COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
DIVISION: Traffic Engineering

August 15, 2017:

VS-1 Page: 1302.60, JB-R1, R2Pages: 1317.10 & 1317.11
JB-S1, S2, S3, S4 Pages: 1317.20 & 1317.21
WSP-1 Pages: 1320.10 – 1320.16
STP-1 Pages: 1321.10, 1321.17, 1321.19 - 1321.21
ISD-1 Page: 1329.10

Drawings Submitted By : Harry A. Campbell, P.E.

COMMONWEALTH OF VIRGINIA
HARRY A. CAMPBELL
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PROFESSIONAL ENGINEER

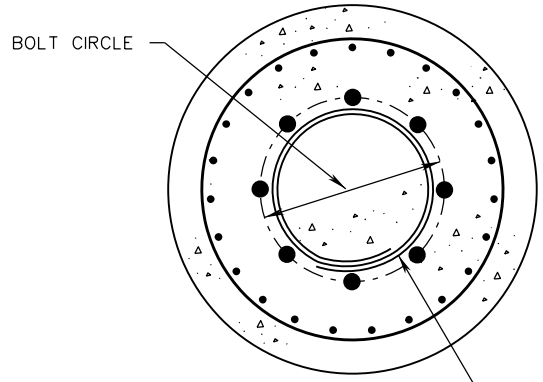
Harry A Campbell
Digitally signed by Harry A Campbell
Date: 2017.08.15 15:22:25-04'00'

VDOT Traffic Engineering Division
Richmond, Virginia
Traffic Engineer

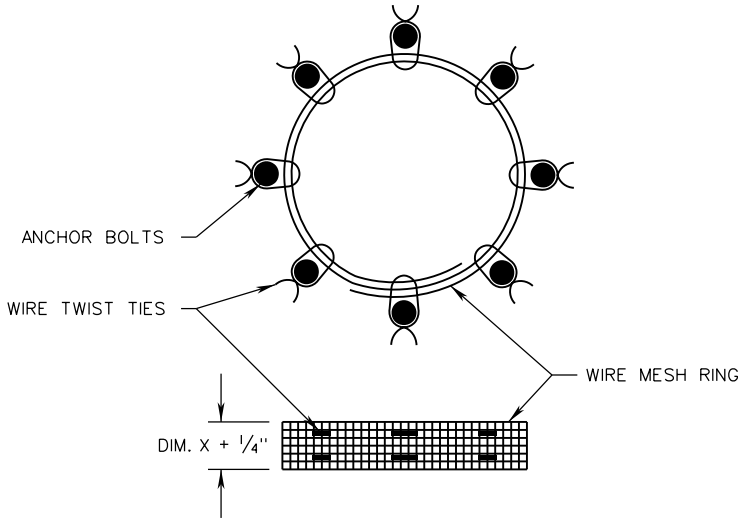
Responsible for all attached pages

NOTES:

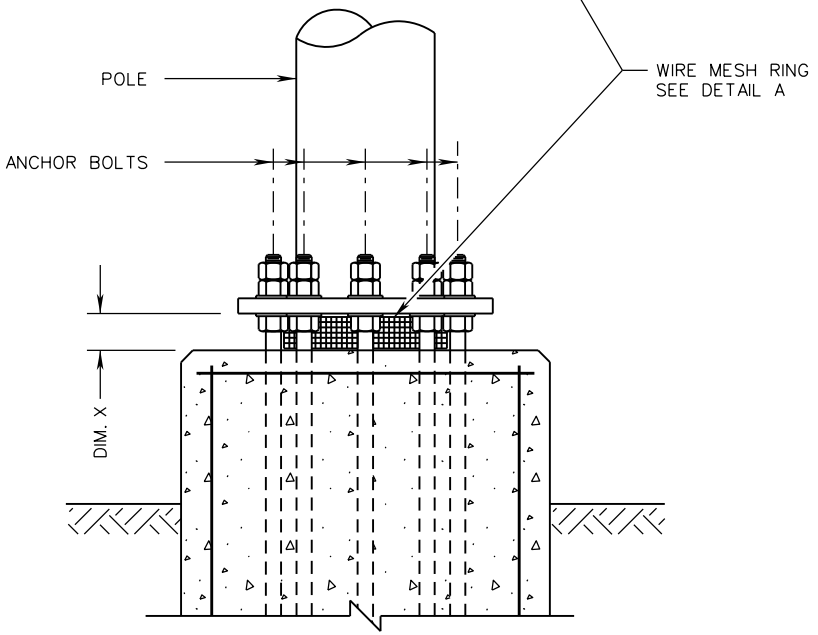
1. WIRE MESH RING SHALL BE 1/8" WOVEN HARDWARE CLOTH 27 GAGE (COMMERCIAL GRADE) HOT DIPPED GALVANIZED. DOUBLE LAP MESH AND SECURE WITH PLASTIC COATED WIRE TWIST TIES. LENGTH AND HEIGHT DETERMINED BY FIELD MEASUREMENTS.
2. WIRE MESH RING SHALL BE PLACED INSIDE THE BOLT CIRCLE BEFORE THE POLE IS ERECTED AND PLUMBED.
3. WIRE MESH RING SHALL BE COMPRESSED BETWEEN POLE BASE PLATE, CONCRETE FOUNDATION, AND BOLTS. ENSURE THE WIRE MESH RING WILL REMAIN IN PLACE AND ANY ACCESS THROUGH THE POLE BASE PLATE OPENING IS ELIMINATED.
4. WELDING OR DRILLING IS NOT PERMITTED ON BASE PLATE OF POLE.
5. CONDUITS NOT SHOWN FOR CLARITY.
6. THIS STANDARD DOES NOT APPLY TO STRUCTURES MOUNTED ATOP TRANSFORMER BASES.



PLAN VIEW

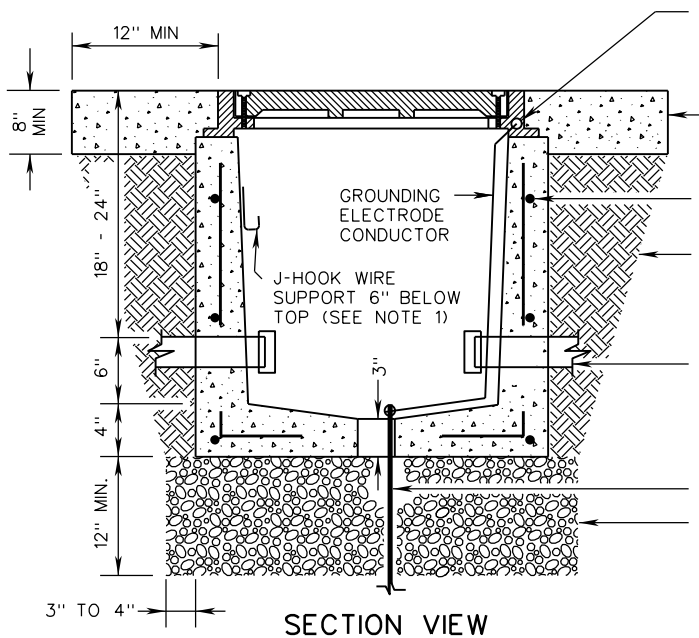


DETAIL A



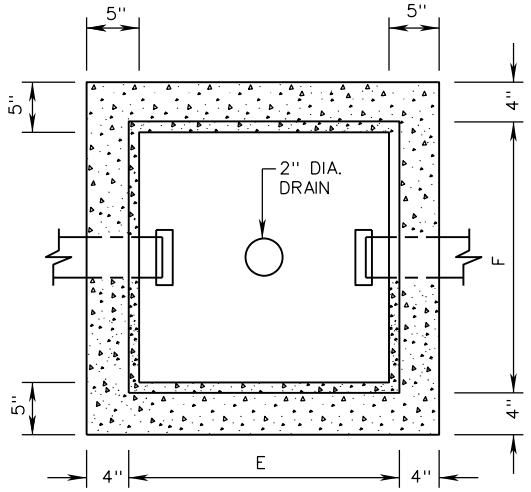
VENTED VARMINT SCREEN

SPECIFICATION REFERENCE	VENTED VARMINT SCREEN	VDOT ROAD AND BRIDGE STANDARDS
700	DETAILS	REVISION DATE 08/17
	VIRGINIA DEPARTMENT OF TRANSPORTATION	SHEET 1 OF 1
		1302.60



SECTION VIEW
(JB-R1 AND R2)

STANDARD	DIMENSIONS	
	E	F
JB-R1	20"	20"
JB-R2	27"	27"

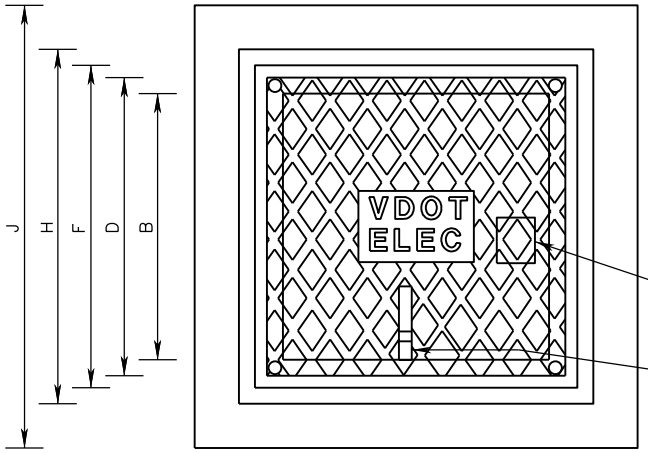


TOP VIEW
(FRAME AND COVER REMOVED)
(JB-R1 AND R2)

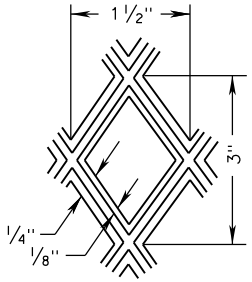
NOTES:

1. J-HOOK WIRE SUPPORTS SHALL BE SECURELY ATTACHED TO THE JUNCTION BOX WITH A BOLT AND NUT WITH A NEOPRENE WASHER OR AN EXPANSION FITTING. ONE J-HOOK PER WALL SHALL BE INSTALLED FOR JB-R1 AND R2 BOXES. TWO J-HOOKS PER WALL (EQUALLY SPACED) SHALL BE INSTALLED FOR JB-R3 BOXES.
2. CONDUIT ENTRANCES SHALL BE LOCATED AS SHOWN IN THE CONTRACT DOCUMENTS. CONDUITS SHALL EXTEND 2" MIN. TO 3" MAX. INTO THE INSIDE WALL OF THE JUNCTION BOX.
3. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH SECTION 223 OF THE SPECIFICATIONS, SHALL HAVE A MINIMUM 1 1/2" CONCRETE COVER. ANY REINFORCING STEEL IN CONFLICT WITH CONDUIT SHALL BE CUT A MINIMUM OF 1 1/2" FROM CONDUIT.
4. THE JUNCTION BOX MAY BE PRECAST OR CAST IN PLACE CLASS A3 CONCRETE.
5. A MINIMUM 2" DIAMETER CONDUIT ENTRANCE IS REQUIRED UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
6. A CONCRETE COLLAR IS REQUIRED ONLY WHEN JUNCTION BOX IS INSTALLED IN EARTH AREAS.
7. HIGH STRENGTH GROUT CONFORMING TO THE ROAD & BRIDGE SPECIFICATIONS SHALL BE USED TO SECURE THE FRAME TO THE JUNCTION BOX.
8. ALL JUNCTION BOXES SHALL BE INSTALLED WITH A GROUNDING ELECTRODE.
9. VOIDS RESULTING FROM ENTRANCE OF CONDUITS INTO JUNCTION BOX SHALL BE COMPLETELY FILLED WITH HYDRAULIC CEMENT GROUT CONFORMING TO THE ROAD & BRIDGE SPECIFICATIONS.
10. WHEN INSTALLED, CONDUIT STUB-OUTS SHALL EXTEND A MINIMUM OF 6" PAST THE OUTSIDE OF THE JUNCTION BOX AND SHALL BE CAPPED OR PLUGGED.

