



Work Package	Signing & Striping General Drawings - RDSGEN
Revision	B0
Submittal Stage	Pre-Final
Date	7/31/2017

Plotted: 8/8/2017 1:21:42 PM
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SIGNING LEGEND

	EXIST SMALL SIGN TO BE RELOCATED		PREFAB PAV MRK W/WNTY TY B(W) (6IN) (BRK) CNTST WITH 2IN(B) ON EACH SIDE (10IN TOTAL WIDTH PER STD SHEET CPM(1)-14 (CONTRAST AND SHADOW PAVEMENT MARKINGS
	EXIST SMALL SIGN TO BE REMOVED		REFL PAV MRKR TY II-C-R
	EXIST LARGE SIGN TO BE REMOVED		REFL PAV MRKR TY I-C
	PROPOSED SMALL SIGN		REFL PAV MRKR TY II-Y-Y
	PROPOSED LARGE SIGN OR OVHD SIGN		INSTL DEL ASSM (D-SW)SZ 1(FLX)GF2
	EXISTING SIGN TO REMAIN		INSTL DEL ASSM (D-SY)SZ 1(FLX)GF2
	PROPOSED SMALL SIGN ASSEMBLY		INSTL DEL ASSM (D-SW)SZ (BR)CTB AT 80' SPA
	EXISTING SMALL SIGN ASSEMBLY TO REMAIN		INSTL DEL ASSM (D-SY)SZ (BR)CTB AT 80' SPA
	PROPOSED LARGE SIGN ASSEMBLY, GROUND MOUNT		REFL PAV MRK W/RET REQ TY I (W) 4"(BRK)
	PROPOSED OVERHEAD SIGN BRIDGE STRUCTURE		
	PROPOSED CANTILEVER SIGN STRUCTURE		

	REFL PAV MRK W/RET REQ TY I (Y) 4"(BRK)		ELIM EXT PAV MRK & MRKR (4IN)
	REFL PAV MRK W/RET REQ TY I (W) 4"(SLD)		ELIM EXT PAV MRK MRKR (18" AND 36")
	REFL PAV MRK EL PROF TY I (W) 4"(SLD)		ELIM EXT PAV MRK & MRKR (WORD)
	REFL PAV MRK W/RET REQ TY I (Y) 4" (SLD)		"ONLY" "MERGE" PREFAB PAV MRK TY C (W) (WORD)
	REFL PAV MRK TY I (Y)4"(SLD) (DBL)		PREFAB PAV MRK TY C (W) (ARROW)
	REFL PAV MRK EL PROF TY I (Y) 4"(SLD)		EXISTING PAV MRK TO REMAIN
	REFL PAV MRK TY I (BLACK)6"(SHADOW) (100 MIL)		RAILROAD CROSSING
	REFL PAV MRK TY I (W)8"(SLD) (100 MIL)		4" DOTTED WHITE LINE (3' LINE, 9' GAP)
	REFL PAV MRK TY I (W)12"(SLD) (100 MIL)		4" DOTTED WHITE LINE (2' LINE, 6' GAP)
	REFL PAV MRK TY I (W)24"(SLD) (100 MIL)		12" DOTTED WHITE LINE (3' LINE, 9' GAP)
	REFL PAV MRK TY I (Y)24"(SLD) (100 MIL)		YIELD LINES

SIGNING AND PAVEMENT MARKING NOTES

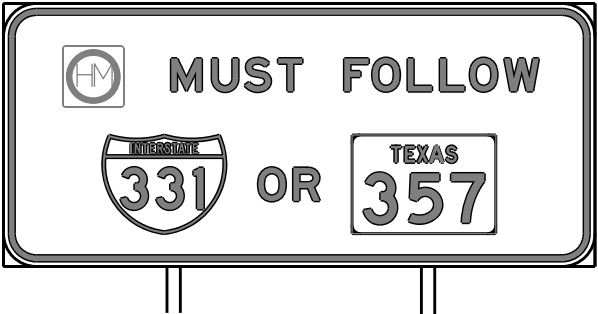
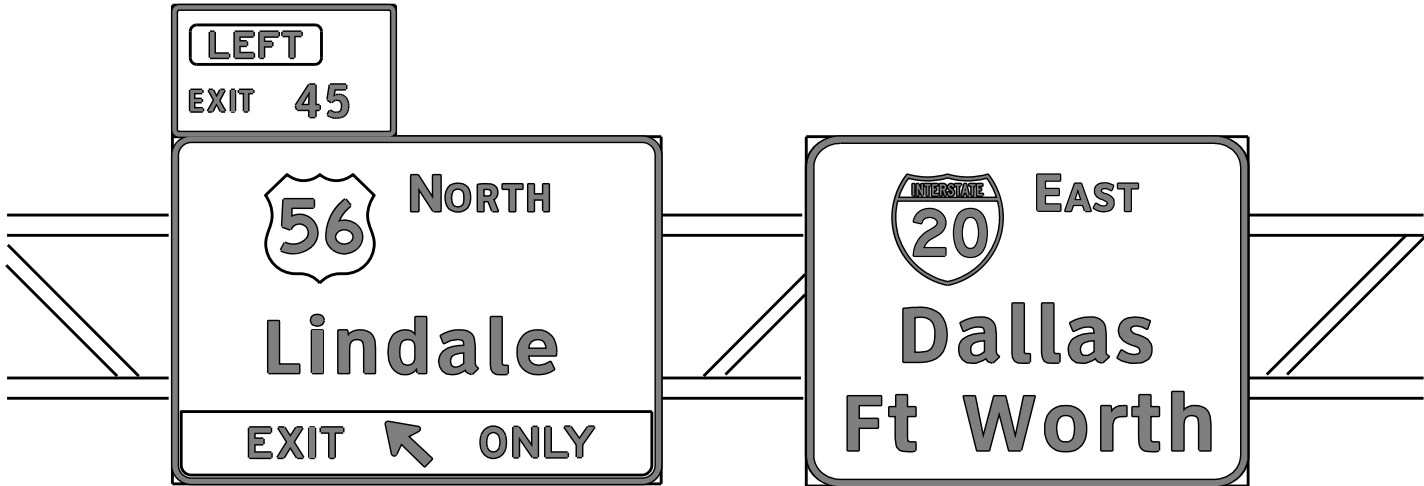
- ALL SIGN LEGENDS AND OFFSETS PER THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), LATEST STANDARDS AND CORPUS CHRISTI DISTRICT POLICIES.
- ACTUAL CLEARANCE TO BE SHOWN WILL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO FABRICATION OF THE SIGN.
- ALL EXISTING TEXAS LOGO SIGNS TO BE RELOCATED BY LONE STAR LOGOS AND SIGNS. CONTRACTOR SHALL CALL MR. RICK RENDON AT (512) 462-1310, FAX (512) 462-1315, TWO WEEKS PRIOR TO COORDINATE THIS WORK.
- FIELD VERIFY ALL PROPOSED SIGN LOCATIONS BEFORE INSTALLING.
- LOCATION OF PROPOSED SIGNS IS APPROXIMATE AND SHALL BE ADJUSTED AS SPECIFIED BY TXDOT IN THE FIELD.
- FOR ALL SIGN STATION CALLOUTS ON ALL PLAN SHEETS, SEE THE SIGN SUMMARY SHEETS FOR ROADWAY CENTERLINE DESIGNATION.
- ALL PAVEMENT MARKINGS ARE ACCORDING TO THE TEXAS PAVEMENT MARKING MANUAL, LATEST STANDARDS AND CORPUS CHRISTI DISTRICT POLICIES.
- ALL EXISTING SIGNS WITHIN PROJECT LIMITS WILL BE REMOVED UNLESS DESIGNATED TO REMAIN, IDENTIFIED BY HATCHING AS SHOWN IN THE SIGNING LEGEND ABOVE.

PAVEMENT MARKING AND SIGNING STANDARDS

TSR	TYPICAL SIGN REQUIREMENTS
RCD	RAILROAD CROSSING DETAILS SIGNING, STRIPING AND DEVICE PLACEMENT
BLPM	BICYCLE LANE PAVEMENT MARKINGS
D&OM	DELINEATORS & OBJECT MARKERS
PM	PAVEMENT MARKINGS
FPM	FREEWAY PAVEMENT MARKINGS
SMD(GEN)	SIGN MOUNTING DETAILS, SMALL ROADSIDE SIGNS, GENERAL NOTES & DETAILS
SMD(SLIP)	SIGN MOUNTING DETAILS, SMALL ROADSIDE SIGNS, TRIANGULAR SLIPBASE SYSTEM
SMD(TWT)	SIGN MOUNTING DETAILS, SMALL ROADSIDE SIGNS, WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST
SMD(FRP)	SIGN MOUNTING DETAILS, SMALL ROADSIDE SIGNS, UNIVERSAL ANCHOR SYSTEM WITH FRP POST
SMD(BR)	BRIDGE RAILING SIGN MOUNT
SMD(2-1)	SIGN MOUNTING DETAILS, EXTRUDED ALUMINUM SIGN PANELS & HARDWARE
SMD(2-2)	SIGN MOUNTING DETAILS, LARGE ROADSIDE SIGNS FOUNDATION & STUB
SMD(2-3)	SIGN MOUNTING DETAILS, LARGE ROADSIDE SIGNS
SMD(2-4)	SIGN MOUNTING DETAILS, OVERHEAD SIGNS, EXTRUDED ALUMINUM
SMD(2-6)	SIGN MOUNTING DETAILS, LARGE ROADSIDE SIGNS, ELECTRICAL CONNECTION
SMD(8W1)	LARGE ROADSIDE SIGN SUPPORTS, POST SELECTION WORKSHEET
SMD(8W2)	LARGE ROADSIDE SIGN SUPPORTS, FOUNDATION WORKSHEET
DMS(TM)	DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS
OSB-Z1	OVERHEAD SIGN BRIDGE DETAILS
HOSB-Z1	HIGH LEVEL OVERHEAD SIGN BRIDGE DETAILS
OSBC	OVERHEAD SIGN BRIDGE TRUSS DETAILS
OSBC-SC-Z1	OVERHEAD SIGN BRIDGE TRUSS DETAILS SINGLE COLUMN
COSS & OSB-SZ	OVERHEAD SIGN BRIDGE DETAILS
COSS-Z1-10	CANTILEVER OVERHEAD SIGN SUPPORTS
HCOSS-Z1-10	HIGH LEVEL CANTILEVER OVERHEAD SIGN SUPPORTS
COSSD	CANTILEVER OVERHEAD SIGN SUPPORT DETAILS

NO.		BY	DATE
<div>PRELIMINARY</div> <div>FOR REVIEW ONLY</div> <div>THESE DOCUMENTS ARE PRELIMINARY AND SUBJECT TO CHANGE. THEY ARE NOT INTENDED FOR CONSTRUCTION OR BIDDING. THEY WERE PREPARED BY, OR UNDER THE SUPERVISION OF:</div> <div>Engineer: Robert Wright</div> <div>P.E. No.: 70943</div> <div>Date: 8/8/17</div>			
PRE-FINAL SUBMITTAL			
NOT FOR CONSTRUCTION			
US 181 HARBOR BRIDGE			
PAVEMENT MARKING & SIGNING GENERAL NOTES AND LEGEND			
<div>FLATIRON DRAGADOS</div> <div>FLATIRON/Dragados LLC</div>			
<div>AZTEC</div> <div>2000 Berling Drive, Suite 102 Houston, Texas 77057 281-772-2880</div>			
DP-001			
Texas Department of Transportation			
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FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	HP X597(1)		STR-GN
STATE	STATE DIST. NO.	COUNTY	001
TEXAS	CRP	NUECES	
CONT.	SECT	JOB	HIGHWAY NO.
0101	06	095	US181

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).
- Block 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.
- Block 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



Traffic
Operations
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Standard

TYPICAL SIGN
REQUIREMENTS

TSR(1)-13

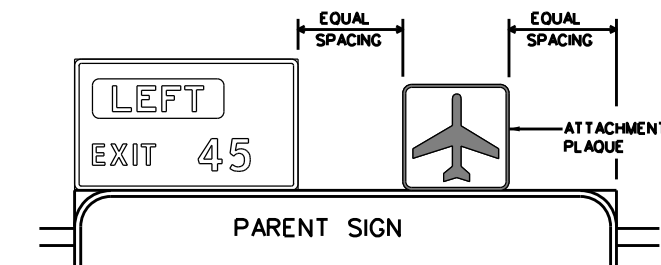
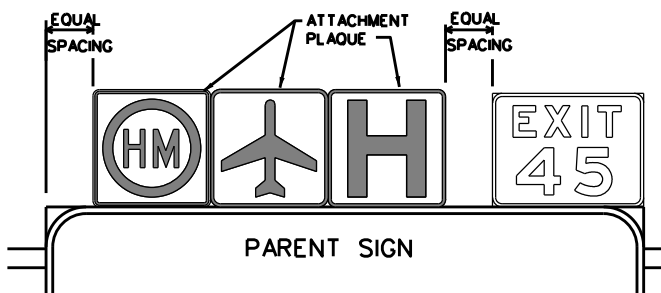
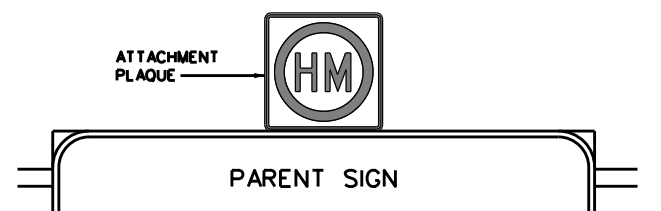
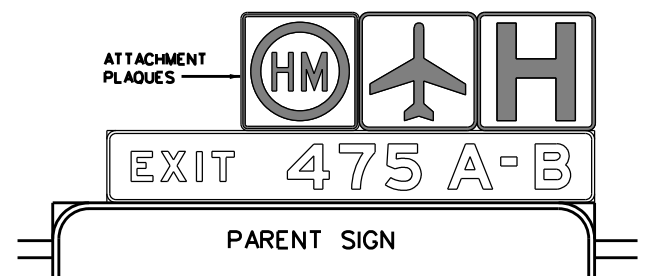
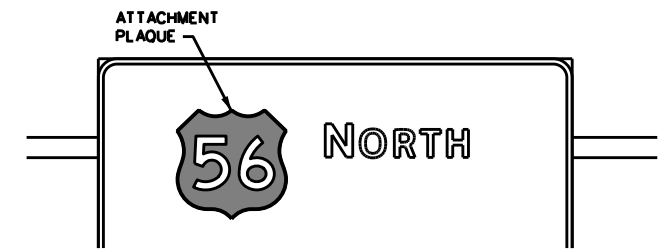
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REVISIONS		0101	06	095	US181				
12-03	7-13	DIST	COUNTY		SHEET NO.				
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REQUIREMENTS FOR ATTACHMENTS TO OVERHEAD AND LARGE GROUND MOUNTED SIGNS

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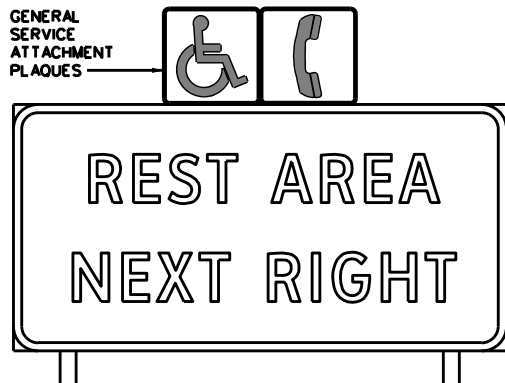


DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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.



TYPICAL EXAMPLES

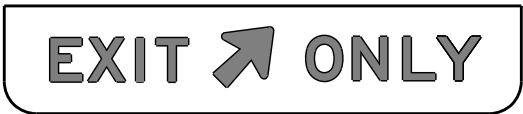
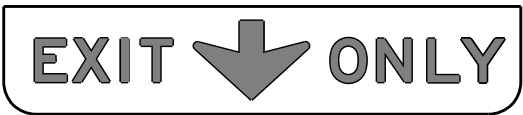
REQUIREMENTS FOR EXIT ONLY AND LEFT EXIT PANELS

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/>



TYPICAL SIGN REQUIREMENTS

TSR(2)-13

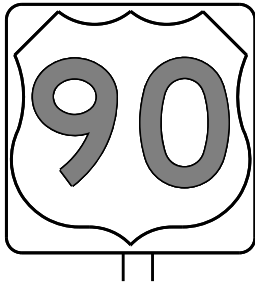
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12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	CRP	NUECES	SID 011.002	

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REQUIREMENTS FOR INDEPENDENT MOUNTED
ROUTE SIGNS

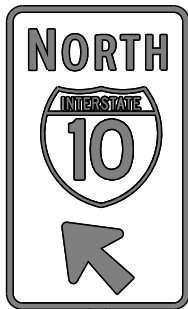
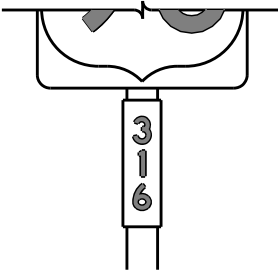
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



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

- 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).
- 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
- 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).
- 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.
- 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.
- 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.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- 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/>



Traffic
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TYPICAL SIGN
REQUIREMENTS

TSR(3)-13

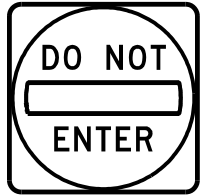
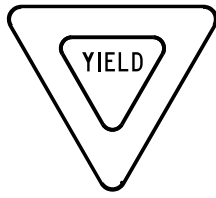
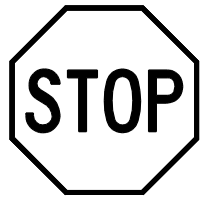
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REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

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

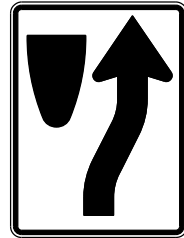


REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

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

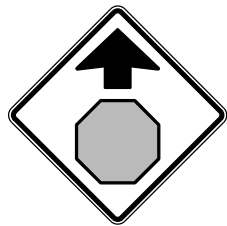
(EXCLUDING STOP, YIELD, DO NOT ENTER AND
WRONG WAY SIGNS)



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	FLUORESCENT 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	FLUORESCENT 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/>



Traffic
Operations
Division
Standard

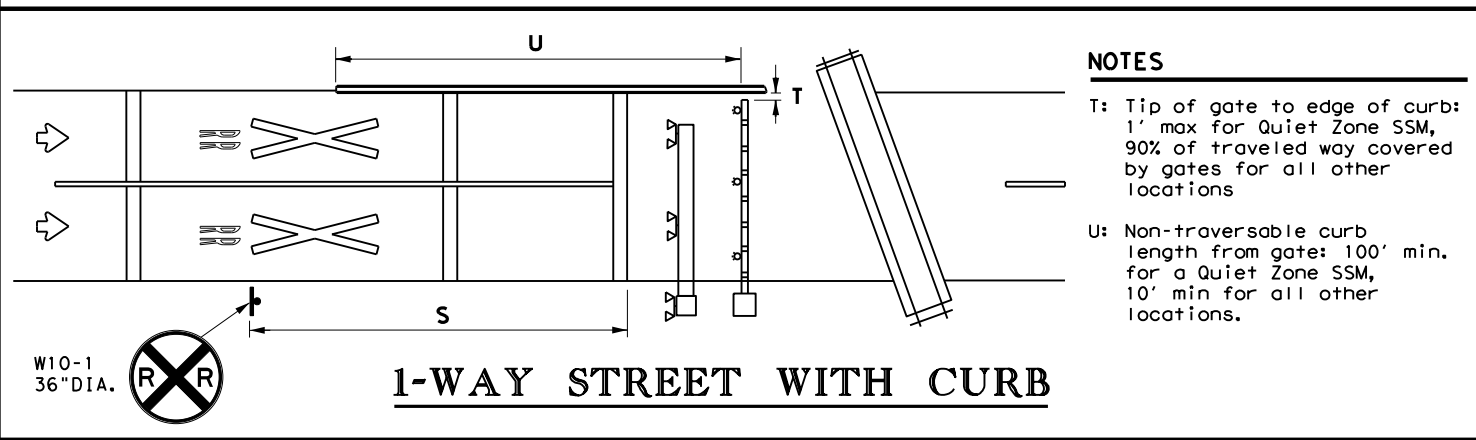
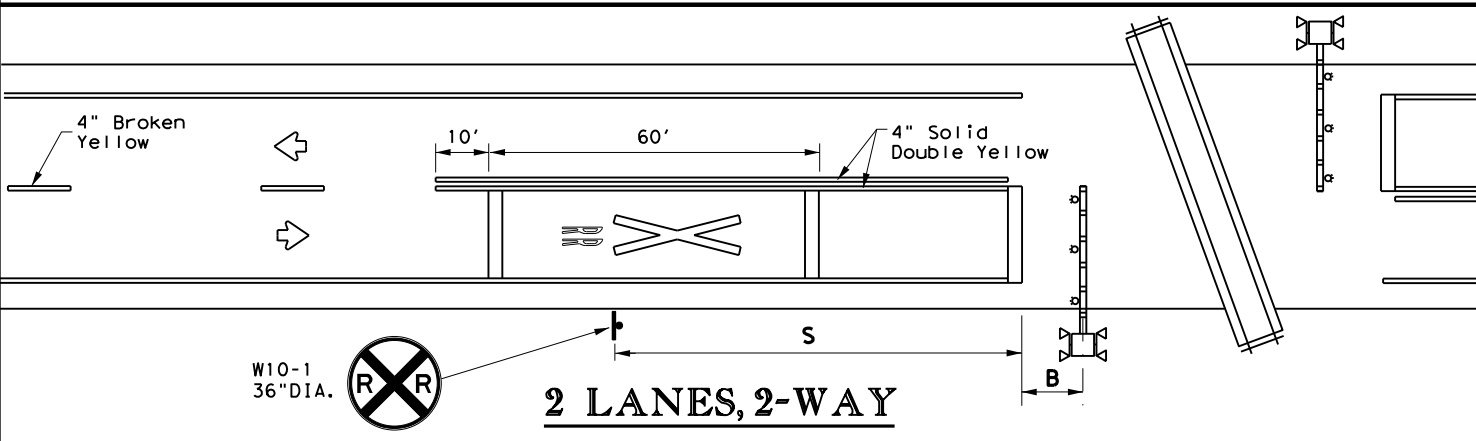
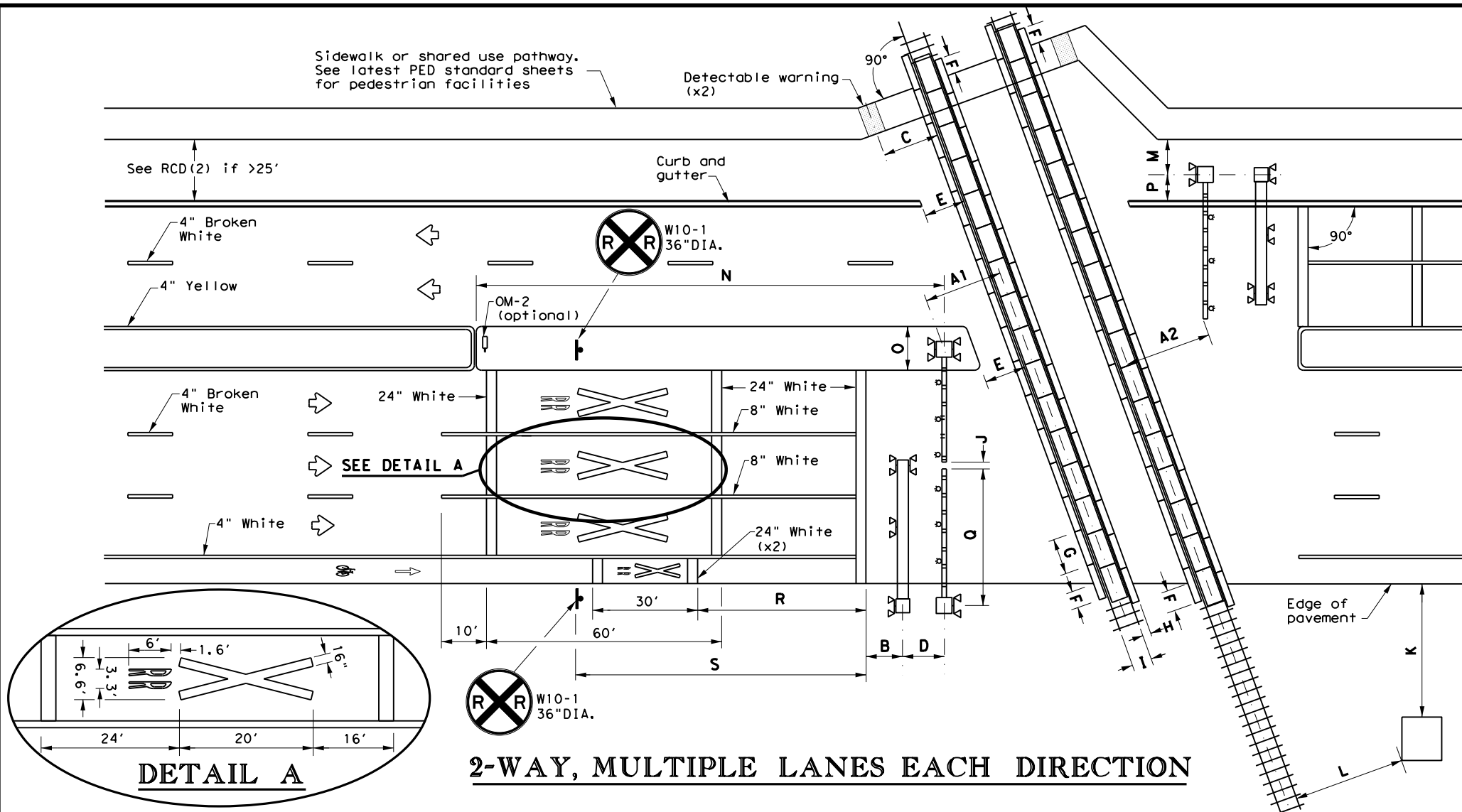
TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE:	tsr4-13.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0101	06	095	US181				
12-03	7-13	DIST	COUNTY		SHEET NO.				
9-08		CRP	NUECES		S10.011.004				

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NOTES

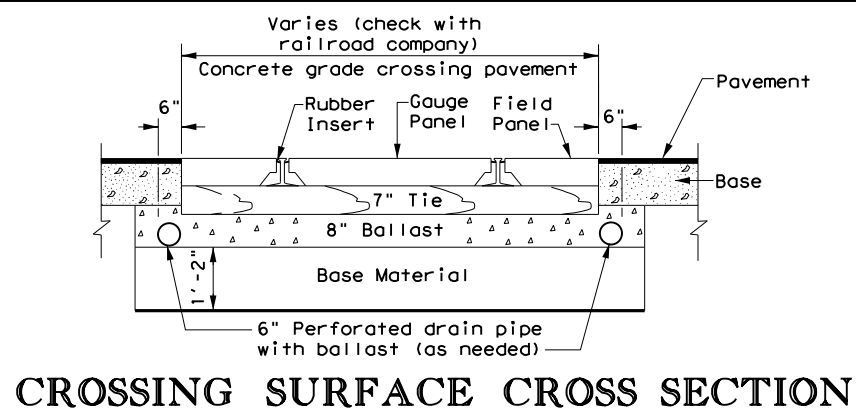
- T: Tip of gate to edge of curb: 1' max for Quiet Zone SSM, 90% of traveled way covered by gates for all other locations
- U: Non-traversable curb length from gate: 100' min. for a Quiet Zone SSM, 10' min for all other locations.

TABLE 1	
Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

LEGEND	
	Sign
	Object Marker
	Traffic Flow
	Cantilever
	Gate Assembly
	Mast Flasher Pair

GENERAL NOTES

- Medians and curbs must be non-traversable to qualify as a Quiet Zone Supplementary Safety Measure (SSM). Non-traversable curbs in Quiet Zones are 6" tall minimum and used on roadways where speed does not exceed 40 mph.
- Raised pavement markers may be used to supplement striping. See PM(2) and PM(3) standard sheets.
- Medians preferred whenever possible to prevent vehicles from driving around gates.
- Longitudinal edge striping may be continued thru crossing as needed. Illumination may also be considered for nighttime visibility.
- See SMD standard sheets for sign mounting details.
- See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.



Texas Department of Transportation

Traffic Operations Division Standard

RAILROAD CROSSING DETAILS

SIGNING, STRIPING, AND DEVICE PLACEMENT

RCD(1)-16

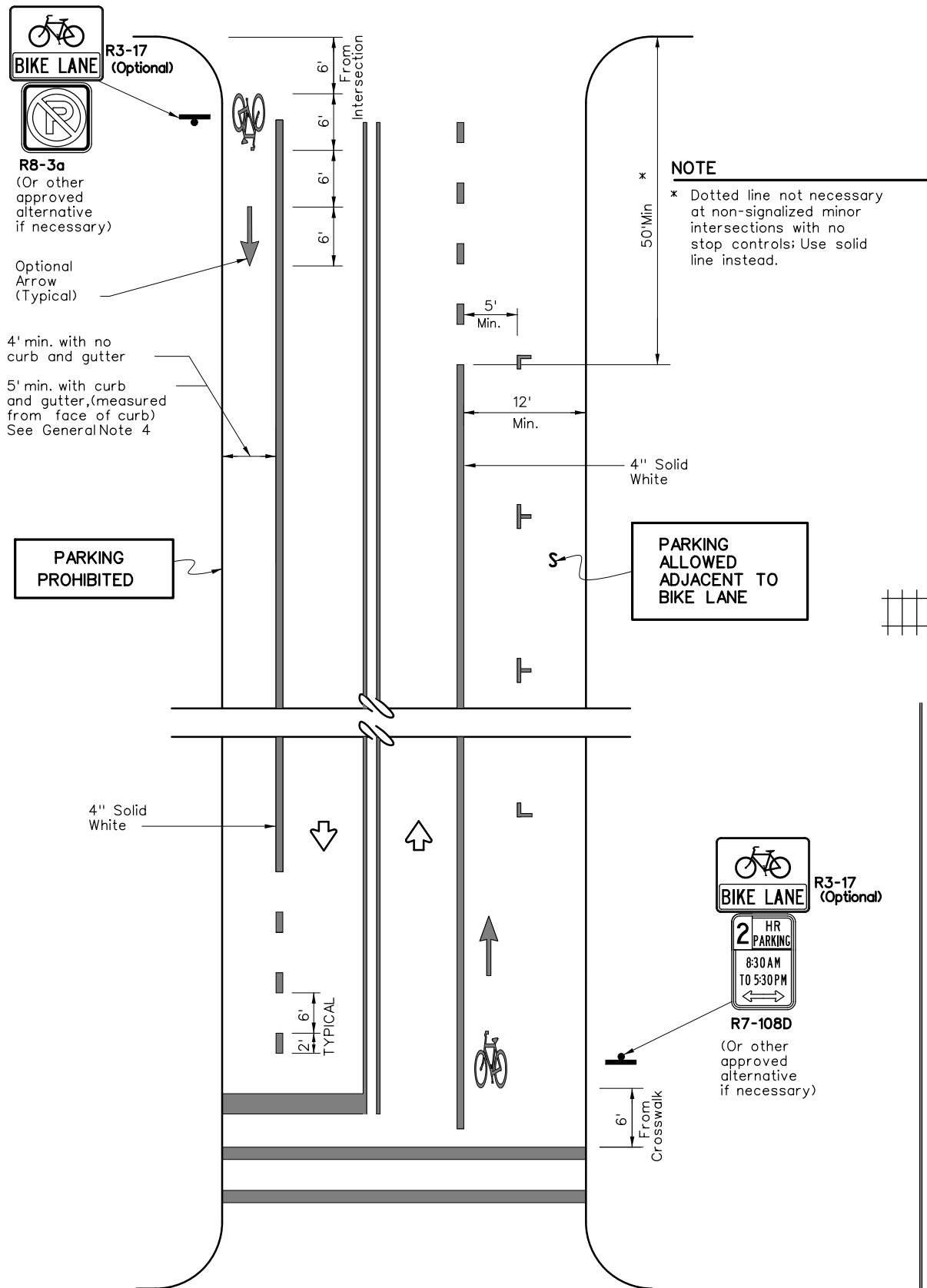
FILE: rcd1-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST		COUNTY	SHEET NO.

NOTES

- A1: Center of RR mast to center of rail: 12' minimum, 15' typical.
- A2: Tip of gate to center of rail: 12' minimum, 15' typical.
- B: Center of mast (cantilever, gate, or mast flasher) of nearest active traffic control device to stop line: 8' (NOTE: Stop line may be moved as needed, but should be at least 8' back from gates, if present).
- C: Center of detectable warning device to nearest rail: 6' minimum
- D: Center of gate mast to center of cantilever mast: 6' typical. NOTE: Cantilever may be located in front or behind gates.
- E: Edge of median or curb to nearest rail: 10' typical. NOTE: Design median edge to be parallel with rail.
- F: Edge of planking panel from edge of pavement or sidewalk: 3' minimum. NOTE: Field panels need not be in line with gauge panels.
- G: Length of panels along rail: 8' typical.
- H: Width of field panel: 2' typical (check with railroad company).
- I: Distance between rails: 4'-8.5".
- J: Tip of gate to tip of gate: 2' maximum for Quiet Zone SSM or 90% of traveled way covered by gates for all other locations.
- K: Nearest edge of RR cabin from edge of pavement: 30' typical. NOTE: Cabinet not required to be parallel to edge of pavement.
- L: Nearest edge of RR cabin from nearest rail: 25' typical.
- M: Center of RR mast to edge of sidewalk: 6' minimum.
- N: Center of gate mast to leading edge of non-traversable median: 100' minimum to qualify as a Quiet Zone SSM. NOTE: 60' will suffice if there is a street intersection within the 100' and all street intersections within 60' are closed.
- O: Width of median: 8'-6" minimum, 10' typical when using median gates. NOTE: Center of gate mast minimum 4'-3" from face of curb.
- P: Center of RR mast to face of curb: 4'-3" minimum. Center of RR mast to edge of pavement (with shoulder): 6' minimum. Center of RR mast to edge of pavement (no shoulder): 8'-3" minimum. NOTE: BNSF prefers 5'-3", 7', and 9'-3" minimums, respectively.
- Q: Gate length: 28' or less typical, but railroad company may allow up to 32' under special circumstances.
- R: Stop line to first RR Crossing transverse line (bike lane): 50' typical.
- S: Stop line to GRADE CROSSING ADVANCE WARNING (W10-1) sign and adjacent RR Crossing pavement markings. See Table 1. See RCD(2) for other signs.

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NOTES

- Bicycle lane pavement markings typically repeated after each intersection or signalized driveway.
- On uninterrupted sections of roadway, bicycle lane pavement markings typically repeated as follows:

-1200' for 45 MPH or less roads
-2500' for 50 MPH and greater roads.

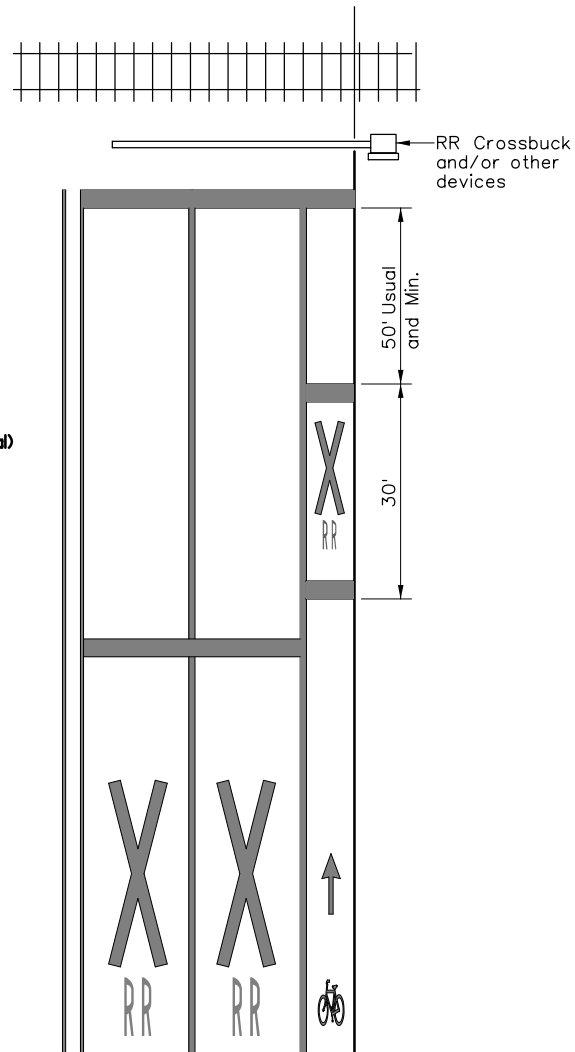
TWO-WAY STREET

GENERAL NOTES

- All bicycle lane pavement markings shall be white unless otherwise noted.
- All pavement marking materials shall meet the required Department Material Specifications as specified by the plans.
- Exact sign placement and details are shown elsewhere in the plans.
- The current edition of AASHTO'S Guide for the Development of Bicycle Facilities should be referenced for variations in design, other geometric conditions, and lane width options.
- Other bicycle lane symbol or word markings as shown in the Texas Manual on Uniform Traffic Control Devices may be used. Details for words, arrows and symbols as shown in the Standard Highway Sign Designs for Texas.
- The "BIKE LANE" (R3-17) sign with the "AHEAD" (R3-17a) sign mounted directly below should be installed in advance of the beginning of a marked bike lane.
- The "BIKE LANE" (R3-17) sign with the "END" (R3-17b) sign mounted directly below should be installed at the end of marked bicycle lane.

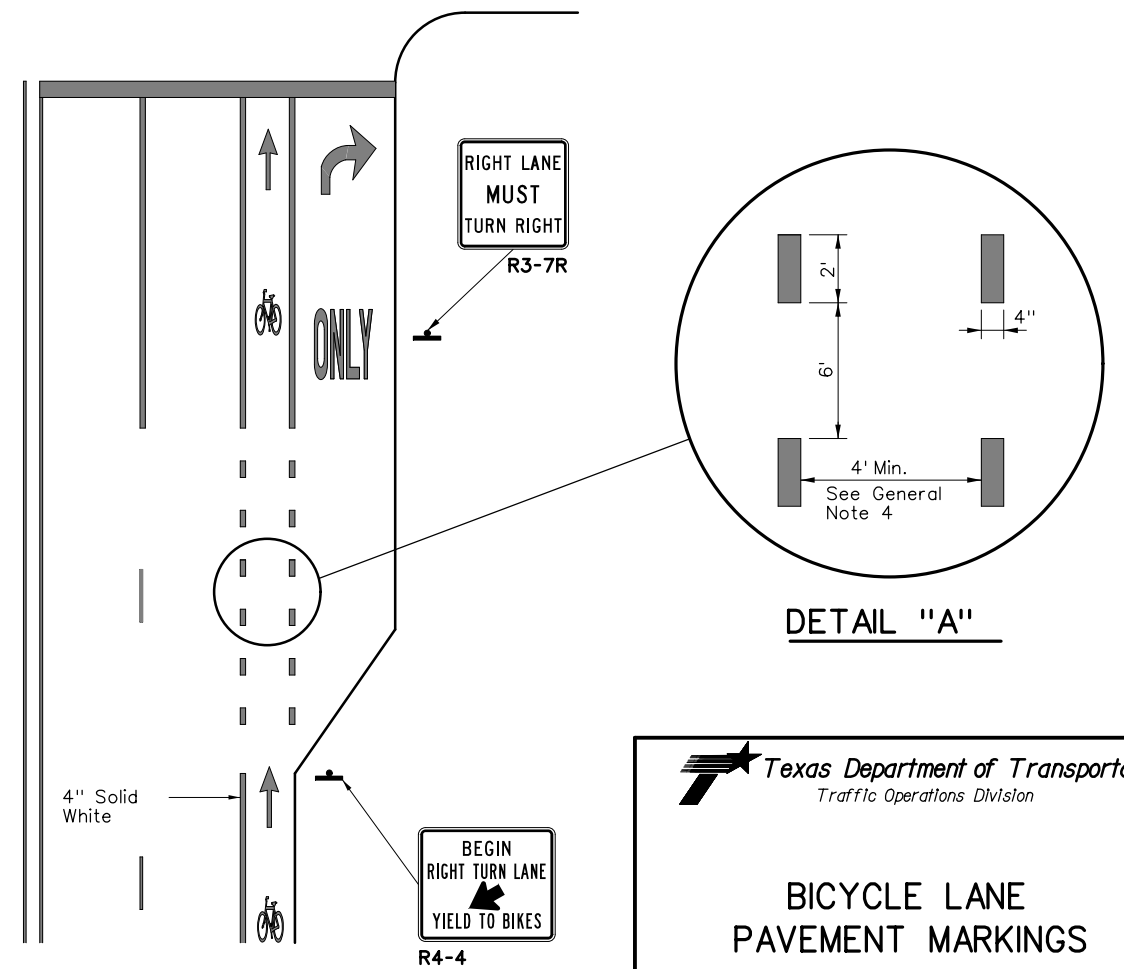
NOTE

* Dotted line not necessary at non-signalized minor intersections with no stop controls; Use solid line instead.



(See RCPM Standard for travel lane details)

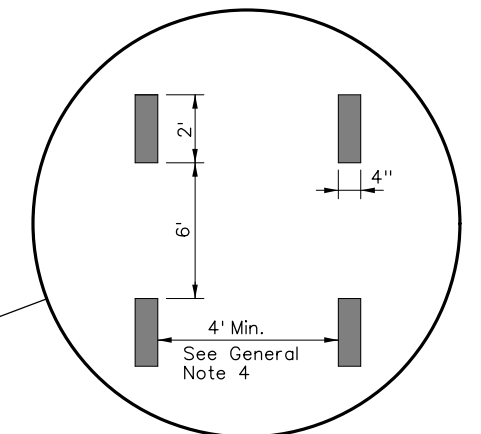
RAILROAD CROSSING APPROACH



LEGEND	
	Sign
	Traffic Flow

SPECIFICATION REFERENCE TABLE

Traffic Point	DMS-8200
Hot Applied Thermoplastic	DMS-8220
Permanent Prefabricated Pavement Markings	DMS-8240
Glass Traffic Beads	DMS-8290



DETAIL "A"

Texas Department of Transportation
Traffic Operations Division

BICYCLE LANE PAVEMENT MARKINGS

BLPM-10

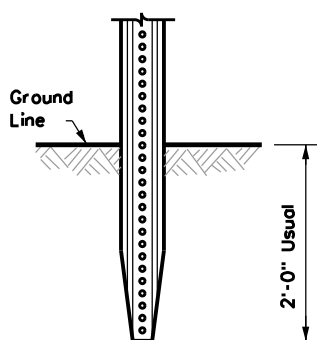
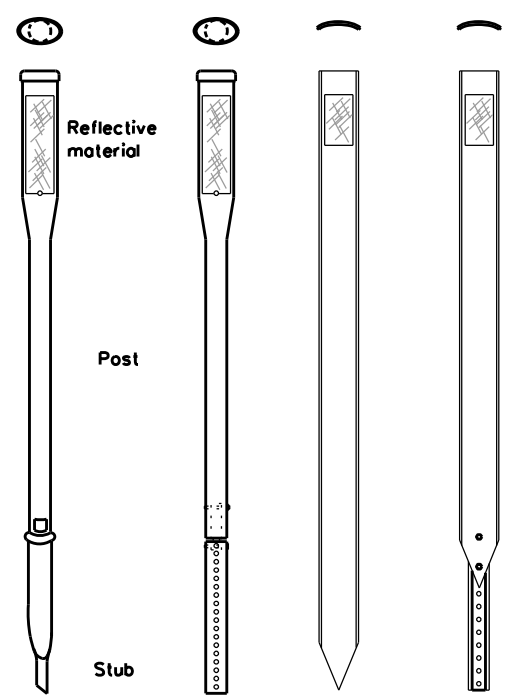
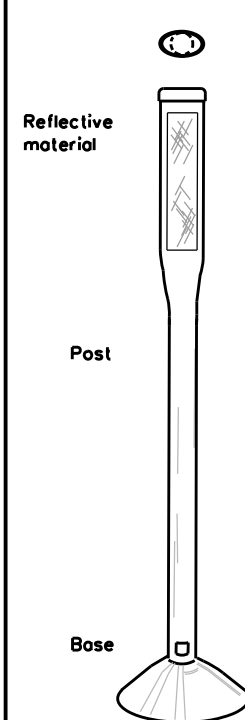
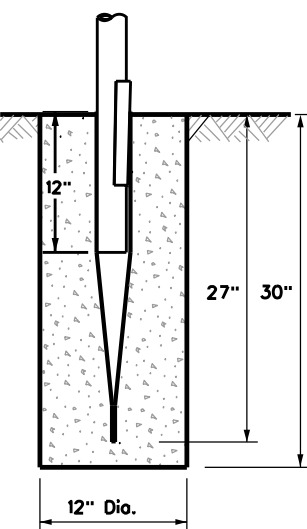
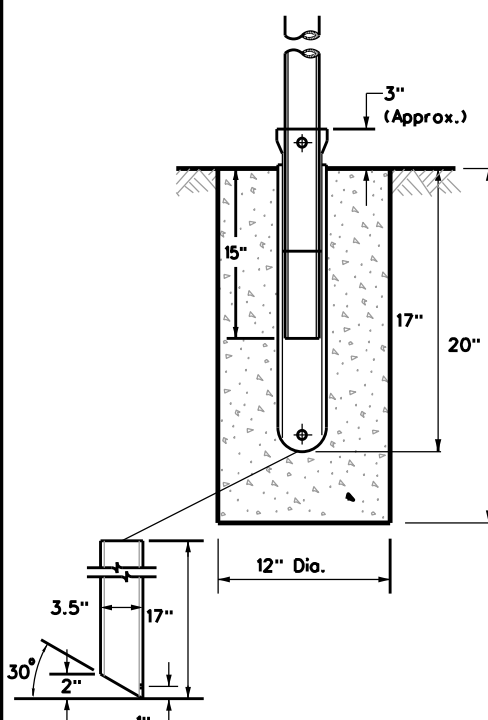
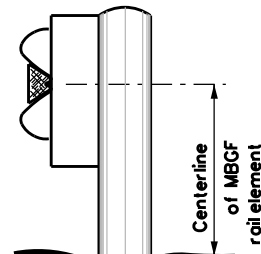
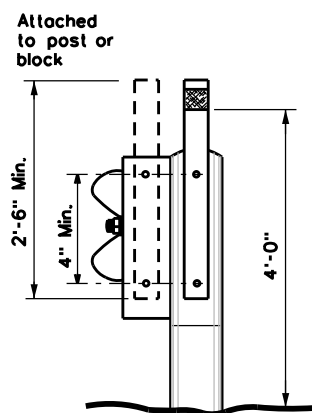
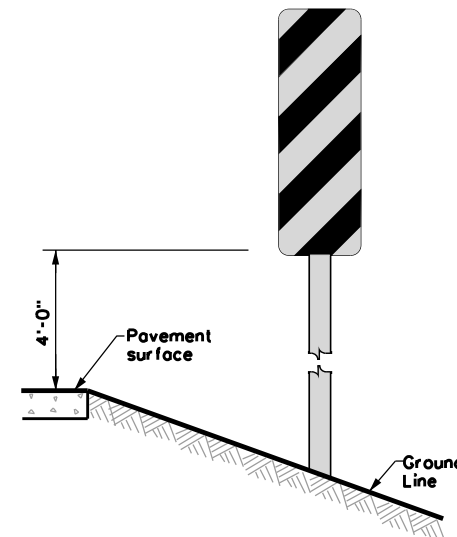
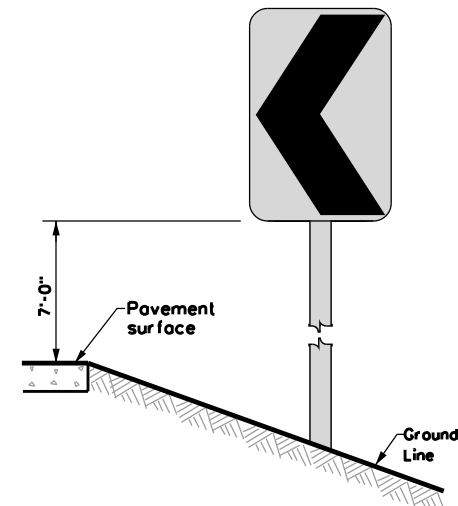
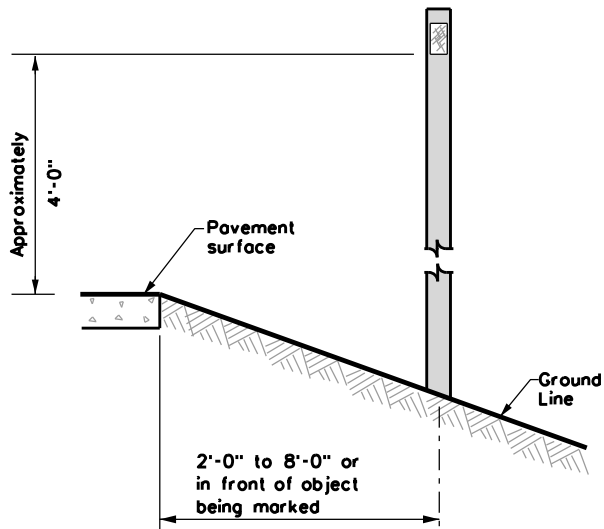

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	DIST		COUNTY	SHEET NO.

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20A

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POST TYPE AND SUPPORT FOUNDATION DETAILS					TYPE OF BARRIER MOUNTS																										
WING CHANNEL (WC)	FLEXIBLE POSTS (FLX)		WEDGE ANCHOR SYSTEMS		GUARD FENCE ATTACHMENT																										
GND	GND	SRF	WAS	WAP	GF1	GF2																									
																															
NOTES 1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only. 2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.	EMBEDDED		SURFACE MOUNT	STEEL	PLASTIC																										
	NOTES 1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices. 2. Install per manufacturer's recommendations. 3. Post length may vary to meet field conditions.		NOTE 1. Install per manufacturer's recommendations.																												
TYPES 1,3, AND 4 OBJECT MARKERS AND CHEVRONS		CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN		DELINEATORS AND TYPE 2 OBJECT MARKERS																											
 NOTE Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)		 NOTE Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTIONAL LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.		 NOTE See general notes 1, 2 and 3.																											
					GENERAL NOTES 1. Place delineators on a section of roadway at a consistent distance from the edge of pavement. 2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction. 3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible. 4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation. 5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.																										
					 DELINATOR & OBJECT MARKER INSTALLATION D & OM(2)-15																										
					<table><tr><td>FILE: dom2-15.dgn</td><td>DN: TxDOT</td><td>CK: TxDOT</td><td>DW: TxDOT</td><td>CK: TxDOT</td></tr><tr><td>© TxDOT August 2004</td><td>CONT</td><td>SECT</td><td>JOB</td><td>HIGHWAY</td></tr><tr><td>REVISIONS</td><td>0101</td><td>06</td><td>095</td><td>US181</td></tr><tr><td>10-09 3-15</td><td>DIST</td><td>COUNTY</td><td>SHEET NO.</td><td></td></tr><tr><td>4-10</td><td>CRP</td><td>NUECES</td><td></td><td>SDO.DEL.008</td></tr></table>		FILE: dom2-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY	REVISIONS	0101	06	095	US181	10-09 3-15	DIST	COUNTY	SHEET NO.		4-10	CRP	NUECES		SDO.DEL.008
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© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY																											
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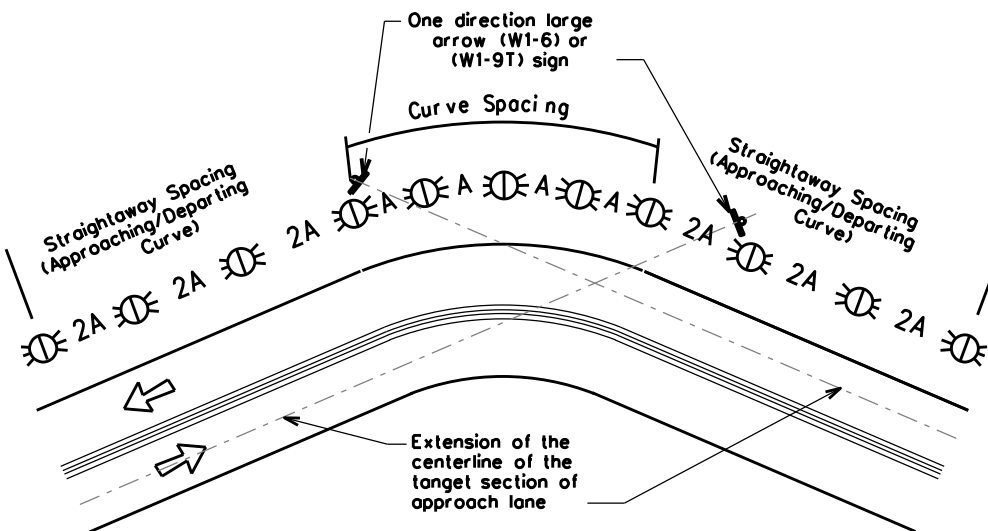
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USE OF WARNING DEVICES AT CURVES WITH ADVISORY SPEED LIMITS

Amount by which Advisory Speed Is less than Posted Speed	Warning Devices Needed
5 MPH & 10 MPH	RPMs
15 MPH & 20 MPH	RPMs, and Delineators or RPMs and ONE DIRECTION LARGE ARROW (W1-6) or (W1-9T) sign
25 MPH & Greater	RPMs and Chevrons

SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES

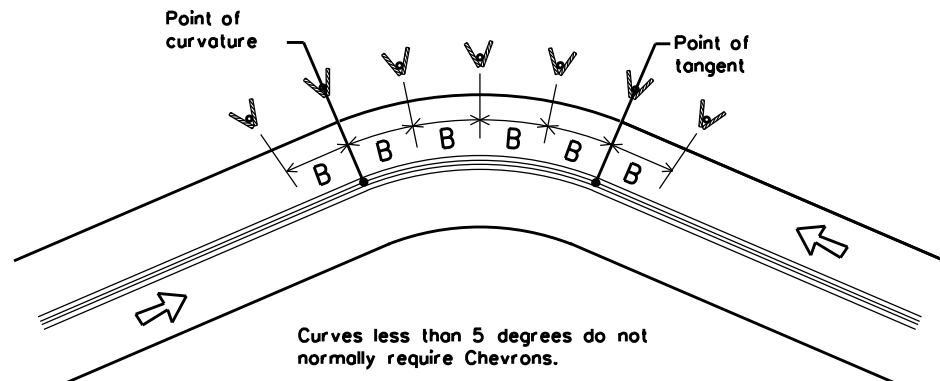


Curves less than 1 degree do not normally require delineators.

