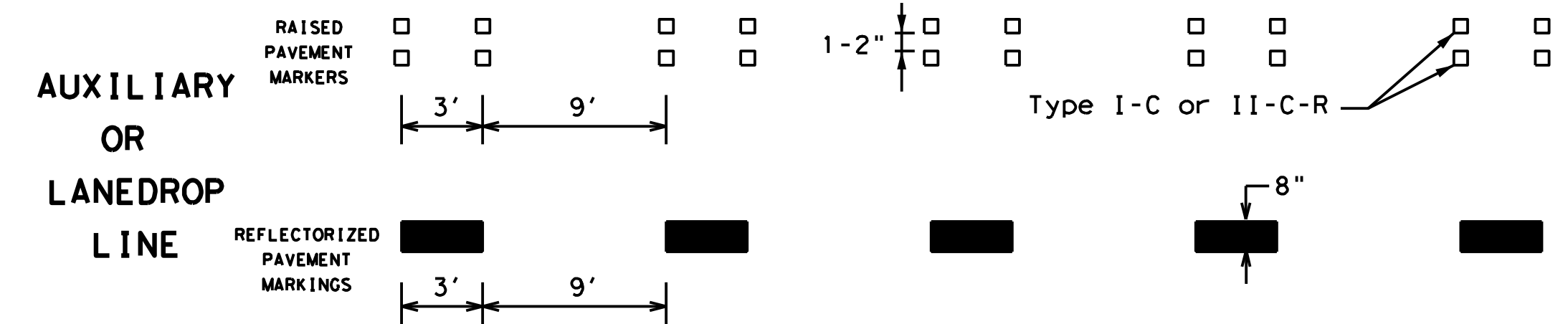
SOLID LINES



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

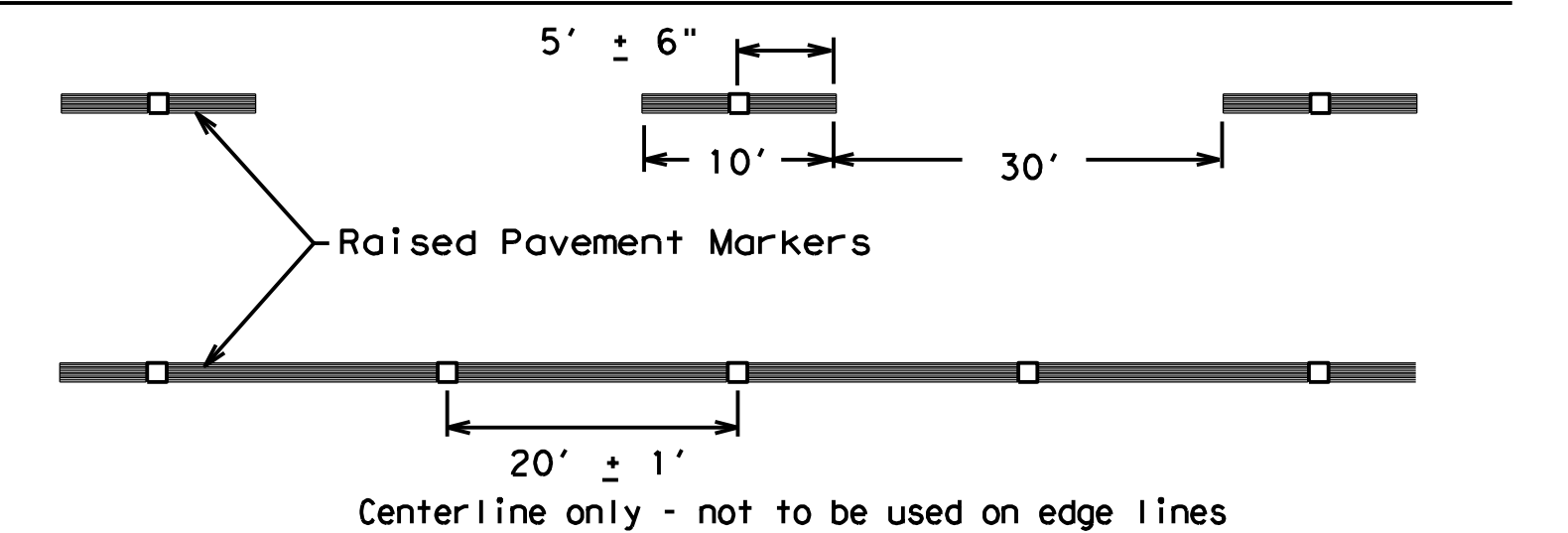


BROKEN LINES



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.



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CK: TxDOT
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REVISIONS	0055	15	082	US 84
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2-98 7-13	WAC	MCLENNAN	43	
11-02 8-14				

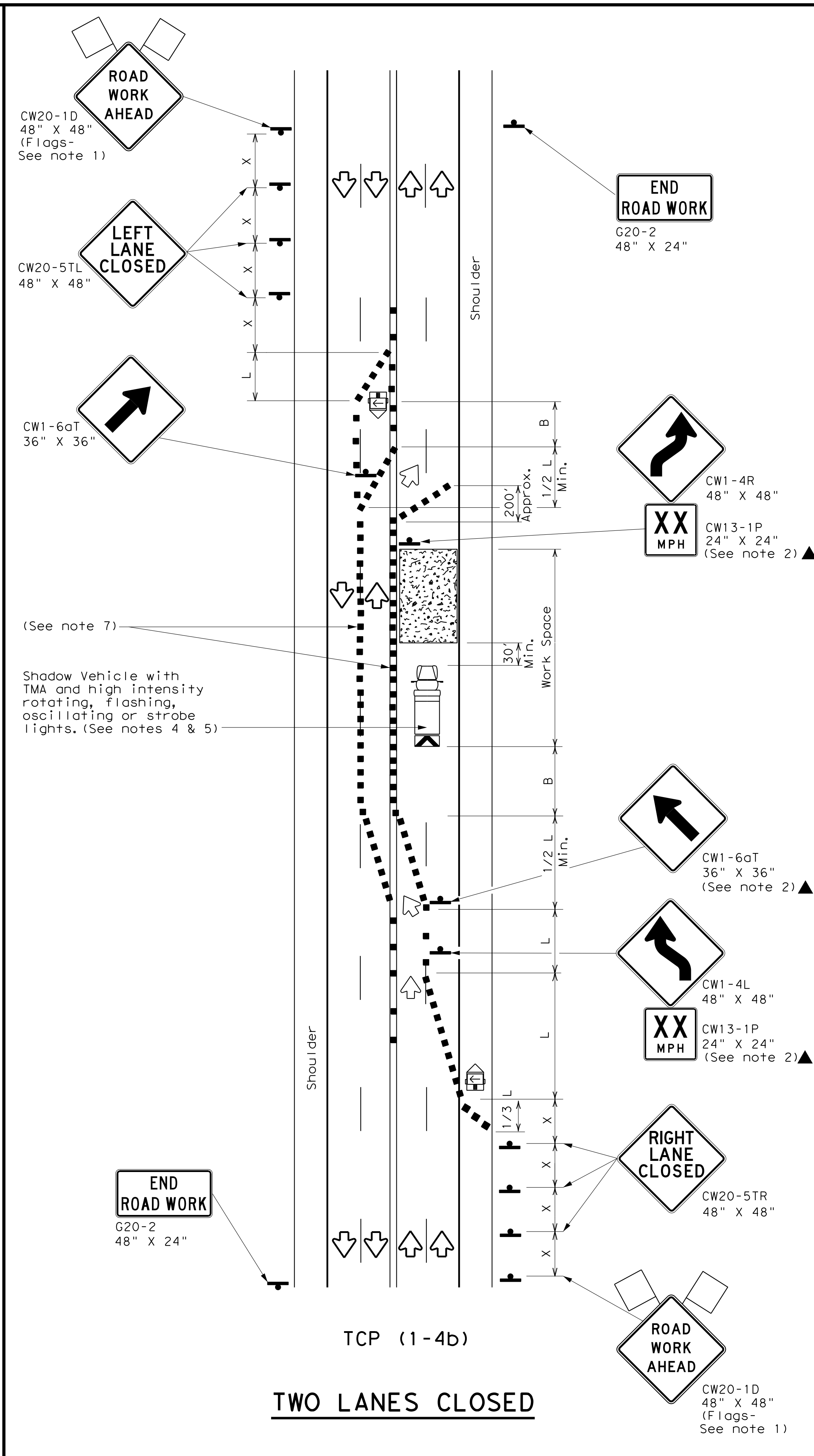
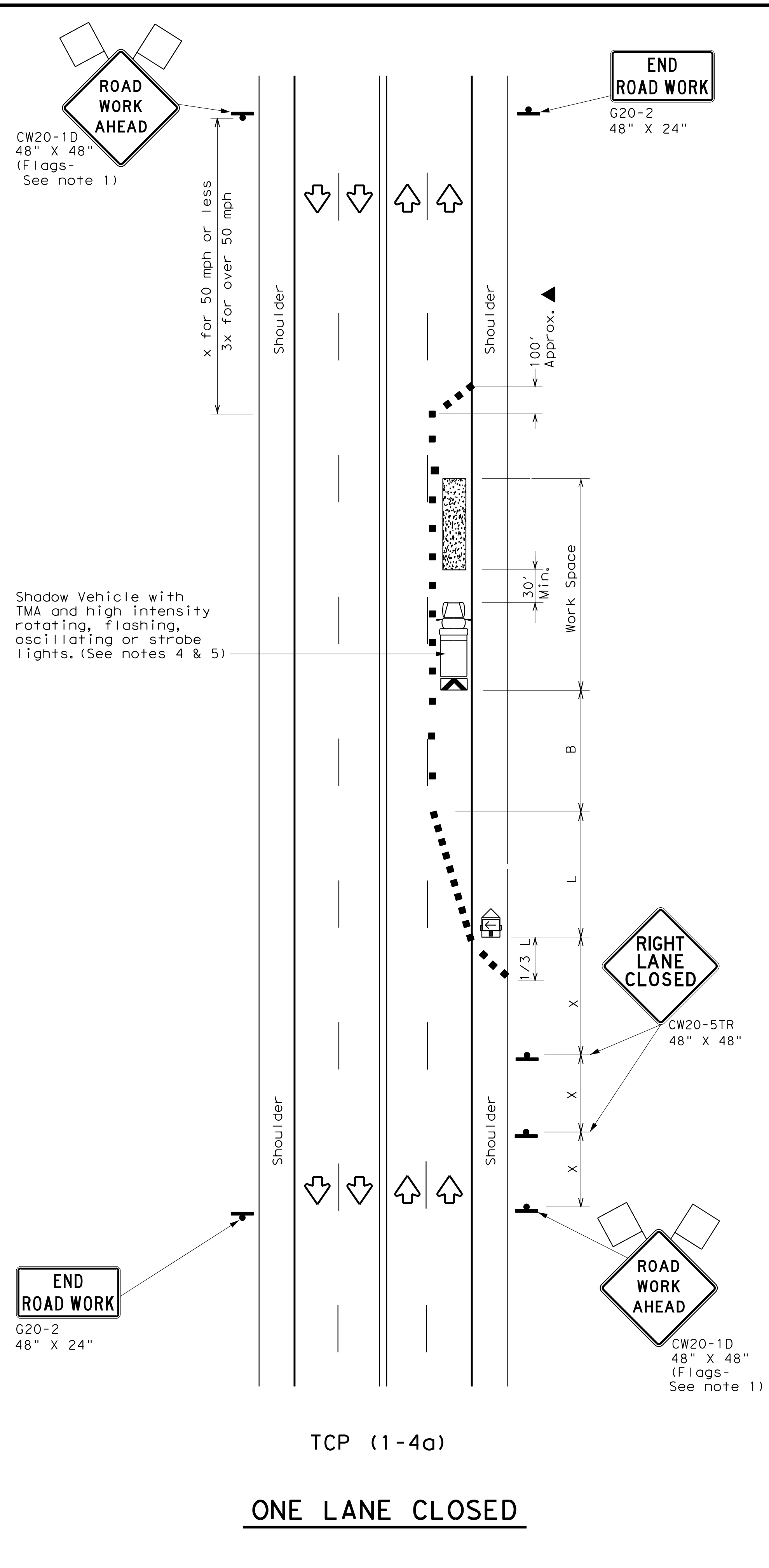
Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

- Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Texas Department of Transportation
 Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

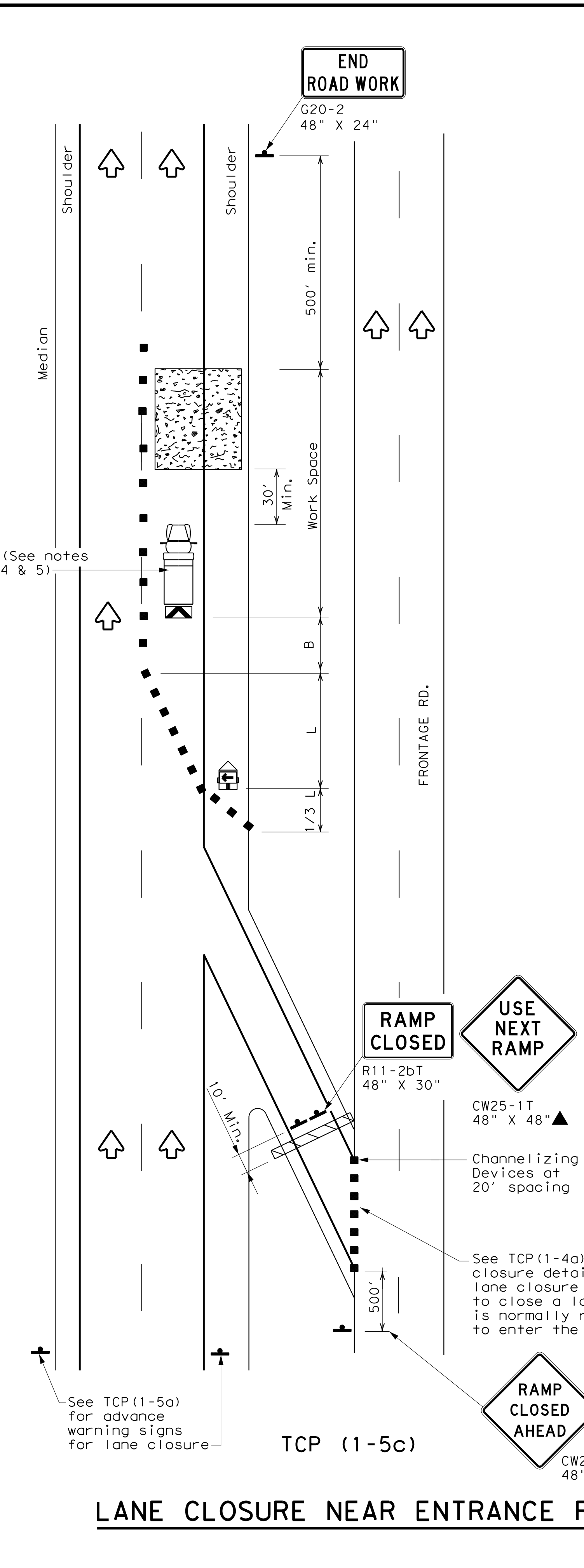
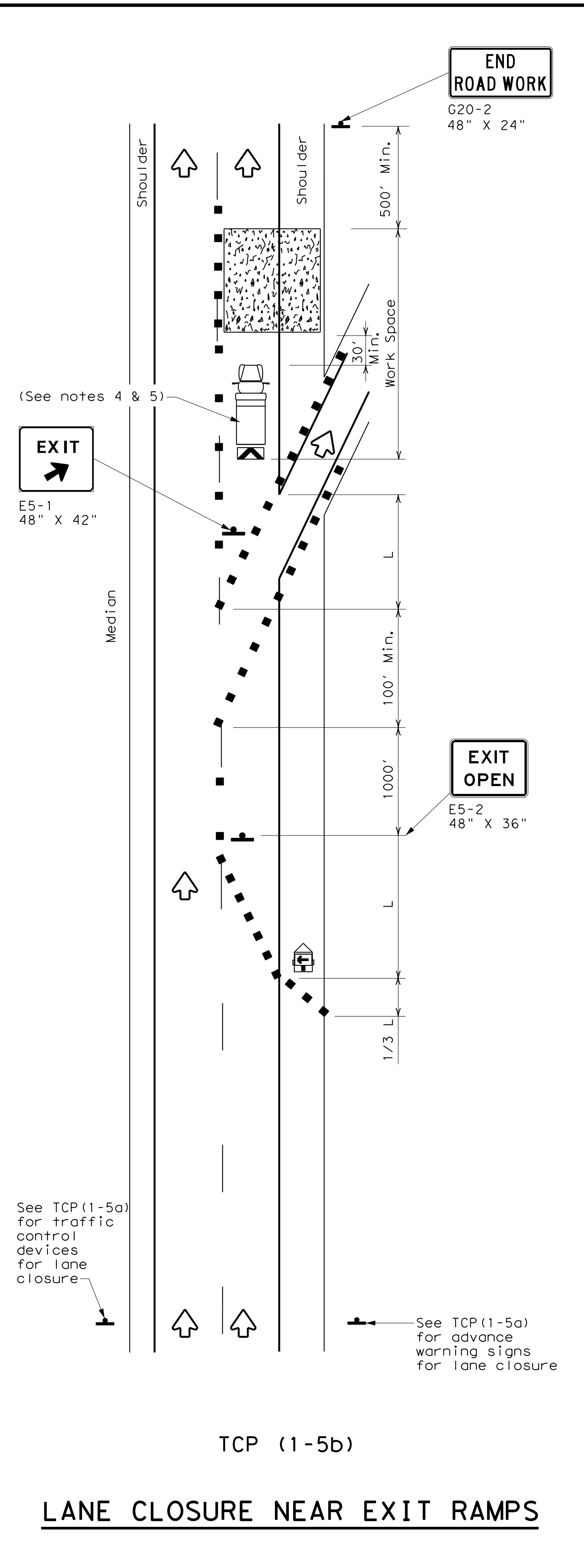
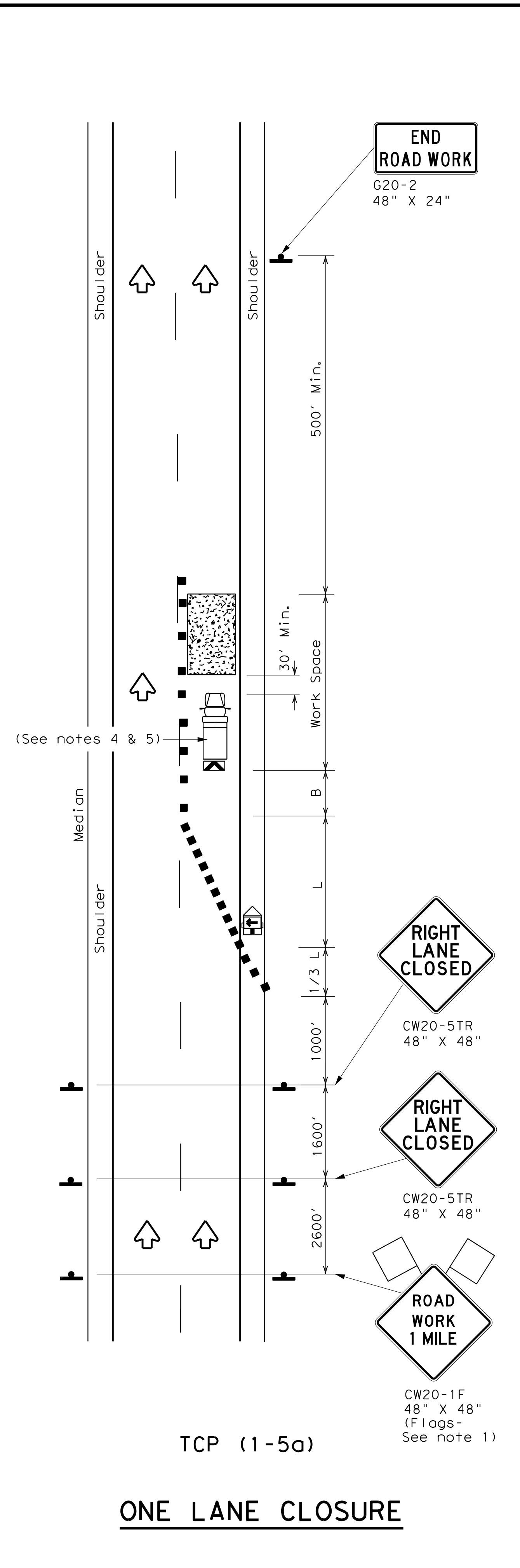
TCP (1-4) - 18

FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
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2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	WAC	MCLENNAN	44	
1-97 2-18				

159

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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
 - Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation
 Traffic Operations Division Standard

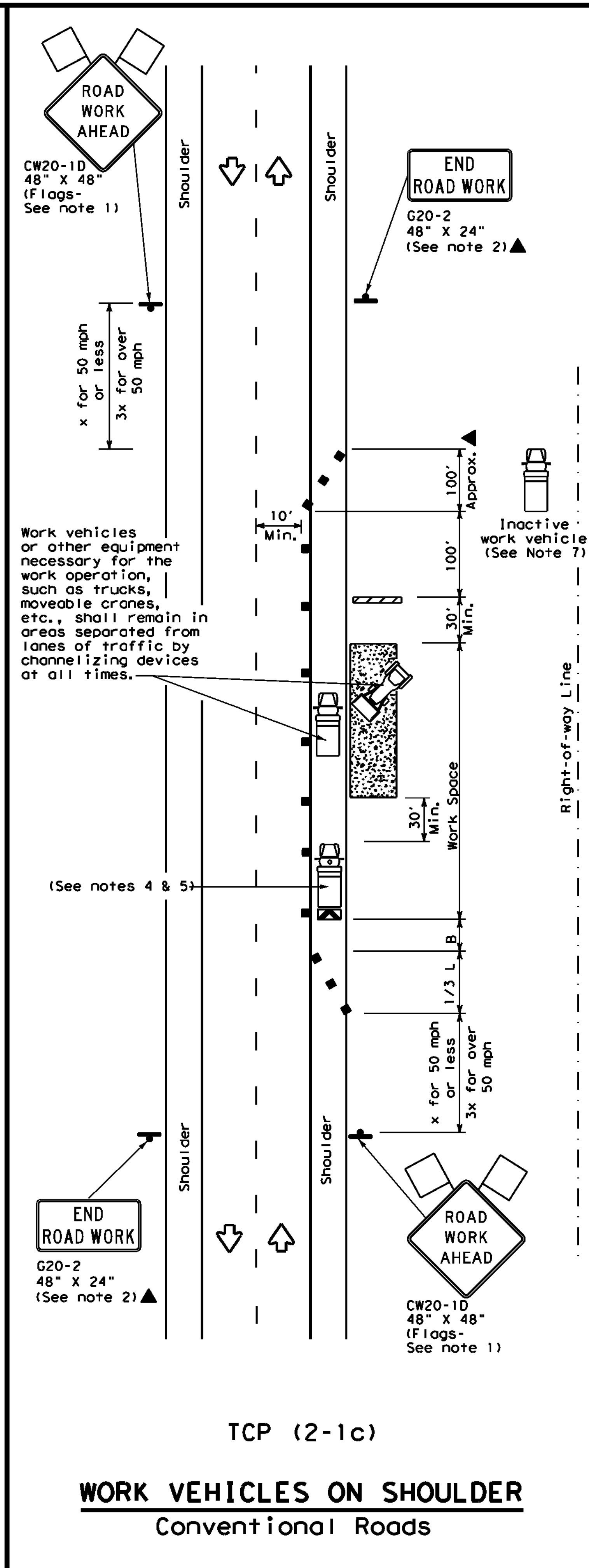
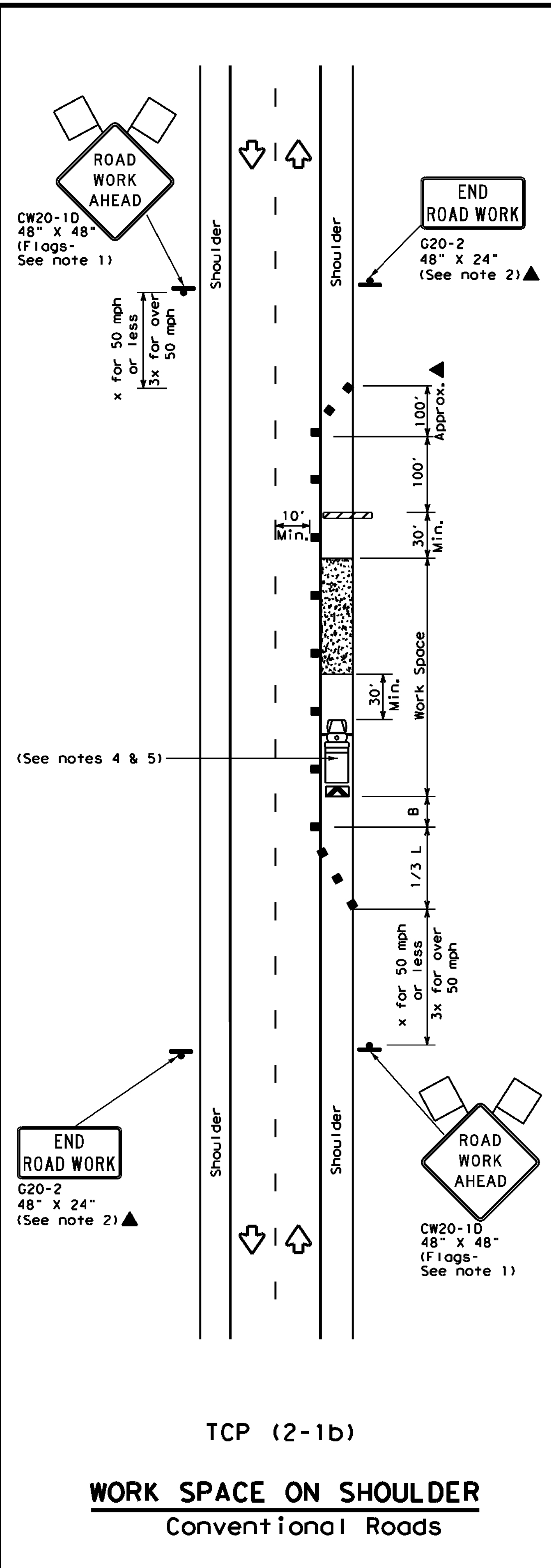
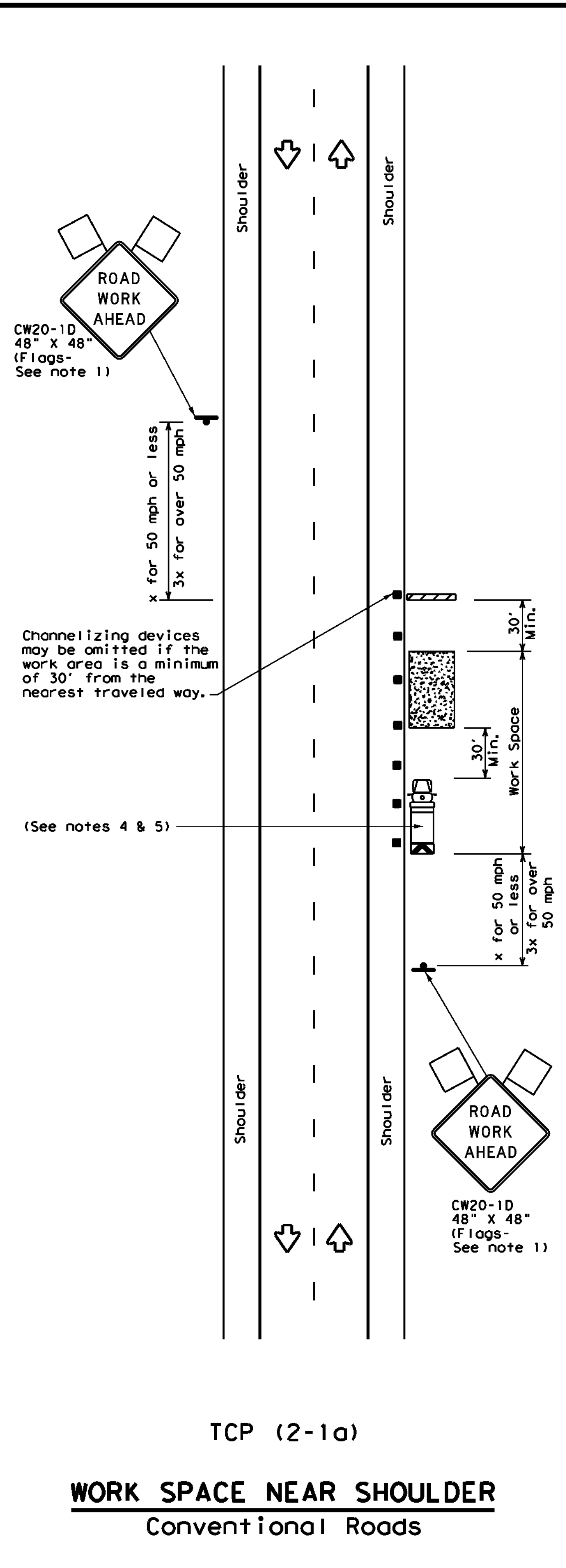
**TRAFFIC CONTROL PLAN
LANE CLOSURES FOR
DIVIDED HIGHWAYS**

