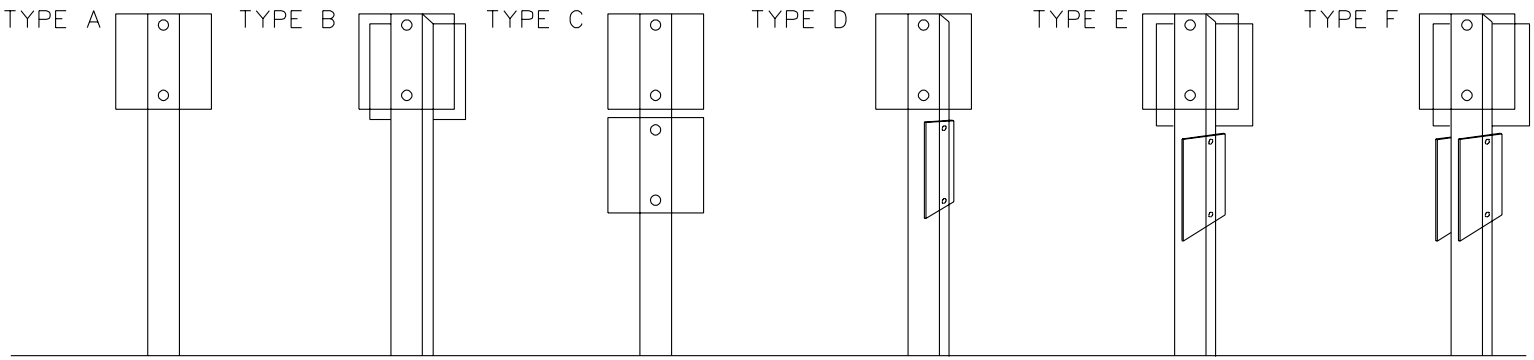
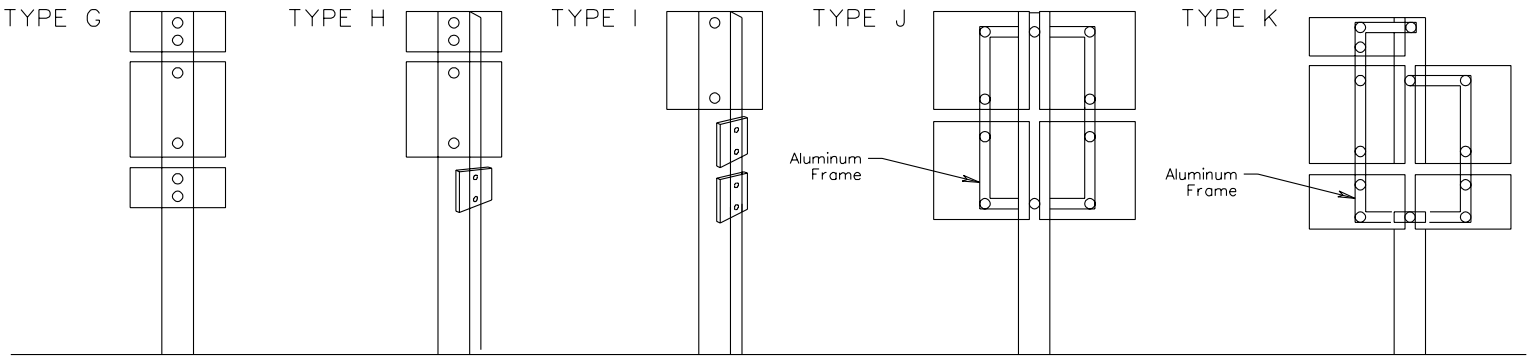
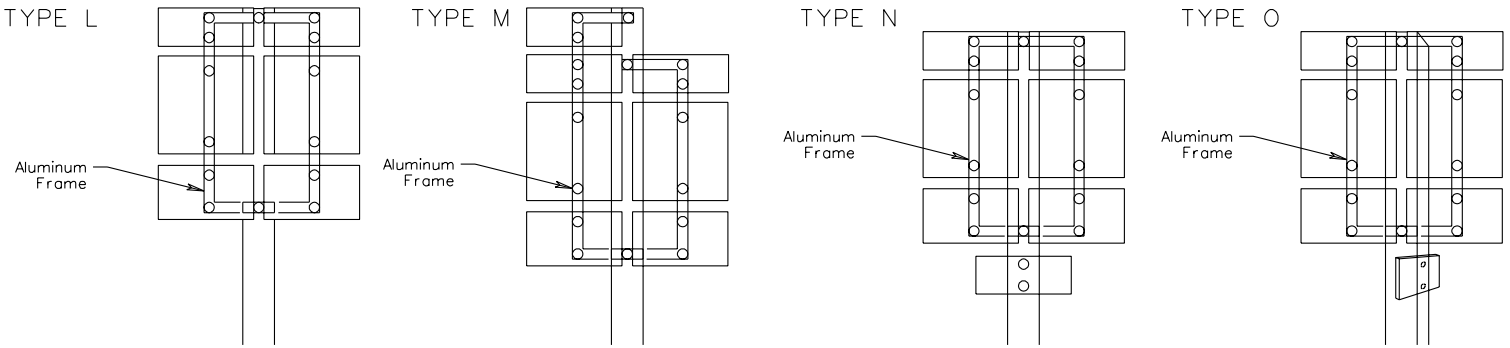
WSP-1







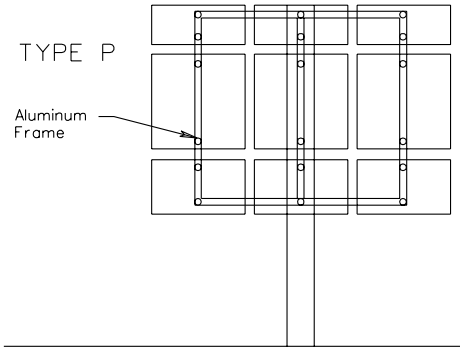
TYPICAL DETAILS FOR STANDARD WOOD POST STRUCTURE TYPES

VIRGINIA DEPARTMENT OF TRANSPORTATION

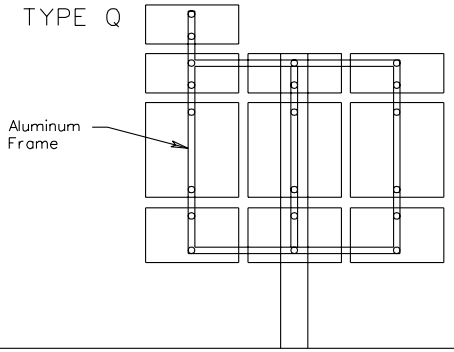
1301.55

WSP-1

TYPE P



TYPE Q



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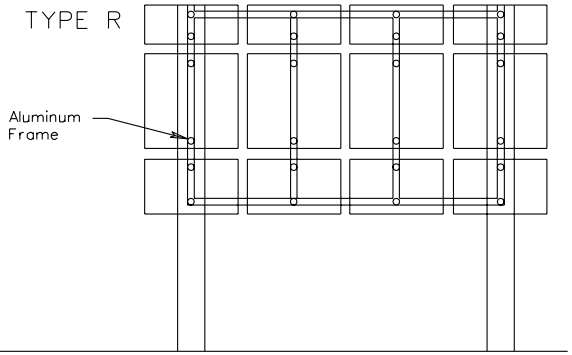

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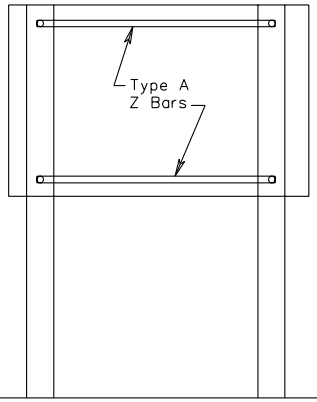
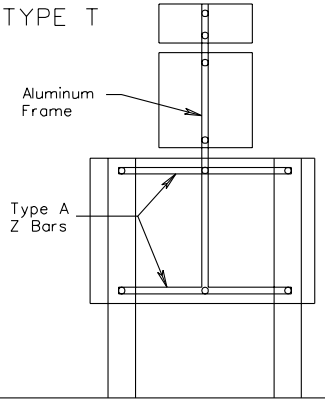


TYPE T



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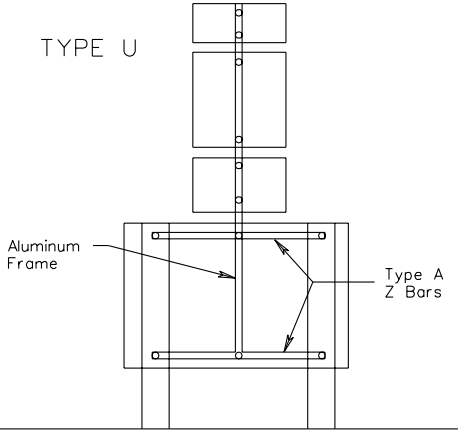
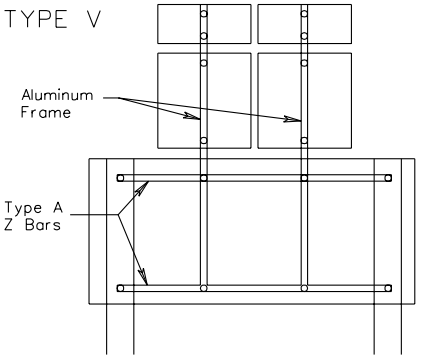
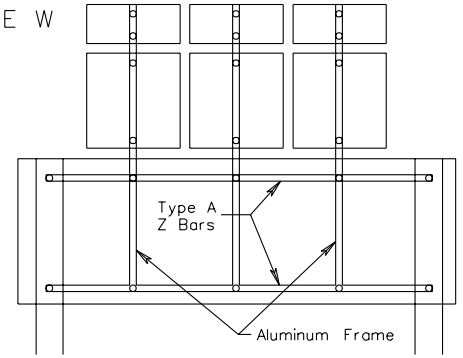


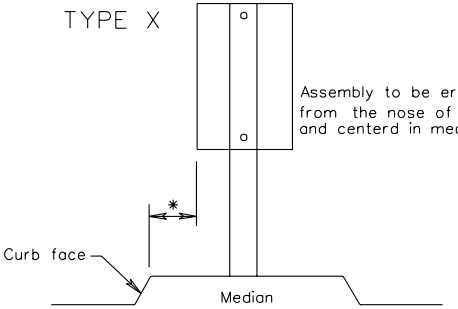
TYPE V



TYPE W



TYPE X



* 2' for medians over 10' in width. 12" for medians 10' or less in width.

TYPICAL DETAILS FOR STANDARD WOOD POST STRUCTURE TYPES

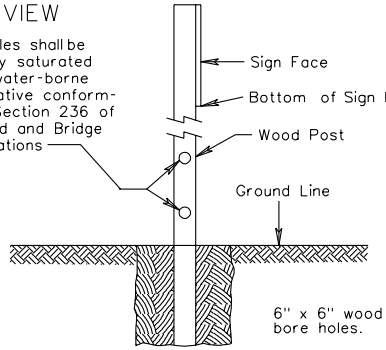
VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.56

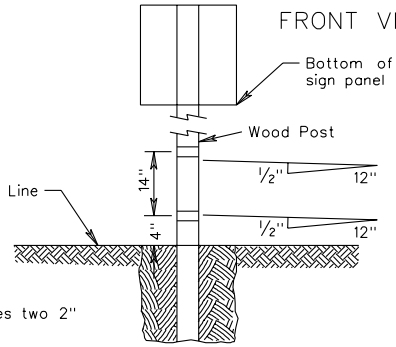
METHOD OF POST DRILLING

SIDE VIEW

Bore holes shall be throughly saturated with a water-borne preservative conforming to Section 236 of the Road and Bridge Specifications



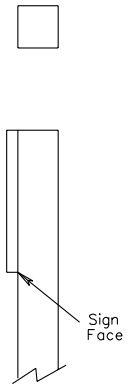
FRONT VIEW



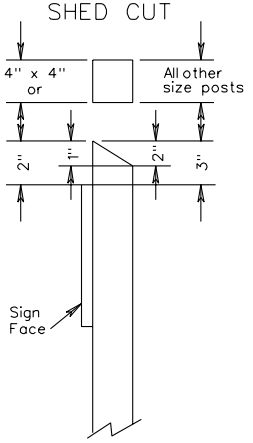
6" x 6" wood post requires two 2" bore holes.

6" x 8" wood post requires two 3" bore holes. Posts less than 6" x 6" do not require bore holes.

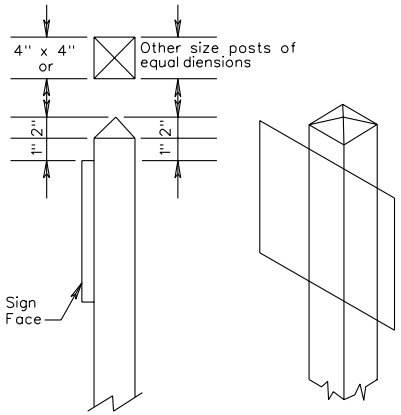
FLAT CUT



SHED CUT



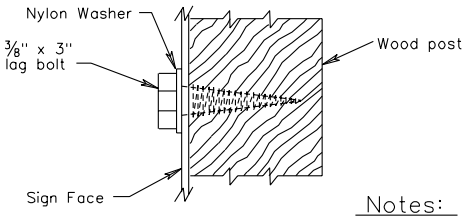
PYRAMIDAL CUT



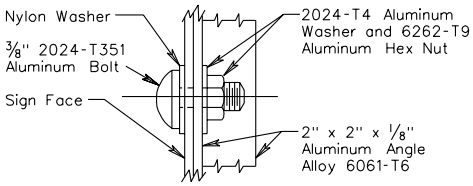
SIGN PANEL ATTACHMENT DETAILS

WOOD POSTS

(For Sign Panel Attachment To Z Bars, See Standard SPD-1)



ALUMINUM FRAMING



Notes:

Nylon washer shall be 1/8" thick minimum with an outside diameter of 1" and an inside diameter of 7/16"

To obtain a flush mounting surface for signs, all wood shall be mortised where necessary, to receive flange of aluminum angle.

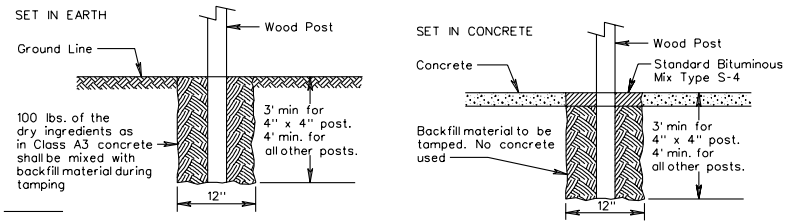
Note:

Flat cut wood post is shown on Types A through X as typical. Shed cut and pyramidal cut wood post designs may be used; however, the style of wood post shall be uniform throughout a project.

TYPICAL DETAILS FOR STANDARD WOOD POST STRUCTURE TYPES

VIRGINIA DEPARTMENT OF TRANSPORTATION

WSP-1

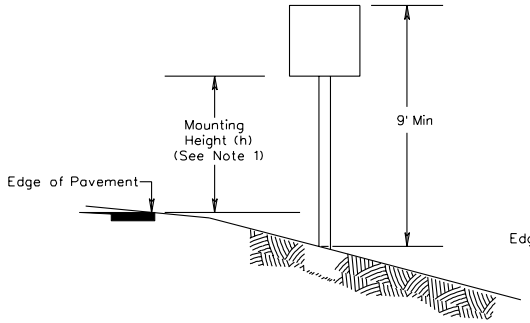


INSTALLATION DETAILS

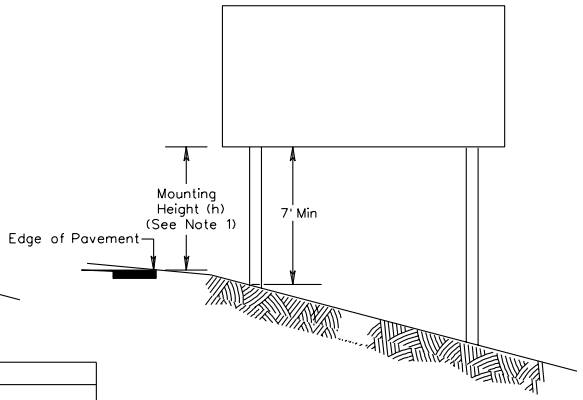
Notes:

Minimum spacing between two 4" x 4" wood posts shall be 3'. Minimum spacing between any other two size posts shall be 8'.

SINGLE POST INSTALLATIONS



MULTI-POST INSTALLATIONS



PERMANENT SIGN INSTALLTIONS

MINIMUM MOUNTING HEIGHT (h) (See Note 1)

Sign Types	Limited Access Highways		Non- limited Access Highways	
	Signs located less than 30' from the edge of travel lane	Signs located 30' or more from the edge of travel lane	Rural Areas	Urban Areas
Directional Signs	7'	5'	5'	7'
Route Markers, Warning and Regulatory Signs	6'	5'	5'	7'
Secondary Signs (See Note 2)	5' (See Note 3)	5' (See Note 3)	4'	6'

1. Mounting heigth may need to be greater than indicated in chart to provide the minimum height to the top of the sign for single post installations and the minimum height to the bottom of the sign for multi-post installations.
2. A secondary sign is considered to be a sign mounted below another sign except a route marking assembly consisting of a route marker with an auxiliary plate is considered to be a single sign.
3. Mounting height (h) of the major sign above the secondary sign shall be 8' minimum.

CONSTRUCTION SIGN INSTALLTIONS

MINIMUM MOUNTING HEIGHT (h) (See Note 1)

Sign Types	Limited Access Highways		Non- limited Access Highways	
	Signs located less than 30' from the edge of travel lane	Signs located 30' or more from the edge of travel lane	Rural Areas	Urban Areas
Construction Signs	7'	7'	7'	7'
Secondary Signs (See Note 2)	6' (See Note 3)	6' (See Note 3)	6'	6'

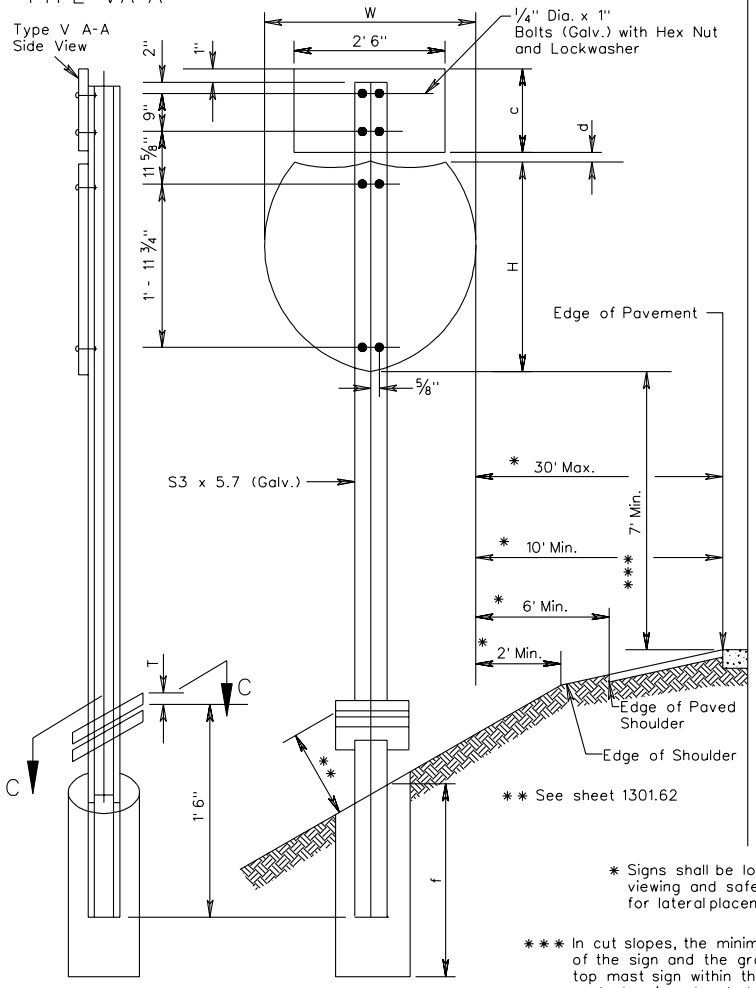
1. Mounting heigth may need to be greater than indicated in chart to provide the minimum height to the top of the sign for single post installations and the minimum height to the bottom of the sign for multi-post installations.
2. A secondary sign is considered to be a sign mounted below another sign.
3. Mounting height (h) of the major sign above the secondary sign shall be 8' minimum.

TYPICAL DETAILS FOR STANDARD WOOD POST STRUCTURE TYPES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.58

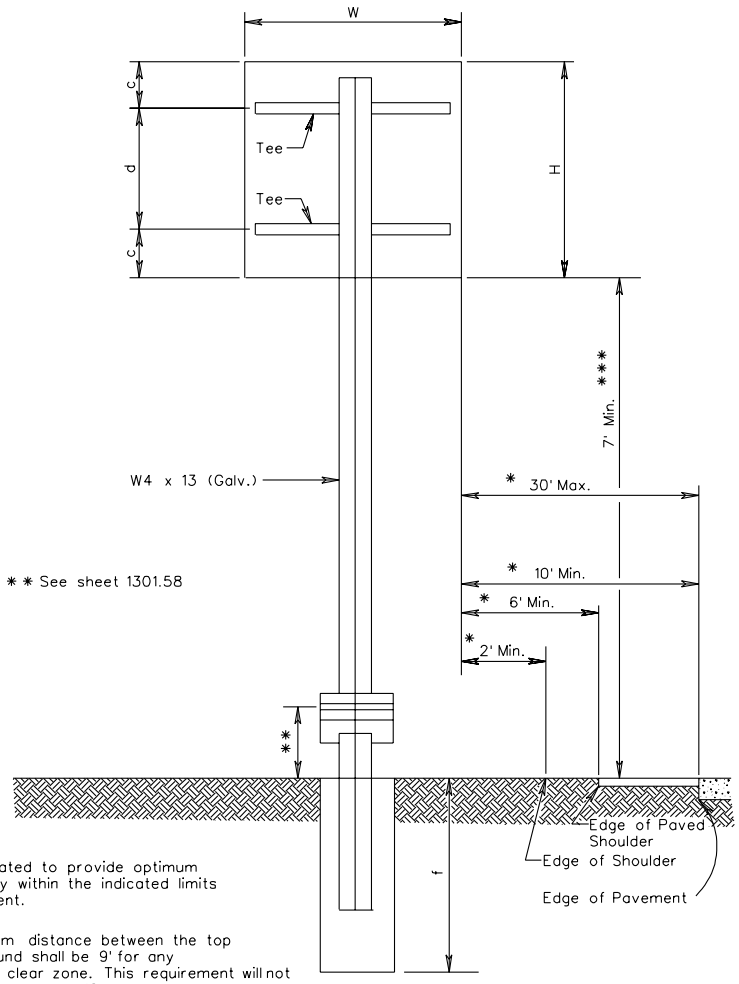
TYPE VA-A



** See sheet 1301.62

See Sheet 1301.61 for
Section C-C

TYPES VA-B, VA-C, VA-D, VA-E, VA-L AND VA-M



** See sheet 1301.58

* Signs shall be located to provide optimum viewing and safety within the indicated limits for lateral placement.

