

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
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STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

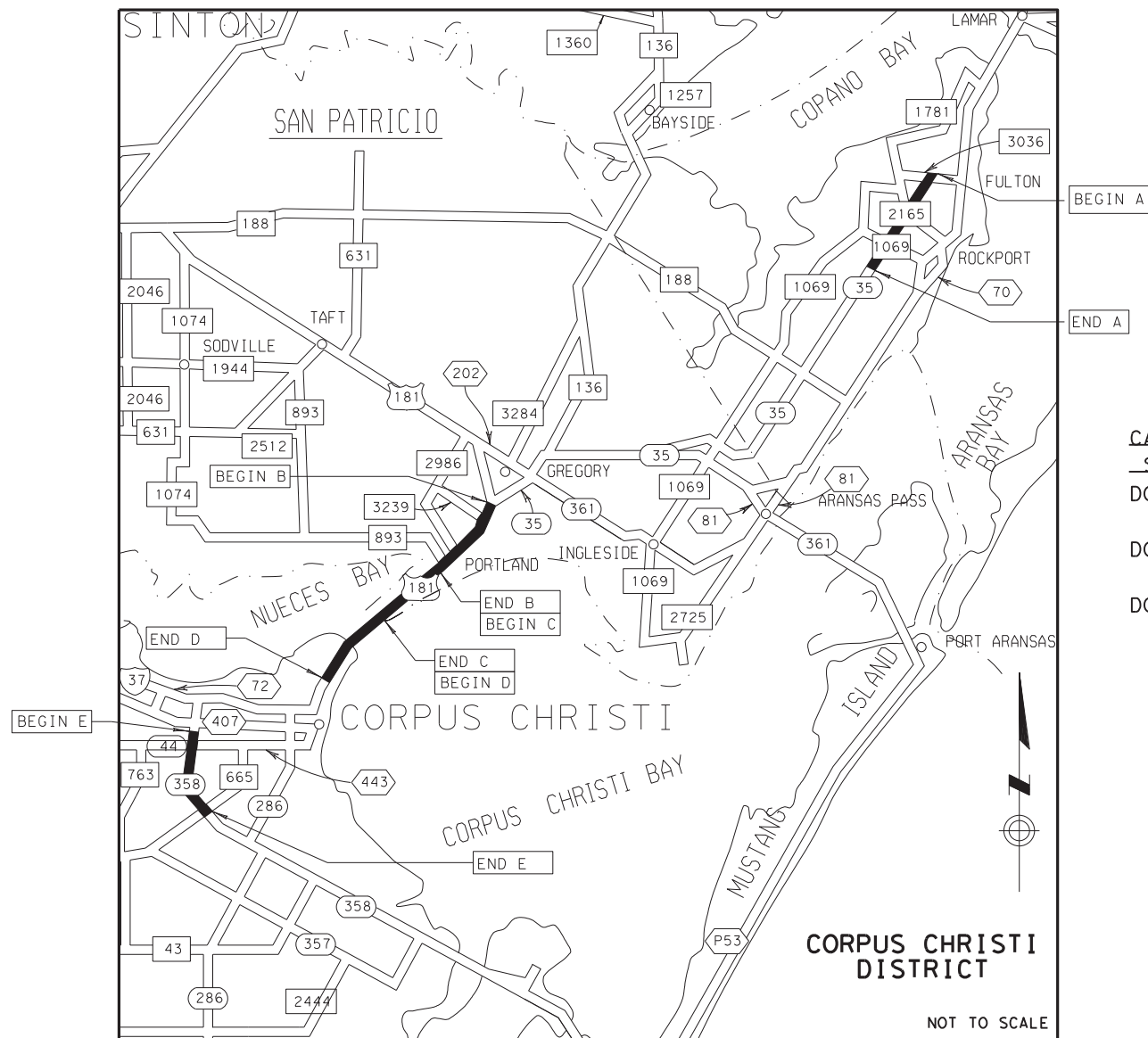
FEDERAL PROJECT NO.
STP 2B24(265)HES

2024 SYSTEMIC
WRONG WAY DRIVER WARNING SYSTEMS

LIMITS: CSJ: 0916-00-281 (US 181: FROM SH 35 TO 0.32 MI S OF BURLESON ST)
(SH 35: FROM FM 3036 TO INTERSECTION WITH CORPUS CHRISTI ST)
(SH 358: 2.109 MI N OF FM 665 TO FM 665)

PROVIDE MARKINGS, SIGNS AND ADVANCED TECHNOLOGIES TO DETECT AND WARN
WRONG WAY DRIVERS ON SH 358, US 181, AND SH 35

<p>A</p> <p>BEGIN FM 3036 MP 10.000 RM 660+2.915 DFO 186.874</p> <p>END CORPUS CHRISTI ST MP 13.497 RM 666A+1.350 DFO 190.371</p> <p>B</p> <p>BEGIN SH 35 MP 24.343 RM 638A+0.426 DFO 126.129</p> <p>END CS BREAK MP 1.385 RM 640+1.388 DFO 132.799</p> <p>C</p> <p>BEGIN CS BREAK MP 1.385 RM 640+1.388 DFO 132.799</p> <p>END SAN PATRICIO COUNTY LINE MP 2.355 RM 644+0.000 DFO 131.411</p>	<p>D</p> <p>END SAN PATRICIO COUNTY LINE MP 2.355 RM 644+0.000 DFO 131.411</p> <p>END 0.32 MI S OF BURLESON ST MP 3.155 RM 646+1.158 DFO 134.569</p> <p>E</p> <p>BEGIN 2.109 MI N OF FM 665 MP 1.415 RM 556+1.334 DFO 1.415</p> <p>END FM 665 MP 3.524 RM 558+1.532 DFO 3.524</p>
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CANADIAN PACIFIC KANSAS CITY RAILROAD--LAREDO
SUBDIVISION:
DOT #793792K @ RRMP 157.400 AT GRADE SH 358 WBFR @ AGNES ST
DOT #793791D @ RRMP 157.300 AT GRADE SH 358 EBFR @ AGNES ST
DOT #793992U @ RRMP 157.350 UNDER SH 358



SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION NOVEMBER 1, 2014, AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023).
EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: SEE INFORMATION ABOVE

APPROVED FOR LETTING: 4/10/2024
DocuSigned by:
Valente Olivarez
303F64E8A574E1

RECOMMENDED FOR LETTING: 4/10/2024
DocuSigned by:
Paula Sales-Evans, P.E.
DISTRICT DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

DATE: 4/5/2024
FILE: pw://txdot.projectwiseonline.com:TXDOT4/Documents/16 - CRP/Design Projects/091600281/4 - Design/Plan Set/1. General/Title Sheet.dgn

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THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ON THIS SHEET WITH AN (#) HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

Kassondra Flora Munoz 4-6-24
NAME DATE

VARIOUS INDEX OF SHEETS

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GENERAL NOTES:

Find, for your information and convenience, tools such as forms, software, materials, and various other information provided by the Department at <https://www.txdot.gov/business.html>. Please note that these tools are updated periodically, and your attention is directed to the latest edition.

In the event of a called evacuation, emergencies, impending adverse weather or as directed, do not perform any work without written authorization. The District reserves the right to suspend all work in support of evacuations or emergencies occurring from other parts of the state. Any work performed, other than work directed by the Department, is unauthorized work in accordance with Item 5.

In addition to the Plans and Specifications please see the attached electronic file: Wrong Way Driver Alert Systems Locations.kmz. This file is readable with Google Earth and Google Earth Pro. This file contains the locations of all signs shown in the plans with coordinates given as approximate locations. It is the responsibility of the Contractor to obtain the proper software for opening and reading the attached files. It is recommended that prospective bidders examine the electronic files to view the locations of signs, traffic control considerations, and other factors influencing the prosecution of the work.

Sweep, clean and remove any construction waste, surplus materials or debris from the roadway and right of way at the end of each day unless otherwise approved. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

The following standards have been modified: Reflective Wrap Detail.

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

Ernest Longoria, P.E. Ernest.Longoria@txdot.gov
Fidencio Lopez, Jr. P.E. Fidencio.Lopez@txdot.gov

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.

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ITEM 2: Instructions to Bidders

It is recommended that prospective bidders examine the specified work locations with the Engineer to view the nature of the work, the need for close coordination with the various utilities, traffic control considerations, and other factors influencing the prosecution of the work.

ITEM 5 (On-System): Control of the Work

Field verify all dimensions and notify Engineer prior to initiating any work.

Verify the locations of utilities, underground or overhead, shown within the limits of the right-of-way. Adhere to OSHA Standards when working within the vicinity of overhead power lines. Coordinate with the utility companies and notify the Engineer of any possible conflicts. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.


Prior to beginning any excavation work, the Contractor shall contact a notification center 48 hours prior to excavating, with some exceptions such as emergencies. The notification center phone number is 1-800-245-4545. This action, however, shall in no way be interpreted as relieving the Contractor of his/her responsibilities under the terms of the contract as set out in the plans and specifications. The Contractor shall repair any damages caused by his/her operations at the Contractor's expense and shall restore facilities to service in a timely manner. All information concerning utility verifications shall be provided to the Engineer.

The 811 call services for a utility location does not include TxDOT facilities. Provide notification to the District Traffic Signal Shop by email at CRP_Utility_Locate@txdot.gov or call 361-739-6044 when planning, drilling, or excavating in areas where existing TxDOT underground utilities exist. Visual evidence of TxDOT underground utilities in the area include illumination poles, ground boxes, flashing beacons, traffic signals, etc. This notification must be provided 48 hours in advance of performing the work, but no earlier than 72 business hours before the work will commence. Drilled shaft locations or excavation areas must be staked prior to the notification so that the underground utilities can be located in relationship to the proposed work.

Notify the Engineer immediately of utility conflicts in accordance with Item 5.6. Refer to Item 4.5 for consideration of differing site conditions.

The responsibility for the construction surveying on this contract will be in accordance with Item 5.9.3, "Method C".

Contractor shall call the railroad representative for this area before any sign pole placement can commence. The Canadian Pacific Kansas City Railroad Company (CPKCR) has several crossings near to the project limits that might be affected by this project. Please refer to the

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scope of work sheets associated with this project and included in the plan set for more information. The CPKCR representative, Felipe Nevarez (the signal supervisor for this area) needs to be contacted at 956-286-9802. If the Contractor is unable to reach the CPKCR representative one of the two TxDOT Railroad Coordinators may be contacted:

Kassondra Munoz, P.E. Kassondra.Munoz@txdot.gov 361-877-0212
Jorge Perez, P.E. <mailto:Jorge.Perez@txdot.gov>

ITEM 6: Control of Materials

For Department-furnished material, contact the Engineer or his designated representative to request material a minimum of one workday prior to pick up. Load material with contract personnel. Materials are to be stored in a safe location outside TXDOT property or right-of-way, {unless otherwise approved.} Use material furnished by the Department only on the project(s) intended. Return any unused material as soon as possible.

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.

ITEM 7: Legal Relationships and Responsibilities

The work performed for Item 7.2.4, "Public Safety and Convenience" will not be measured or paid for directly, but will be subsidiary to pertinent Items.

When working at street, farm-to-market, state highway, and county road intersections, schedule work to minimize intersection closures. During nonworking hours, all public road intersections will be open to the traveling public.

The total disturbed area for this project is 0 acres. The disturbed area in this project, all project locations in the Contract, and Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain any required authorization from the TCEQ for any

General Notes

Sheet C

County: Nueces

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Contractor PSLs for construction support activities on or off ROW. When the total area disturbed for all projects in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer.

Establish uniform perennial vegetative coverage with a density of at least 70% of the native background vegetative cover to achieve final stabilization.

Comply with the Texas Aggregate Quarry and Pit Safety Act for waste areas or material source areas resulting from this project.

No significant traffic generator events identified.

Submit charge summary and invoices for Law Enforcement Personnel using the Department forms.

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. No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site.

If the Contractor has a field office, provide an office location for a supervisory officer when event requires a supervising officer. This work is subsidiary.

A maximum combined rate of \$70 per hour for the law enforcement personnel and the patrol vehicle will be allowed. Any scheduling fee is subsidiary per Standard Specification 502.4.2.

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.


Alterations to the cancellation and maximum rate must be approved by the Engineer or pre-determined by official policy of the officers governing authority.

ITEM 8: Prosecution and Progress

Prepare the progress schedule using the Critical Path Method (CPM). Submit (2) two 11" x 17" hard copies and an electronic file of the original or updated progress schedule. Submit the original progress schedule seven (7) days before the Preconstruction Conference.

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Submit an updated progress schedule as directed to show proposed major changes, changes affecting compliance with the contract requirements, or changes affecting the critical path/controlling item of work.

Working days will be computed and charge in accordance with Article 8.3.1.4, "Standard Workweek".

Work above traffic is not allowed.

Lane closures are not permitted Monday through Friday between 9 AM and 4 PM unless approved.

Any lane closed or obstructed beyond the period permitted will be assessed a lane rental charge. The following lane rental charges will apply:

Roadway	CSJ	Lane Rental Fee (\$ /lane / hour)
US 181	0101-04	13246.00
US 181	0101-05	12115.00
US 181	0101-06	11386.00
SH 358	0617-01	1224.00
SH 35	0180-04	10000.00

Nighttime work is allowable.

Notify the Engineer at least 48 hours in advance of weekend or nighttime work.

ITEM 9: Measurement and Payment

Monthly progress payments will be made for items of work completed by the 28th day of each month. Any work completed after the 28th will be included for payment in the subsequent monthly progress estimate.

Submit signed request for compensation of material-on-hand (MOH), including any requests from subcontractors, suppliers, or fabricators for MOH, at least two (2) working days prior to the end of the month on the Departments approved forms.

ITEM 100: Preparing Right of Way

Coordinate all right of way preparation activities with the project's Storm Water Pollution Prevention Plan (SWP3) and Environmental Permit Issues, and Commitments Sheet (EPIC) or as approved.

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ITEM 416: Drilled Shaft Foundations

If casings are to be used for drilled shaft foundations below the groundwater line, casings shall be removed after placement to allow skin friction to develop in the drilled shaft per the foundation design.

ITEM 500: Miscellaneous Construction

"Materials on Hand" payments are not considered when determining partial payments

ITEM 502: Barricades, Signs, and Traffic Engineering

Furnish and install all signs, barricades and other incidentals necessary for proper traffic control, in accordance with part VI of the "Texas Manual on Uniform Traffic Control Devices for Streets, and Highways", latest edition, and as directed. All signs shall be erected in a manner that they shall not obstruct the travelling public's view of the normal roadway signing or necessary sight distance at intersections and curves.

There will be no direct payment for traffic control, this function (traffic control) will be considered subsidiary to the pertinent bid items. Furnish additional barricades, signs, and traffic handling as directed. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent items.

Consecutive crossovers and/or ramps, on the same state route, shall not be closed at the same time unless approved by the Engineer.

Traffic control for daytime lane closures shall be in accordance with applicable standards.

Furnish additional barricades, signs, and traffic handling as directed. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Traffic control for daytime lane closures shall be in accordance with applicable standards. Traffic control shall include temporary rumble strips in accordance with WZ (RS)-22


When advanced warning flashing arrow panels are specified, furnish one (1) standby unit in good condition at the job site for immediate use.

Attach stop/slow paddle to a staff with a minimum length of 6 feet to the bottom of the sign.

Maintain traffic control devices by taking corrective action as soon as possible. Complete corrective action as per TxDOT form 599.

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Unless otherwise shown on plan sheets, channelization device spacing shall be as shown on "BC" Standard Sheets.

For lighting purposes, nighttime is defined as occurring shortly before sunset until after sunrise.

Prior to any nighttime work, a lighting plan shall be submitted for approval by the Engineer. The plan shall outline the types of lighting systems that will be used to adhere to following conditions. Before nighttime construction may begin, the lighting systems shall be demonstrated as being operational.

Provide a photometer for use by the Engineer to check the adequacy of illumination for any nighttime operations. The meter shall have a digital display calibrated to NIST standards, shall be cosine and color corrected, and shall have an accuracy of 1 +/- 5 percent. The sensor shall have a level indicator to ensure measurements are taken in a horizontal plane. Readings will be taken 3 feet above the pavement or ground surface.

The lighting system shall provide a minimum of 5 foot candles of illumination throughout the work area. For stationary operations, the work area is defined as the entire area where work is being performed. For mobile operations, the work area shall be defined as 25 feet in front of and behind moving equipment.

20 foot candles of illumination shall be provided for installation of signal equipment or other electrical/ mechanical equipment and other tasks involving fine details or intricate parts and equipment.

Provide shields, visors, or louvers on luminaires as necessary to reduce objectionable levels of glare. Avoid objectionable glare on roadways open to traffic. Corrections shall be made when the Engineer determines glare exceeds acceptable levels.

Lighting needed to perform work shall not be paid for directly and should be considered subsidiary to Item 502.

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

All items marked as optional on all traffic control standards shall be required unless otherwise approved by an Engineer.

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Sheet G

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ITEM 504: Field Office and Laboratory

No field office will be required for this project.

ITEM 506: Temporary Erosion, Sedimentation, and Environmental Controls

Designate in writing a Contractor Responsible Person (CRP) for implementing, maintaining, and reviewing environmental requirements.

Do not discharge onto the ground or surface waters any pollutants such as chemicals, raw sewage, fuels, lubricants, coolants, hydraulic fluids, bitumens, or any other petroleum product. Operate and maintain equipment on site in a manner as to prevent actual or potential water pollution. Manage, control, and dispose of litter on site such that no adverse impacts to water quality occur. Prevent dust from creating a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property. Wash out concrete trucks only in approved contained areas. Use appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water (i.e. dewatering). Prevent discharges that would contribute to a violation of Edwards Aquifer Rules, water quality standards, the impairment of a listed water body, or other state or federal law.

ITEM 618: Conduit

Seal all conduits terminating in ground boxes and pole foundations with a sealant made of polyurethane or equivalent that will cure in the presence of moisture. Ensure sealant is suitable for sealing ends with electrical conductor extending past the ends of the conduit. Inject the sealant a minimum of 3 inches and a maximum of 5 inches into the conduit.

Provide rigid metal conduit (RMC) elbows for all underground conduit bends of 45 degrees or more, including bends into ground boxes. Provide a polyvinyl chloride conduit (PVC) elbow in lieu of a RMC elbow for conduit 1 inch or larger. Ensure the elbow is the same schedule rating as the conduit to which it is connected.

Bond the RMC to the grounding conductor with grounding type bushings when the RMC is exposed or extends into the ground box.


Provide a flat, high tensile strength polyester fiber pull tape in each conduit to pull conductors.

Provide wide sweep conduit elbows.

Jacking of conduit will not be permitted.

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All conduit runs under existing pavement or existing driveways shall be bored. Where boring is required, it shall be placed at a minimum depth of 3.5 feet from proposed grade.

ITEM 620: Electrical Conductors

Grounding conductors that share the same conduit, junction box, ground box, or structure shall be bonded together at every accessible point in accordance with the current National Electrical Code and TxDOT requirements. Provide cable with green color insulation.

Ensure all grounding conductors size 8AWG and larger are stranded, except for the grounding electrode conductor that terminates at meter Enclosure , which will be a solid conductor.

ITEM 624: Ground Boxes

Aggregate fill shall consist of ¾ inch up to 2 inch course aggregate. Ensure aggregate is in place prior to setting box and conduits shall be capped.

ITEM 636: Signs

All sign wraps are subsidiary to Item 636.

Contractor is responsible for receiving deliveries and storing all signing materials including but not limited to the signs and all mounting components and brackets at a secure location in such a way as to deter damage and theft of said material.

Shop drawings for all signs in the contract requiring fabrication are to be supplied to the TxDOT Area Engineer’s Office as well as to the Corpus Christi District Traffic Engineering Office. Fabricate and install signs only after approval of the shop drawings.

Furnish new sign supports when replacing and/or installing overhead signs. Sign supports are mentioned in the various standards included with this plan set. Furnish and fabricate all frames, wind beams and stiffeners. Furnish all bolts, rivets, screws, fasteners, clamps, brackets, intermediate sign supports and sign support connections. This includes but is not limited to the S4x7.7 or other approved alternative members needed in order to mount the overhead signs to the trusses. Assemble and erect the signs. Prepare and clean the signs. This will be subsidiary to pertinent items. Contractor shall field verify the number and length of intermediate sign supports needed to properly install the overhead signs on overhead structures.

Disassemble, deliver and neatly stack salvageable materials at a secure location. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

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ITEM 644: Small Roadside Sign Assemblies

Use crash worthy supports as shown on the BC sheets, the CWZTCD, or as directed for signs relocated using temporary supports. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

All slip bases and hardware including but not limited to nuts, bolts, screws and washers will be galvanized. All sign and housing components will be galvanized. Slip bases shall be clamp-style.

Unless otherwise directed by the Area Office, all salvageable signs and sign components will become the property of the Department and will be stockpiled at designated locations. Contact Project Engineer to determine locations. Disassemble, deliver and neatly stack salvageable materials at a secure location. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Any abandoned slip base footings, whether abandoned through this contract or occurring within the vicinity of signs on this project, shall be removed and will be subsidiary to Item 644. Contractor will fill the hole left by the abandoned and removed footing to site conditions in a timely manner. Labor, materials and incidentals associated with this shall be considered subsidiary to Item 644.

Sign post wraps shall be installed/ refreshed per details provided with these plans and as directed by the Engineer. Post wraps should be on Yield, Do Not Enter, and Wrong Way signs as shown in the Reflective Wrap Detail provided. Post wraps shall be retroreflective with high intensity and pressure sensitive. The color of the post wraps shall be red for the Yield, Do Not Enter and Wrong Way signs. Sheeting shall be approved by the Engineer prior to installation.


Retroreflective sheeting wrapped around a sign has a height on the post of at least 12 inches. The bottom of the retroreflective sheeting wrapped around a sign is approximately 4 feet above the edge of travel lane.

Sign post wraps shall be subsidiary to Item 644.

Coordinates provided in this plan set are approximate locations. All signs placed shall follow the Texas Department of Transportation’s sign placement guidelines to include but not be limited to the Sign Crew Field Book and the latest edition of the Texas Manual on Uniform Traffic Control Devices as well as the Freeway Signing Handbook. Sign locations (including those for the wrong way detection systems) shall be marked and approved by the Engineer before foundations are poured for the wrong way detection systems. Any questions regarding sign locations may be directed to the Area Office and TxDOT District Traffic Engineering Office.

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ITEM 685: Roadside Flashing Beacon Assemblies

Provide solar powered flasher controller assemblies capable of a 24-hr flash with dual indications.

Provide single-pole breakaway disconnects. Ensure the disconnects have a white colored marking and a permanently installed solid neutral.

ITEM 687: Pedestal Pole Assemblies

Provide single-pole breakaway disconnects. Ensure the disconnects have a white colored marking and a permanently installed solid neutral.

The Contractor shall ensure that the poles supplied are compatible with the bases supplied so as to provide optimal fit.

Poles provided shall be 4.5" OD schedule 80.

Contractor will fill the hole left by the abandoned and removed footing of any pedestal pole assemblies to site conditions in a timely manner.

ITEM 6001: Portable Changeable Message Signs

Furnish the portable changeable message signs displaying the correct message at least seven (7) days prior to beginning work or as directed.

The Contractor's Responsible Person (CRP) will maintain full control of messages at all times.

The Engineer will provide the sign message text to use at each sign.

A minimum of 2 PCMS will be required. However, additional units may be necessary depending on the work in progress.

Standby time will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Portable changeable message signs may be moved and message changed at any time as deemed necessary by the Engineer. This will be considered subsidiary to Item 6001.

ITEM 6185: Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

A minimum of 2 TMAS will be required. However, additional units may be necessary depending on the work in progress

General Notes

Sheet K

County: Nueces

Control: 0916-00-281

Highway: Various

Provide manufacturer's curb weight or certified scales weight ticket to the Engineer for approval.

TMA's paid by the each shall be available for the duration of the project. Relocation of TMA's will be as directed by the Engineer, and will be considered subsidiary to this Item.

ITEM 6409: Installation of Wrong Way Driver Thermal Imaging Camera and Equipment

Provide thermal imaging cameras / sensors for detection.

Provide cellular modems to be subsidiary to Item 6409. Cellular modems shall be compatible with the Thermal Wrong Way Driver detection systems being installed here as well as with any other systems being installed in this District.

The Contractor shall have the Manufacturer's representative on site to assist with the installation of all equipment before any work begins.


The locations of ramps at which detection systems are placed can be found in both the summary of small signs as well as the Wrong Way Driver System Locations maps provided in this plan set. Locations are shown per corridor (US 181, SH 358 and SH 35) with coordinates of the specific ramps provided as approximate locations. Guidance for pole locations for the different components of the detection systems at each ramp is also provided in the Wrong Way Detection System Layout and Details provided in this plan set. The Contractor shall mark the proposed system pole locations and notify the Engineer in a timely manner to allow the Engineer to schedule a site visit in order to identify the proper sign locations at each exit before the foundations are poured.

Conduit and other materials needed to connect the detection assembly to the detection assembly's solar panel assembly may not be shown in the Wrong Way Detection System Layout and Details provided in this plan set as they are to be determined and furnished by the Manufacturer and are considered subsidiary to Item 6409.

Contractor shall notify the TxDOT Area and District Traffic Offices when any wrong way driver systems and their components are removed and shall take care to ensure that all equipment is kept in the existing condition before removed and is stored in a secure location. Contact the Engineer to coordinate the safe transfer of removed equipment and materials back to TxDOT. Delivery shall be to the District Traffic Signal Office and will be coordinated through the Director of Traffic Operations, Mr. Juan Marfil. He may be contacted at 361-808-2501.

General Notes

Sheet L

 GENERAL NOTES	FED. RD. DIV. NO.			HIGHWAY NO.
	6			VARIOUS
	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	CRP	NUECES, ETC.	
CONTROL	SECTION	JOB		
0916	00	281	8	



Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0916-00-281

DISTRICT Corpus Christi

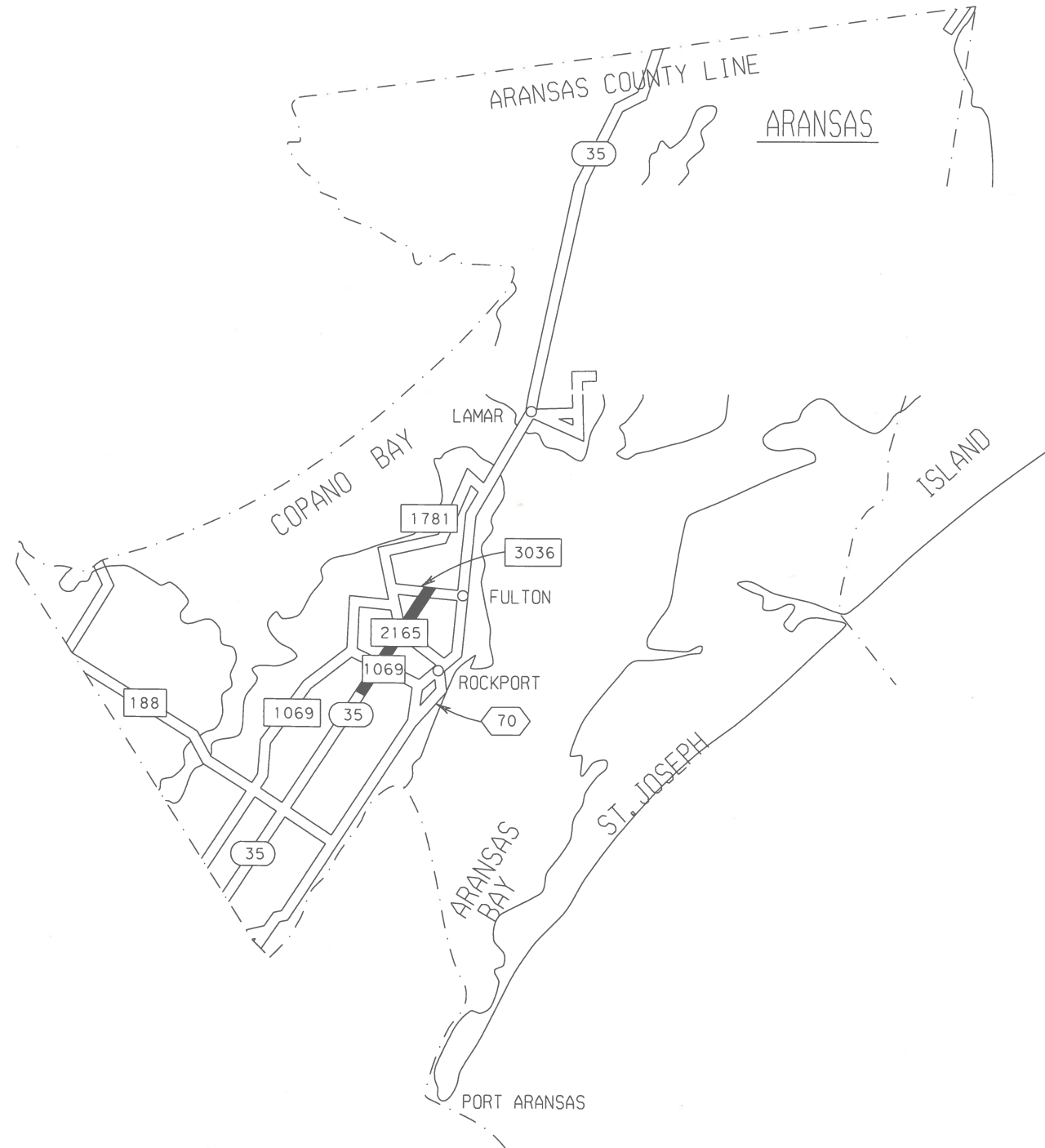
COUNTY Nueces

HIGHWAY Various

CONTROL SECTION JOB				0916-00-281		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00206773			
COUNTY				Nueces			
HIGHWAY				Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	104-6014	REMOVING CONC (FOUNDATIONS)	CY	0.600		0.600	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3.000		3.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	40.000		40.000	
	506-6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	50.000		50.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	100.000		100.000	
	636-6003	ALUMINUM SIGNS (TY O)	SF	352.000		352.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	3.000		3.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	13.000		13.000	
	644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	16.000		16.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	5.000		5.000	
	644-6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)	EA	22.000		22.000	
	687-6001	PED POLE ASSEMBLY	EA	39.000		39.000	
	687-6005	REMOVE PED POLE ASSEMBLY	EA	19.000		19.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	96.000		96.000	
	6185-6002	TMA (STATIONARY)	DAY	64.000		64.000	
	6227-6002	SOLAR POWERED LED ROADSIDE SIGN	EA	25.000		25.000	
	6319-6005	LED WRONG WAY DRIVER SYSTEM (REMOVE)	EA	3.330		3.330	
	6409-6001	LED WRONG WAY DRIVER SYSTEM (THERMAL)	EA	13.000		13.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

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DN: DW: CK:



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 4-6-24

**LOCATION MAP
 ARANSAS COUNTY**

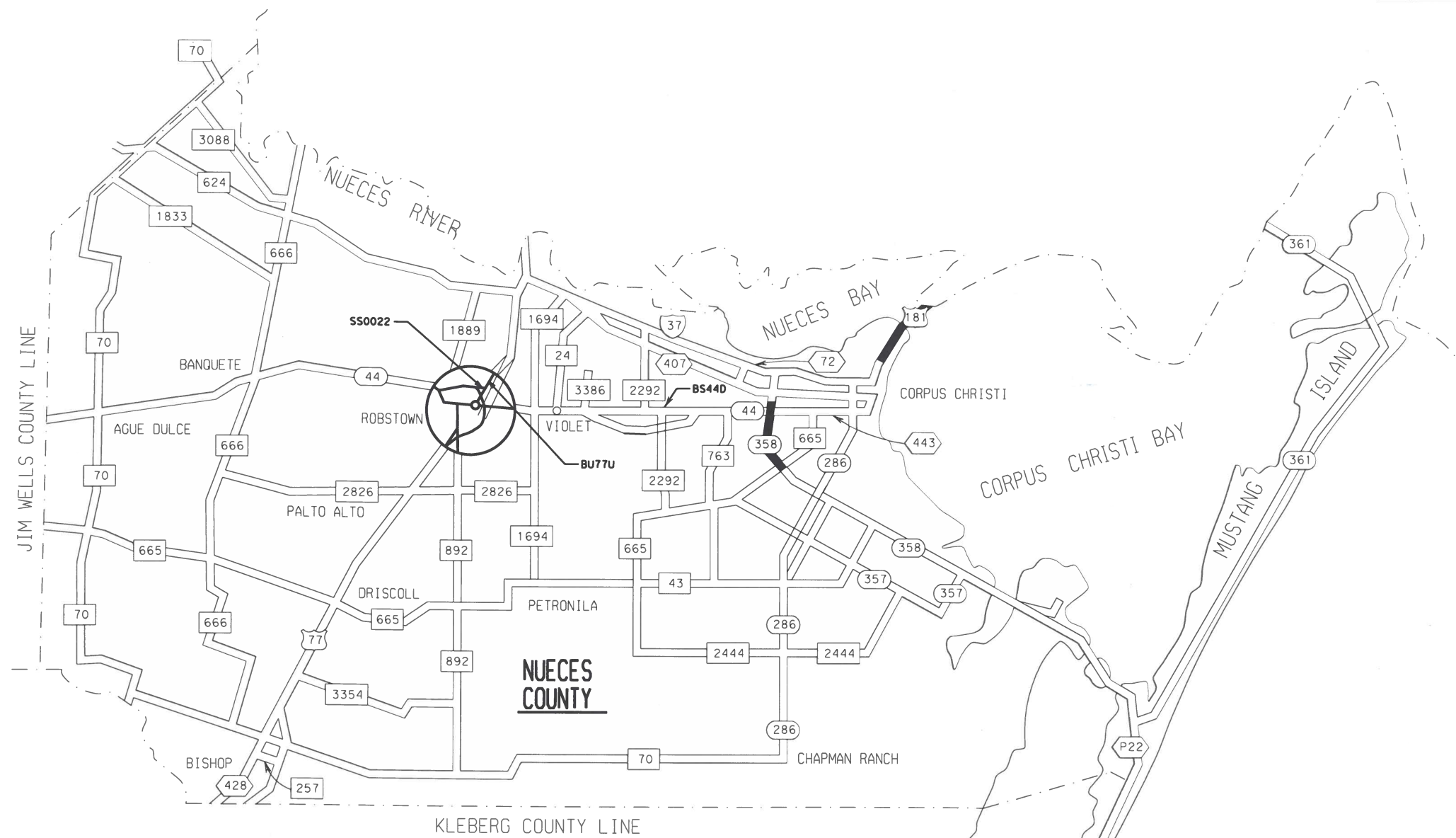
ARANSAS COUNTY			
ROADWAY	CONTROL SECTION	FROM	TO
SH 35	0180-04	FM 3036	CORPUS CHRISTI ST

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	11	

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DN:
 DC:
 DW:
 CK:



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 4-6-24

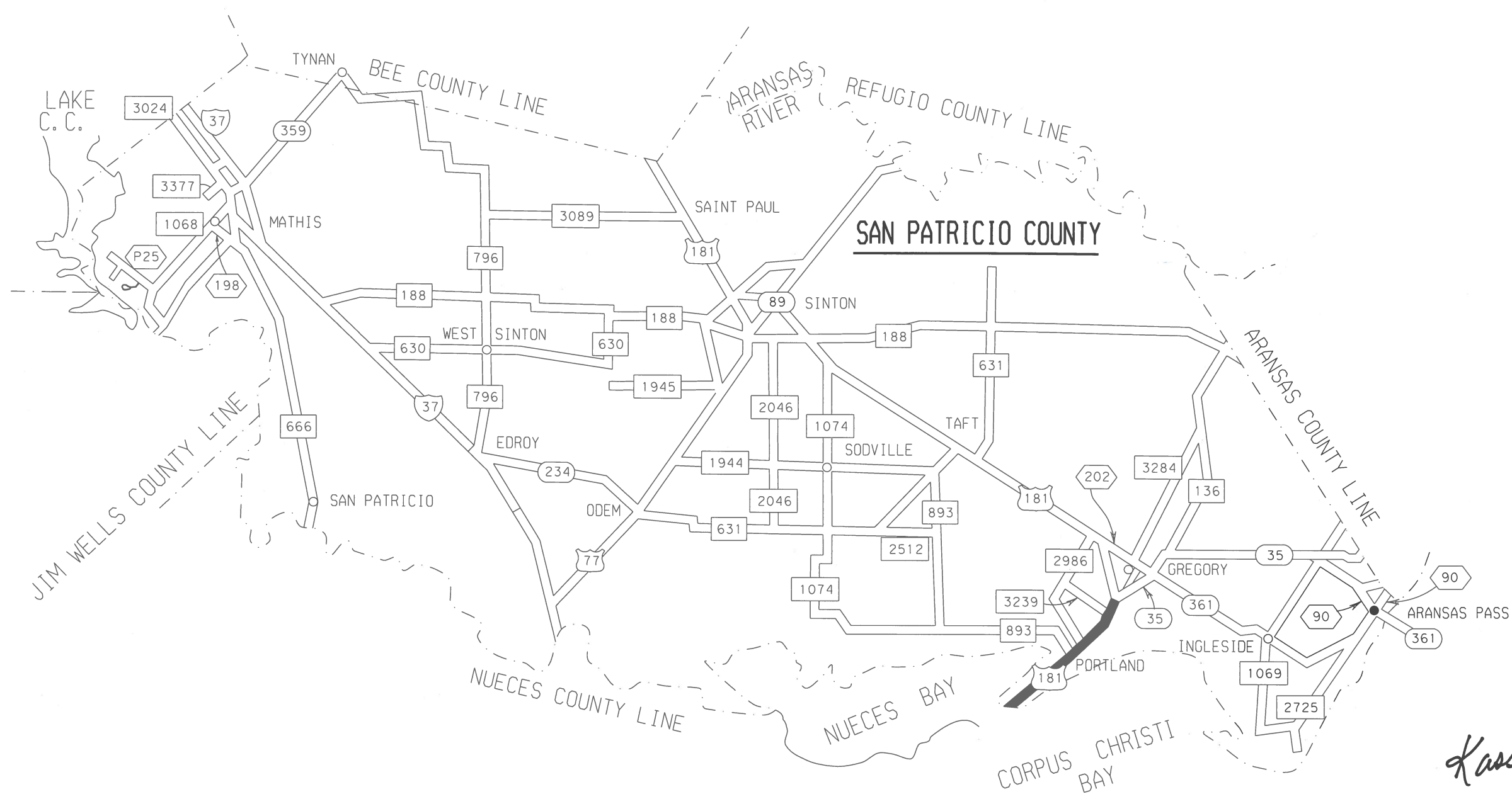
LOCATION MAP
 NUECES COUNTY

NUECES COUNTY			
ROADWAY	CONTROL SECTION	FROM	TO
US 181	0101-06	SAN PATRICIO COUNTY LINE	0.32 MI S OF BURLESON ST
SH 35	0617-01	2.109 MI N OF FM 665	FM 665

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	12	

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 4-6-24

SAN PATRICIO COUNTY			
ROADWAY	CONTROL SECTION	FROM	TO
US 181	0101-04	FM 2986	CS BREAK (S OF FM 893)
	0101-05	CS BREAK (S OF FM 893)	NUECES COUNTY LINE

**LOCATION MAP
 SAN PATRICIO COUNTY**

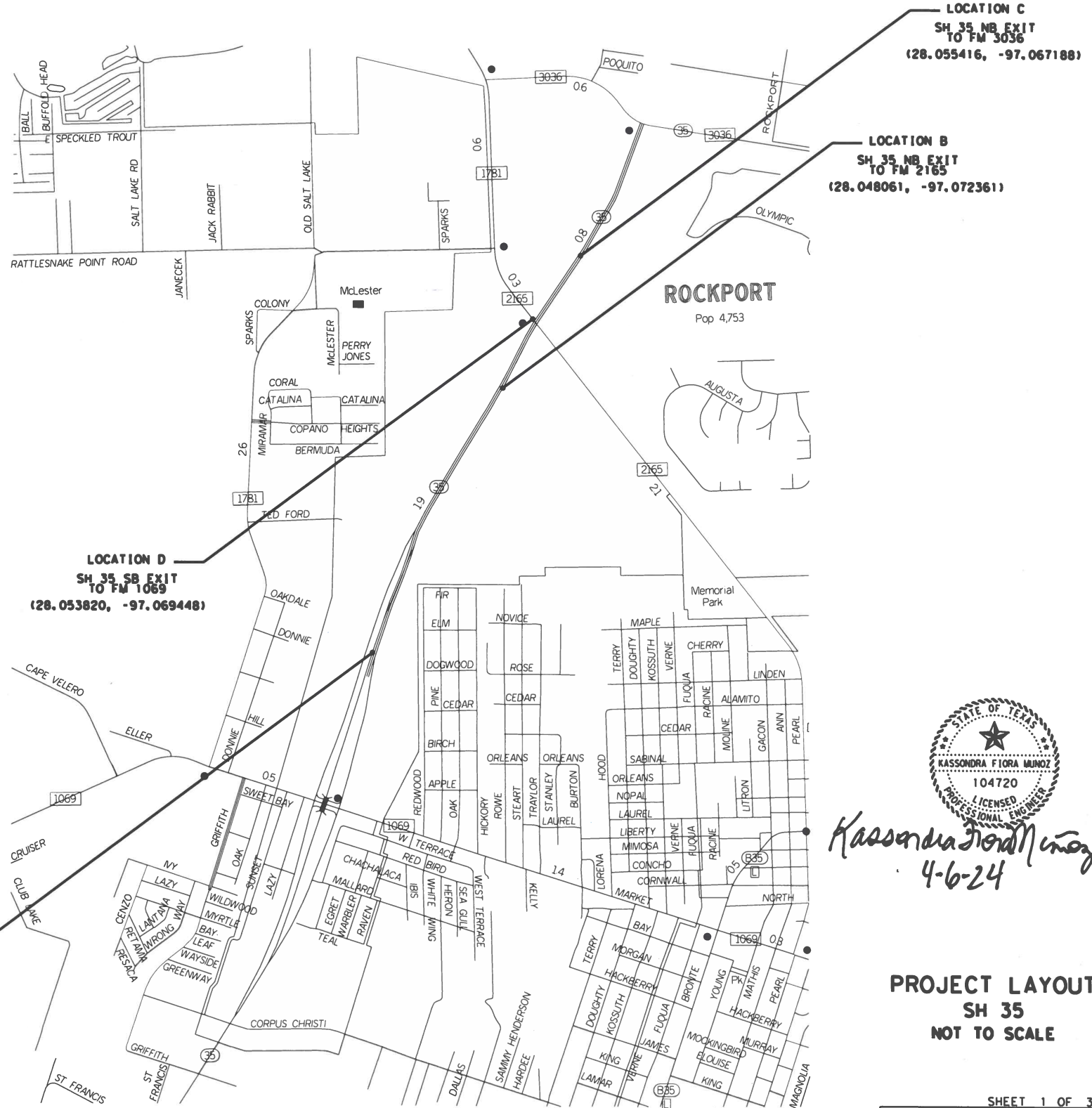
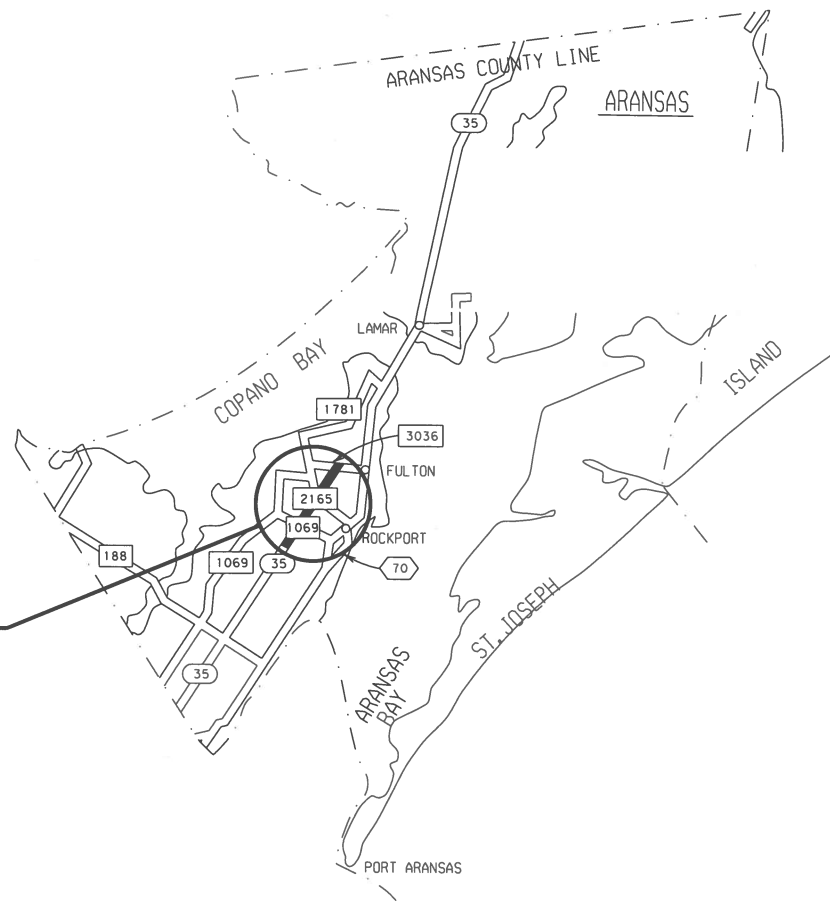
SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	13	

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CK: _____
 DW: _____
 CK: _____
 DN: _____

REFER TO
 INSET "B"



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 4-6-24

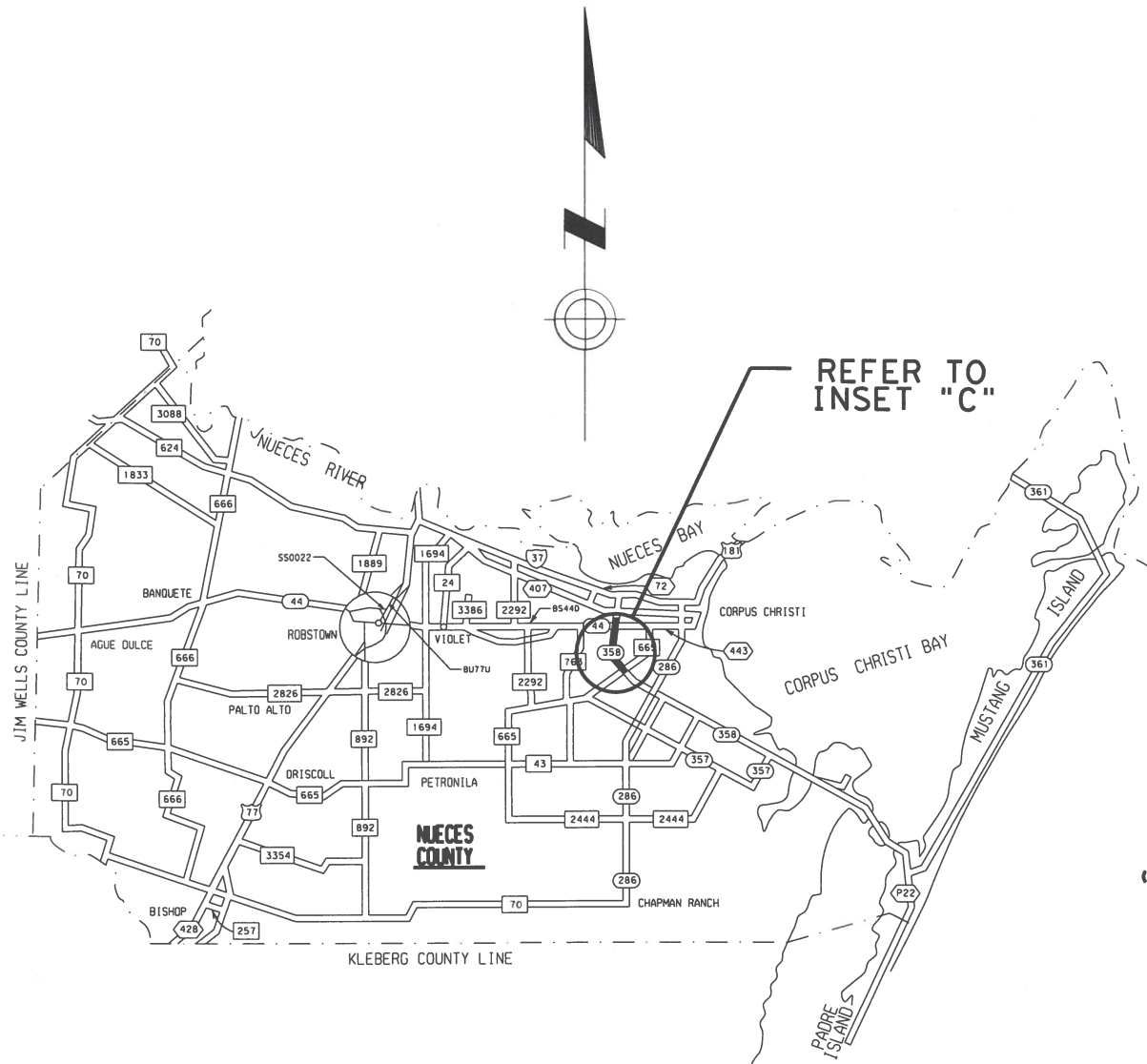
PROJECT LAYOUT
 SH 35
 NOT TO SCALE

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	14	

INSET "B"

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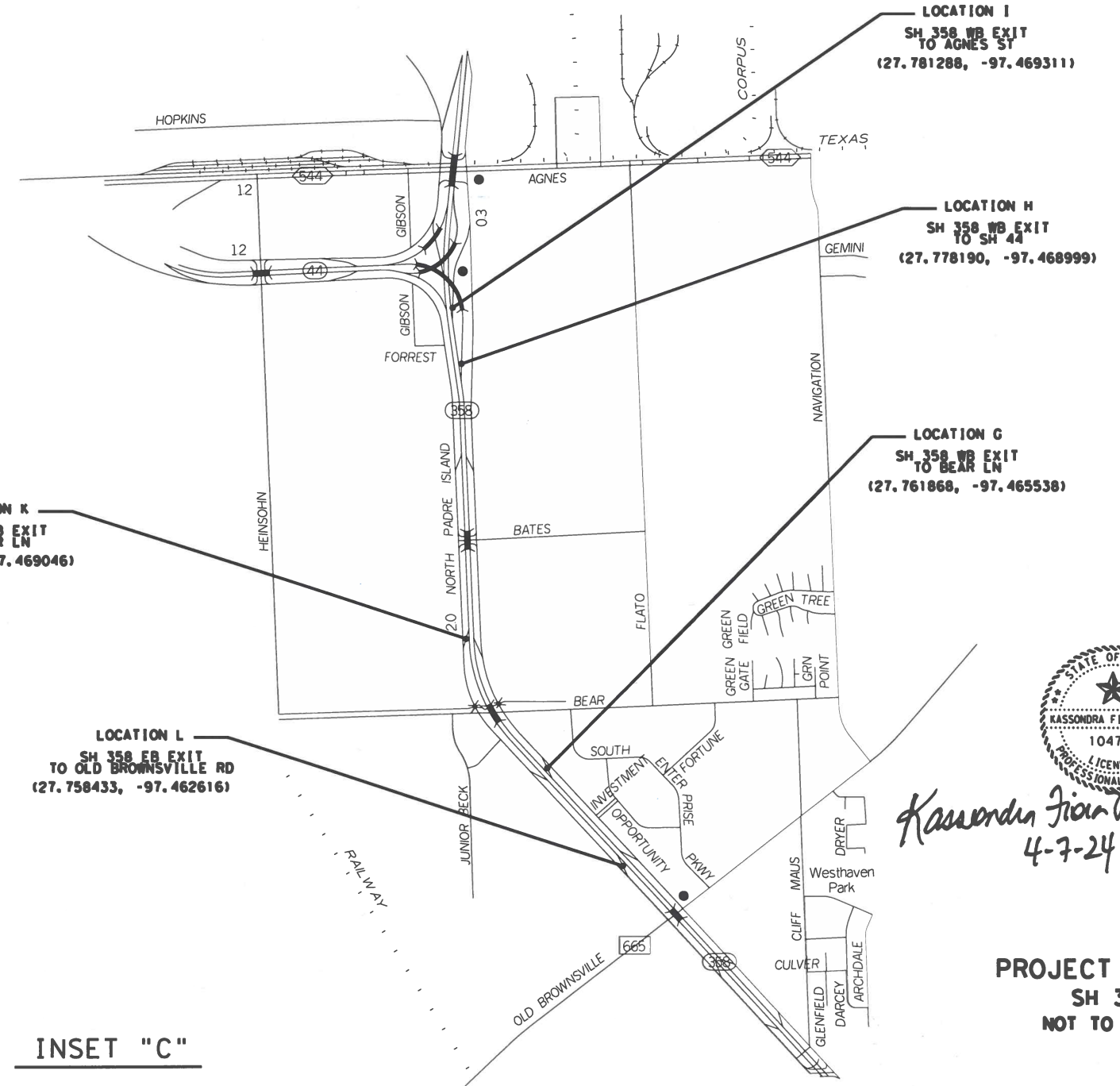


REFER TO
 INSET "C"

LOCATION K
 SH 358 EB EXIT
 TO BEAR LN
 (27.767203, -97.469046)

LOCATION L
 SH 358 EB EXIT
 TO OLD BROWNSVILLE RD
 (27.758433, -97.462616)

INSET "C"



LOCATION I
 SH 358 WB EXIT
 TO AGNES ST
 (27.781288, -97.469311)

LOCATION H
 SH 358 WB EXIT
 TO SH 44
 (27.778190, -97.468999)

LOCATION G
 SH 358 WB EXIT
 TO BEAR LN
 (27.761868, -97.465538)



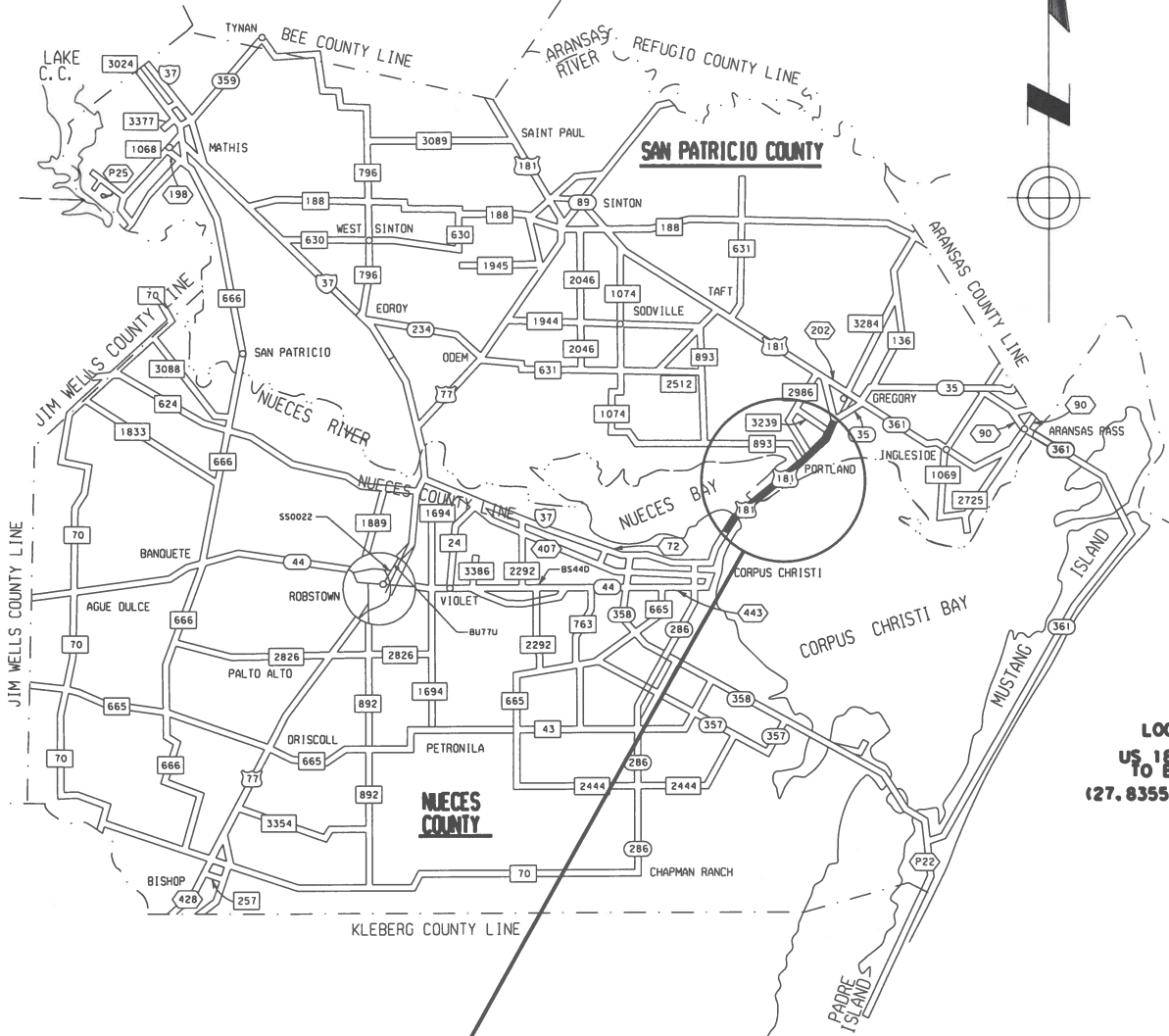
Kassandra Fiora Munoz
 4-7-24

PROJECT LAYOUT
 SH 358
 NOT TO SCALE

SHEET 2 OF 3

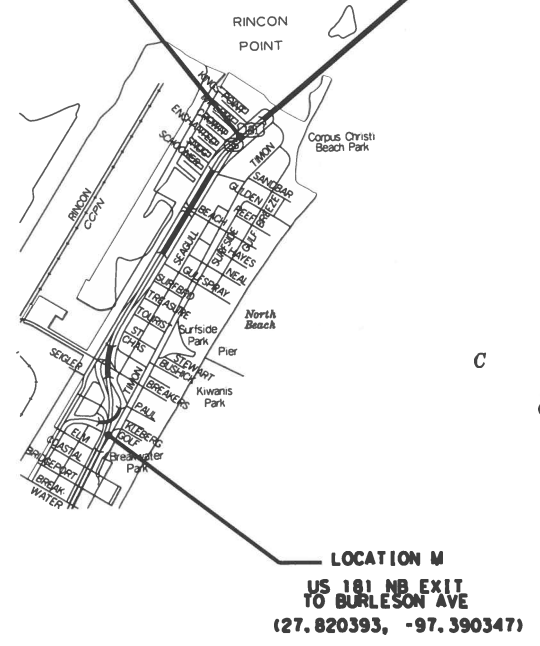
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		091600	281	VARIOUS	
		DIST	COUNTY	SHEET NO.	
		CRP	NUECES	15	

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REFER TO
 INSET "A"

LOCATION N
 US 181 SB EXIT
 TO BEACH AVE
 (27.835543, -97.382294)



LOCATION M
 US 181 NB EXIT
 TO BURLISON AVE
 (27.820393, -97.390347)

INSET "A"

LOCATION S
 US 181 NB EXIT
 TO FM 2986
 (27.877023, -97.324367)

LOCATION O
 US 181 SB EXIT
 TO FRONTAGE ROAD
 (27.871825, -97.332083)

NUECES BAY

N
U
E
C
E
S
B
A
Y

LOCATION P
 US 181 NB EXIT
 TO FM 893
 (27.871729, -97.331971)

C
O
R
P
U
S
C
H



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 4-7-24

PROJECT LAYOUT
 US 181
 NOT TO SCALE

SHEET 3 OF 3

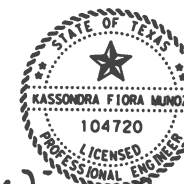
CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	16	

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General\SUGGESTED SEQUENCE OF CONSTRUCTION.dgn

SUGGESTED SEQUENCE OF CONSTRUCTION

1. WORK SHOULD BE COMPLETED SOUTH TO NORTH (AND WEST TO EAST) ALONG A ROUTE AT IDENTIFIED EXITS IN ORDER OF SUCCESSIVE RAMP. IT IS SUGGESTED THAT THE CONTRACTOR BEGIN WORK ON US 181, THEN MOVE TO SH 358 AND THEN TO SH 35.
2. WORK PER LOCATION IS SUGGESTED IN THE FOLLOWING ORDER:
 - SET UP TCP.
 - INSTALL BIOLOGS.
 - PERFORM SIGNING WORK.
 - REMOVE BIOLOGS.
 - REMOVE TCP.
3. WORK SHOULD BE PERFORMED ONE LOCATION AT A TIME WITH THE LOCATIONS OF THE POLES FOR THE SIGN FOUNDATIONS TO BE IDENTIFIED PER LOCATIONS BY THE TXDOT ENGINEER BEFORE FOUNDATIONS ARE PLACED. ONCE POLES ARE INSTALLED AND EQUIPMENT FOR THE DETECTION SYSTEM IS INSTALLED ON THE POLES, THE TECHNICIANS WILL SET UP THE WRONG WAY DRIVER DETECTION ZONES AND TERMINATE CONNECTIONS. THE CONTRACTOR MAY MOVE TO THE NEXT LOCATION ONCE THE SIGNING WORK IS COMPLETED FOR THE PREVIOUS LOCATION.
4. WORK SHOULD BE PERFORMED ONE LOCATION AT A TIME WITH THE LOCATIONS OF THE POLES FOR THE WRONG WAY DRIVER SYSTEM SIGN FOUNDATIONS TO BE IDENTIFIED PER LOCATIONS BY THE TXDOT ENGINEER BEFORE FOUNDATIONS ARE PLACED. THIS INCLUDES THE DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES AS SHOWN IN THE LAYOUTS, DETAILS AND SUMMARIES. ONCE POLES ARE INSTALLED AND EQUIPMENT FOR THE DETECTION SYSTEM IS INSTALLED ON THE POLES, THE TECHNICIANS WILL SET UP THE WRONG WAY DRIVER DETECTION ZONES AND TERMINATE CONNECTIONS. THE CONTRACTOR MAY MOVE TO THE NEXT LOCATION ONCE THE SIGNING WORK IS COMPLETED FOR THE PREVIOUS LOCATION.



Kassondra Fiora Munoz
4-6-24

**SUGGESTED
SEQUENCE OF
CONSTRUCTION**

SHEET 1 OF 1




CONT	SECT	JOB	HIGHWAY
0916	00	281	VARIOUS
DIST	COUNTY	SHEET NO.	
CRP	NUECES	17	

TRAFFIC CONTROL ITEMS SUMMARY				QUANTITIES
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3
500	6001	MOBILIZATION	LS	1
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	96
6185	6002	TMA (STATIONARY)	DAY	64
ENVIRONMENTAL ITEMS SUMMARY				QUANTITIES
506	6041	BIODEG EROSN CONT LOGS (INSL)(12")	LF	40
506	6042	BIODEG EROSN CONT LOGS (INSL)(18")	LF	50
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	100

**TRAFFIC CONTROL
 AND ENVIRONMENTAL
 ITEMS SUMMARY**

SHEET 1 OF 1



CONT	SECT	JOB	HIGHWAY
0916	00	281	VARIOUS
DIST	COUNTY		SHEET NO.
CRP	NUECES		18


SIGN MOUNTING SUMMARY				TOTAL
104	6014	REMOVING CONC (FOUNDATIONS)	CY	0.6
636	6003	ALUMINUM SIGNS (TY O)	SF	352
644	6076	REMOVE SM RD SN SUP&AM	EA	5
644	6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)	EA	22
644	6070	RELOCATE SM RD SN SUP&AM TYS80	EA	16
644	6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	3
644	6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	13
687	6005	REMOVE PED POLE ASSEMBLY	EA	19
687	6001	PED POLE ASSEMBLY	EA	39
6409	6001	LED WRONG WAY DRIVER SYSTEM (THERMAL)	EA	13
6319	6005	LED WRONG WAY DRIVER SYSTEM (REMOVE)	EA	3.33
6227	6002	SOLAR POWERED LED ROADSIDE SIGN	EA	25

NOTE

1. THE CONTRACTOR SHALL HAVE THE MANUFACTURER'S REPRESENTATIVE ON SITE TO ASSIST WITH THE INSTALLATION OF ALL EQUIPMENT BEFORE ANY WORK BEGINS.
2. REFER TO THE SUMMARY OF LARGE SIGNS (LARGE SIGN SUMMARY) AND GENERAL NOTES FOR GUIDANCE ON ATTACHMENT OF THE OVERHEAD WRONG WAY SIGNS INSTALLED UNDER ITEM 636-6003.

SIGN MOUNTING SUMMARY

SHEET 1 OF 1




CONT	SECT	JOB	HIGHWAY
0916	00	281	VARIOUS
DIST	COUNTY		SHEET NO.
CRP	NUECES		19

DATE: 4/7/2024 2:27:32 PM
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SH 35 (Aransas County)									
Latitude	Longitude	SIGN NO.	SIGN DESIGNATION / DESCRIPTION	ITEM 0644-6078	ITEM 0644-6070	ITEM 0687-6005	ITEM 6319-6005	ITEM 0644-6076	ITEM 0104-6014
				REMOVE SM RD SN SUP&AM (SIGN ONLY)	RELOCATE SM RD SN SUP&AM TY 580	REMOVE PED POLE ASSEMBLY	LED WRONG WAY DRIVER SYSTEM (REMOVE)	REMOVE SM RD SN SUP&AM	REMOVING CONC (FOUNDATIONS)
				EA	EA	EA	EA	EA	CY
SH 35 Northbound Exit to FM 2165 (Location B)									
28.052336	-97.068528	B-1	R5-1 / DO NOT ENTER	1					
28.052534	-97.068679	B-2	R5-1 / DO NOT ENTER	1					
28.048906	-97.071608	B-6A (FROM)	R5-1a/ WRONG WAY		1				
28.049578	-97.071031	B-6B (TO)							
28.048423	-97.072043	B-9A (FROM)	R5-1a/ WRONG WAY		1				
28.049147	-97.071417	B-9B (TO)							
28.049	-97.071317	B-10A (FROM)*	R5-1a/ WRONG WAY		1				
28.04909	-97.071433	B-11A (FROM)**	R5-1a/ WRONG WAY						
28.048829	-97.071474	B-12	N/A			1			
28.048322	-97.07192	B-13	N/A			1			
			ABANDONED NOTIFICATION ASSEMBLY				1/3		
SH 35 Northbound Exit to FM 3036 (Location C)									
28.056313	-97.066302	C-7	N/A			1			
28.056426	-97.066302	C-8	N/A					1	
28.055899	-97.066687	C-11	N/A			1			
			ABANDONED NOTIFICATION ASSEMBLY				1/3		
28.056003	-97.066813	C-12	R5-1a/ WRONG WAY					1	
28.05592	-97.066887	B-10B (TO)*	R5-1a/ WRONG WAY						
28.056337	-97.066501	B-11B (TO)**	R5-1a/ WRONG WAY						
SH 35 Southbound Exit to FM 2165 (Location D)									
28.054005	-97.069491	D-1	R5-1/ DO NOT ENTER	1					
28.053826	-97.069349	D-2	R5-1/ DO NOT ENTER	1					
28.05432	-97.0692	D-3A (FROM)	R5-1a/ WRONG WAY		1				
28.054763	-97.068879	D-3B (TO)							
28.054208	-97.069017	D-4A (FROM)	R5-1a/ WRONG WAY		1				
28.054646	-97.068687	D-4B (TO)							
28.058569	-97.065906	D-15A (FROM)	R5-1a/ WRONG WAY		1				
28.058943	-97.065419	D-15B (TO)							
SH 35 Southbound Exit to FM 1069 (Location E)									
28.029588	-97.082908	E-1	R5-1/ DO NOT ENTER	1					
28.029516	-97.082716	E-2	R5-1/ DO NOT ENTER	1					
28.030902	-97.082306	E-5A (FROM)	R5-1a/ WRONG WAY		1				
28.030701	-97.082393	E-5B (TO)							
28.030848	-97.082151	E-6A (FROM)	R5-1a/ WRONG WAY		1				
28.030647	-97.082244	E-6B (TO)							
28.035325	-97.080008	E-10A (FROM)	R5-1a/ WRONG WAY		1				
28.035137	-97.080122	E-10B (TO)							
28.035374	-97.0801	E-12	N/A						0.2
28.035872	-97.079818	E-14	N/A			1			
			ABANDONED NOTIFICATION ASSEMBLY				1/3		

**SMALL SIGN
REMOVAL
SUMMARY**


SHEET 1 OF 3



CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	20	

SH 358 (NUECES)									
Latitude	Longitude	SIGN NO.	SIGN DESIGNATION / DESCRIPTION	ITEM 0644-6078	ITEM 0644-6070	ITEM 0687-6005	ITEM 6319-6005	ITEM 0644-6076	ITEM 0104-6014
				REMOVE SM RD SN SUP&AM (SIGN ONLY)	RELOCATE SM RD SN SUP&AM TY S80	REMOVE PED POLE ASSEMBLY	LED WRONG WAY DRIVER SYSTEM (REMOVE)	REMOVE SM RD SN SUP&AM	REMOVING CONC (FOUNDATIONS)
				EA	EA	EA	EA	EA	CY
SH 358 Westbound Exit to Bear Ln (Location G)									
27.762342	-97.465958	G-1	R5-1 / DO NOT ENTER	1					
27.762106	-97.465635	G-3	R5-1a/ WRONG WAY					1	
SH 358 Westbound Exit to SH 44 (Location H)									
27.779048	-97.468851	H-1	N/A			1			
27.778504	-97.46889	H-2	N/A			1			
SH 358 Westbound Exit to Agnes St (Location I)									
27.783101	-97.468764	I-1	R5-1 / DO NOT ENTER	1					
27.783134	-97.468882	I-2	R5-1 / DO NOT ENTER	1					
27.782649	-97.468931	I-3	N/A						0.2
27.782127	-97.4691	I-7	N/A ABANDONED NOTIFICATION ASSEMBLY			1	1/3		
SH 358 Eastbound Exit to Bear Ln (Location K)									
27.766615	-97.469212	K-1	R5-1 / DO NOT ENTER	1					
27.766626	-97.469058	K-2	R5-1 / DO NOT ENTER	1					
27.767741	-97.469096	K-7	N/A			1			
27.768281	-97.469088	K-12	N/A ABANDONED NOTIFICATION ASSEMBLY				1/3		
SH 358 Eastbound Exit to Old Brownsville Rd (Location L)									
27.757922	-97.462152	L-2	R5-1 / DO NOT ENTER	1					
27.758387	-97.462693	L-7	N/A						0.2
27.758807	-97.463065	L-9	N/A ABANDONED NOTIFICATION ASSEMBLY			1	1/3		

**SMALL SIGN
 REMOVAL
 SUMMARY**




CONT	SECT	JOB	HIGHWAY
091600		281	VARIOUS
DIST	COUNTY	SHEET NO.	
CRP	NUECES	21	

US 181 (NUECES)									
Latitude	Longitude	SIGN NO.	SIGN DESIGNATION / DESCRIPTION	ITEM 0644-6078	ITEM 0644-6070	ITEM 0687-6005	ITEM 6319-6005	ITEM 0644-6076	ITEM 0104-6014
				REMOVE SM RD SN SUP&AM (SIGN ONLY)	RELOCATE SM RD SN SUP&AM TY S80	REMOVE PED POLE ASSEMBLY	LED WRONG WAY DRIVER SYSTEM (REMOVE)	REMOVE SM RD SN SUP&AM	REMOVING CONC (FOUNDATIONS)
				EA	EA	EA	EA	EA	CY
US 181 Northbound Exit to Burleson Rd									
27.822232	-97.389422	M-1	R5-1/ DO NOT ENTER	1					
27.82224	-97.389429	M-2	R5-1/ DO NOT ENTER	1					
27.821257	-97.389642	M-7	N/A			1			
27.820779	-97.389943	M-10	N/A			1			
US 181 Southbound Exit to Beach Ave									
27.834842	-97.383524	N-1	R5-1/ DO NOT ENTER	1					
27.834755	-97.38345	N-2	R5-1/ DO NOT ENTER	1					
27.758149	-97.462356	N-3	N/A					1	
27.83534	-97.382798	N-7	N/A			1			
			ABANDON NOTIFICATION ASSEMBLY				1/3		

US 181 (SAN PATRICIO)									
Latitude	Longitude	SIGN NO.	SIGN DESIGNATION / DESCRIPTION	ITEM 0644-6078	ITEM 0644-6070	ITEM 0687-6005	ITEM 6319-6005	ITEM 0644-6076	ITEM 0104-6014
				REMOVE SM RD SN SUP&AM (SIGN ONLY)	RELOCATE SM RD SN SUP&AM TY S80	REMOVE PED POLE ASSEMBLY	LED WRONG WAY DRIVER SYSTEM (REMOVE)	REMOVE SM RD SN SUP&AM	REMOVING CONC (FOUNDATIONS)
				EA	EA	EA	EA	EA	CY
US 181 Northbound Exit to FM 893 (Location P)									
27.874833	-97.326993	P-1	R5-1/ DO NOT ENTER	1					
27.783134	-97.468882	P-2	R5-1/ DO NOT ENTER	1					
27.872722	-97.33008	P-3A (FROM)	R5-1/ DO NOT ENTER		1				
27.87358	-97.32875	P-3B(TO)							
27.873149	-97.330161	P-4A (FROM)	R5-1/ DO NOT ENTER		1				
27.873702	-97.328853	P-4B (TO)							
27.872636	-97.330465	P-9A (FROM)	R5-1a/ WRONG WAY		1				
27.873149	-97.329665	P-9B (TO)							
27.872543	-97.330401	P-10	N/A			1			
27.872386	-97.330665	P-11A (FROM)	R5-1/ DO NOT ENTER		1				
27.872328	-97.33097	P-11B (TO)							
27.872471	-97.330741	P-12	R5-1/ DO NOT ENTER					1	
27.782127	-97.4691	P-13	N/A			1			
			ABANDON NOTIFICATION ASSEMBLY				1/3		
US 181 Southbound Exit to Access Rd (Location Q)									
27.870119	-97.334905	Q-1	R5-1/ DO NOT ENTER	1					
27.870043	-97.334837	Q-2	R5-1/ DO NOT ENTER	1					
27.870809	-97.333922	Q-3	N/A			1			
			ABANDON DETECTION				1/3		
27.871166	-97.333443	Q-7	N/A			1			
US 181 Northbound Exit to FM 2986 (Location S)									
27.877757	-97.322914	S-1	R5-1/ DO NOT ENTER	1					
27.877918	-97.32309	S-2	R5-1/ DO NOT ENTER	1					
27.877575	-97.323424	S-3	N/A			1			
27.87753	-97.323492	S-4A (FROM)	R6-1R (ONE WAY RIGHT)		1				
27.877549	-97.323457	S-4B (TO)							
27.877371	-97.323735	S-8A (FROM)	R5-1/ DO NOT ENTER		1				
27.87736	-97.323725	S-8B (TO)							
27.877327	-97.323812	S-9A (FROM)	W4-3L + W13-1P / 40 MPH		1				
27.877299	-97.323856	S-9B (TO)							
27.877313	-97.323833	S-11	N/A			1			
			ABANDON NOTIFICATION ASSEMBLY				1/3		

**SMALL SIGN
REMOVAL
SUMMARY**



Texas
Department
of Transportation

CONT	SECT	JOB	HIGHWAY
091600		281	VARIOUS
DIST	COUNTY	SHEET NO.	
CRP	NUECES	22	

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ROADWAY	SIGN NUMBER	SIGN BACK GROUND COLOR	SIGN TEXT	SIGN DIMENSIONS		ROUTE SHEILDS, EXIT ONLY PANELS & OTHER ATTACHMENTS		BACKGROUND SUBSTRATE (SQ FT)		ENTER "X" IF OVERHEAD SIGN	COUNTY	TYPE OF MOUNT			"X" DIMENSION				GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT			
						DIRECT	ALUMINUM	GROUND MOUNT	OVERHEAD			WIND ZONE	NO. OF POSTS (1 TO 3)	ALUM/FIBER = 0 ALUMINUM = 1 FIBERGLASS = 3	LINEAR FEET			TOTAL WEIGHT	LINEAR FEET						
						APPLY	(TYPE A)	(TYPE G)	(TYPE O)			NO.			POST	POST	POST	LBS.	NON-REINF	REINFORCED					
				WIDTH (FT)	HEIGHT (FT)							1	2	3	SIZE	1	2	3		12"	24"	30"	36"		
SH 358	H-3	RED	WRONG WAY																						
			27.777826, -97.468940	8	X	4				32.00	X														
	H-4	RED	WRONG WAY																						
			27.777819, -97.469050	8	X	4				32.00	X														
	G-8	RED	WRONG WAY																						
			27.7761361, -97.465050	8	X	4				32.00	X														
	I-10	RED	WRONG WAY																						
			27.780562, -97.469236	8	X	4				32.00	X														
	K-14	RED	WRONG WAY																						
			27.768683, -97.469021	8	X	4				32.00	X														
	L-10	RED	WRONG WAY																						
			27.758973, -97.463130	8	X	4				32.00	X														
	L-11	RED	WRONG WAY																						
			27.759012, -97.463079	8	X	4				32.00	X														
US 181	N-9	RED	WRONG WAY																						
			27.835907, -97.381823	8	X	4				32.00	X														
	P-14	RED	WRONG WAY																						
			27.871744, -97.331976	8	X	4				32.00	X														
	Q-10	RED	WRONG WAY																						
			27.871909, -97.332178	8	X	4				32.00	X														
	S-12	RED	WRONG WAY																						
			27.877020, -97.324386	8	X	4				32.00	X														
				PAGE	TOTALS					352.00					PAGE	TOTALS									

NOTES:

- LARGE SIGNS ARE TO BE INSTALLED ON THE BACK SIDES OF TRUSSES IDENTIFIED HERE (FACING TRAFFIC THAT WOULD BE TRAVELING IN THE WRONG DIRECTION).
- REFER TO STANDARDS FOR CONNECTION INFORMATION. ALL CONNECTIONS INCLUDING BUT NOT LIMITED TO THE S4X7.7 BRACKETS REQUIRED TO ATTACH THE OVERHEAD SIGNS TO THE TRUSSES SHALL BE FURNISHED NEW AND ARE SUBSIDIARY TO ITEM 0636-6003.
- CONTRACTOR SHALL FIELD VERIFY THE NUMBER AND LENGTH OF INTERMEDIATE SIGN SUPPORTS NEEDED TO PROPERLY INSTALL THE OVERHEAD SIGNS ON THE OVERHEAD STRUCTURES AND MAY REFER TO THE TXDOT STANDARDS.
- ALL BRACKETS SHALL BE TRIMMED SO THAT THEY DON'T EXTEND ANY FURTHER THAN ALLOWED ACCORDING TO STANDARDS.