NOTE

ONE DIRECTIONAL LARGE ARROW (W1-6) or (W1-9T) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve ¹	Single delineators on right side	See delineator spacing table
FRWY/EXP. Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 4 on D&OM(4))	100 feet on ramp tangents. Use delineator spacing table for ramp curves ('straightway spacing' does not apply to ramp curves).
Acceleration/Deceleration Lane	Double delineators (see Detail 4 on D&OM(4))	100 feet (See Detail 4 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete) and Metal Beam Guard Fence or CTB	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100' max) but not less than 3 delineators
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end. Undivided 2-lane highways - Object marker on approach and departure end.	Requires Type 3 Object Marker or reflective sheeting provided by manufacturer per D & OM(VIA).
Bridges with no Approach Rail	Type 3 Object Marker at end of rail and 3 single delineators approaching rail.	See Detail 2 on D & OM(4)
Reduced Width Approaches to Bridge Rail	Type 2 Object Markers and 3 single delineators approaching bridge.	See Detail 1 on D & OM(4)
Culverts without MBGF	Type 2 Object Markers	See Detail 3 on D & OM(4)
Crossovers	Double yellow delineators or RPM's	See Detail 5 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Delineators not required in urban areas with continuous illumination.
2. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
3. Barrier reflectors may be used to replace required delineators.
4. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

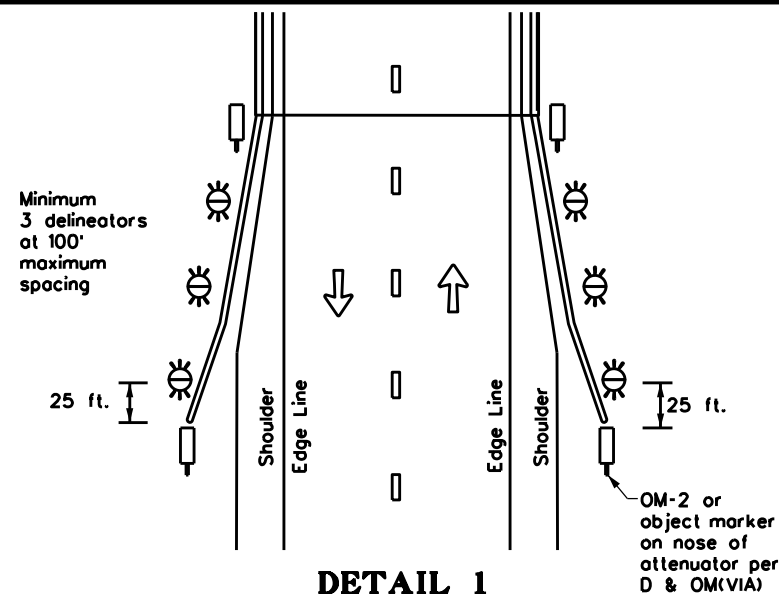
LEGEND

	Bi-directional Delineator
	Delineator
	Sign

				Traffic Operations Division Standard	
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS					
D & OM(3)-15B					
FILE: dom3-15b.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT	
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8-15	CRP	NUECES		SID. 011. 009	

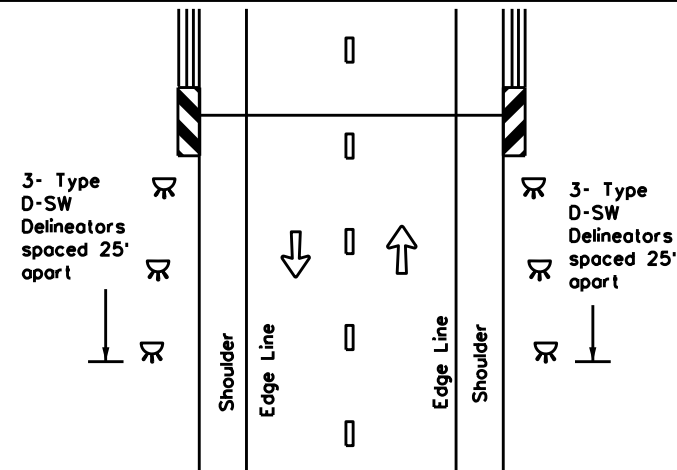
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TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH



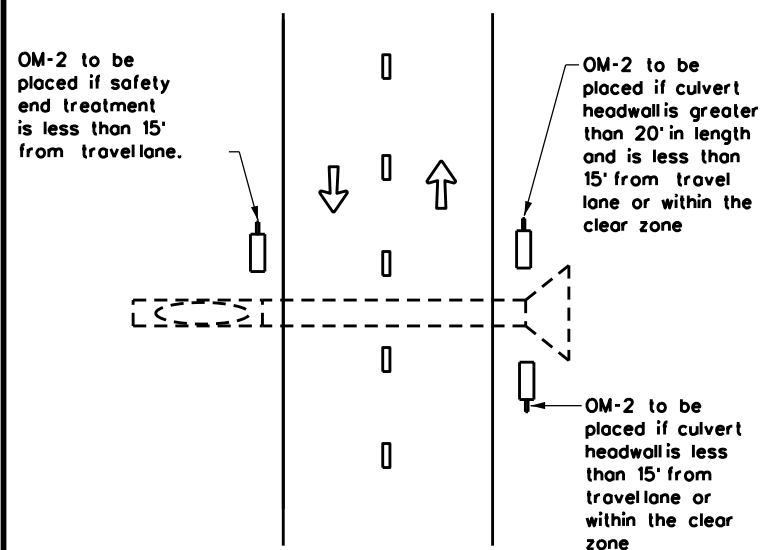
DETAIL 1

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



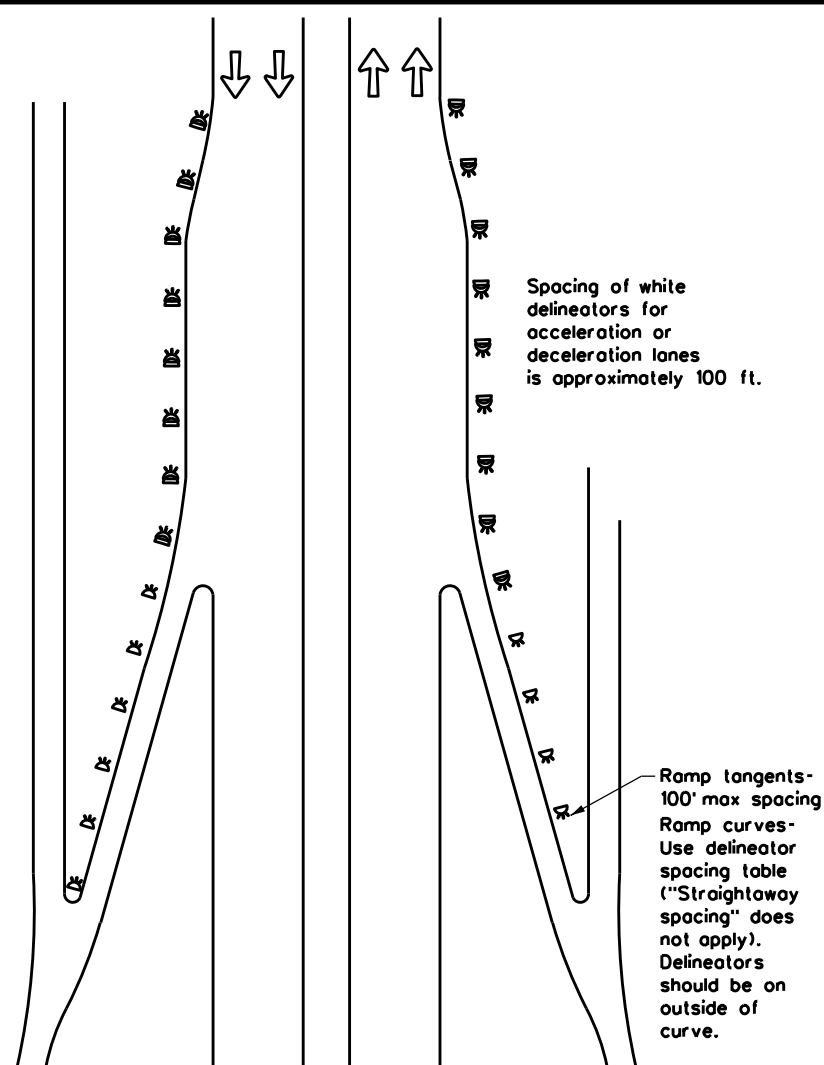
DETAIL 2

FOR CULVERTS WITHOUT MBGF



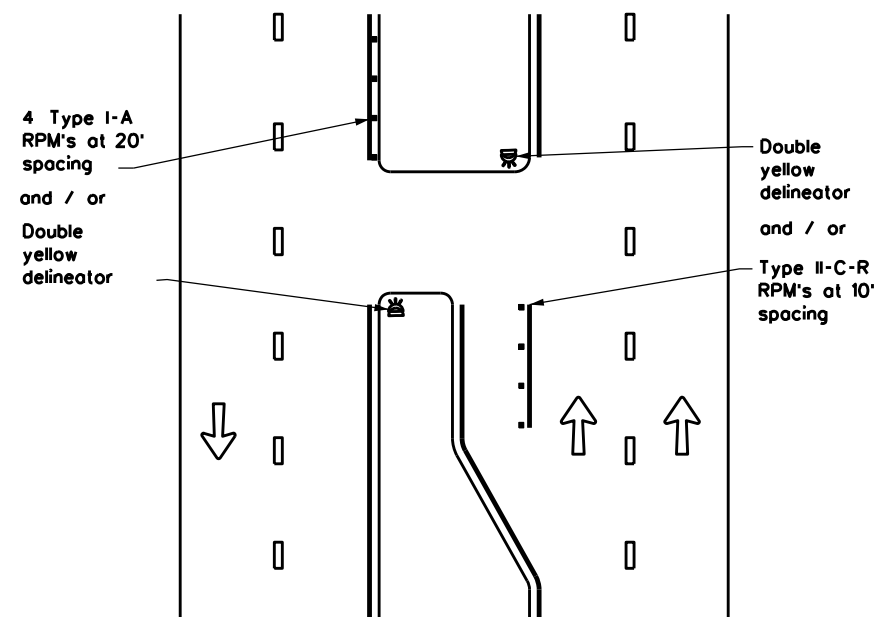
DETAIL 3

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



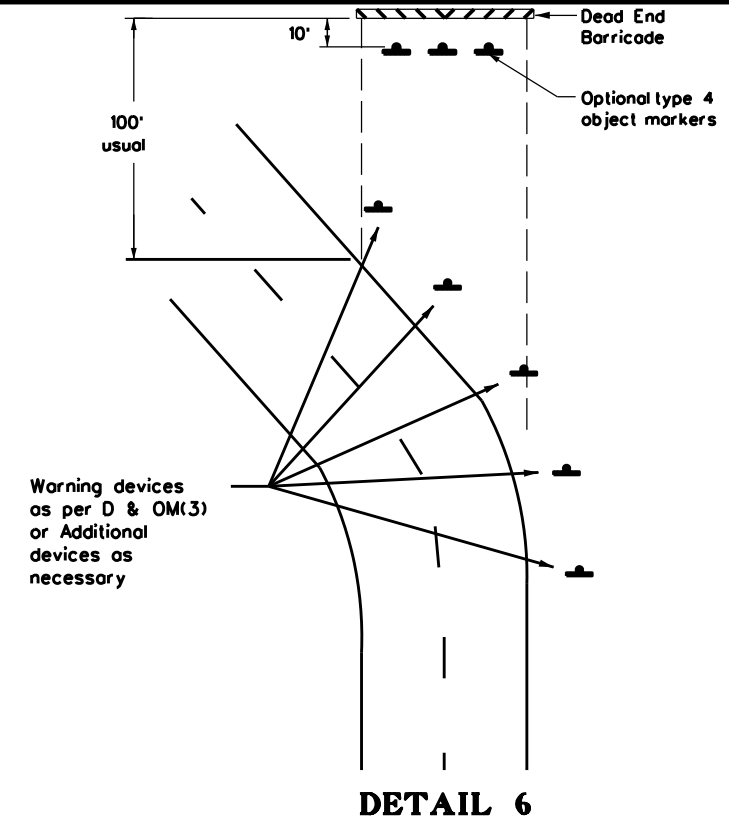
DETAIL 4

CROSSOVERS



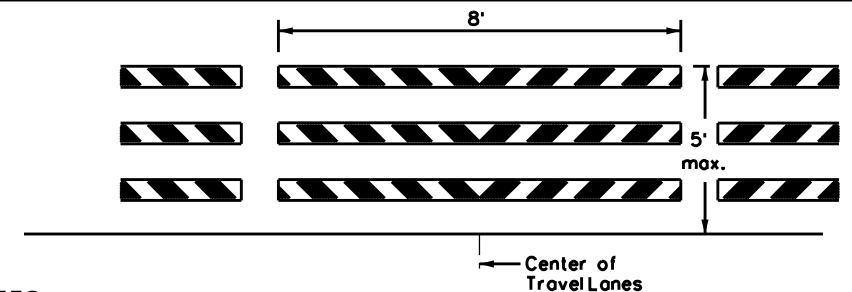
DETAIL 5

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 6

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 7

LEGEND

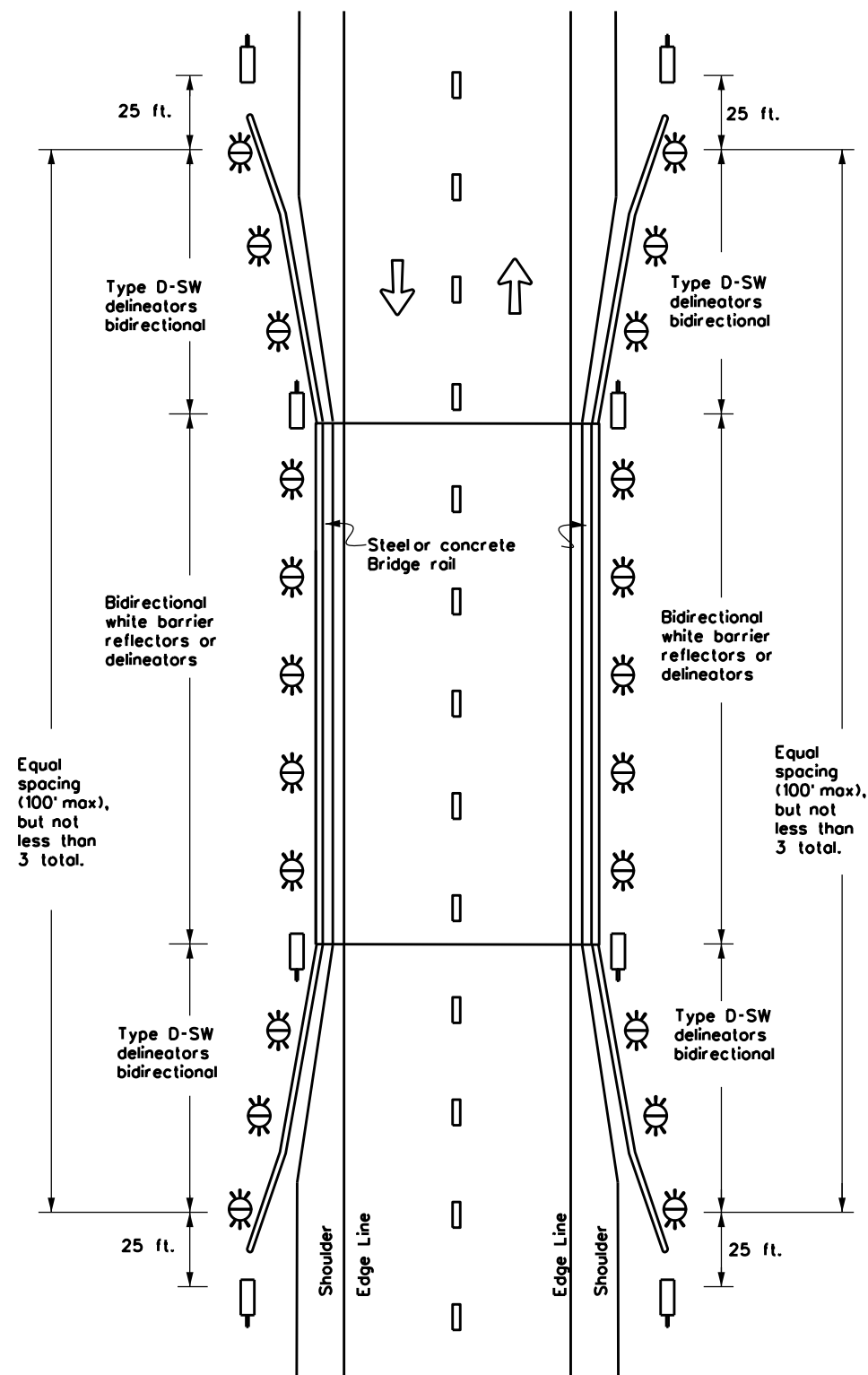
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	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

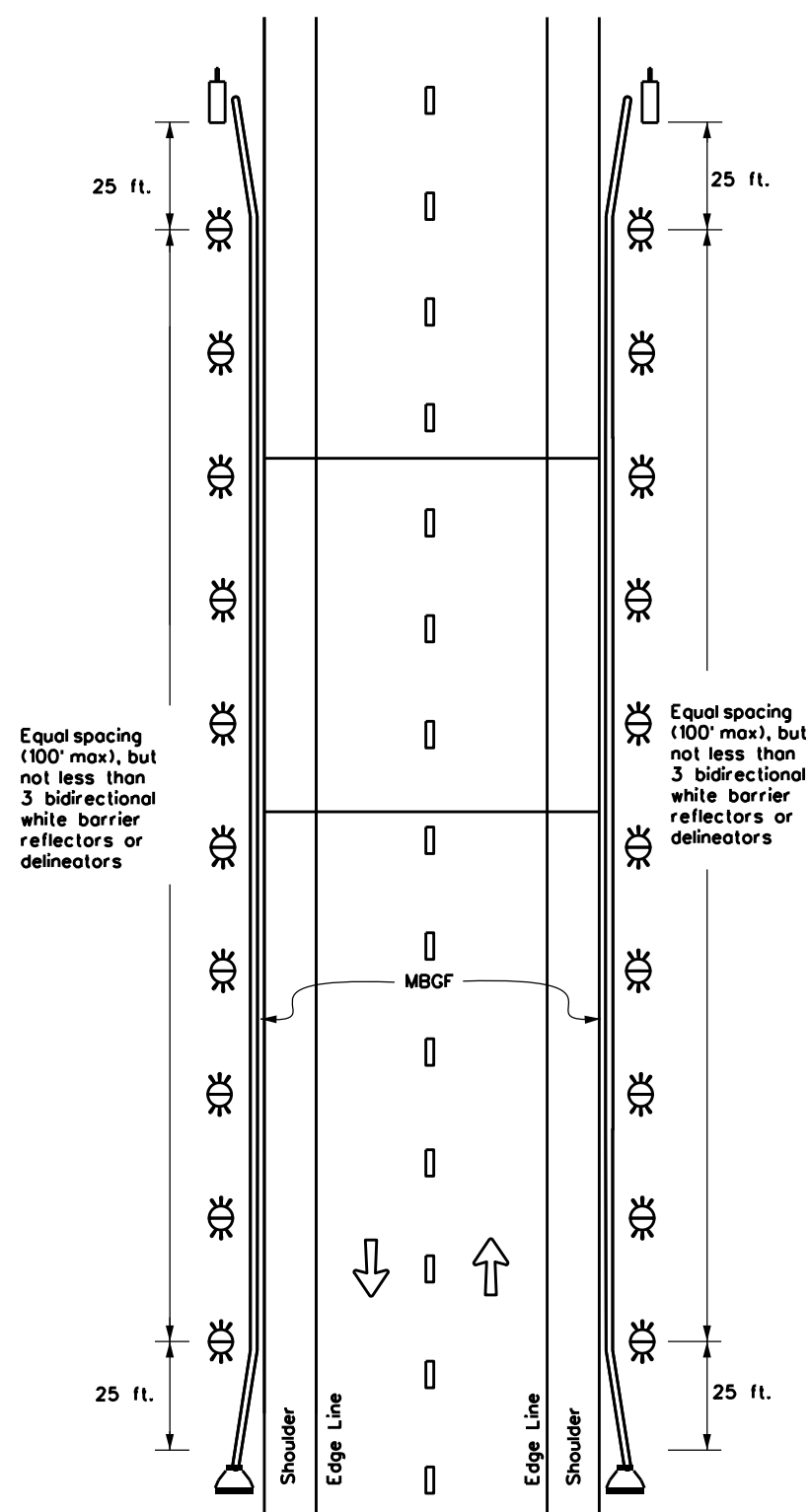
D & OM(4)-15

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3-15	DIST	COUNTY	SHEET NO.	
CRP	NUECES			SDO.01.00

TWO-WAY, TWO LANE ROADWAY
WITH REDUCED WIDTH APPROACH RAIL



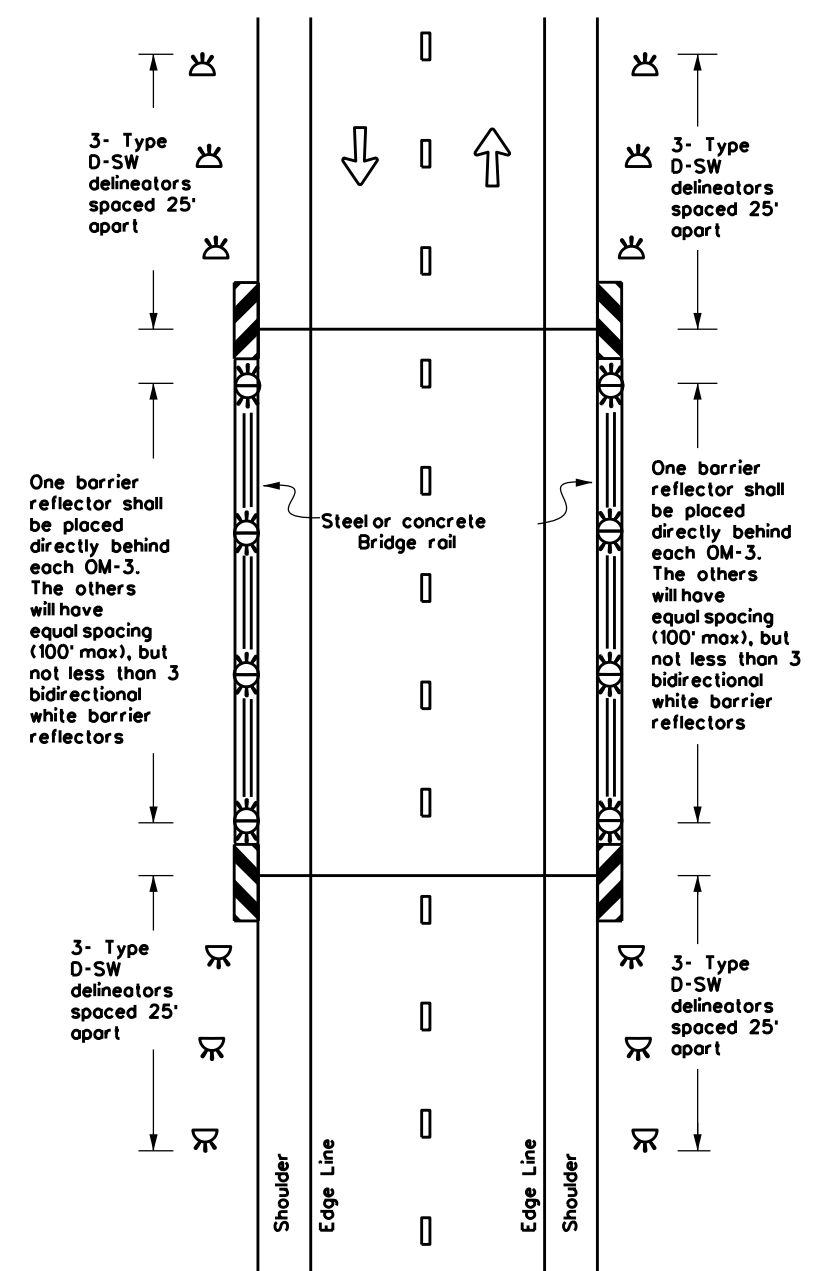
TWO-WAY, TWO LANE ROADWAY
WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

If terminal ends include an object marker, there is no need to install an OM-2 in front of terminal.

TWO-WAY, TWO LANE ROADWAY
BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	TRAFFIC FLOW



Traffic
Operations
Division
Standard

DELINEATOR &
OBJECT MARKER
PLACEMENT DETAILS

D & OM(5)-15

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© TxDOT August 2015	CON: 0101	SECT: 06	JOB: 095	HIGHWAY: US181
REVISIONS	DIST: CRP	COUNTY: NUECES	SHEET NO.	510.011.01

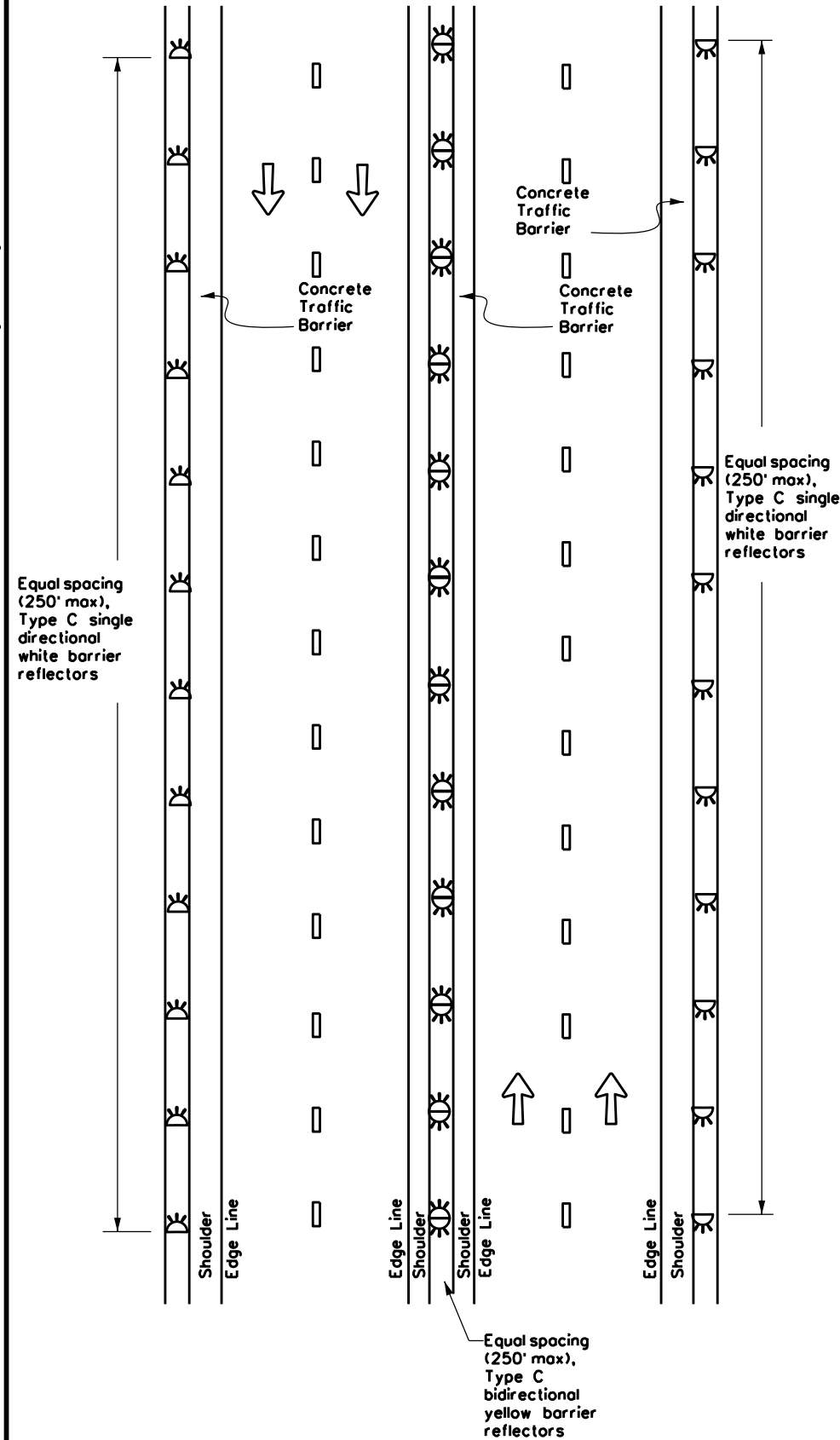
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DATE:
FILE:

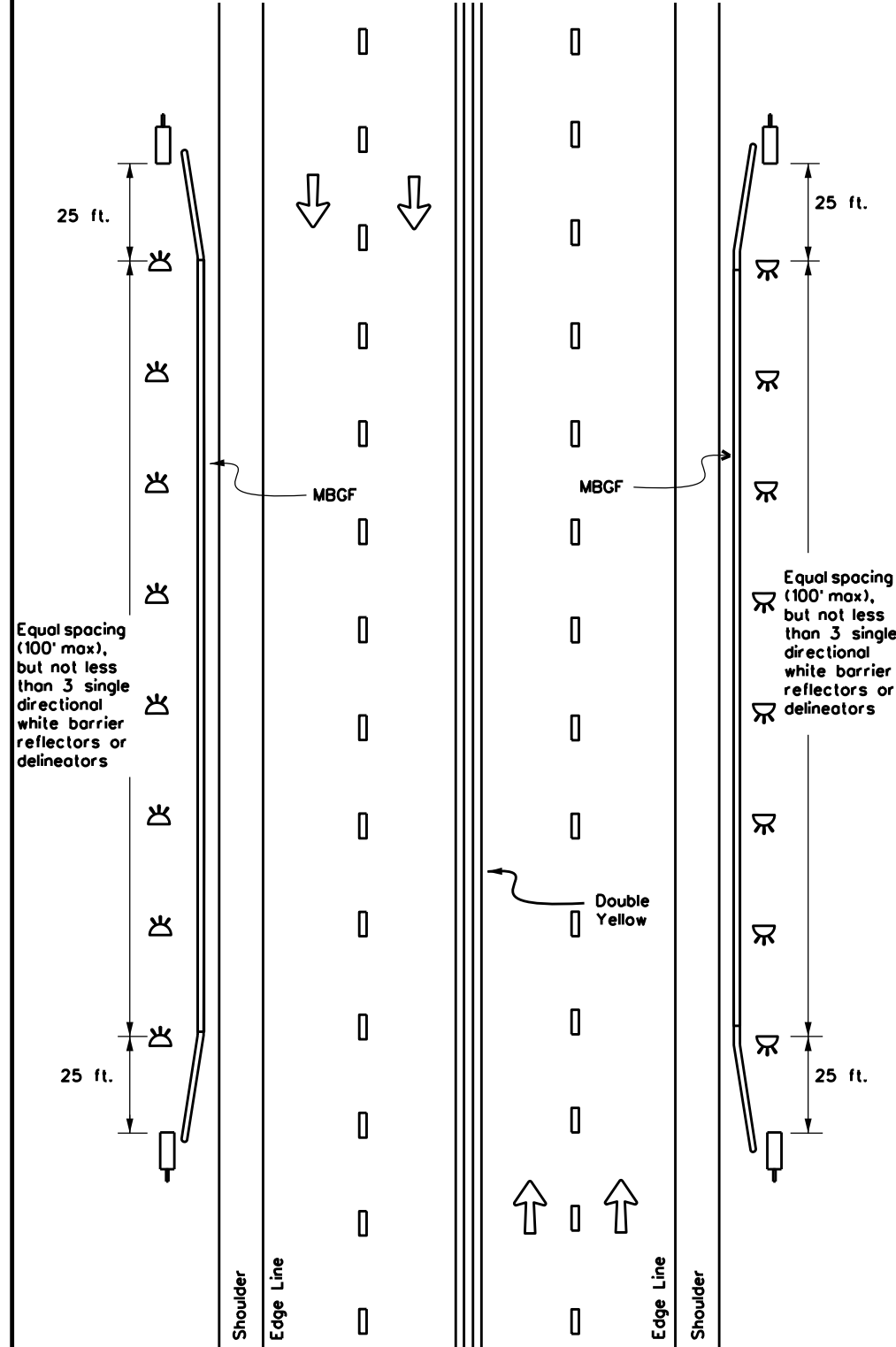
DISCLAIMER:
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DATE:
FILE:

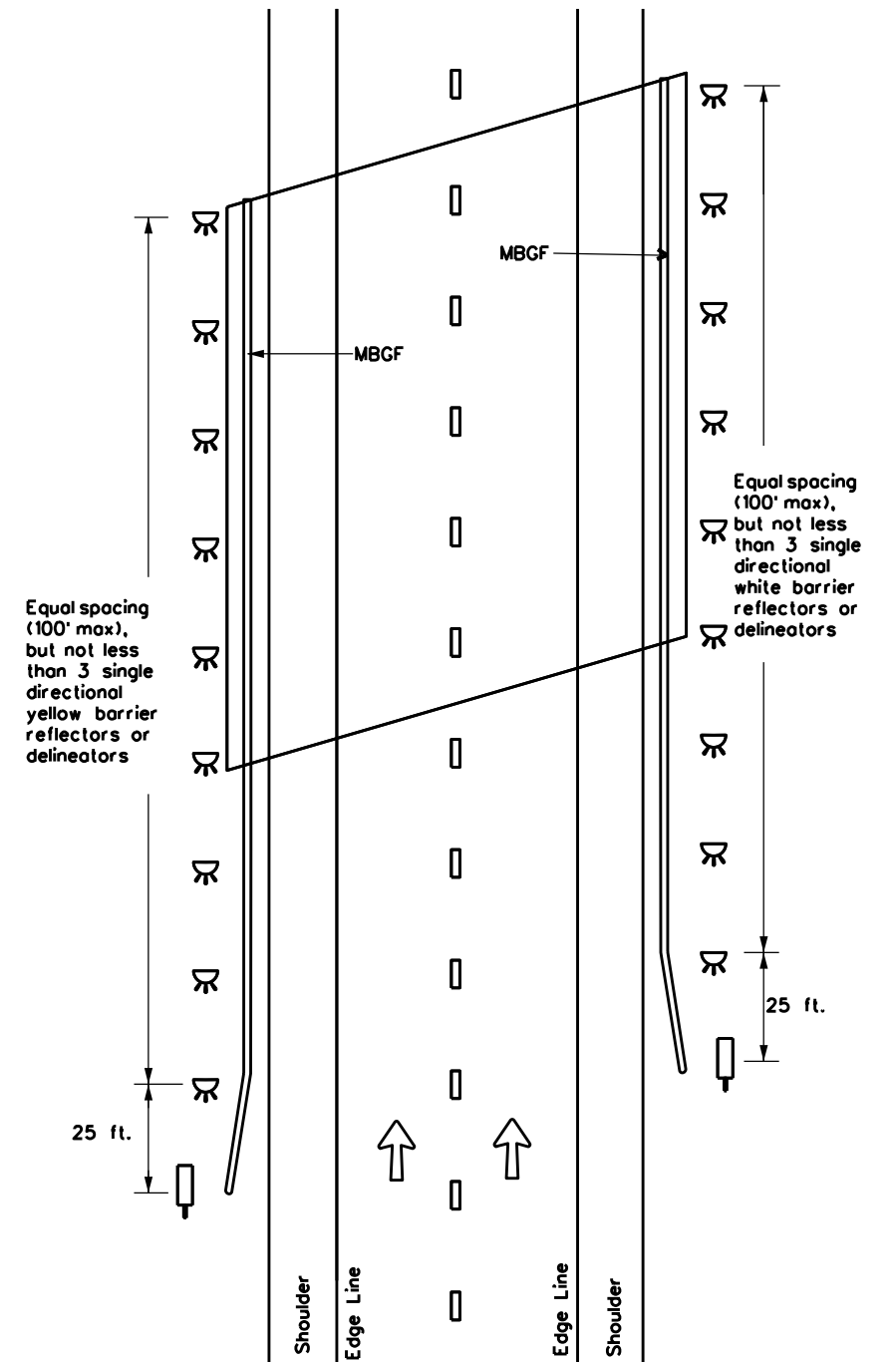
CONTINUOUS CONCRETE BARRIER



MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	TRAFFIC FLOW



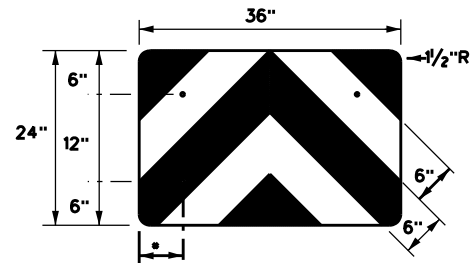
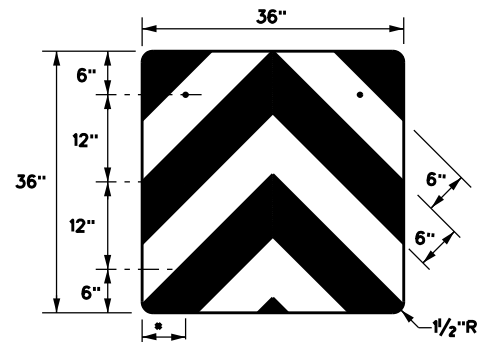
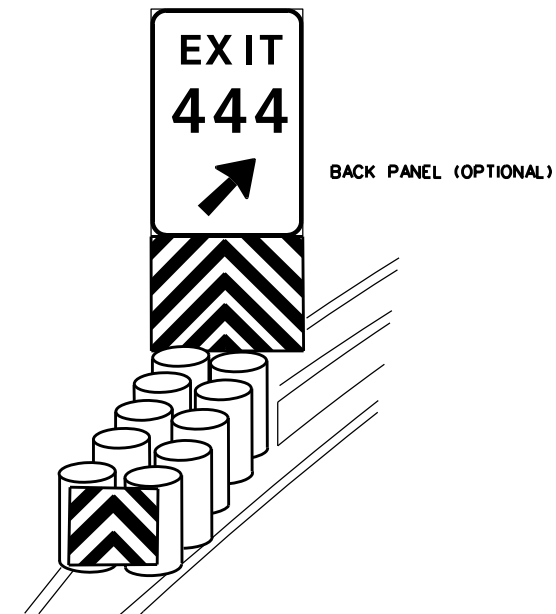
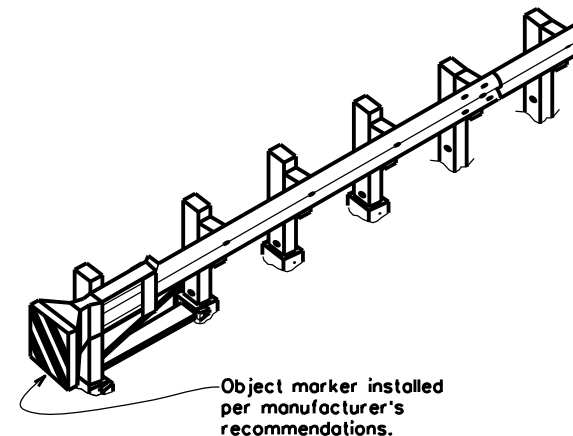
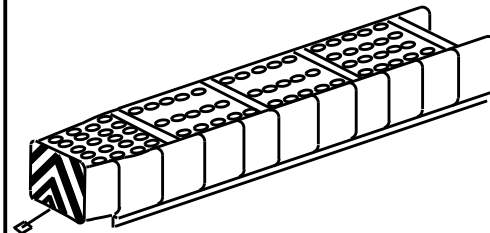
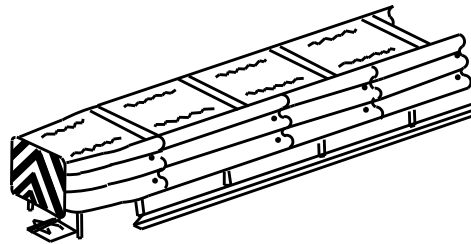
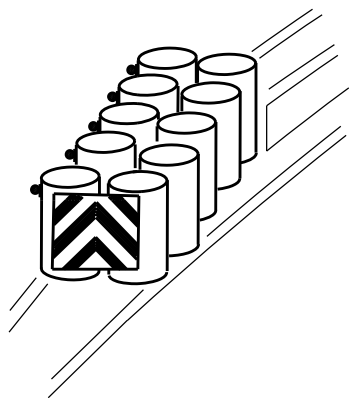
Traffic
Operations
Division
Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

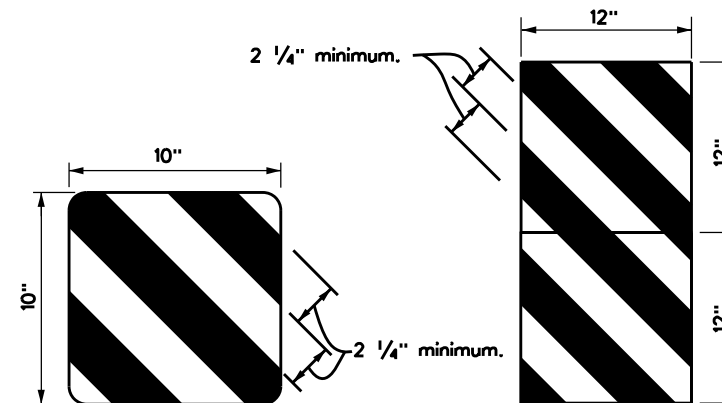
D & OM(6)-15

FILE: dom6-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT: 0101	SECT: 06	JOB: 095	HIGHWAY: US181
REVISIONS	DIST: CRP	COUNTY: NUECES	SHEET NO.	SDO.DIL.02

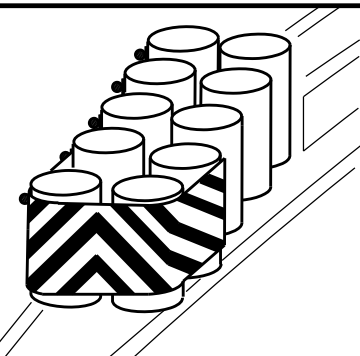
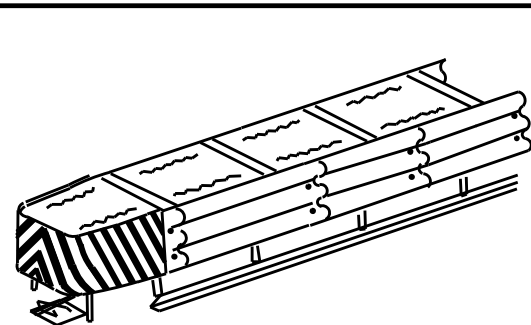
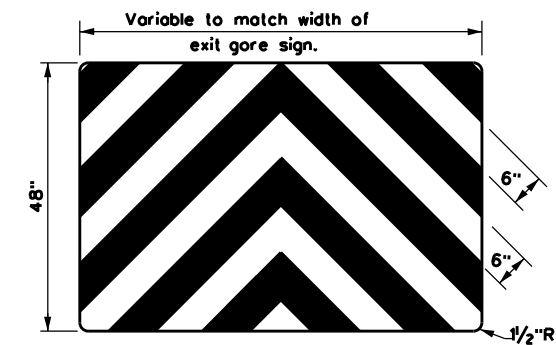
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- Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

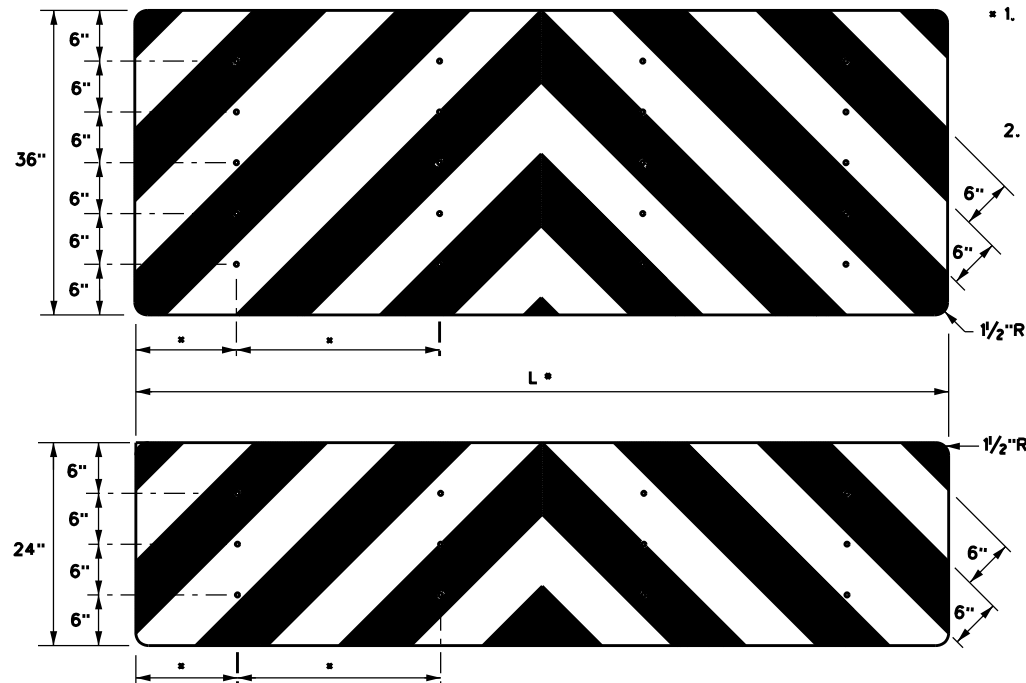


OBJECT MARKERS SMALLER THAN 3 FT²



NOTES

1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.
2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".



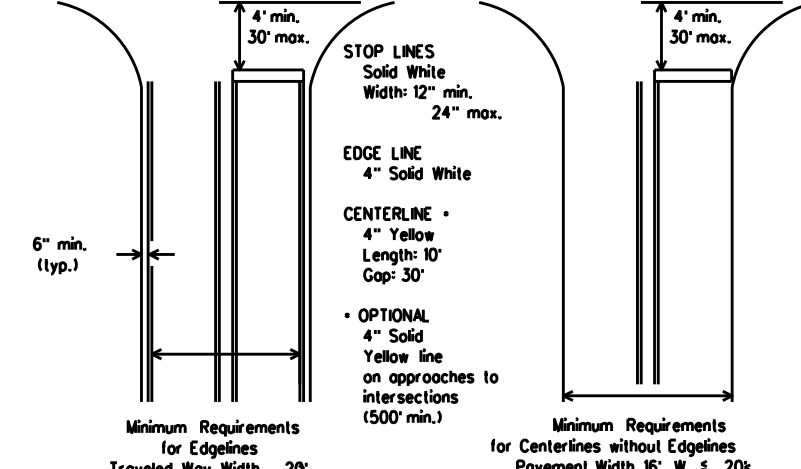
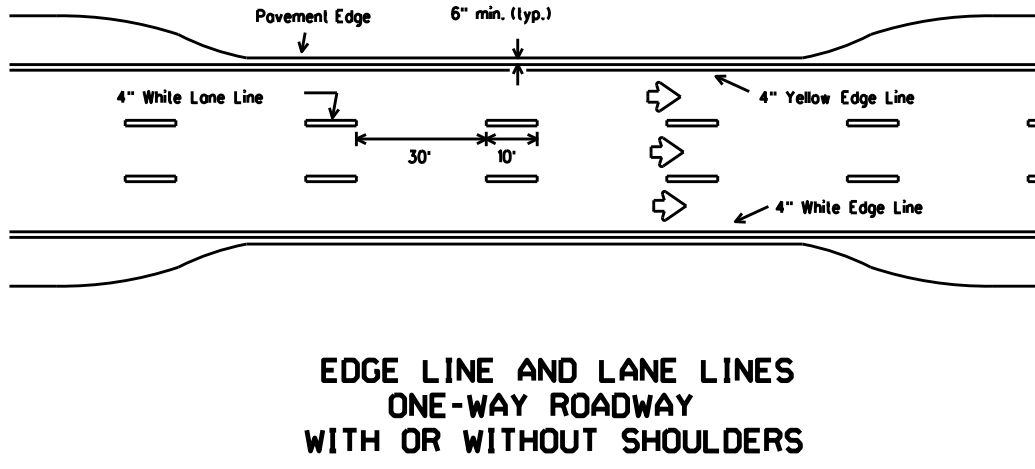
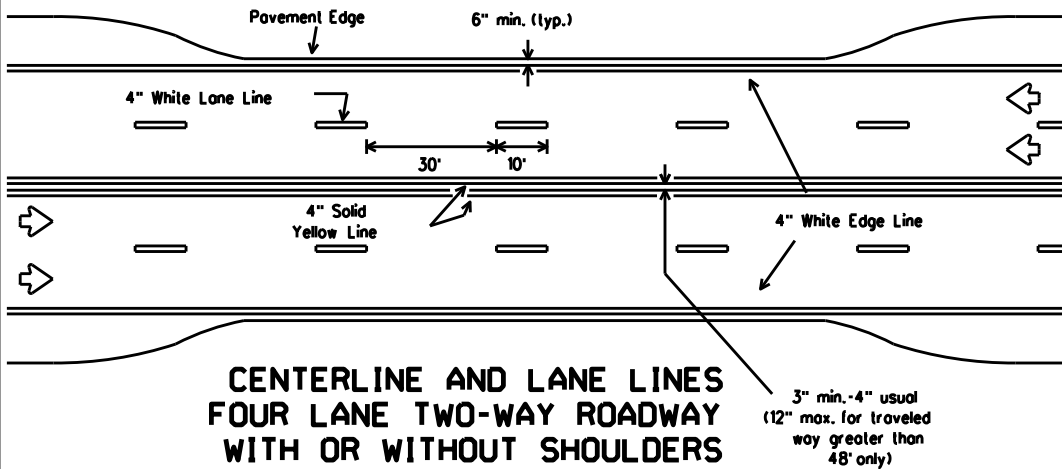
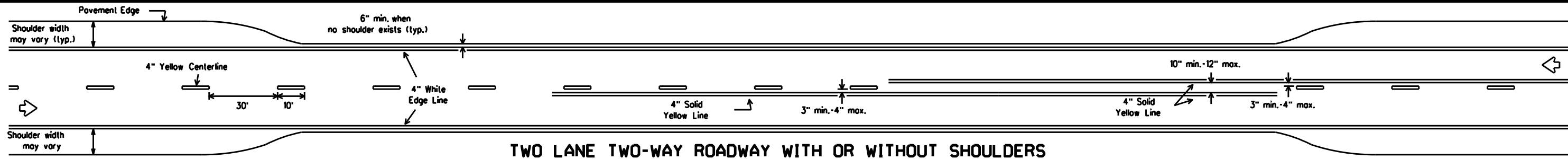
NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.
2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.
3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 1/4".
4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.
5. Object Marker at nose of attenuator is subsidiary to the attenuator.
6. See D & OM (1-4) for required barrier reflectors.

				Traffic Operations Division Standard	
DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS					
D & OM(VIA)-15					
FILE: domvia15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT December 1989	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0101	06		US181	
4-92 8-04	DIST	COUNTY		SHEET NO.	
8-95 3-15	CRP	NUECES		STD. 011.013	
4-98					
20G					

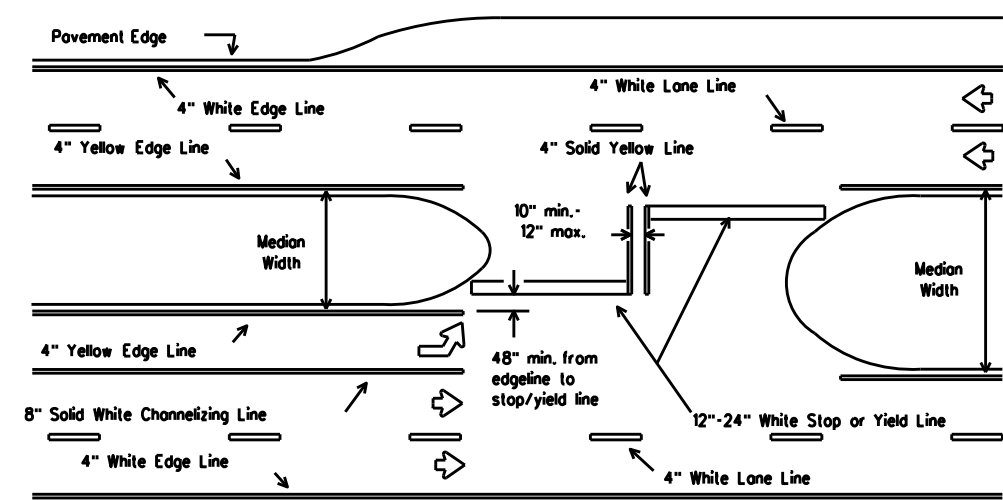
DATE:
FILE:

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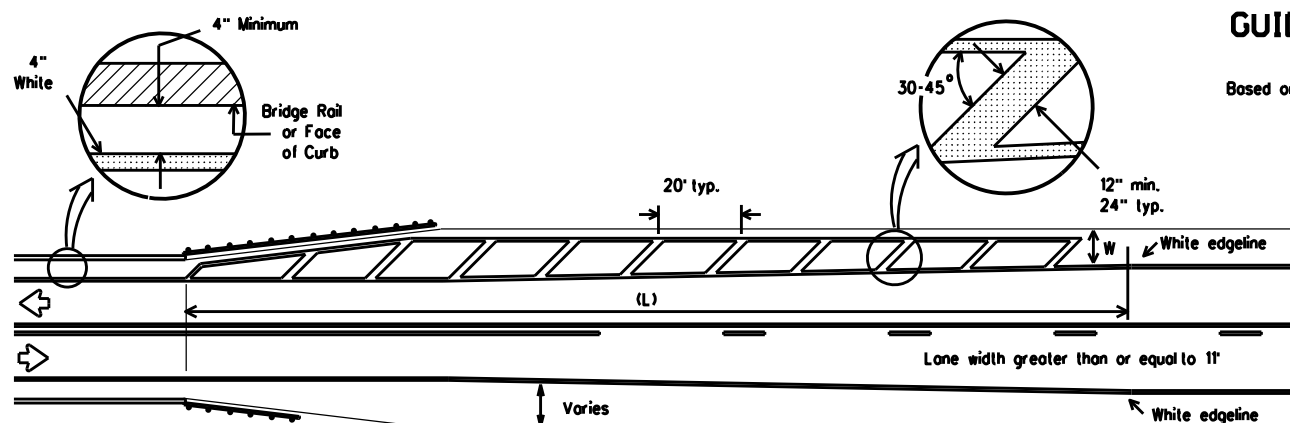
GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

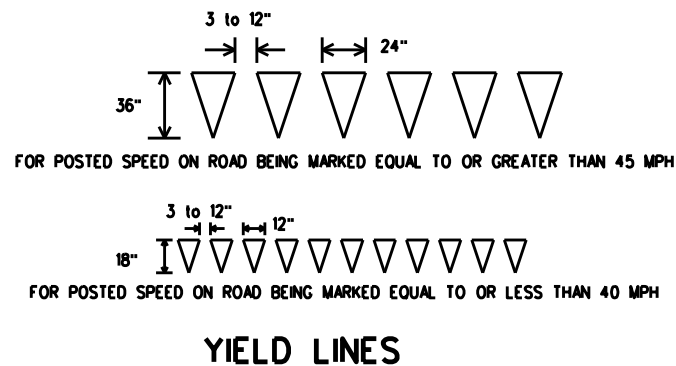
ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement leveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



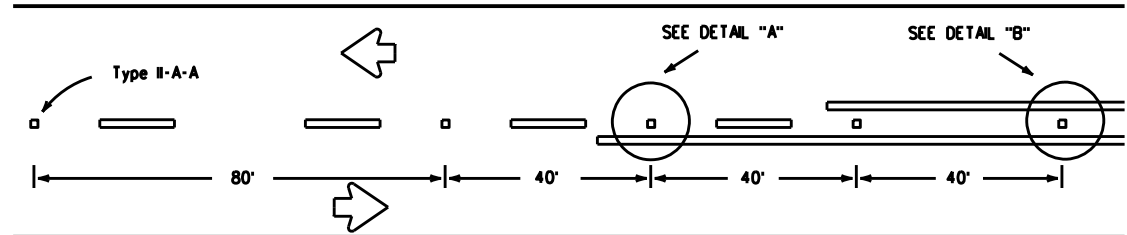
TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-12

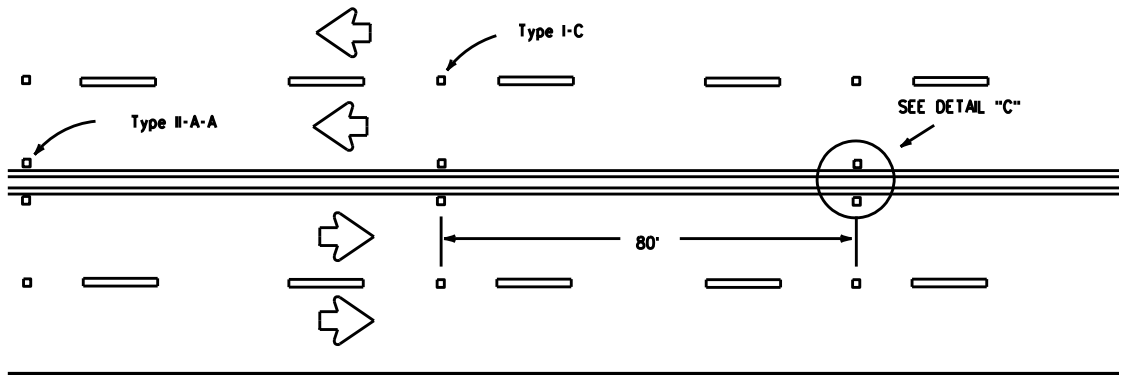
© TxDOT November 1978		DN: TXDOT		CK: TXDOT	DW: TXDOT	CK: T
REVISIONS		CONT	SECT	JOB		HIGHWAY
8-95	2-12	0101	06	095		US181
5-00		DIST		COUNTY		SHEET
8-00		CRP		NUECES		510.011.04
3-03						

REFLECTIVE RAISED PAVEMENT MARKERS
FOR VEHICLE POSITIONING GUIDANCE

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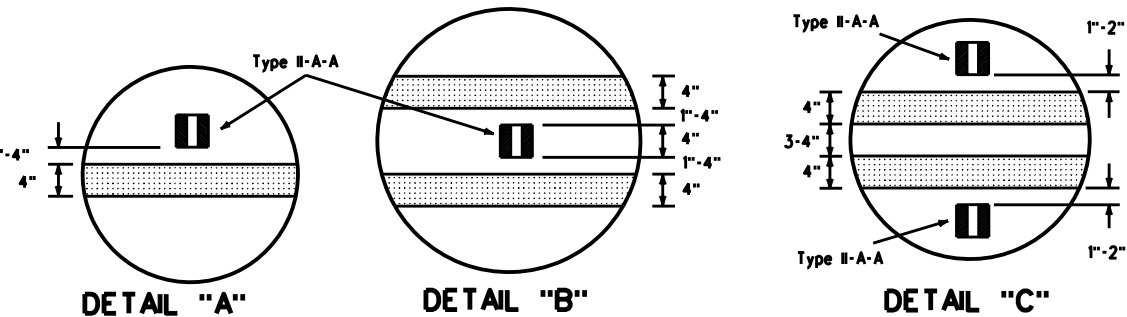


CENTERLINE FOR ALL TWO LANE ROADWAYS



CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS

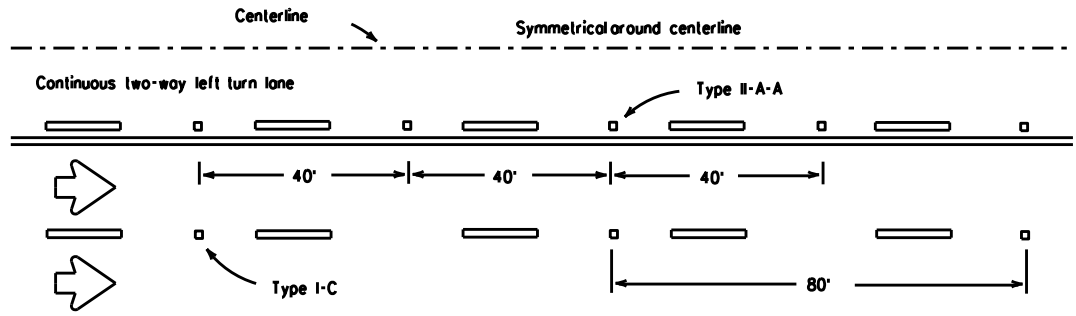
Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.



