

# COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION  
1401 EAST BROAD STREET  
RICHMOND, VIRGINIA 23219 2000

David S. Ekern, P.E.  
COMMISSIONER

April 21, 2009

## MEMORANDUM

To: All Holders of the Virginia Department of Transportation's 2008 Road and Bridge Standards

The following is a list of sheets contained in the 2008 Road and Bridge Standards that have been revised. Please add these pages to your copy of the standards. An insertable sheet will not be required in plan assemblies for the following three (3) sheets only. Changes to these sheets will not affect the basis of payment or estimates.

PAGE	REVISION
100.06	Revised Table of Contents for section 100
200.10	Revised Table of Contents for section 200
1300.01	Revised Table of Contents for section 1300

The following is a list of revised standards to the 2008 Road and Bridge Standards that require an insertable sheet to be included in your plan assembly until the next edition of the imperial standards is published. Please add these pages to your copy of the standards. The respective insertable sheet number has been placed with the revised standard. An insertable sheet is available for each of these revised standards. The insertable sheets are available on VDOT's web site, on the FTP server, and in Falcon DMS for VDOT personnel. These insertable sheets will be required in plan assemblies for projects advertised November 10, 2009 and later.

PAGE	INSERT	STANDARD	REVISION
101.32	IIS01_01	EW-12	Added requirement for a positive connection to be cast into EW-12
113.16	IIS01_02	EC-12	Removed construction crossing
113.18	IIS01_03	EC-14	New, Temporary Watercourse Crossing
203.05	IIS02_01	CG-12	Updated dimensions on the Type A
203.06	IIS02_01	CG-12	Updated dimensions and placement typicals

203.07	IIS02_02	CG-12	Added drawings showing application with and without a buffer strip
203.08	IIS02_02	CG-12	Added placement typical and flared opening
203.08A	IIS02_03	CG-12	New, Applies to medians and refuge islands
301.09	IIS03_01	PR-3	Clarified drawing to match dimensions
301.12	IIS03_02	PR-4	Clarified drawing to match dimensions
501.01	IIS05_04	GR-HDW	Deleted notes referencing steel blockouts
501.09	IIS05_05	GR-6	Revised note 1
501.27	IIS05_06	GR-FOA-1	Revised rubrail details 7 & 8, and blockout thickness charts.
1307.10	IIS13_01	PA-1,2,3	Revised drawings
1310.11	IIS13_02	PF-8	New, Signal Pole Foundation
1323.10	IIS13_03	SSP-VIA	Added exit sign panel
1324.10	IIS13_04	OSS-1	Added note #7
1324.12	IIS13_05	OSS-1	Revised notes
1325.11	IIS13_06	SPD-1	Revised table
1325.21	IIS13_07	SPD-2	Revised installation detail and notes
1325.31	IIS13_08	SPD-3	Revised table
1325.72	IIS13_09	SPD-7	Revised table
1330.50	IIS13_10	PM-5	Added taper length table
1330.90	IIS13_11	PM-9	Revised drawing for "PASSING ONE DIRECTION" and "NO PASSING"

If you have any questions or comments regarding this revision to the publication, please contact Chuck Patterson, at (804) 786-1805, of the Standards and Special Design Section.

Sincerely,  
Signature on file: April 21, 2009

Mohammad Mirshahi, P.E.  
State Location and Design Engineer

STANDARD	TITLE	PAGE
EC-7	TYPICAL SEDIMENT TRAP	113.11
EC-8	DEWATERING BASIN	113.12
EC-9	TEMPORARY DIVERSION DIKE	113.13
EC-10	TEMPORARY BERM AND SLOPE DRAIN	113.14
EC-11	STABILIZED CONSTRUCTION ENTRANCE	113.15
EC-12	TEMPORARY DIVERSION CHANNEL	113.16
EC-13	RIPRAP WEIRS; LOW FLOW DIVERSION FOR MULTIPLE LINE CULVERTS	113.17
EC-14	TEMPORARY VEHICULAR WATERCOURSE CROSSING	113.18
SWM-1	STORMWATER MANAGEMENT DRAINAGE STRUCTURE	114.01
	PRECAST STORMWATER MANAGEMENT DRAINAGE STRUCTURE	114.02
	STORMWATER MANAGEMENT DRAINAGE STRUCTURE - GRATE DETAILS	114.03
SWM-DR	STORMWATER MANAGEMENT (SWM) DETAILS	114.04
	STORMWATER MANAGEMENT (SWM) DETAILS	114.05
	STORMWATER MANAGEMENT (SWM) DETAILS	114.06
	STORMWATER MANAGEMENT (SWM) DETAILS	114.07
	STORMWATER MANAGEMENT (SWM) DETAILS	114.08



ROAD AND BRIDGE STANDARDS

SHEET 6 OF 6

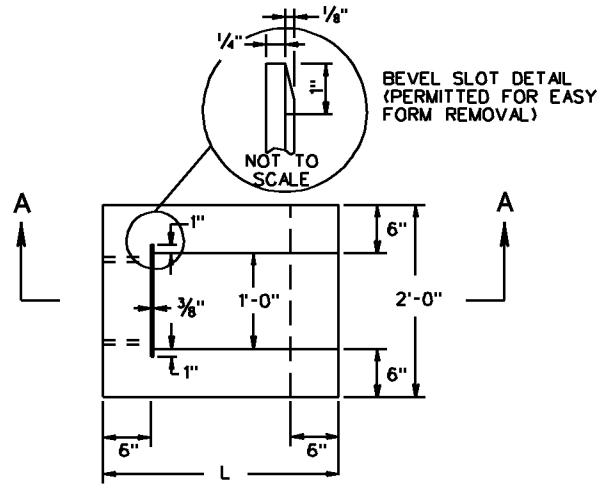
REVISION DATE

100.06

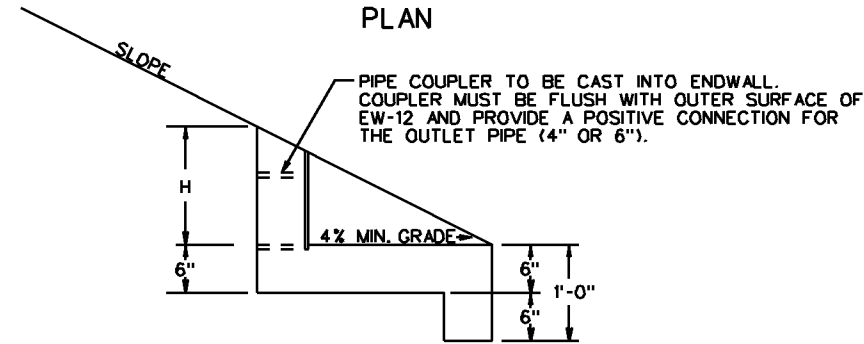
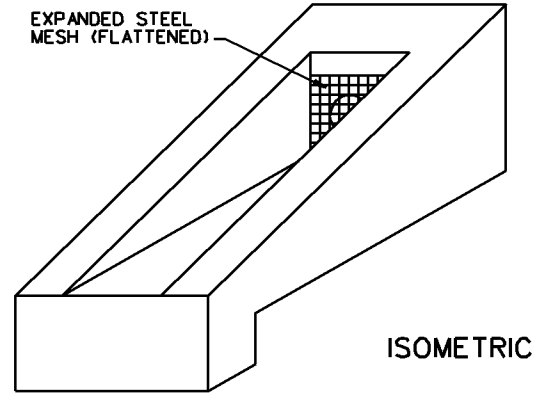
04/09