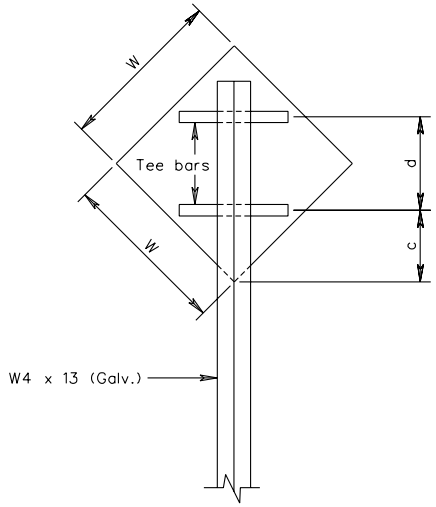
*** In cut slopes, the minimum distance between the top of the sign and the ground shall be 9' for any top mast sign within the clear zone. This requirement will not apply to signs located more than 10' up a slope greater than 3:1.

TYPICAL DETAILS FOR TYPE VA SIGN STRUCTURES

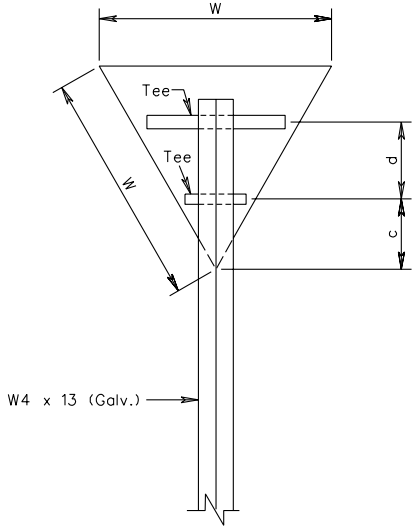
VIRGINIA DEPARTMENT OF TRANSPORTATION

SSP-VA

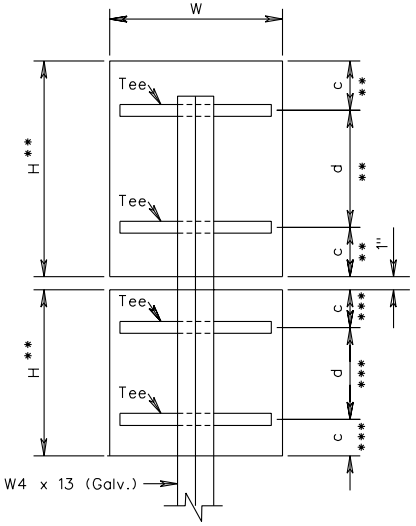
TYPE VA-F



TYPE VA-G



TYPE VA-K



SUPPORT DETAILS

STRUCTURE TYPE	SIGN PANEL DIMENSIONS				POST LENGTH DIMENSIONS		TEE 6061-T6 2.5 x 3.0 @ 1.175 lb/ft.		FOUNDATION DIMENSIONS		WELDED WIRE MESH		STEEL BASE PLATE
	W	H	c	d	Slope 3:1 to 2:1	Clamp	Number	Length	f	Diameter	Length	Sq. Ft.	T (Thickness)
VA-A	3'	3'	1'-3"	5/8"	12'-3"	-	-	-	3'-0"	1'-0"	2'-6"	5	1/2"
VA-B	4'	4'	1'-2"	1'-8"	12'-3"	4	2	3'-0"	4'-6"	1'-9"	4'-4"	20	1"
VA-C	4'	5'	1'-3"	2'-6"	13'-3"	4	2	3'-0"	4'-6"	1'-9"	4'-4"	20	1"
VA-D	5'	3'	0'-8"	1'-8"	12'-9"	4	2	4'-0"	4'-6"	1'-9"	4'-4"	20	1"
VA-E	6'	5'	1'-3"	2'-6"	13'-9"	4	2	5'-0"	4'-6"	1'-9"	4'-4"	20	1"
VA-F	4'	-	1'-8"	2'-4"	13'-9"	4	2	2'-10"	4'-6"	1'-9"	4'-4"	20	1"
VA-G	5'	-	1'-8"	-	13'-0"	4	1 each	2'-10" & 1'-4"	4'-6"	1'-9"	4'-4"	20	1"
VA-K	4'	5'	1'-3"**	2'-6"**	17'-3"	4	2	3'-0"	4'-6"	1'-9"	4'-4"	20	1"
VA-K	4'	4'	1'-2"***	1'-8"***	-	4	2	3'-0"	-	-	-	-	-
VA-L	6'	6'	1'-6"	3'-0"	14'-6"	4	2	5'-0"	4'-6"	1'-9"	4'-4"	20	1"
VA-M	5'	5'	1'-3"	2'-6"	13'-9"	4	2	4'-0"	4'-6"	1'-9"	4'-4"	20	1"
VA-A2	6'	3'	1'-3"	5/8"	13'-9"	-	4	5'-0"	4'-6"	1'-9"	4'-4"	20	1"

* All post lengths shall be field checked by contractor prior to fabrication.

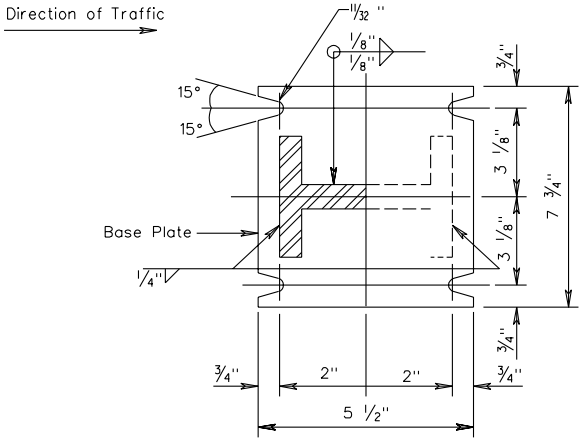
TYPICAL DETAILS FOR TYPE VA SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

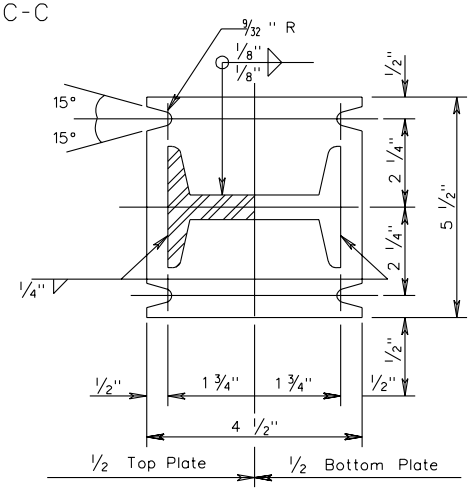
1301.60

SECTION A-A

SECTION B-B

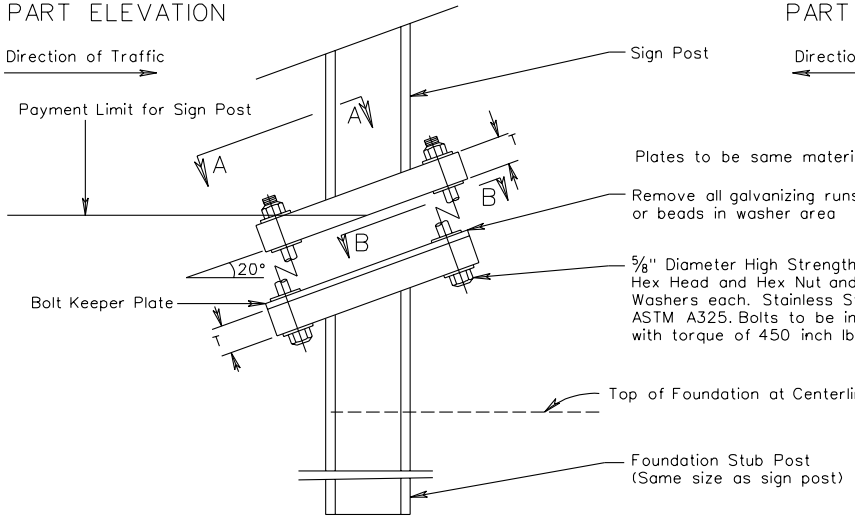


SECTION C-C

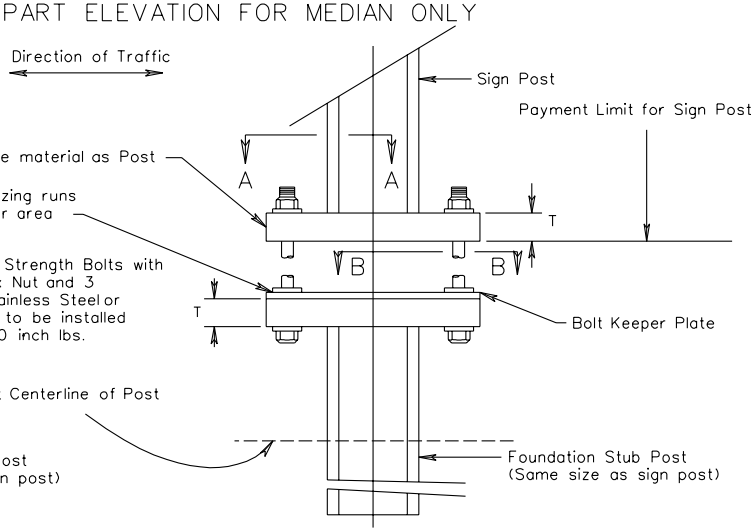


For Type VA-A, use 1/2" Diameter High Strength Bolts with Hex Head, Hex Nut and 3 Washers each Stainless Steel or ASTM A325. Bolts to be installed with a torque of 155 inch lbs. for typical assembly, see Project Plans.

PART ELEVATION



PART ELEVATION FOR MEDIAN ONLY



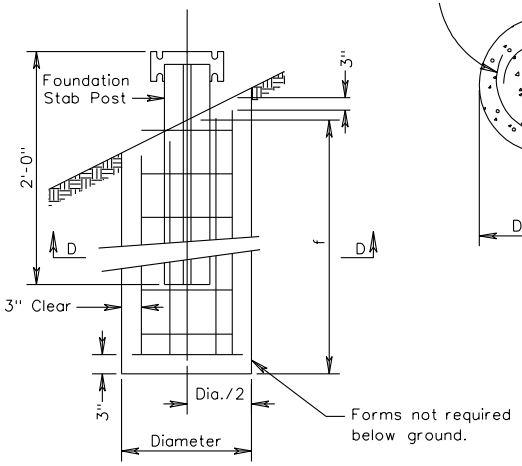
TYPICAL DETAILS FOR TYPE VA SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

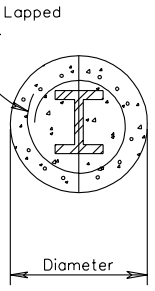
SSP-VA

FOUNDATION

Elevation



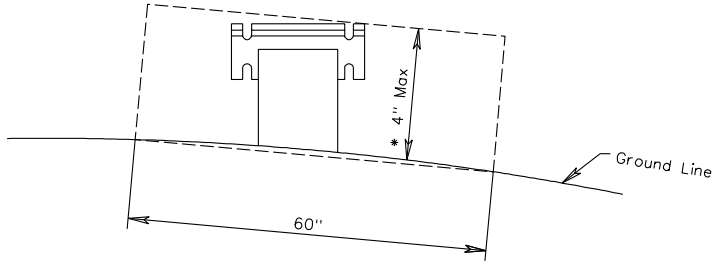
SECTION D-D



6 x 6 - MW5.5 x MW5.5

** 6 x 6 - 2/2 Welded Wire Mesh

METHOD TO DETERMINE MAXIMUM PROJECTION OF SIGN STUB POST



* 4" Maximum projection when measured above a 60" chord aligned radially to the centerline of the highway and connecting any point, within the length of the chord, on the ground surface on one side of the support to a point on the ground surface on the other side.

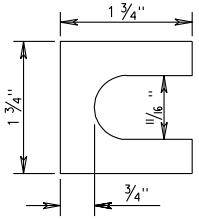
** Requires two layers offset in both directions resulting in 3" square openings.

TYPICAL DETAILS FOR TYPE VA SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.62

SHIM DETAIL

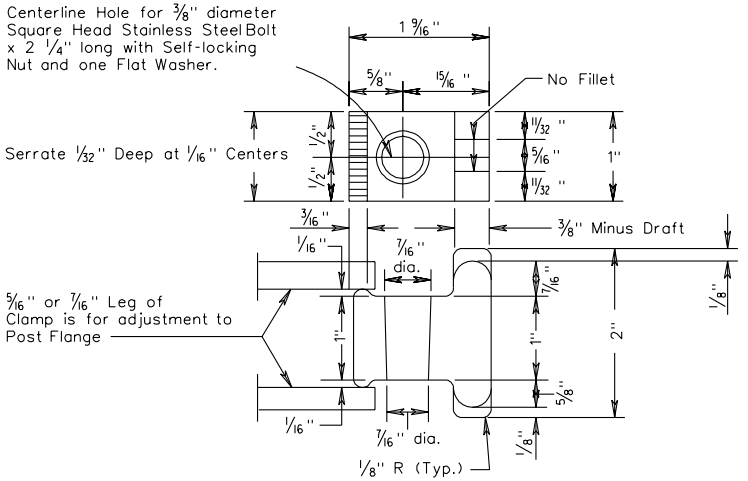


Furnish 2 @ .063" thick and 2 @ .032" thick shims per post. Shims shall be fabricated from brass conforming to ASTM B36 or from stainless steel with a minimum chromium content of 11.50% . No more than 2 shims shall be used per bolt with a maximum of 4 shims per post.

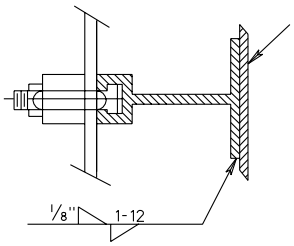
POST CLAMP DETAIL

Galvanized Gray - Iron or Aluminum Casting

Centerline Hole for 3/8" diameter Square Head Stainless Steel Bolt x 2 1/4" long with Self-locking Nut and one Flat Washer.

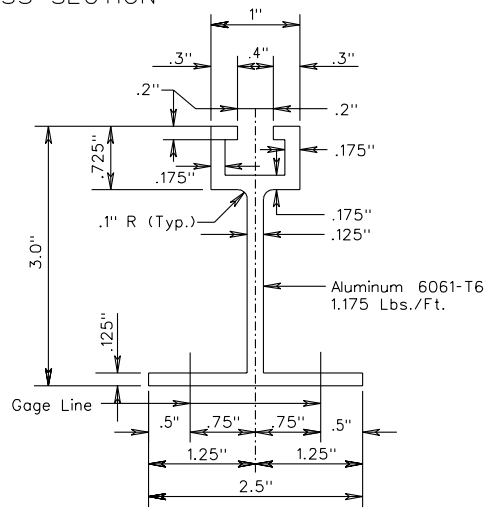


ALTERNATE FASTENING



Attach sign to tee bar by using 1100-H18 aluminum alloy 1/4" - 20 x 1/2" long studs electrically welded to back of sign panel by the Capacitor Discharge Method. Maximum horizontal spacing of studs shall be on 6" centers beginning 1" from each end of tee bar. 7075-T6 aluminum alloy spring lockwasher 0.255" I.D. x 0.493" O.D. x 0.062" thick shall be provided for each stud. 6262-T9 aluminum alloy 1/4" - 20 hexagon head nut, torque to 25 in lbs. shall be provided for each stud.

TEE CROSS SECTION

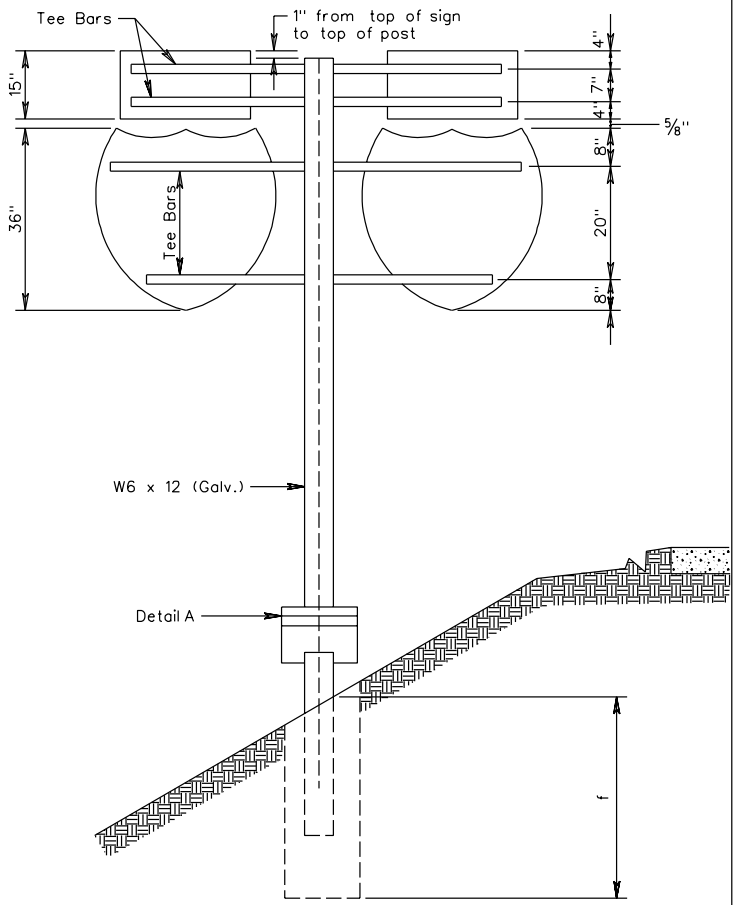


TYPICAL DETAILS FOR TYPE VA SIGN STRUCTURES

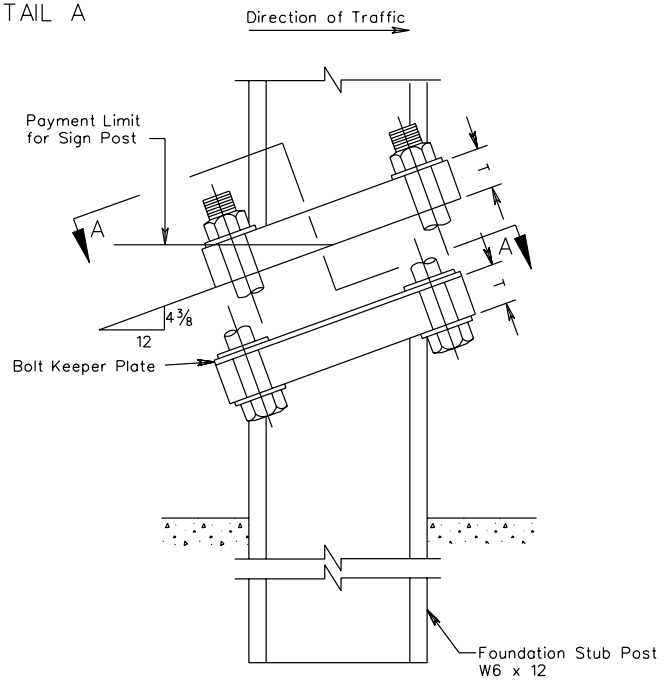
VIRGINIA DEPARTMENT OF TRANSPORTATION

SSP-VA

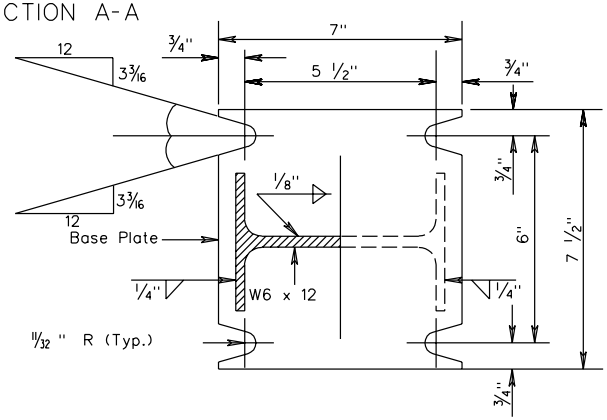
TYPE VA-A2



DETAIL A



SECTION A-A



NOTES:

There is to be a maximum space of 1" between signs

Cardinal directions are to be centered above shields.

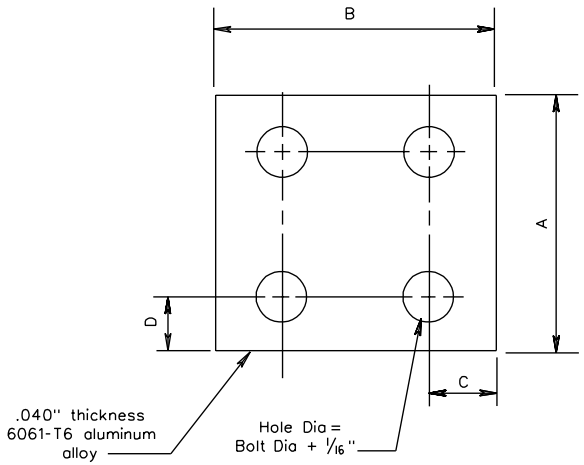
For details of shims, tee bars, clamps, and other notes, see standard 1301.63.