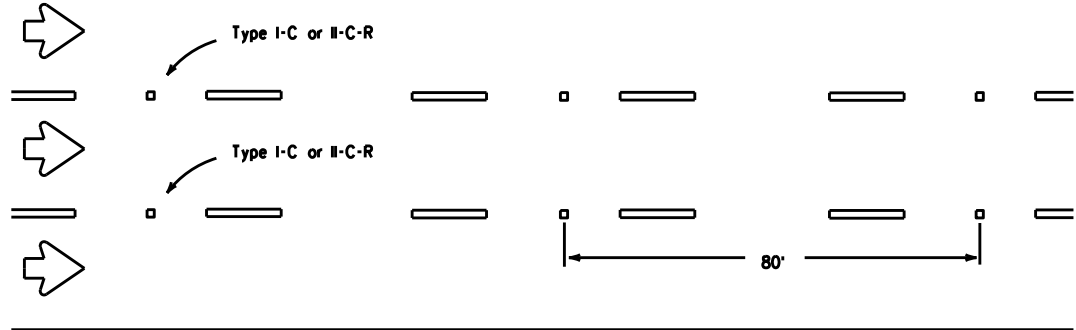
DETAIL "A"

DETAIL "B"

DETAIL "C"

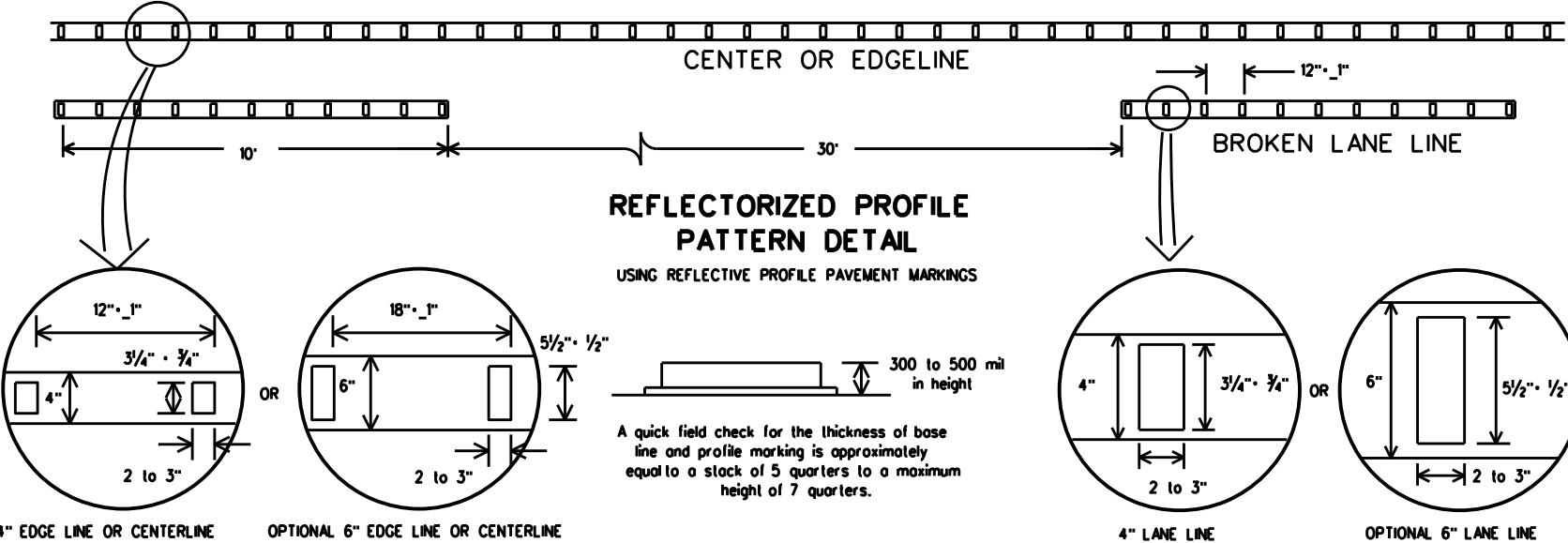


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



REFLECTORIZED PROFILE
PATTERN DETAIL

USING REFLECTORIZED PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTE:

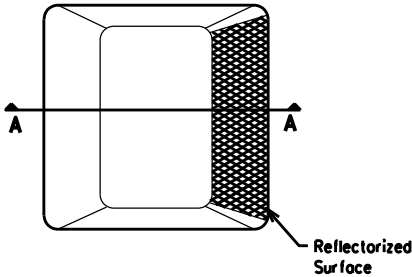
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

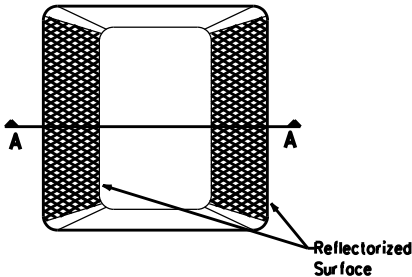
- All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
- On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

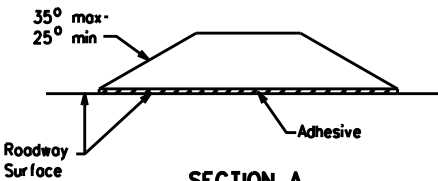
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

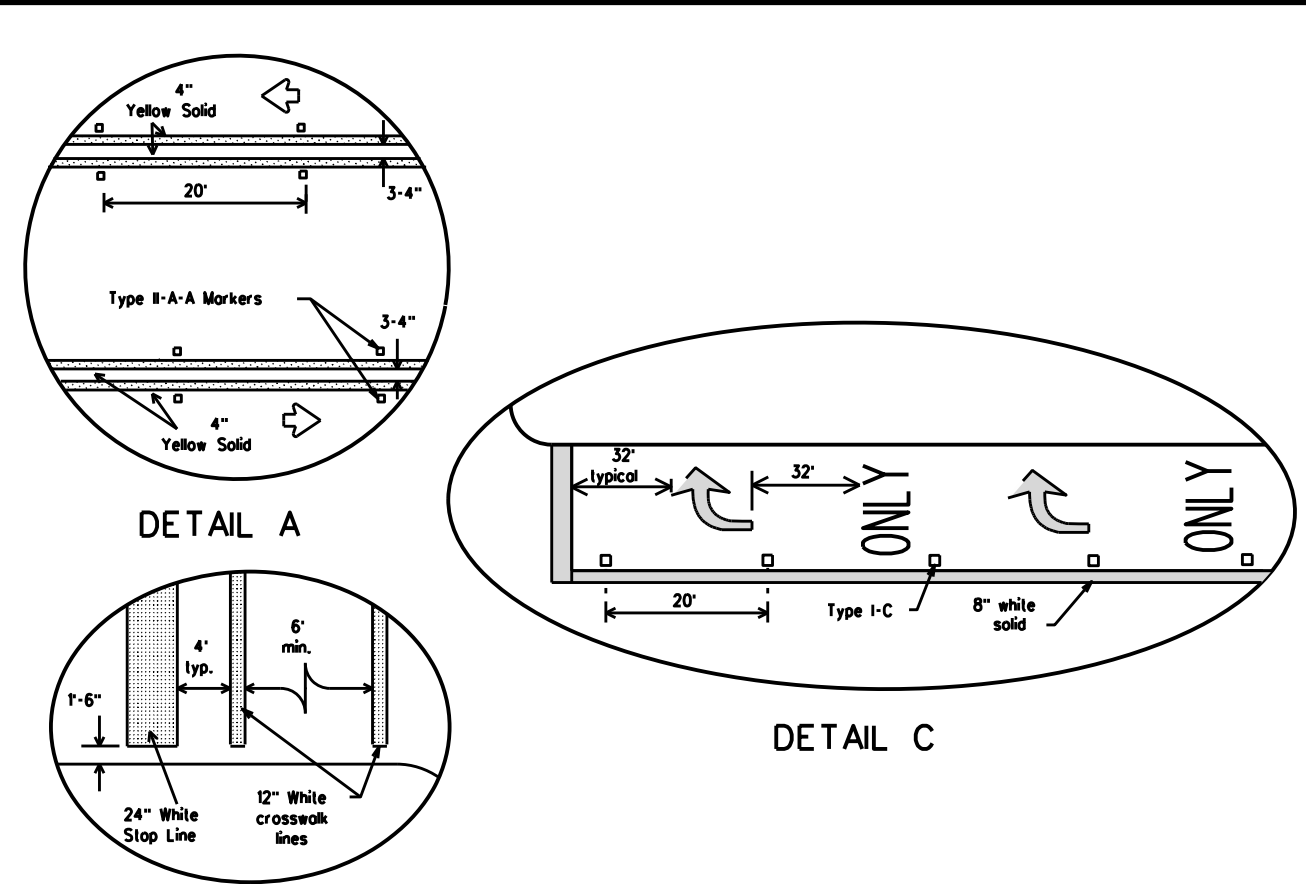
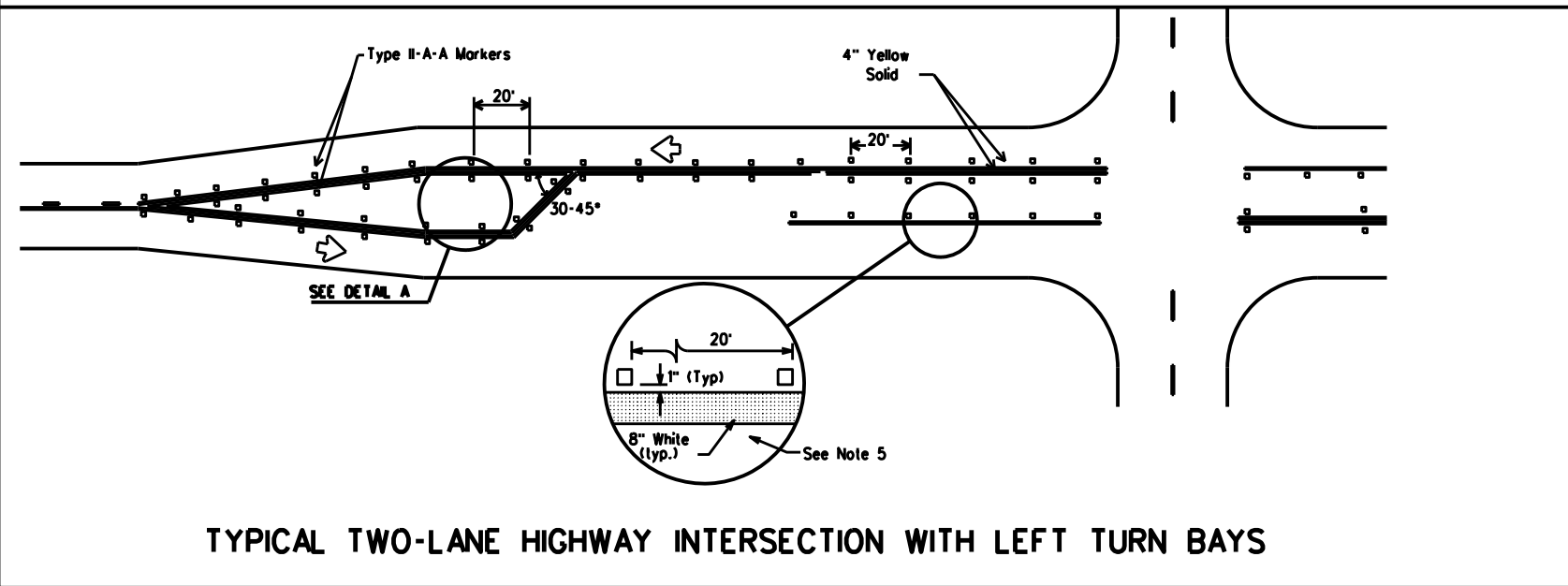
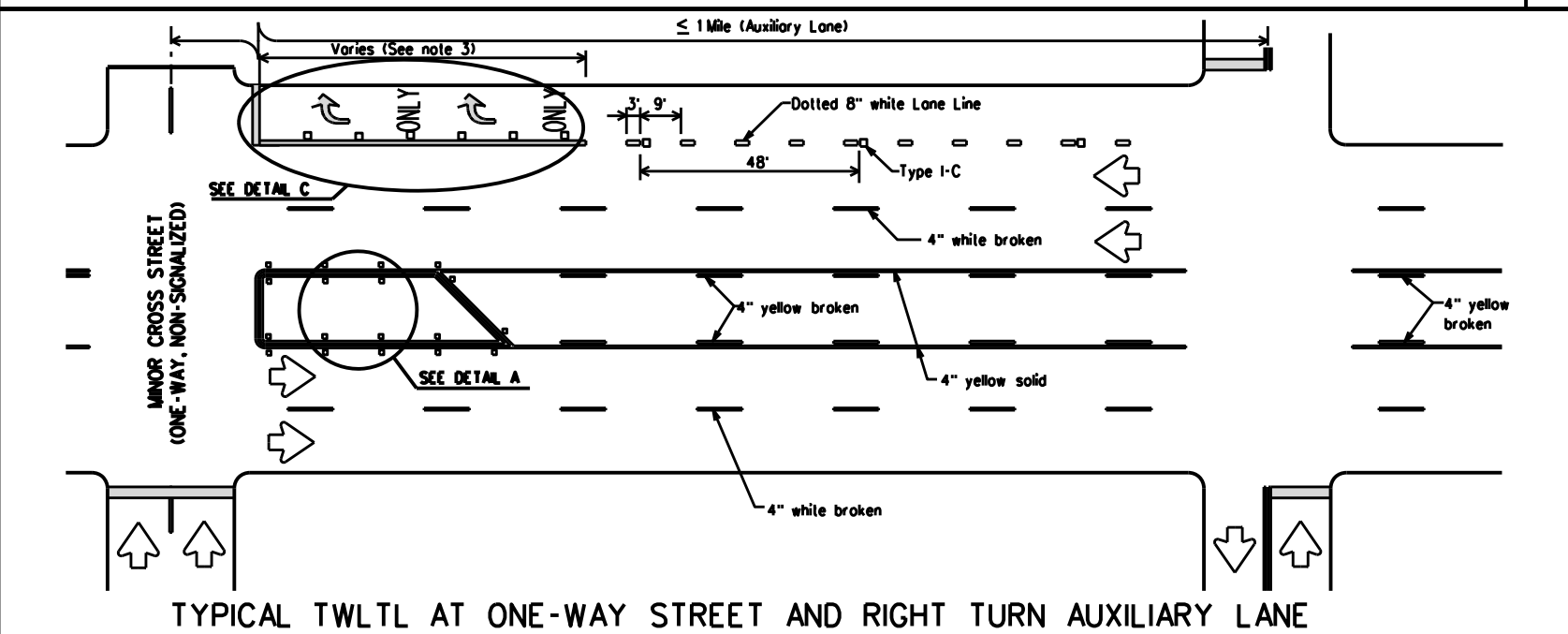
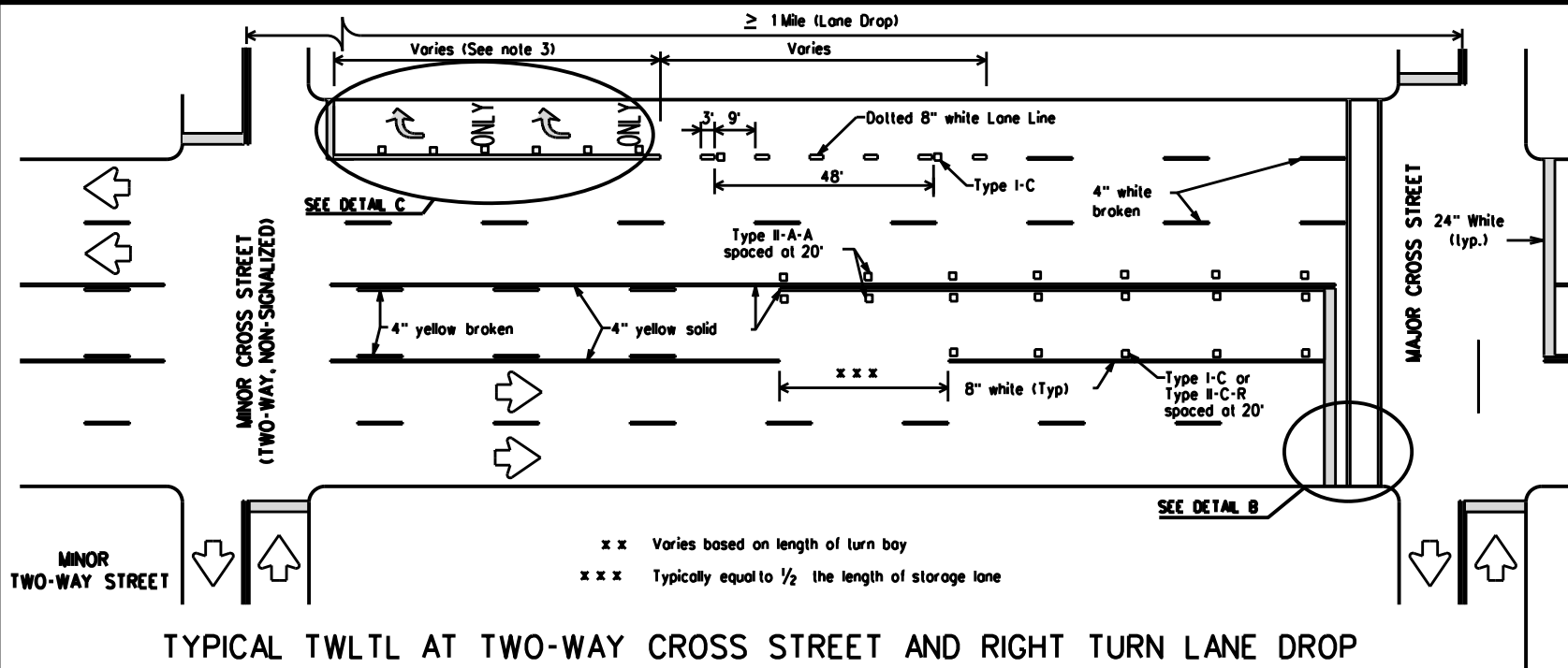
POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS

PM(2)-12

© TxDOT April 1977		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS		CONT	SECT	JOB	HIGHWAY
4-92	2-10	0101	06	095	US181
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8-00		CRP	NUECES		510.011.06
2-08					

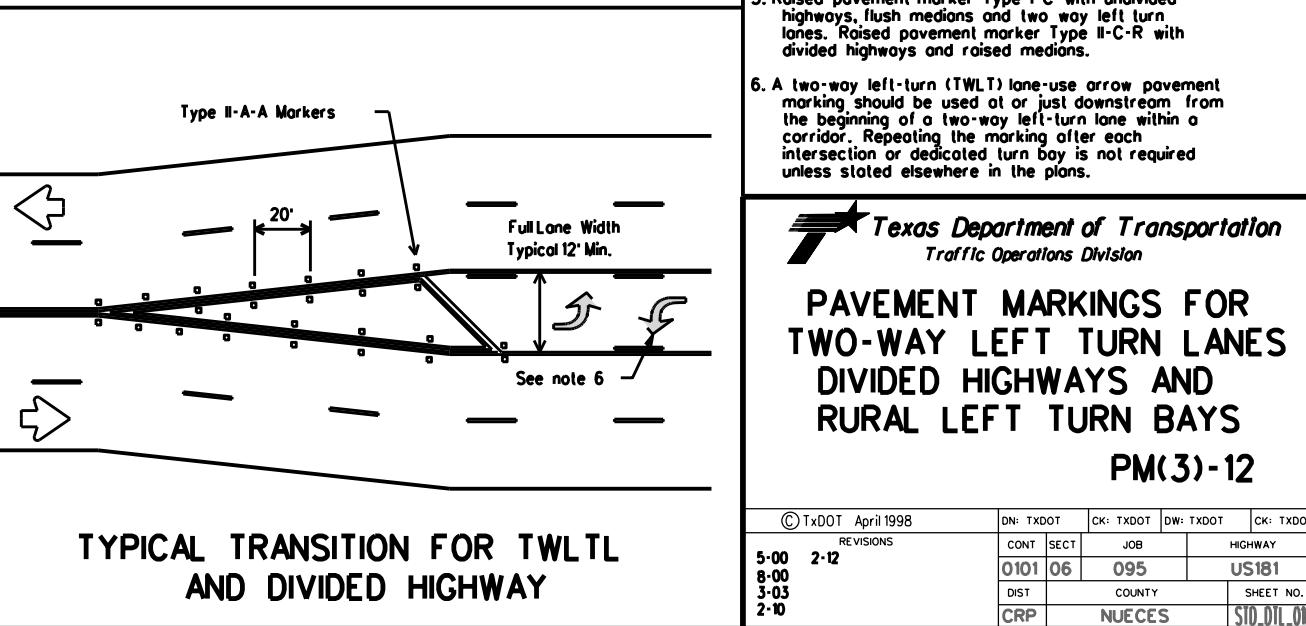
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DATE: 5-00
FILE: 8-00
STIMES
FILES



MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



GENERAL NOTES

- Refer elsewhere in plans for additional RPM placement and details.
- Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows as shown in the Standard Highway Sign Designs for Texas.
- When lane used word and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
- Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
- Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
- A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

Texas Department of Transportation
Traffic Operations Division

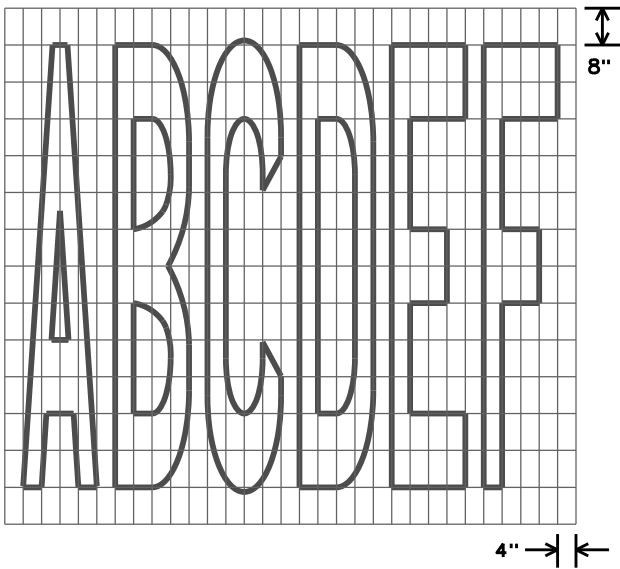
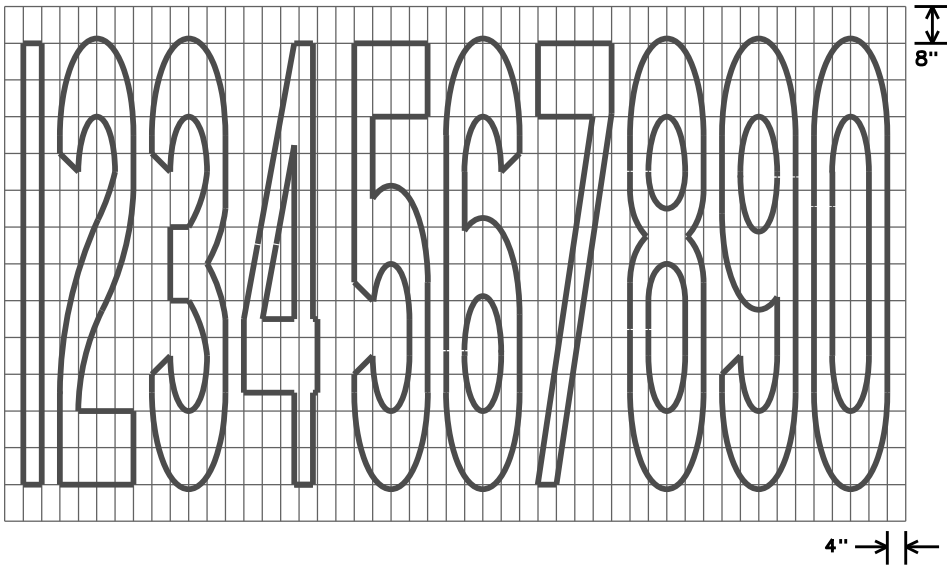
PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS
PM(3)-12

© TxDOT April 1998	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONTRACT	SECTION	JOB	HIGHWAY
5-00 2-12	0101	06	095	US181
8-00	DIST	COUNTY		SHEET NO.
3-03	CRP	NUECES		S10.011.06
2-10				

22C

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DATE: 8/24/2010
FILE: 8/24/2010



EXIT GORE MARKINGS

MAIN LANES

EXIT RAMP

765B

BACK OF GORE (PHYSICAL GORE)

EXIT GORE SIGN

20' MIN.

8'

GENERAL NOTES

1. Minimum 8 foot white markings should be used, unless otherwise noted.
2. Spacing between letters and numbers should be approximately 4 inches.
3. Pavement markings are to be located as specified elsewhere in the plans.
4. All pavement marking materials shall meet the required Departmental Material Specifications or as specified in these plans.

 **Texas Department of Transportation**
Traffic Operations Division

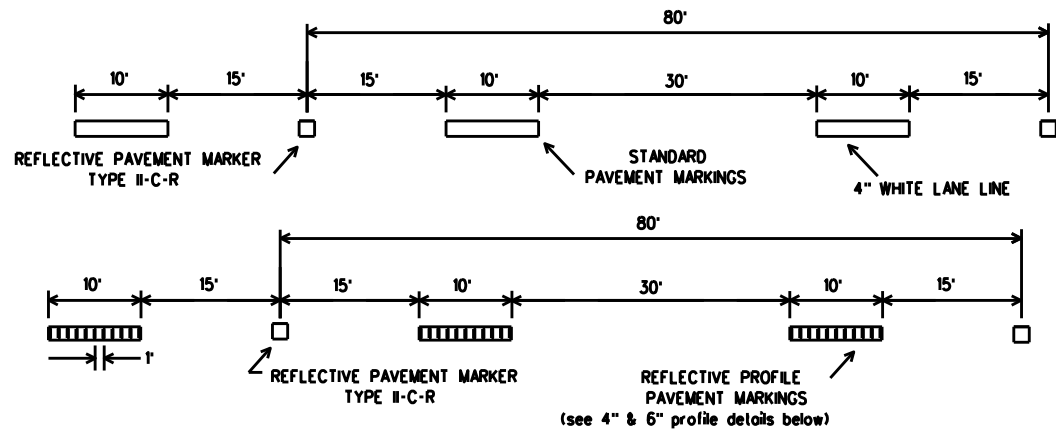
EXIT NUMBER GORE MARKINGS FOR AERIAL VIEW DETAIL

PM(4)-12

© TxDOT April 2006		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS		CONT	SECT	JOB	HIGHWAY
2-10		0101	06	095	US181
2-12		DIST	COUNTY		SHEET NO.
		CRP	NUECES		STD. 011. 017

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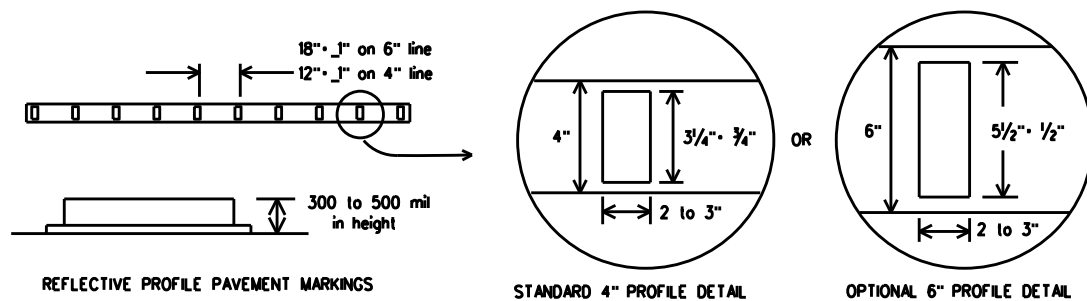
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FILE: 2-08
STAGES: 0101
FILES: 06



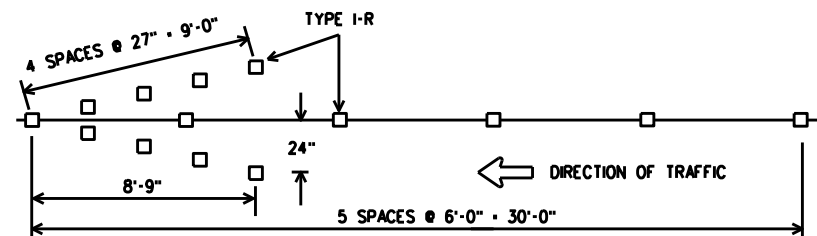
PAVEMENT MARKERS (REFL) TYPE II-C-R SHALL BE SPACED ON 80' CENTERS WITH THE CLEAR FACE TOWARD NORMAL TRAFFIC AND THE RED FACE TOWARD WRONG WAY TRAFFIC.

TRAFFIC LANE LINES PAVEMENT MARKING DETAILS

EDGE LINES SHOULD TYPICALLY BE 4" WIDE AND THE MATERIALS SHALL BE AS SPECIFIED IN THE PLANS. IF RAISED PROFILE PAVEMENT MARKINGS ARE USED SEE DETAILS BELOW.

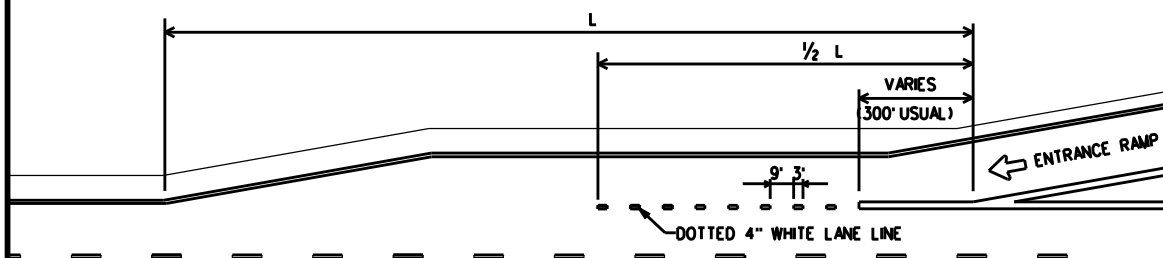


EDGE LINE PAVEMENT MARKINGS

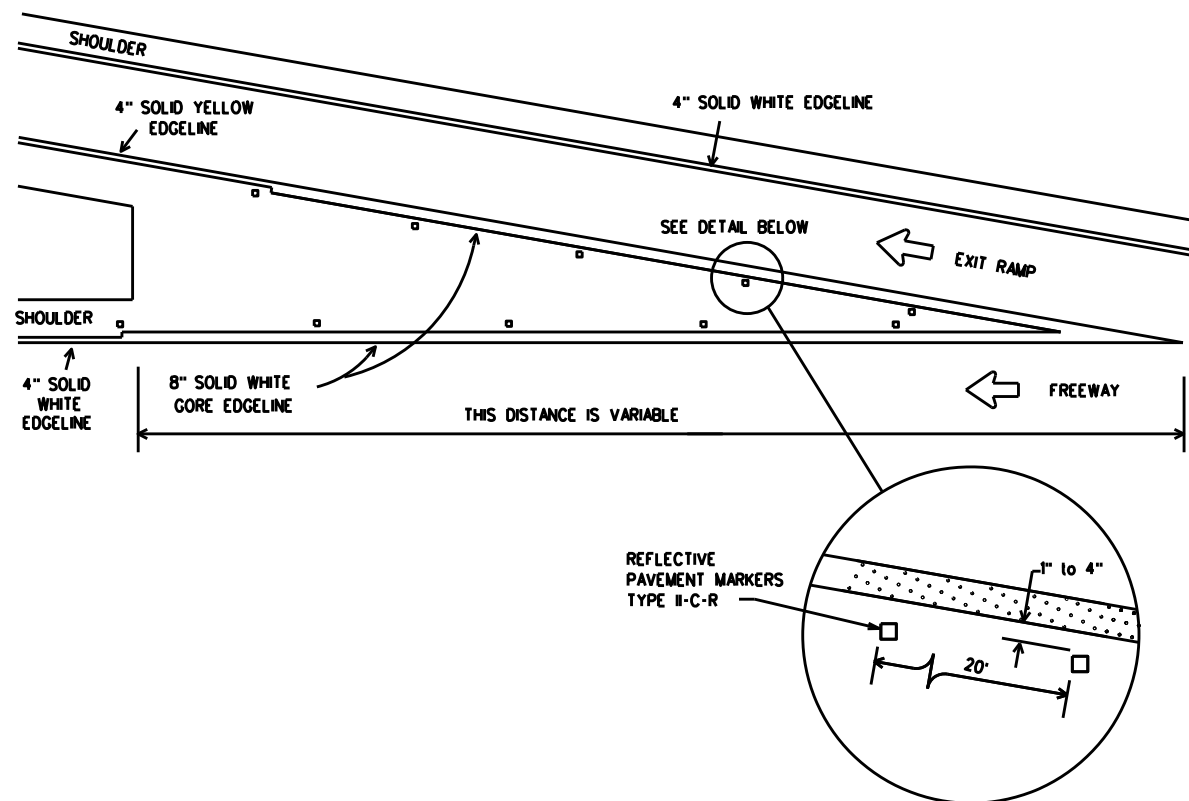


ALL RAISED MARKERS IN THE WRONG WAY ARROW SHALL BE TYPE I-R REFLECTORIZED PAVEMENT MARKERS WITH THE REFLECTORIZED SURFACE FACING THE WRONG WAY TRAFFIC. TYPE II-C-R SHALL NOT BE USED. REFLECTORIZED WRONG WAY ARROWS, NOT TO EXCEED TWO, MAY BE PLACED ON EXIT RAMP. LOCATION OF THE ARROWS SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

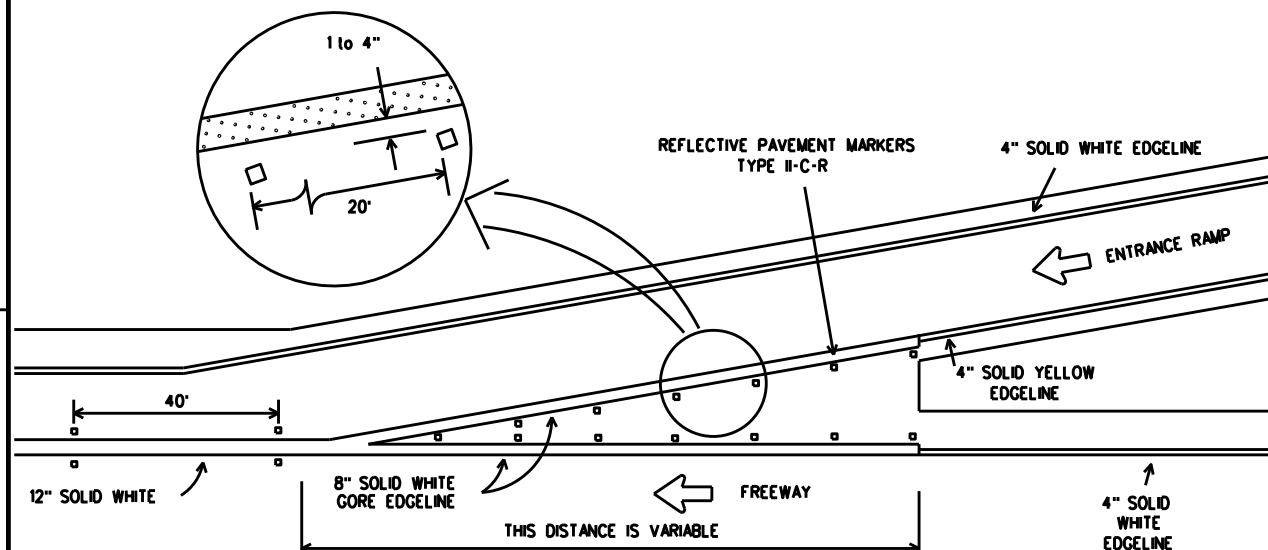
WRONG WAY ARROW DETAIL



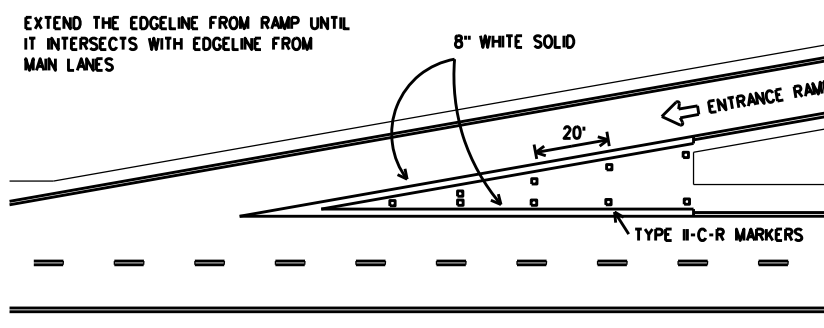
PARALLEL ACCELERATION LANE



TYPICAL EXIT RAMP GORE MARKING



TYPICAL ENTRANCE RAMP GORE MARKING

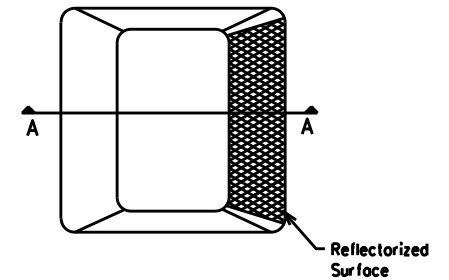


TAPERED ACCELERATION LANE

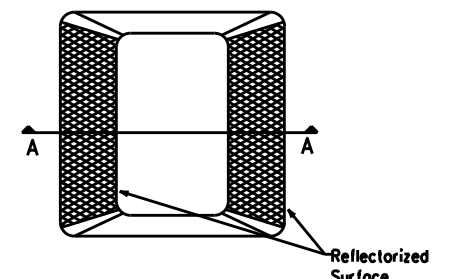
MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

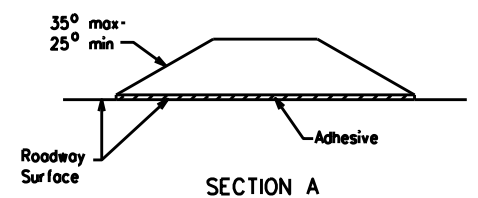
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



RAISED PAVEMENT MARKERS

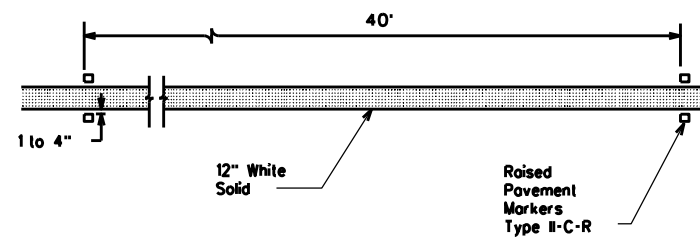
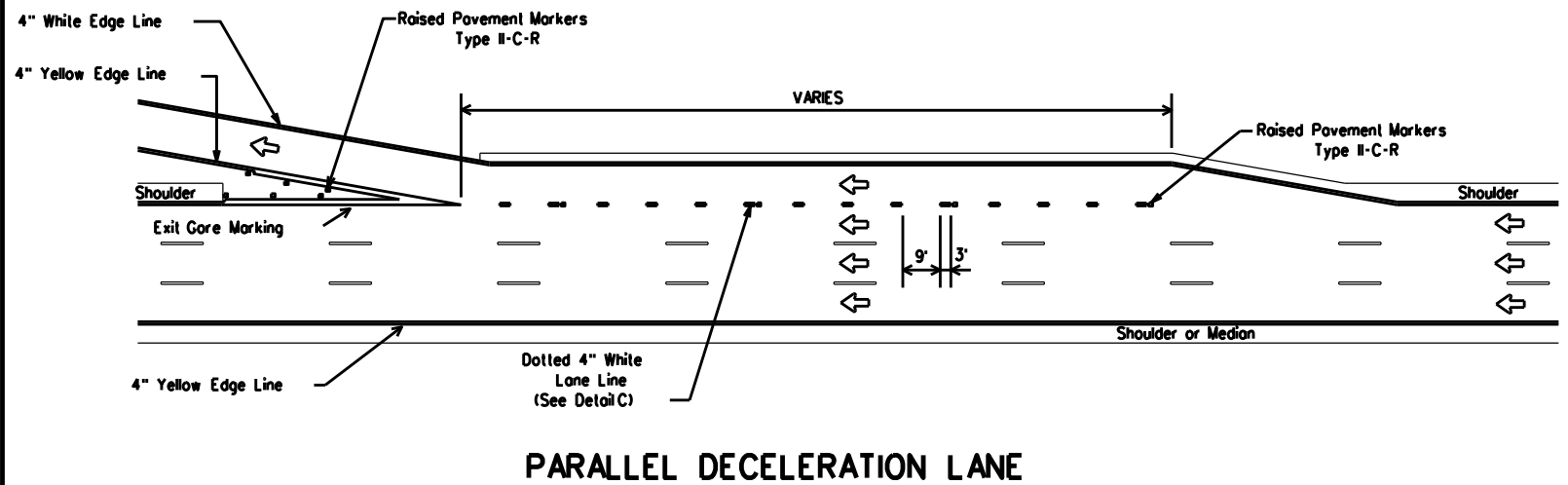
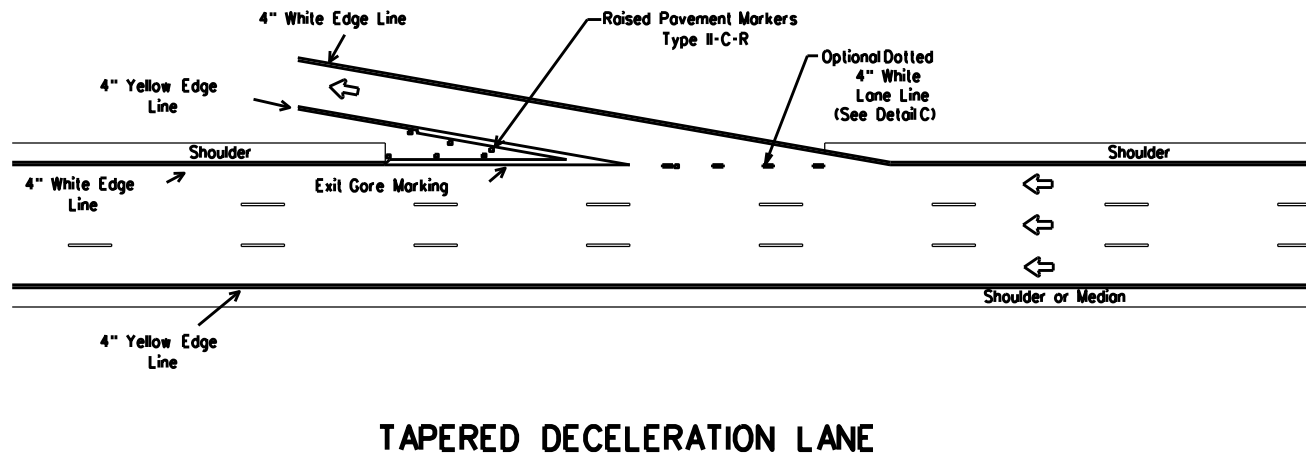
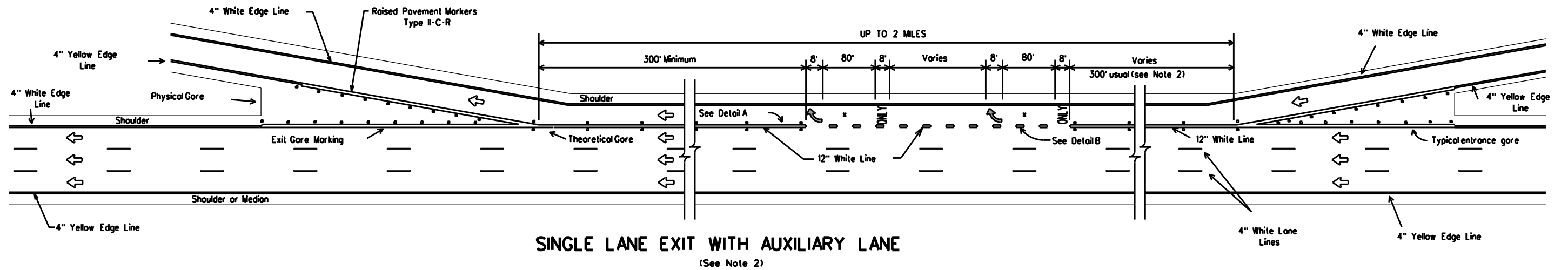
Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS FPM(1)-12

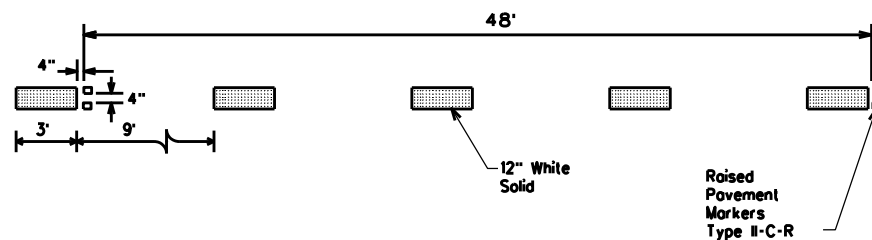
© TxDOT May 1974	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
4-92 2-10	CONT	SECT	JOB	HIGHWAY
5-00 2-12	0101	06	095	US181
8-00	DIST	COUNTY		SHEET NO.
2-08	CRP	NUECES		S10.011.08

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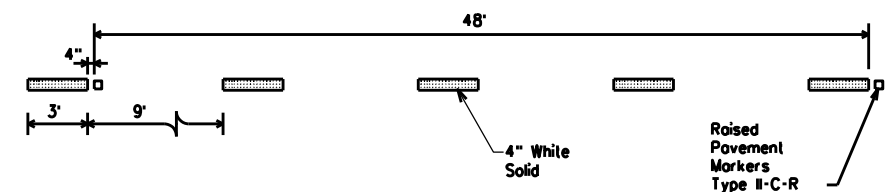
DATE: 8/24/2011
FILE: 8/24/2011



DETAIL A



DETAIL B
Wide (12") Dotted Lane Line (See Note 3)



DETAIL C
Normal (4") Dotted Lane Line (See Note 4)

GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") Dotted Lane Line (See Detail B) is used to separate a through lane from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.
4. Normal (4") Dotted Lane Line (See Detail C) is used at parallel acceleration and deceleration lanes.

LEGEND	
←	Denotes direction of traffic.
↶	Pavement marking arrows (white)
X	Arrow markings are optional, however "ONLY" is required if arrow is used

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

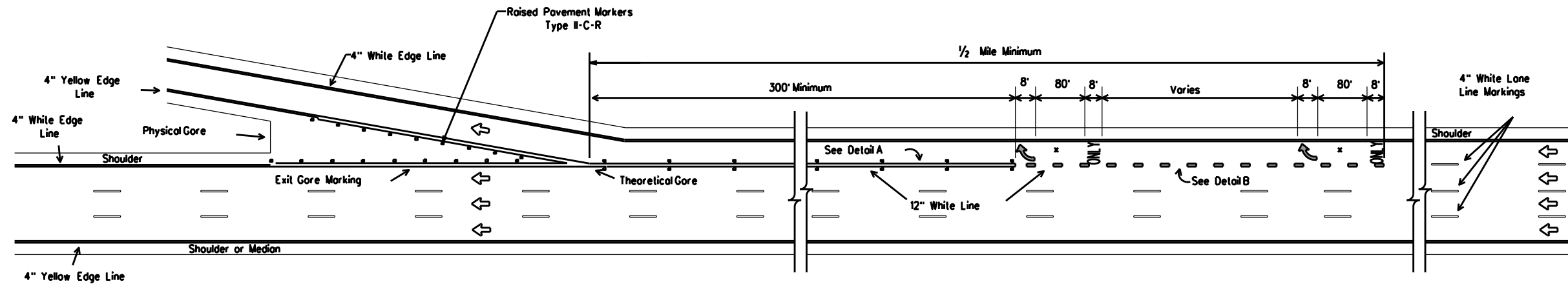
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



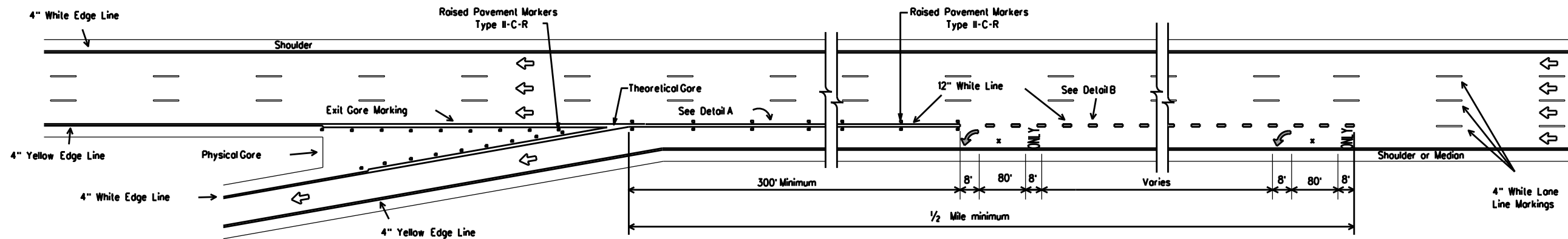
TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS ENTRANCE AND EXIT RAMP FPM(2)-12

© TxDOT February 1977		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS		CONT	SECT	JOB	HIGHWAY
4-92	2-10	0101	06	095	US181
8-95	2-12				
5-00		DIST		COUNTY	SHEET NO.
8-00		CRP		NUECES	510.011.09

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SINGLE LANE EXIT - LANE DROP OR EXIT ONLY

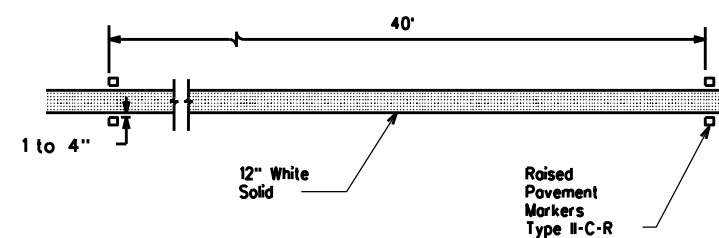


SINGLE LANE EXIT - LANE DROP OR EXIT ONLY (LEFTHAND)

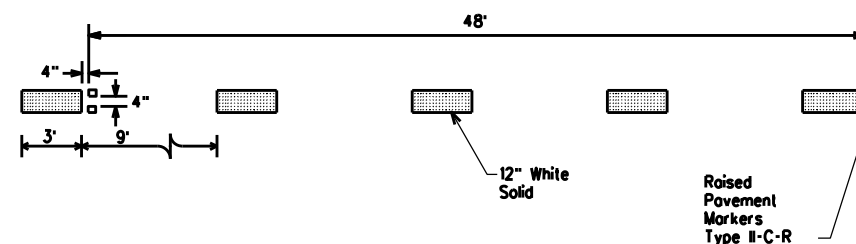
LEGEND	
	Denotes direction of traffic.
	Pavement marking arrows (white)
X	Arrow markings are optional, however "ONLY" is required if arrow is used

GENERAL NOTES

- Pavement markings shall be white except as otherwise noted.
- Length of 12" white line may vary depending on location.
- Wide (12") Dotted Lane Line (See Detail B) is used to separate a through lane from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.



DETAIL A



DETAIL B

Wide (12") Dotted Lane Line (See Note 3)

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

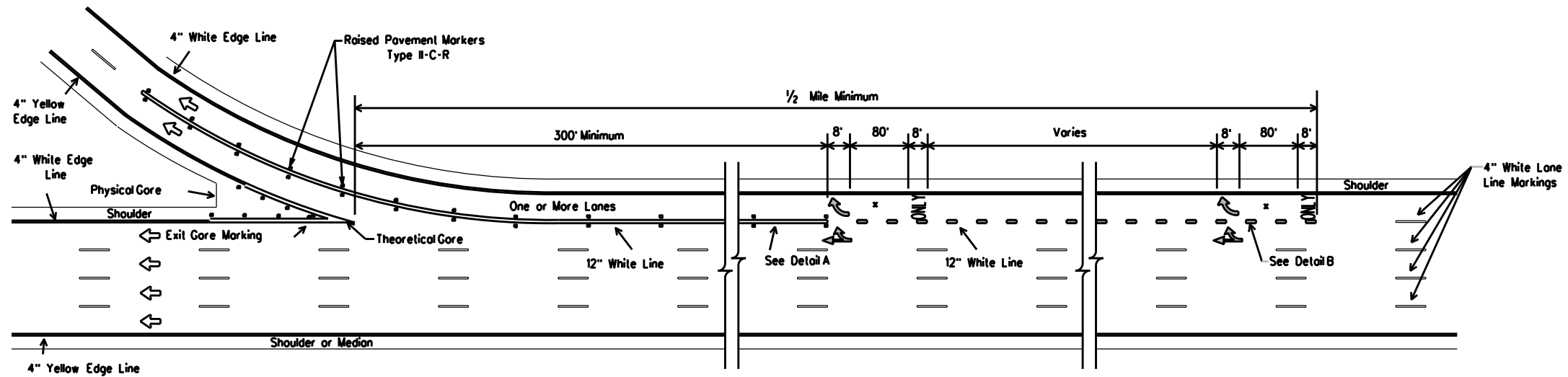
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

Texas Department of Transportation
Traffic Operations Division

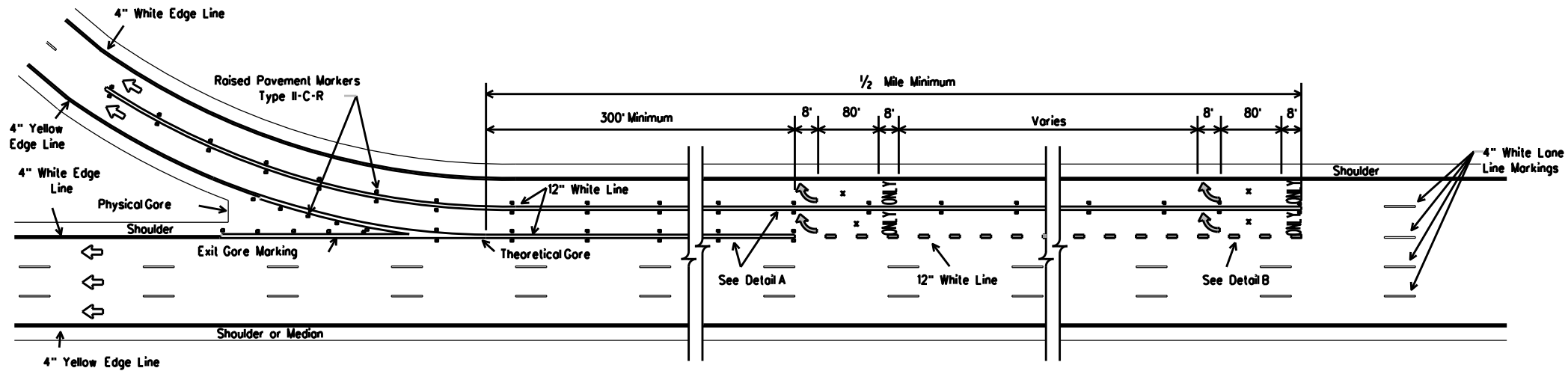
TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS LANE DROP (EXIT ONLY) EXIT RAMP FPM(3)-12

© TxDOT April 1992		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS		CONT	SECT	JOB	HIGHWAY
5-00		0101	06	095	US181
8-00					
2-10		DIST		COUNTY	SHEET NO.
2-12		CRP		NUECES	STD. 011.020

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MULTIPLE LANE EXIT - EXIT ONLY WITH OPTION LANE

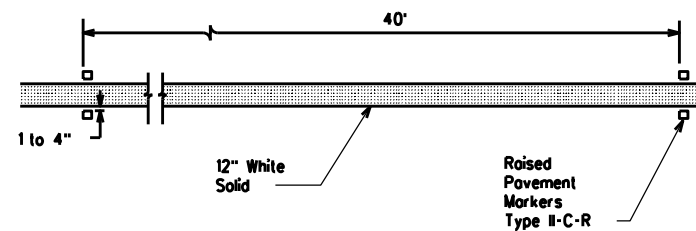


MULTIPLE LANE EXIT ONLY

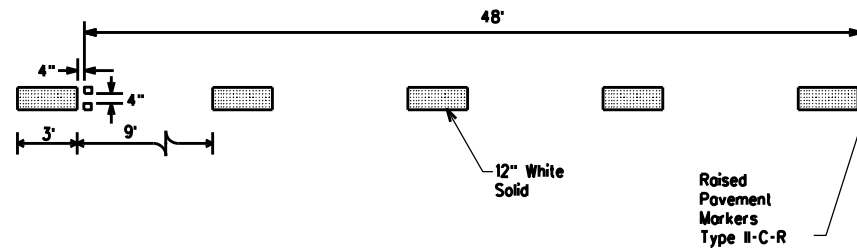
LEGEND	
	Denotes direction of traffic
	Pavement marking arrow (white)
	Optional Pavement Marking Arrows (white)
	Arrow markings are optional, however "ONLY" is required if arrow is used

GENERAL NOTES

- Pavement markings shall be white except as otherwise noted.
- Length of 12" white line may vary depending on location.
- Wide (12") Dotted Lane Line (See Detail B) is used to separate a through lane from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.