## INDEX OF SHEETS SECTION 100-DRAINAGE

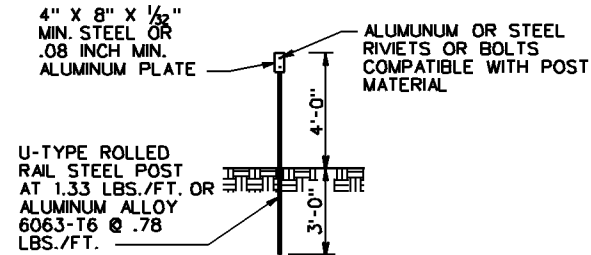
VIRGINIA DEPARTMENT OF TRANSPORTATION



PLAN



SECTION A-A



UNDERDRAIN OUTLET  
MARKER DETAIL

NOTES:

1. TYPICAL ENDWALL TO BE PLACED AT THE ENDS OF ALL UNDERDRAIN OUTLETS, BARRING LOCATIONS WHERE UNDERDRAIN IS TIED INTO OTHER DRAINAGE STRUCTURES. ENDWALL TO BE INSTALLED PERPENDICULAR TO ROADWAY AND FLUSH WITH THE SLOPE.
2. OUTLET PIPES SHALL BE RIGID NONPERFORATED, SMOOTH-BORE PIPE, MEETING THE REQUIREMENTS OF 70 PSI TESTED ACCORDING TO ASTM 2412.
3. EXPANDED STEEL MESH (FLATTENED) SHALL HAVE OPENINGS OF APPROX. 1/2" X 1" AND WEIGH APPROX. 0.82 LBS. PER SQ. FT. MESH SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123. THE MESH SHALL EXTEND A MINIMUM OF 1" ABOVE THE O.D. OF THE PIPE, AND IS A BARRIER FOR RODENTS, ETC. THE SLOT FOR THE STEEL MESH IS TO BE CONSTRUCTED SO THAT THE MESH CAN BE REMOVED FOR CLEANOUT PURPOSES.
4. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
5. STEEL POSTS AND PLATES TO BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS. IF PAINTED THE FINAL COAT SHALL BE NO. 13 ALUMINUM PAINT OR NO. 11 WHITE PAINT.
6. MARKER TO BE PLACED AT ALL EW-12 UNDERDRAIN INSTALLATIONS.
7. MARKER WILL BE PAID FOR IN ACCORDANCE WITH SECTION 501 OF THE ROAD AND BRIDGE SPECIFICATIONS.

PIPE I.D.	SLOPE	DIMENSIONS		CLASS A3 CONCRETE CUBIC YARDS
		L	H	
4"	2:1	2'-5 1/2"	1'-2 3/4"	0.17
4"	4:1	4'-5"	1'-1 1/4"	0.28
6"	2:1	2'-10 1/2"	1'-5 1/4"	0.21
6"	4:1	5'-3"	1'-3 3/4"	0.35