LARGE SIGN SUMMARY

SHEET 1 OF 1



CONT	SECT	JOB	HIGHWAY
091600		281	VARIOUS
DIST	COUNTY	SHEET NO.	
CRP	NUECES	23	

DATE: 4/6/2024 4:51:16 PM
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SUMMARY OF SMALL SIGNS							SMA RD SGN ASSM TY XXXXX (X) XX (X-XXXX)					BRIDGE MOUNT CLEARANCE SIGNS		
Latitude	Longitude	SIGN NO.	SIGN DESIGNATION	SIGN CONTENT	SIGN DIMENSIONS	ALUMINUM TYPE A	ALUMINUM TYPE G	ALUMINUM TYPE O	Post Type	Anchor Type	Mounting Designation		TY N = Type N	TY S = Type S
									FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sched 80	Posts (1 or 2)	UA = Univer-Conc UB = Univer-Bolt SA = Slip-Conc SB = Slip-Bolt WS = Wedge Steel WP = Wedge Plstic	P = Prefab. "Plain" T = Prefab. "T" U = Prefab. "U"		
SH 35 Northbound Exit to FM 2165 (Location B)														
28.052336	-97.068528	B-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
28.052534	-97.068679	B-2	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
28.049494	-97.070891	B-5	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
28.049467	-97.070897	B-7		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly at B-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet										
28.049068	-97.071284	B-8	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
SH 35 Northbound Exit to FM 3036 (Location C)														
28.060724	-97.062983	C-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on new assembly--Refer to Sign Mounting Summary Sheet					
									S80	1	SA	P		
28.060796	-97.063136	C-2	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on new assembly--Refer to Sign Mounting Summary Sheet					
									S80	1	SA	P		
28.059192	-97.063995	C-3	R5-1	DO NOT ENTER	36" X 36"	X			S80	1	SA	T		
28.059277	-97.064148	C-4	R5-1	DO NOT ENTER	36" X 36"	X			S80	1	SA	T		
28.056247	-97.066383	C-9	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
28.056217	-97.066396	C-10		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly at D-17 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet										
28.055816	-97.066761	C-13	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
SH 35 Southbound Exit to FM 2165 (Location D)														
28.054005	-97.069491	D-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
28.053826	-97.069349	D-2	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
28.054511	-97.068798	D-5	R6-1R	ONE WAY (RIGHT)	54" X 18"	X			S80	1	SA	T		
28.055206	-97.068242	D-6	R6-1R	ONE WAY (RIGHT)	54" X 18"	X			S80	1	SA	T		
28.055398	-97.068345	D-7	R5-1	DO NOT ENTER	36" X 36"	X			S80	1	SA	T		
28.05529	-97.068165	D-8	R5-1	DO NOT ENTER	36" X 36"	X			S80	1	SA	T		
28.056293	-97.067364	D-9	R6-1R	ONE WAY (RIGHT)	54" X 18"	X			S80	1	SA	T		
28.056491	-97.067416	D-10	R5-1	DO NOT ENTER	36" X 36"	X			S80	1	SA	T		
28.056406	-97.067274	D-11	R5-1	DO NOT ENTER	36" X 36"	X			S80	1	SA	T		
28.0557644	-97.066341	D-12	R6-1R	ONE WAY (RIGHT)	54" X 18"	X			S80	1	SA	T		
28.058592	-97.06589	D-17	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
28.058628	-97.065887	D-18		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly at D-17 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet										
28.059025	-97.065572	D-19	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
SH 35 Southbound Exit to FM 1069 (Location E)														
28.029588	-97.082908	E-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
28.029516	-97.082716	E-2	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
28.029944	-97.082739	E-3	R5-1a	WRONG WAY	42" x 30"	X			S80	1	SA	T		
28.035189	-97.080223	E-9	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
28.035219	-97.080212	E-11		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly at E-9 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet										
28.035669	-97.079926	E-13	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					

NOTES:

COORDINATES PROVIDED HERE ARE APPROXIMATE LOCATIONS. THE ENGINEER SHALL IDENTIFY THE PROPER SIGN LOCATIONS AT EACH EXIT BEFORE THE FOUNDATIONS ARE POURED.

SMALL SIGN SUMMARY

SHEET 1 OF 3



CONT	SECT	JOB	HIGHWAY
0916	00	281	VARIOUS
DIST	COUNTY	SHEET NO.	
CRP	NUECES	24	

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DWG: CDS: CDS:


SUMMARY OF SMALL SIGNS							SMA RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS			
Latitude	Longitude	SIGN NO.	SIGN DESIGNATION	SIGN CONTENT	SIGN DIMENSIONS	ALUMINUM TYPE A	ALUMINUM TYPE G	ALUMINUM TYPE O	Post Type	Anchor Type	Mounting Designation		TY N = Type N	TY S = Type S
									FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sched 80	Posts (1 or 2)	UA = Univer-Conc UB = Univer-Bolt SA = Slip-Conc SB = Slip-Bolt WS = Wedge Steel WP = Wedge Plstic	P = Prefb. "Plain" T = Prefab. "T" U = Prefab. "U"		
SH 358 Westbound Exit to Bear Lane (Location G)														
27.762342	-97.465958	G-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
27.762033	-97.465573	G-5	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.762016	-97.465548	G-6		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly					at G-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.76161	-97.465177	G-7	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
SH 358 Westbound Exit to Agnes St (Location I)														
27.783101	-97.468764	I-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
27.783134	-97.468882	I-2	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
27.78264	-97.468934	I-5	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.782611	-97.468935	I-6		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly					at I-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.782111	-97.469102	I-9	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
SH 358 Eastbound Exit to Bear Ln (Location K)														
27.766615	-97.469212	K-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
27.766626	-97.469058	K-2	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
27.767755	-97.469096	K-8	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.767785	-97.469097	K-9		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly					at K-8 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.768306	-97.469093	K-13	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
SH 358 Eastbound Exit to Old Brownsville Rd (Location L)														
27.757797	-97.4623	L-1	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on new assm--Refer to Sign Mounting Summary Sheet	S80	1	SA	P	
27.757922	-97.462152	L-2	R5-1	DO NOT ENTER	36" X 36"	X			Edge-Lit LED Sign on existing pole--Refer to Sign Mounting Summary Sheet					
27.758362	-97.462664	L-5	R5-1a	WRONG WAY	42" x 30"	X			WWD Detection Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.758379	-97.462686	L-6		WWD Solar Panel Assembly (1/3 of system)--supports WWD Detection Assembly					at L-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					
27.758792	-97.463051	L-8	R5-1a	WRONG WAY	42" x 30"	X			WWD Notification Assembly (1/3 of system)--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet					

NOTES:

COORDINATES PROVIDED HERE ARE APPROXIMATE LOCATIONS. THE ENGINEER SHALL IDENTIFY THE PROPER SIGN LOCATIONS AT EACH EXIT BEFORE THE FOUNDATIONS ARE POURED.

SMALL SIGN SUMMARY

SHEET 2 OF 3



CONT	SECT	JOB	HIGHWAY
091600		281	VARIOUS
DIST	COUNTY	SHEET NO.	
CRP	NUECES	25	


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SUMMARY OF SMALL SIGNS							SMA RD SGN ASSM TY XXXXX (X) XX (X-XXXX)					BRIDGE MOUNT CLEARANCE SIGNS					
Latitude	Longitude	SIGN NO.	SIGN DESIGNATION	SIGN CONTENT	SIGN DIMENSIONS	ALUMINUM TYPE A	ALUMINUM TYPE G	ALUMINUM TYPE O	Post Type		Anchor Type		Mounting Designation		TY N = Type N	TY S = Type S	
									FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sched 80	Posts (1 or 2)	UA = Univer-Conc UB = Univer-Bolt SA = Slip-Conc SB = Slip-Bolt WS = Wedge Steel WP = Wedge Plstic	P = Prefab. "Plain" T = Prefab. "T" U = Prefab. "U"	1EXT or 2EXT = # of Ext. BM = Extruded Beam WC = 1.12 #/ft Wing Chan. EXAL = Extruded Alum. Signs				
US 181 Northbound Exit to Burluson St (Location M)																	
27.822232	-97.389422	M-1	R5-1	DO NOT ENTER	36" X 36"	X											
-27.82224	-97.389429	M-2	R5-1	DO NOT ENTER	36" X 36"	X											
27.821286	-97.389615	M-5	R5-1a	WRONG WAY	42" x 30"	X											
27.82127	-97.389643	M-6		WWD Solar Panel Assembly (1/3 of system)--suports WWD Detection Assembly M-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet													
		M-9	R5-1a	WRONG WAY	42" x 30"	X											
US 181 Southbound Exit to Beach Ave (Location N)																	
27.834842	-97.383524	N-1	R5-1	DO NOT ENTER	36" X 36"	X											
27.834755	-97.38345	N-2	R5-1	DO NOT ENTER	36" X 36"	X											
27.835168	-97.383045	N-4	R5-1a	WRONG WAY	42" x 30"	X											
27.835199	-97.383035	N-6		WWD Solar Panel Assembly (1/3 of system)--suports WWD Detection Assembly N-4 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet													
27.835502	-97.382553	N-8	R5-1a	WRONG WAY	42" x 30"	X											
US 181 Northbound Exit To FM 893 (Location P)																	
27.874833	-97.326993	P-1	R5-1	DO NOT ENTER	36" X 36"	X											
27.783134	-97.46882	P-2	R5-1	DO NOT ENTER	36" X 36"	X											
27.873032	-97.329567	P-5	R5-1a	WRONG WAY	42" x 30"	X											
27.873149	-97.329665	P-6	R5-1a	WRONG WAY	42" x 30"	X			S80	1	SA	T					
27.873006	-97.329583	P-7		WWD Solar Panel Assembly (1/3 of system)--suports WWD Detection Assembly P-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet													
27.82079	-97.389946	P-8	R5-1a	WRONG WAY	42" x 30"	X											
US 181 Southbound Exit to Frontage Road (Location Q)																	
27.870119	-97.334905	Q-1	R5-1	DO NOT ENTER	36" X 36"	X											
27.870043	-97.334837	Q-2	R5-1	DO NOT ENTER	36" X 36"	X											
27.871086	-97.33377	Q-4	R5-1a	WRONG WAY	42" x 30"	X			S80	1	SA	T					
27.87096	-97.333742	Q-5	R5-1a	WRONG WAY	42" x 30"	X											
27.87097	-97.333713	Q-6		WWD Solar Panel Assembly (1/3 of system)--suports WWD Detection Assembly Q-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet													
27.871272	-97.333227	Q-9	R5-1a	WRONG WAY	42" x 30"	X											
US 181 Northbound Exit to FM 2986 (Location S)																	
27.877757	-97.322914	S-1	R5-1	DO NOT ENTER	36" X 36"	X											
27.877918	-97.32309	S-2	R5-1	DO NOT ENTER	36" X 36"	X											
27.877539	-97.323473	S-5	R5-1a	WRONG WAY	42" x 30"	X											
27.877506	-97.323527	S-6		WWD Solar Panel Assembly (1/3 of system)--suports WWD Detection Assembly at S-5 mentioned above--requires install ped pole assm item--Refer to Sign Mounting Summary Sheet													
27.87732	-97.323823	S-10	R5-1a	WRONG WAY	42" x 30"	X											

NOTES:

COORDINATES PROVIDED HERE ARE APPROXIMATE LOCATIONS. THE ENGINEER SHALL IDENTIFY THE PROPER SIGN LOCATIONS AT EACH EXIT BEFORE THE FOUNDATIONS ARE POURED.

SMALL SIGN SUMMARY



CONT	SECT	JOB	HIGHWAY
0916	00	281	VARIOUS
DIST	COUNTY		SHEET NO.
CRP	NUECES		26

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

- 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).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- 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:


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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

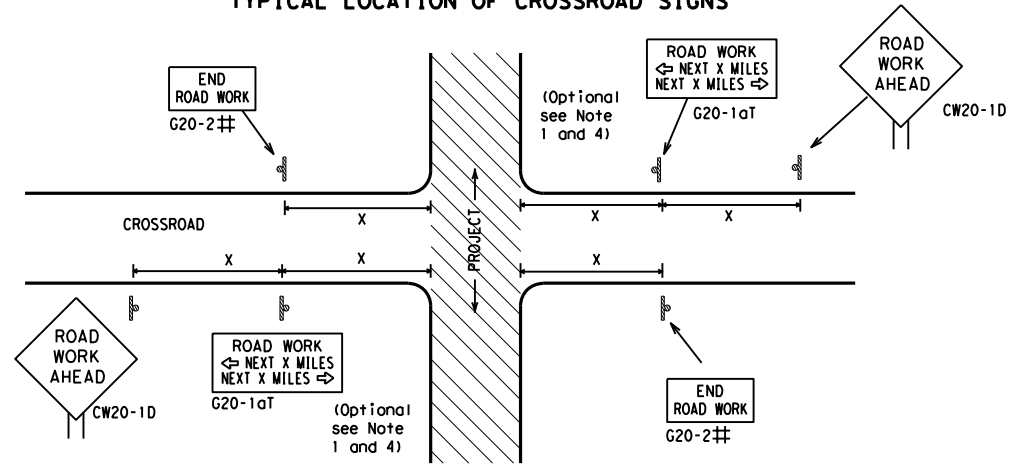
THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS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

SHEET 1 OF 12

 Texas Department of Transportation		Traffic Safety Division Standard	
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS			
BC (1) - 21			
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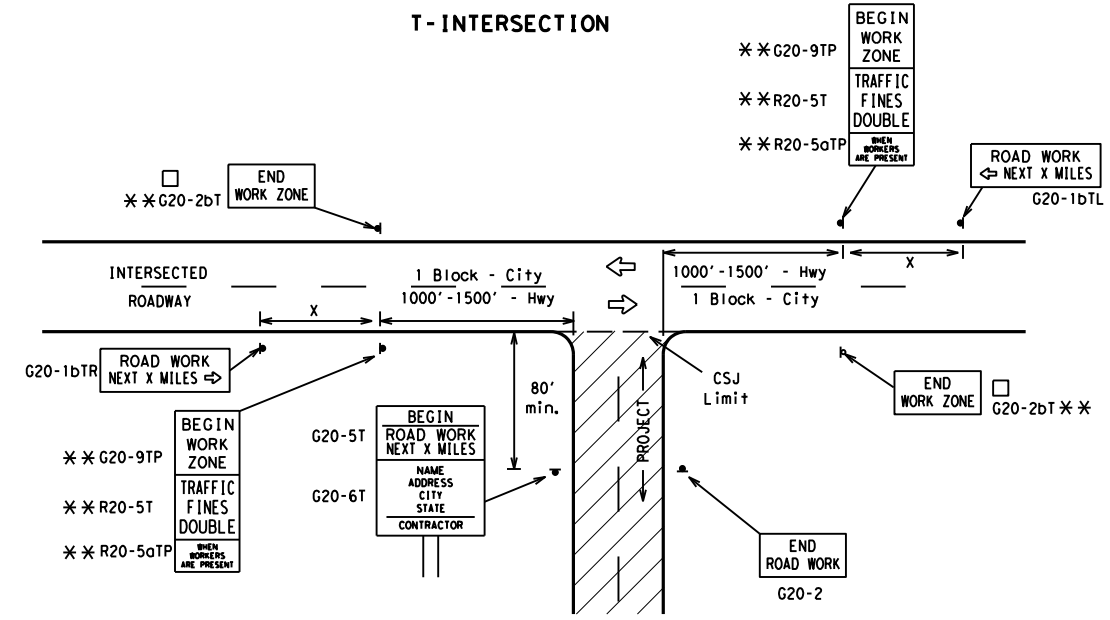
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TYPICAL LOCATION OF CROSSROAD SIGNS



- ## 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

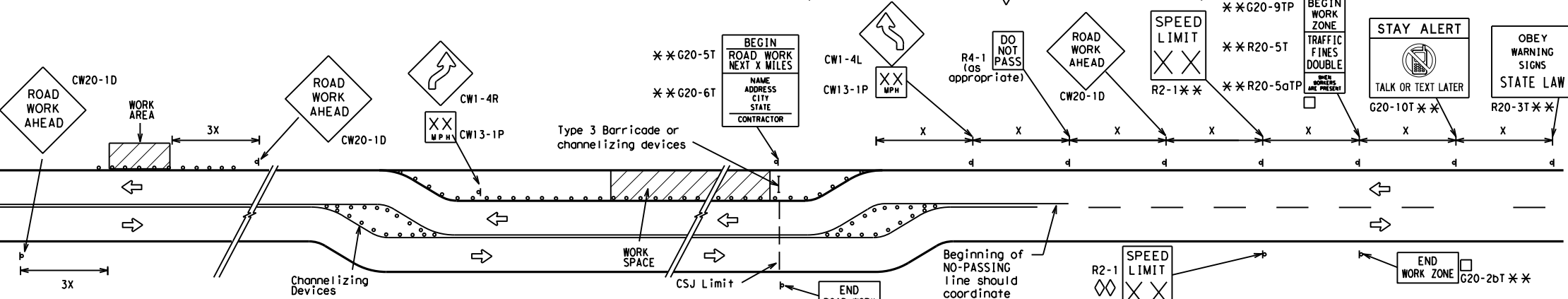
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

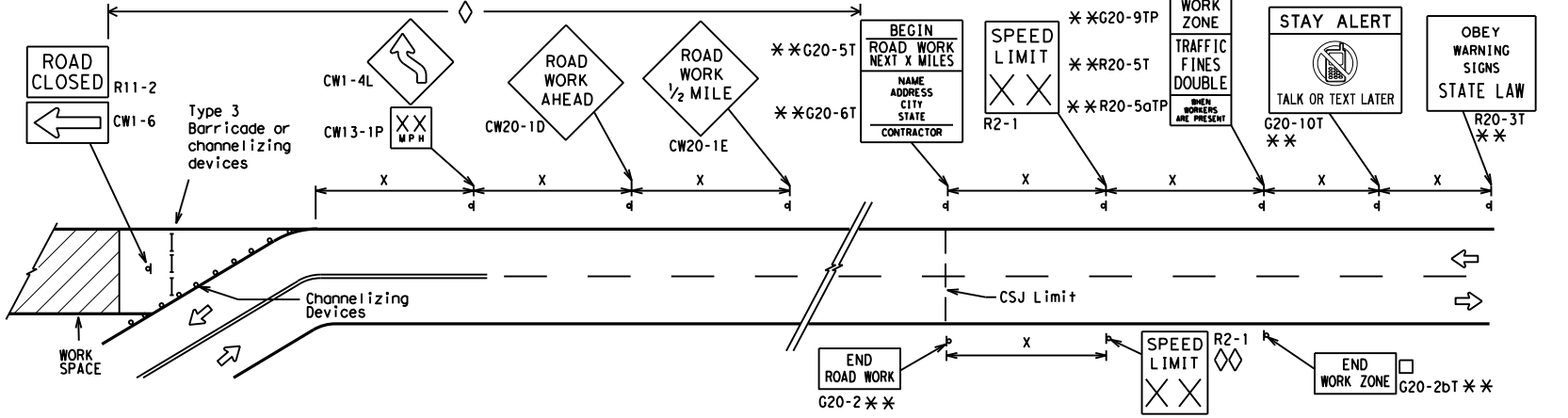
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

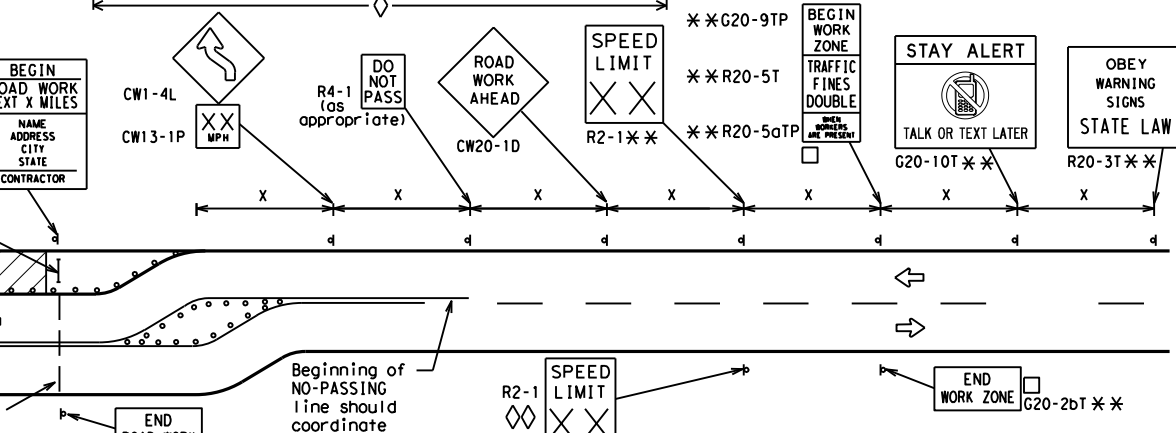


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "x" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
 - CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
 - Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
 - Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

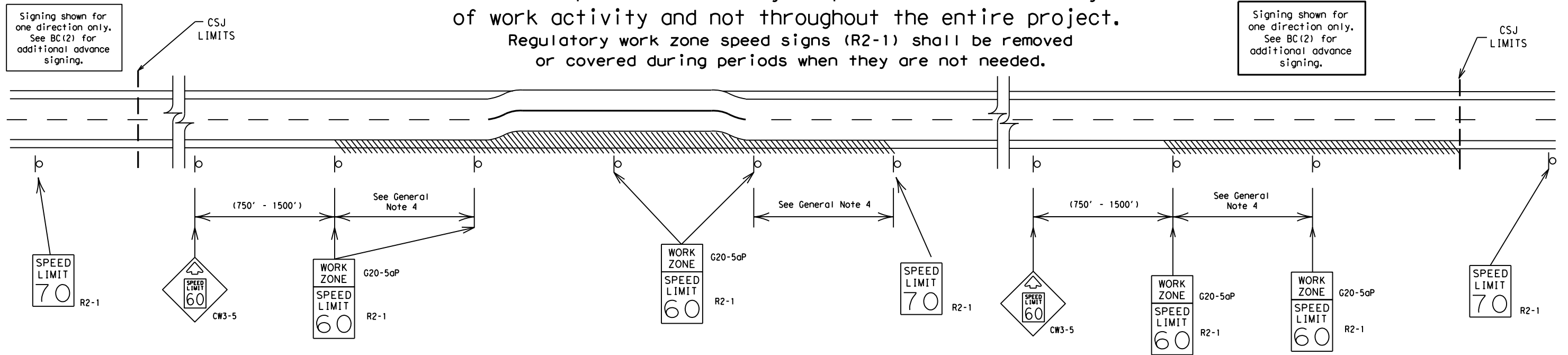
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

- 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.

SHEET 3 OF 12



BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

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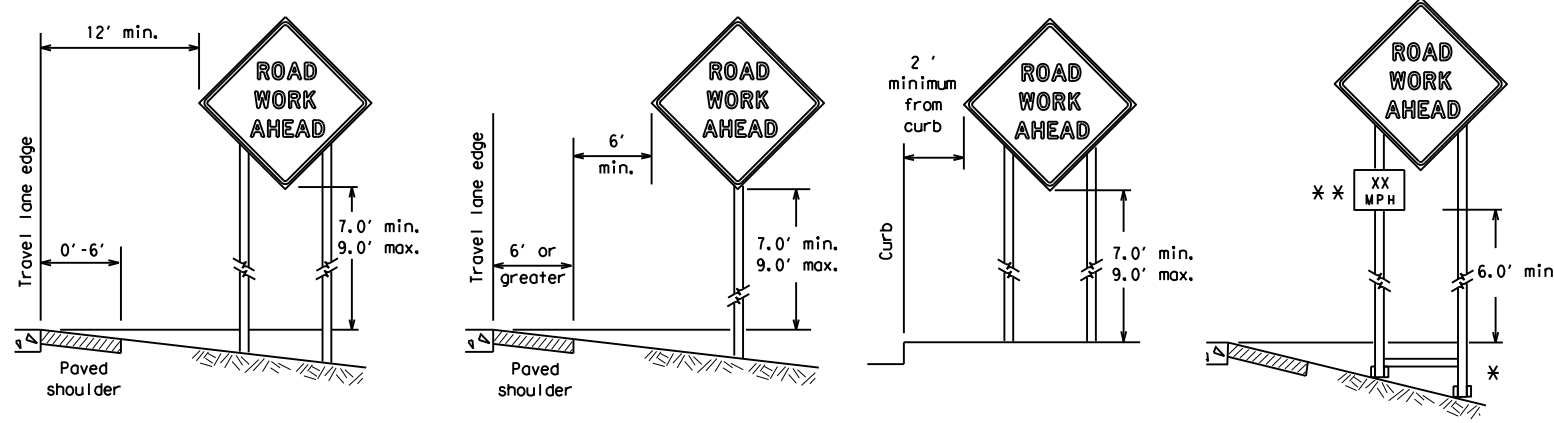
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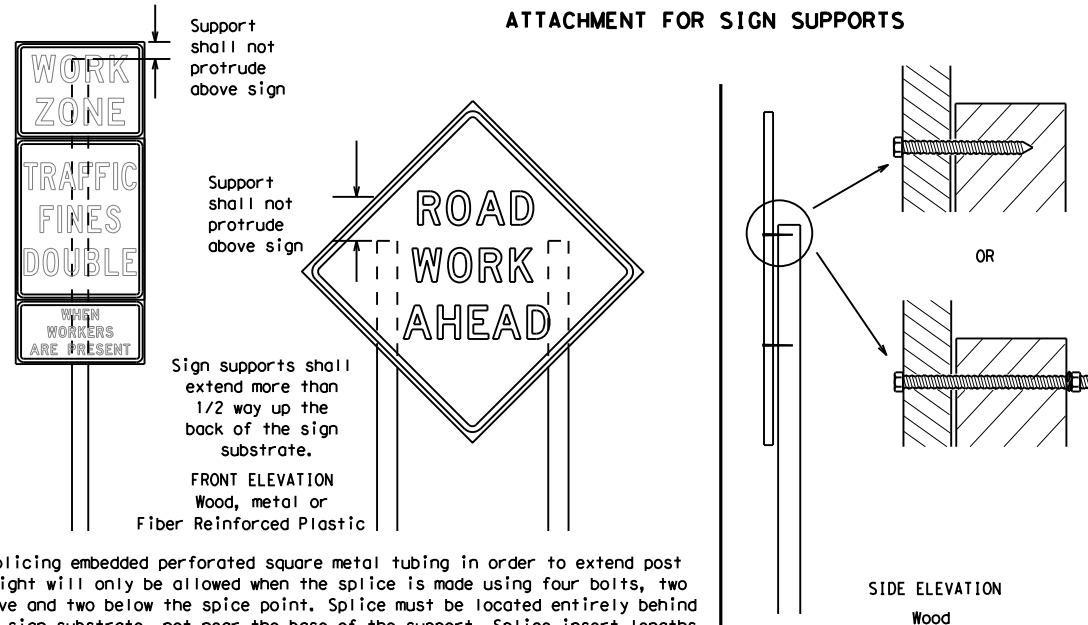
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

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

ATTACHMENT FOR SIGN SUPPORTS



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

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

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

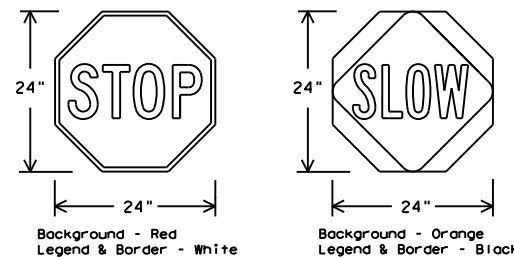
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not 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 retroreflectized 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.

SHEET 4 OF 12

Texas Department of Transportation Traffic Safety Division Standard

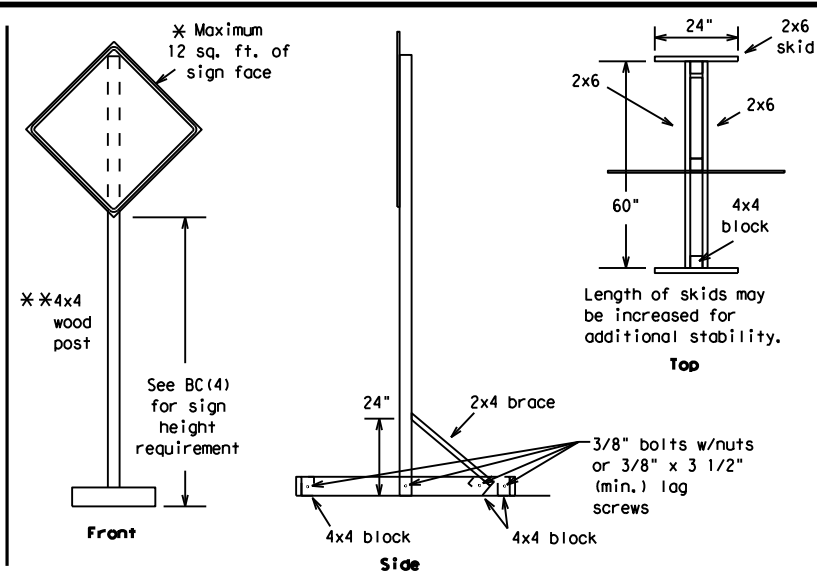
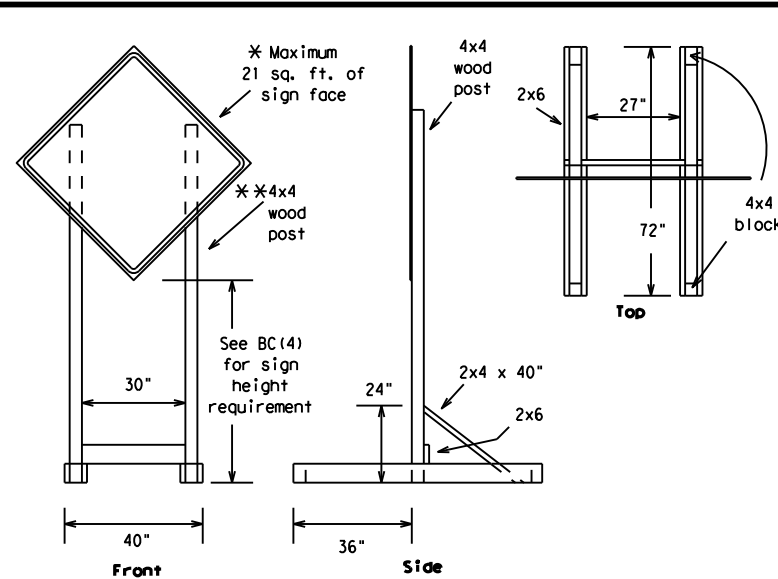
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

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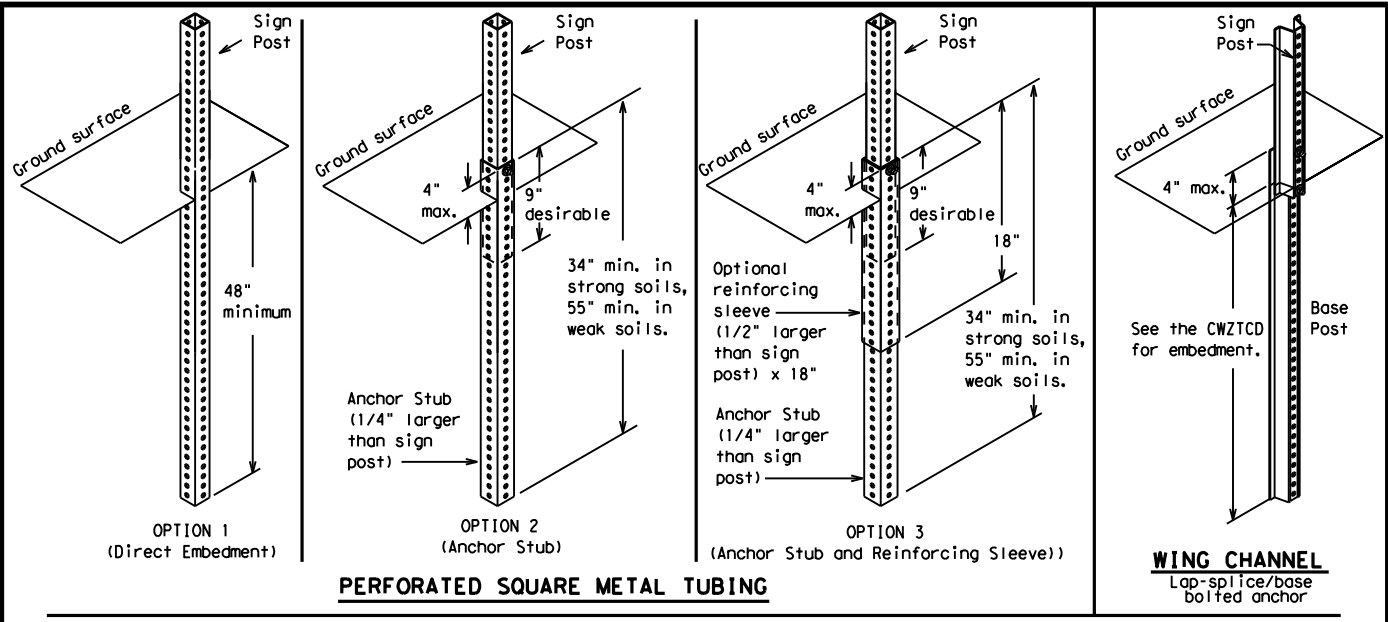
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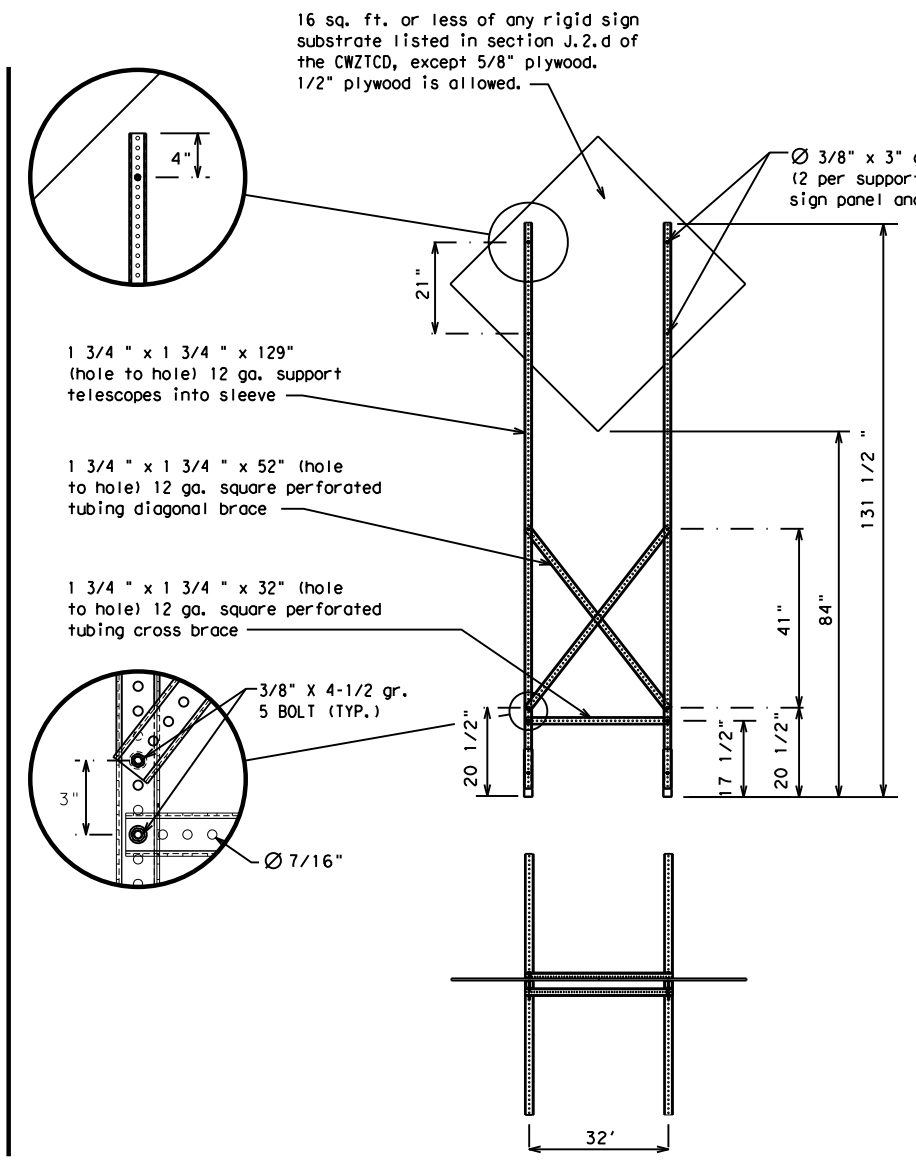
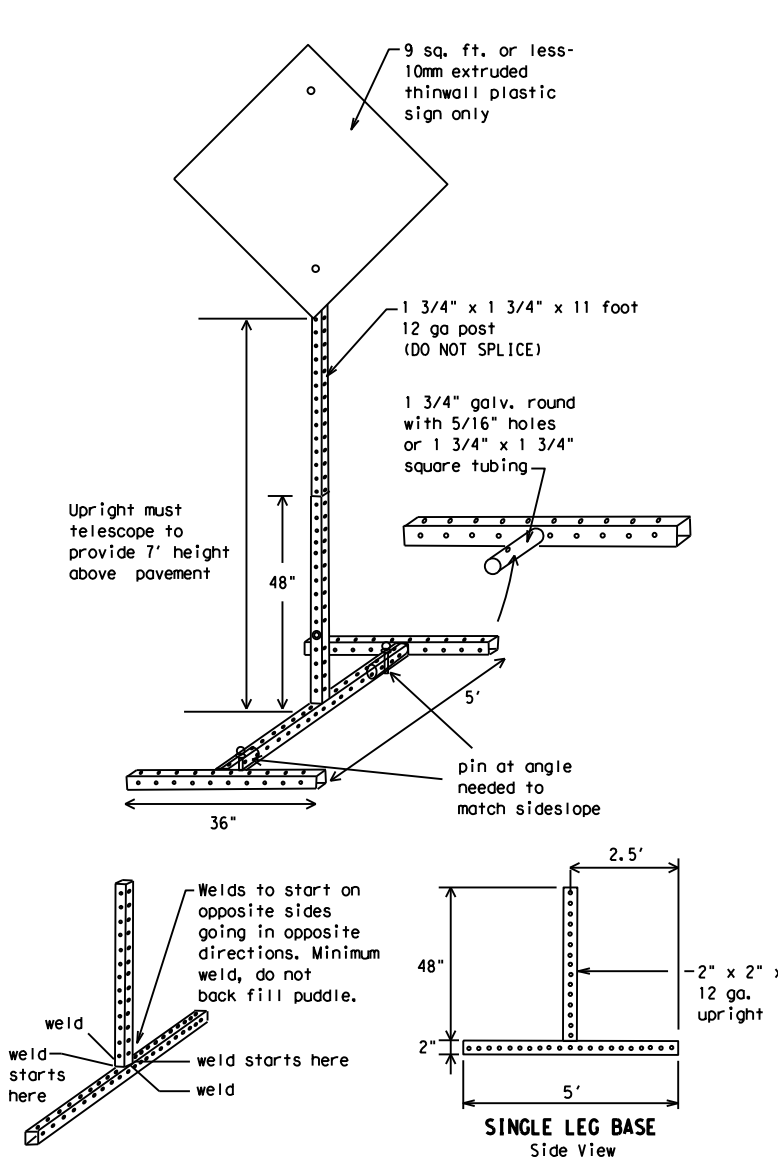
SKID MOUNTED WOOD SIGN SUPPORTS

* 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.

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

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7-13	5-21	CRP	NUECES	31					

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

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.

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

- 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.

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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
Canot	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	TRVLR
High-Occupancy Vehicle	HOV	Tuesday	TUES
Hour(s)	HR, HRS	Time Minutes	TIME MIN
Information	INFO	Upper Level	UPR LEVEL
It Is	ITS	Vehicles (s)	VEH, VEHS
Junction	JCT	Warning	WARN
Left	LFT	Wednesday	WED
Left Lane	LFT LN	Weight Limit	WT LIMIT
Lane Closed	LN CLOSED	West	W
Lower Level	LWR LEVEL	Westbound	(route) W
Maintenance	MAINT	Wet Pavement	WET PVMT
		Will Not	WONT

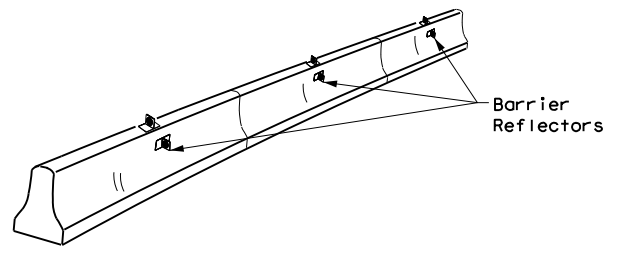
Roadway designation # IH-number, US-number, SH-number, FM-number

<h3>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</h3>			
<h2>BC (6) - 21</h2>			
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		SECT	VARIOUS
		DIST	COUNTY
		CRP	NUECES
		SHEET NO.	32

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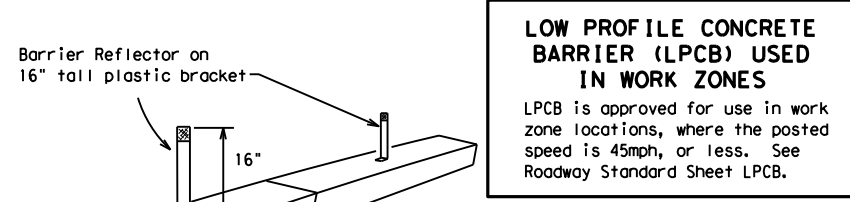
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



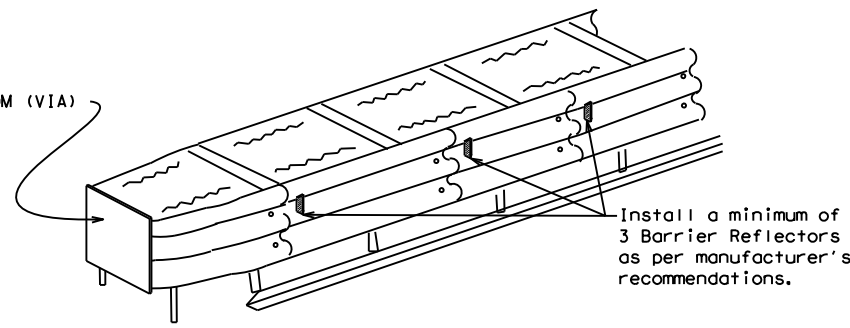
CONCRETE TRAFFIC BARRIER (CTB)

- 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.

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

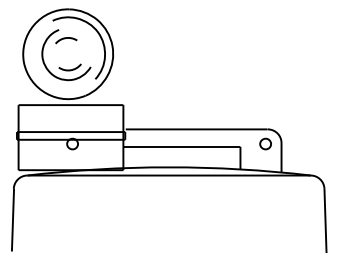
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

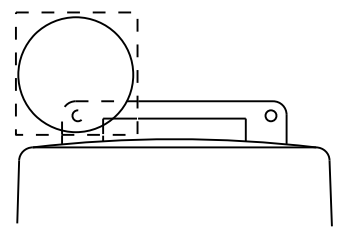
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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



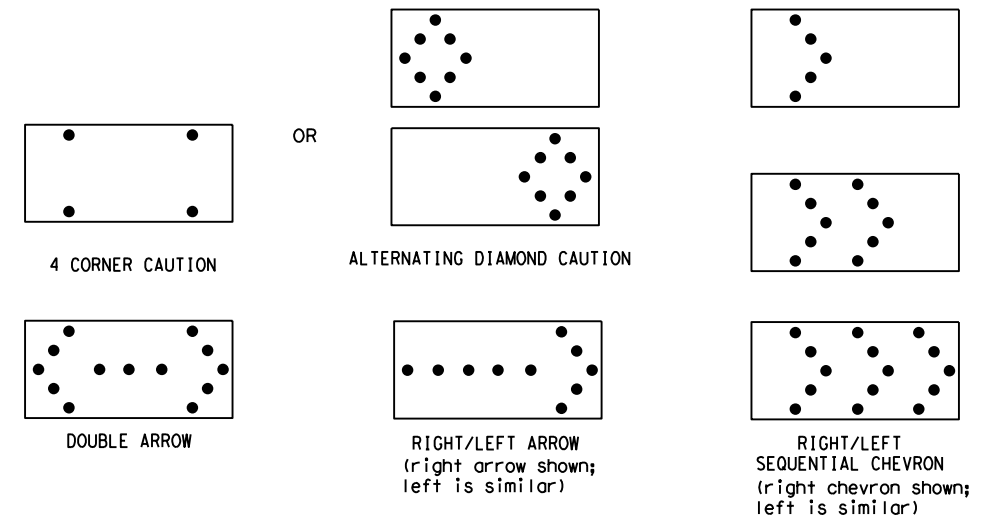
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



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

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.

Texas Department of Transportation
 Traffic Safety Division Standard

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

BC (7) -21

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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

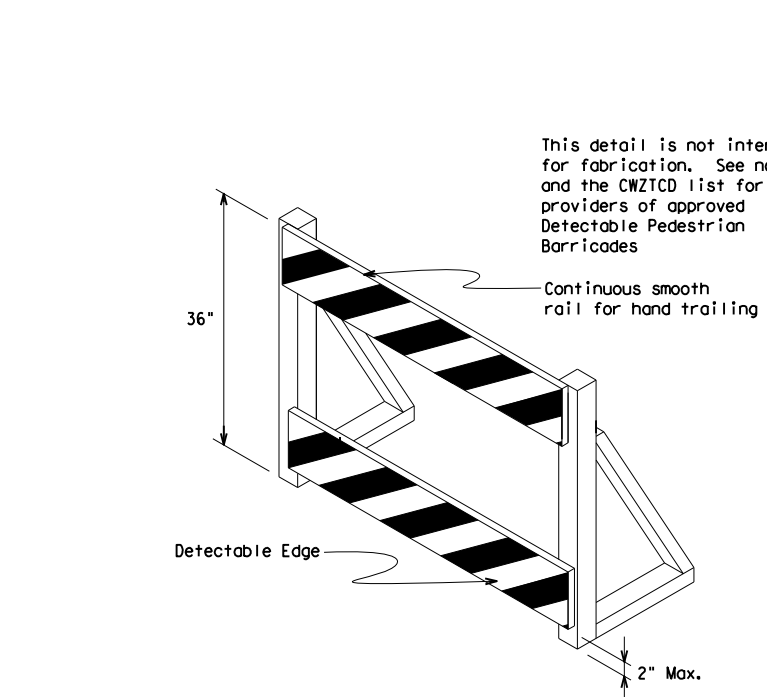
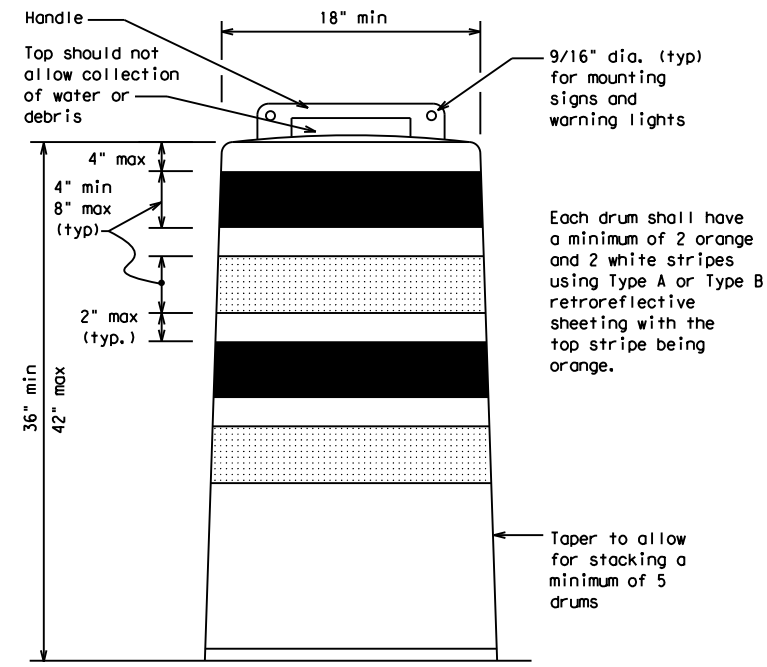
- Pre-qualified plastic drums shall meet the following requirements:
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
 - The body and base shall lock together in such a manner that the body separates from the base when impacted 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.

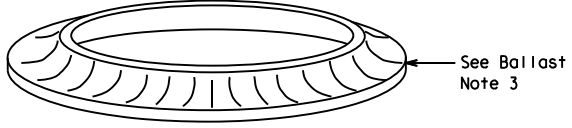
BALLAST

- 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.

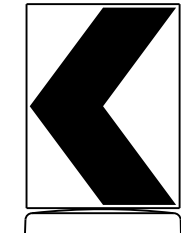


DETECTABLE PEDESTRIAN BARRICADES

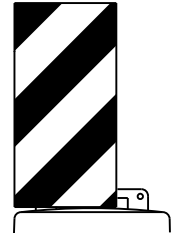
- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for 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.



This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades



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.

SHEET 8 OF 12



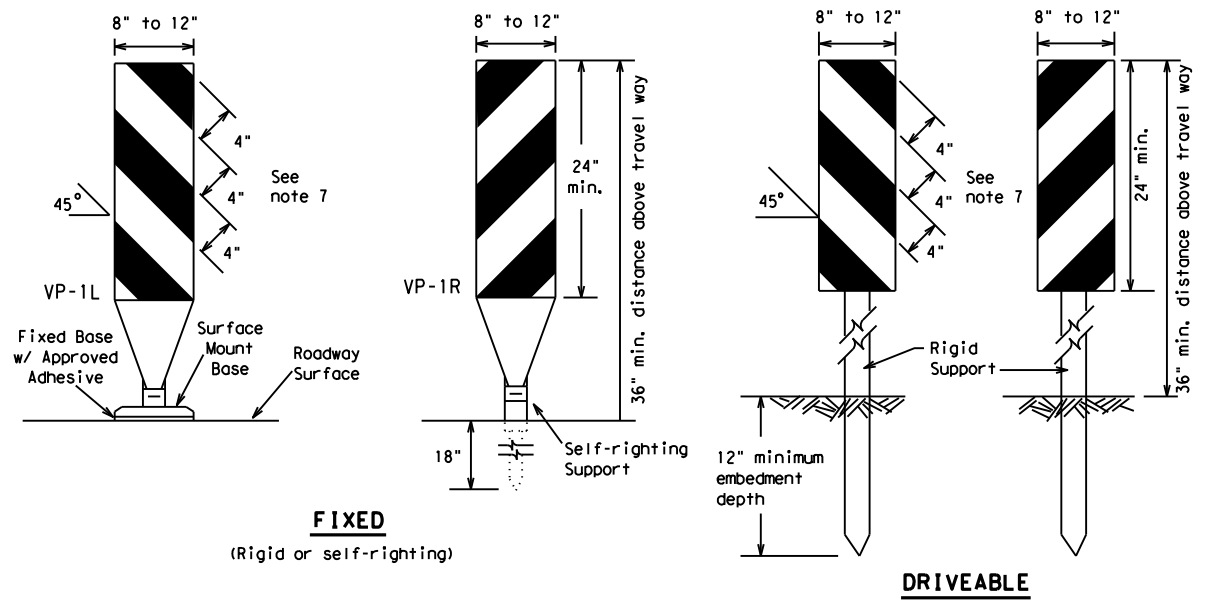
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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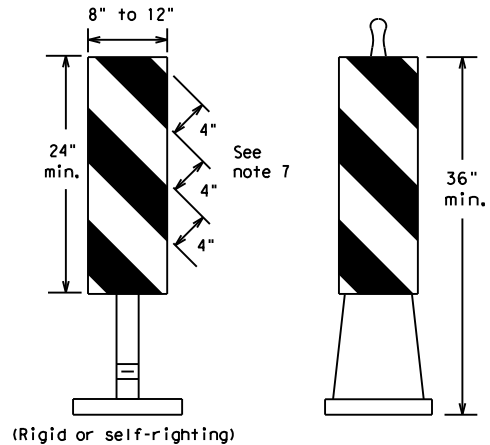
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FIXED
(Rigid or self-righting)

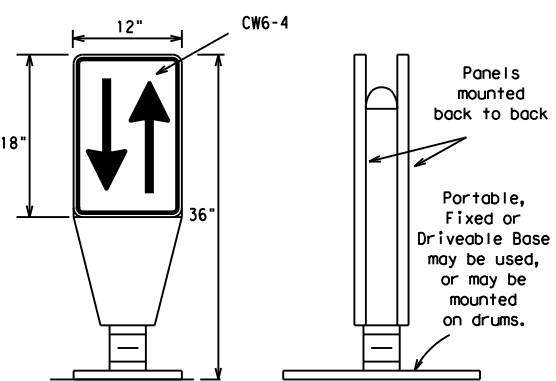
DRIVEABLE

- 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.



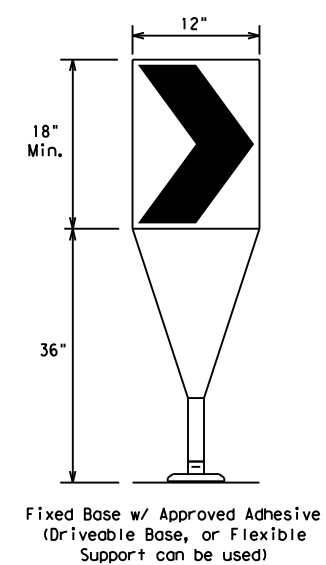
PORTABLE

VERTICAL PANELS (VPs)



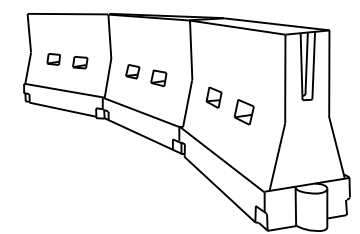
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

- 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

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TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.

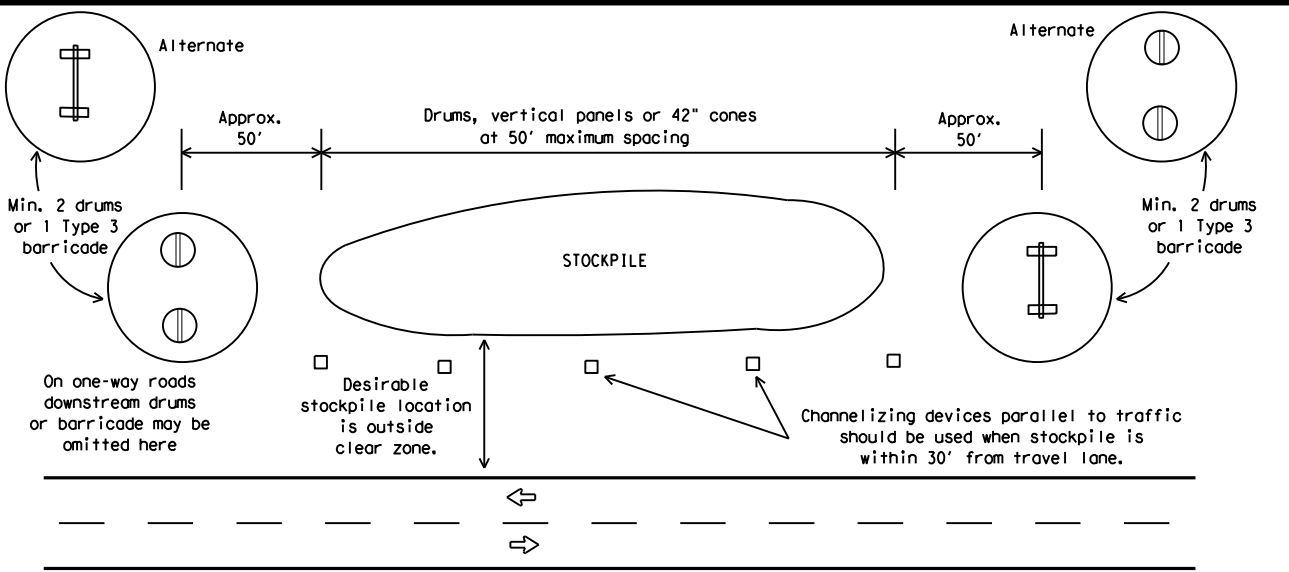


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



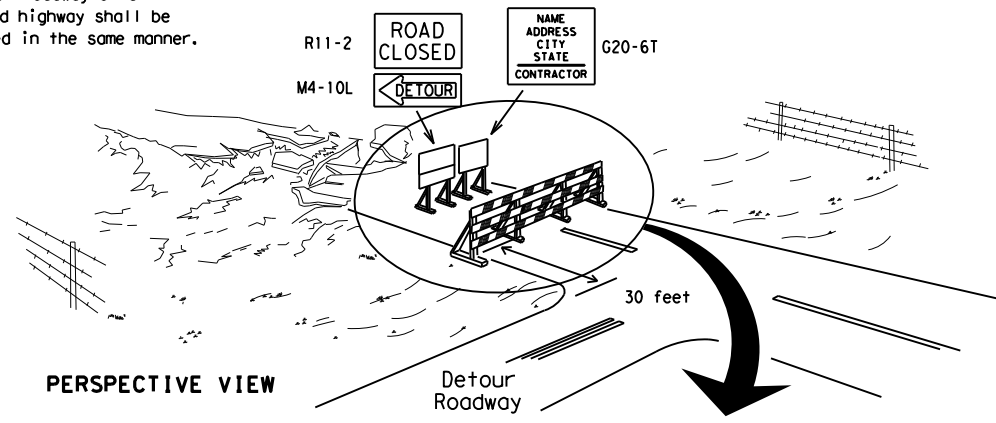
Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



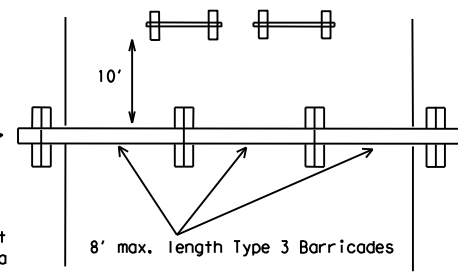
TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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



PERSPECTIVE VIEW

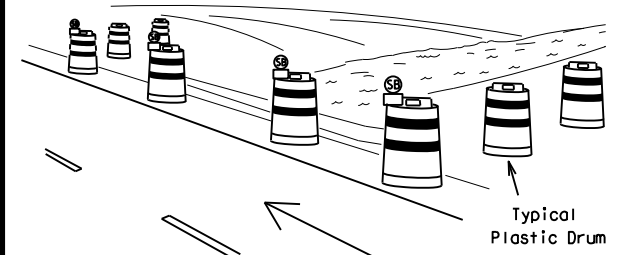
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



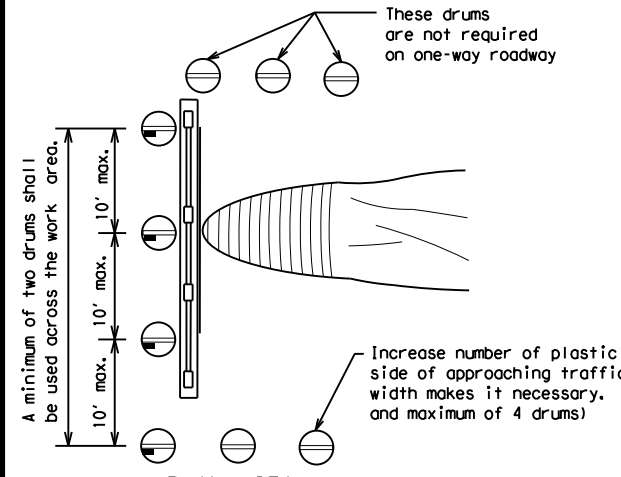
PLAN VIEW

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

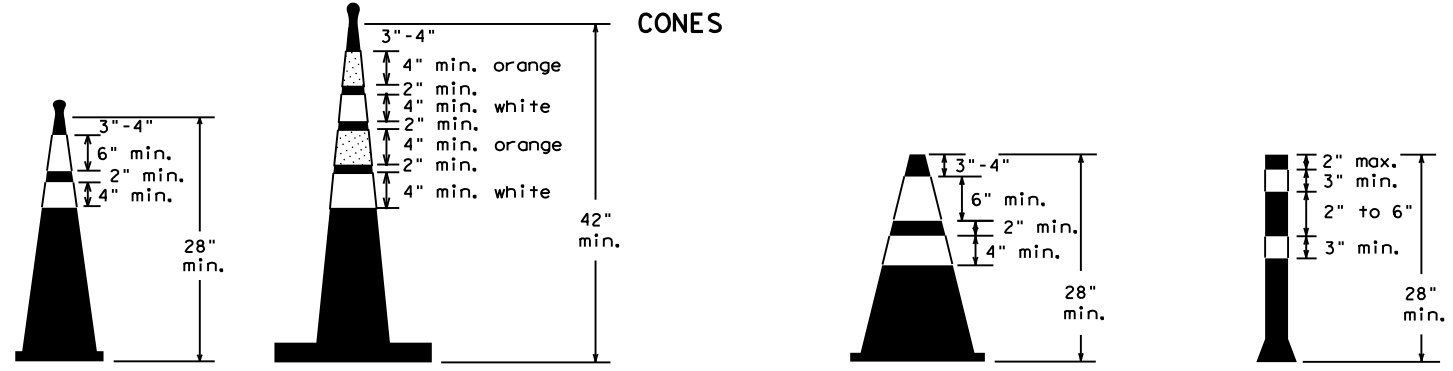


PLAN VIEW

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.



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (10) - 21

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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.

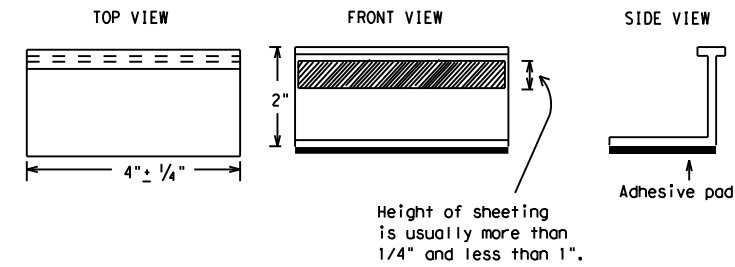
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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

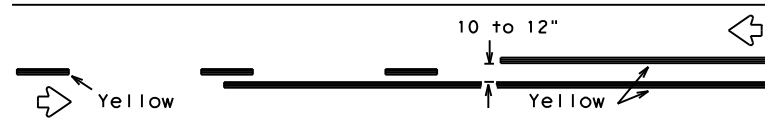
A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

SHEET 11 OF 12

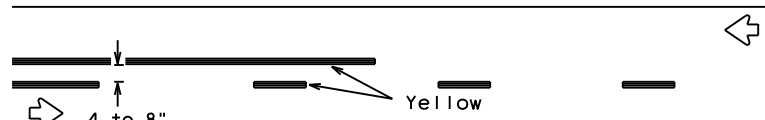
Texas Department of Transportation		Traffic Safety Division Standard
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS		
BC(11)-21		
FILE:	bc-21.dgn	DN: TxDOT
© TxDOT	February 1998	CR: TxDOT
REVISIONS	0916 00	JOB
2-98 9-07 5-21	281	HIGHWAY
1-02 7-13	DIST	COUNTY
11-02 8-14	CRP	SHEET NO.
	NUECES	37

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PAVEMENT MARKING PATTERNS

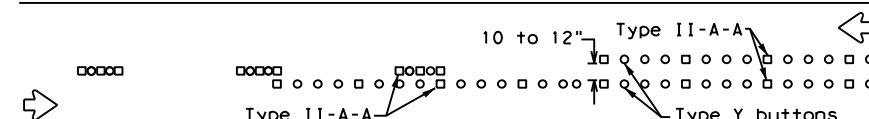


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

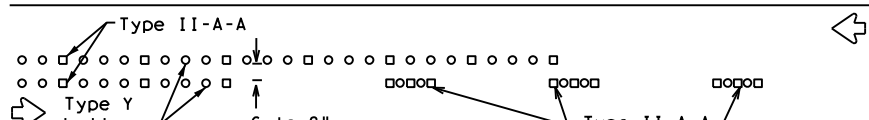


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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



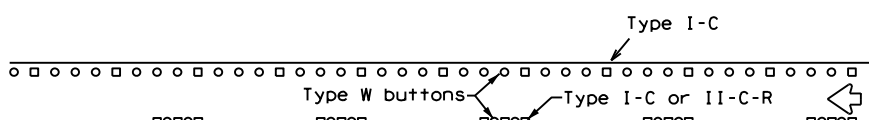
RAISED PAVEMENT MARKERS - PATTERN B

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



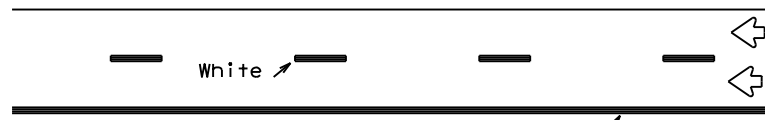
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



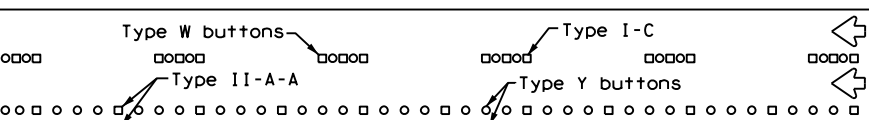
RAISED PAVEMENT MARKERS

EDGE & LANE LINES FOR DIVIDED HIGHWAY



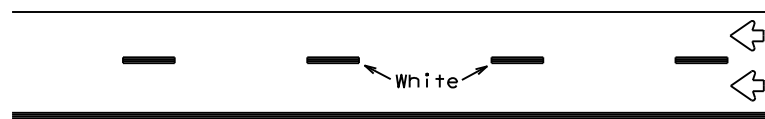
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



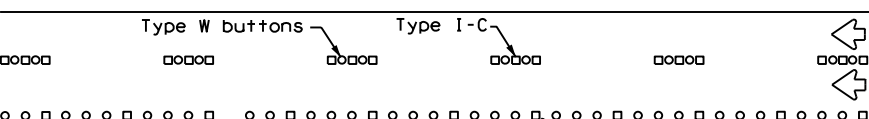
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

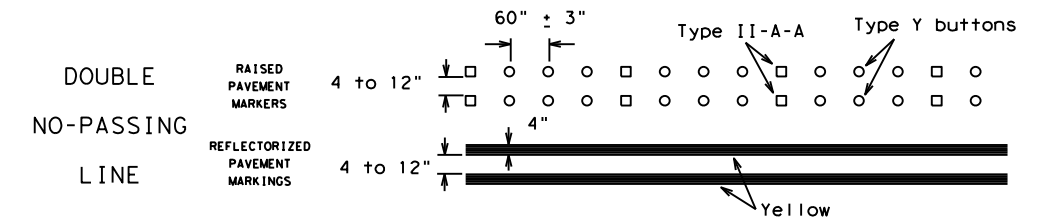
Prefabricated markings may be substituted for reflectORIZED pavement markings.



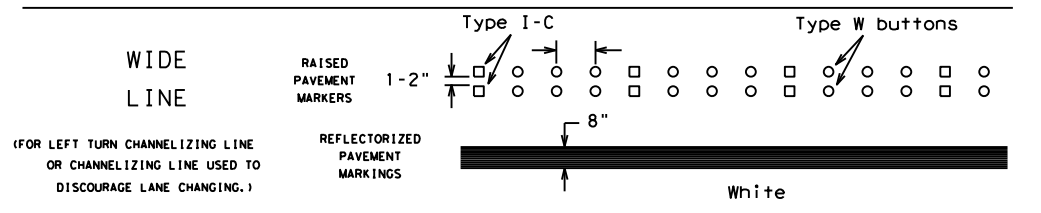
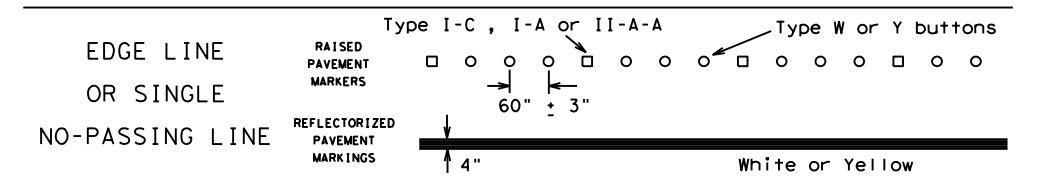
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE

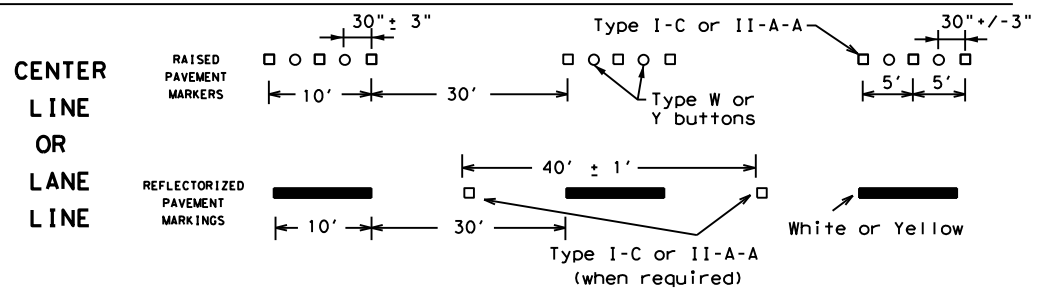
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



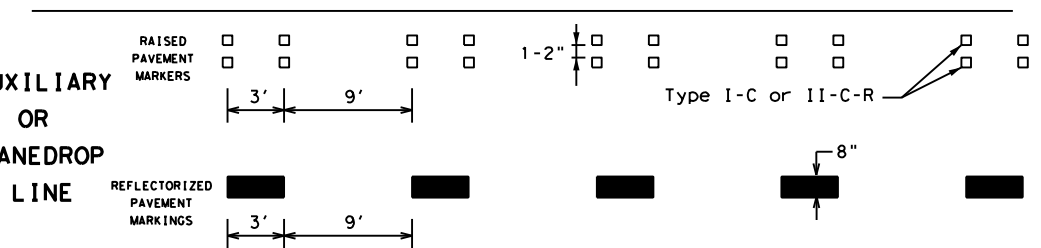
SOLID LINES



BROKEN LINES

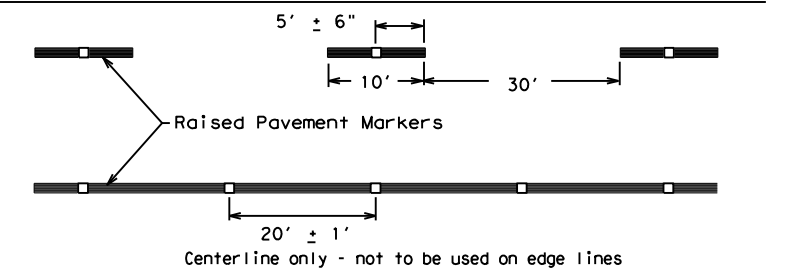


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

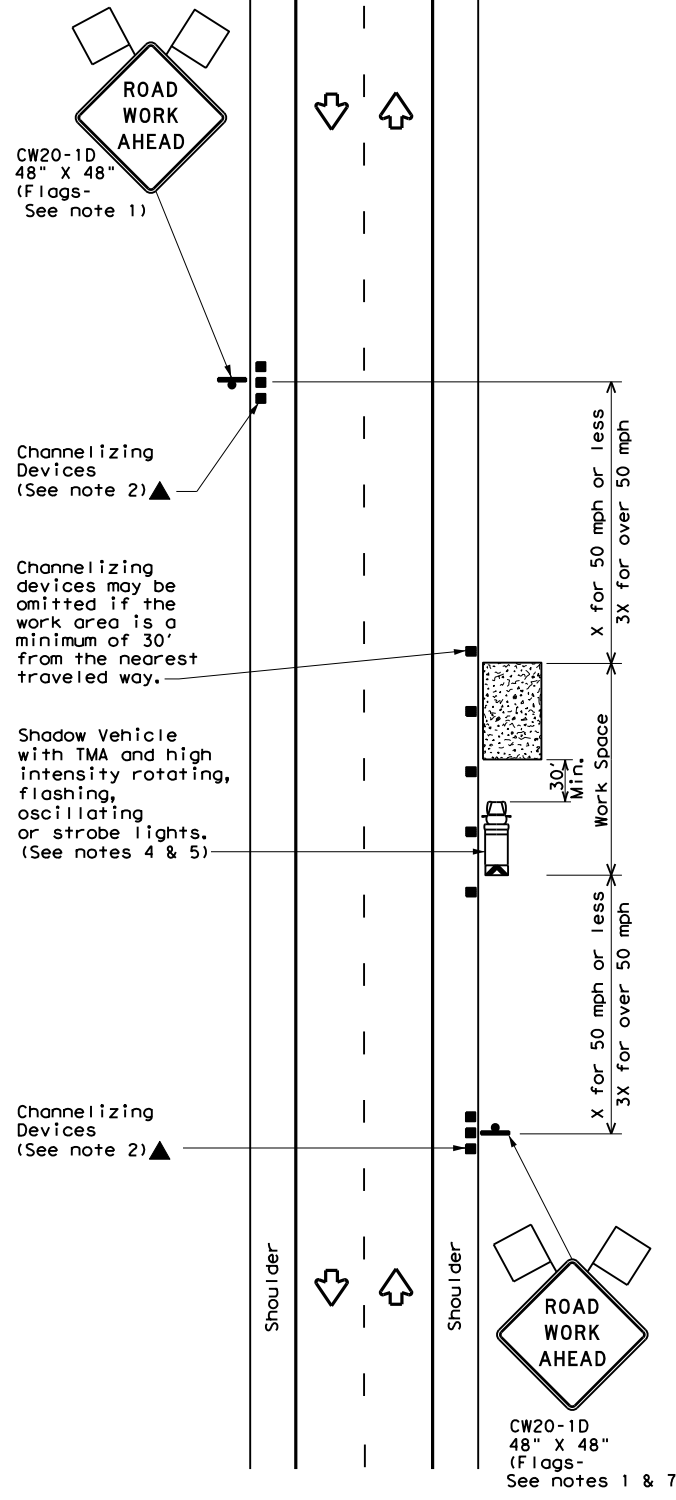
BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916	00	281	VARIOUS
1-97 9-07 5-21	DIST	COUNTY	SHEET NO.	
2-98 7-13	CRP	NUECES	38	
11-02 8-14				

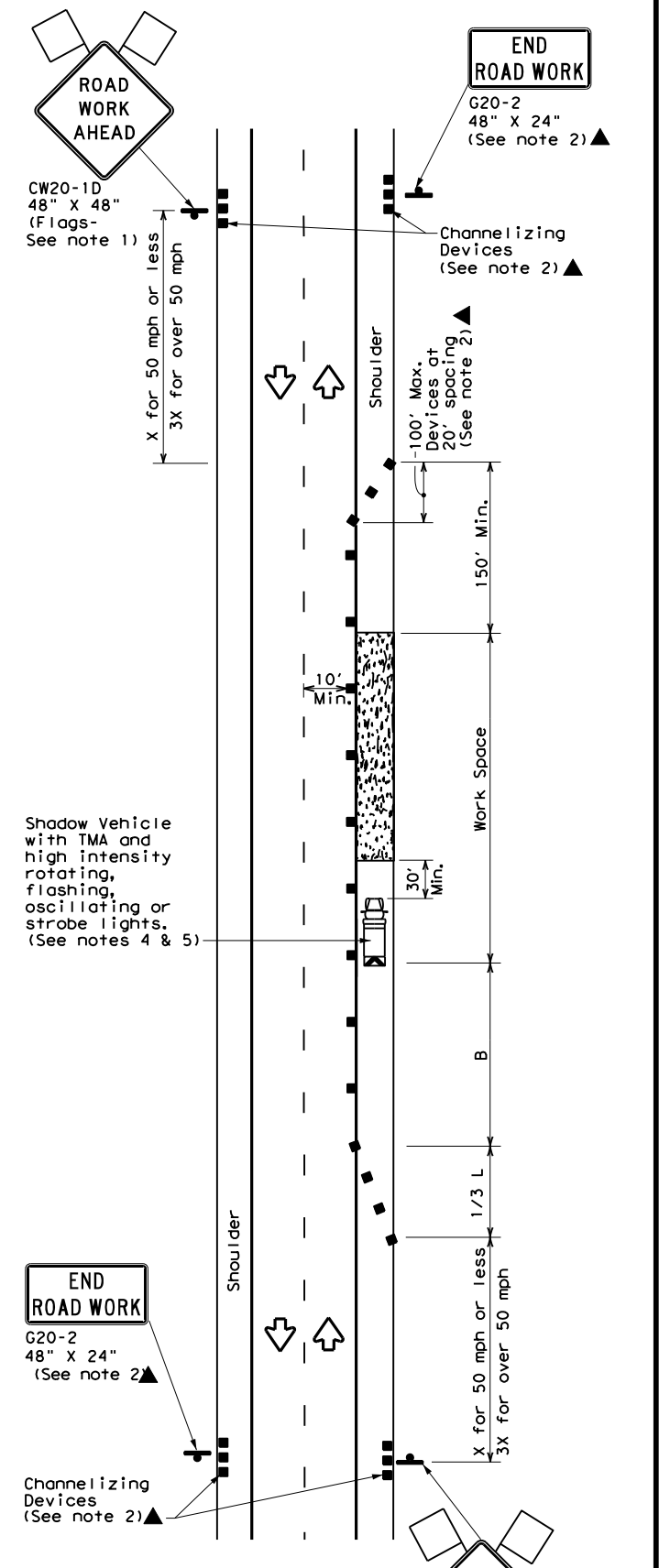
Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

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 FILE: D:\txdot\projectwiseonline.com\TXDOT4\Documents\16 - CRP\Design Projects\091600281\4 - Design\Plan Set\2 - TCP\BC-21.dgn
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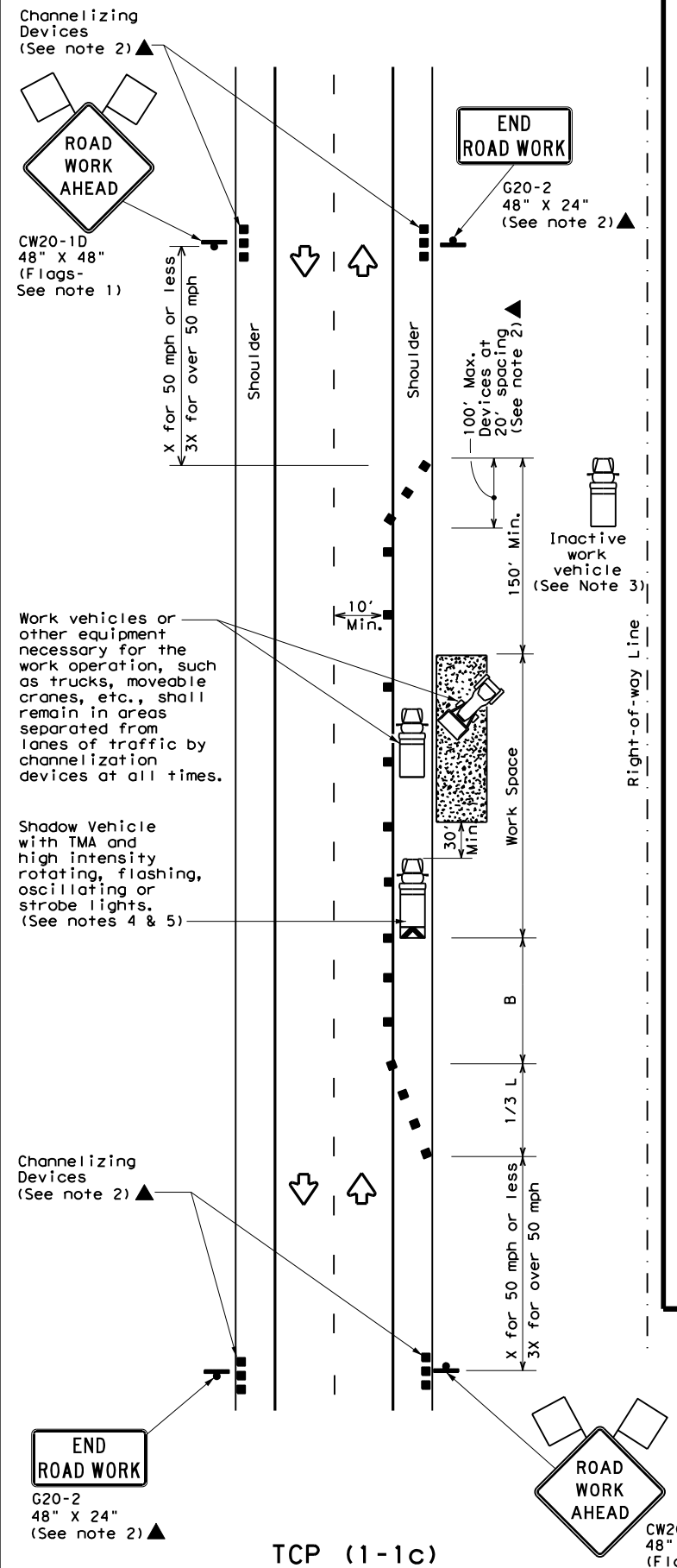
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TCP (1-1a)
WORK SPACE NEAR SHOULDER
 Conventional Roads



TCP (1-1b)
WORK SPACE ON SHOULDER
 Conventional Roads



TCP (1-1c)
WORK VEHICLES ON SHOULDER
 Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		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.
 - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
 - 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.
 - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
 - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