DETAIL A



DETAIL B

Wide (12") Dotted Lane Line (See Note 3)

MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS LANE DROP (EXIT ONLY) DETAILS

FPM(4)-12

© TxDOT April 1992		DN: TxDOT		CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS		CONT	SECT	JOB		HIGHWAY
5-00		0101	06	095		US181
8-00		DIST		COUNTY		SHEET NO.
2-10		CRP		NUECES		510.011.021
2-12						

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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))
10BWC • 10 BWC 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)

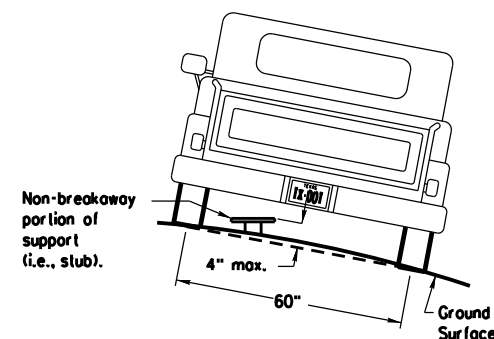
Anchor Type

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
TEXT 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))

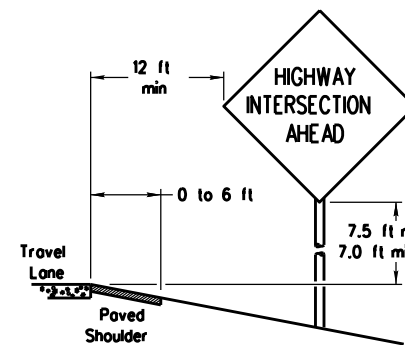
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

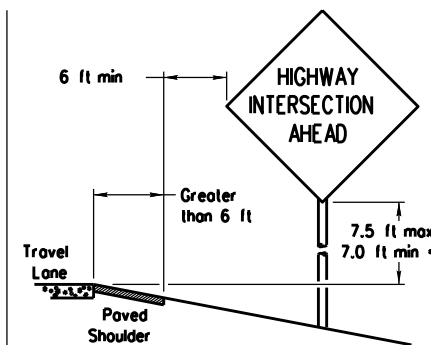
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

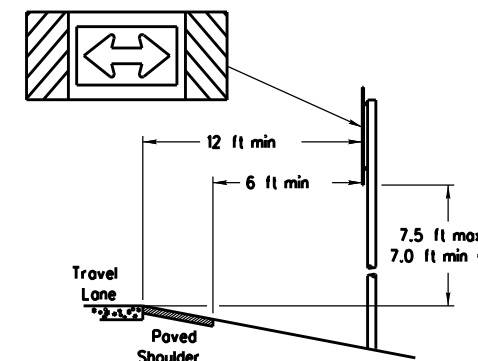
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

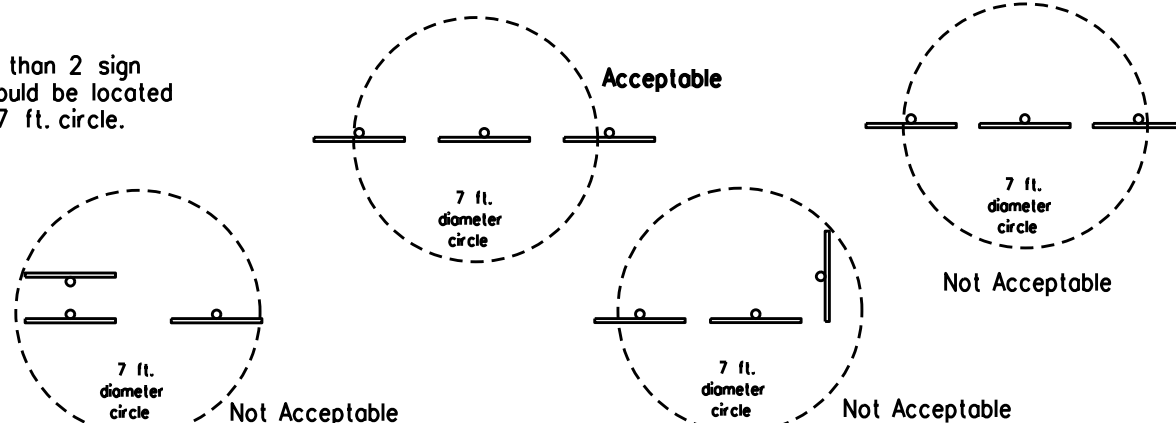
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

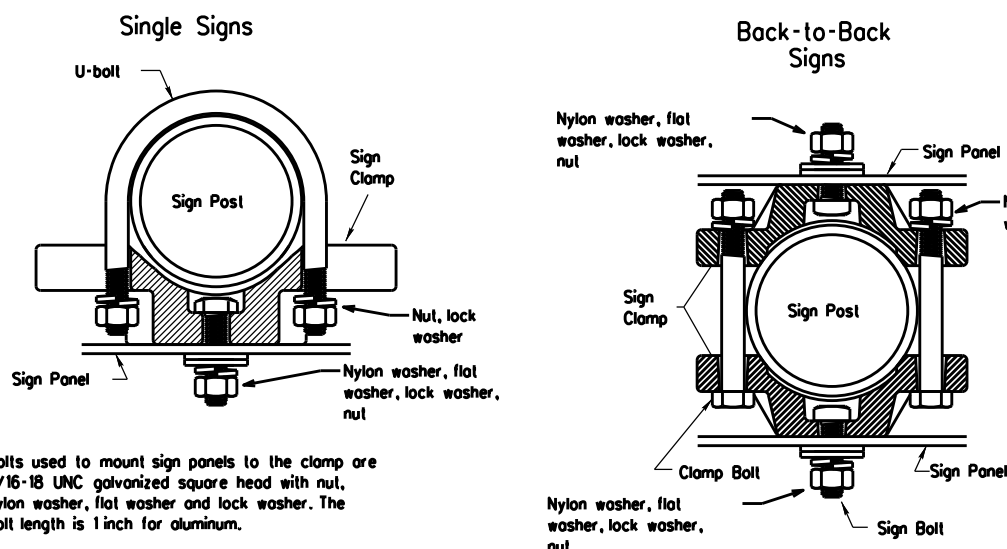


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL



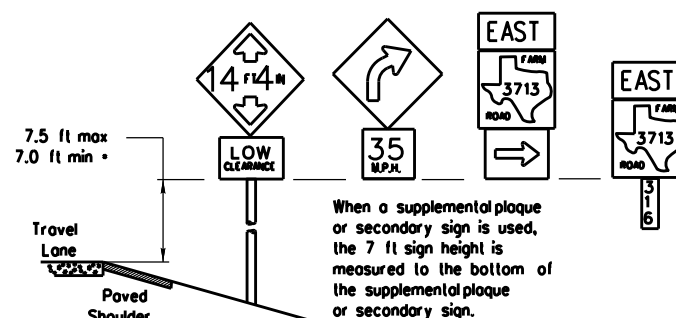
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

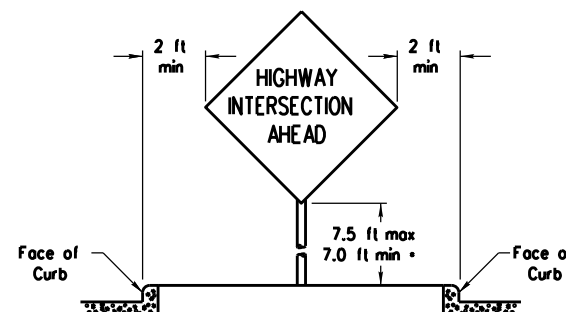
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

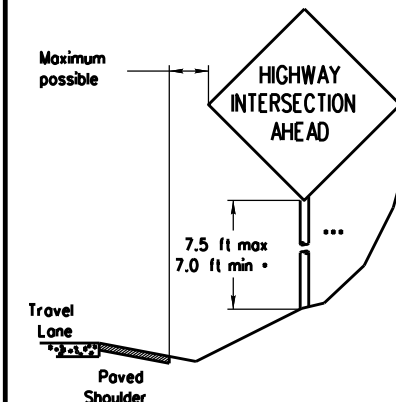


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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>

Texas Department of Transportation
Traffic Operations Division

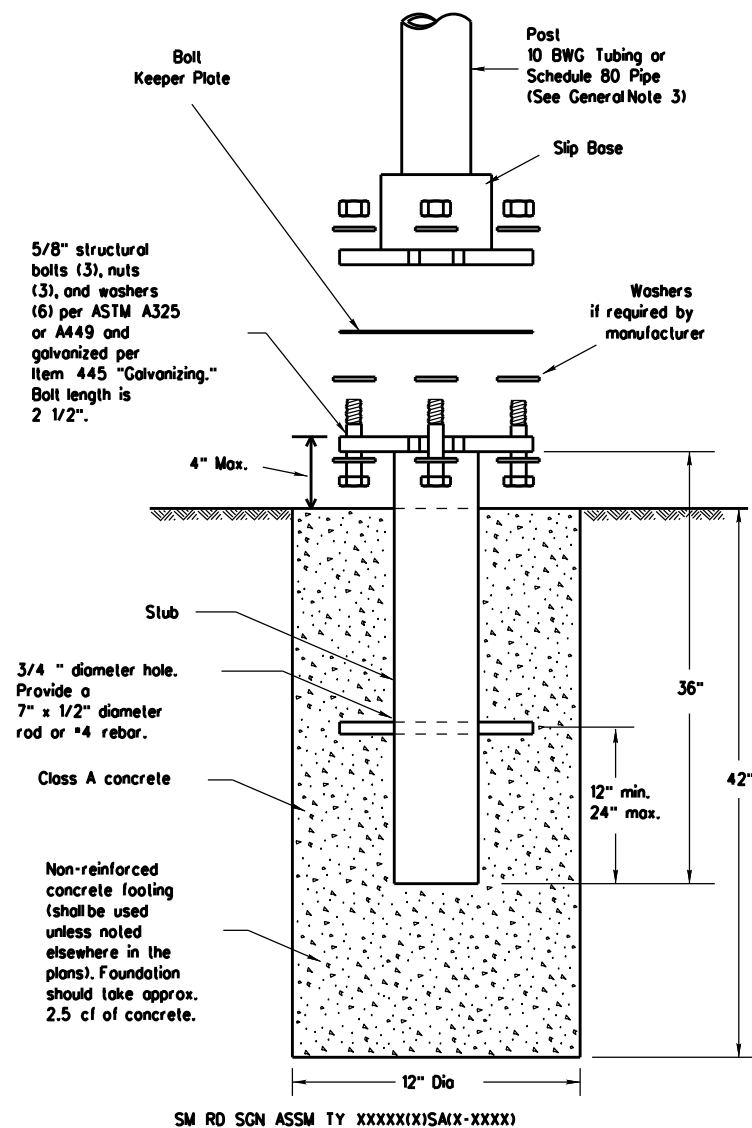
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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9-08	REVISIONS	CONT	SECT	JOB
		0101	06	095
		DIST	COUNTY	SHEET NO.
		CRP	NUECES	STD. 011. 023

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DATE: 5/24/02
FILE: 5/24/02



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

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

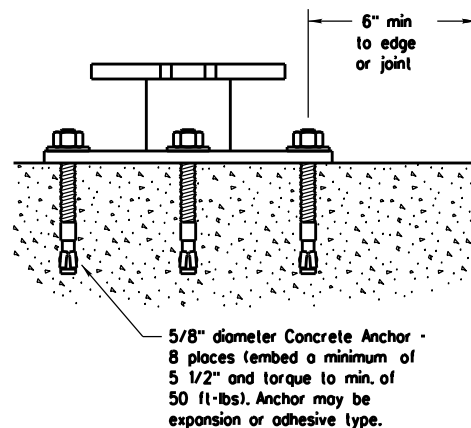
Foundation

- 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



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

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxy 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.

 Texas Department of Transportation
Traffic Operations Division

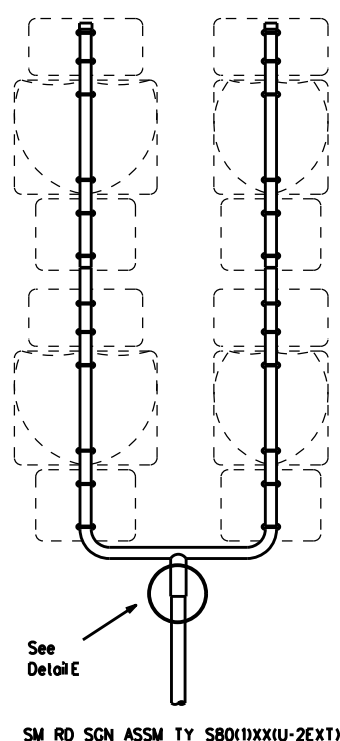
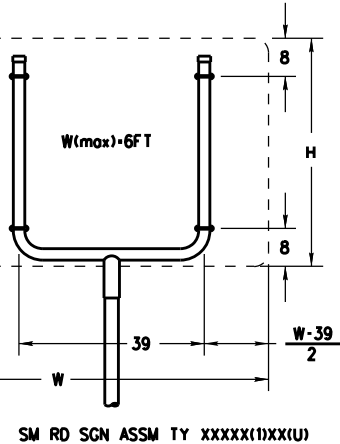
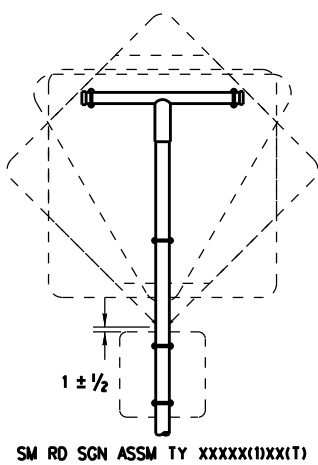
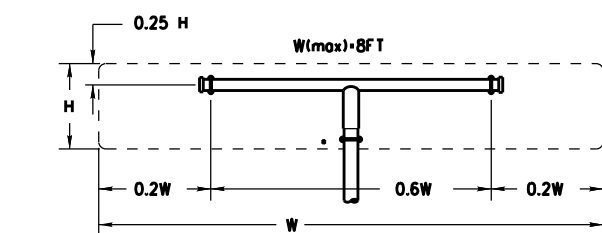
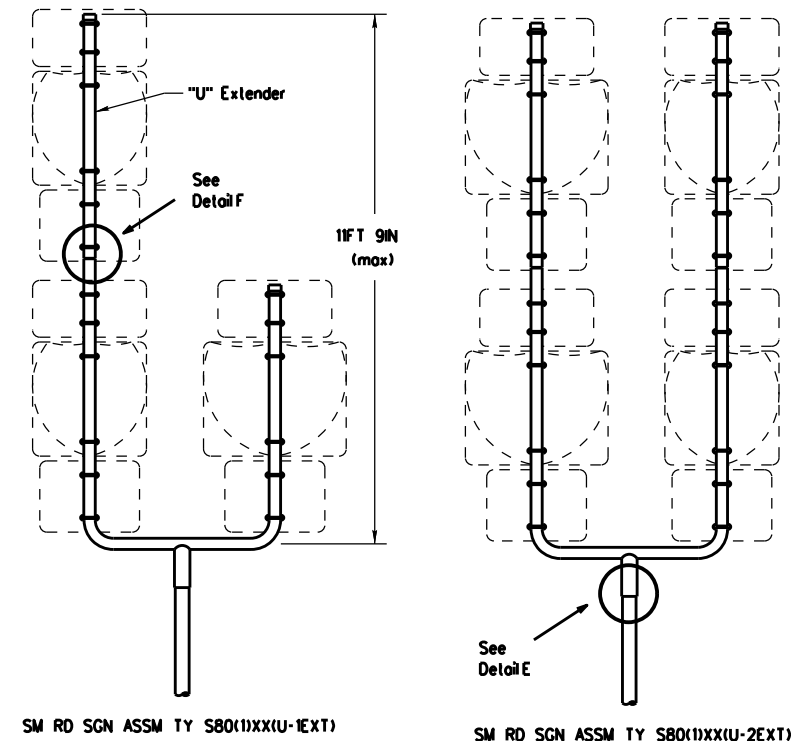
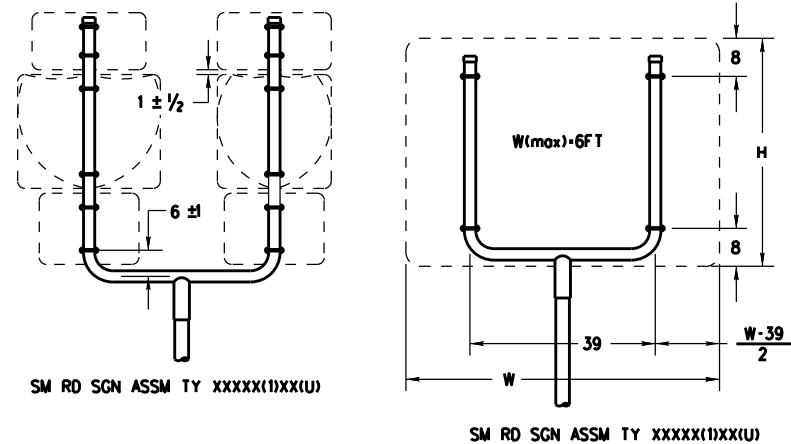
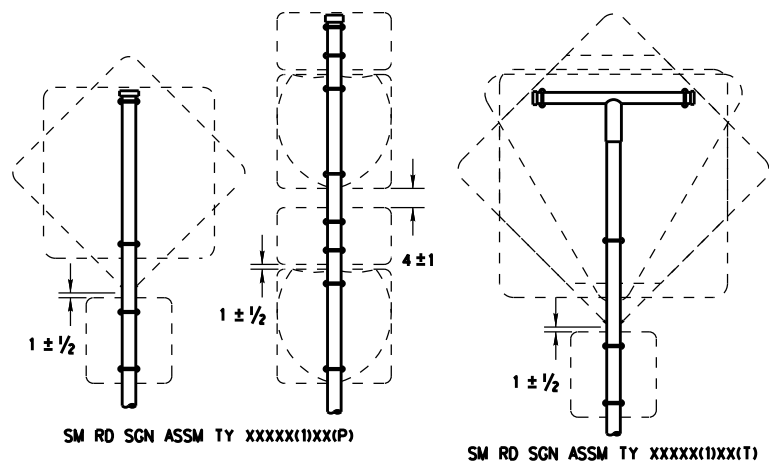
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0101	06	095	US181
		DIST	COUNTY		SHEET NO.
		CRP	NUECES		S10.011.024

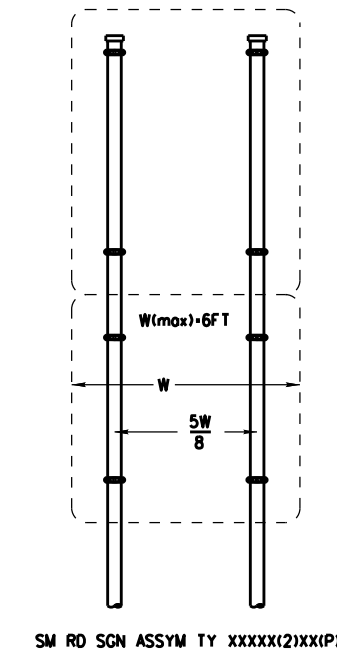
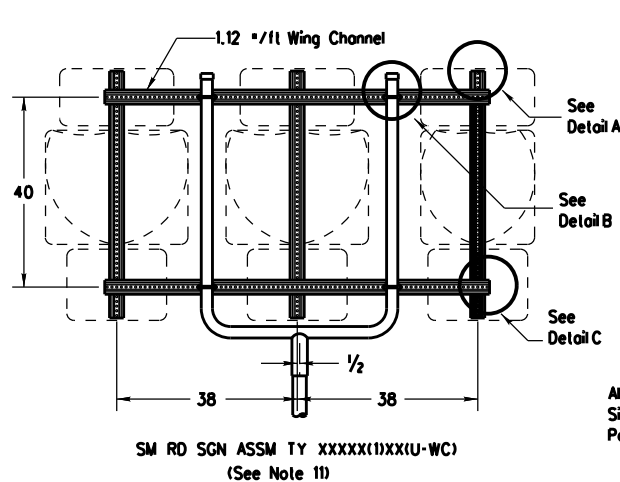
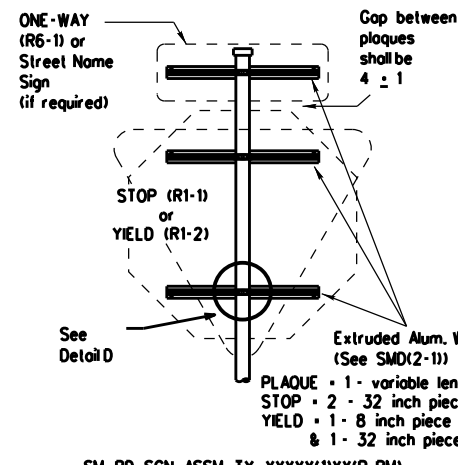
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DATE: **SDATES**
FILE: **SFILES**



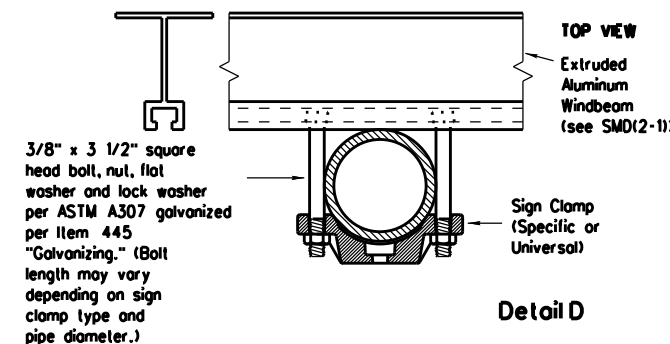
SM RD SGN ASSM TY XXXXX(1)XX(T)
(• See Note 12)

All dimensions are in english
unless detailed otherwise.

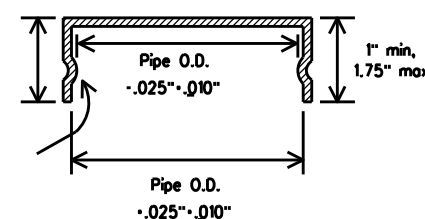


SM RD SGN ASSM TY XXXXX(2)XX(P)

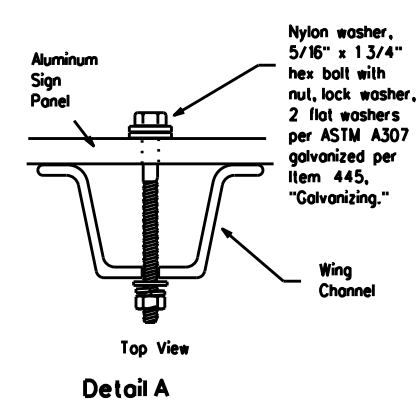
SIDE VIEW



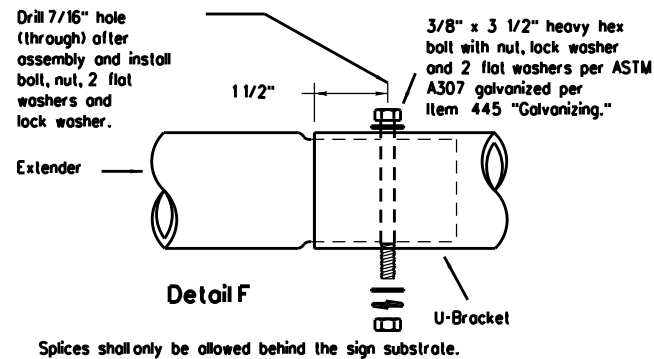
FRICION CAP DETAIL



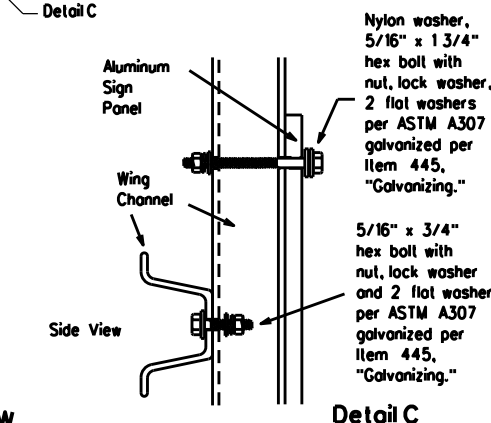
Rolled Crimp to
engage pipe O.D.



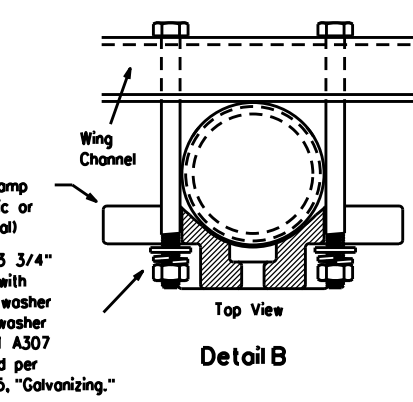
Detail A



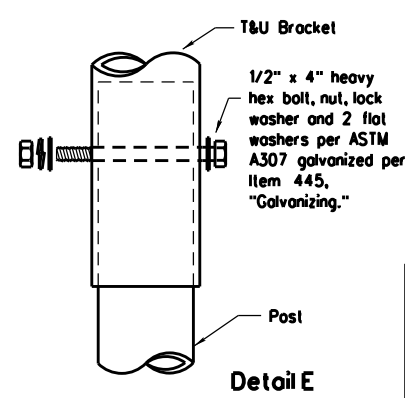
Splices shall only be allowed behind the sign substrate.



Detail C



Detail B



Detail E

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 of cut support ends per Item 445, "Galvanizing."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- 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.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
Regulatory	SIGN DESCRIPTION	SUPPORT
	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Regulatory	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)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	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)
Warning	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

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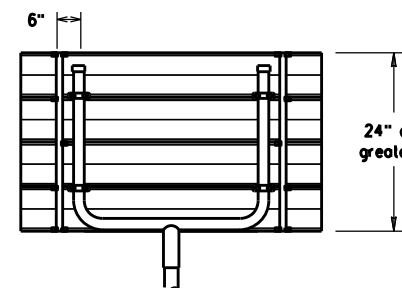
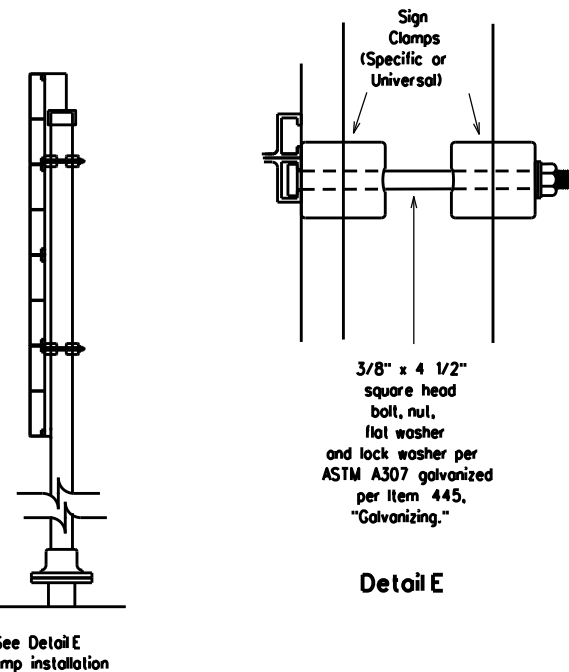
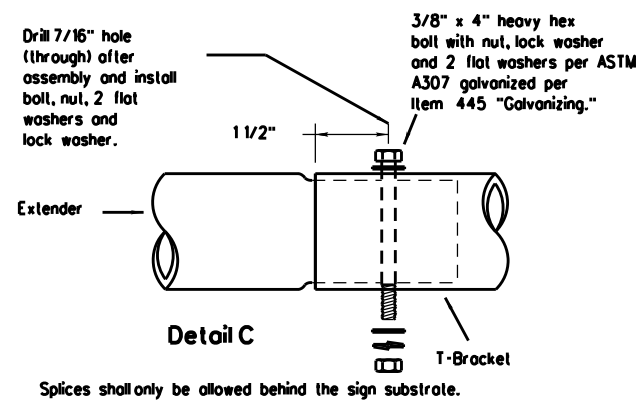
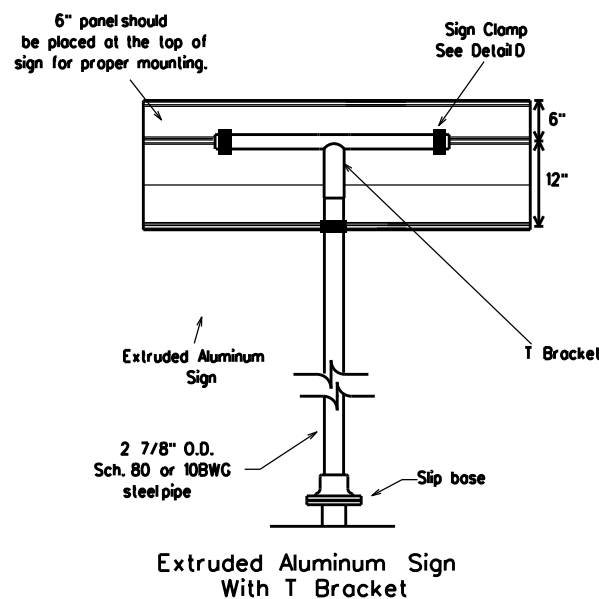
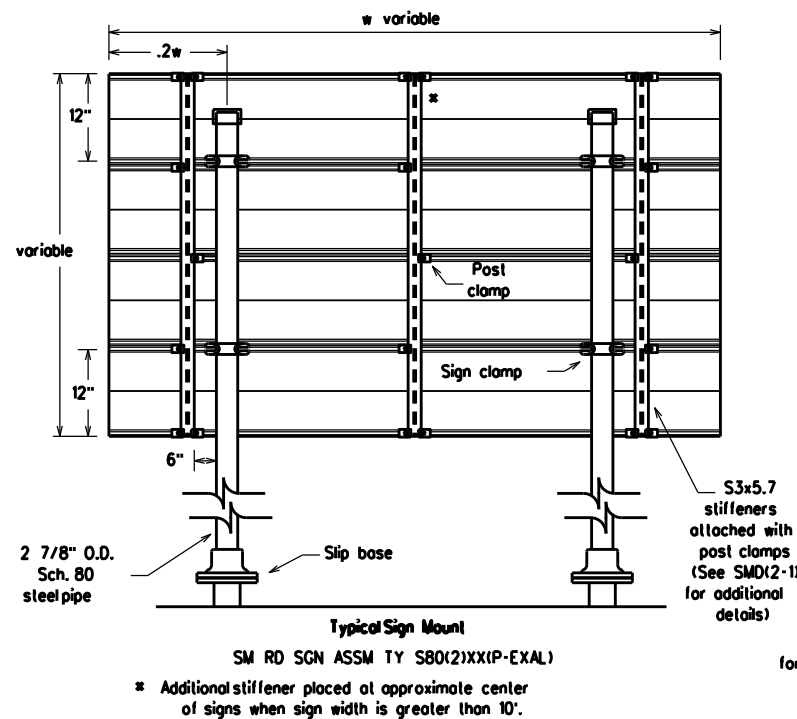
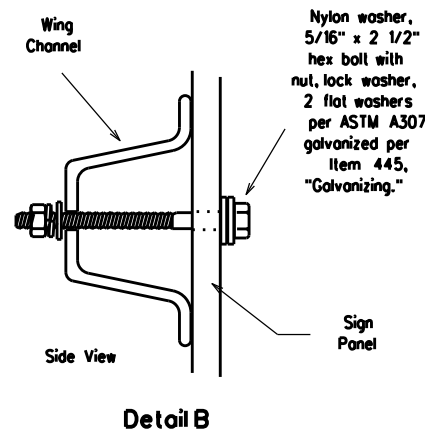
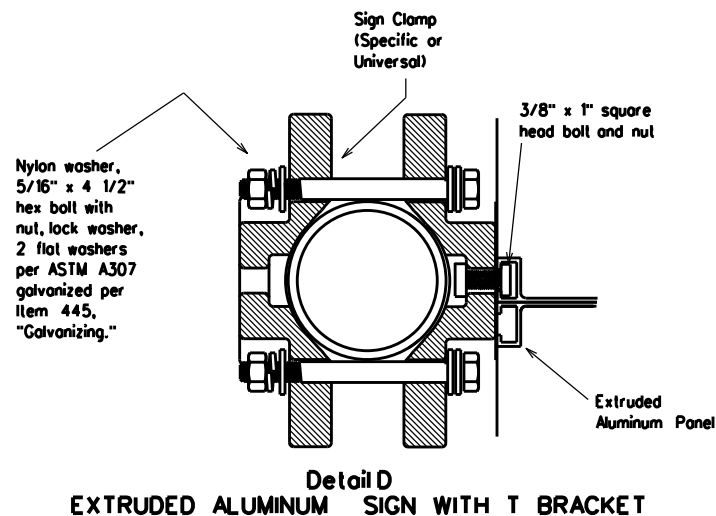
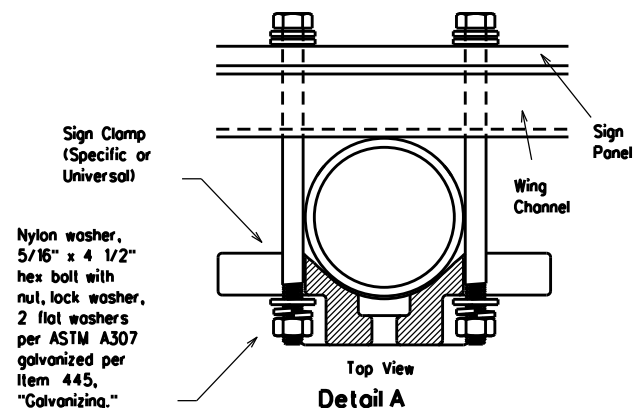
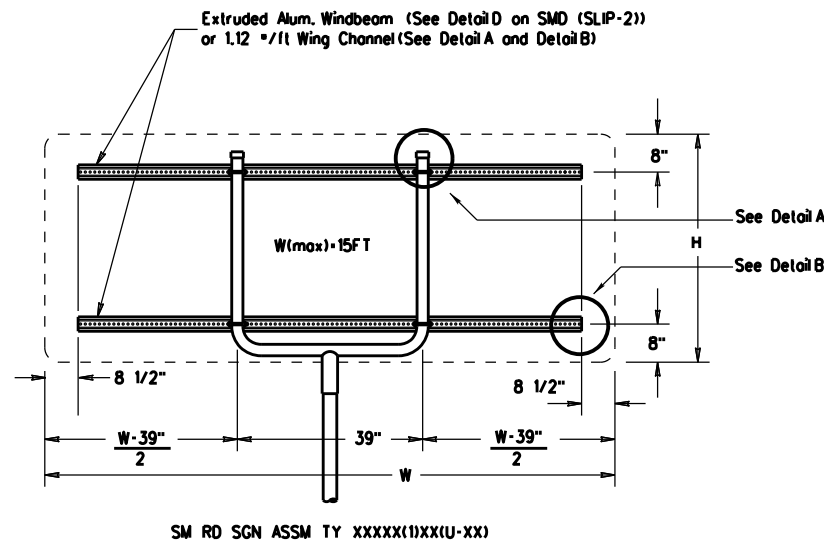
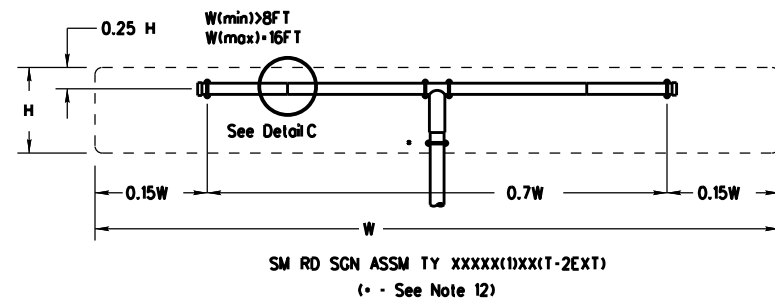
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB
		0101	06	095
		DIST	COUNTY	SHEET NO.
		CRP	NUECES	STD. 011. 025

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STIMES
DATE: 5/24/08
FILE: SFILES



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details
See Detail E
for clamp installation

GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |
- 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)	
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)	

Texas Department of Transportation
Traffic Operations Division

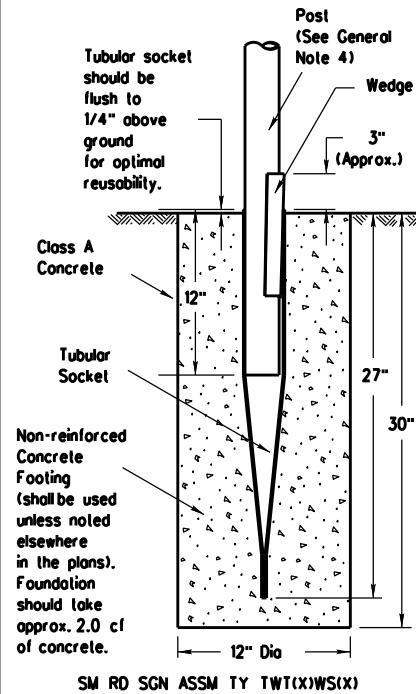
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-3)-08

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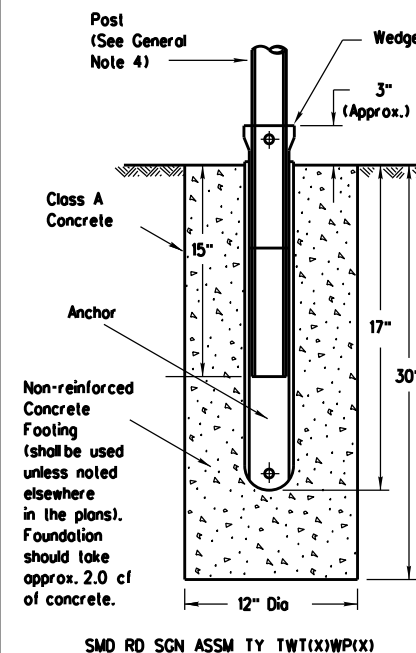
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STIMES
DATE: 8/24/05
FILE: 8/24/05

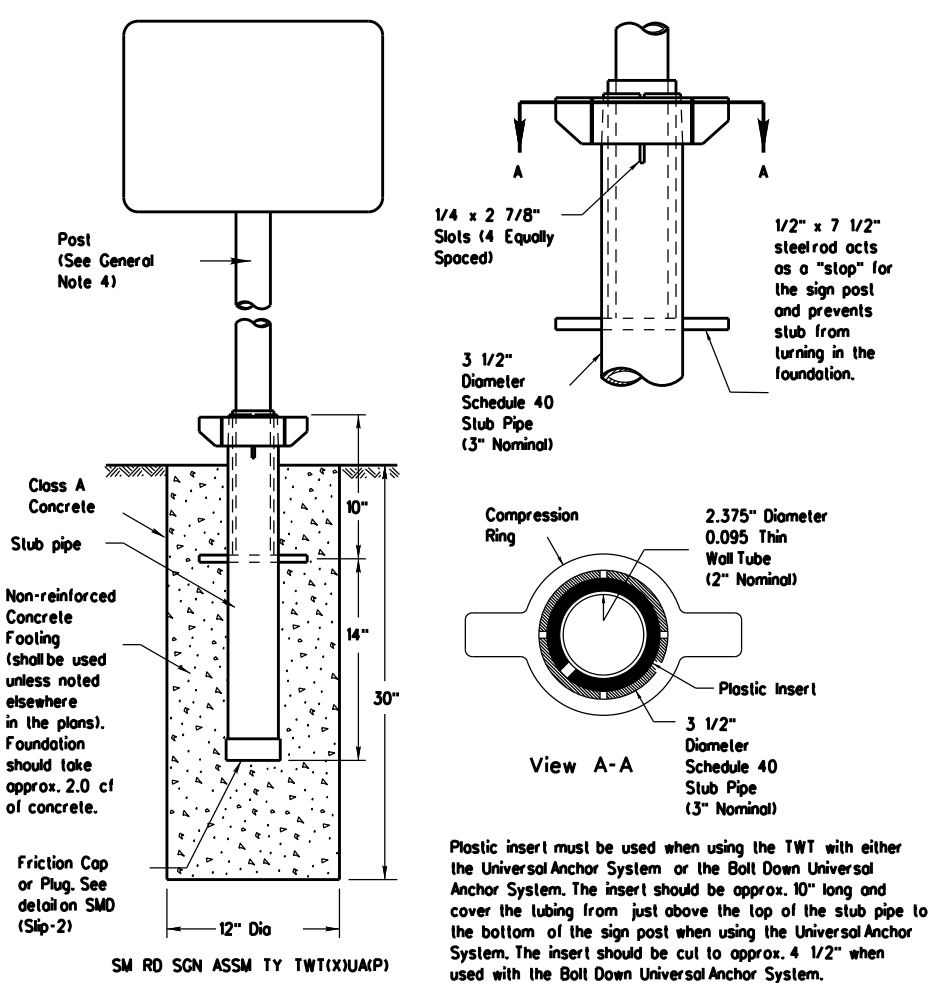
Wedge Anchor Steel System



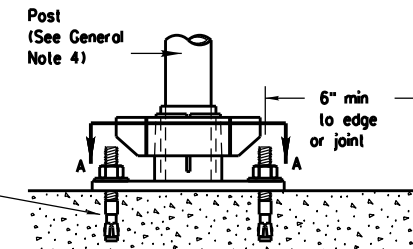
Wedge Anchor High Density Polyethylene (HDPE) System



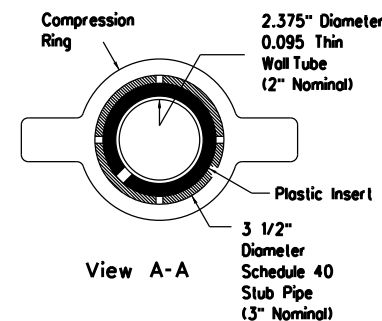
Universal Anchor System with Thin-Walled Tubing Post



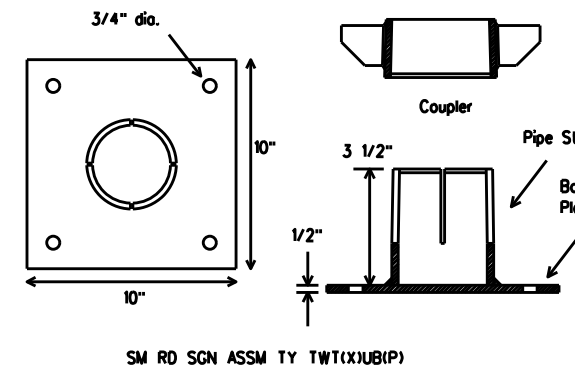
5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.



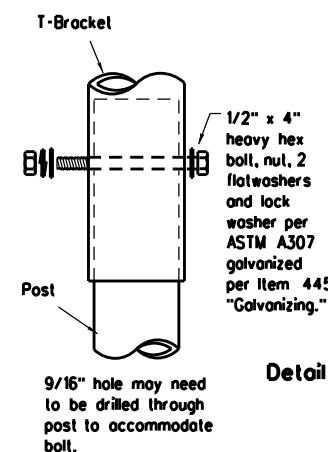
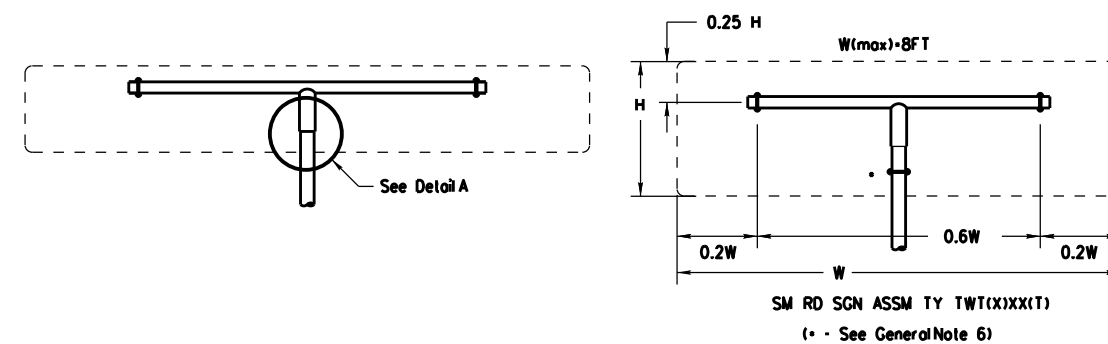
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxy and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.



Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

- The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
- The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
- Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer_list.htm
- Material used as post with this system shall conform to the following specifications:
 - 13 BWG Tubing (2.375" outside diameter) (TWT)
 - 0.095" nominal wall thickness
 - Seamless or electric-resistance welded steel tubing
 - 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
 - 18% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of .083" to .099"
 - Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
 - Galvanization per ASTM 123 or ASTM A653 G210. For pre-coated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
- Sign blanks shall be the sizes and shapes shown on the plans.
- Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
- 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. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
- Insert tubular socket into concrete until top of socket is approximately 1/4" above the concrete footing.
- Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer.
- Attach the sign to the sign post.
- Insert the sign post into socket and align sign face with roadway.
- Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
- Insert base post in hole to depths shown and backfill hole with concrete.
- Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
- Attach the sign to the sign post.
- Install plastic insert around bottom of post.
- Insert sign post into base post. Lower until the post comes to rest on steelrod.
- Seal compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
- Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

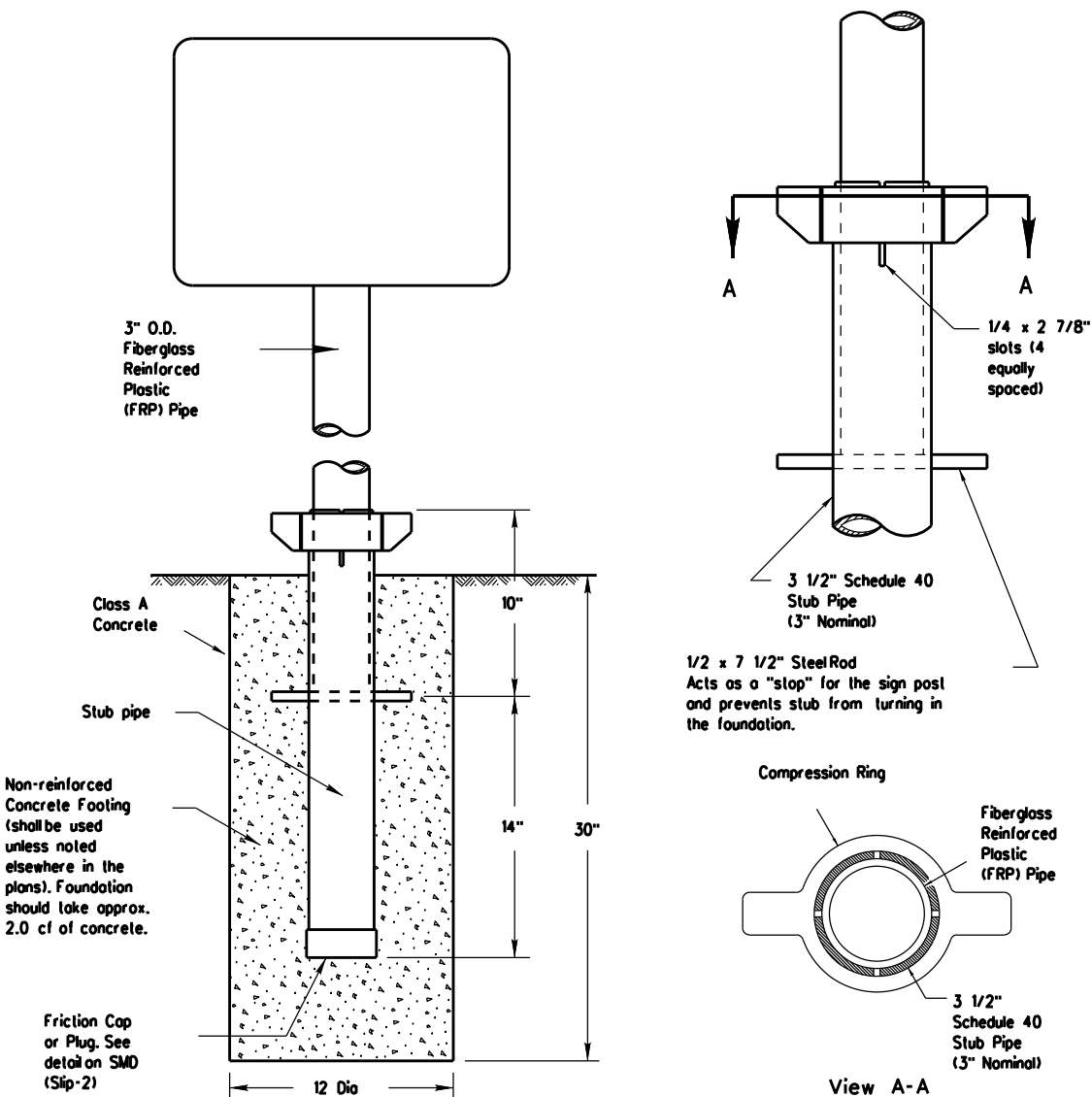


SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST SMD(TWT)-08

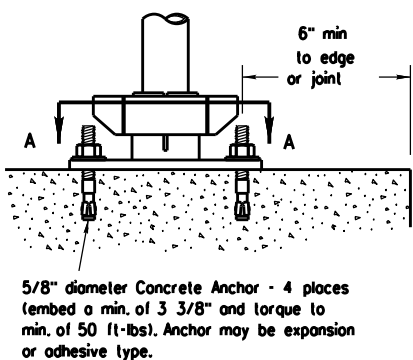
© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
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Universal Anchor System
with Fiberglass Reinforced Plastic (FRP) Post

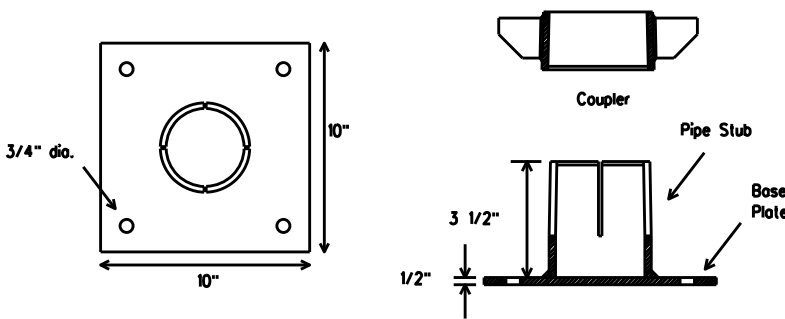


SM RD SGN ASSM TY FRP(X)UA(P)



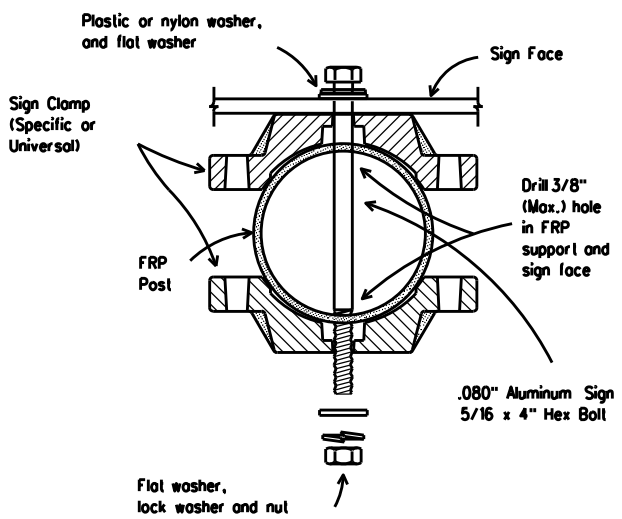
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxy and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS

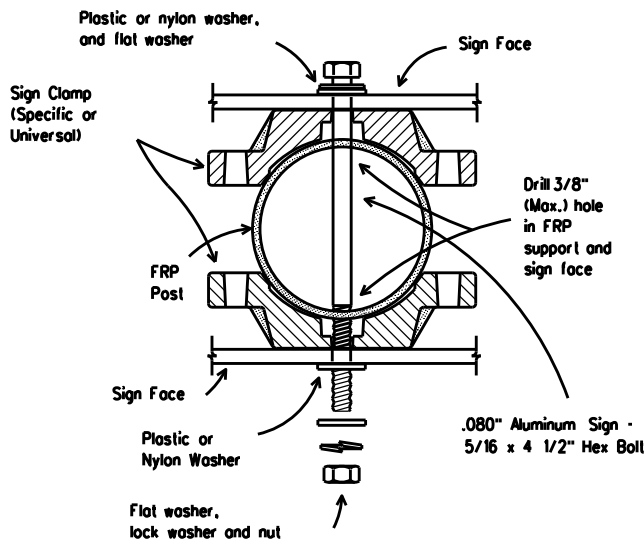


SM RD SGN ASSM TY FRP(X)UB(P)

Typical Sign Mounting Detail
for FRP Support with Single Sign



Typical Sign Mounting Detail
for FRP Support with Back-to-Back Signs



GENERAL NOTES:

- FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
- All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
- See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: <http://www.txdot.gov/publications/traffic.htm>

FRP POST REQUIREMENTS

- Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
- Thickness of FRP sign support is 0.125" ± 0.031", ± 0.0".
- FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing: Texas Department of Transportation Traffic Operations Division 125 East 11th Street Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
- 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.
- Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
- Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
- Attach sign to FRP post.
- Insert sign post into base post. Lower until the post comes to rest on the steel rod.
- Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
- Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

BOLT DOWN SIGN SUPPORT

- Position base plate with coupler on existing concrete.
- Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
- Attach sign to FRP post.
- Insert bottom of sign post into pipe stub.
- Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
- Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Texas Department of Transportation
Traffic Operations Division

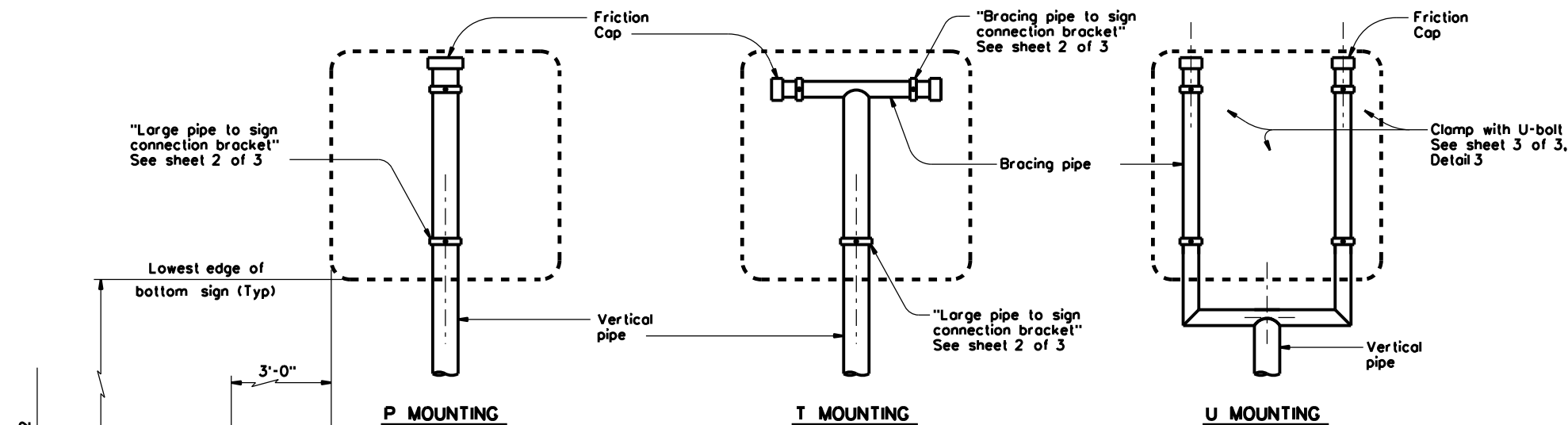
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST

SMD(FRP)-08

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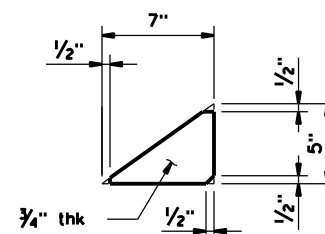
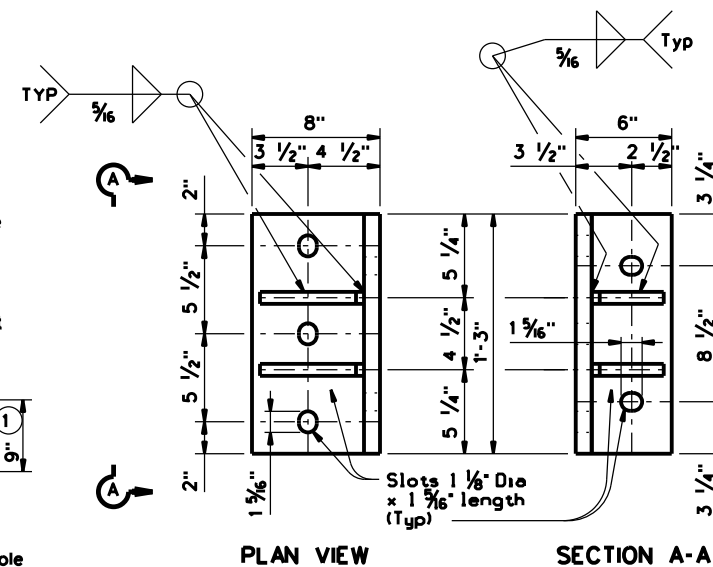
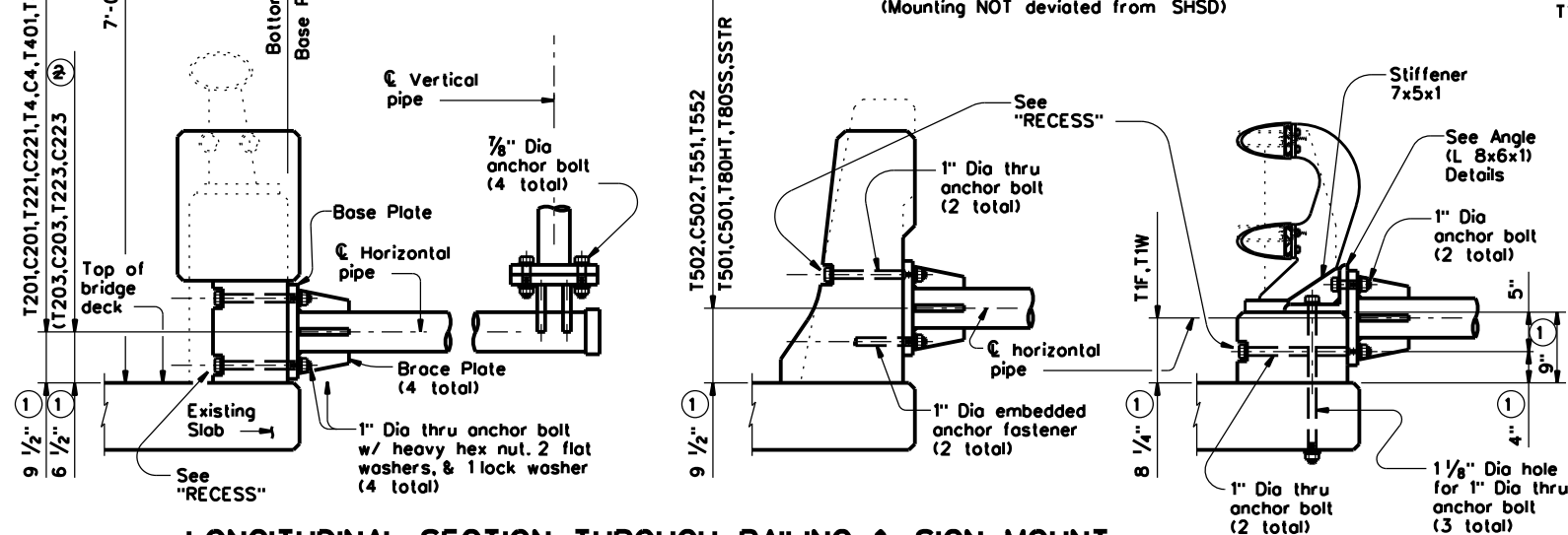
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DATE:
FILE:



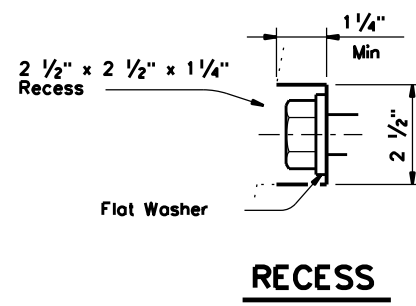
VARIOUS SIGN ATTACHMENTS

(Mounting NOT deviated from SHSD)



ANGLE (L 8x6x1) DETAILS

- ① Increase 2" for structure with overlay.
- ② Attached at L Post.