ROAD AND BRIDGE STANDARDS

STANDARD ENDWALL FOR PIPE UNDERDRAIN

SPECIFICATION  
REFERENCE

SHEET 1 OF 1

REVISION DATE

105

233

101.32

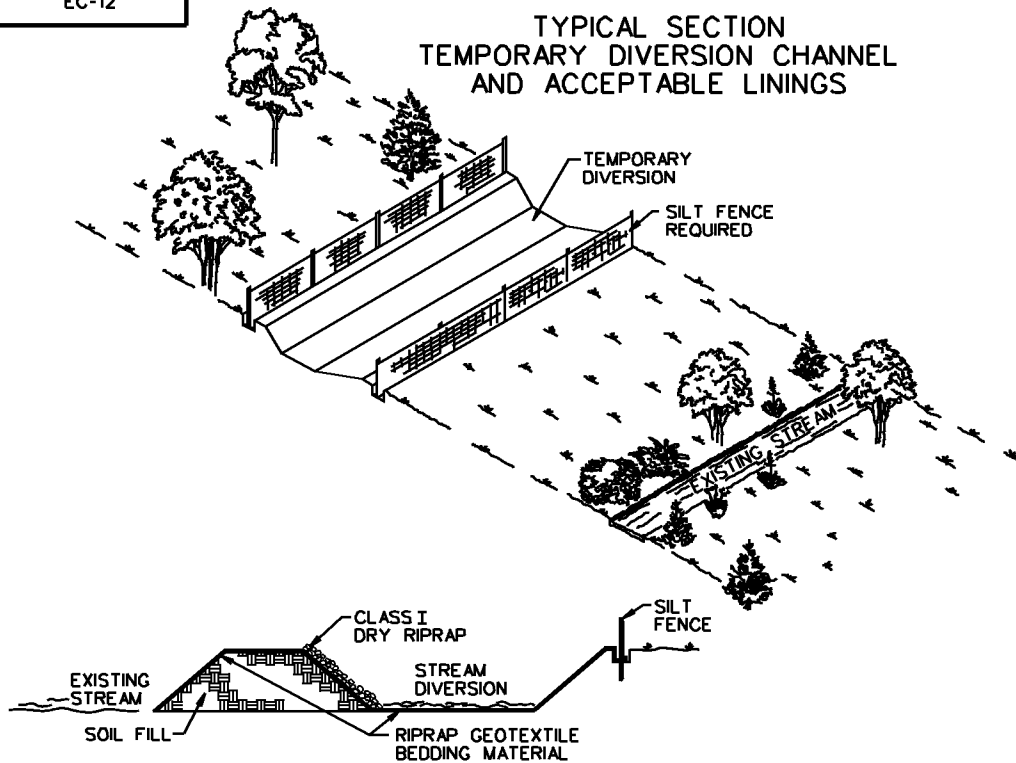
4/09

302

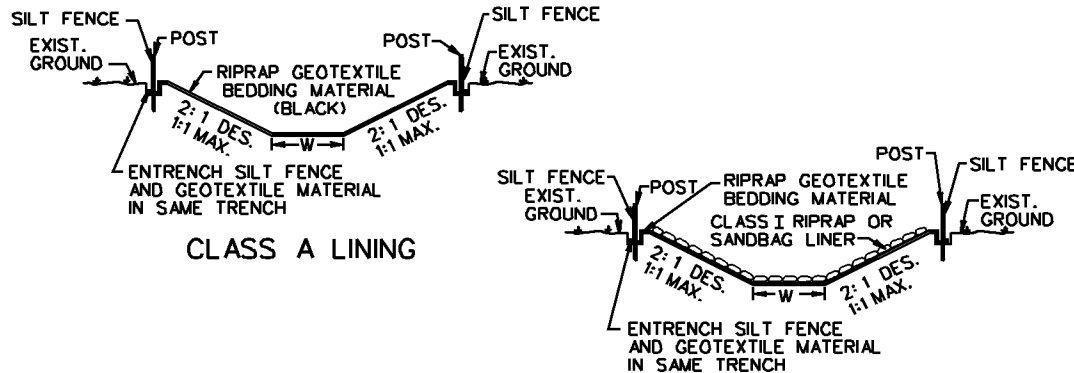
501

VIRGINIA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION  
TEMPORARY DIVERSION CHANNEL  
AND ACCEPTABLE LININGS



DAM DETAIL



CLASS A LINING

CLASS B LINING

BOTTOM WIDTH OF TEMPORARY DIVERSION CHANNEL SHALL APPROXIMATE THE BOTTOM WIDTH OF THE NATURAL STREAM CHANNEL.

STREAM DIVERSION  
GENERAL NOTES

SLOPES

MAXIMUM STEEPNESS OF SIDE SLOPES SHALL BE 1:1. DEPTH AND GRADE MAY BE VARIABLE, DEPENDENT ON SITE CONDITIONS, BUT SHALL BE SUFFICIENT TO ENSURE CONTINUOUS FLOW OF WATER IN THE DIVERSION.

EXCAVATION

NO EXCAVATED MATERIAL SHALL BE STORED OR STOCKPILED NEXT TO THE DIVERSION OR IN SUCH A MANNER THAT SILTATION OF THE STREAM COULD OCCUR.

PIPE CULVERTS

PIPE CULVERT(S) MAY BE USED TO DIVERT A STREAM PROVIDED THEY ARE PROPERLY SIZED TO SAFELY CARRY THE FLOW OF A TWO YEAR STORM EVENT. UNDERSIZED PIPES SHALL BE USED FOR NO LONGER THAN 72 HOURS PROVIDED LESS THAN 50% THREAT OF RAIN CAN BE REASONABLY EXPECTED WITHIN THAT TIME PERIOD AND THEY ARE APPROVED BY THE ENGINEER.

WHEN THE CONTRACTOR USES PIPE CULVERTS IN LIEU OF THE DIVERSION CHANNEL OR A PORTION OF THE CHANNEL, PAYMENT WILL BE MADE BASED ON THE PRICE BID FOR THE QUANTITIES SHOWN ON THE PLANS FOR TEMPORARY DIVERSION CHANNEL EXCAVATION AND TEMPORARY DIVERSION CHANNEL LINING CLASS SPECIFIED.

LINING

THE CONTRACTOR SHALL HAVE THE OPTION OF USING A HIGHER CLASS OF LINING THAN THAT SPECIFIED ON THE PLANS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR USING THE HIGHER CLASS.

STREAM DIVERSION LINERS SHALL BE SECURED AT THE UPSTREAM AND DOWNSTREAM SIDES WITH NON-ERODIBLE WEIGHTS SUCH AS EROSION CONTROL STONE. THESE WEIGHTS SHALL ALLOW NORMAL FLOW OF THE STREAM. SOIL SHALL NOT BE MIXED IN WITH STREAM DIVERSION WEIGHTS. WEIGHTS MAY ALSO BE NEEDED ALONG THE STREAM DIVERSION'S LENGTH.

STREAM DIVERSION LINERS SHALL BE ENTRENCHED AT THE TOP OF THE DIVERSION SLOPES (SLOPE BREAKS) WITH A LINE OF SILT FENCE.

PROTECTIVE COVERING (EC-2) STAPLES OR NON-ERODIBLE WEIGHTS SHALL BE USED AS NECESSARY TO ANCHOR STREAM DIVERSION LINERS TO THE SIDE SLOPES OF THE DIVERSION. WOODEN STAKES SHALL NOT BE USED ON THE DIVERSION'S BOTTOM OR SIDE SLOPES.

STREAM DIVERSION LINERS SHALL BE OVERLAPPED WHEN A SINGLE OR CONTINUOUS LINER IS NOT AVAILABLE OR IS IMPRACTICAL. OVERLAPS SHALL BE PLACED SUCH THAT CONTINUOUS FLOW OF THE STREAM IS MAINTAINED. AN UPSTREAM SECTION SHALL OVERLAP A DOWNSTREAM SECTION BY A MINIMUM OF 18". OVERLAPS ALONG THE CROSS SECTION SHALL BE MADE SUCH THAT A LINER IS PLACED IN THE STREAM DIVERSION BOTTOM FIRST AND ADDITIONAL PIECES OF LINER ON THE SLOPES OVERLAP THE BOTTOM PIECE BY A MINIMUM OF 18".

GENERAL

THE DOWNSTREAM PLUG SHALL BE REMOVED PRIOR TO THE UPSTREAM PLUG WHEN A STREAM DIVERSION IS USED FOR THE TRANSPORT OF WATER.

NON-ERODIBLE MATERIALS, INCLUDING BUT NOT LIMITED TO, EROSION CONTROL STONE, CONCRETE BARRIERS, SANDBAGS, PLYWOOD, OR SHEET PILING SHALL BE USED BOTH TO DIVERT THE STREAMS AWAY FROM THEIR ORIGINAL CHANNELS AND TO PREVENT OR REDUCE WATER BACKUP INTO A CONSTRUCTION AREA.

STREAMS MAY BE DIVERTED THROUGH AN EXISTING OR INCOMPLETE STRUCTURE PROVIDED THEY WILL NOT RE-ENTER A DISTURBED AREA, COME INTO CONTACT WITH WET CONCRETE, AND/OR BECOME PARTIALLY OR WHOLLY IMPOUNDED, SILTED, OR OTHERWISE CONTAMINATED.

STREAMS MAY BE REDIVERTED UPON COMPLETION OF THE DRAINAGE STRUCTURE(S) FOR WHICH THE DIVERSION WAS BUILT. PRIOR TO REDIVERSION, ANY MATERIALS USED TO PREVENT WATER BACKUP INTO THE DOWNSTREAM END OF THE DRAINAGE STRUCTURE(S) SHALL BE REMOVED. THIS MATERIAL SHALL NOT BE PLACED IN THE DOWNSTREAM END OF THE DIVERSION UNTIL AFTER WATER HAS BEEN REDIVERTED TO THE DRAINAGE STRUCTURE(S). A STREAM SHALL BE REDIVERTED BY REMOVING ALL OF THE MATERIALS DAMMING THE UPSTREAM END OF THE DRAINAGE STRUCTURE(S) BEFORE PLACING IT IN THE UPSTREAM END OF THE STREAM DIVERSION. THE DIVERSION SHALL BE SEALED OFF AT THE DOWNSTREAM END AND THEN BACKFILLED.