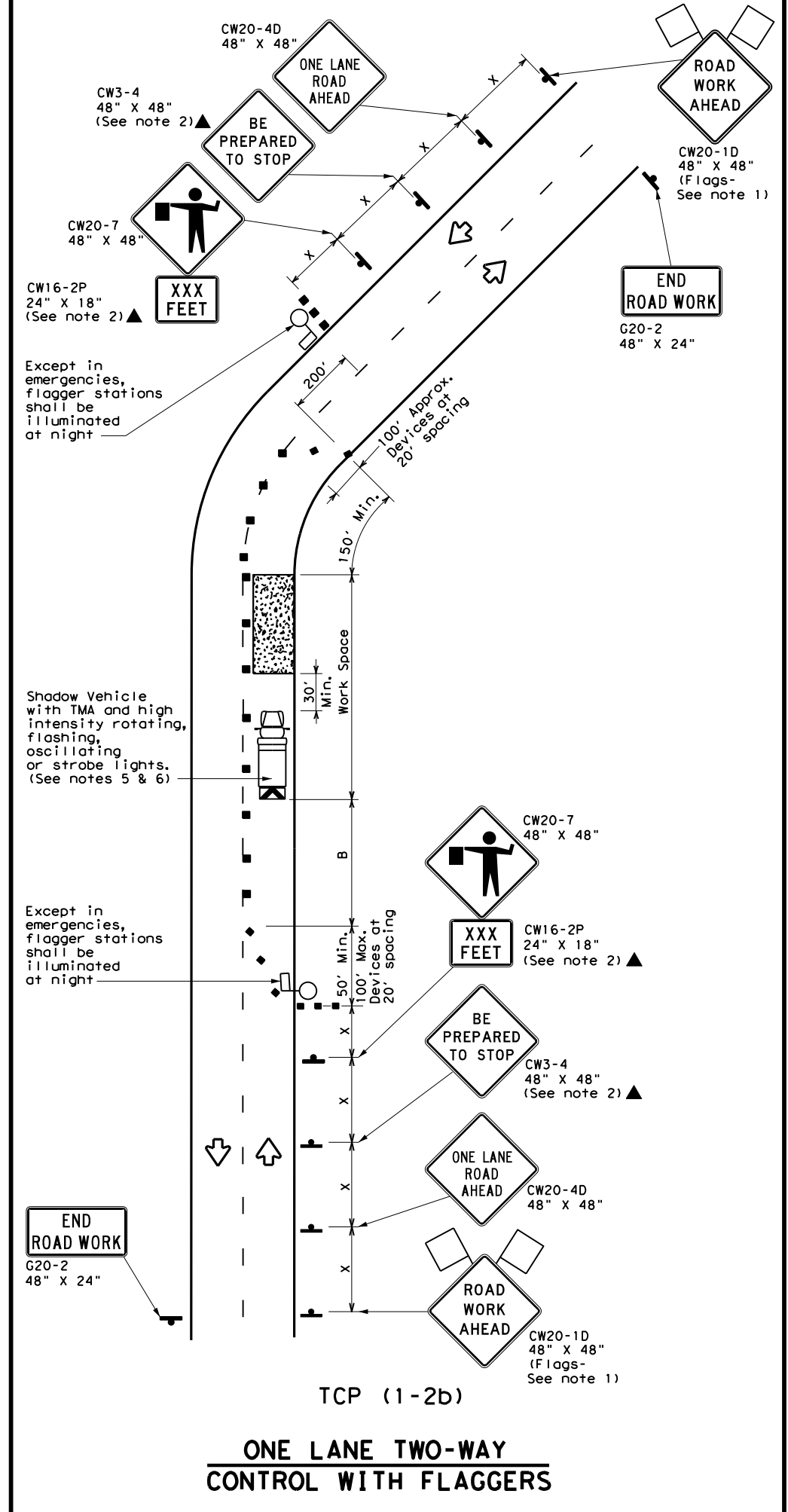
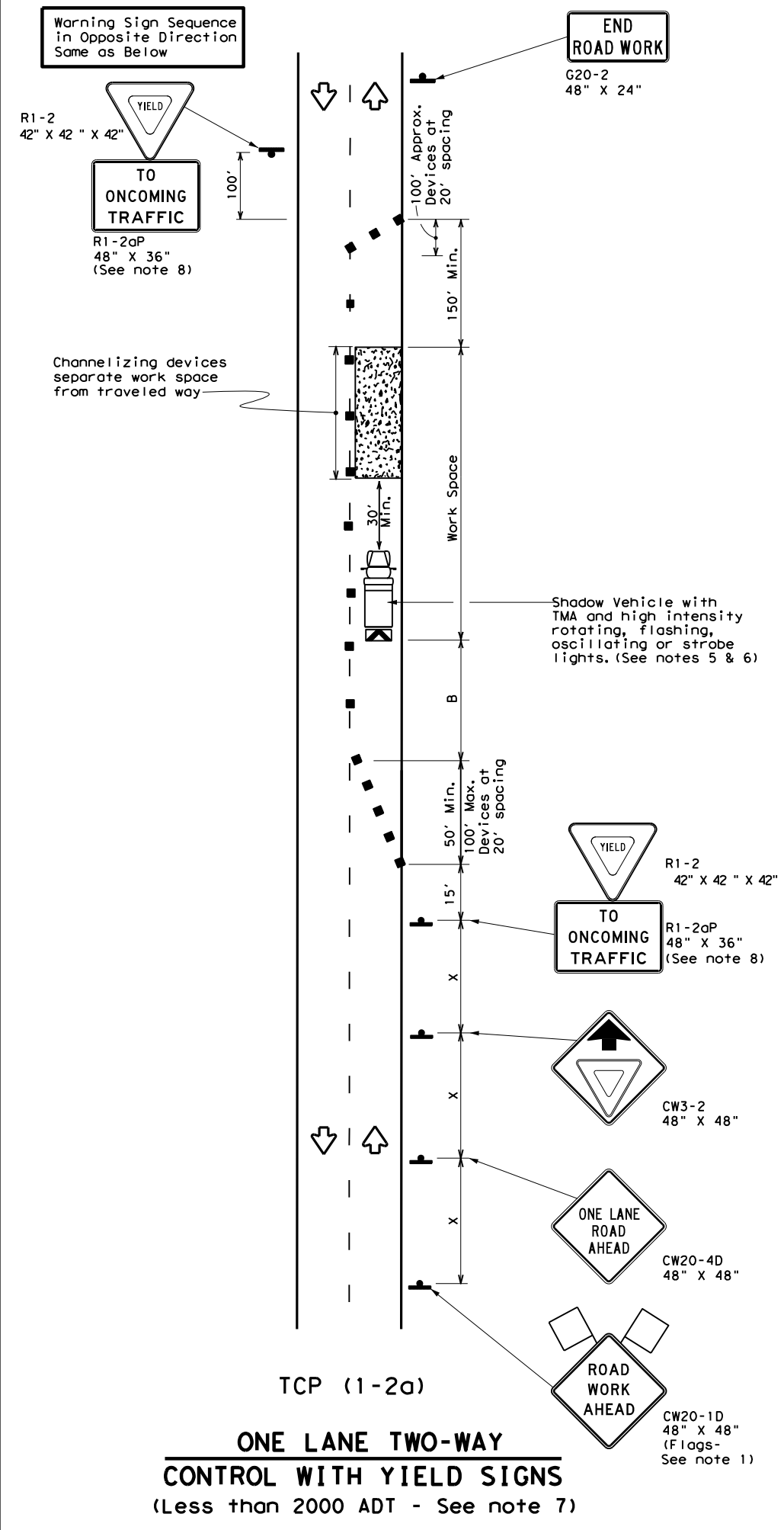


**TRAFFIC CONTROL PLAN
 CONVENTIONAL ROAD
 SHOULDER WORK**

TCP (1-1) - 18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916	00	281	VARIOUS
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	CRP	NUECES	39	
1-97 2-18				

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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"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70	700'	770'	840'	70'	140'	800'	475'	730'	
75	750'	825'	900'	75'	150'	900'	540'	820'	

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

TYPICAL USAGE

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

GENERAL NOTES

- 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 CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
- Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 150 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 (1-2a)

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

TCP (1-2b)

- Flaggers should use two-way radios or other methods of communication to control traffic.
- Length of work space should be based on the ability of flaggers to communicate.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
- Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
- Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

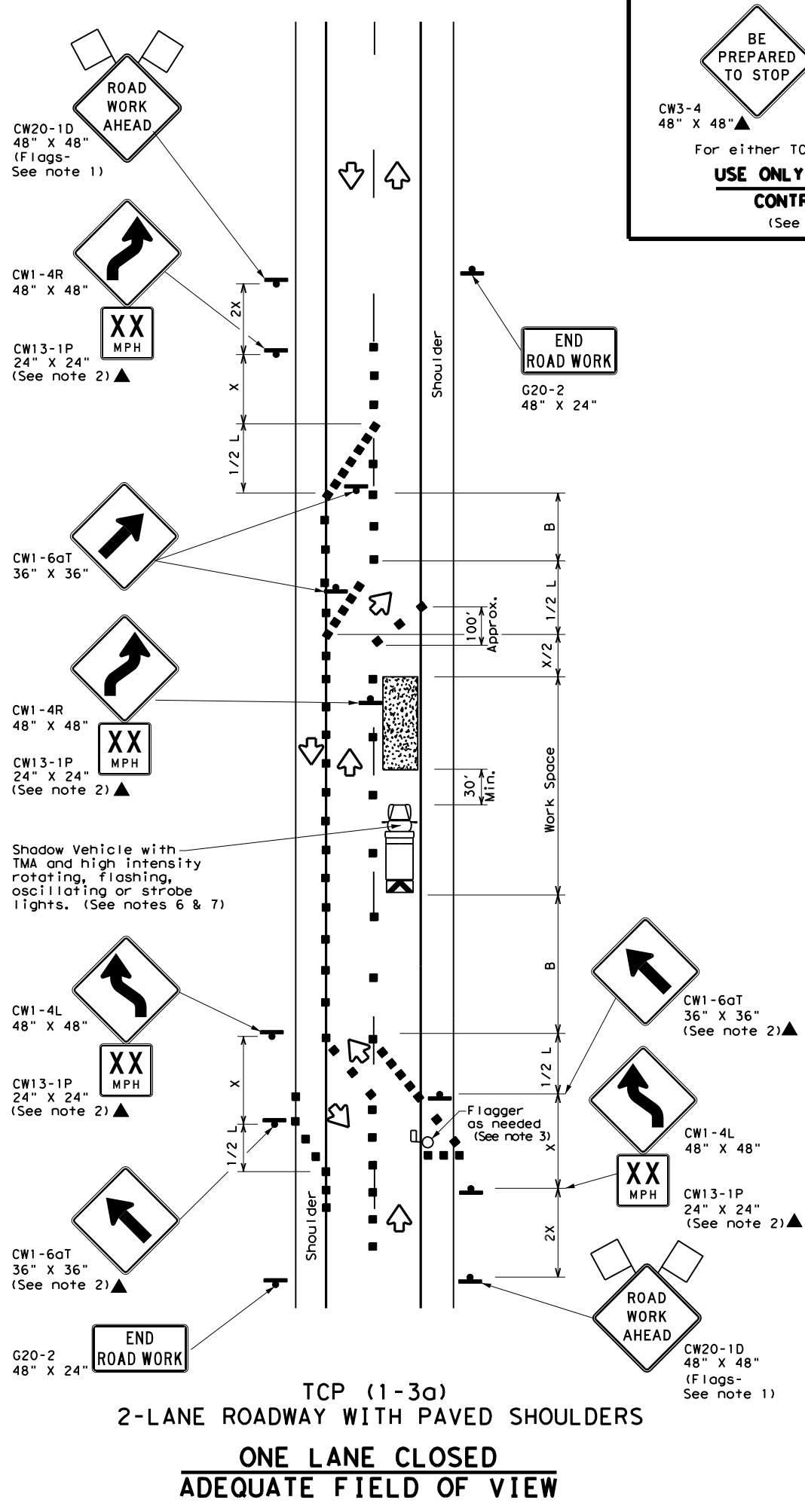
Texas Department of Transportation Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

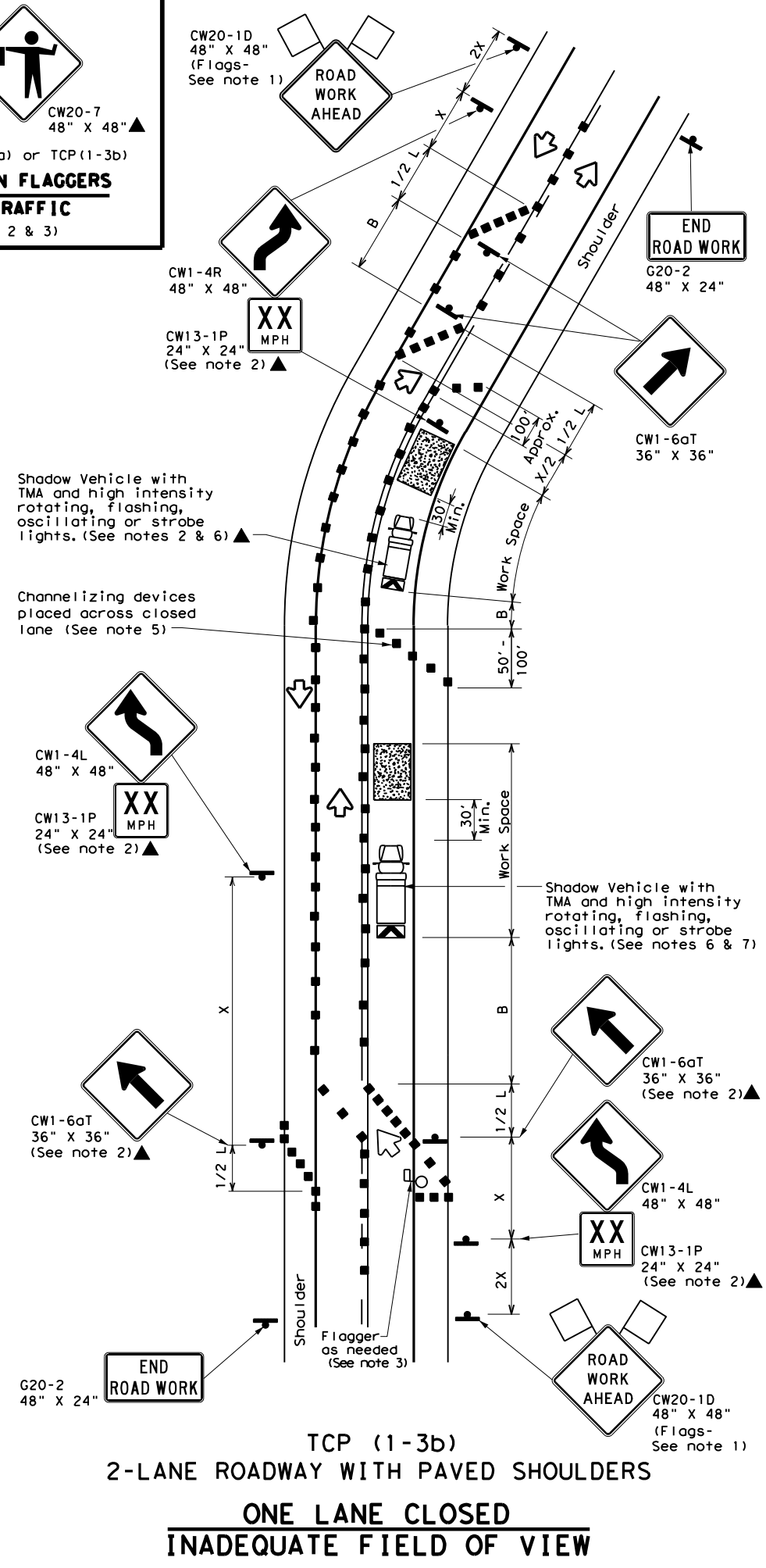
TCP (1-2) - 18

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916	00	281	VARIOUS
4-90 4-98	DIST	COUNTY	SHEET NO.	
2-94 2-12	CRP	NUECES	40	
1-97 2-18				

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BE PREPARED TO STOP
CW3-4 48" X 48"▲
CW20-7 48" X 48"▲
For either TCP(1-3a) or TCP(1-3b)
USE ONLY WHEN FLAGGERS CONTROL TRAFFIC
(See Notes 2 & 3)



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 / 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.
 - Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
 - DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
 - When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
 - 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.
 - 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 speed 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 area of conflicting markings not the entire work zone.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON
TWO LANE ROADS
TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	CRP	NUECES	41	
1-97 2-18				

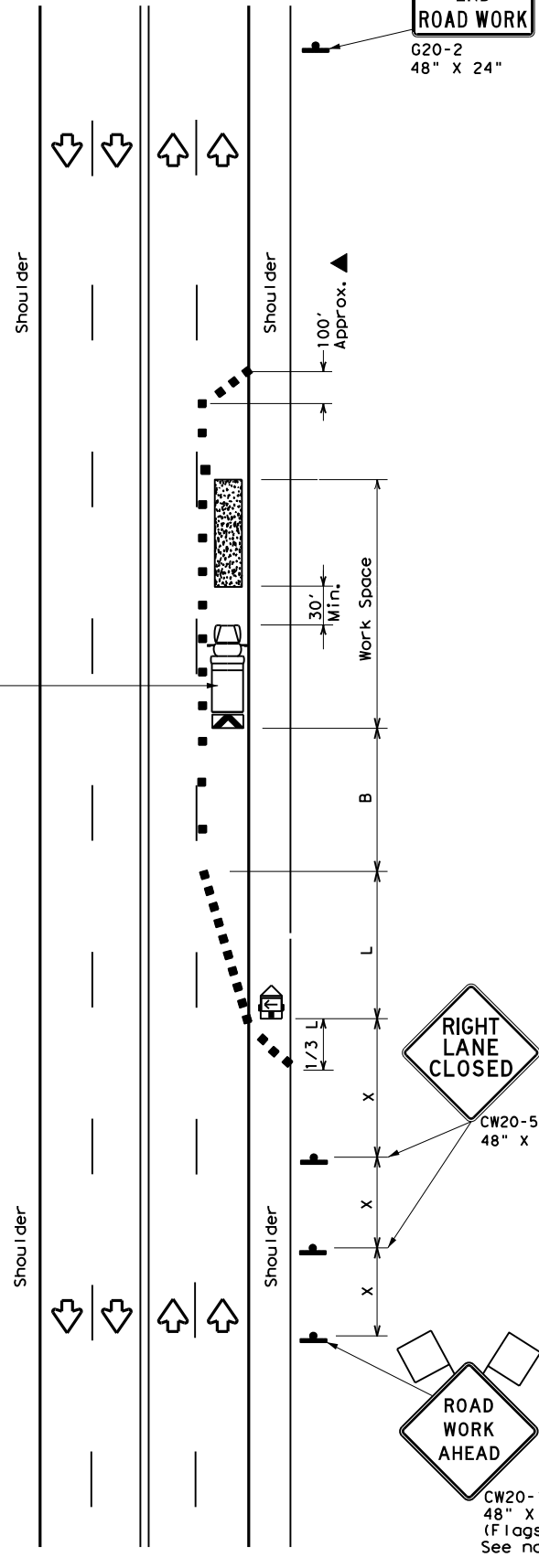
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END ROAD WORK
G20-2
48" X 24"

ROAD WORK AHEAD
CW20-1D
48" X 48"
(Flags-
See note 1)

Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. (See notes 4 & 5)



TCP (1-4a)
ONE LANE CLOSED

END ROAD WORK
G20-2
48" X 24"

ROAD WORK AHEAD
CW20-1D
48" X 48"
(Flags-
See note 1)

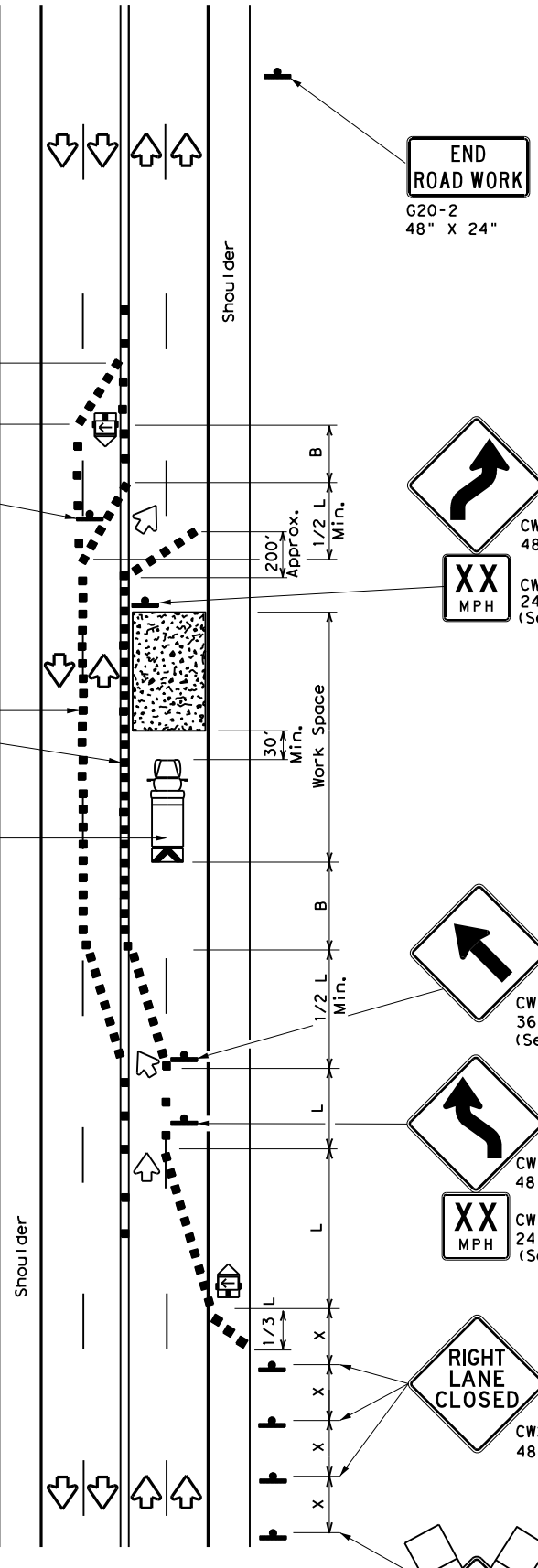
LEFT LANE CLOSED
CW20-5TL
48" X 48"

RIGHT TURN AHEAD
CW1-6aT
36" X 36"

Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. (See notes 4 & 5)

RIGHT LANE CLOSED
CW20-5TR
48" X 48"

END ROAD WORK
G20-2
48" X 24"



TCP (1-4b)
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	$L = WS$	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75	$L = WS$	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.

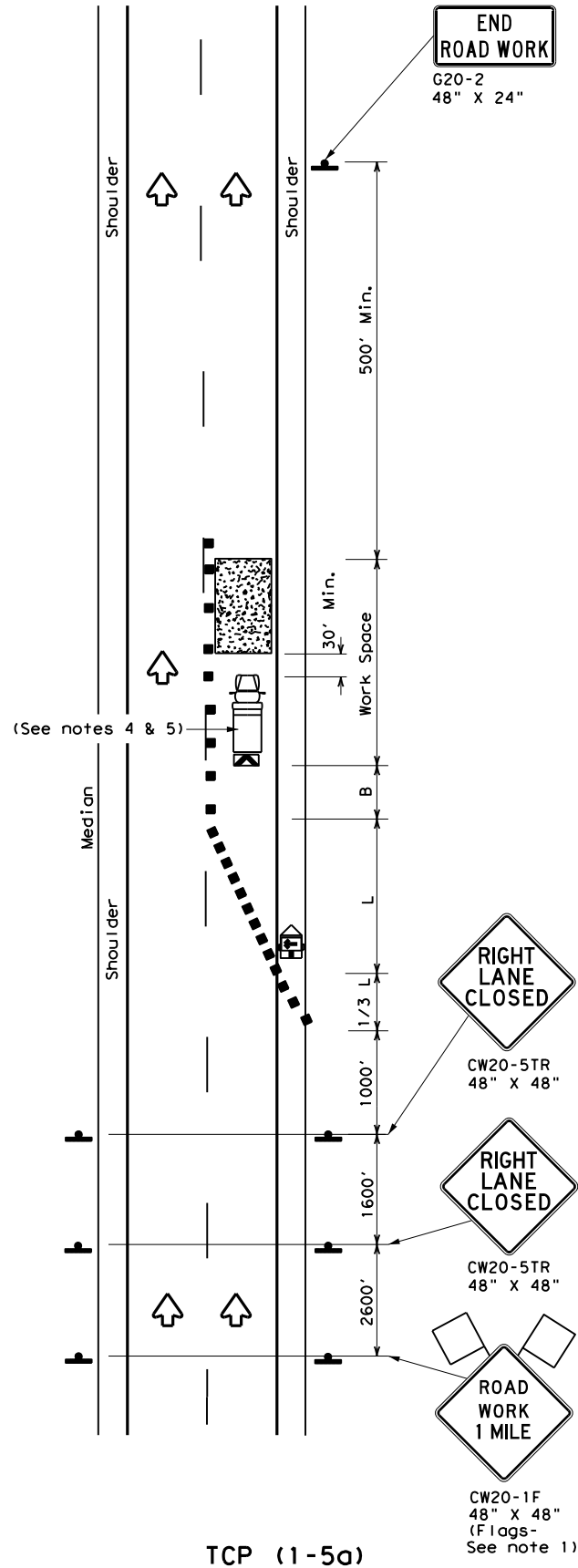
TCP (1-4a)
6. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)
7. 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.

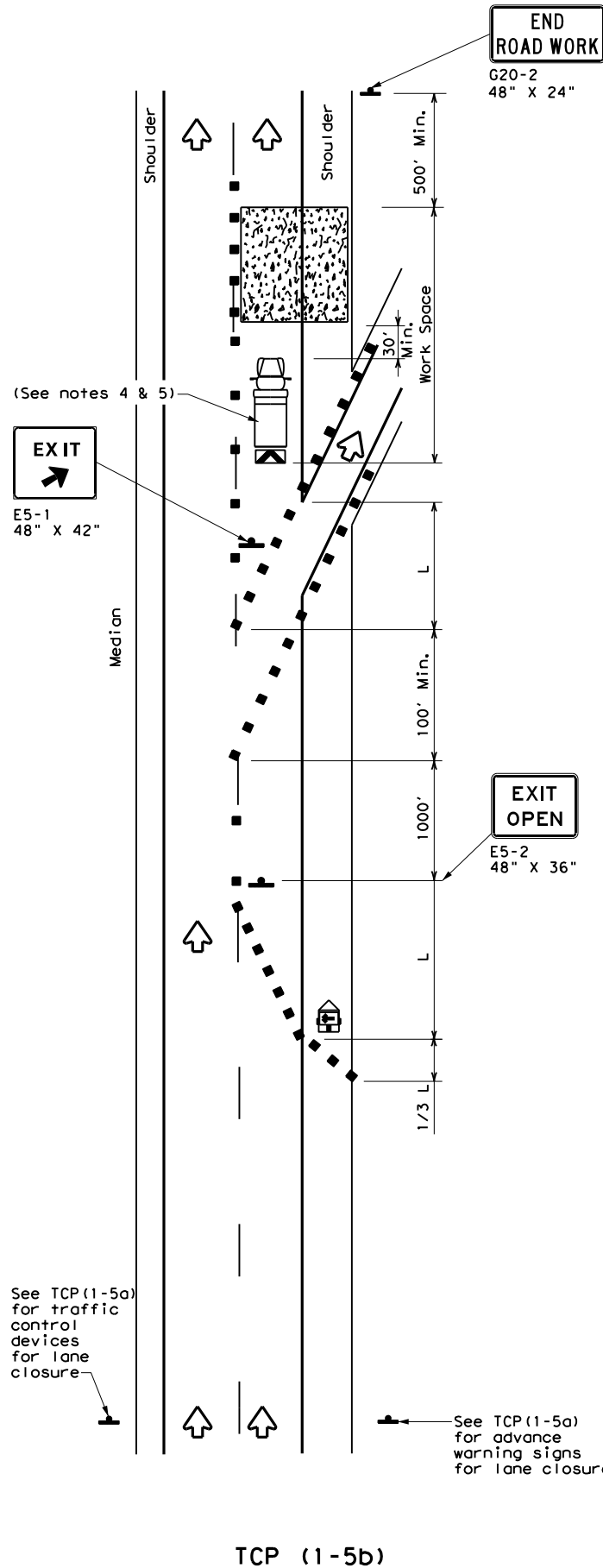
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TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS			
TCP (1-4) - 18			
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© TxDOT	December 1985	CONT	SECT
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8-95	2-12	DIST	COUNTY
1-97	2-18	CRP	NUECES
			SHEET NO.
			42

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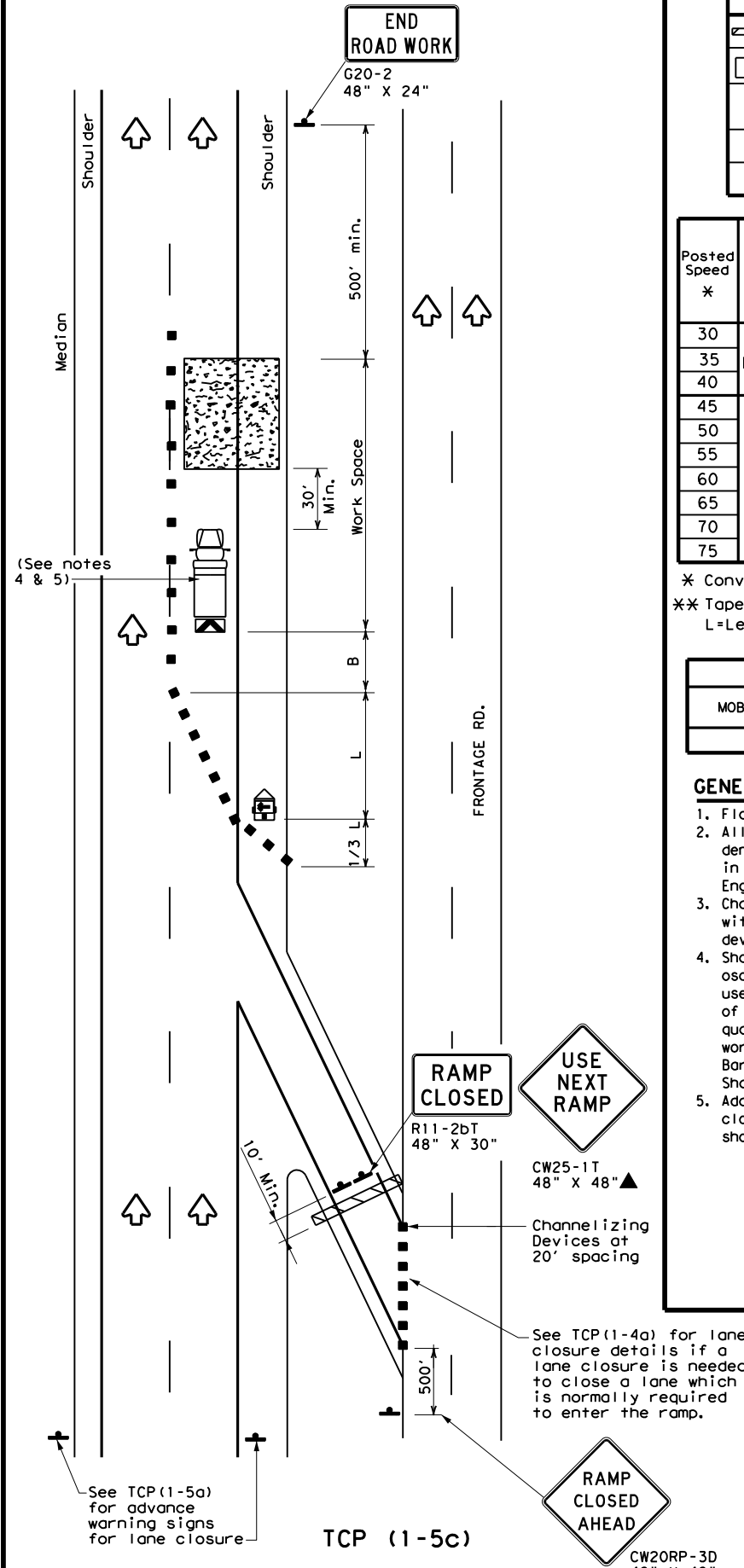
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ONE LANE CLOSURE



LANE CLOSURE NEAR EXIT RAMP



LANE CLOSURE NEAR ENTRANCE RAMP

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

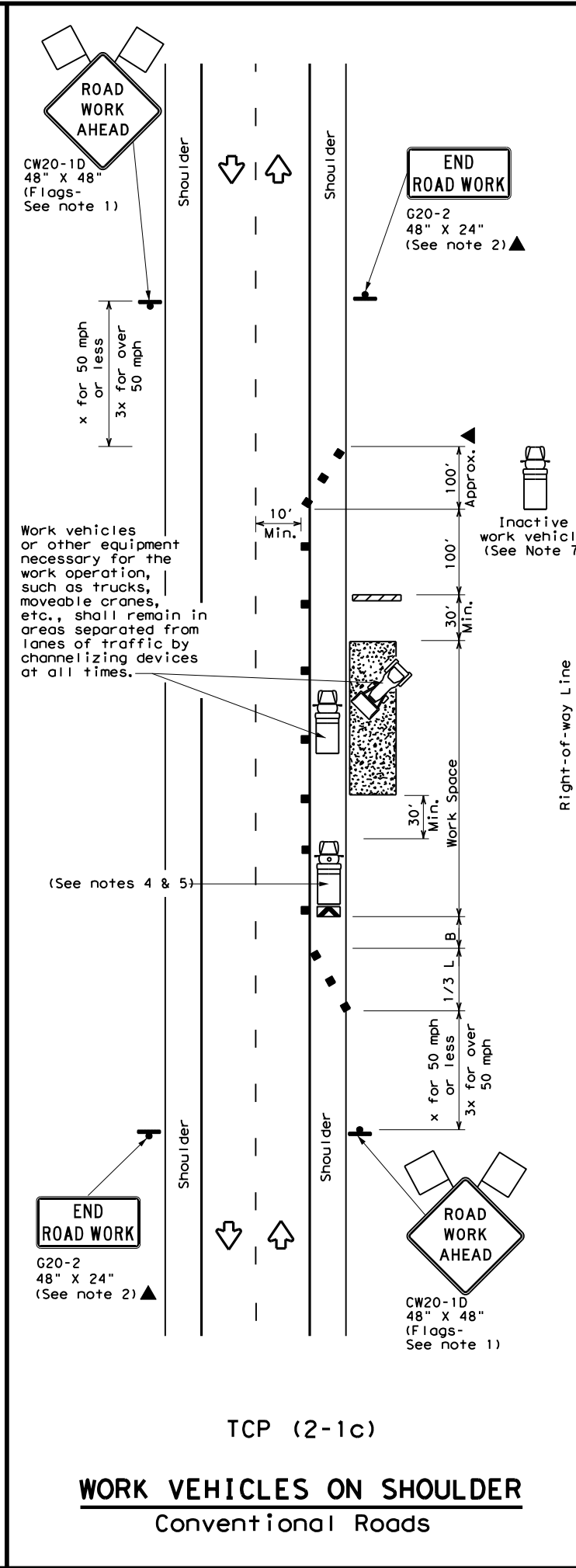
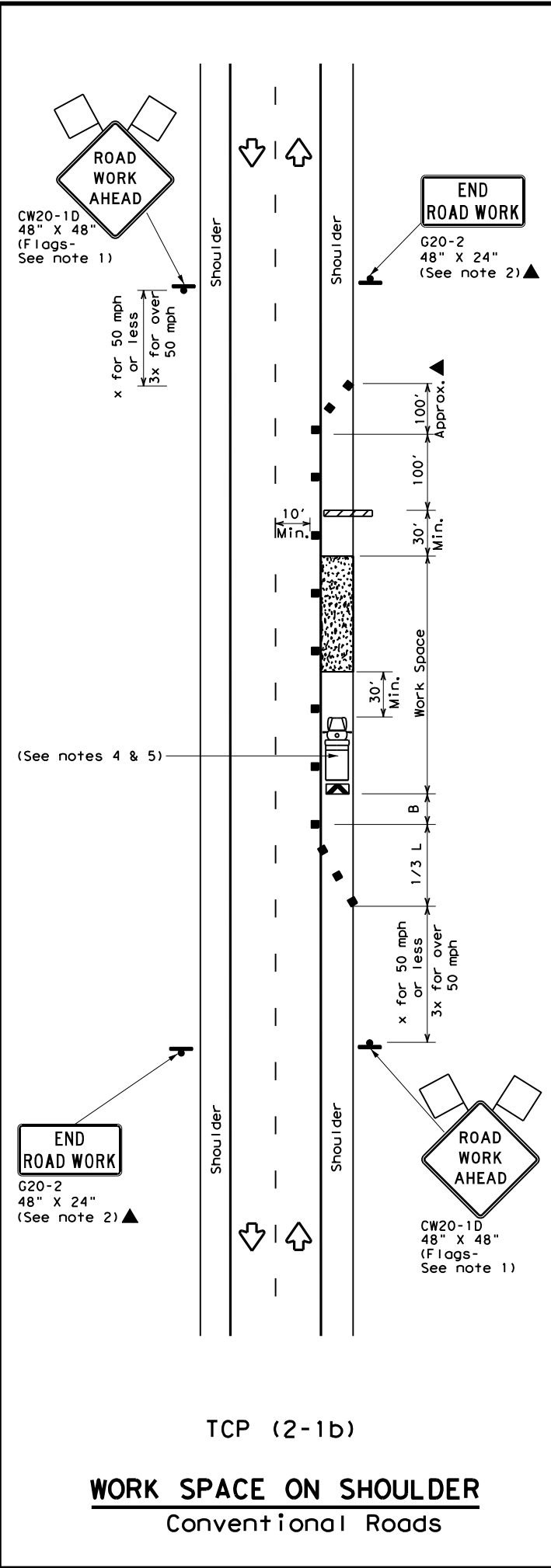
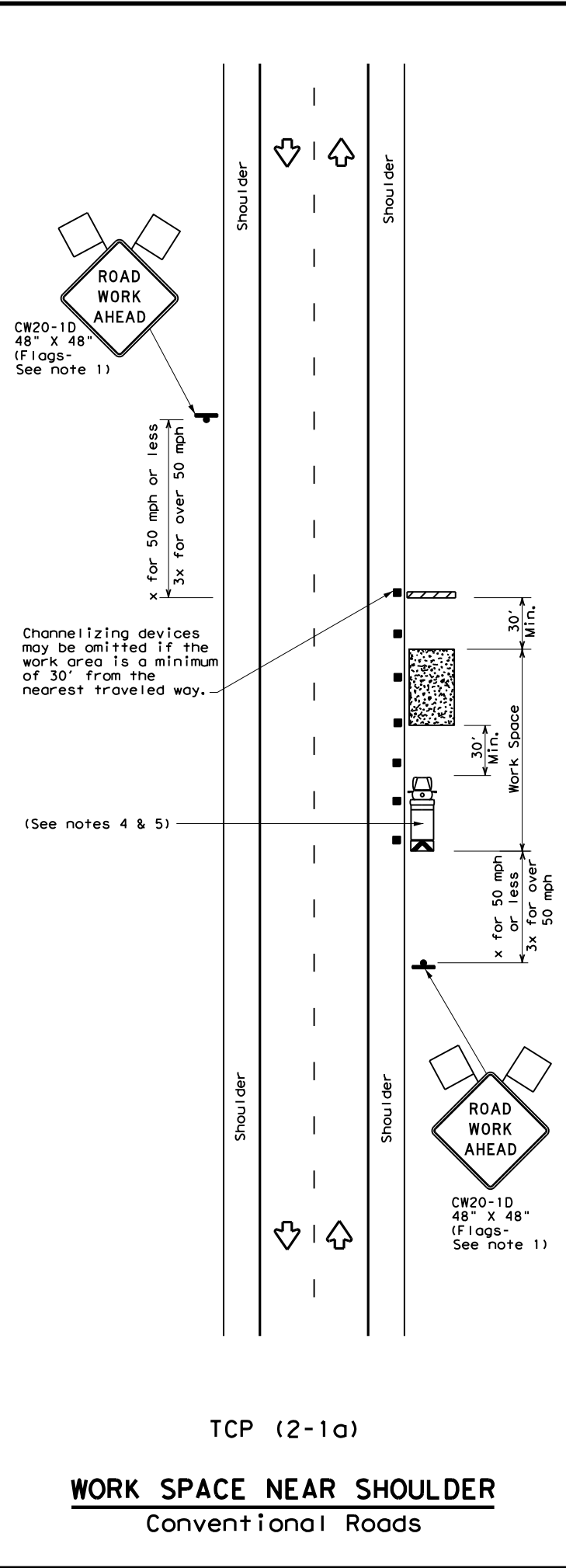
**TRAFFIC CONTROL PLAN
 LANE CLOSURES FOR
 DIVIDED HIGHWAYS**

TCP(1-5)-18

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©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	CRP	NUECES		43

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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 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.

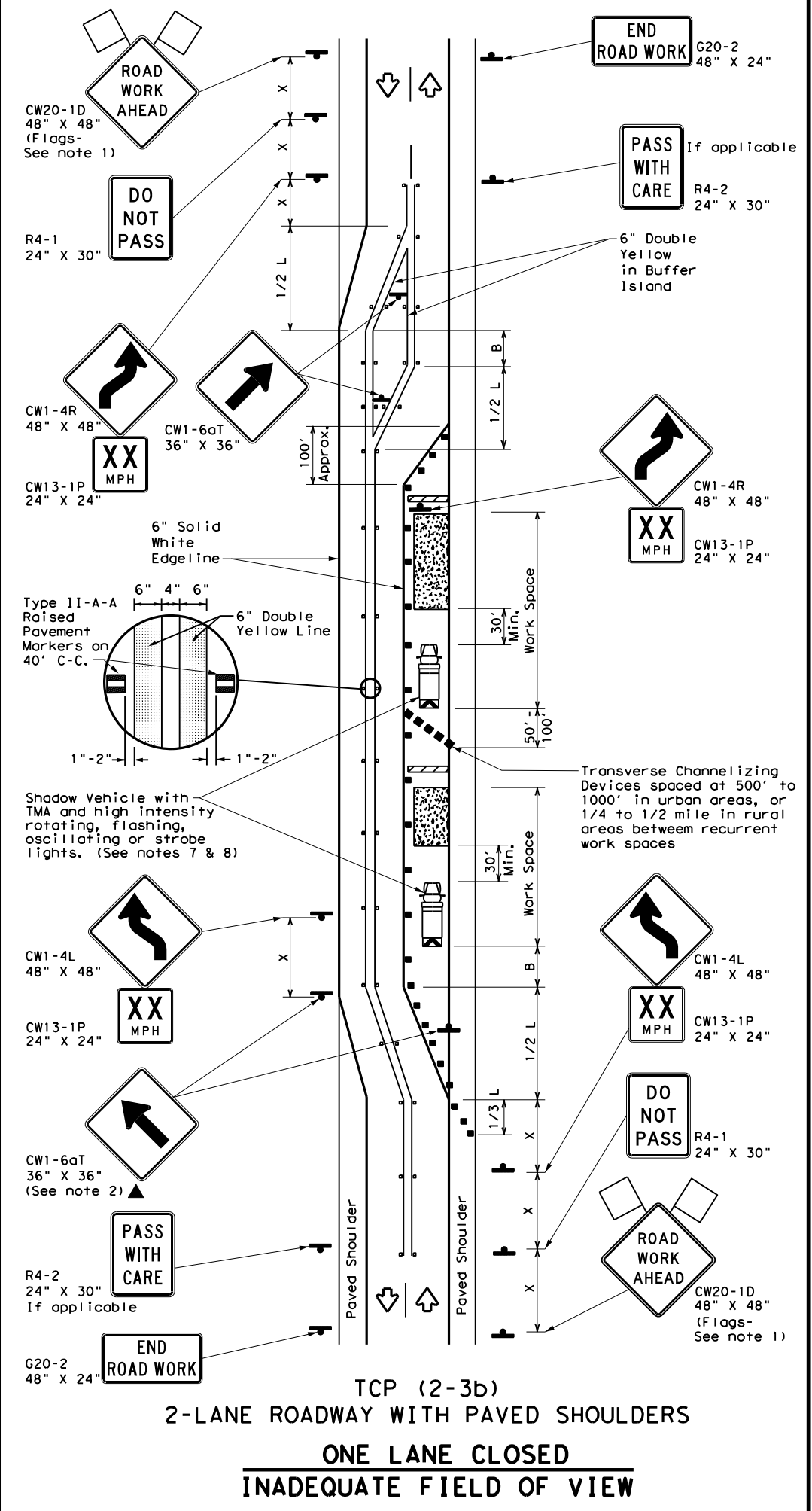
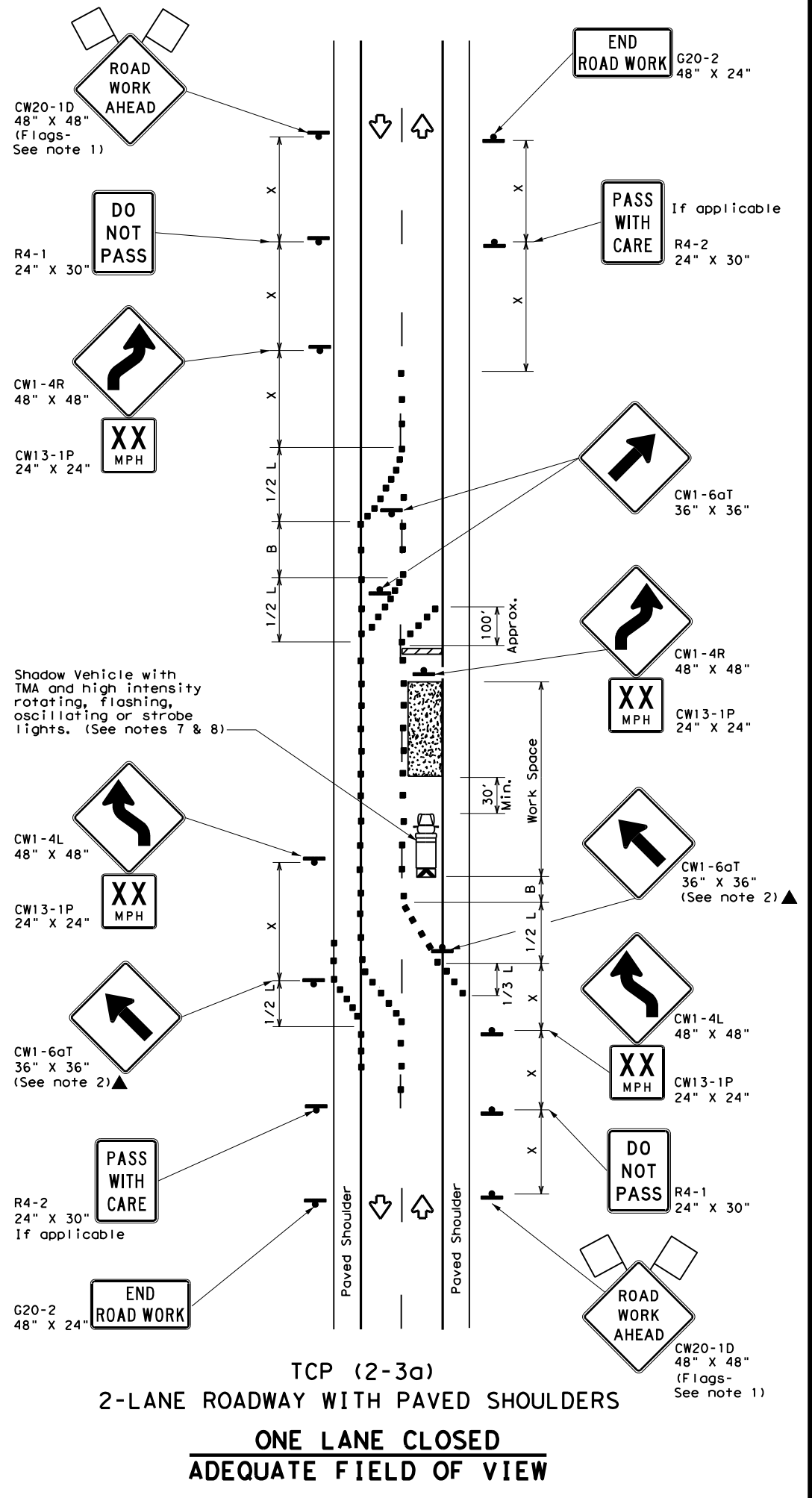
Texas Department of Transportation
 Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (2-1) - 18

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	CRP	NUECES	44	
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LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	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'	70'	120'	90'
35		205'	225'	245'	35'	80'	160'	120'
40		265'	295'	320'	40'	90'	240'	155'
45	L = WS	450'	495'	540'	45'	100'	320'	195'
50		500'	550'	600'	50'	110'	400'	240'
55		550'	605'	660'	55'	120'	500'	295'
60	L = WS	600'	660'	720'	60'	130'	600'	350'
65		650'	715'	780'	65'	140'	700'	410'
70		700'	770'	840'	70'	150'	800'	475'
75	L = WS	750'	825'	900'	75'	160'	900'	540'
80		800'	880'	960'	80'	170'	1000'	610'

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

TYPICAL USAGE

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

TCP (2-3b) ONLY

- 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.
 - When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
 - Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
 - The R4-1 "DO NOT PASS," R4-2 "PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
 - Conflicting pavement marking shall be removed for long term projects.
 - 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.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-3a)**
- Conflicting pavement markings shall be removed for long-term projects. 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 device spacing is intended for the area of the conflicting markings, not the entire work zone.

Texas Department of Transportation
 Traffic Safety Division Standard

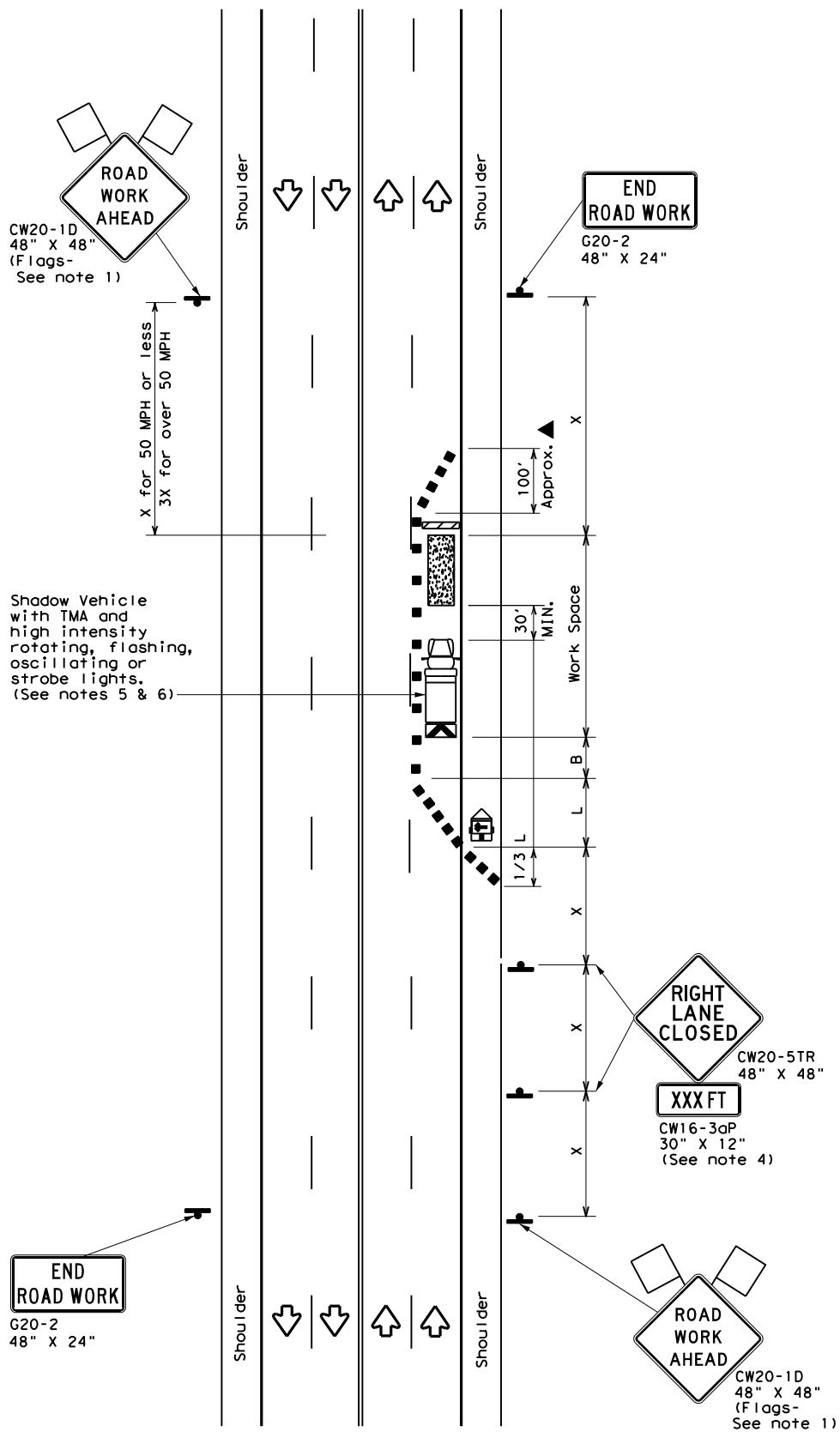
TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON
TWO-LANE ROADS

TCP (2-3) - 23

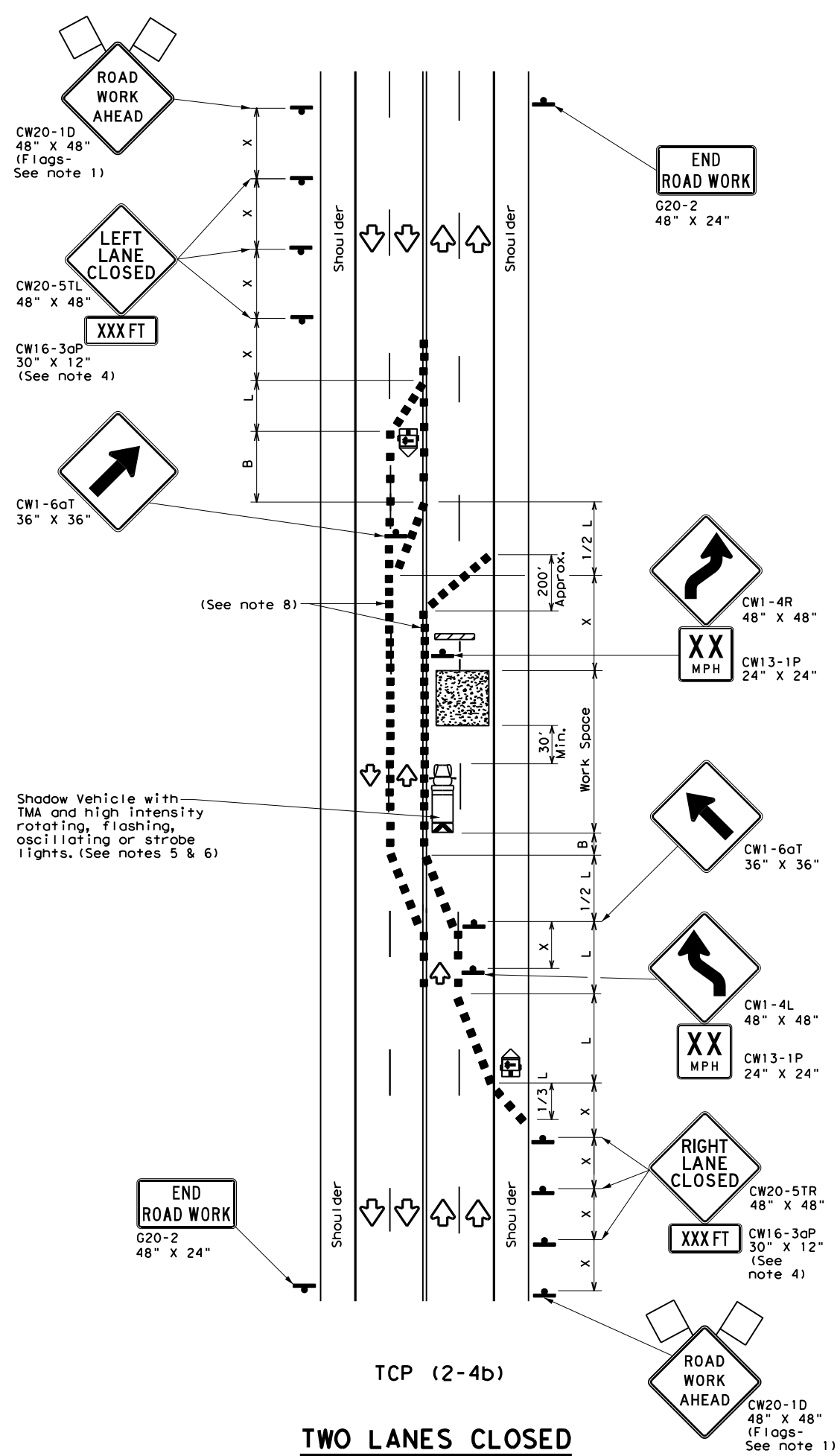
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12-85	4-98	2-18			
8-95	3-03	4-23			
1-97	2-12				
CRP		COUNTY	SHEET NO.		
		NUECES			45

163

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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 = 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

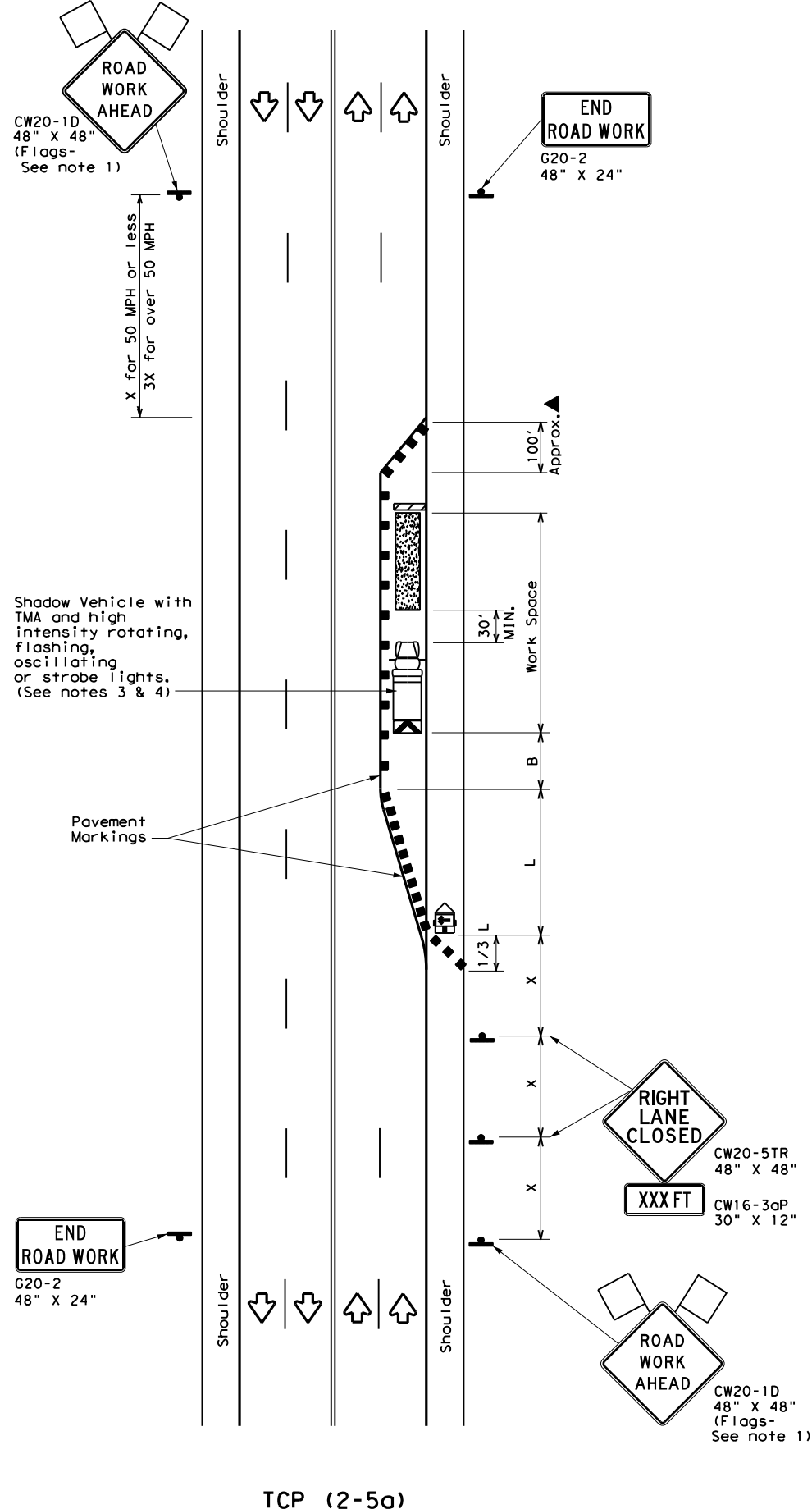
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP (2-4) - 18

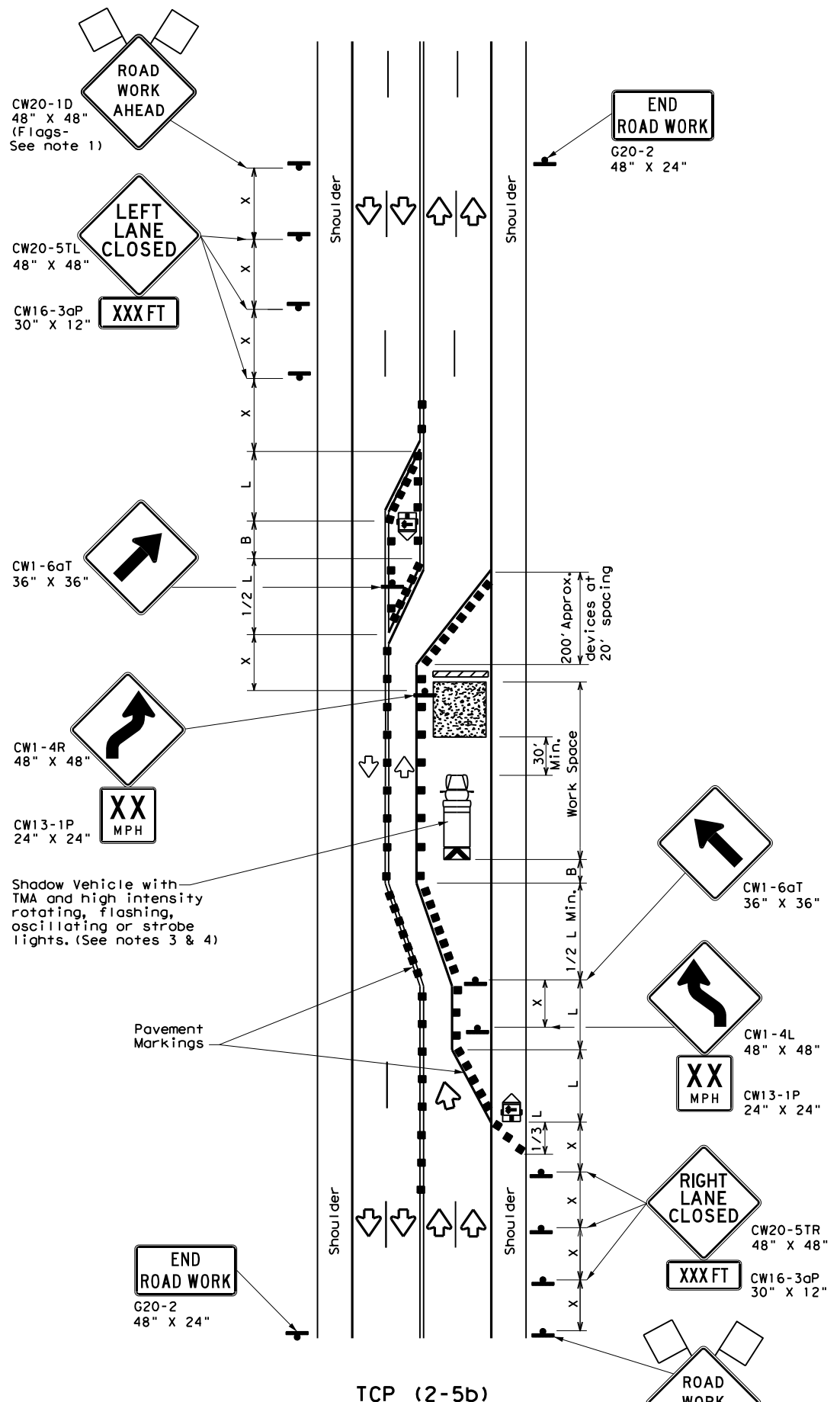
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1-97 2-12	CRP	NUECES	46	
4-98 2-18				

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**TCP (2-5a)
ONE LANE CLOSED**



**TCP (2-5b)
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.
 - 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.

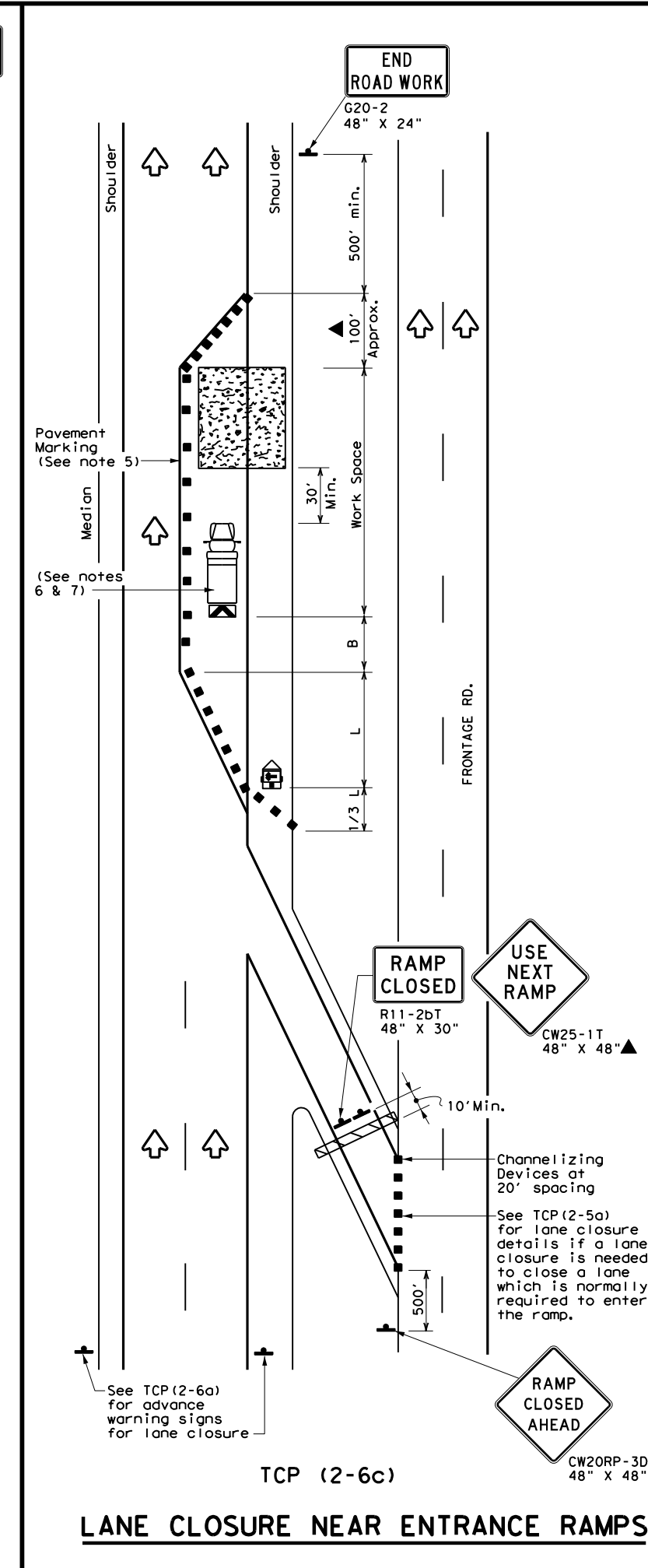
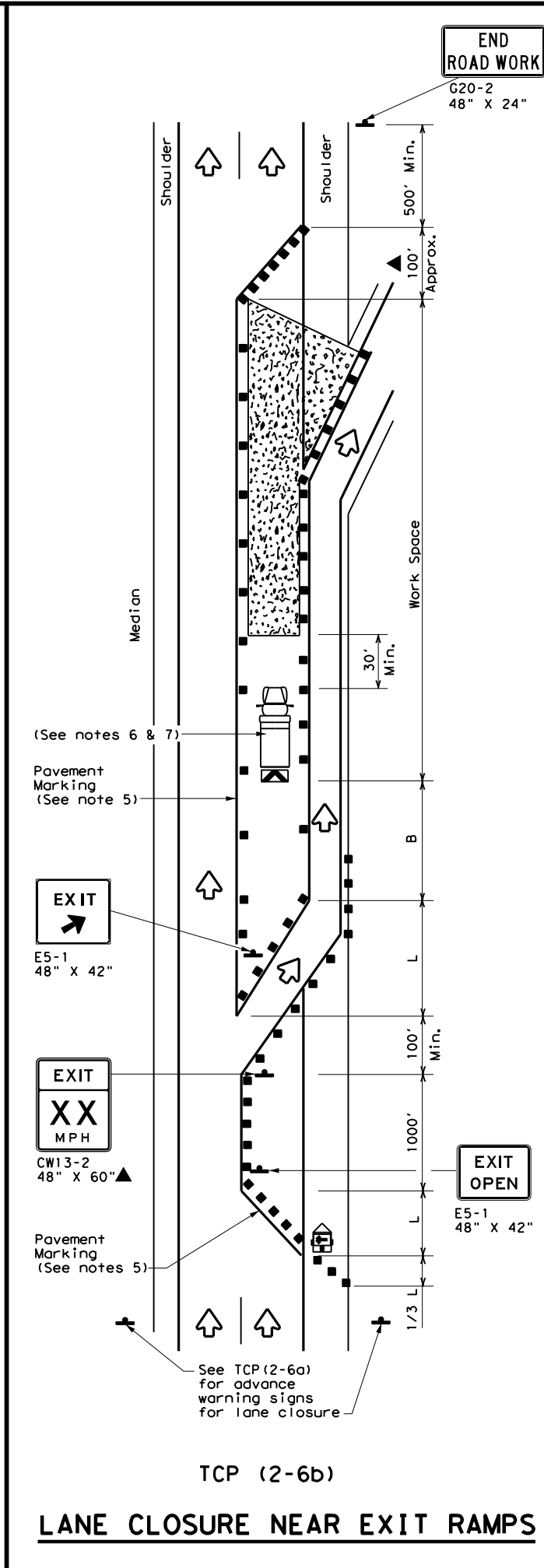
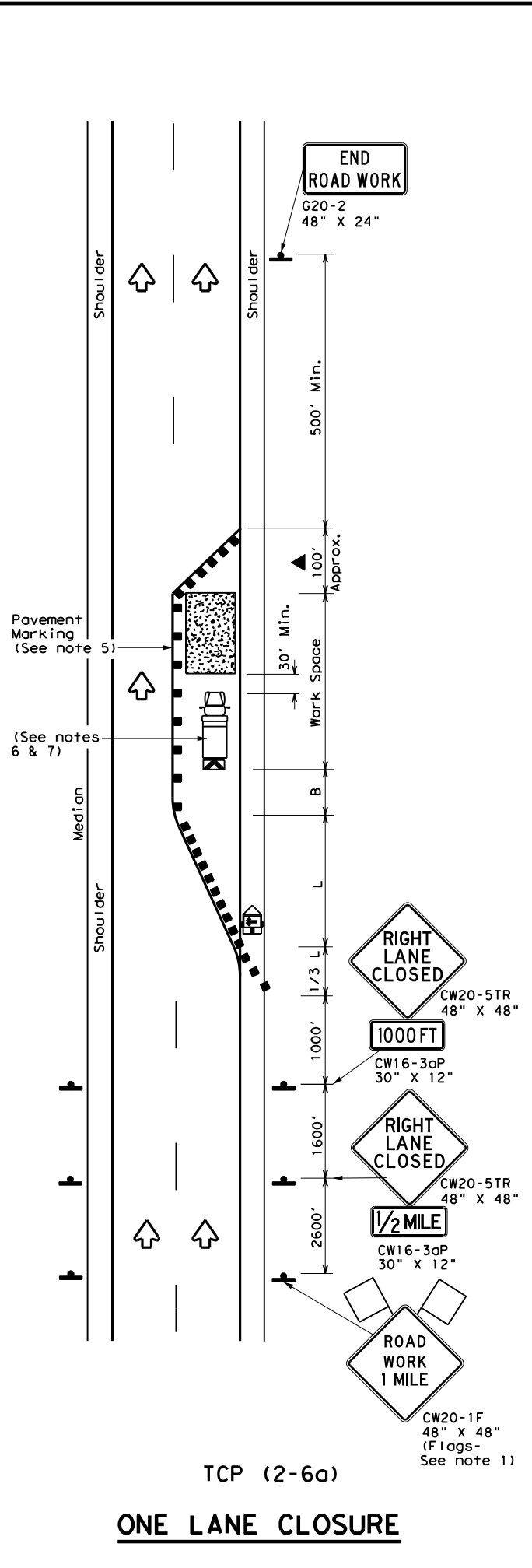
Texas Department of Transportation
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.
TCP (2-5) - 18**

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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	CRP	NUECES		47

165

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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 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		500'	550'	600'	50'	100'	400'	240'
55		605'	605'	660'	55'	110'	500'	295'
60		660'	660'	720'	60'	120'	600'	350'
65		715'	715'	780'	65'	130'	700'	410'
70		770'	770'	840'	70'	140'	800'	475'
75		825'	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.