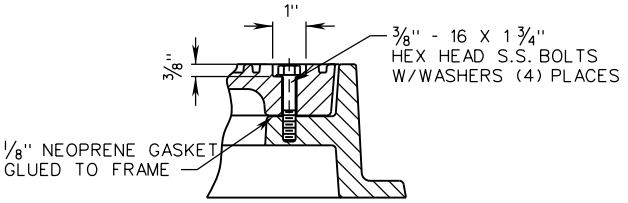
SPECIFICATION REFERENCE	JUNCTION BOX FOR TRAFFIC USE VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
700		REVISION DATE 08/17
		SHEET 1 OF 2
		1317.10



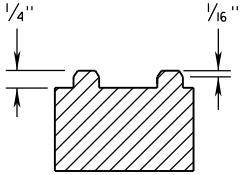
TOP VIEW



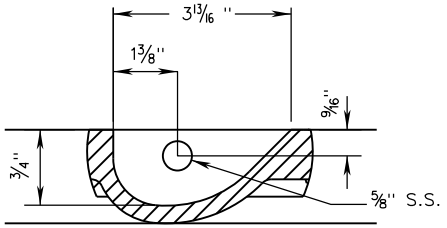
DETAIL A
SURFACE PATTERN



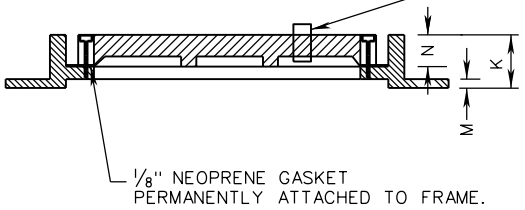
DETAIL C
BOLT DETAIL



DETAIL B
PATTERN ELEVATION



DETAIL D
PICKBAR DETAIL



SIDE VIEW

STANDARD	DIMENSIONS												
	A	B	C	D	E	F	G	H	I	J	K	M	N
JB-R1	18"	18"	19"	19"	20"	20"	21"	21"	24"	24"	4"	5/8"	1"
JB-R2	24"	24"	26"	26"	27"	27"	28"	28"	33"	33"	4"	5/8"	1"

NOTES:

1. EACH COVER SECTION SHALL HAVE A NON-SKID SURFACE WITH LETTERS CAST IN THE DEPRESSION ON TOP. THE LETTERS "VDOT ELEC", "VDOT TRAFF", "VDOT COMM", "VDOT FIBER", OR "UTILITY" AS APPLICABLE ARE TO BE ONE (1) INCH WIDE AND RAISED 1/4" HIGH. COVERS USED FOR JUNCTION BOXES INSTALLED THAT WILL BE MAINTAINED BY LOCALITIES SHALL OMIT THE WORD "VDOT".

2. FOUR RECESSED 3/8" S.S. HEX HEAD BOLTS ARE REQUIRED FOR EACH COVER.

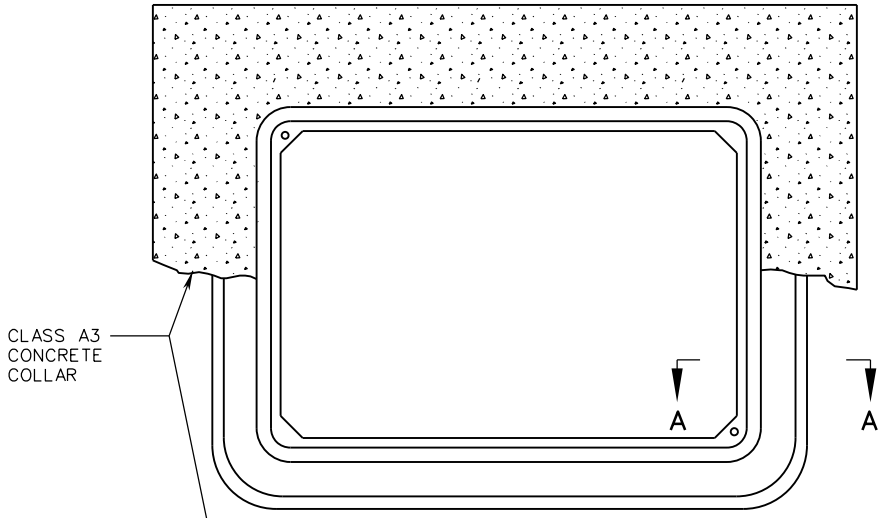
2. GRAY IRON CASTINGS SHALL BE AS PER SECTION 224 OF THE SPECIFICATIONS.

VDOT
ROAD AND BRIDGE STANDARDS

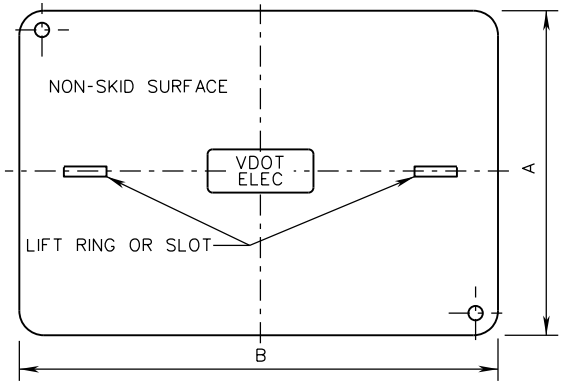
SHEET 2 OF 2 | REVISION DATE 08/17
1317.11

JUNCTION BOX
FOR TRAFFIC USE
VIRGINIA DEPARTMENT OF TRANSPORTATION

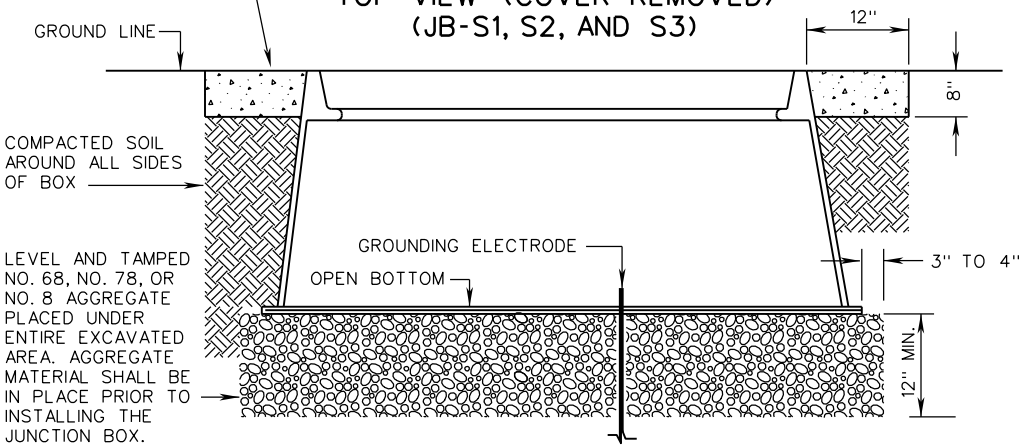
SPECIFICATION REFERENCE
700



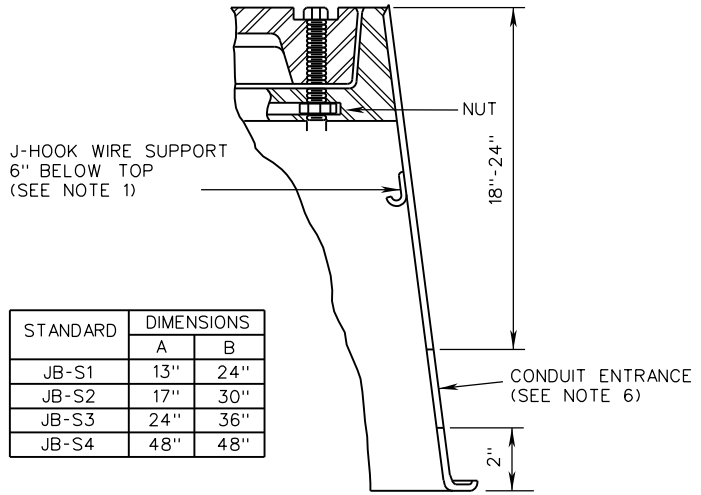
TOP VIEW (COVER REMOVED)
(JB-S1, S2, AND S3)



COVER DETAIL (JB-S1, S2, AND S3)



SECTION VIEW (JB-S1, S2, AND S3)