ONCE STARTED, ANY WORK TO RELOCATE A STREAM (PLUGS) SHALL NOT BE DISCONTINUED UNTIL IT IS COMPLETED.

ANY DEVIATIONS TO THE ABOVE NOTED STREAM DIVERSION DESIGN, INSTALLATION, OR MAINTAINANCE SHALL BE APPROVED BY THE ENGINEER.



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

113.16

4/09

TEMPORARY DIVERSION CHANNEL

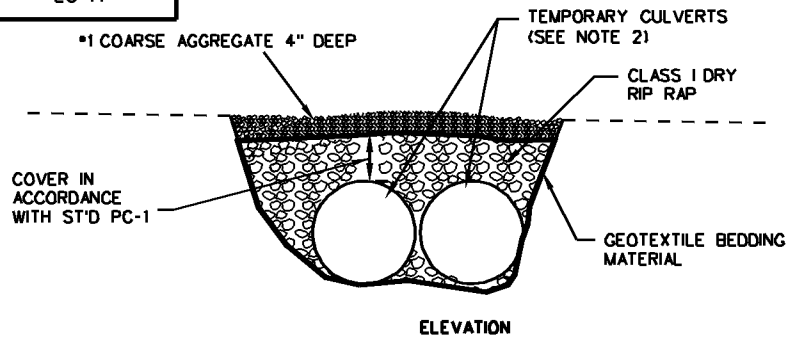
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION  
REFERENCE

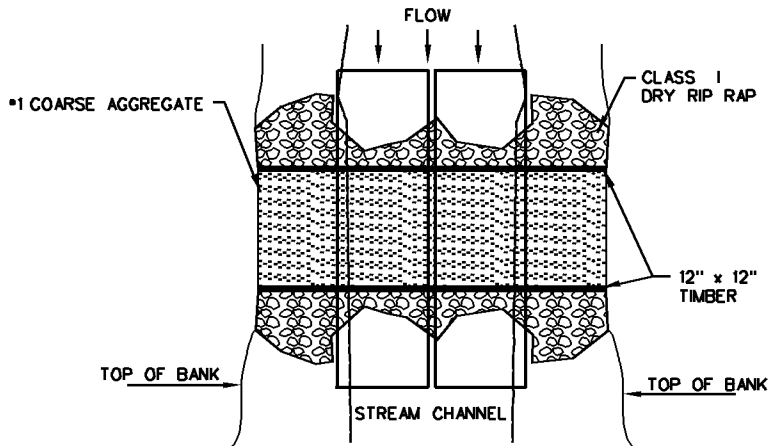
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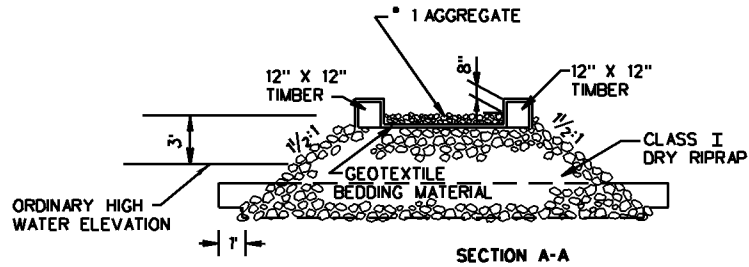
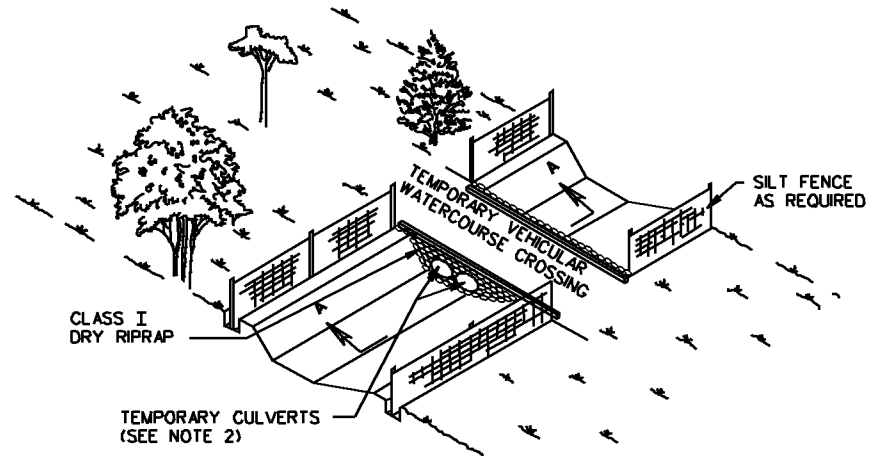
414



ELEVATION



PLAN VIEW



SECTION A-A

**NOTE:**

1. THE CULVERT(S) SHALL BE SIZED TO CONVEY THE FLOW OF A TWO YEAR STORM EVENT. THE ELEVATION OF THE TWO YEAR EVENT SHALL BE AT OR BELOW THE LOWEST SURFACE ELEVATION OF THE CROSSING. THE REQUIRED HYDRAULIC OPENINGS SHOULD BE DETERMINED USING THE APPROPRIATE HYDROLOGIC/HYDRAULIC DESIGN TECHNIQUES. A TEMPORARY VEHICULAR WATERCOURSE CROSSING SHOULD ONLY BE UTILIZED WHERE THE DRAINAGE AREA IS NO GREATER THAN 1 SQUARE MILE. THE DEPTH OF STONE COVER OVER THE CULVERT(S) SHALL BE IN ACCORDANCE WITH STANDARD PC-1.

2. AN ALTERNATIVE TEMPORARY VEHICULAR WATERCOURSE CROSSING DESIGN MAY BE USED PROVIDED IT IS SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL IN ACCORDANCE WITH ROAD AND BRIDGE SPECIFICATIONS 105.10 AND 107.02.