PIPE SIZE AND THICKNESS			
Pipe Placement Design Wind Speed	Horizontal	Vertical	Bracing
90 mph	5" X-Strong (.375")	4" X-Strong (.337")	2 1/2" Standard (.203")
130 mph	6" X-Strong (.432")	5" X-Strong (.375")	3" X-Strong (.300")

GENERAL NOTES:

Design conforms to 2013 AASHTO Standard Specifications for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design 3-second gust wind speeds of 90 mph and 130 mph with a 1.14 gust factor, and a wind importance factor of 1.0 (50-year mean recurrence interval) for the supporting structures. For mounting connection between sign panel and pipe, wind importance factors of 0.71 and 0.54, for 90 mph and 130 mph winds, respectively, are applied to adjust the wind speeds to a 10-year mean recurrence interval.

See standard sheet WV & IZ(LTS2013) for the boundaries of each design wind zone. All mounting shall be based on 130 mph wind speed design except when located in 90 mph wind zone. Maximum panel area is 30 sq. ft. Maximum design height is 50 ft, with design height defined as the distance between natural ground (average elevation of surrounding terrain) and the center of sign(s) at the mounting location.

Material for pipe shall be ASTM A53 Grade B, or A501. Structural steel plates shall be ASTM A36, A572 Grade 50, or A588. Bolts used to connect pipe and mounting bracket, and wind beam to sign panel shall be ASTM A307. Anchor bolts shall be ASTM A325 or A193 B7. Each anchor bolt shall be provided with 2 flat washers, 1 lock washer, and 1 heavy hex nut. All parts shall be galvanized in accordance with Standard Specifications Item 445, "Galvanizing".

Attach horizontal pipe at least 2'-0" from the edge of any nearby drain slot.

Contractor shall verify applicable field dimensions before fabrication. Holes drilled through the railing parapet wall shall be drilled with rotary (coring or masonry drill) type equipment. Percussion (star) drilling shall not be allowed. Anchorage for pipe attached to rail shall be placed using an anchoring system approved by the engineer. Installation of anchor fasteners including hole depth, diameter and material shall be in accordance with the manufacturers' recommendation.

Each embedded anchor fastener shall resist an allowable design loading (after applying the reduction factors of bolt spacing and bolt edge distance) of:

	130 mph	90 mph
Tension	12.5 kips	7.5 kips
Shear	9.0 kips	5.0 kips

Each anchoring system shall provide a capacity to resist the required tension and shear acting simultaneously.

For sign connection to mounting, shop drill holes on sign blank in accordance with the current Standard Highway Sign Designs for Texas (SHSD). Additional hole(s) needed to meet a stipulated-type mounting may be field drilled. For multi-sign or back-to-back signs mounting, the engineer shall determine the proper type which ensures each individual mounting meets requirements.

Refer to Standard sheets SMD(GEN), SMD(SLIP-2 and SMD(2-1) for details not covered here.

SHEET 1 OF 3

Texas Department of Transportation

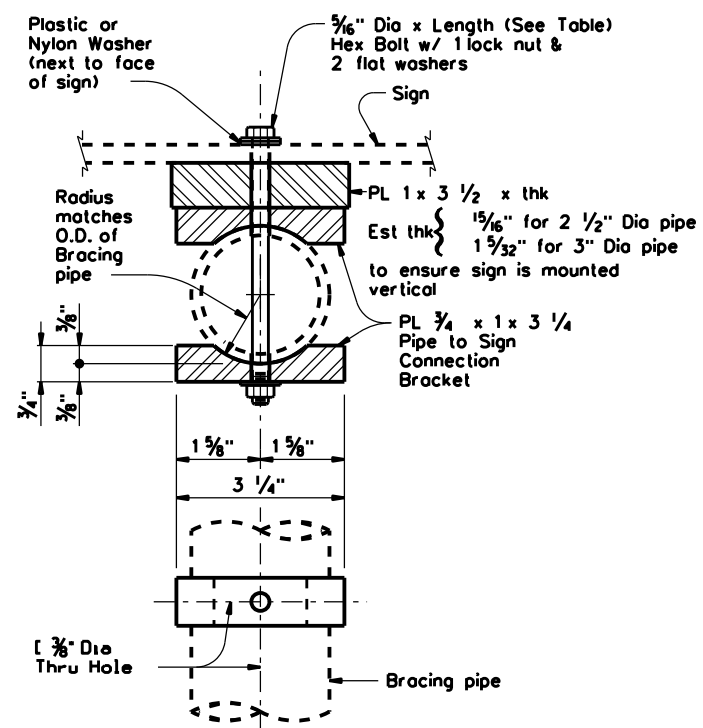
Traffic Operations Division Standard

BRIDGE RAILING SIGN MOUNT DETAILS

SMD(BR-1)-14

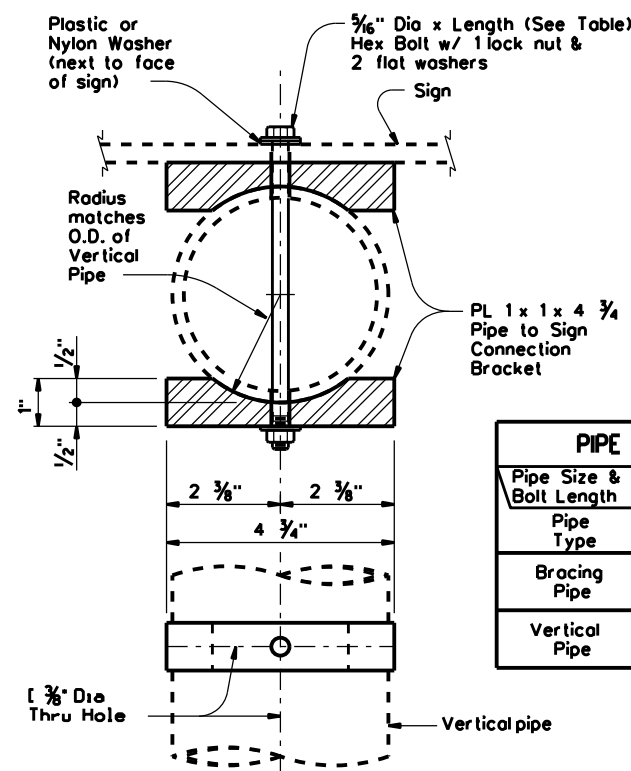
FILE: smdbr-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0101	06	095	US181
	DIST	COUNTY	SHEET NO.	
	CRP	NUECES	S10.011.029	

DATE: _____
FILE: _____



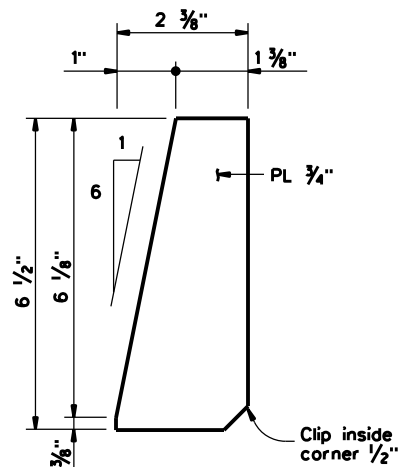
BRACING PIPE TO SIGN CONNECTION BRACKET DETAILS

(Showing T Mounting)

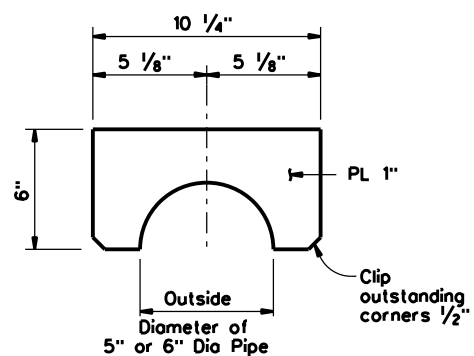


LARGE PIPE TO SIGN CONNECTION BRACKET DETAILS

(Showing P or T Mounting)

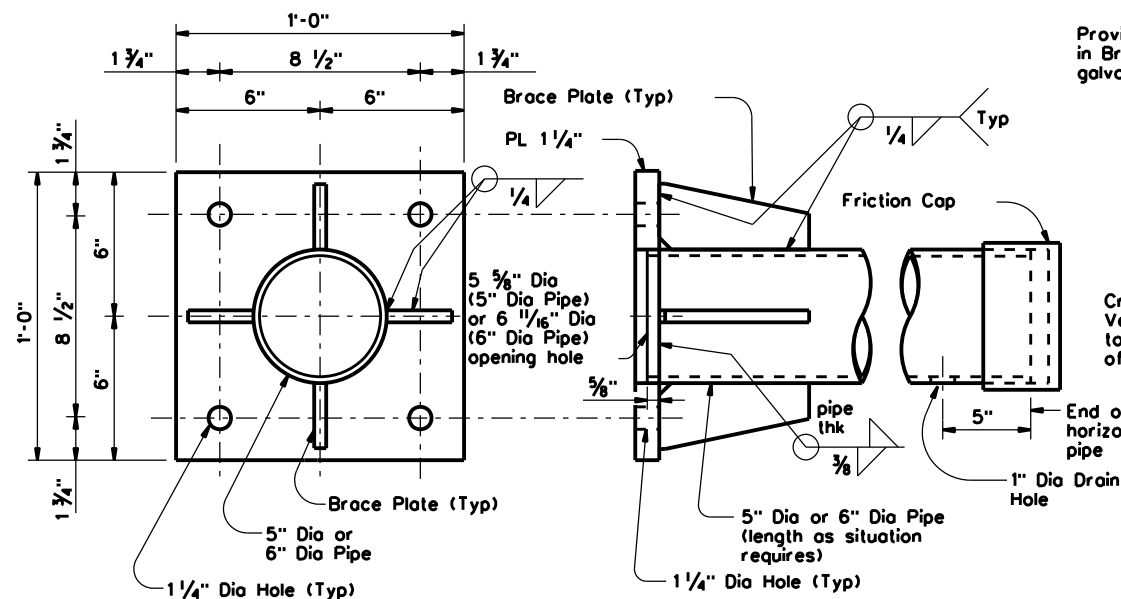


BRACE PLATE DETAILS

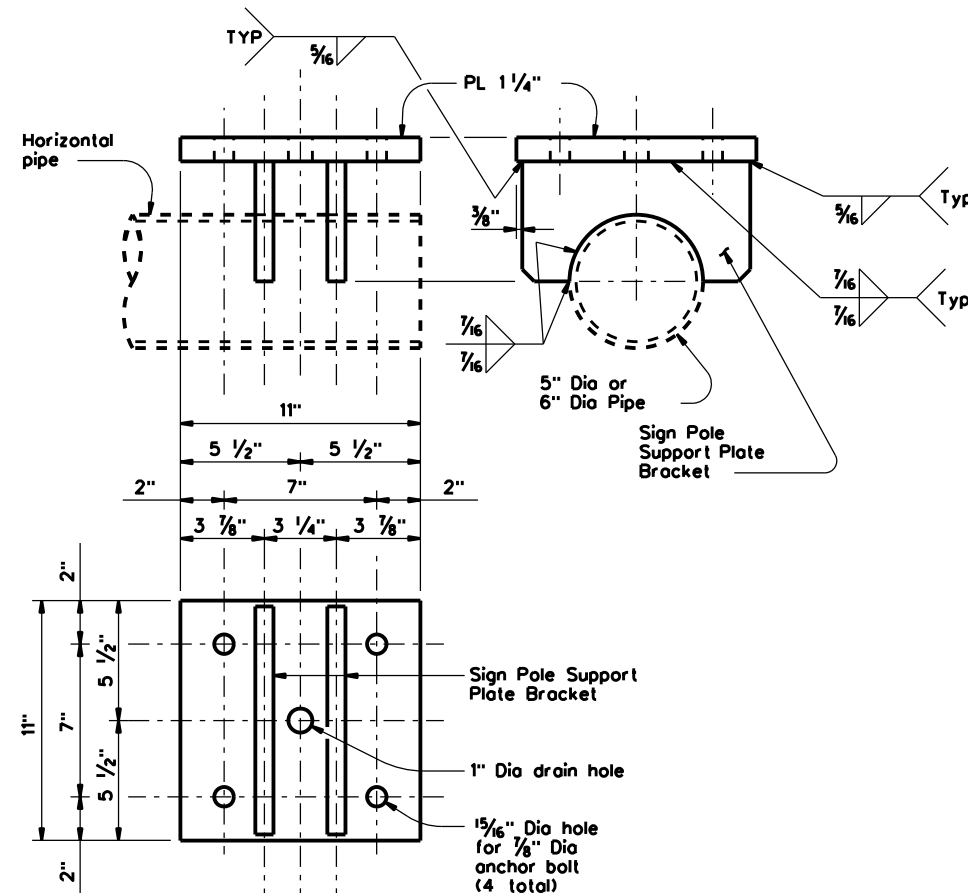


SIGN POLE SUPPORT PLATE BRACKET DETAILS

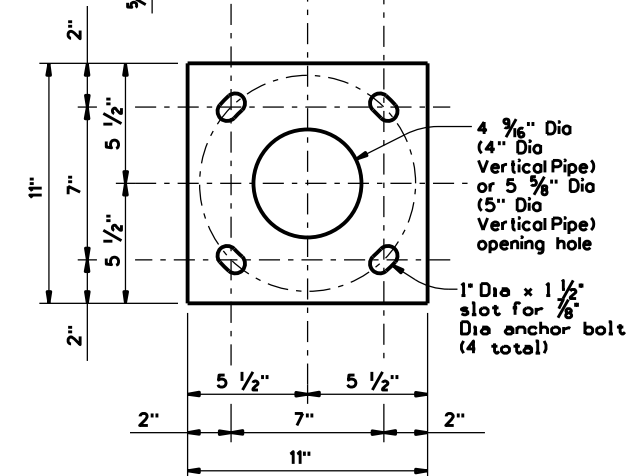
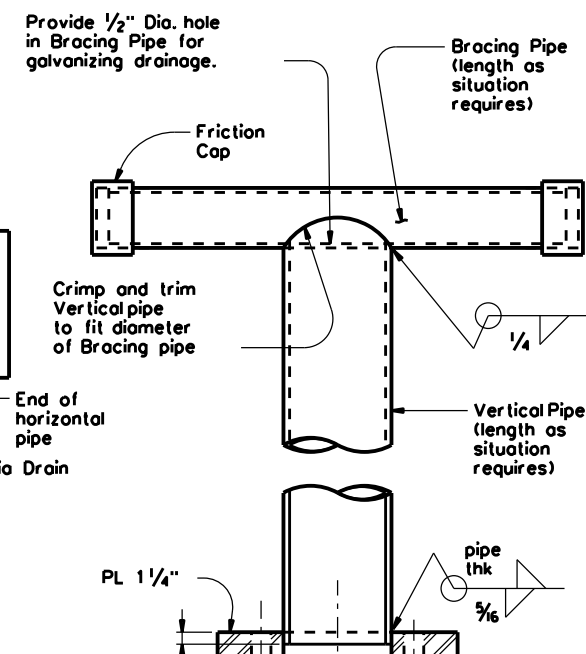
PIPE AND BOLT SPECIFICATIONS		
Pipe Size & Bolt Length Pipe Type	Nominal Pipe Dia (in.)	Bolt Length (in.)
Bracing Pipe	2 1/2	6
	3	7
Vertical Pipe	4	7
	5	8



BASE PLATE DETAILS



SIGN POLE SUPPORT PLATE DETAILS



SIGN POLE & POLE BASE PLATE DETAILS

(Showing only T Mounting)

SHEET 2 OF 3



Texas Department of Transportation

**Traffic
Operations
Division
Standard**

BRIDGE RAILING SIGN MOUNT DETAILS

SMD(BR-2)-14

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		CRP	NUECES		SD 011 030

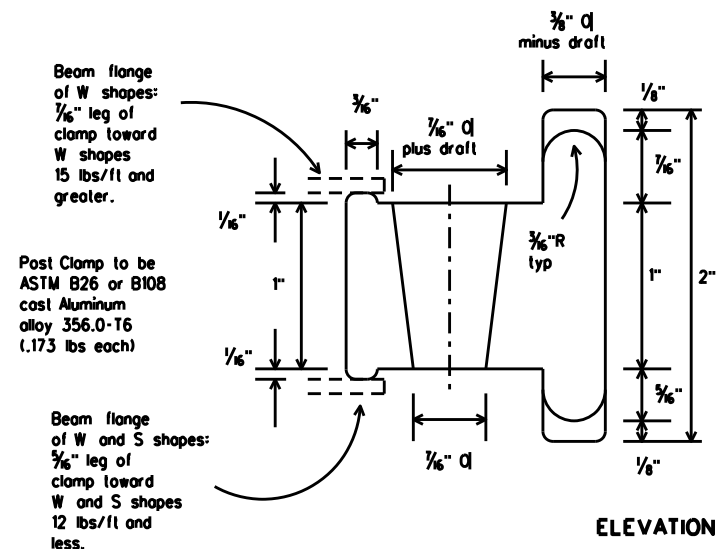
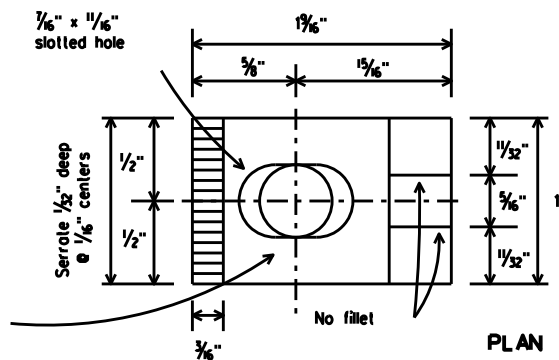
26H

DATE: _____
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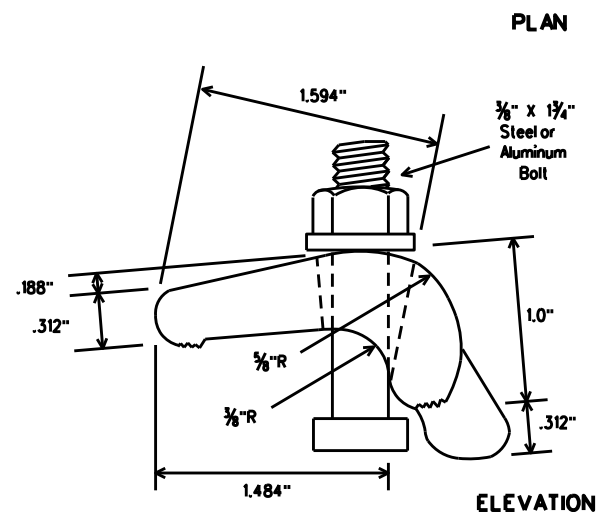
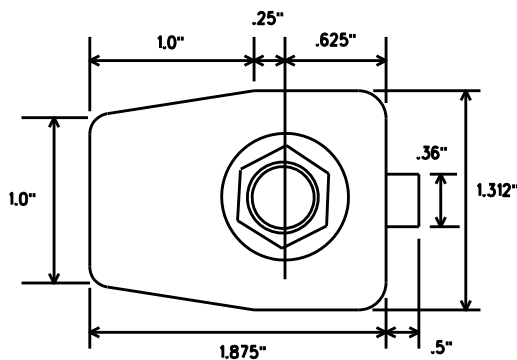
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FILE: 5/04/01

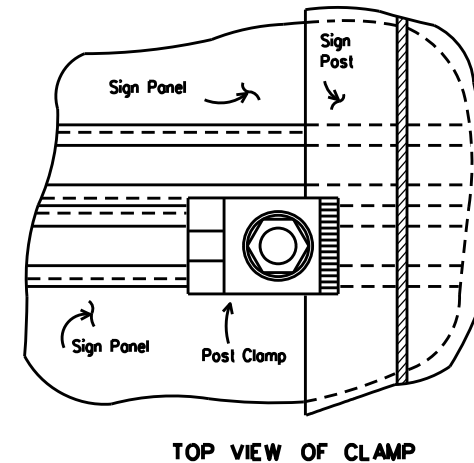
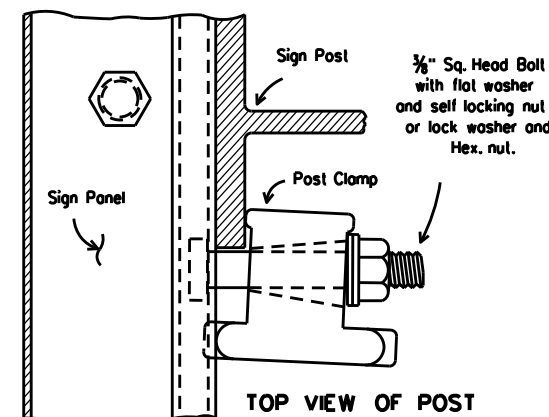
NOTE: centerline of hole for 3/8" diameter squarehead bolt x 2 1/4" long with a flat washer and self-locking nut, or lock washer and hex. nut. Bolt head dimensions shall be in accordance with ANSI B18.2.1 as referred to in the AISC Manual of steel construction. Bolt assembly shall be galvanized.



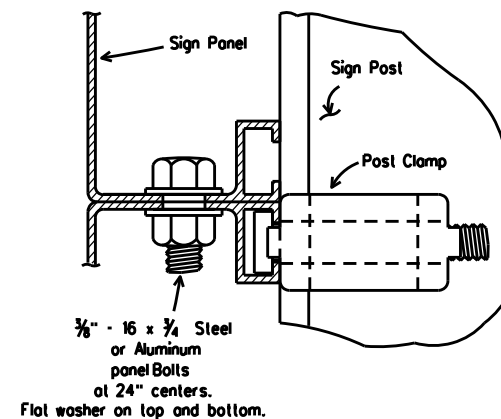
POST CLAMP DETAIL



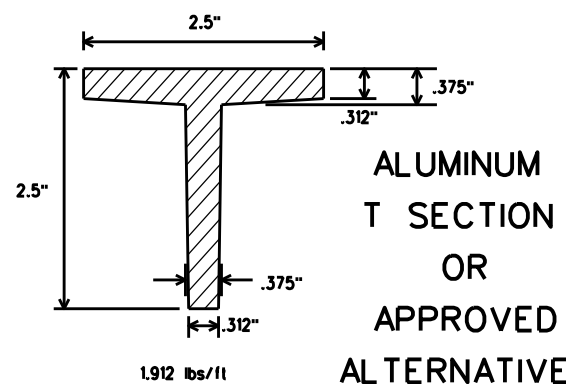
ALTERNATE POST CLAMP DETAIL



TOP VIEW OF CLAMP

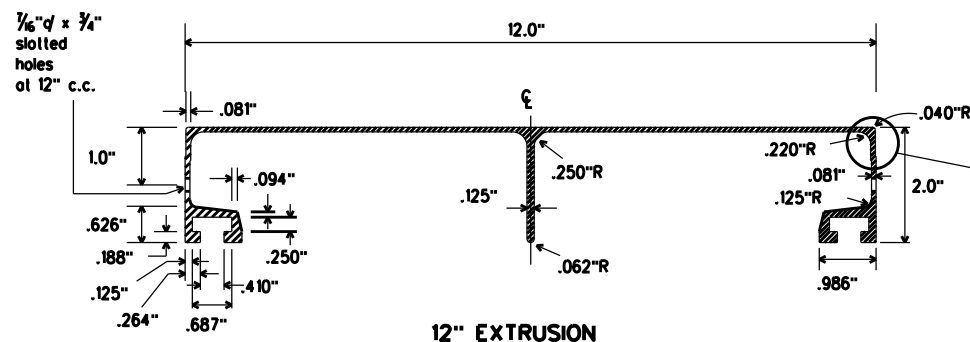
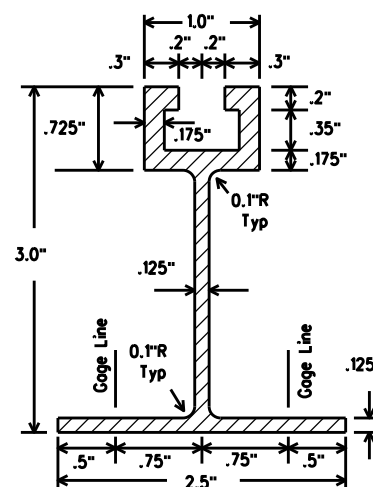


SIDE VIEW OF PANELS
CONNECTION DETAILS

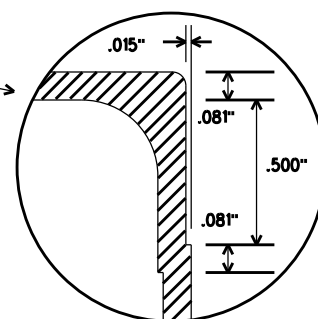


WINDBEAM CROSS SECTION

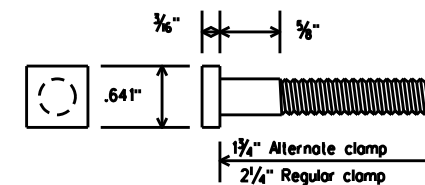
Windbeam to be
extruded aluminum
(1.175 lbs/ft)
or approved
alternative



ALUMINUM SIGN PANEL EXTRUSION DETAILS



6" EXTRUSION



POST CLAMP
BOLT DETAIL

DEPARTMENTAL MATERIAL SPECIFICATIONS
SIGN HARDWARE

DMS-7120

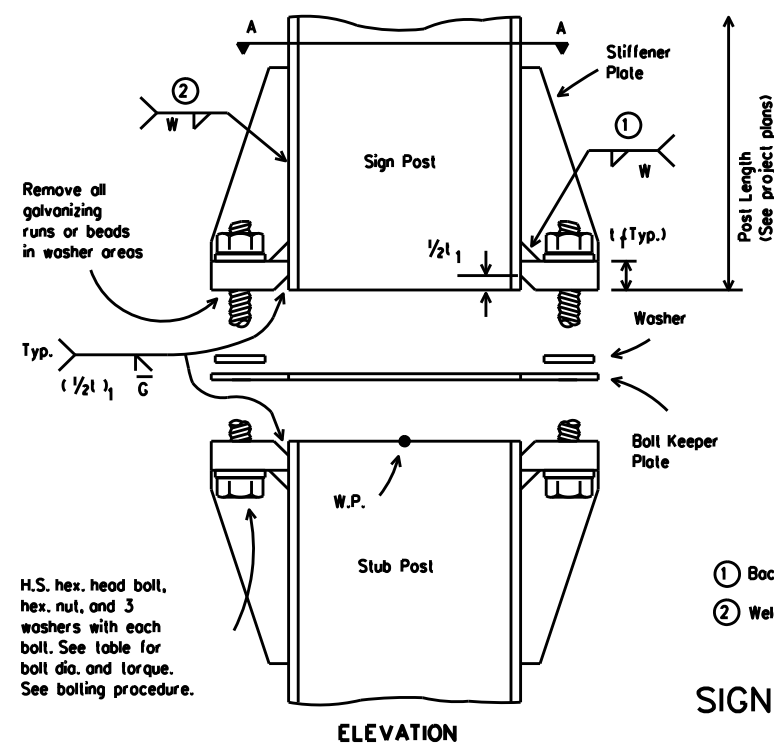
GENERAL NOTES:

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.

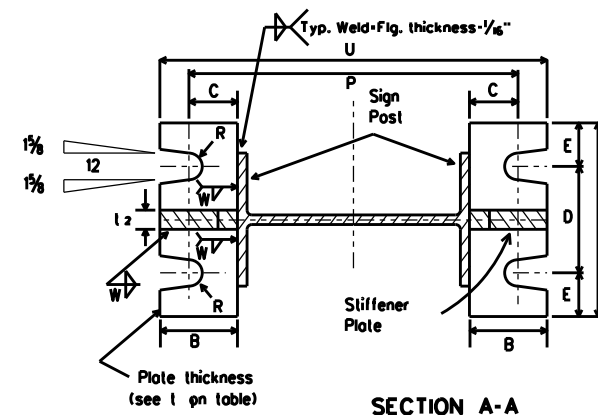
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS- EXTRUDED ALUMINUM SIGN PANELS & HARDWARE SMD(2-1)-08

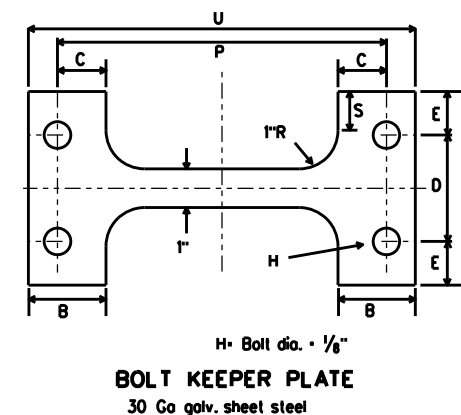
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		CRP	NUECES	S10.011.032

DATE: SDATE\$
FILE: SFILE\$
STIMES

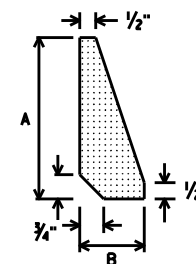
ELEVATION



SECTION A-A

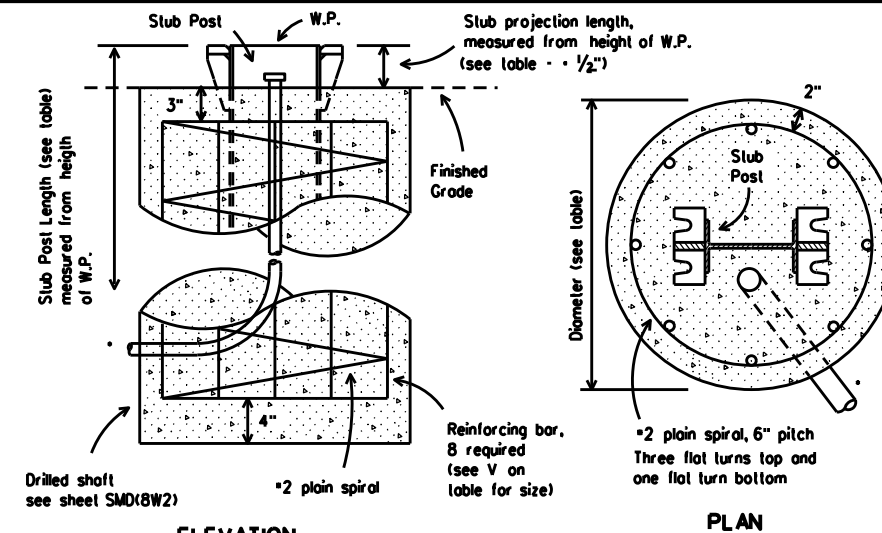


BOLT KEEPER PLATE
30 Gs galv. sheet steel



STIFFENER PLATE DETAIL

Steel Plate (thickness = 1) 2
(See table for dimensions)

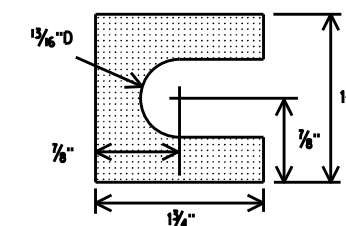


ELEVATION

PLAN

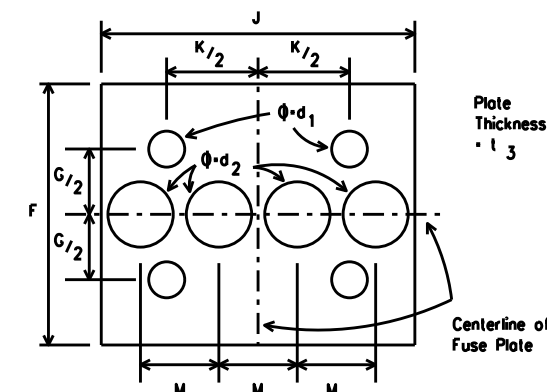
FOUNDATION DETAIL

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



SHIM DETAIL

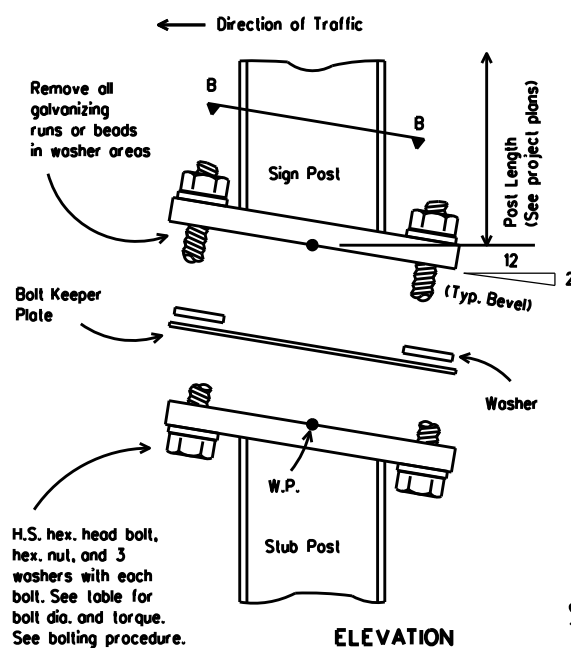
Furnish two .012" thick and two .032" thick shims per post. Shims shall be fabricated from brass shim stock or strip conforming to ASTM B36.

Plate Thickness
= 1/3

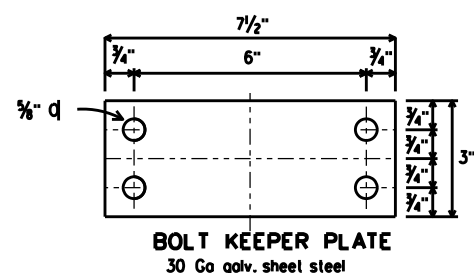
Centerline of Fuse Plate

PERFORATED FUSE PLATE DETAIL

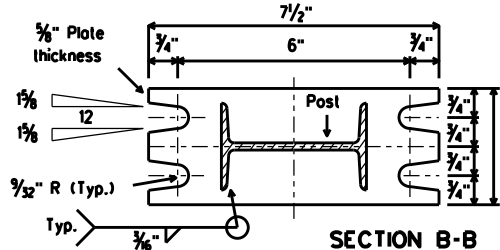
Use H.S. hex head bolts, hex head nut and bevelor flat washer (where req'd) under nut. All holes shall be drilled, sub-punched and reamed. All plate cuts shall preferably be saw cuts. However, flame cutting will be permitted provided all edges are ground. Metal projecting beyond the plane of the plate 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.



ELEVATION

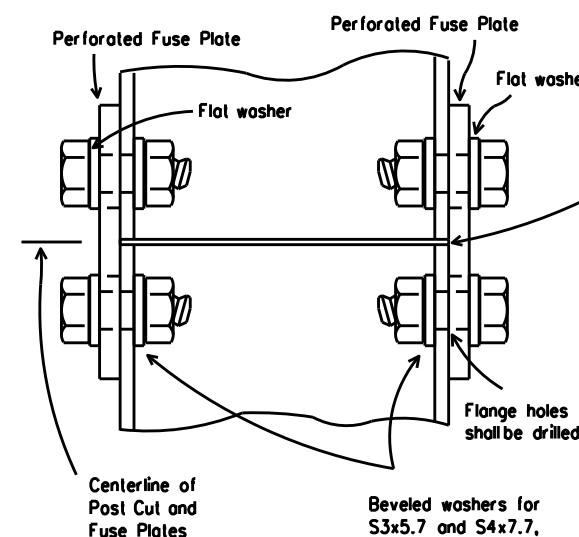


BOLT KEEPER PLATE
30 Ga galv. sheet steel



SECTION B-B

SIGN POST AND STUB POST



DETAIL "A"

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

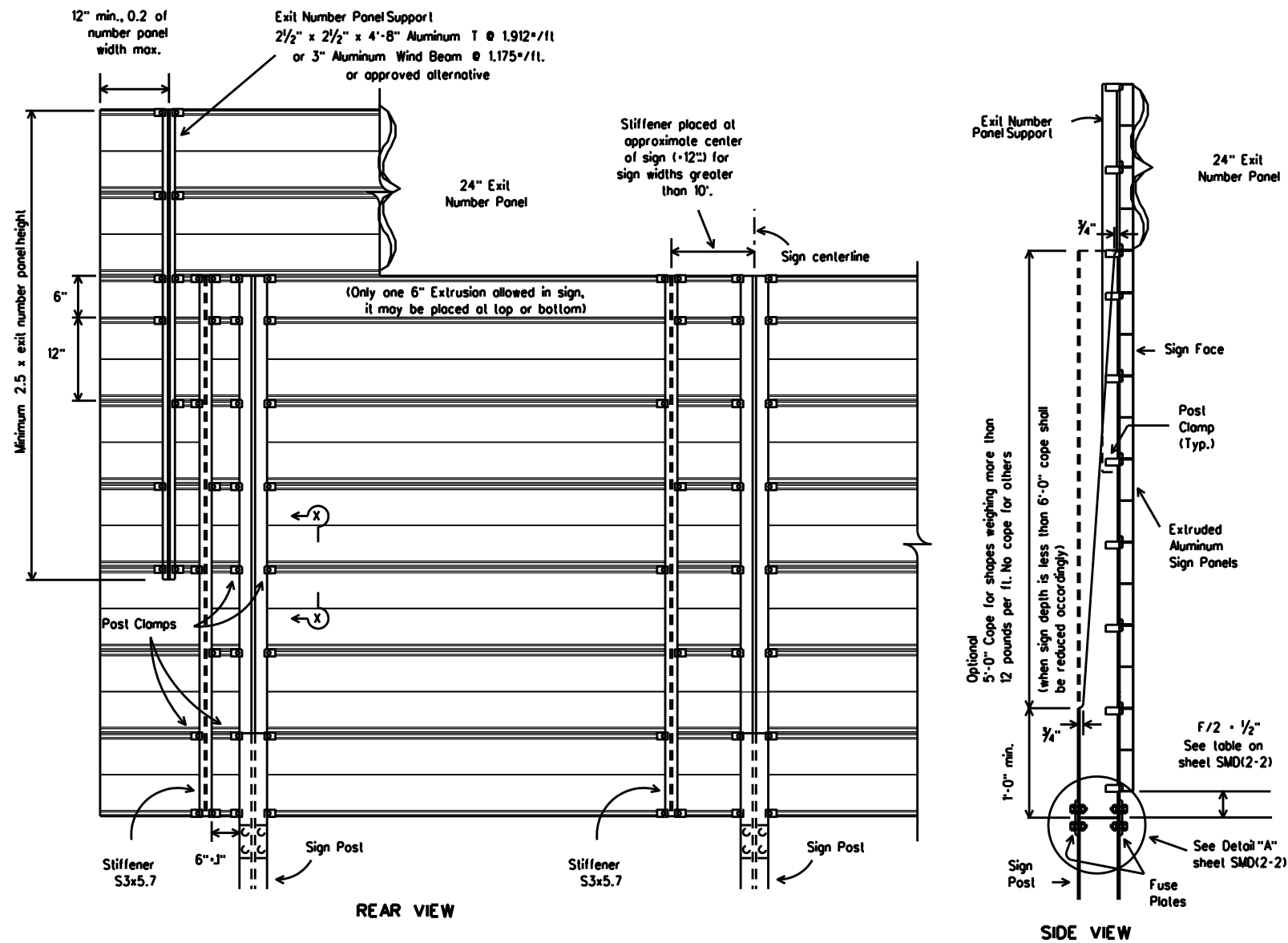
SIGN MOUNTING DETAILS- LARGE ROADSIDE SIGNS FOUNDATION & STUB

SMD(2-2)-08

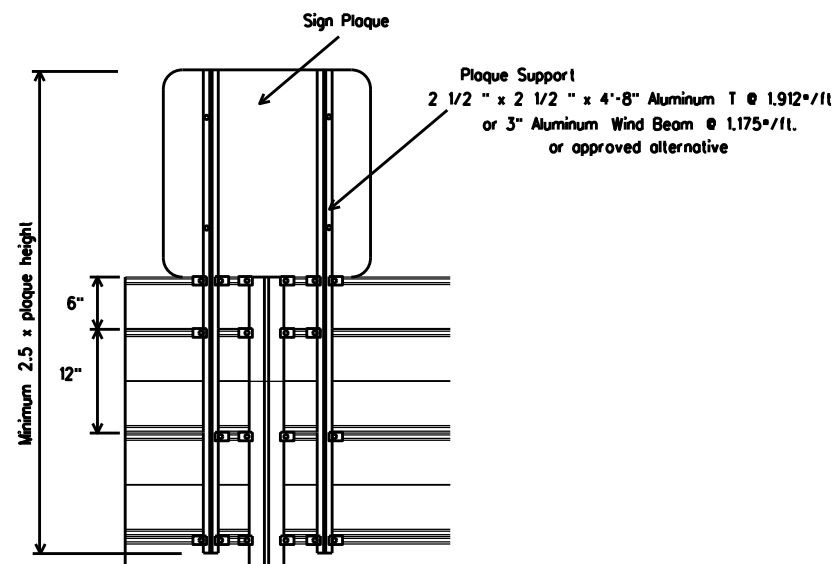
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FILE: SFILES

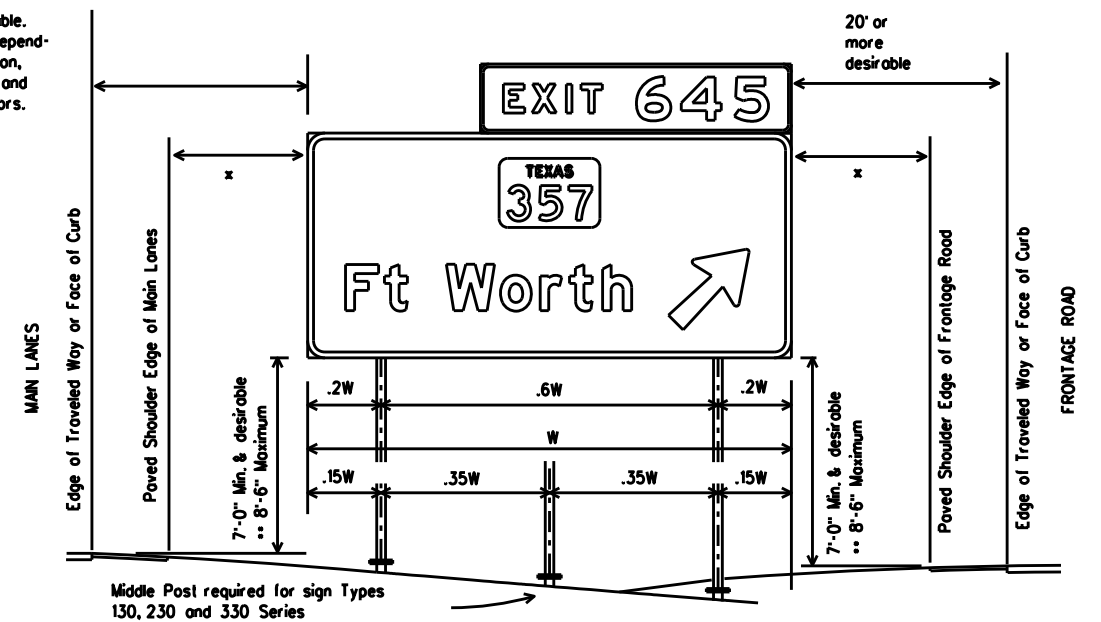


ALUMINUM PARENT SIGN & EXIT NUMBER PANEL MOUNTING DETAILS



SIGN PLAQUE MOUNTING DETAIL TO ALUMINUM PARENT SIGN

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



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.

x - 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
SIGN HARDWARE

DMS-7110
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.



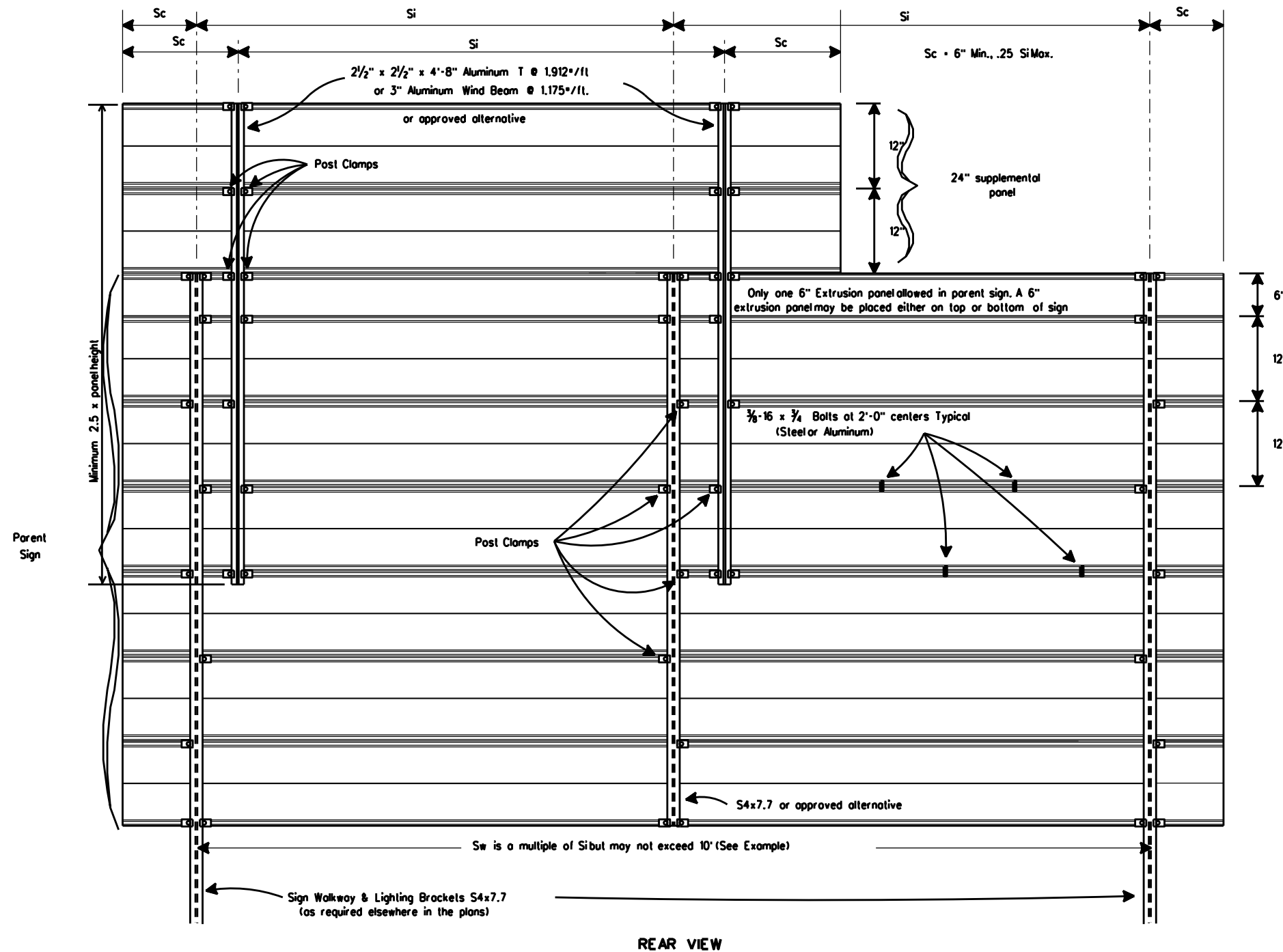
SIGN MOUNTING DETAILS-
LARGE ROADSIDE SIGNS

SMD(2-3)-08

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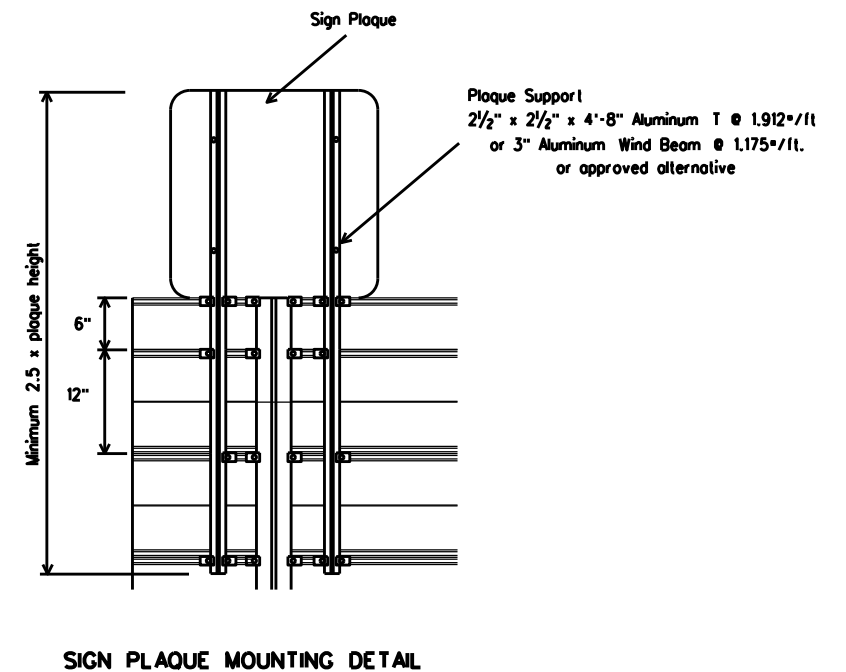
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DATE: 8/24/2015
FILE: SFILES



EXAMPLES (FOR DETERMINING S_i and S_w)									
NO.	ZONE	"d"	EXIT	PANEL	WALKWAY	S_i	S_w	COMMENT	
1	1	15.0	YES	YES	YES	4.5	9.0	$S_w = 2 \times (S_i)$	
2	2	14.0	YES	YES	NO	7.5	7.5	$S_w = S_i$	
3	1	15.0	NO	NO	NO	8.5	8.5	$S_w = S_i$	
4	3	14.0	NO	YES	YES	10.0	10.0	$S_w = S_i$	

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



MAXIMUM SIGN SUPPORT SPACING "Si" (FEET)																			
Deepest Sign in Group (Ft.)	"d"	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					
		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	10
13		7.5	9	10	10		7.5	9	10	10		9	10	10	10	10	10	10	10
12		8.5	10	10	10		8.5	10	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	10	10	10	10

For fiberglass sign installations, see manufacturer's recommendations.