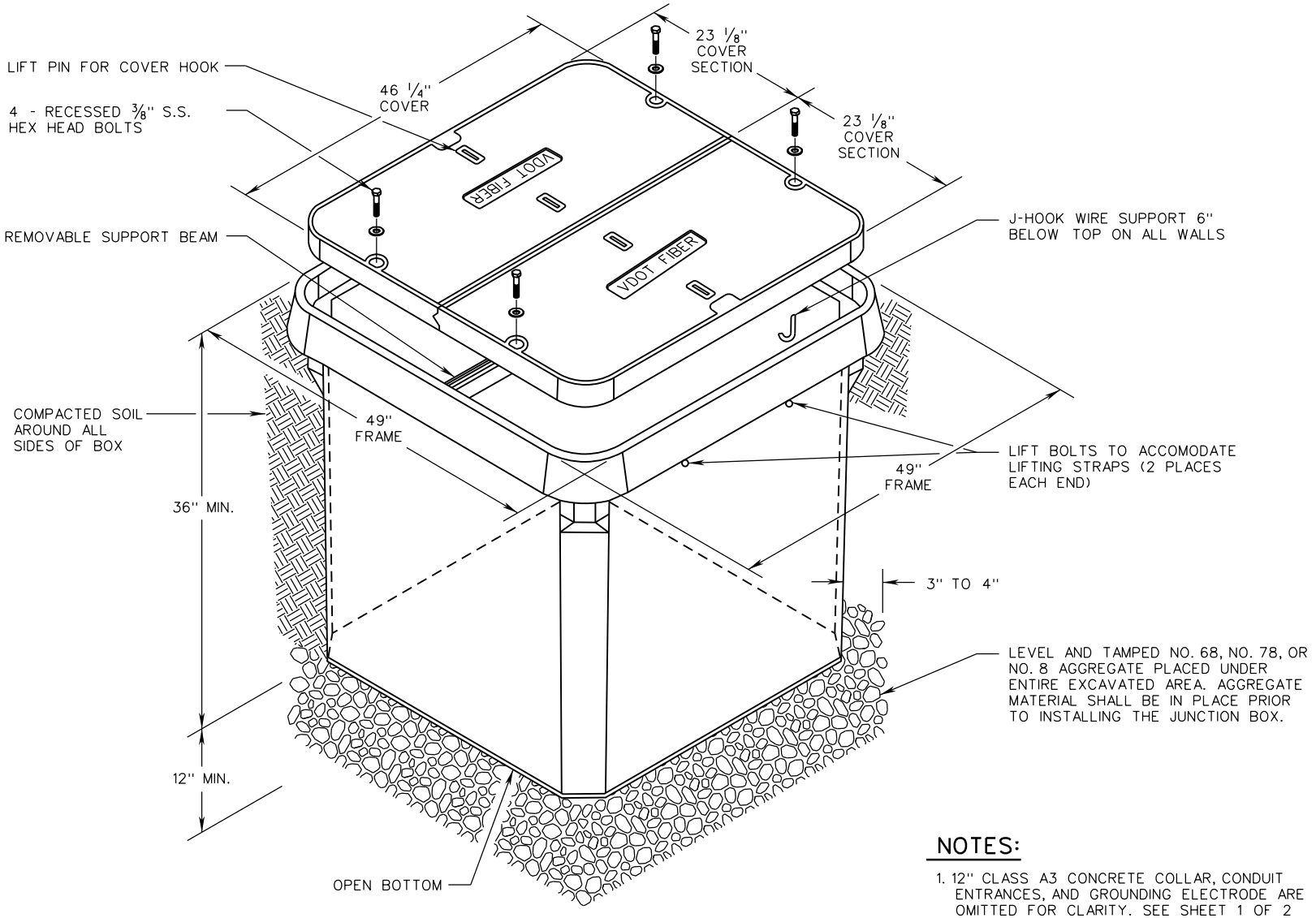
STANDARD	DIMENSIONS	
	A	B
JB-S1	13"	24"
JB-S2	17"	30"
JB-S3	24"	36"
JB-S4	48"	48"

SECTION A-A (JB-S1, S2, AND S3)

NOTES:

1. JUNCTION BOXES SHALL HAVE A STRAIGHT OR FLARED INSIDE WALL DESIGN. MATERIALS SHALL CONFORM TO SECTION 238 OF THE ROAD & BRIDGE SPECIFICATIONS.
2. CONDUIT ENTRANCES SHALL BE LOCATED AS SHOWN IN THE CONTRACT DOCUMENTS. CONDUITS SHALL EXTEND 2" MIN. TO 3" MAX. INTO THE INSIDE WALL OF THE JUNCTION BOX.
3. EACH COVER SECTION SHALL HAVE A NON-SKID SURFACE WITH LETTERS CAST IN THE DEPRESSION ON TOP OR OTHER PRE-APPROVED METHODS THAT DO NOT REQUIRE THE USE OF ADHESIVES. THE LETTERS "VDOT ELEC", "VDOT TRAF", "VDOT COMM", "VDOT FIBER", OR "UTILITY" AS APPLICABLE ARE TO BE 1" WIDE. COVERS USED FOR JUNCTION BOXES INSTALLED THAT WILL BE MAINTAINED BY LOCALITIES SHALL OMIT THE WORD "VDOT".
4. ALL JUNCTION BOXES SHALL BE INSTALLED WITH A GROUNDING ELECTRODE.
5. TWO RECESSED $\frac{3}{8}$" S.S. HEX HEAD BOLTS ARE REQUIRED FOR EACH JB-S1, S2, AND S3 COVER. FOUR RECESSED $\frac{3}{8}$" S.S. HEX HEAD BOLTS ARE REQUIRED FOR EACH JB-S4 COVER.
6. A MINIMUM 2" DIAMETER CONDUIT ENTRANCE IS REQUIRED, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
7. J-HOOK WIRE SUPPORTS SHALL BE SECURELY ATTACHED TO THE JUNCTION BOX WITH A BOLT AND NUT WITH A NEOPRENE WASHER OR AN EXPANSION FITTING. ONE J-HOOK PER WALL SHALL BE INSTALLED FOR JB-S1, S2, AND S3 BOXES. TWO J-HOOKS PER WALL SHALL BE INSTALLED FOR JB-S4 BOXES.
8. VOIDS RESULTING FROM ENTRANCE OF CONDUITS INTO JUNCTION BOXES SHALL BE COMPLETELY FILLED WITH AN APPROVED MATERIAL.
9. CONDUIT STUB-OUTS, WHEN INSTALLED, SHALL EXTEND A MINIMUM OF 6" PAST THE OUTSIDE OF THE JUNCTION BOX.

SPECIFICATION REFERENCE	JUNCTION BOX FOR NON-DELIBERATE TRAFFIC USE VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
700 238		REVISION DATE 08/17
		SHEET 1 OF 2 1317.20



ISOMETRIC VIEW (JB-S4)

NOTES:

1. 12" CLASS A3 CONCRETE COLLAR, CONDUIT ENTRANCES, AND GROUNDING ELECTRODE ARE OMITTED FOR CLARITY. SEE SHEET 1 OF 2 FOR DETAILS.
2. SEE SHEET 1 OF 2 FOR NOTES.

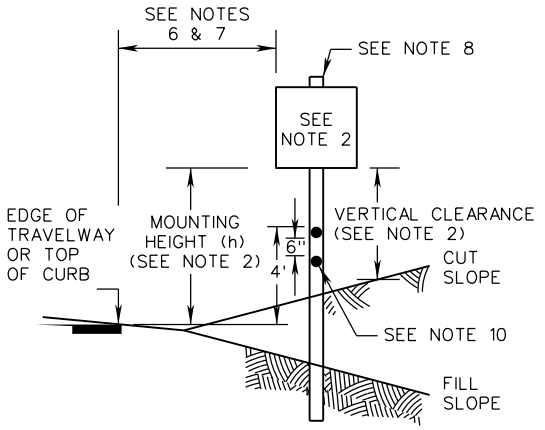
VDOT
ROAD AND BRIDGE STANDARDS

SHEET 2 OF 2 | REVISION DATE
1317.21 | NEW 08/17

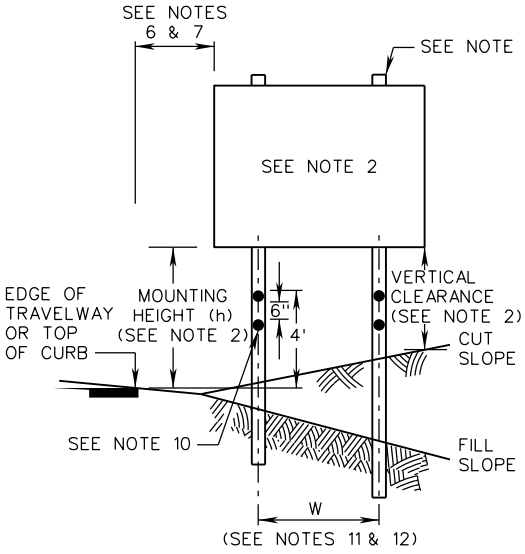
JUNCTION BOX
FOR NON-DELIBERATE TRAFFIC USE
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
700
238

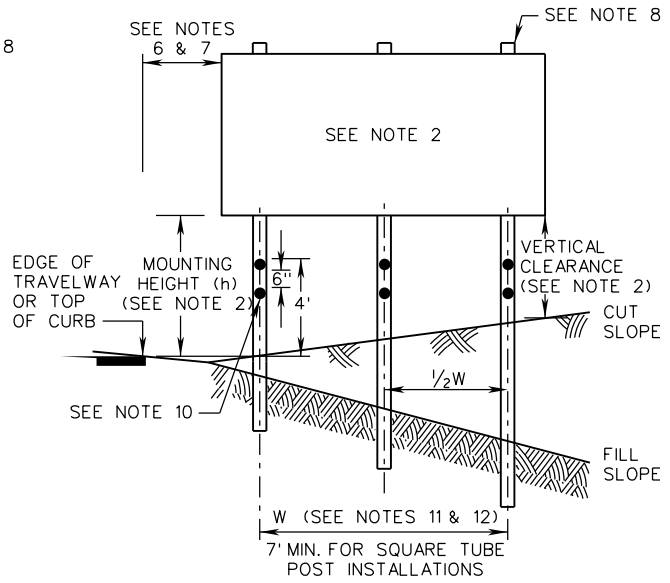
WSP-1



SINGLE POST INSTALLATIONS



TWO POST INSTALLATIONS



THREE POST INSTALLATIONS

GENERAL NOTES:

1. WSP STANDARDS SHALL ONLY BE USED FOR TEMPORARY SIGN INSTALLATIONS THAT WILL BE IN PLACE FOR A MAXIMUM OF 36 MONTHS.

2. FOR ALL SIGNS EXCEPT STREET NAME SIGNS:
   A. MINIMUM MOUNTING HEIGHT (h) SHALL BE 7 FEET FOR TEMPORARY SIGNS AND 6 FEET FOR SECONDARY SIGNS (SEE NOTE 4).
   B. MAXIMUM MOUNTING HEIGHT (h) FOR THE BOTTOM-MOST SIGN(S) SHALL BE 8 FEET, EXCEPT WHEN NECESSARY TO ACHIEVE MINIMUM VERTICAL CLEARANCE BENEATH SIGN AS PER NOTE 2C.
   C. MINIMUM VERTICAL CLEARANCE (DISTANCE BETWEEN BOTTOM OF SIGN AND FINISHED GRADE BENEATH THE SIGN) SHALL BE 7 FEET FOR ANY PORTION OF THE SIGN WITHIN THE CLEAR ZONE. THIS MINIMUM VERTICAL CLEARANCE MAY BE REDUCED TO 5 FEET FOR EITHER OF THE FOLLOWING CONDITIONS:
      - WHEN SIGNS OR PORTIONS OF SIGNS ARE LOCATED MORE THAN 10 FEET UP A CUT SLOPE GREATER THAN 3:1, OR
      - WHEN THE SIGN IS LOCATED AT LEAST THE MINIMUM DISTANCE BEHIND CURB, BARRIER, OR GUARDRAIL AS PER NOTES 6 AND 7.