TYPICAL DETAILS FOR TYPE VA SIGN STRUCTURES

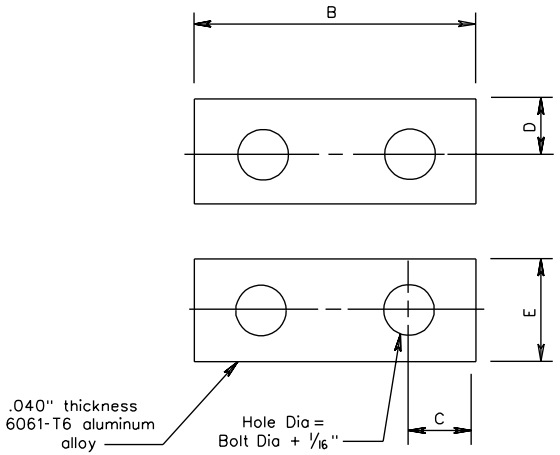
VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.64

BOLT KEEPER PLATE



ALTERNATE BOLT KEEPER PLATE



BOLT KEEPER PLATE DATA

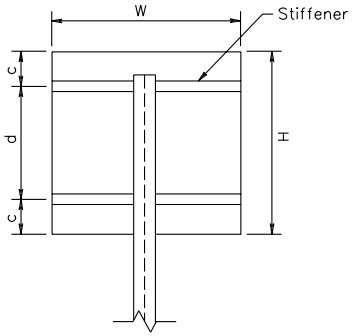
POST SHAPE	A	B	C	D	E
S3 x 5.7	5"	4"	1/2"	1/2"	1"
W4x 13	7 3/4"	5 1/2"	3/4"	3/4"	1 1/2"
W6 x 12	7 1/2"	7"	3/4"	3/4"	1 1/2"

TYPICAL DETAILS FOR TYPE VA SIGN STRUCTURES

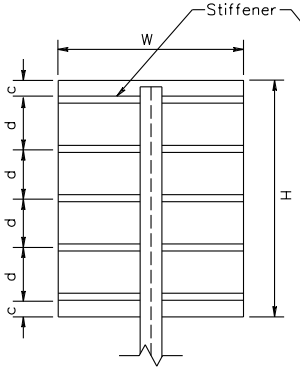
VIRGINIA DEPARTMENT OF TRANSPORTATION

SSP-VA

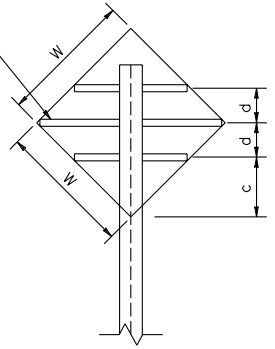
TYPES VA-B, VA-C, VA-D, VA-L AND VA-M



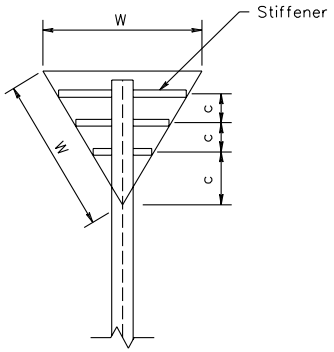
TYPES VA-E



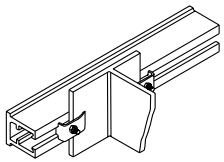
TYPES VA-F



TYPES VA-G



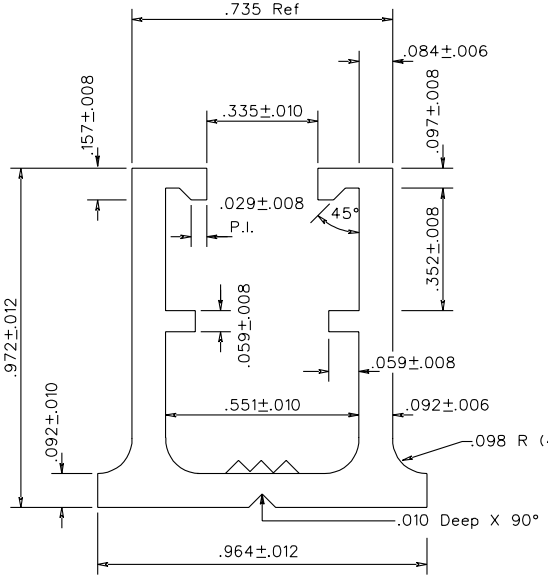
STIFFENER TO POST ATTACHMENT DETAIL



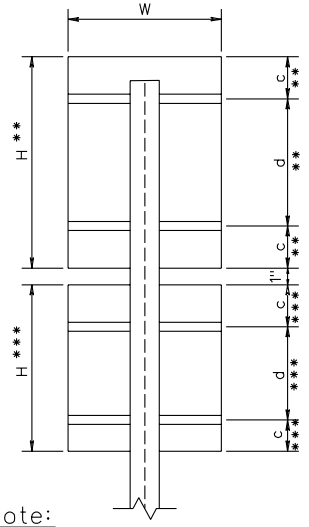
STRUCTURE TYPE	W	H	c	d	STIFFENERS NO.	STIFFENERS SIZE
VA-B	4'	4'	6½"	2'-11"	2	MEDIUM
VA-C	4'	5'	12½"	2'-11"	2	MEDIUM
VA-D	5'	3'	7"	1'-10"	2	MEDIUM
VA-E	6'	5'	0"	1'-3"	5	MEDIUM
VA-F	4'	——	8"	2'-2"	3	MEDIUM
VA-G	5'	——	1'-4"	——	3	MEDIUM
VA-K	4'	5'**	12½"**	2'-11"	2**	MEDIUM
	4'	4'***	6½"***	2'-11"	2***	MEDIUM
VA-L	6'	6'	6"	1'-3"	5	MEDIUM
VA-M	5'	5'	8"	1'-10"	3	MEDIUM

See Standard SSP-VIA for post clamp and bolt details.
See sheets 1301.59 thru 1301.63 for other details.

MEDIUM STIFFENER DETAIL



TYPES VA-K



Note:

Rivets shall be used for securing the stiffeners to the sign unless otherwise specified or approved, and shall be 3/16" minimum diameter by ½" long aluminum and capable of withstanding a minimum shear force of 460lbs. Rivet spacing for attaching the stiffeners to the sign panel shall be 6" maximum begining 1½" from the ends of the sign panel.

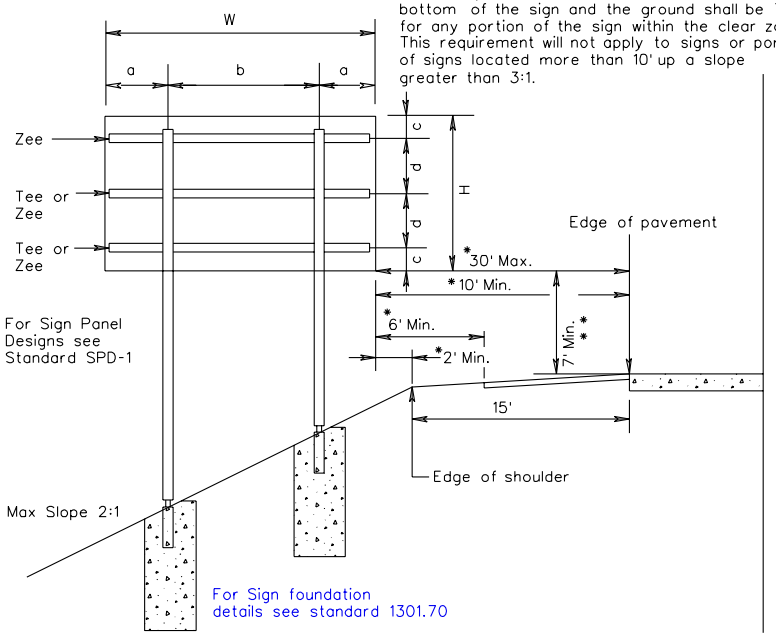
ALTERNATE DETAILS FOR TYPE VA SIGN STRUCTURES

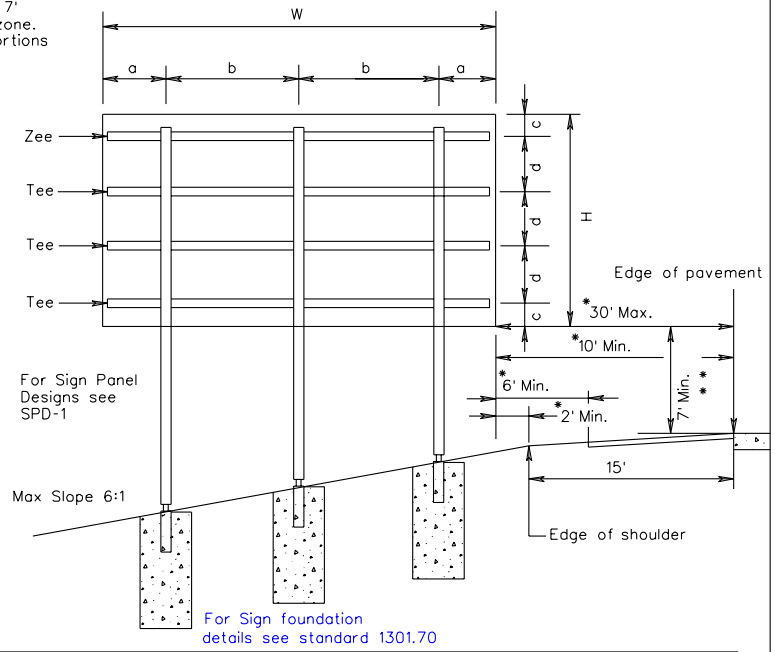
VIRGINIA DEPARTMENT OF TRANSPORTATION

SSP-VI A

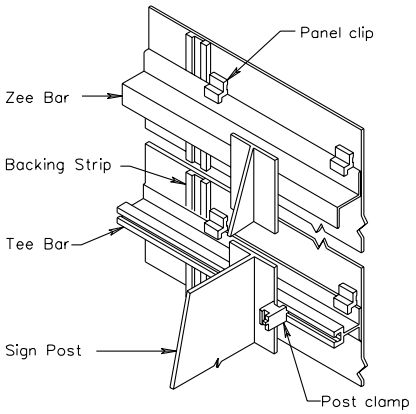
The spacing between sign posts shall be a minimum of 8' center to center.
* Signs shall be located to provide optimum viewing and safety within the indicated view limits for lateral placement.

* * In cut slopes, the minimum clearance between the bottom of the sign and the ground shall be 7' for any portion of the sign within the clear zone. This requirement will not apply to signs or portions of signs located more than 10' up a slope greater than 3:1.

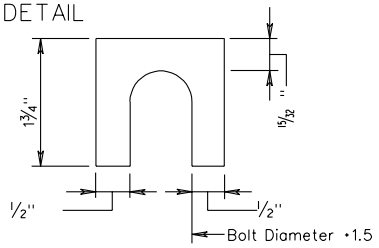




ISOMETRIC VIEW

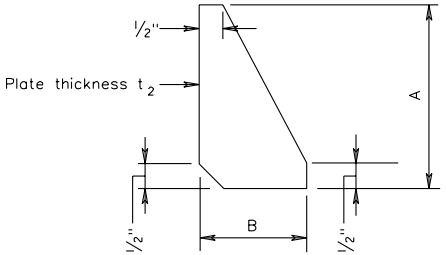


SHIM DETAIL



Furnish 2 each .063"± and 2 each .032± mm thick shims per pole. Shims shall be fabricated from brass conforming to ASTM B36 or from stainless steel with a minimum chromiun content of 11.50 %. No more than 2 shims shall be used per bolt with a maximum of 4 shims per pole.

STIFFENER PLATE DETAIL



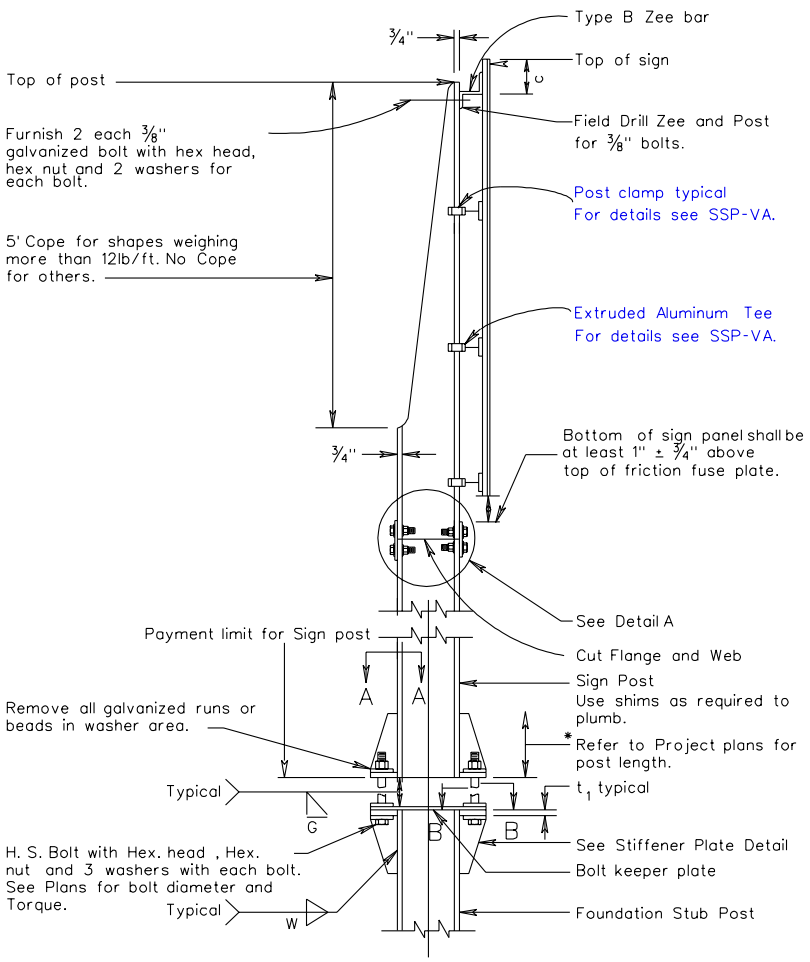
TYPICAL DETAILS FOR TYPE VI A INTERSTATE SIGN STRUCTURE

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.67

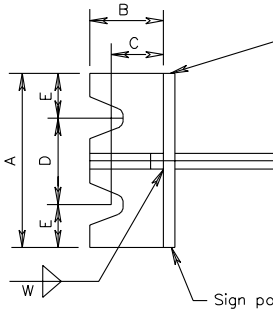
SSP-VI A

SIGN POST AND FOUNDATION STUB POST ELEVATION

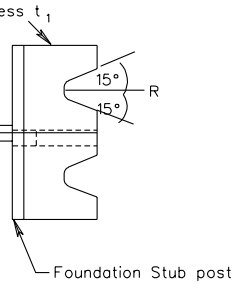


* Post lengths shown on plans are typical for a 2:1 slope. All post lengths shall be field checked by contractor prior to fabrication.

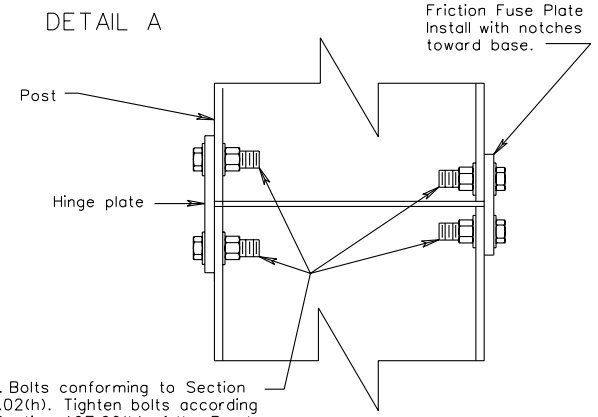
SECTION A-A



SECTION B-B



DETAIL A



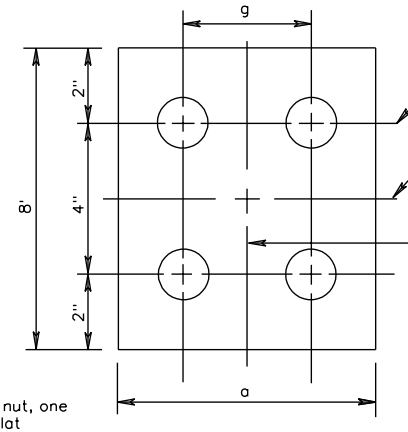
Direction of Traffic

TYPICAL DETAILS FOR TYPE VI A INTERSTATE SIGN STRUCTURES

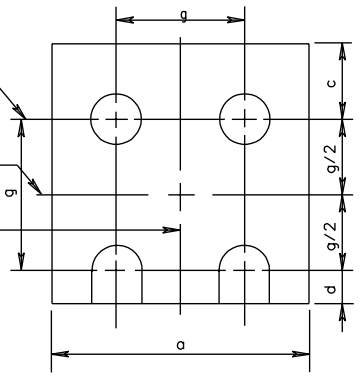
VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.68

HINGE PLATE DETAIL



FUSE PLATE DETAIL

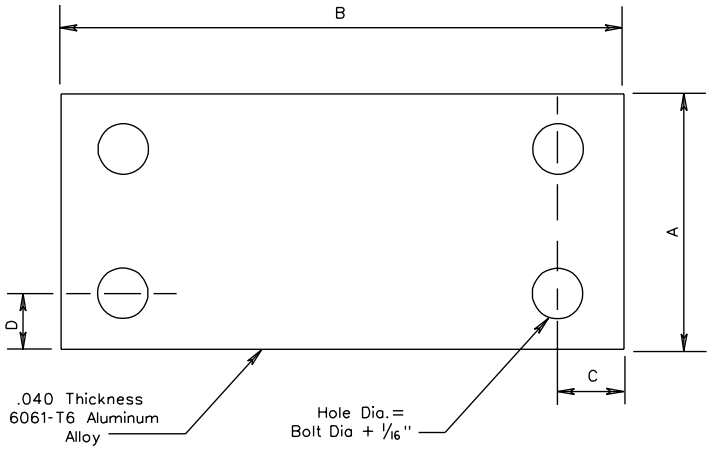


ZEE BARS		
TYPE	SIZE	WEIGHT
A	2 3/8" x 1 1/4" x 3/16"	1.00lbs./ft.
B	3" x 2 11/16" x 1/4"	2.40lbs./ft.
C	4" x 3 1/16" x 1/4"	2.93lbs./ft.
D	5" x 3 1/4" x 5/16"	4.13lbs./ft.
E	6" x 3 1/2" x 3/8"	5.58lbs./ft.

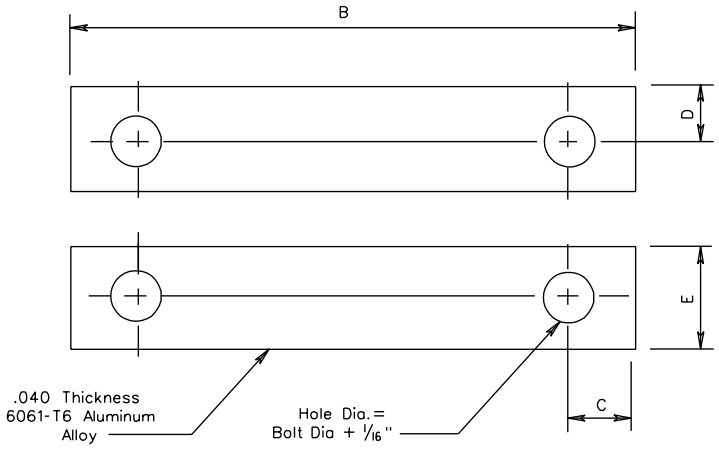
NOTES:

Use H.S. bolts with hexagon head and hexagon nut, one flat washer under each bolt head and bevel or flat washer, where required, under nut. Tighten in accordance with section 407.06 of the Road and Bridge Specifications.