TCP (1-5) - 18

FILE: tcp1-5-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
2-18	0055	15	082	US 84
	DIST	COUNTY	SHEET NO.	
	WAC	MCLENNAN	45	

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DATE:
FILE:



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

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

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

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

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

Texas Department of Transportation
Traffic Operations Division Standard

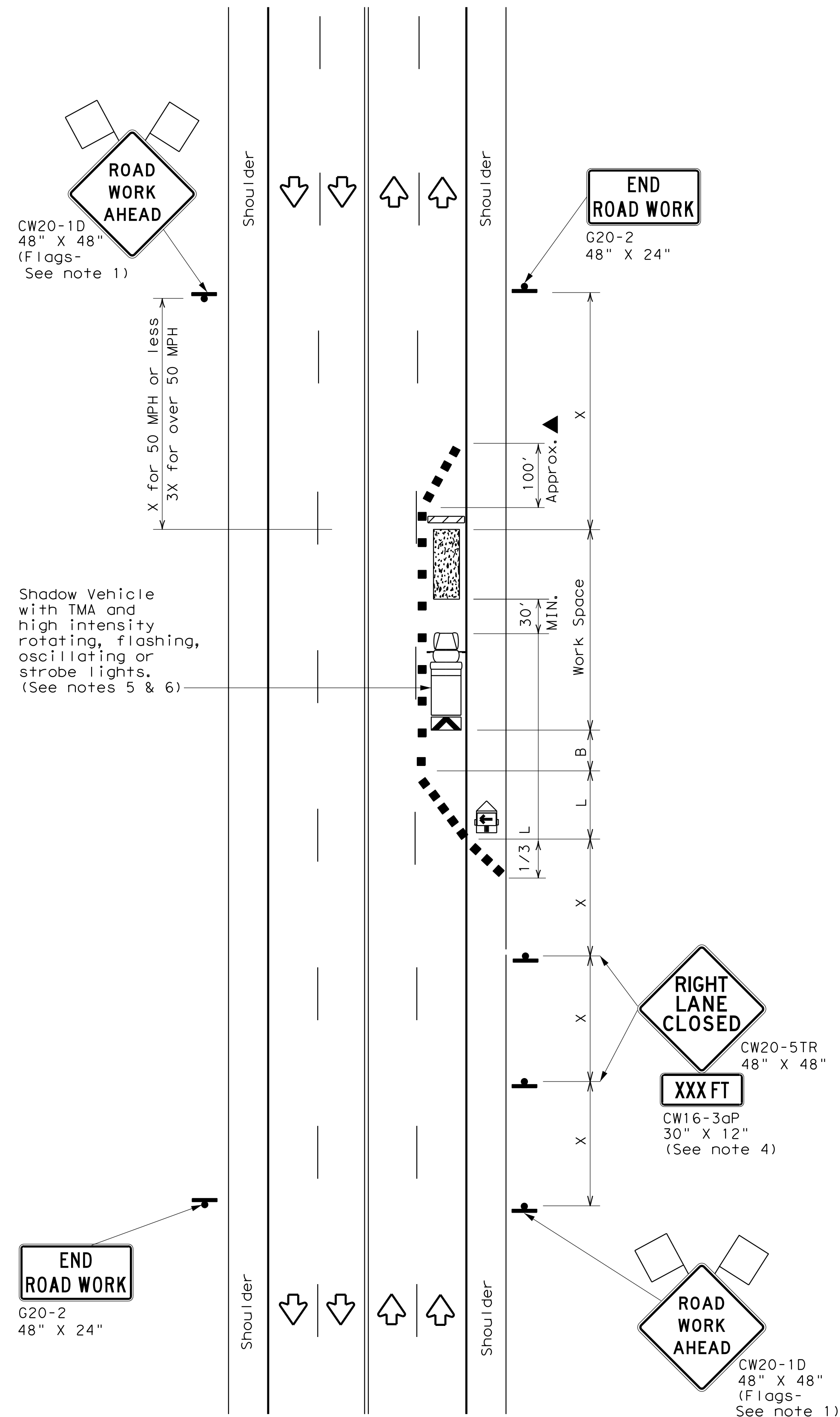
**TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK**

TCP (2-1) - 18

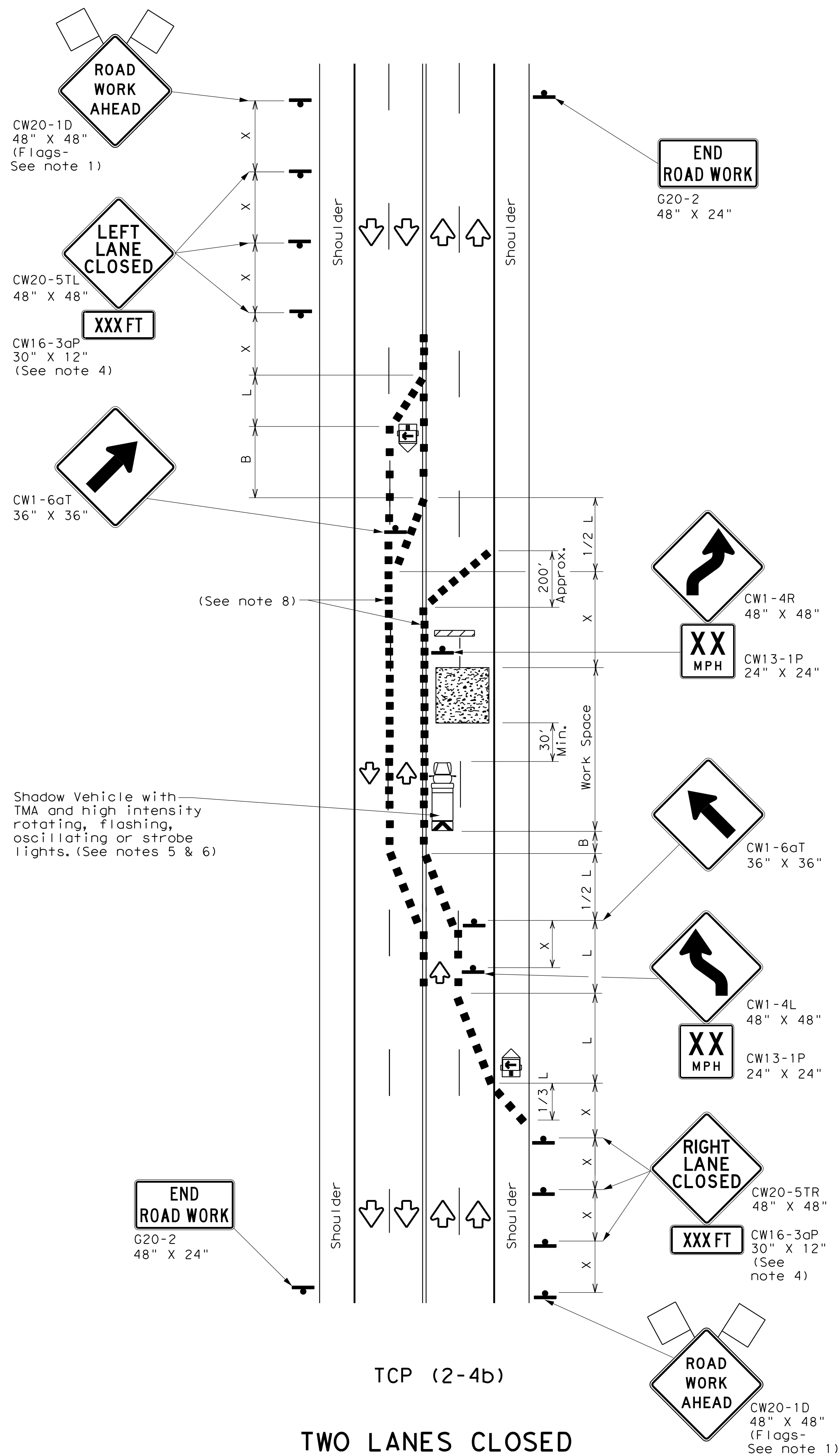
FILE: tcp2-1-18.dgn	DN:	CKI:	DW:	CKI:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0055	15	082	US 84
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	WAC	MCLENNAN	46	
1-97 2-18				

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DATE: FILE:



TCP (2-4a)
ONE LANE CLOSED



TCP (2-4b)
TWO LANES CLOSED

LEGEND

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

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

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

TYPICAL USAGE

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
 - For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-4a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-4b)**
- For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation Traffic Operations Division Standard

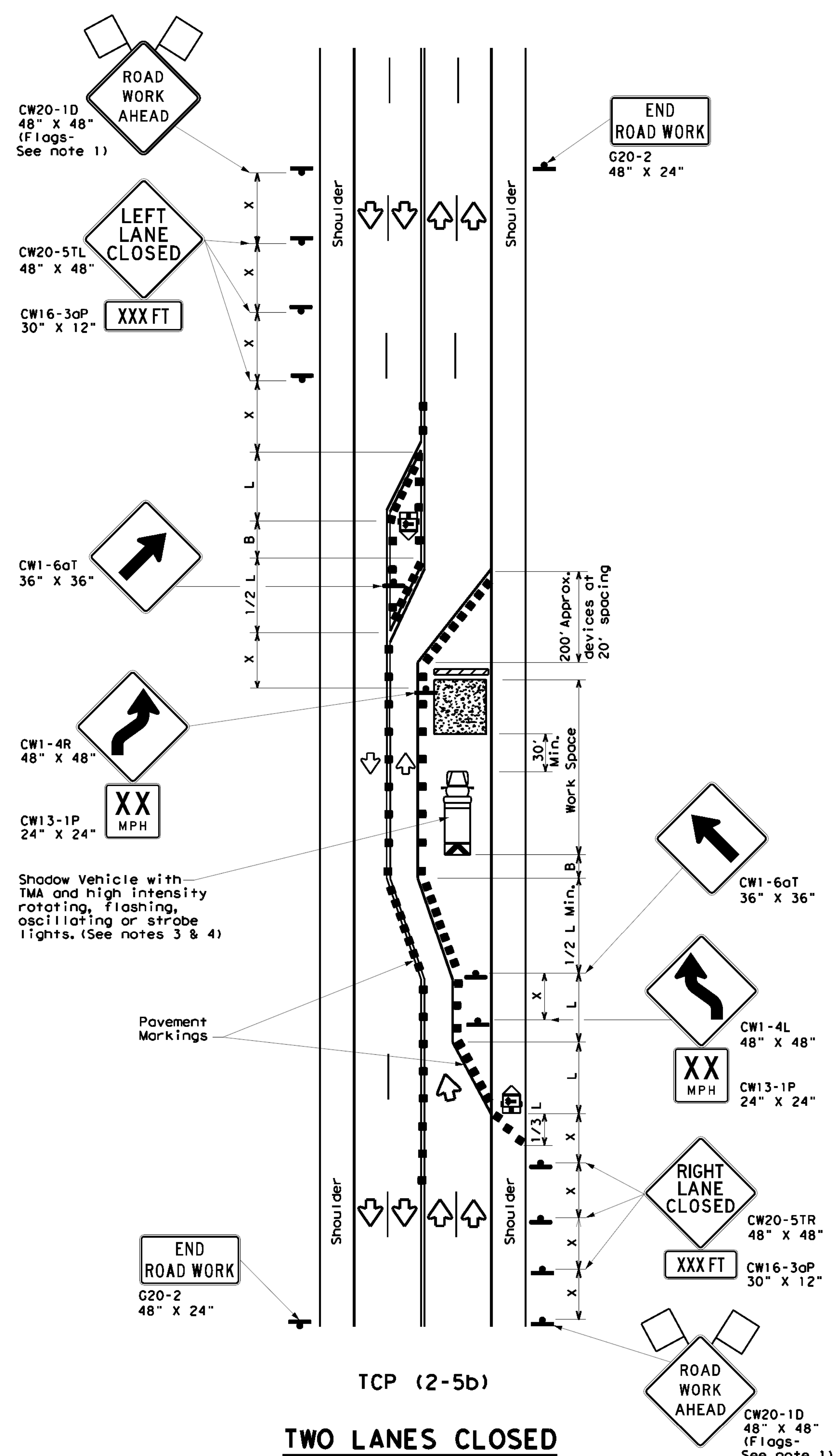
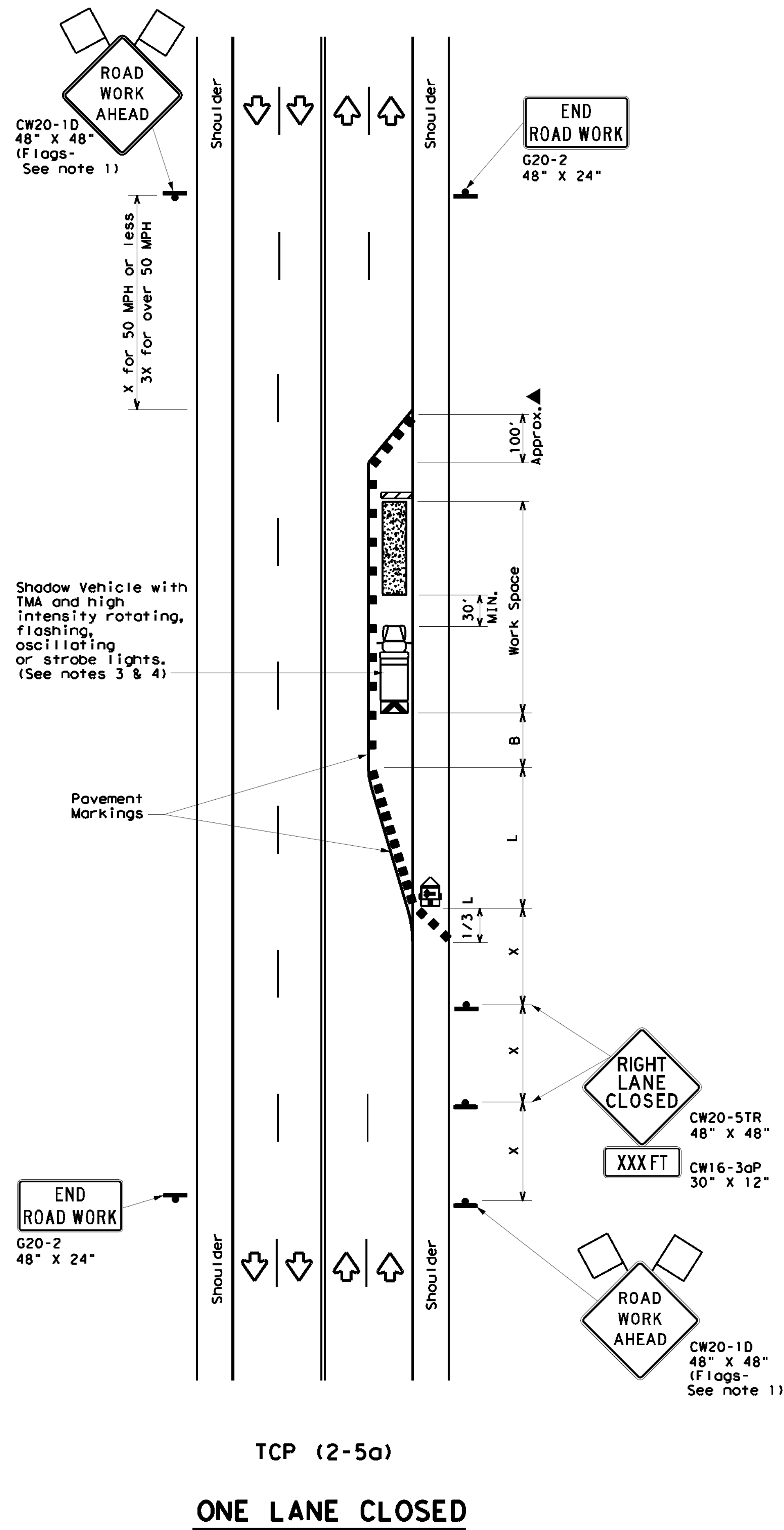
TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS
TCP (2-4) - 18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0055	15	082	US 84
8-95 3-03	DIST	COUNTY	SHEET NO.	
1-97 2-12	WAC	MCLENNAN	47	
4-98 2-18				

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DATE: FILE:



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

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

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

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

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
 - The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

- TCP (2-5a)**
- If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.
- TCP (2-5b)**
- Conflicting pavement markings shall be removed for long-term projects.

Traffic Operations Division Standard

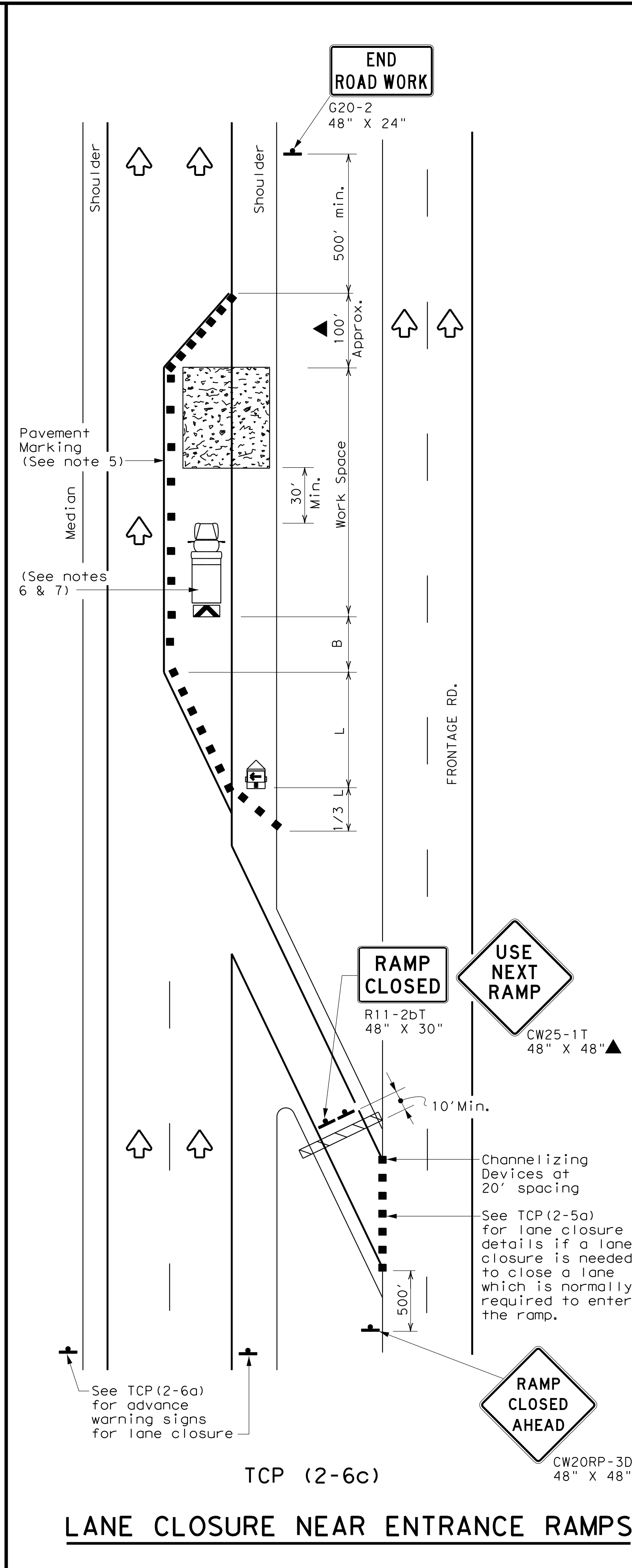
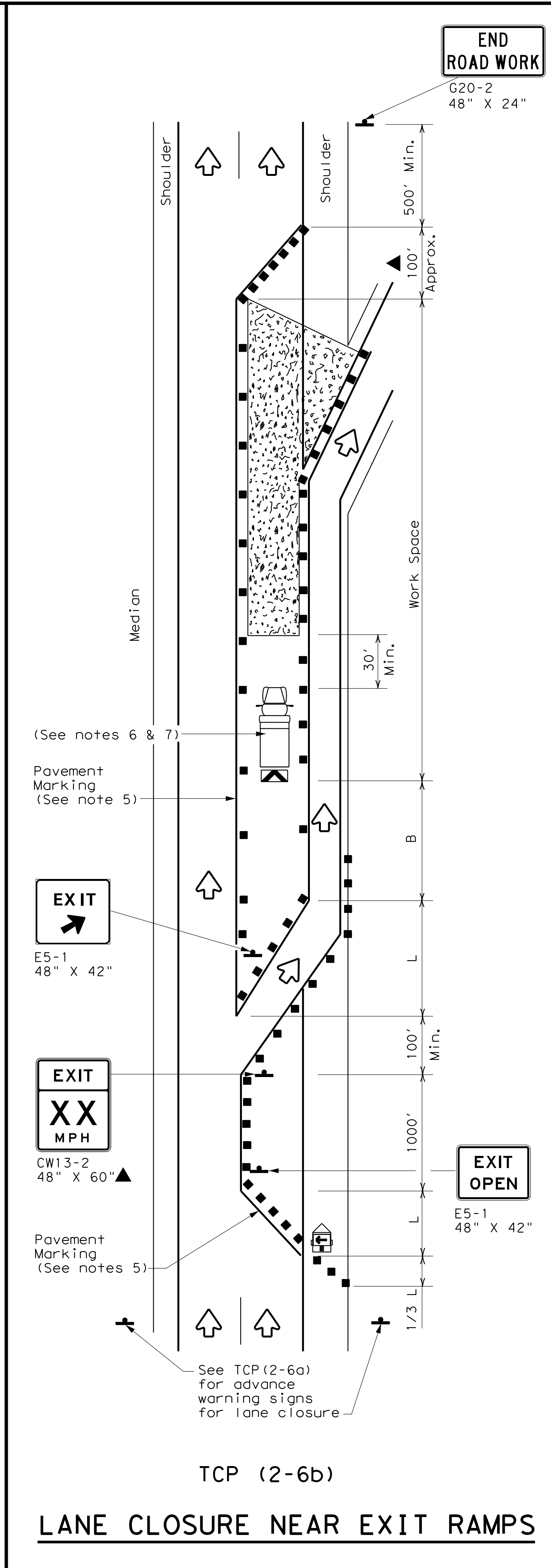
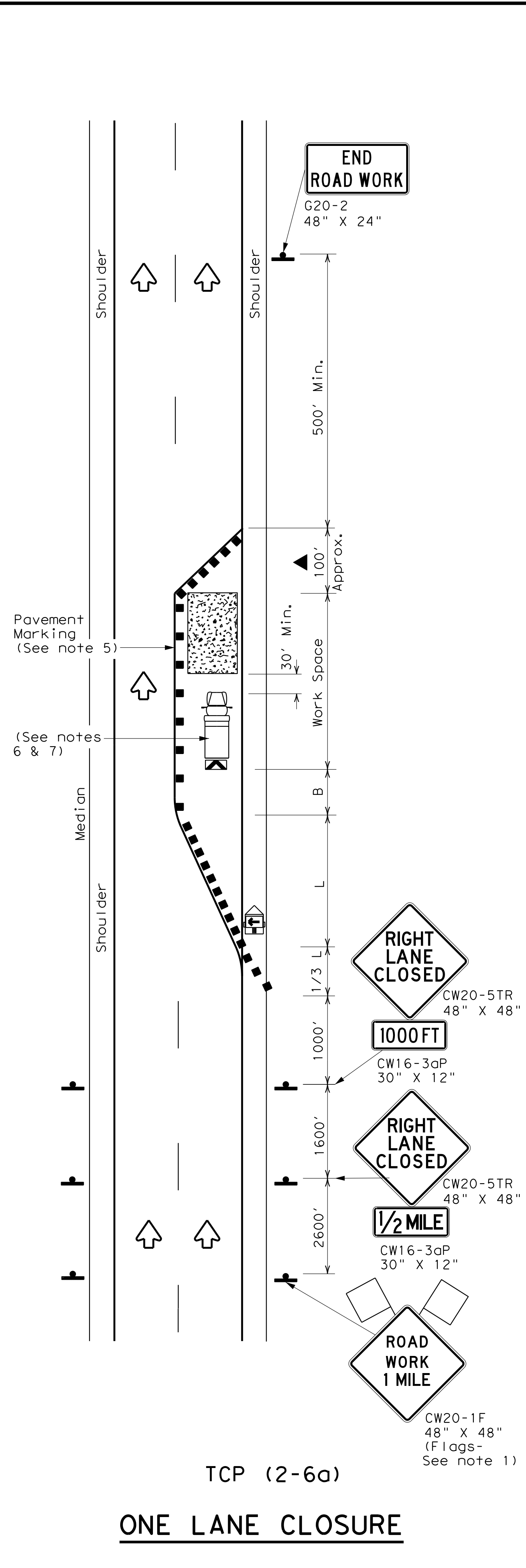
TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP (2-5) - 18