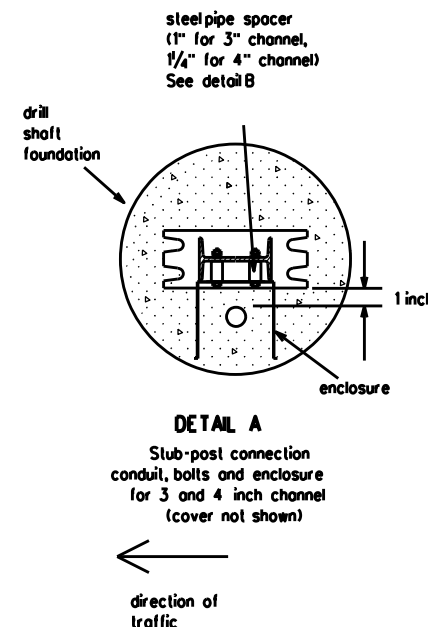
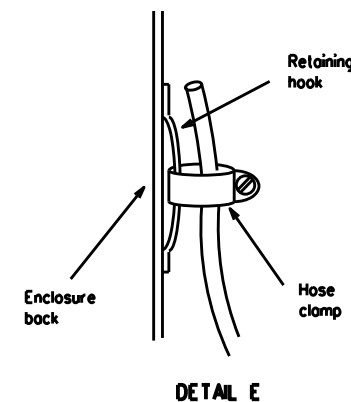
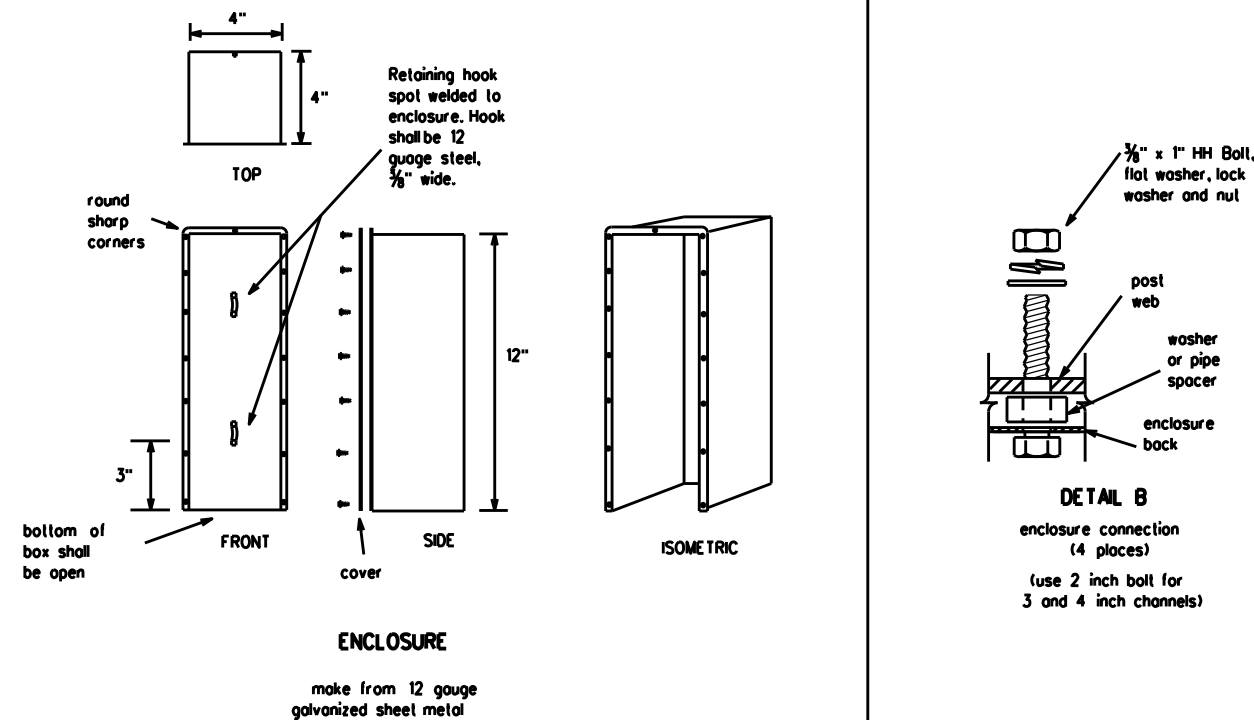
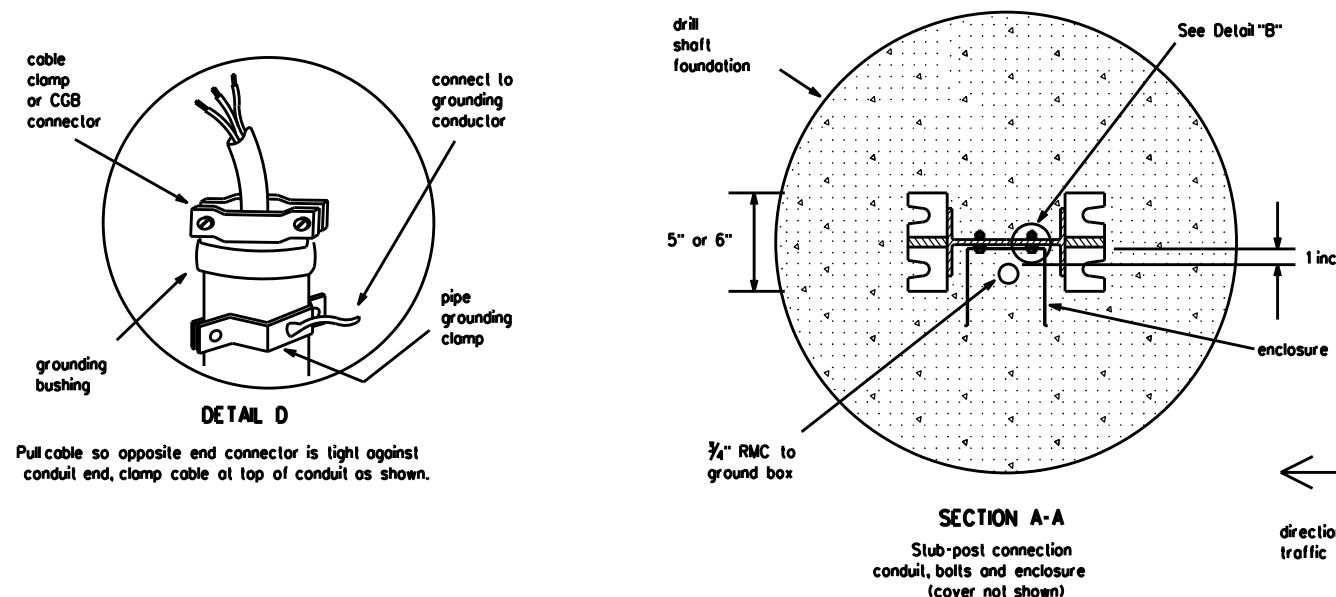
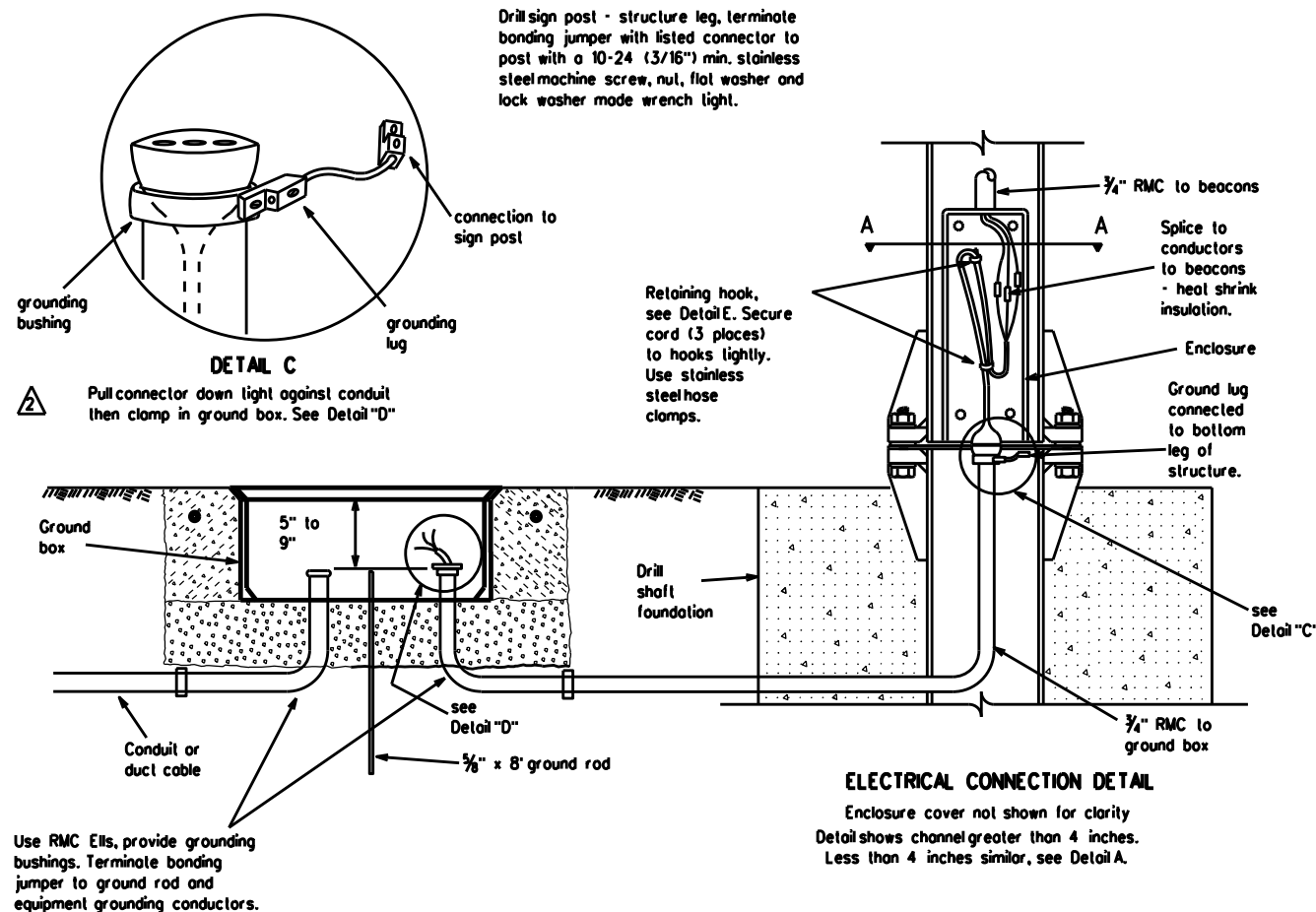
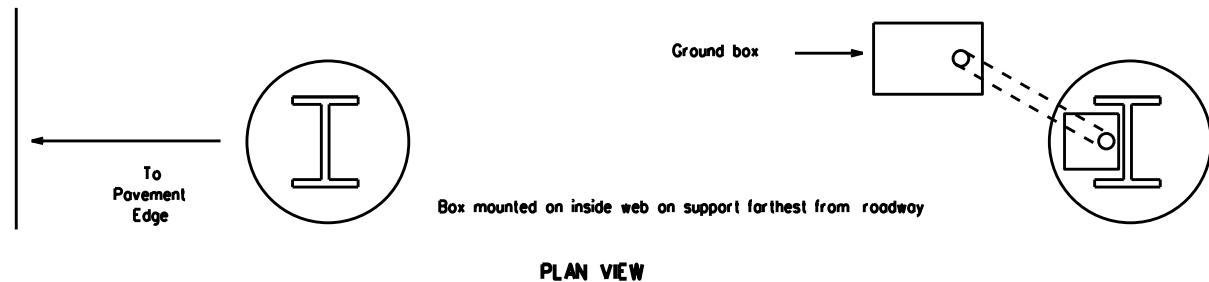


SIGN MOUNTING DETAILS- OVERHEAD SIGNS EXTRUDED ALUMINUM SMD(2-4)-08

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DATE: 05/01/98
FILE: 01-01



NOTES:

- Breakaway connector shall be rated for 300 VAC, 30 amps and shall be waterproof. Connector shall be a three pole (two line conductors and neutral) polarized elastomer connector made from thermosetting synthetic polymer which remains flexible over the temperature range of -40 degrees C to 90 degrees C. The pins on the connector shall be overmolded 1/4" from the face of the connector toward the tips of the pins with the same material used in the construction of the connector body. This overmolding of the pins shall provide a non-conductive double layer which prevents the intrusion of water into the connection when the connectors are fully engaged. The pin receptors shall have current carrying barrels recessed 1/2" from the face of the connector and surrounded by beryllium copper spring sleeves. The plug/receptacle combination shall be listed by an approved testing facility (UL or Factory Mutual) as suitable for outdoor use and shall have passed a rain test and a watertight (immersion) test as approved by the Engineer.
- The female connector shall be integrally molded to a 13' length of type SO cord containing three number 10 or number 8 AWG conductors. The male connector shall be integrally molded to a 20' length of type SO cord containing three number 10 or number 8 AWG conductors. Cord conductors shall have colored insulation, two black and one white, or shall be taped or painted to be two black and one white. Tape or paint marking shall cover entire exposed length. The contractor shall make a brochure submittal on cord connectors. Breakaway connector and cord shall not be paid for separately, but shall be subsidiary to the various items.
- The contractor shall install in-line waterproof fuseholders for each line conductor in the ground box. Fuses shall be fast-acting 5 amp (Bussman KTK5, Gould ATM5, Littelfuse KLK5 or equal).
- Conduit shall convert to 3/4" liquidtight flexible metallic conduit below the fuse plate or knee joint and shall revert to 3/4" RMC above the fuse plate or knee joint. The length of liquidtight flexible metallic conduit shall not exceed 6".
- Ground rod clamp shall be Blackburn GG 5/8H, Weaver W5.8 or equal.
- Ground rod to be driven to a depth to leave between 2 to 4 inches of rod above the gravel placed under the ground box. See ED(2) standard sheet for ground box details.

11-01 Revision

- Liquidtight conduit size corrected.
- Editing of minor notes.

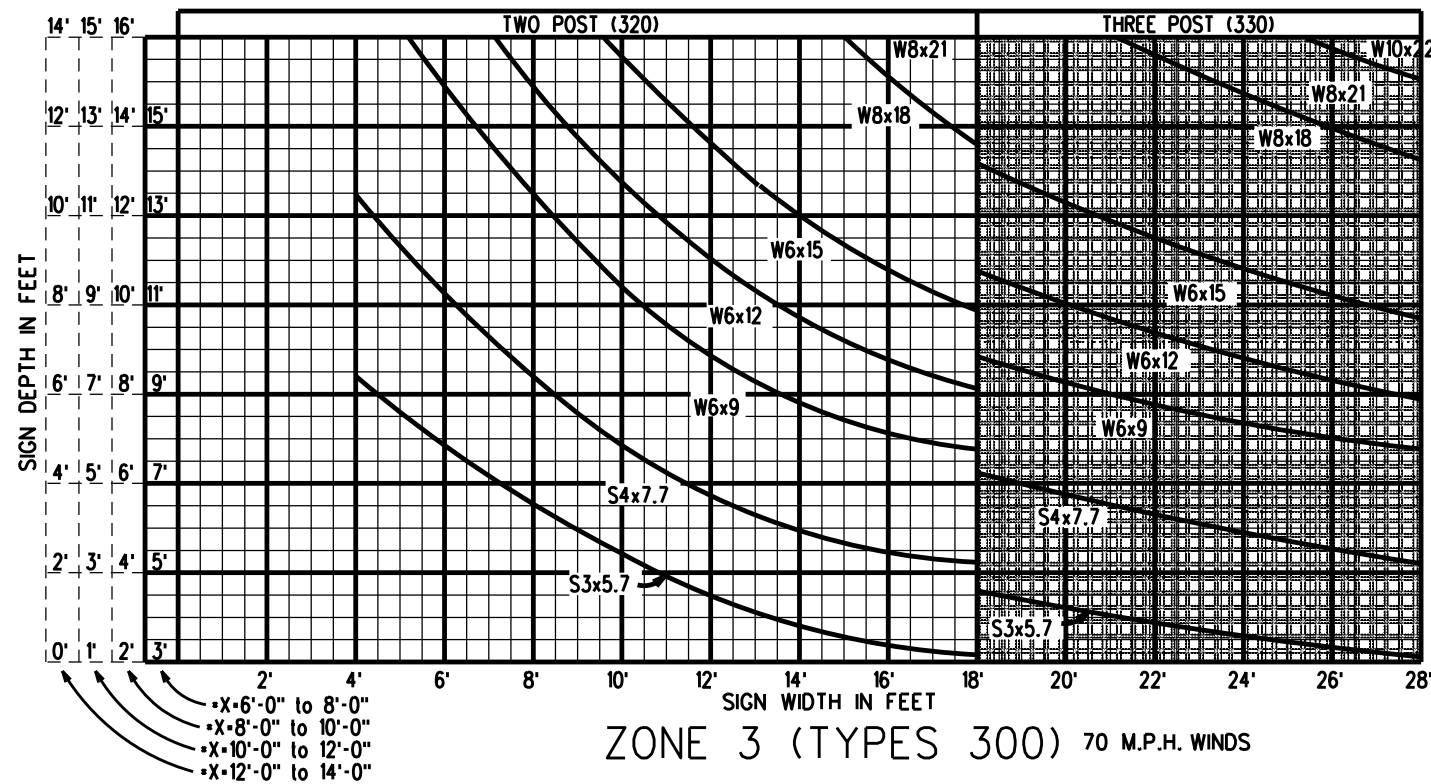
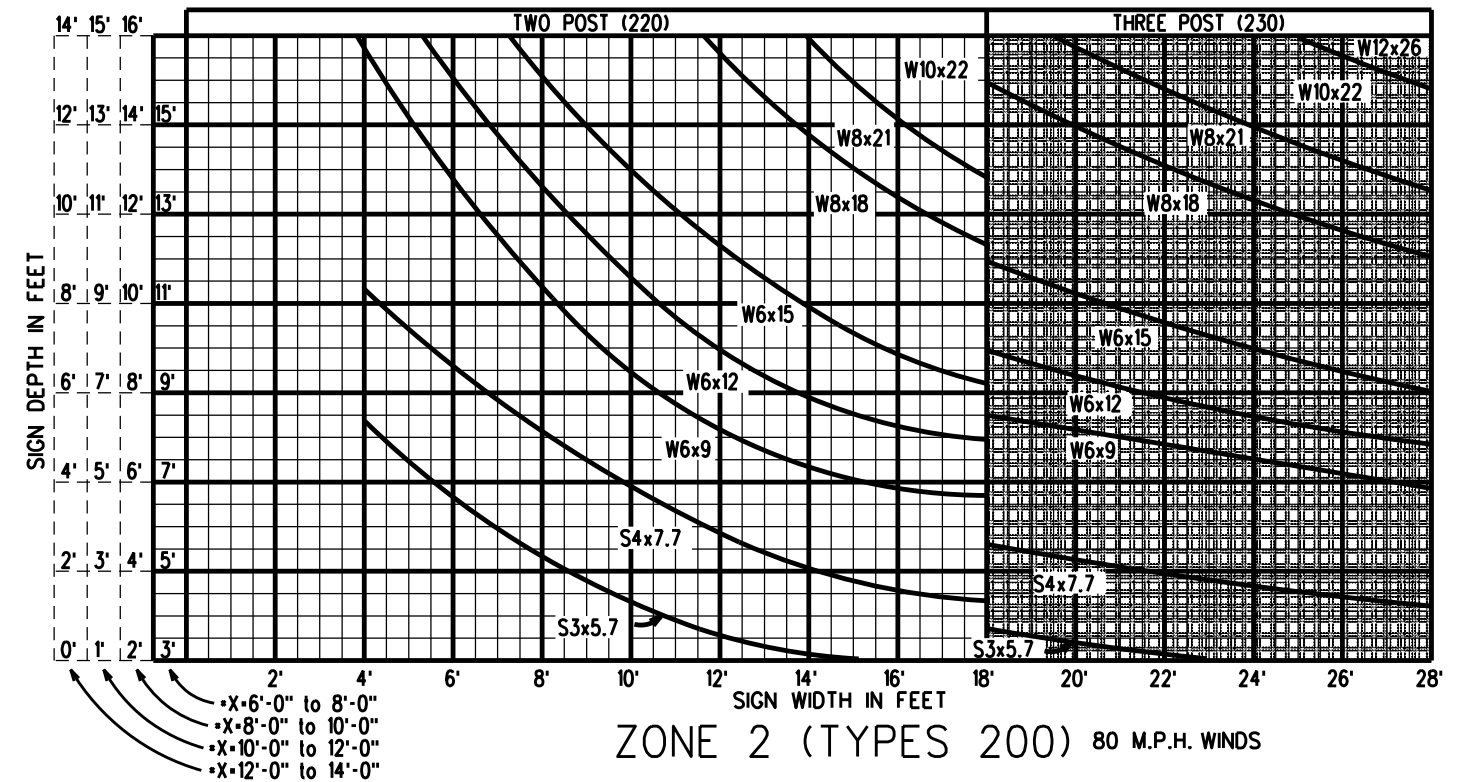
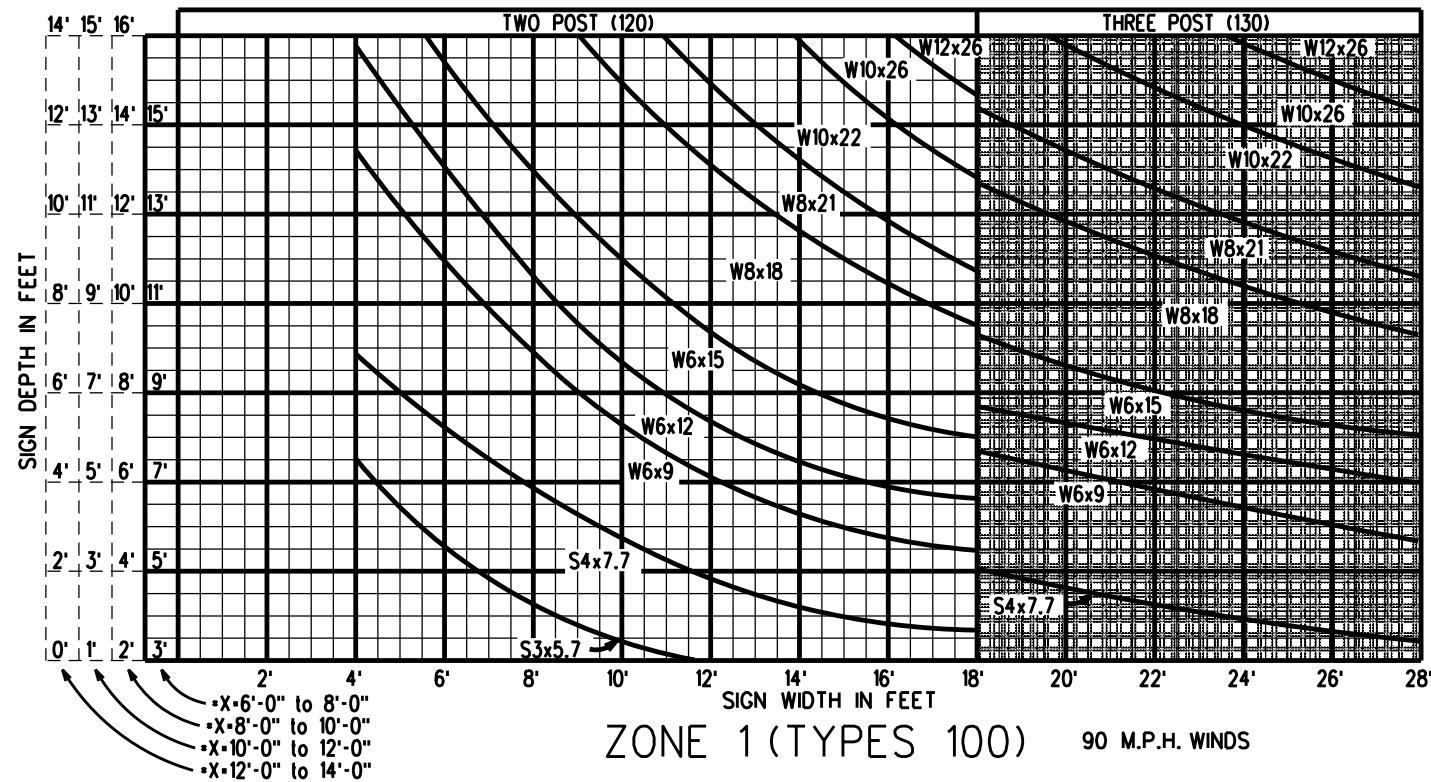
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS- LARGE ROADSIDE SIGNS ELECTRICAL CONNECTION

SMD(2-6)-01

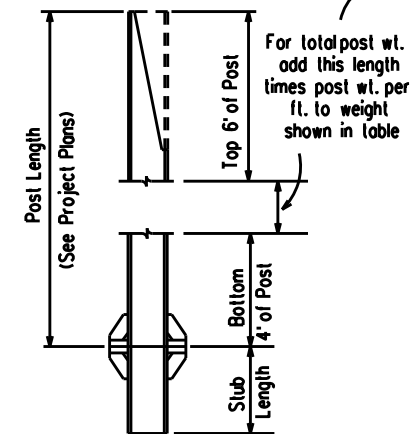
© TxDOT April 1998		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
11-98	REVISIONS	CONT	SECT	JOB	HIGHWAY
11-01		0101	06	095	US181
		DIST		COUNTY	SHEET NO.
		CRP		NUECES	STD. 011. 036

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NOTE: "X" EQUALS THE AVERAGE HEIGHT FROM THE GROUND LINE TO THE BOTTOM EDGE OF THE SIGN.

SHADED AREA DENOTES 3 POST SUPPORTS



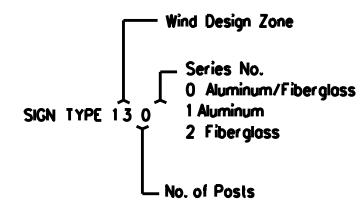
POST WEIGHT DATA

POST SIZE	WEIGHT OF ONE POST (LBS)	WEIGHT OF TWO POSTS (LBS)	WEIGHT OF THREE POSTS (LBS)
W6x9*	123.2	246.4	369.6
W6x12*	160.3	320.6	480.9
W6x15*	167.8	335.6	503.4
W8x18*	201.8	403.6	605.4
W8x21*	254.7	509.4	764.1
W10x22*	266.0	532.0	798.0
W10x26*	308.0	616.0	924.0
W12x26*	308.6	617.2	925.8
S3x5.7*	85.9	171.8	257.7
S4x7.7*	112.2	224.4	336.6

*LAST FIGURES-POST WT. PER FT.

Weight Data is the weight of items shown for one, two or three posts - (includes top 6' of post, bottom 4' of post, post foundation slub, related base connection plates and stiffeners, friction fuse plate and all high strength bolts, nuts and washers).

SIGN TYPE



Note: Footings for S3x5.7 and S4x7.7 post sizes shall be non-reinforced with Class A concrete, while footing for all other post sizes shall be reinforced with Class C concrete.

Texas Department of Transportation
Traffic Operations Division

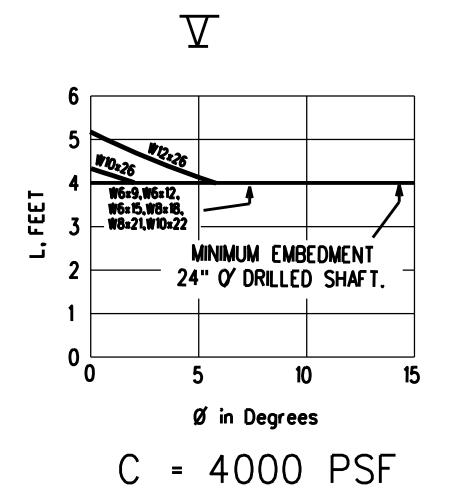
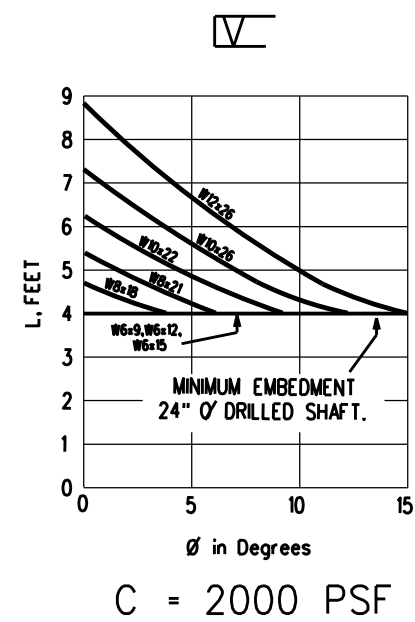
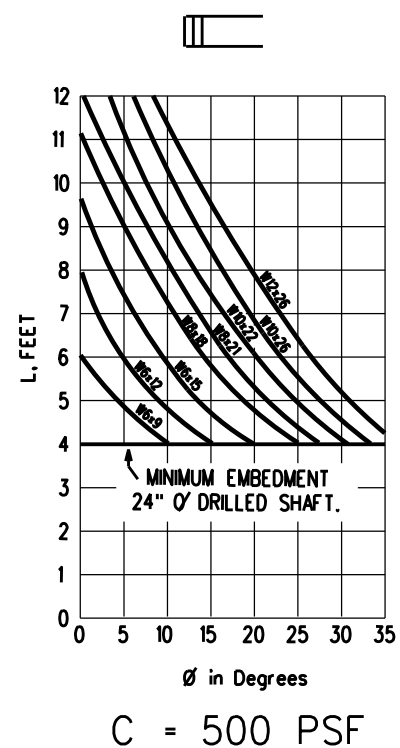
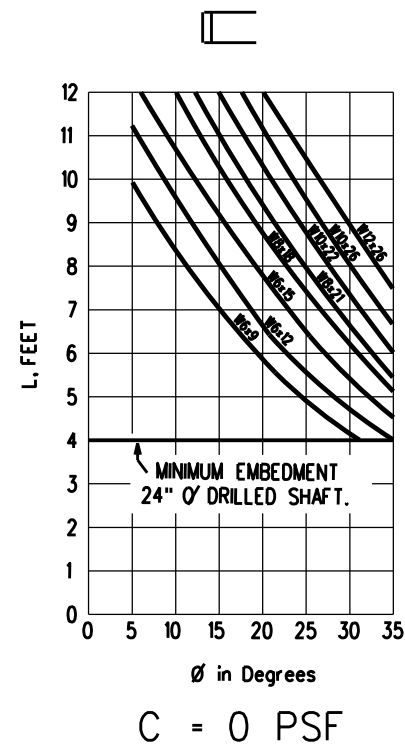
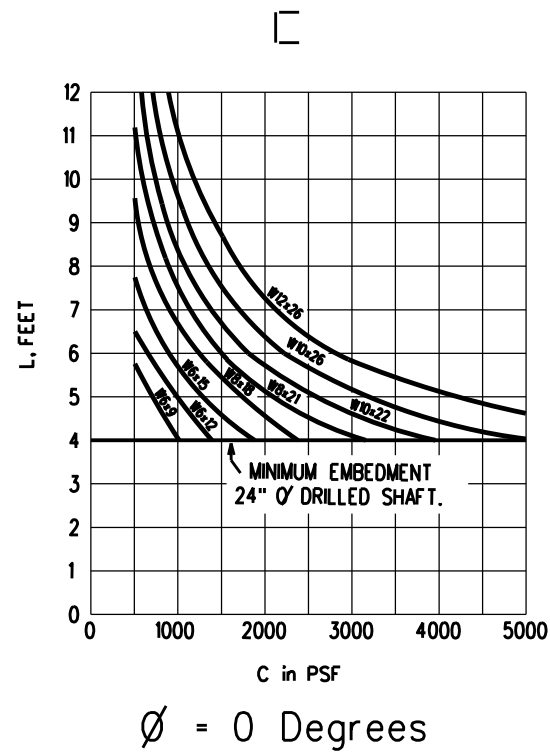
LARGE ROADSIDE SIGN SUPPORTS POST SELECTION WORKSHEET

SMD(8W1)-08

© TxDOT July 1978	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
1-82	REVISIONS	CONT	SECT	JOB
5-01		0101	06	095
9-08		DIST	COUNTY	SHEET NO.
		CRP	NUECES	S10.011.037

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DATE: 5-74
FILE: 4-78
STIMES
FILES



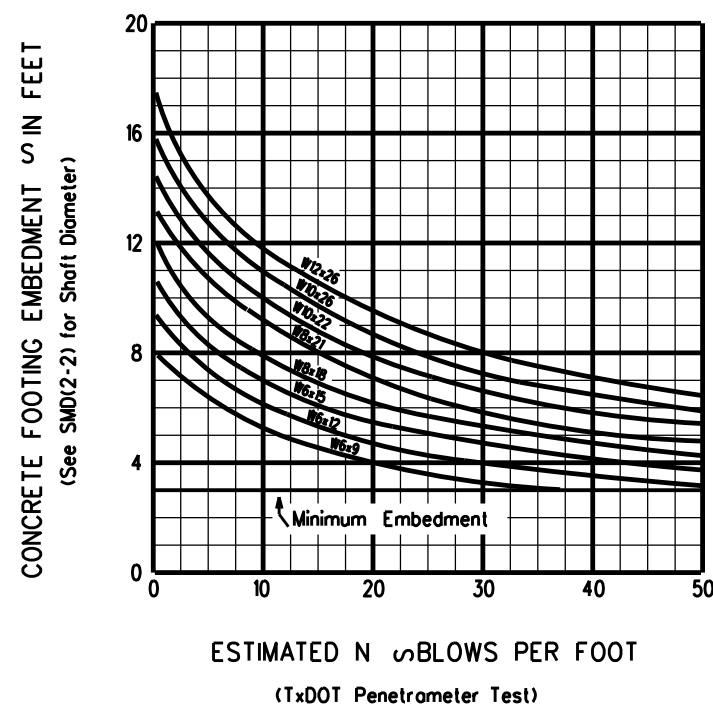
DRILLED CONCRETE FOOTING DEPTH CHART (COHFRIC DESIGN)

NOTE: THESE CHARTS MAY BE USED AS AN ALTERNATE TO THE CHART BELOW, PROVIDED THAT SOIL COHESION AND INTERNAL FRICTION (COHFRIC) DATA ARE AVAILABLE.

LEGEND:

L = Required embedment of concrete drilled shaft, in feet
C = Cohesive shear strength of soil, in psf
 ϕ = Angle of internal friction of soil, in degrees

For values of C and ϕ which are intermediate to those on the charts, embedments may be determined by straight-line interpolation.



DRILLED CONCRETE FOOTING DEPTH CHART (TXDOT PENETROMETER DESIGN)

NOTE: ESTIMATED N SHOULD BE BASED AT APPROXIMATELY THE UPPER ONE-THIRD POINT OF THE DRILLED CONCRETE FOOTING BELOW THE GROUND LINE

Note:
1. Curves shown on this sheet are applicable for reinforced concrete footings only.

Texas Department of Transportation
Traffic Operations Division

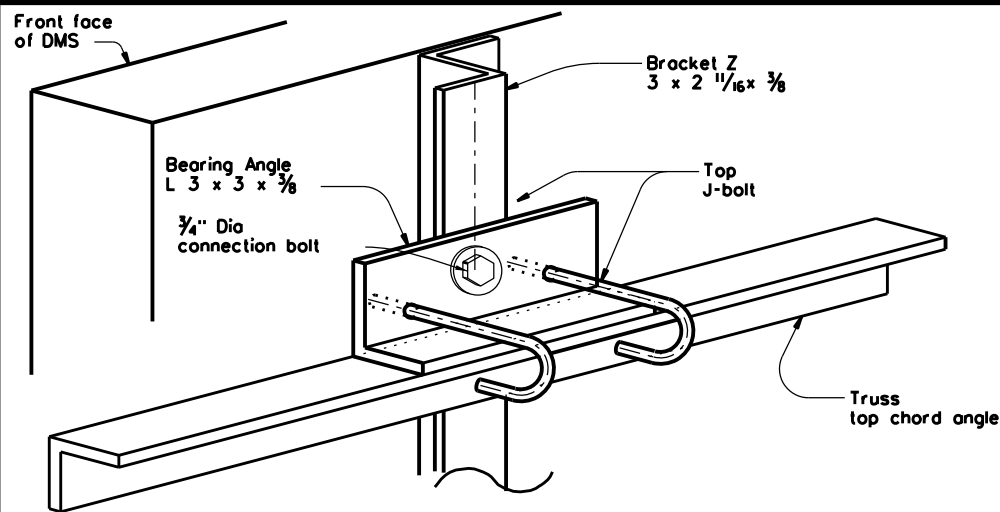
LARGE ROADSIDE SIGN SUPPORTS FOUNDATION WORKSHEET

SMD(8W2)-08

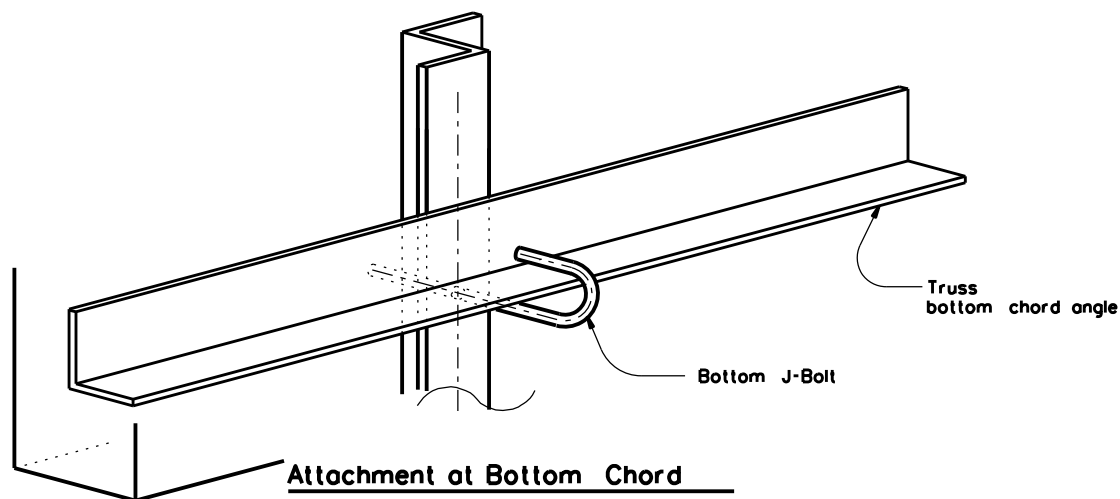
© TxDOT July 1972	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
5-74 4-78 9-08	REVISIONS	CONT	SECT	JOB
		0101	06	095
		DIST	COUNTY	SHEET NO.
		CRP	NUECES	S10.011.038

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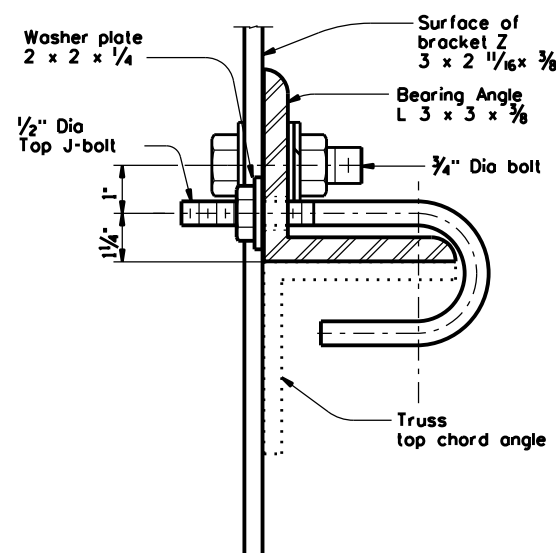
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FILE:



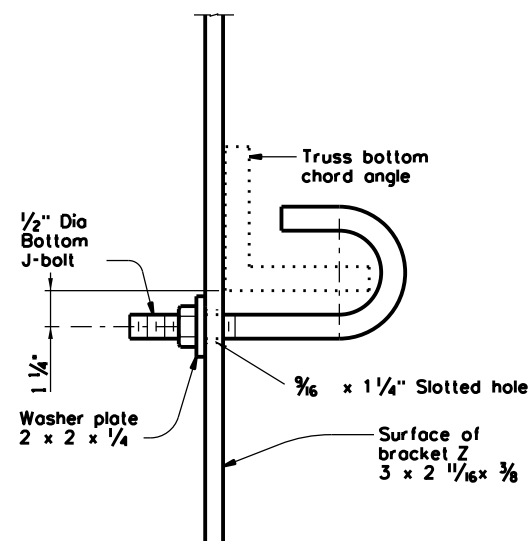
Attachment at Top Chord
(Showing Chord Angle 3")



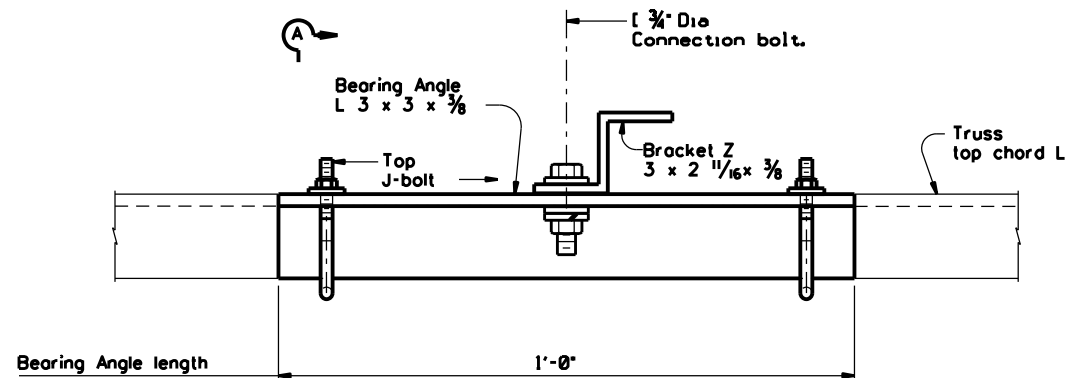
Attachment at Bottom Chord
ISOMETRIC VIEW



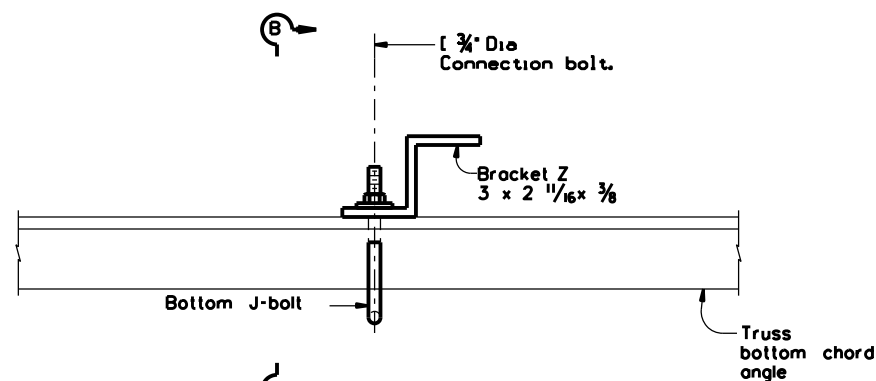
SECTION A-A



SECTION B-B



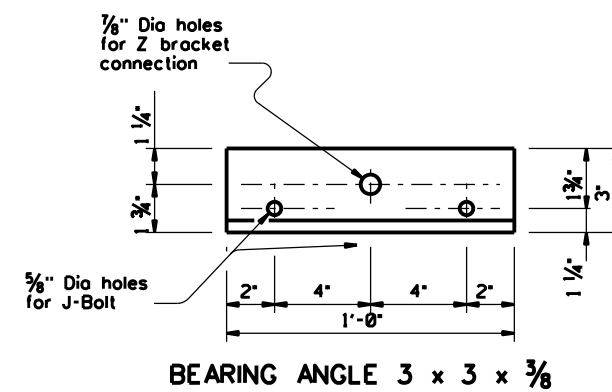
Attachment at Top Chord
(Showing Chord Angle 3")



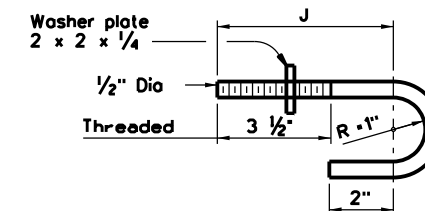
Attachment at Bottom Chord
PLAN VIEW

GENERAL NOTES:

1. Application of the mounting detailed on Sheet 1 of 3 is limited to a dynamic message sign (DMS) attachment that is not in conflict with the truss connection bolts at the point(s) of attachment. The overhead sign structure must have adequate capacity to support the DMS. A determination of adequacy shall be made prior to attaching the DMS supports to the truss.
2. Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. The Design Sustained Wind Velocity is 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3600 lbs and a design Effective Projected Area (EPA) of 441 sq ft, with the EPA based on a DMS nominal width of 30.5 feet and nominal depth of 8.25 feet plus four top and bottom 1'-8" square flashing beacons. The EPA includes drag coefficients of 1.7 (applied to sign area) and 1.2 (applied to flashing beacon area). A horizontal eccentricity of 1.0 ft from the face of the truss to the center of gravity of the DMS for attachment of DMS is assumed. An even number of Z brackets, spaced at 5 ft max., is assumed to transfer forces through the connection.
3. All structural steel shall conform to ASTM A36, A572 Gr 50 or A588. Connection bolts shall conform to ASTM A325 or A449. Each connection bolt shall be provided with 1 heavy hex nut, 2 flat washers, and 1 lock washer. J bolts and washer plate both shall be Type 304 stainless steel, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. All parts except stainless steel shall be galvanized.
4. Contractor shall verify applicable field dimensions before fabrication.



Chord Angle	J
3°, 3 1/2°, 4°	5 1/2"
5° and 6°	7 1/2"



TOP & BOTTOM J-BOLT

SHEET 1 OF 3

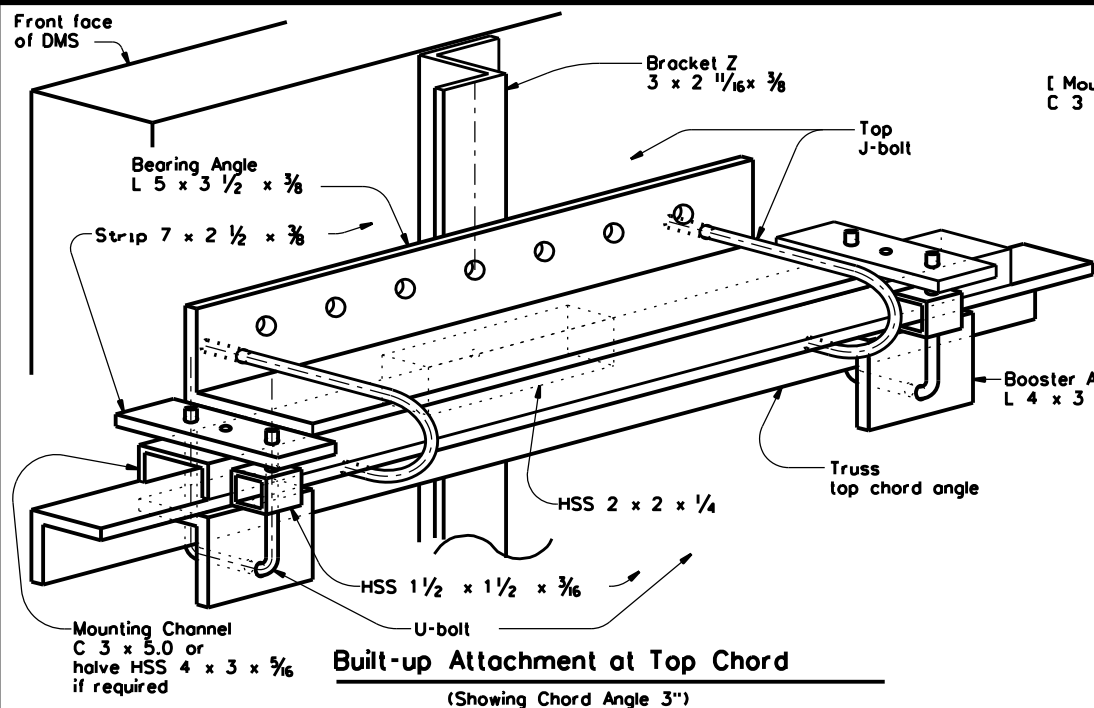


**DMS-TO-TRUSS MOUNTING
AT OVERHEAD SIGN SUPPORTS
(NON BUILD-UP)
DMS(TM-1)-16**

FILE: dms-tm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
© TxDOT June 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0101	06	095	US181
	DIST	COUNTY	SHEET NO.	
	CRP	NUECES	S10.011.039	

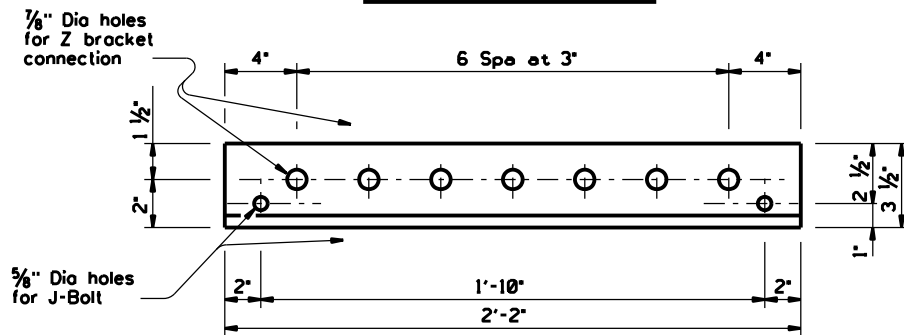
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DATE: FILE:

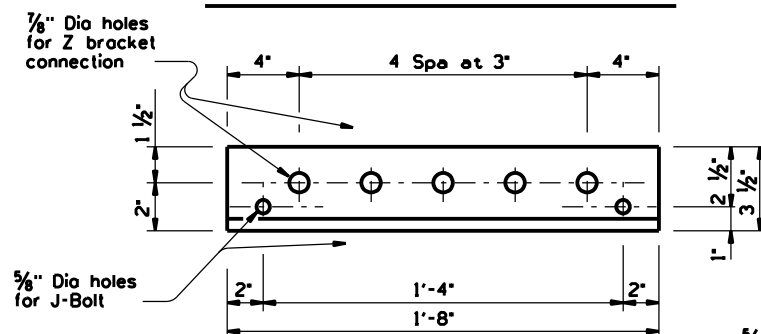


Built-up Attachment at Top Chord
(Showing Chord Angle 3")

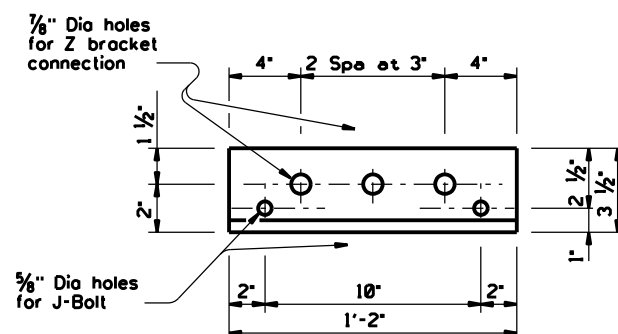
ISOMETRIC VIEW



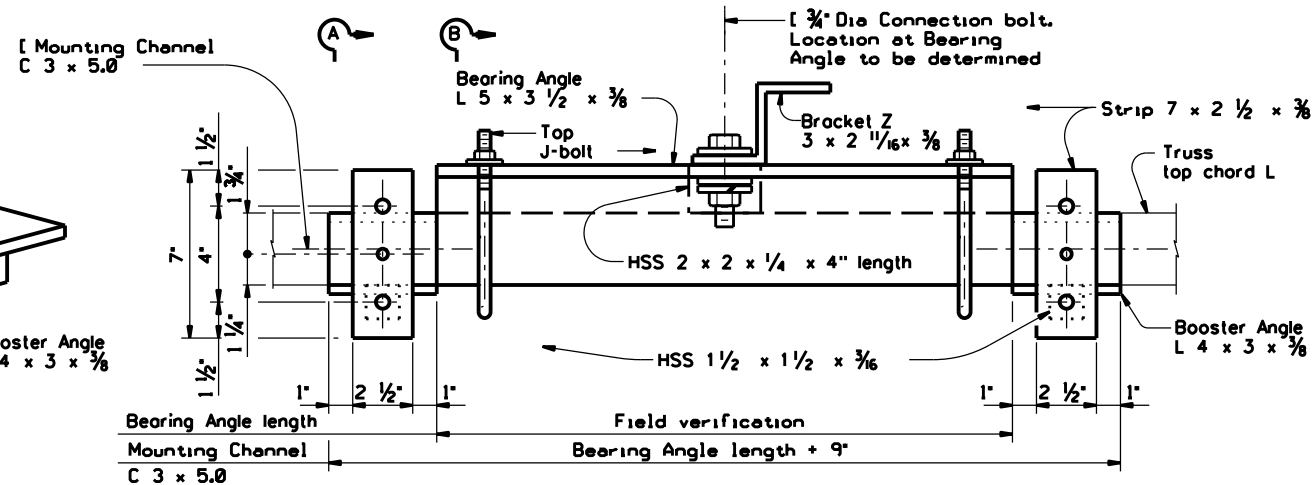
BEARING ANGLE 5 x 3 1/2 x 3/8



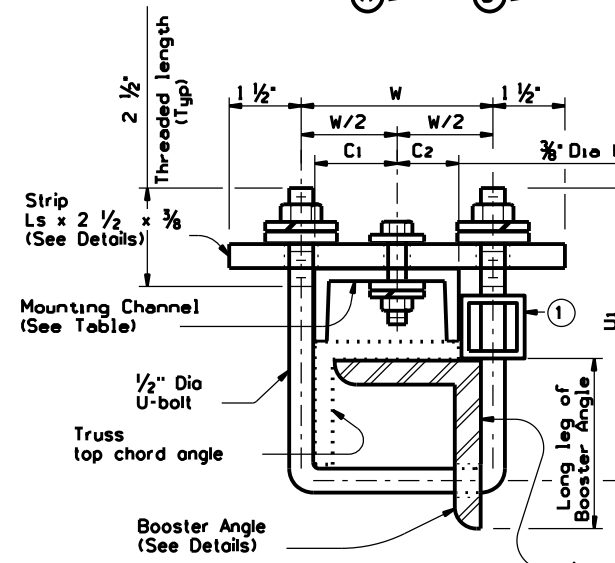
BEARING ANGLE 5 x 3 1/2 x 3/8



BEARING ANGLE 5 x 3 1/2 x 3/8

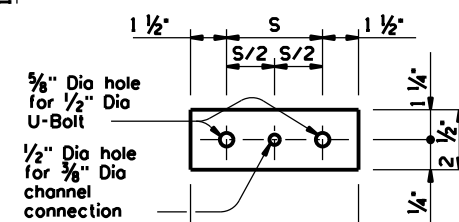


**PLAN VIEW
(AT TOP CHORD)**
(Showing Chord Angle 3")



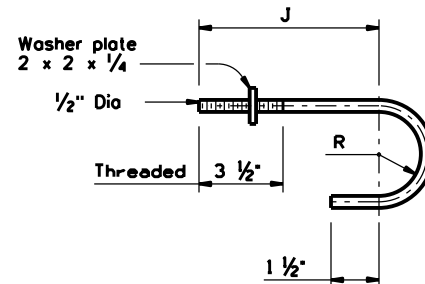
SECTION A-A
(Showing Chord Angle 3", 4", 5" & 6")

Chord Angle	U1	W	C1	C2	Mounting Channel
3"	7"	4"	1 3/4"	1 1/4"	C3 x 5.0
4"	8"	5"	2 1/4"	1 3/4"	C4 x 7.25
5"	9"	6"	2 3/4"	2 1/4"	C5 x 9.0
6"	10 1/2"	7"	3 1/4"	2 3/4"	C6 x 13



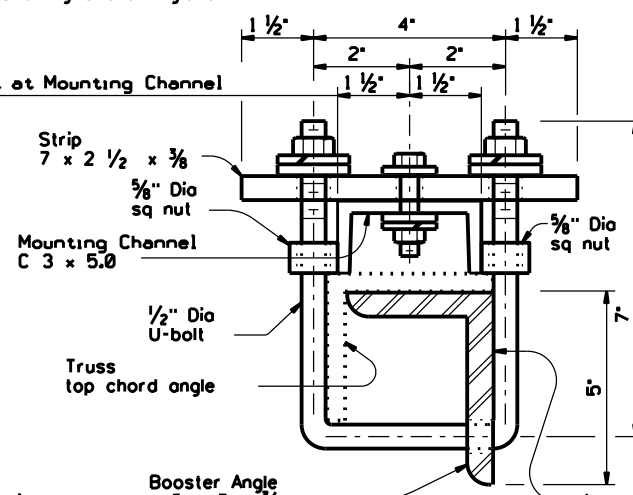
Strip Ls x 2 1/2 x 3/8

Chord Angle	S	Ls
3"	4"	7"
3 1/2"	4"	7"
4"	5"	8"
5"	6"	9"
6"	7"	10"

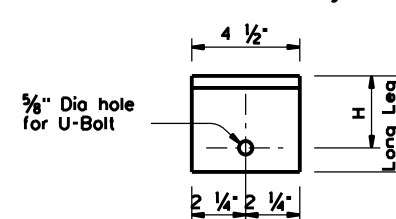


TOP J-BOLT

Chord Angle	J	R
3 & 3 1/2"	7"	1 3/4"
4 & 5"	8"	2"
6"	9"	2 1/4"

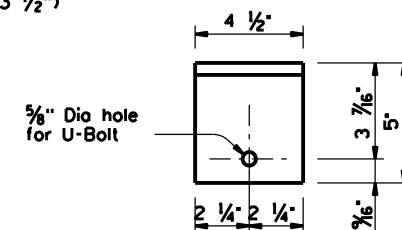


SECTION A-A
(Showing Chord Angle 3 1/2")

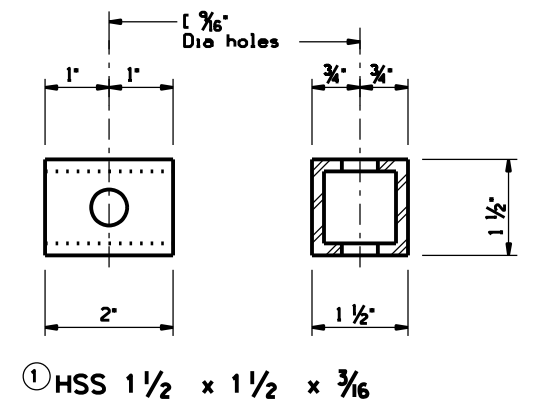


BOOSTER ANGLE
(For Chord Angle 3", 4", 5" and 6")

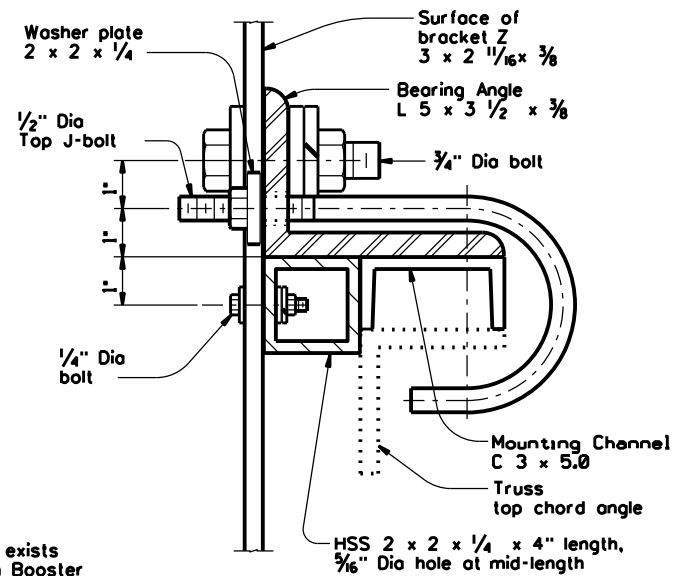
Chord Angle	Booster Angle	H
3"	4 x 3 x 3/8	3"
4"	5 x 3 1/2 x 3/8	3 13/16"
5"	6 x 4 x 3/8	4 13/16"
6"	7 x 4 x 3/8	5 5/8"



BOOSTER ANGLE 5 x 3 x 3/8
(For Chord Angle 3 1/2")



SECTION B-B



SHEET 2 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

**DMS-TO-TRUSS MOUNTING
AT OVERHEAD SIGN SUPPORTS
(WITH BUILD-UP)**

DMS(TM-2)-16

FILE: dms-tm-16.dgn

DN: TxDOT

CK: DW: TxDOT

CK:

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REVISIONS

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0101

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095

US181

DIST

COUNTY

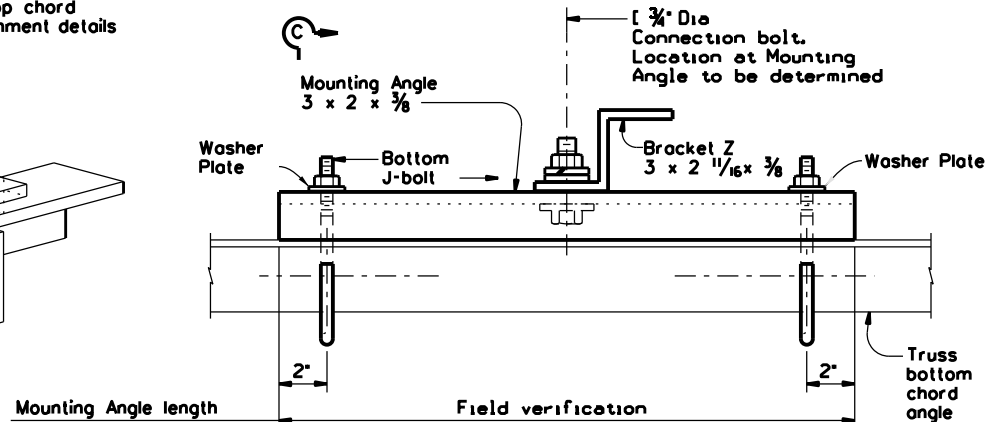
SHEET NO.