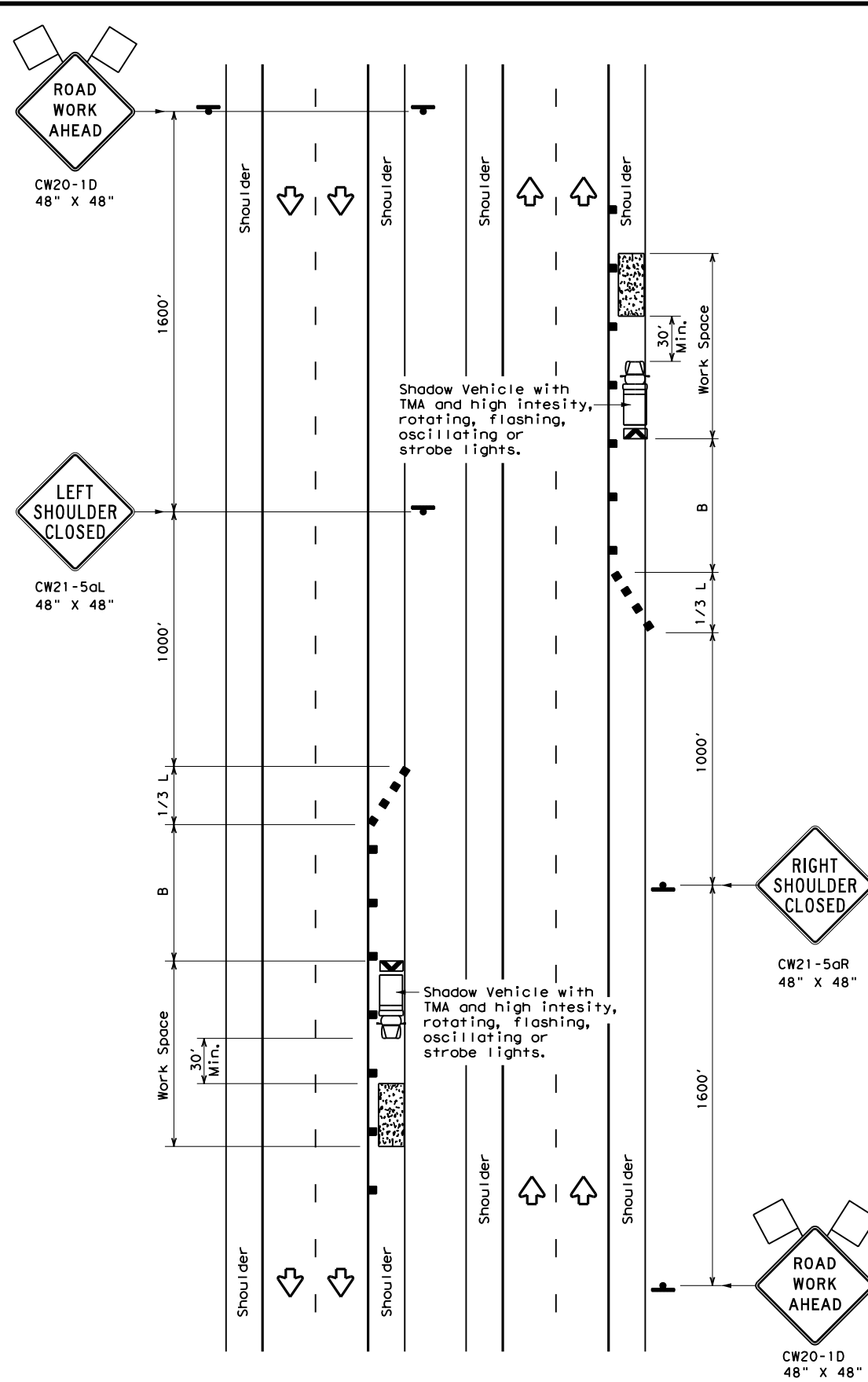
**TRAFFIC CONTROL PLAN
 LANE CLOSURES ON
 DIVIDED HIGHWAYS**

TCP (2-6) - 18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT:	SECT:	JOB:	HIGHWAY:
REVISIONS:	0916	00	281	VARIOUS
2-94 4-98 8-95 2-12 1-97 2-18	DIST:	COUNTY:	SHEET NO.	
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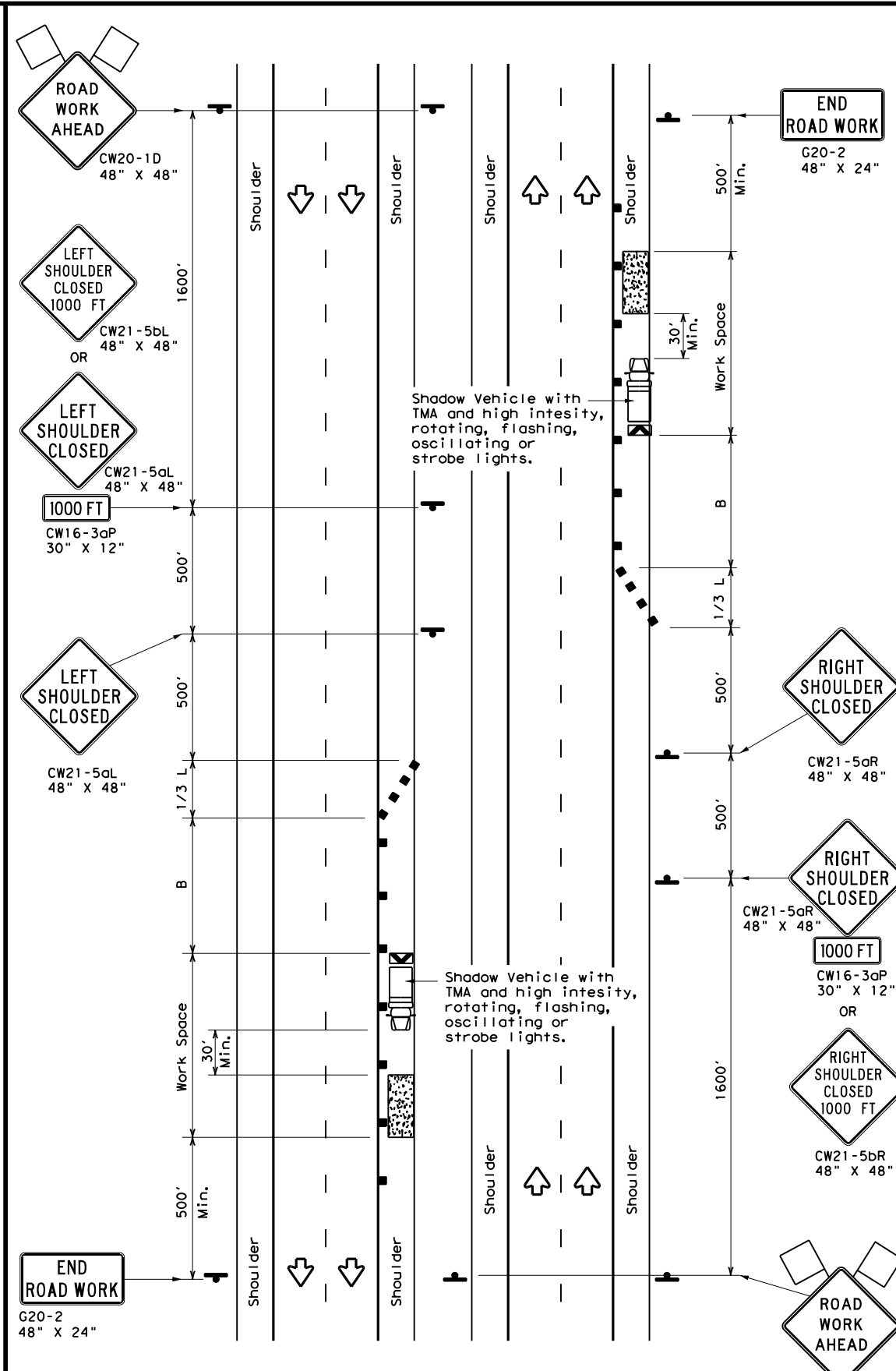
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TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		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'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

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

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

GENERAL NOTES

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

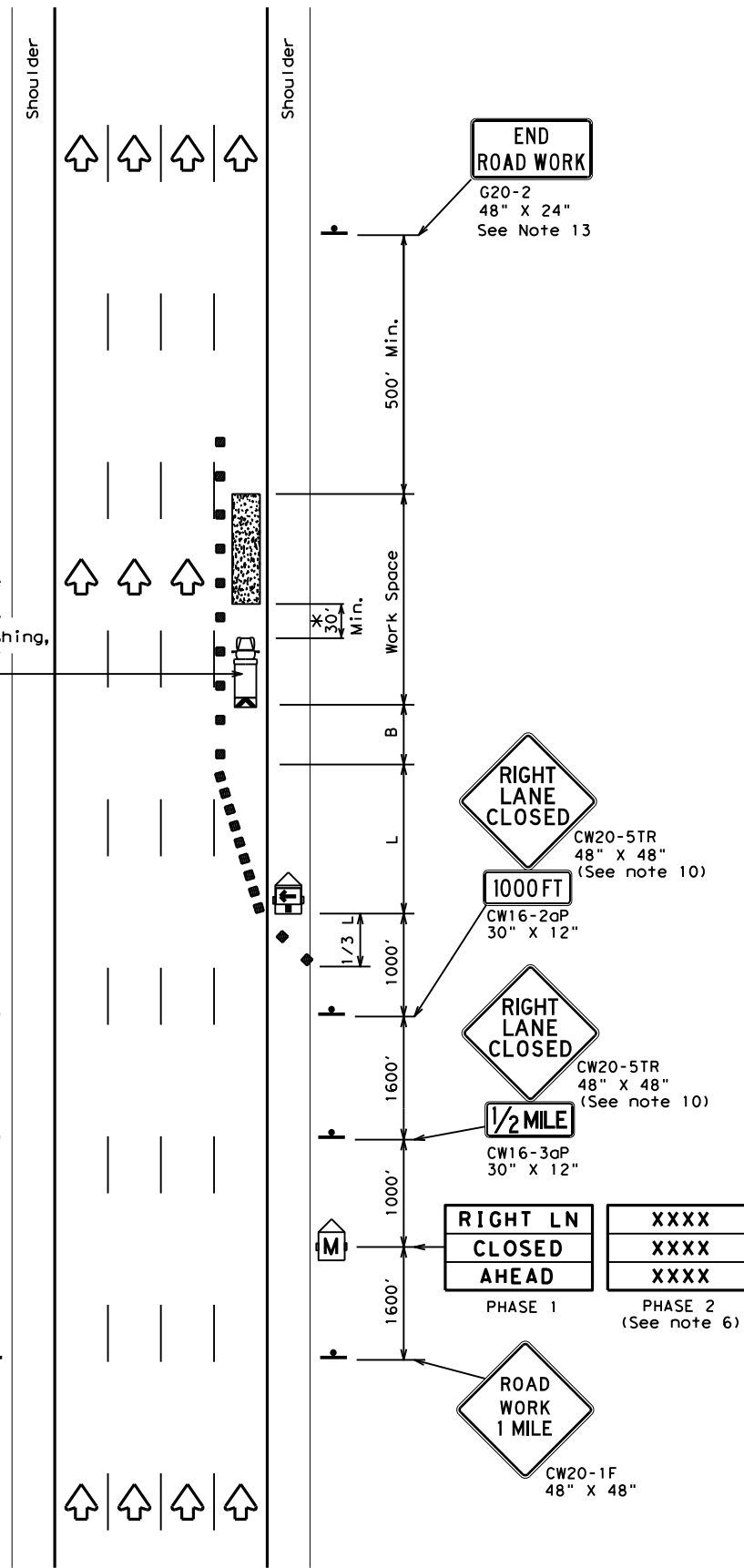


**TRAFFIC CONTROL PLAN
 SHOULDER WORK FOR
 FREEWAYS / EXPRESSWAYS**

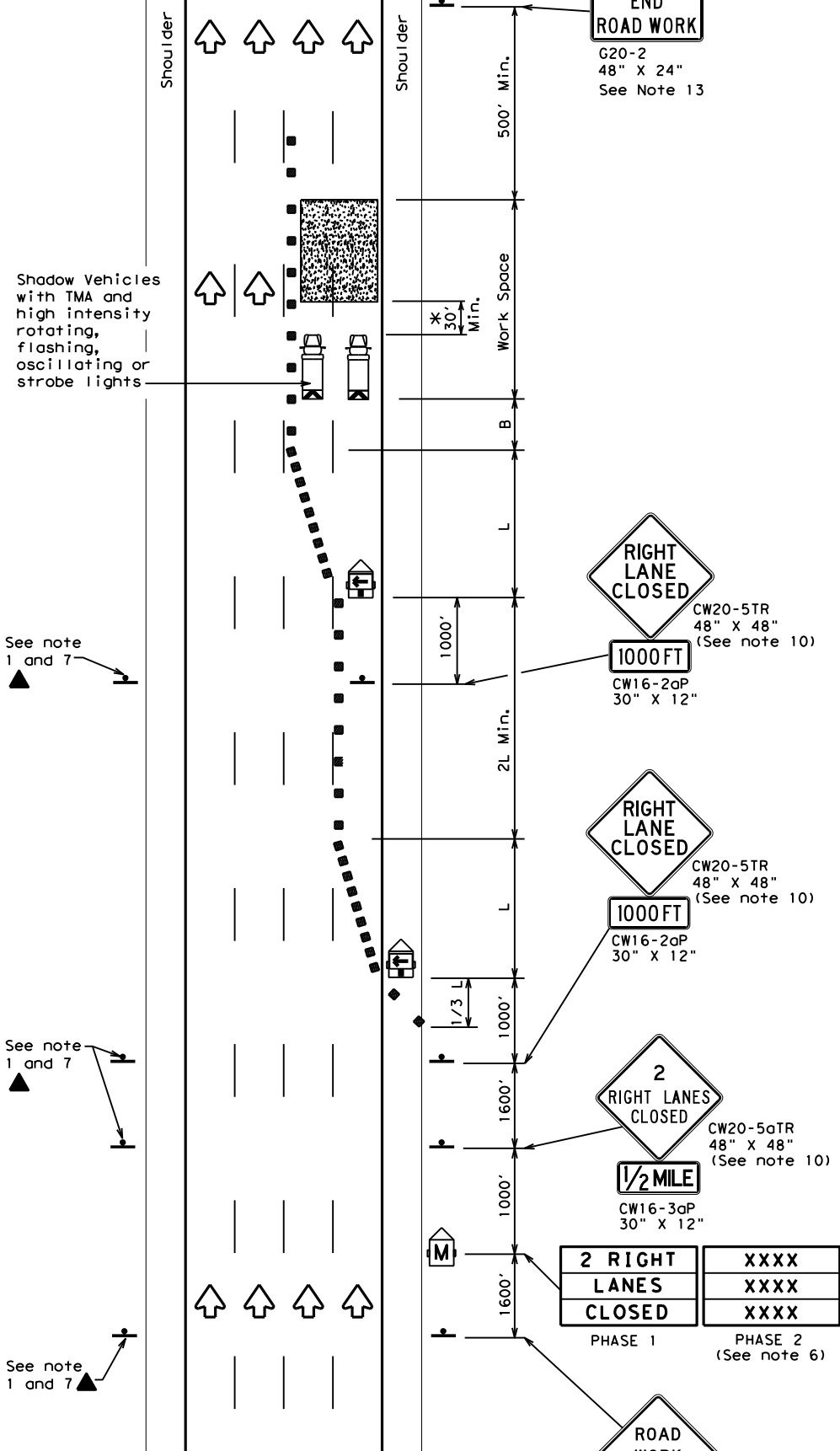
TCP (5-1) - 18

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
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2-18	DIST	COUNTY	SHEET NO.	
	CRP	NUECES	49	

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TCP (6-1a)
TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)
TYPICAL FREEWAY TWO LANE CLOSURE

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

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

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

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

GENERAL NOTES

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

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

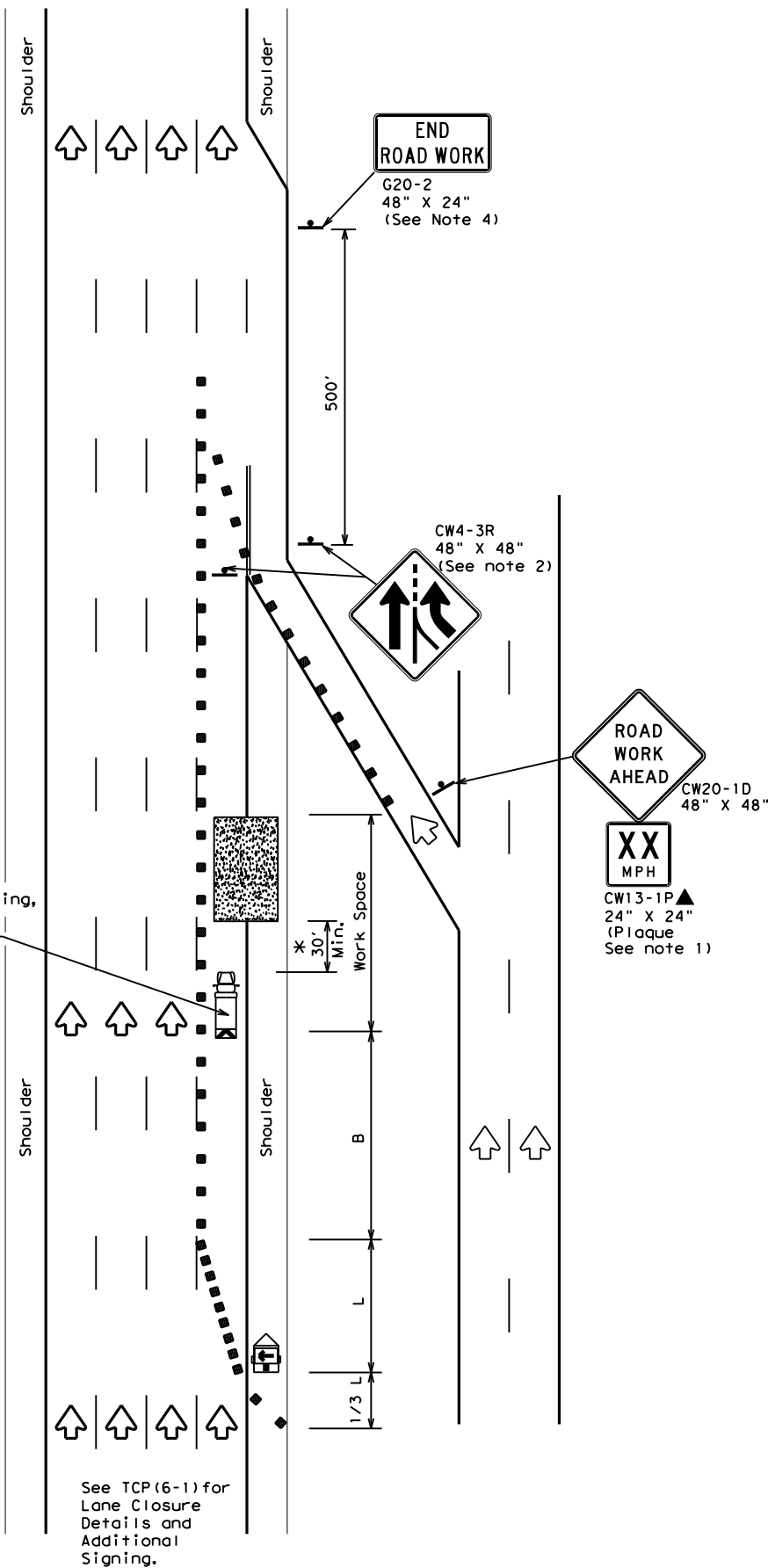


**TRAFFIC CONTROL PLAN
 FREEWAY LANE CLOSURES**

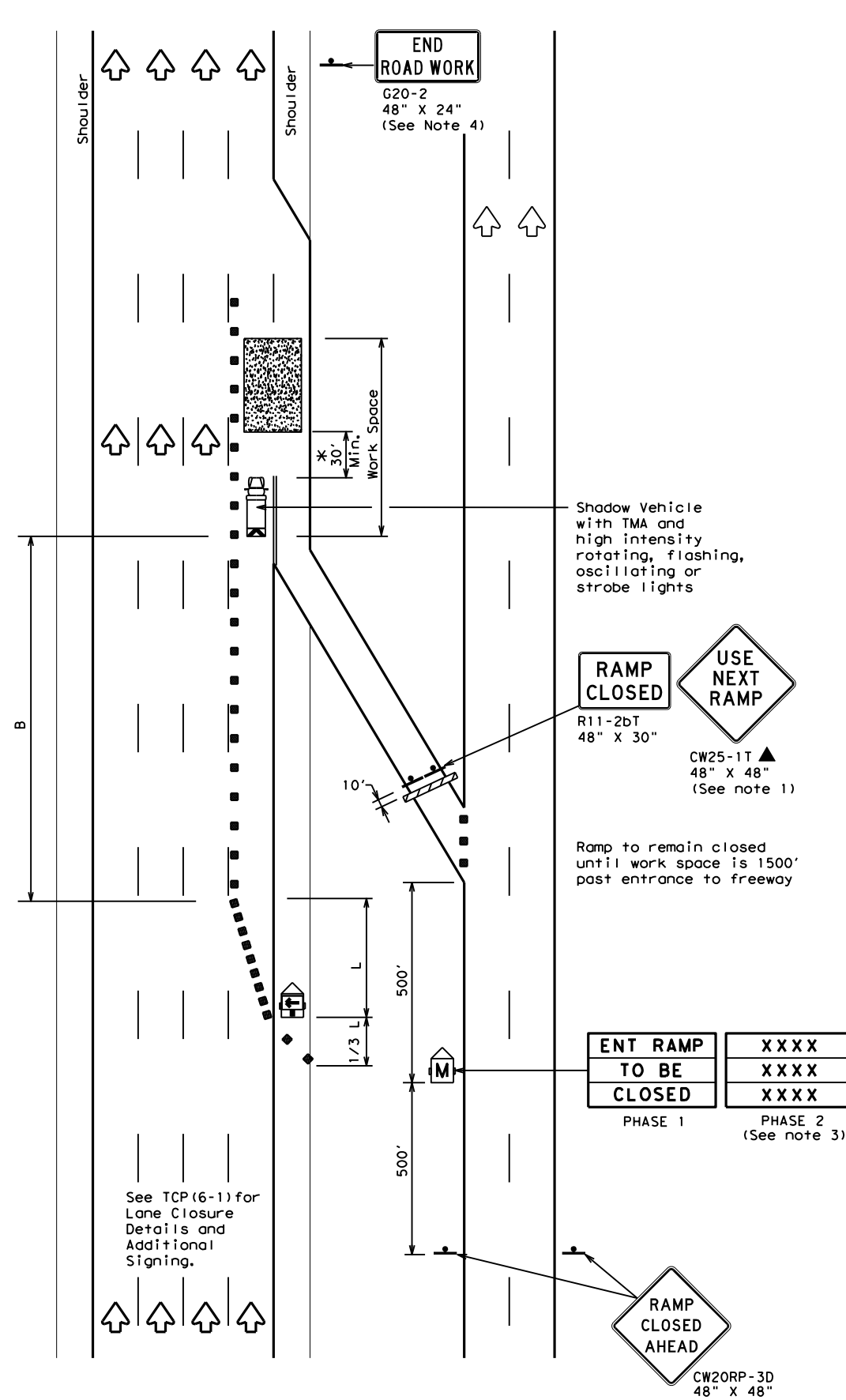
TCP (6-1) - 12

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© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY				
8-12	REVISIONS	0916	00	281	VARIOUS				
	DIST	COUNTY	SHEET NO.						
	CRP	NUECES	50						

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TCP (6-2a)
ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b)
ENTRANCE RAMP CLOSED

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

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

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

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

GENERAL NOTES

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

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

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



TRAFFIC CONTROL PLAN

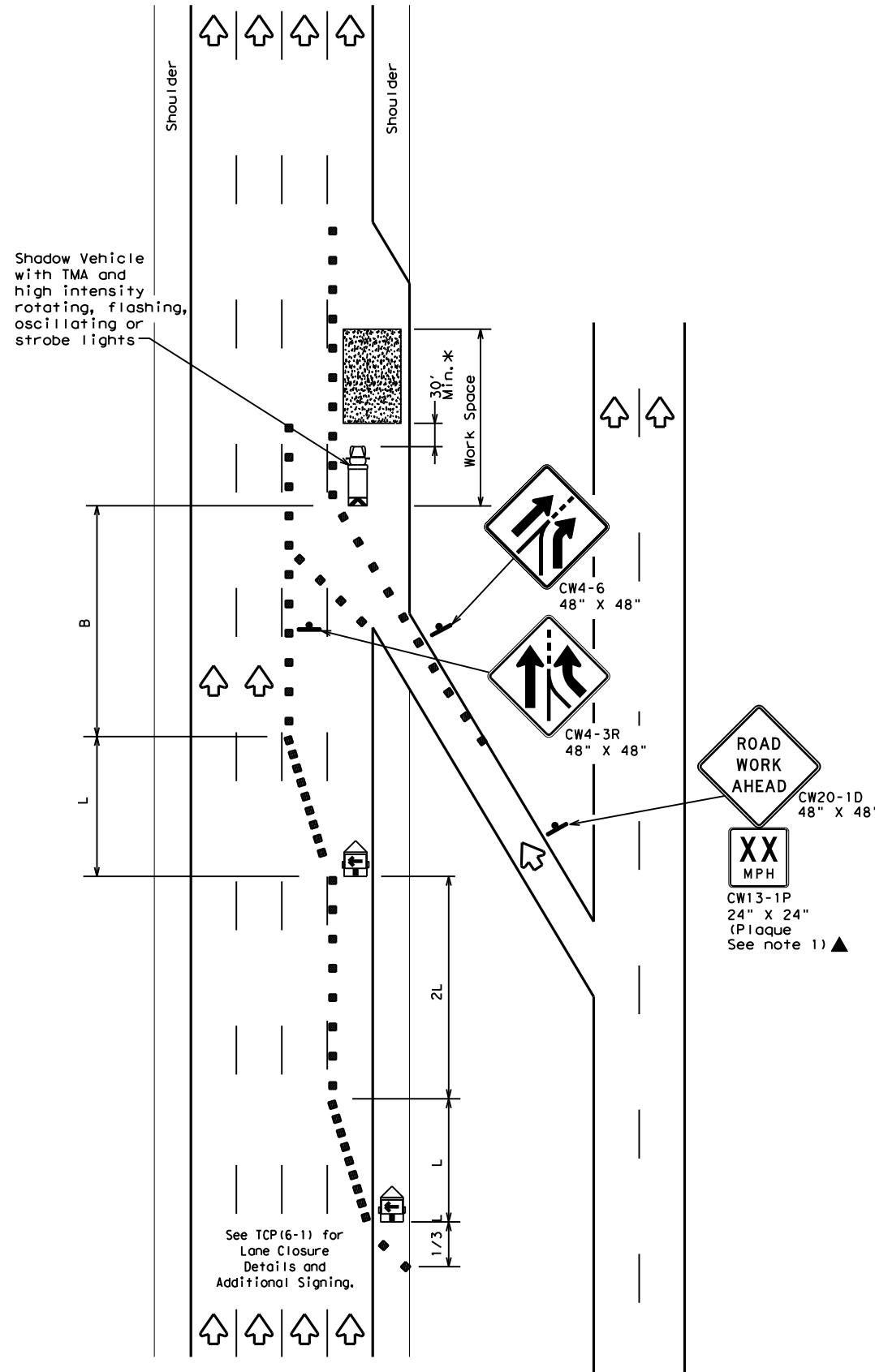
WORK AREA NEAR RAMP

TCP (6-2) - 12

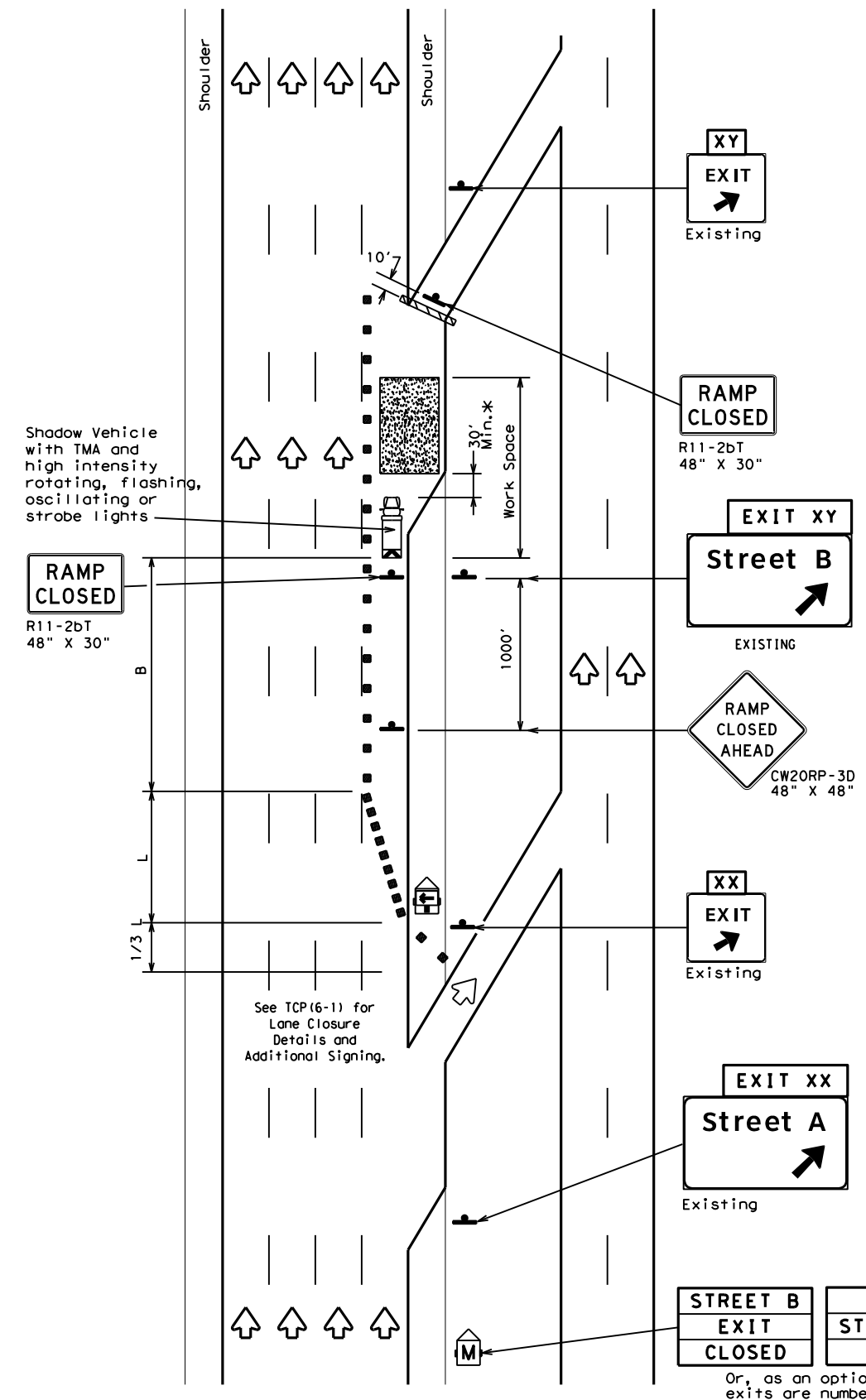
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©TxDOT	February 1994	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0916	00	281	VARIOUS				
1-97	8-98			DIST	COUNTY	SHEET NO.			
4-98	8-12	CRP		NUECES		51			

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TCP (6-3a)
ENTRANCE RAMP OPEN



TCP (6-3b)
EXIT RAMP CLOSED
TRAFFIC EXITS PRIOR TO CLOSED RAMP

STREET B
 EXIT
 CLOSED

USE
 STREET A
 EXIT

EXIT XY
 CLOSED

USE
 EXIT XX

Or, as an option when exits are numbered

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

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

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

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

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

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

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

Texas Department of Transportation
 Traffic Operations Division Standard

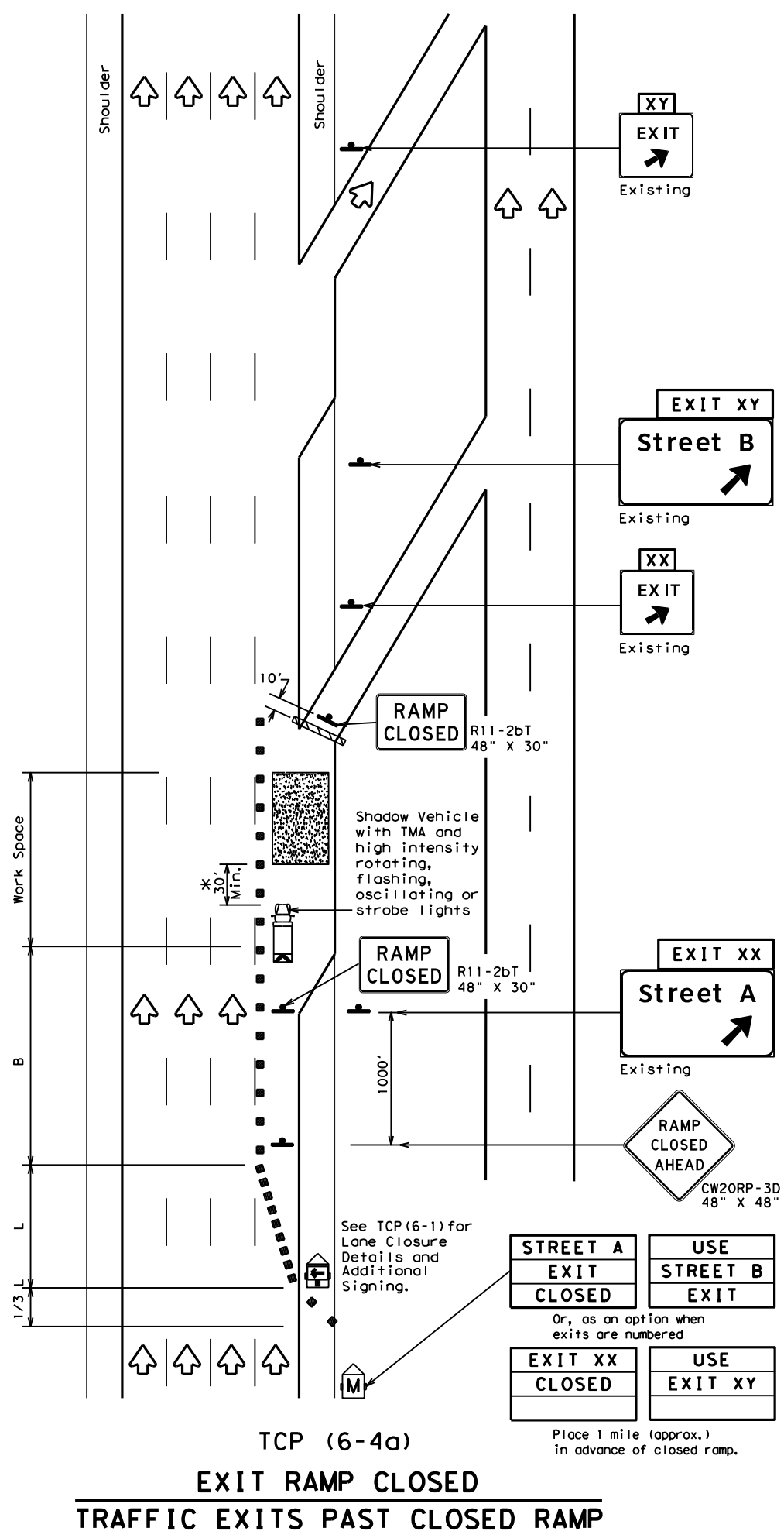
TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP (6-3) - 12

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©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916 00		281	VARIOUS
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	CRP	NUECES	52	

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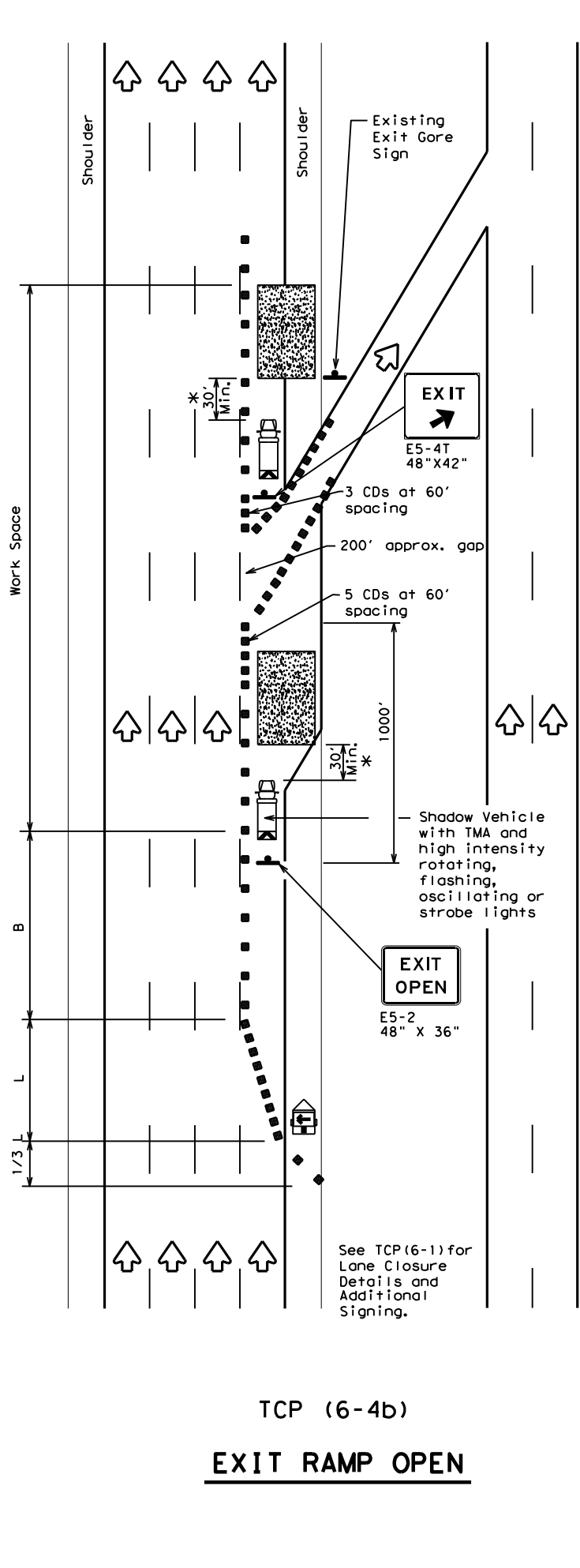


TCP (6-4a)
EXIT RAMP CLOSED
TRAFFIC EXITS PAST CLOSED RAMP

STREET A EXIT CLOSED	USE STREET B EXIT
EXIT XX CLOSED	USE EXIT XY

Or, as an option when exits are numbered

Place 1 mile (approx.) in advance of closed ramp.



TCP (6-4b)
EXIT RAMP OPEN

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

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

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

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

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

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

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

Texas Department of Transportation
 Traffic Operations Division Standard

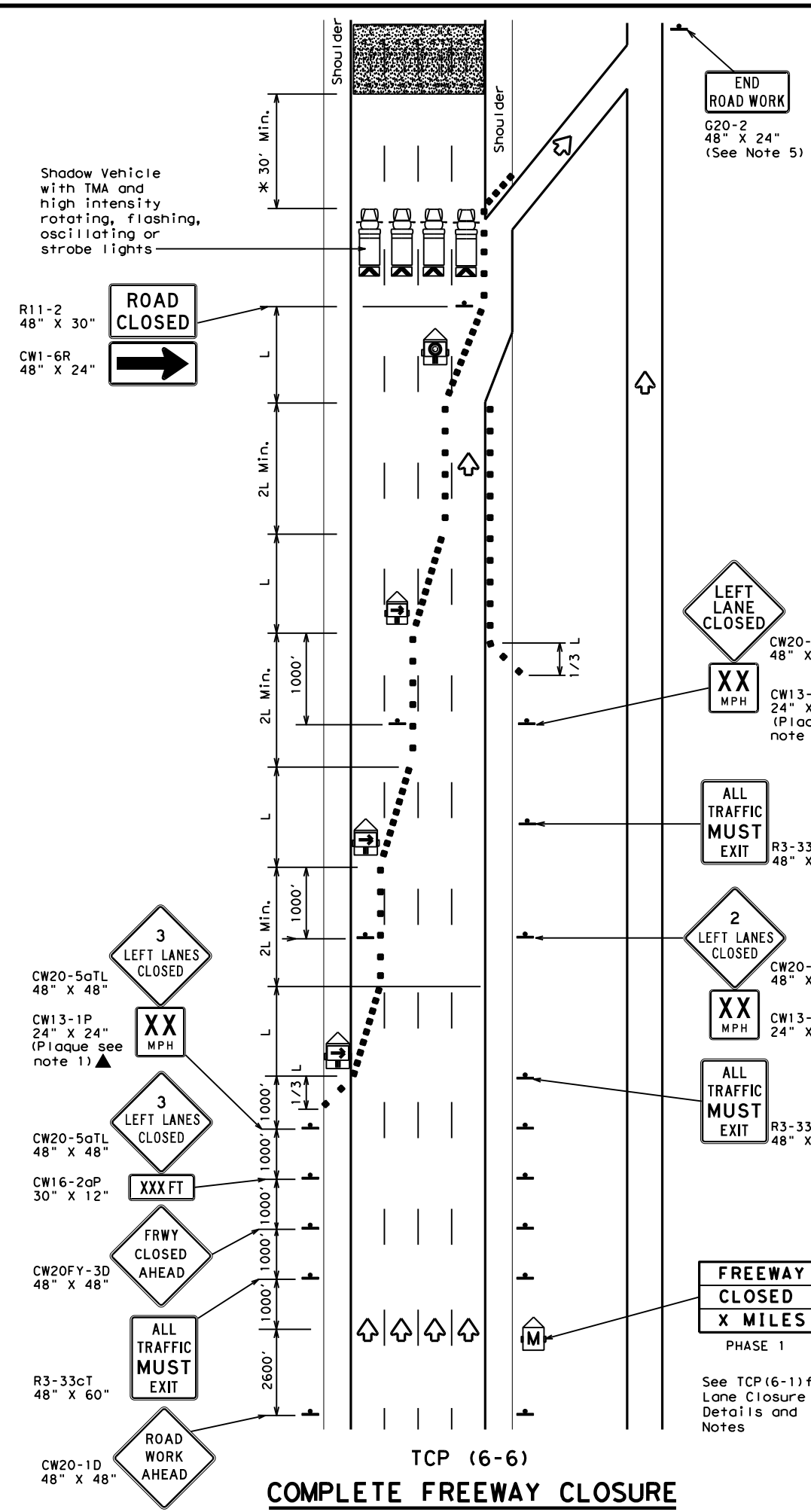
TRAFFIC CONTROL PLAN
WORK AREA AT EXIT RAMP

TCP (6-4) - 12

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©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916 00		281	VARIOUS
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	CRP	NUECES		53

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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)
	Flashing Arrow Board in Caution Mode		Traffic Flow
	Sign		

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

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

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

GENERAL NOTES

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE RIGHT," recommended speed, delay, exit information, or other specific warnings.
- Where queuing is anticipated beyond signing shown, additional PCMS signs, other warning signs, devices or Law Enforcement Officers should be available to warn approaching high speed traffic of the end of the queue, as directed by the Engineer.
- Entrance ramps located from the advance warning area to the exit ramp should be closed whenever possible.
- The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

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

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

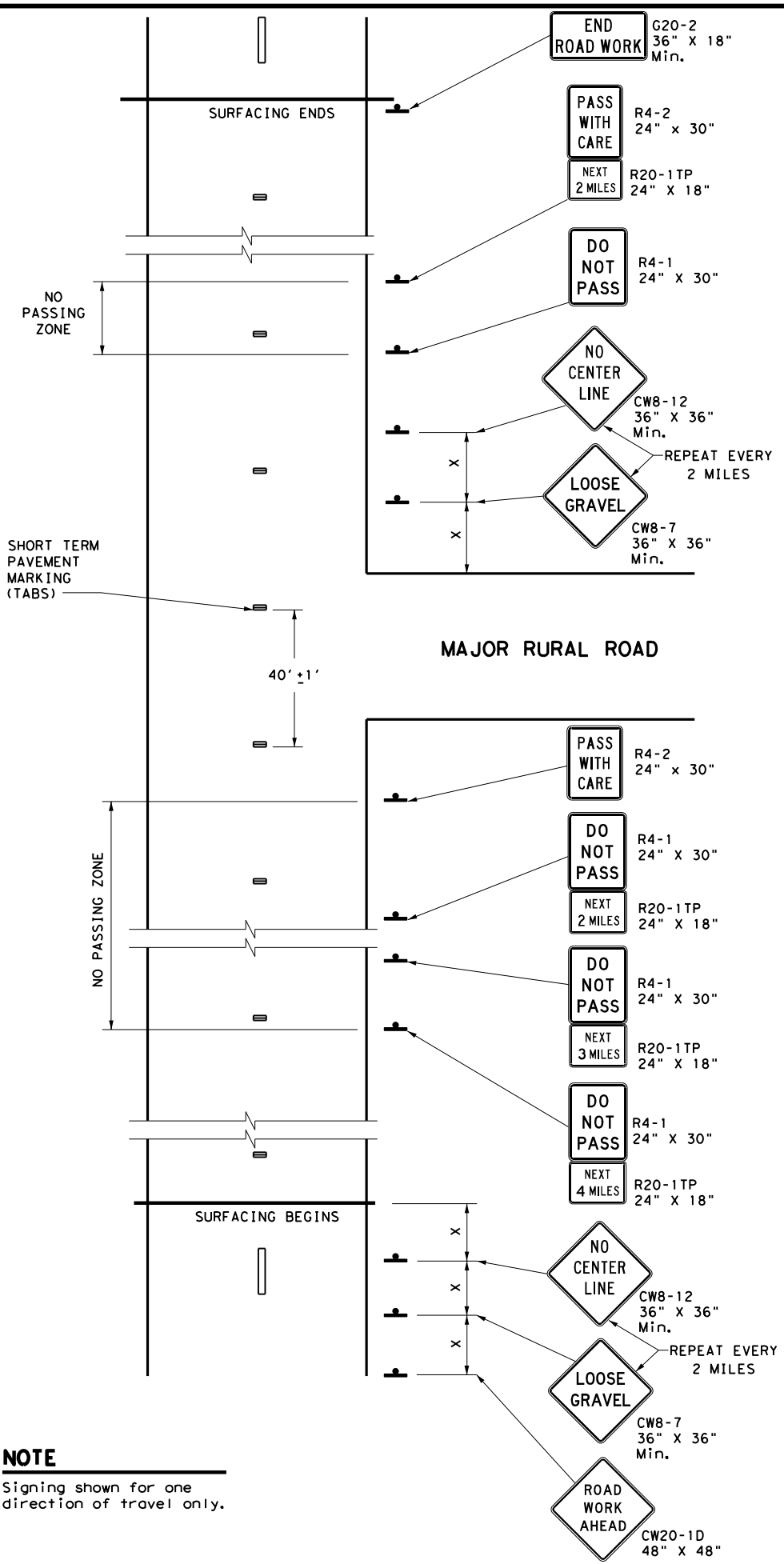
Texas Department of Transportation
 Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
FREEWAY CLOSURE

TCP (6-6) - 12

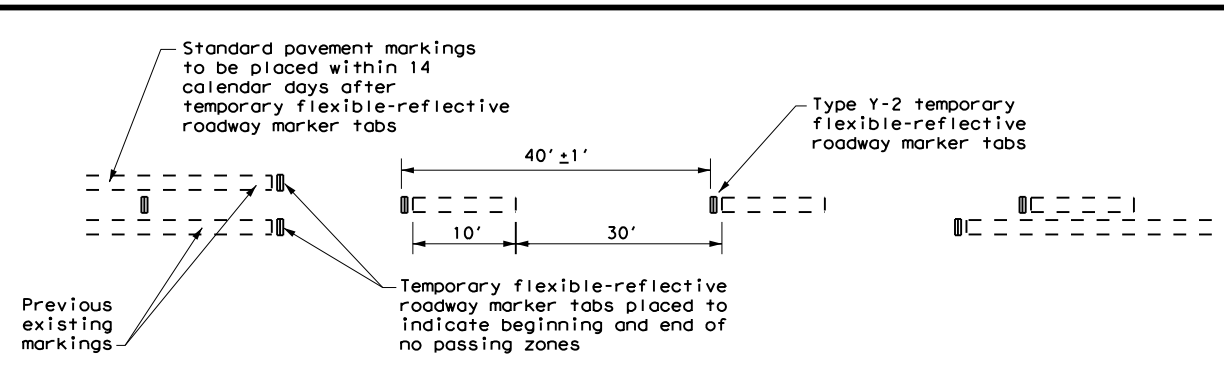
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©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916 00		281	VARIOUS
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	CRP	NUECES		54

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NOTE
 Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS
 For seal coat, micro-surface or similar operations

"DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES

- A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.
- B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.
- C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.
- D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CW8-12)

- A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.
- B. At the time construction activity obliterates the existing center line markings (low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.
- C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CW8-7)

- A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.
- B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

- A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.
- B. Tabs shall not be used to simulate edge lines.
- C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

COORDINATION OF SIGN LOCATIONS

- A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.
- B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T) sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.



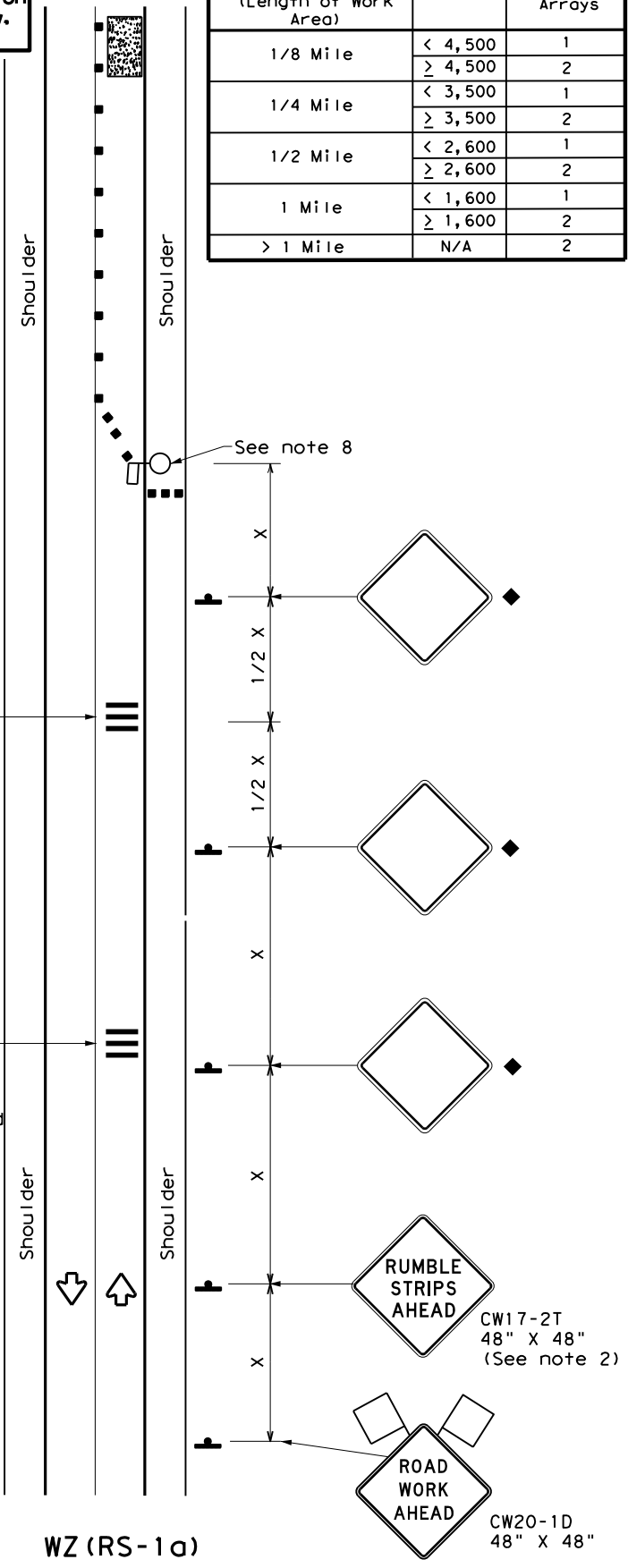
TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS
TCP (7-1) - 13

FILE: tcp7-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 1991	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916 00		281	VARIOUS
4-92 4-98	DIST	COUNTY		SHEET NO.
1-97 7-13	CRP	NUECES		55

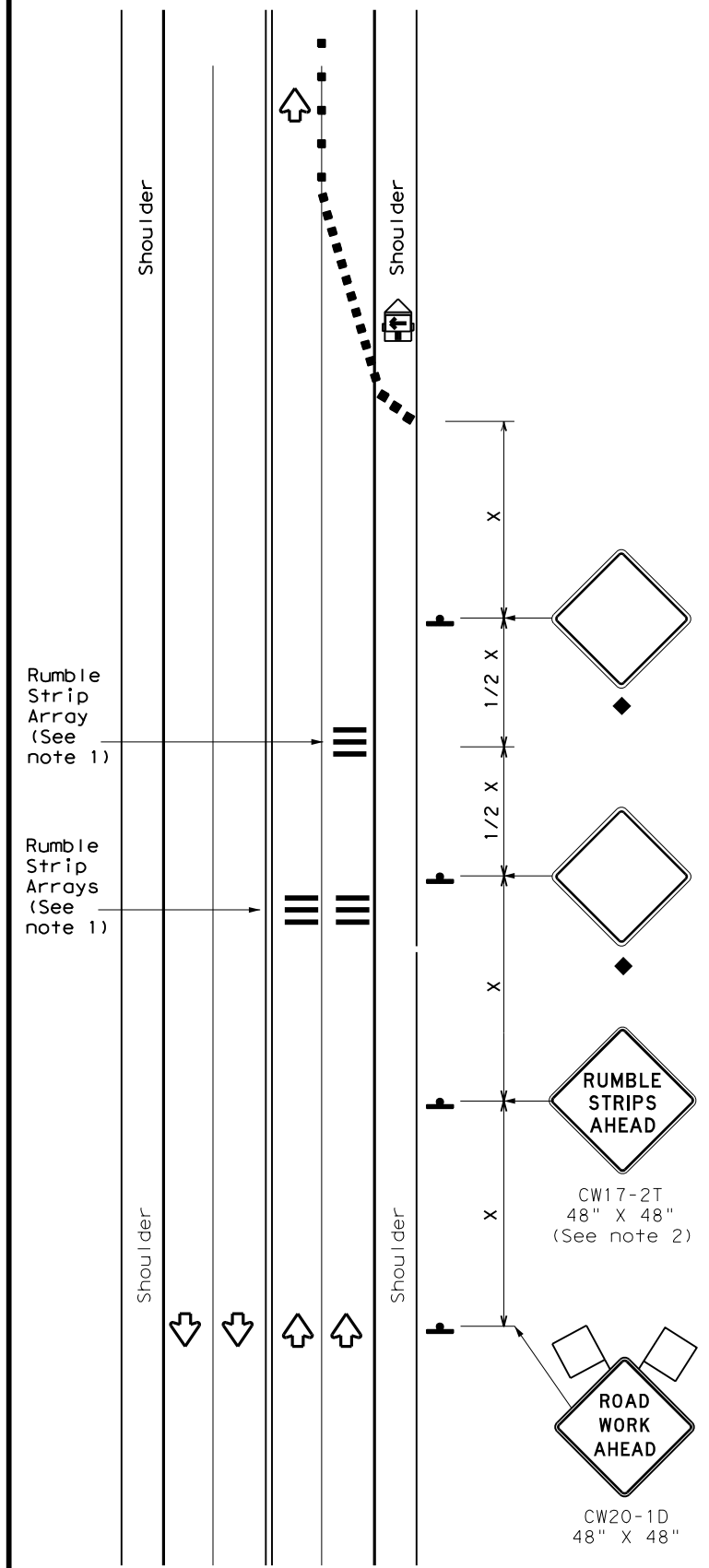
DATE: 4/5/2024 11:03:45 PM
 FILE: p:\txdot\project\wiseonline.com:TXDOT4\Documents\16 - CRP\Design Projects\WZ\WZ22\WZ22.dgn

Warning sign and rumble strip sequence in opposite direction is same as below.

Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	≥ 4,500	2
1/4 Mile	< 3,500	1
	≥ 3,500	2
1/2 Mile	< 2,600	1
	≥ 2,600	2
1 Mile	< 1,600	1
	≥ 1,600	2
> 1 Mile	N/A	2



RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

- Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
- The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD" sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
- Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
- Remove Temporary Rumble Strips before removing the advanced warning signs.
- Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
- Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
- This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
- The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
- Replace defective Temporary Rumble Strips as directed by the Engineer.
- Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35' +

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

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

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.
 * For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

Texas Department of Transportation Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ (RS) - 22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916	00	281	VARIOUS
2-14 1-22 4-16	DIST	COUNTY	SHEET NO.	
CRP	NUECES		56	

LOCATION B: SH 35 NORTHBOUND EXIT TO FM 2165

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.



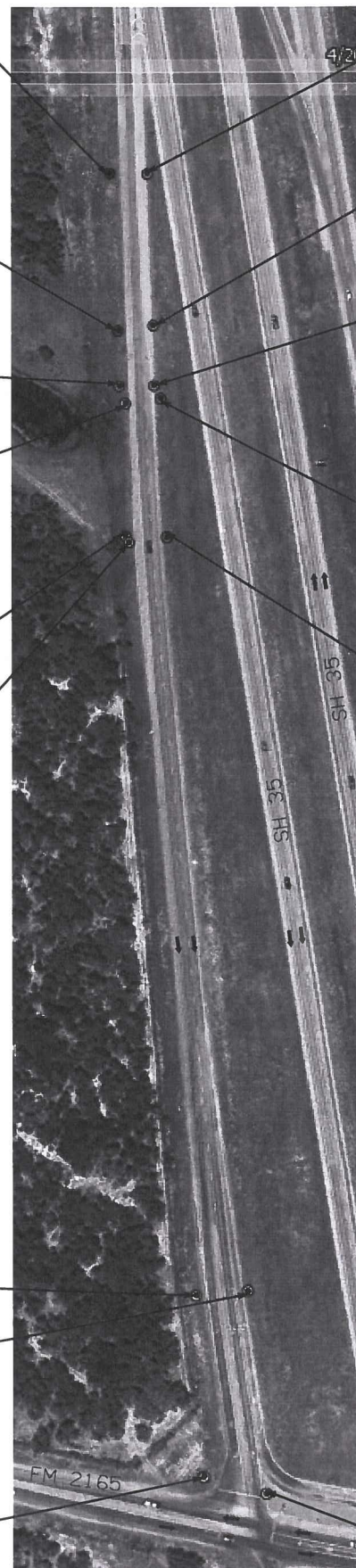
Kassondra Fiora Munoz
4-7-24

SIGNING LAYOUT

LOCATION B:
SH 35 NB EXIT
TO FM 2165

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	57	



B-13: 28.048322°, -97.071920°
REMOVE PED POLE ASSEMBLY ~ 1 EA
REMOVE LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

B-12: 28.048829°, -97.071474°
REMOVE PED POLE ASSEMBLY ~ 1 EA

WRONG WAY

B-10A: 28.049000°, -97.071317°
RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA
REFER TO LAYOUT C SHEET.

WRONG WAY NOTIFICATION ASSEMBLY

WRONG WAY

B-8: 28.049068°, -97.071284°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY SOLAR PANEL ASSEMBLY

WRONG WAY

B-7: 28.049467°, -97.070897°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY DETECTION ASSEMBLY

WRONG WAY

B-5: 28.049494°, -97.070891°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY

B-3: 28.051821°, -97.068989°
EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

WRONG WAY

B-4: 28.051937°, -97.069166°
EXISTING WRONG WAY SIGN TO REMAIN IN PLACE



B-1: 28.052336°, -97.068528°
REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
INSTALL SOLAR POWERED LED SIGN ~ 1 EA

WRONG WAY

B-9A: 28.048423°, -97.072043°
RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA

WRONG WAY

B-6A: 28.048906°, -97.071608°
RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA

WRONG WAY

B-11A: 28.049090°, -97.071433°
RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA
REFER TO LAYOUT C SHEET.

WRONG WAY

B-9B: 28.049147°, -97.071417°
NEW LOCATION OF RELOCATED WRONG WAY SIGN FROM LOCATION B-9A

WRONG WAY

B-6B: 28.049578°, -97.071031°
NEW LOCATION OF RELOCATED WRONG WAY SIGN FROM LOCATION B-6A



B-2: 28.052534°, -97.068679°
REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
INSTALL SOLAR POWERED LED SIGN ~ 1 EA

DATE: 4/7/2024 3:39:08 PM FILE: p:\1\p\dot\p\roject\wiseon\ine.com\TXDOT4\Documents\16 - CRP\Design Projects\091600281\4 - Design\Plan Set\5. Drainage\Signing Layout\LOCATION B\SH 35 NB-EXIT\NO FM 2165.dgn

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WRONG WAY
 SOLAR PANEL
 ASSEMBLY C-10: 28.056217°, -97.066396°

INSTALL PED POLE ASSEMBLY ~ 1 EA

WRONG WAY
 NOTIFICATION
 ASSEMBLY C-13: 28.055816°, -97.066761°

INSTALL PED POLE ASSEMBLY ~ 1 EA

LOCATION C: SH 35 NORTHBOUND EXIT TO FM 3036

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.

WRONG WAY
 DETECTION
 ASSEMBLY

WRONG WAY

C-9: 28.056247°, -97.066383°

INSTALL PED POLE ASSEMBLY ~ 1 EA

INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

C-7: 28.056313°, -97.066302°

REMOVE PED POLE ASSEMBLY ~ 1 EA

WRONG WAY

C-8: 28.056426°, -97.066431°

REMOVE SM RD SN SUP&AM ~ 1 EA



C-5: 28.056785°, -97.065912°,
 C-6: 28.056861°, -97.066027°

EXISTING DO NOT ENTER SIGN TO REMAIN IN PLACE

C-11: 28.055899°, -97.066687°

REMOVE PED POLE ASSEMBLY ~ 1 EA
 REMOVE LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY

C-12: 28.056003°, -97.066813°

REMOVE SM RD SN SUP&AM ~ 1 EA

WRONG WAY

B-11B: 28.056337°, -97.066501°

NEW LOCATION OF RELOCATED WRONG WAY SIGN FROM LOCATION B-11A. REFER TO LAYOUT B SHEET.

WRONG WAY

B-10B: 28.055920°, -97.066887°

NEW LOCATION OF RELOCATED WRONG WAY SIGN FROM LOCATION B-10A. REFER TO LAYOUT B SHEET.



R5-1
 36" X 36"

C-3: 28.059192°, -97.063995°

INS SM RD SN SUP&AM TYS80(1)SA(T) ~ 1 EA



C-4: 28.059277°, -97.064148°

INS SM RD SN SUP&AM TYS80(1)SA(T) ~ 1 EA

R5-1
 36" X 36"



R5-1
 36" X 36"

C-1: 28.060724°, -97.062983°

INSTALL SOLAR POWERED LED SIGN ~ 1 EA
 INS SM RD SN SUP&AM TYS80(1)SA(P) ~ 1 EA



C-2: 28.060796°, -97.063136°

INSTALL SOLAR POWERED LED SIGN ~ 1 EA
 INS SM RD SN SUP&AM TYS80(1)SA(P) ~ 1 EA

R5-1
 36" X 36"



Kassondra Fiora Munoz
 4-7-24

SIGNING LAYOUT

LOCATION C:
 SH 35 NB EXIT
 TO FM 3036

SHEET 1 OF 1

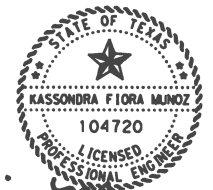
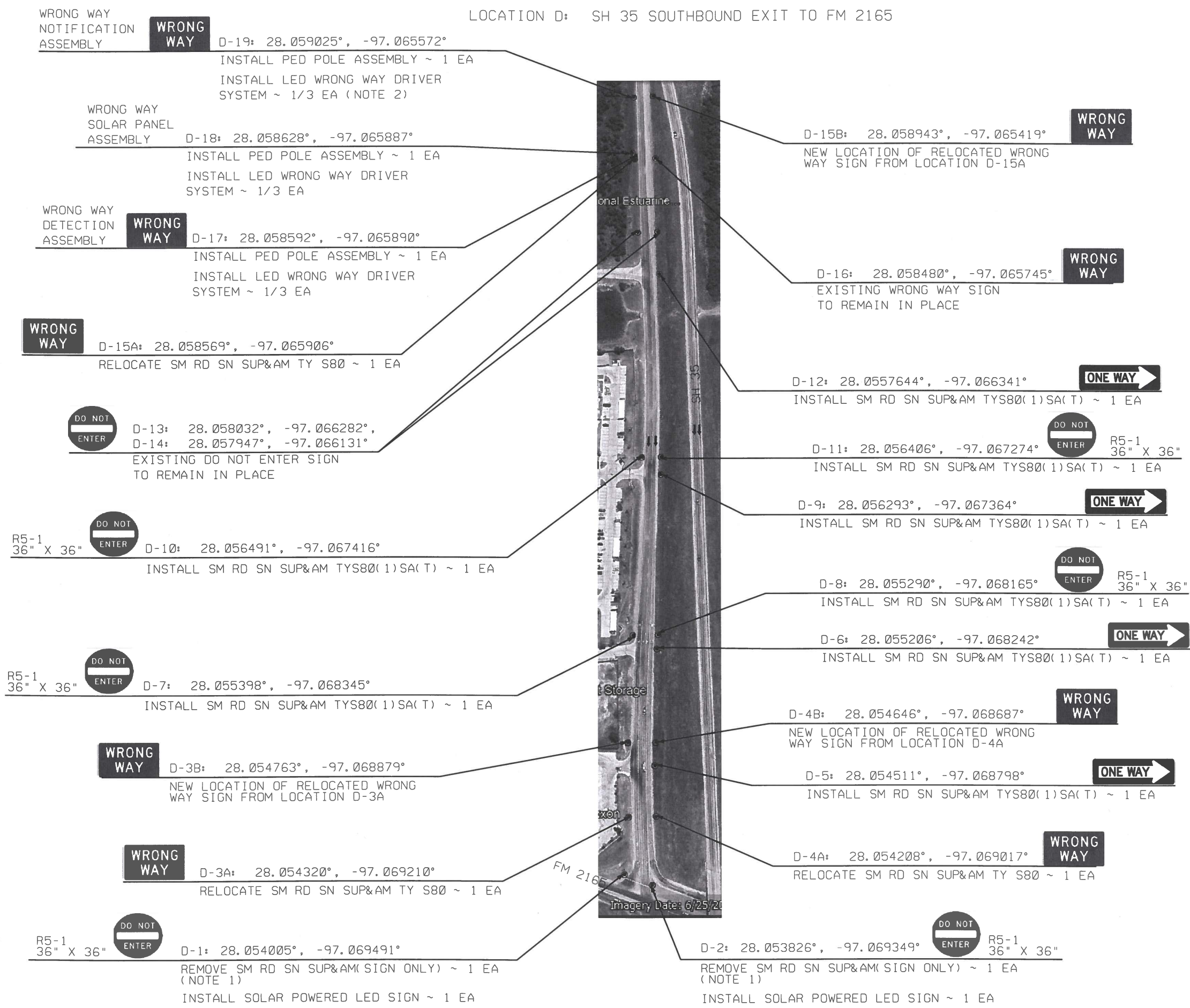
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		VARIOUS	
CONTRACT	SECTION	JOB	SHEET NO.
091600	281		58
DISTRICT		COUNTY	
CRP		NUECES	

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LOCATION D: SH 35 SOUTHBOUND EXIT TO FM 2165

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.



Kassandra Fiora Munoz
 4-7-24



SIGNING LAYOUT

LOCATION D:
 SH 35 SB EXIT
 TO FM 2165

SHEET 1 OF 1

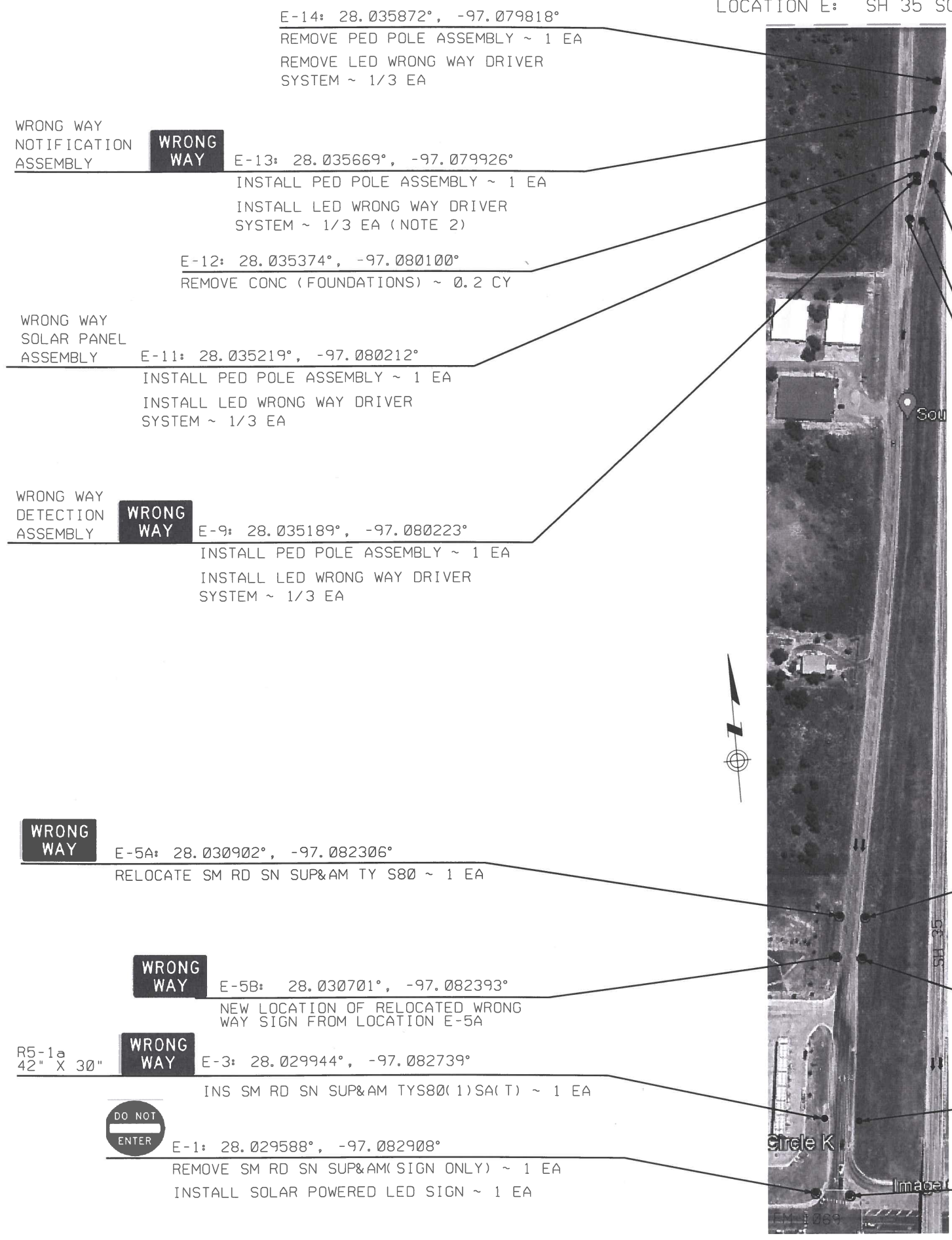
CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY		SHEET NO.
CRP	NUECES		59

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LOCATION E: SH 35 SOUTHBOUND EXIT TO FM 1069

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.



E-14: 28.035872°, -97.079818°
 REMOVE PED POLE ASSEMBLY ~ 1 EA
 REMOVE LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY NOTIFICATION ASSEMBLY
WRONG WAY
 E-13: 28.035669°, -97.079926°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA (NOTE 2)

E-12: 28.035374°, -97.080100°
 REMOVE CONC (FOUNDATIONS) ~ 0.2 CY

WRONG WAY SOLAR PANEL ASSEMBLY
 E-11: 28.035219°, -97.080212°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY DETECTION ASSEMBLY
WRONG WAY
 E-9: 28.035189°, -97.080223°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

E-10A: 28.035325°, -97.080008°
 RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA
WRONG WAY

E-10B: 28.035137°, -97.080122°
 NEW LOCATION OF RELOCATED WRONG WAY SIGN FROM LOCATION E-10A
WRONG WAY

E-7: 28.034942°, -97.080370°
 E-8: 28.034900°, -97.080285°
 EXISTING DO NOT ENTER SIGN TO REMAIN IN PLACE
 DO NOT ENTER

WRONG WAY
 E-5A: 28.030902°, -97.082306°
 RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA

E-6A: 28.030848°, -97.082151°
 RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA
WRONG WAY

WRONG WAY
 E-5B: 28.030701°, -97.082393°
 NEW LOCATION OF RELOCATED WRONG WAY SIGN FROM LOCATION E-5A

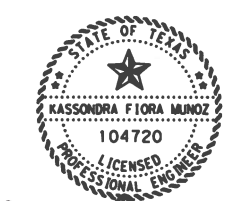
E-6B: 28.030647°, -97.082244°
 NEW LOCATION OF RELOCATED WRONG WAY SIGN FROM LOCATION E-6A
WRONG WAY

R5-1a
 42" X 30"
WRONG WAY
 E-3: 28.029944°, -97.082739°
 INS SM RD SN SUP&AM TYS80(1)SA(T) ~ 1 EA

E-4: 28.029882°, -97.082539°
 EXISTING WRONG WAY SIGN TO REMAIN IN PLACE ~ 1 EA
WRONG WAY

DO NOT ENTER
 E-1: 28.029588°, -97.082908°
 REMOVE SM RD SN SUP&AM(SIGN ONLY) ~ 1 EA
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA

E-2: 28.029516°, -97.082716°
 REMOVE SM RD SN SUP&AM(SIGN ONLY) ~ 1 EA
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA
 DO NOT ENTER



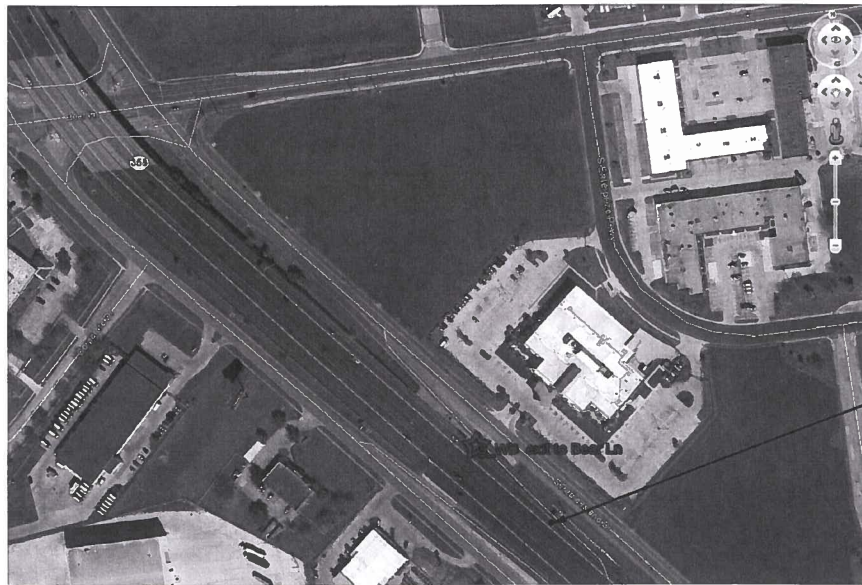
Kassandra Fiora Munoz
 4-7-24

SIGNING LAYOUT
 LOCATION E:
 SH 35 SB EXIT
 TO FM 1069

SHEET 1 OF 1

		CONT	SECT	JOB	HIGHWAY
		091600	281	VARIOUS	
		DIST	COUNTY	SHEET NO.	
		CRP	NUECES	60	

LOCATION G: SH 358 WESTBOUND EXIT TO BEAR LN



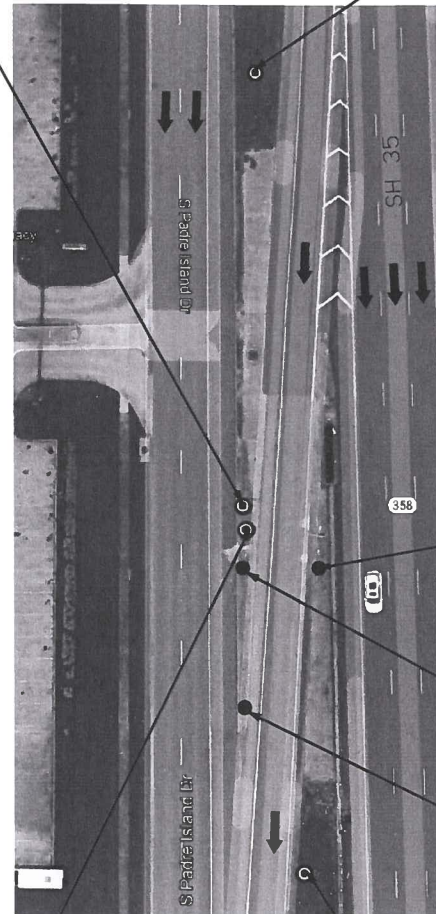
NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.
4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS S4X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.

DATE: 4/7/2024 4:03:12 PM
FILE: pw://txdot.prolectwiseonline.com:TXDOT4/Documents/16 - CRP/Design Projects/091600281/4 - Design/Plan Set/8. Traffic/Signing Layout LOCATION G SH 358 WB EXIT TO BEAR LN.dgn

WRONG WAY
SOLAR PANEL
ASSEMBLY

G-6: 27.762016°, -97.465548°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA (NOTE 2)



G-8: 27.761361°, -97.465050°
INSTALL ALUMINUM SIGN (TY 0) ~ 32 SF
(NOTE 4)



R5-1a
8' X 4
ON BACK SIDE
OF TRUSS

G-7: 27.761610°, -97.465177°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA (NOTE 2)



WRONG WAY
NOTIFICATION
ASSEMBLY

WRONG WAY
DETECTION
ASSEMBLY



G-5: 27.762033°, -97.465573°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

G-4: 27.762053°, -97.465704°
EXISTING WRONG WAY SIGN
TO REMAIN IN PLACE



G-3: 27.762106°, -97.465635°
REMOVE SM RD SN SUP&AM ~ 1 EA (NOTE 3)



G-2: 27.762250°, -97.465759°
EXISTING DO NOT ENTER SIGN
TO REMAIN IN PLACE



G-1: 27.762342°, -97.465958°
REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
(NOTE 1).



R5-1
36" X 36"

INSTALL SOLAR POWERED LED SIGN ~ 1 EA

Kassondra Fiora Munoz
 4-7-24

SIGNING LAYOUT

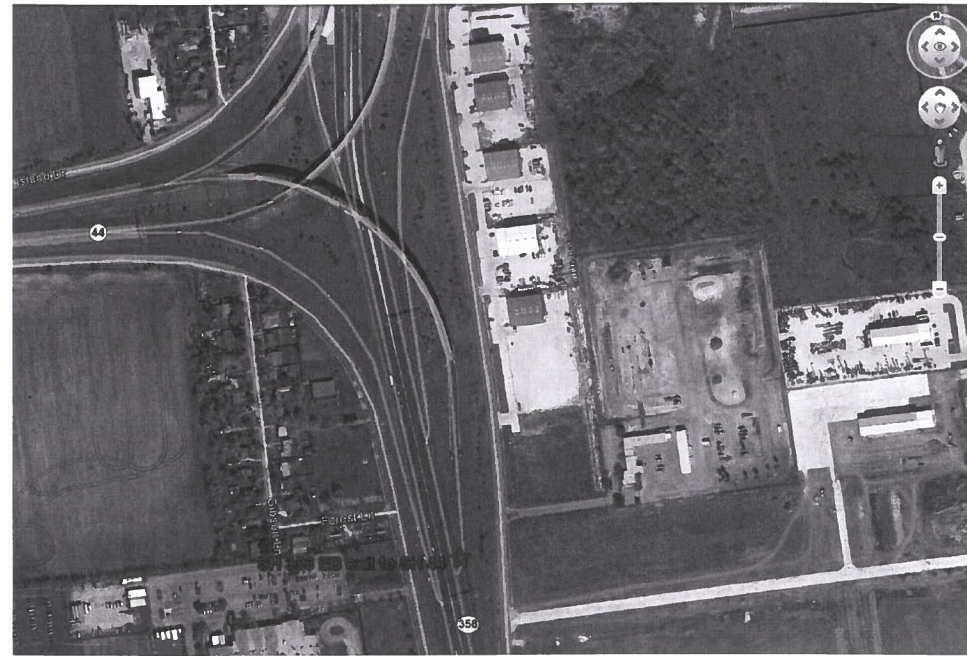
LOCATION G:
SH 358 WB EXIT
TO BEAR LN

SHEET 1 OF 1

		SHEET 1 OF 1	
		CONT 091600	SECT 281
DIST CRP	COUNTY NUECES	SHEET NO. 61	TOTAL SHEETS

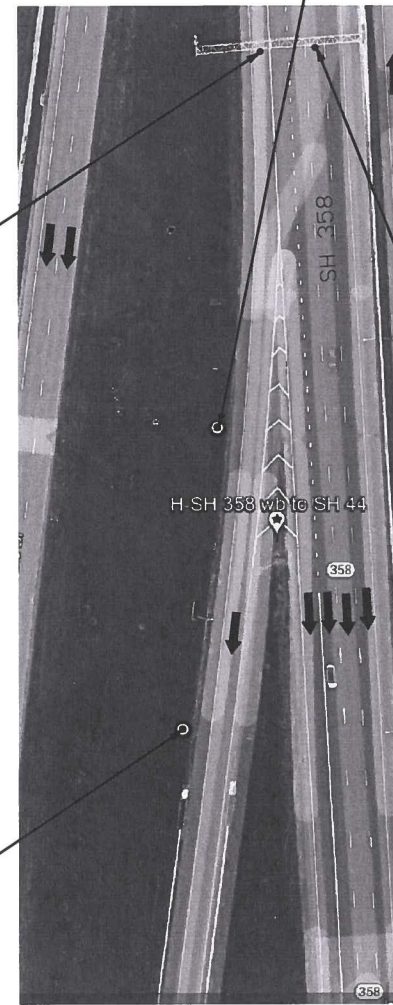
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LOCATION H: SH 358 WESTBOUND EXIT TO SH 44



R5-1a
 8' X 4
 ON BACK SIDE
 OF TRUSS **WRONG WAY**

H-3: 27.777826°, -97.468940°
 INSTALL ALUMINUM SIGN (TY 0) ~ 32 SF
 (NOTE 4)



H-2: 27.778504°, -97.468890°
 REMOVE PED POLE ASSEMBLY ~ 1 EA.

H-4: 27.777819°, -97.469050°
 INSTALL ALUMINUM SIGN (TY 0) ~ 32 SF
 (NOTE 4)

R5-1a
 8' X 4
 ON BACK SIDE
 OF TRUSS **WRONG WAY**

H-1: 27.779048°, -97.468851°
 REMOVE PED POLE ASSEMBLY ~ 1 EA.

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.
4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS 54X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.



Kassondra Fiora Munoz
 4-7-24

SIGNING LAYOUT

LOCATION H:
 SH 358 WB EXIT
 TO SH 44

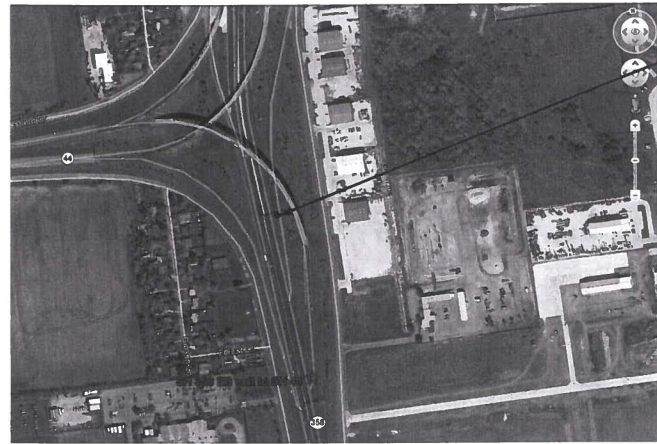
SHEET 1 OF 1



CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	62	

DATE: 4/7/2024 4:11:06 PM
 FILE: p:\17\txdot\projectwise\seon\16 - CRP/Design Projects\091600281\4 - Design\Plan Set\8 - Traffic/Signing Layout LOCATION I SH 358 WB EXIT TO AGNES ST.dgn

LOCATION I: SH 358 WESTBOUND EXIT TO AGNES ST



I-10: 27.780562°, -97.469236°
 INSTALL ALUMINUM SIGN (TY 0) ~ 32 SF (NOTE 4)

WRONG WAY
 ON BACK SIDE OF TRUSS

I-9: 27.782111°, -97.469102°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA (NOTE 2)

WRONG WAY
 WRONG WAY NOTIFICATION ASSEMBLY

I-8: 27.782149, -97.469236°
 EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

WRONG WAY

I-7: 27.782127°, -97.469100°
 REMOVE PED POLE ASSEMBLY ~ 1 EA
 REMOVE LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY SOLAR PANEL ASSEMBLY

I-6: 27.782611°, -97.468935°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA (NOTE 2)



WRONG WAY DETECTION ASSEMBLY

WRONG WAY

I-5: 27.782640°, -97.468934°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA (NOTE 2)

I-3: 27.782649°, -97.468931°
 REMOVE CONC (FOUNDATIONS) ~ 0.2 CY

WRONG WAY

I-4: 27.782662, -97.469083°
 EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

R5-1
 36" X 36"



I-1: 27.783101°, -97.468764°
 REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA

I-2: 27.783134°, -97.468882°
 REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA (NOTE 1)
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA

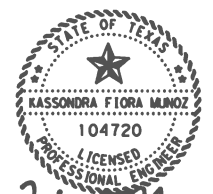


R5-1
 36" X 36"



NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
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Kassondra Fiora Munoz
 4-7-24

SIGNING LAYOUT

LOCATION I:
 SH 358 WB EXIT
 TO AGNES ST

SHEET 1 OF 1

		DIST COUNTY SHEET NO.	
		CRP	NUECES
CONT SECT	JOB	HIGHWAY	
091600	281	VARIOUS	

DATE: 4/7/2024 4:17:38 PM
 FILE: pwr://txdot.profiles/wisconsin.com:TXDOT4/Documents/16 - CRP/Design Projects/091600281/4 - Design/Plan Set/8. Traffic/Signing Layout LOCATION K SH 358 EB EXIT TO BEAR LN.dgn

R5-1a
 8' X 4
 ON BACK SIDE
 OF TRUSS

WRONG WAY

K-14: 27.768683°, -97.469021°

LOCATION K: SH 358 EASTBOUND EXIT TO BEAR LN

NOTES:

WRONG WAY

K-12: 27.768281°, -97.469088°

INSTALL ALUMINUM SIGN (TY O) ~ 32 SF
 (NOTE 4)
 REMOVE PED POLE ASSEMBLY ~ 1 EA
 REMOVE LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA

WRONG WAY
 NOTIFICATION
 ASSEMBLY

WRONG WAY

K-13: 27.768306°, -97.469093°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA (NOTE 2)

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.
4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS S4X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.