FILE: tcp2-5-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
8-95 2-12	0055	15	082	US 84
1-97 3-03	DIST	COUNTY	SHEET NO.	
4-98 2-18	WAC	MCLENNAN	48	

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DATE:
FILE:



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

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

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

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

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

Texas Department of Transportation
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
LANE CLOSURES ON
DIVIDED HIGHWAYS**

TCP (2-6) - 18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0055	15	082	US 84
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	WAC	MCLENNAN	49	
1-97 2-18				

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DATE: FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.
2.
 No Action Required Required Action

Action No.

- Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
- Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
- Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
- When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

- No Permit Required
 Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
 Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
 Individual 404 Permit Required
 Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.
2.
3.
4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
<input type="checkbox"/> Temporary Vegetation	<input type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

III. CULTURAL RESOURCES

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

- No Action Required Required Action

Action No.

1.
2.
3.
4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

- No Action Required Required Action

Action No.

1.
2.
3.
4.

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

- No Action Required Required Action

Action No.

1.
2.
3.
4.

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

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:

- * Dead or distressed vegetation (not identified as normal)
- * Trash piles, drums, canister, barrels, etc.
- * Undesirable smells or odors
- * Evidence of leaching or seepage of substances

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

- Yes No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

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

- Yes No

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

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

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

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

- No Action Required Required Action

Action No.

1.
2.
3.

VII. OTHER ENVIRONMENTAL ISSUES

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

- No Action Required Required Action

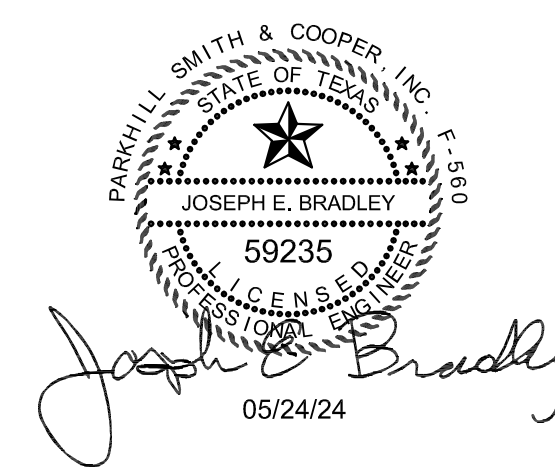
Action No.

1.
2.
3.

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC

FILE: epic.dgn	DN: TxDOT	CR: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
12-12-2011 (DS)	0055	15	082	US 84
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	WAC	MCLENNAN		50



STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0055-15-082

1.2 PROJECT LIMITS:

From: CENTERPOINT DRIVE

To: N VALLEY MILLS DRIVE

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 31.518972, (Long) 97.181

END: (Lat) 31.528472, (Long) 97.170472

1.4 TOTAL PROJECT AREA (Acres): 0.99

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.99

1.6 NATURE OF CONSTRUCTION ACTIVITY:

MEDIAN IMPROVEMENTS INCLUDING LANDSCAPE AND IRRIGATION

1.7 MAJOR SOIL TYPES:

Soil Type	Description
CLAY	

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

- PSLs determined during preconstruction meeting
- PSLs determined during construction
- No PSLs planned for construction

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

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

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

- Other: _____
- Other: _____
- Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

- Other: _____
- Other: _____
- Other: _____

1.11 RECEIVING WATERS:

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

Tributaries	Classified Waterbody
WACO CREEK WHICH FLOWS TO BRAZOS RIVER	

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

- Other: _____
- Other: _____
- Other: _____

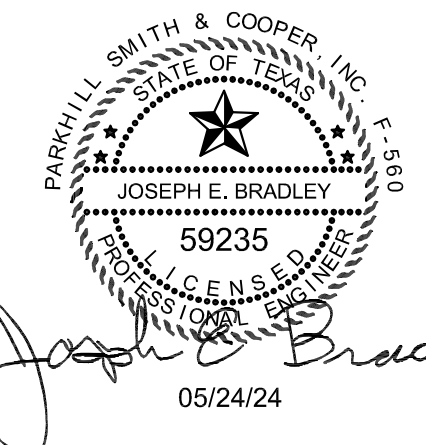
1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

- Other: _____
- Other: _____
- Other: _____

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

MS4 Entity



STORMWATER POLLUTION PREVENTION PLAN (SWP3)

© 2023 July 2023 Sheet 1 of 2
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				51A
STATE	STATE DIST.	COUNTY		
TEXAS	WAC	MCLENNAN		
CONT.	SECT.	JOB	HIGHWAY NO.	
0055	15	082	US 84	

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

- Biodegradable Erosion Control Logs
- Dewatering Controls
- Inlet Protection
- Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- Sediment Control Fence
- Stabilized Construction Exit
- Floating Turbidity Barrier
- Vegetated Buffer Zones
- Vegetated Filter Strips
- Other: _____
- Other: _____
- Other: _____
- Other: _____

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

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

T / P

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

- Chemical Management
- Concrete and Materials Waste Management
- Debris and Trash Management
- Dust Control
- Sanitary Facilities
- Other: _____
- Other: _____
- Other: _____
- Other: _____

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:

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

2.8 DEWATERING:

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

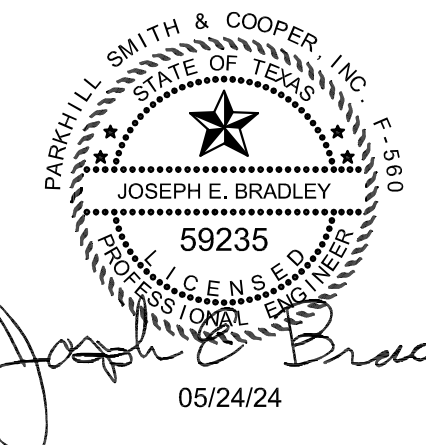
2.9 INSPECTIONS:

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

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

2.10 MAINTENANCE:

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

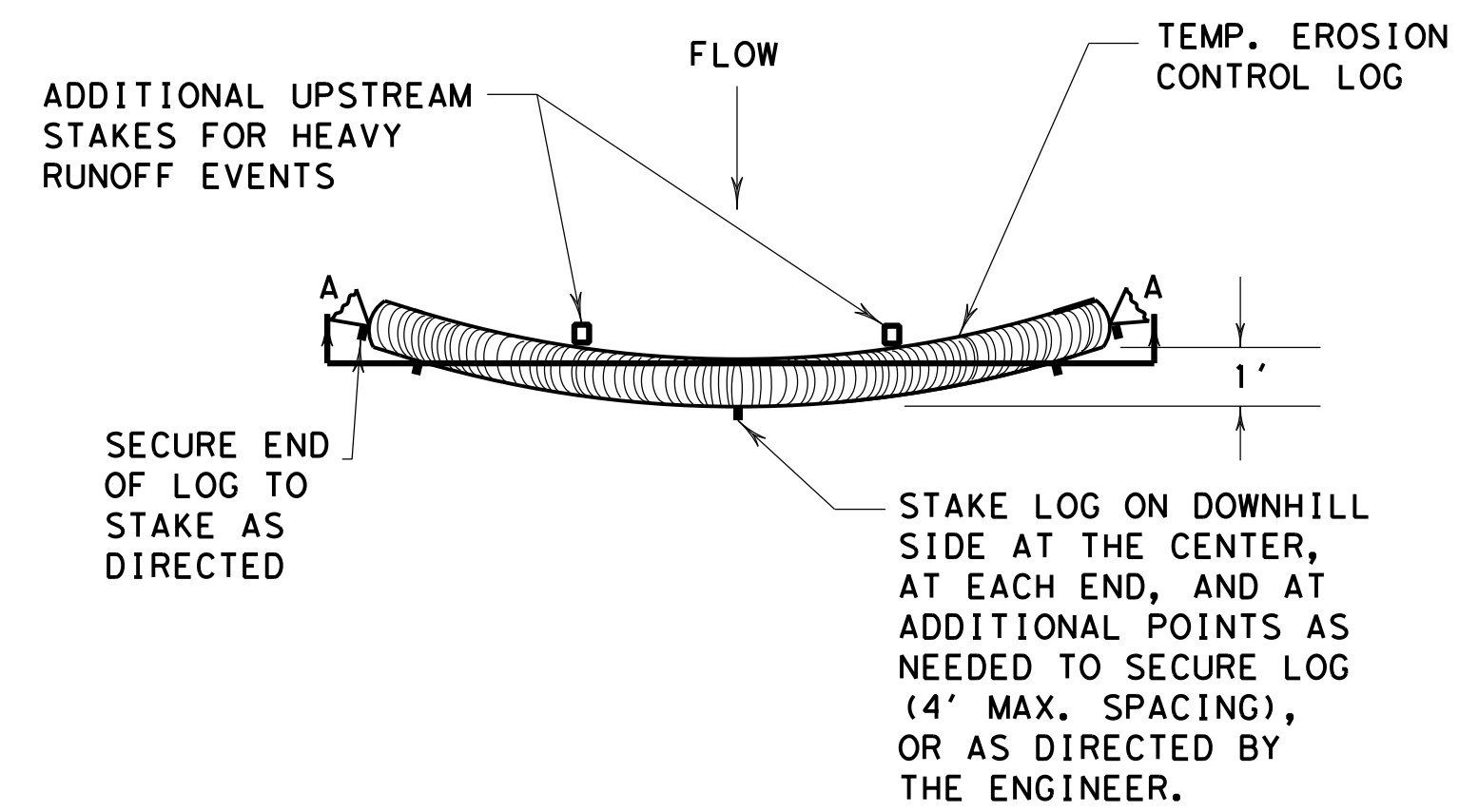


STORMWATER POLLUTION PREVENTION PLAN (SWP3)

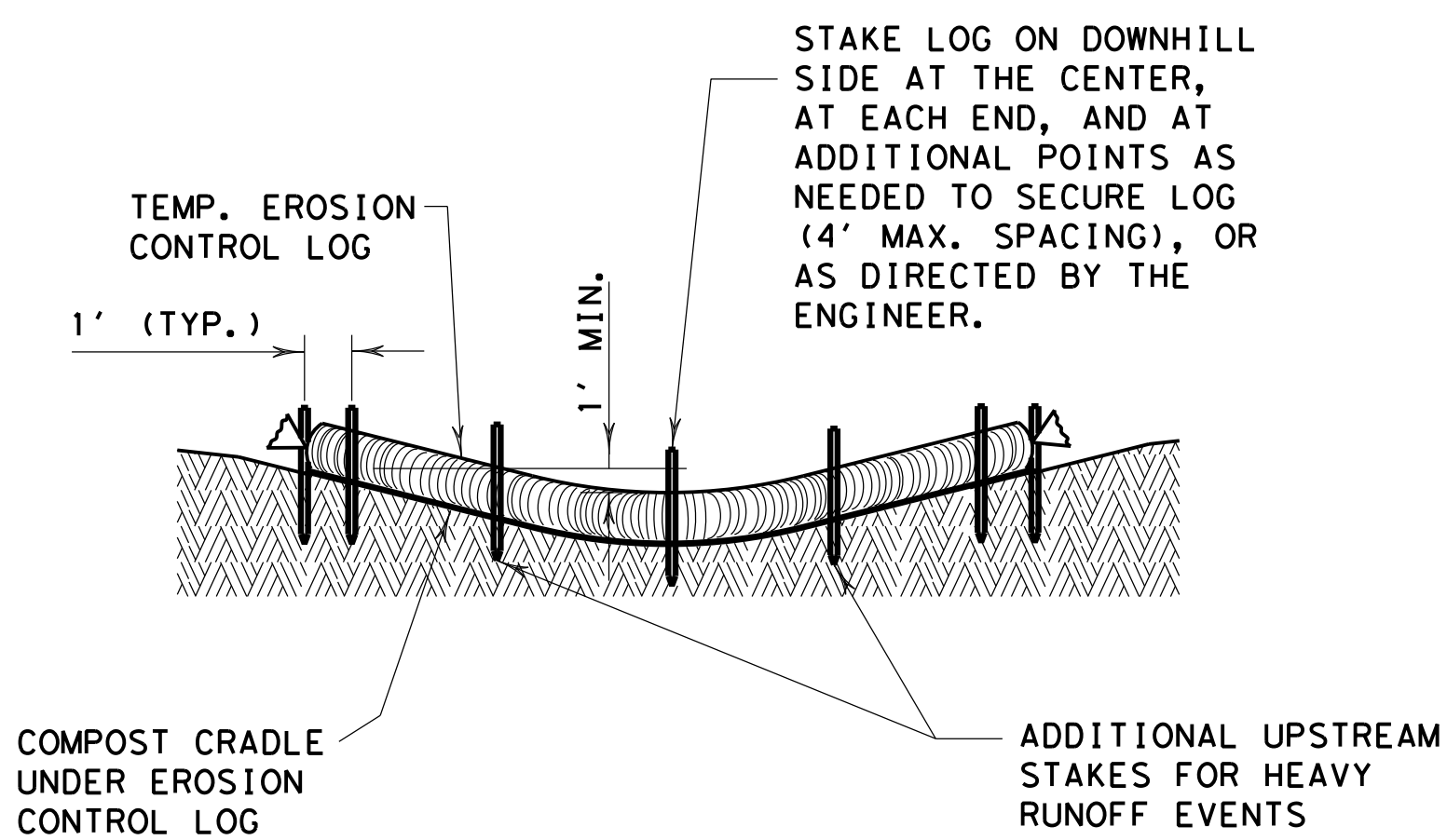
FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				51B
STATE	STATE DIST.	COUNTY		
TEXAS	WAC	MCLENNAN		
CONT.	SECT.	JOB	HIGHWAY NO.	
0055	15	082	US 84	

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DATE:
FILE:



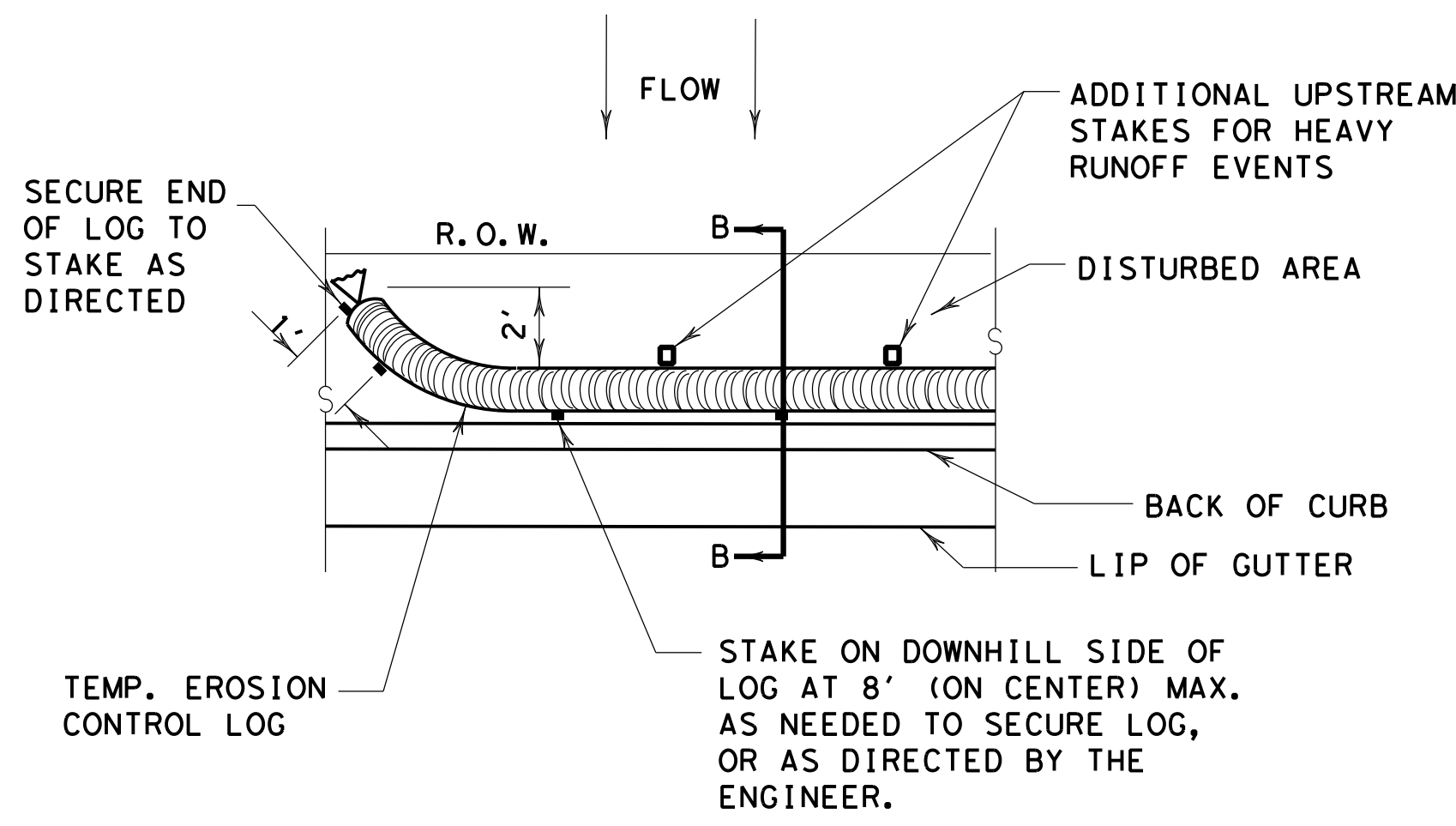
PLAN VIEW



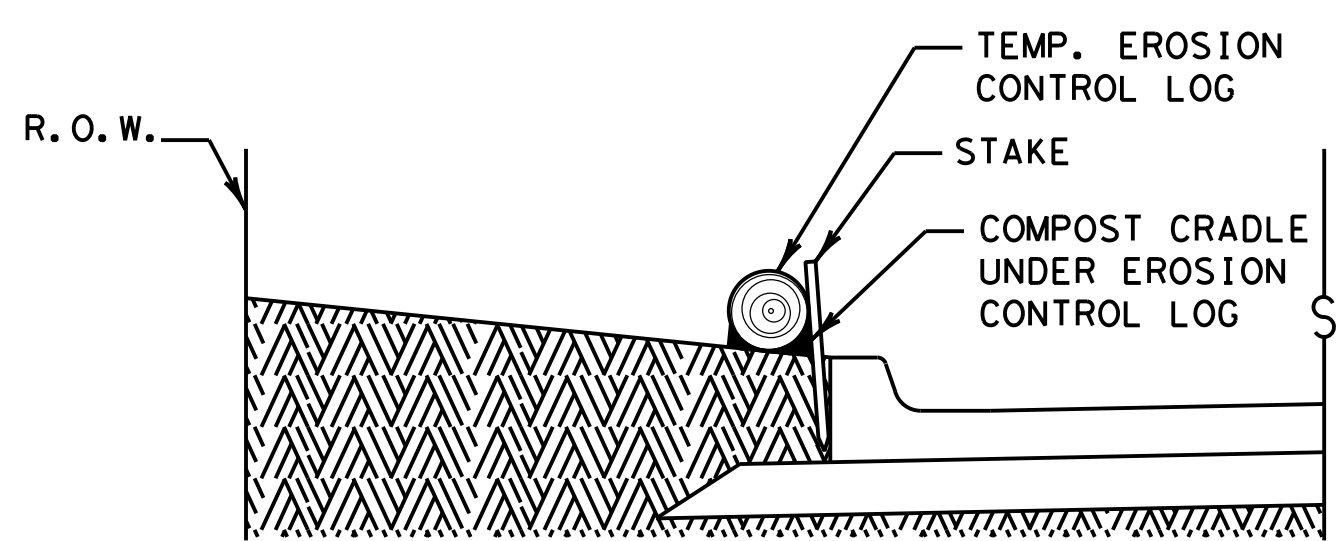
SECTION A-A

EROSION CONTROL LOG DAM

CL-D



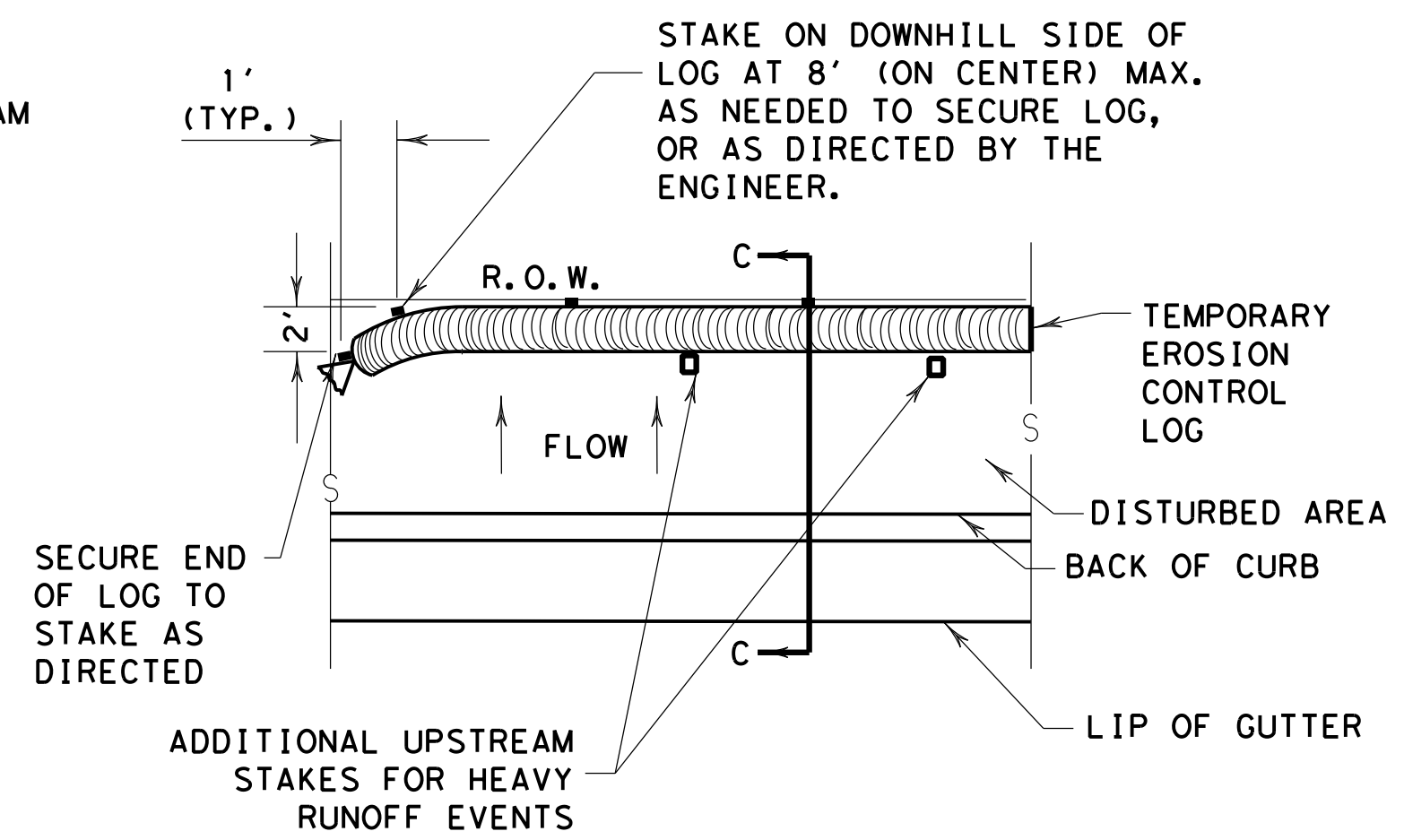
PLAN VIEW



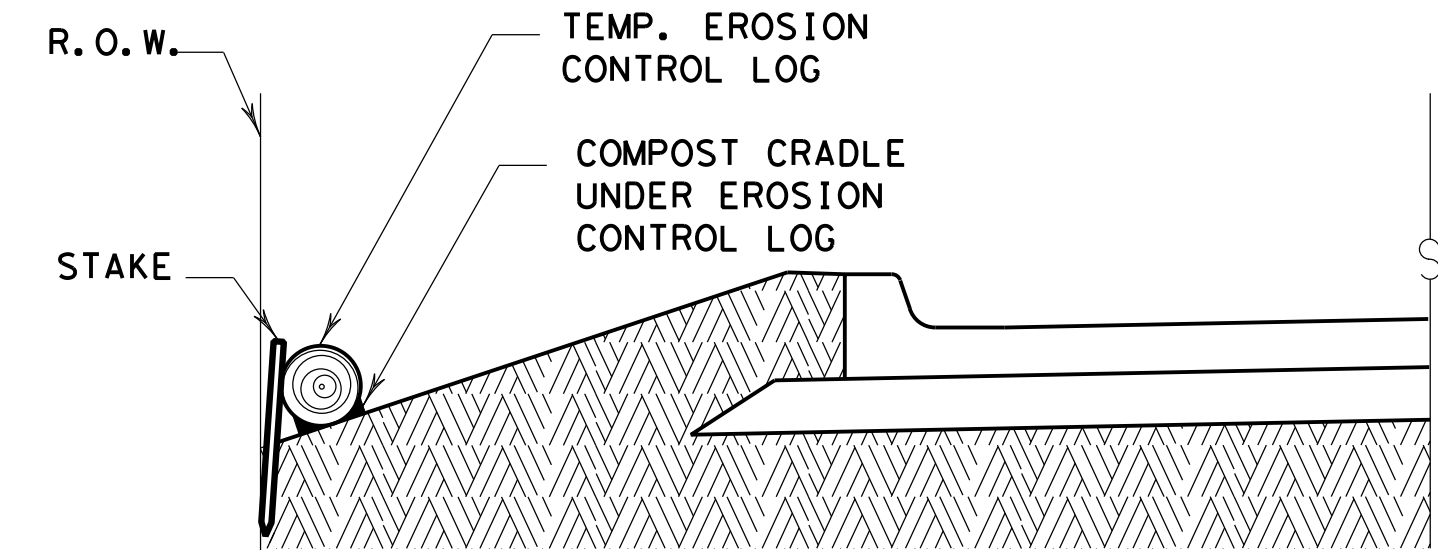
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



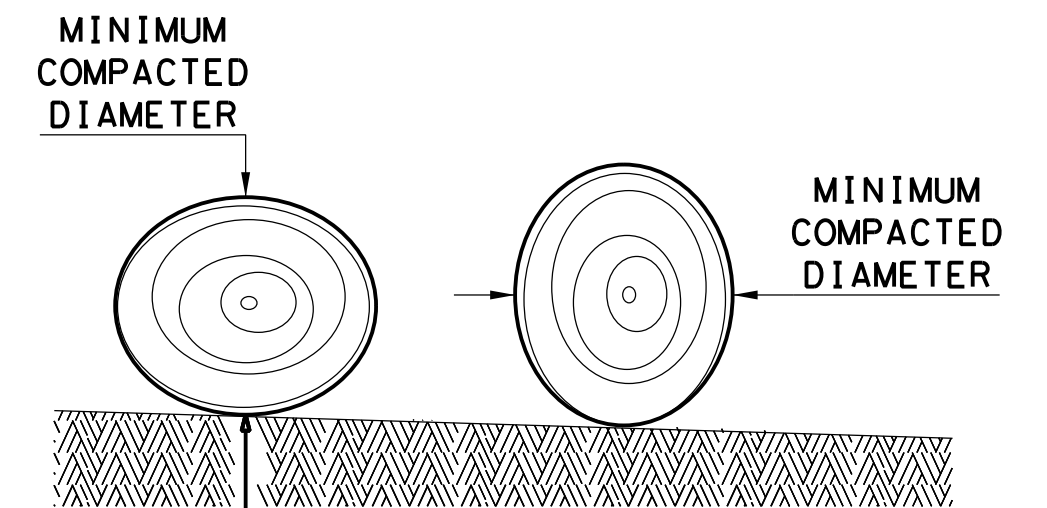
PLAN VIEW



SECTION C-C

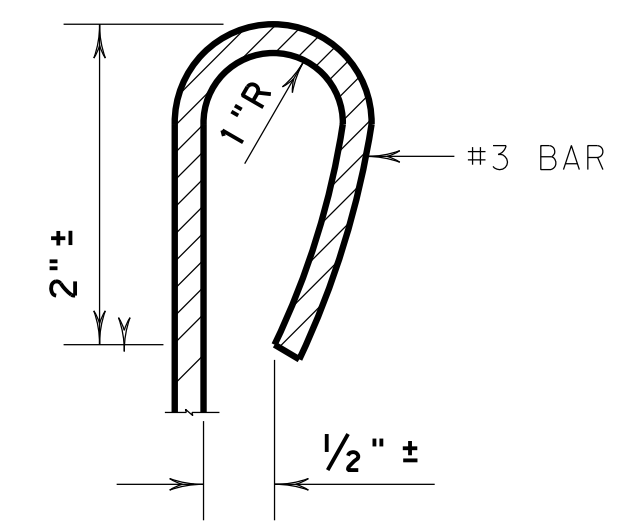
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

- 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

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.

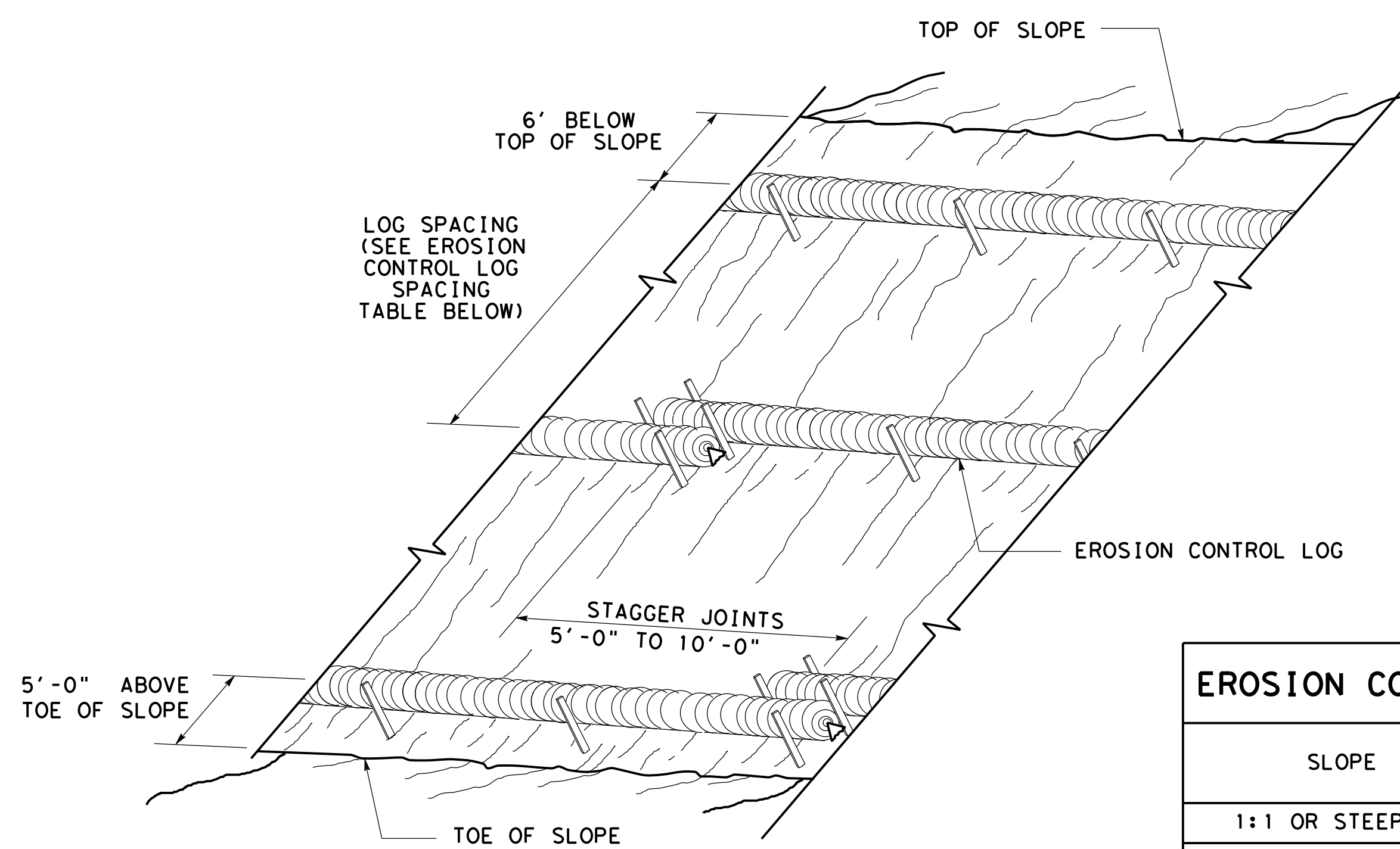
GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'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.

SHEET 1 OF 3

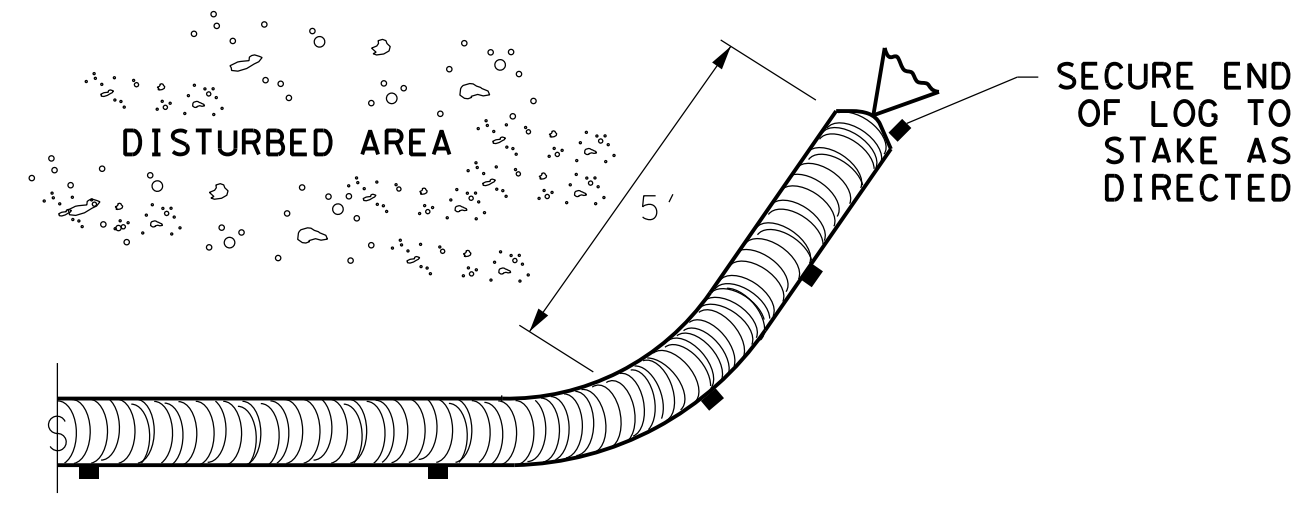
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES			
EROSION CONTROL LOG			
EC (9) - 16			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	REVISIONS	CONT	SECT
	0055	15	JOB
			082
			US 84
			COUNTY
			WAC
			MCLENNAN
			SHEET NO.
			52A

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**EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING**

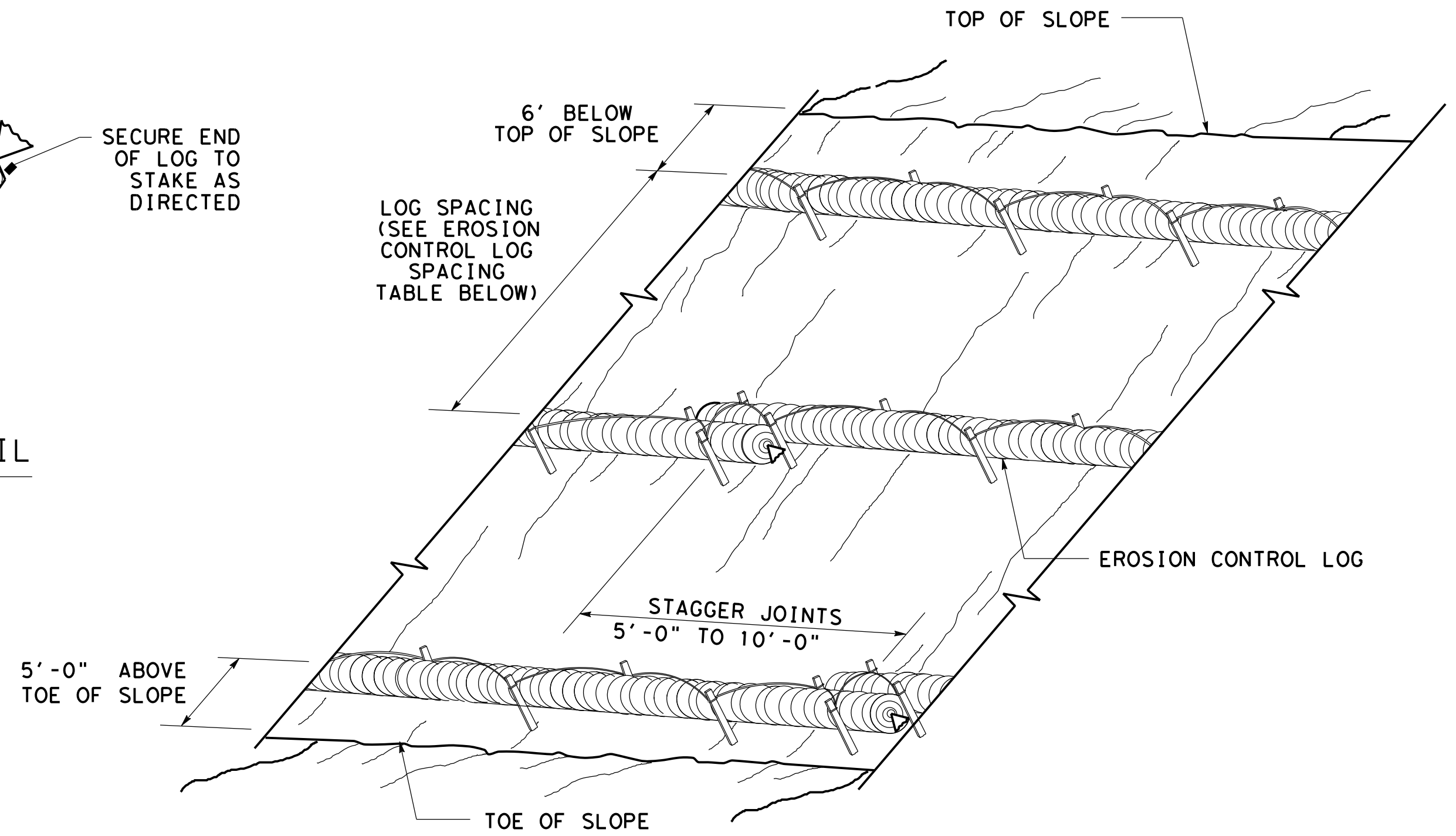
CL-SST



END SECTION RAP DETAIL

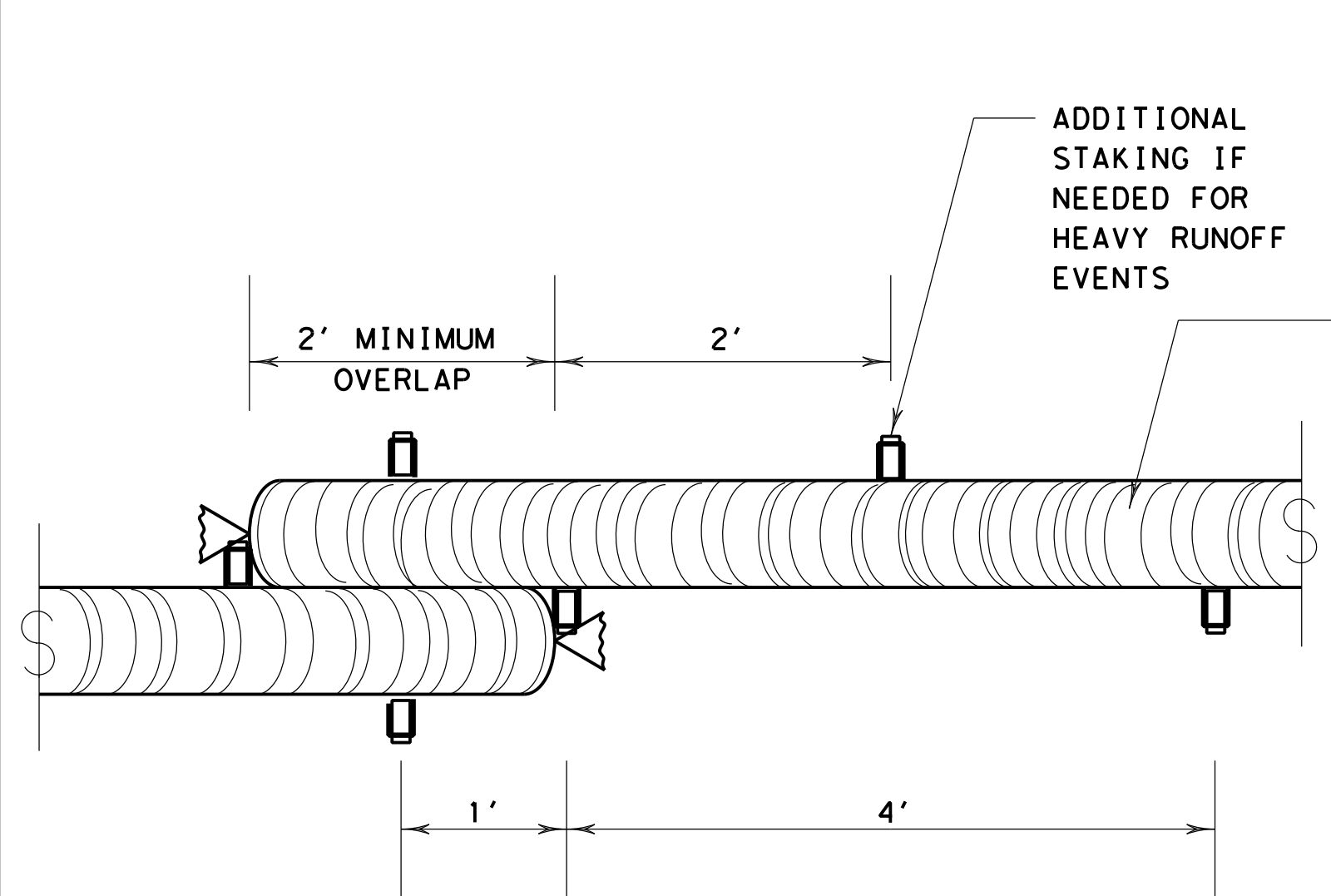
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



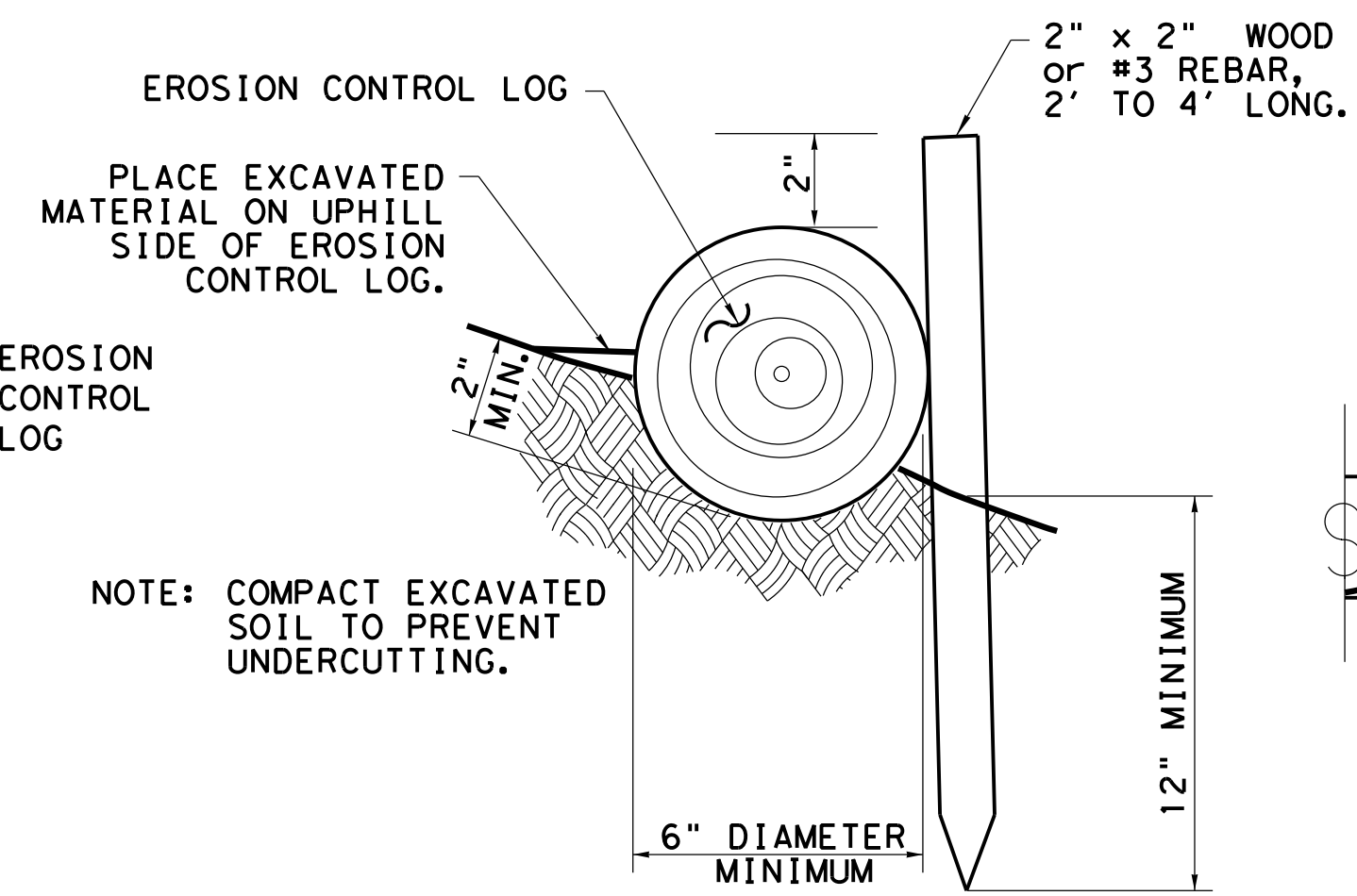
**EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING**