ROAD AND BRIDGE STANDARDS

# TEMPORARY VEHICULAR WATERCOURSE CROSSING

SPECIFICATION REFERENCE

SHEET 1 OF 1

REVISION DATE

113.18

4/09

VIRGINIA DEPARTMENT OF TRANSPORTATION

302  
303  
414

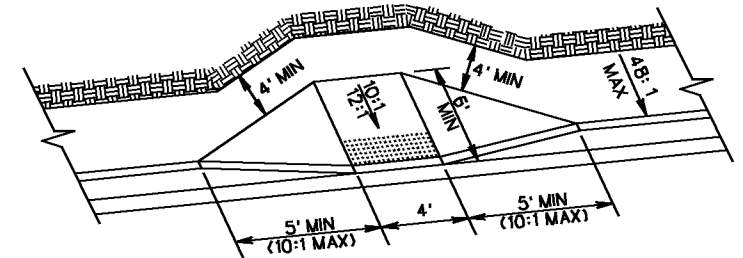
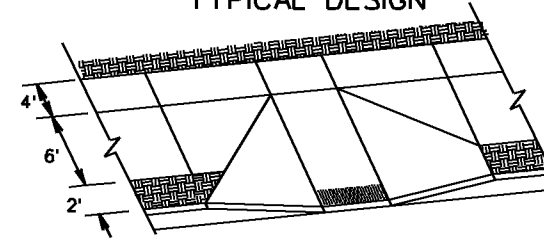
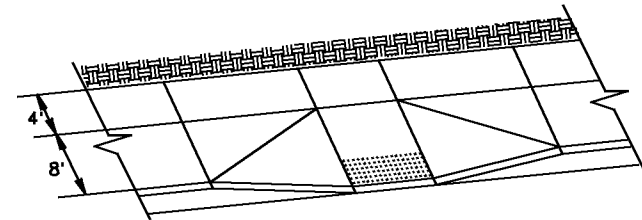
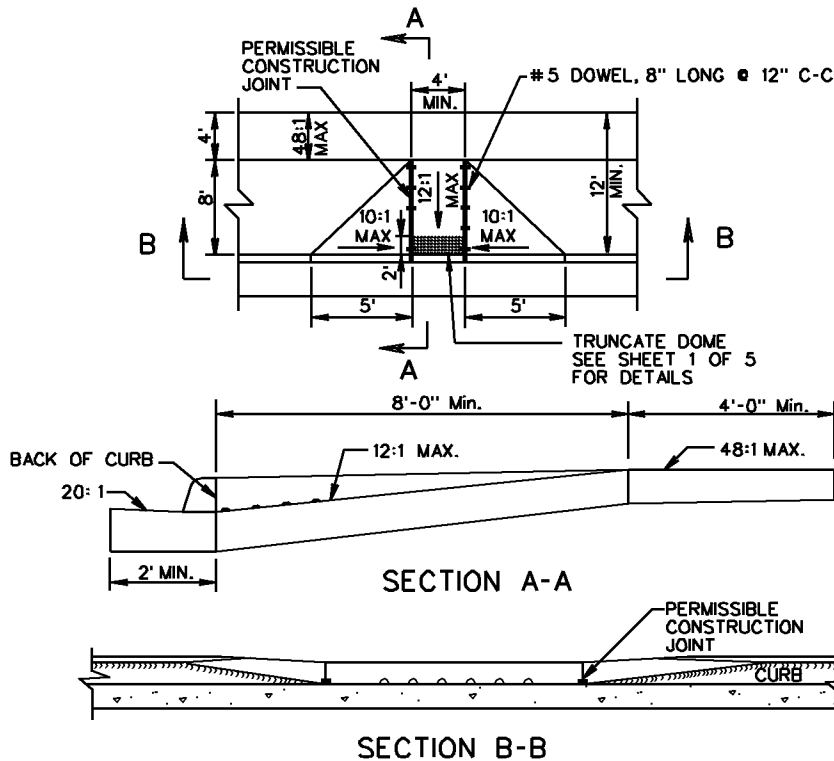
STANDARD	TITLE	PAGE
CG-2	STANDARD 6" CURB	201.01
CG-3	STANDARD 4" CURB	201.02
CG-6	COMBINATION 6" CURB AND GUTTER	201.03
CG-7	COMBINATION 4" CURB AND GUTTER	201.04
MC-3, 3A	ASPHALT CONCRETE CURB AND MEDIAN (FOR TEMPORARY OR PERMANENT INSTALLATION)	201.05
MC-3B, 3C	ASPHALT CONCRETE CURB AND MEDIAN (FOR TEMPORARY OR PERMANENT INSTALLATION)	201.06
MC-4	ASPHALT CURB AND GUTTER (ASPHALT PAVING UNDER GUARDRAIL)	201.07
	ASPHALT CURB AND GUTTER (ASPHALT PAVING UNDER GUARDRAIL)	201.08
MC-1	CONCRETE MEDIAN CURB	202.01
MS-1	STANDARD SOLID CONCRETE RAISED MEDIAN STRIP	202.02
MS-1A	STANDARD SOLID CONCRETE RAISED MEDIAN STRIP	202.03
MS-2	STANDARD RAISED GRASS MEDIAN STRIP	202.04
MS-4	STANDARD RAISED ASPHALT MEDIAN (WITH P.C. CONCRETE CURB)	202.05
CG-9A	STANDARD ENTRANCE GUTTER WITH FLARED OPENING (FOR USE ACROSS SIDEWALK)	203.01
CG-9B	STANDARD ENTRANCE GUTTER (FOR USE WITH UNPAVED SPACE BETWEEN CURB AND GUTTER)	203.02
CG-9D	STANDARD ENTRANCE GUTTER	203.03
CG-11	METHOD OF TREATMENT (CONNECTION FOR STREET INTERSECTIONS)	203.04
CG-12	CG-12 DETECTABLE WARNING SURFACE (GENERAL NOTES)	203.05
	CG-12 DETECTABLE WARNING SURFACE (TYPE A, PERPENDICULAR APPLICATION)	203.06
	CG-12 DETECTABLE WARNING SURFACE (TYPE B, PARALLEL APPLICATION)	203.07
	CG-12 DETECTABLE WARNING SURFACE (TYPE C, PARALLEL & PERPENDICULAR APPLICATION)	203.08
	CG-12 DETECTABLE WARNING SURFACE (TYPE M,	203.08A
CG-13	COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC ANTICIPATED)	203.09

**INDEX OF SHEETS**  
**SECTION 200-CURBS AND ENTRANCES**  
 VIRGINIA DEPARTMENT OF TRANSPORTATION

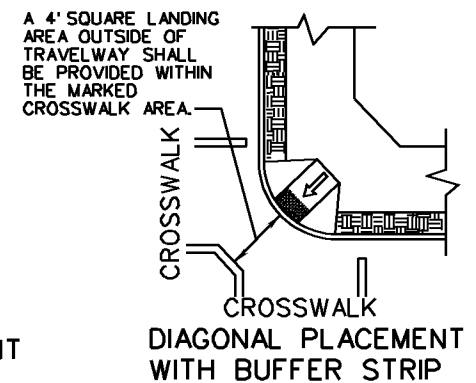
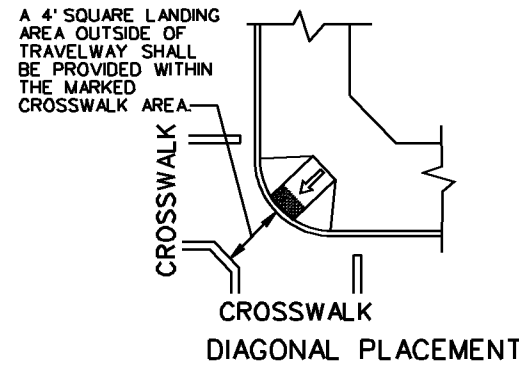
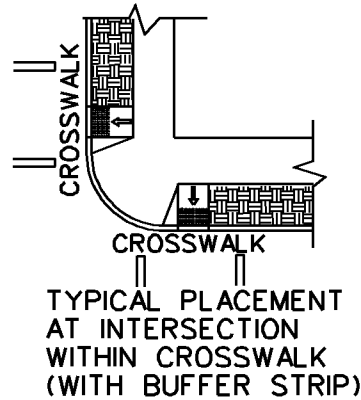
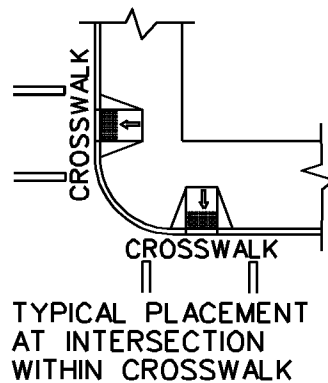