WRONG WAY
 SOLAR PANEL
 ASSEMBLY

K-9: 27.767785°, -97.469097°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA

WRONG WAY
 DETECTION
 ASSEMBLY

WRONG WAY

K-8: 27.767755°, -97.469096°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA



K-11: 27.768033°, -97.469105°

EXISTING DO NOT ENTER
 TO REMAIN IN PLACE



K-10: 27.768034°, -97.469244°

EXISTING DO NOT ENTER
 TO REMAIN IN PLACE

K-7: 27.767741°, -97.469096°

REMOVE PED POLE ASSEMBLY ~ 1 EA



TO RAMP

K-6: 27.767458°, -97.469227°

EXISTING YIELD TO RAMP ASSEMBLY
 TO REMAIN IN PLACE



TO RAMP

K-5: 27.767464°, -97.469103°

EXISTING YIELD TO RAMP ASSEMBLY
 TO REMAIN IN PLACE

WRONG WAY

K-3: 27.767060°, -97.469043°

EXISTING WRONG WAY SIGN TO
 REMAIN IN PLACE



R5-1
 36" X 36"

K-1: 27.766615°, -97.469212°

REMOVE SM RD SN SUP&AM(SIGN ONLY) ~ 1 EA
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA

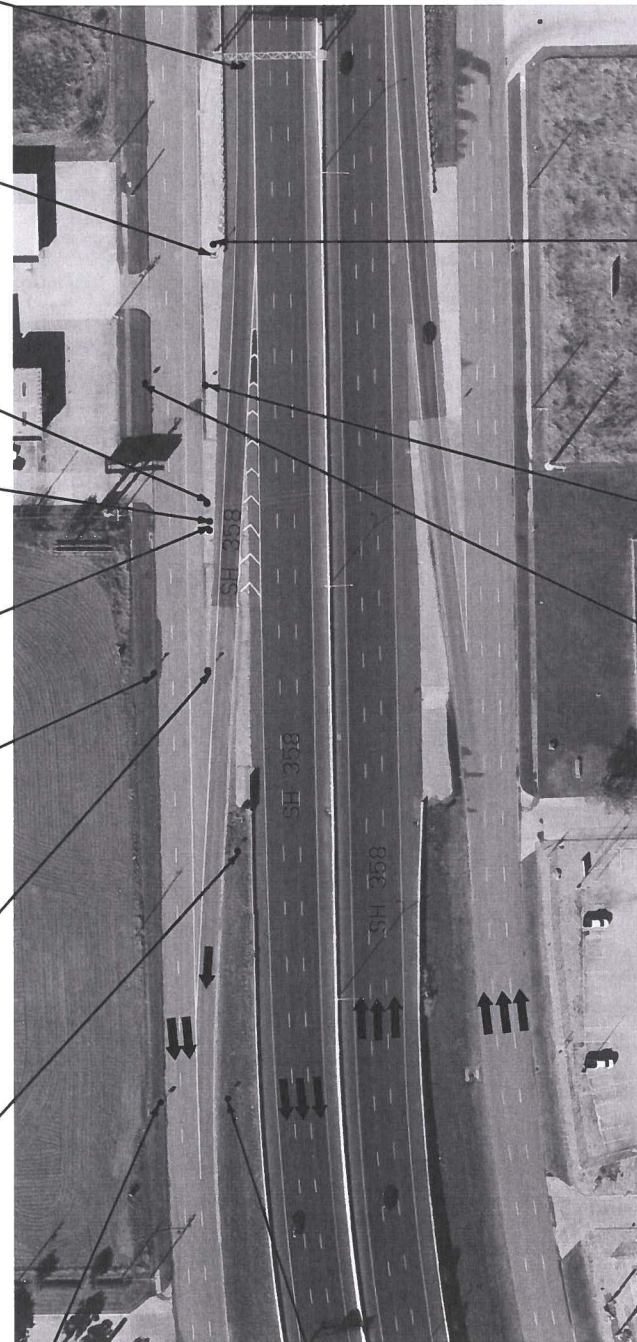


K-2: 27.766626°, -97.469058°

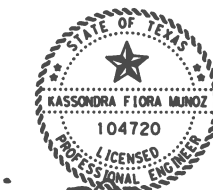
REMOVE SM RD SN SUP&AM(SIGN ONLY) ~ 1 EA
 (NOTE 1)

R5-1
 36" X 36"

INSTALL SOLAR POWERED LED SIGN ~ 1 EA



Kassandra Fiora Munoz
 4-7-24



SIGNING LAYOUT

LOCATION K:
 SH 358 EB EXIT
 TO BEAR LN

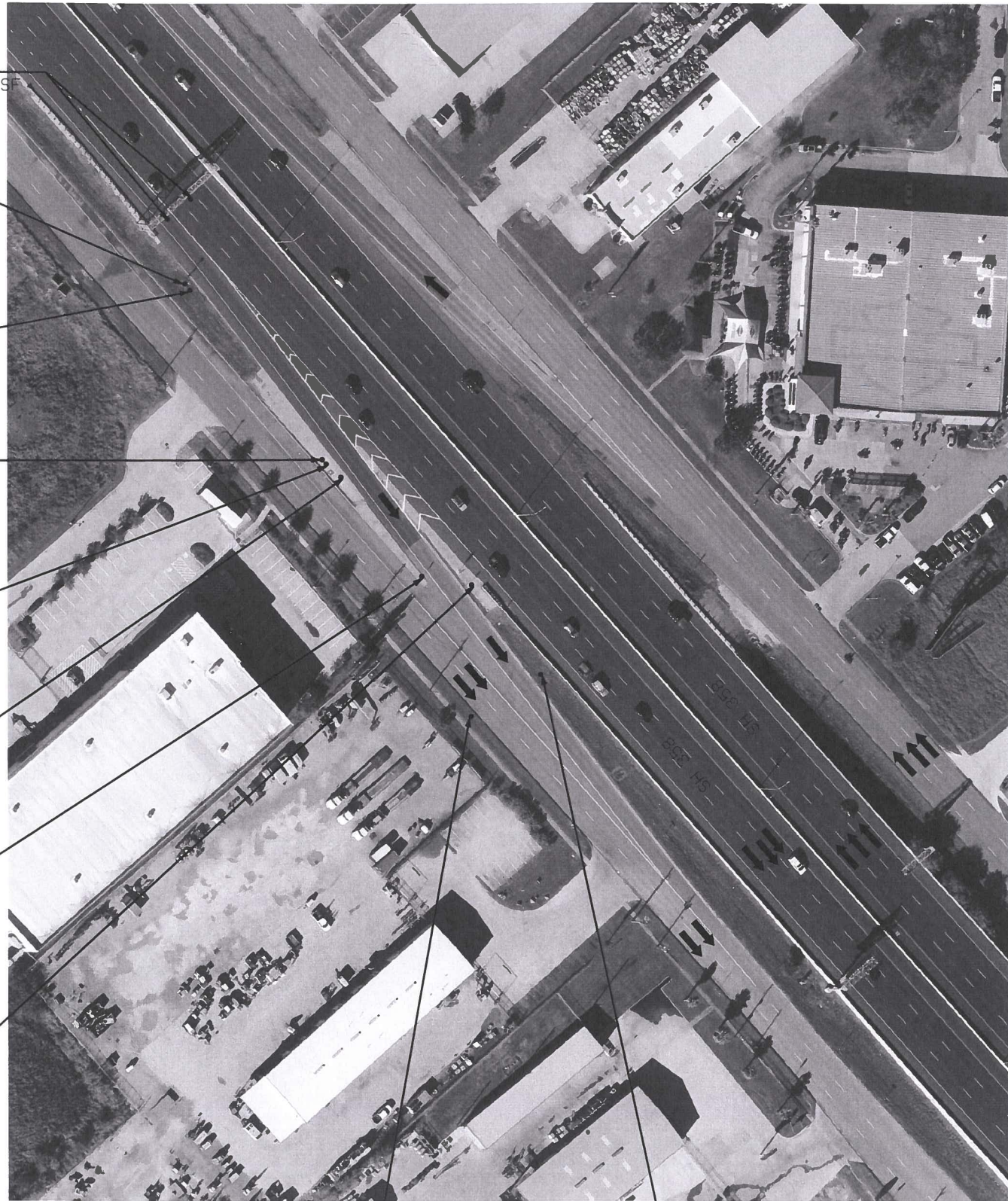
SHEET 1 OF 1



CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	64	

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LOCATION L: SH 358 EASTBOUND EXIT TO OLD BROWNSVILLE RD



R5-1a
 8' X 4
 ON BACK SIDE OF TRUSS **WRONG WAY**
 L-10: 27.758973°, -97.463130°
 L-11: 27.759012°, -97.463079°
 INSTALL ALUMINUM SIGN (TY 0) ~ 32 S
 (NOTE 4)

L-9: 27.758807°, -97.463065°
 REMOVE PED POLE ASSEMBLY ~ 1 EA
 REMOVE LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY NOTIFICATION ASSEMBLY **WRONG WAY**
 L-8: 27.758792°, -97.463051°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

L-7: 27.758387°, -97.462693°
 REMOVE CONC FOUNDATIONS ~ 0.2 CY

WRONG WAY SOLAR PANEL ASSEMBLY **WRONG WAY**
 L-6: 27.758379°, -97.462686°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

WRONG WAY DETECTION ASSEMBLY **WRONG WAY**
 L-5: 27.758362°, -97.462664°
 INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA

DO NOT ENTER
 L-4: 27.758147°, -97.462467°
 EXISTING DO NOT ENTER SIGN TO REMAIN IN PLACE

WRONG WAY
 L-3: 27.758149°, -97.462356°
 EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

DO NOT ENTER
 L-1: 27.757797°, -97.462300°
 INSTALL SM RD SN SUP&AM TYS80(1)SA(P) ~ 1 EA
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA


DO NOT ENTER
 L-2: 27.757922°, -97.462152°
 REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA (NOTE 1)
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA

- NOTES:
1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
 2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
 3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.
 4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS S4X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.




Kassondra Fiora Manoz
 4-7-24
 SIGNING LAYOUT
 LOCATION L:
 SH 358 EB EXIT
 TO OLD
 BROWNSVILLE RD

SHEET 1 OF 1

			
CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	65	

DATE: 4/7/2024 4:59:52 PM
 FILE: pwr://txdot.protectwiseonline.com:TXDOT4/Documents/16 - CRP/Design Projects/091600281/4 - Design/Plan Set/3. Roadway/Signing Layout/LOCATION M US 181 NB EXIT TO BURLESON ST. dwg

LOCATION M: US 181 NORTHBOUND EXIT TO BURLESON RD

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.



M-10: 27.820779°, -97.389943°

REMOVE PED POLE ASSEMBLY ~ 1 EA

WRONG WAY NOTIFICATION ASSEMBLY

WRONG WAY

M-9: 27.820790°, -97.389946°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA (NOTE 2)

M-7: 27.821257°, -97.389642°

REMOVE PED POLE ASSEMBLY ~ 1 EA

WRONG WAY SOLAR PANEL ASSEMBLY

M-6: 27.821270°, -97.389643°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA (NOTE 2)

WRONG WAY DETECTION ASSEMBLY

M-5: 27.821286°, -97.389615°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER SYSTEM ~ 1/3 EA (NOTE 2)

WRONG WAY

M-3: 27.762053°, -97.465704°

EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

R5-1
36" X 36"



M-1: 27.822232°, -97.389422°

REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA

R5-1
36" X 36"



M-2: 27.822240°, -97.389429°

REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA

M-11: 27.820837°, -97.390070°

EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

WRONG WAY

M-8: 27.821317°, -97.389768°

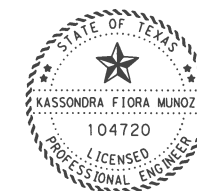
EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

WRONG WAY

M-4: 27.762053°, -97.465704°

EXISTING WRONG WAY SIGN TO REMAIN IN PLACE

WRONG WAY



Kassondra Fiora Munoz
4-7-24

SIGNING LAYOUT

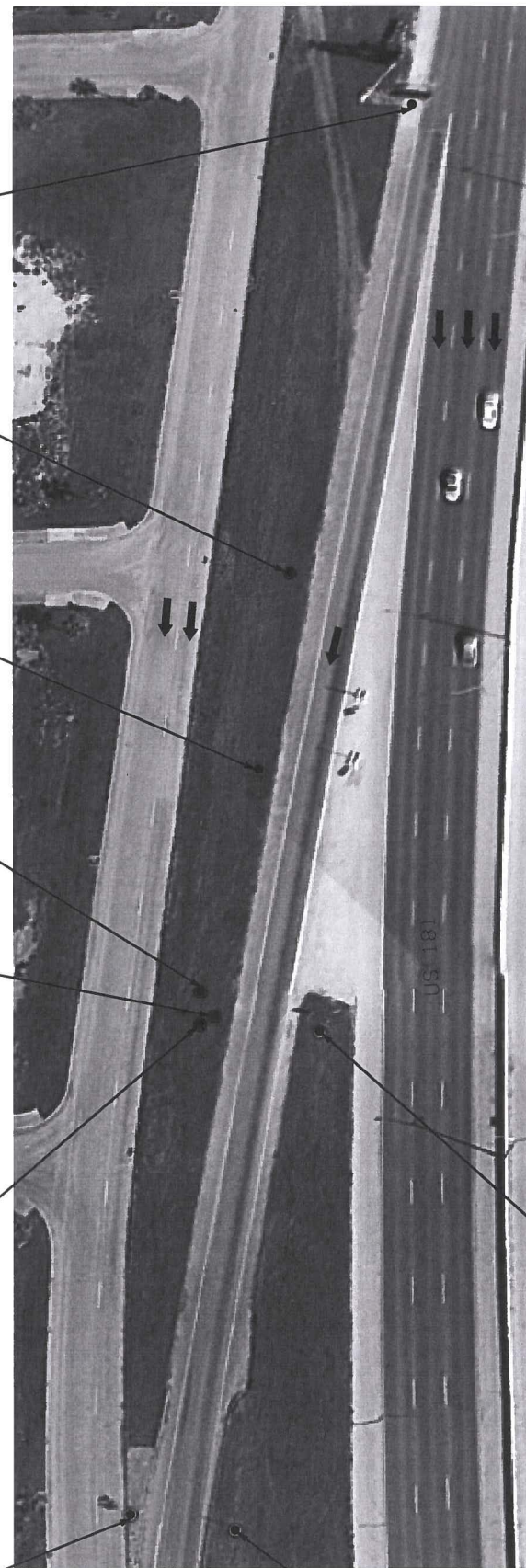
LOCATION M:
US 181 NB EXIT
TO BURLESON RD

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	66	

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
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4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS S4X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.



R5-1a
8' X 4
ON BACK SIDE
OF TRUSS **WRONG WAY**
N-9: 27.835907°, -97.381823°
INSTALL ALUMINUM SIGN (TY 0) ~ 32 SF
(NOTE 4)

WRONG WAY
NOTIFICATION
ASSEMBLY **WRONG WAY**
N-8: 27.835502°, -97.382553°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

N-7: 27.835340°, -97.382798°
REMOVE PED POLE ASSEMBLY ~ 1 EA
REMOVE LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

WRONG WAY
SOLAR PANEL
ASSEMBLY **WRONG WAY**
N-6: 27.835199°, -97.383035°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

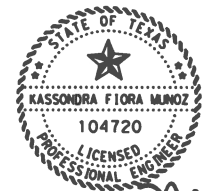
WRONG WAY
DETECTION
ASSEMBLY **WRONG WAY**
N-4: 27.835168°, -97.383045°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

WRONG WAY
N-3: 27.758149°, -97.462356°
REMOVE SM RD SN SUP&AM ~ 1 EA

N-5: 27.835073°, -97.382966° **WRONG WAY**
EXISTING WRONG WAY SIGN
TO REMAIN IN PLACE ~ 1 EA

DO NOT ENTER
N-1: 27.834842°, -97.383524°
REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
(NOTE 1)
INSTALL SOLAR POWERED LED SIGN ~ 1 EA

DO NOT ENTER
N-2: 27.834755°, -97.383450°
REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
(NOTE 1)
INSTALL SOLAR POWERED LED SIGN ~ 1 EA



Kassandra Fiora Munoz
4-7-24

SIGNING LAYOUT
LOCATION N:
US 181 SB EXIT
TO BEACH AVE

CONT	SECT	HIGHWAY
091600	281	VARIOUS
DIST	COUNTY	SHEET NO.
CRP	NUECES	67

DATE: 4/7/2024 5:04:20 PM
FILE: pw://ttdot.prolectwiseonline.com:TXDOT4/Projects/091600281/4 - CRP/Design/Plan Set/3. Roadway/Signing Layout LOCATION N (US 181 SB EXIT TO BEACH AVE).dgn

DATE: 4/7/2024 5:09:22 PM
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R5-1a
 8' X 4
 ON BACK SIDE
 OF TRUSS

WRONG WAY

P-14: 27.871744°, -97.331976°

LOCATION P: US 181 NORTHBOUND EXIT TO FM 893

INSTALL ALUMINUM SIGN (TY 0) ~ 32 SF
 (NOTE 4)

P-13: 27.782127°, -97.469100°
 REMOVE PED POLE ASSEMBLY ~ 1 EA
 REMOVE LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA

DO NOT
 ENTER

P-11A: 27.872386°, -97.330665°
 RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA

P-10: 27.872543°, -97.330401°
 REMOVE PED POLE ASSEMBLY ~ 1 EA

WRONG WAY
 NOTIFICATION
 ASSEMBLY

WRONG WAY

P-8: 27.872710°, -97.330104°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA (NOTE 2)

DO NOT
 ENTER

P-3A: 27.872722°, -97.330080°
 RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA

WRONG WAY
 SOLAR PANEL
 ASSEMBLY

P-7: 27.873006°, -97.329583°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA (NOTE 2)

WRONG WAY
 DETECTION
 ASSEMBLY

WRONG WAY

P-5: 27.873032°, -97.329567°

INSTALL PED POLE ASSEMBLY ~ 1 EA
 INSTALL LED WRONG WAY DRIVER
 SYSTEM ~ 1/3 EA (NOTE 2)

DO NOT
 ENTER

P-3B: 27.873580°, -97.328750°

NEW LOCATION OF RELOCATED DO NOT
 ENTER SIGN FROM LOCATION P-3A

DO NOT
 ENTER

P-4B: 27.873702°, -97.328853°

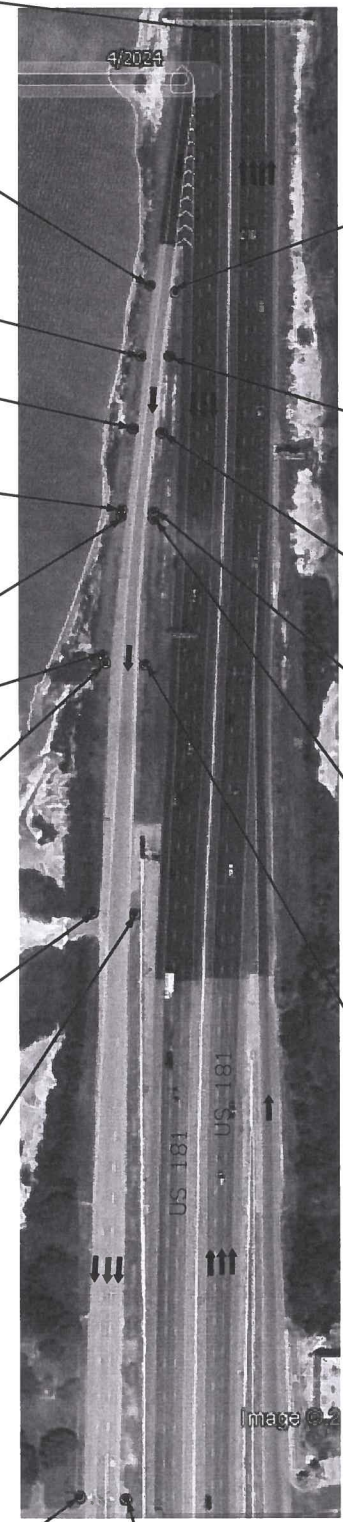
NEW LOCATION OF RELOCATED DO NOT
 ENTER SIGN FROM LOCATION P-4A

R5-1
 36" X 36"

DO NOT
 ENTER

P-1: 27.874833°, -97.326993°

REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
 (NOTE 1)
 INSTALL SOLAR POWERED LED SIGN ~ 1 EA



P-11B: 27.872328°, -97.330970°
 NEW LOCATION OF RELOCATED DO NOT
 ENTER SIGN FROM LOCATION P-11A

DO NOT
 ENTER

P-12: 27.872471°, -97.330741°
 REMOVE SM RD SN SUP&AM ~ 1 EA

DO NOT
 ENTER

P-9A: 27.872636°, -97.330465°
 RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA

WRONG WAY

P-9B: 27.873149°, -97.329665°
 NEW LOCATION OF RELOCATED WRONG
 WAY SIGN FROM LOCATION P-9A

WRONG WAY

P-4A: 27.872824°, -97.330161°
 RELOCATE SM RD SN SUP&AM TY S80
 ~ 1 EA

DO NOT
 ENTER

P-6: 27.873149°, -97.329665°
 INSTALL SM RD SN SUP&AM TYS80(1)SA(T) ~ 1 EA

WRONG WAY

DO NOT
 ENTER

P-2: 27.783134°, -97.468882°
 REMOVE SM RD SN SUP&AM (SIGN ONLY)
 ~ 1 EA (NOTE 1)

R5-1
 36" X 36"

INSTALL SOLAR POWERED LED SIGN ~ 1 EA

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.
4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS S4X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.



Kassondra Fiora Munoz
 4-7-24

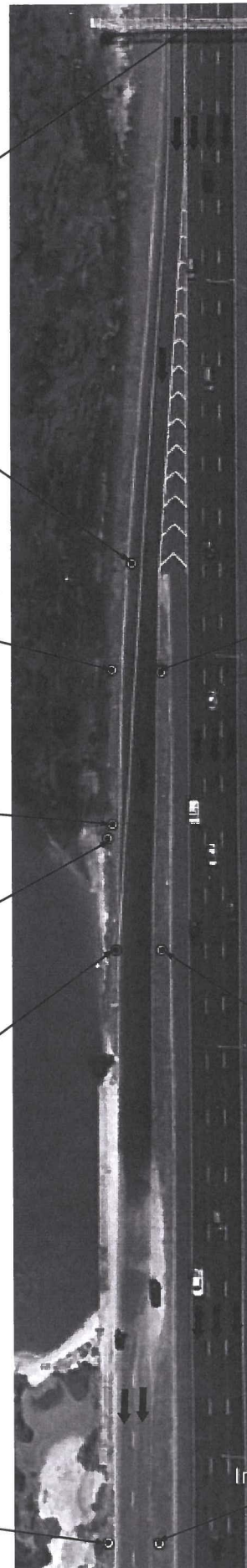
SIGNING LAYOUT
 LOCATION P:
 US 181 NB EXIT
 TO FM 893

SHEET 1 OF 1

		HIGHWAY	
		VARIOUS	
CONT	SECT	JOB	HIGHWAY
091600	281		
DIST		COUNTY	SHEET NO.
CRP		NUECES	68

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.
4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS 54X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.



R5-1a
8' X 4
ON BACK SIDE
OF TRUSS

WRONG WAY Q-10: 27.871909°, -97.332178°
INSTALL ALUMINUM SIGN (TY 0) ~ 32 SF
(NOTE 4)

WRONG WAY
NOTIFICATION
ASSEMBLY

WRONG WAY Q-9: 27.871272°, -97.333227°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA (NOTE 2)

Q-7: 27.871166°, -97.333443°
REMOVE PED POLE ASSEMBLY ~ 1 EA

WRONG WAY
SOLAR PANEL
ASSEMBLY

Q-6: 27.870970°, -97.333713°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA (NOTE 2)

WRONG WAY
DETECTION
ASSEMBLY

WRONG WAY Q-5: 27.870960°, -97.333742°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA (NOTE 2)

WRONG WAY Q-3: 27.870809°, -97.333922°
REMOVE PED POLE ASSEMBLY ~ 1 EA
REMOVE LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

R5-1
36" X 36"

DO NOT ENTER Q-1: 27.870119°, -97.334905°
REMOVE SM RD SN SUP&AM(SIGN ONLY) ~ 1 EA
(NOTE 1)
INSTALL SOLAR POWERED LED SIGN ~ 1 EA

Q-8: 27.871086°, -97.333377° **WRONG WAY**
EXISTING WRONG WAY SIGN
TO REMAIN IN PLACE

Q-4: 27.871086°, -97.333377° **WRONG WAY**
INS SM RD SN SUP&AM TYS80(1)SA(T) ~ 1 EA

Q-2: 27.870043°, -97.334837° **DO NOT ENTER** R5-1
36" X 36"
REMOVE SM RD SN SUP&AM(SIGN ONLY) ~ 1 EA
(NOTE 1)
INSTALL SOLAR POWERED LED SIGN ~ 1 EA



Kassandra Fiora Munoz
4-7-24

SIGNING LAYOUT

LOCATION Q:
US 181 SB EXIT
TO ACCESS RD

		DIST COUNTY SHEET NO.	
		CRP	NUECES
CONT SECT	JOB	HIGHWAY	
091600	281	VARIOUS	

DATE: 4/7/2024 5:20:14 PM FILE: pwr://txdot.prolectwiseonline.com:TXDOT4/Documents/16 - CRP/Design Projects/091600281/4 - Design/Plan Set/4. Wall/Signing Layout LOCATION S US 181 NB EXIT TO FM 2986.dgn

LOCATION S: US 181 NORTHBOUND EXIT TO FM 2986

NOTES:

1. REMOVAL OF THE T BRACKET FOR THIS ASSEMBLY SHALL BE CONSIDERED TO BE SUBSIDIARY TO THE REMOVAL ITEM 0644-6078 (REMOVE SM RD SN SUP&AM)(SIGN ONLY)).
2. REFER TO WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS FOR MORE INFORMATION. ITEM 6409-6001 (LED WRONG WAY DRIVER SYSTEM (THERMAL)) PAYS TO FURNISH AND INSTALL THE EQUIPMENT ON THE WRONG WAY DETECTION, NOTIFICATION AND SOLAR PANEL ASSEMBLIES. CONSIDER THIS IN CONJUNCTION WITH THE SPECIFICATION BOOK AND GENERAL NOTES ASSOCIATED WITH THIS PROJECT.
3. SPECIAL ATTENTION IS CALLED TO THE FACT THAT ITEM 644-6076 (REMOVE SM RD SN SUP&AM) ALSO INCLUDES THE REMOVAL OF THE EXISTING FOUNDATION, BACKFILLING AND SURFACE PLACEMENT. THE CONTRACTOR SHALL REFER TO THE SPEC BOOK FOR MORE INFORMATION.
4. WRONG WAY SIGN TO BE INSTALLED ON THE BACKSIDE OF THE OVERHEAD TRUSS PER ITEM 636-6003. SUPPORT BRACKETS/ INTERMEDIATE SIGN SUPPORT MEMBERS S4X7.7'S SHALL BE USED. THIS IS SUBSIDIARY TO ITEM 636-6003. REFER TO GENERAL NOTES AND STANDARDS FOR MORE INFORMATION.

R5-1a
8' X 4
ON BACK SIDE
OF TRUSS
WRONG WAY
S-12: 27.877020°, -97.324386°
INSTALL ALUMINUM SIGN (TY O) ~ 32 SF
(NOTE 4)

S-11: 27.877313°, -97.323833°
REMOVE PED POLE ASSEMBLY ~ 1 EA
REMOVE LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

WRONG WAY
NOTIFICATION
ASSEMBLY
WRONG WAY
S-10: 27.877320°, -97.323823°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

DO NOT ENTER
S-7: 27.877243°, -97.323624°
EXISTING DO NOT ENTER
TO REMAIN IN PLACE

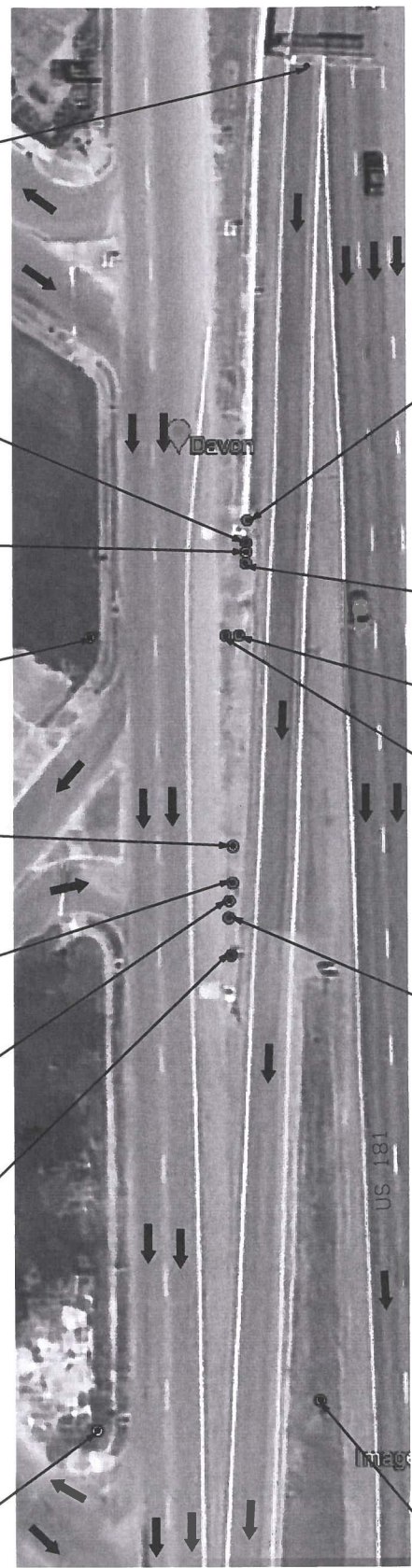
WRONG WAY
SOLAR PANEL
ASSEMBLY
WRONG WAY
S-6: 27.877506°, -97.323527°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

ONE WAY
S-4A: 27.877530°, -97.323492°
RELOCATE SM RD SN SUP&AM TY S80 ~ 1 EA

WRONG WAY
DETECTION
ASSEMBLY
WRONG WAY
S-5: 27.877539°, -97.323473°
INSTALL PED POLE ASSEMBLY ~ 1 EA
INSTALL LED WRONG WAY DRIVER
SYSTEM ~ 1/3 EA

S-3: 27.877575°, -97.323424°
REMOVE PED POLE ASSEMBLY ~ 1 EA

DO NOT ENTER
S-1: 27.877757°, -97.322914°
REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
(NOTE 1)
INSTALL SOLAR POWERED LED SIGN ~ 1 EA



S-9B: 27.877299°, -97.323856°
NEW LOCATION OF RELOCATED DO NOT
ENTER SIGN FROM LOCATION S-9A

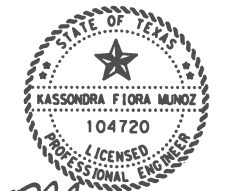
S-9A: 27.877327°, -97.323812°
RELOCATE SM RD SN SUP&AM TY S80
~ 1 EA

S-8A: 27.877371°, -97.323735°
RELOCATE SM RD SN SUP&AM TY S80
~ 1 EA

S-8B: 27.877360°, -97.323725°
NEW LOCATION OF RELOCATED DO NOT
ENTER SIGN FROM LOCATION S-8A

S-4B: 27.877549°, -97.323457°
NEW LOCATION OF RELOCATED DO NOT
ENTER SIGN FROM LOCATION S-4B

S-2: 27.877918°, -97.323090°
REMOVE SM RD SN SUP&AM (SIGN ONLY) ~ 1 EA
(NOTE 1)
INSTALL SOLAR POWERED LED SIGN ~ 1 EA



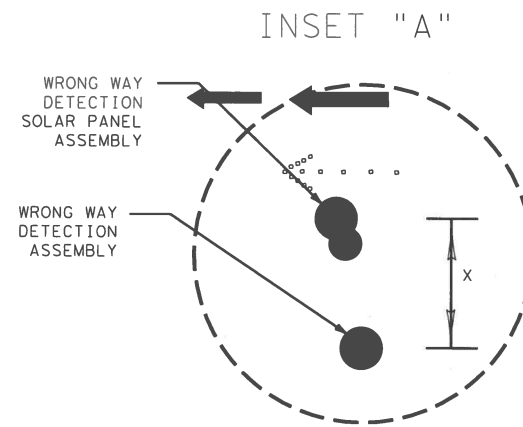
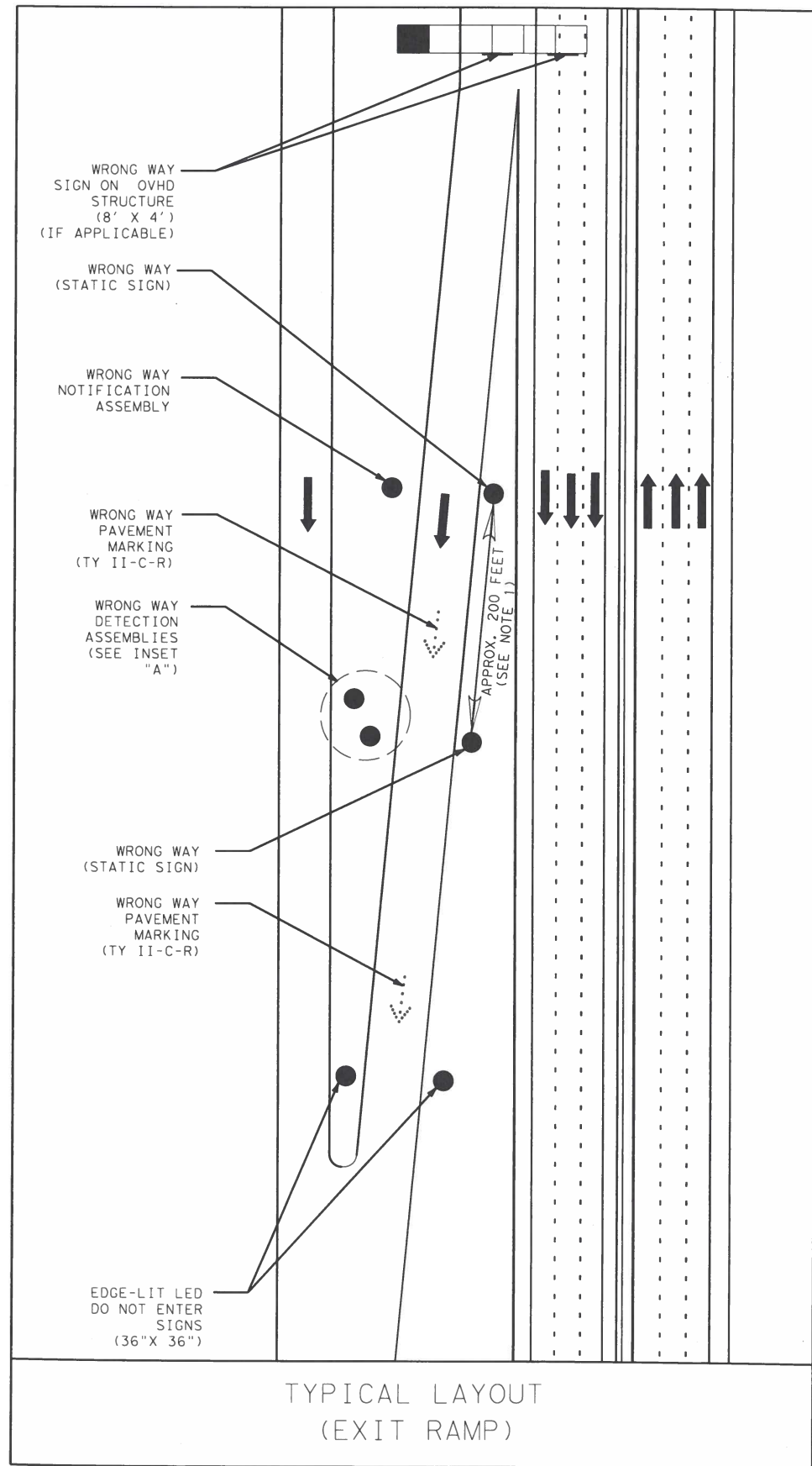
Kassandra Fiora Munoz
4-7-24

SIGNING LAYOUT
LOCATION S:
US 181 NB EXIT
TO FM 2986

SHEET 1 OF 1

		CONT	SECT	JOB	HIGHWAY
		091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.			
CRP	NUECES	70			

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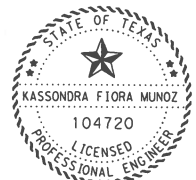
X = APPROXIMATELY 10 FEET OR PER MANUFACTURER'S RECOMMENDATIONS (SEE NOTE 2)

LEGEND

- ← DIRECTION OF TRAVEL
- ⋯ PAVEMENT MARKERS TY II-C-R
- WWD ASSEMBLY

NOTES:

1. THE WRONG WAY DETECTION ASSEMBLY AND NOTIFICATION ASSEMBLY SHALL BE PLACED PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL MARK LOCATIONS APPROXIMATELY 200 FEET APART FROM EACH OTHER AS SHOWN IN THE DIAGRAM AND THEN COORDINATE WITH THE ENGINEER FOR APPROVAL OF THESE MARKED LOCATIONS BEFORE FOUNDATIONS ARE TO BE DRILLED.
2. THE CONTRACTOR SHALL MARK THE PROPOSED LOCATIONS OF THE WRONG WAY DETECTION ASSEMBLY AND ITS CORRESPONDING SOLAR PANEL ASSEMBLY AND THEN COORDINATE WITH THE ENGINEER FOR APPROVAL OF THESE LOCATIONS BEFORE THE FOUNDATIONS ARE DRILLED.
3. REFER TO SHEET 2 OF 2 FOR DETAILS OF EQUIPMENT MOUNTED ON THE SYSTEM POLES AND OF THE POLE FOUNDATIONS.



Kassondra Fiora Munoz
 4-6-24

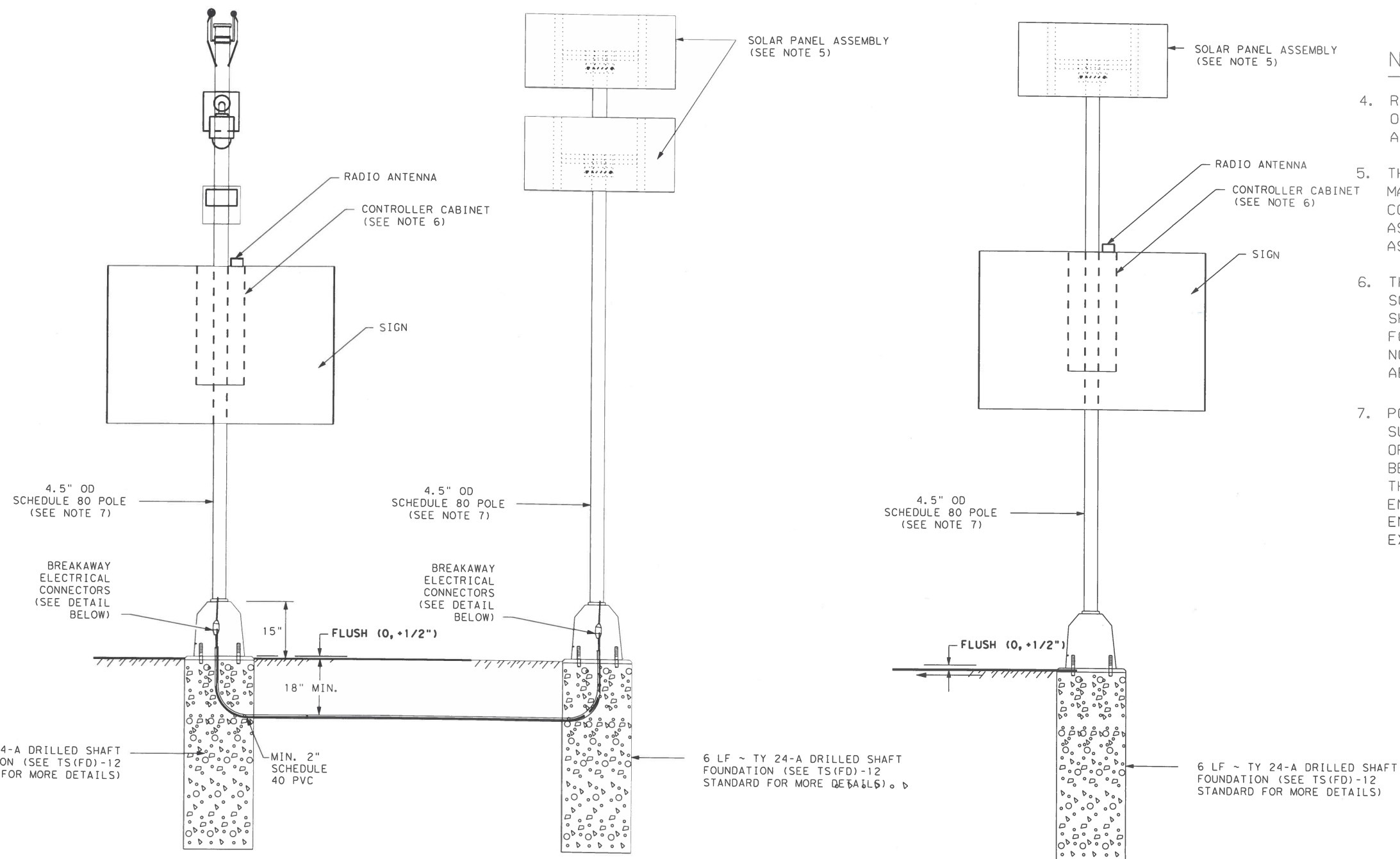
WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS

LINE SIDE INSULATED CONDUCTORS

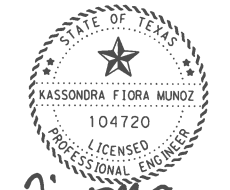
SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.	
CRP	NUECES	71	

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- NOTES:**
- REFER TO SHEET 1 OF 2 FOR TYPICAL LAYOUT OF POLES FOR WRONG WAY DETECTION SYSTEMS AT A TYPICAL RAMP.
 - THE SOLAR PANELS ARE TO BE INSTALLED PER MANUFACTURER RECOMMENDATIONS. THE CONTRACTOR SHALL INSTALL SO THAT THE ASSEMBLY MAY RECEIVE OPTIMAL SUNLIGHT FOR ASSEMBLY OPERATION.
 - THE CONTROLLER CABINET SHALL BE INSTALLED SO THAT IT IS BEHIND THE SIGN AND IS SHOWN IN THE DETAILS HERE AND TO ALLOW FOR THE RADIO ANTENNAS FOR THE NOTIFICATION AND DETECTION ASSEMBLY TO BE ABLE TO COMMUNICATE OPTIMALLY.
 - POLES SHALL BE SUPPLIED FROM THE SAME SUPPLIER AS THE BREAKAWAY BASES TO PROVIDE OPTIMAL FIT. THIS FIT SHALL BE VERIFIED BEFORE EQUIPMENT IS INSTALLED ON THE POLES. THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER IF OPTIMAL FIT ISN'T PROVIDED TO ENSURE THAT THE ASSEMBLY WILL PERFORM AS IS EXPECTED.



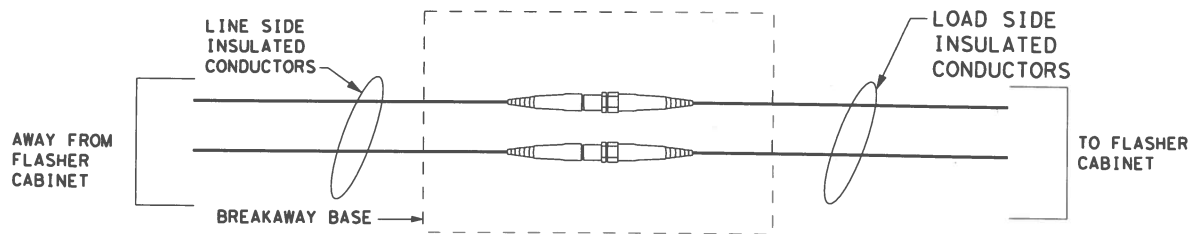
Kassandra Fiora Munoz
4-6-24

WRONG WAY DETECTION ASSEMBLY

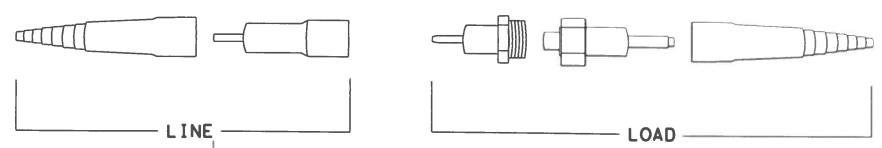
WRONG WAY SOLAR PANEL ASSEMBLY FOR DETECTION ASSEMBLY

WRONG WAY NOTIFICATION ASSEMBLY

WRONG WAY DETECTION SYSTEM LAYOUT AND DETAILS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS EXPLODED VIEW

		CONT	SECT	JOB	HIGHWAY
		091600	281	VARIOUS	
		DIST	COUNTY	SHEET NO.	
		CRP	NUECES	72	

DN: CK: DW: CK: CK:

MODIFIED R5-1a SIGNS



Identifier : R5-1 SPL_96x48;
 1.000" Border, White on Red;
 [WRONG] D; [WAY] D;

NOTES

1. THE CONTRACTOR SHALL SUBMIT THE DESIGNS FOR ALL SIGNS ON THIS SHEET TO THE TXDOT AREA ENGINEER AND TXDOT DISTRICT TRAFFIC ENGINEERING OFFICE PRIOR TO SIGN FABRICATION FOR APPROVAL.
2. SHOW ALL DIMENSIONS TO 3 DECIMAL PLACES AND ROUND DIMENSIONS TO 1/8 TH OF AN INCH.
3. ALL SIGNS ON THIS SHEET ARE TO BE FABRICATED WITH RED RETROREFLECTIVE SHEETING AND WHITE RETROREFLECTIVE LEGEND.
4. REFER TO TSR STANDARDS FOR MORE SHEETING INFORMATION.
5. REFER TO THE LARGE SIGN SUMMARIES FOR LOCATIONS OF THESE SIGNS. LOCATIONS MAY BE ADJUSTED BY THE ENGINEER.



Kassondra Fiora Munoz
 4-6-24

LARGE SIGN DETAILS

NOTE: ALL DIMENSIONS ARE IN INCHES.

LEGEND
 ● WHITE - RETROREFLECTIVE
 ● RED - RETROREFLECTIVE

SHEET 1 OF 1

		HIGHWAY	
		VARIOUS	
CONT	SECT	JOB	COUNTY
091600	281		CRP
DIST		SHEET NO.	
CRP		73	

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GENERAL NOTES FOR ALL ELECTRICAL WORK

- The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.
- Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.
- Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.
- Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.
- Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.
- When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

- Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.
- Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.
- Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.


AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

- Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.
- Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.
- Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.
- Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

- Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.
- When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.
- Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

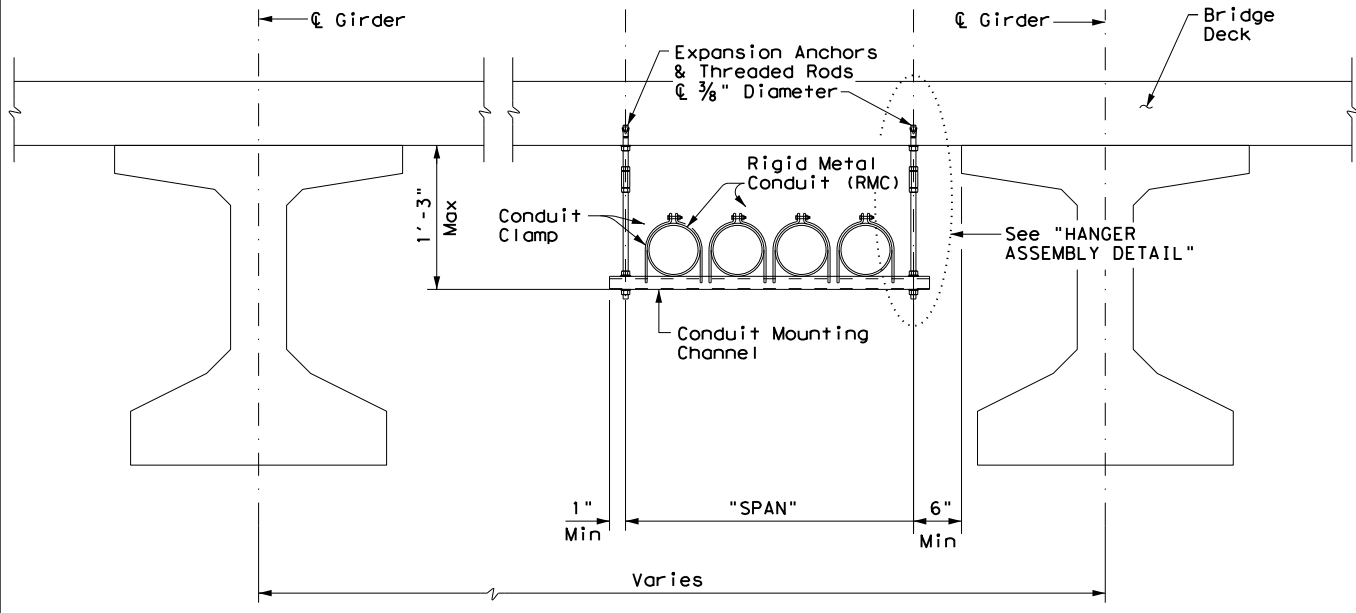
B. CONSTRUCTION METHODS

- Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.
- Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.
- Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.
- Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.
- When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."
- Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.
- During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.
- Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.
- Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.
- Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.
- At all electrical services, install a 6 AWG solid copper grounding electrode conductor.
- Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).
- Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.
- File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

 Texas Department of Transportation		Traffic Operations Division Standard	
<h1>ELECTRICAL DETAILS CONDUITS & NOTES</h1>			
<h2>ED(1) - 14</h2>			
FILE:	ed1-14.dgn	DWG:	CK:
© TxDOT	October 2014	CONT	SECT
REVISIONS		0916	00
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		CRP	COUNTY
		NUECES	SHEET NO.
			74

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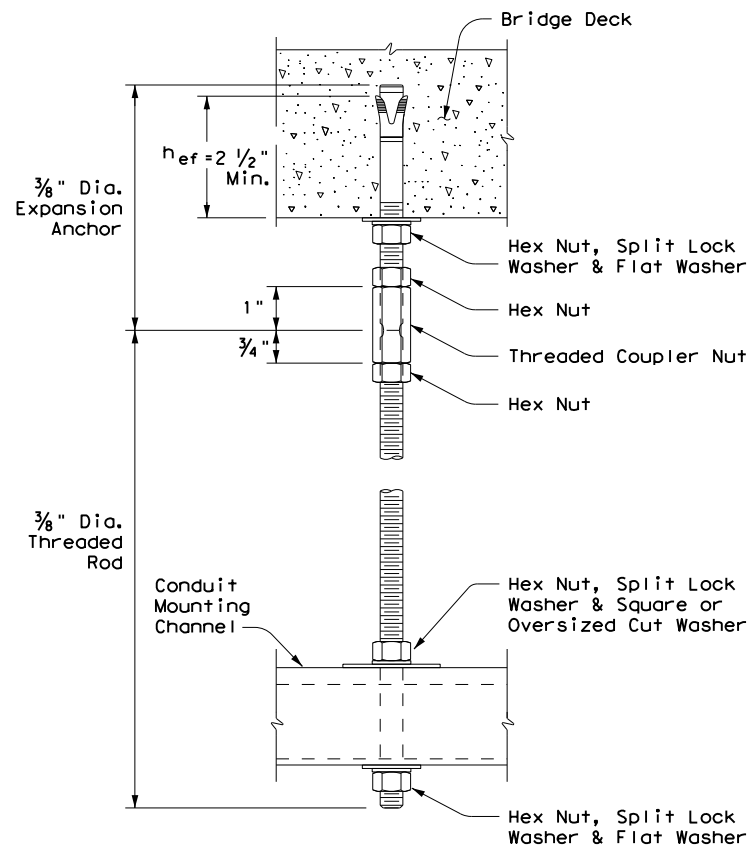
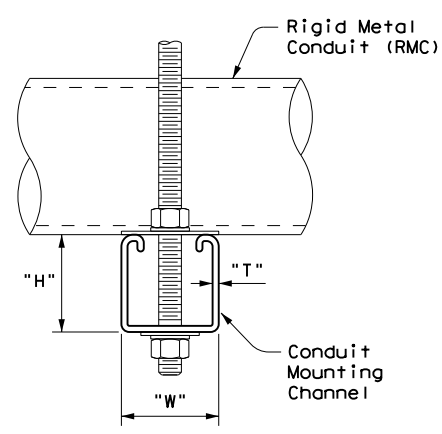
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CONDUIT HANGING DETAIL

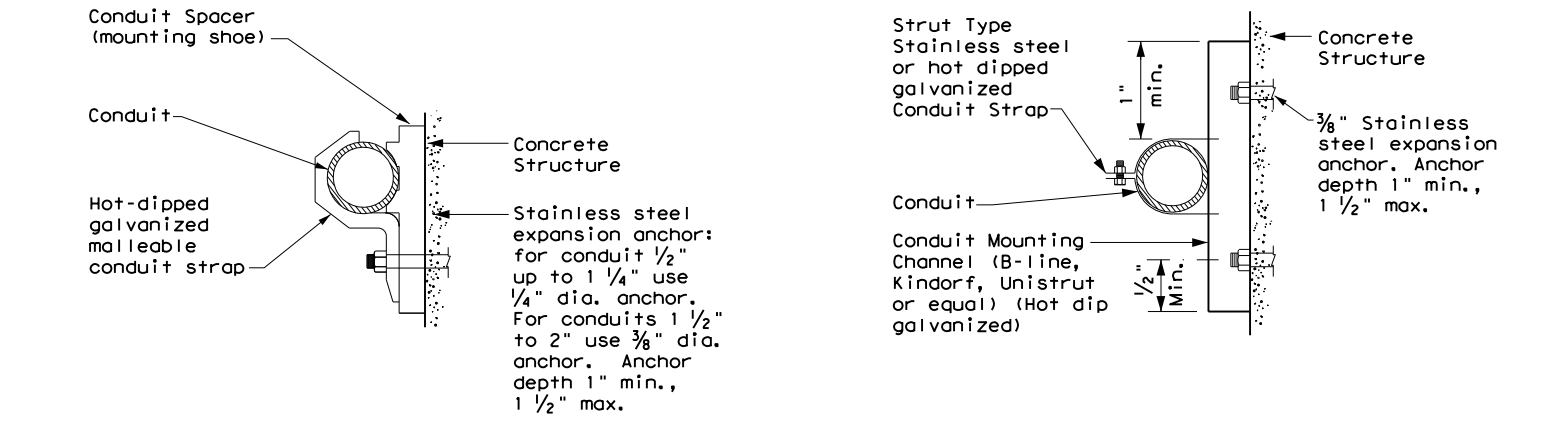
CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 1/16"	12 Ga.

Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.



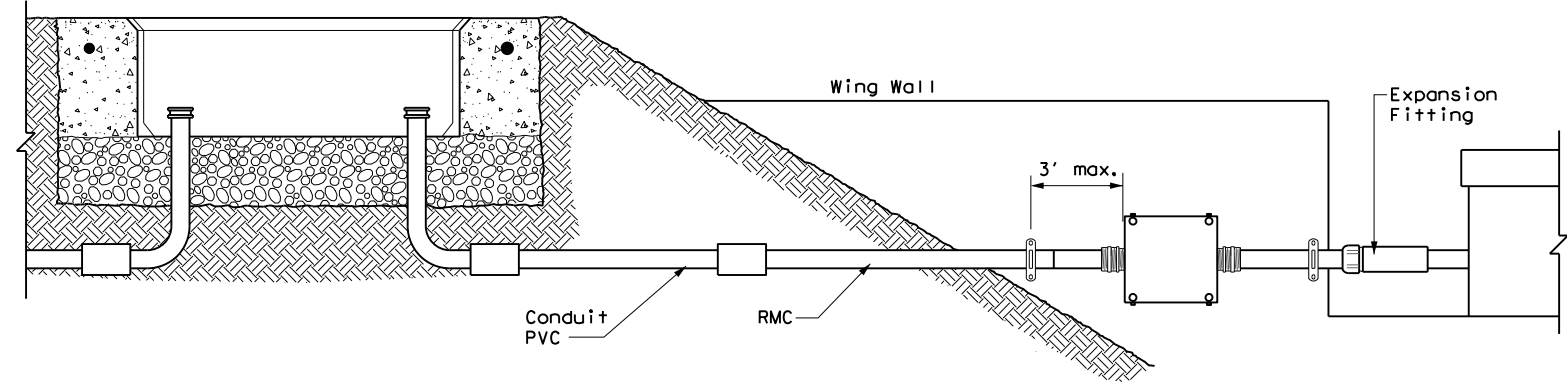
HANGER ASSEMBLY DETAIL

ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT



CONDUIT MOUNTING OPTIONS

Attachment to concrete surfaces
 See ED(1)B.2



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.
2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.
3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.
4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.
5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef}) as needed to ensure sufficient thread length for proper torquing and tightening of anchors.
6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.



ELECTRICAL DETAILS
 CONDUIT SUPPORTS

ED(2) - 14

FILE: ed2-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916	00	281	VARIOUS
	DIST	COUNTY	SHEET NO.	
	CRP	NUECES	75	

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS) 11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

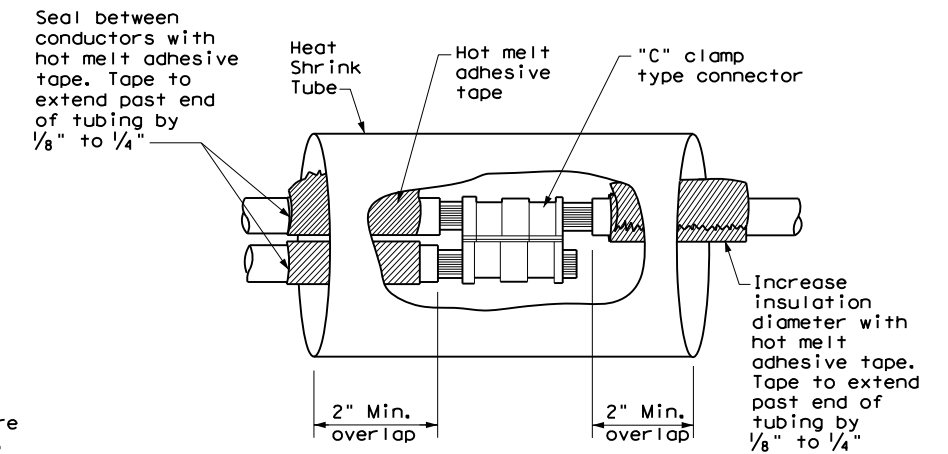
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

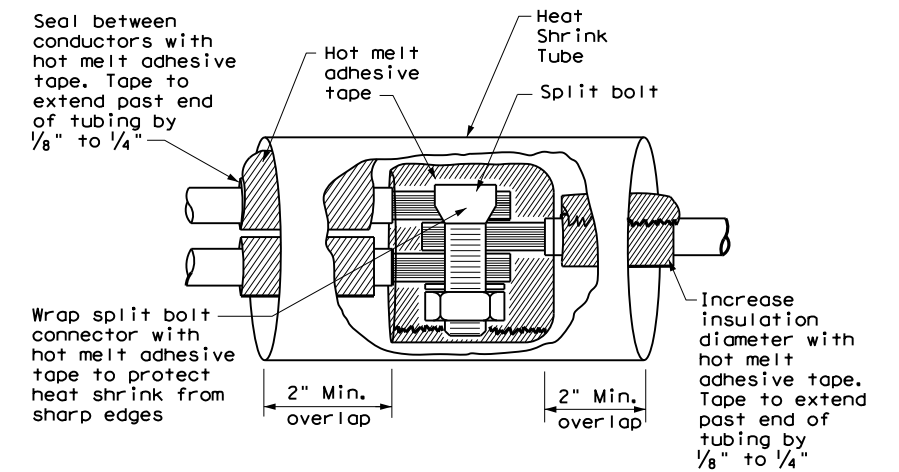
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

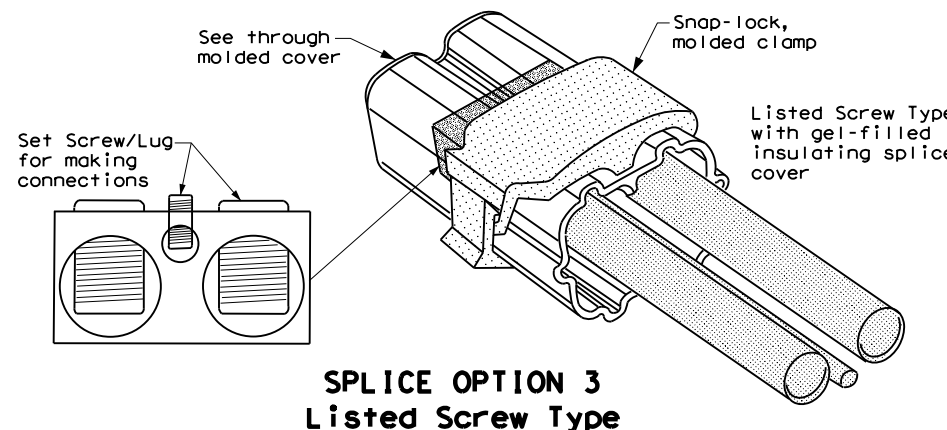
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



**SPLICE OPTION 1
Compression Type**



**SPLICE OPTION 2
Split Bolt Type**



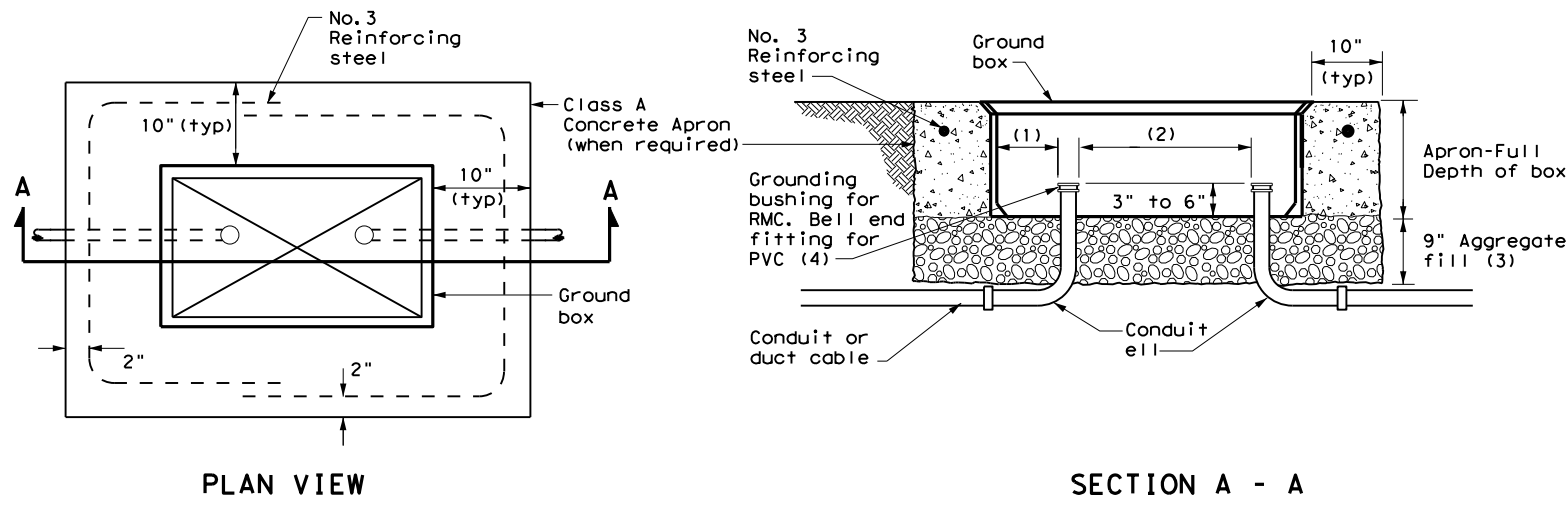
**SPLICE OPTION 3
Listed Screw Type**

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		Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS CONDUCTORS</h2>			
<h3>ED(3) - 14</h3>			
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REVISIONS	0916 00	281	VARIOUS
	DIST	COUNTY	SHEET NO.
	CRP	NUECES	76

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APRON FOR GROUND BOX

- (1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.
- (2) Maintain sufficient space between conduits to allow for proper installation of bushing.
- (3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.
- (4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."
2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

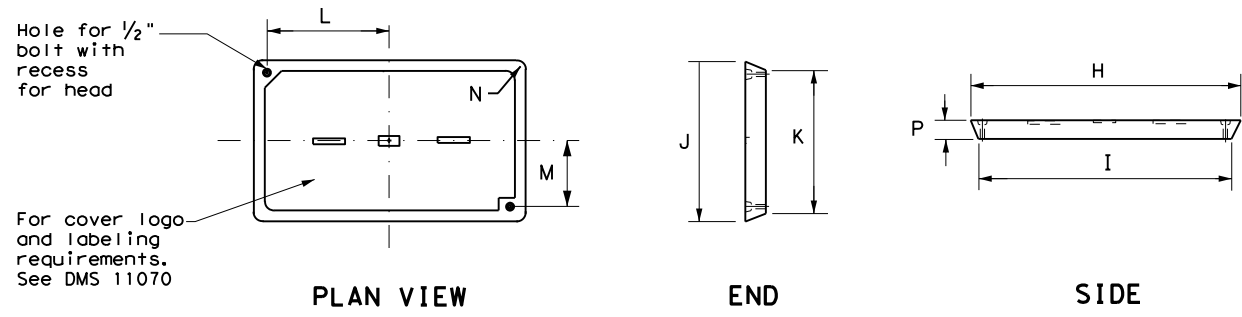
4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.
2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.
3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.
4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.
5. Temporarily seal all conduits in the ground box until conductors are installed.
6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.
7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.
8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.
10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.
11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



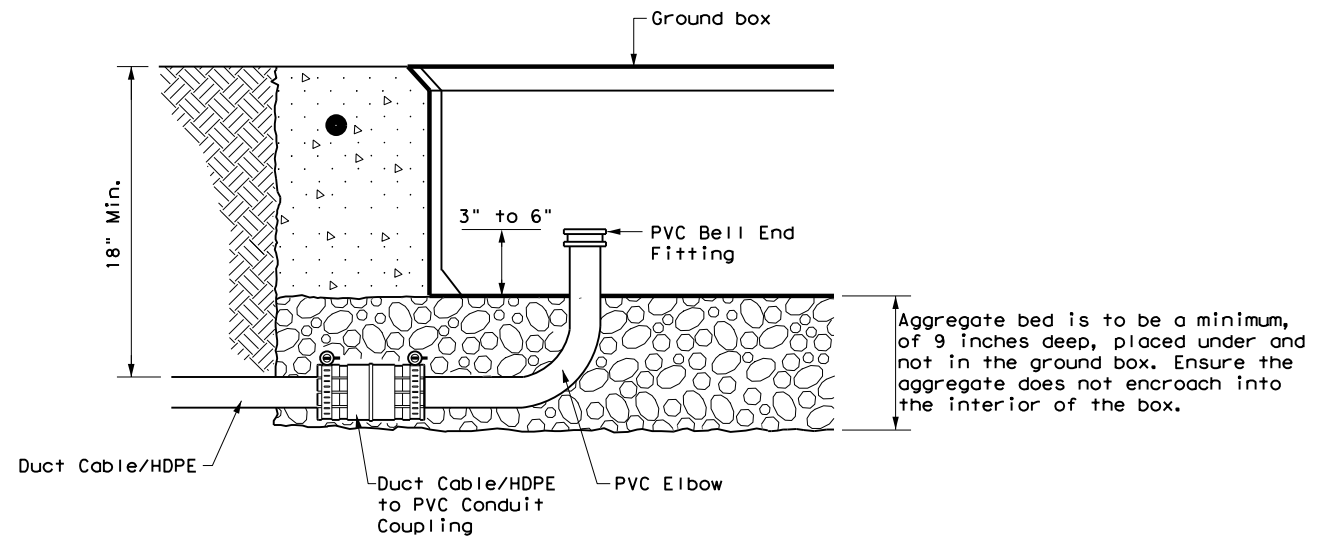
GROUND BOX COVER

				Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS GROUND BOXES</h2>					
<h3>ED(4) - 14</h3>					
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CRP	NUECES	77			

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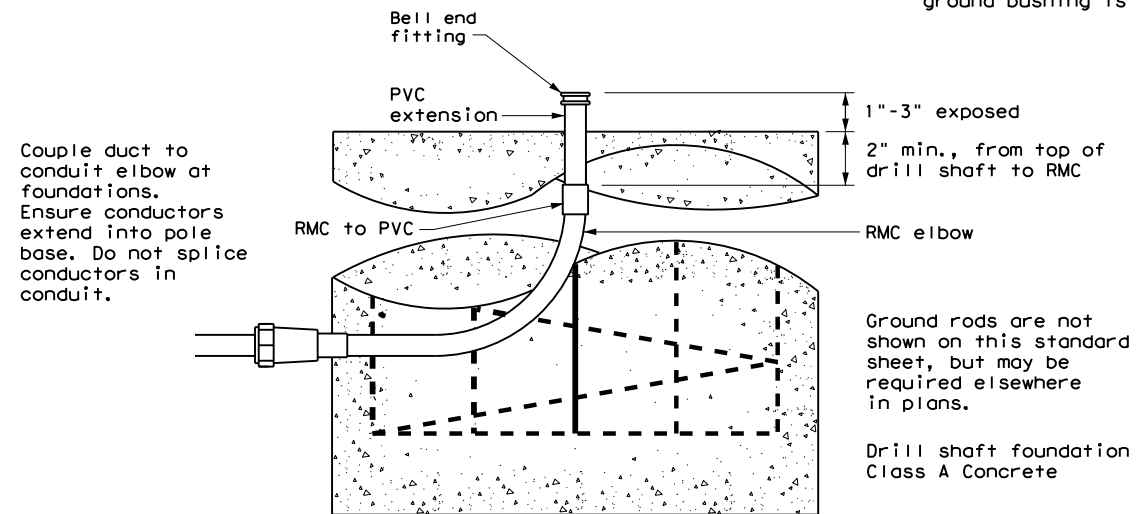
DUCT CABLE & HDPE CONDUIT NOTES

- Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.
- Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.
- Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.
- Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.
- Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."
- When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.
- Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.
- Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.
- Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

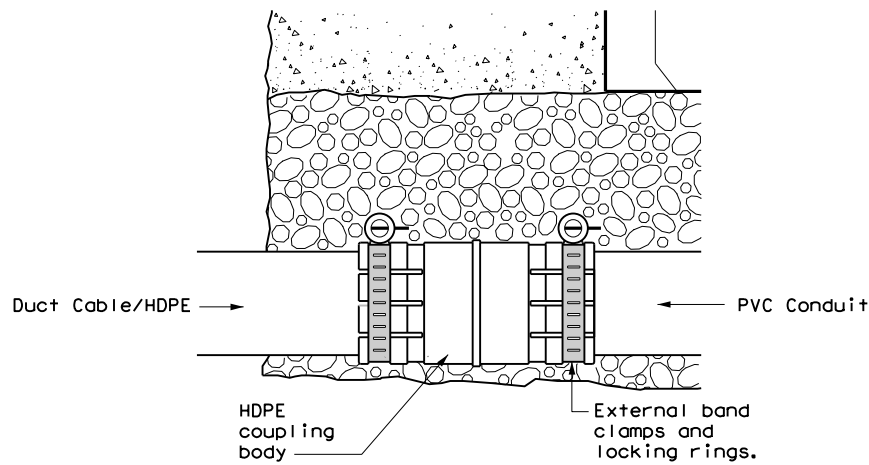


DUCT CABLE/HDPE AT GROUND BOX

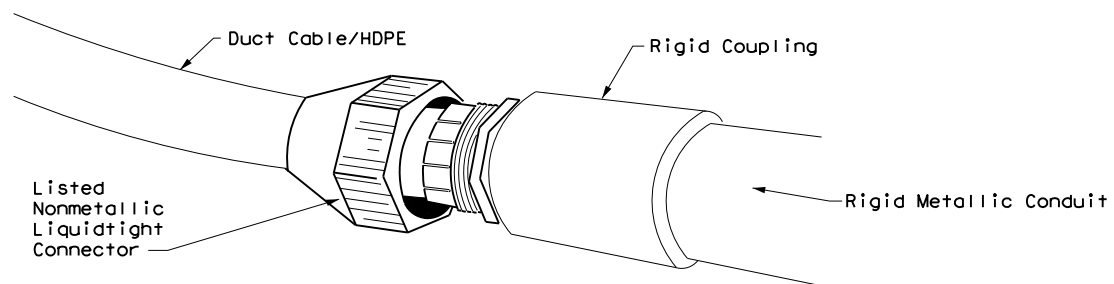
When the upper end of an RMC Ell does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



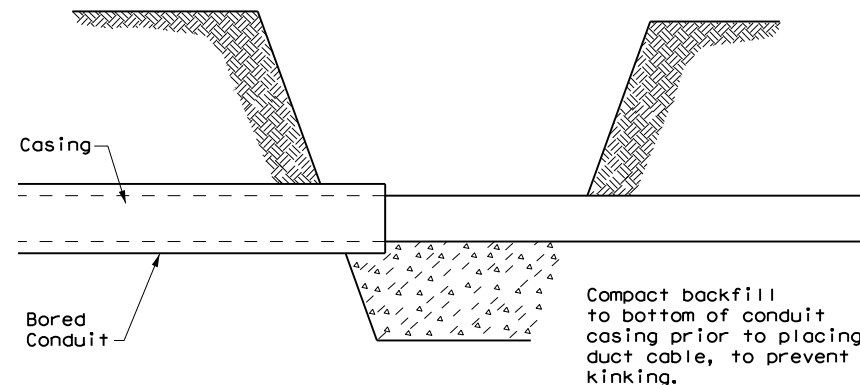
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



BORE PIT DETAIL

		Traffic Operations Division Standard	
ELECTRICAL DETAILS DUCT CABLE/ HDPE CONDUIT			
ED(11)-14			
FILE: ed11-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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DIST: CRP	COUNTY: NUECES	SHEET NO. 78	

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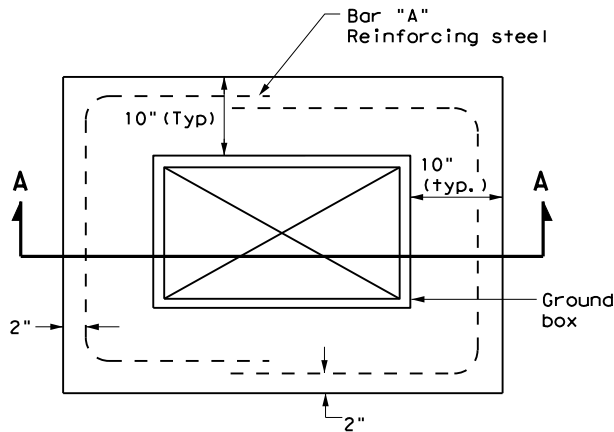
BATTERY BOX GROUND BOXES NOTES

A. MATERIALS

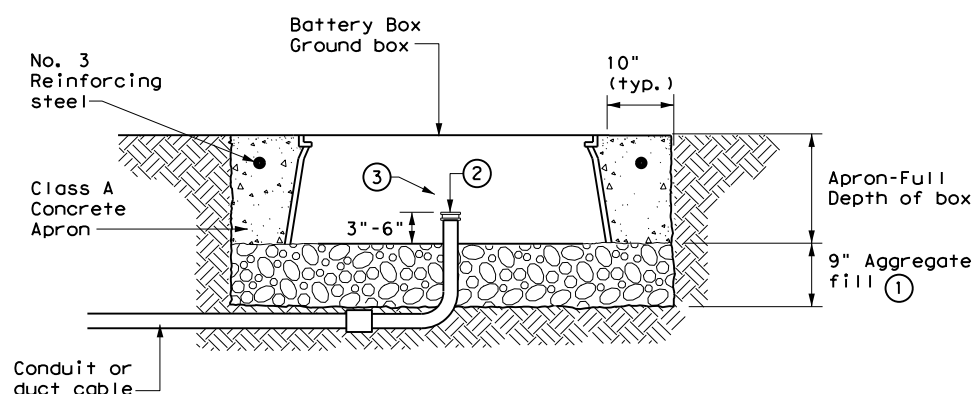
1. Provide polymer concrete or fiberglass reinforced plastic (FRP) battery box ground box and cover in accordance with Departmental Material Specification (DMS) 11071 "Battery Box Ground Boxes." Battery box will accommodate up to 4 batteries, each measuring 8 in. x 13.5 in. x 10 in. (W x L x D). Label battery box ground box cover in accordance with DMS 11071.
2. Supply a marine grade batteries with covers. Secure the marine grade batteries with covers to the stainless steel rack in the bottom of the ground box with tie down straps.

B. CONSTRUCTION METHODS

1. Ensure conduit entry will not interfere with placement of the batteries in the battery box ground box.
2. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting battery box ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure the aggregate bed is in place and is a minimum of 9 in. deep prior to setting the box. Install battery box ground box on top of aggregate.
3. Cast battery box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Battery box ground box aprons, including concrete and reinforcing steel, are subsidiary to battery box ground boxes when called for by descriptive code.
4. Bolt covers down when not working in battery box ground boxes. Keep bolt holes in the box clear of dirt.



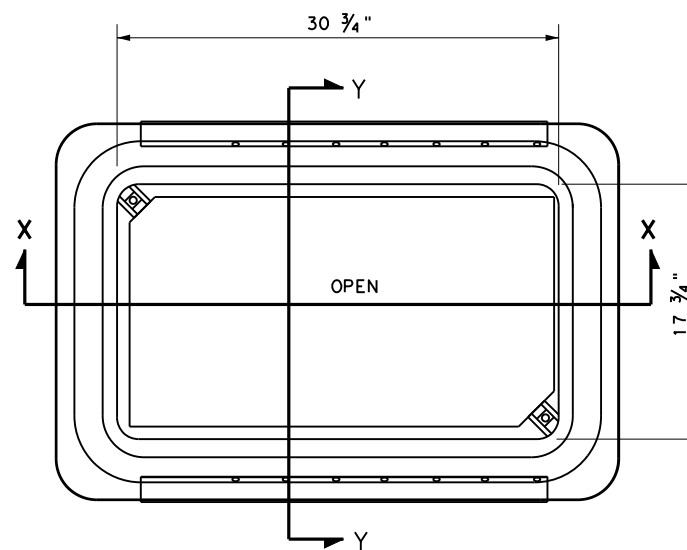
PLAN VIEW



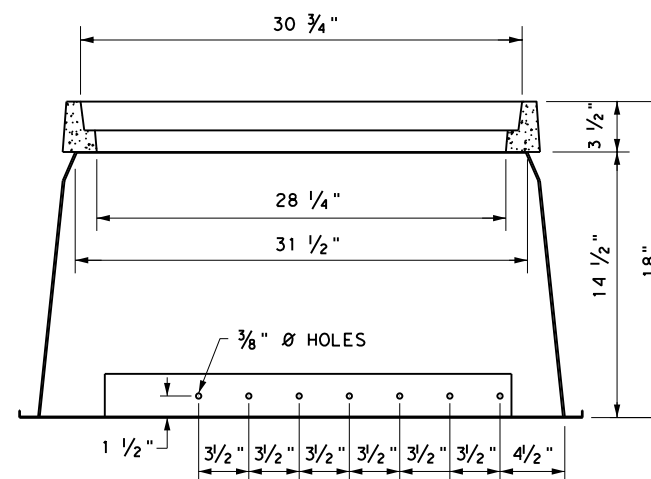
SECTION A - A

APRON FOR BATTERY BOX GROUND BOXES

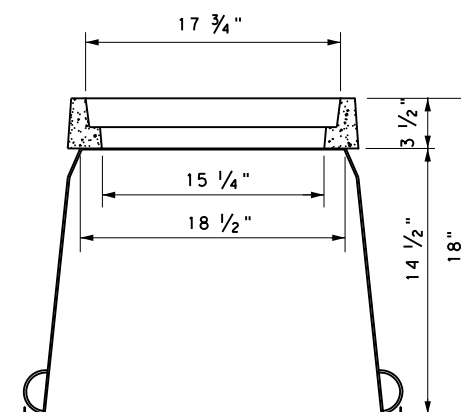
- ① Place aggregate under the box and not in the box. Aggregate should not encroach on the interior volume of the box.
- ② Install bushing or bell end fitting on the upper end of all ellis.
- ③ Install all conduits in a neat and workmanlike manner.