BOLT KEEPER PLATE



ALTERNATE BOLT KEEPER PLATE



TYPICAL DETAILS FOR TYPE VI A INTERSTATE SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

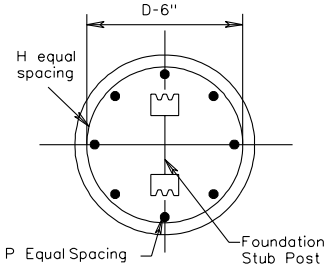
SSP-VI A

TYPE VI A	FOOTING DIMENSIONS		BAR P			BAR H		
	D	d	Length	Bar Size	No.	Bar Size	No.	Length
A	2'-3"	4'-0"	3'-7"	# 4	8	# 4	5	6'-7"
B	2'-3"	4'-0"	3'-7"	# 4	8	# 4	5	6'-7"
C	2'-3"	4'-0"	3'-7"	# 4	8	# 4	5	6'-7"
D	2'-3"	4'-0"	3'-7"	# 4	8	# 4	5	6'-7"
E	2'-3"	4'-6"	4'-1"	# 4	8	# 4	5	6'-7"
F	2'-9"	4'-6"	4'-1"	# 4	8	# 4	5	8'-2"
G	2'-9"	5'-0"	4'-7"	# 4	8	# 4	6	8'-2"
H	2'-9"	5'-6"	5'-1"	# 5	8	# 4	6	8'-2"
J	3'-0"	5'-6"	5'-1"	# 5	8	# 4	6	9'-0"
K	3'-0"	6'-0"	5'-7"	# 5	8	# 4	7	9'-0"
L	3'-0"	6'-6"	6'-1"	# 5	8	# 4	7	9'-0"
M	3'-6"	6'-6"	6'-1"	# 5	8	# 4	7	10'-7"
N	3'-6"	7'-0"	6'-7"	# 5	8	# 4	8	10'-7"
O	3'-6"	7'-0"	6'-7"	# 6	8	# 4	8	10'-7"
P	3'-6"	7'-6"	7'-1"	# 6	8	# 4	8	10'-7"
Q	2'-9"	4'-6"	4'-1"	# 4	8	# 4	5	8'-2"
R	2'-9"	5'-0"	4'-7"	# 4	8	# 4	6	8'-2"
S	2'-9"	5'-6"	5'-1"	# 4	8	# 4	6	8'-2"
T	2'-9"	6'-0"	5'-7"	# 5	8	# 4	7	8'-2"
U	2'-9"	6'-6"	6'-1"	# 5	8	# 4	7	8'-2"
V	3'-0"	6'-6"	6'-1"	# 5	8	# 4	7	9'-0"
W	3'-0"	7'-0"	6'-7"	# 6	8	# 4	8	9'-0"
X	3'-0"	7'-6"	7'-1"	# 6	8	# 4	8	9'-0"
Y	3'-6"	7'-6"	7'-1"	# 6	8	# 4	8	10'-7"
Z	3'-6"	8'-0"	7'-7"	# 6	8	# 4	9	10'-7"
AA	3'-6"	8'-6"	8'-1"	# 7	8	# 4	9	10'-7"
BB	3'-6"	9'-0"	8'-7"	# 7	8	# 4	10	10'-7"
CC	2'-9"	5-'6"	5'-1"	# 5	8	# 4	6	8'-2"
DD	2'-9"	6'-6"	6'-1"	# 5	8	# 4	7	8'-2"
EE	2'-9"	7'-0"	6'-7"	# 6	8	# 4	8	8'-2"
FF	3'-0"	7'-0"	6'-7"	# 6	8	# 4	8	9'-0"
GG	3'-6"	7'-6"	7'-1"	# 6	8	# 4	8	10'-7"
HH	3'-6"	8'-0"	7'-7"	# 6	8	# 4	9	10'-7"
JJ	3'-6"	8'-6"	8'-1"	# 7	8	# 4	9	10'-7"
KK	3'-6"	9'-0"	8'-7"	# 7	8	# 4	10	10'-7"
LL	3'-6"	9'-6"	9'-1"	# 7	8	# 4	10	10'-7"
MM	3'-6"	10'-0"	9'-7"	# 8	8	# 4	11	10'-7"
NN	3'-6"	10'-0"	9'-7"	# 8	8	# 4	11	10'-7"

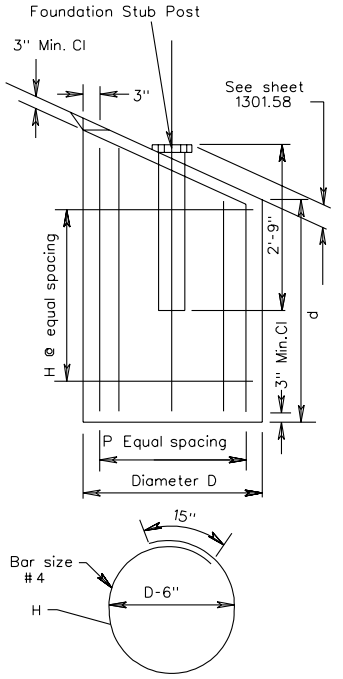
TYPE VI A	FOOTING DIMENSIONS		BAR P			BAR H		
	D	d	Length	Bar Size	No.	Bar Size	No.	Length
OO	2'-9"	5'-6"	5'-1"	# 4	8	# 4	6	8'-2"
PP	2'-9"	6'-0"	5'-7"	# 5	8	# 4	7	8'-2"
QQ	2'-9"	6'-6"	6'-1"	# 5	8	# 4	7	8'-2"
RR	3'-0"	7'-0"	6'-7"	# 5	8	# 4	8	9'-0"
SS	3'-0"	7'-0"	6'-7"	# 6	8	# 4	8	9'-0"
TT	3'-0"	8'-0"	7'-7"	# 6	8	# 4	9	9'-0"
UU	3'-6"	8'-0"	7'-7"	# 6	8	# 4	9	10'-7"
VV	3'-6"	8'-0"	7'-7"	# 6	8	# 4	9	10'-7"
WW	3'-6"	8'-6"	8'-1"	# 7	8	# 4	9	10'-7"
XX	3'-6"	9'-0"	8'-7"	# 7	8	# 4	10	10'-7"
YY	3'-6"	9'-6"	9'-1"	# 8	8	# 4	10	10'-7"
ZZ	3'-0"	7'-0"	6'-7"	# 6	8	# 4	8	9'-0"
AB	3'-0"	7'-6"	7'-1"	# 6	8	# 4	8	9'-0"
AC	3'-6"	8'-0"	7'-7"	# 6	8	# 4	9	10'-7"
AD	3'-6"	8'-6"	8'-1"	# 7	8	# 4	9	10'-7"
AE	3'-6"	9'-0"	8'-7"	# 7	8	# 4	10	10'-7"
AF	3'-6"	9'-6"	9'-1"	# 7	8	# 4	10	10'-7"
AG	3'-6"	10'-0"	9'-7"	# 8	8	# 4	11	10'-7"
AH	4'-0"	10'-0"	9'-7"	# 8	8	# 4	11	12'-1"
AJ	4'-0"	10'-6"	10'-1"	# 8	8	# 4	11	12'-1"
AK	4'-0"	11'-0"	10'-7"	# 8	8	# 4	12	12'-1"
AL	4'-0"	7'-6"	7'-1"	# 6	8	# 4	8	12'-1"
AM	4'-0"	8'-0"	7'-7"	# 6	8	# 4	9	12'-1"
AN	4'-0"	9'-0"	8'-7"	# 7	8	# 4	10	12'-1"
AO	4'-0"	9'-6"	9'-1"	# 7	8	# 4	10	12'-1"
AP	4'-0"	10'-0"	9'-7"	# 8	8	# 4	11	12'-1"
AQ	4'-0"	10'-6"	10'-1"	# 8	8	# 4	11	12'-1"
AR	4'-0"	11'-0"	10'-7"	# 8	8	# 4	12	12'-1"
AS	4'-0"	11'-6"	11'-1"	# 9	8	# 4	12	12'-1"
AT	4'-0"	12'-0"	11'-1"	# 9	8	# 4	13	12'-1"
AU	4'-0"	9'-0"	8'-7"	# 7	8	# 4	10	12'-1"
AV	4'-0"	9'-6"	9'-1"	# 7	8	# 4	10	12'-1"
AW	4'-0"	10'-0"	9'-7"	# 8	8	# 4	11	12'-1"
AX	4'-0"	11'-0"	10'-7"	# 8	8	# 4	12	12'-1"
AY	4'-0"	11'-6"	11'-1"	# 9	8	# 4	12	12'-1"
AZ	4'-0"	12'-0"	11'-7"	# 9	8	# 4	13	12'-1"
BC	4'-0"	13'-0"	12'-7"	# 10	8	# 4	14	12'-1"
BD	4'-0"	13'-6"	13'-1"	# 10	8	# 4	14	12'-1"

PLAN

Parallel to face at Footing



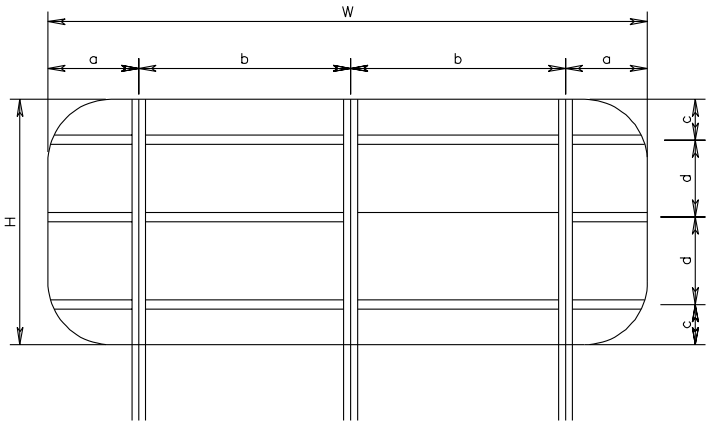
ELEVATION



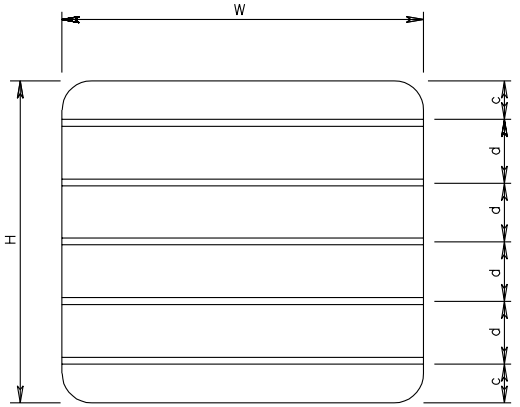
TYPICAL VI A FOUNDATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SIGN PANEL
DETAIL

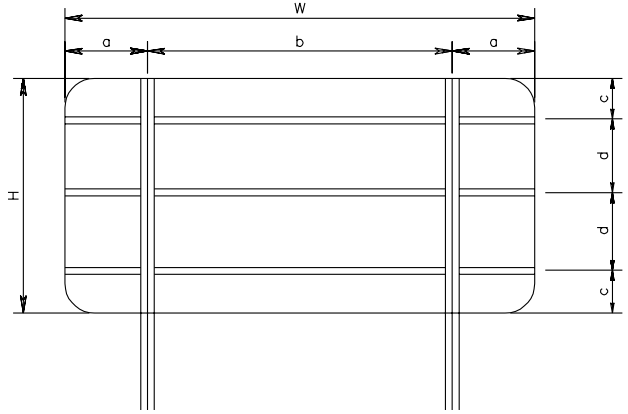


SIGN PANEL
DETAIL

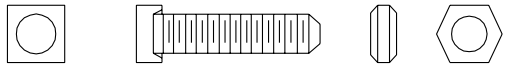


Use the above sign panel detail for "c" and "d" spacing when the "c" dimension for Alternate Sign Panel Attatchment Details is "0" or 12 mm.

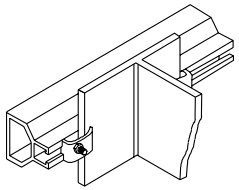
SIGN PANEL
DETAIL



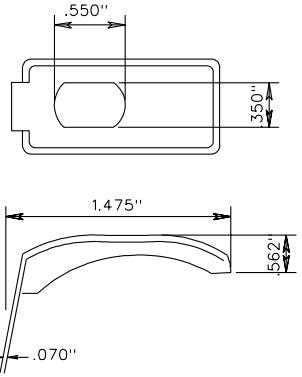
Post clam bolt
(Stainless steel)



STIFFENER TO POST
ATTACHMENT DETAIL



POST CLAMP
(Stainless steel)



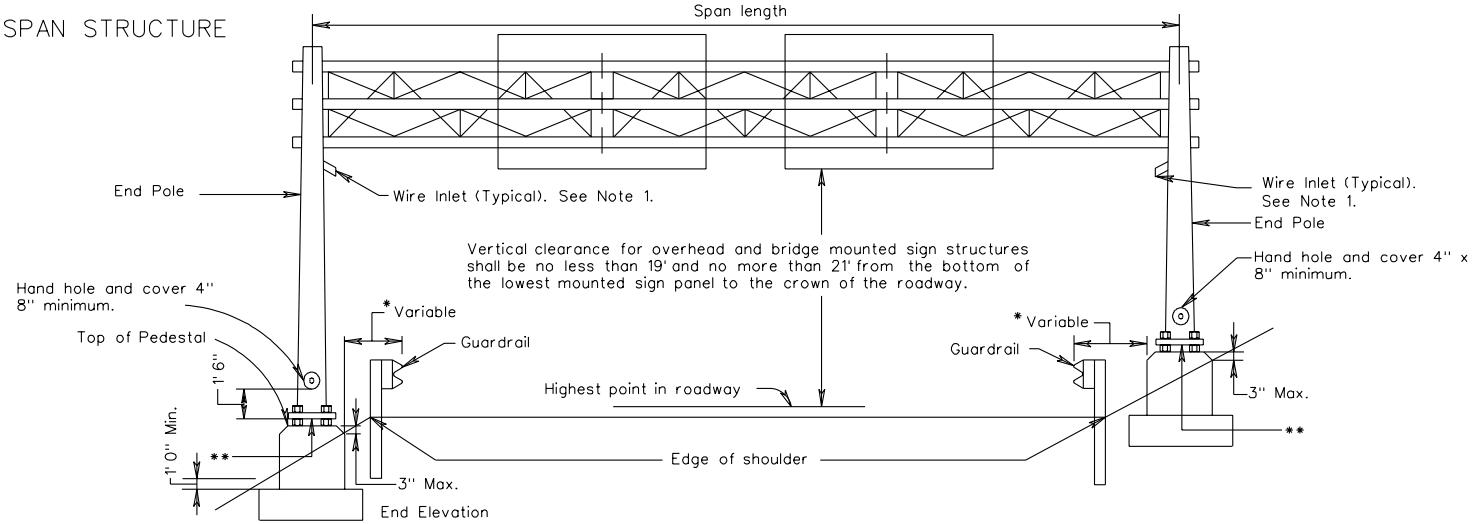
See Standard SPD-1 for sign panel design.
See sheets 1301.67 thru 1301.70 for other details.

ALTERNATE DETAILS FOR TYPE VIA INTERSTATE SIGN STRUCTURES

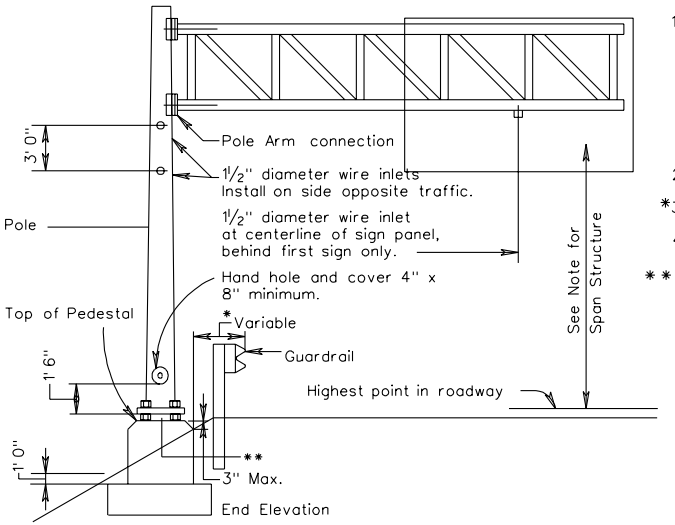
VIRGINIA DEPARTMENT OF TRANSPORTATION

OSS-1

SPAN STRUCTURE



CANTILEVER STRUCTURE



NOTES:

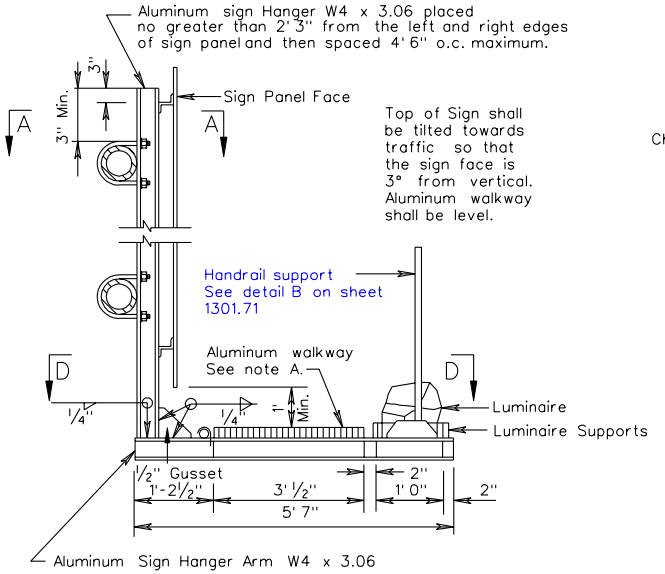
1. 1½" diameter wire inlets shall be provided at the following locations:
   - A. On span structures on the front leg of end pole 12" below bottom chord.
   - B. On cantilever structures on pole 12" below bottom chord.
   - C. On span structures below bottom chord at centerline behind first sign panel from each end pole.
   - D. On cantilever structures below bottom chord at centerline behind first sign panel from pole.
2. All unused wire inlets shall be capped water tight.
3. * Distance shall be no less than the minimum indicated in Standard GR-INS.
4. No mortar, grout, or concrete shall be placed between bottom of base plate and top of pedestal.
5. ** Distance between bottom of base plate and top of pedestal shall be less than or equal to twice the diameter of anchor bolt but shall not be greater than 3".

TYPICAL DETAILS FOR OVERHEAD SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.72

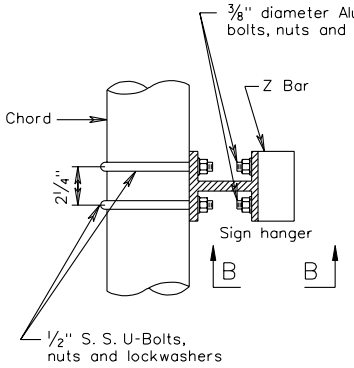
SIGN HANGER ERECTION DETAIL



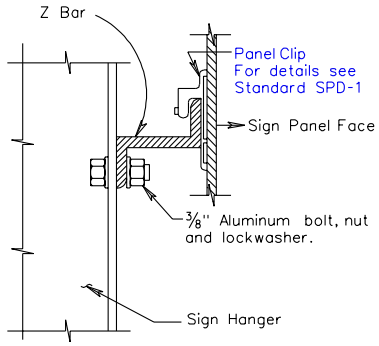
Note A

Walkway, Handrail and Luminaires required only where indicated on the plans.

SECTION A-A



SECTION B-B



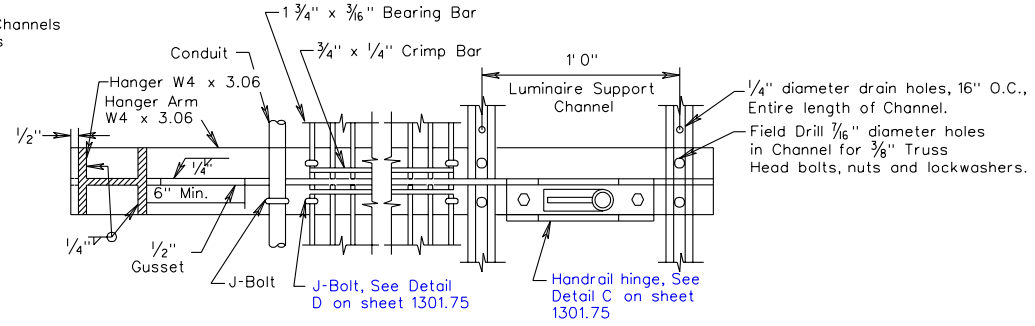
See Standard SSP-VIA for method of attaching alternate sign panel design to sign hanger.

Note:

When required by the plans overhead sign structure luminaires shall be installed on a luminaire retrieval system with supports and electrical system designed for track mounted luminaires. Retrieval system including the electrical system shall be equal to "LUMI-TRAK" and designed for the number of luminaires indicated on the plans. Spacing of hangers used to support the retrieval system shall be increased to a maximum 7 foot distance only where the hangers do not support sign panels. Turntable end of retrieval system shall be of sufficient length to align with the vertical edge of the outside paved shoulder (± 6") or shall extend 5 feet beyond the vertical edge (± 6") of outermost sign luminaire whichever is greater. The opposite end of retrieval system shall extend a minimum of 6 inches past the outermost vertical edge of the sign hanger arm. Walkway, handrail, luminaire support channels and associated equipment will not be required with the luminaire retrieval system.

SECTION D-D

Luminaire to be attached to Channels with 3/8" galvanized cap screws and spring nuts.



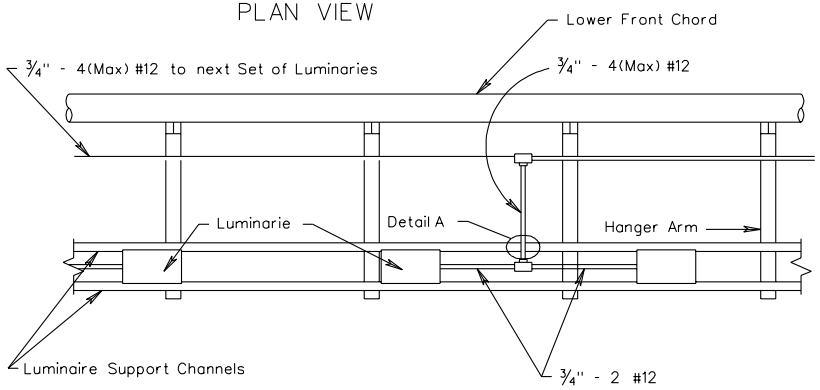
TYPICAL DETAILS FOR OVERHEAD SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

OSS-1

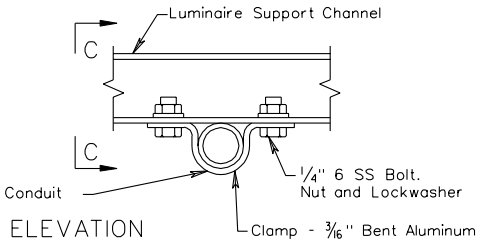
ELECTRICAL INSTALLATION DOUBLE POLE END FRAMES

PLAN VIEW



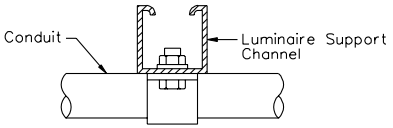
Walkway Grating, if required, is not shown.
Installation for Single Pole Supports to be similar.

DETAIL A



ELEVATION

SECTION A-A

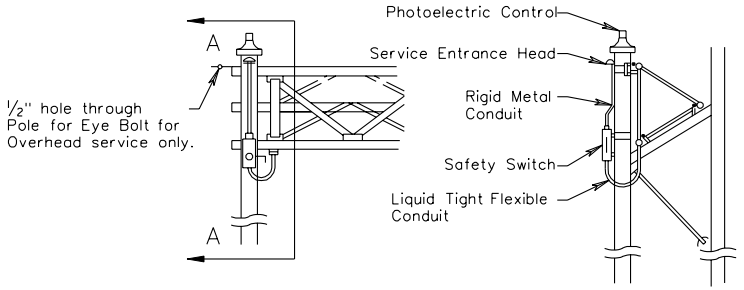


ELECTRIC DETAILS FOR SIGN LIGHTING

SPAN SIGN STRUCTURE

FRONT VIEW

SECTION A-A

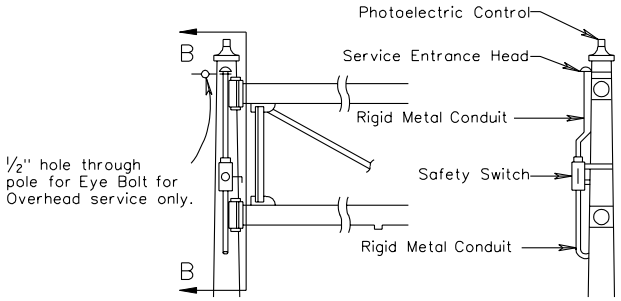


ELECTRIC DETAILS FOR SIGN LIGHTING

CANTILEVER SIGN STRUCTURE

FRONT VIEW

SECTION B-B



Note:
All conduit located in or on cantilever structure shall be ¾" minimum.