3. MOUNTING HEIGHT (h) FOR STREET NAME SIGNS SHALL BE BETWEEN 8'-6" AND 9'-0".

4. 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. A SECONDARY SIGN SHALL NOT BE MOUNTED LOWER THAN 7 FEET ABOVE A PEDESTRIAN SIDEWALK OR PATHWAY IF IT WILL PROJECT MORE THAN 4" INTO THE PEDESTRIAN FACILITY.

5. FOR SIGNS LOCATED IN AREAS WHERE PEDESTRIAN MOVEMENTS ARE LIKELY TO OCCUR OR ON-STREET PARKING IS PERMITTED, THE HEIGHT (h) FROM THE LOWEST PORTION OF THE SIGN TO THE FINISHED SURFACE SHALL HAVE A CLEARANCE OF 7 FEET.

6. THE LATERAL CLEARANCE TO THE SIGN EDGE SHALL BE A MINIMUM OF 2 FEET FROM THE FACE OF CURB OR 4 FEET FROM FACE OF PERMANENT CONCRETE BARRIER, IF PRESENT. THE EDGE OF SIGN SHALL BE OUTSIDE THE DEFLECTION ZONE FOR TRAFFIC BARRIER SERVICE.

7. UNLESS OTHERWISE APPROVED BY THE ENGINEER, SIGNS PLACED BEHIND GUARDRAIL SHALL BE LOCATED SUCH THAT THE NEAR SIDE EDGE OF THE SIGN PANEL IS OUTSIDE OF THE GUARDRAIL DEFLECTION DISTANCE.

8. THE TOP OF THE SIGN POST MAY EXTEND NO MORE THAN 2 FEET ABOVE THE TOP OF THE SIGN.

9. THE SIGN POST SHALL BE PLUMB AT INSTALLATION AND SHALL NOT LEAN OR TWIST DURING USE. IN THE EVENT THE POST LEANS OR TWISTS OUT OF POSITION THE CONTRACTOR SHALL TAKE IMMEDIATE CORRECTIVE ACTION.

10. ED-3 TYPE 2 DELINEATORS SHALL BE PLACED ON ALL POSTS DURING ALL TIMES THAT THE SIGN IS COVERED. THE COLOR OF THE ED-3 DELINEATORS SHALL MATCH THE COLOR OF THE ADJACENT EDGE LINE MARKING.

WOOD POST NOTES:

11. MINIMUM SPACING (CENTER TO CENTER) BETWEEN TWO 4" x 4" WOOD POSTS SHALL BE 3 FEET. MINIMUM SPACING (CENTER TO CENTER) BETWEEN TWO WOOD POSTS OF ANY OTHER SIZE SHALL BE 8 FEET.

SQUARE TUBE POST NOTES:

12. W = (0.60) X (SIGN WIDTH)

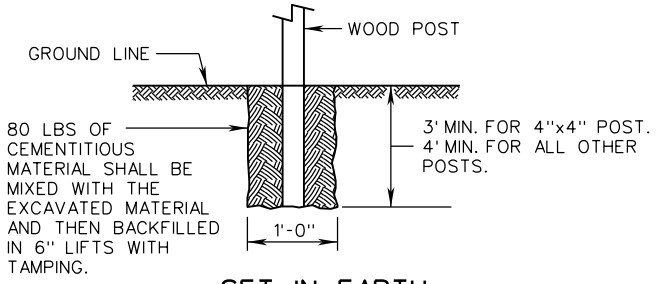
VDOT
ROAD AND BRIDGE STANDARDS

SHEET 1 OF 7 | REVISION DATE 08/17
1320.10

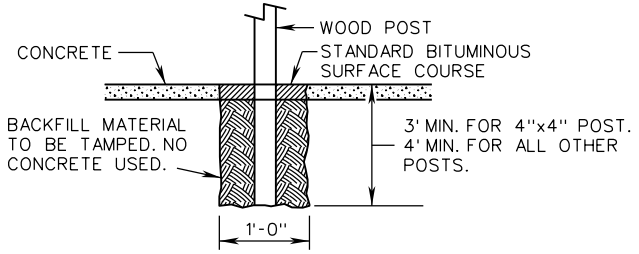
TEMPORARY SIGNS
(FOR CONSTRUCTION, MAINTENANCE, PERMIT AND UTILITY ACTIVITIES)
WOOD POST AND SQUARE TUBE POST SIGN STRUCTURES
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
512
700

INSTALLATION DETAILS

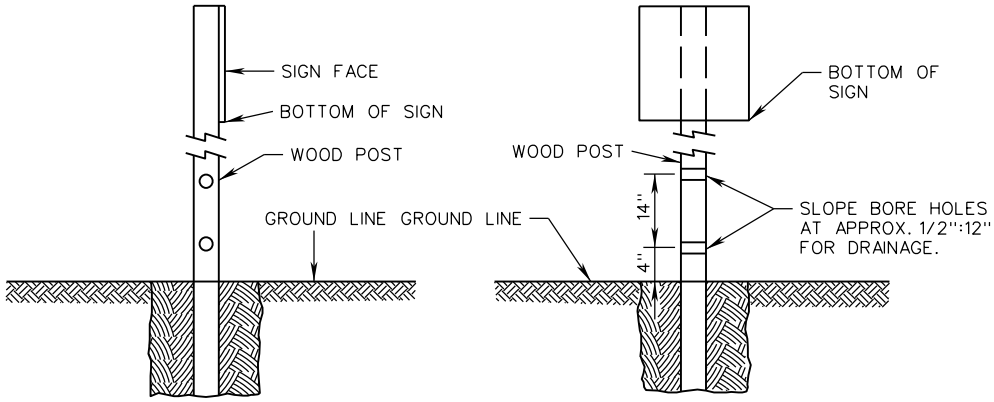


SET IN EARTH



SET IN CONCRETE

METHOD OF POST DRILLING



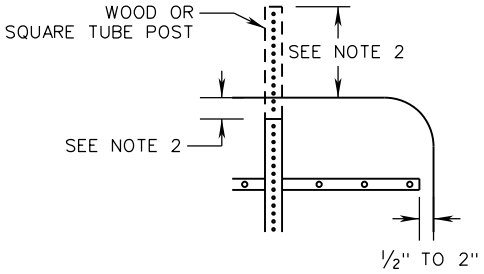
SIDE VIEW

FRONT VIEW

NOTES:

1. 6" X 6" WOOD POST REQUIRES TWO 2" BORE HOLES.
2. 6" X 8" WOOD POST REQUIRES TWO 3" BORE HOLES.
3. POSTS LESS THAN 6" X 6" DO NOT REQUIRE BORE HOLES.

BRACING AND POST TOLERANCE DETAIL



NOTES:

1. SIGN WIDTHS GREATER THAN 48" SHALL REQUIRE SIGN BRACING CONFORMING TO STANDARD STP-1.
2. THE TOP OF POST SHALL BE NO MORE THAN 2" BELOW AND NO MORE THAN 2 FEET ABOVE THE TOP OF THE SIGN.

SPECIFICATION REFERENCE	TEMPORARY SIGNS (FOR CONSTRUCTION, MAINTENANCE, PERMIT AND UTILITY ACTIVITIES) WOOD OR SQUARE TUBE STEEL POST SIGN STRUCTURES VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
512 700		REVISION DATE 08/17
		SHEET 2 OF 7 1320.11

DESIGN TABLE FOR WOOD POST

SIZE OF POST	CENTROID (FT)	MAXIMUM AREA (TOTAL OF SIGNS) (FT^2)			COMMENTS
		SINGLE-POST	TWO-POST	THREE-POST	
4" X 4"	8	7	13	20	SEE NOTE 1
	9	6	12	18	
	10	5	11	16	
	11	5	10	15	
	12	4	9	13	
4" X 6" (SEE NOTE 2)	8	18	37	55	
	9	16	33	49	
	10	15	29	44	
	11	13	27	40	
	12	12	25	37	
5" X 5"	8	15	31	46	
	9	14	27	41	
	10	12	24	37	
	11	11	22	33	
	12	10	20	31	
6" X 6"	8	29	58	87	
	9	26	51	77	
	10	23	46	69	
	11	21	42	63	
	12	19	39	58	
	13	18	36	53	
6" X 8" (SEE NOTE 2)	8	52	103	155	
	9	46	92	138	
	10	41	83	124	
	11	38	75	113	
	12	34	69	103	
	13	32	64	95	
	14	22	44	66	

NOTES:

1. FOR A SINGLE 4" X 4" POST THE MAXIMUM TOTAL SIGN CAN BE INCREASED TO 16 SQUARE FEET PROVIDED:

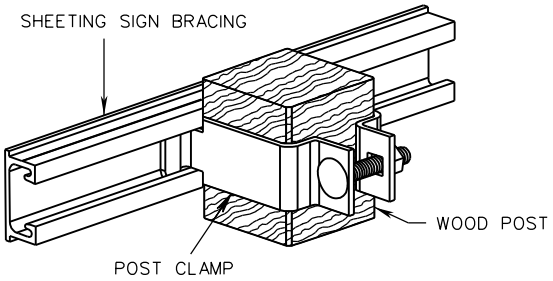
   A. THE MAXIMUM VERTICAL CLEARANCE BETWEEN THE GROUND LEVEL AND BOTTOM OF THE SIGN DOES NOT EXCEED 7'-6" WHILE MAINTAINING A 7'-0" MINIMUM MOUNTING HEIGHT (h) BETWEEN BOTTOM OF SIGN AND TOP OF ROADWAY SURFACE AT THE EDGE OF TRAVEL LANE.

   B. CONTRACTOR SUPPLIES DEPARTMENT WITH MATERIALS CERTIFICATION FOR WOOD POSTS TO ENSURE CONFORMANCE WITH SECTION 236 OF THE SPECIFICATIONS.

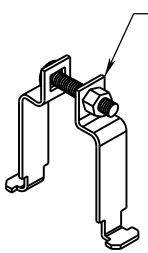
2. LARGER DIMENSION OF WOOD POST SHALL BE IN DIRECTION OF (PARALLEL TO) TRAFFIC.