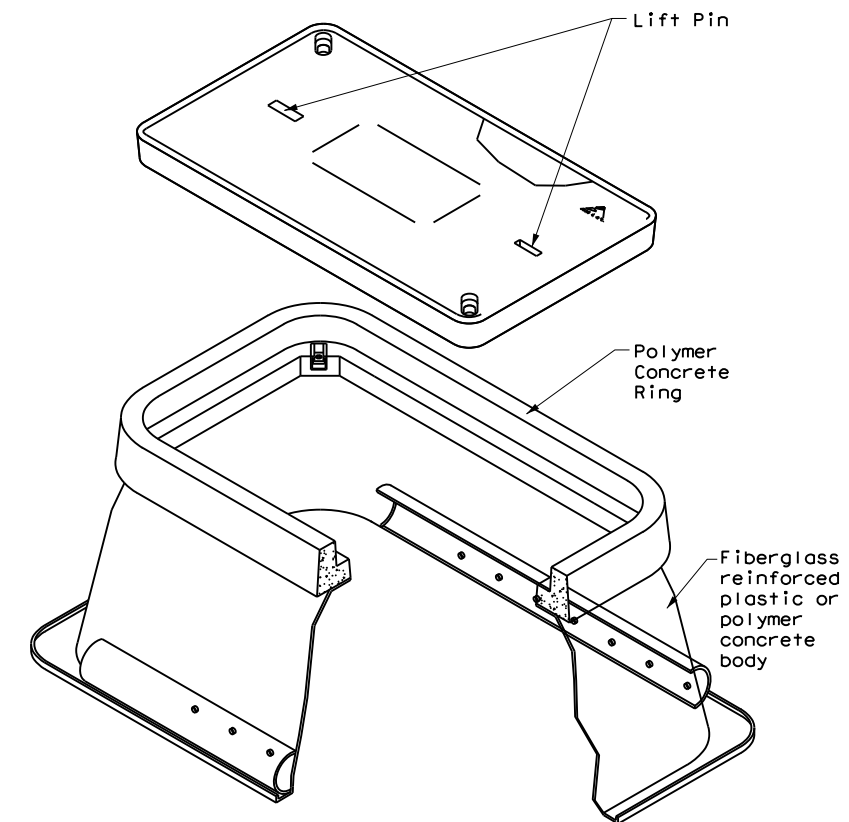
BATTERY BOX TOP VIEW



SECTION X-X



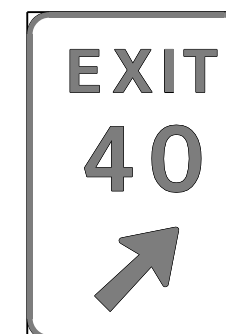
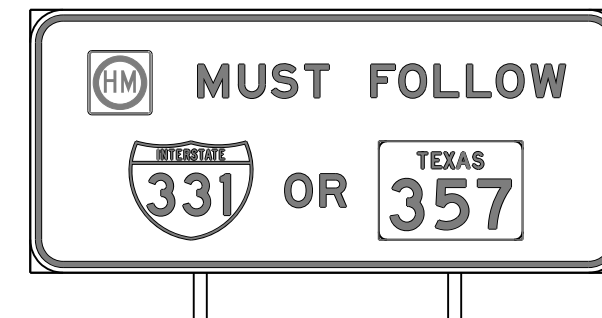
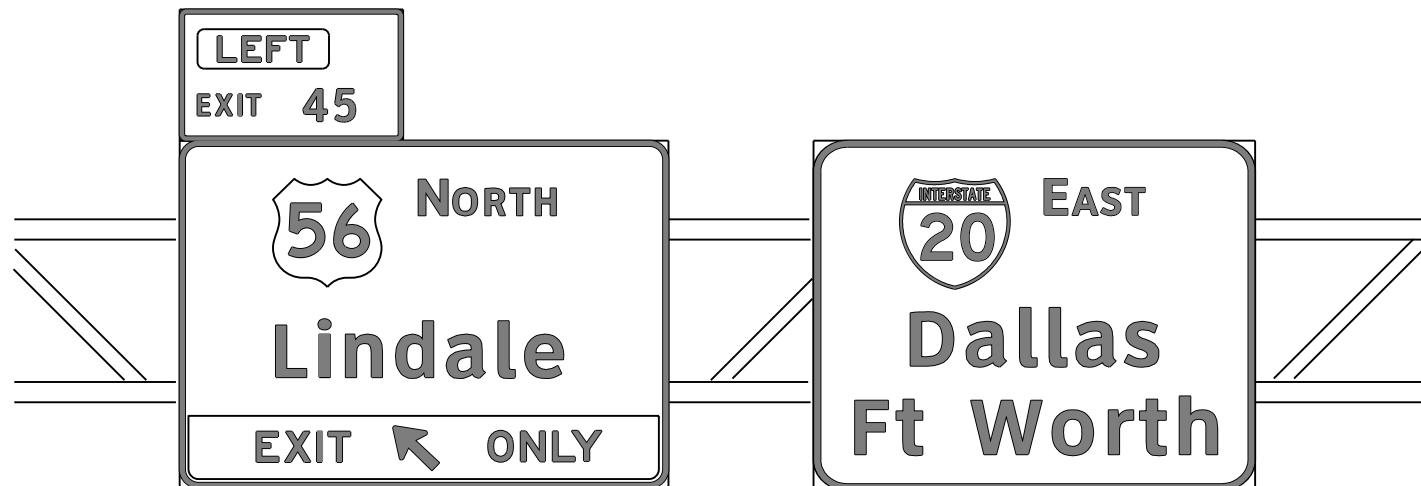
SECTION Y-Y



				Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS</h2> <h3>BATTERY BOX GROUND BOXES</h3> <h4>ED(12)-14</h4>					
FILE: ed12-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT	
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0916	00	281	VARIOUS	
DIST	COUNTY	SHEET NO.			
CRP	NUECES	79			

REQUIREMENTS FOR OVERHEAD AND LARGE GROUND-MOUNTED SIGNS

TYPICAL EXAMPLES



GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign summary sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Black legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F). White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white FHWA lettering, when not specified in the SHSD or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be cut-out white sheeting applied to colored background sheeting.
- Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius need not be trimmed or rounded if fabricated from an extruded material.
- Sign substrate for ground-mounted signs shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative. Sign substrate for overhead signs shall be any material that meets DMS-7110. Exit Number Panels attached above the parent sign shall be made with the same substrate and sheeting as the parent sign.
- Mounting details of attachments to parent sign face are shown on Standard Plan Sheet TSR(5). Mounting details of exit number panels above parent sign are shown in the "SMD series" Standard Plan Sheets.
- Background sheeting shall be applied to the substrate per sheeting manufacturer's recommendations. Sheeting will not be allowed to bridge the horizontal gap between panels.
- Cut all legend, symbols, borders, and direct applied sign attachments at panel joints.

DEPARTMENTAL MATERIAL SPECIFICATIONS

ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

<http://www.txdot.gov/>

SHEETING REQUIREMENTS

USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE B OR C SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM

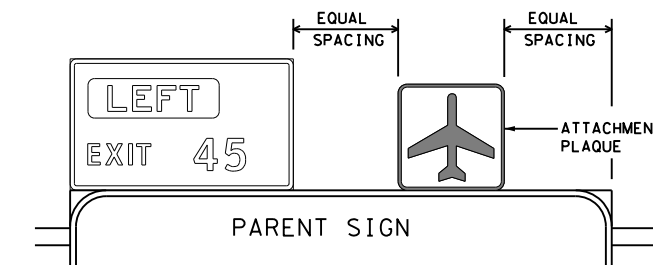
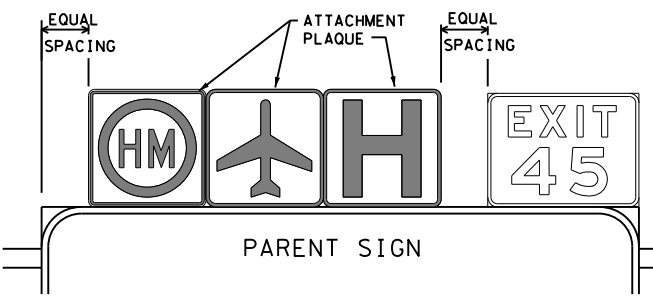
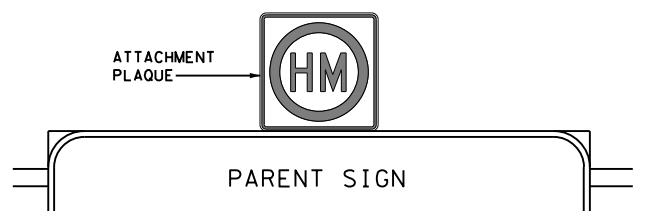
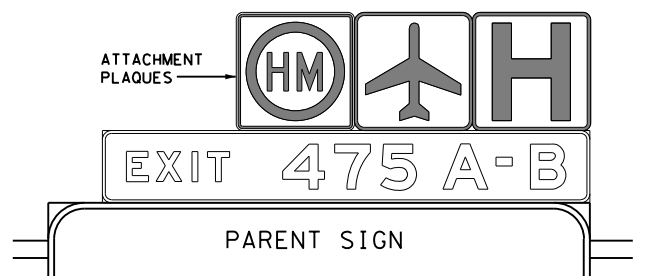
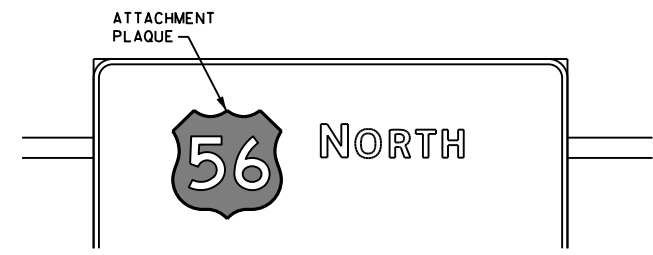
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion or reproduction of this standard in any form or by any means, including electronic, mechanical, photocopying, recording, or by any information storage and retrieval system.

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Texas Department of Transportation				Traffic Operations Division Standard	
<h2 style="margin: 0;">TYPICAL SIGN REQUIREMENTS</h2> <h3 style="margin: 0;">TSR(1) - 13</h3>					
FILE:	fstr1-13.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2003	CONT:	SECT:	JOB:	HIGHWAY:
REVISIONS		0916	00	281	VARIOUS
12-03	7-13	DIST:	COUNTY:	SHEET NO.:	80
9-08		CRP:	NUECES		

REQUIREMENTS FOR ATTACHMENTS TO OVERHEAD AND LARGE GROUND MOUNTED SIGNS

DATE: 4/5/2024 11:09:05 PM
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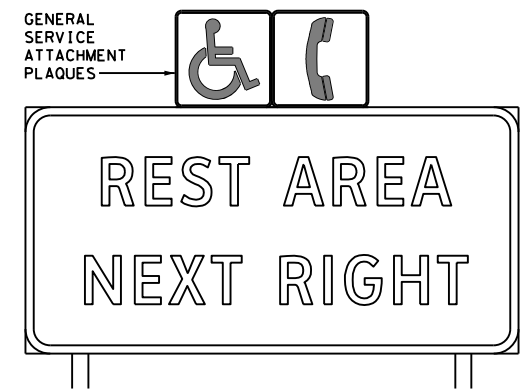
TYPICAL EXAMPLES

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

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B OR C SHEETING

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Route Marker legends (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to white background sheeting, or combination thereof.
- Route markers and other attachments within the parent sign face shall be direct applied unless otherwise specified in the plans. Attachments not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
- General Service Plaques shall be 0.080 inch thick and Routing Plaques shall be 0.100 inch thick.
- The priority for Routing Plaques shall be (left to right) Hazardous Material, Airport then Hospital. See examples for mounting location.
- Mounting details of attachments to parent signs face are shown on Standard Plan Sheet TSR(5). Mounting details of sign plaque attachments above and below parent sign are shown in the "SMD series" Standard Plan Sheets.
- Plaques shall be horizontally centered at the top of the parent sign. If an exit number panel exists, the plaque shall be centered between the edge of the parent sign and the edge of the exit number panel. The plaque may be placed above the exit number panel when there is insufficient space.



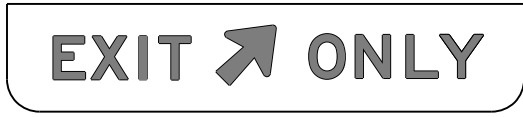
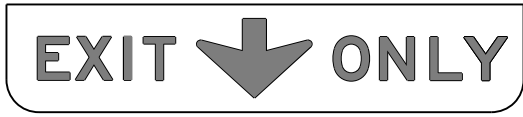
REQUIREMENTS FOR EXIT ONLY AND LEFT EXIT PANELS

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

SHEETING REQUIREMENTS FOR OVERHEAD EXIT PANELS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLUORESCENT YELLOW	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND	BLACK	ACRYLIC NON-REFLECTIVE FILM

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD). Individual panel sizes shown in the plans may be adjusted to fit actual parent sign sizes if necessary.
- Exit Panel legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets E Series.
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to yellow background sheeting, or combination thereof.
- Exit Only and Left Exit panels within the parent sign face shall be direct applied unless otherwise specified in the plans. Panels not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
- Mounting details of Exit Only and Left Exit panel attachments to parent signs face are shown on Standard Plan Sheet TSR(5).



TYPICAL EXAMPLES

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

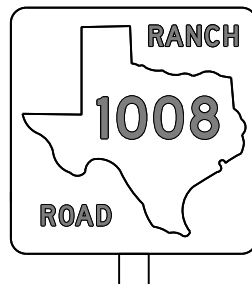
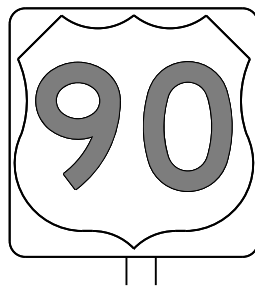
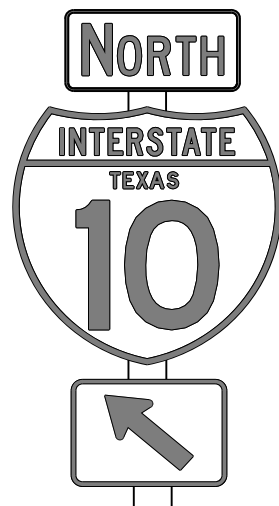
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©TxDOT	October 2003	CK:	TxDOT
REVISIONS		OW:	TxDOT
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12-03	7-13	CONT	SECT
9-08		0916	00
		JOB	281
		HIGHWAY	VARIOUS
		DIST	COUNTY
		CRP	NUECES
		SHEET NO.	81

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REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

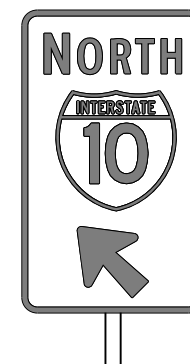
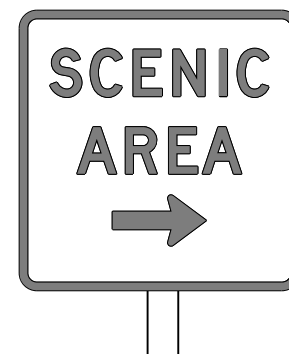
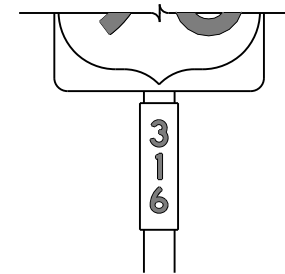
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

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

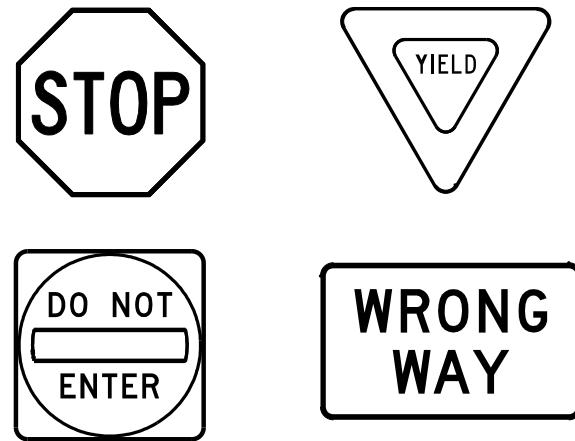
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

Texas Department of Transportation		<i>Traffic Operations Division Standard</i>
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FILE: tsr3-13.dgn	DN: TxDOT	CR: TxDOT
©TxDOT October 2003	CON: 091600	SECT: 281
REVISIONS	JOB: 281	HIGHWAY: VARIOUS
12-03 7-13	DIST: CRP	COUNTY: NUECES
9-08	SHEET NO.:	82

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REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

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



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

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

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

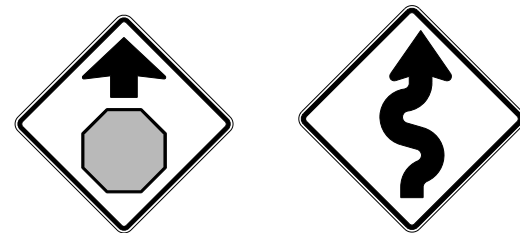
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

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

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

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

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

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

GENERAL NOTES

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

ALUMINUM SIGN BLANKS THICKNESS

Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS

ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

<http://www.txdot.gov/>



TYPICAL SIGN REQUIREMENTS

TSR(4) - 13

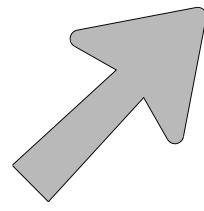
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© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0916	00	281	VARIOUS				
12-03	7-13	DIST	COUNTY	SHEET NO.					
9-08		CRP	NUECES	83					

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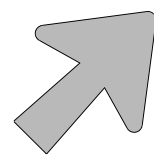
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ARROW DETAILS

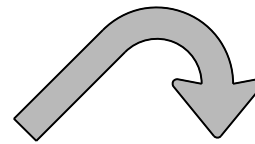
for Large Ground-Mounted and Overhead Guide Signs



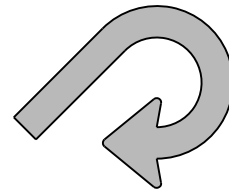
Type A



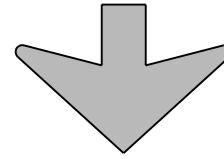
Type B



E-3



E-4



Down Arrow

TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

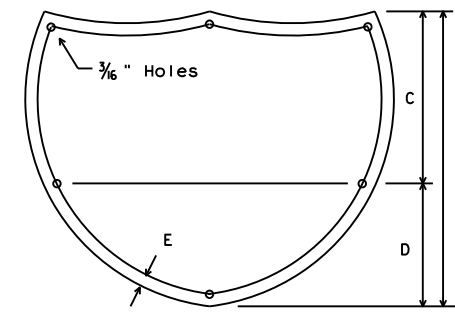
CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

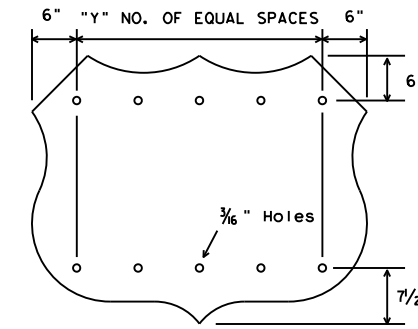
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



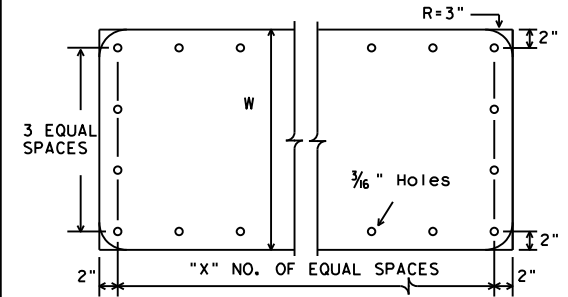
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



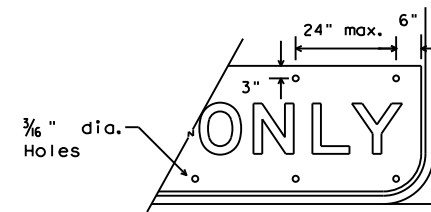
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



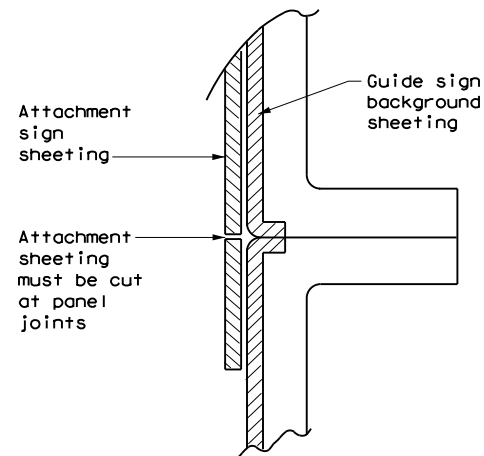
STATE ROUTE MARKERS

No. of Digits	W	X
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4	36	5
4	48	6
3	24	3
3	36	4
3	48	5



EXIT ONLY PANEL

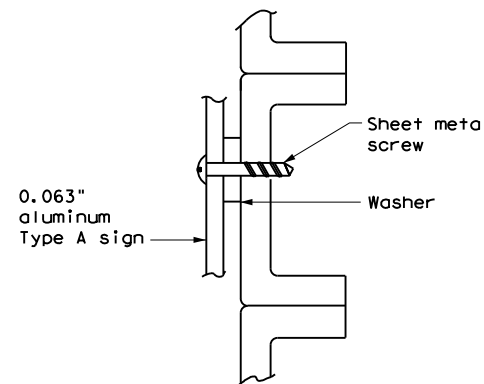
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



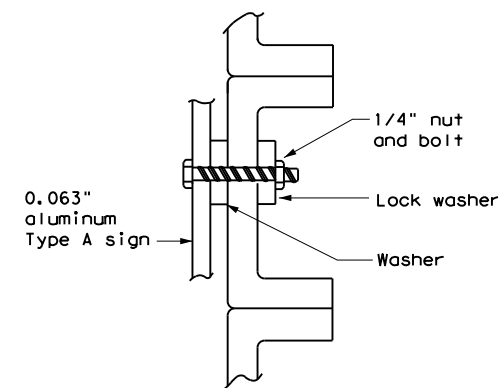
DIRECT APPLIED ATTACHMENT

NOTE:

- Sheeting for legend, symbols, and borders must be cut at panel joints.
- Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT

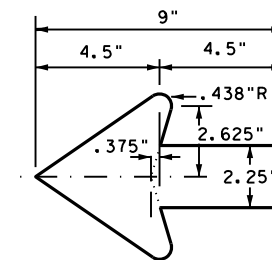


NUT/BOLT ATTACHMENT

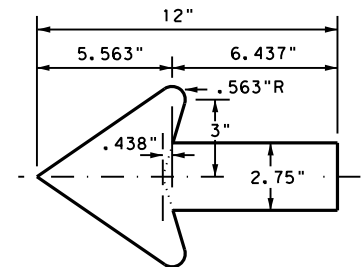
NOTE:

Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



TYPICAL SIGN REQUIREMENTS

TSR (5) - 13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916 00		281	VARIOUS
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	CRP	NUECES		84

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11-09-22 PM
 DATE: 4/5/2024
 FILE: \\twdot\project\wisson\line.com\txdot\Documents\16 - CRP\Design Projects\091600281\4 - Design\Plan Ser.8 - Traffic\SMD (GEN)-08.dgn

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

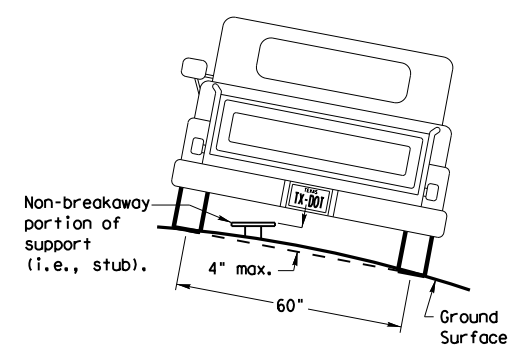
Post Type
 FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
 TWT = Thin-Walled Tubing (see SMD(TWT))
 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
 S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

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

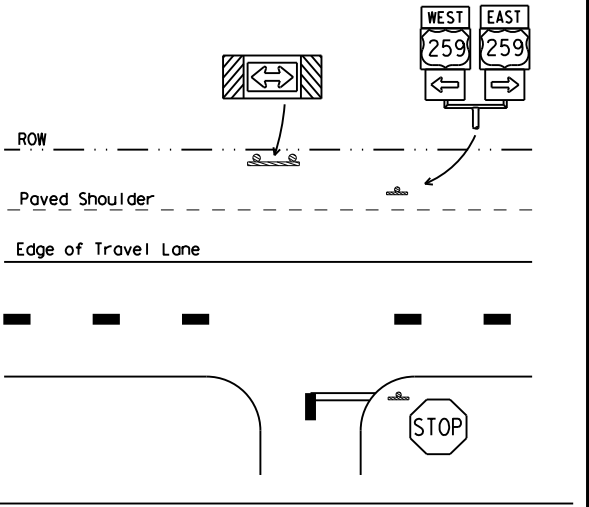
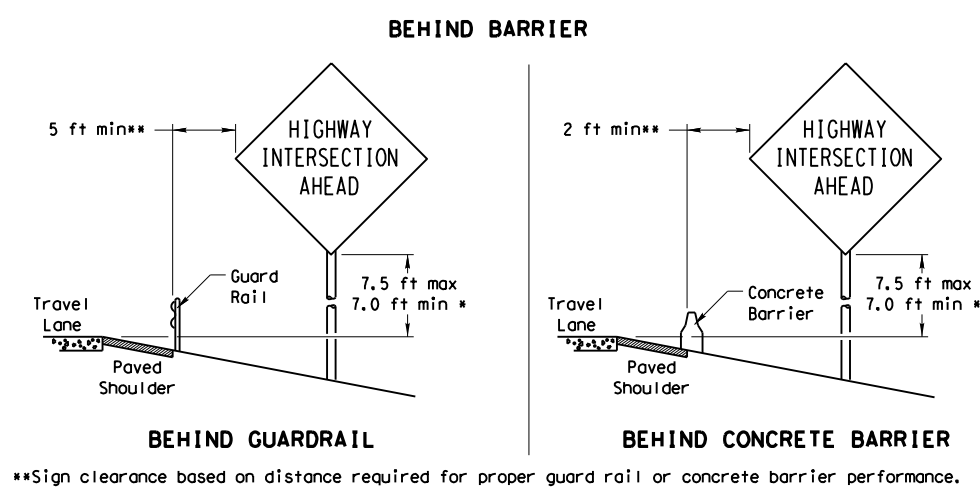
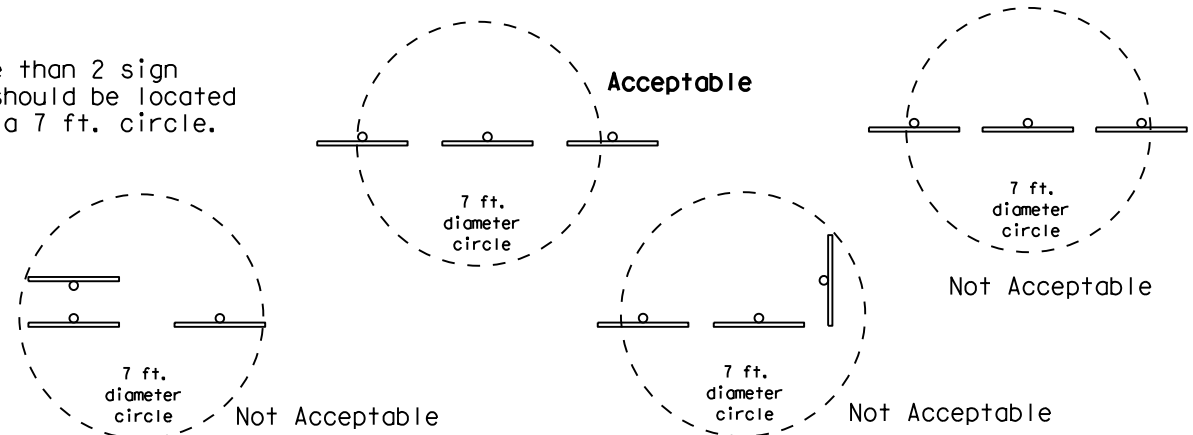
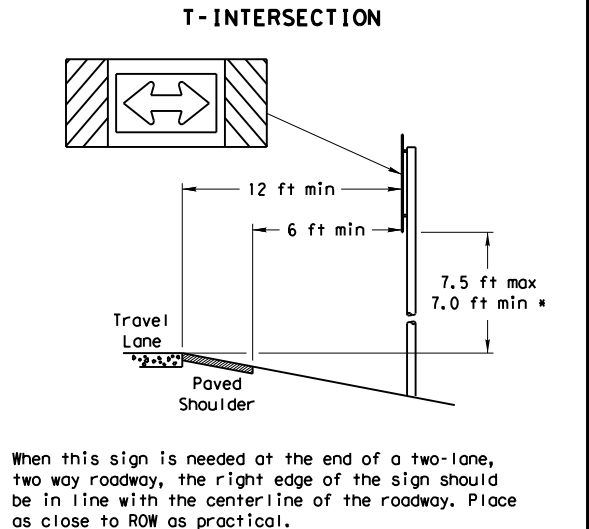
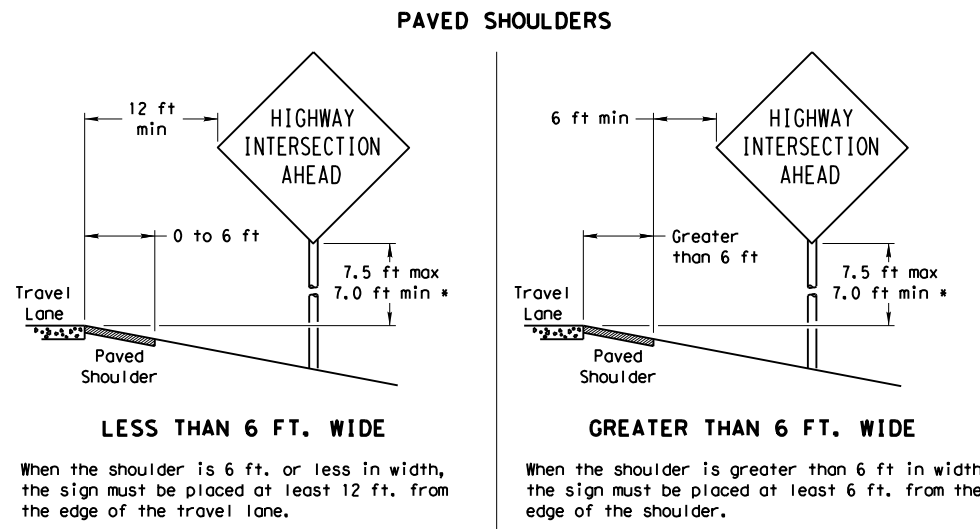
Sign Mounting Designation
 P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
 T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
 U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
 IF REQUIRED
 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
 BM = Extruded Wind Beam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

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

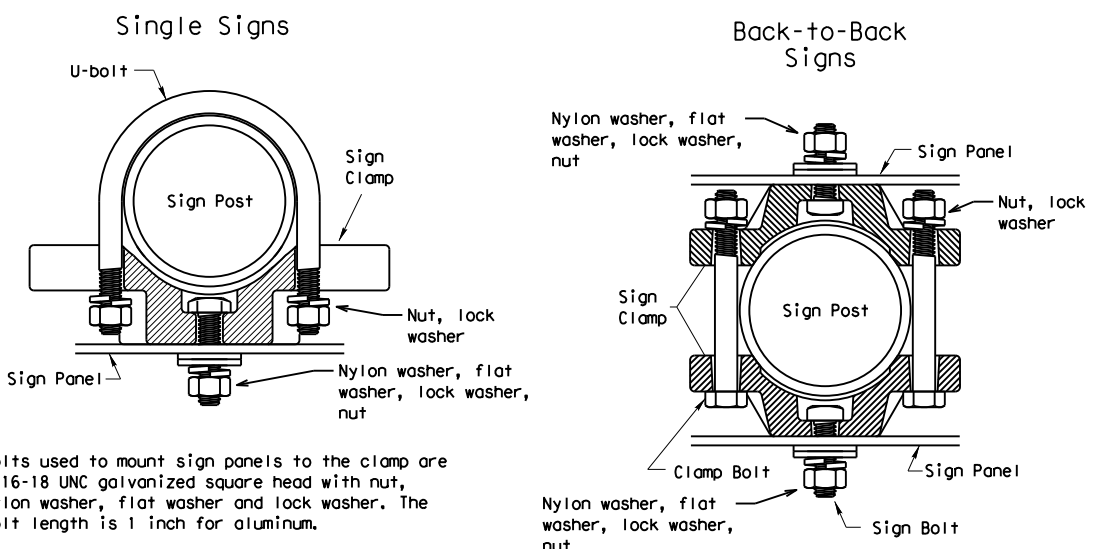


To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

SIGN LOCATION



TYPICAL SIGN ATTACHMENT DETAIL



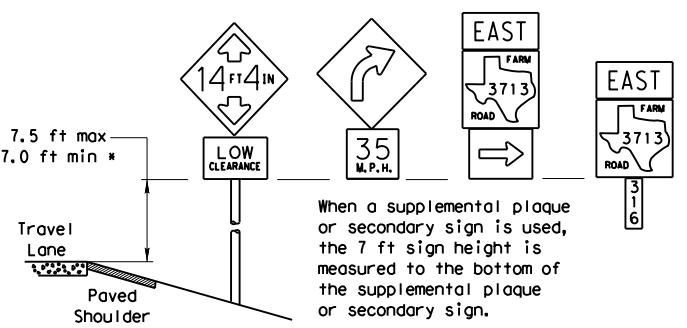
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

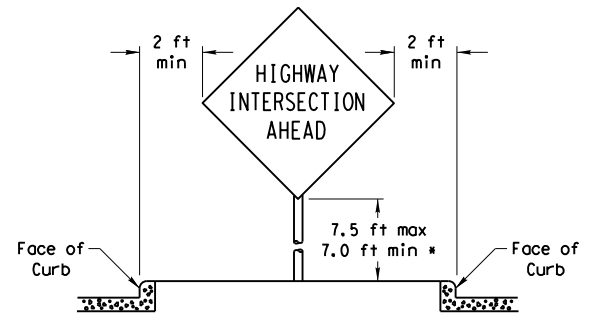
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

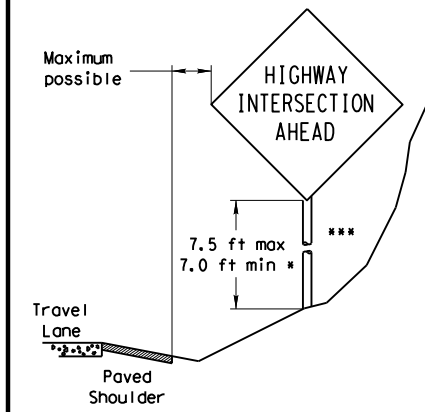


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



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

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

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

- * Signs shall be mounted using the following condition that results in the greatest sign elevation:
- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
 - (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.
- The maximum values may be increased when directed by the Engineer.
- See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.
- The website address is:
<http://www.txdot.gov/publications/traffic.htm>



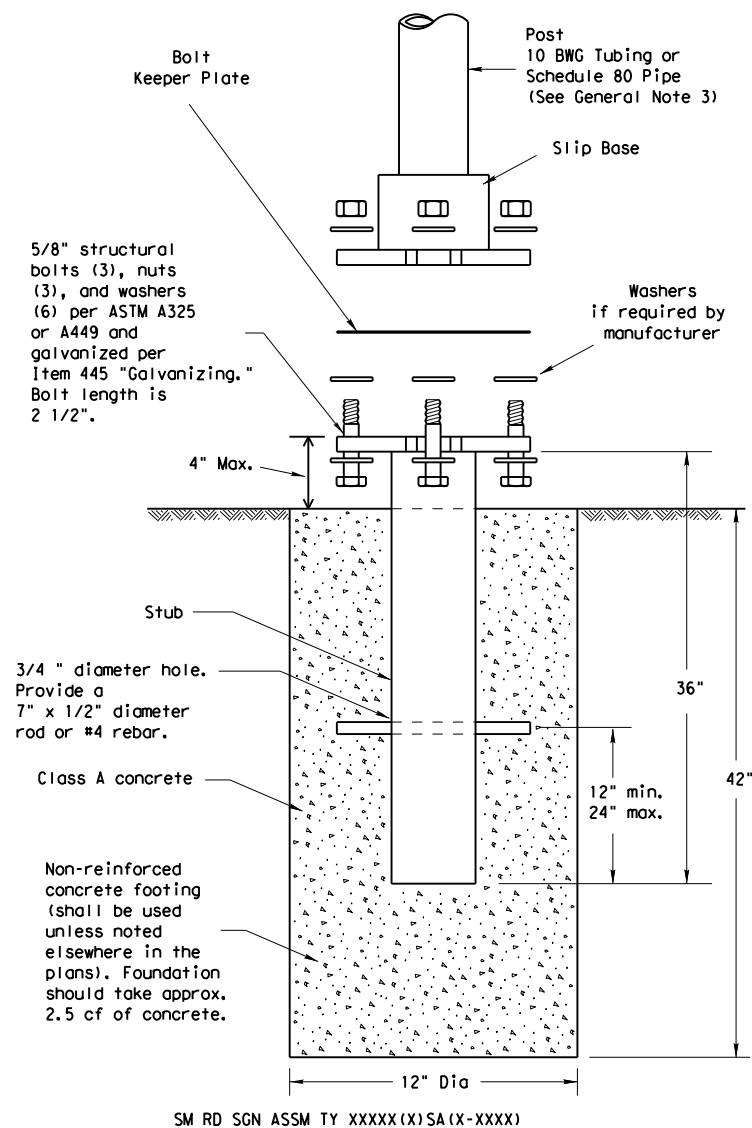
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD (GEN) - 08

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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		091600		281	VARIOUS
		DIST	COUNTY		SHEET NO.
		CRP	NUECES		85

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

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

ASSEMBLY PROCEDURE

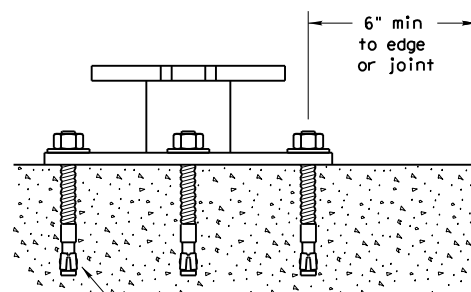
Foundation

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

Support

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

CONCRETE ANCHOR



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

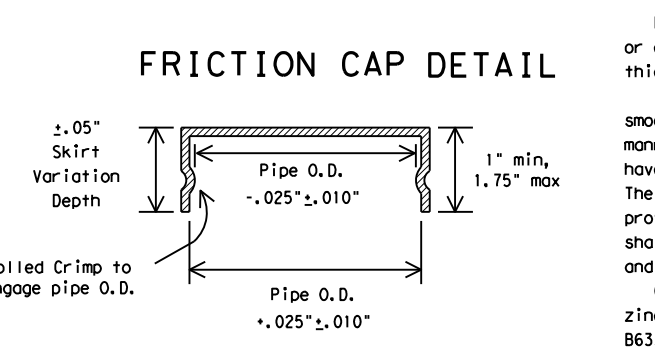
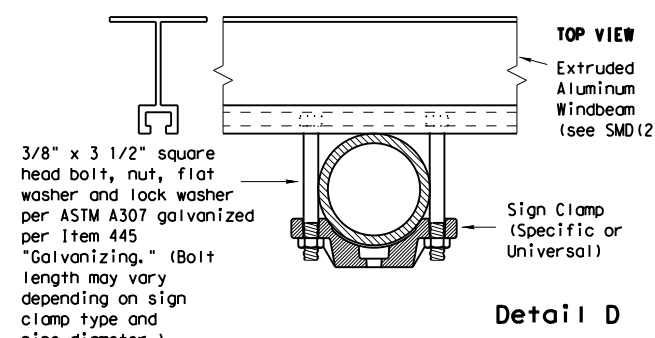
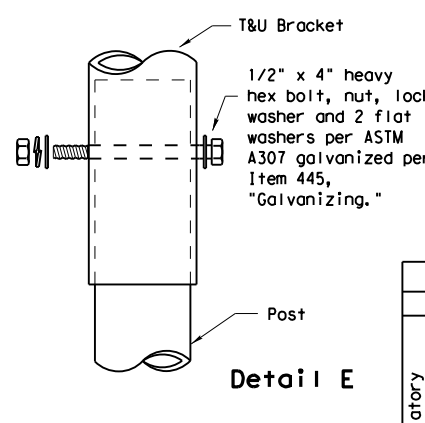
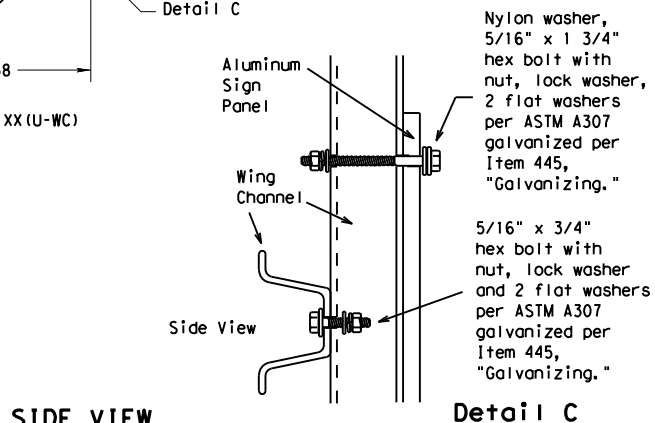
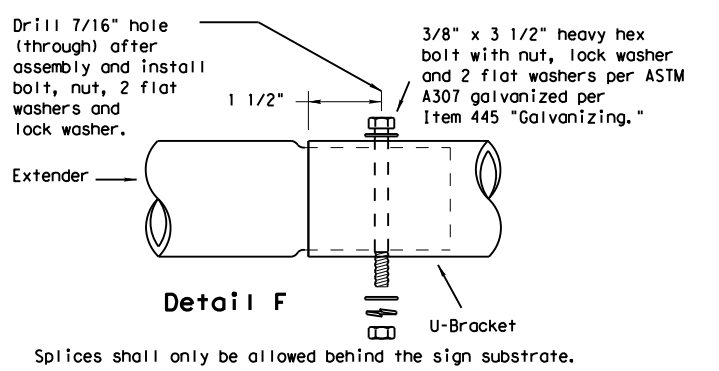
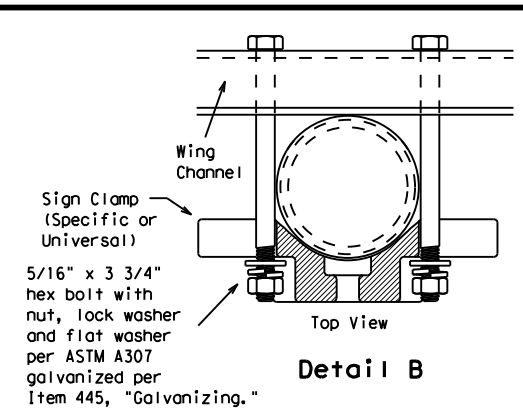
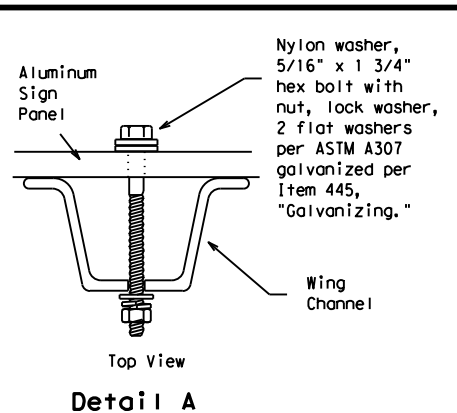
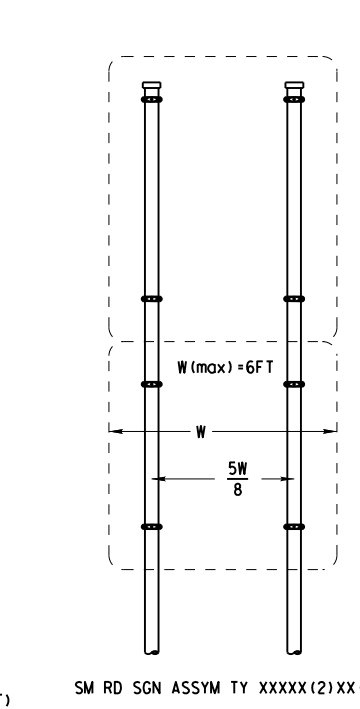
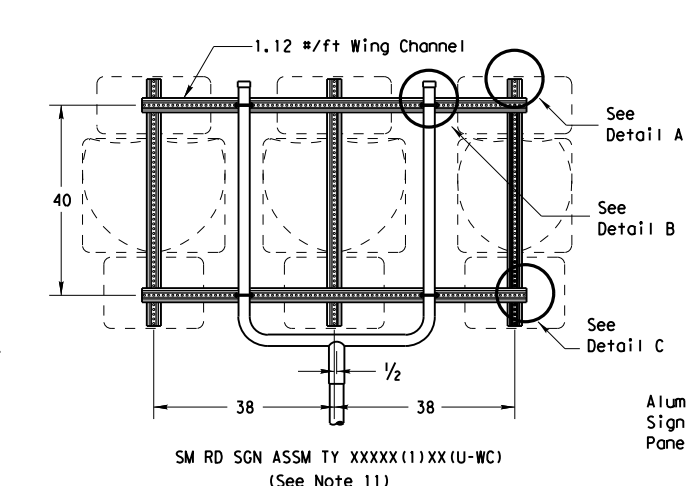
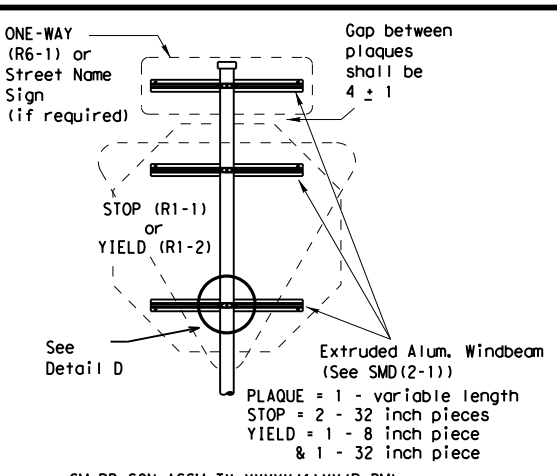
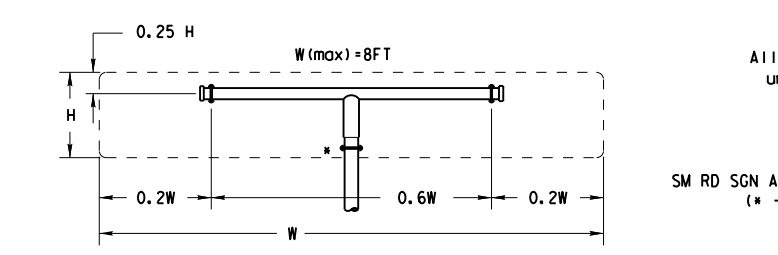
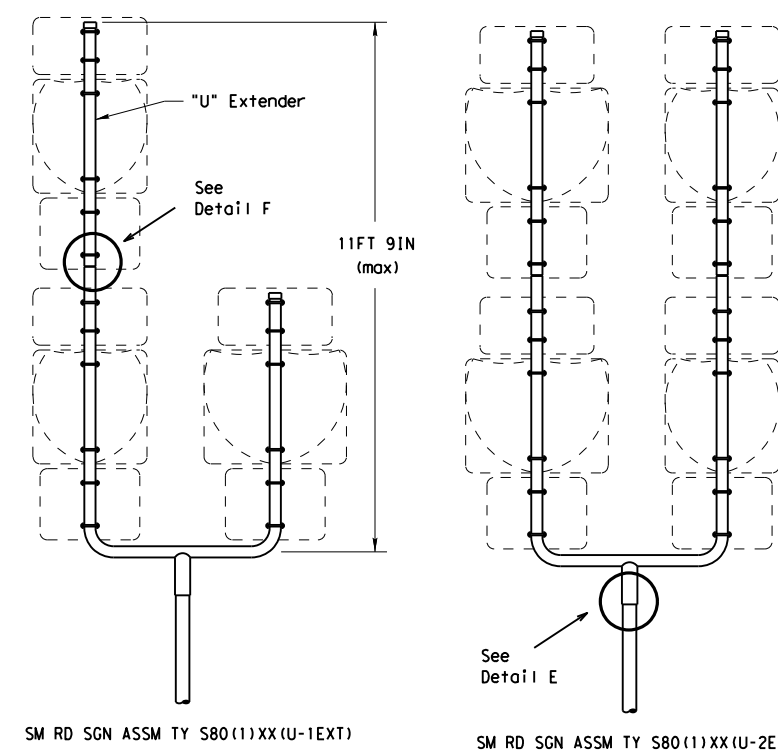
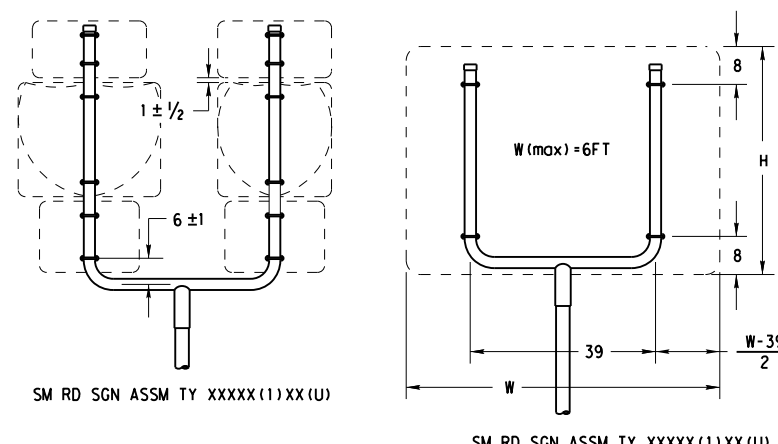
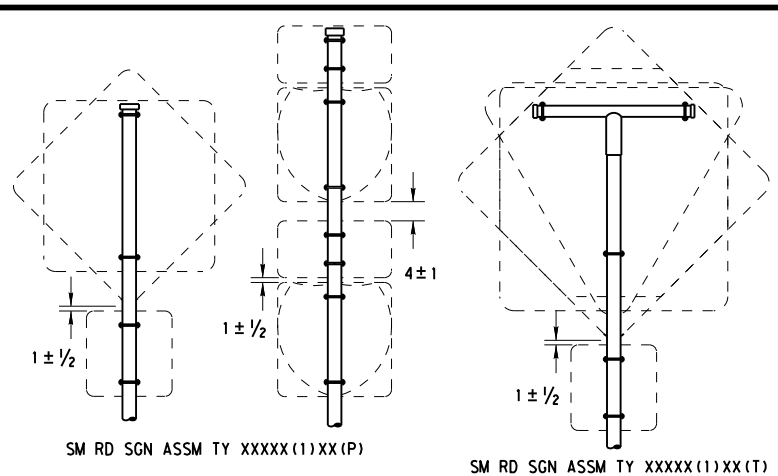


SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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9-08	REVISIONS		CONT	SECT	JOB	HIGHWAY
	0916	00	281		VARIOUS	
	DIST	COUNTY	SHEET NO.			
CRP	NUECES		86			

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All dimensions are in english unless detailed otherwise.

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1. SIGN SUPPORT # OF POSTS MAX. SIGN AREA

10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

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



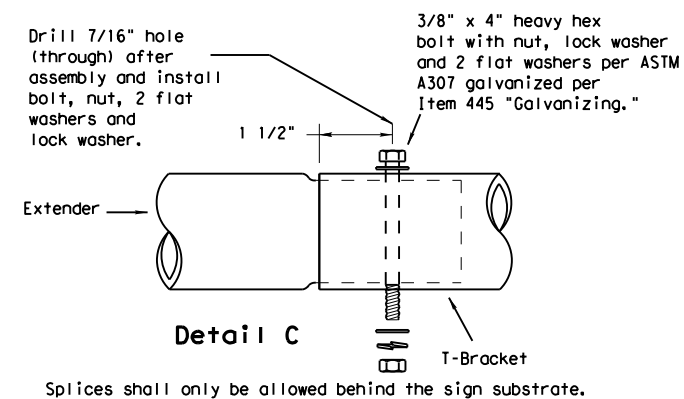
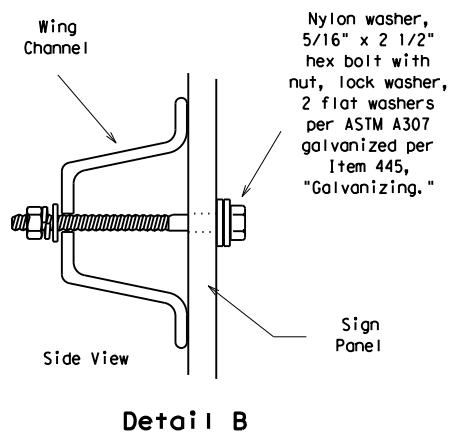
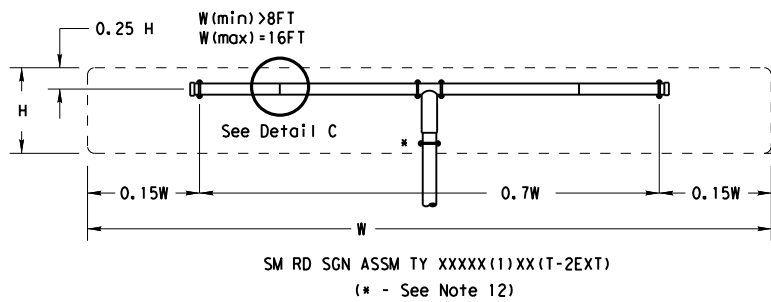
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-2)-08

© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	CONTRACT	SECTION	JOB	HIGHWAY
	0916 00		281	VARIOUS
	DIST	COUNTY		SHEET NO.
	CRP	NUECES		87

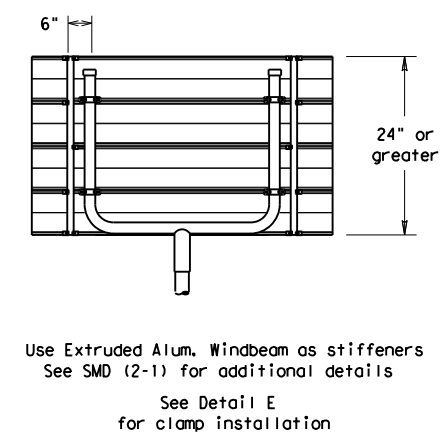
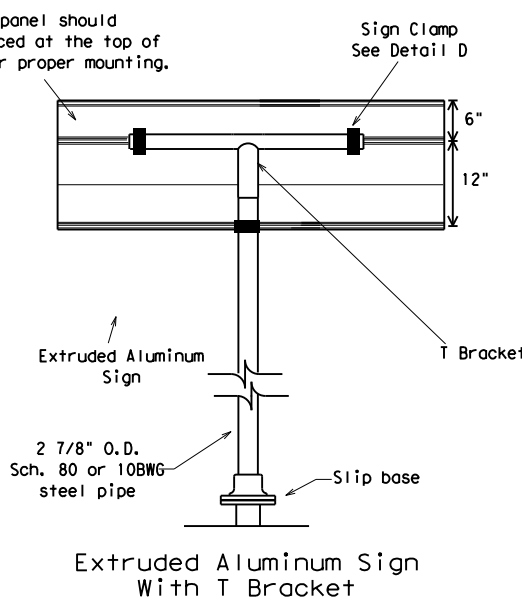
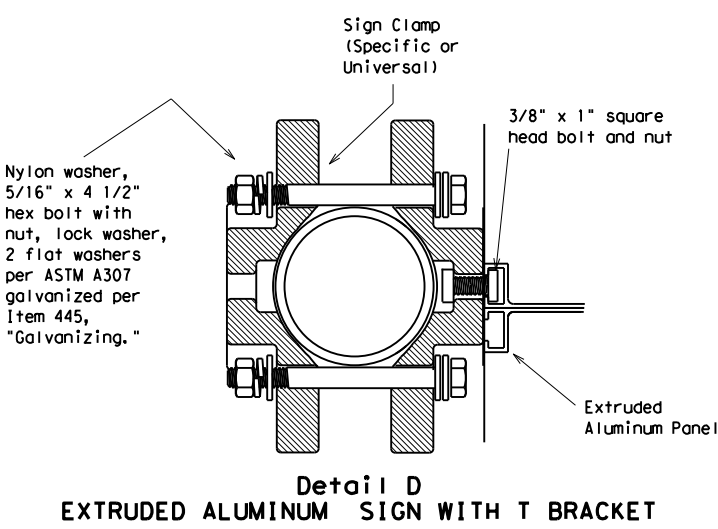
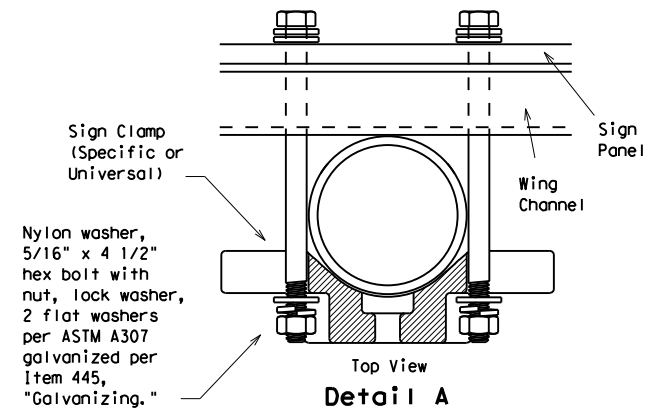
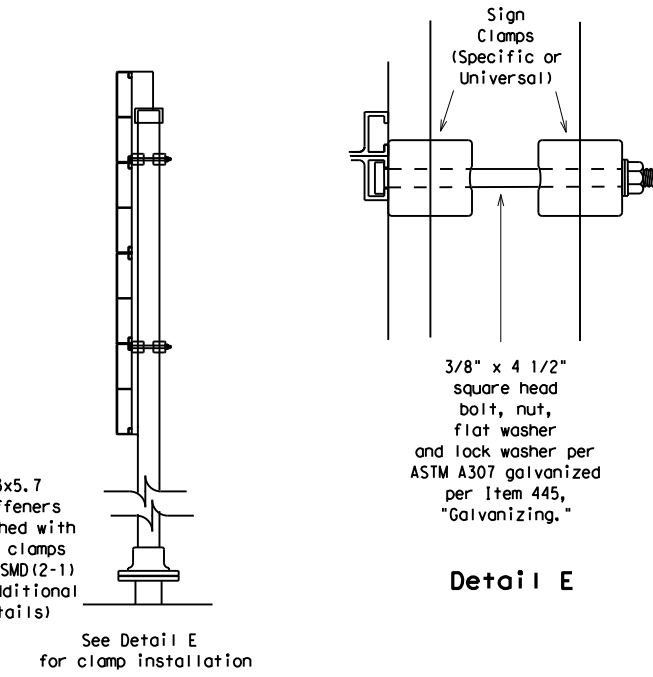
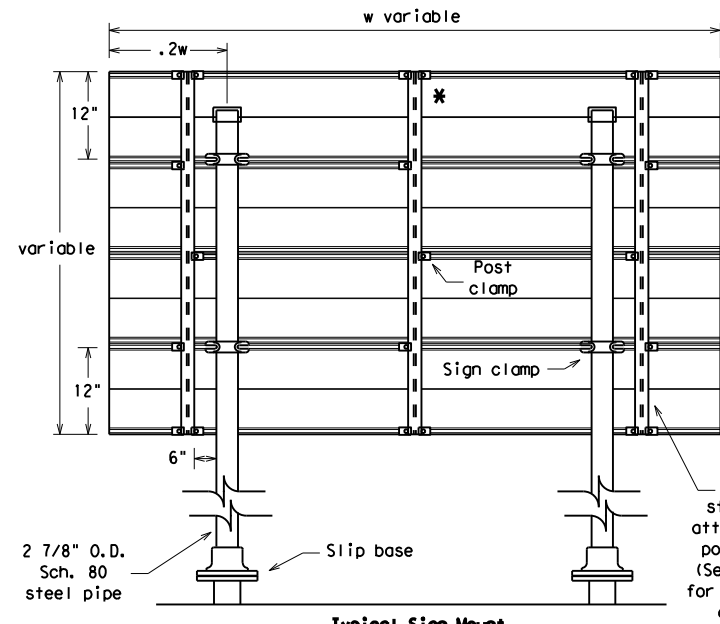
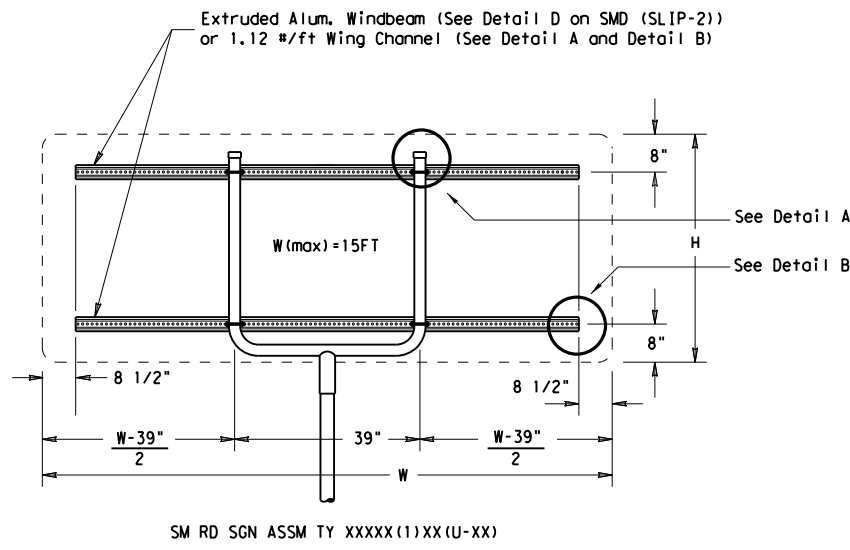
DATE:
FILE:

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DATE:
FILE:



- GENERAL NOTES:**
- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |
 - The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
 - Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
 - Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
 - Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
 - For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
 - When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
 - Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
 - Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
 - Sign blanks shall be the sizes and shapes shown on the plans.
 - Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
 - Post open ends shall be fitted with Friction Caps.



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

Texas Department of Transportation
Traffic Operations Division

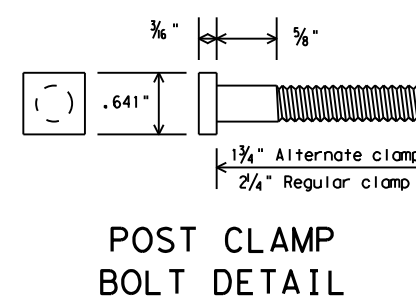
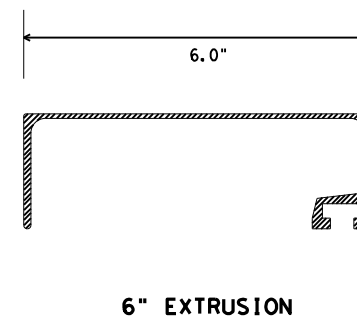
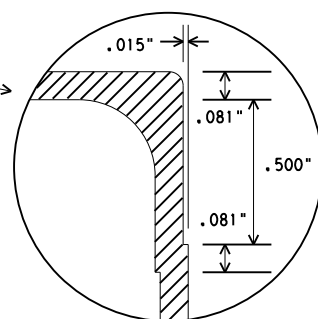
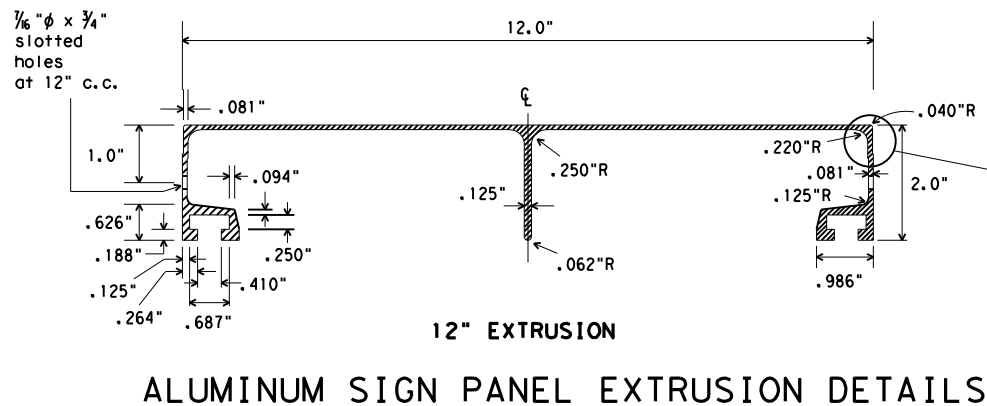
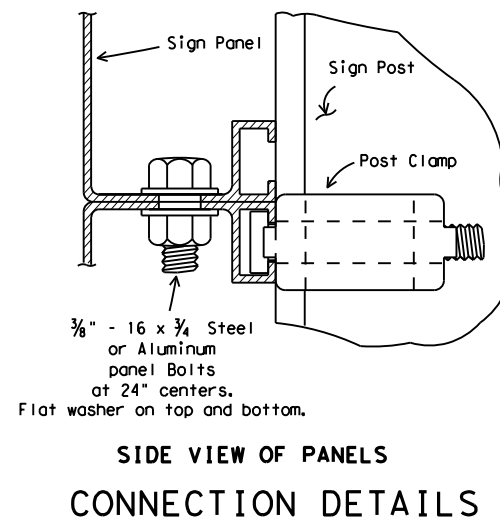
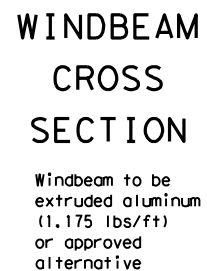
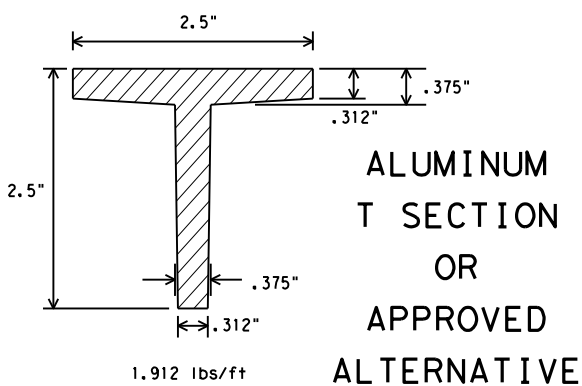
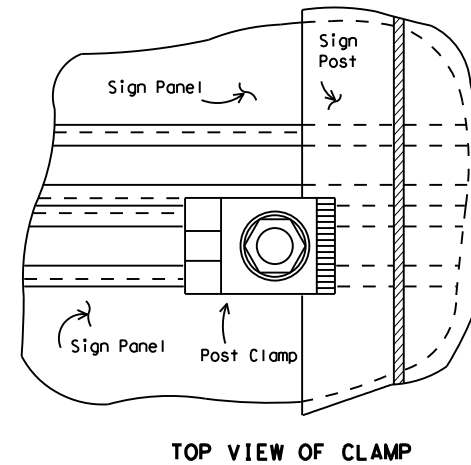
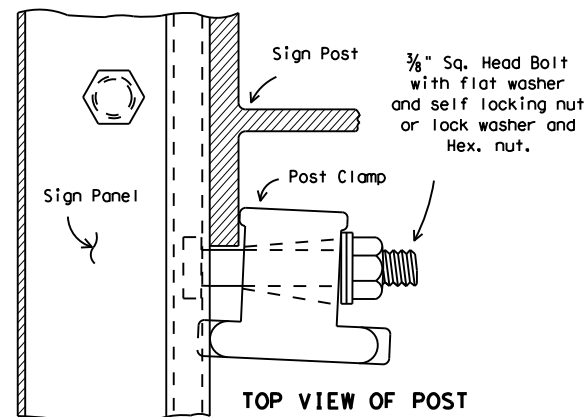
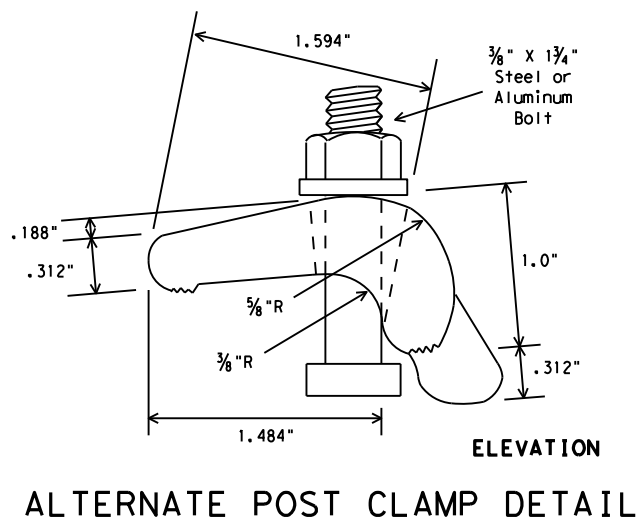
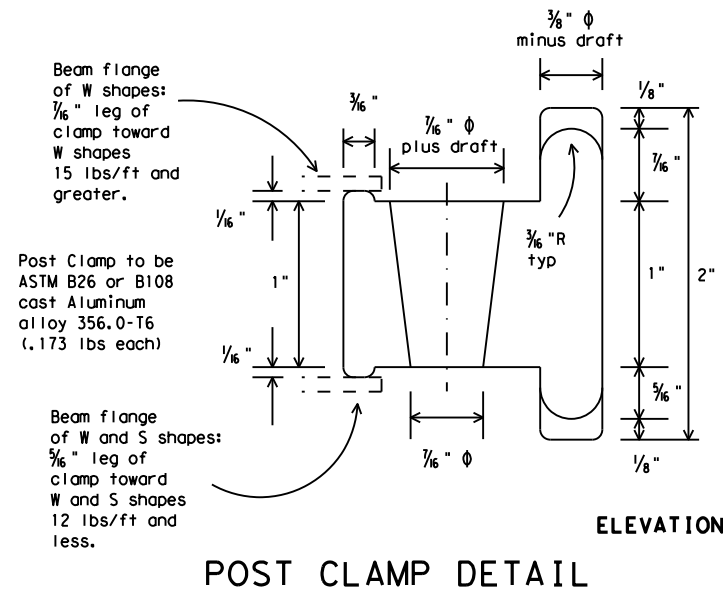
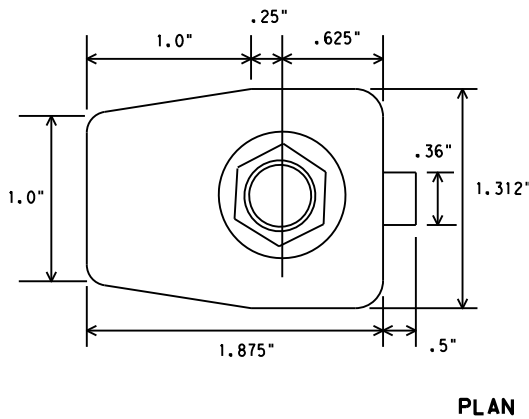
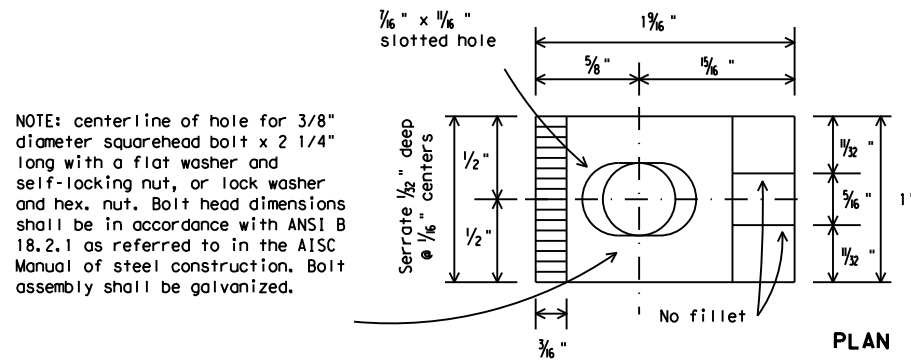
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-3)-08

© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0916	00	281	VARIOUS
		DIST	COUNTY		SHEET NO.
		CRP	NUECES		88

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DISCLAIMER:

DATE: 04/19/04
FILE: \\twdot\shared\p01\signing\std\std080808\std080808.dwg



DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN HARDWARE	DMS-7120

- GENERAL NOTES:
1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
 2. Materials and fabrication shall conform to the requirements of the Department material specifications.
 3. Structural steel shall be "low-alloy steel" for non-bridge structures per Item 442, "Metal For Structures."
 4. For fiberglass substrate connection details, see manufacturer's recommendations.



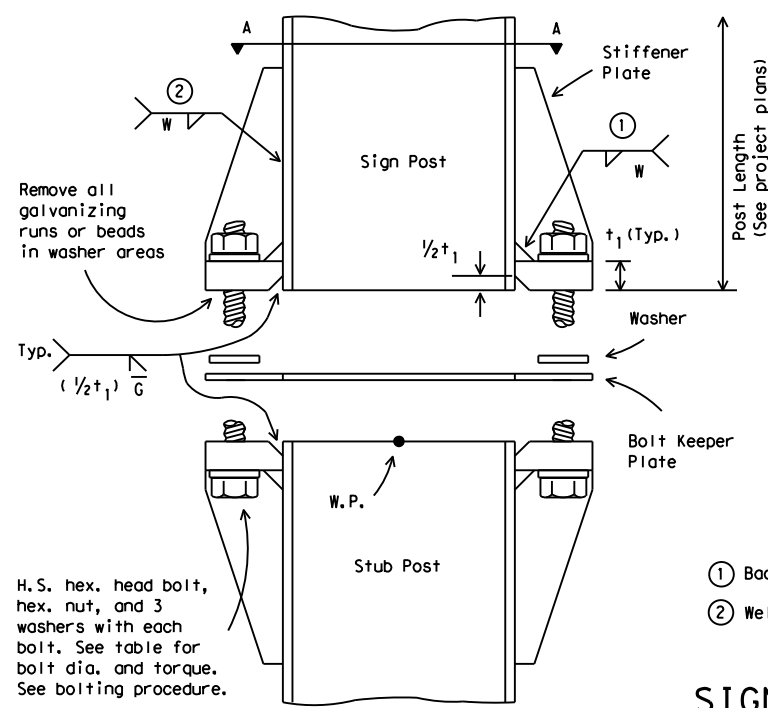
**SIGN MOUNTING DETAILS-
EXTRUDED ALUMINUM
SIGN PANELS & HARDWARE**

SMD(2-1)-08

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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
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		DIST	COUNTY	SHEET NO.	
		CRP	NUECES	89	

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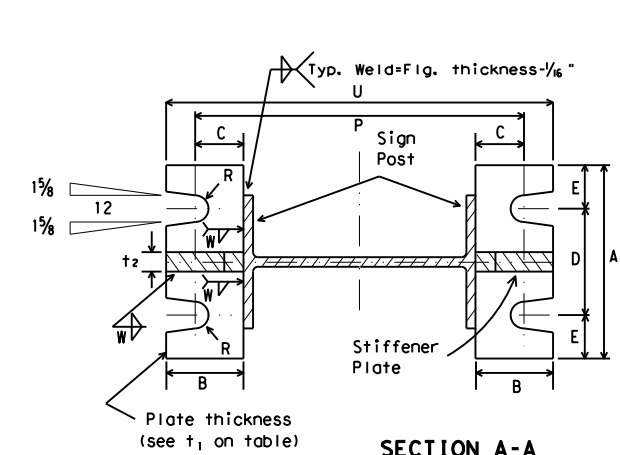
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ELEVATION

Remove all galvanizing runs or beads in washer areas

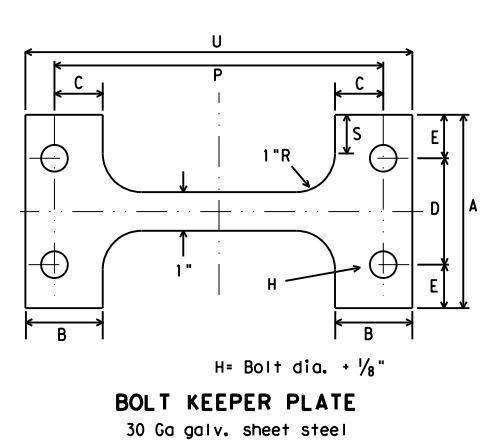
H.S. hex. head bolt, hex. nut, and 3 washers with each bolt. See table for bolt dia. and torque. See bolting procedure.



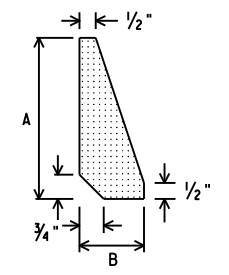
SECTION A-A

- ① Back up weld to be made before installing stiffener plate
- ② Weld W may be continued across clips to seal joint

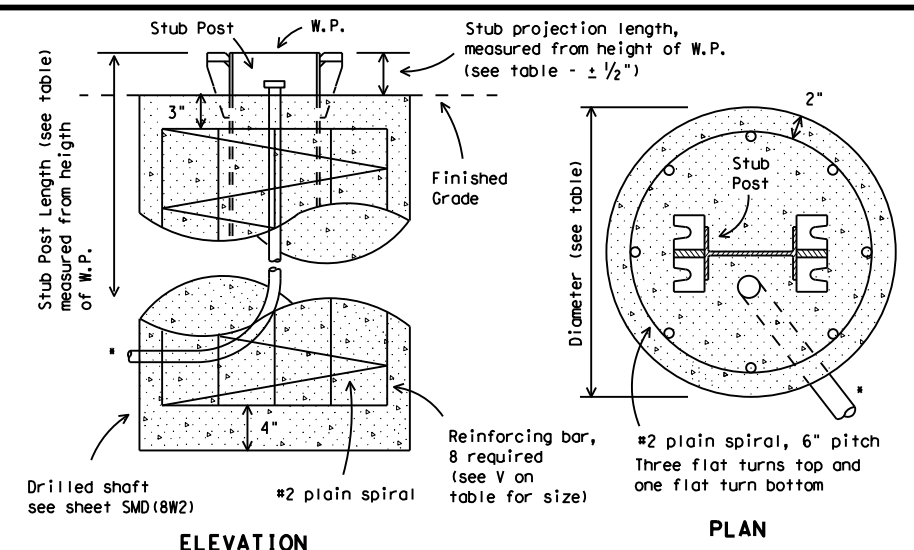
SIGN POST AND STUB POST
(For W Shapes)



BOLT KEEPER PLATE
30 Ga galv. sheet steel

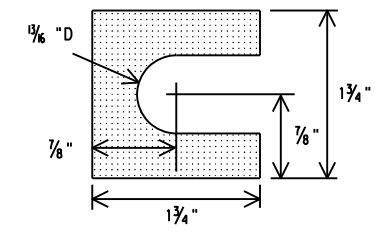


STIFFENER PLATE
DETAIL
Steel Plate (thickness = t2)
(See table for dimensions)



FOUNDATION DETAIL
ELEVATION
PLAN

*Note: For signs with electrical apparatus, see ED(10) for conduit required in foundation.

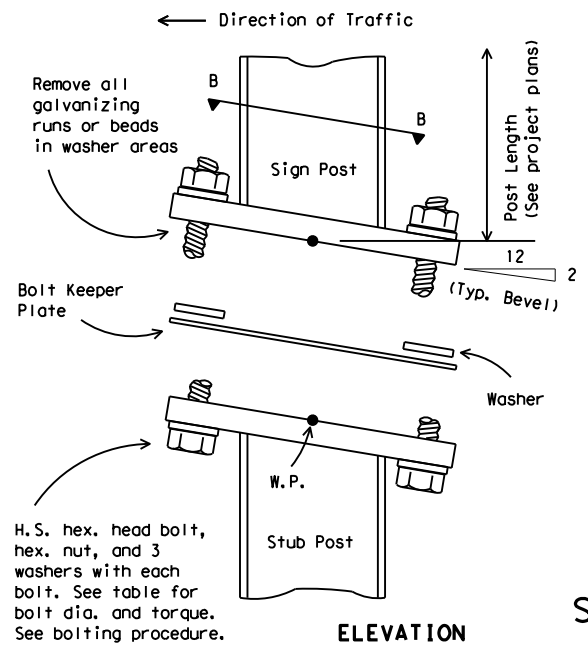


SHIM DETAIL
Furnish two .012" thick and two .032" thick shims per post. Shims shall be fabricated from brass shim stock or strip conforming to ASTM B36.