CL-SSL



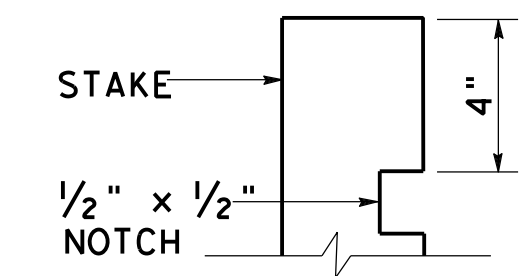
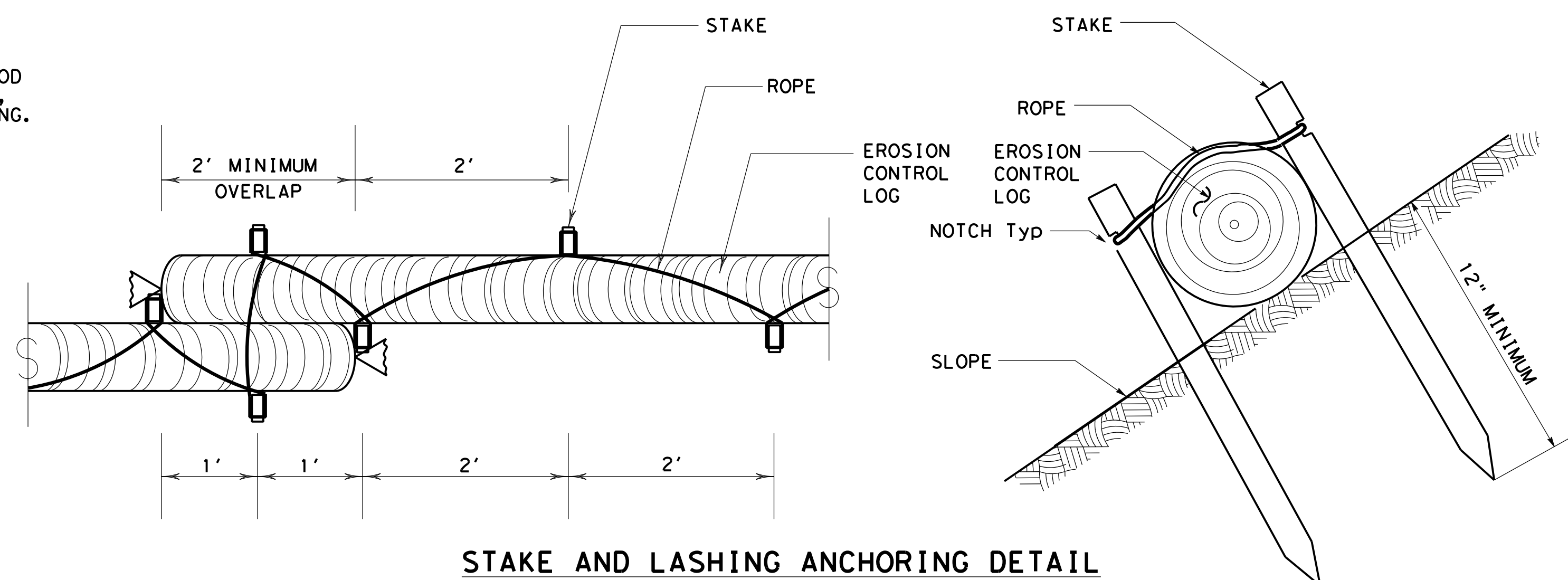
STAKE AND TRENCHING ANCHORING DETAIL

CL-SST



STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

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

SHEET 2 OF 3

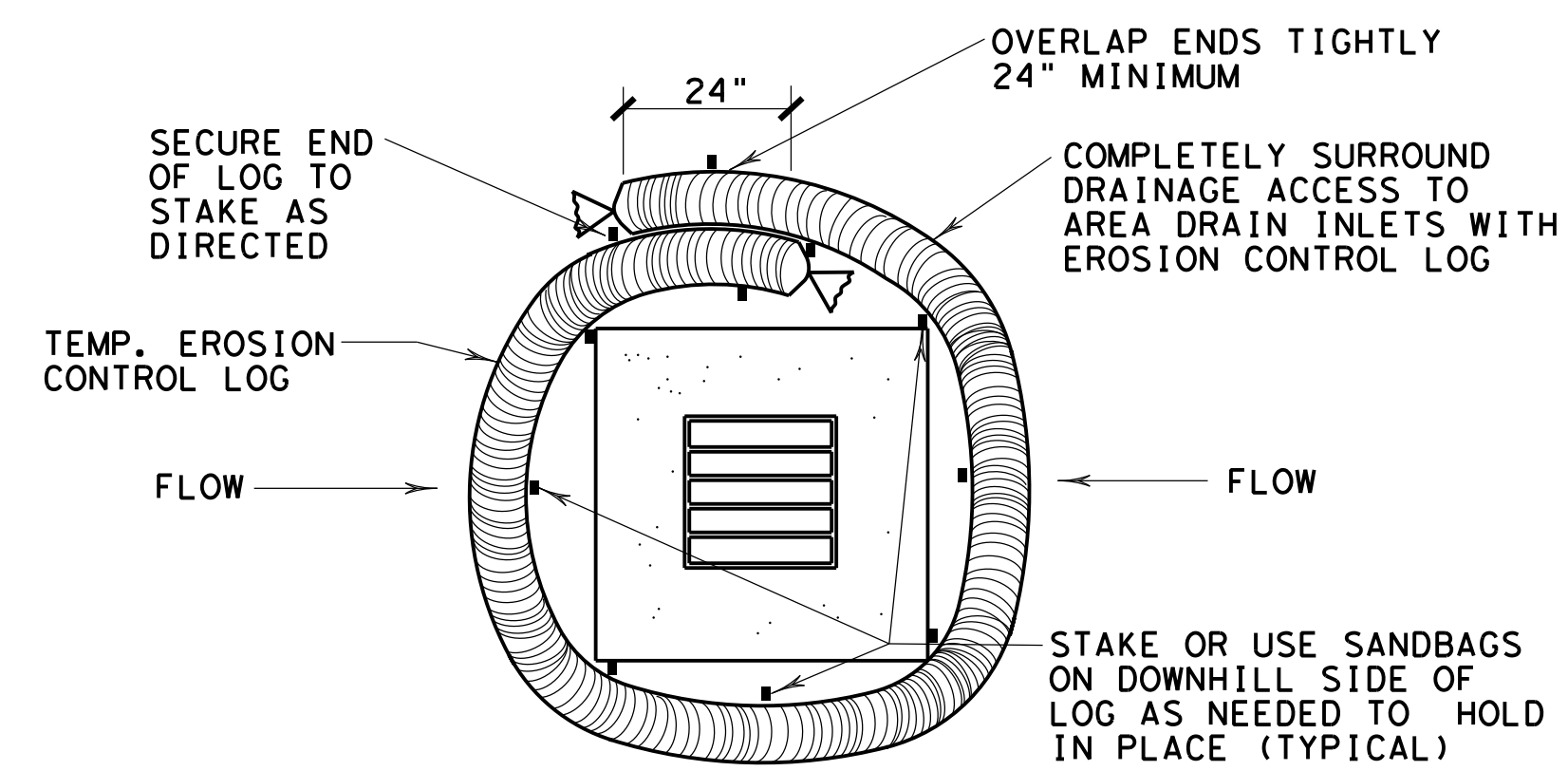
Texas Department of Transportation
Design Division Standard

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

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0055	15	082	US 84
DIST	COUNTY		SHEET NO.	
WAC	MCLENNAN		52B	

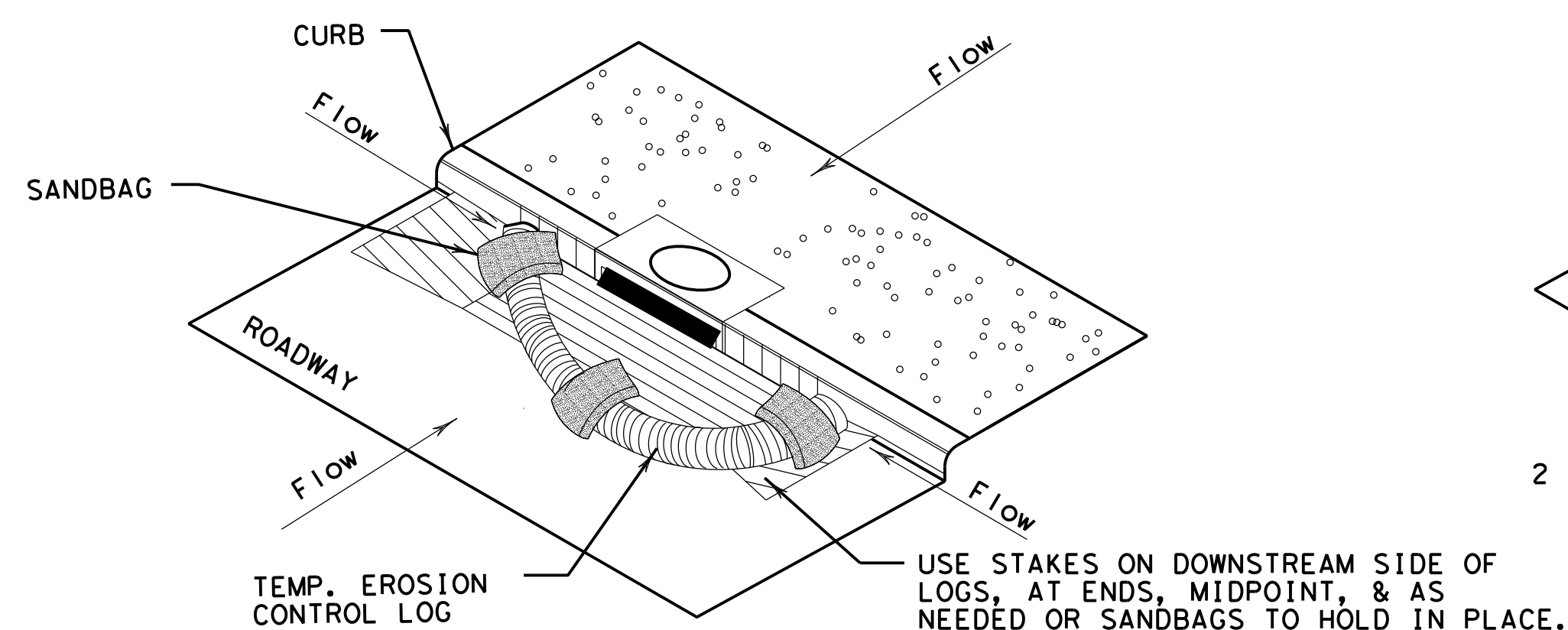
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FILE:

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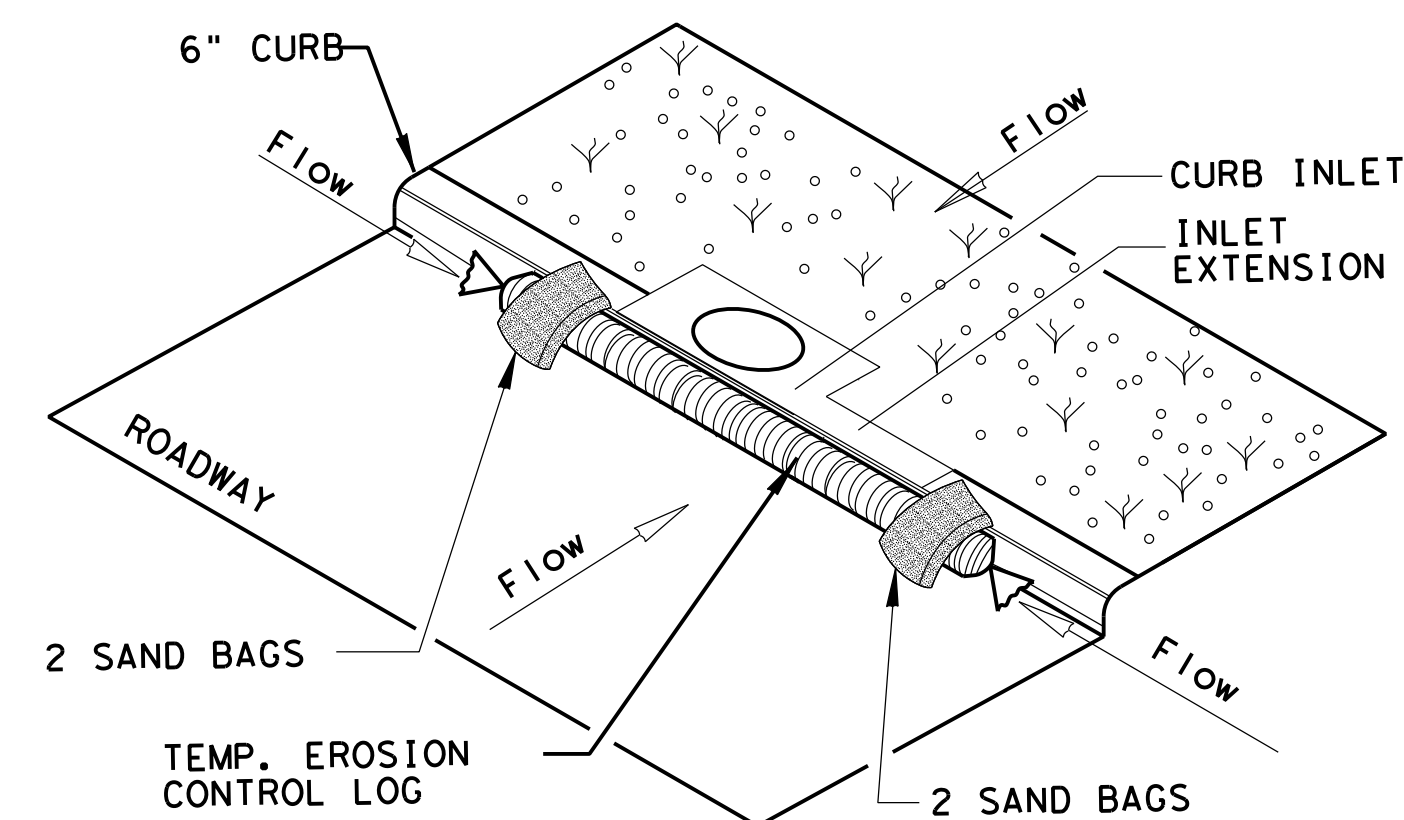
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

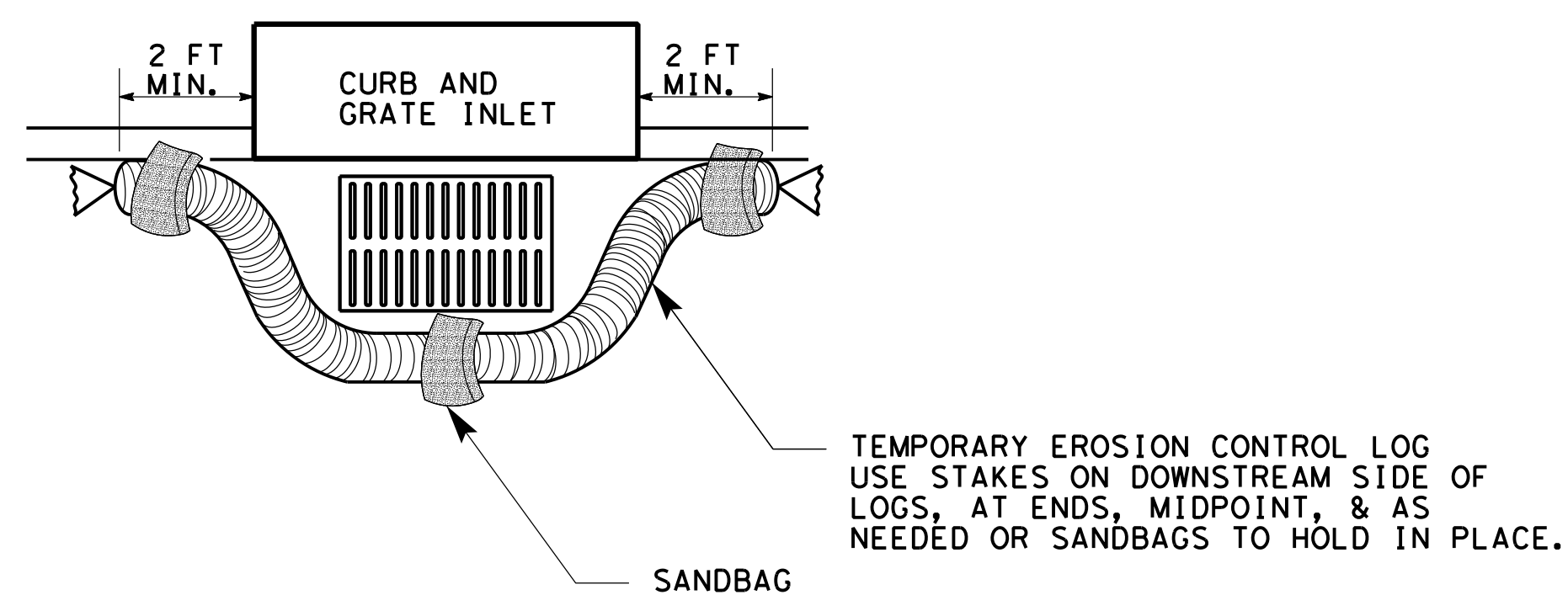
CL-CI



EROSION CONTROL LOG AT CURB INLET

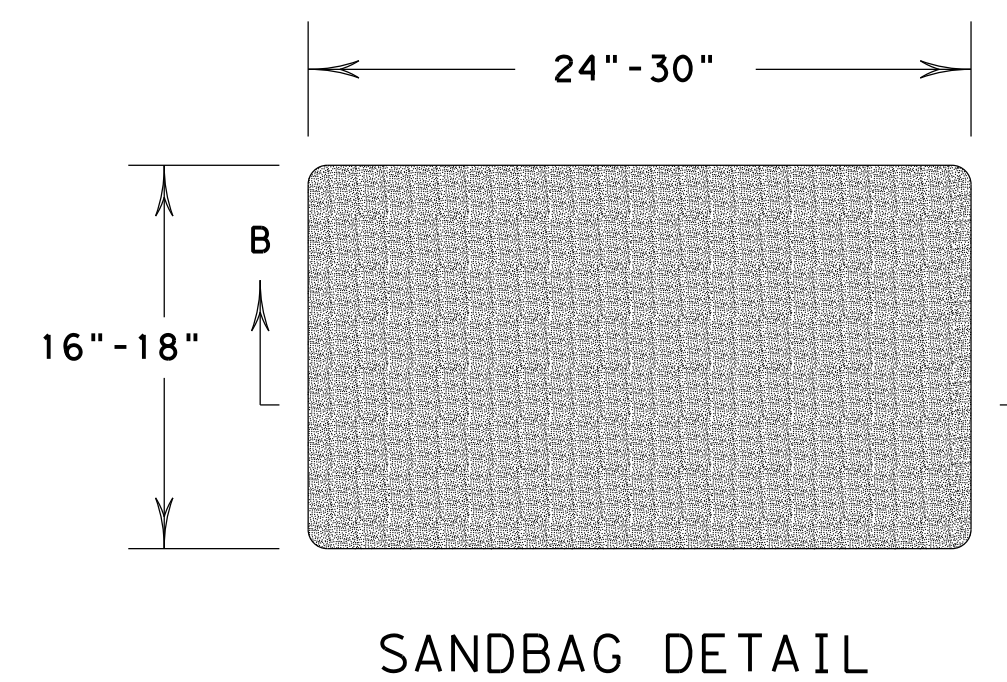
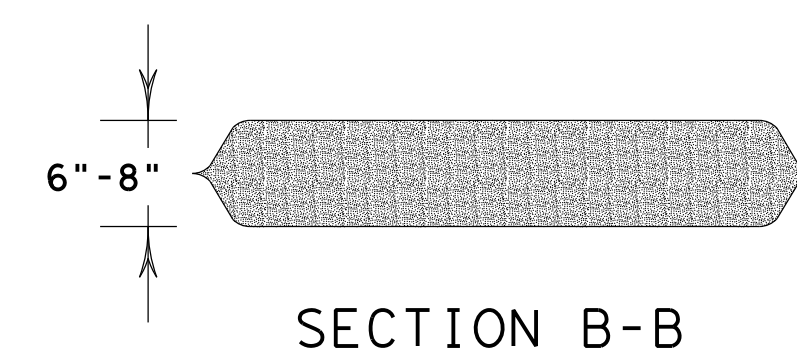
CL-CI

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



SHEET 3 OF 3

		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
© TxDOT: JULY 2016	CONT: 0055	SECT: 15	JOB: 082
REVISIONS	DIST: WAC		COUNTY: MCLENNAN
			SHEET NO.: 52C

DATE:
FILE:

BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

1. Prior to TxDOT allowing the Contractor to start construction, the Contractor will provide the required storm water and 404 permit documentation and support activities, including but not limited to the following:
 - Provide a list of all chemicals, construction and waste products that will be generated, stored or brought upon TxDOT ROW. The list includes expected construction debris, sanitary wastes, construction chemicals and petroleum products used or generated by the Contractor and sub-contractors. Along with the list, the Contractor will supply a spill prevention plan and clean up procedures that will include each of these chemical products or generated waste.
 - Provide in the construction schedule the necessary line items that will comply with the schedule and planning requirements of the storm water permit.
 - Post the TxDOT storm water permit and any Contractor permits, per permit requirements.
 - Provide copies of storm water permits for Contractor PSL(s). As new PSL(s) may be obtained for the project, provide copies of new or amended permits to TxDOT. The Contractor will not disturb soil without the proper permits.
 - Provide scale drawings of off ROW PSL's within one mile of the project, for field offices, borrow sources, plant sites or other uses.
 - Provide permit information on any Contractor batch plants or concrete crushing plants to be located at a Contractor PSL(s) within one mile of the project limits or boundaries. Copies of the air and water permits are to be provided to TxDOT before materials will be used on the project. No asphalt or concrete batch plants or concrete crushing plants will be located on TxDOT ROW.
 - Provide a letter indicating a Contractor Responsible Person for environmental compliance (CRP) for the project, and maintain a CRP throughout the project duration.
 - Provide all environmental documentation including certification of compliance and EMS training documents/certificates prior to starting work. The Contractor is to provide daily BMP inspection reports that document all field BMPs needing repair or replacement. The Contractor is to clearly document specific BMPs needing repair and location each work day. The Contractor is encouraged to be proactive in fixing BMPs without TxDOT direction.
 - Provide documentation required for Waters of the US, Note #3 and submittals for Item 496 bridge removal. Bridge removal methods submitted will follow all Waters of the US note requirements. The Contractor is not to start construction within the Ordinary High Water Marks of any stream until receiving approval for stream channel construction methods from TxDOT.
 - Provide a written procedure for managing all chemicals and construction items placed in vertical containment structures. Also, provide methods to be used for the treatment, disposal, collection or release of storm water.
 - Provide an estimated date by letter, for the submittal of marked up bridge drawings, indicating cut locations for any structural steel requiring cutting or torching of steel, coated with lead containing paints.
2. Place and maintain trash cans and portable sanitary facilities at locations where there is active construction. Worker generated trash and construction debris will be kept from being transported by storm water and will be collected daily from the ground and routinely hauled from the work area.
3. Contractor will provide TxDOT copies of all correspondence with MS4s, TCEQ, EPA, DSHS and Corps of Engineers regarding activities on this project.
4. Contractor to conduct storm water inspections and develop SWPPP documents to support Contractor permits obtained for the project including PSL(s).
5. Contractor will maintain written documentation of locations of all portable sanitary facilities. The Contractor is required to document the location and disposition of all spills and cleanups from portable sanitary facilities.
6. Contractor will not store chemicals on TxDOT ROW, unless chemicals are stored following all environmental and safety regulations. Fuels for construction equipment will not be stored on TxDOT ROW.
7. The Contractor will store fuels and bulk chemicals on Contractor PSL(s) using a secondary containment method, such as double lined tanks and/or free standing containment reservoirs made of plastic or steel designed to hold bulk chemicals or drums.
8. The Contractor will not remove sediment controls without the prior approval of TxDOT, except for a sediment control that may back up water and cause safety or traffic problems.

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9. Any sediment controls removed by the Contractor must be re-installed before the next rainfall event or by the end of day, as approved in advance.
10. Vegetative buffer strips may be used in place of temporary sediment controls such as silt fences and rock filter dams. The amount of disturbed soil area will be limited to 1/3 of an acre or less for a minimum of 50 feet of grassed ditch and 2/3 of an acre of disturbed soil for a minimum of 100 feet of grassed ditch.
11. Construction equipment found to be leaking oil, fuel or coolant will be immediately stopped, the leaking fluid collected and the equipment fixed. Equipment continuing to leak will be removed from the project at no cost to TxDOT. Leaking fluids from equipment will be collected and removed from the project or PSL.
12. Earth berms or mounds typically used to stockpile topsoil and used in place of boundary silt fence will be seeded upon being constructed. Long term use of earth berms or mounds will not be continued without establishing grass on the control.
13. The Contractor will inform TxDOT of new areas where soil will be disturbed to facilitate planning for new sediment controls. Areas of vegetated soil will not be disturbed by the Contractor, unless adequate sediment controls can be installed before the next rainfall event. The Contractor will assist TxDOT in keeping an accurate set of working SWPPP drawings that show the locations of all temporary sediment and erosion controls.
14. The Contractor will maintain an adequate amount of temporary sediment controls on hand at the field office or project staging area for critical SWPPP maintenance, including silt fence (minimum of 200 feet) and rock / fabric for rock filter dams (minimum for 100 feet of Type III dams).