ROAD AND BRIDGE STANDARDS

REVISION DATE	SHEET 1 OF 1
04/09	200.01



**NOTES:**  
 FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.  
 THIS DESIGN TO BE USED FOR CONSTRUCTION THAT INCORPORATES WIDER SIDEWALK. LANDING (4' WIDE) REQUIRED AT TOP OF CURB RAMP. MINIMUM CURB RAMP LENGTH 8 FEET FOR NEW CONSTRUCTION, 6 FEET FOR ALTERATIONS.



SPECIFICATION REFERENCE
105 502

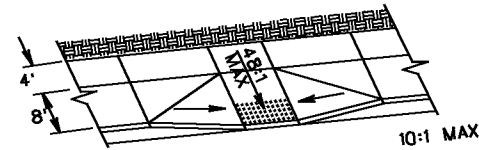
**CG-12 DETECTABLE WARNING SURFACE**  
 TYPE A (PERPENDICULAR) APPLICATION  
 VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS	
REVISION DATE 4/09	SHEET 2 OF 5 203.06

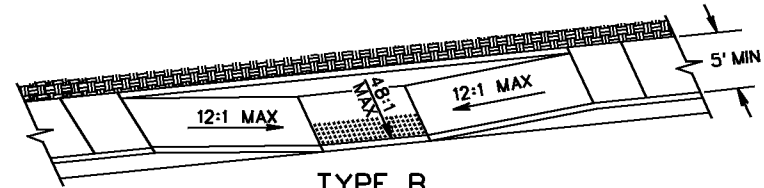


**GENERAL NOTES:**

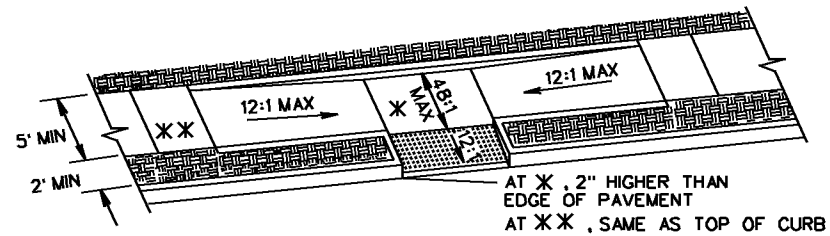
1. THE DETECTABLE WARNING SHALL BE PROVIDED BY TRUNCATED DOMES.
2. DETECTABLE WARNING TO BE CLASS A-3 CONCRETE (CLASS A-4 IF PRECAST) WITH SLIP RESISTANT INTEGRAL SURFACE COVERING THE FULL WIDTH OF THE RAMP FLOOR BY 2 FOOT IN LENGTH IN THE DIRECTION OF PEDESTRIAN TRAVEL. OTHER TYPES OF MATERIAL WITH THE TRUNCATED DOMES DETECTABLE WARNING MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
3. SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
4. IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4.
5. REQUIRED BARS ARE TO BE NO. 5 X 8" PLACED 1' CENTER TO CENTER ALONG BOTH SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1/2".
6. CURB / CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB / CURB AND GUTTER.
7. CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSIBLE ROUTE WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. ACCESSIBLE ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.
8. RAMPS MAY BE PLACED ON RADIAL OR TANGENTIAL SECTIONS PROVIDED THAT THE CURB OPENING IS PLACED WITHIN THE LIMITS OF THE CROSSWALK AND THAT THE SLOPE AT THE CONNECTION OF THE CURB OPENING IS PERPENDICULAR TO THE CURB.
9. TYPICAL CONCRETE SIDEWALK IS 4" THICK. WHEN THE ENTRANCE RADIICANNOT ACCOMMODATE THE TURNING REQUIREMENTS OF ANTICIPATED HEAVY TRUCK TRAFFIC, REFER TO STANDARD CG-13, COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC) FOR CONCRETE DEPTH.
10. WHEN CURB RAMPS ARE USED IN CONJUNCTION WITH A SHARED USE PATH, THE MINIMUM WIDTH SHALL BE THE WIDTH OF THE SHARED USE PATH
11. WHEN ONLY ONE CURB RAMP IS PROVIDED FOR TWO CROSSINGS (DIAGONAL), A 4' x 4' LANDING AREA SHALL BE PROVIDED TO MANEUVER A WHEELCHAIR INTO THE CROSSWALK WITHOUT GOING INTO THE TRAVELWAY. THIS 4' x 4' LANDING AREA MAY INCLUDE THE GUTTER PAN.



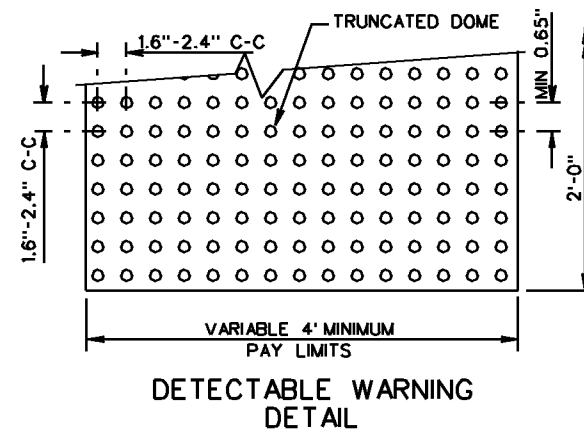
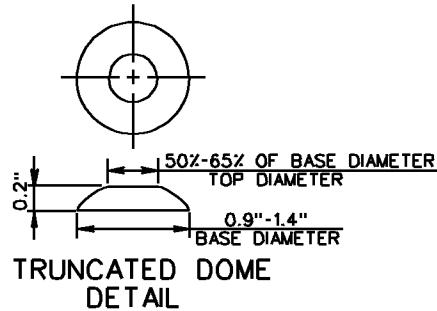
**TYPE A  
PERPENDICULAR**