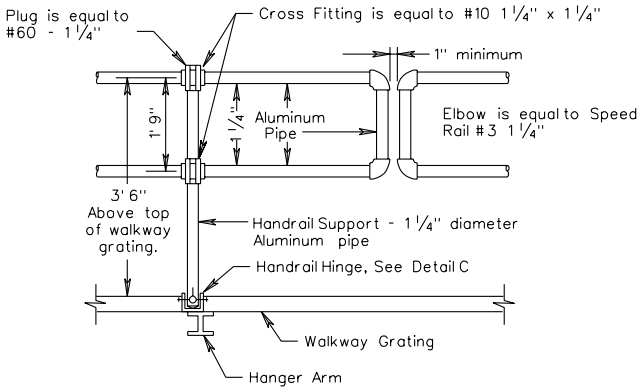
TYPICAL DETAILS FOR OVERHEAD SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.74

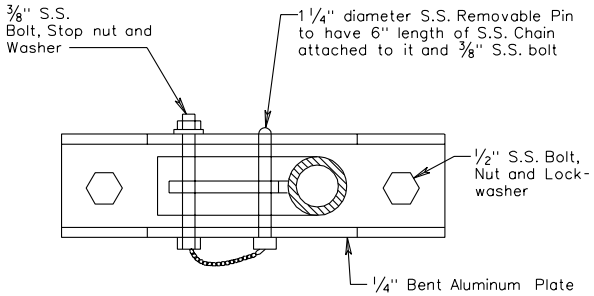
DETAIL B

HANDRAIL ELEVATION



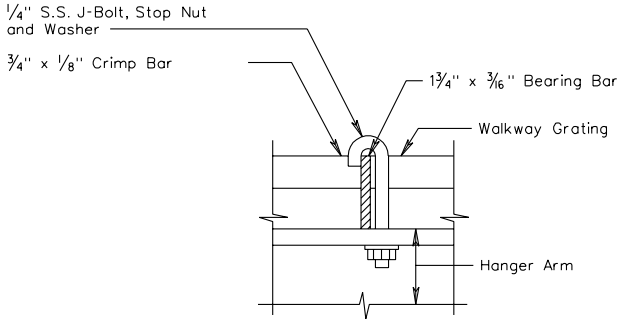
DETAIL C

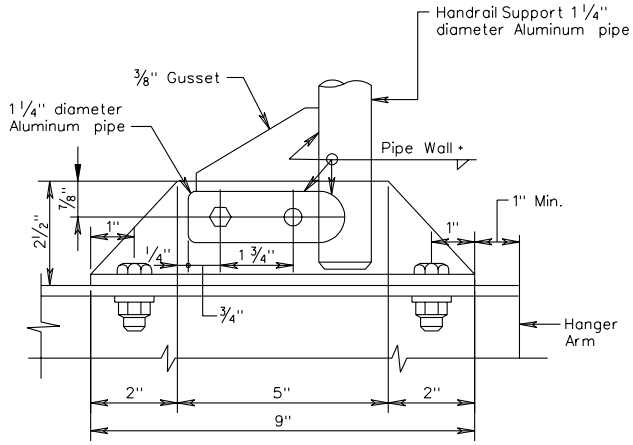
HANDRAIL HINGE



PLAN VIEW

DETAIL D



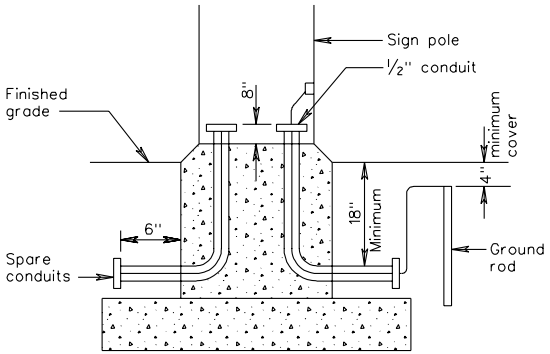


ELEVATION VIEW

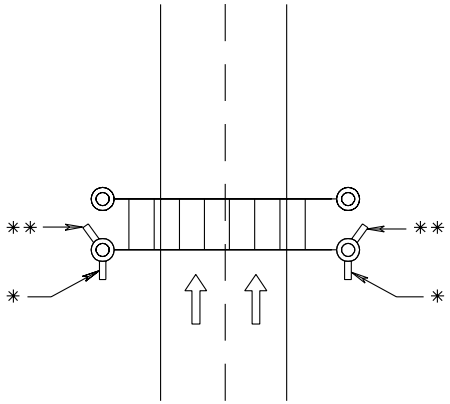
TYPICAL DETAILS FOR OVERHEAD SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

TYPICAL SIGN FOOTING DETAIL WITH CONDUIT



LOCATION OF FUTURE USE CONDUITS FOR DOUBLE END POLE STRUCTURES



* Future use conduits placed parallel to the roadway

** Future use conduits placed at an angle to miss the back foundation or anchor bolts in a spread footing foundation.

NOTES:

The type, size, number and orientation of conduits entering and exiting footings may vary per sign location.

In addition to the conduits specified on the plans, one - 1/2" conduit required for ground wire and two - 2" pvc heavy wall conduits required for future use. Future use conduits shall be stubbed out and capped. Future use conduits shall be oriented to run parallel to the roadway. For location of future use conduits in foundations for double end pole structures, see drawing at right.

Each foundation shall be permanently marked to indicate all sides from which conduits pass. This mark shall be made with a trowel when finishing the concrete and shall be 1/4" deep and 4" to 6" long. Locations of empty conduits shall have an additional 2" long mark made perpendicular to and centered on this mark.

Foundations above finished grade shall be chamfered 3/4" on all edges.

Grounding bushings shall be installed on each end of metal conduits.

Bell ends shall be installed on each end of PVC conduits.

Bell ends & bushings of empty conduits shall be plugged to prevent moisture and rodent entry.

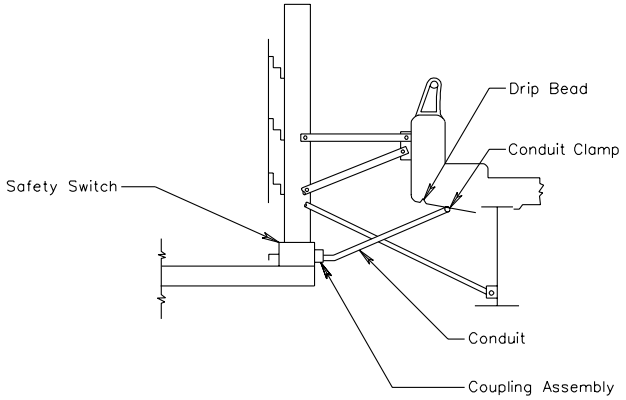
Voids remaining after conductors exit or enter bell ends or bushings of conduits shall be sealed with silicone to prevent moisture and rodent entry.

No mortar, grout, or concrete shall be placed between bottom of base plate and top of pedestal.

TYPICAL DETAILS FOR OVERHEAD SIGN STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

BRIDGE PARAPET ELECTRICAL DETAILS



NOTES:

The vertical and horizontal conduit runs shall be supported at 10' intervals for metal conduits and 5' intervals for PVC conduit; all bends shall be supported within a minimum of 12" on each side of bend.

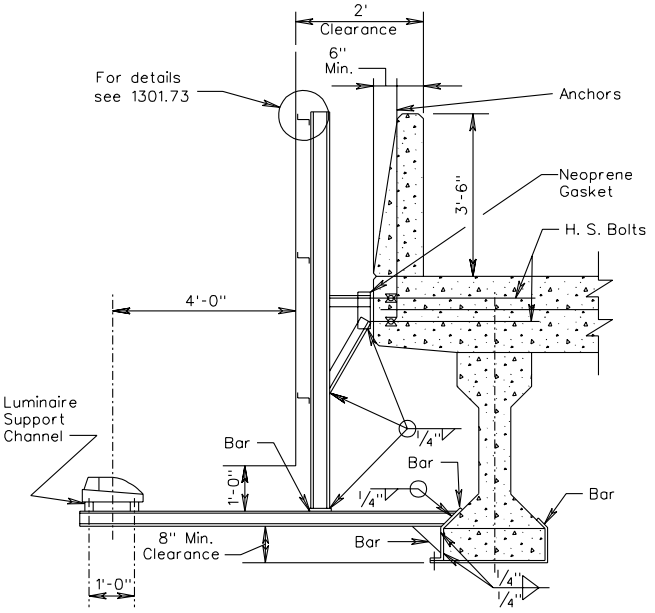
Conduit clamps shall be designed for the size and type of conduit indicated. The expansion anchor bolt shall be galvanized or stainless steel, 1/4" diameter embedded a minimum length of 2" with a minimum tensile pullout strength of 500 Lbs. Conduit clamps shall be located 4" minimum from the drip bead.

TYPICAL BRIDGE PARAPET ELECTRICAL DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

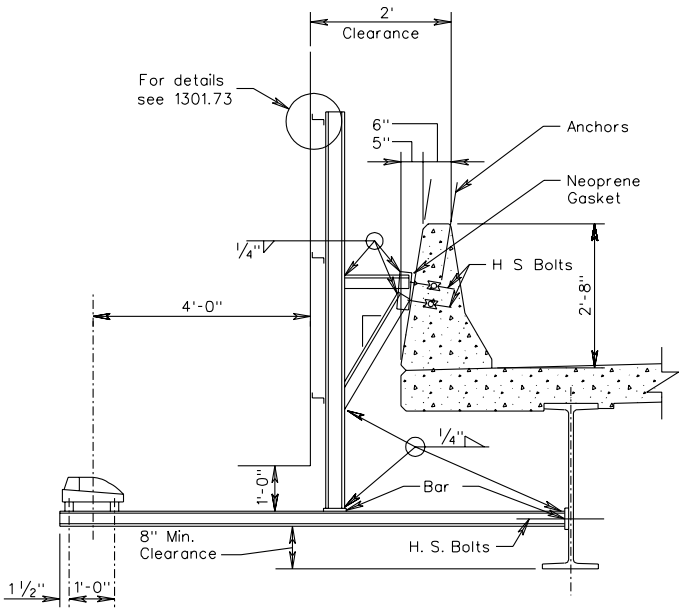
BSS-1

TYPICAL FOR PRESTRESSED CONCRETE



This parapet is typical for bridges with a sidewalk.

TYPICAL FOR STEEL BEAM



NOTES:

The size of members shall be designed by the contractor for the sign to be supported.

Minimum clearances are as specified by AASHTO or approved by the Virginia Department of Transportation.

The supporting frames may be either aluminum or galvanized steel.

The spacing of zees and supports shall be as shown on the plans.

Sign supports shall be braced for lateral forces.

Bolts shall be High-Strength ASTM A325, galvanized.

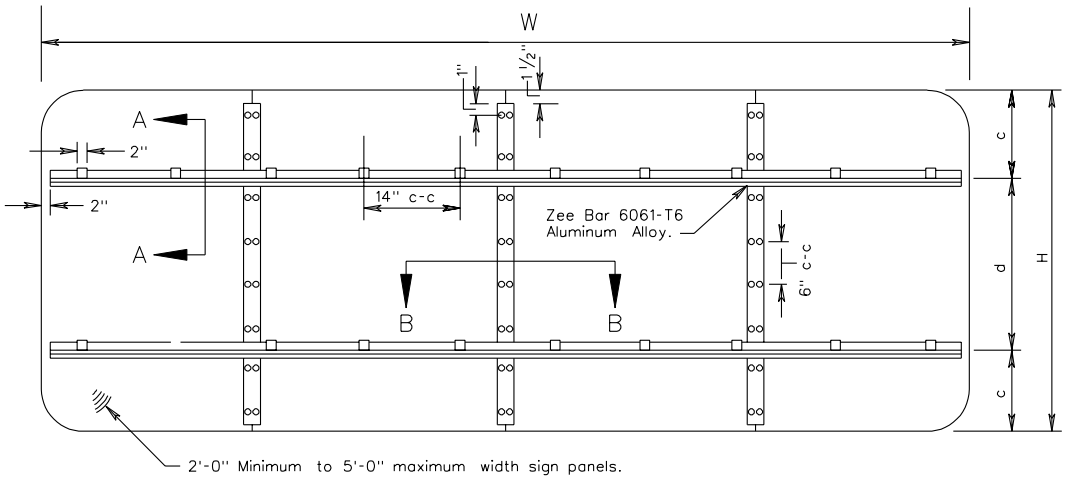
Anchors shall be adhesive or cast-in-place. Thru-bolting may also be used for attachments to parapets. When cast-in-place anchors are used, they shall develop the strength of the bolts. When thru-bolting is used, anchorage on the traffic side of the parapet shall be flush with the parapet face.

When required by the plans bridge mounted sign structure luminaires shall be installed on a luminaire retrieval system with supports and electrical system designed for track mounted luminaires. Retrieval system including the electrical system shall be equal to "LUMI-TRAK" and designed for the number of luminaires as indicated on the plans. Spacing of hangers used to support the retrieval system shall be increased to a maximum 7-foot distance only where hangers do not support sign panels. Turntable end of retrieval system shall be of sufficient length to align with the vertical edge of the outside paved shoulder (± 6") or shall extend five feet beyond the vertical edge (± 6") of outermost sign luminaire whichever is greater. The opposite end of retrieval system shall extend a minimum of 6 inches past the outermost vertical edge of the sign hanger arm. Luminaire support channels and associated equipment will not be required with the luminaire retrieval system.

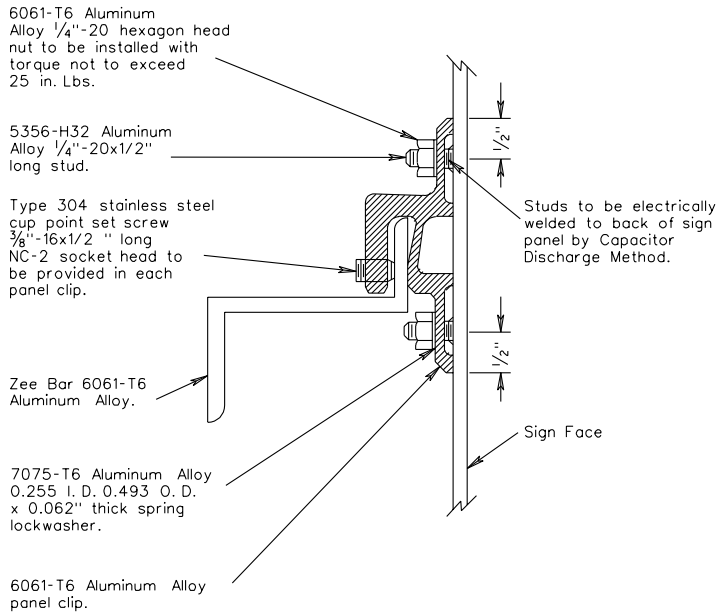
TYPICAL BRIDGE PARAPET SIGN MOUNTING DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

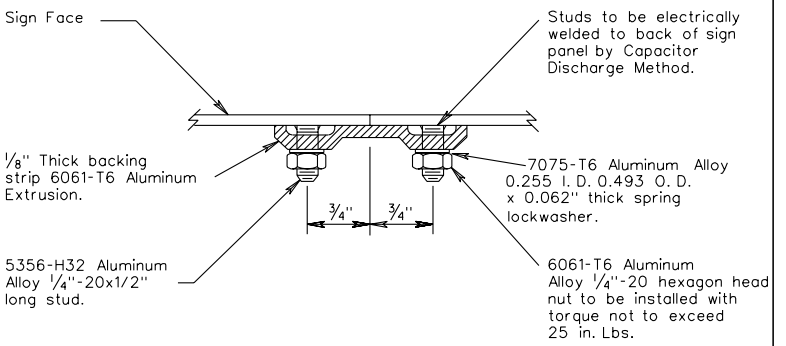
1301.78



SECTION A-A



SECTION B-B

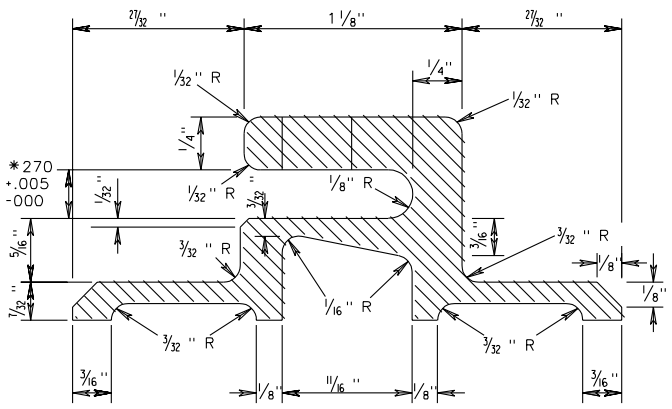


SIGN PANEL DESIGN

VIRGINIA DEPARTMENT OF TRANSPORTATION

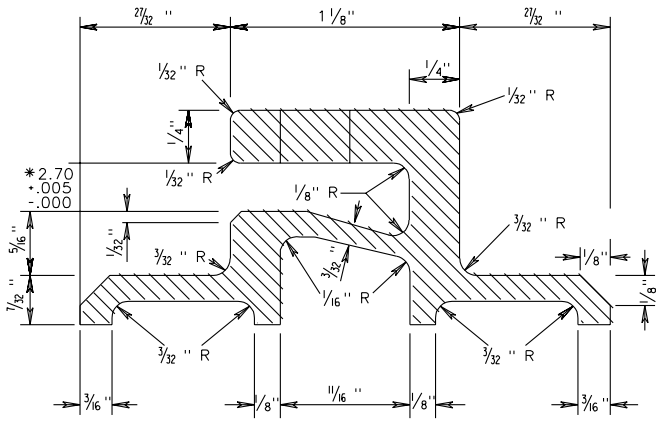
SPD-1

TYPE ONE PANEL CLIP DETAIL



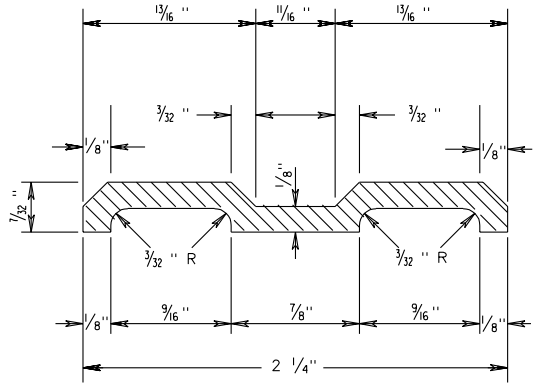
*Use 380 for Type D and E Zee Bars

TYPE TWO PANEL CLIP DETAIL



*Use 380 for Type D and E Zee Bars

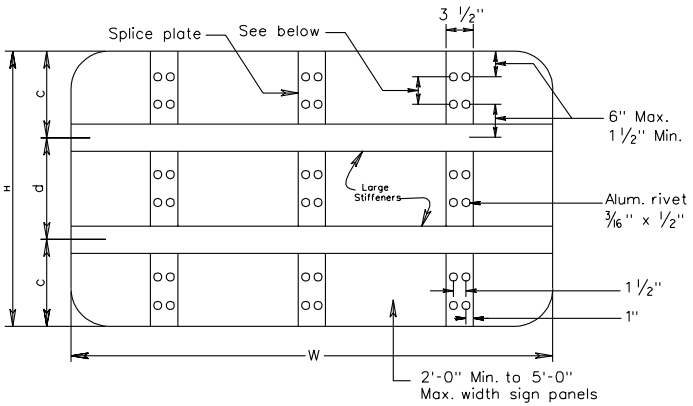
BACKING STRIP DETAIL

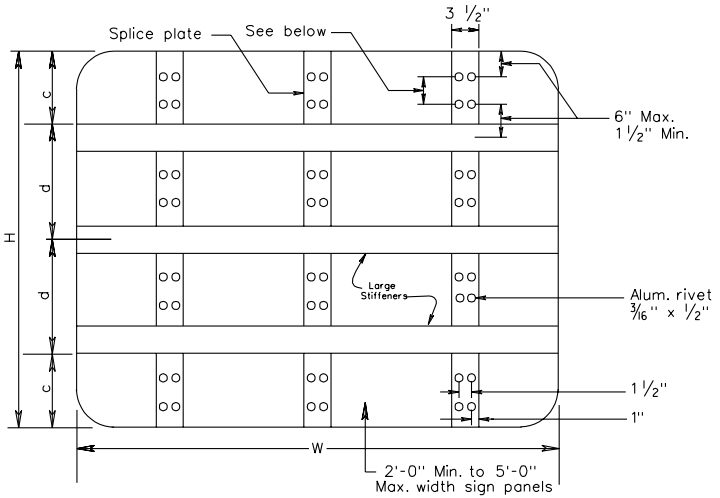


SIGN PANEL DESIGN

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.80

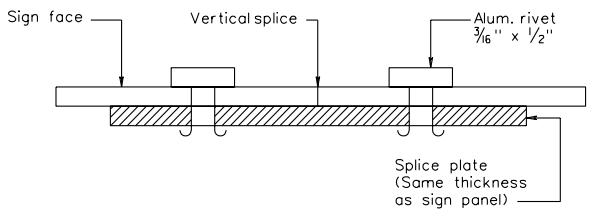




Use the above sign panel detail for "c" and "d" spacing when the "c" dimension for alternate sign panel attachment details is "0" or 1/2".

Rivets used for securing the stiffeners and splice plate to the sign, and the large stiffener splice bar to the large stiffener shall be 3/16" minimum diameter by 1/2" long aluminum and capable of withstanding a minimum shear force of 460 lbs. Rivet spacing for attaching the stiffeners to the sign shall be 6" maximum beginning 1 1/2" from the ends of the sign panel. Rivet spacing for attaching the large stiffener splice bar to the large stiffener shall be 3" beginning 1 1/2" from the ends of the splice bar. Rivet spacing for attaching the splice plate shall be based on stiffener spacing in accordance with the following:

Stiffener spacing	Splice plate rivet spacing
6"	3"
7"	4"
8"	5"
9" or greater	6"



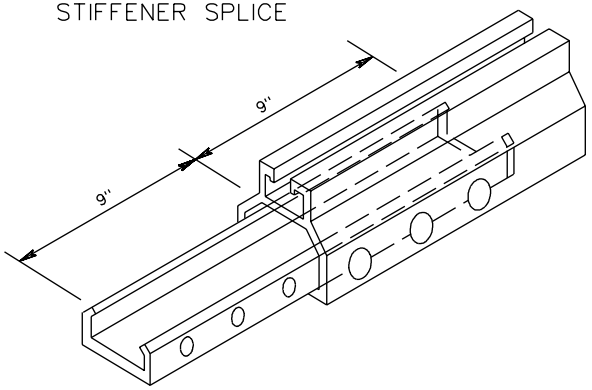
VERTICAL SPLICING DETAIL

ALTERNATE SIGN PANEL DESIGN

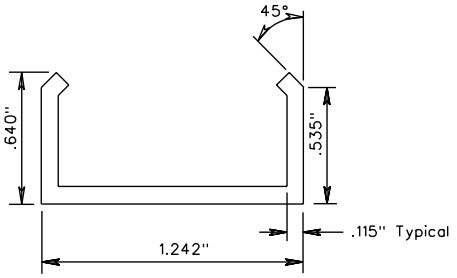
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPD-1

LARGE STIFFENER SPLICE



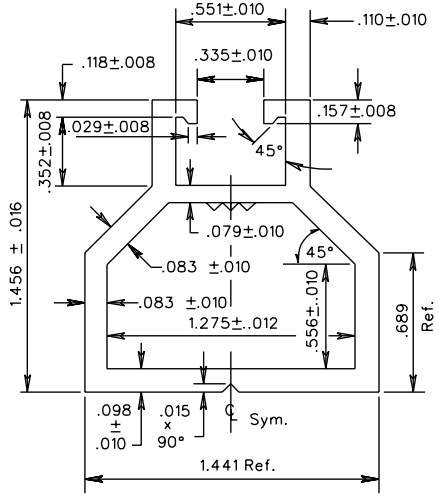
LARGE STIFFENER SPLICE BAR



The maximum number of splices in a stiffener shall be one per stiffener location.