The requirement for BMP rock quantities on hand is waived for small projects for on and off system bridge installations. The Contractor having a BMP Subcontractor does not eliminate the requirement for the Contractor to have the required silt fence and rock on hand, typically stored at the Contractor PSL.
15. Failure of a sub-contractor to complete storm water work on time will require the Contractor to start storm water sediment control work immediately and complete the work with high priority, or be subject to stop work on the entire project.
16. Earth materials on roads as a result of soil tracking will not be allowed to be transported off ROW in storm water. Soil or rock material found on roadways deposited from Contractor equipment will be removed daily.
17. Unless approved, completed concrete curb inlets will not be blocked by sediment controls. The contractor will frequently sweep the completed or partially completed roadway to keep sediment out of drainage pipes.
18. The Contractor will be responsible for proper dust control and will route construction traffic in a manner that minimizes dust generation.
19. Water for dust control will contain no pollutants, but may be non-potable from upland stock ponds. No quantity of water to be used for construction purposes may be taken from a 404 stream, prior to the proper authorizations or permits being obtained by the Contractor.
20. Contractor is to direct workers and sub-contractors to use portable sanitary facilities provided by the Contractor and not to trespass off ROW.
21. Contractor will provide written verification to TxDOT that earth borrow pits and disposal sources meet environmental and regulatory requirements, prior to use. Excavations will meet all OSHA requirements and the current safety guidelines established for TxDOT Quarries and Pits.
22. Boundary silt fences that are terminated down slope, with one end being at the lowest elevation, will be installed with an L - hook to contain sediment. Boundary silt fences that are installed on flat ground will have L-hooks on both ends.
23. Rock filter dams across ditches will be constructed where the rock filter dam ends are embedded within the ditch side slopes and ditch bottom. The top center elevation of the rock filter dam will be at least 6 inches lower than the elevations on the rock filter dam ends.
24. Silt fence will be constructed in a U or V pattern across ditch lines and up the ditch side slope to keep storm water from flowing around the ends of the silt fence. Small silt fences that do not adequately span the ditch and allows storm water around the end(s) will not be used. Where there is adequate space, large U pattern silt fences are preferred to facilitate sediment collection and sediment removal with equipment.
25. Sediment controls (RFDs or silt fences) will be located along road ditches as marked on the SWPPP drawings. Modifications to the sediment control spacing will be adjusted during the project based on sediment control effectiveness. The installation and maintenance of sediment controls at or near outfalls, where storm water leaves TxDOT ROW, takes persistent over ditch line sediment controls.

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BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

26. Storm water draining sheet flow over disturbed soil sloped towards the ROW property line, will be intercepted by a boundary silt fence typically installed with L-shaped ends.
27. For ditch grading and shoulder up work, the Contractor is limited during good weather to remove up to one mile (limited to five acres of disturbed soil) of ditch line sediment controls; on one side of the roadway. Outfall controls cannot be removed during this activity. Ditch line controls must be replaced upon completion of work and before the next rain event.
28. Sediment controls damaged by the Contractor, as defined by permit, must be fixed or replaced immediately upon discovery.
29. Notches in silt fences are not typically allowed. Specific silt fences that back up water onto lanes of traffic may be notched if approved.
30. For silt fence maintenance, the Contractor will leave approximately 4 inches of deposited sediment up stream of silt fences and not over excavate around silt fences or rock filter dams.
31. The Contractor will inform TxDOT of new construction areas and where soil is planned to be disturbed. Sediment controls will be installed at outfalls prior to the Contractor beginning soil disturbing activities up slope from the outfall.
32. Water from concrete saw cutting, concrete grinding and concrete coring activities; or fine materials from concrete chipping and salvage will not be allowed to enter storm drains or enter streams.
33. Storm water containing suspended sediment and turbidity needing to be removed from excavations or low areas will be pumped or gravity drained through vegetated buffer strips (50 foot minimum) or placed in ditches with temporary sediment controls, prior to the water being discharged into a stream.
34. Uncontaminated water from natural groundwater seepage, springs, foundations and drains that does not contain suspended sediment or any pollutants may be discharged without storm water controls.
35. Lime or cement if spilled in ditches or outside the defined limits of application is considered a pollutant and will be excavated and removed the same day, to avoid contaminating streams.
36. If located along the project ROW, RAP stockpiles will be located where there is a minimum 100 feet of vegetative buffer strip before storm water will reach a stream. RAP will not be used as a construction material within the Ordinary High Water Marks of a stream channel of a 404 designated stream.
37. If allowed on the project, concrete truck wash out areas will have adequate volume to allow 12 inch freeboard for rain and will be lined with 6 mils of plastic. No concrete will be stored higher than the 12 inch freeboard. Cleaning of truck chutes and equipment does not constitute concrete truck wash out and this activity may be completed at the concrete placement location. Wash out areas will not be located closer than 50 ft from down slope inlets or stream channels.
38. For outfalls near stock ponds closer than 50 foot from disturbed soil at the ROW line, redundant sediment controls will be provided, typically a combination of rock filter dam and a silt fence constructed in line of the flow.
39. Earth stockpiles will utilize silt fence sediment controls, positioned on the low end of the stockpile drainage area with L-hooks or silt fence installed around the entire stockpile.
40. Sediment controls including rock filter dams and silt fences will not be installed across any 404 streams. Sediment controls at 404 streams will be positioned to limit sediment entering the stream from the banks and around structures/culverts, and will allow free flow of storm water to pass through the ROW without being dammed by any sediment controls. Remove loose materials from stream channels prior to each rain event.
41. Sediment controls for non-404 streams may be constructed across the drainage channel in unlimited locations. It is appropriate to use sediment control details typically used for 404 streams for non-404 streams when flow velocities are high. Remove loose material from stream channels prior to each rain event.
42. Incomplete drainage pipe installation across the roadway does not remove the requirement for having sediment controls around the ends of the pipe. To stay within permit requirements, sediment controls should be installed over and around the terminated end and along each side of the banks as soon as construction on the pipe has been completed. Remove loose material from stream channels prior to each rain event.
43. Safety end / headwall construction temporarily will require the removal of part of the sediment control placed over and around the pipe end. Retain in place as much functioning sediment control as possible. Replace the silt fence over and around the top of the pipe, immediately upon concrete placement and form removal. Do not remove culvert sediment controls that cannot be replaced before the next rain event. Sediment control at the ends of culverts must be in place and available for any rain event until the disturbed soil areas are re-vegetated.

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BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

44. Between the Ordinary High Water Marks of a 404 stream channel, the Contractor will disturb only the minimum amount of stream channel that is necessary to complete the work.
45. Rock riprap for erosion control does not replace the requirements to maintain sediment control until vegetation is re-established. Replace sediment controls immediately after installing erosion rock.
46. At the direction of TxDOT, sediment deposited into existing and new culverts will be removed subsidiary to Item 506. Sediment to be removed is either pre-existing material before construction starts or sediment generated as a part of this project.
47. Provide treated 2X4 cross bracing for rectangular inlet silt fence, subsidiary to Item 506.
48. Loose or granular earth materials will not be used to repair silt fence undercuts. Silt fence undercut repairs will be conducted with well compacted soils or the silt fence will be reset in a nearby location.
49. Silt fence steel T posts of approximately 1.25 pounds per foot are allowed at a spacing of 8 feet or less. Silt fence steel T posts between approximately 1.25 pounds per foot and 0.85 pounds per foot are allowed for T post spacing of 5 feet or less.
50. Silt fence to be used to slow the flow of storm water down slopes will be positioned approximately horizontal (on the contour) with L hooks on the ends and limited to approximately 200 feet in length. Multiple sections and levels of silt fence may be required in addition to temporary / permanent erosion control flumes.
51. Soil retention blankets will be installed rolled down the slope with the small dimension side embedded at the top of slope, unless recommended otherwise by the manufacturer. Excess grass, rocks, trash, debris or clods will be removed before seeding and installing soil retention blankets. All installations will be by the manufacturer recommendations. Contractor equipment, including tractor mowers will be kept off areas with soil retention blankets until the grass is established.

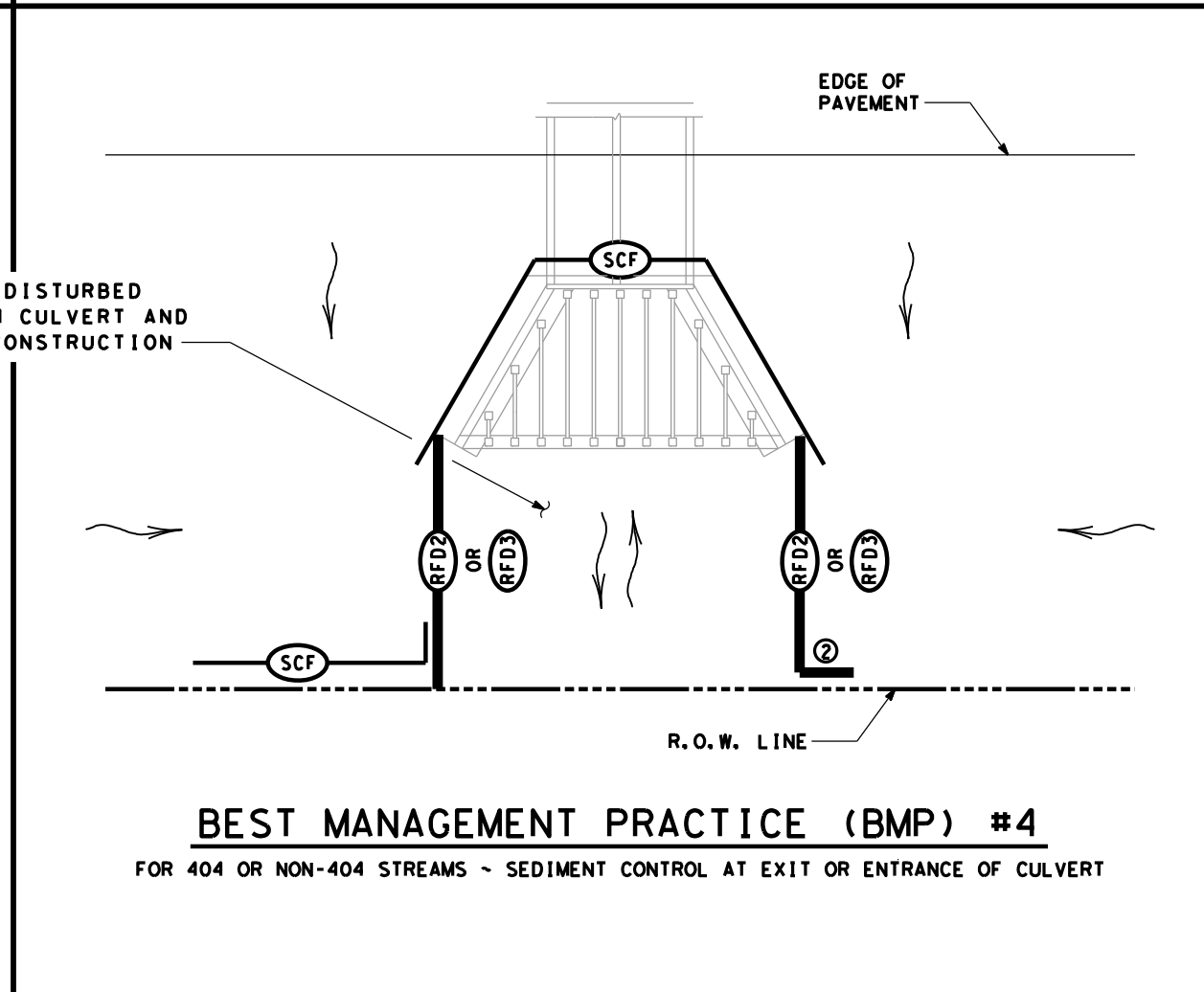
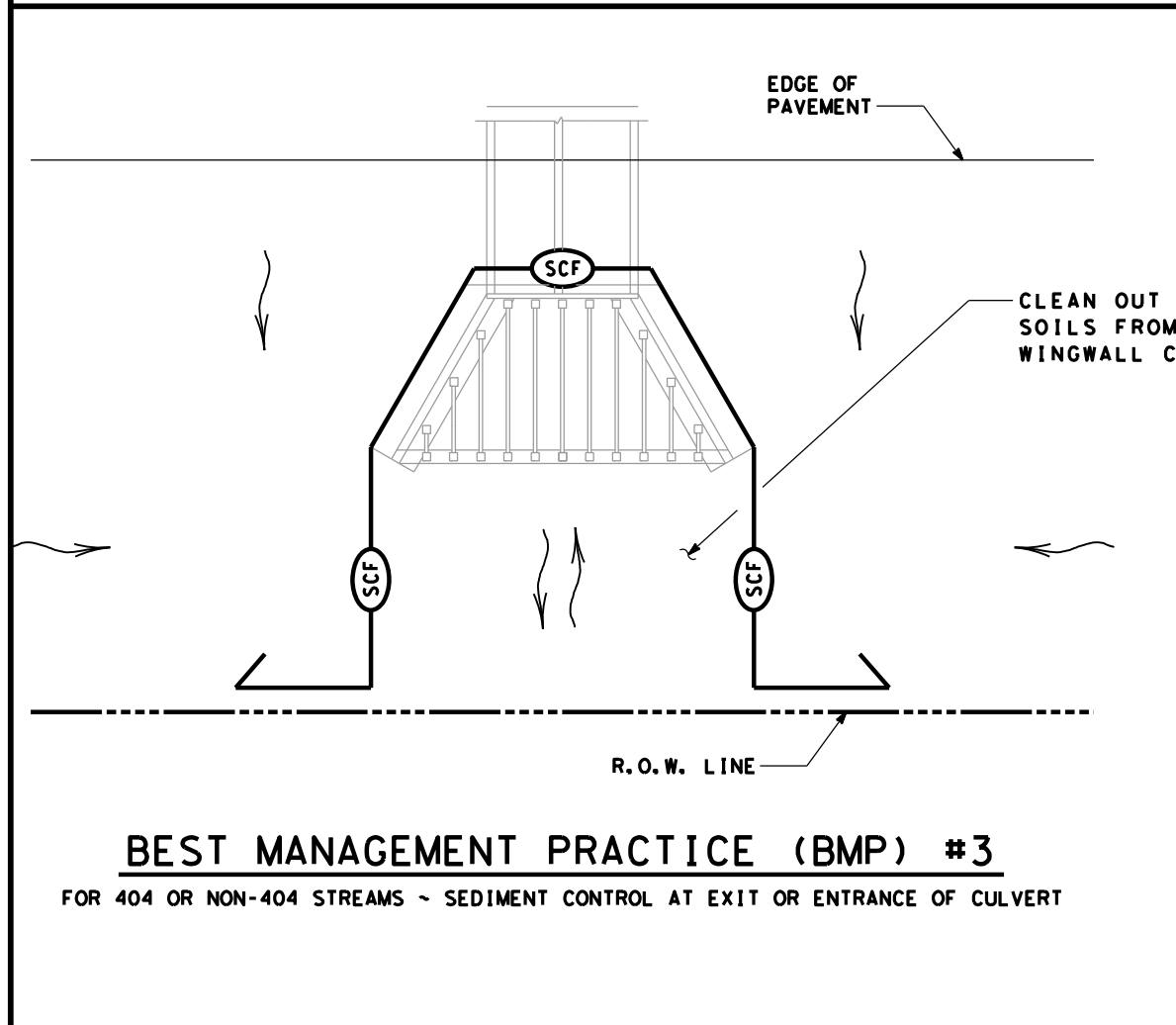
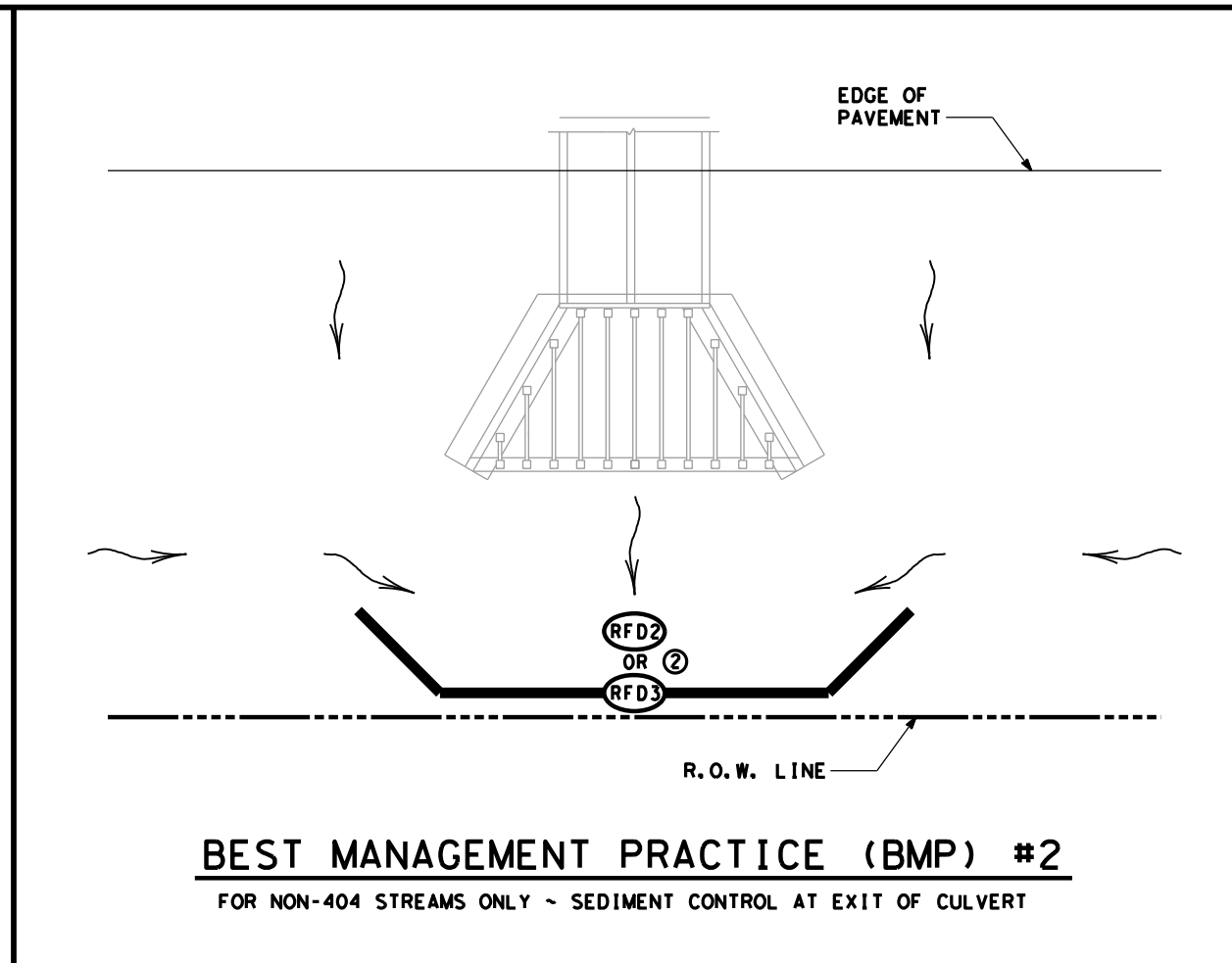
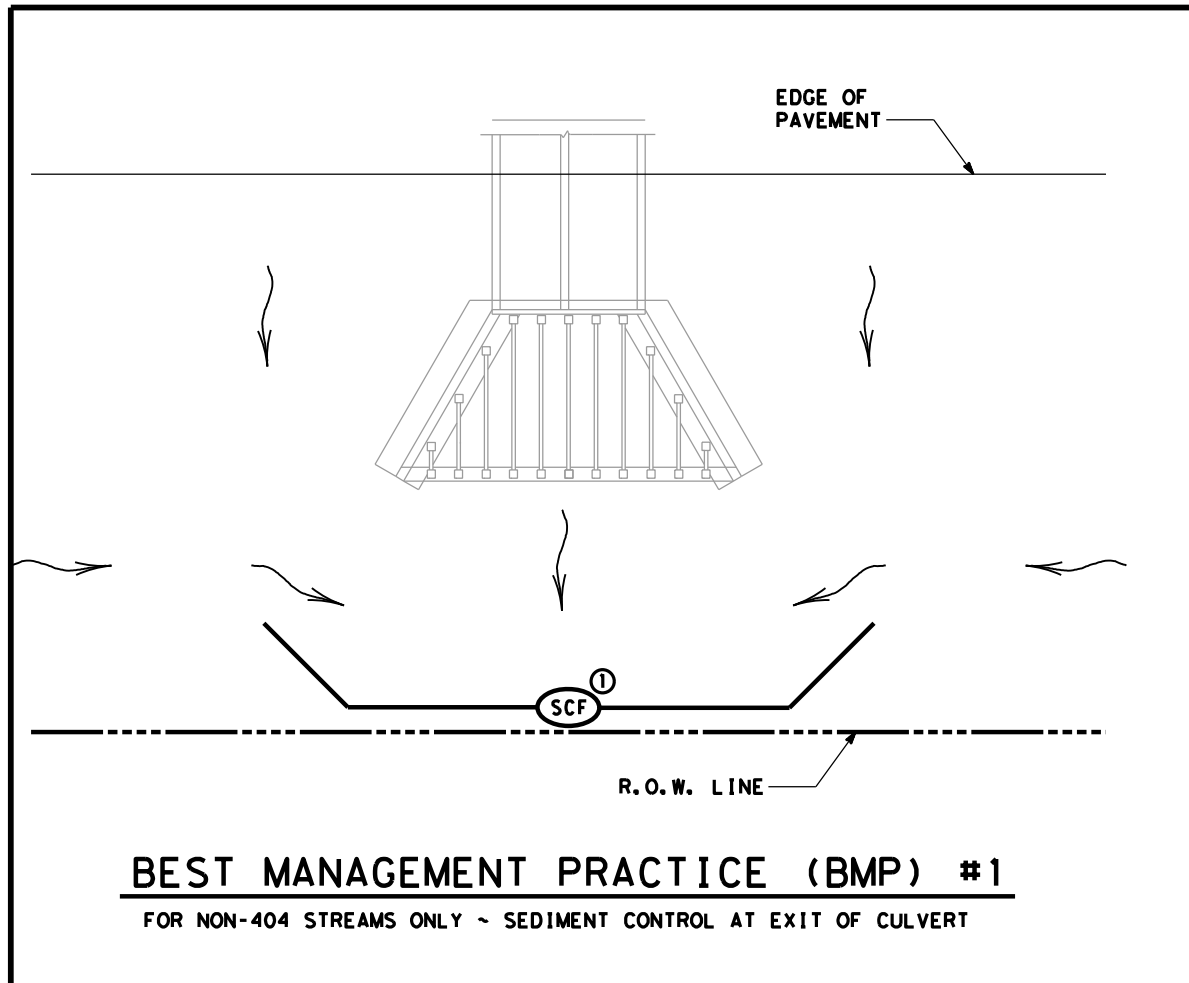
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	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

- NOTES:
- ① EXTEND SILT FENCE SO STORM WATER DOES NOT GO AROUND THE ENDS. USE L-HOOKS ON ENDS AS REQUIRED.
 - ② EXTEND ROCK FILTER DAM SO STORM WATER DOES NOT GO AROUND THE ENDS.