CRP

NUECES

S10.D11.040

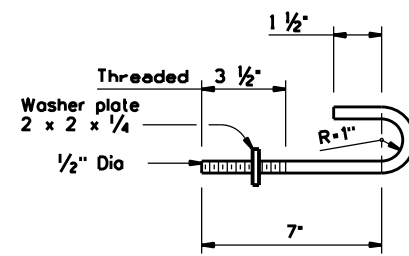
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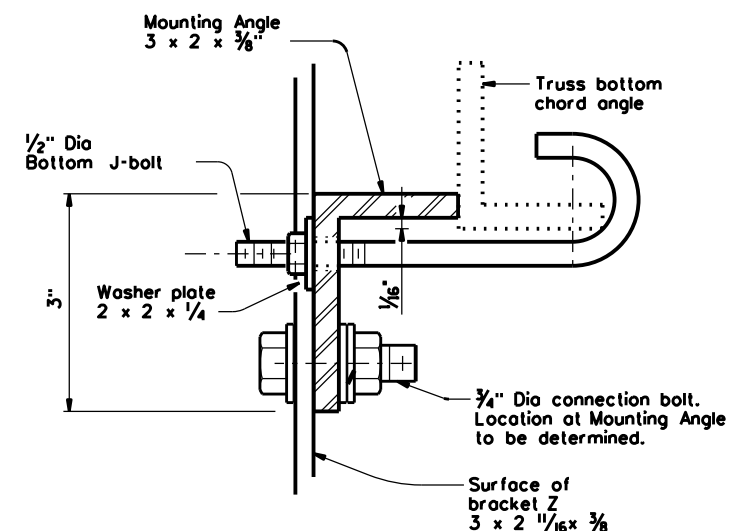
PLAN VIEW
(AT BOTTOM CHORD)



ISOMETRIC VIEW



BOTTOM J-BOLT



SECTION C-C

GENERAL NOTES:

1. Application of the built-up detailed on Sheet 2 and 3 of 3 is limited to the dynamic message sign (DMS) attachment which is in conflict with the truss connection bolts at the point(s) of attachment. The overhead sign structure must have adequate capacity to support the DMS. A determination of adequacy shall be made prior to attaching the DMS supports to the truss.
2. Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. The Design Sustained Wind Velocity is 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3600 lbs and a design Effective Projected Area (EPA) of 441 sq ft, with the EPA based on a DMS nominal width of 30.5 feet and nominal depth of 8.25 feet plus four top and bottom 1'-8" square flashing beacons. The EPA includes drag coefficients of 1.7 (applied to sign area) and 1.2 (applied to flashing beacon area). A horizontal eccentricity of 1.0 ft from the face of the truss to the center of gravity of the DMS for attachment of DMS is assumed. An even number of Z brackets, spaced at 5 ft max., is assumed to transfer forces through the connection.
3. All structural steel shall conform to ASTM A36, A572 Gr 50 or A588. Connection bolts shall conform to ASTM A325 or A449. Each connection bolt shall be provided with 1 heavy hex nut, 2 flat washers, and 1 lock washer. U bolts shall conform to ASTM A307 with 2 hex nuts, 2 flat washers and 2 lock washers. Hollow structural section (HSS) shall conform to ASTM A500, A501, or A847. J bolts and washer plate both shall be Type 304 stainless steel, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. All parts, except stainless steel shall be galvanized.
4. Contractor shall verify applicable field dimensions before fabrication. Various lengths of bearing and mounting angle are provided for suitable mounting. Contractor shall determine the proper bearing and mounting angle length, and the connection along the length at Z bracket to accommodate J-bolt hook. Contractor may substitute HSS for the mounting channel as long as the HSS has equal or greater thickness at the mounting channel. Limit HSS height to achieved mounting clearance.

SHEET 3 OF 3



Texas Department of Transportation

**Traffic
Operations
Division
Standard**

DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS (WITH BUILD-UP)

DMS(TM-3)-16

FILE: dms-lm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
© TxDOT JUNE 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0101	06	095	US181
	DIST	COUNTY		SHEET NO.
	CRP	NUECES		STD DIT. 0

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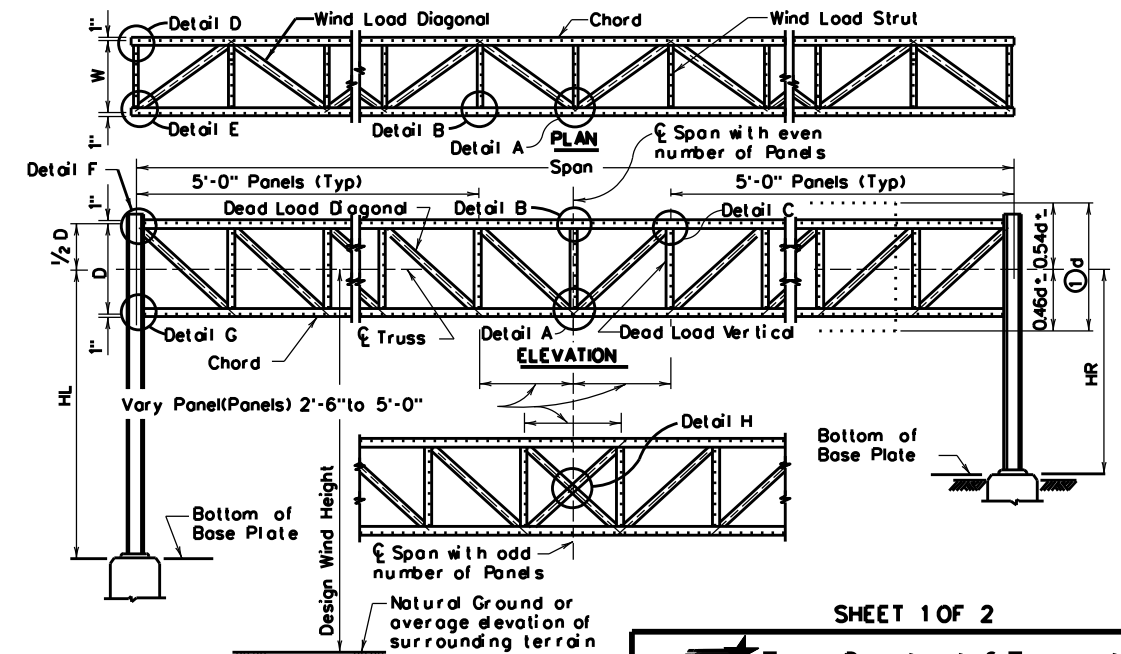
DATE: 8/08
FILE: 0101

ZONE 1 NO ICE 100 M.P.H. WIND									
SPAN W x D - WIDTH x DEPTH		TRUSS DETAILS							
		3/4" Dia. H.S. Bolts Spans 40' Thru 75'							
CHORD - ② Unless Otherwise Shown		40'	45'	50'	55'	60'	65'	70'	75'
DEAD LOAD DIAGONAL - ③		L 3 x 3 x 3/16 [3]	L 3 x 3 x 1/4 [3]	L 3 x 3 x 1/4 [3]	L 3 x 3 x 1/4 [6]	L 3 1/2 x 3 1/2 x 1/4 [7]	L 3 1/2 x 3 1/2 x 3/16 [9]	L 3 1/2 x 3 1/2 x 3/16 [9]	L 4 x 4 x 3/16 [10]
WIND LOAD DIAGONAL - ③		L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]
DEAD LOAD VERTICAL - ③		L 3 x 3 x 3/16 [2]	L 3 x 3 x 3/16 [2]	L 3 x 3 x 3/16 [2]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 2 1/2 x 1/4 [3]	L 3 x 3 x 1/4 [2]	L 3 x 3 x 1/4 [3]
WIND LOAD STRUT - ③		L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]	L 2 x 2 x 3/16 [2]
TOTAL DEFL. & TRUSS D.L.		DEFL=0.12" L=42 lb/ft	DEFL=0.18" L=42 lb/ft	DEFL=0.21" L=47 lb/ft	DEFL=0.30" L=47 lb/ft	DEFL=0.38" L=53 lb/ft	DEFL=0.44" L=59 lb/ft	DEFL=0.58" L=60 lb/ft	DEFL=0.75" L=64 lb/ft
S - COLUMN SPACING TOWER HEIGHT		TOWER DETAILS							
		6.0'	6.0'	6.0'	6.0'	6.5'	6.5'	6.5'	6.5'
Tower Height = $\frac{HL + HR}{2}$	15'	W 10 x 17 (28.0)	W 10 x 17 (31.5)	W 10 x 22 (34.3)	W 10 x 22 (37.8)	W 10 x 22 (36.7)	W 10 x 22 (39.9)	W 10 x 22 (42.9)	W 10 x 26 (45.7)
	16'	W 10 x 17 (30.0)	W 10 x 22 (33.7)	W 10 x 22 (36.7)	W 10 x 22 (40.5)	W 10 x 22 (39.3)	W 10 x 22 (42.7)	W 10 x 26 (45.9)	W 10 x 26 (48.9)
	17'	W 10 x 22 (33.0)	W 10 x 22 (36.0)	W 10 x 22 (39.0)	W 10 x 22 (43.1)	W 10 x 26 (42.3)	W 10 x 26 (45.5)	W 10 x 26 (48.8)	W 12 x 26 (53.4)
	18'	W 10 x 22 (34.0)	W 10 x 22 (38.2)	W 10 x 22 (41.4)	W 10 x 22 (45.8)	W 10 x 26 (44.9)	W 10 x 26 (48.4)	W 10 x 26 (51.9)	W 12 x 26 (56.8)
	19'	W 10 x 22 (36.4)	W 10 x 22 (40.5)	W 10 x 26 (43.9)	W 10 x 26 (48.4)	W 10 x 26 (47.6)	W 12 x 26 (51.8)	W 12 x 26 (55.6)	W 12 x 26 (59.3)
	20'	W 10 x 22 (38.5)	W 10 x 22 (42.7)	W 10 x 26 (46.4)	W 10 x 26 (51.1)	W 10 x 26 (50.2)	W 12 x 26 (54.7)	W 12 x 26 (58.7)	W 12 x 26 (62.6)
	21'	W 10 x 22 (40.6)	W 10 x 26 (45.0)	W 10 x 26 (49.3)	W 12 x 26 (54.4)	W 12 x 26 (53.6)	W 12 x 26 (57.6)	W 12 x 26 (61.8)	W 14 x 30 (66.8)
	22'	W 10 x 22 (42.7)	W 10 x 26 (47.4)	W 10 x 26 (51.9)	W 12 x 26 (57.1)	W 12 x 26 (56.4)	W 12 x 26 (60.6)	W 12 x 26 (64.9)	W 14 x 30 (70.3)
	23'	W 10 x 26 (44.2)	W 10 x 26 (49.7)	W 12 x 26 (55.1)	W 12 x 26 (60.0)	W 12 x 26 (59.2)	W 14 x 30 (64.6)	W 14 x 30 (69.1)	W 14 x 30 (73.7)
	24'	W 10 x 26 (46.3)	W 10 x 26 (52.0)	W 12 x 26 (57.7)	W 12 x 26 (62.8)	W 12 x 26 (62.0)	W 14 x 30 (67.7)	W 14 x 30 (72.4)	W 14 x 30 (77.2)
	25'	W 12 x 26 (49.7)	W 12 x 26 (55.0)	W 12 x 26 (60.3)	W 14 x 30 (66.9)	W 14 x 30 (65.9)	W 14 x 30 (70.7)	W 14 x 34 (75.6)	W 14 x 34 (80.5)
	26'	W 12 x 26 (51.9)	W 12 x 26 (57.4)	W 12 x 26 (63.0)	W 14 x 30 (69.8)	W 14 x 30 (68.8)	W 14 x 30 (73.8)	W 14 x 34 (78.9)	W 14 x 34 (84.0)
	27'	W 12 x 26 (54.1)	W 12 x 26 (59.9)	W 14 x 30 (67.0)	W 14 x 30 (72.8)	W 14 x 30 (71.6)	W 14 x 34 (76.9)	W 14 x 34 (82.2)	W 16 x 36 (87.4)
	28'	W 12 x 26 (56.4)	W 12 x 26 (62.4)	W 14 x 30 (69.8)	W 14 x 30 (75.8)	W 14 x 30 (74.7)	W 14 x 34 (80.0)	W 14 x 34 (85.5)	W 16 x 36 (90.9)
	29'	W 12 x 26 (58.7)	W 14 x 30 (66.5)	W 14 x 30 (72.6)	W 14 x 34 (78.7)	W 14 x 34 (77.6)	W 14 x 34 (83.1)	W 16 x 36 (90.4)	W 16 x 36 (94.5)
	30'	W 12 x 26 (61.0)	W 14 x 30 (69.1)	W 14 x 30 (75.5)	W 14 x 34 (81.7)	W 14 x 34 (80.7)	W 16 x 36 (86.3)	W 16 x 36 (93.9)	W 16 x 36 (98.0)

ZONE 1 NO ICE 100 M.P.H. WIND									
3/4" Dia. H.S. Bolts Spans 76' Thru 155'					TRUSS DETAILS				
80'		85'		90'		95'		SPAN	
4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		W x D - WIDTH x DEPTH	
L 3 1/2 x 3 1/2 x 3/8 [8]		L 4 x 4 x 3/8 [9]		L 4 x 4 x 3/8 [10]		L 4 x 4 x 7/16 [11]		CHORD - ② Unless Otherwise Shown	
L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		DEAD LOAD DIAGONAL - ③	
L 3 x 3 x 1/4 [3]		L 3 x 3 x 1/4 [3]		L 3 x 3 x 1/4 [3]		L 3 1/2 x 3 1/2 x 1/4 [3]		WIND LOAD DIAGONAL - ③	
L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		DEAD LOAD VERTICAL - ③	
L 2 1/2 x 2 1/2 x 3/16 [1]		L 2 1/2 x 2 1/2 x 3/16 [1]		L 2 1/2 x 2 1/2 x 3/16 [1]		L 2 1/2 x 2 1/2 x 3/16 [1]		WIND LOAD STRUT - ③	
DEFL=0.86" L=70 lb/ft		DEFL=1.08" L=76 lb/ft		DEFL=1.20" L=76 lb/ft		DEFL=1.43" L=86 lb/ft		TOTAL DEFL. & TRUSS D.L.	
TOWER DETAILS									
7.0'		7.0'		7.0'		7.0'		S - COLUMN SPACING	
								TOWER HEIGHT	
W 10 x 26 (44.0)		W 10 x 26 (46.8)		W 12 x 26 (50.0)		W 12 x 26 (52.8)		15'	
W 10 x 26 (47.2)		W 10 x 26 (50.1)		W 12 x 26 (53.6)		W 12 x 26 (56.5)		16'	
W 12 x 26 (51.2)		W 12 x 26 (54.3)		W 12 x 26 (57.2)		W 12 x 26 (60.3)		17'	
W 12 x 26 (54.4)		W 12 x 26 (57.7)		W 12 x 26 (60.8)		W 14 x 30 (64.1)		18'	
W 12 x 26 (57.7)		W 14 x 30 (61.8)		W 14 x 30 (65.1)		W 14 x 30 (68.6)		19'	
W 12 x 26 (60.9)		W 14 x 30 (65.3)		W 14 x 30 (68.8)		W 14 x 30 (72.5)		20'	
W 14 x 30 (65.0)		W 14 x 30 (68.8)		W 14 x 30 (72.5)		W 14 x 34 (76.5)		21'	
W 14 x 30 (68.3)		W 14 x 30 (72.4)		W 14 x 34 (76.3)		W 14 x 34 (80.4)		22'	
W 14 x 30 (71.7)		W 14 x 34 (76.0)		W 14 x 34 (80.0)		W 16 x 36 (85.2)		23'	
W 14 x 34 (75.1)		W 14 x 34 (79.5)		W 14 x 34 (83.8)		W 16 x 36 (89.3)		24'	
W 14 x 34 (78.6)		W 16 x 36 (83.0)		W 16 x 36 (88.7)		W 16 x 36 (93.4)		25'	
W 14 x 34 (82.0)		W 16 x 36 (86.6)		W 16 x 36 (92.5)		W 16 x 40 (97.4)		26'	
W 16 x 36 (86.7)		W 16 x 36 (91.6)		W 16 x 40 (96.4)		W 16 x 40 (101.4)		27'	
W 16 x 36 (90.2)		W 16 x 36 (95.4)		W 16 x 40 (100.3)		W 16 x 40 (105.6)		28'	
W 16 x 40 (93.7)		W 16 x 40 (97.5)		W 16 x 40 (104.2)		W 18 x 46 (111.2)		29'	
W 16 x 40 (97.3)		W 16 x 40 (101.2)		W 18 x 46 (108.2)		W 18 x 46 (115.5)		30'	

COLUMN SIZE & UPLIFT (kips)

Tower Height = $\frac{HL + HR}{2}$



- ① d = Sign Depth
Where signs of different depths are used, the bottom edges 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 of the truss.
- ② "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures".
- ③ "Carbon Steel" for non-bridge structures per Item 442, "Metal For Structures".

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

OVERHEAD SIGN BRIDGE DETAILS

OSB-Z1

© TxDOT November 2007		DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS		CONT	SECT	JOB	HIGHWAY
8/08 * of HS bolt/square sizes: odd missing HS bolt dia (select spans)		0101	06	095	US181
		DIST	COUNTY		SHEET NO.
		CRP	NUECES		510.011.042

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DATE: 8/08
FILE: 0101_06_095

ZONE 1 NO ICE 100 M.P.H. WIND									
SPAN W x D - WIDTH x DEPTH CHORD - ② Unless Otherwise Shown DEAD LOAD DIAGONAL - ⑤ WIND LOAD DIAGONAL - ⑤ DEAD LOAD VERTICAL - ⑤ WIND LOAD STRUT - ⑤ TOTAL DEFL. & TRUSS D.L.		TRUSS DETAILS							
		¾" Dia. H.S. Bolts Spans 76' Thru 155'							
		100'	105'	110'	115'	120'	125'	130'	135'
		5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0
		L 5 x 5 x ⅜ [11]	L 4 x 4 x ½ [12]	L 5 x 5 x ⅜ [14]	L 5 x 5 x ⅜ [15]	L 5 x 5 x ½ [16]	L 5 x 5 x ½ [18]	L 6 x 6 x ½ [20]	L 6 x 6 x ½ [21]
		L 3 x 2 x ⅜ [2]	L 3 x 2 x ⅜ [2]	L 3 x 2 x ⅜ [2]	L 3 x 2 x ⅜ [2]	L 3 x 2 ½x ⅜ [2]	L 3 x 3 x ⅜ [2]	L 3 x 2 x ¼ [2]	L 3 x 2 ½x ¼ [2]
		L 3 ½x 3 ½x ¼ [3]	L 3 ½x 3 ½x ¼ [3]	L 3 ½x 3 ½x ¼ [3]	L 3 ½x 3 ½x ¼ [4]	L 4 x 4 x ¼ [4]	L 4 x 4 x ¼ [4]	L 4 x 4 x ¼ [4]	L 3 ½x 3 ½x ⅝ [4]
		L 3 x 2 x ⅜ [2]	L 3 x 2 x ⅜ [2]	L 3 x 2 x ⅜ [2]	L 3 x 2 x ⅜ [2]	L 3 x 2 ½x ⅜ [2]	L 3 x 2 ½x ⅜ [2]	L 3 x 2 ½x ⅜ [2]	L 3 x 2 ½x ⅜ [2]
		L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]
		DEFL=1.46" L=92 lb/ft	DEFL=1.58" L=95 lb/ft	DEFL=1.88" L=101 lb/ft	DEFL=2.04" L=101 lb/ft	DEFL=2.30" L=113 lb/ft	DEFL=2.61" L=114 lb/ft	DEFL=2.74" L=130 lb/ft	DEFL=3.14" L=133 lb/ft
		TOWER DETAILS							
		7.5'	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'
		W 12 x 26 (54.0)	W 12 x 26 (56.4)	W 14 x 30 (59.5)	W 14 x 30 (62.0)	W 14 x 34 (64.5)	W 14 x 34 (66.9)	W 14 x 34 (69.2)	W 14 x 34 (71.9)
		W 12 x 26 (57.8)	W 14 x 30 (60.4)	W 14 x 30 (63.7)	W 14 x 30 (66.4)	W 14 x 34 (69.1)	W 14 x 34 (71.6)	W 14 x 34 (74.2)	W 14 x 34 (77.0)
		W 14 x 30 (61.5)	W 14 x 30 (64.4)	W 14 x 30 (68.0)	W 14 x 34 (70.6)	W 14 x 34 (73.7)	W 14 x 34 (76.4)	W 14 x 34 (79.1)	W 16 x 36 (82.7)
		W 14 x 30 (65.4)	W 14 x 30 (68.4)	W 14 x 30 (72.2)	W 14 x 34 (75.1)	W 14 x 34 (78.3)	W 14 x 34 (81.2)	W 16 x 36 (84.1)	W 16 x 36 (88.0)
		W 14 x 30 (69.2)	W 14 x 34 (73.0)	W 14 x 30 (76.4)	W 14 x 34 (79.6)	W 16 x 36 (83.6)	W 16 x 36 (86.7)	W 16 x 36 (89.9)	W 16 x 40 (93.8)
		W 14 x 34 (73.1)	W 14 x 34 (77.1)	W 14 x 34 (80.7)	W 16 x 36 (84.1)	W 16 x 36 (88.3)	W 16 x 36 (91.6)	W 16 x 40 (95.0)	W 16 x 40 (99.1)
		W 14 x 34 (77.6)	W 16 x 36 (82.0)	W 16 x 36 (85.8)	W 16 x 36 (88.4)	W 16 x 40 (92.9)	W 16 x 40 (96.4)	W 16 x 40 (99.5)	W 18 x 46 (104.4)
		W 14 x 34 (81.6)	W 16 x 36 (86.2)	W 16 x 36 (90.1)	W 16 x 36 (92.9)	W 16 x 40 (97.7)	W 16 x 40 (101.3)	W 16 x 40 (105.1)	W 18 x 46 (109.8)
		W 16 x 36 (86.5)	W 16 x 36 (90.4)	W 16 x 40 (94.3)	W 16 x 40 (98.3)	W 16 x 40 (102.4)	W 18 x 46 (107.2)	W 18 x 46 (111.2)	W 18 x 46 (115.2)
		W 16 x 36 (90.6)	W 16 x 40 (94.6)	W 16 x 40 (98.7)	W 16 x 40 (102.9)	W 18 x 46 (107.2)	W 18 x 46 (112.2)	W 18 x 46 (116.5)	W 18 x 46 (120.6)
		W 16 x 40 (94.5)	W 16 x 40 (98.8)	W 16 x 40 (103.1)	W 18 x 46 (108.8)	W 18 x 46 (113.1)	W 18 x 46 (117.3)	W 18 x 50 (121.6)	W 18 x 50 (126.1)
		W 16 x 40 (98.6)	W 16 x 40 (103.1)	W 18 x 46 (107.6)	W 18 x 46 (113.5)	W 18 x 46 (118.0)	W 18 x 46 (122.3)	W 18 x 50 (126.9)	W 18 x 50 (131.6)
		W 16 x 40 (100.2)	W 18 x 46 (108.5)	W 18 x 46 (113.4)	W 18 x 46 (118.3)	W 18 x 46 (122.9)	W 18 x 50 (127.5)	W 18 x 50 (132.2)	W 18 x 50 (137.1)
		W 16 x 40 (104.2)	W 18 x 46 (112.9)	W 18 x 46 (118.0)	W 18 x 46 (123.0)	W 18 x 50 (127.9)	W 18 x 50 (132.6)	W 18 x 50 (137.5)	W 18 x 55 (142.6)
		W 18 x 46 (112.4)	W 18 x 46 (117.3)	W 18 x 46 (122.6)	W 18 x 50 (127.7)	W 18 x 50 (132.9)	W 18 x 55 (137.5)	W 18 x 55 (142.6)	W 18 x 55 (148.1)
		W 18 x 46 (116.6)	W 18 x 46 (121.8)	W 18 x 50 (127.2)	W 18 x 50 (132.5)	W 18 x 50 (137.9)	W 18 x 55 (142.6)	W 18 x 55 (147.9)	W 21 x 57 (153.7)

ZONE 1 NO ICE 100 M.P.H. WIND

¾" Dia. H.S. Bolts Spans 76' Thru 155'				TRUSS DETAILS							
				140'	145'	150'	155'				
				5.5 x 5.5	5.5 x 5.5	5.5 x 5.5	5.5 x 5.5				
				L 6 x 6 x ½ [21]	L 6 x 6 x ⅝ [23]	L 6 x 6 x ⅝ [24]	L 6 x 6 x ⅝ [26]				
				L 3 x 2 ½x ¼ [2]	L 3 x 2 ½x ¼ [2]	L 3 x 2 ½x ¼ [2]	L 3 x 3 x ¼ [3]				
				L 3 ½x 3 ½x ⅝ [4]	L 3 ½x 3 ½x ⅝ [4]	L 3 ½x 3 ½x ⅝ [4]	L 4 x 3 ½x ⅝ [4]				
				L 3 x 3 x ⅝ [2]	L 3 x 2 ½x ¼ [2]	L 3 x 2 ½x ¼ [2]	L 3 x 2 ½x ¼ [2]				
				L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]	L 2 ½x 2 ½x ⅜ [1]				
				DEFL=3.09" L=137 lb/ft	DEFL=3.36" L=149 lb/ft	DEFL=3.82" L=149 lb/ft	DEFL=4.14" L=162 lb/ft				
				TOWER DETAILS							
				7.5'	7.5'	7.5'	7.5'				
				W 14 x 34 (74.8)	W 16 x 36 (77.2)	W 16 x 36 (80.1)	W 16 x 36 (82.6)				
				W 14 x 34 (80.1)	W 16 x 36 (82.7)	W 16 x 36 (85.8)	W 16 x 36 (88.5)				
				W 16 x 36 (85.5)	W 16 x 36 (88.3)	W 16 x 40 (91.5)	W 16 x 40 (94.3)				
				W 16 x 36 (90.8)	W 16 x 40 (93.8)	W 16 x 40 (97.2)	W 16 x 40 (100.3)				
				W 16 x 40 (96.1)	W 16 x 40 (99.3)	W 18 x 46 (104.5)	W 18 x 46 (107.7)				
				W 16 x 40 (101.5)	W 16 x 40 (104.9)	W 18 x 46 (110.4)	W 18 x 46 (113.9)				
				W 18 x 46 (108.6)	W 18 x 46 (112.2)	W 18 x 46 (116.3)	W 18 x 46 (120.0)				
				W 18 x 46 (114.2)	W 18 x 46 (118.0)	W 18 x 46 (122.3)	W 18 x 50 (126.2)				
				W 18 x 46 (119.8)	W 18 x 46 (123.8)	W 18 x 50 (128.1)	W 18 x 50 (132.1)				
				W 18 x 46 (125.4)	W 18 x 50 (129.6)	W 18 x 50 (134.1)	W 18 x 50 (138.3)				
				W 18 x 50 (130.8)	W 18 x 50 (135.2)	W 18 x 55 (140.0)	W 18 x 55 (144.4)				
				W 18 x 50 (136.5)	W 18 x 55 (141.1)	W 18 x 55 (146.1)	W 18 x 55 (150.7)				
				W 18 x 55 (141.9)	W 18 x 55 (146.8)	W 21 x 57 (154.0)	W 21 x 57 (158.9)				
				W 18 x 55 (147.7)	W 18 x 55 (152.7)	W 21 x 57 (160.2)	W 21 x 57 (165.3)				
				W 21 x 57 (155.6)	W 21 x 57 (160.8)	W 21 x 62 (166.5)	W 21 x 62 (171.8)				
				W 21 x 57 (161.5)	W 21 x 57 (166.8)	W 21 x 62 (172.7)	W 21 x 62 (178.3)				

KEY TO TRUSS AND TOWER DETAILS

Truss members are all angles.
Truss columns are all wide flange shapes.

W 10 x 26 (44.2) -44.2 kips Uplift at base plate
-26 Pounds per foot.
-10" Nominal size
-Wide Flange

DEFL = 0.12" = inches Deflection due to dead load of truss, walkway, signs and lights.
DL = 42 lb/ft = pounds per foot dead load of truss members only; does not include walkway, signs, and lights.

NOTE: Details on these sheets are for Design Wind Heights up to 30 feet.

GENERAL NOTES

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

For overhead sign bridges with different tower heights, average the height of the two towers and use the tabulated height nearest the calculated average. For average heights falling midway between the two tabulated heights use the larger height.

For truss lengths falling between those shown in the tables use the sizes called for in the next longer span.

Overhead sign bridges are designed for the equivalent area of a 10 foot deep sign panel over 75 percent of the span length, located as necessary to produce maximum stress. Design includes 3 pounds per square foot for sign panel, 20 pounds per linear foot for lights, and 50 pounds per linear foot for walkway, all placed as specified for the design sign panel.

Refer to "Overhead Sign Bridge Truss Details" for details called out in plan and elevation views.

The number of High Strength Bolts required in truss connection or splice are indicated in brackets, e.g. [3], after the member size.

SHEET 2 OF 2

 Texas Department of Transportation
Traffic Operations Division

OVERHEAD SIGN BRIDGE DETAILS

OSB-Z1

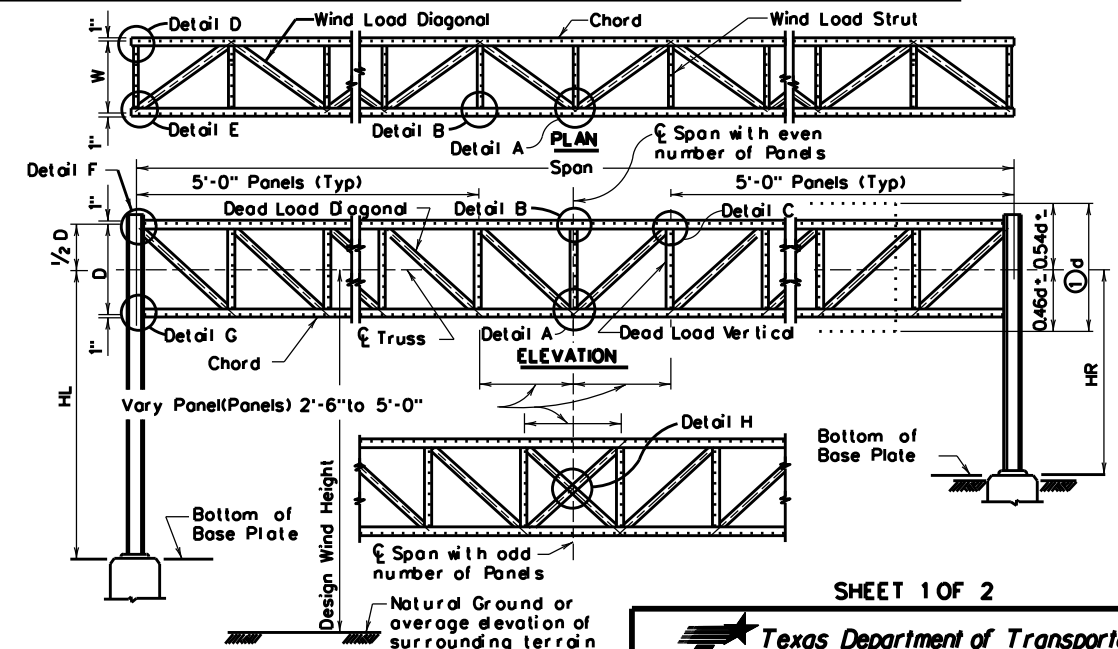
© TxDOT November 2007	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS 8/08 add missing HS bolt dia (select spans); applicability notes noted design specifications	CONT 0101	SECT 06	JOB 095	HIGHWAY US181
	DIST CRP	COUNTY NUECES	SHEET NO. SD0.011.043	

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DATE: 8/08
FILE: 8/08

ZONE 1 NO ICE 100 M.P.H. WIND																	
		TRUSS DETAILS								3/8" Dia. H.S. Bolts Spans 40' Thru 75'							
		40'		45'		50'		55'		60'		65'		70'		75'	
SPAN W x D - WIDTH x DEPTH		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5	
CHORD - ② Unless Otherwise Shown		L 3 x 3 x 3/16 [3]		L 3 x 3 x 1/4 [4]		L 3 x 3 x 1/4 [4]		L 3 1/2x 3 1/2x 3/16 [6]		L 3 1/2x 3 1/2x 3/16 [8]		L 3 1/2x 3 1/2x 3/16 [8]		L 3 1/2x 3 1/2x 3/16 [9]		L 4 x 4 x 3/16 [10]	
DEAD LOAD DIAGONAL - ③		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]	
WIND LOAD DIAGONAL - ③		L 3 x 3 x 3/16 [3]		L 3 x 3 x 3/16 [3]		L 3 x 3 x 3/16 [3]		L 3 x 2 1/2x 1/4 [4]		L 3 x 2 1/2x 1/4 [3]		L 3 x 3 x 1/4 [3]		L 3 x 3 x 1/4 [4]		L 3 x 3 x 1/4 [4]	
DEAD LOAD VERTICAL - ③		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]		L 2 x 2 x 3/16 [2]	
WIND LOAD STRUT - ③		L 2 x 2 x 3/16 [1]		L 2 x 2 x 3/16 [1]		L 2 x 2 x 3/16 [1]		L 2 x 2 x 3/16 [1]		L 2 x 2 x 3/16 [1]		L 2 x 2 x 3/16 [1]		L 2 x 2 x 3/16 [1]		L 2 x 2 x 3/16 [1]	
TOTAL DEFL. & TRUSS D.L.		DEFL-0.14" L-42 lb/ft		DEFL-0.15" L-47 lb/ft		DEFL-0.22" L-47 lb/ft		DEFL-0.25" L-59 lb/ft		DEFL-0.35" L-59 lb/ft		DEFL-0.46" L-60 lb/ft		DEFL-0.61" L-60 lb/ft		DEFL-0.80" L-64 lb/ft	
		TOWER DETAILS															
S - COLUMN SPACING		6.0'		6.0'		6.0'		6.0'		6.5'		6.5'		6.5'		6.5'	
TOWER HEIGHT																	
Tower Height = $\frac{HL + HR}{2}$	25'	W 12 x 26 (54.9)		W 12 x 26 (60.7)		W 14 x 30 (66.4)		W 14 x 30 (72.5)		W 14 x 34 (74.6)		W 14 x 34 (79.9)		W 14 x 34 (85.3)		W 16 x 36 (90.6)	
	26'	W 12 x 26 (57.4)		W 12 x 26 (63.4)		W 14 x 30 (69.6)		W 14 x 30 (75.7)		W 14 x 34 (77.9)		W 14 x 34 (83.5)		W 14 x 34 (89.1)		W 16 x 36 (94.6)	
	27'	W 12 x 26 (59.9)		W 14 x 30 (66.2)		W 14 x 30 (72.6)		W 14 x 34 (78.5)		W 14 x 34 (81.3)		W 14 x 34 (87.1)		W 16 x 36 (92.7)		W 16 x 36 (98.7)	
	28'	W 12 x 26 (62.5)		W 14 x 30 (69.0)		W 14 x 34 (75.5)		W 14 x 34 (82.0)		W 14 x 34 (84.7)		W 16 x 36 (90.6)		W 16 x 36 (96.6)		W 16 x 40 (102.4)	
	29'	W 14 x 30 (65.1)		W 14 x 30 (71.8)		W 14 x 34 (78.5)		W 14 x 34 (85.3)		W 16 x 36 (88.0)		W 16 x 36 (94.2)		W 16 x 40 (100.1)		W 16 x 40 (106.5)	
	30'	W 14 x 30 (67.7)		W 14 x 34 (74.6)		W 14 x 34 (81.6)		W 14 x 34 (88.6)		W 16 x 36 (91.5)		W 16 x 36 (97.9)		W 16 x 40 (104.0)		W 16 x 40 (110.6)	
	31'	W 14 x 30 (70.3)		W 14 x 34 (77.5)		W 14 x 34 (84.7)		W 16 x 36 (91.7)		W 16 x 36 (95.0)		W 16 x 40 (101.3)		W 16 x 40 (108.0)		W 18 x 46 (114.6)	
	32'	W 14 x 34 (75.6)		W 14 x 34 (80.3)		W 16 x 36 (87.6)		W 16 x 36 (95.1)		W 16 x 40 (98.2)		W 16 x 40 (105.0)		W 18 x 46 (111.8)		W 18 x 46 (118.8)	
	33'	W 14 x 34 (76.9)		W 14 x 34 (83.2)		W 16 x 36 (90.7)		W 16 x 36 (98.4)		W 16 x 40 (101.7)		W 16 x 40 (108.8)		W 18 x 46 (115.8)		W 18 x 46 (123.0)	
	34'	W 14 x 34 (78.3)		W 16 x 36 (85.9)		W 16 x 36 (93.8)		W 16 x 40 (101.4)		W 16 x 40 (105.3)		W 18 x 46 (112.4)		W 18 x 46 (119.7)		W 18 x 50 (127.0)	
	35'	W 14 x 34 (81.0)		W 16 x 36 (88.9)		W 16 x 36 (97.0)		W 16 x 40 (104.8)		W 16 x 40 (108.8)		W 18 x 46 (116.2)		W 18 x 46 (123.8)		W 18 x 50 (131.2)	
	36'	W 16 x 36 (83.5)		W 16 x 36 (91.8)		W 16 x 40 (99.8)		W 16 x 40 (108.2)		W 18 x 46 (112.4)		W 18 x 46 (120.0)		W 18 x 50 (127.6)		W 18 x 50 (135.5)	
	37'	W 16 x 36 (86.2)		W 16 x 36 (94.8)		W 16 x 40 (103.0)		W 18 x 46 (108.6)		W 18 x 46 (115.9)		W 18 x 46 (123.8)		W 18 x 50 (131.6)		W 18 x 55 (139.8)	
	38'	W 16 x 36 (89.0)		W 16 x 40 (97.0)		W 16 x 40 (106.2)		W 18 x 46 (112.0)		W 18 x 46 (119.6)		W 18 x 50 (127.5)		W 18 x 50 (135.7)		W 18 x 55 (144.0)	
	39'	W 16 x 36 (91.8)		W 16 x 40 (100.0)		W 18 x 46 (109.2)		W 18 x 46 (115.4)		W 18 x 46 (123.3)		W 18 x 50 (131.4)		W 18 x 55 (139.8)		W 21 x 57 (148.4)	
	40'	W 16 x 40 (93.7)		W 16 x 40 (103.0)		W 18 x 46 (112.5)		W 18 x 46 (125.3)		W 18 x 50 (126.7)		W 18 x 50 (135.3)		W 18 x 55 (143.9)		W 21 x 57 (152.3)	
42'	W 16 x 40 (99.4)		W 18 x 46 (109.3)		W 18 x 46 (119.0)		W 18 x 50 (136.1)		W 18 x 50 (134.1)		W 18 x 55 (143.1)		W 21 x 57 (151.8)		W 21 x 57 (161.0)		
45'	W 18 x 46 (108.1)		W 18 x 46 (118.5)		W 18 x 55 (137.1)		W 18 x 55 (147.6)		W 21 x 57 (145.4)		W 21 x 57 (155.1)		W 21 x 57 (164.4)		W 21 x 62 (174.3)		

ZONE 1 NO ICE 100 M.P.H. WIND									
3/4" Dia. H.S. Bolts Spans 76' Thru 155'					TRUSS DETAILS				
80'		85'		90'		95'		SPAN	
4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		W x D - WIDTH x DEPTH	
L 3 1/2x 3 1/2x 3/8 [7]		L 4 x 4 x 3/8 [9]		L 4 x 4 x 3/8 [9]		L 4 x 4 x 7/16 [10]		CHORD - ② Unless Otherwise Shown	
L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		DEAD LOAD DIAGONAL - ③	
L 3 x 3 x 1/4 [3]		L 3 x 3 x 1/4 [3]		L 3 1/2x 3 1/2x 1/4 [3]		L 3 1/2x 3 1/2x 1/4 [3]		WIND LOAD DIAGONAL - ③	
L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		L 3 x 2 x 3/16 [2]		DEAD LOAD VERTICAL - ③	
L 2 1/2x 2 1/2x 3/16 [1]		L 2 1/2x 2 1/2x 3/16 [1]		L 2 1/2x 2 1/2x 3/16 [1]		L 2 1/2x 2 1/2x 3/16 [1]		WIND LOAD STRUT - ③	
DEFL=0.86" L=70 lb/ft		DEFL=0.99" L=76 lb/ft		DEFL=1.24" L=78 lb/ft		DEFL=1.40" L=86 lb/ft		TOTAL DEFL. & TRUSS D.L.	
TOWER DETAILS									
7.0'		7.0'		7.0'		7.0'		S - COLUMN SPACING	
								TOWER HEIGHT	
W 16 x 36 (88.8)		W 16 x 36 (93.8)		W 16 x 40 (98.6)		W 16 x 40 (103.8)		25'	
W 16 x 36 (92.7)		W 16 x 40 (97.6)		W 16 x 40 (102.9)		W 16 x 40 (108.3)		26'	
W 16 x 40 (96.4)		W 16 x 40 (101.8)		W 16 x 40 (107.3)		W 18 x 46 (112.7)		27'	
W 16 x 40 (100.3)		W 16 x 40 (105.9)		W 18 x 46 (111.5)		W 18 x 46 (117.3)		28'	
W 16 x 40 (104.3)		W 18 x 46 (110.0)		W 18 x 46 (115.9)		W 18 x 46 (121.9)		29'	
W 18 x 46 (108.2)		W 18 x 46 (114.2)		W 18 x 46 (120.4)		W 18 x 46 (126.5)		30'	
W 18 x 46 (112.3)		W 18 x 46 (118.5)		W 18 x 46 (124.8)		W 18 x 50 (131.0)		31'	
W 18 x 46 (116.3)		W 18 x 50 (122.6)		W 18 x 50 (129.1)		W 18 x 50 (135.7)		32'	
W 18 x 46 (120.4)		W 18 x 50 (126.8)		W 18 x 50 (133.6)		W 18 x 50 (140.4)		33'	
W 18 x 50 (124.3)		W 18 x 50 (131.2)		W 18 x 50 (138.1)		W 18 x 55 (145.0)		34'	
W 18 x 50 (128.5)		W 18 x 50 (135.5)		W 18 x 55 (142.6)		W 18 x 55 (149.5)		35'	
W 18 x 50 (132.6)		W 18 x 55 (139.8)		W 18 x 55 (147.1)		W 21 x 57 (154.2)		36'	
W 18 x 55 (136.8)		W 18 x 55 (144.0)		W 21 x 57 (151.4)		W 21 x 57 (159.0)		37'	
W 18 x 55 (140.9)		W 21 x 57 (148.2)		W 21 x 57 (156.0)		W 21 x 57 (163.8)		38'	
W 21 x 57 (144.7)		W 21 x 57 (152.6)		W 21 x 57 (160.6)		W 21 x 62 (168.4)		39'	
W 21 x 57 (149.0)		W 21 x 57 (157.0)		W 21 x 57 (165.2)		W 21 x 62 (173.2)		40'	
W 21 x 57 (157.5)		W 21 x 62 (165.7)		W 21 x 62 (174.3)		W 21 x 62 (183.0)		42'	
W 21 x 62 (170.2)		W 21 x 62 (179.2)		W 21 x 68 (188.7)		W 21 x 68 (198.1)		45'	



- ① d = Sign Depth
Where signs of different depths are used, the bottom edges 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 of the truss.
- ② "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures".
- ③ "Carbon Steel" for non-bridge structures per Item 442, "Metal For Structures".

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

HIGH LEVEL OVERHEAD SIGN BRIDGE DETAILS

HOSB-Z1

© TxDOT November 2007		DN: TxDOT		CK: TxDOT		DW: TxDOT		CK: TxDOT	
REVISIONS		CONT		SECT		JOB		HIGHWAY	
8/08 add missing HS bolt dia (select spans)		0101		06		095		US181	
		DIST		COUNTY				SHEET NO.	
		CRP		NUECES				STD. 011.044	

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DATE: 8/08
FILE: 0101

STAGES

ZONE 1 NO ICE 100 M.P.H. WIND									
SPAN W x D - WIDTH x DEPTH CHORD - ② Unless Otherwise Shown DEAD LOAD DIAGONAL - ⑤ WIND LOAD DIAGONAL - ⑤ DEAD LOAD VERTICAL - ⑤ WIND LOAD STRUT - ⑤ TOTAL DEFL. & TRUSS D.L.		TRUSS DETAILS							
		¾" Dia. H.S. Bolts Spans 76' Thru 155'							
S - COLUMN SPACING		100'	105'	110'	115'	120'	125'	130'	135'
TOWER HEIGHT		5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0	5.0 x 5.0
25'		L 5 x 5 x ⅝ [11]	L 4 x 4 x ½ [12]	L 5 x 5 x ⅝ [13]	L 5 x 5 x ⅝ [14]	L 5 x 5 x ½ [16]	L 5 x 5 x ½ [16]	L 6 x 6 x ½ [19]	L 6 x 6 x ⅝ [21]
26'		L 3 x 2 x ⅝ [2]	L 3 x 2 x ⅝ [2]	L 3 x 2 x ⅝ [2]	L 3 x 2 x ⅝ [2]	L 3 x 2 x ⅝ [2]	L 3 x 3 x ⅝ [2]	L 3 x 2 x ¼ [2]	L 3 x 2 ½ x ¼ [3]
27'		L 3 ½ x 3 ½ x ¼ [3]	L 3 ½ x 3 ½ x ¼ [3]	L 3 ½ x 3 ½ x ¼ [3]	L 4 x 4 x ¼ [4]	L 4 x 4 x ¼ [4]	L 4 x 4 x ¼ [4]	L 3 ½ x 3 ½ x ⅝ [4]	L 3 ½ x 3 ½ x ⅝ [4]
28'		L 3 x 2 x ⅝ [2]	L 3 x 2 x ⅝ [2]	L 3 x 2 x ⅝ [2]	L 3 x 2 x ⅝ [2]	L 3 x 2 ½ x ⅝ [2]	L 3 x 2 ½ x ⅝ [2]	L 3 x 2 ½ x ⅝ [2]	L 3 x 2 ½ x ⅝ [2]
29'		L 2 ½ x 2 ½ x ⅝ [1]	L 2 ½ x 2 ½ x ⅝ [1]	L 2 ½ x 2 ½ x ⅝ [1]	L 2 ½ x 2 ½ x ⅝ [1]	L 2 ½ x 2 ½ x ⅝ [1]	L 2 ½ x 2 ½ x ⅝ [1]	L 2 ½ x 2 ½ x ⅝ [1]	L 2 ½ x 2 ½ x ⅝ [1]
30'		DEFL=1.42" L=92 lb/ft	DEFL=1.59" L=95 lb/ft	DEFL=1.88" L=101 lb/ft	DEFL=2.24" L=104 lb/ft	DEFL=2.32" L=112 lb/ft	DEFL=2.70" L=114 lb/ft	DEFL=3.10" L=133 lb/ft	DEFL=3.03" L=143 lb/ft
31'		TOWER DETAILS							
32'		7.5'	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'	7.5'
33'		W 16 x 40 (101.0)	W 16 x 40 (105.6)	W 18 x 46 (110.4)	W 18 x 46 (115.3)	W 18 x 46 (119.6)	W 18 x 46 (124.3)	W 18 x 50 (132.7)	W 18 x 50 (137.8)
34'		W 16 x 40 (105.5)	W 18 x 46 (110.2)	W 18 x 46 (115.3)	W 18 x 46 (120.3)	W 18 x 46 (124.8)	W 18 x 50 (129.6)	W 18 x 50 (138.6)	W 18 x 55 (143.9)
35'		W 18 x 46 (109.8)	W 18 x 46 (114.9)	W 18 x 46 (120.1)	W 18 x 46 (125.3)	W 18 x 50 (129.9)	W 18 x 50 (135.0)	W 18 x 55 (144.3)	W 18 x 55 (149.9)
36'		W 18 x 46 (114.2)	W 18 x 46 (119.5)	W 18 x 50 (124.9)	W 18 x 50 (130.2)	W 18 x 50 (135.1)	W 18 x 50 (140.4)	W 18 x 55 (150.2)	W 18 x 55 (156.0)
37'		W 18 x 46 (118.7)	W 18 x 50 (124.1)	W 18 x 50 (129.7)	W 18 x 50 (135.3)	W 18 x 55 (140.4)	W 18 x 55 (145.8)	W 21 x 57 (156.2)	W 21 x 57 (162.0)
38'		W 18 x 50 (123.1)	W 18 x 50 (128.8)	W 18 x 50 (134.6)	W 18 x 55 (140.4)	W 18 x 55 (145.5)	W 18 x 55 (151.2)	W 21 x 57 (162.1)	W 21 x 57 (168.3)
39'		W 18 x 50 (127.6)	W 18 x 50 (133.5)	W 18 x 55 (139.4)	W 18 x 55 (145.4)	W 21 x 57 (150.6)	W 21 x 57 (156.6)	W 21 x 57 (168.2)	W 21 x 62 (174.4)
40'		W 18 x 50 (132.2)	W 18 x 55 (138.3)	W 18 x 55 (144.3)	W 21 x 57 (150.3)	W 21 x 57 (156.0)	W 21 x 57 (162.1)	W 21 x 62 (174.1)	W 21 x 62 (180.6)
41'		W 18 x 55 (136.8)	W 18 x 55 (142.7)	W 21 x 57 (149.0)	W 21 x 57 (155.4)	W 21 x 57 (161.3)	W 21 x 57 (167.6)	W 21 x 62 (180.2)	W 21 x 62 (186.9)
42'		W 18 x 55 (141.0)	W 21 x 57 (147.4)	W 21 x 57 (154.0)	W 21 x 57 (160.6)	W 21 x 57 (166.7)	W 21 x 62 (173.0)	W 21 x 62 (186.3)	W 21 x 68 (193.1)
43'		W 21 x 57 (145.6)	W 21 x 57 (152.3)	W 21 x 57 (159.0)	W 21 x 57 (165.8)	W 21 x 62 (171.9)	W 21 x 62 (178.6)	W 21 x 68 (192.2)	W 21 x 68 (199.4)
44'		W 21 x 57 (150.2)	W 21 x 57 (157.1)	W 21 x 57 (164.0)	W 21 x 62 (170.8)	W 21 x 62 (177.3)	W 21 x 62 (184.2)	W 21 x 68 (198.4)	W 21 x 68 (205.8)
45'		W 21 x 57 (154.9)	W 21 x 57 (161.9)	W 21 x 62 (168.9)	W 21 x 62 (176.0)	W 21 x 62 (182.7)	W 21 x 68 (189.6)	W 21 x 68 (204.6)	W 24 x 68 (212.2)
		W 21 x 62 (159.5)	W 21 x 62 (166.6)	W 21 x 62 (173.9)	W 21 x 62 (182.3)	W 21 x 68 (187.9)	W 21 x 68 (195.2)	W 24 x 68 (210.8)	W 24 x 68 (218.7)
		W 21 x 62 (164.0)	W 21 x 62 (171.5)	W 21 x 62 (179.0)	W 21 x 68 (186.3)	W 21 x 68 (193.3)	W 21 x 68 (200.8)	W 24 x 68 (217.1)	W 24 x 76 (224.8)
		W 21 x 62 (168.7)	W 21 x 62 (176.4)	W 21 x 68 (188.9)	W 21 x 68 (191.6)	W 21 x 68 (198.8)	W 24 x 68 (206.5)	W 24 x 76 (223.5)	W 24 x 76 (231.3)
		W 21 x 68 (177.9)	W 21 x 68 (185.9)	W 21 x 68 (194.1)	W 24 x 68 (212.9)	W 24 x 68 (209.8)	W 24 x 68 (217.9)	W 24 x 76 (236.2)	W 24 x 76 (244.3)
		W 21 x 68 (192.3)	W 24 x 68 (200.1)	W 24 x 68 (209.6)	W 24 x 76 (218.3)	W 24 x 76 (237.6)	W 24 x 76 (234.8)	W 27 x 84 (253.9)	W 27 x 84 (263.0)

ZONE 1 NO ICE 100 M.P.H. WIND									
¾" Dia. H.S. Bolts Spans 76' Thru 155'				TRUSS DETAILS					
140'		145'		150'		155'		SPAN	
5.5 x 5.5		5.5 x 5.5		5.5 x 5.5		5.5 x 5.5		W x D - WIDTH x DEPTH	
L 6 x 6 x ⅝ [21]		L 6 x 6 x ⅝ [22]		L 6 x 6 x ⅝ [23]		L 6 x 6 x ⅝ [25]		CHORD - ② Unless Otherwise Shown	
L 3 x 2 ½x ¼ [3]		L 3 x 2 ½x ¼ [3]		L 3 x 2 ½x ¼ [3]		L 3 x 3 x ¼ [3]		DEAD LOAD DIAGONAL - ⑤	
L 3 ½x 3 ½x ⅝ [4]		L 3 ½x 3 ½x ⅝ [4]		L 4 x 3 ½x ⅝ [4]		L 4 x 3 ½x ⅝ [4]		WIND LOAD DIAGONAL - ⑤	
L 3 x 3 x ⅝ [2]		L 3 x 3 x ⅝ [2]		L 3 x 2 ½x ¼ [2]		L 3 x 2 ½x ¼ [2]		DEAD LOAD VERTICAL - ⑤	
L 2 ½x 2 ½x ⅝ [1]		L 2 ½x 2 ½x ⅝ [1]		L 2 ½x 2 ½x ⅝ [1]		L 2 ½x 2 ½x ⅝ [1]		WIND LOAD STRUT - ⑤	
DEFL=2.99" L=147 lb/ft		DEFL=3.41" L=147 lb/ft		DEFL=3.86" L=151 lb/ft		DEFL=4.15" L=162 lb/ft		TOTAL DEFL. & TRUSS D.L.	
TOWER DETAILS									
7.5'		7.5'		7.5'		7.5'		S - COLUMN SPACING	
								TOWER HEIGHT	
W 18 x 55 (143.1)		W 18 x 55 (147.9)		W 21 x 57 (152.9)		W 21 x 57 (157.7)		25'	
W 18 x 55 (148.9)		W 18 x 55 (154.4)		W 21 x 57 (159.7)		W 21 x 57 (164.6)		26'	
W 18 x 55 (155.3)		W 21 x 57 (160.8)		W 21 x 57 (166.4)		W 21 x 57 (171.6)		27'	
W 21 x 57 (161.5)		W 21 x 57 (167.4)		W 21 x 62 (173.1)		W 21 x 62 (178.5)		28'	
W 21 x 57 (167.9)		W 21 x 62 (173.9)		W 21 x 62 (179.9)		W 21 x 62 (185.5)		29'	
W 21 x 62 (174.2)		W 21 x 62 (180.5)		W 21 x 62 (186.8)		W 21 x 62 (192.6)		30'	
W 21 x 62 (180.7)		W 21 x 62 (187.2)		W 21 x 68 (193.5)		W 21 x 68 (199.5)		31'	
W 21 x 62 (187.2)		W 21 x 68 (193.7)		W 21 x 68 (200.4)		W 21 x 68 (206.7)		32'	
W 21 x 68 (193.5)		W 21 x 68 (200.4)		W 21 x 68 (207.4)		W 24 x 68 (213.8)		33'	
W 21 x 68 (200.0)		W 24 x 68 (207.2)		W 24 x 68 (214.4)		W 24 x 68 (221.0)		34'	
W 21 x 68 (206.6)		W 24 x 68 (214.0)		W 24 x 68 (221.4)		W 24 x 68 (228.3)		35'	
W 24 x 68 (213.2)		W 24 x 68 (220.8)		W 24 x 76 (228.2)		W 24 x 76 (235.2)		36'	
W 24 x 68 (219.9)		W 24 x 76 (227.4)		W 24 x 76 (235.2)		W 24 x 76 (242.5)		37'	
W 24 x 76 (226.2)		W 24 x 76 (234.2)		W 24 x 76 (242.3)		W 24 x 76 (249.8)		38'	
W 24 x 76 (232.9)		W 24 x 76 (241.1)		W 24 x 76 (249.4)		W 27 x 84 (256.9)		39'	
W 24 x 76 (239.6)		W 24 x 76 (248.0)		W 27 x 84 (256.2)		W 27 x 84 (264.2)		40'	
W 27 x 84 (252.7)		W 27 x 84 (261.6)		W 27 x 84 (270.5)		W 27 x 84 (279.0)		42'	
W 27 x 84 (273.2)		W 27 x 84 (282.7)		W 27 x 84 (292.3)		W 27 x 94 (300.9)		45'	

KEY TO TRUSS AND TOWER DETAILS

Truss members are all angles.
Truss columns are all wide flange shapes.