Splices shall not be in a vertical alignment but shall be offset 12" from each other.

LARGE STIFFENER DETAIL



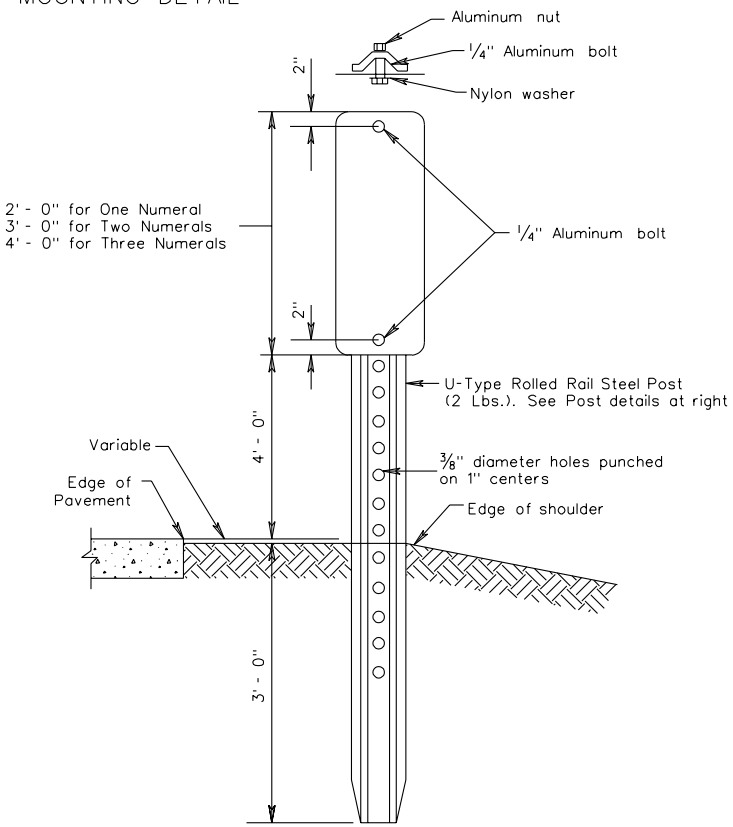
ALTERNATE SIGN PANEL DESIGN

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.82

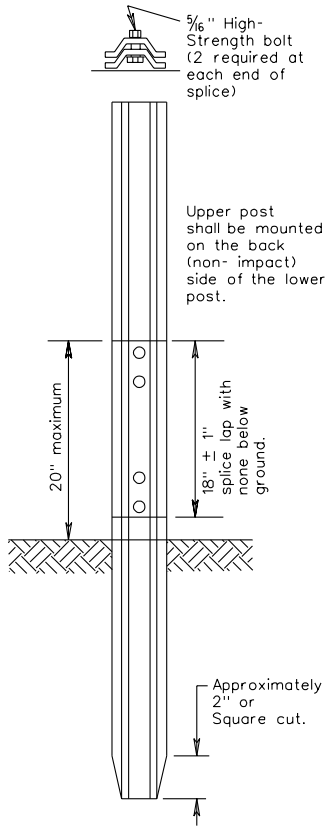
MM-1

MOUNTING DETAIL

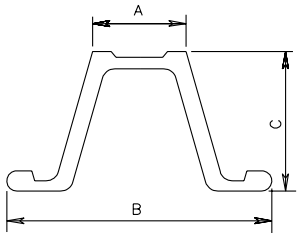


USP-1

SPLICING DETAIL



POST SECTION DIMENSIONS



1.33 Lb./LF

	Minimum	Maximum
A.	1/2"	1"
B.	2"	2 1/4"
C.	3/4"	1 1/4"

2.00 Lb./LF

	Minimum	Maximum
A.	1 13/64"	1 9/32"
B.	3 1/16"	3 1/8"
C.	1 21/64"	1 33/64"

3.00 Lb./LF

	Minimum	Maximum
A.	1 17/64"	1 5/8"
B.	3 3/16"	3 1/2"
C.	1 1/2"	1 7/8"

Length is variable
Weight is linear foot

Notes:

Driving cap to be used when driving post.

Panel to be fabricated of ASTM B209 alloy 6061-T6 or 5052-H38, 0.080 thick.

Top of panel to be flush with top of post.

ERECTION

Milepost markers to be located in line with delineator posts, edge of shoulder or back of guardrail, if present.

	D10-4	D10-5	D10-6
Curb face to sign edge:	2'	2'	2'
Pavement top to sign bottom:	4'	4'	4'
Curb top to sign bottom:	4'	4'	4'
Sign face to pavement edge:	93°	93°	93°

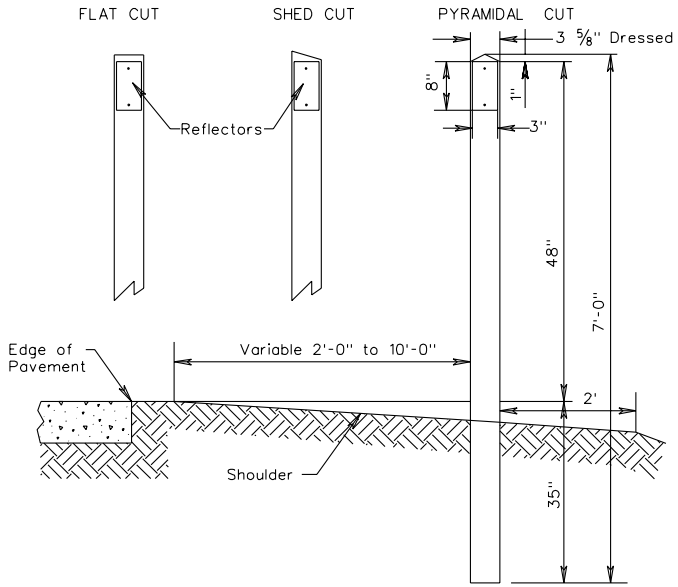
TYPICAL DETAILS FOR MILEPOST MARKERS & U-TYPE STEEL POST STRUCTURES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.83

ED-1

STANDARD ROAD EDGE DELINEATORS



NOTES:

Standard ED-1 delineators consist of reflectorized sheeting, cut to a 3" by 8" vertical rectangle, mounted on a backing of aluminum alloy, not less than 0.063 thick conforming to ASTM B209, alloy 6061-T6 or 5052-H38. The color of the reflective sheeting shall, in all cases, conform to the color of the edgelines.

The reflectors are attached to wood posts with a minimum of two nails or screws produced from alloy 2024-T4 or 6061-T6.

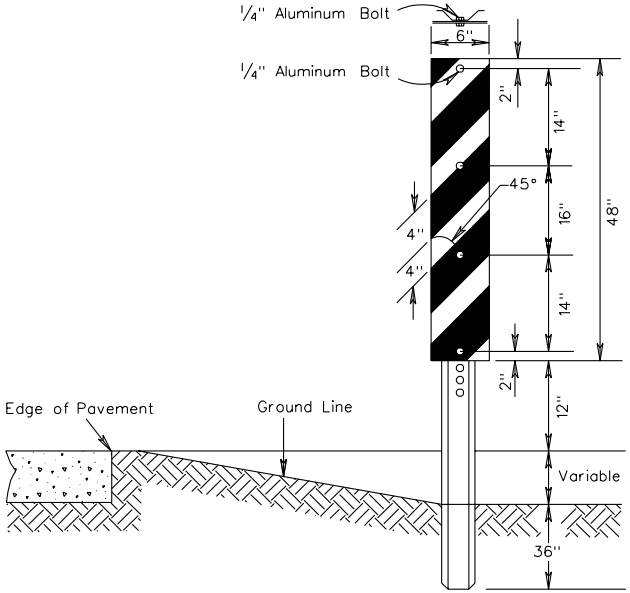
The posts above the ground are painted white with number 11 white paint.

Posts are treated with a water-borne preservative in accordance with Section 236 of the Road and Bridge Specifications.

The top of the posts may have a flat, shed, or pyramidal cut: however, they shall be uniform throughout a project. Cuts shall be in accordance with Standard WSP-1.

ED-2

SPECIAL ROAD EDGE DELINEATORS



NOTES:

Special delineators are made from aluminum alloy, not less than 0.080 thick conforming to ASTM B209, alloy 6061-T6 or 5052-H38.

Delineators extend 1" above the of the post.

Delineators are reflectorized, and in all cases, the color shall conform to the color of the edgelines, alternating with a black stripe.

The stripes shall slope down toward the center of roadway.

Delineators are mounted on U-Type posts fabricated from rolled-rail steel 1.33 lb./ft. minimum.

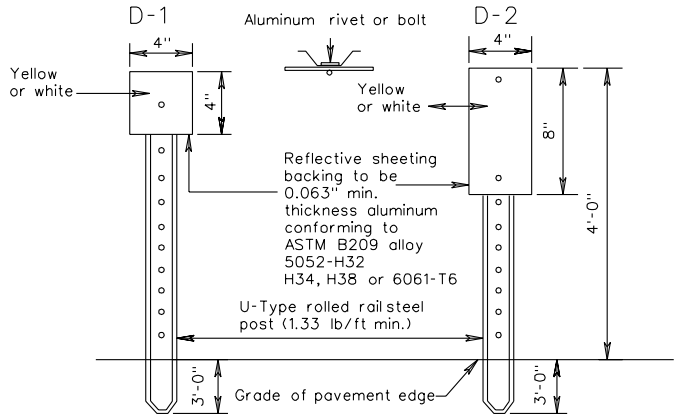
The bottom of the delineator panel is 12" above the pavement edge elevation.

TYPICAL DETAILS FOR STANDARD & SPECIAL ROAD EDGE DELINEATORS

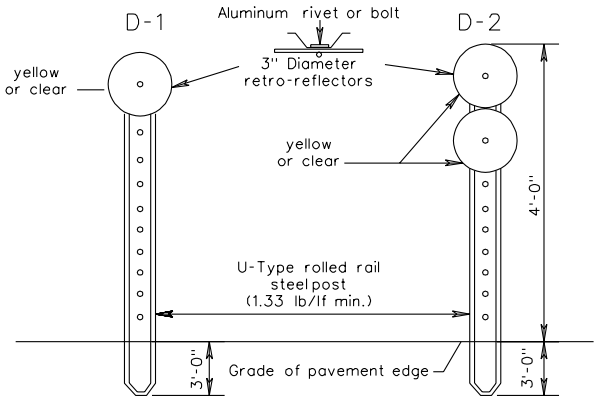
1301.84

VIRGINIA DEPARTMENT OF TRANSPORTATION

TYPE I



TYPE II



NOTES:

Road edge delineators are to be erected two feet beyond the outer edge of the shoulder or the face of unmountable curb.

D-1 delineators shall be placed on the right of through roadways at 528 foot spacing with the following exceptions:

Tangent roadways where pavement markers are installed will not require the installation of delineators.

Locations where delineators are installed on guardrails, parapets or barriers on the right of the roadway will not require the installation of road edge delineators.

D-1 delineators shall be placed on at least one side and on the outside curve of interchange ramps except where delineators are installed on guardrails, parapets or barriers. The spacing along the ramps shall be at 100' intervals except in horizontal curves where the spacing shall conform to the chart on SPACING FOR HIGHWAY DELINEATORS.

D-2 delineators shall be placed on acceleration and deceleration lanes at 100' spacing.

The color of delineators shall conform to the color of the edgelines.

SPACING FOR HIGHWAY DELINEATORS ON HORIZONTAL CURVES

Distance in feet rounded to the nearest 5'.

RADIUS OF CURVE IN FEET	SPACING ON CURVE IN FEET
50	20
150	30
200	35
250	40
300	50
400	55
500	65
600	70
700	75
800	80
900	85
1000	90

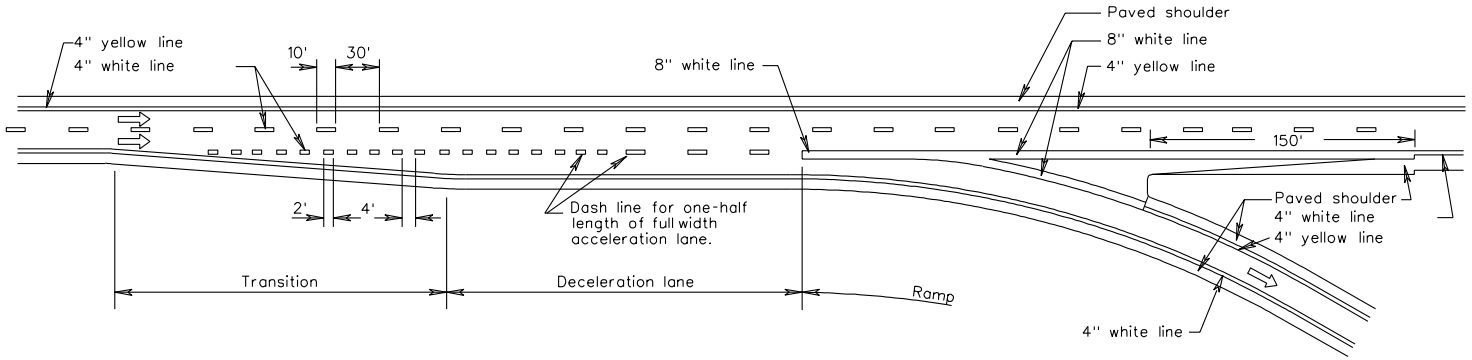
Spacing for specific radii not shown may be interpolated from table. The minimum spacing should be 20'. The spacing on curves should not exceed 300'. In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator is 2S, the second 3S and the third 6S but not to exceed 300'. S refers to the delineator spacing for specific radii computed from the formula $S = 3\sqrt{R-50}$

TYPICAL DETAILS FOR INTERSTATE ROAD EDGE DELINEATORS

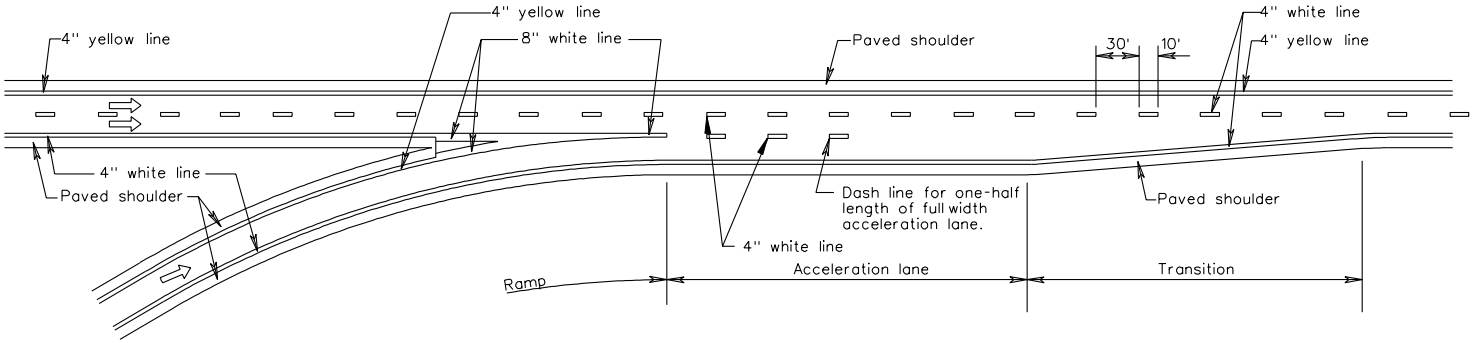
VIRGINIA DEPARTMENT OF TRANSPORTATION

PM-1

INTERCHANGE EXIT



INTERCHANGE ENTRANCE

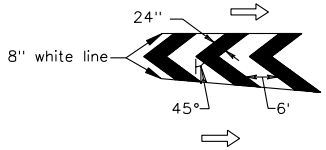


Notes:

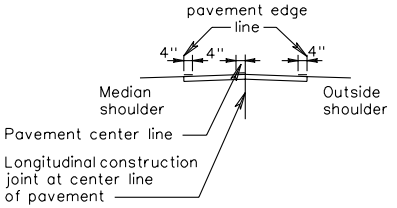
Place pavement center line marking on center line of bituminous surface.

All pavement markings shall be installed in accordance with the MUTCD.

GORE AREA HATCHING OPTIONAL



LATERAL PLACEMENT FOR PAVEMENT LINE MARKING ON HYDRAULIC CEMENT CONCRETE

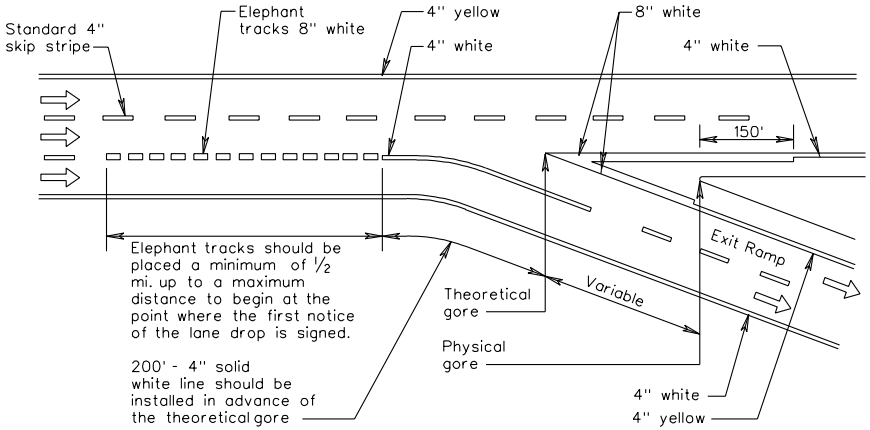


TYPICAL PAVEMENT MARKING DETAILS

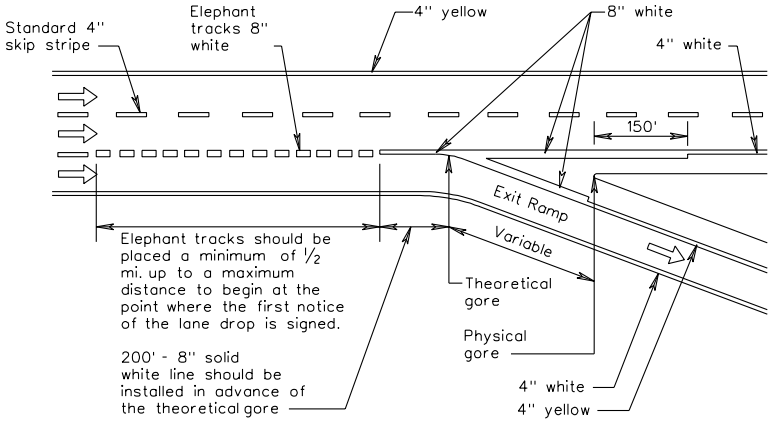
VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.86

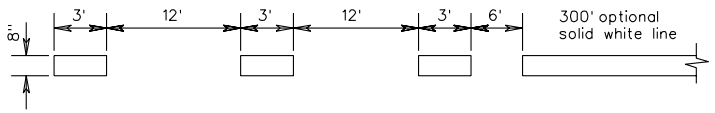
LIMITED ACCESS LANE DROP EXIT RAMPS
BESIDE CHOICE LANE THRU / EXIT



LIMITED ACCESS LANE DROP EXIT RAMPS



STANDARD ELEPHANT TRACKS



TYPICAL PAVEMENT MARKING DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

PM-3

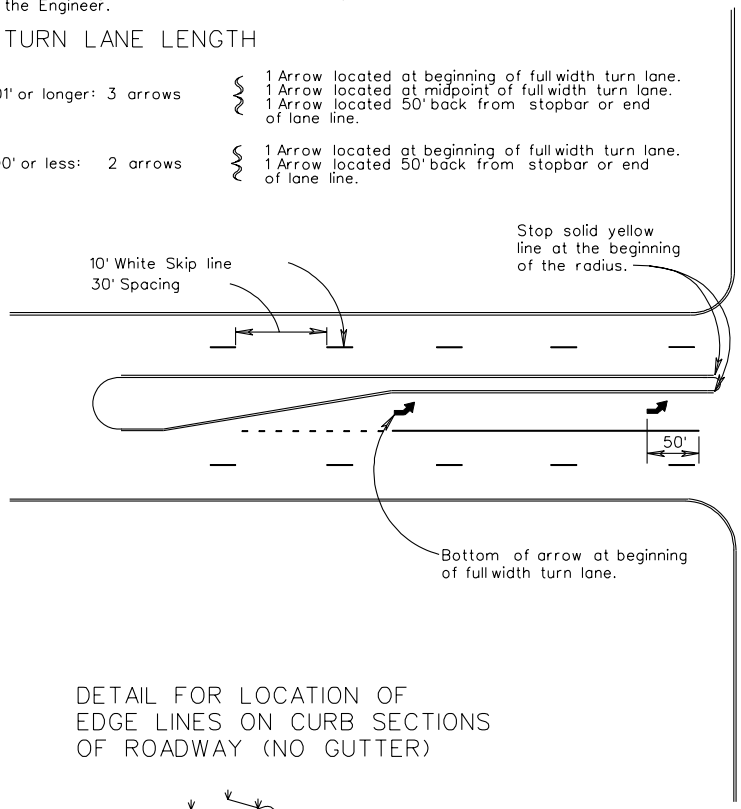
TURN LANE ARROWS

Turn arrows required in accordance with the following, unless otherwise directed by the Engineer.