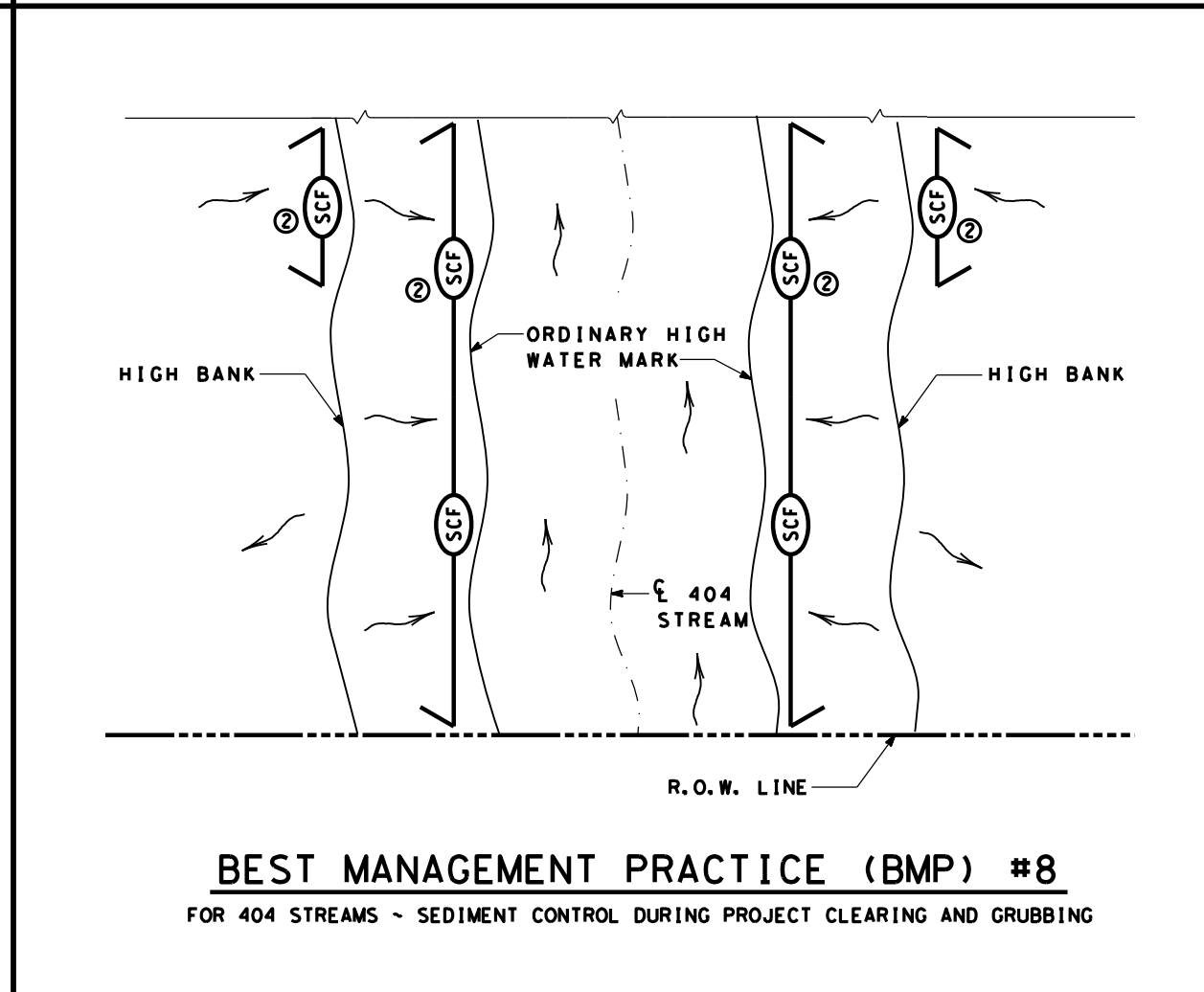
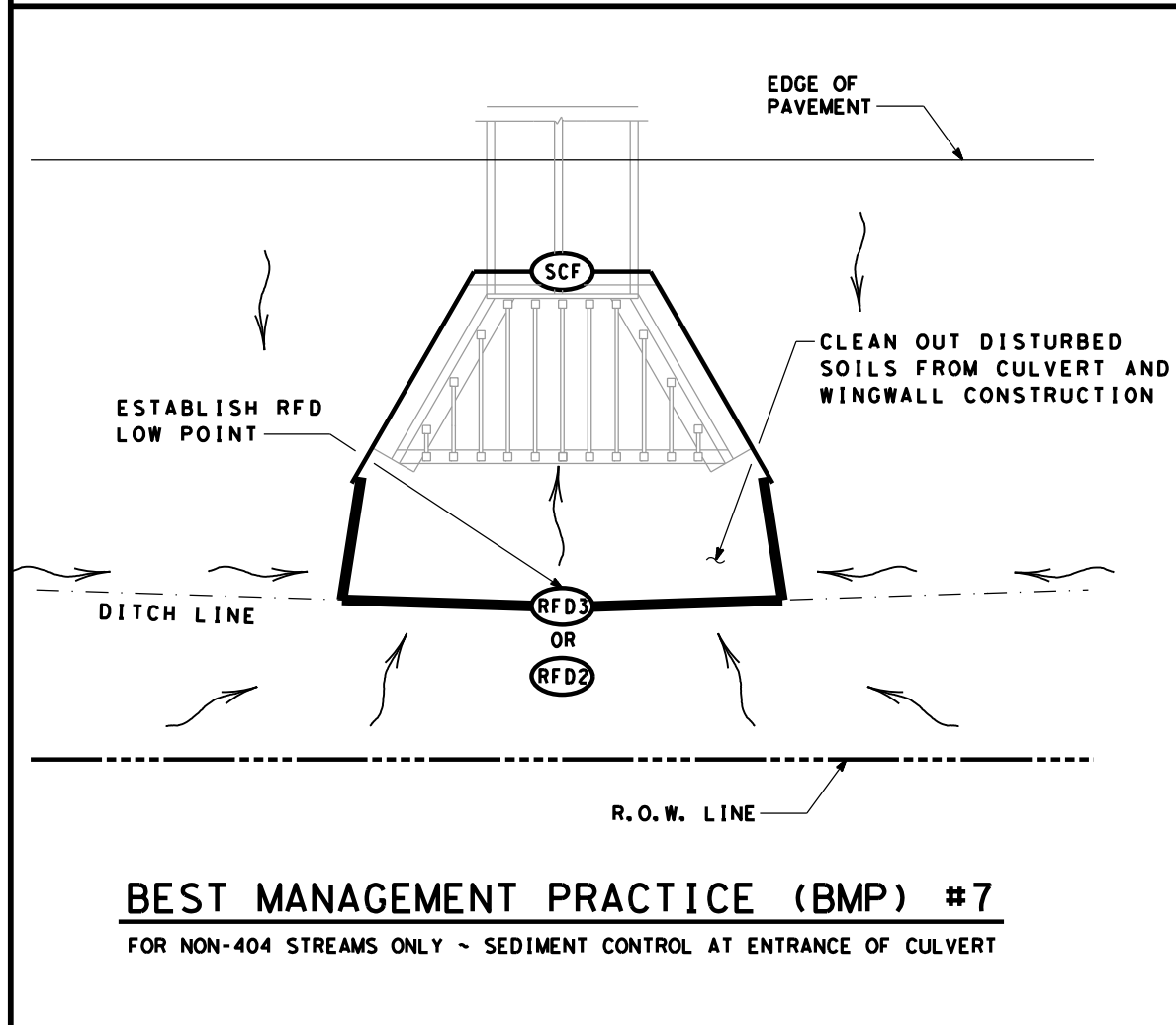
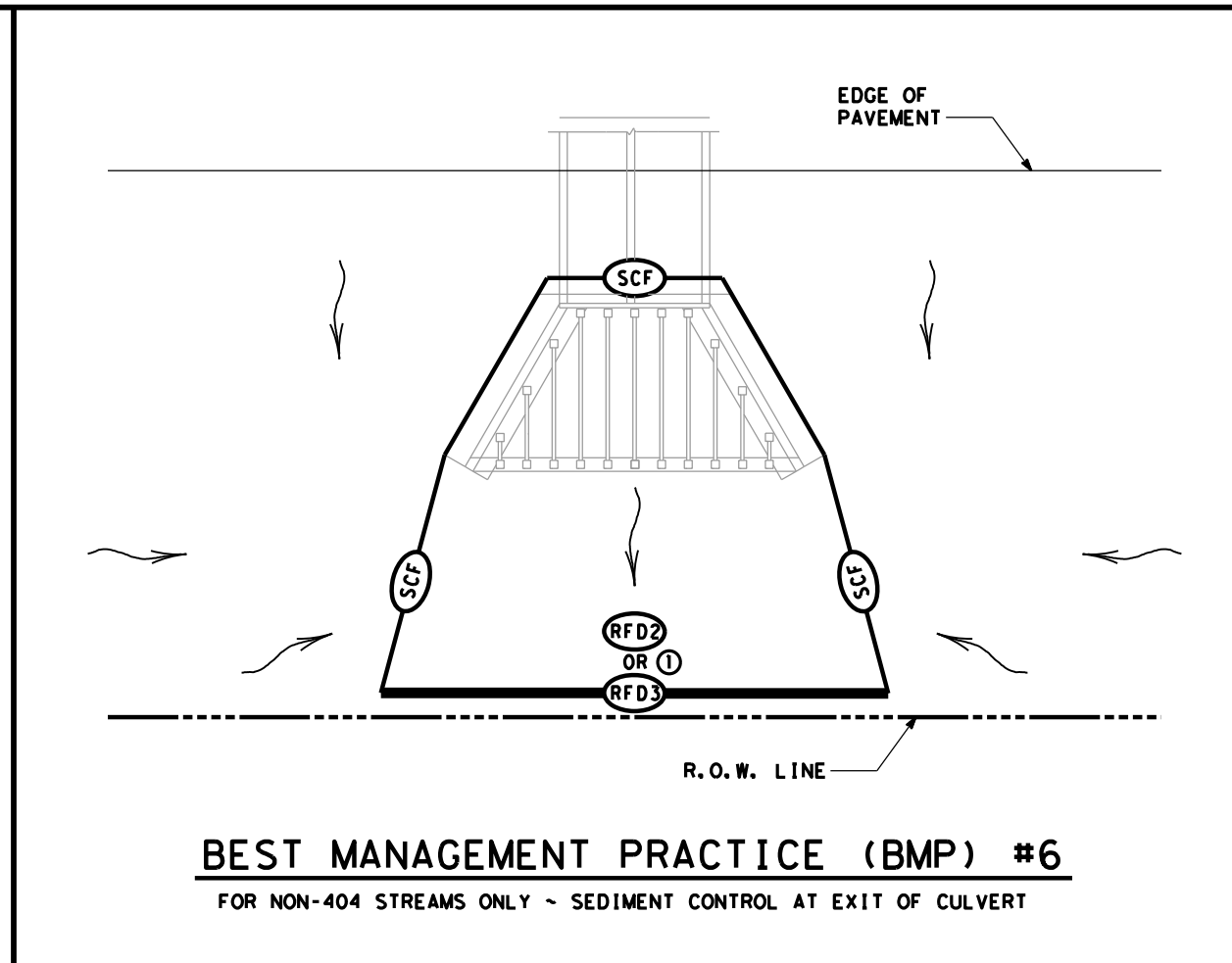
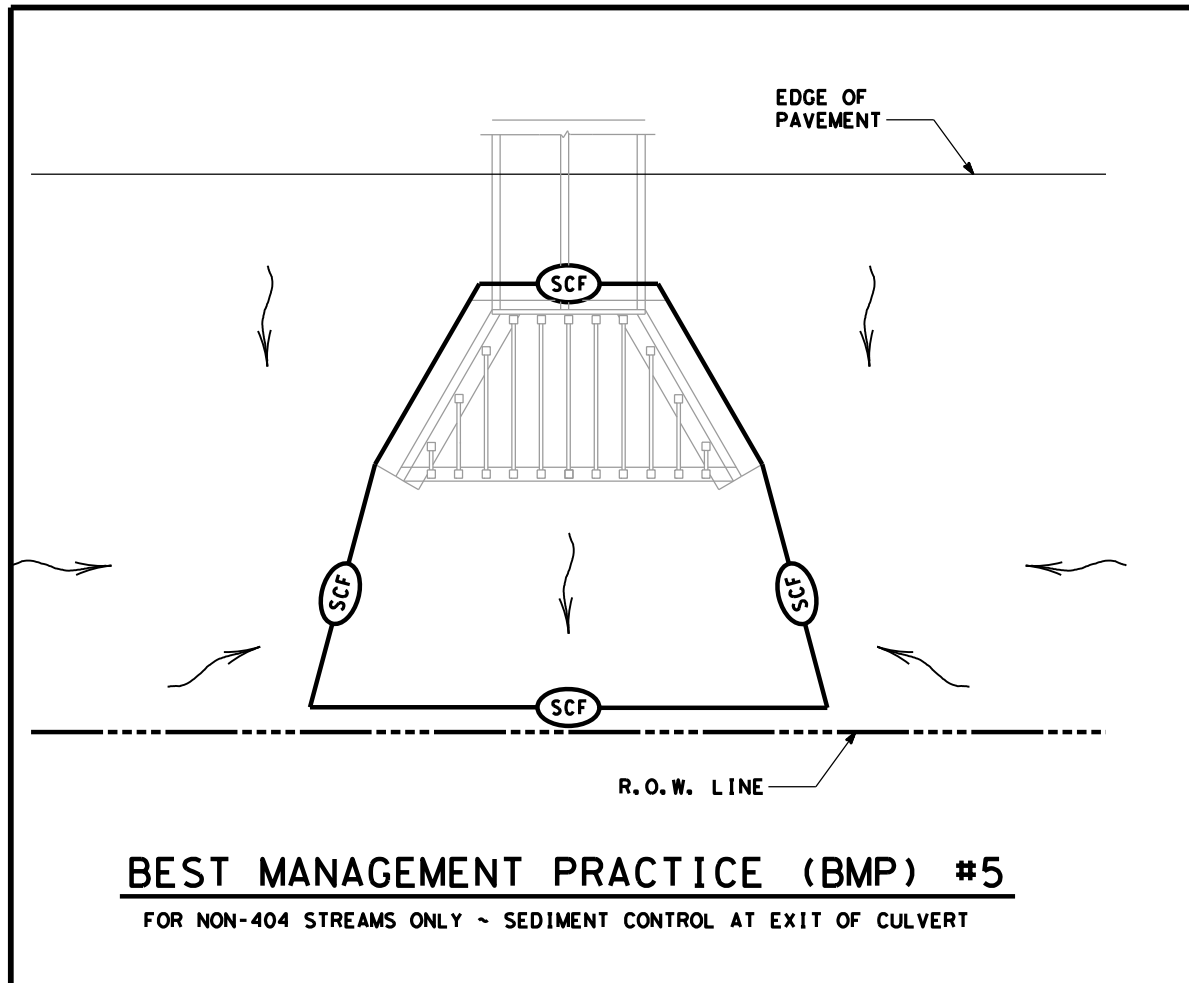
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	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

- NOTES:
- PROVIDE OVERLAP OF SILT FENCE WITH ROCK FILTER DAM.
 - USE SILT FENCE L-HOOKS ON ENDS TO BLOCK STORM WATER SEDIMENT

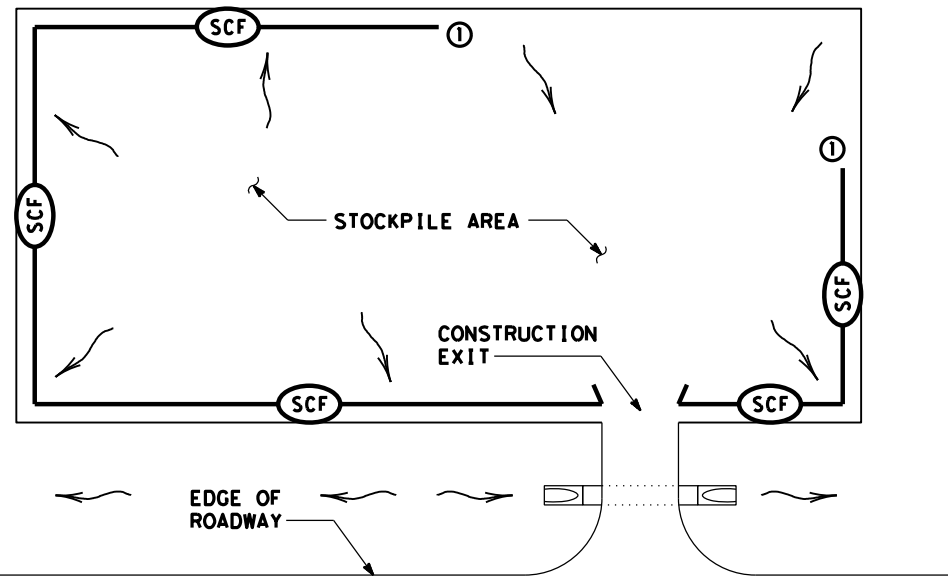
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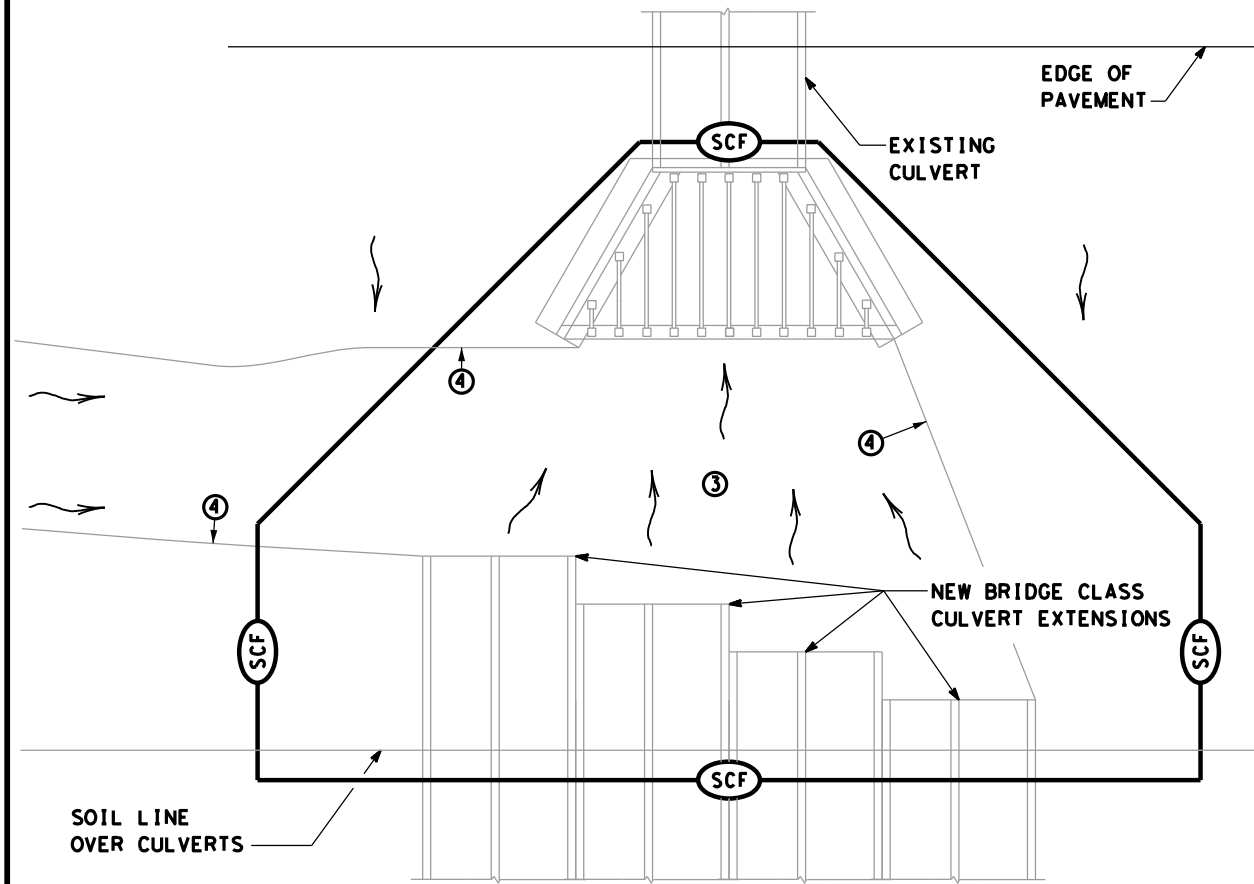
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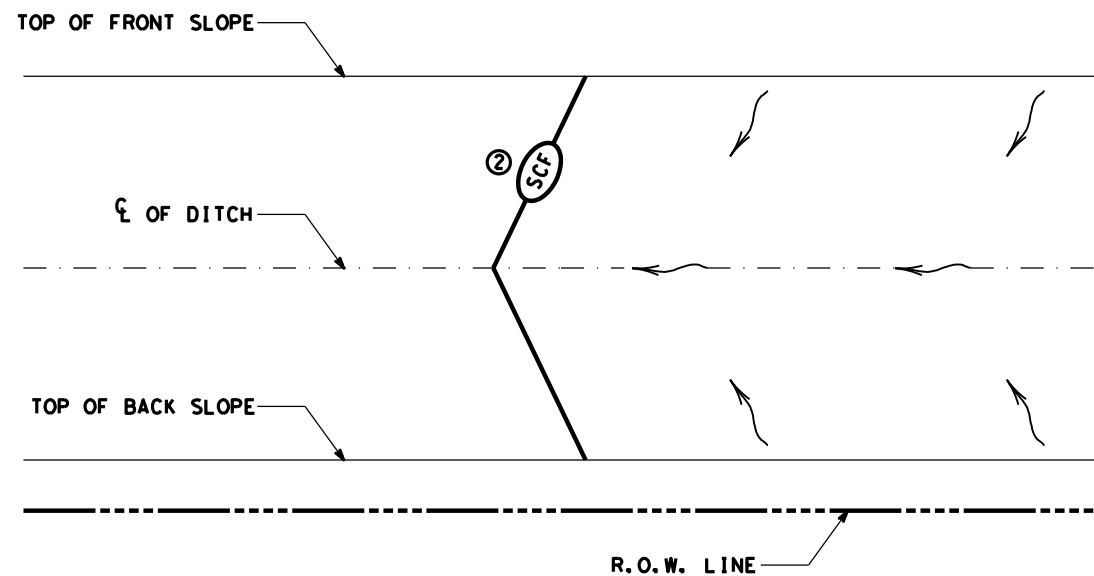
BEST MANAGEMENT PRACTICE (BMP) #9
STOCKPILE SEDIMENT CONTROL



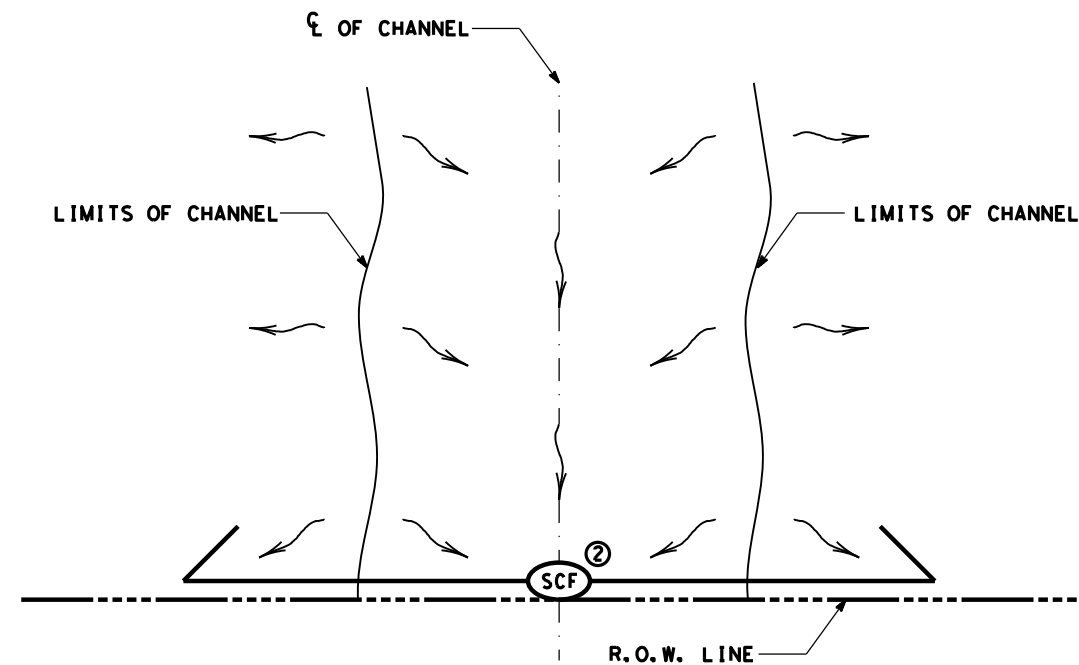
BEST MANAGEMENT PRACTICE (BMP) #10
FOR 404 OR NON-404 STREAMS ONLY ~
SEDIMENT CONTROL AT PHASED CONSTRUCTION OF BRIDGE CLASS CULVERTS

	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

- NOTES:
- START SEDIMENT CONTROL AT LOCATION SO ALL STORM WATER WITH SEDIMENT IS COLLECTED
 - ROCK FILTER DAMS OR EARTH/GRASSED EMBANKMENTS CAN BE SUBSTITUTED AS DIRECTED.
 - PROVIDE A SMOOTH TRANSITION FROM THE INVERT ELEVATIONS BETWEEN CULVERTS. REMOVE LOOSE SOIL FROM EXCAVATED AREA BETWEEN CULVERTS.
 - PROVIDE AND INSTALL PNEUMATICALLY PLACED CONCRETE ON THE DITCH BOTTOM AND SIDE SLOPES BETWEEN TEMPORARY TERMINATIONS BETWEEN OLD AND NEW CULVERTS. PNEUMATICALLY PLACED CONCRETE WILL BE PLACED TO THE HEIGHT OF THE LARGEST CULVERT ON THE DITCH SIDE SLOPES; AND TO A LIMIT 10 FEET OUTSIDE THE LOCATION OF BMPs ALONG THE DITCH BOTTOM. CEMENT STABILIZED SAND MAY BE SUBSTITUTED FOR PNEUMATICALLY PLACED CONCRETE, IN AREAS WHERE INSTALLATION WORKS AND AT THE OPTION OF TXDOT.