W 10 x 26 (44.2) -44.2 kips Uplift at base plate
26 Pounds per foot.
10" Nominal size
Wide Flange

DEFL = 0.12" = inches Deflection due to dead load of truss, walkway, signs and lights.
DL = 42 lb/ft = pounds per foot dead load of truss members only; does not include walkway, signs, and lights.

NOTE: Details on these sheets are for Design Wind Heights between 30 feet and 50 feet.

GENERAL NOTES

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

For overhead sign bridges with different tower heights, average the height of the two towers and use the tabulated height nearest the calculated average. For average heights falling midway between the two tabulated heights use the larger height.

For truss lengths falling between those shown in the tables use the sizes called for in the next longer span.

Overhead sign bridges are designed for the equivalent area of a 10 foot deep sign panel over 75 percent of the span length, located as necessary to produce maximum stress. Design includes 3 pounds per square foot for sign panel, 20 pounds per linear foot for lights, and 50 pounds per linear foot for walkway, all placed as specified for the design sign panel.

Refer to "Overhead Sign Bridge Truss Details" for details called out in plan and elevation views.

The number of High Strength Bolts required in truss connection or splice are indicated in brackets, e.g. [3], after the member size.

SHEET 2 OF 2

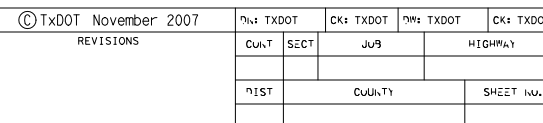
Texas Department of Transportation
Traffic Operations Division

HIGH LEVEL OVERHEAD SIGN BRIDGE DETAILS

HOSB-Z1

© TxDOT November 2007	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
8/08 * of HS bolts: add missing HS bolt dia (select spans) applicability note: noted design specifications	0101	06	095	US181
	DIST	COUNTY	SHEET NO.	
	CRP	NUECES	STD. 011.045	

DATE: _____
FILE: _____



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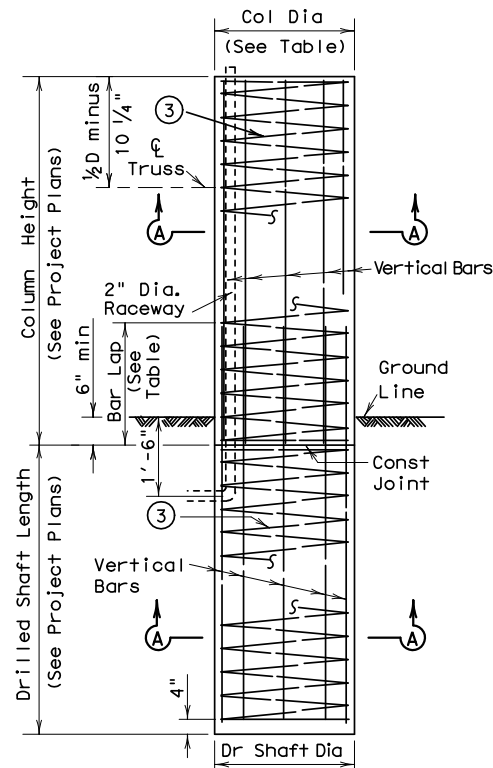
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ZONE 1 100 M.P.H. WIND

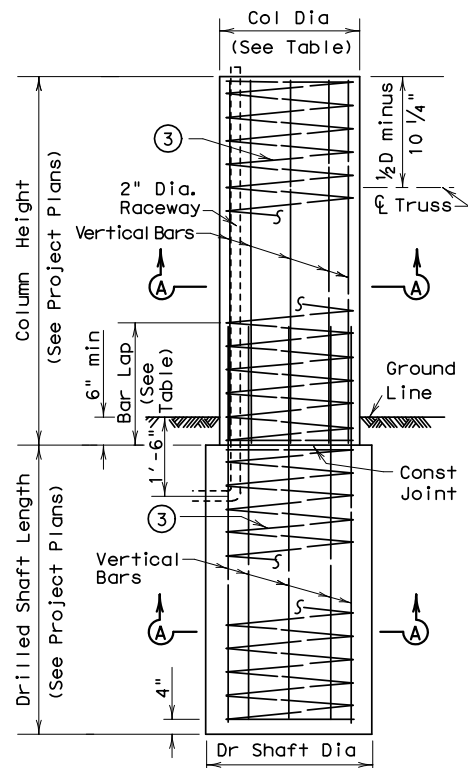
		SPAN	REACTIONS			COLUMN BENDING MOMENTS (Kip-Ft.)																										Height
		Ft.	D. L.	W. L.	Torque	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'	31'	32'								
"Dia x 1'-3" Anchor Bolts	W 8 x 18 BEARING BEAM	40	2.74	9.97	10.29	153	163	173	183	193	204	214	224	234	244	254	265	275	285	295	305	315	326	336	30" Diameter Column							
		45	3.09	11.22	11.58	171	182	193	205	216	228	239	251	262	274	285	296	308	319	331	342	354	365	377								
		50	3.56	12.48	12.87	191	204	217	229	242	255	267	280	293	306	318	331	344	357	369	382	395	407	420								
		55	3.92	13.75	14.16	211	225	239	253	267	281	295	309	323	337	351	365	379	393	407	421	435	449	463								
		60	4.58	15.01	15.45	230	245	260	276	291	306	322	337	352	368	383	398	414	429	444	459	475	490	505								
65		5.12	16.28	16.74	249	266	282	299	316	332	349	365	382	399	415	432	448	465	482	498	515	532	548	36" Diameter Column								
70		5.68	17.57	18.03	269	287	305	323	341	359	376	394	412	430	448	466	484	502	520	538	556	574	592									
75		6.12	18.86	19.33	289	308	328	347	366	385	405	424	443	462	482	501	520	539	559	578	597	616	636									
80		6.61	20.21	20.62	309	330	350	371	392	412	433	454	474	495	515	536	557	577	598	618	639	660	680									
85		7.27	21.52	21.92	329	351	373	395	417	439	461	483	505	527	549	571	593	615	637	658	680	702	724									
90		7.70	22.83	23.21	347	373	396	419	442	466	489	512	536	559	582	605	629	652	675	699	722	745	768	42" Diameter Column								
95		8.62	24.20	24.51	370	395	411	444	469	494	518	543	568	592	617	642	666	691	716	740	765	790	814									
100		8.95	26.24	26.91	402	429	455	482	509	535	562	589	616	643	669	696	723	750	776	804	830	857	883									
105		9.86	27.60	28.27	422	451	479	507	535	563	591	619	648	676	704	732	760	788	817	845	873	901	929									
110		10.50	28.97	29.62	443	473	502	532	562	591	621	650	680	709	739	768	798	827	857	887	916	946	975									
115	11.30	30.33	30.98	464	495	526	557	588	619	650	681	712	743	774	804	835	866	897	928	959	990	1021	48" Diameter Column									
120	11.90	31.75	32.33	486	518	550	583	615	648	680	712	745	777	810	842	874	907	939	971	1003	1036	1069										
125	13.19	33.22	33.69	508	542	576	610	644	677	711	745	779	813	847	881	915	949	982	1016	1050	1084	1118										
130	14.69	34.60	35.05	529	564	600	635	670	706	741	776	811	847	882	917	953	988	1023	1059	1094	1129	1164										
135	15.38	36.00	36.40	550	587	624	661	697	734	771	808	844	881	918	954	991	1028	1065	1101	1138	1175	1211										
140	16.30	37.43	39.43	574	612	650	688	727	765	803	841	879	918	956	994	1032	1070	1108	1147	1185	1223	1261	48" Diameter Column									
145	17.62	38.93	40.86	597	636	676	716	756	795	835	875	914	954	994	1034	1073	1113	1152	1192	1232	1272	1312										
150	18.23	40.43	42.29	620	661	702	743	785	826	867	908	950	991	1032	1073	1114	1155	1197	1238	1279	1321	1362										
155	19.72	41.94	43.73	643	685	728	771	814	857	899	942	985	1028	1070	1113	1156	1199	1242	1284	1327	1370	1413										

For column and drilled shaft reinforcing steel see standard drawing OSBS-SC.
D.L. and W.L. reactions are in Kips.
Torque reactions are in Kip-Feet (Kip-Ft.).

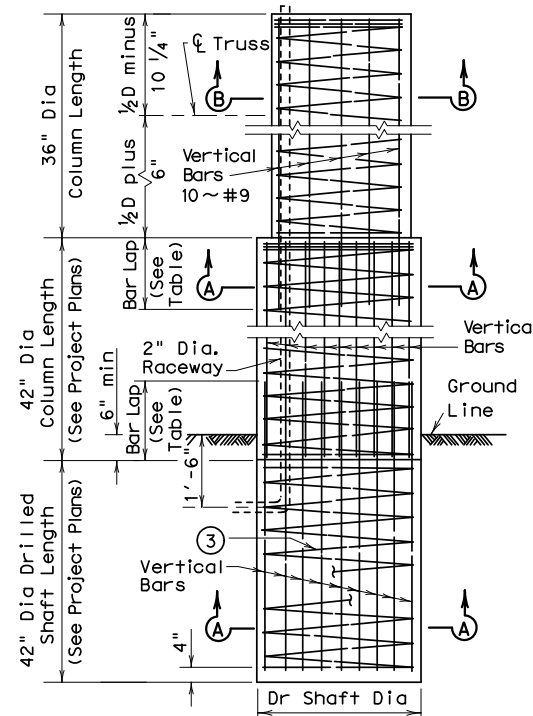
(4) Note: Maximum column size at Friction Collar is 36" Dia.
See Transition Column Details.



COLUMN & SHAFT
EQUAL SIZE



COLUMN & SHAFT
UNEQUAL SIZE



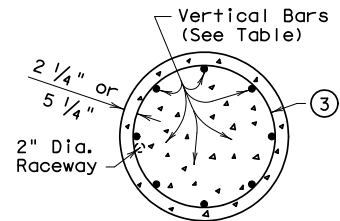
TRANSITION
COLUMN

(3) #3 spiral at 6" pitch. Three flat turns top and one flat turn bottom.
One flat turn top and bottom in Drilled shaft.

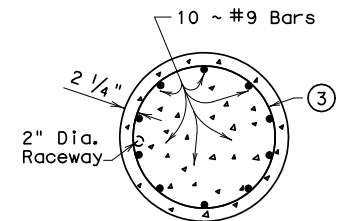
COLUMN AND DRILLED SHAFT DETAILS

NOTE: Use same diameter spiral for both column and drilled shaft.

COLUMN BARS		
BAR SIZE	BAR LAP	
	Gr 40	Gr 60
# 9	3'-10"	5'-8"
#10	4'-10"	7'-3"
#11	5'-11"	8'-11"



COLUMN & SHAFT SECTION A-A



COLUMN SECTION B-B

SHEET 2 OF 2

Texas Department of Transportation
Traffic Operations Division

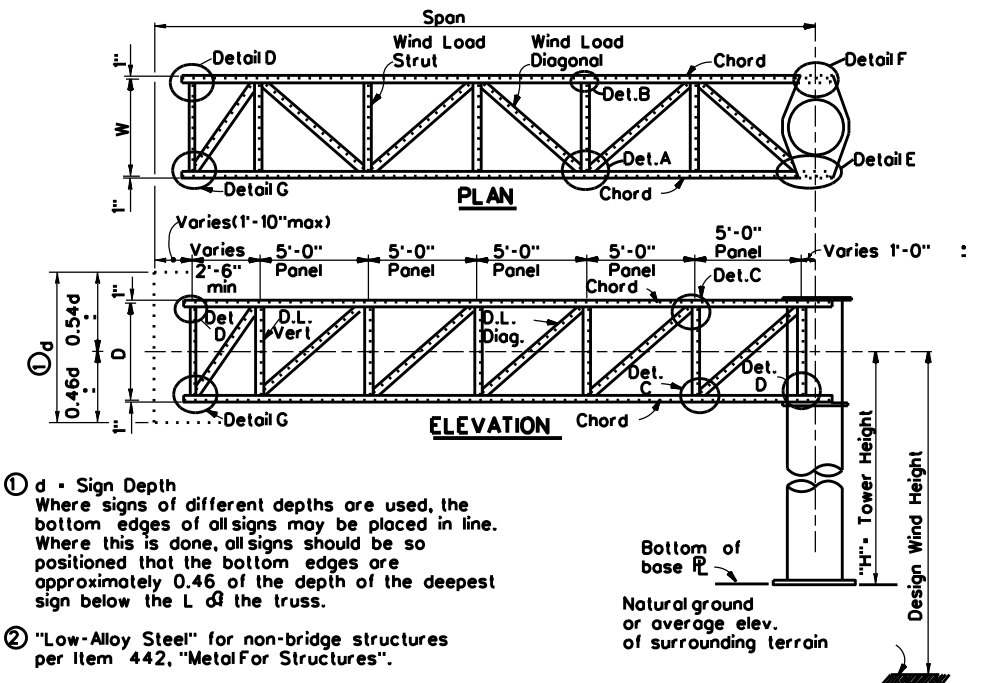
OVERHEAD SIGN BRIDGE
TRUSS DETAILS
SINGLE COLUMN

OSBC-SC-Z1

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REVISIONS	DATE	SECT	JOB	HIGHWAY
	LIST	COUNTY		SHEET NO.

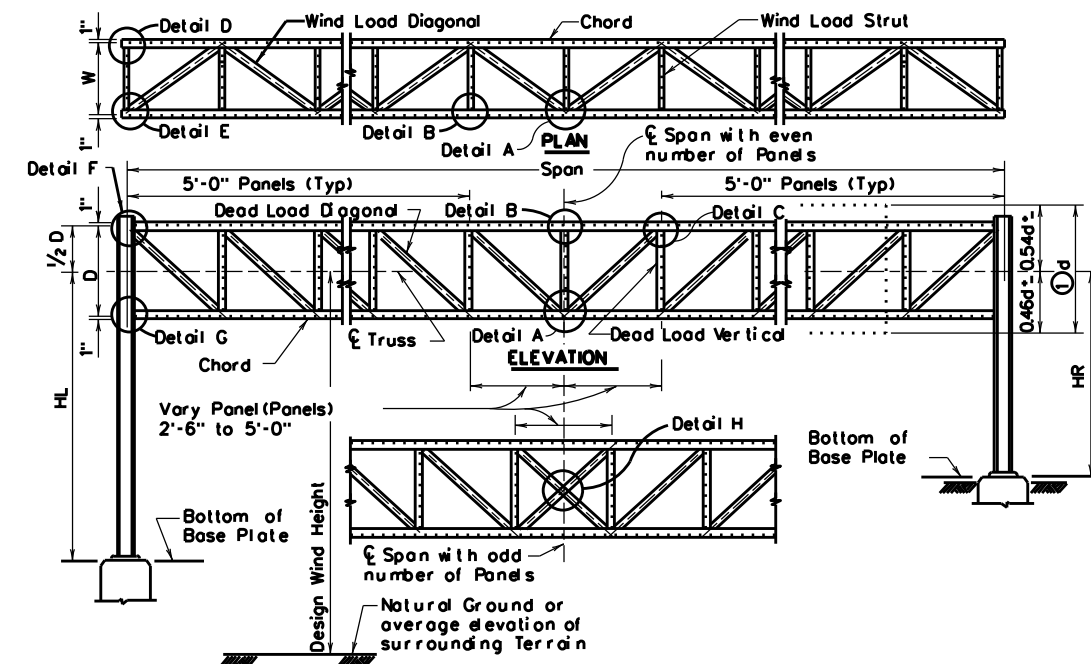
COSS STRUCTURES

STRUCTURE NO. AND STATION				
DESIGN WIND HEIGHT, Hd (feet)				
TRUSS DETAILS	LENGTH OF SPAN (feet)			
	W x D & SIZE HS BOLTS	x w/ " Dio HS Bolts	x w/ " Dio HS Bolts	x w/ " Dio HS Bolts
	LENGTH OF TRUSS PANELS	End = Other =	End = Other =	End = Other =
	CHORD			
	DEAD LOAD DIAGONAL			
	WIND LOAD DIAGONAL			
	DEAD LOAD VERTICAL			
	WIND LOAD STRUT			
	TRUSS DL & DEFL	DL = lb/ft , Δv = "	DL = lb/ft , Δv = "	DL = lb/ft , Δv = "
TOWER DETAILS	TOWER HEIGHT AT TRUSS C (feet)			
	TOWER PIPE DIA & WALL THICKNESS	Dia = Thick =	Dia = Thick =	Dia = Thick =
	TOWER PIPE ΔH AT C TRUSS			
	NO. & SIZE OF ANCHOR BOLTS			
	ANCHOR BOLT CIRCLE DIA			
	BASE C SIZE			
	TRUSS TO TOWER CONNECTION			
DESIGN LOADS				
	SHEAR (Kips)			
	TORSION (Kip-ft)			
	MOMENT (Kip-ft)			
FOUNDATION		w/ "N " =	w/ "N " =	w/ "N " =
	SOIL (Sand or Clay) & "N"			
	SIZE & LENGTH OF DR SHAFT			
	MAIN SHAFT STEEL			
	SHAFT SPIRAL REINFORCING			



OSB STRUCTURES

STRUCTURE NO. AND STATION								
DESIGN WIND HEIGHT, Hd (feet)								
TRUSS	LENGTH OF SPAN (feet)							
	W x D & SIZE HS BOLTS		x	w/	" Dia HS Bolts	x	w/	" Dia HS Bolts
	LENGTH OF TRUSS PANELS		5.0' w/		Center Pane l(s) at	5.0' w/		Center Pane l(s) at
	CHORD						5.0' w/	
	DEAD LOAD DIAGONAL						Center Pane l(s) at	
	WIND LOAD DIAGONAL							
	DEAD LOAD VERTICAL							
	WIND LOAD STRUT							
	TRUSS DL & DEFL		DL =		lb/ft , Δ =	"	DL =	
				lb/ft , Δ =	"	DL =		
						lb/ft , Δ =		
TOWERS			LEFT TOWER		RIGHT TOWER		LEFT TOWER	
							RIGHT TOWER	
	COLUMN SPACING							
	TOWER HEIGHT (feet)		H _L =		H _R =		H _L =	
	COLUMN SIZE		W x		W x		H _R =	
	ANCHOR BOLTS						W x	
	BASE PLATE						W x	
	TOWER DIAGONALS						W x	
	TOWER STRUTS						W x	
	TOWER UPLIFT (Kips)						W x	
DRILLED SHAFTS								
MAXIMUM BRACING SPACING, "S"								
SOIL N (BLOWS PER FT.)								



GENERAL NOTES :

Use tower details, truss details, truss to tower connection, and foundation details, shown on standard drawings OSBT, OSBC, COSSD, and COSSF.
Dimensions and connections, should be determined, using member size or combination of members shown on this sheet.
Number of high strength bolts required in truss connection or splice are indicated in brackets, e.g. [3], after the member size.
Design of truss includes 3 pounds per square foot for sign panel, 20 pounds per foot for lights, and 50 pounds per foot for walkway, all placed as specified for the design sign panel.

Texas Department of Transportation
Traffic Operations Division

OVERHEAD SIGN BRIDGE DETAILS

COSS & OSB-SZ

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REVISIONS	CONT	SECT	JOB	HIGHWAY
	0101	06	095	US181
	DIST	COUNTY	SHEET NO.	
	CRP	NUECES	STD. 011. 050	

DATE:	\$DATES	\$TIMES
FILE:	\$FILES	

ZONE 1 100 MPH WIND

TOWER HEIGHT (ft)	30' SPAN											35' SPAN											40' SPAN											TOWER HEIGHT (ft)
	TOWER PIPE			ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS				TOWER PIPE			ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS				
	Q.D.	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	Q.D.	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	Q.D.	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	
	(in)	(in)	(in)									(in)	(in)	(in)									(in)	(in)	(in)									
14'	24	0.375	0.199	2	8	29 3/4"	34 1/2x 1 3/4	1.1	17.16	242.54	249.26	30	0.310	0.178	2	8	35 3/4"	40 1/2x 1 3/8	1.3	20.11	330.60	296.99	30	0.375	0.206	2 1/4	8	36"	41 x 1 1/8	1.8	22.89	432.38	347.21	14'
15'		0.375	0.238				34 1/2x 1 3/4	1.2	17.20		265.80		0.310	0.205				40 1/2x 1 3/8	1.4	20.16		316.04		0.410	0.219				41 x 1 1/8	1.8	22.94		368.40	15'
16'		0.406	0.251				34 1/2x 1 3/8		17.24		282.45		0.310	0.233				40 1/2x 1 3/8		20.21		335.27		0.410	0.249					1.8	22.99		389.82	16'
17'		0.406	0.283				34 1/2x 1 3/8		17.28		299.21		0.344	0.239				40 1/2x 1 3/4		20.26		354.65		0.410	0.282					1.9	23.04		411.46	17'
18'		0.438	0.296				34 1/2x 1 3/8	1.2	17.32		316.06		0.344	0.268				40 1/2x 1 3/4	1.4	20.31		374.16		0.410	0.316			41 x 1 1/8	2.0	23.09		433.29	18'	
19'		0.438	0.329				34 1/2x 2	1.3	17.36		332.99		0.344	0.299				40 1/2x 1 3/4	1.5	20.36		393.81		0.440	0.327			41 x 2	2.0	23.14		455.29	19'	
20'		0.438	0.355				34 1/2x 2	1.3	17.40		350.00		0.344	0.331	2		35 3/4"	40 1/2x 1 3/4	1.5	20.41		413.56		0.440	0.362					2.0	23.19		477.44	20'
21'		0.467	0.377	2		29 3/4"	34 1/2x 2	1.3	17.44		367.09		0.375	0.336	2 1/4		36"	41 x 1 1/8	1.5	20.46		433.43		0.440	0.399					2.1	23.24		499.74	21'
22'		0.467	0.414	2 1/4		30"	35 x 2 1/8	1.4	17.48		384.25		0.375	0.369				41 x 1 1/8	1.6	20.51		453.39		0.440	0.438				41 x 2	2.2	23.29		522.16	22'
23'		0.467	0.452				35 x 2 1/8		17.52		401.47		0.375	0.403				41 x 2	1.6	20.56		473.44		0.470	0.531	2 1/4		36"	41 x 2 1/8	2.2	23.34		544.69	23'
24'		0.500	0.463				35 x 2 1/8		17.56		418.75		0.375	0.439				41 x 2	1.7	20.61		493.59		0.470	0.489	2 1/2		36 1/2"	42 x 2 1/8	2.2	23.39		567.34	24'
25'		0.530	0.475				35 x 2 1/4		17.60		436.09		0.406	0.442				41 x 2		20.66		513.81		0.470	0.531				42 x 2 1/4	2.3	23.44		590.10	25'
26'		0.530	0.514				35 x 2 1/4	1.4	17.64		453.50		0.406	0.478				41 x 2		20.70		534.12		0.500	0.540				42 x 2 1/4		23.49		612.95	26'
27'		0.530	0.554				35 x 2 1/4	1.5	17.68		470.95		0.406	0.512				41 x 2		20.75		554.50		0.500	0.582				42 x 2 1/4		23.54		635.89	27'
28'		0.530	0.596				35 x 2 3/8	1.5	17.72		488.46		0.438	0.514				41 x 2 1/8		20.80		574.96		0.500	0.626				42 x 2 3/8		23.59		658.93	28'
29'		0.562	0.607				35 x 2 3/8	1.5	17.76		506.03		0.438	0.552				41 x 2 1/4	1.7	20.85		595.49		0.531	0.647				42 x 2 3/8	2.3	23.64		682.04	29'
30'		0.562	0.649	2 1/4		30"	35 x 2 3/8	1.6	17.80		523.64		0.438	0.591	2 1/4		36"	41 x 2 1/4	1.8	20.90		616.08		0.531	0.692				42 x 2 3/8	2.4	23.69		705.24	30'
31'		0.594	0.659	2 1/2		30 1/2"	36 x 2 1/2	1.6	17.84		541.31		0.469	0.591	2 1/2		36 1/2"	42 x 2 1/4	1.8	20.95		636.75		0.562	0.687				42 x 2 3/8	2.4	23.73		728.52	31'
32'	24	0.594	0.702	2 1/2	8	30 1/2"	36 x 2 1/2	1.6	17.88	242.54	559.02	30	0.469	0.630	2 1/2	8	36 1/2"	42 x 2 1/4	1.8	21.00	330.60	657.48	30	0.562	0.732	2 1/2	8	36 1/2"	42 x 2 1/2	2.4	23.78	432.38	751.87	32'

TRUSS DETAILS									
SPAN	10', 15', & 20'	25'	30'	35'	40'				
W x D - WIDTH x DEPTH	4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5		4.5 x 4.5
CHORD- ① Unless Other wise Shown	L 3 x 3 x $\frac{3}{16}$ ② [3] L		x 3 x 3 $\frac{1}{4}$ ②	x	3 $\frac{1}{2}$ 3 $\frac{1}{2}$ [7] $\frac{1}{4}$	x x	3 $\frac{1}{2}$ 3 $\frac{1}{2}$ $\frac{5}{16}$ x		3 [8] 3 $\frac{1}{2}$ $\frac{3}{16}$
DEAD LOAD DIAGONAL - ②	L 2 x 2 x $\frac{3}{16}$ [2] L		x 2 x 2 $\frac{3}{16}$ [2] L	x	x 2 2 [2] $\frac{3}{16}$ x x		2 [2] L $\frac{3}{16}$ x		[2] 2 $\frac{3}{16}$
WIND LOAD DIAGONAL - ②	L 3 x 3 x $\frac{3}{16}$ [2] L		x 3 x 3 $\frac{3}{16}$ [2] L	x	x 3 2 $\frac{1}{2}$ [3] $\frac{1}{4}$ x x		3 [3] L $\frac{1}{4}$ x		[3] 3 $\frac{1}{4}$
DEAD LOAD VERTICAL - ②	L 2 x 2 x $\frac{3}{16}$ [2] L		x 2 x 2 $\frac{3}{16}$ [2] L	x	x 2 2 [2] $\frac{3}{16}$ x x		2 [2] L $\frac{3}{16}$ x		[2] 2 $\frac{3}{16}$
WIND LOAD STRUT- ②	L 2 x 2 x $\frac{3}{16}$ [1] L		x 2 x 2 $\frac{3}{16}$ [1] L	x	x 2 2 [1] $\frac{3}{16}$ x x		2 [1] $\frac{3}{16}$ x		[1] $\frac{1}{2}$ 2 $\frac{1}{2}$ $\frac{3}{16}$
TRUSS DEAD LOAD	42 lb/ft		47 lb/ft	53 lb/ft	60 lb/ft		70 lb/ft		
SIZE H. S. BOLTS IN CONNECTION	$\frac{5}{8}$ " DIA		$\frac{5}{8}$ " DIA		$\frac{5}{8}$ " DIA		$\frac{5}{8}$ " DIA		$\frac{3}{4}$ " DIA
NO. & SIZE OF H. S. BOLTS IN CHORD			5 - $\frac{5}{8}$ " DIA or		7 - $\frac{5}{8}$ " DIA or	9 - $\frac{5}{8}$ " DIA or			
ANGLE TO TOWER CONNECTION PLATE	3 - $\frac{5}{8}$ " DIA eo		3 - $\frac{3}{4}$ " DIA eo		5 - $\frac{3}{4}$ " DIA eo	7 - $\frac{3}{4}$ " DIA eo	8 - $\frac{3}{4}$ " DIA eo		



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

Steel for tower pipe shall conform to ASTM A53 Grade B or to ASTM A501. Tower pipe wall thickness shown is the minimum allowable. Fabricator may use the wall thickness shown or pipe of the same diameter with greater wall thickness.

All connection bolts shall conform to Item 447, "Structural Bolting". All structural steel, connection bolts, nuts and washers shall be galvanized in accordance with the Specifications.

Compensate for truss deflection at free end by offsetting upper and lower bolt holes at truss-to-tower connection.

For truss details see standard drawing COSSD.

For base and foundation details see standard drawing COSSF.

For cantilever truss lengths falling between those shown use sizes called for in the next longer span.

Truss and towers for cantilever sign supports are designed for the equivalent area of a 10'-0" deep sign panel over 100% of the span length. Design includes 3 pounds per foot squared for sign panel and 20 pounds per foot for lights and 50 pounds per foot for walkways all placed as specified for the design sign panel.

Details called for hereon are applicable for Design Wind Heights up to 30' inclusive.

Number of High Strength bolts required in truss connection or splice are indicated in brackets, e.g. [3], after the member size.

Deflections shown include the design loads for Truss, Sign Panel, Lights and Walkways.

CANTILEVER OVERHEAD SIGN SUPPORTS

COSS-Z1-10

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4-10	REVISONS		CONT	SECT	JOB	HIGHWAY
			0101	06	095	US181
			DIST		COUNTY	SHEET NO.
			CRP		NUECES	170-011-051

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STATES
FILE: 010106

DATE: 01/01/2007
FILE: 010106

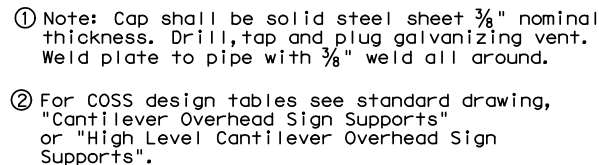
ZONE 1 100 MPH WIND

TOWER HEIGHT (ft)	10' SPAN										15' SPAN										20' SPAN										25' SPAN										TOWER HEIGHT (ft)				
	TOWER PIPE			ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS			TOWER PIPE			ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS			TOWER PIPE			ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS			TOWER PIPE			ANCHOR BOLTS		BASE PLATE	TRUSS	DESIGN LOADS							
	Q.D. (in)	WALL THICK (in)	DEFL ΔH (in)	S ZE DIA (in)	NQ	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	Q.D. (in)	WALL THICK (in)	DEFL ΔH (in)	S ZE DIA (in)	NQ	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	Q.D. (in)	WALL THICK (in)	DEFL ΔH (in)	S ZE DIA (in)	NQ	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	Q.D. (in)	WALL THICK (in)	DEFL ΔH (in)	S ZE DIA (in)	NQ	BOLT CIR DIA	SIZE (in)		DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)
25'	16	0.375	0.240	1 1/2	8	21"	25 x 1 3/4	0.2	6.46	27.82	153.70	16	0.531	0.384	1 3/4	8	21 1/2"	26 x 2 1/4	0.5	9.30	62.60	225.51	20	0.438	0.411	2	8	25 3/4"	30 1/2x 2 1/8	0.8	12.34	111.29	300.38	24	0.469	0.356	2	8	29 3/4"	34 1/2x 2 1/8	0.9	15.37	173.89	375.94	25'
26'		0.375	0.250				25 x 1 3/4		6.49		160.15		0.531	0.415	1 3/4		21 1/2"	26 x 2 1/4		9.33		234.80		0.438	0.444				30 1/2x 2 1/8		12.37		312.67		0.469	0.385	2		29 3/4"	34 1/2x 2 1/8		15.41		391.21	26'
27'		0.406	0.260				25 x 1 3/4		6.52		166.65		0.531	0.448	1 3/4		21 1/2"	26 x 2 1/4		9.36		244.12		0.469	0.449				30 1/2x 2 1/4		12.41		325.01		0.500	0.391	2		29 3/4"	34 1/2x 2 1/4		15.46		406.54	27'
28'		0.438	0.260				25 x 1 7/8		6.55		173.18		0.656	0.400	2		22"	27 x 2 3/8		9.39		253.47		0.500	0.455						12.44		337.38			0.421	2 1/4		30"	35 x 2 1/4		15.50		421.92	28'
29'		0.469	0.260	1 1/2		21"	25 x 1 7/8		6.58		179.73		0.656	0.429				27 x 2 3/8		9.42		262.85		0.500	0.488						12.48		349.80			0.451					15.54		437.35	29'	
30'			0.270	1 3/4		21 1/2"	26 x 1 7/8		6.61		186.32		0.687	0.441				27 x 2 1/2		9.45		272.26		0.531	0.495				30 1/2x 2 1/4		12.52		362.25		0.500	0.483					15.59		452.82	30'	
31'			0.290				26 x 2		6.64		192.94			0.471						9.48		281.70		0.562	0.501	2		25 3/4"	30 1/2x 2 3/8		12.55		374.75		0.531	0.488				0.9	15.63		468.35	31'	
32'		0.469	0.310				26 x 2		6.67		199.59			0.502						9.50		291.17		0.562	0.534	2 1/4		26"	31 x 2 3/8		12.59		387.28			0.520				1.0	15.68		483.93	32'	
33'		0.500	0.320				26 x 2 1/8		6.70		206.26		0.687	0.534						9.53		300.68		0.562	0.568				31 x 2 3/8		12.63		399.85			0.553				35 x 2 1/4		15.72		499.55	33'
34'		0.500	0.330						6.73		212.97		0.750	0.525	2		22"	27 x 2 1/2		9.56		310.21		0.594	0.573				31 x 2 3/8		12.66		412.46			0.587	2 1/4		30"	35 x 2 3/8		15.76		515.23	34'
35'		0.500	0.350						6.75		219.70			0.557	2 1/4		22 1/2"	28 x 2 5/8		9.59		319.77		0.594	0.607				31 x 2 1/2		12.70		425.11		0.531	0.622	2 1/2		30 1/2"	36 x 2 3/8		15.81		530.95	35'
36'		0.531	0.350				26 x 2 1/8		6.78		226.47			0.589				28 x 2 5/8		9.62		329.37		0.594	0.643				31 x 2 5/8		12.74		437.80		0.562	0.624				36 x 2 1/2		15.85		546.71	36'
37'		0.531	0.370				26 x 2 1/4		6.81		233.26			0.622				28 x 2 3/4		9.65		338.99		0.625	0.648				31 x 2 5/8		12.77		450.53		0.562	0.659				36 x 2 1/2	1.0	15.89		562.53	37'
38'		0.531	0.390						6.84		240.08		0.750	0.656				28 x 2 3/4		9.65		347.49		0.625	0.684				31 x 2 5/8		12.81		463.29		0.562	0.695				36 x 2 1/2	1.1	15.94		578.39	38'
39'		0.656	0.350						6.87		246.94		0.843	0.626				28 x 2 7/8		9.71		358.32		0.656	0.689				31 x 2 3/4		12.84		476.09		0.594	0.696				36 x 2 3/8		15.98		594.30	39'
40'		0.656	0.360	1 3/4		21 1/2"	26 x 2 1/4		6.90		253.82		0.843	0.658				28 x 2 7/8		9.74		368.03		0.656	0.725	2 1/4		26"	31 x 2 3/4		12.88		488.93		0.594	0.732				36 x 2 3/8		16.03		610.25	40'
42'		0.656	0.400	2		22"	27 x 2 3/8		6.96		267.67		0.843	0.726				28 x 3		9.80		387.55		0.719	0.736	2 1/2		26 1/2"	31 1/2x 2 3/4		12.95		514.72		0.625	0.770				36 x 2 3/4		16.11		642.29	42'
44'		0.687	0.420	2		22"	27 x 2 3/8		7.02		281.64		1.031	0.675				28 x 3		9.85		407.18		0.750	0.779	2 1/2		26 1/2"	31 1/2x 2 3/8		13.03		540.66		0.656	0.808				36 x 2 3/4		16.20		674.52	44'
45'	16	0.687	0.440	2	8	22"	27 x 2 3/8	0.2	7.05	27.82	288.67	16	1.218	0.619	2 1/4	8	22 1/2"	28 x 3	0.5	9.88	62.60	417.04	20	0.750	0.814	2 1/2	8	26 1/2"	31 1/2x 2 7/8	0.8	13.06	111.29	553.68	24	0.688	0.809	2 1/2	8	30 1/2"	36 x 2 3/4	1.1	16.24	173.89	690.71	45'

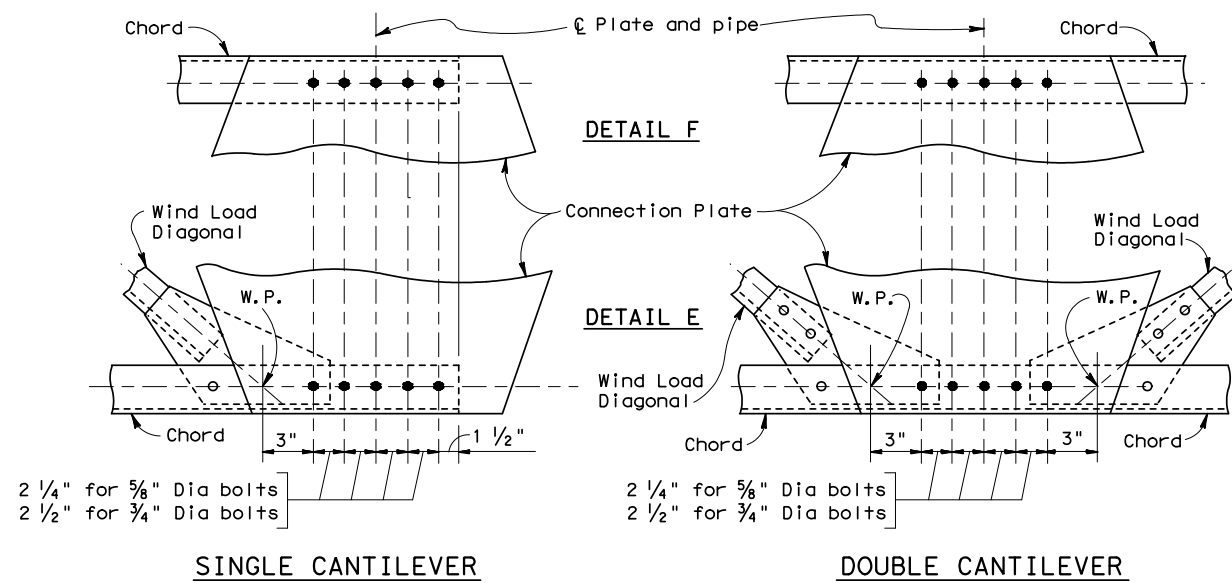
ZONE 1 100 MPH WIND

TOWER HEIGHT (ft)	30' SPAN											35' SPAN											40' SPAN											TOWER HEIGHT (ft)
	TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS			TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS			TOWER PIPE			ANCHOR BOLTS			BASE PLATE	TRUSS	DESIGN LOADS			
	Q.D.	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	Q.D.	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	Q.D.	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	
	(in)											(in)											(in)											
25'	24	0.531	0.475	2 1/4	8	30"	35 x 2 1/4	1.4	18.21	250.41	449.85	30	0.406	0.442	2 1/4	8	36"	41 x 2	1.6	21.34	340.83	529.13	30	0.500	0.502	2 1/2	8	36 1/2"	42 x 2 1/4	2.1	24.18	445.17	606.83	25'
26'		0.531	0.514				35 x 2 1/4		18.25		467.86		0.406	0.478				41 x 2	1.7	21.40		550.13		0.500	0.543				42 x 2 1/4	2.2	24.23		630.43	26'
27'		0.562	0.526				35 x 2 3/8		18.29		485.93		0.438	0.479				41 x 2 1/8		21.45		571.21		0.500	0.586				42 x 2 3/8	2.3	24.29		654.13	27'
28'		0.562	0.566				35 x 2 3/8	1.4	18.34		504.07			0.515				41 x 2 1/8		21.50		592.37		0.531	0.595				42 x 2 3/8		24.34		677.92	28'
29'		0.562	0.607	2 1/4		30"	35 x 2 3/8	1.5	18.38		522.25			0.552	2 1/4		36"	41 x 2 1/8		21.56		613.61		0.531	0.638				42 x 2 3/8		24.40		701.81	29'
30'		0.594	0.617	2 1/2		30 1/2"	36 x 2 1/2	1.5	18.43		540.50		0.438	0.591	2 1/2		36 1/2"	42 x 2 1/4		21.61		634.92		0.531	0.683				42 x 2 1/2	2.3	24.45		725.77	30'
31'		0.594	0.659				36 x 2 1/2	1.5	18.47		558.79		0.469	0.591				42 x 2 1/4	1.7	21.67		656.31		0.562	0.691	2 1/2		36 1/2"	42 x 2 1/2	2.4	24.51		749.82	31'
32'		0.594	0.702				36 x 2 3/8	1.6	18.51		577.14		0.469	0.630				42 x 2 1/4	1.8	21.72		677.76		0.562	0.737	2 3/4		37"	43 x 2 1/2		24.56		773.96	32'
33'		0.625	0.712				36 x 2 3/8		18.56		595.54		0.469	0.670				42 x 2 3/8		21.78		699.28		0.562	0.783				43 x 2 3/8		24.61		798.17	33'
34'		0.625	0.756				36 x 2 3/8		18.60		614.00		0.500	0.669				42 x 2 3/8		21.83		720.87		0.594	0.789				43 x 2 3/8		24.67		822.45	34'
35'		0.656	0.766				36 x 2 3/4		18.64		632.50		0.500	0.709				42 x 2 1/2		21.89		742.53		0.594	0.836				43 x 2 3/8	2.4	24.72		846.81	35'
36'		0.656	0.811				36 x 2 3/4		18.69		651.05		0.500	0.750				42 x 2 1/2		21.94		764.25		0.594	0.885				43 x 2 3/4	2.5	24.78		871.25	36'
37'		0.688	0.820				36 x 2 3/4		18.73		669.66		0.531	0.749	2 1/2		36 1/2"	42 x 2 1/2		22.00		786.04		0.625	0.891				43 x 2 3/4		24.83		895.75	37'
38'		0.688	0.865				36 x 2 3/4		18.78		688.31		0.531	0.790	2 3/4		37"	43 x 2 3/8		22.05		807.89		0.625	0.940				43 x 2 3/4		24.89		920.33	38'
39'		0.719	0.875	2 1/2		30 1/2"	36 x 2 3/8		18.82		707.01		0.562	0.788				43 x 2 3/8		22.10		829.80		0.656	0.946				43 x 2 3/4		24.94		944.97	39'
40'		0.719	0.920	2 3/4		31 1/2"	38 x 2 3/8		18.86		725.76		0.562	0.829				43 x 2 3/4		22.16		851.78		0.656	0.995	2 3/4		37"	43 x 2 3/8	2.5	25.00		969.68	40'
42'		0.750	0.977				38 x 3		18.95		763.41		0.594	0.868				43 x 2 3/4		22.27		895.92		0.688	1.150	3		37 1/2"	44 x 3	2.7	25.11		1019.30	42'
44'		0.937	0.877				38 x 3		19.04		801.24		0.625	0.905				43 x 2 3/4	1.8	22.38		940.31		0.719	1.106	3		37 1/2"	44 x 3	2.6	25.22		1069.19	44'
45'	24	0.937	0.918	2 3/4	8	31 1/2"	38 x 3 1/8	1.6	19.08	250.41	820.23	30	0.625	0.947	2 3/4	8	37"	43 x 2 3/4	1.9	22.43	340.83	962.59	30	0.719	1.157	3	8	37 1/2"	44 x 3	2.6	25.27	445.17	1094.23	45'

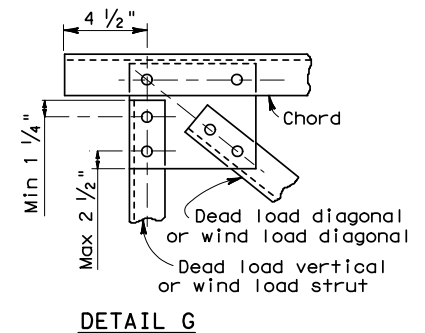
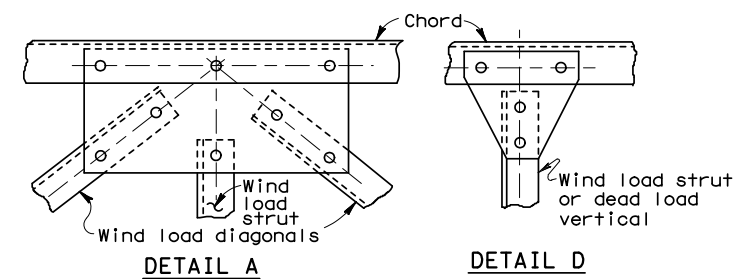
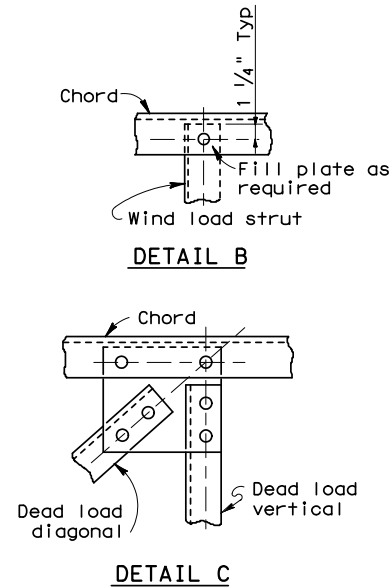
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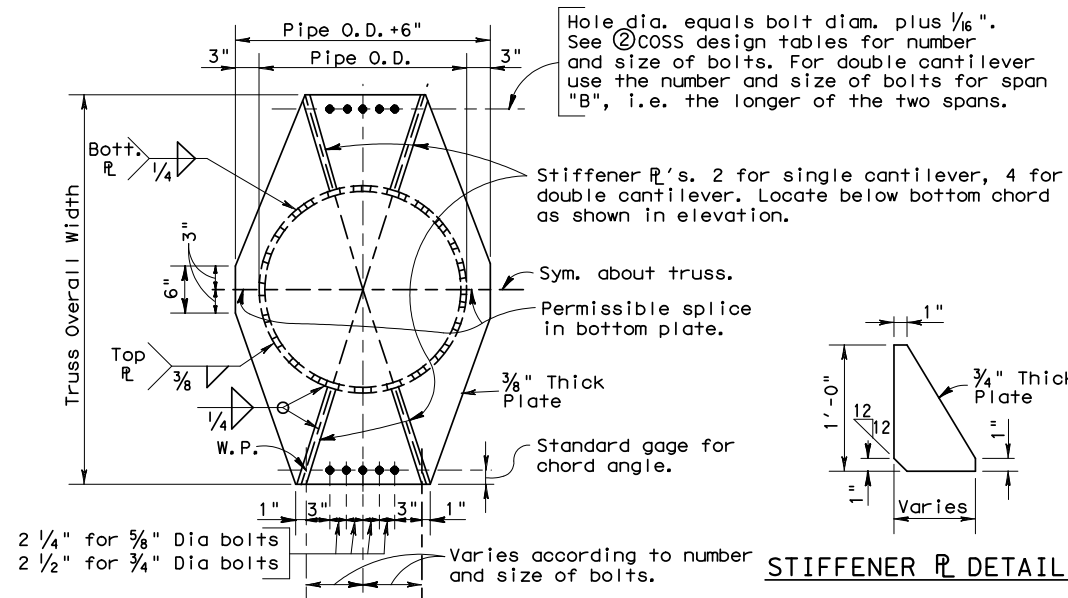
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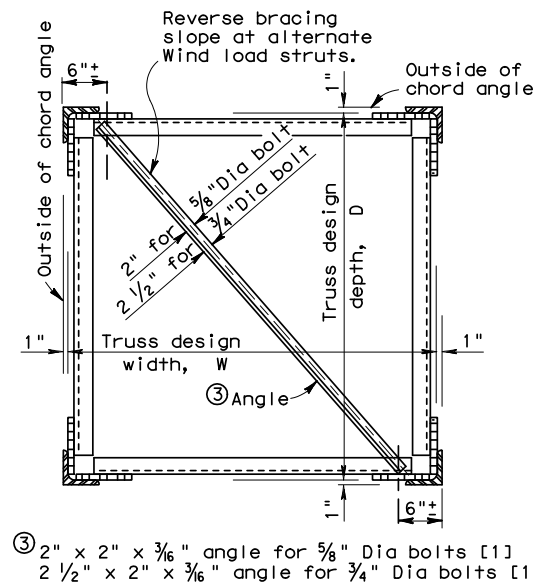
CONNECTION DETAILS



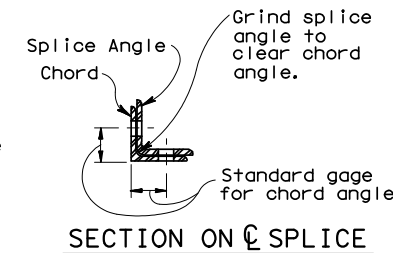
NUMBER OF BOLTS REQD. IN GUSSET PL TO CHORD CONNECTION		
TOTAL NO. OF BOLTS IN DIAG.'S. IN JOINT	0	2
	2	2
	3	3
	4	3
	5	4
	6	4
	8	5
	10	6



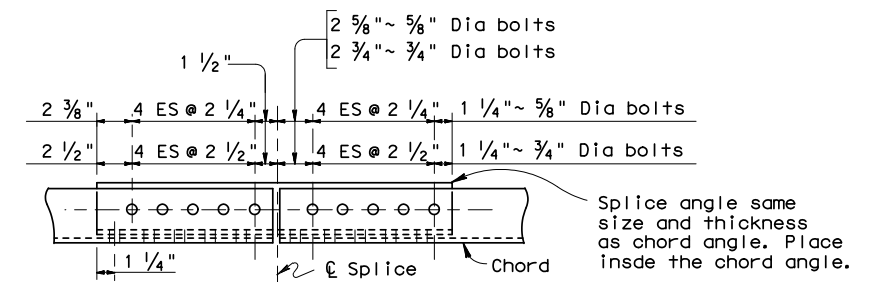
CONNECTION PLATE DETAIL

TRUSS SECTION

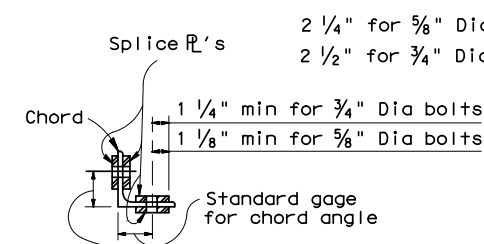
(DIAGONALS NOT SHOWN)



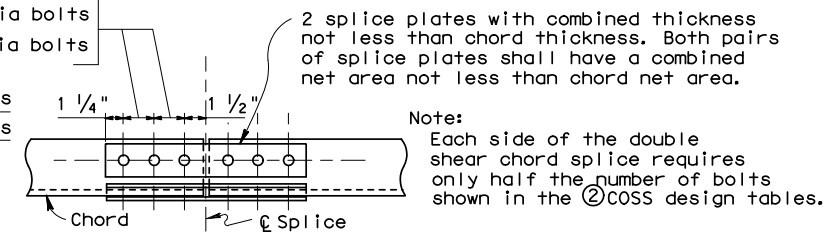
SECTION ON C SPLICE



SINGLE SHEAR CHORD SPLICE

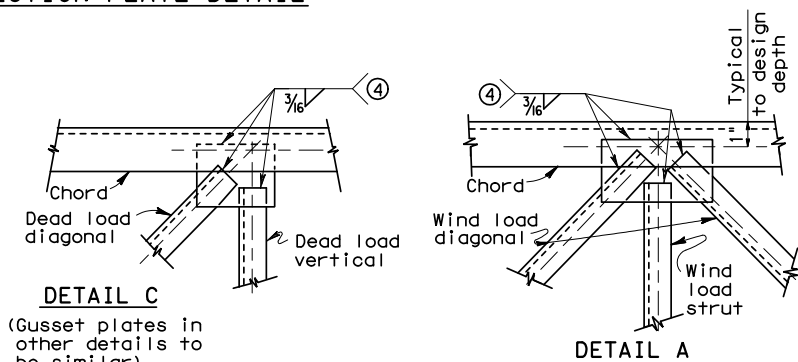


SECTION ON \mathbb{C} SPLICE



DOUBLE SHEAR CHORD SPLICE

SPLICE DETAILS



DETAIL C
(Gusset plates in other details to be similar)

ALTERNATE WELDED CONNECTION DETAILS

④ MINIMUM LENGTH OF $\frac{3}{16}$ " FILLET WELD REQUIRED		
NUMBER OF BOLTS	TO REPLACE $\frac{5}{8}$ " DIA BOLTS	TO REPLACE $\frac{3}{4}$ " DIA BOLTS
1	2"	3"
2	4"	6"
3	6"	9"
4	8"	11 $\frac{1}{2}$ "
5	10"	14 $\frac{1}{2}$ "
6	12"	17 $\frac{1}{2}$ "
7	14"	20"

SHEET 2 OF 2



CANTILEVER OVERHEAD SIGN SUPPORT DETAILS

COSSD

© TxDOT November 2007	PLN: TXDOT	CK: TXDOT	PLM: TXDOT	CK: TXDOT
REVISIONS	CUA.T	SECT	JOB	HIGHWAY
	DIST	COUNTRY		SHEET NO.

	66B
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