**TYPE B  
PARALLEL**



**TYPE C  
PARALLEL & PERPENDICULAR**



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 5

REVISION DATE

203.05

4/09

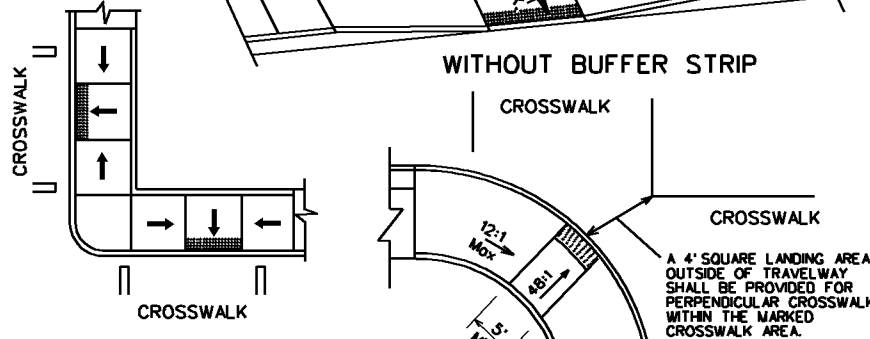
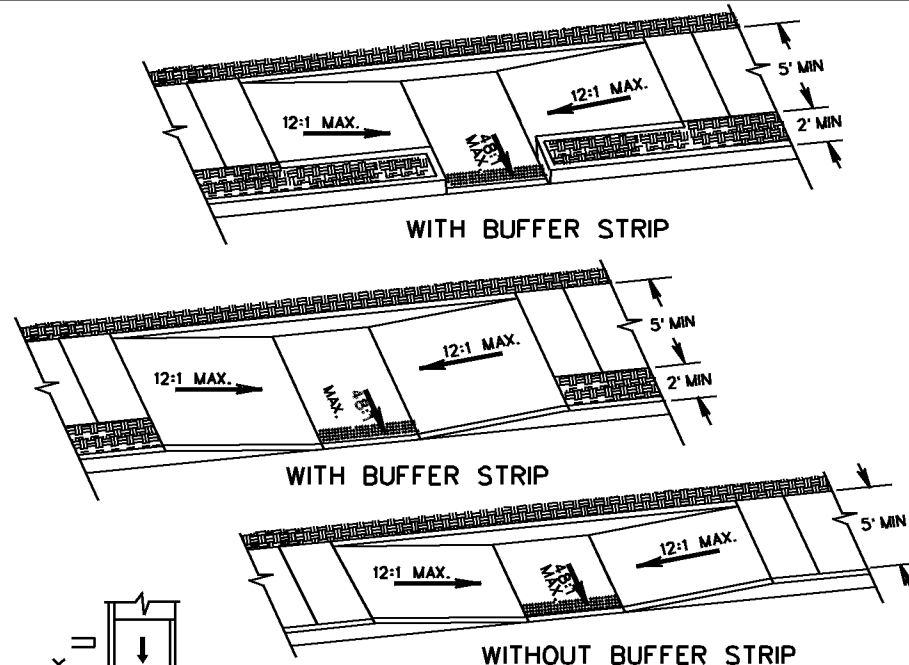
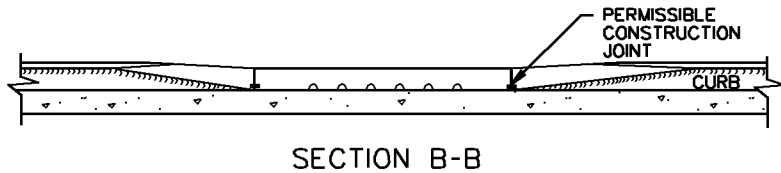
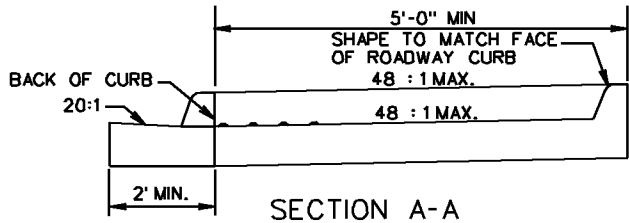
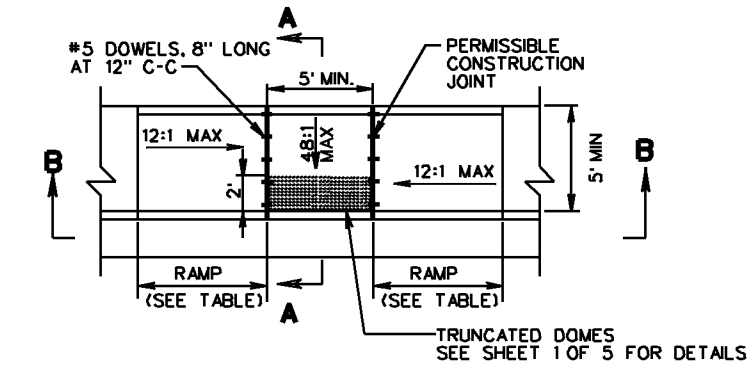
**CG-12 DETECTABLE WARNING SURFACE**

(GENERAL NOTES)

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION  
REFERENCE

105  
502



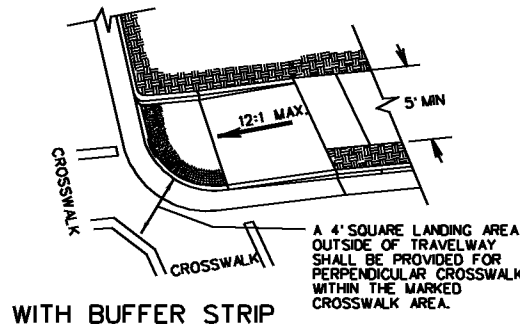
TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK

DIAGONAL PLACEMENT

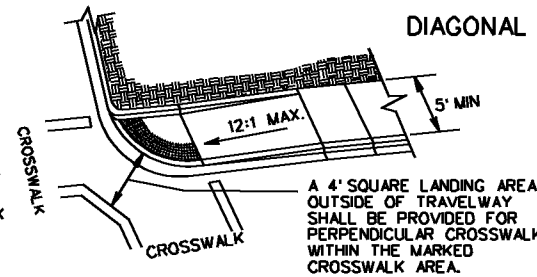
NOTES: FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.

THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.

TYPE B PARALLEL APPLICATION		
ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	4	6
1	5	7
2	5	8
3	6	9
4	8	12
5	10	15
6	14	15



WITH BUFFER STRIP



A 4' SQUARE LANDING AREA OUTSIDE OF TRAVELWAY SHALL BE PROVIDED FOR PERPENDICULAR CROSSWALK WITHIN THE MARKED CROSSWALK AREA.