BEST MANAGEMENT PRACTICE (BMP) #11
BOUNDRY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED UP SLOPE



BEST MANAGEMENT PRACTICE (BMP) #12
BOUNDRY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED DOWN SLOPE

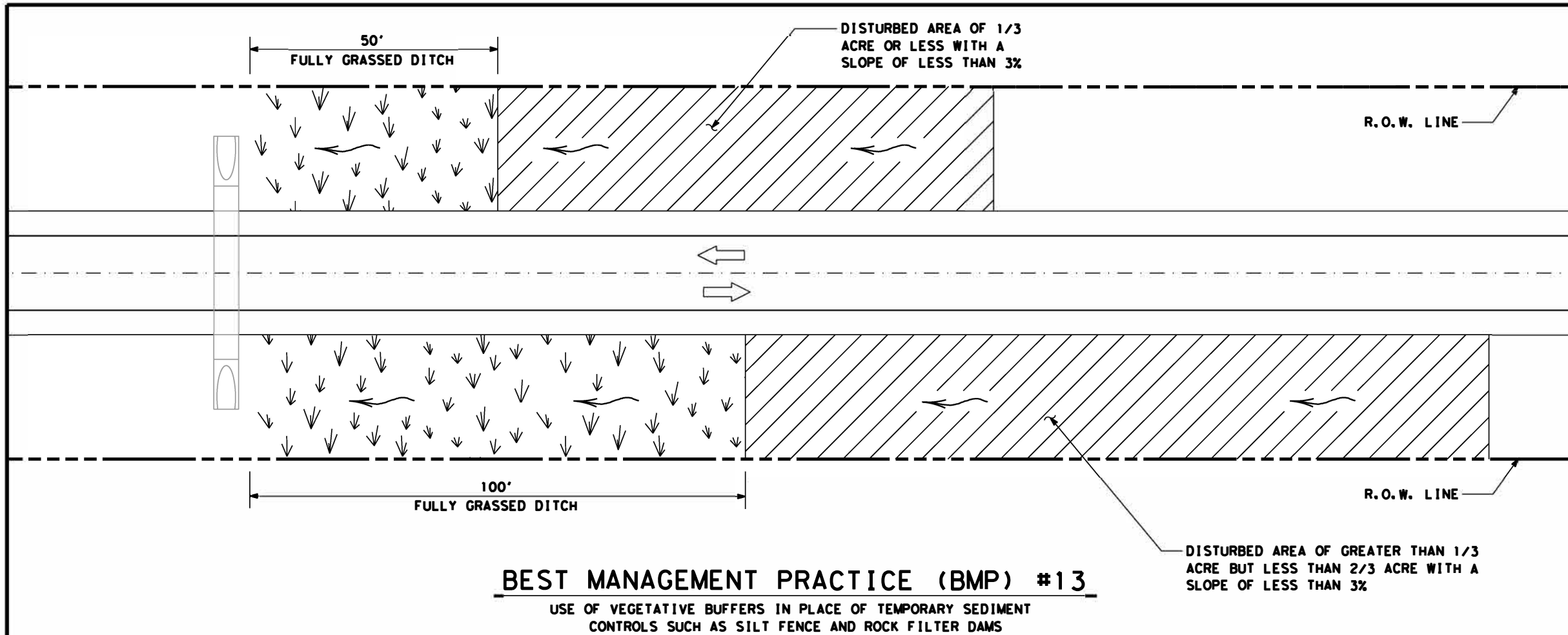
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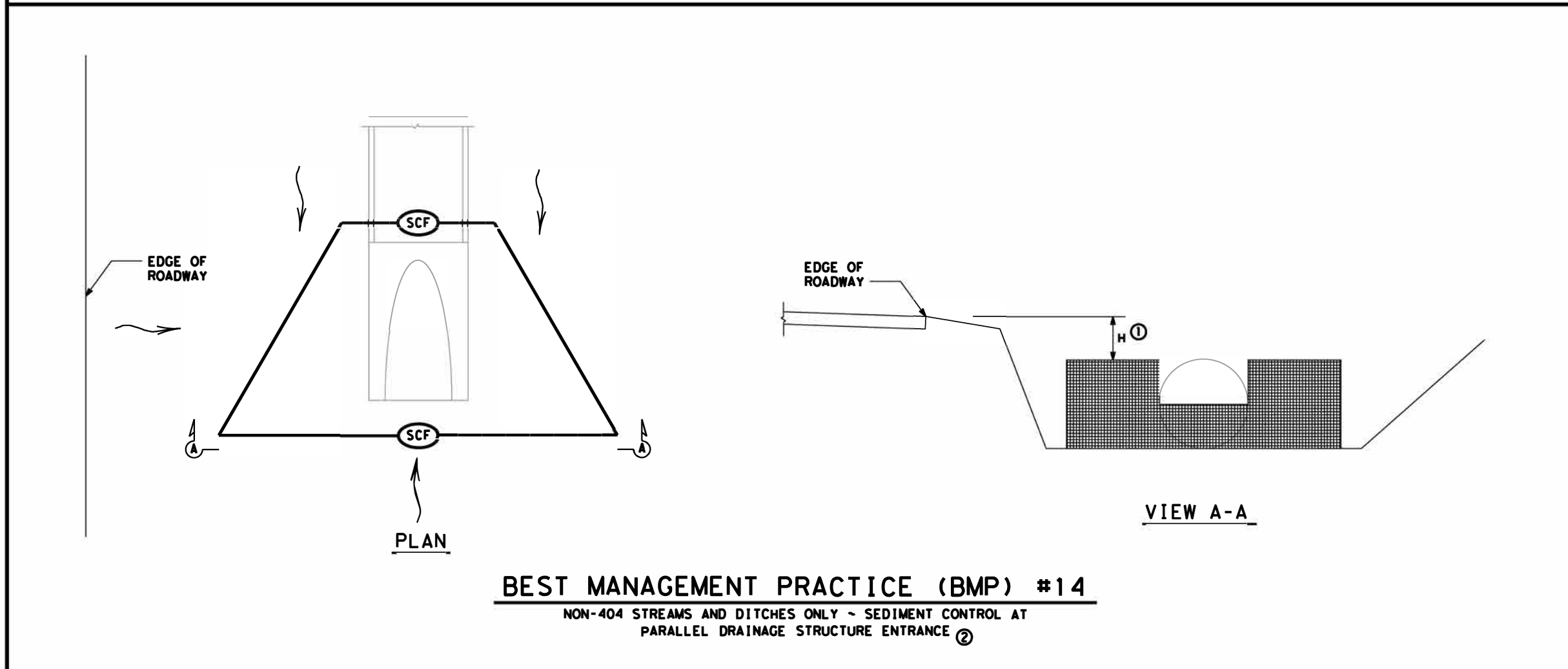


BEST MANAGEMENT PRACTICE (BMP) #13

USE OF VEGETATIVE BUFFERS IN PLACE OF TEMPORARY SEDIMENT CONTROLS SUCH AS SILT FENCE AND ROCK FILTER DAMS

	FULLY GRASSED DITCH
	DISTURBED AREA
	DIRECTION OF FLOW
	SEDIMENT CONTROL FENCE

- ① FOR H DIMENSIONS LESS THAN 1.5' SILT FENCE MAY NEED TO BE NOTCHED AS SHOWN IN VIEW A-A. ADD EXTRA POSTS AT NOTCH.
- ② BMP #14 MAY BE USED AT CROSS DRAINAGE STRUCTURES AS DIRECTED.



BEST MANAGEMENT PRACTICE (BMP) #14

NON-404 STREAMS AND DITCHES ONLY - SEDIMENT CONTROL AT PARALLEL DRAINAGE STRUCTURE ENTRANCE ②

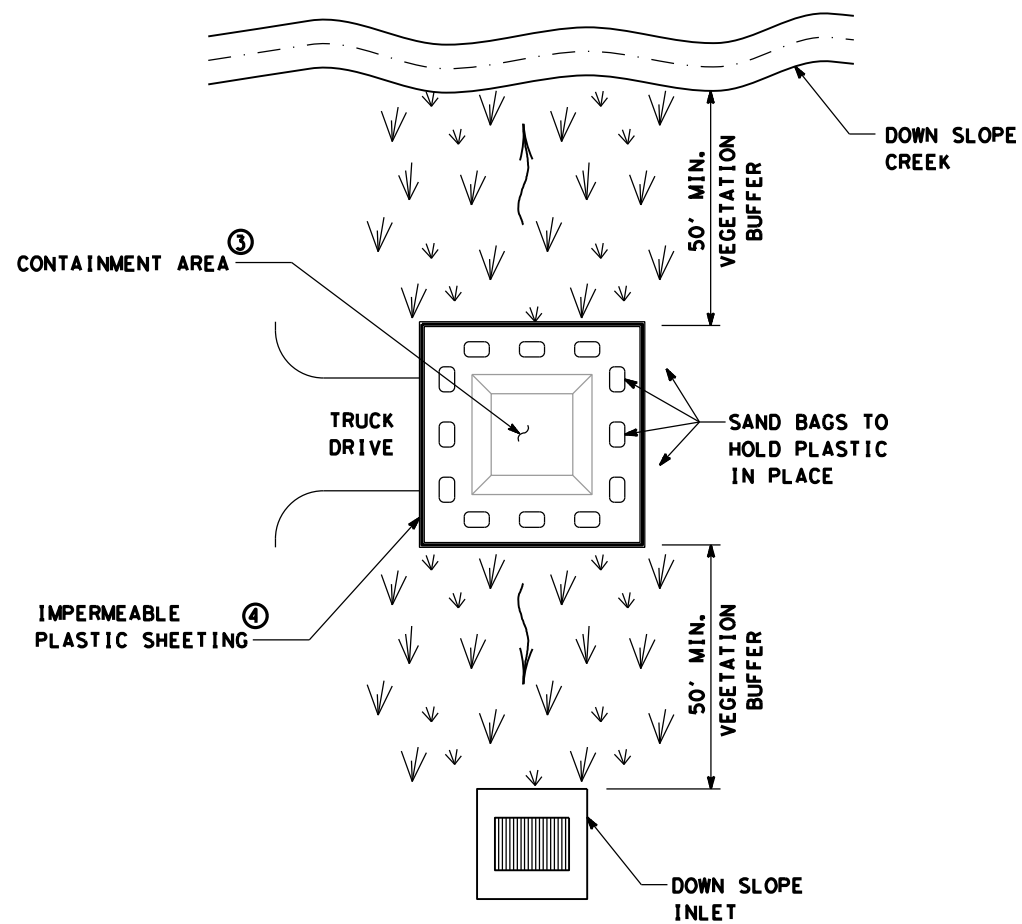
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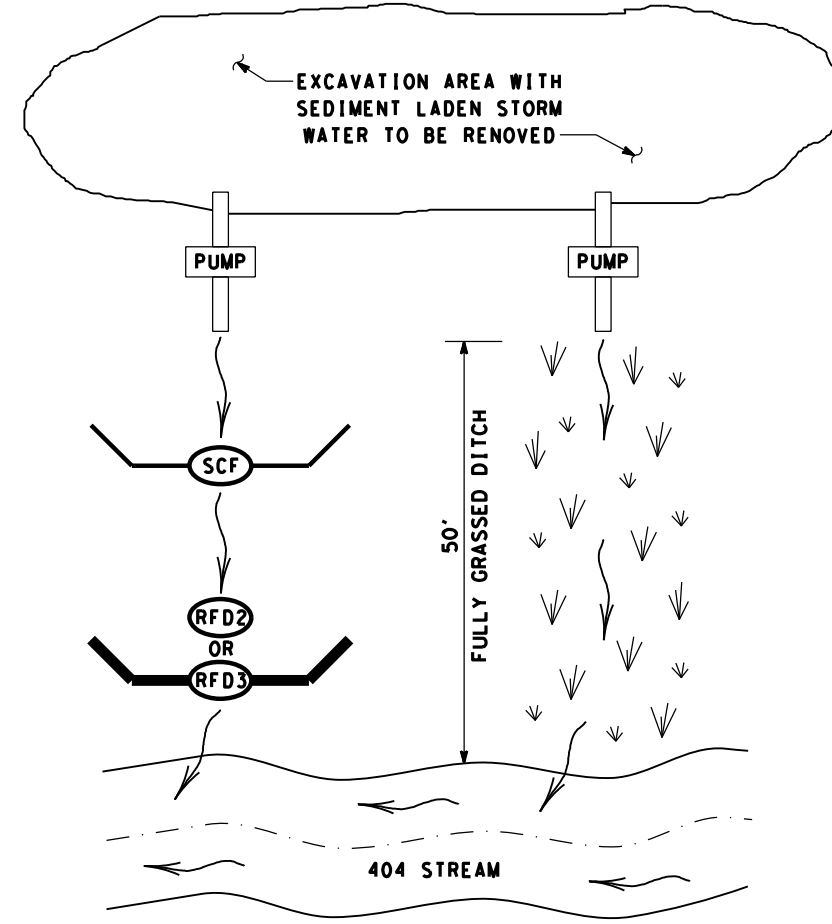
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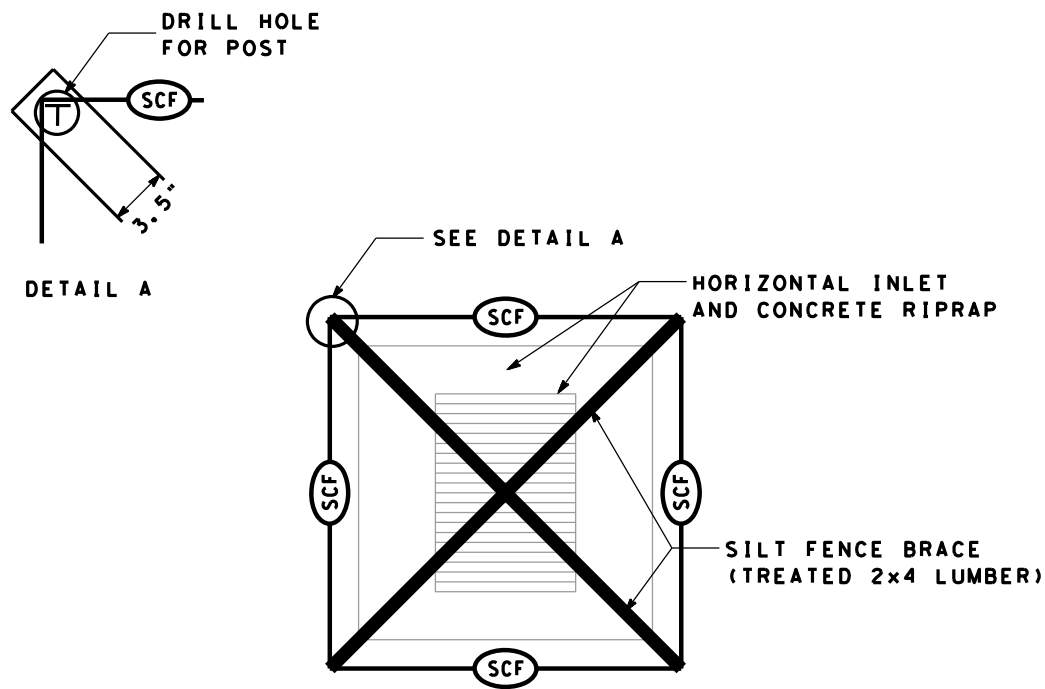
BEST MANAGEMENT PRACTICE (BMP) #15
CONCRETE TRUCK WASHOUT AREA



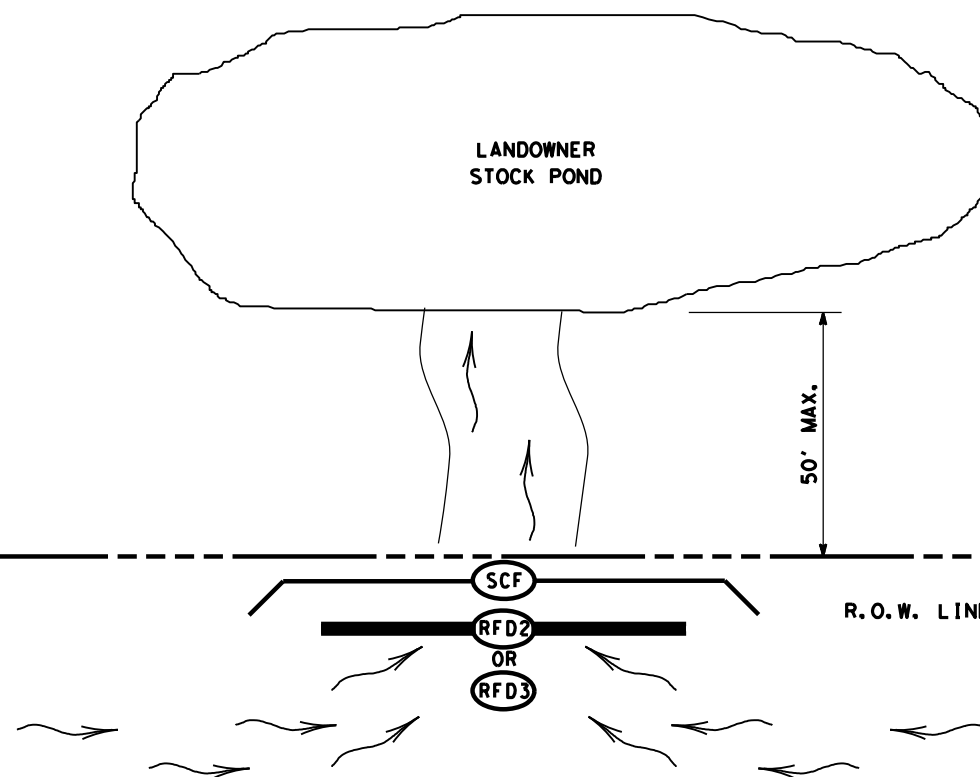
BEST MANAGEMENT PRACTICE (BMP) #16
PUMPED STORM WATER SEDIMENT CONTROLS ①

	FULLY GRASSED DITCH
	DIRECTION OF FLOW
	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM (TY 2)
	ROCK FILTER DAM (TY 3)

- ① PUMPED STORM WATER FROM AN EXCAVATION AREA SHOULD BE DISCHARGED IN A 50' VEGETATIVE BARRIER OR THROUGH TWO TEMPORARY SEDIMENT CONTROLS BEFORE ENTERING A 404 STREAM.
- ② FOR LANDOWNER STOCKPONDS WITHIN 50' OF THE RIGHT OF WAY LINE, PROVIDE REDUNDANT SEDIMENT CONTROLS AT THE CONVEYANCE OF THE POND. MINIMUM OF TWO SEDIMENT CONTROLS.
- ③ WHEN CONTAINMENT AREA REACHES 1' FREEBOARD, DISCONTINUE WASHOUT PLACEMENT AND REMOVE MATERIAL UPON SOLIDIFICATION.
- ④ EACH TIME SOLIDIFIED MATERIAL IS REMOVED REPLACE PLASTIC SHEETING.



BEST MANAGEMENT PRACTICE (BMP) #17
HORIZONTAL INLET SEDIMENT CONTROL



BEST MANAGEMENT PRACTICE (BMP) #18
LANDOWNER STOCKPOND SEDIMENT CONTROL ②

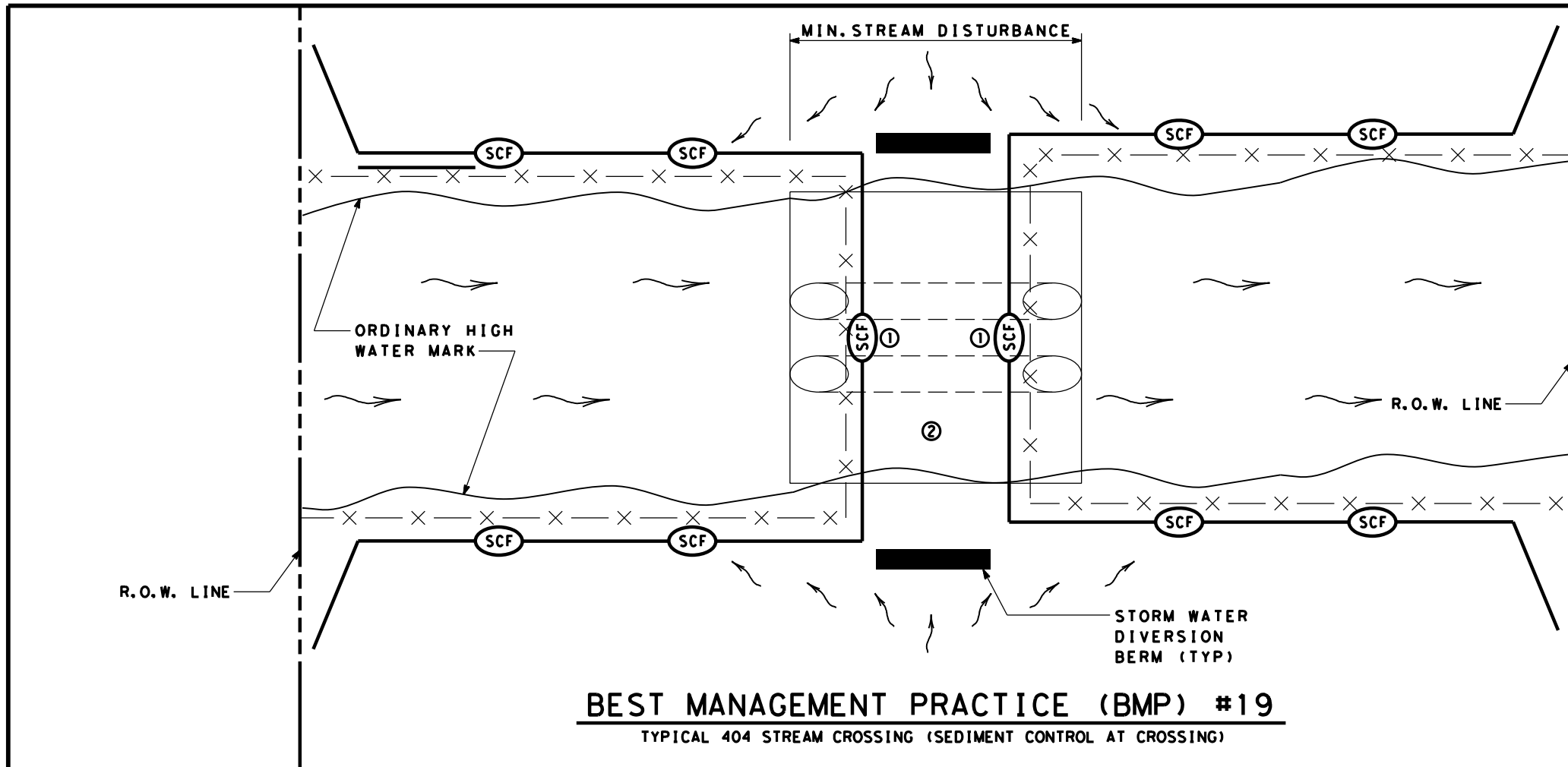
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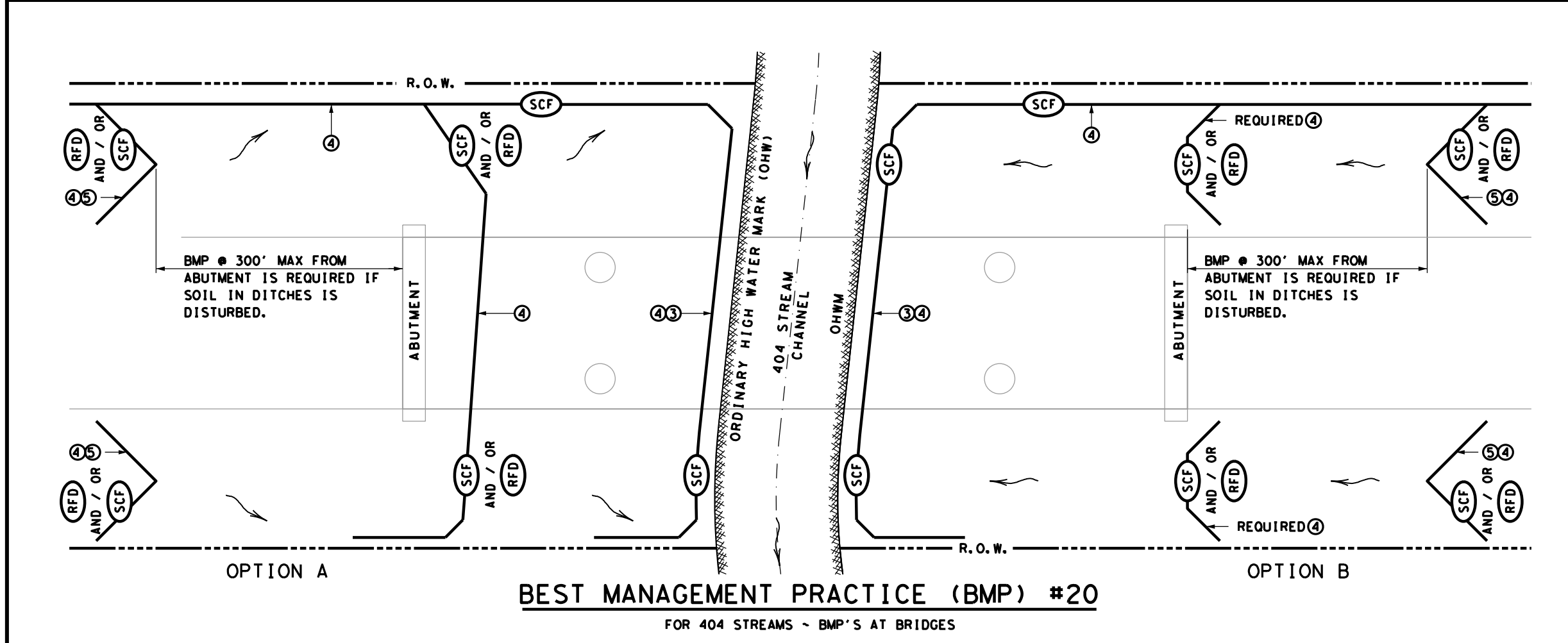
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	DIRECTION OF FLOW
	SEDIMENT CONTROL FENCE
	ROCK FILTER DAM
	SECURITY FENCING

- ① HAY BALES MAY BE SUBSTITUTED FOR SILT FENCE OVER THE STREAM CROSSING.
- ② CROSSING WILL BE AS PER REQUIREMENTS OF THE WATERS OF THE US GENERAL NOTES.
- ③ INSTALL SILT FENCE SLIGHTLY UP FROM OHW MARK FROM R.O.W. TO R.O.W.
- ④ USE SILT FENCE L-HOOKS ON LEVEL OR DOWN SLOPING ENDS TO BLOCK STORM WATER SEDIMENT
- ⑤ INSTALL LARGE V OR U SHAPED BMP'S FROM ABUTMENT AS SHOWN. IF THERE IS STEEP DITCH CONDITIONS DECREASE SPACING AND CONSIDER RFD'S. ADD ADDITIONAL BMP'S IF GRADE IS STEEP OR IF FLOW IS HIGH.



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