3. CENTROID SHALL BE DETERMINED IN ACCORDANCE WITH STANDARD PCS-1.

TEMPORARY SIGNS
(FOR CONSTRUCTION, MAINTENANCE, PERMIT AND UTILITY ACTIVITIES)
WOOD POST SIGN STRUCTURES
VIRGINIA DEPARTMENT OF TRANSPORTATION



WOOD POST & BRACE
(CONNECTING JUNCTION)



CLAMP DETAIL

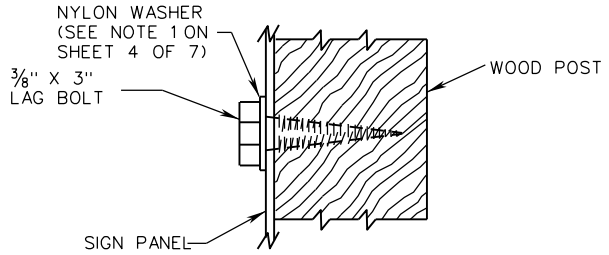
NOTES:

1. NYLON WASHER SHALL BE 1/16" THICK MINIMUM WITH AN OUTSIDE DIAMETER OF 1" AND AN INSIDE DIAMETER OF 7/16".
2. DRIVE RIVET SHALL BE 3/16" OR 3/8" ALUMINUM FLAT HEAD RIVET WITH STEEL PINS AND NYLON OR RUBBER WASHER.
3. SIGN PANEL ATTACHMENTS TO SQUARE TUBE POSTS SHALL BE AS PER STANDARD STP-1.
4. THE HEADS OF ALL DRIVE RIVETS AND BOLTS PROTRUDING FROM TEMPORARY SIGNS MAY BE UNCOATED. IF POWDER COATED, THE HEADS SHALL MATCH THE COLOR OF THE SIGN SHEETING.
5. BOLTS, NUTS, AND LOCK WASHERS SHALL BE GALVANIZED OR STAINLESS STEEL.
6. DRIVE RIVET SHALL NOT BE USED FOR SIGNS WITHOUT BRACING

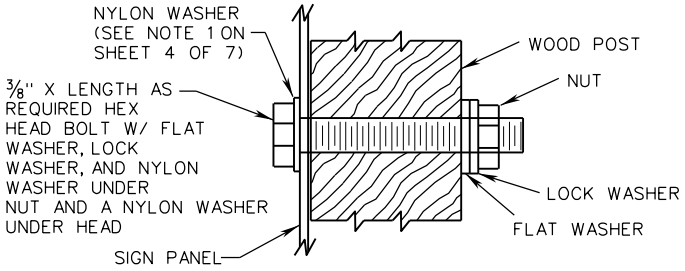
SPECIFICATION REFERENCE	TEMPORARY SIGNS (FOR CONSTRUCTION, MAINTENANCE, PERMIT AND UTILITY ACTIVITIES) WOOD POST SIGN STRUCTURES - ATTACHMENT DETAILS VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
512 700		REVISION DATE 08/17
		SHEET 4 OF 7
		1320.13

WSP-1

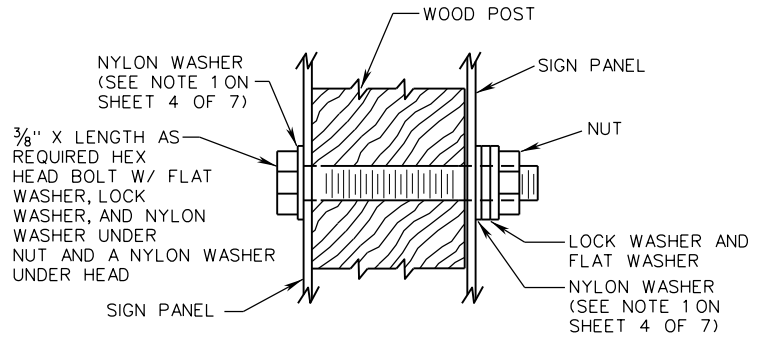
WOOD POSTS NOT REQUIRING BRACING



SINGLE SIGN PANEL DETAIL



SINGLE SIGN PANEL ALTERNATE METHOD DETAIL

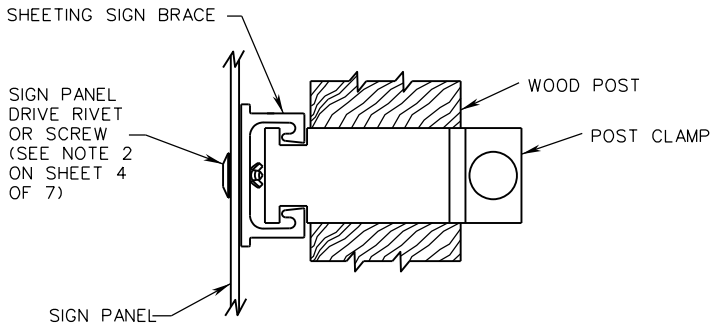


BACK-TO-BACK SIGN PANEL DETAIL

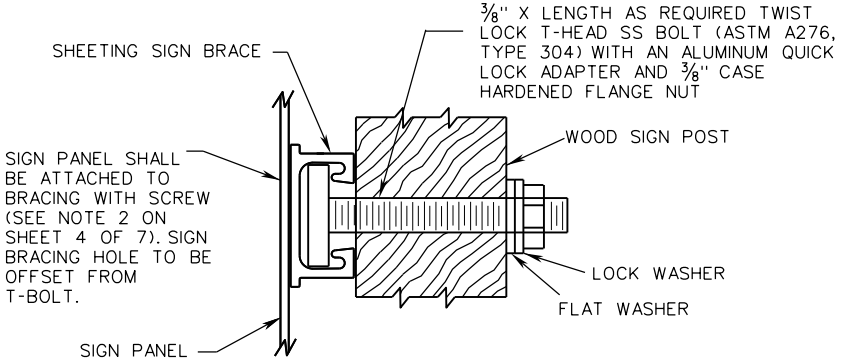
NOTES:

1. SEE SHEET 4 OF 7 FOR NOTES.

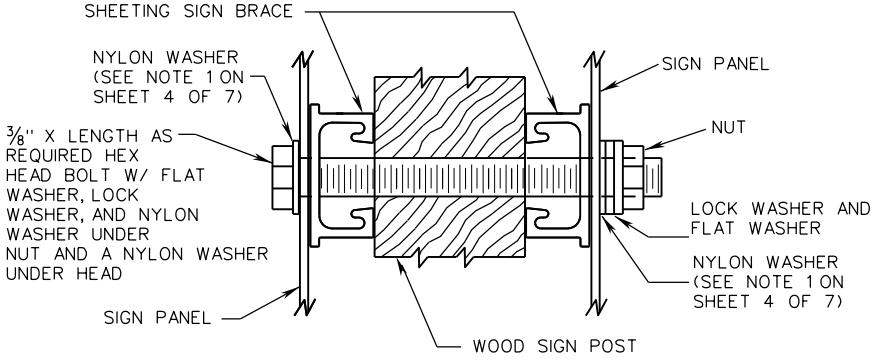
WOOD POSTS REQUIRING BRACING



SIGN PANEL ATTACHMENT DETAIL



SINGLE SIGN PANEL ALTERNATE METHOD DETAIL



BACK-TO-BACK SIGN PANEL DETAIL

VDOT
ROAD AND BRIDGE STANDARDS

TEMPORARY SIGNS
(FOR CONSTRUCTION, MAINTENANCE, PERMIT AND UTILITY ACTIVITIES)
WOOD POST SIGN STRUCTURES - ATTACHMENT DETAILS
VIRGINIA DEPARTMENT OF TRANSPORTATION

SHEET 5 OF 7	REVISION DATE
1320.14	08/17

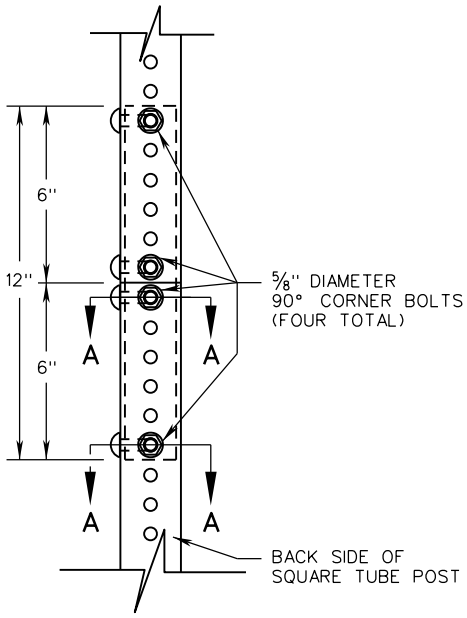
SPECIFICATION REFERENCE
512
700

DESIGN TABLE FOR SQUARE TUBE POST

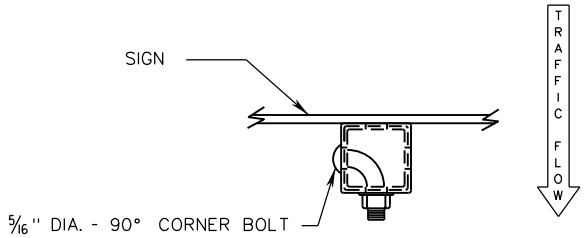
SIZE OF POST	CENTROID (FT)	MAXIMUM AREA (TOTAL OF SIGNS) (FT^2)			COMMENTS
		SINGLE-POST	TWO-POST	THREE-POST	
2 INCH 14 GA.	8	10.7	21.4		TYPE A, TYPE D, OR TYPE F FOUNDATION (SEE NOTE 4)
	9	9.5	19.0		
	10	8.5	17.0		
	11	7.7	15.4		
	12	7.1	14.2		
	13	6.5	13.0		
	14	6.1	12.2		
2½ INCH 12 GA.	8	21.5			TYPE A OR TYPE E FOUNDATION (SEE NOTE 4)
	9	19.1			
	10	17.2			
	11	15.6			
	12	14.3			
	13	13.2			
	14	12.3			
2½ INCH 10 GA.	8	24.8	49.6	74.4	TYPE B OR TYPE C FOUNDATION (SEE NOTE 4)
	9	22.0	44.0	66.0	
	10	19.8	39.6	59.4	
	11	18.0	36.0	54.0	
	12	16.5	33.0	49.5	
	13	15.2	30.4	45.6	
	14	14.1	28.2	42.3	
2½ INCH 10 GA. WITH 2 3/16 INCH 10 GA. INNER POST (SEE NOTE 1)	8	43.4	86.8	130.2	TYPE B OR TYPE C FOUNDATION (SEE NOTE 4)
	9	38.6	77.2	115.8	
	10	34.7	69.4	104.1	
	11	31.6	63.2	94.8	
	12	28.9	57.8	86.7	
	13	26.7	53.4	80.1	
	14	24.8	49.6	74.4	

NOTES:

1. THE INNER POST SHALL BE 6 FEET IN LENGTH.
2. CENTROID SHALL BE DETERMINED IN ACCORDANCE WITH PCS-1.
3. MINIMUM COLD FORMED YIELD STRENGTH SHALL BE:
   14 GA. AND 12 GA. = 60 KSI
   10 GA. = 55 KSI
4. TYPE A, B, C, D, E, AND F FOUNDATIONS SHALL BE IN ACCORDANCE WITH STANDARD STP-1.