- BOLTING PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:**
- Assemble sign post, BOLT KEEPER PLATE and stub post with bolts and three flat washers per bolt as shown.
 - Shim as required to plumb post.
 - Tighten all bolts the maximum possible with a 12 to 15 inch wrench to clean bolt threads and to bed washers and shims.
 - Loosen each bolt in sequence and retighten bolts in a systematic order to the prescribed torque. Do not over-tighten.
 - To prevent nut loosening, burr threads of bolt at junction with nut using a center punch.

Dimensions Post Size	Base Connection Data Table										Perforated Fuse Plate Data Table							Bolt Keeper Data			Foundation Data								
	Bolt Size & Torque	A	B	C	D	E	t ₁	t ₂	W	R	F	G	J	K	M	d ₁	d ₂	t ₃	Bolt Dia.	Wt. (ea.) (lbs.)	Bolt length	P	S	U	Stub length	Stub projection	Dr. Shaft diameter	Bar V Size	
W6x9	5/8" φ × 2 3/4"										4 1/4"	2"	4"	2 1/4"	1"	9/16"	3/4"	1/4"	1/2"	1.01	1 1/2"	8 3/8"		9 7/8"	2'-0"	3"			#5
W6x12	440-450 inch pounds	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	1/32"	5"	2 1/2"	6"	3 1/2"	1 1/2"	1/16"	1/4"	3/8"	5/8"	2.51	2 1/4"	8 1/2"	1"	10"	2'-0"	3"			#5
W6x15	36-38 foot pounds										5"	2 1/2"	5 1/4"	2 3/4"	1 1/4"	1/16"	1/16"	3/8"	5/8"	2.26	2 1/4"	10 5/8"		10"	2'-6"	3"			#6
W8x18											5 1/2"	2 1/2"	5 1/4"	2 3/4"	1 1/4"	13/16"	1"	1/2"	3/4"	3.35	2 1/4"	11"		12 3/8"	2'-6"	3"			#7
W8x21	3/4" φ × 3 1/2"										5 1/2"	2 1/2"	5 1/4"	2 3/4"	1 1/4"	13/16"	1"	1/2"	3/4"	3.35	2 1/4"	11"		12 3/8"	3'-0"	2 1/2"			#8
W10x22	740-750 inch pounds	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/16"	13/32"	6"	3"	5 3/4"	2 3/4"	1 3/8"	13/16"	1 1/8"	1/2"	3/4"	4.03	2 1/4"	12 7/8"	1 1/2"	14 5/8"	3'-0"	2 1/2"			#9
W10x26	62-63 foot pounds										6"	3"	6 1/2"	3 1/2"	1 5/8"	13/16"	1 5/8"	1/2"	3/4"	4.47	2 1/4"	13 3/8"	1 1/2"	14 7/8"	3'-0"	2 1/2"			#10
W12x26											6"	3"	6 1/2"	3 1/2"	1 5/8"	13/16"	1 5/8"	1/2"	3/4"	4.47	2 1/4"	15"		16 3/4"	3'-0"	2 1/2"			#11
S3x5.7	1/2" φ × 2 1/2"	See Detail Below										3 3/4"	1 1/2"	2 5/8"	1 1/2"	5/8"	9/16"	3/8"	1/4"	1/2"	0.60	1 1/2"	See Detail Below			3'-3 1/2"	3/2"	12"	Non-reinforced
S4x7.7	440-450 inch pounds	See Detail Below										3 3/4"	1 1/2"	2 5/8"	1 1/2"	5/8"	9/16"	3/8"	1/4"	1/2"	0.60	1 1/2"	See Detail Below			3'-3 1/2"	3/2"	12"	Non-reinforced

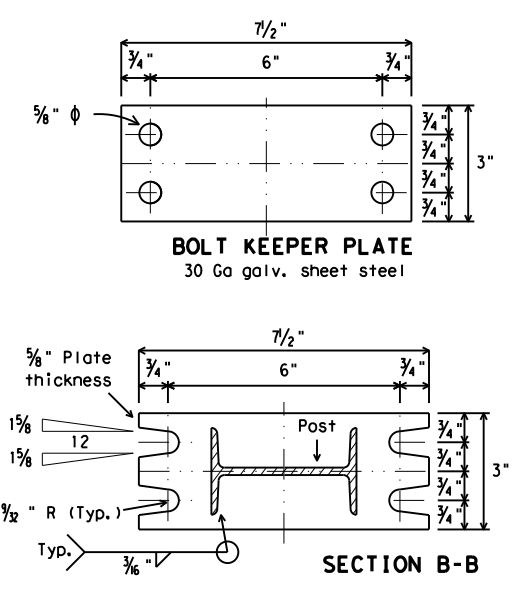
③ Foundation design shall be Type G Mount, see SMD (TY G).



ELEVATION

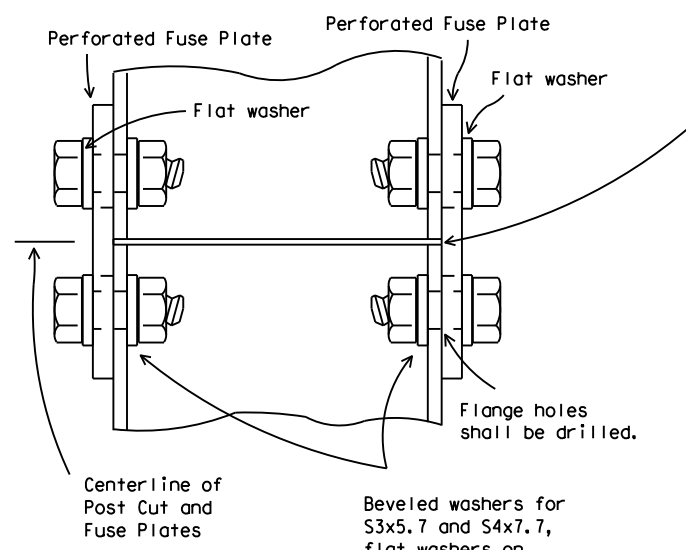
Remove all galvanizing runs or beads in washer areas

H.S. hex. head bolt, hex. nut, and 3 washers with each bolt. See table for bolt dia. and torque. See bolting procedure.



SECTION B-B

SIGN POST AND STUB POST
(For S4x7.7 and S3x5.7)



DETAIL "A"

Parts shall be saw cut either before galvanizing and the galvanized cut cleaned of zinc build-up, or saw cut after galvanizing and the cut surface repaired per Item 445, "Galvanizing."

Centerline of Post Cut and Fuse Plates

Beveled washers for S3x5.7 and S4x7.7, flat washers on others.

Flange holes shall be drilled.

PERFORATED FUSE PLATE DETAIL

Use H.S. hex head bolts, hex head nut and bevel or flat washer (where req'd) under nut. All holes shall be drilled, sub-punched and reamed. All plate cuts shall preferably be saw cuts. However, flame cutting will be permitted provided all edges are ground. Metal projecting beyond the plane of the plate face will not be permitted. Steel fuse plates shall conform to the requirements of ASTM A36. ASTM A572 Grade 50 or ASTM A588 may be substituted for A36 at the option of the fabricator. Mill test reports shall be submitted for Fuse Plates. Steel used shall have an ultimate tensile strength not to exceed 80 KSI. For alternative Fuse Plate contact Traffic Operations Division.

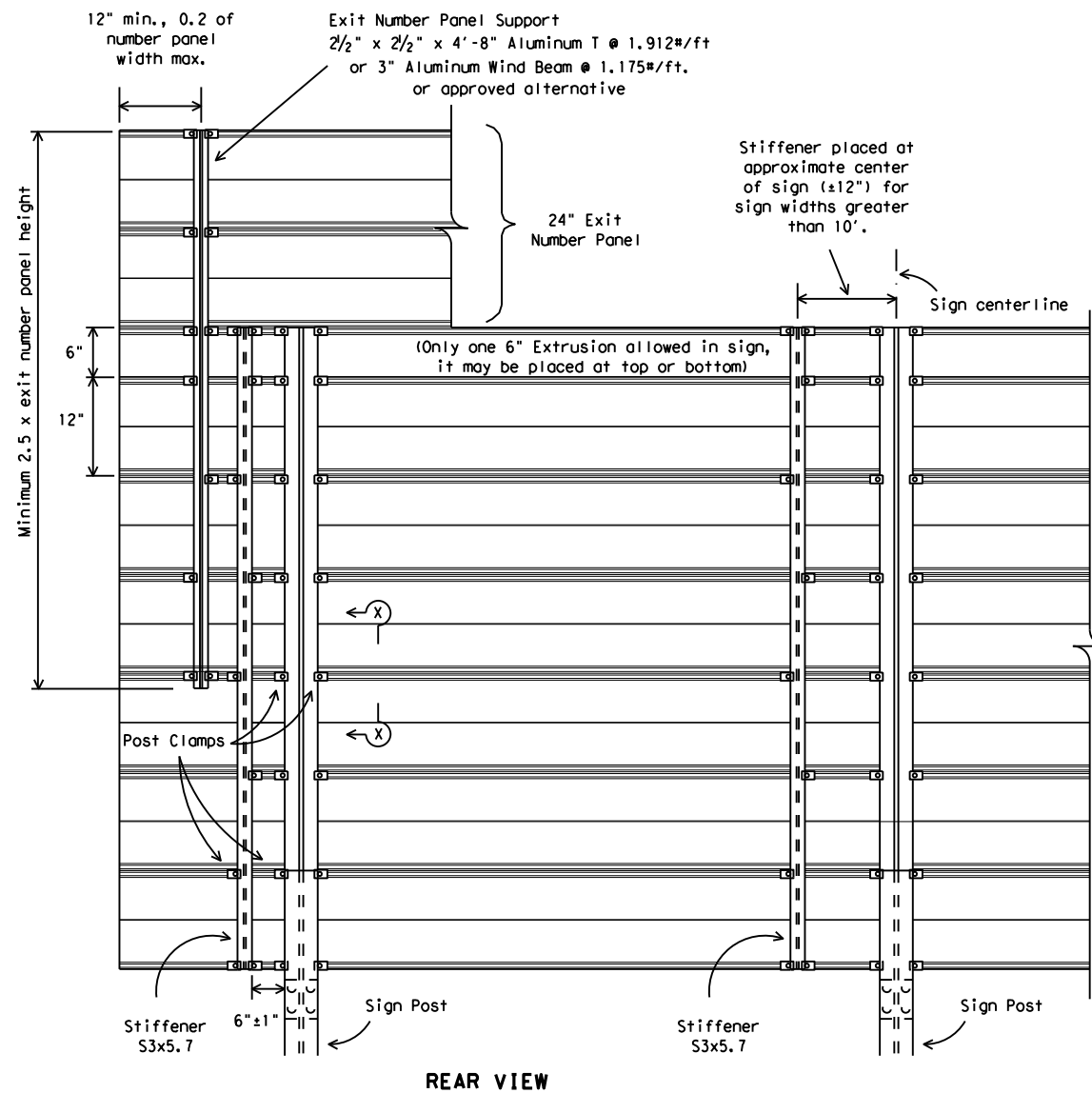
Texas Department of Transportation
Traffic Operations Division

**SIGN MOUNTING DETAILS-
LARGE ROADSIDE SIGNS
FOUNDATION & STUB**

SMD(2-2)-08

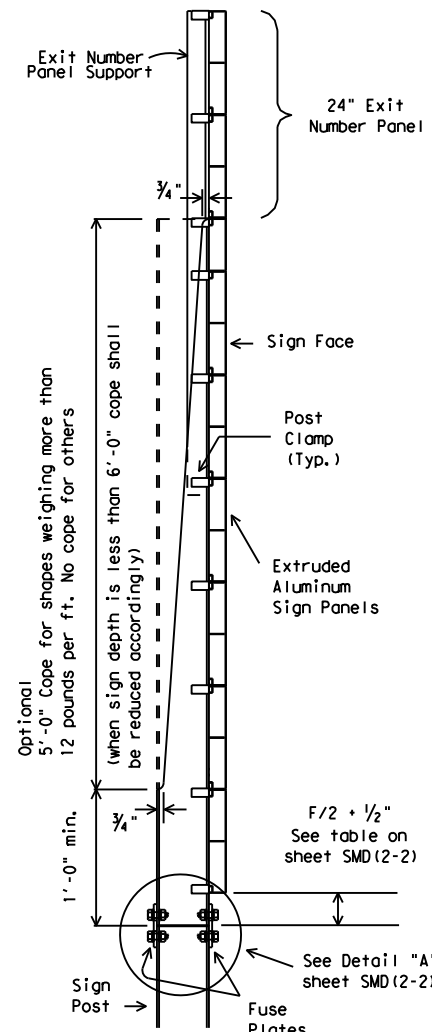
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4-98	REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08		0916	00	281	VARIOUS
		DIST	COUNTY		SHEET NO.
		CRP	NUECES		90

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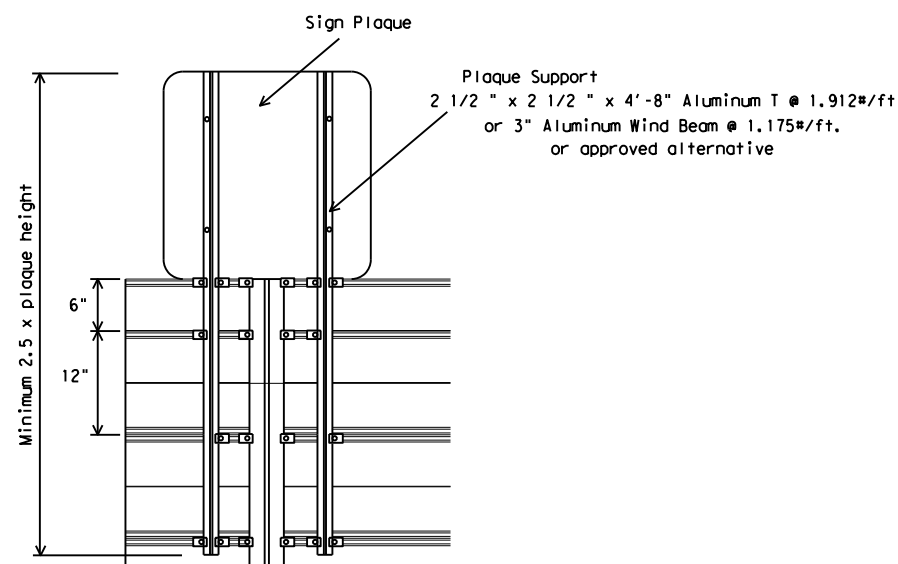


REAR VIEW

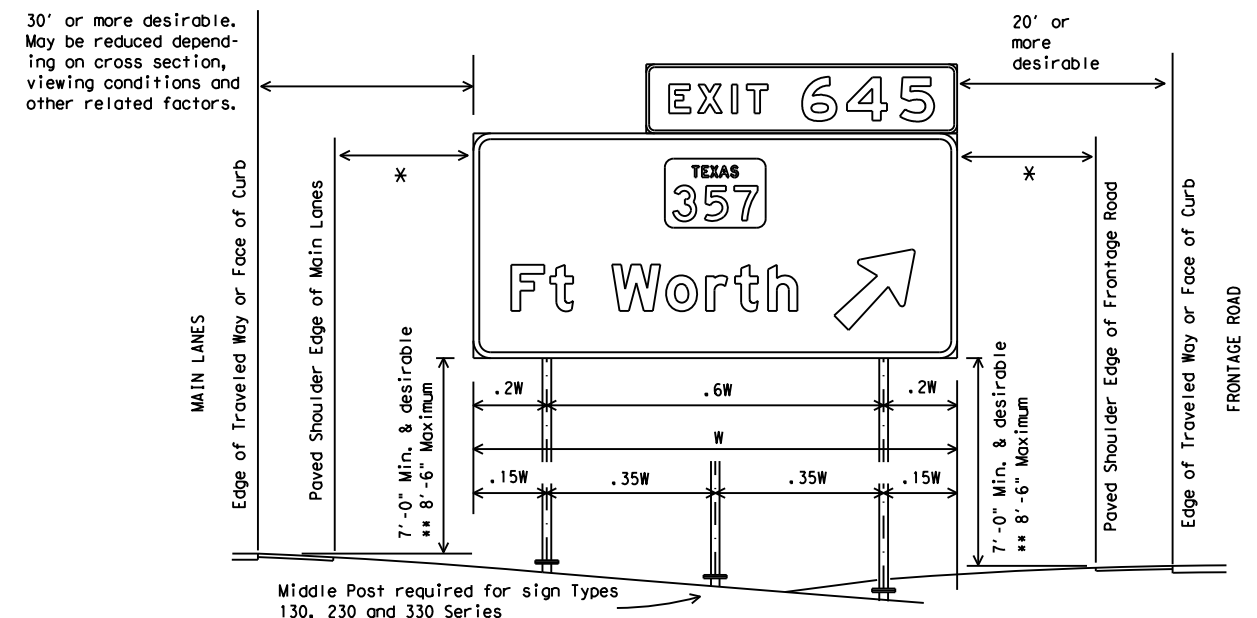
ALUMINUM PARENT SIGN & EXIT NUMBER PANEL MOUNTING DETAILS



SIDE VIEW



SIGN PLAQUE MOUNTING DETAIL TO ALUMINUM PARENT SIGN



TYPICAL SIGN INSTALLATION AND LOCATION

LATERAL CLEARANCE NOTES:

Lateral clearances of signs mounted on median side of main lanes are the same as shown above where space will permit.

Where a sign is to be located behind guardrail, an allowable minimum clearance of five feet may be used, measured from the face of the guardrail to the near edge of sign.

* - 6' minimum and desirable may be used only in areas of limited lateral clearance and when approved by the Engineer.

POST SPACING NOTES:

Post spacing on a two post sign may vary a maximum of plus or minus 10% of total sign width to fit field conditions.

Post spacing on a three post sign may vary a maximum of plus or minus 5% of total sign width to fit field conditions.

SIGN HEIGHT NOTES:

** The 8' 6" maximum may be exceeded when placing signs on extreme slopes. In these conditions, a 7' minimum from natural ground to bottom of sign must be maintained.

DEPARTMENTAL MATERIAL SPECIFICATIONS

ALUMINUM SIGN BLANKS	DMS-7110
SIGN HARDWARE	DMS-7120

GENERAL NOTES:

- Exit number panel shall be mounted to the right hand side of the parent sign for right exits and to the left hand side for left exits. The number panel shall be mounted with two uprights so its right edge is even with the right edge of the parent sign or vice-versa for left hand exits.
- Exit number panel support shall be symmetrical about number panel centerline.
- Exit number panel support shall be ASTM A36 structural steel galvanized after fabrication, or ASTM B221 aluminum alloy 6061-T6 or approved alternative.
- All bolts, nuts and washers shall be galvanized per ASTM Designation: B695 Class 50, or A153 Class C or D.
- Posts, parent sign panels, and exit number panels shall comply with notes on sheets SMD(2-1) and SMD(2-2).
- Signs (such as exit number panels) attached above a parent sign shall be made of the same type material as the parent sign. General Service and Routing signs may be fabricated from flat sheet aluminum.
- Exit number panel support and other connection hardware required to fasten exit number panel to parent sign shall be subsidiary to "Aluminum Signs" or "Fiberglass Signs."
- For fiberglass sign installation details, see manufacturer's recommendations.



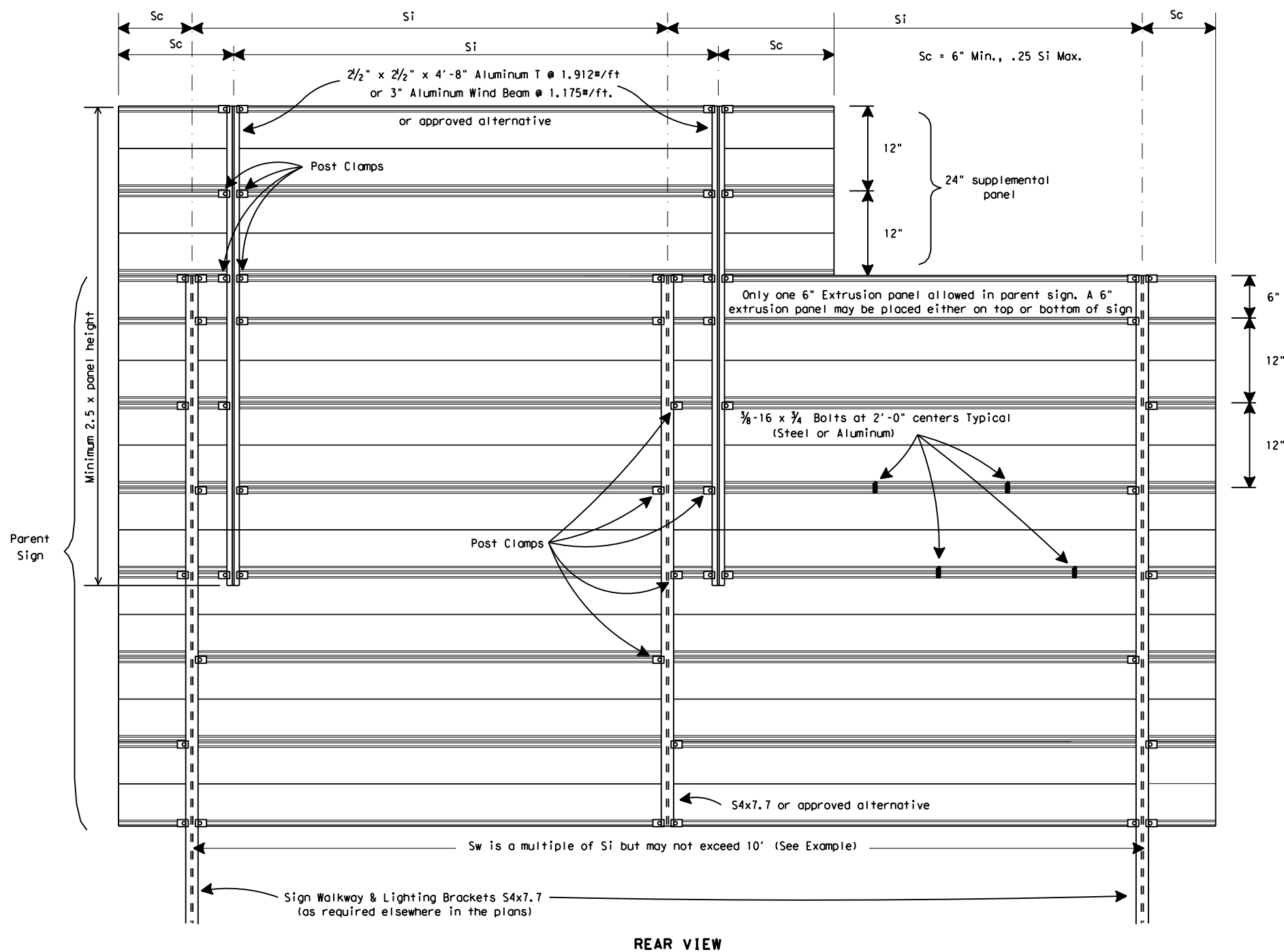
SIGN MOUNTING DETAILS-
LARGE ROADSIDE SIGNS

SMD(2-3)-08

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		DIST	COUNTY	SHEET NO.
		CRP	NUECES	91

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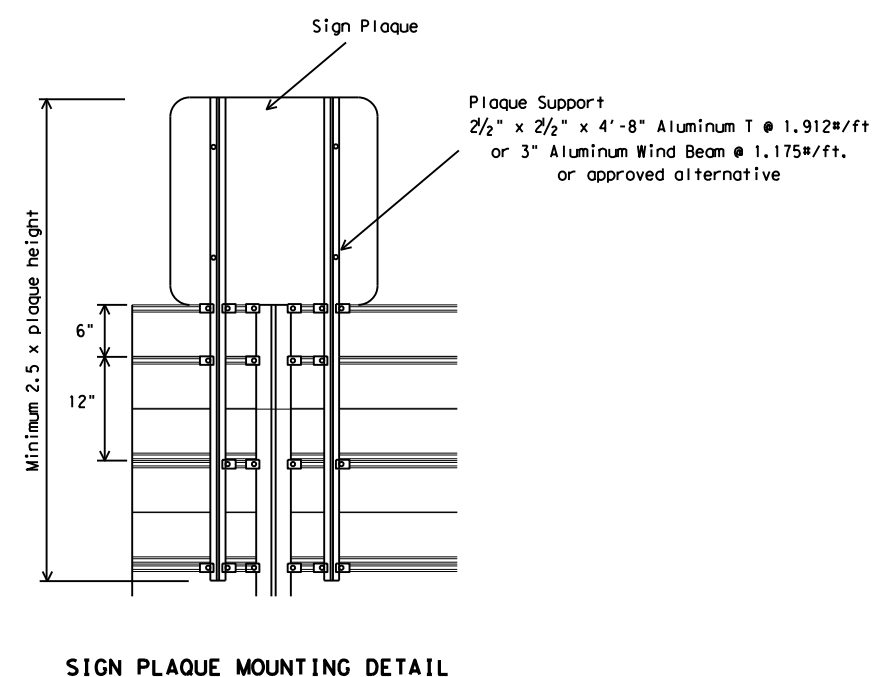
11/18/12 BY: [unclear]
 DATE: 04/20/12
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EXAMPLES (FOR DETERMINING Si and Sw)

NO.	ZONE	"d"	EXIT PANEL	WALKWAY	Si	Sw	COMMENT
1	1	15.0	YES	YES	4.5	9.0	Sw=2x(Si)
2	2	14.0	YES	NO	7.5	7.5	Sw = Si
3	1	15.0	NO	NO	8.5	8.5	Sw = Si
4	3	14.0	NO	YES	10.0	10.0	Sw = Si

Values shown for Si are maximum values. Si may be varied for different sign lengths and Truss mounting conditions. Sw should not exceed two times Si (Max.) or 10 feet.



"d" Deepest Sign in Group (Ft.)	MAXIMUM SIGN SUPPORT SPACING "Si" (FEET)																			
	EXTRUDED ALUMINUM SIGN PANELS																			
	WITH EXIT NUMBER PANELS								WITHOUT EXIT NUMBER PANELS											
	WITH WALKWAYS				WITHOUT WALKWAYS				WITH WALKWAYS				WITHOUT WALKWAYS							
WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE	WIND ZONE				
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
15	4.5	7	8	10	5	7	8	10	7	8	9	10	8.5	10	10	10				
14	6	7.5	9.5	10	6	7.5	9.5	10	8	9	10	10	10	10	10					
13	7.5	9	10	10	7.5	9	10	10	9	10	10	10	10	10	10					
12	8.5	10	10	10	8.5	10	10	10	10	10	10	10	10	10	10					
11 or less	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10					

For fiberglass sign installations, see manufacturer's recommendations.

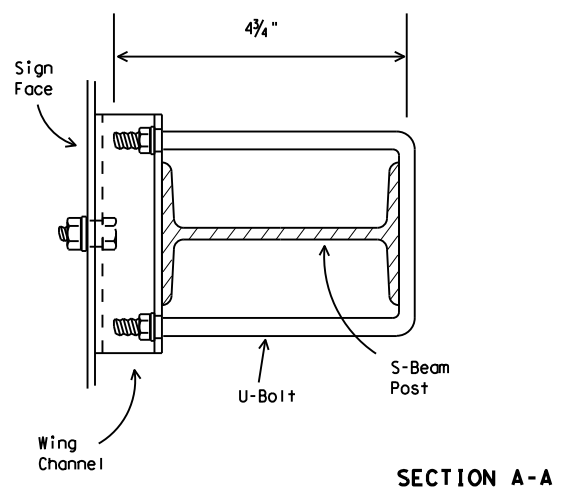
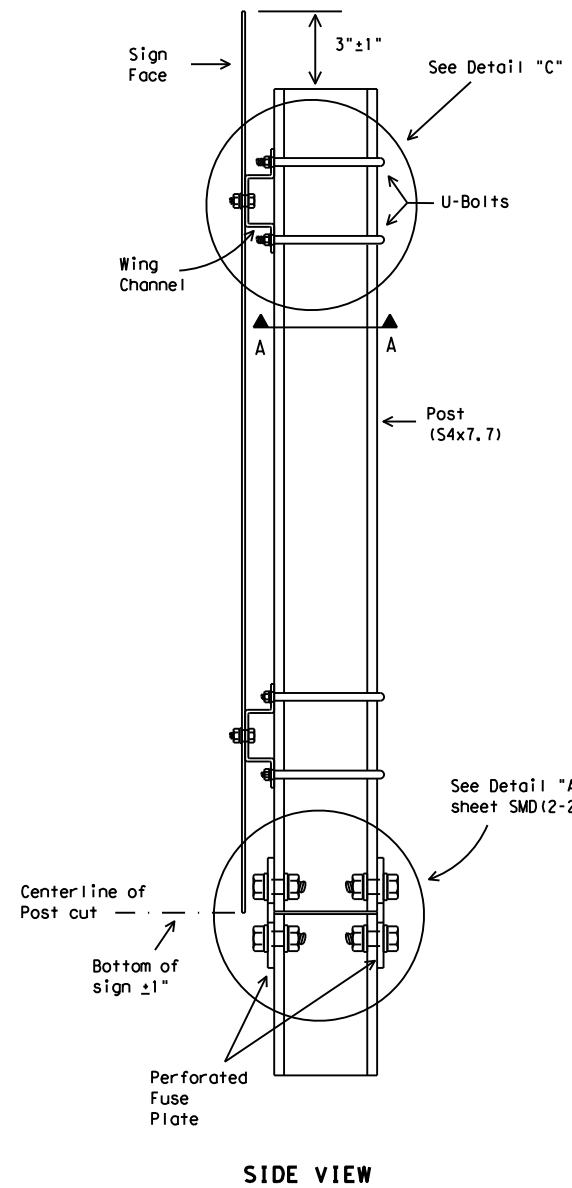
Texas Department of Transportation
 Traffic Operations Division

**SIGN MOUNTING DETAILS-
 OVERHEAD SIGNS
 EXTRUDED ALUMINUM
 SMD(2-4)-08**

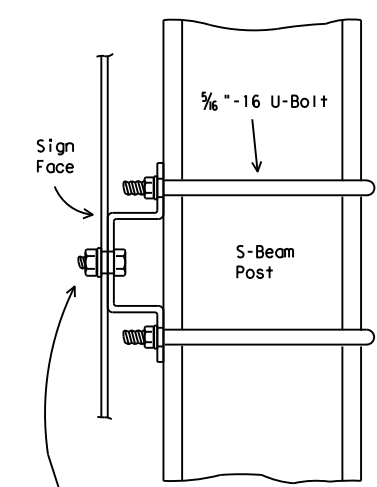
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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0916	00	281	VARIOUS
		DIST	COUNTY	SHEET NO.	
		CRP	NUECES	92	

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WING CHANNEL CLAMP DETAIL FOR TYPE G MOUNT

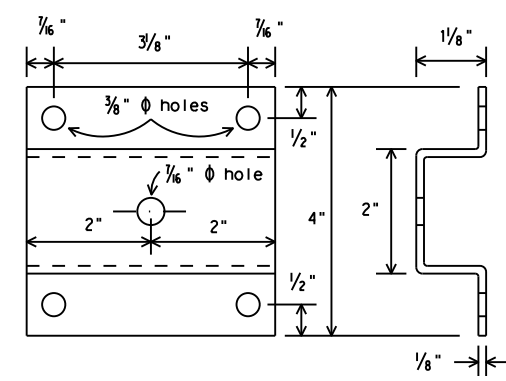


SECTION A-A



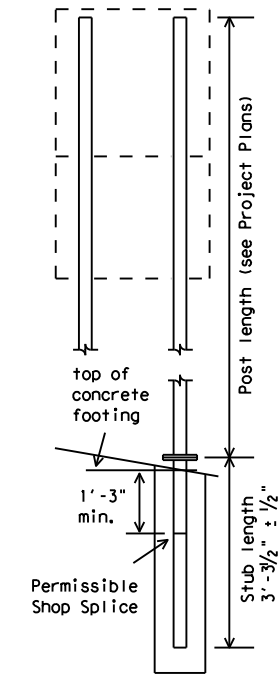
Galvanized steel or aluminum self-locking hex. head nut. 3/8" - 16 x 3/4" hex. head bolt for sheet metal. 3/8" - 16 x 1 1/4" hex. head bolt for plywood. 3/8" galvanized medium washer.

DETAIL "C"



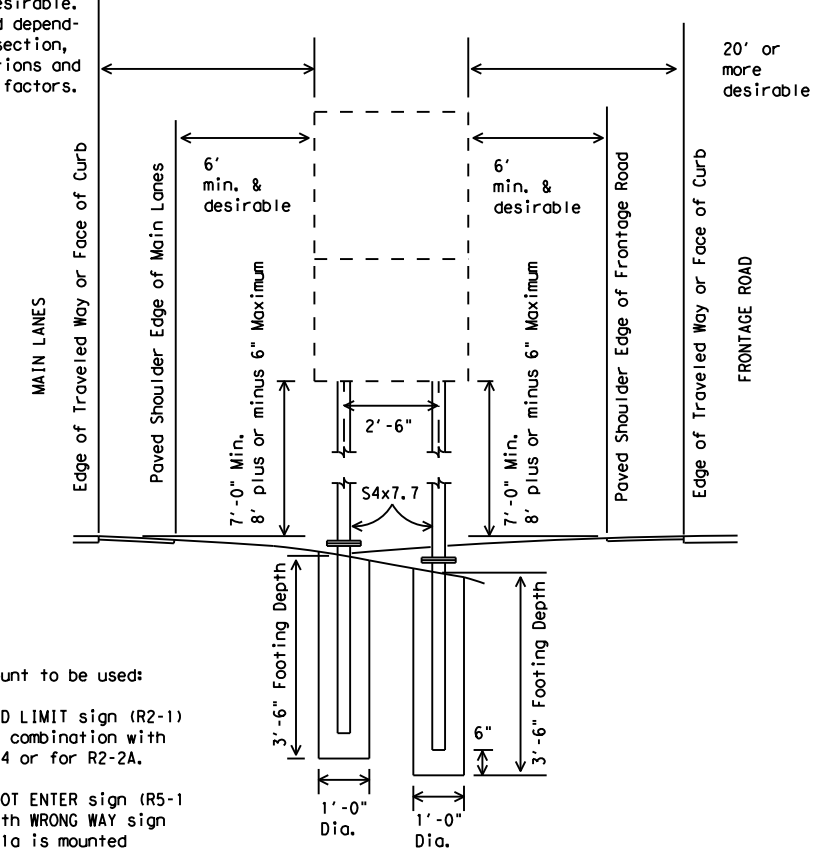
WING CHANNEL

Wing channel, 4" width x 1/8" depth x 1/8" thickness, shall be aluminum (ASTM B221 6061-T6 or B308 6061-T6), galvanized steel (ASTM A36) or stainless steel (ASTM A167 type 304, No. 2B finish).



The weight of one S4x7.7 post is equal to 112.2 lbs. plus 7.7 lbs./ft x (post length in feet minus 10 ft). The weight of 112.2 lbs. includes 10 feet of post length, post foundation stub, related connection plates, friction fuse plate, and all high strength bolts, nuts and washers.

30' or more desirable. May be reduced depending on cross section, viewing conditions and other related factors.



- This type mount to be used:
- (1) For SPEED LIMIT sign (R2-1) when used in combination with R2-2 and R2-4 or for R2-2A.
 - (2) For DO NOT ENTER sign (R5-1) when used with WRONG WAY sign (R5-1a). R5-1a is mounted above R5-1.

DEPARTMENTAL MATERIAL SPECIFICATIONS
SIGN HARDWARE
DMS-7120

- GENERAL NOTES:
1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
 2. Materials and fabrication shall conform to the requirements of the Department material specifications.
 3. Structural steel shall be "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures."
 4. Parts shall be saw cut either before galvanizing and the galvanized cut cleaned of zinc build-up, or saw cut after galvanizing and the cut surface repaired per Item 445, "Galvanizing." (Cut surface will not be treated until plate is installed and all bolts fully tightened.)



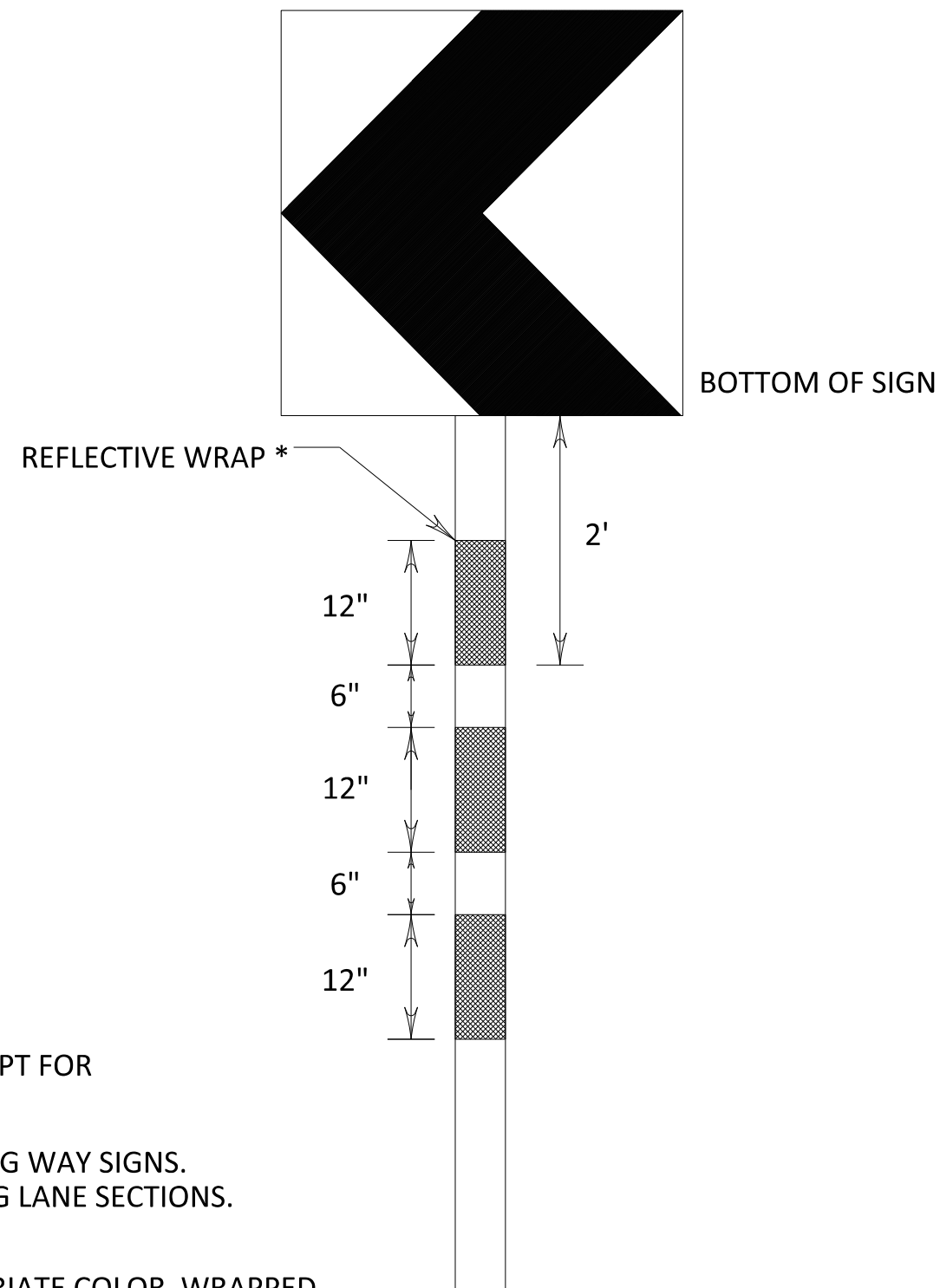
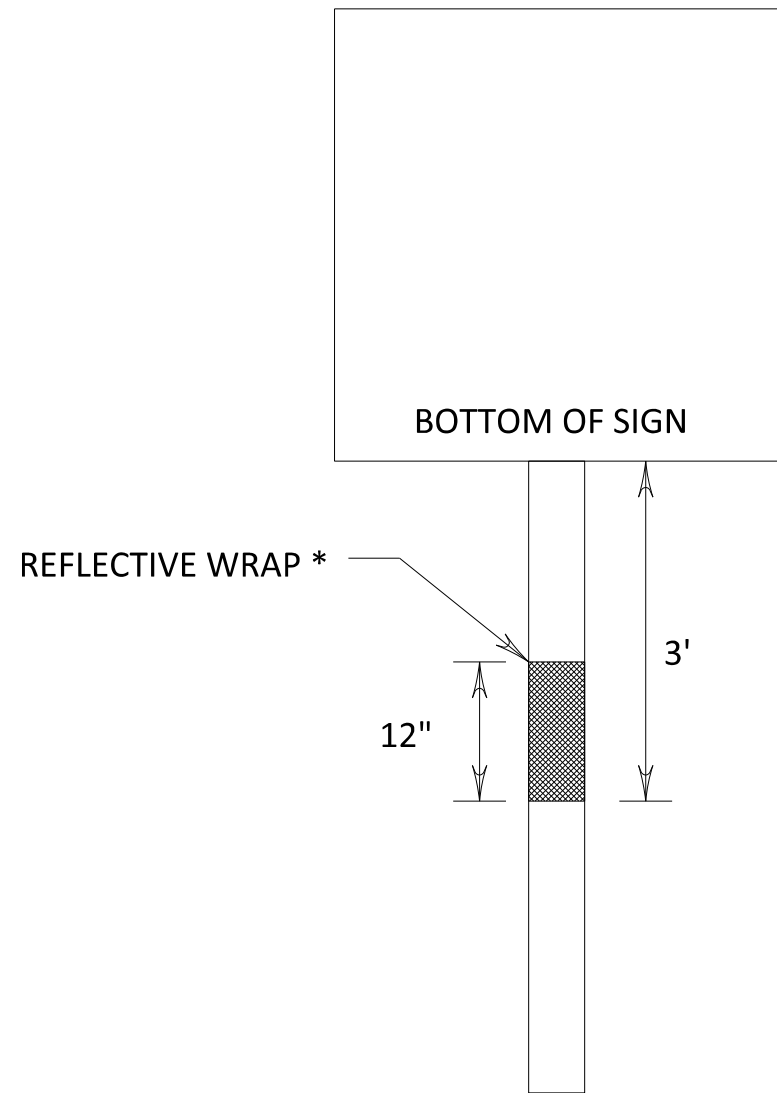
SIGN MOUNTING DETAILS, TYPE G SUPPORT SMD(TY G)-08

© TxDOT August 1995		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
1-97	REVISIONS	CONTRACT	SECTION	JOB	HIGHWAY
9-08		0916	00	281	VARIOUS
		DIST	COUNTY	SHEET NO.	
		CRP	NUECES	93	

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DATE:
FILE:

W1-8



REFLECTIVE WRAP COLOR SHALL MATCH THE BACKGROUND OF THE SIGN, EXCEPT FOR STOP AND YIELD SIGNS, WHICH WILL BE RED.

APPLY WRAP TO ALL WARNING SIGNS, STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS. ADDITIONALLY, APPLY WRAP TO THE W9-1R AND W9-2TL SIGNS IN THE PASSING LANE SECTIONS. PLEASE DIRECT ANY QUESTIONS REGARDING THE WRAPS TO THE ENGINEER.

WRAP WILL CONSIST OF A 12" STRIP OF REFLECTIVE MATERIAL OF THE APPROPRIATE COLOR WRAPPED AROUND THE SIGN POST SO THAT THE BOTTOM OF THE STRIP IS POSITIONED 3 FEET FROM THE BOTTOM OF THE SIGN. THE BOTTOM OF THE STRIP WILL BE POSITION 2 FEET FROM THE BOTTOM OF THE SIGN FOR CHEVRON SIGNS (W1-8 SIGNS)

WRAPS WILL BE FURNISHED BY THE CONTRACTOR AND SHALL BE SUBSIDIARY TO ITEM 644.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

SHEET 1 OF 1



CORPUS CHRISTI DISTRICT REFLECTIVE WRAP DETAIL

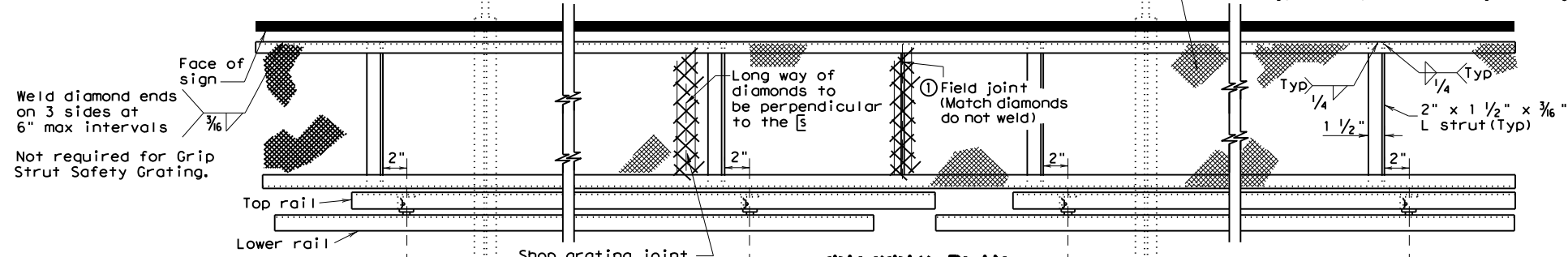
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© TxDOT July 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	091600	281	VARIOUS	
DIST	COUNTY	SHEET NO.		
CRP	NUECES	94		

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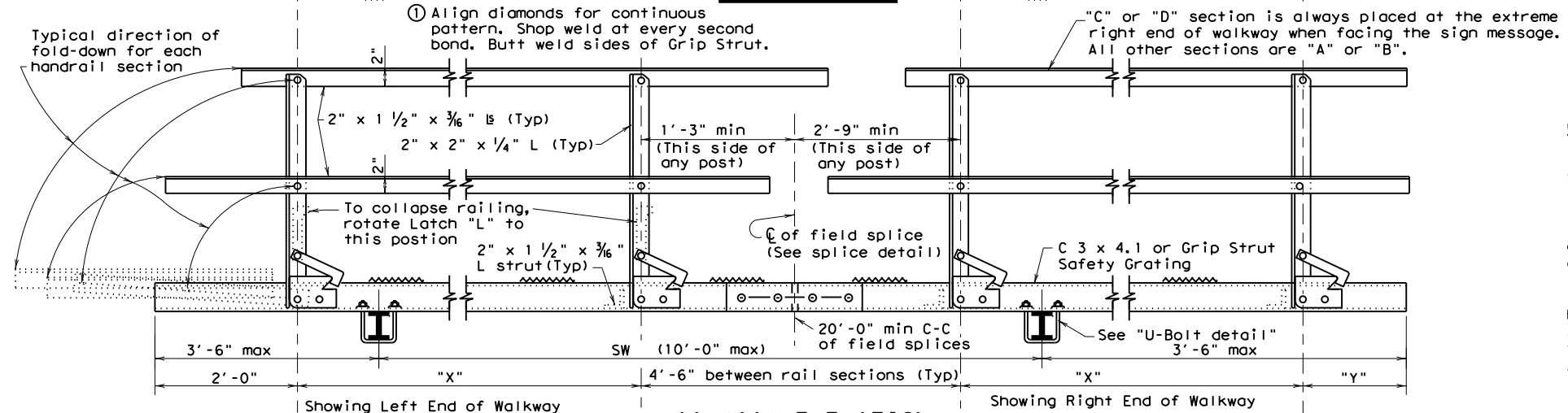
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 FILE: \\txdot.projectwiseonline.com:TXDOT4\Documents\16 - CRP\Design Projects\SWW(1)-14.dwg

Note: Diamond remnants on cut grating edge of walkway end shall be trimmed flush, or sharp edges removed by grinding.

Steel expanded metal grating. Weight = 4 1/4# (approx) per sq ft ; U.S. Gypsum Grite-X or Steelcrete Walkway Mesh or U.S. Gypsum Grip Strut Safety Grating or approved equal.



WALKWAY PLAN



WALKWAY ELEVATION

10'-0" Maximum spacing for Walkway, Lights and Sign Support Bracket spacing, see sheets SL (MV), and SMD (2-4) EXTRUDED ALUMINUM for other limitations to spacing.

Note: Eliminate C 3 x 4.1 when Grip Strut Safety Grating is used. All other details and materials apply unless otherwise noted.

GENERAL NOTES

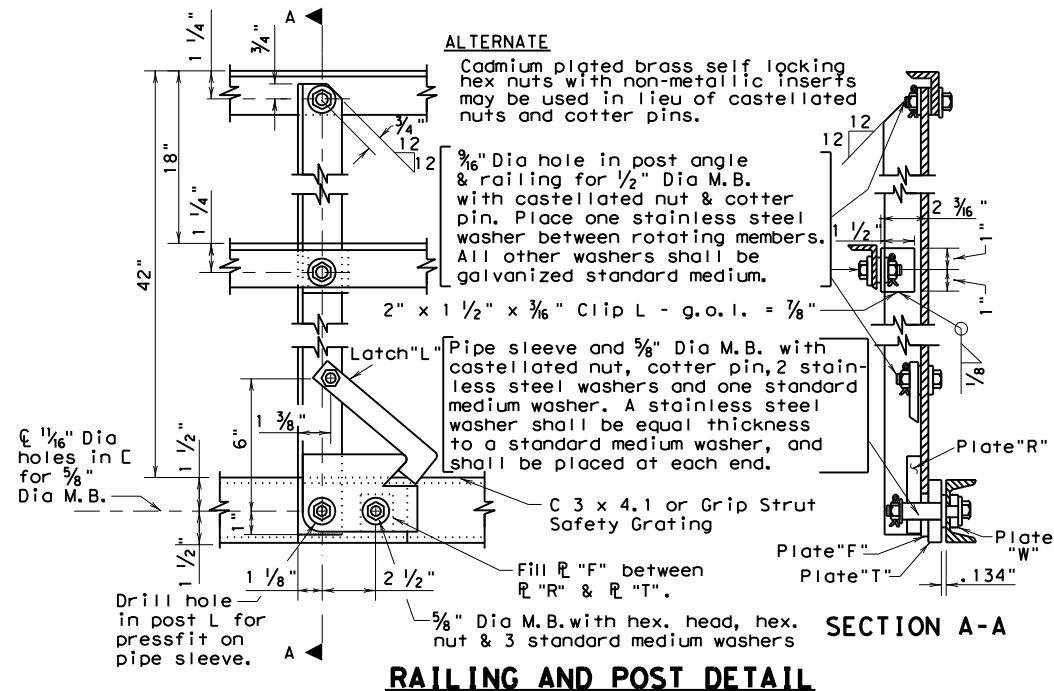
Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and Interim revisions thereto.

Materials, fabrication, construction and erection shall conform to Item 654, "Sign Walkways" and with details, dimensions, and weld procedures shown herein.

Structural steel shall conform with ASTM A36. Bolts shall have hexagon heads and nuts and conform with ASTM A307. Stainless steel pipe bushings shall conform with ASTM A312 Grade TP304. Stainless steel washers shall conform with ASTM A167 Type 302B. All parts, except stainless steel shall be galvanized after fabrication per Item 445, "Galvanizing".

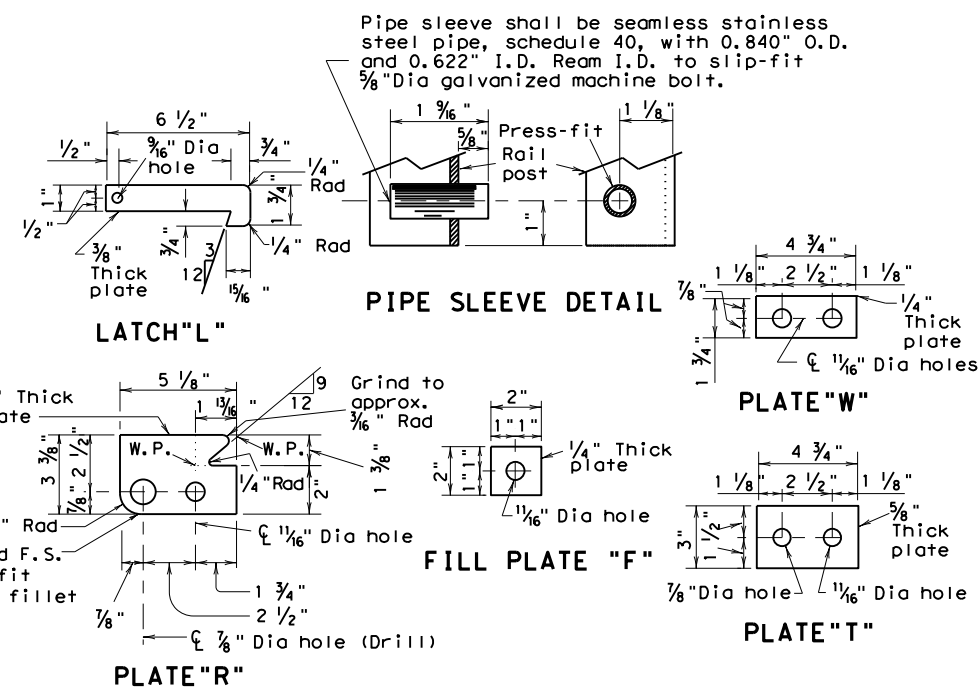
The stainless steel bushings shall be pressed in the rail posts after posts are galvanized.

The walkway and railing shall be shop assembled to check fabrication.



RAILING AND POST DETAIL

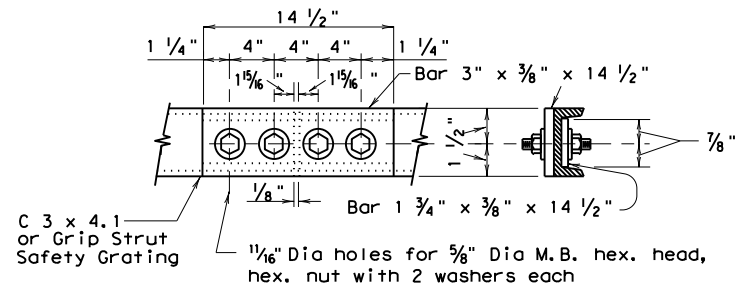
After erection, adjust all castellated nuts to remove only excess play in rotation parts then lock in position with cotter pins. Adjust nut on latch "L" for free latch operation.



PIPE SLEEVE DETAIL, LATCH "L", FILL PLATE "F", PLATE "R", PLATE "W", PLATE "T"

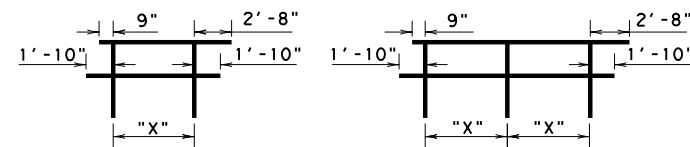
		Texas Department of Transportation		<i>Traffic Operations Division Standard</i>	
SIGN WALKWAY AND HANDRAIL					
SWW(1) - 14					
FILE:	SWW1-14.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	April 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		0916	00	281	VARIOUS
	DIST	COUNTY		SHEET NO.	
	CRP	NUECES		95	

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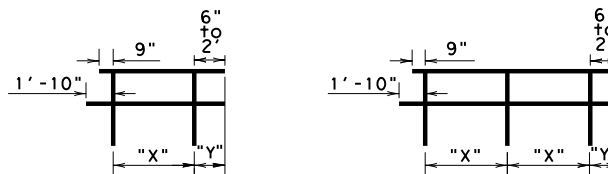
FIELD SPLICE DETAIL

(See WALKWAY ELEVATION for location; sheet 1 of 2)



"A" SECTION

"B" SECTION



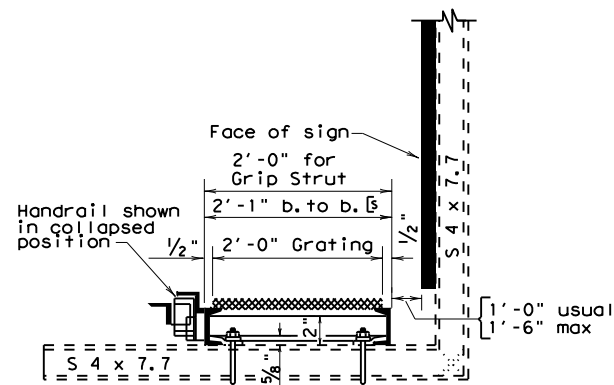
"C" SECTION

"D" SECTION

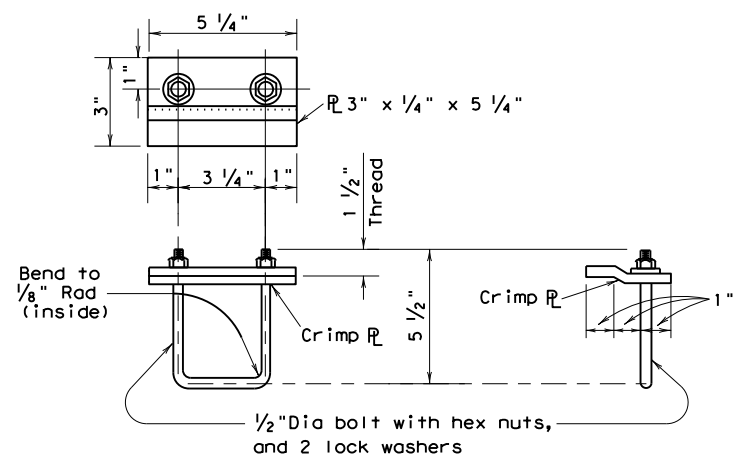
"X" dimension = 8'-0" max. See table for min dimension "X".
 "X" shall be the same for all sections in any one walkway.
 "Y" dimension = 6" usual, but variable between 6" and 2'-0" to obtain maximum dimension for "X" in even inches.

TYPES OF HANDRAIL SECTION

WALKWAY LENGTH	MINIMUM "X" DIMENSION	REQUIRED NO. OF SECTIONS			
		"A"	"B"	"C"	"D"
7'-6" to 12'-0"	1 at 5'-0"	~	~	1	~
12'-6" to 20'-0"	2 at 5'-0"	~	~	~	1
20'-6" to 24'-6"	2 at 6'-9"	1	~	1	~
25'-0" to 32'-6"	3 at 6'-0"	~	1	1	~
33'-0" to 40'-6"	4 at 6'-6"	~	1	~	1
41'-0" to 45'-0"	4 at 7'-4 1/2"	1	1	1	~
45'-6" to 53'-0"	5 at 6'-9"	~	2	1	~
53'-6" to 61'-0"	6 at 7'-0"	~	2	~	1
61'-6" to 73'-6"	7 at 6'-6"	~	3	1	~
74'-0" to 81'-6"	8 at 7'-3"	~	3	~	1
82'-0" to 94'-0"	9 at 6'-10"	~	4	1	~
94'-6" to 102'-0"	10 at 7'-4"	~	4	~	1
102'-6" to 114'-6"	11 at 7'-0"	~	5	1	~
115'-0" to 122'-6"	12 at 7'-6"	~	5	~	1



END VIEW OF WALKWAY



U-BOLT AND CLAMP DETAIL

SHEET 2 OF 2

Texas Department of Transportation
Traffic Operations Division Standard

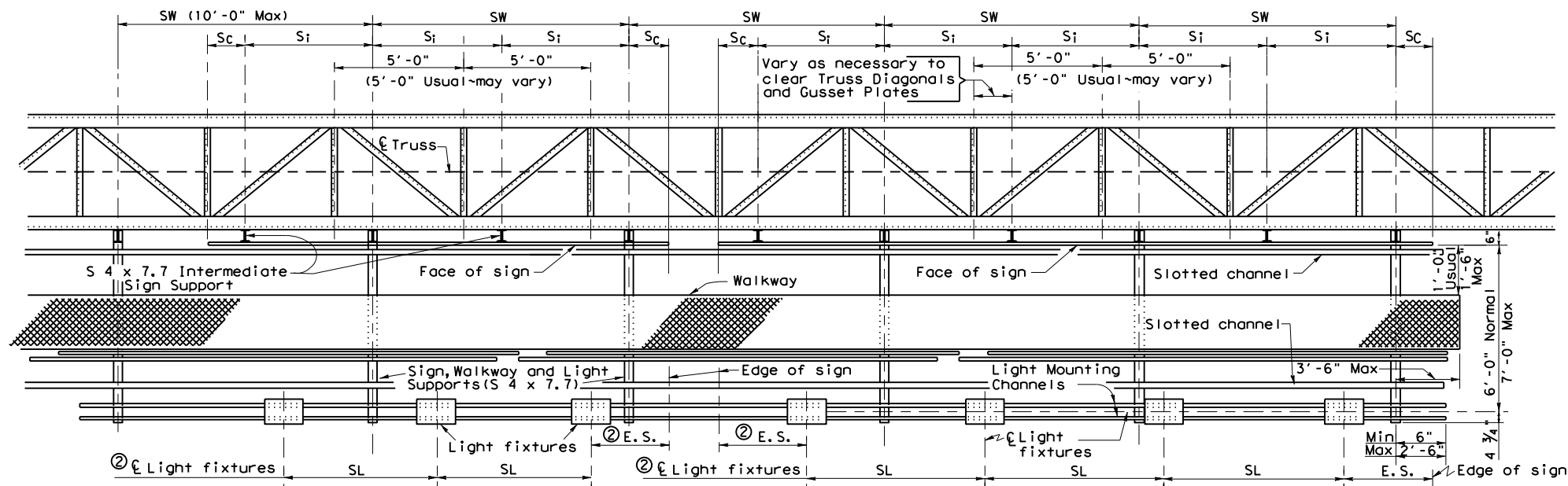
SIGN WALKWAY AND HANDRAIL

SWW(1) - 14

FILE: sww1-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT April 2014	CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY	SHEET NO.		
CRP	NUECES	96		

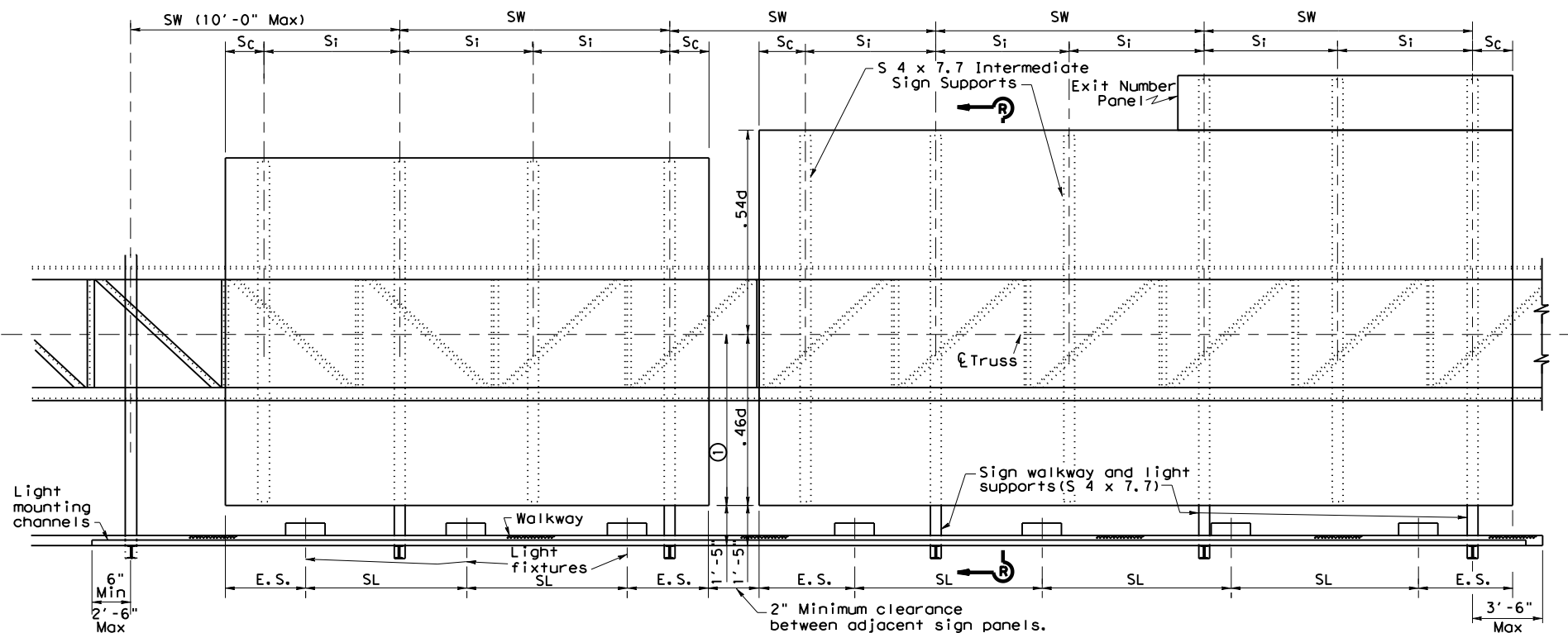
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DATE: 4/5/2024 11:10:07 PM
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Sc=6" Min and .25 Si Max
 ② See SL(MV) for light fixture spacing.

PART PLAN
 (Showing Truss, Signs, Walkways and Lights)

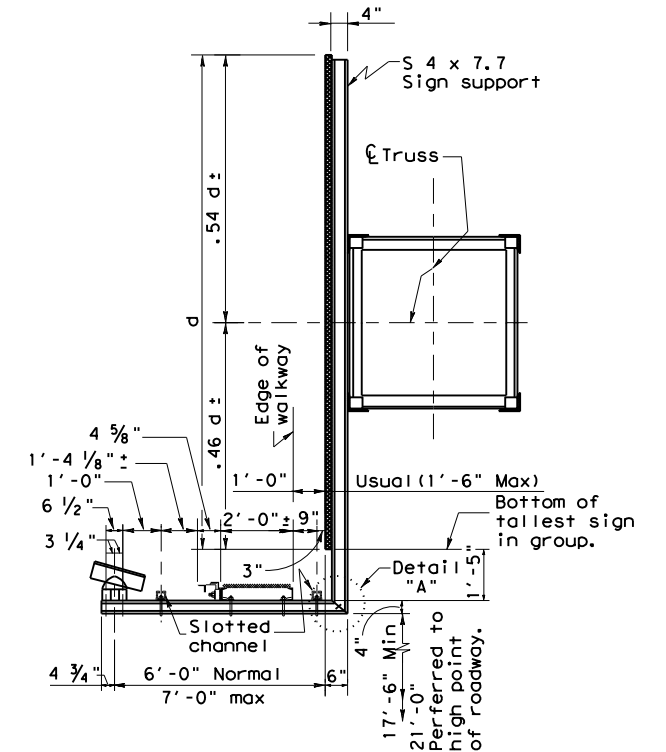


PART ELEVATION

① Where signs of different depths are used, the bottom edge of all signs may be placed in line. Where this is done, all signs should be so positioned that the bottom edges are approximately 0.46 of the depth of the deepest sign below the ϵ of the truss. When signs are spaced thus, Si is determined by the deepest sign.

See sheet SL(MV) for Lighting Details & Spa.S.L. & E.S.
 See sheet SSW(1) for Walkway Details.
 See sheet SMD(2-4) for Extruded Aluminum Sign Details & Max. Spa. for Si.
 Sc= 6" min, .25 Si max.

Note: Exit Number Panel may be supported by sign support brackets as shown hereon, or may be supported as shown on sheet SMD(2-4). Regardless of method used spacing of supports shall not exceed Si.



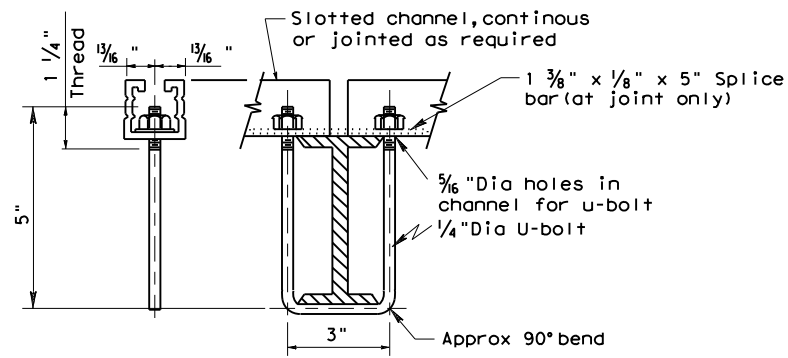
SECTION R-R

SHEET 1 OF 2

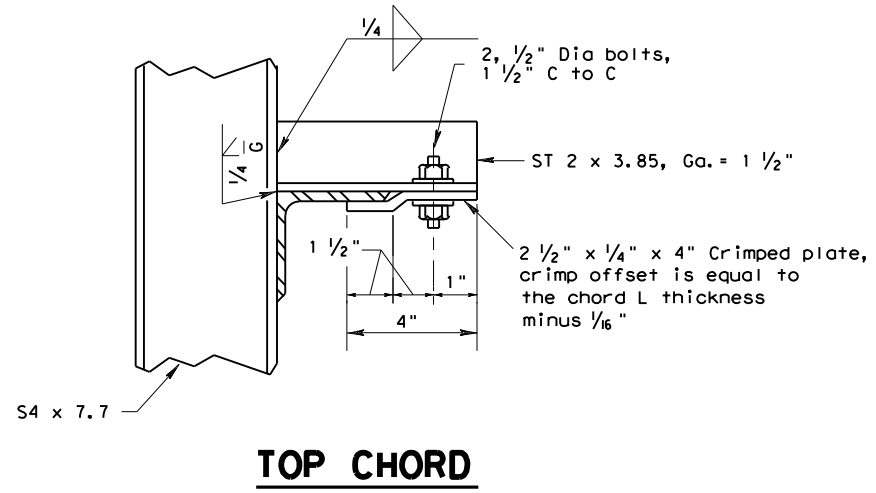
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SUPPORT BRACKETS FOR SIGNS, WALKWAYS & LIGHTS			
SB(SWL-1)-14			
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REV:	091600	DATE:	April 2014
CONT:	00	JOB:	281
DIST:	CRP	COUNTY:	NUECES
REVISIONS:		HIGHWAY:	VARIOUS
		SHEET NO.:	97

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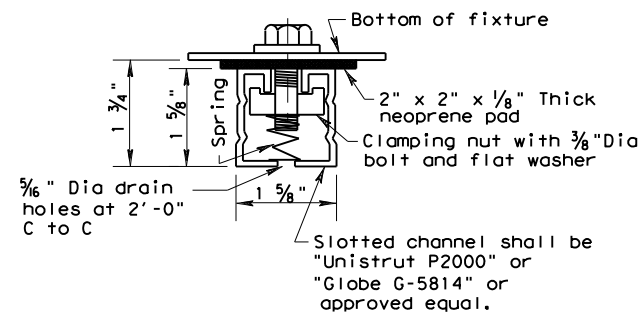
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SECTION A-A

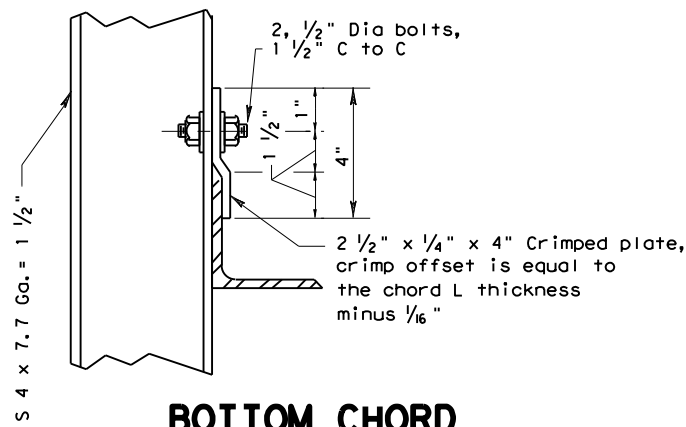


TOP CHORD



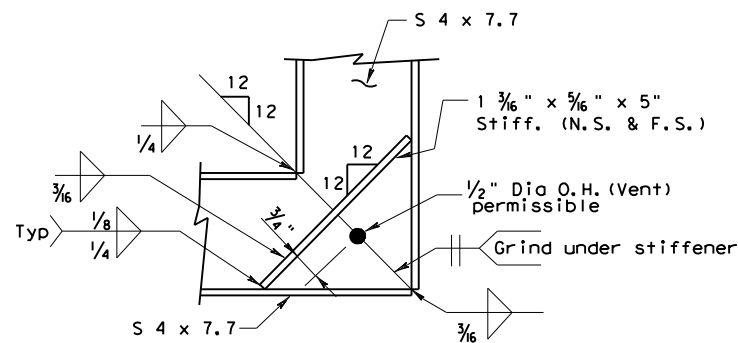
TYPICAL SLOTTED CHANNEL

CONNECTED TO LIGHTING FIXTURE



BOTTOM CHORD

SUPPORT TO TRUSS CONNECTION



DETAIL "A"

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and Interim revisions thereto.

Materials, fabrication, construction and erection shall conform to Item 654, "Sign Walkways" and with details, dimensions, and weld procedures shown herein. Structural steel shall conform with ASTM A36 unless noted otherwise.

Bolts shall have hexagon heads and nuts and conform with ASTM A307.

All parts shall be galvanized after fabrication per Item 445, "Galvanizing".

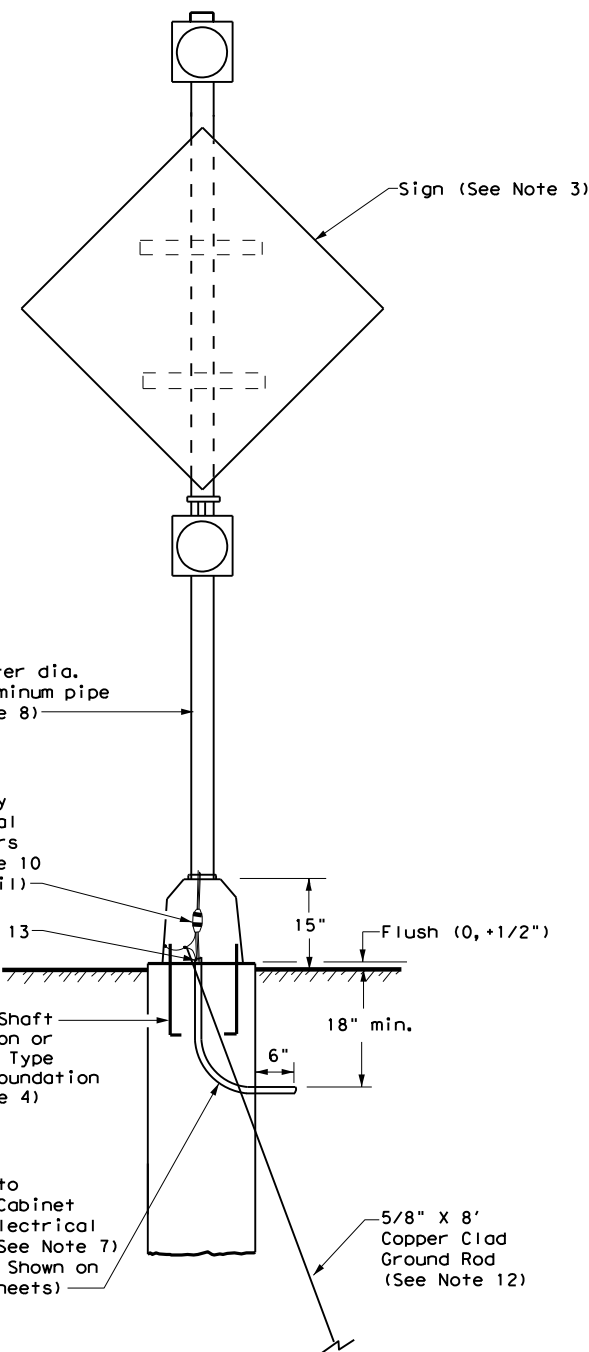
SHEET 2 OF 2

		Traffic Operations Division Standard	
SUPPORT BRACKETS FOR SIGNS, WALKWAYS & LIGHTS SB(SWL-1)-14			
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© TxDOT April 2014	CONT	SECT	JOB
REVISIONS	0916	00	281
DIST	COUNTY		SHEET NO.
CRP	NUECES		98

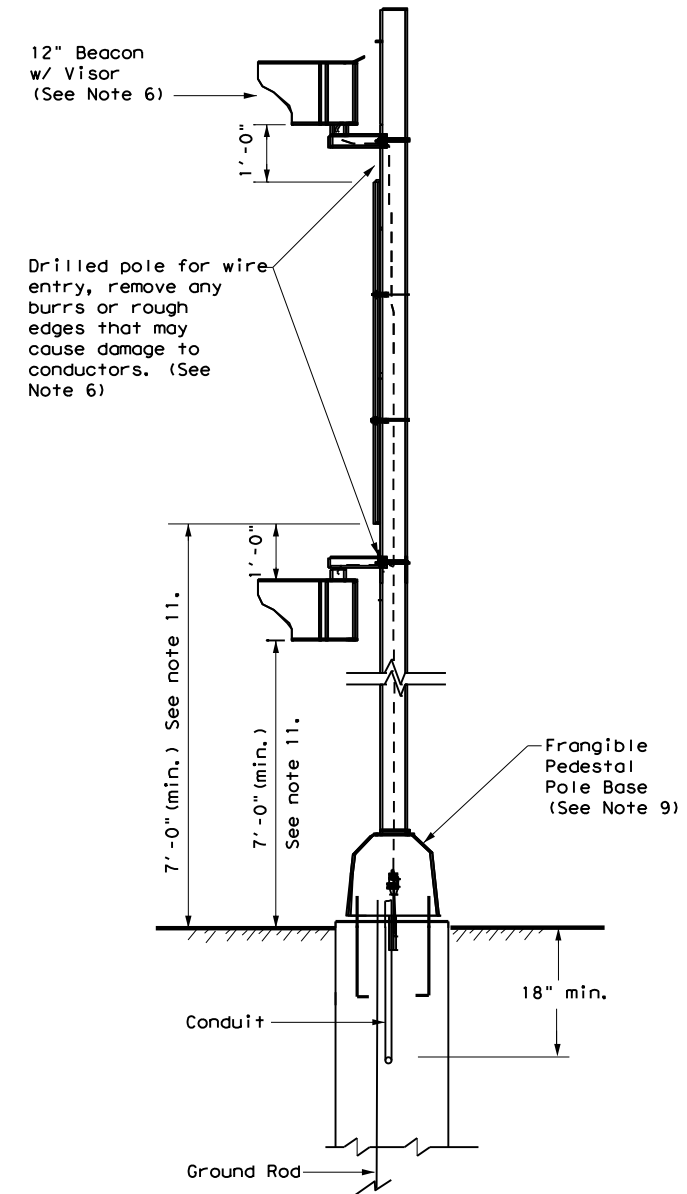
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GENERAL NOTES:

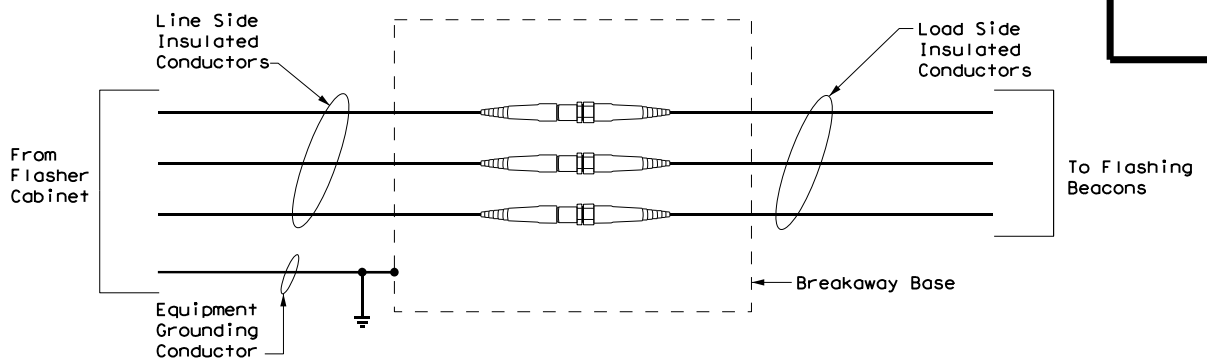
1. Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
2. See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
3. See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
4. Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
5. When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
6. Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
7. Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
8. Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
9. Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening of connection.
10. Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug. For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
11. Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
12. Make connections to ground rods according to NEC. Ground rod clamps shall be listed for their intended purpose.
13. Ensure height of conduit and ground rod is below top of anchor bolts.