TURN LANE LENGTH

301' or longer: 3 arrows
- 1 Arrow located at beginning of full width turn lane.
- 1 Arrow located at midpoint of full width turn lane.
- 1 Arrow located 50' back from stopbar or end of lane line.

300' or less: 2 arrows
- 1 Arrow located at beginning of full width turn lane.
- 1 Arrow located 50' back from stopbar or end of lane line.

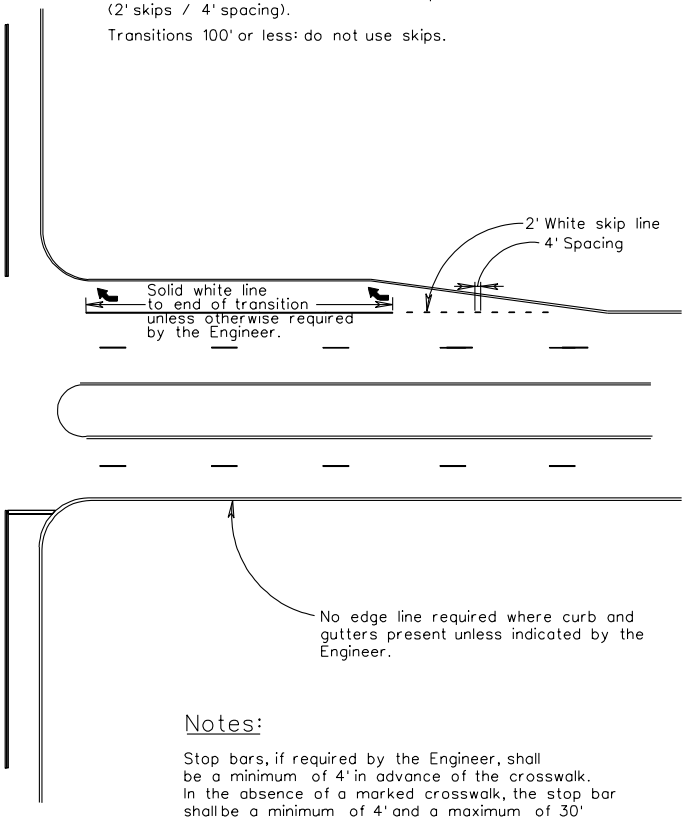


SKIPS

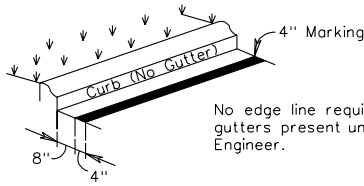
Thru lanes: use 10' skips / 30' spacing.

Transitions more than 100': use mini skips (2' skips / 4' spacing).

Transitions 100' or less: do not use skips.



DETAIL FOR LOCATION OF EDGE LINES ON CURB SECTIONS OF ROADWAY (NO GUTTER)



No edge line required where curb and gutters present unless indicated by the Engineer.

Notes:

Stop bars, if required by the Engineer, shall be a minimum of 4' in advance of the crosswalk. In the absence of a marked crosswalk, the stop bar shall be a minimum of 4' and a maximum of 30' in advance of the nearest edge of the intersecting roadway. Stopbars shall be 2' in width.

Arrows shall be in accordance with the Federal MUTCD.

Spacing between double solid yellow lines shall be 4''.

TYPICAL PAVEMENT MARKING FOR UNSIGNALIZED INTERSECTIONS

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.88

TURN LANE ARROWS

Turn arrows required in accordance with the following, unless otherwise directed by the Engineer.

TURN LANE LENGTH

301' or longer: 3 arrows
- 1 Arrow located at beginning of full width turn lane.
- 1 Arrow located at midpoint of full width turn lane.
- 1 Arrow located 50' back from stopbar.

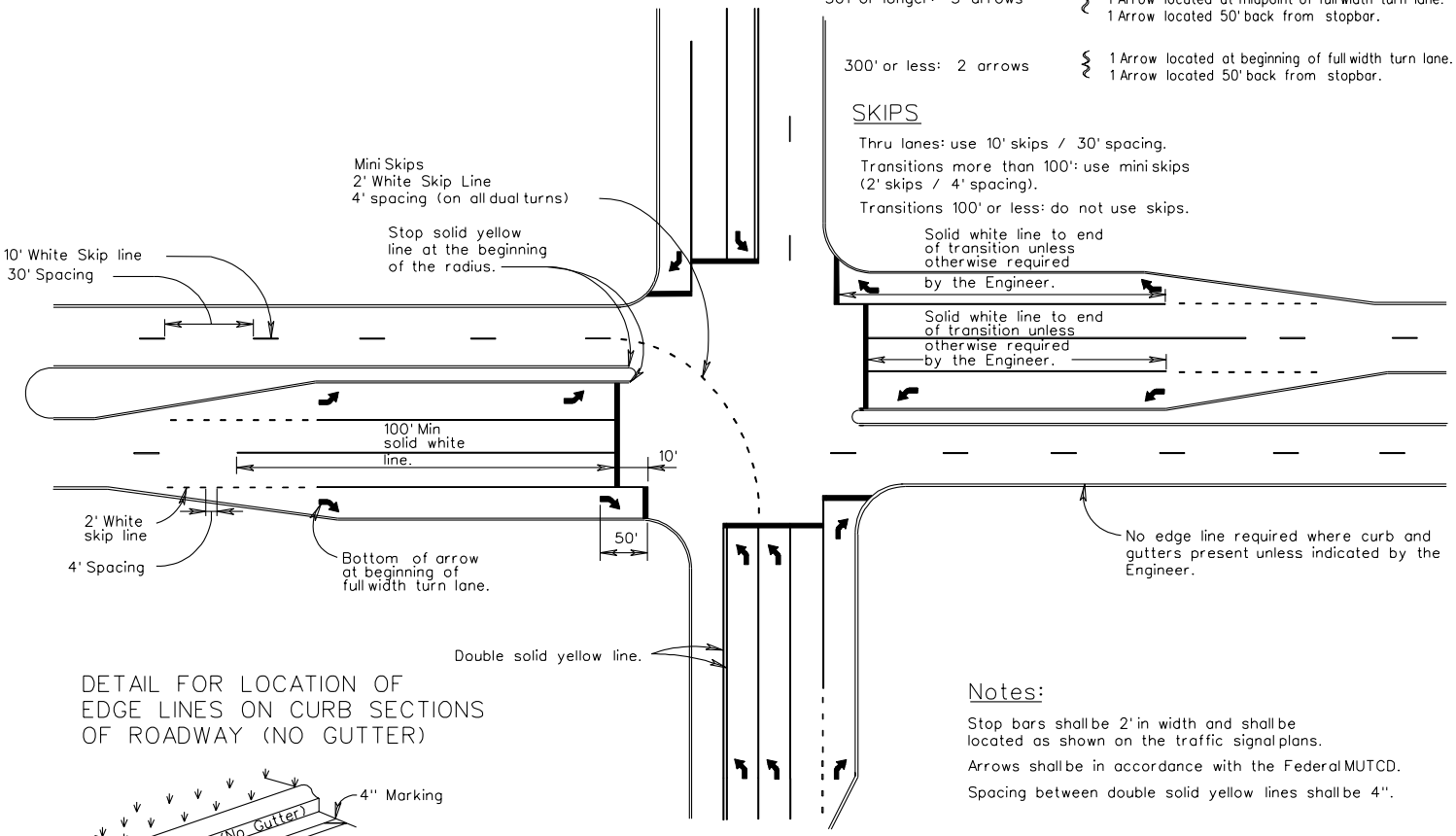
300' or less: 2 arrows
- 1 Arrow located at beginning of full width turn lane.
- 1 Arrow located 50' back from stopbar.

SKIPS

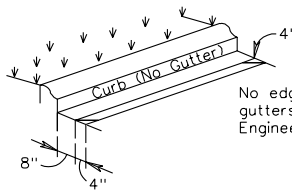
Thru lanes: use 10' skips / 30' spacing.

Transitions more than 100': use mini skips (2' skips / 4' spacing).

Transitions 100' or less: do not use skips.



DETAIL FOR LOCATION OF EDGE LINES ON CURB SECTIONS OF ROADWAY (NO GUTTER)



No edge line required where curb and gutters present unless indicated by the Engineer.

Notes:

Stop bars shall be 2' in width and shall be located as shown on the traffic signal plans.

Arrows shall be in accordance with the Federal MUTCD.

Spacing between double solid yellow lines shall be 4".

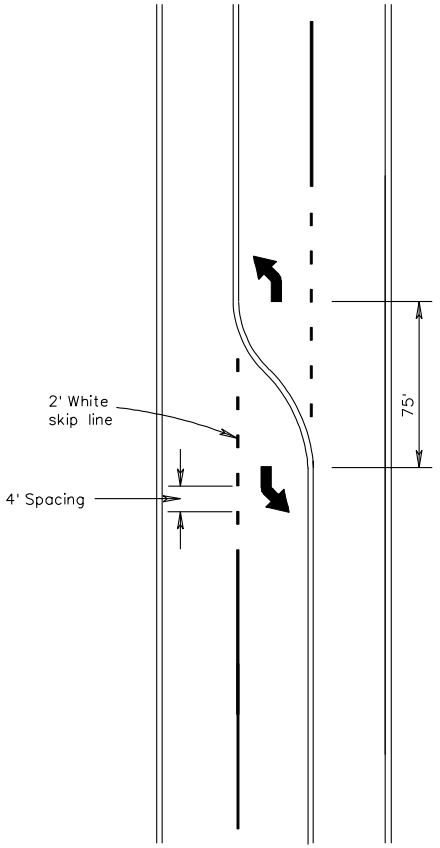
TYPICAL PAVEMENT MARKING FOR SIGNALIZED INTERSECTIONS

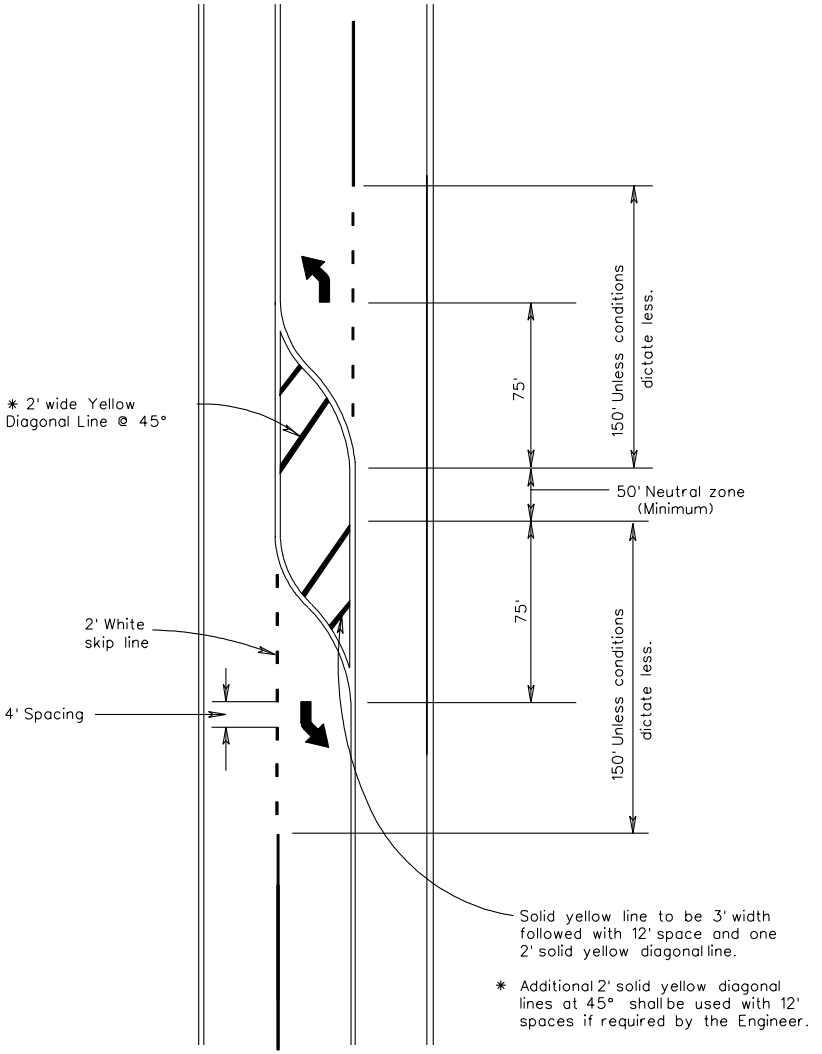
VIRGINIA DEPARTMENT OF TRANSPORTATION

PM-5

Note:

Method used shall be
as directed by the Engineer.

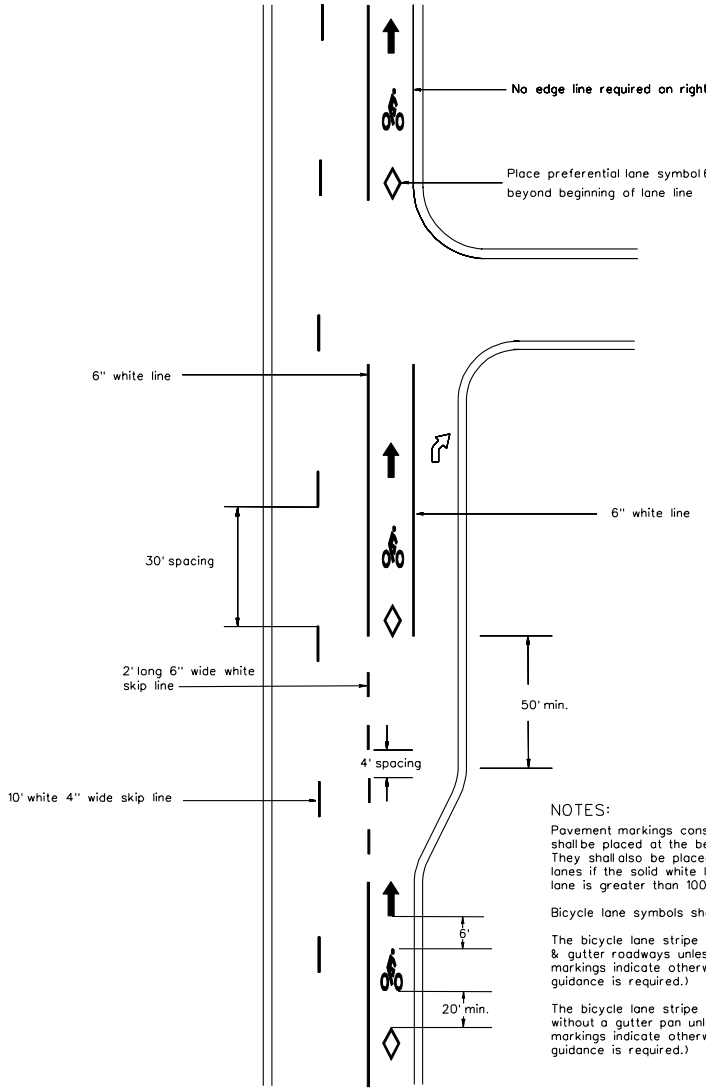




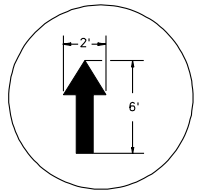
TYPICAL PAVEMENT MARKING
LEFT TURN PAVEMENT MARKED MEDIAN

VIRGINIA DEPARTMENT OF TRANSPORTATION

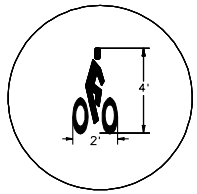
1301.90



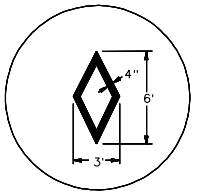
ARROW DETAILS



BICYCLE LANE SYMBOL



PREFERENTIAL LANE SYMBOL



NOTES:

Pavement markings consisting of arrow, bicycle & preferential lane symbols shall be placed at the beginning of the bicycle lane at right turn lanes. They shall also be placed at the end of the bicycle lane at right turn lanes if the solid white line separating the bicycle lane from the right turn lane is greater than 100' in length.

Bicycle lane symbols shall be placed a maximum of 500' apart.

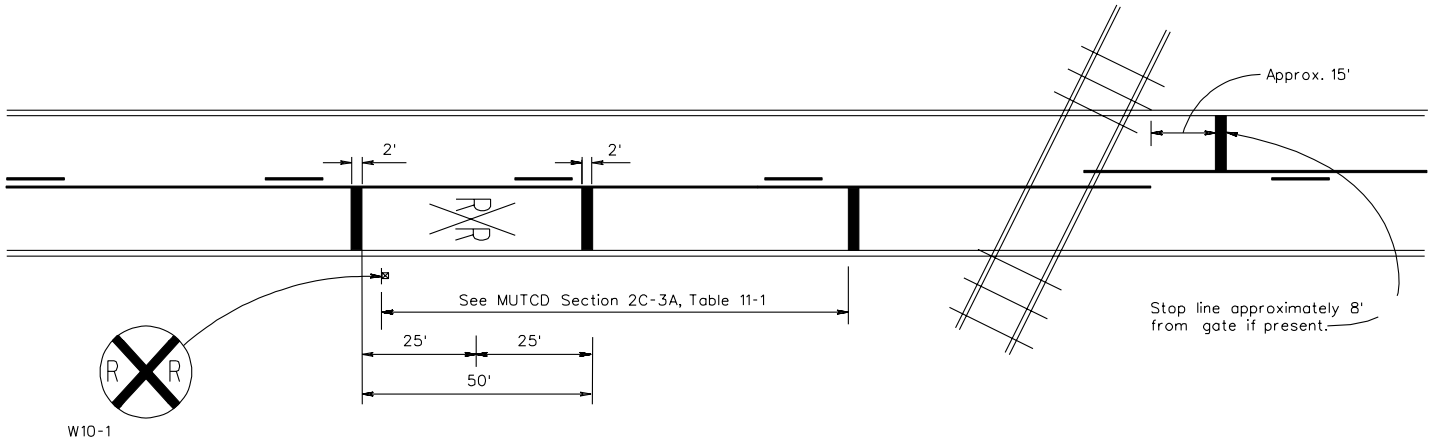
The bicycle lane stripe shall be 4 feet from the edge of pavement on curb & gutter roadways unless otherwise noted on the plans or existing markings indicate otherwise. (Contact Traffic Engineering if additional guidance is required.)

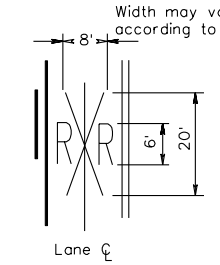
The bicycle lane stripe shall be 5 feet from the face of curb on roadways without a gutter pan unless otherwise noted on the plans or existing markings indicate otherwise. (Contact Traffic Engineering if additional guidance is required.)

TYPICAL PAVEMENT MARKINGS FOR BICYCLE LANE

VIRGINIA DEPARTMENT OF TRANSPORTATION

PM-7





A portion of the pavement marking symbol should be directly opposite the advance warning sign (W10-1). If needed, supplemental pavement marking symbols(s) may be placed between the advance warning sign and the crossing, but should be at least 50' from the stop line.

Markings shall be installed at grade crossing which conform to the requirements of the MUTCD and as directed by the Engineer.

A three lane roadway should be marked with a centerline for two - lane approach operation on the approach to a crossing.

On multi-lane roads the transverse bands should extend across all approach lanes, and individual RXR symbols should be used in each approach lane.

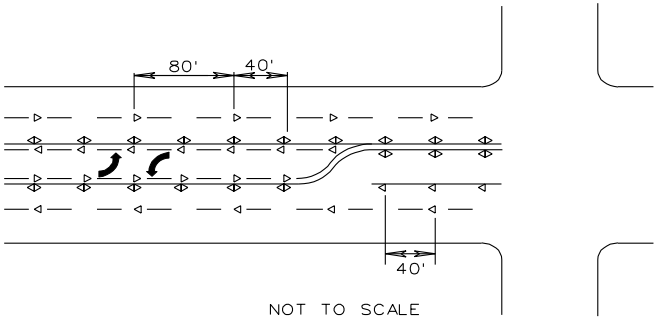
Refer to standard alphabet for highway signs and markings for RXR symbols details.

TYPICAL PAVEMENT MARKING
RAILROAD - HIGHWAY GRADE CROSSING

1301.92

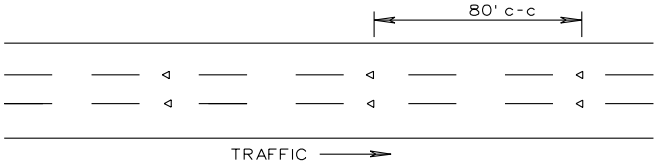
VIRGINIA DEPARTMENT OF TRANSPORTATION

FIVE LANE - CENTER LANE LEFT TURN ONLY



NOT TO SCALE

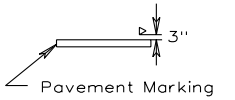
DIVIDED ROADWAYS



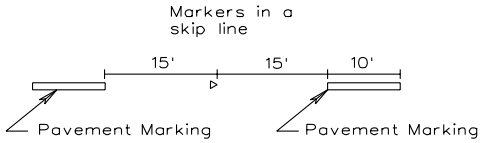
NOT TO SCALE

GENERAL PLACEMENT:

Markers adjacent to solid line



Markers in a skip line



Notes:

Exact locations of the markers shall be approved by the Engineer prior to installation.

Typical spacing is 40' c-c when used adjacent to a solid line and 80' when used in conjunction with a skip line except that on horizontal curves of 4° or more, the spacing along skip lines and channelizing lines adjacent to turn lanes can be reduced by ½ as shown on the plans or as directed by the Engineer.

KEY:

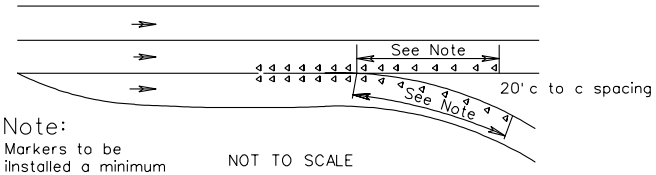
◁▷ Two way
◁ One way

TYPICAL PAVEMENT MARKER LOCATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

PM-9

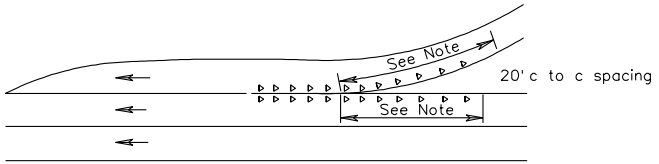
EXIT RAMP



Note:
Markers to be ilnstalled a minimum of 80' beyond physical gore.