SPLICE DETAIL



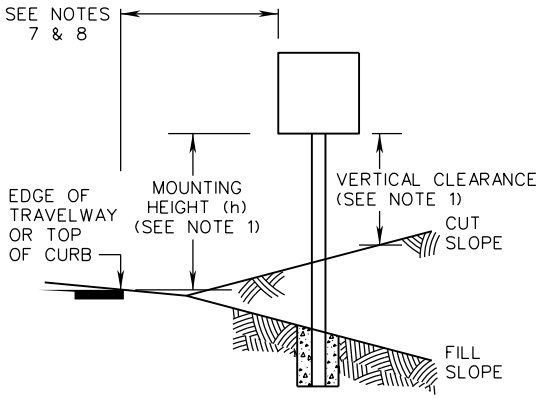
SECTION A-A
CORNER BOLT DETAIL

SPLICE SIZE TABLE	
POST SIZE	SPLICE POST SIZE
2 INCH, 14 GAUGE	1¾ INCH, 14 GAUGE
2½ INCH, 12 GAUGE	2¼ INCH, 12 GAUGE
2½ INCH, 10 GAUGE	2 3/16 INCH, 10 GAUGE

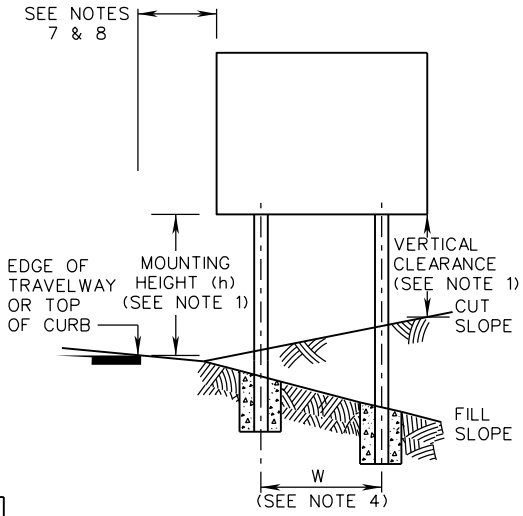
NOTES:

1. ONLY ONE SPLICE PER POST WILL BE ALLOWED.
2. SPLICES SHALL BE A MINIMUM OF 24" ABOVE GROUND LINE.
3. SPLICES SHALL ONLY BE PERMITTED FOR TEMPORARY INSTALLATIONS.
4. CORNER BOLTS SHALL BE INSTALLED SO THE BOLT HEADS ARE ON ONE SIDE OF THE SIGN POST. THE NUT SHALL BE ON THE BACK OF THE POST. SEE SPLICE DETAIL.

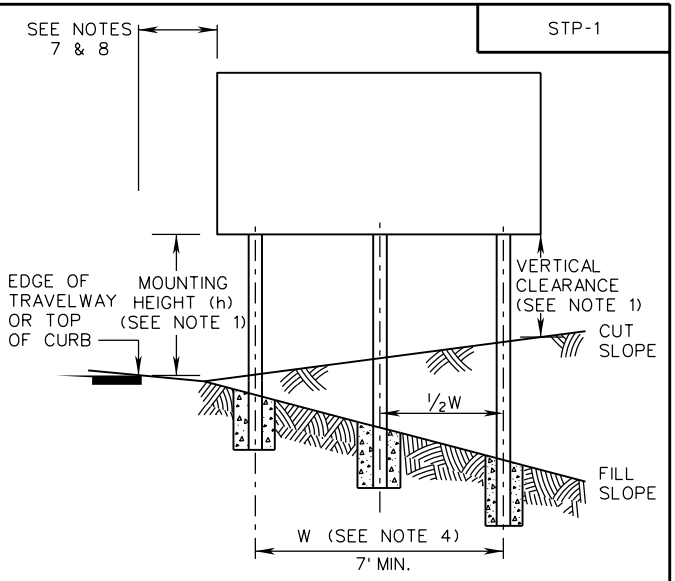
TEMPORARY SIGNS
(FOR CONSTRUCTION, MAINTENANCE, PERMIT AND UTILITY ACTIVITIES)
SQUARE TUBE POST SIGN STRUCTURES
VIRGINIA DEPARTMENT OF TRANSPORTATION



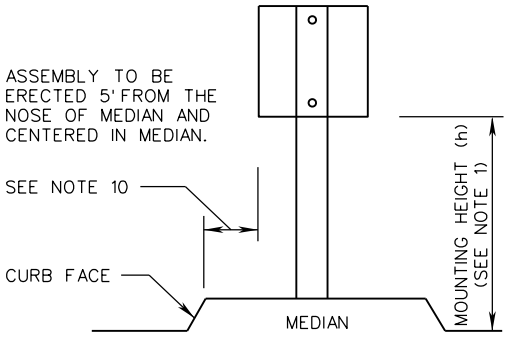
SINGLE POST
INSTALLATIONS



TWO POST
INSTALLATIONS



THREE POST
INSTALLATIONS



SINGLE POST
MEDIAN INSTALLATIONS

MINIMUM MOUNTING HEIGHT (h) (SEE NOTE 1)

SIGN TYPES	FREEWAYS, EXPRESSWAYS, AND FULL CONTROL ACCESS HIGHWAYS	OTHER HIGHWAYS	
		RURAL AREAS	NON-RURAL AREAS
DIRECTIONAL SIGNS	7'	5'	7'
ROUTE MARKERS, WARNING AND REGULATORY SIGNS	7'	5'	7'
SECONDARY SIGNS (SEE NOTE 3)	5'	4'	7'

NOTES:

1. FOR ALL SIGNS EXCEPT STREET NAME SIGNS:
   A. MINIMUM MOUNTING HEIGHT (h) SHALL BE IN ACCORDANCE WITH THE "MINIMUM MOUNTING HEIGHT" TABLE ON THIS SHEET. MOUNTING HEIGHT IS MEASURED FROM THE ROADWAY ELEVATION AT THE EDGE OF THE TRAVEL WAY TO THE BOTTOM OF THE SIGN PANEL.
   B. MAXIMUM MOUNTING HEIGHT (h) FOR THE BOTTOM-MOST SIGN PANEL(S) SHALL BE 8 FEET, EXCEPT WHEN NECESSARY TO ACHIEVE MINIMUM VERTICAL CLEARANCE BENEATH SIGN PANEL AS PER NOTE 1C.
   C. MINIMUM VERTICAL CLEARANCE (DISTANCE BETWEEN BOTTOM OF SIGN PANEL AND FINISHED GRADE BENEATH THE PANEL) SHALL BE 7 FEET FOR ANY PORTION OF THE SIGN WITHIN THE CLEAR ZONE. THIS MINIMUM VERTICAL CLEARANCE MAY BE REDUCED TO 5 FEET FOR EITHER OF THE FOLLOWING CONDITIONS:
      - WHEN SIGNS OR PORTIONS OF SIGNS ARE LOCATED MORE THAN 10 FEET UP A CUT SLOPE GREATER THAN 3:1, OR
      - WHEN THE SIGN IS LOCATED AT LEAST THE MINIMUM DISTANCE BEHIND CURB, BARRIER, OR GUARDRAIL AS PER NOTES 7 AND 8.

2. MOUNTING HEIGHT (h) FOR STREET NAME SIGNS SHALL BE BETWEEN 8'-6" AND 9'-0".

3. A SECONDARY SIGN IS CONSIDERED TO BE A SIGN MOUNTED BELOW ANOTHER SIGN, EXCEPT A ROUTE MARKER WITH AN AUXILIARY PLATE IS CONSIDERED TO BE A SINGLE SIGN. A SECONDARY SIGN SHALL NOT BE MOUNTED LOWER THAN 7 FEET ABOVE A PEDESTRIAN SIDEWALK OR PATHWAY IF IT WILL PROJECT INTO THE PEDESTRIAN FACILITY.

4. W = (0.60) X (SIGN PANEL WIDTH)

5. SQUARE TUBE SIGN POSTS REQUIRING A BREAKAWAY SUPPORT SYSTEM SHALL BE AN FHWA APPROVED BREAKAWAY SUPPORT SYSTEM CONFORMING TO AASHTO'S STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINIARIES AND TRAFFIC SIGNALS.

6. FOR SIGNS LOCATED IN AREAS WHERE PEDESTRIAN MOVEMENTS ARE LIKELY TO OCCUR OR ON-STREET PARKING IS PERMITTED, THE HEIGHT FROM THE LOWEST PORTION OF THE SIGN PANEL TO THE FINISHED SURFACE SHALL HAVE A MINIMUM CLEARANCE OF 7 FEET.

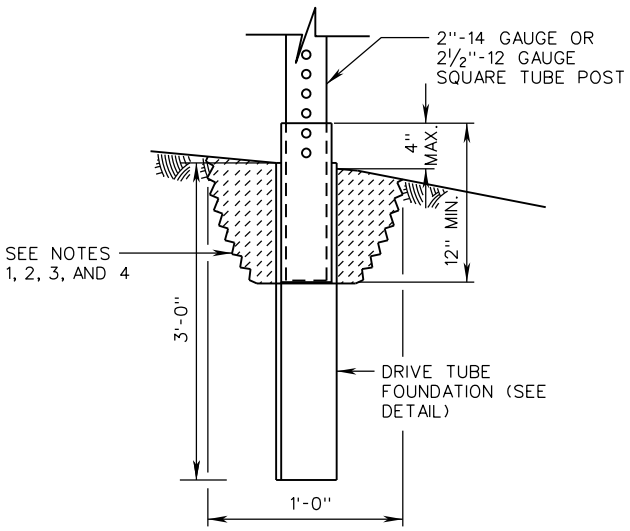
7. THE LATERAL CLEARANCE TO THE SIGN PANEL SHALL BE A MINIMUM OF 2 FEET FROM THE FACE OF CURB OR 4 FEET FROM FACE OF BARRIER, IF PRESENT.

8. UNLESS OTHERWISE APPROVED BY THE ENGINEER, SIGNS PLACED BEHIND GUARDRAIL SHALL BE LOCATED SUCH THAT THE NEAR SIDE EDGE OF THE SIGN PANEL IS OUTSIDE OF THE GUARDRAIL DEFLECTION DISTANCE.