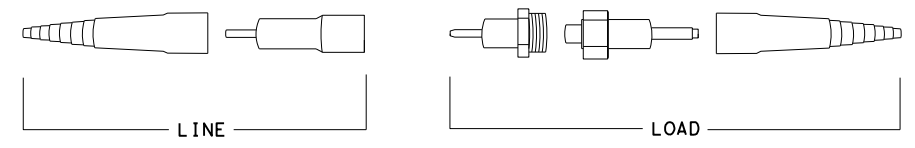
FRONT



SIDE



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



**NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW**

Texas Department of Transportation

Traffic Operations Division Standard

ROADSIDE FLASHING
 BEACON ASSEMBLY

RFBA-13

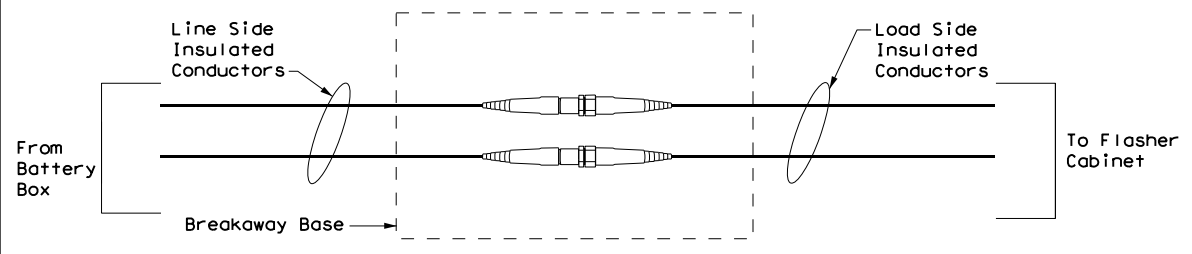
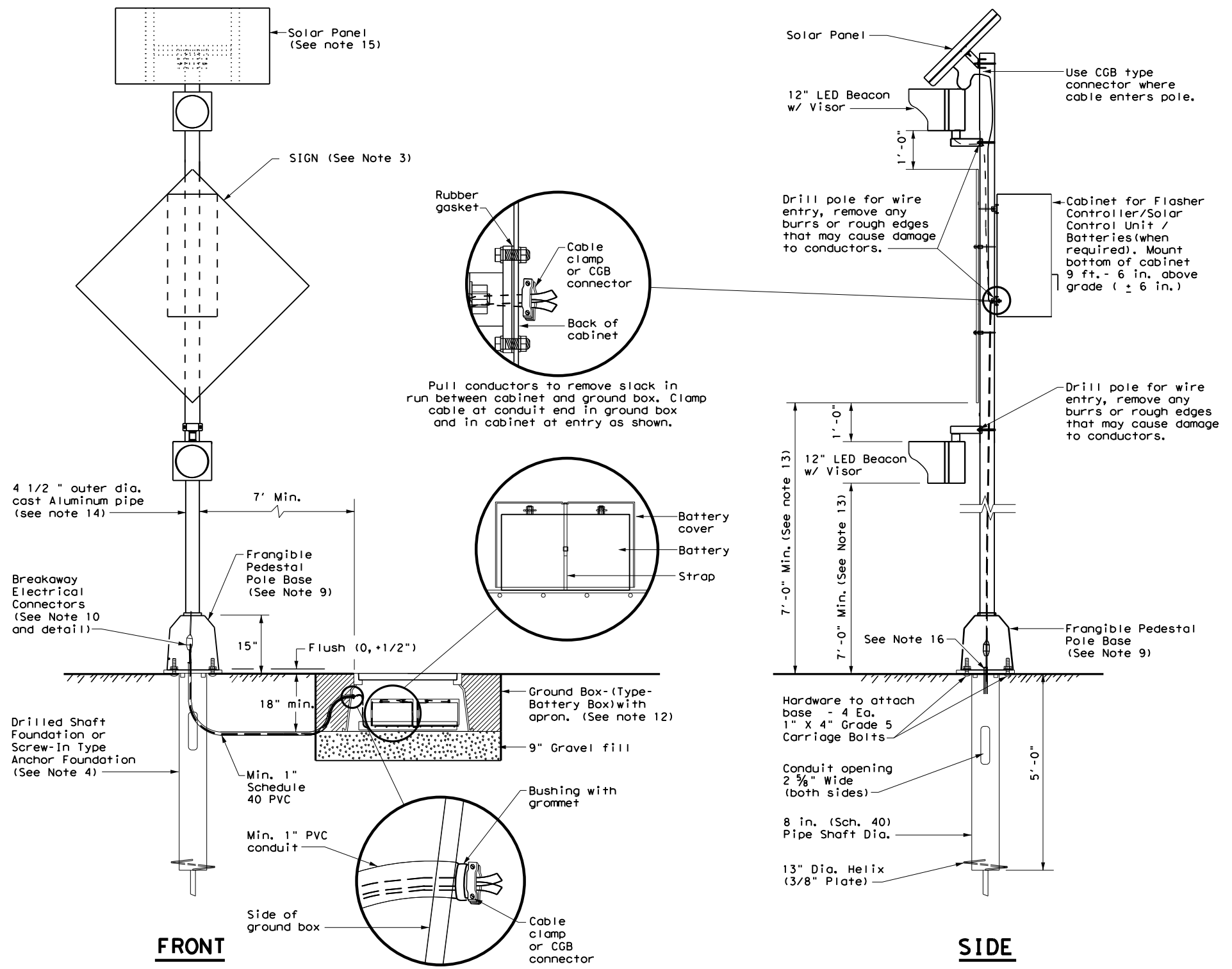
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© TxDOT January 1992	CONT	SECT	JOB	HIGHWAY
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5-93 12-04	DIST	COUNTY	SHEET NO.	
10-93 3-13	CRP	NUECES	99	
4-98				

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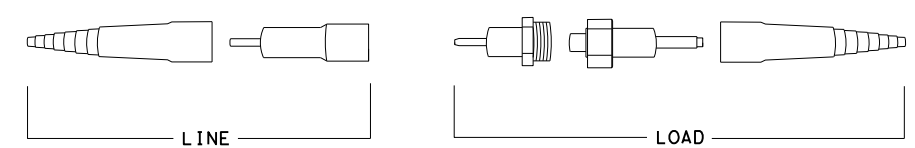
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GENERAL NOTES:

- Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
- See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
- See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
- Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
- When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
- Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
- Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
- Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
- Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug. For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
- Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturers recommendations. Provide the number of batteries as required by the manufacturer.
- See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
- Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
- Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
- Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
- Ensure height of conduit is below top of anchor bolts.



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



**NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW**

SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS
SPRFBA (1) - 13

FILE: spb1-13.dgn	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
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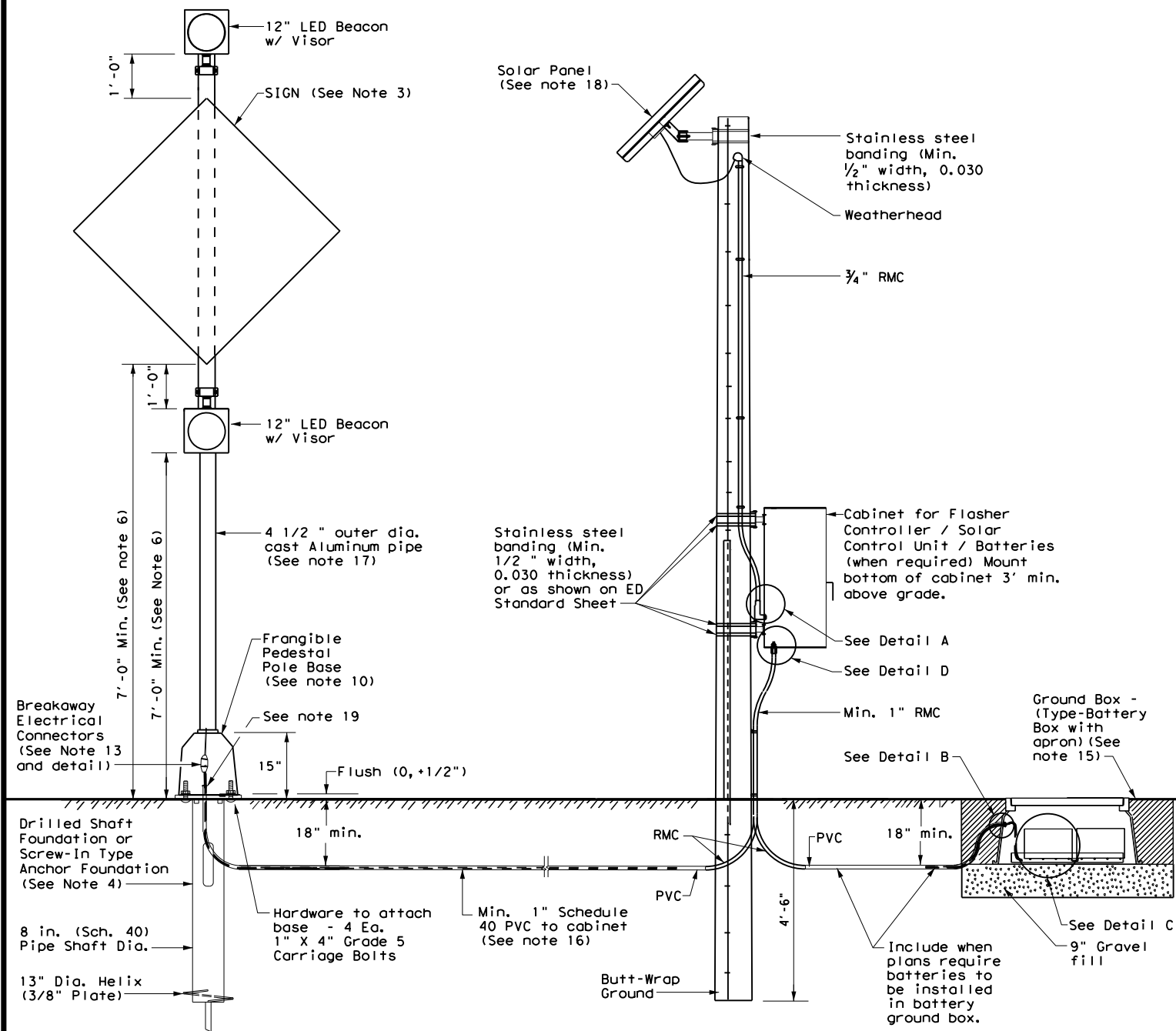
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GENERAL NOTES:

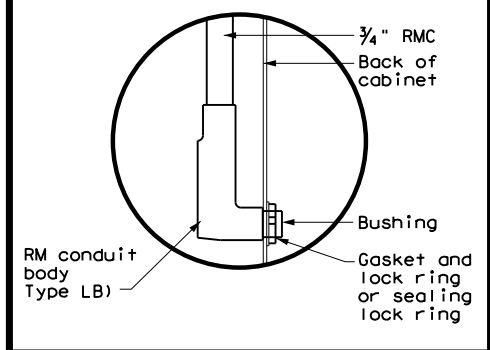
- Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
- See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
- See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
- Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
- When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
- Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
- Provide 20' in length ANSI class 5 timber poles. Install pole as shown or at the edge of the right of way. The timber pole is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
- Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
- Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
- Install the Type LB conduit body attachment in the bottom third of the back of the cabinet. See Detail A.
- Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies". Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse (slug). For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
- Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturer's recommendations. Provide the number of batteries as required by the manufacturer.
- See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
- Unless otherwise shown on the plans or recommended by the manufacturer, use the following table to determine the wire size from cabinet to beacons.

Distance from Cabinet to Beacons (ft.)	Minimum Required Wire Size (AWG)
0 - 35	#14
35 - 60	#12
60 - 100	#10
> 100	#8

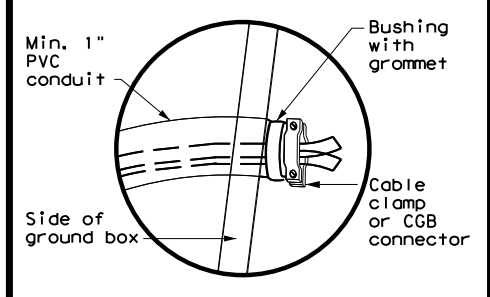
- Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
- Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
- Ensure height of conduit is below top of anchor bolts.



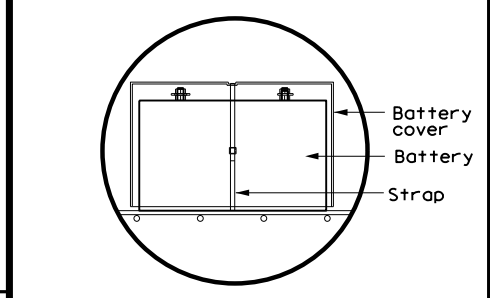
DETAIL FOR SOLAR PANEL, CABINET, AND BATTERIES LOCATED OUT OF CLEAR ZONE ON TIMBER POLE



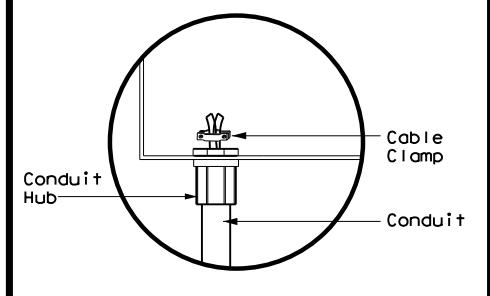
DETAIL A



DETAIL B



DETAIL C

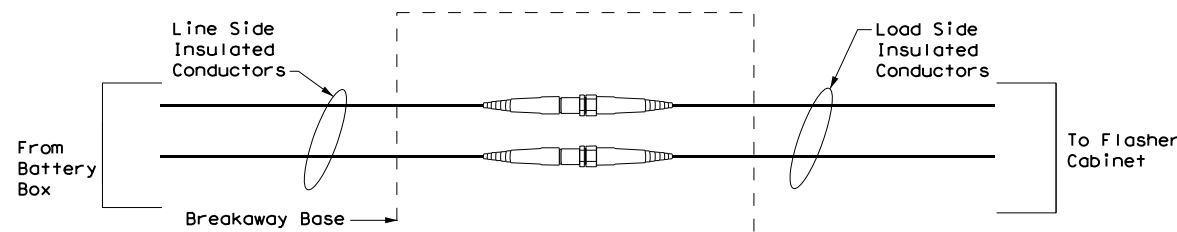


DETAIL D

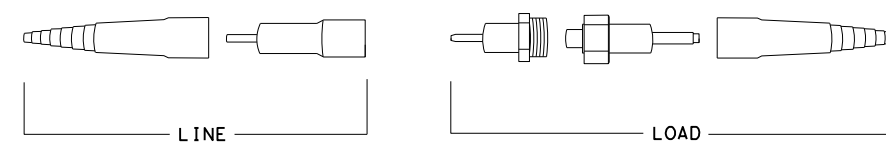
SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS (TIMBER)
SPRFBA (2) - 13

FILE: spb2-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916	00	281	VARIOUS
12-04	DIST	COUNTY	SHEET NO.	
3-13	CRP	NUECES	101	

75B



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS EXPLODED VIEW

DATE: 4/5/2024 11:10:20 PM
 FILE: pw://txdot.projectwiseonline.com:TXDOT4/Documents/16 - CRP/Design Projects/09160000281/02/SPRFBA (2) - 13.dwg

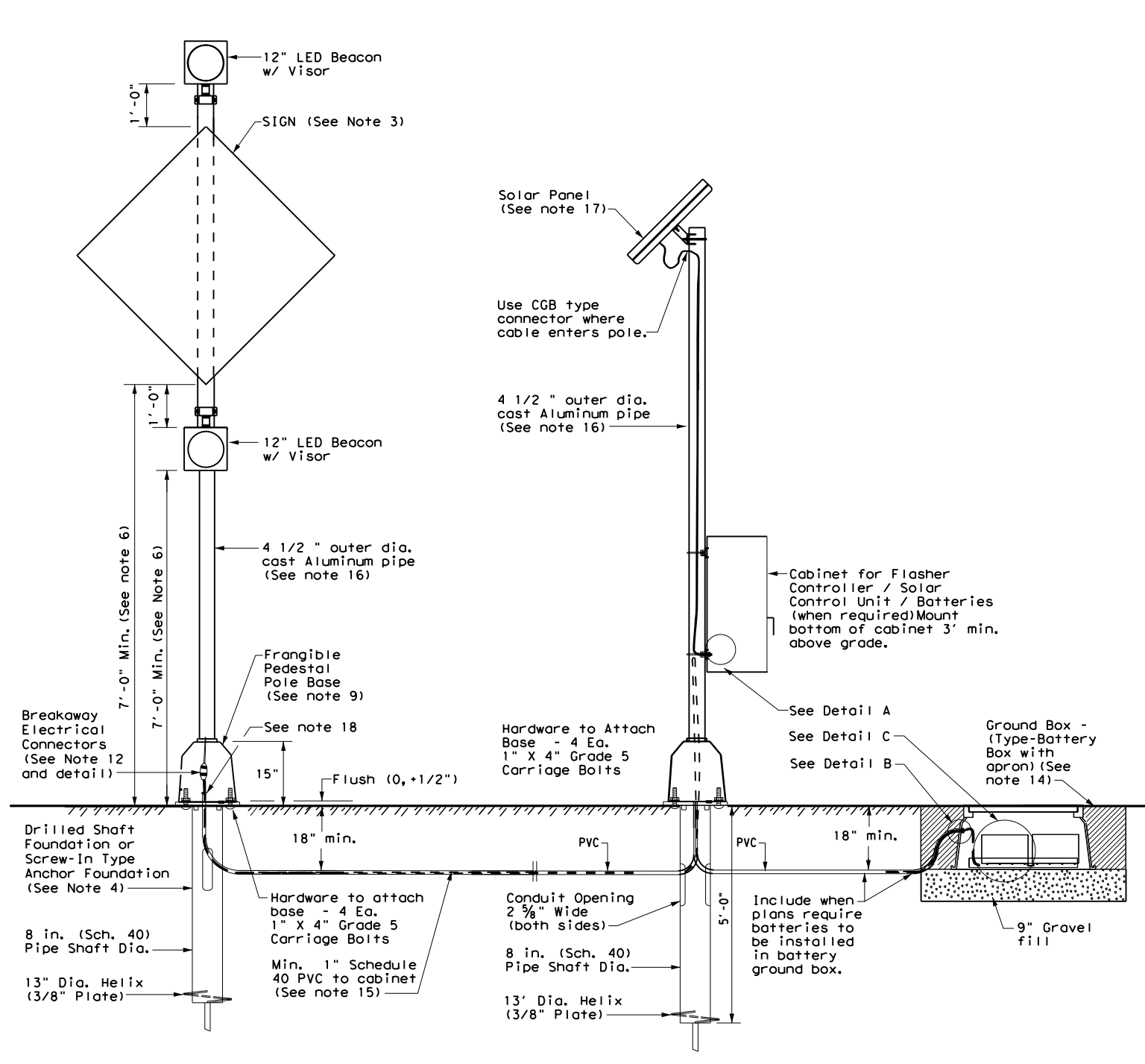
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of units or for the accuracy of the information contained herein.

GENERAL NOTES:

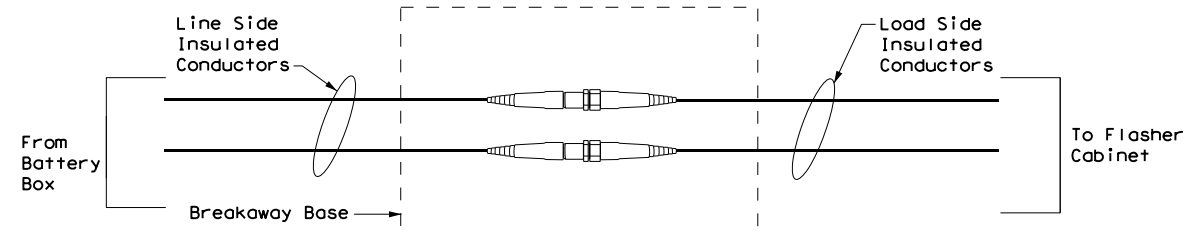
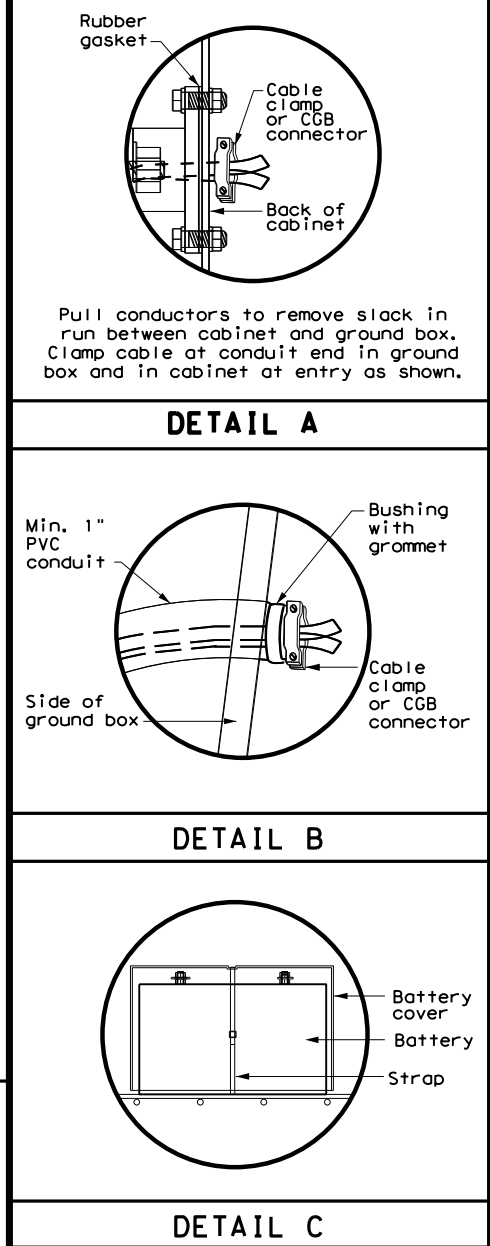
- Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
- See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
- See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
- Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
- When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
- Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
- Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
- Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
- Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
- Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
- Install the cable clamp in the bottom third of the back of the cabinet. See Detail A.
- Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies". Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse (slug). For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
- Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturer's recommendations. Provide the number of batteries as required by the manufacturer.
- See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
- Unless otherwise shown on the plans or recommended by the manufacturer, use the following table to determine the wire size from cabinet to beacons.

Distance from Cabinet to Beacons (ft.)	Minimum Required Wire Size (AWG)
0 - 35	#14
35 - 60	#12
60 - 100	#10
> 100	#8

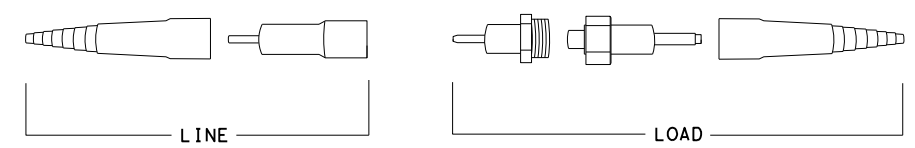
- Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
- Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
- Ensure height of conduit is below top of anchor bolts.



DETAIL FOR SOLAR PANEL, CABINET, AND BATTERIES LOCATED OUT OF CLEAR ZONE ON SEPARATE ALUMINUM POLE ASSEMBLY



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS EXPLODED VIEW

SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS (ALUMINUM) SPRFBA (3) - 13

FILE: spb3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0916	00	281	VARIOUS
12-04	DIST	COUNTY	SHEET NO.	
3-13	CRP	NUECES	102	

DATE: 4/5/2024 11:10:24 PM
 FILE: pw://txdot.projectwiseonline.com:TXDOT4/Documents/16 - CRP/Design Projects/SPB3-13.dwg

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DATE: FILE:

FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)			FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION	
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	F _y (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft		SHEAR Kips
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

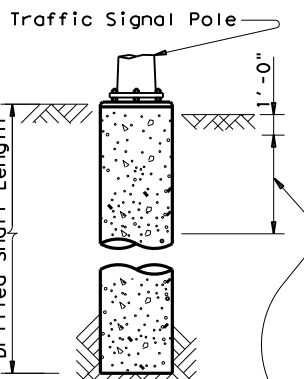
- Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
- Foundation Design Loads are the allowable moments and shears at the base of the structure.
- Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
- Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.
- If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
- Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE (3)

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (6) (FEET)				
				24-A	30-A	36-A	36-B	42-A
B-5,7,8	10	24-A	1	18				
C-9,10,13	10	24-A	1	18				
D-17,18,19	10	24-A	1	18				
E-9,11,13	10	24-A	1	18				
G-5, 6, 7	10	24-A	1	18				
I-5,6,9	10	24-A	1	18				
K-8,9,13	10	24-A	1	18				
L-5,6,8	10	24-A	1	18				
M-5,6,9	10	24-A	1	18				
N-4,6,8	10	24-A	1	18				
P-5,7,8	10	24-A	1	18				
Q-5,6,9	10	24-A	1	18				
S-5,6,10	10	24-A	1	18				
TOTAL DRILLED SHAFT LENGTHS								

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
		MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24' 28' X 28' 32' X 28'	32' X 32' 36' X 36' 40' X 36' 44' X 28'	44' X 36'
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	24' X 24' 28' X 28' 32' X 24'	36' X 36' 40' X 24'	44' X 36'	40' X 36' 44' X 36'
		MAXIMUM DOUBLE ARM LENGTH COMBINATIONS			



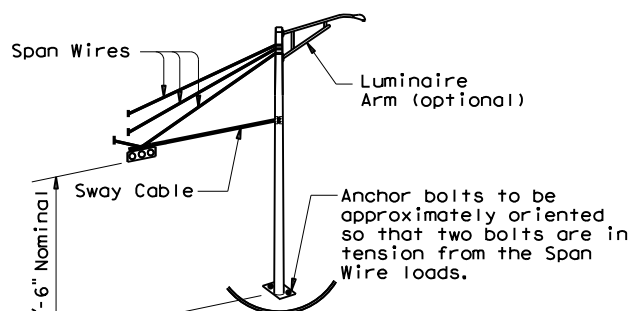
ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R ₂	R ₁
¾"	1'-6"	3"	—	12 ¾"	7 ⅞"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

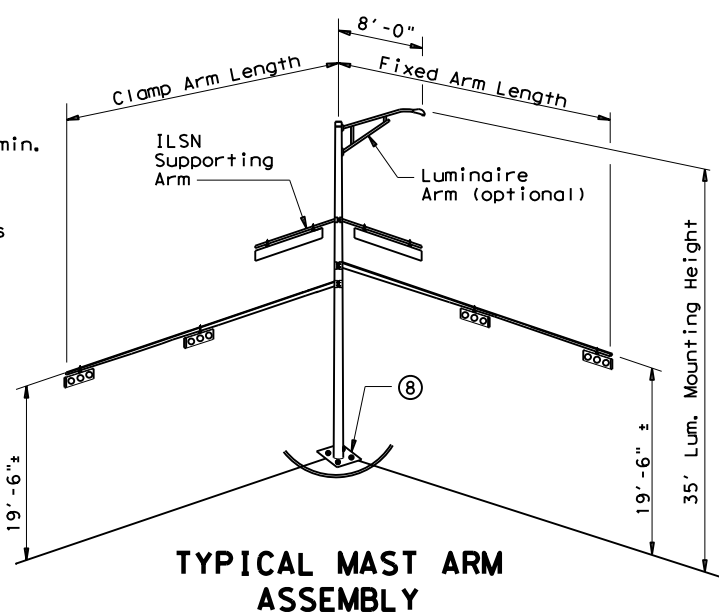
(7) Min dimensions given, longer bolts are acceptable.

EXAMPLE:

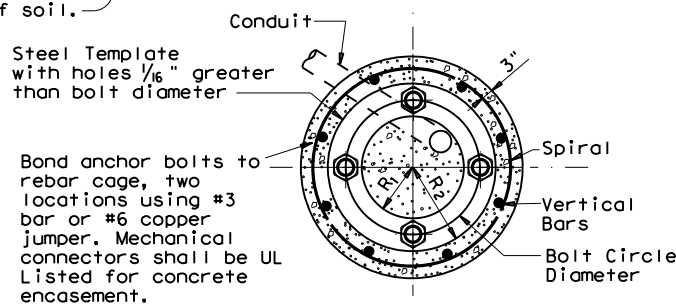
- For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
- For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



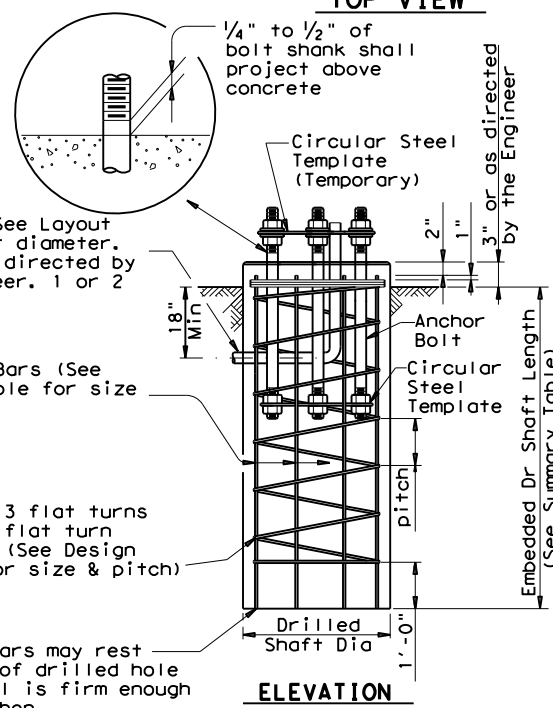
TYPICAL STRAIN POLE ASSEMBLY



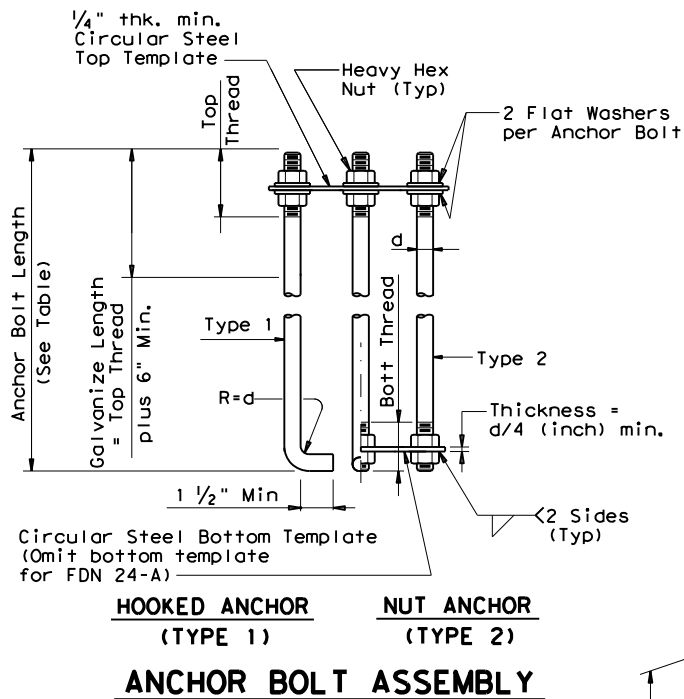
TYPICAL MAST ARM ASSEMBLY



TOP VIEW



FOUNDATION DETAILS



HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2) ANCHOR BOLT ASSEMBLY

(8) Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".



TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

© TxDOT August 1995		DN: MS	CK: JSY	DW: MAQ/MMF	CK: JSY/TEE
REVISIONS		CON: SECT	JOB	HIGHWAY	
5-96	0916	00	281	VARIOUS	
11-92	DIST	COUNTY	SHEET NO.		
1-12	CRP	NUECES	103		

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

For projects with less than one acre of soil disturbing activity and 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 project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0916-00-281

1.2 PROJECT LIMITS:

From: Burleson Street on US 181

To: FM 2986 on US 181

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 27.823941, (Long) -97.390384

END: (Lat) 27.878417, (Long) -97.322682

1.4 TOTAL PROJECT AREA (Acres): _____

1.5 TOTAL AREA TO BE DISTURBED (Acres): _____

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Provide markings, signs, and advanced technologies to detect and warn wrong way drivers.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Ijam Clay Loam, 0 to 1% Slopes, SB	Poorly drained, high rate of runoff
Ua - Urban Land, NB	Asphalt Disturbed right-of-way, additional information not available
Dianola Soils, 0 to 1% Slopes	Poorly drained, negligible rate of runoff
Victoria Clay, 0 to 1% Slopes	Well drained, medium rate of runoff

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
N/A	

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 2.3.)

- 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
US 181 Corpus Christi Bay No TMDLs or I-Plans Identified	Segment ID 2481OW Unclassified No Impairments
US 181 Corpus Christi Bay	Segment ID 2481-Classified No impairments

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- Development of plans and specifications
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Other: _____
- Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- Day To Day Operational Control
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Other: _____
- Other: _____



Kassondra Fiora Munoz
4-16-24

STORMWATER POLLUTION PREVENTION PLAN (SWP3) A (Less Than 1 Acre)

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				104
STATE	STATE DIST.	COUNTY		
TEXAS	CRP	NUECES		
CONT.	SECT.	JOB	HIGHWAY NO.	
0916	00	281	VARIOUS	

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

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
N/A		

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
N/A		

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:

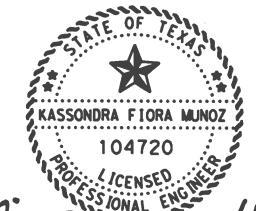
Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment 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 2.3 of this SWP3 .

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 2.3 of this SWP3.



Kassondra Fiora Munoz 4-16-24

STORMWATER POLLUTION PREVENTION PLAN (SWP3) A (Less Than 1 Acre)

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				105
STATE	STATE DIST.	COUNTY		
TEXAS	CRP	NUECES		
CONT.	SECT.	JOB	HIGHWAY NO.	
0916	00	281	VARIOUS	

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

For projects with less than one acre of soil disturbing activity and 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 project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0916-00-281

1.2 PROJECT LIMITS:

From: SH 35 from Corpus Christi Street on SH 35

To: FM 3036 on SH 35

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 28.017829, (Long) -97.087748

END: (Lat) 28.063542, (Long) -97.062460

1.4 TOTAL PROJECT AREA (Acres): _____

1.5 TOTAL AREA TO BE DISTURBED (Acres): _____

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Provide markings, signs, and advanced technologies to detect and warn wrong way drivers.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Galveston-Mustang Complex 0 to 3% Slopes	98.1%, Moderately well drained, negligible rate of runoff
Mustang Fine Sand, 0 to 1% Slopes	1.9%, Poorly drained, negligible rate of runoff

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
N/A	

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 2.3.)

- 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
N/A	

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- Development of plans and specifications
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Other: _____
- Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- Day To Day Operational Control
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Other: _____
- Other: _____



Kassondra Fiora Munoz
4-16-24

STORMWATER POLLUTION PREVENTION PLAN (SWP3) B (Less Than 1 Acre)

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				106
STATE	STATE DIST.	COUNTY		
TEXAS	CRP	NUECES		
CONT.	SECT.	JOB	HIGHWAY NO.	
0916	00	281	VARIOUS	

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

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
N/A		

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
N/A		

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 2.3 of this SWP3 .

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 2.3 of this SWP3.



Kassondra Fiora Munoz 4-10-24

STORMWATER POLLUTION PREVENTION PLAN (SWP3) B (Less Than 1 Acre)

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				107
STATE	STATE DIST.	COUNTY		
TEXAS	CRP	NUECES		
CONT.	SECT.	JOB	HIGHWAY NO.	
0916	00	281	VARIOUS	

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

For projects with less than one acre of soil disturbing activity and 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 project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

0916-00-281

1.2 PROJECT LIMITS:

From: FM 665 on SH 358

To: 2.109 MI N of FM 665 (Agnes St Exit NB) on SH 358

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 27.756028, (Long) -97.459992

END: (Lat) 27.785600, (Long) -97.469202

1.4 TOTAL PROJECT AREA (Acres):

1.5 TOTAL AREA TO BE DISTURBED (Acres):

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Provide markings, signs, and advanced technologies to detect and warn wrong way drivers.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Banquete Clay, 0 to 1% Slopes	7.3%, Moderately well drained, negligible rate of runoff
Raymondville Complex, 0 to 1% Slopes	14.5%, Moderately well drained, medium rate of runoff
Victoria Clay, 0 to 1% Slopes	78.2%, Moderately well drained, medium rate of runoff

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 2.3.)

- 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
N/A	

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- Development of plans and specifications
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations

Other: _____

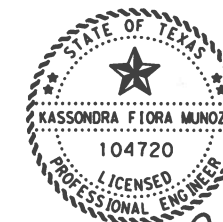
Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- Day To Day Operational Control
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs

Other: _____

Other: _____



Kassondra Fiora Munoz
4-10-24

STORMWATER POLLUTION PREVENTION PLAN (SWP3) C (Less Than 1 Acre)

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				108
STATE	STATE DIST.	COUNTY		
TEXAS	CRP	NUECES		
CONT.	SECT.	JOB	HIGHWAY NO.	
0916	00	281	VARIOUS	

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

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
N/A		

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
N/A		

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:

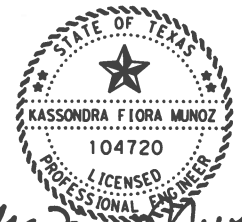
Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment 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 2.3 of this SWP3 .

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 2.3 of this SWP3.



Kassondra Fiora Munoz
4-16-24

STORMWATER POLLUTION PREVENTION PLAN (SWP3) C (Less Than 1 Acre)

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
				109
STATE	STATE DIST.	COUNTY		
TEXAS	CRP	NUECES		
CONT.	SECT.	JOB	HIGHWAY NO.	
0916	00	281	VARIOUS	

DATE: 4/5/2024
 FILE: pwt://txdot.projectwiseonline.com:TXDOT4/Documents/16 - CRP/Design Projects/091600281/4 - Design/Plan Set/9. Environmental/ENVIRONMENTAL PERMITS ISSUES AND COMMITMENTS.dgn
 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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.

-
- 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.

-
-
-
-

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 checked="" type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input checked="" type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input checked="" 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 checked="" type="checkbox"/> Mulch Filter Berm and Socks	<input checked="" 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

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.

- Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided to the greatest extent practicable. Wherever practicable, impacted vegetation should be replaced with in-kind on-site replacement/restoration of native vegetation. The use of seed mix that contains seeds from only locally adapted native species is recommended.
- Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.

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

- No Action Required Required Action


Action No.

- The Federal Migratory Bird Treaty Act (MBTA) states that it is unlawful to pursue, hunt, take, kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit. This project does not have a federal permit; therefore, in accordance with this regulation, the Contractor will avoid disturbing, destroying, removing, or relocating migratory birds and active nests found in trees, culverts, bridges, on the ground, etc. Typical breeding season occurs from March through August; therefore, tree trimming and other vegetation clearing activities that may disturb breeding birds should be done in the non-breeding season (September-February), when possible. If work must be performed during the breeding season, the Contractor shall have a qualified biologist conduct a survey of the right of way to determine if bird nests are present. In the event that active nests are encountered on-site during construction, the Contractor shall notify the Engineer and measures shall be taken to avoid disturbance of these birds, their occupied nest, eggs, and/or young, in accordance with the MBTA. Phasing of work during construction may be necessary to stay in compliance with the MBTA. The Contractor can discuss other preventative measures with the Project Engineer and/or District Environmental Staff.
- Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed. Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season. Avoid the removal of unoccupied, inactive nests, as practicable. Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair. Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

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

- Be advised of the potential occurrence of the black-spotted newt in the project area. This species prefers warm shallow watered areas with vegetative cover such as arroyos, canals, ditches, or even shallow depressions. During dry seasons the newt lays dormant underground. Ensure that SW3P and 401 BMPs are implemented and maintained during construction. Avoid harming this species if encountered.
- Be advised of the potential occurrence of sheep frog in the project area. This species prefers subterranean burrows, such as those of pack rats. They will also burrow under fallen tree limbs. Although this species will remain in its burrow for most of the year, they may emerge with heavy rains in the late summer season. Breeding takes place in August and September. Minimize disturbance to downed woody debris. Ensure that SW3P and 401 BMPs are implemented and maintained during construction. Avoid harming this species if encountered.
- Be advised of the potential occurrence of South Texas siren in the project area. This species prefers warm shallow waters with vegetative cover such as ponds, ditches and swamps. This is a nocturnal species that burrows during the day. Ensure that SWPPP and 401 BMPs are implemented and maintained during construction. Avoid harming this species if encountered.
- Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats. Maintain hydrologic regime and connections between wetlands and other aquatic features. Use barrier fencing to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.
- Consider applying hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
- Project Specific Locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features. When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and overwinter sites (e.g., brush and debris piles, crawfish burrows), where feasible. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refugia for terrestrial amphibians, where feasible.
- Be advised of the potential occurrence of white-nosed coati in the project area. This diurnal species prefers woodlands, riparian corridors and canyons; it is omnivorous and forages on the ground and in trees. Avoid unnecessary impacts to dens if encountered. Avoid harming this species if encountered.
- Be advised of the potential occurrence of plains spotted skunk in the project area. This species prefers wooded, brushy areas and tall-grass prairies, but may also occur in open fields, farmyards, and along fence rows. The species is almost entirely nocturnal, but becomes more active during its mating season, March - August. Avoid unnecessary impacts to dens if encountered. Avoid harming this species if encountered.
- Be advised of the potential occurrence of Eastern spotted skunk in the project area. This species prefers open fields prairies, croplands, fence rows, farmyards, forest edges. It can be found in found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available. Avoid unnecessary impacts to dens if encountered. Avoid harming this species if encountered.

 Texas Department of Transportation		Design Division Standard	
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC			
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP
©TxDOT: February 2015	CONT	SECT	JOB
12-12-2011 (DS) REVISIONS	0916 00	281	VARIOUS
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.	CRP	NUECES	110

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DATE:
FILE:

12. Be advised of the potential occurrence of Texas horned lizard in the project area. This species prefers arid and semiarid habitats in open areas with sparse plant cover. Because horned lizards dig for hibernation, nesting and insulation purposes, they commonly are found in loose sand or loamy soils. Avoid harming this species if encountered. In addition, when selecting the site for the Project Specific Locations (PSLs), areas where harvester ant mounds are present should be avoided.
13. Be advised of the potential occurrence of Texas indigo snake in the project area. This species prefers lightly vegetated areas not far from permanent water sources and is active year round. During severely dry weather, this species will retreat to dens/burrows left by other animals or brush piles. Avoid harming this species and unnecessary impacts to burrows if encountered.
14. Be advised of the potential occurrence of Texas scarlet snake in the project area. This semi-fossorial species inhabits mixed hardwood scrub on sandy soils and feeds on reptile eggs. Avoid harming this species and unnecessary impacts to burrows if encountered.
15. Be advised of the potential occurrence of Texas tortoise in the project area. This species can be found in open brush environments with grass understory, as well as, utilize burrows made by other animals or man for shelter.; it avoids open grass and bare ground. When inactive the tortoise occupies shallow depressions at the base of brush or cactus and at times will burrow underground. Utility trenches should be covered overnight to prevent tortoise from being trapped. Visually inspected trenches before filling to avoid burial of this species. Avoid harming this species if encountered.
16. Be advised of the potential occurrence of timber rattle snake in the project area. This specie prefers swamps, floodplains, upland pine and deciduous woodlands, riparian zones; abandoned farmland, limestone bluffs, sandy soil or black clay. Avoid harming this species and unnecessary impacts to burrows if encountered.
17. Due to the increased activity (mating) of reptiles during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (April-May) season. It is also encouraged to conduct ground disturbing activities before October to prevent disturbing reptiles that become less active and may be using burrows in the project area.
18. Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
19. If reptiles are found on project site allow species to safely leave the project area. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.

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.

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.

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
NMP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

VII. OTHER ENVIRONMENTAL ISSUES


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

No Action Required Required Action

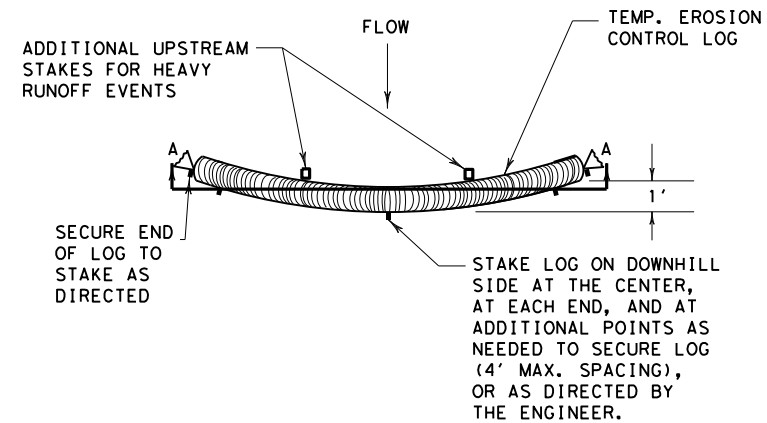
Action No.

1. Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges. When temporary stream crossings are unavoidable, remove stream crossing once they are no longer needed and stabilize banks and soil around the crossings.
2. Rubbish found near bridges on TxDOT ROW should be removed and disposed of properly to minimize the risk of pollution. Rubbish does not include brush piles or snags.
3. Do not attempt to handle or catch any of these species. Report all sightings and/or impacts to the TxDOT-Corpus Christ District Environmental Section.

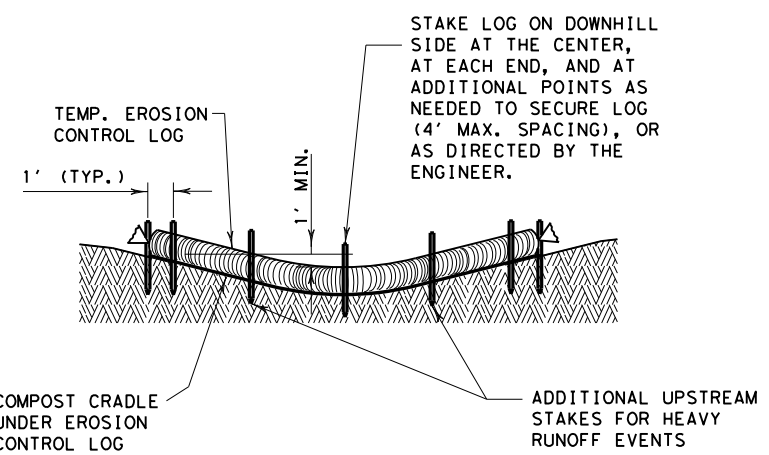
SHEET 2 OF 2

		Design Division Standard	
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC			
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP
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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.	CRP	NUECES	111

DATE: 4/6/2024
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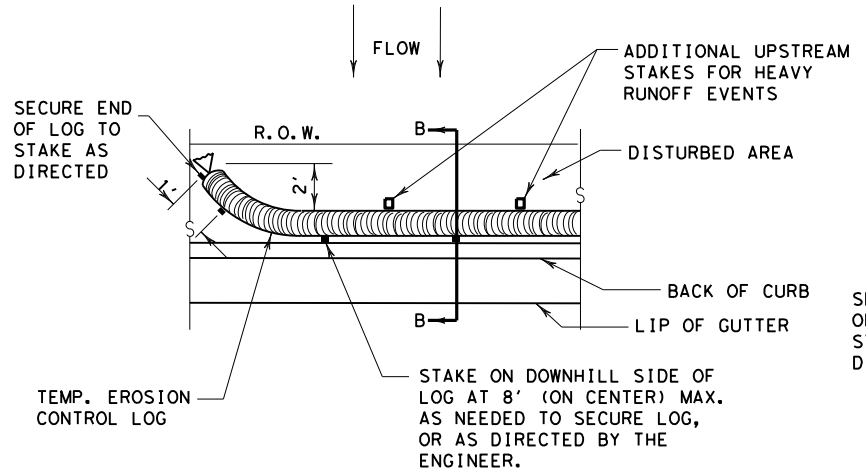


PLAN VIEW

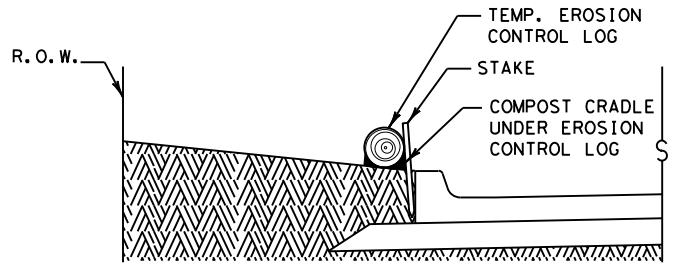


SECTION A-A
EROSION CONTROL LOG DAM

CL-D

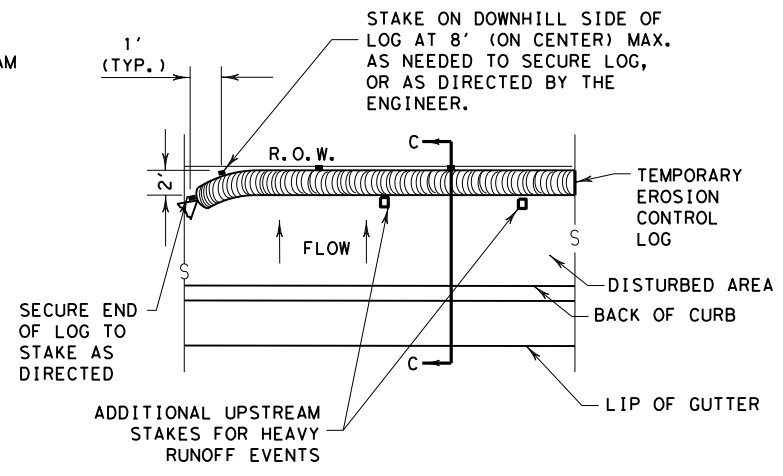


PLAN VIEW

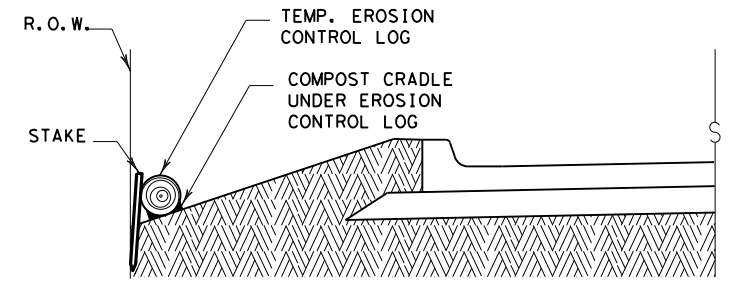


SECTION B-B
EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



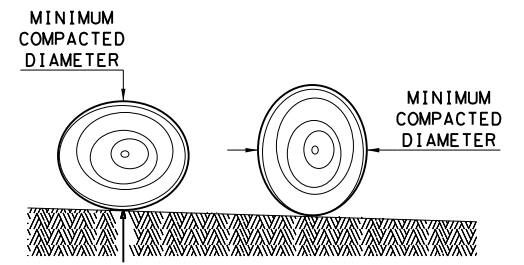
PLAN VIEW



SECTION C-C

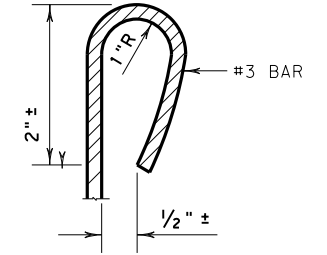
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

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:

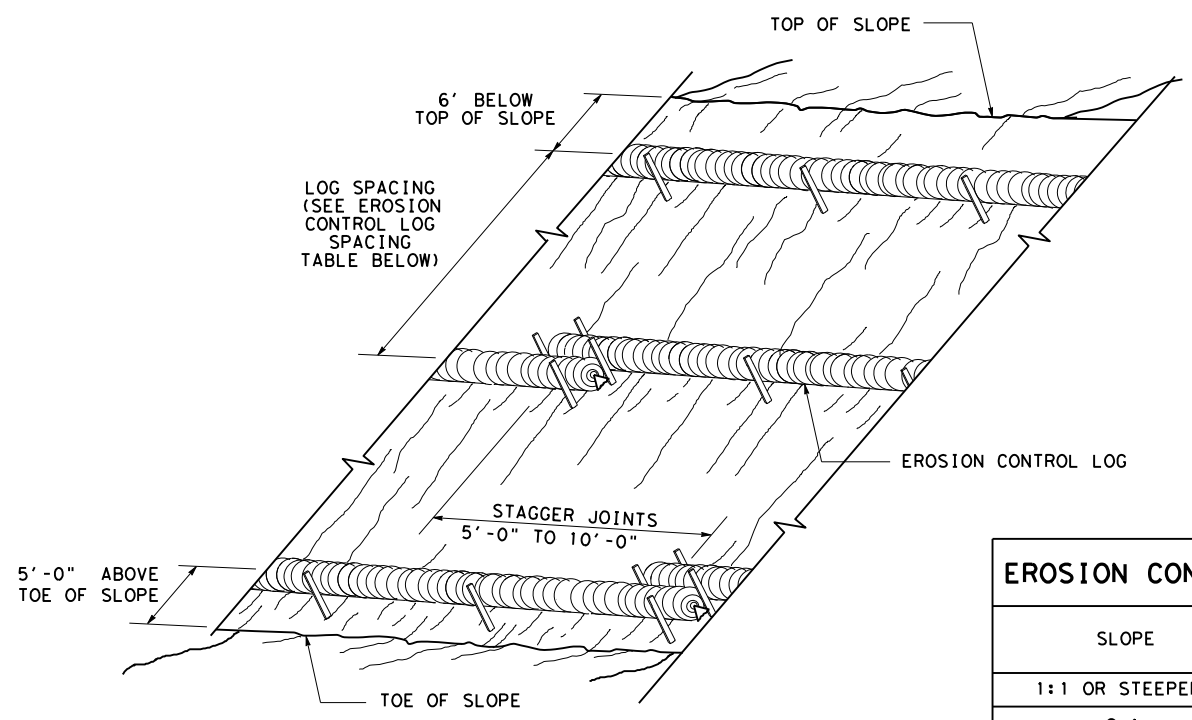
1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE 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

		<i>Design Division Standard</i>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0916 00	281	VARIOUS
	DIST	COUNTY	SHEET NO.
	CRP	NUECES	112

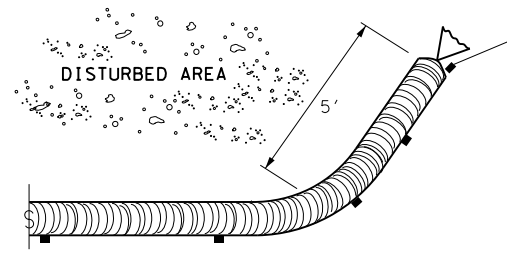
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**EROSION CONTROL LOGS ON SLOPES
 STAKE AND TRENCHING ANCHORING**

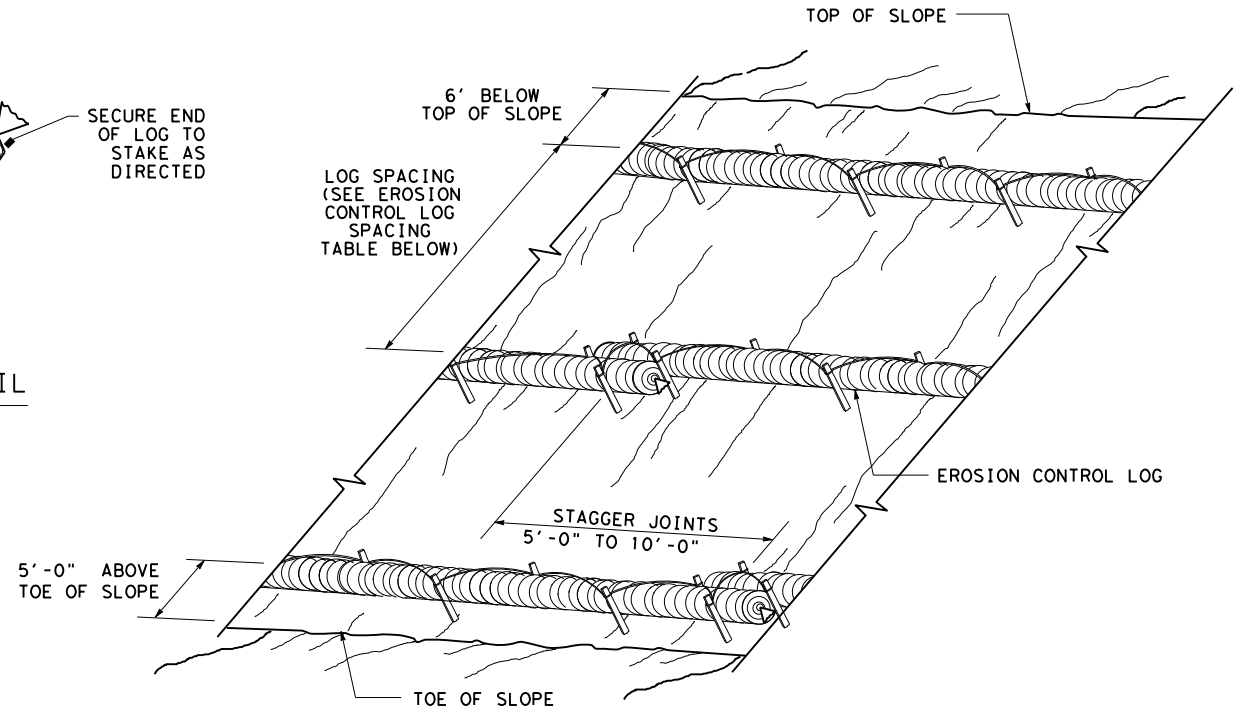
CL-SST



END SECTION RAP DETAIL

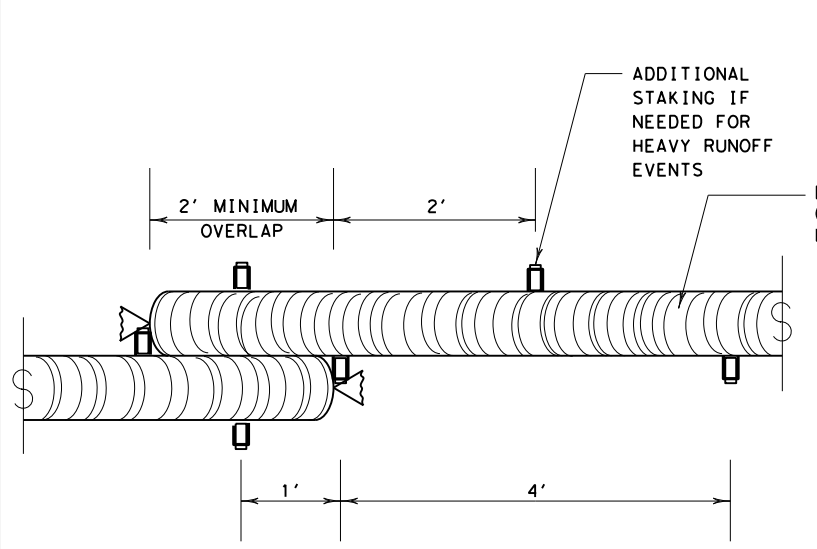
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



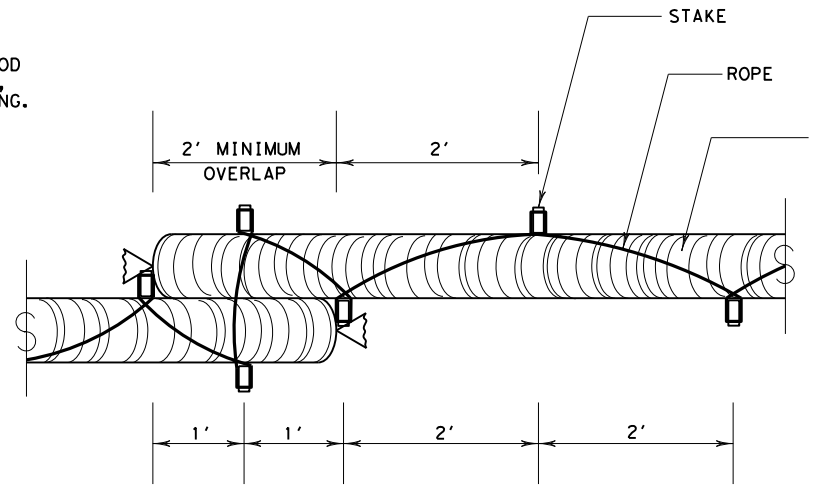
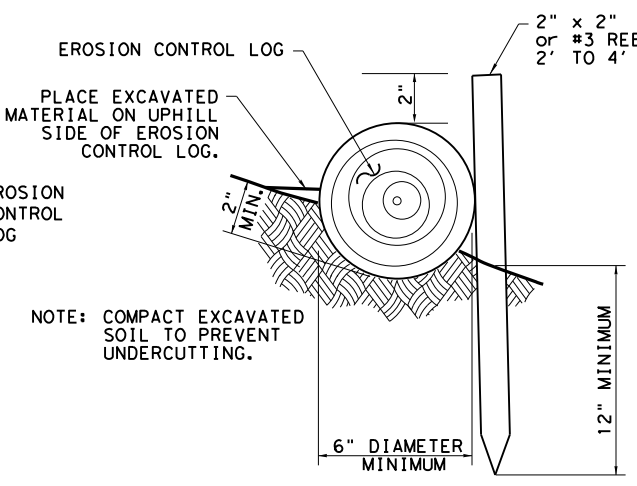
**EROSION CONTROL LOGS ON SLOPES
 STAKE AND LASHING ANCHORING**

CL-SSL



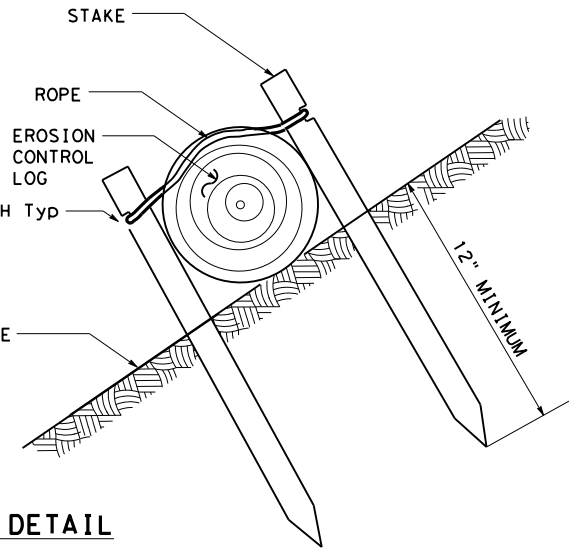
STAKE AND TRENCHING ANCHORING DETAIL

CL-SST



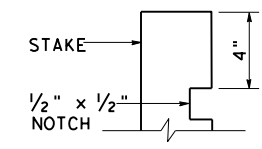
STAKE AND LASHING ANCHORING DETAIL

CL-SSL



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

TRENCH DEPTH TABLE

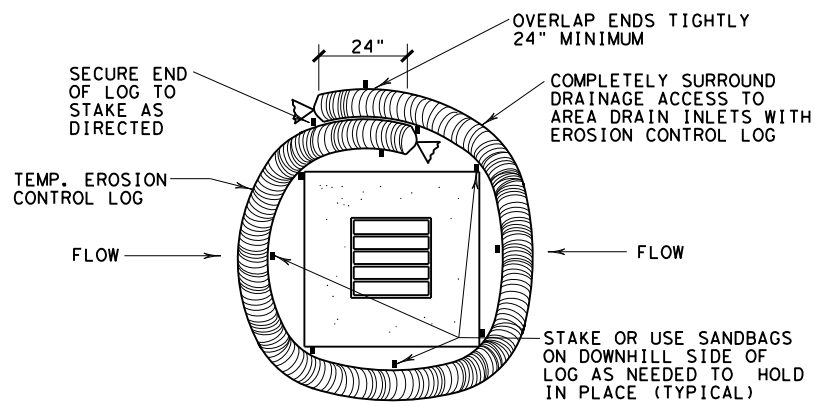


STAKE NOTCH DETAIL

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
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DIST	COUNTY	SHEET NO.	
CRP	NUECES	113	

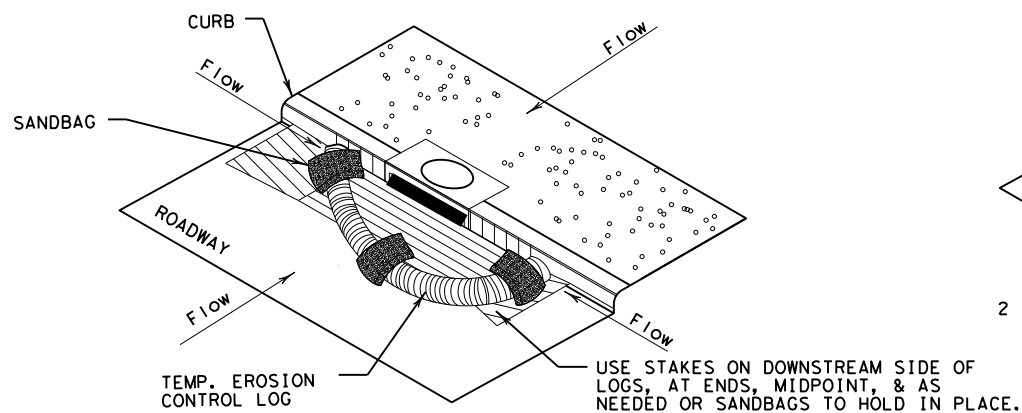
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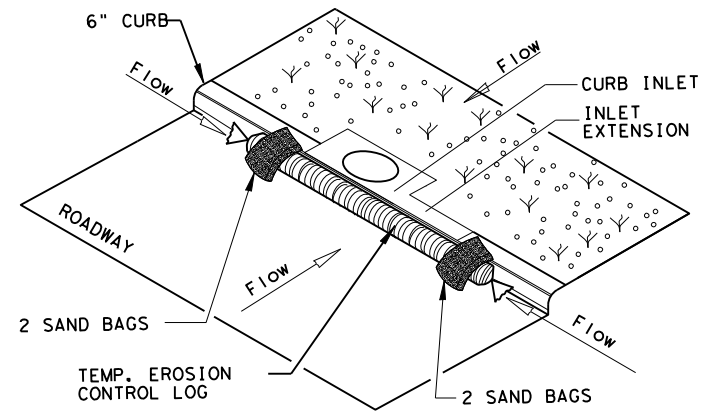
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

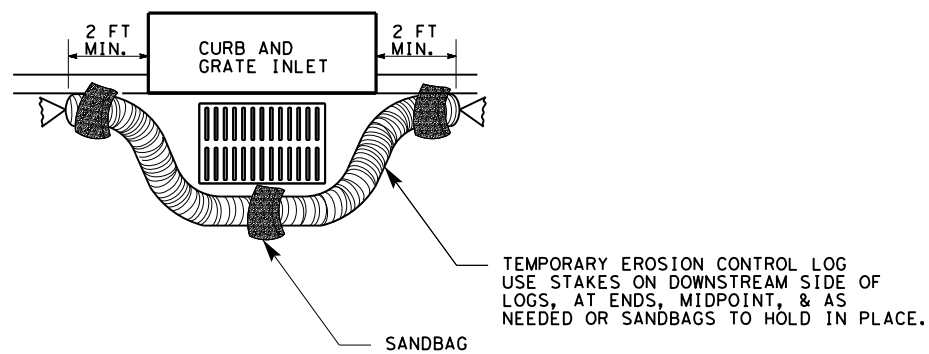
CL-CI



EROSION CONTROL LOG AT CURB INLET

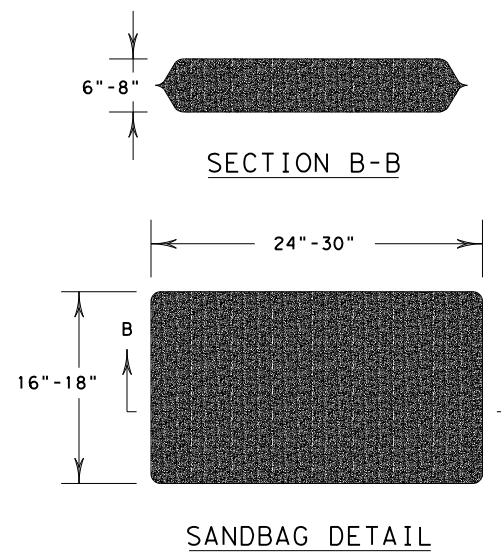
CL-CI

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

		<i>Design Division Standard</i>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
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REVISIONS	0916 00	281	HIGHWAY
DIST	COUNTY	SHEET NO.	
CRP	NUECES	114	

DATE: 0420102024 1091 05 5PM
 FILE: DOCUMENTNAME\project\wiseonline.com:TXDOT\4\Documents\16 - CRP\Design Projects\091600281\4 - Design\Plan Set\8. Traffic/RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

PART 1 - GENERAL

1.01 DESCRIPTION

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

1.02 REQUEST FOR INFORMATION / CLARIFICATION

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

1.03 PLANS / SPECIFICATIONS

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

PART 2 - UTILITIES AND FIBER OPTIC

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

PART 3 - CONSTRUCTION

3.01 GENERAL

- A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.
- B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.
- C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.
- D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.
- E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.
- F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.
- G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

- A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.
- B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. Railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.
- C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:
 - 1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.
 - 2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

- A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.
- B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.
- C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.
- D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
 - 1. Exactly what the work entails.
 - 2. The days and hours that work will be performed.
 - 3. The exact location of work, and proximity to the tracks.
 - 4. The type of window requested and the amount of time requested.
 - 5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.
- E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

3.05 RAILROAD SAFETY ORIENTATION

- A. Complete the railroad course "Orientation for Contractor's Safety", and maintain current registration prior to working on railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."
- B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

Abide by the following minimum temporary clearances during the course of construction:



- A. 15' - 0" (BNSF) (UPRR) and 14' - 0" (KCS) horizontal from centerline of track
- B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

3.08 APPROVAL OF REDUCED CLEARANCES

- A. Maintain minimum track clearances during construction as specified in Section 3.07.
- B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.
- C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

SHEET 1 OF 2

					
RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS					
FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT	
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY	
REVISIONS March 2020	0916	00	281	VARIOUS	
	DIST	COUNTY		SHEET NO.	
CRP	NUECES		115		

DATE: 04/20/2024 10:41:05 AM
 FILE: DOCUMENTS\PROJECTS\CRP\DESIGN\RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

3.09 MAINTENANCE OF RAILROAD FACILITIES

- A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.
- B. Perform all such maintenance and repair of damages due to the Contractor's operations at Contractor's expense.
- C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD'S DESIGNATED REPRESENTATIVE

- A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
 1. Pre-construction meetings.
 2. Pile driving/drilling of caissons or drilled shafts.
 3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
 4. Erection of precast concrete or steel bridge superstructure.
 5. Placement of waterproofing (prior to placing ballast on bridge deck).
 6. Completion of the bridge structure.
- B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.
- C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

- A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.
- B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.
- C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.
- D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.
- E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

3.13 TRAFFIC CONTROL

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

- A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".
- B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

UPRR 1-800-336-9193
 7:00 AM to 9:00 PM CST Monday-Friday except holidays,
 staffed 24 hrs/day for emergencies
 48 hrs notice required

BNSF 1-800-533-2891
 24 hour number
 5 working days notice required

KCS 1-800-344-8377
 Texas One Call, a 24 hour number
 48 hrs notice required, excluding weekends and holidays

If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.


- C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

3.16 CLEANING OF RIGHT-OF-WAY

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

 Texas Department of Transportation		Rail Division		
RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS				
FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0916	00	281	VARIOUS
CRP	DIST	COUNTY	SHEET NO.	
	NUECES		116	

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

This project is adjacent or parallel work, not within RR ROW:
 DOT No.: 793792K
 Crossing Type: at grade crossing on SH 358 WB FR (NB) at Agnes St
 RR Company Operating Track at Crossing: Texas Mexican Railway
 RR Company Owning Track at Crossing: Canadian Pacific-Kansas City Railroad
 RR MP: 157.400
 RR Subdivision: Laredo
 City: Corpus Christi
 County: NUECES
 CSJ at this Crossing: 0916-00-281
 Latitude: 27.7859166
 Longitude: -97.4685188

Scope of Work, including any TCP, to be performed by State Contractor:
 The State's Contractor will be installing wrong way driver alert systems and signs at and along the westbound exit ramp to Agnes St within 641 feet of the tracks. Traffic control will be needed to close off the exit ramp at the intersection with Agnes St for the commissioning and wrong way driver testing of the alert systems, which will be within 145 feet of the tracks at the westbound frontage road. No TCP signs or channelizers will be within railroad ROW. RR flagging to be provided for the entire duration of TCP through railroad ROW.

Scope of Work to be performed by Railroad Company:
 None

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1
 On this project, night or weekend flagging is:
 Expected
 Not Expected
 Flagging services will be provided by:
 Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
 Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:
 UPRR
 UP.info@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 UP.request@nrssinc.net
 Call Center 877-984-6777
 BNSF
 BNSFinfo@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 CPKCR
 KCS.info@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 Bottom Line On-Track Safety Services
 bottomline076@aol.com, 903-767-7630

OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.
 Not Required
 Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD
 Required.
 Not Required
 Railroad Point of Contact: _____
 Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.
 Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.
 No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits	
Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	\$500,000 / \$500,000 / \$500,000
Commercial General Liability	\$2,000,000 / \$4,000,000
Business Automobile	\$2,000,000

Railroad Protective Liability Limits
 Not Required
 Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures \$2,000,000 / \$6,000,000
 Bridge Structure Projects. Includes new construction or replacement of overpass/underpass structures \$5,000,000 / \$10,000,000
 Other: _____

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

Not Required
 Required: UPRR Maintenance Consent Letter. TxDOT to assist
 Required: TxDOT to assist in obtaining the UPRR CROE
 Required: Contractor to obtain

BNSF: _____
<https://bnsf.railpermitting.com>
 CPKCR
https://ilrrg.360works.com/fmi/webd/rpo_web_kcs.fmp12
 Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: <https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html>

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
 Call: Canadian Pacific Kansas City Railroad
 Railroad Emergency Line at: 877-527-9464
 Location: DOT 793792K
 RR Milepost: 157.400
 Subdivision: Laredo

RRD Review Only
 Initials: _____
 Date: 02/14/2024



RAILROAD SCOPE OF WORK
 PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf	PK: TxDOT	CR: _____	CR: _____
© TxDOT June 2014	CONT: SECT	JOB: _____	HIGHWAY: _____
REVISIONS	0916 00	281	VARIOUS
6/2023	DIST: _____	COUNTY: _____	SHEET NO. _____
	CRP: _____	NUECES	117

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

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

This project is adjacent or parallel work, not within RR ROW:
DOT No.: 793791D
Crossing Type: at grade crossing on SH 358 EB FR (SB) at Agnes St
RR Company Operating Track at Crossing: Texas Mexican Railway
RR Company Owning Track at Crossing: Canadian Pacific Kansas City Railroad
RR MP: 157.300
RR Subdivision: Laredo
City: Corpus Christi
County: NUECES
CSJ at this Crossing: 0916-00-281
Latitude: 27.7858959
Longitude: -97.4696333

Scope of Work, including any TCP, to be performed by State Contractor:

The State's Contractor will be installing wrong way driver alert systems and signs at and along the westbound exit ramp to Agnes St within 641 feet of the tracks. Traffic control will be needed to close off the exit ramp at the intersection with Agnes St for the commissioning and wrong way driver testing of the alert systems, which will be within 145 feet of the tracks at the westbound frontage road. No TCP signs or channelizers will be within railroad ROW. RR flagging to be provided for the entire duration of TCP through railroad ROW.

Scope of Work to be performed by Railroad Company:

None

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1
On this project, night or weekend flagging is:
 Expected
 Not Expected
Flagging services will be provided by:
 Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
 Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:
 UPRR
UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777
 BNSF
BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging
 CPKCR
KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.
 Not Required
 Required. Contact Information for Construction Inspection:

Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

Required.
 Not Required
Railroad Point of Contact: _____
Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.
Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.
No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	\$500,000 / \$500,000 / \$500,000
Commercial General Liability	\$2,000,000 / \$4,000,000
Business Automobile	\$2,000,000

Railroad Protective Liability Limits

Not Required
 Non - Bridge/Typical Maintenance Projects. \$2,000,000 / \$6,000,000
Includes repairs to overpass/underpass and culvert structures
 Bridge Structure Projects. Includes new construction or replacement of overpass/underpass structures
 Other: _____

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

Not Required
 Required: UPRR Maintenance Consent Letter. TxDOT to assist
 Required: TxDOT to assist in obtaining the UPRR CROE
 Required: Contractor to obtain
 BNSF: _____
https://bnsf.railpermitting.com
 CPKCR
https://ilrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
 Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: Canadian Pacific Kansas City Railroad
Railroad Emergency Line at: 877-527-9464
Location: DOT 793791D
RR Milepost: 157.300
Subdivision: Laredo

RRD Review Only

Initials: _____
Date: 02/14/2024



RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: IT-SCOPE-OF-WORK.pdf	DN: TxDOT	CR: _____	HW: _____
© TxDOT June 2014	CONT SECT	JOB	HIGHWAY
REVISIONS	0916 00	281	VARIOUS
6/2023	DIST	COUNTY	SHEET NO.
	CRP	NUECES	118

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

This project is adjacent or parallel work, not within RR ROW:
 DOT No.: 793992U
 Crossing Type: RR crossing under SH 358 (parallel to Agnes St)
 RR Company Operating Track at Crossing: Texas Mexican Railway
 RR Company Owning Track at Crossing: Canadian Pacific Kansas City Railroad
 RR MP: 157.350
 RR Subdivision: Laredo
 City: Corpus Christi
 County: NUECES
 CSJ at this Crossing: 0916-00-281
 Latitude: 27.7859020
 Longitude: -97.4691573

Scope of Work, including any TCP, to be performed by State Contractor:

The State's Contractor will be installing wrong way driver alert systems and signs at and along the westbound exit ramp to Agnes St within 641 feet of the tracks. Traffic control will be needed to close off the exit ramp at the intersection with Agnes St for the commissioning and wrong way driver testing of the alert systems, which will be within 145 feet of the tracks at the westbound frontage road. No TCP signs or channelizers will be within railroad ROW. Work (near this crossing) would be parallel as closure would be on Agnes St parallel to the tracks.

Scope of Work to be performed by Railroad Company:

None

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1
 On this project, night or weekend flagging is:
 Expected
 Not Expected

Flagging services will be provided by:

Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
 Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact information for Flagging:

UPRR
 UP.info@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 UP.request@nrssinc.net
 Call Center 877-984-6777
 BNSF
 BNSFinfo@railprosfs.com
 Call Center 877-315-0513, Select #1 for flagging
 CPKCR
 KCS.info@railpros.com
 Call Center 877-315-0513, Select #1 for flagging
 Bottom Line On-Track Safety Services
 bottomline076@aol.com, 903-767-7630

OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

Not Required
 Required. Contact Information for Construction Inspection:

Not Required
 Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

Required.
 Not Required
 Railroad Point of Contact: _____

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits	
Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	\$500,000 / \$500,000 / \$500,000
Commercial General Liability	\$2,000,000 / \$4,000,000
Business Automobile	\$2,000,000

Railroad Protective Liability Limits

Not Required
 Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures \$2,000,000 / \$6,000,000
 Bridge Structure Projects. Includes new construction or replacement of overpass/underpass structures \$5,000,000 / \$10,000,000
 Other: _____

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

Not Required
 Required: UPRR Maintenance Consent Letter. TxDOT to assist
 Required: TxDOT to assist in obtaining the UPRR CROE
 Required: Contractor to obtain

BNSF: <https://bnsf.railpermitting.com>
 CPKCR: https://jilrg.360works.com/fmi/webd/rpo_web_kcs.fmp12
 Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: <https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html>

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
 Call: Canadian Pacific Kansas City Railroad
 Railroad Emergency Line at: 877-527-9464
 Location: DOT 793992U
 RR Milepost: 157.350
 Subdivision: Laredo

RRD Review Only
 Initials: _____
 Date: 02/14/2024



RAILROAD SCOPE OF WORK
 PROJECT SPECIFIC DETAILS

FILE: IT-SCOPE-OF-WORK.PDF	DN: TxDOT	CR: BNSF	CRK: _____
© TxDOT June 2014	CONT SECT	JOB	HIGHWAY
REVISIONS	0916 00	281	VARIOUS
6/2023	DIST	COUNTY	SHEET NO.
	CRP	NUECES	119