NOT TO SCALE

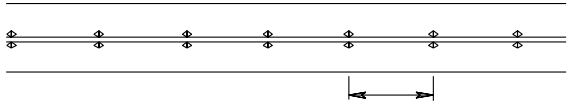
ENTRANCE RAMP



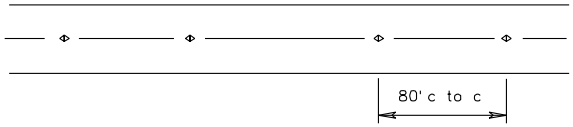
NOT TO SCALE

Note:
Markers to be ilnstalled a minimum of 80' beyond physical gore.

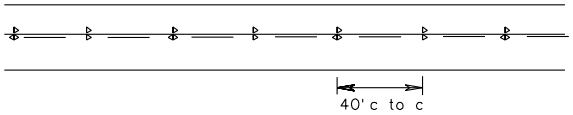
NO PASSING



PASSING TWO DIRECTIONS



PASSING ONE DIRECTION



TYPICAL PAVEMENT MARKER LOCATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.94

PROCEDURE FOR USING TABLES:

1. Select minimum mounting height to be used (5'-0" or 7'-0").
2. Determine slope of ground line (level, 1 1/2: 1 or 2: 1).
3. Decide on number of posts to be used (single, two or three).
4. Calculate the area of each sign panel (A_1, A_2, A_3, . . . A_n).
5. Calculate the centroidal distance for each sign panel (H_1, H_2, H_3, . . . H_n).

   The centroidal distance is the vertical distance from the reference pont on the ground line to the center of each sign panel.
6. Calculate the centroidal distance (H) for the entire sign panel grounp:

$$H = \frac{(A_1 \times H_1 + A_2 \times H_2 + A_3 \times H_3 + \ldots A_n \times H_n)}{(A_2 + A_2 + A_3 + \ldots A_n)}$$

7. Enter the appropriate table based on:
   the minimum mounting height selected in step 1
   the ground slope select in step 2
   Pick the post size(s) to be reviewed, and entering with the "H" value calculated in step 6, read the maximum area under the size of posts selected in step 3. If the total area of sign panel(s) to be supported is less than or equal to that shown in the table(s), the size of the post(s) will be satisfactory.

A_1 = area of sign panel 1

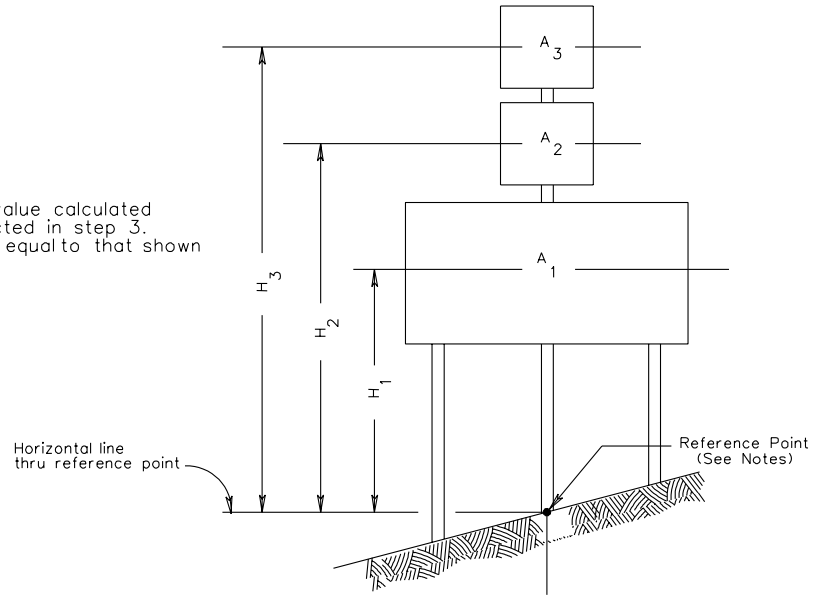
A_2 = area of sign panel 2

A_3 = area of sign panel 3

H_1 = centroidal distance from sign panel 1 to ground line through reference point

H_2 = centroidal distance from sign panel 2 to ground line through reference point

H_3 = centroidal distance from sign panel 3 to ground line through reference point



Notes:

Reference point for calculating centroidal distance(s):
For single post: on ground line at intersection of post
For two-posts: on ground line, half-way between posts
For three posts: on ground line at intersection of center post

PROCEDURES FOR CALCULATING SIZE OF WOOD POSTS FOR PERMANENT & CONSTRUCTION SIGNS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SAMPLE PROBLEM:

Given sign panels: 10'-0" X 5'-0", 6'-0" X 2'-0" (see layout)

Find: Size of post(s) that will be acceptable

1. Minimum mounting height: 7'-0"

2. Slope of ground line: 2:1

3. Area of sign panels: A_1 = 10.0 x 5.0 = 50 sq. ft.

   A_2 = 6.0 x 2.0 = 12 sq. ft.

4. H_1 = 11.5 ft

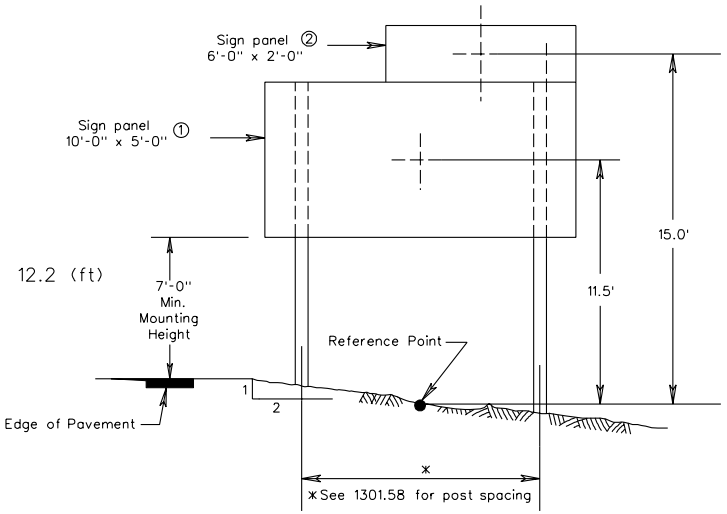
   H_2 = 15.0 ft

$$H = \frac{(A_1 \times H_1 + A_2 \times H_2)}{(A_1 \times A_2)} = \frac{(50 \times 11.5 + 12 \times 15.0)}{(50 + 12)} = \frac{755}{62} = 12.2 \text{ (ft)}$$

Round up H to 12.5 (ft) (Tables are in 0.5 foot increments)

6. Using Table with 7'-0" min. mounting height and 2:1 ground slope, enter with H = 12.5 and use column for 2-posts:

   The following maximum area (Total of sign panel(s) (ft^2)) is indicated in the tables for the following post sizes:



Post size	Maximum area (Total of sign panel(s) (ft^2))
4 x 4	---
5 x 5	18
4 x 6	22
6 x 6	35
6 x 8	64

The total area of sign panels is 62 sq. ft. The only post size that satisfies this requirement is the is the 6 x 8 post which has a maximum area of 64 sq. ft.

SAMPLE OF PROCEDURE FOR CALCULATING SIZE OF WOOD POST

VIRGINIA DEPARTMENT OF TRANSPORTATION

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (FT)	Maximum area (Total of sign panels) (ft^2)		
		Single-post**	Two-posts	Three-posts
4"x 4"	8.0	7	13	20
	8.5	6	13	19
	9.0	6	12	18
	9.5	6	11	17
	10.0	5	11	16
	10.5	5	10	15
	11.0	5	10	15
	11.5	5	9	14
	12.0	4	9	13

** For a single 4x4 post (construction sign installation only) the maximum total sign panel con be increased to 16 square feet provided:

1. The maximum clearance between the ground level and bottom of the sign panel does not exceed 7'-6" while maintaining a 7"-0" minimum mounting height between the bottom of the sign and the top of the pavement at the edge of the pavement.
2. Contractor supplies Department with materials certification for wood posts to ensure conformance with Section 236.02(a) of the Road & Bridge Specifications.

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
4"x 6" (*)	8.0	18	37	55
	8.5	17	35	52
	9.0	16	33	49
	9.5	15	31	46
	10.0	15	29	44
	10.5	14	28	42
	11.0	13	27	40
	11.5	13	26	38
	12.0	12	25	37
5"x 5"	8.0	15	31	46
	8.5	14	29	43
	9.0	14	27	41
	9.5	13	26	39
	10.0	12	24	37
	10.5	12	23	35
	11.0	11	22	33
	11.5	11	21	32
	12.0	10	20	31

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
6"x 6"	8.0	29	58	87
	8.5	27	54	82
	9.0	26	51	77
	9.5	24	49	73
	10.0	23	46	69
	10.5	22	44	66
	11.0	21	42	63
	11.5	20	40	60
	12.0	19	39	58
	12.5	19	37	56
	13.0	18	36	53
6"x 8" (*)	8.0	52	103	155
	8.5	49	97	146
	9.0	46	92	138
	9.5	44	87	131
	10.0	41	83	124
	10.5	39	79	118
	11.0	38	75	113
	11.5	36	72	108
	12.0	34	69	103
	12.5	33	66	99
	13.0	32	64	95
	13.5	31	61	92
	14.0	22	44	66
	14.5	21	42	63

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR CONSTRUCTION & PERMANENT SIGNS INSTALLED AT 7'-0" MINIMUM MOUNTING HEIGHTS ON LEVEL GROUND

VIRGINIA DEPARTMENT OF TRANSPORTATION

CSI-1

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post**	Two-posts	Three-posts
4"x 4"	8.0	7	---	---
	8.5	6	12	---
	9.0	6	11	---
	9.5	6	10	14
	10.0	5	10	13
	10.5	5	9	13
	11.0	5	9	12
	11.5	5	9	12
	12.0	4	8	11
	12.5	4	8	11
	13.0	---	8	10

** For a single 4x4 post (construction sign installation only) the maximum total sign panel con be increased to 16 square feet provided:

1. The maximum clearance between the ground level and bottom of the sign panel does not exceed 7'-6" while maintaining a 7"-0" minimum mounting height between the bottom of the sign and the top of the pavement at the edge of the pavement.
2. Contractor supplies Department with materials certification for wood posts to ensure conformance with Section 236.02(a) of the Road & Bridge Specifications.

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
4"x 6" (*)	8.0	18	---	---
	8.5	17	---	---
	9.0	16	---	---
	9.5	15	---	---
	10.0	15	28	---
	10.5	14	26	---
	11.0	13	25	---
	11.5	13	24	---
	12.0	12	23	---
	12.5	---	22	30
	13.0	---	21	29
	13.5	---	20	28
	14.0	---	14	19
	14.5	---	14	18
	15.0	---	13	17

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
5"x 5"	8.0	15	---	---
	8.5	14	---	---
	9.0	14	---	---
	9.5	13	---	---
	10.0	12	22	---
	10.5	12	21	---
	11.0	11	20	---
	11.5	11	19	---
	12.0	10	18	---
	12.5	---	18	23
	13.0	---	17	22
	13.5	---	16	21
	14.0	---	11	13
	14.5	---	11	13
	15.0	---	10	12

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR CONSTRUCTION & PERMANENT SIGNS INSTALLED AT 7'- 0" MINIMUM MOUNTING HEIGHTS ON $1\frac{1}{2}$: 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.98

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
6"x 6"	8.0	29	---	---
	8.5	27	---	---
	9.0	26	---	---
	9.5	24	---	---
	10.0	23	43	---
	10.5	22	41	---
	11.0	21	39	---
	11.5	20	38	---
	12.0	19	36	---
	12.5	19	35	47
	13.0	18	33	46
	13.5	---	32	44
	14.0	---	21	29
	14.5	---	20	28
	15.0	---	19	27
6"x 8" (*)	8.0	52	---	---
	8.5	49	---	---
	9.0	46	---	---
	9.5	44	---	---
	10.0	41	80	---
	10.5	39	76	---
	11.0	38	73	---
	11.5	36	69	---
	12.0	34	67	---
	12.5	33	64	91
	13.0	32	61	88
	13.5	31	59	84
	14.0	---	42	58
	14.5	---	40	56
	15.0	---	39	54

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR CONSTRUCTION & PERMANENT SIGNS INSTALLED AT 7'– 0" MINIMUM MOUNTING HEIGHTS ON $1\frac{1}{2}$: 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

CSI-1

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post **	Two-posts	Three-posts
4"x 4"	8.0	7	---	---
	8.5	7	---	---
	9.0	6	11	---
	9.5	6	11	---
	10.0	5	10	14
	10.5	5	10	13
	11.0	5	9	13
	11.5	5	9	12
	12.0	4	8	12

** For a single 4x4 post (construction sign installation only) the maximum total sign panel con be increased to 16 square feet provided:

1. The maximum clearance between the ground level and bottom of the sign panel does not exceed 7'-6" while maintaining a 7"-0" minimum mounting height between the bottom of the sign and the top of the pavement at the edge of the pavement.
2. Contractor supplies Department with materials certification for wood posts to ensure conformance with Section 236.02(a) of the Road & Bridge Specifications.

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
4"x 6" (*)	8.0	18	---	---
	8.5	17	---	---
	9.0	16	---	---
	9.5	15	---	---
	10.0	15	28	---
	10.5	14	27	---
	11.0	13	26	---
	11.5	13	24	---
	12.0	12	23	26
	12.5	---	22	25
	13.0	---	22	24
	13.5	---	21	23
	14.0	---	14	15

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
5"x 5"	8.0	15	---	---
	8.5	14	---	---
	9.0	14	---	---
	9.5	13	---	---
	10.0	12	23	---
	10.5	12	22	---
	11.0	11	21	---
	11.5	11	20	---
	12.0	10	19	26
	12.5	---	18	25
	13.0	---	18	24
	13.5	---	---	23
	14.0	---	---	15

(*)Larger dimension in direction of (parallel to) traffic

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR CONSTRUCTION & PERMANENT SIGNS INSTALLED AT 7'- 0" MINIMUM MOUNTING HEIGHTS ON 2 : 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.100

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
6"x 6"	8.0	29	---	---
	8.5	27	---	--57-
	9.0	26	---	---
	9.5	24	---	---
	10.0	23	44	---
	10.5	22	42	---
	11.0	21	40	---
	11.5	20	38	---
	12.0	19	37	52
	12.5	19	35	50
	13.0	18	34	48
	13.5	---	33	46
	14.0	---	23	31
	14.5	---	22	30
	15.0	---	21	29
6"x 8" (*)	8.0	52	---	---
	8.5	49	---	---
	9.0	46	---	---
	9.5	44	---	---
	10.0	41	81	---
	10.5	39	77	---
	11.0	38	73	---
	11.5	36	70	---
	12.0	34	67	98
	12.5	33	64	94
	13.0	32	62	90
	13.5	31	60	87
	14.0	---	42	61
	14.5	---	41	59
	15.0	---	39	57

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR CONSTRUCTION & PERMANENT SIGNS INSTALLED AT 7'-0" MINIMUM MOUNTING HEIGHTS ON 2 : 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

PS1-1

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (FT)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
4″× 4″	6.0	10	20	29
	6.5	9	18	27
	7.0	8	17	25
	7.5	8	16	23
	8.0	7	15	22
	8.5	7	14	21
	9.0	7	13	20
	9.5	6	12	19
	10.0	6	12	18
4″× 6″ (*)	6.0	25	51	76
	6.5	23	49	70
	7.0	22	43	65
	7.5	20	41	61
	8.0	19	38	57
	8.5	18	36	54
	9.0	17	34	51
	9.5	16	32	48
	10.0	15	30	46
5″× 5″	6.0	21	43	64
	6.5	20	40	59
	7.0	18	37	55
	7.5	17	34	51
	8.0	16	32	48
	8.5	15	30	45
	9.0	14	29	43
	9.5	14	27	41
	10.0	13	26	39

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
6″× 6″	6.0	40	80	120
	6.5	37	74	110
	7.0	34	68	102
	7.5	32	64	96
	8.0	30	60	90
	8.5	28	56	84
	9.0	27	53	80
	9.5	25	50	75
	10.0	24	48	72
	10.5	23	46	68
	11.0	22	43	65
6"× 8" (*)	6.0	70	140	211
	6.5	65	130	194
	7.0	60	120	181
	7.5	56	112	169
	8.0	53	105	158
	8.5	50	99	149
	9.0	47	94	140
	9.5	44	89	133
	10.0	42	84	126
	10.5	40	80	120
	11.0	38	77	115
	11.5	37	73	110
	12.0	35	70	105
	12.5	34	67	101

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR PERMANENT SIGNS INSTALLED AT 5′-0″ MINIMUM MOUNTING HEIGHTS ON LEVEL GROUND

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.102

DESIGN TABLE FOR WOODEN SUPPORTS				
Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
4"x 4"	6.0	10	---	---
	6.5	9	---	---
	7.0	8	---	---
	7.5	8	15	---
	8.0	7	14	---
	8.5	7	13	18
	9.0	7	12	17
	9.5	6	12	16
	10.0	6	11	15
	10.5	6	11	15
	11.0	5	10	14
4"x 6" (*)	6.0	25	---	---
	6.5	23	---	---
	7.0	22	---	---
	7.5	20	---	---
	8.0	19	---	---
	8.5	18	34	---
	9.0	17	32	---
	9.5	16	31	---
	10.0	15	29	---
	10.5	14	28	---
	11.0	14	26	---
	11.5	13	25	35
	12.0	13	24	34
	12.5	---	23	32
	13.0	---	22	31

DESIGN TABLE FOR WOODEN SUPPORTS				
Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
5"x 5"	6.0	21	---	---
	6.5	20	---	---
	7.0	18	---	---
	7.5	17	---	---
	8.0	16	---	---
	8.5	15	28	---
	9.0	14	27	---
	9.5	14	25	---
	10.0	13	24	---
	10.5	12	23	31
	11.0	12	22	29
	11.5	11	21	28
	12.0	11	20	27
	12.5	---	19	26
	13.0	---	18	25

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR PERMANENT SIGNS INSTALLED AT 5'- 0" MINIMUM MOUNTING HEIGHTS ON $1\frac{1}{2}$: 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

PSI-1

DESIGN TABLE FOR WOODEN SUPPORTS				
Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
6"x 6"	6.0	40	---	---
	6.5	37	---	---
	7.0	34	---	---
	7.5	32	---	---
	8.0	30	---	---
	8.5	28	54	---
	9.0	27	51	---
	9.5	25	48	---
	10.0	24	46	---
	10.5	23	43	---
	11.0	22	41	---
	11.5	21	40	55
	12.0	20	38	53
	12.5	19	36	51
	13.0	18	35	49
6"x 8" (*)	6.0	70	---	---
	6.5	65	---	---
	7.0	60	---	---
	7.5	56	---	---
	8.0	53	---	---
	8.5	50	97	---
	9.0	47	91	---
	9.5	44	86	---
	10.0	42	82	---
	10.5	40	78	---
	11.0	38	75	---
	11.5	37	71	103
	12.0	35	68	99
	12.5	34	66	95
	13.0	32	63	91
	13.5	31	61	88
	14.0	22	43	62
	14.5	22	42	59
	15.0	21	40	57

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR PERMANENT SIGNS INSTALLED AT 5'- 0" MINIMUM MOUNTING HEIGHTS ON $1\frac{1}{2}$: 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.104

DESIGN TABLE FOR WOODEN SUPPORTS				
Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
4"x 4"	6.0	10	---	---
	6.5	9	---	---
	7.0	8	16	---
	7.5	8	15	---
	8.0	7	14	20
	8.5	7	13	19
	9.0	7	13	18
	9.5	6	12	17
	10.0	5	11	16
4"x 6" (*)	6.0	25	---	---
	6.5	23	---	---
	7.0	22	---	---
	7.5	20	---	---
	8.0	19	37	---
	8.5	18	35	---
	9.0	17	33	---
	9.5	16	31	---
	10.0	15	29	42
	10.5	14	28	40
	11.0	14	27	38
	11.5	13	26	37
	12.0	13	25	35

DESIGN TABLE FOR WOODEN SUPPORTS				
Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
5"x 5"	6.0	21	---	---
	6.5	20	---	---
	7.0	18	---	---
	7.5	17	---	---
	8.0	16	31	---
	8.5	15	29	---
	9.0	14	27	---
	9.5	14	26	---
	10.0	13	24	34
	10.5	13	23	33
	11.0	12	22	31
	11.5	11	21	30
	12.0	11	20	28

(*) Larger dimension in direction of (parallel to) traffic

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR PERMANENT SIGNS INSTALLED AT 5'- 0" MINIMUM MOUNTING HEIGHTS ON 2 : 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

PSI-1

DESIGN TABLE FOR WOODEN SUPPORTS

Size of post	H (ft)	Maximum area (Total of sign panels) (ft^2)		
		Single-post	Two-posts	Three-posts
6"x 6"	6.0	40	---	---
	6.5	37	---	---
	7.0	34	---	---
	7.5	32	---	---
	8.0	30	58	---
	8.5	28	54	---
	9.0	27	51	---
	9.5	25	49	---
	10.0	24	46	66
	10.5	23	44	63
	11.0	22	42	60
	11.5	21	40	58
	12.0	20	39	55
	12.5	19	37	53
	13.0	18	36	51
	13.5	18	34	49
	14.0	13	24	34
	14.5	12	23	33
	15.0	12	23	32
6"x 8" (*)	6.0	70	---	---
	6.5	65	---	---
	7.0	60	---	---
	7.5	56	---	---
	8.0	53	103	---
	8.5	50	97	---
	9.0	47	92	---
	9.5	44	87	---
	10.0	42	83	121
	10.5	40	79	115
	11.0	38	75	110
	11.5	37	72	105
	12.0	35	69	101
	12.5	34	66	97
	13.0	32	64	93

(*) Larger dimension in direction of (parallel to) traffic.

DETAILS FOR CALCULATING SIZE OF WOOD POSTS FOR PERMANENT SIGNS INSTALLED AT 5'-0" MINIMUM MOUNTING HEIGHTS ON 2 : 1 SLOPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

1301.106