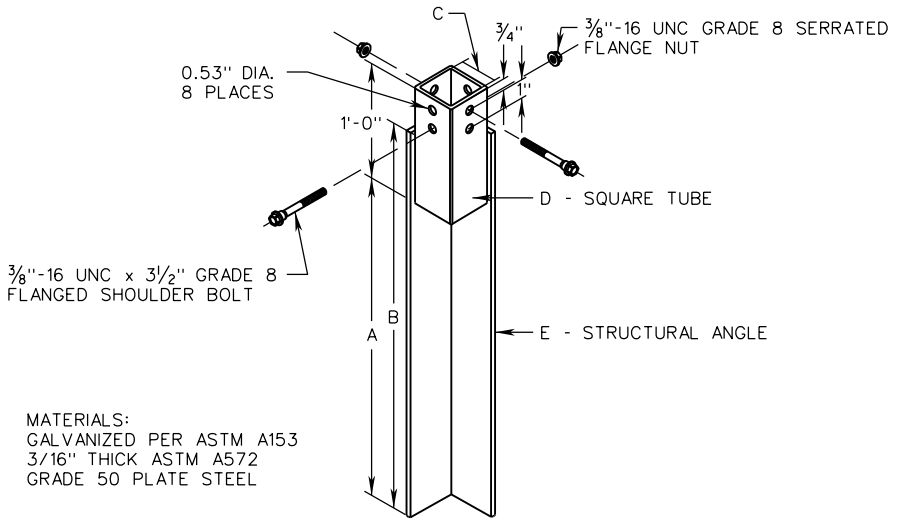
9. FOR SIGNS AT INTERCHANGE EXIT RAMPS, REFER TO STANDARD ISD-1.

10. 2' MINIMUM FOR MEDIANS OVER 10' IN WIDTH. 12" MINIMUM FOR MEDIANS 10' OR LESS IN WIDTH UNLESS SHOWN OTHERWISE IN THE CONTRACT DOCUMENTS.

SPECIFICATION REFERENCE	SQUARE TUBE SIGN POST	VDOT ROAD AND BRIDGE STANDARDS
700	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE 08/17 · SHEET 1 OF 12 · 1321.10



FOUNDATION TYPE D AND E



DRIVE TUBE FOUNDATION DETAIL

NOTES:

1. EXCAVATE TO A DEPTH OF NO LESS THAN 8" AND NO GREATER THAN 12" PRIOR TO INSTALLATION OF DRIVE TUBE FOUNDATION.
2. THE EXCAVATED AREA SHALL BE BACKFILLED WITH A CEMENTITIOUS MATERIAL AND SHALL BE TAPPED WITH EACH 6" LIFT.
3. THE SQUARE TUBE POST SHALL BE INSERTED INTO THE SLEEVE OF THE DRIVE TUBE FOUNDATION A MINIMUM OF 12".
4. DRIVE CAP SHALL BE UTILIZED FOR INSTALLATION OF DRIVE TUBE FOUNDATION. WHEN USING A POWER DRIVER, A SHANK SHALL ALSO BE REQUIRED.

DRIVE TUBE FOUNDATION TABLE

FOUNDATION TYPE	SIZE OF POST	DRIVE TUBE FOUNDATION DIMENSION	
TYPE D	2 INCH 14 GA.	A	27"
		B	36"
		C	2⅛"
		D	2½" X 2½" X 3/16" ASTM A500 GRADE B
		E	2½" X 2½" X 3/16" ASTM A36
TYPE E	2½ INCH 12 GA.	A	27"
		B	36"
		C	2⅝"
		D	3" X 3" X 3/16" ASTM A500 GRADE B
		E	3" X 3" X 3/16" ASTM A36

VDOT
ROAD AND BRIDGE STANDARDS

SHEET 8 OF 12 | REVISION DATE 08/17
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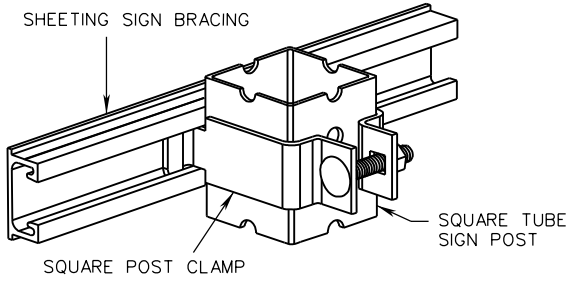
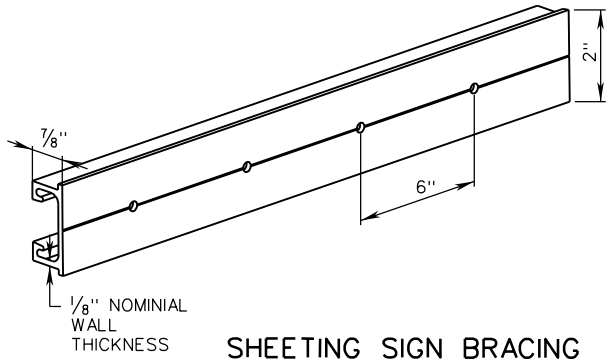
SQUARE TUBE SIGN POST
FOUNDATION TYPE D AND E DETAILS
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
700



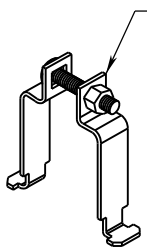
SQUARE POST CLAMP & BRACE (CONNECTING JUNCTION)



ALUMINUM SIGN BRACING 2" MOUNTING SURFACE x 7/8" DEPTH x 1/8" NOMINAL WALL THICKNESS

6061-T6 ALUMINUM ALLOY, PUNCHED WITH 3/16" DIAMETER HOLES ON 6" CENTERS FOR ATTCHMENT OF SIGN SUBSTRATE USING SIGN PANEL 3/16" DRIVE RIVETS, OR 3/8" DIAMETER HOLES ON 12" CENTERS WHEN USING 3/8" DRIVE RIVETS.

SHEETING SIGN BRACING



11 GAUGE, TYPE 304, #2B FINISHED STAINLESS STEEL WITH STAINLESS STEEL CARRIAGE BOLT

CLAMPS CAN BE TWIST LOCKED INTO PLACE WITHOUT SLIDING THE CLAMPS FROM AN OPEN END OF THE CHANNEL BRACE

CLAMP IS TO BE SIZED TO FIT THE SQUARE TUBE POST, 2" OR 2 1/2"

SQUARE POST CLAMP DETAIL

NOTES:

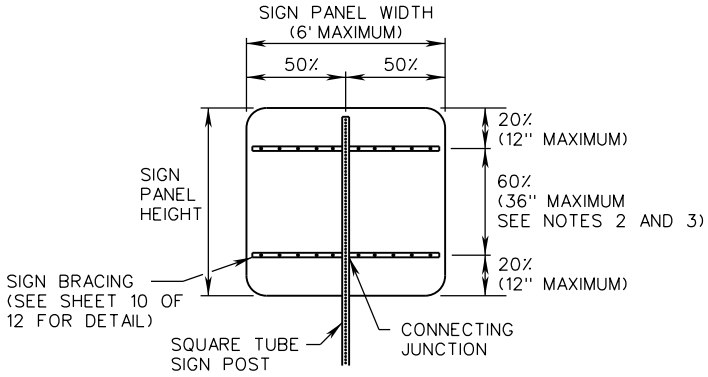
1. SEE SHEET 12 OF 12 FOR SIGN PANEL ATTACHMENT DETAILS.

SQUARE TUBE SIGN POST

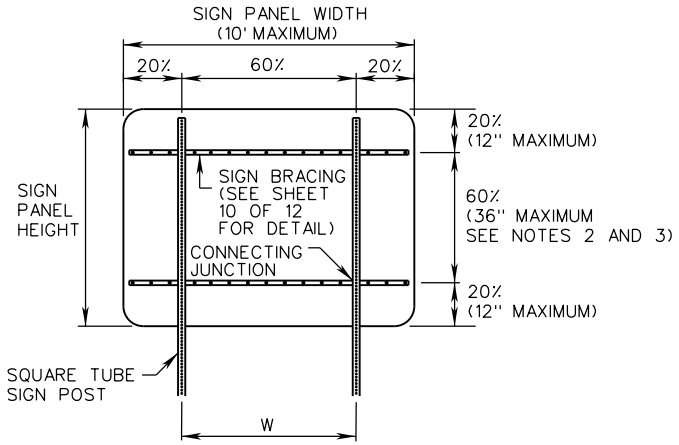
SIGN BRACING DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

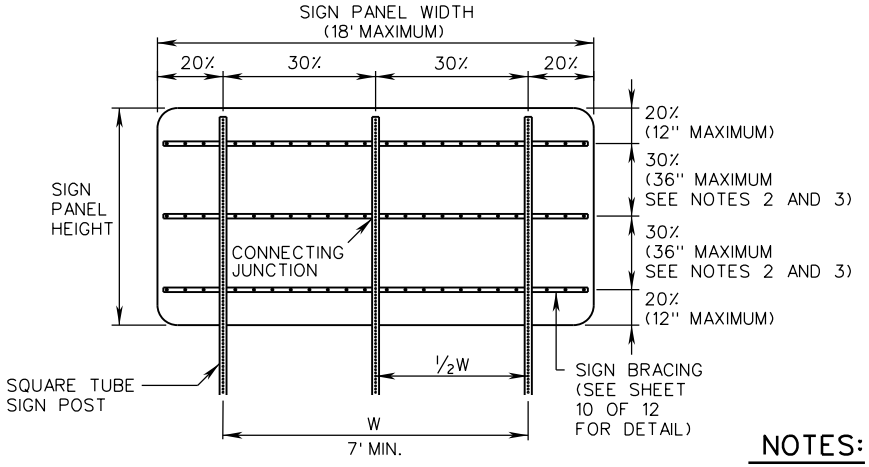
SPECIFICATION REFERENCE
700



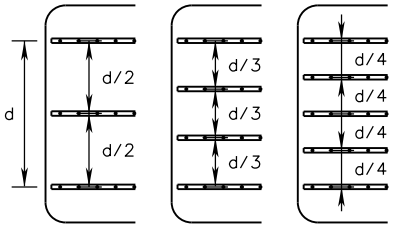
SINGLE POST - BRACING DIAGRAM
TYPICAL - TWO BRACE



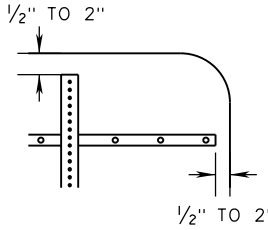
TWO POST - BRACING DIAGRAM
TYPICAL - TWO BRACE



THREE POST - BRACING DIAGRAM
TYPICAL - THREE BRACE



DETAIL A - SPACING OF MULTIPLE BRACING



DETAIL B - INSTALLATION TOLERANCES

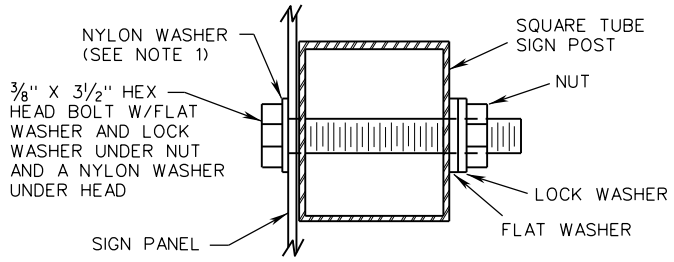
NOTES:

1. SIGN PANEL WIDTHS 36" OR GREATER SHALL REQUIRE SIGN BRACING.
2. VERTICAL SPACING OF SIGN BRACING SHALL NOT EXCEED 12" FROM THE TOP OR BOTTOM EDGE OF SIGN PANEL TO FIRST BRACE AND 36" BETWEEN BRACES. IF THE SPACING BETWEEN BRACES EXCEEDS 36" THEN ADDITIONAL SIGN BRACING SHALL BE ADDED. ALL SIGN BRACING SHALL BE EQUALLY SPACED BETWEEN THE TOP AND BOTTOM BRACE. SEE DETAIL A.
3. MAXIMUM SIGN PANEL AREA PER POST TO BRACE JUNCTION SHALL BE 10 SQ. FT. ADDITIONAL SIGN BRACING SHALL BE INSTALLED IF 10 SQ. FT PER POST TO BRACE JUNCTION IS EXCEEDED.
4. ONE SPLICE PER BRACE WILL BE PERMITTED. BRACE SPLICE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. BRACING SHALL NOT BE SPLICED WITHIN 6" OF A BRACE TO POST JUNCTION. SPLICES SHALL NOT BE IN VERTICAL ALIGNMENT BUT SHALL BE OFFSET NO LESS THAN 12" FROM EACH OTHER.
5. TOP OF SIGN PANEL SHALL BE MOUNTED ½" TO 2" WITH THE TOP OF THE POST AND ½" TO 2" WITH THE SIDE OF THE SIGN BRACING. SEE DETAIL B.
6. SIGN PANEL WIDTHS SHALL NOT EXCEED MAXIMUM SPECIFIED.

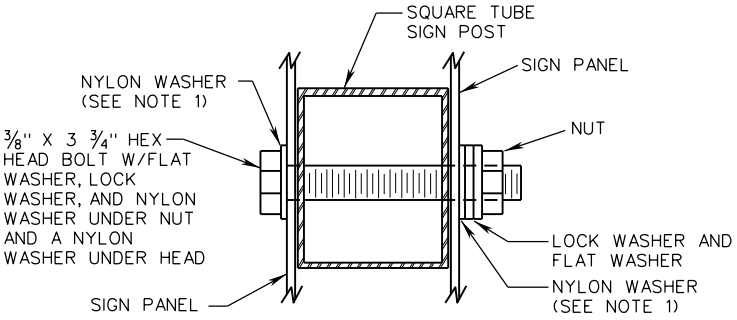
SPECIFICATION REFERENCE	SQUARE TUBE SIGN POST SIGN BRACING DETAILS VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
700		REVISION DATE 08/17
		SHEET 11 OF 12
		1321.20

STP-1

SIGN POSTS NOT REQUIRING BRACING



SINGLE SIGN PANEL DETAIL

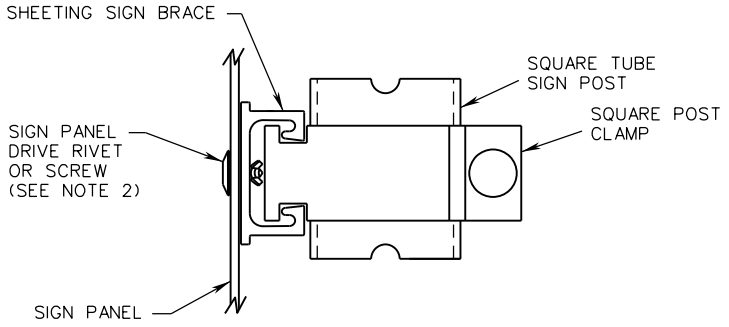


BACK-TO-BACK SIGN PANEL DETAIL

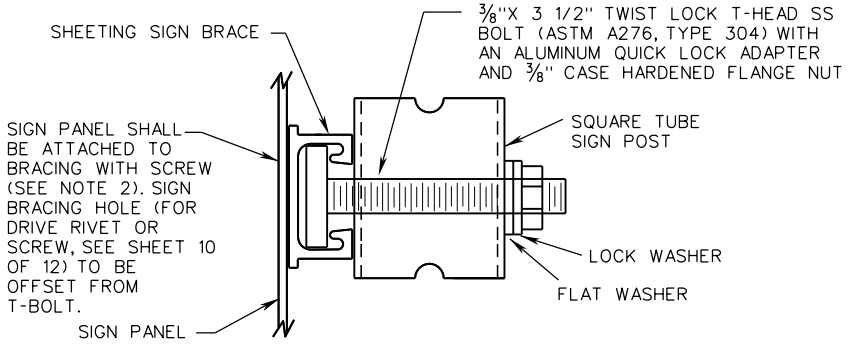
NOTES:

1. NYLON WASHER SHALL BE 1/16" THICK MINIMUM WITH AN OUTSIDE DIAMETER OF 1" AND AN INSIDE DIAMETER OF 7/16".
2. DRIVE RIVET SHALL BE 3/16" OR 3/8" ALUMINUM FLAT HEAD RIVET WITH STEEL PINS AND NYLON OR RUBBER WASHER.
3. THE HEADS OF ALL DRIVE RIVETS AND HEX HEAD BOLTS SHALL BE POWDER COATED TO MATCH THE COLOR OF THE SIGN SHEETING.
4. DRIVE RIVET SHALL NOT BE USED FOR SIGNS WITHOUT BRACING.

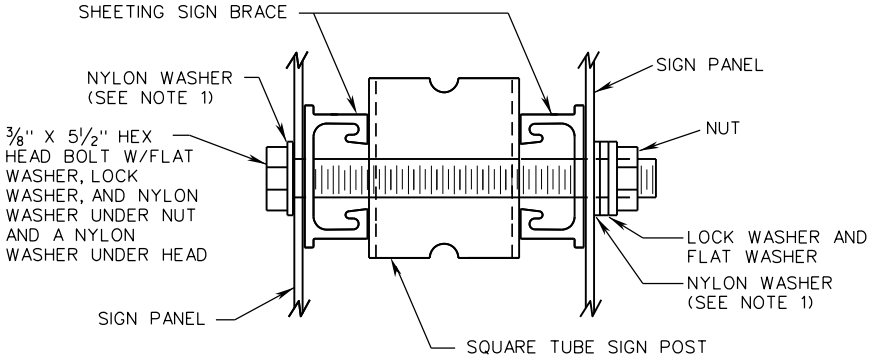
SIGN POSTS REQUIRING BRACING



SINGLE SIGN PANEL DETAIL



SINGLE SIGN PANEL ALTERNATE METHOD DETAIL



BACK-TO-BACK SIGN PANEL DETAIL

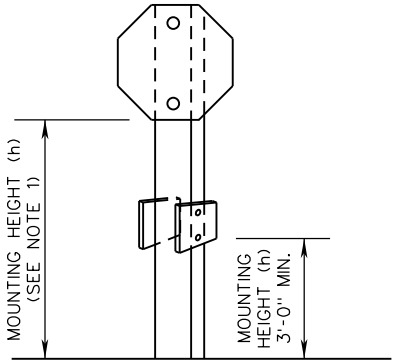
VDOT
ROAD AND BRIDGE STANDARDS

SHEET 12 OF 12 | REVISION DATE 08/17
1321.21

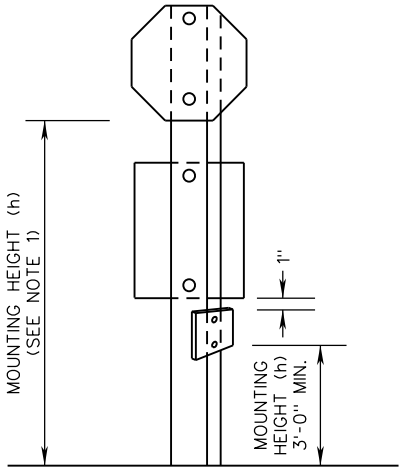
SQUARE TUBE SIGN POST
SIGN PANEL ATTACHMENT DETAILS
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
700

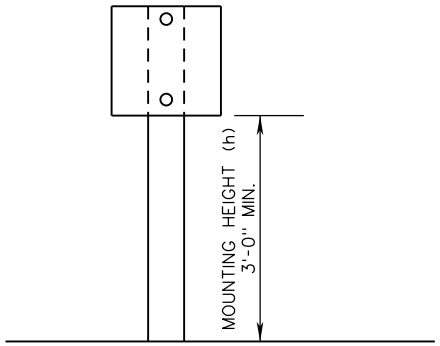
ISD-1



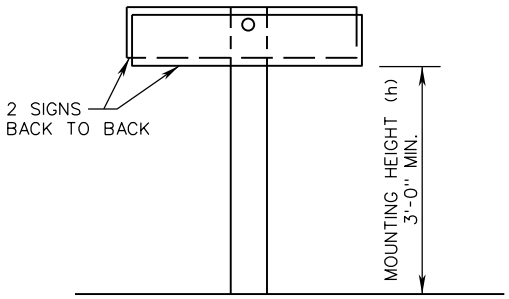
ONE WAY SIGNS
ON EXIT RAMPS
WITH STOP SIGN



STOP OR YIELD SIGNS AND
DO NOT ENTER SIGN
(AT EXIT RAMPS ONLY)



WRONG WAY SIGNS/
DO NOT ENTER SIGNS
(AT EXIT RAMPS ONLY)



ONE WAY SIGNS
ON EXIT RAMPS

NOTES:

1. MOUNTING HEIGHT (h) SHALL BE IN ACCORDANCE WITH STP-1 SHEET 1 OF 12 EXCEPT AS NOTED ON THIS SHEET.
2. MOUNTING HEIGHTS (h) ARE MEASURED FROM BOTTOM OF SIGN PANEL TO ROADWAY ELEVATION AT EDGE OF TRAVELWAY OR TOP OF CURB.

VDOT
ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1
1329.10

REVISION DATE
NEW 08/17

INTERCHANGE EXIT RAMP SIGNING DETAILS

MOUNTING HEIGHTS OF SIGN INSTALLATIONS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

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