ROAD AND BRIDGE STANDARDS

SHEET 3 OF 5

REVISION DATE

203.07

4/09

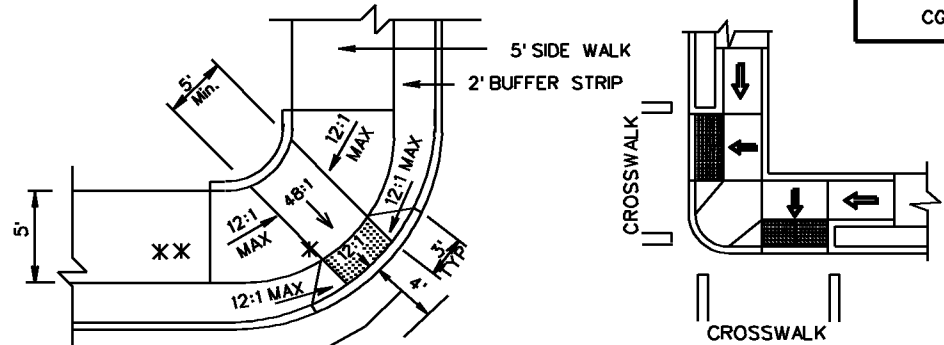
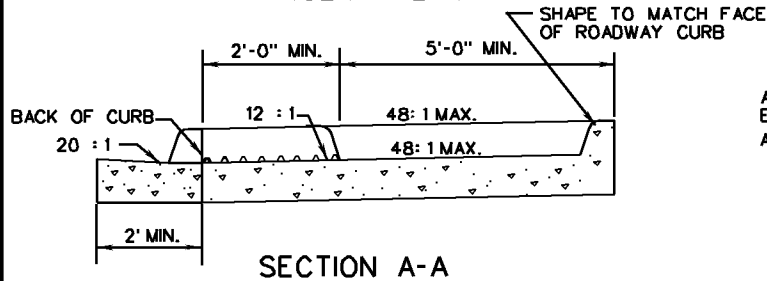
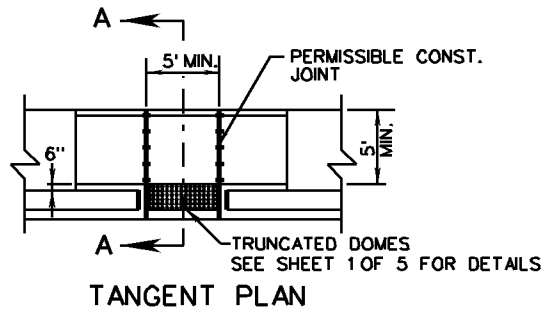
# CG-12 DETECTABLE WARNING SURFACE

TYPE B (PARALLEL) APPLICATION

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

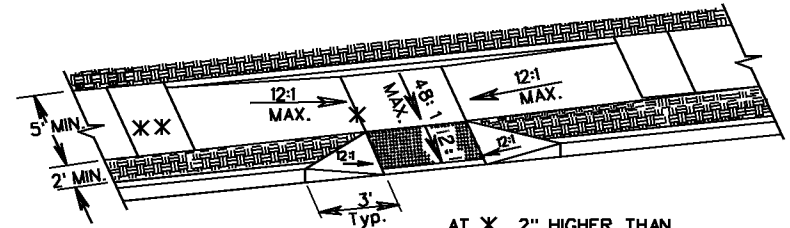
105  
502



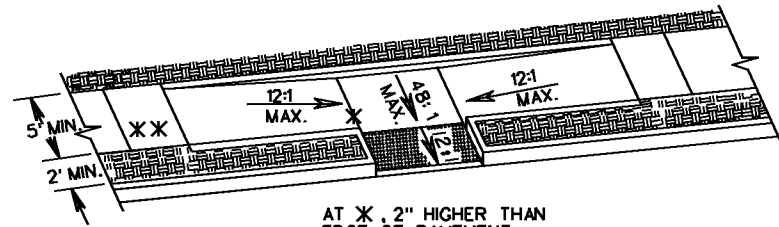
A 4' SQUARE LANDING AREA OUTSIDE OF TRAVELWAY SHALL BE PROVIDED WITHIN THE MARKED CROSSWALK AREA.

AT \* , 2" HIGHER THAN EDGE OF PAVEMENT  
 AT \*X\* , SAME AS TOP OF CURB

TYPICAL PLACEMENT AT INTERSECTION WITH BUFFER STRIP



AT \* , 2" HIGHER THAN EDGE OF PAVEMENT  
 AT \*X\* , SAME AS TOP OF CURB



AT \* , 2" HIGHER THAN EDGE OF PAVEMENT  
 AT \*X\* , SAME AS TOP OF CURB

TYPE C PARALLEL & PERPENDICULAR APPLICATION		
ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	2	4
1	2	5
2	3	5
3	3	6
4	4	8
5	5	10
6	7	14
7	13	15
8	15	15

THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.

NOTES: FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.

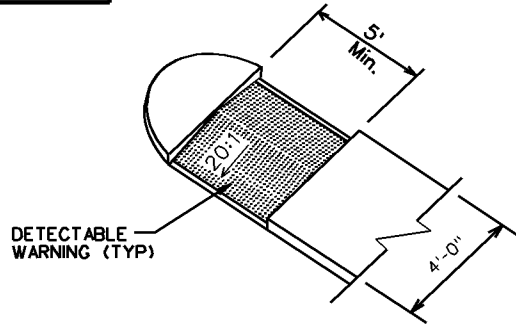
THE SELECTION OF CURB TYPE AND THE CONFIGURATION OF THE BUFFER STRIP MAY VARY TO MEET EXISTING FIELD CONDITIONS AND ROADWAY GEOMETRICS PROVIDING THE DIMENSIONS AND SLOPES ARE AS NOTED.

THIS COMBINED (PARALLEL & PERPENDICULAR) DESIGN CAN BE USED WITH ADJOINING BUFFER STRIP. LANDING AT BOTTOM OF TWO SLOPING SIDES WITH 5' X 5' MIN. DIMENSIONS. THE SHORT PERPENDICULAR RUN TO THE STREET CAN BE PROTECTED BY A LANDSCAPED SETBACK OR CONNECTED TO THE SIDEWALK WITH A WARPED SURFACE.

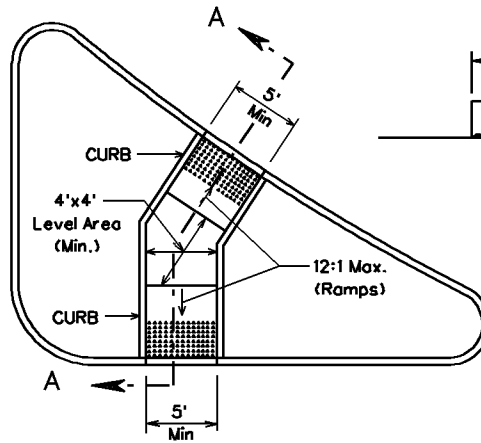
SPECIFICATION REFERENCE
105 502

**CG-12 DETECTABLE WARNING SURFACE**  
 TYPE C (PARALLEL & PERPENDICULAR) APPLICATION  
 VIRGINIA DEPARTMENT OF TRANSPORTATION

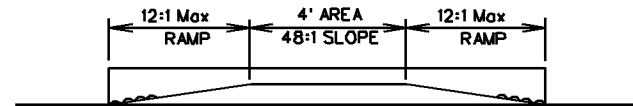
<b>VDOT</b> ROAD AND BRIDGE STANDARDS	
REVISION DATE 4/09	SHEET 4 OF 5 203.08



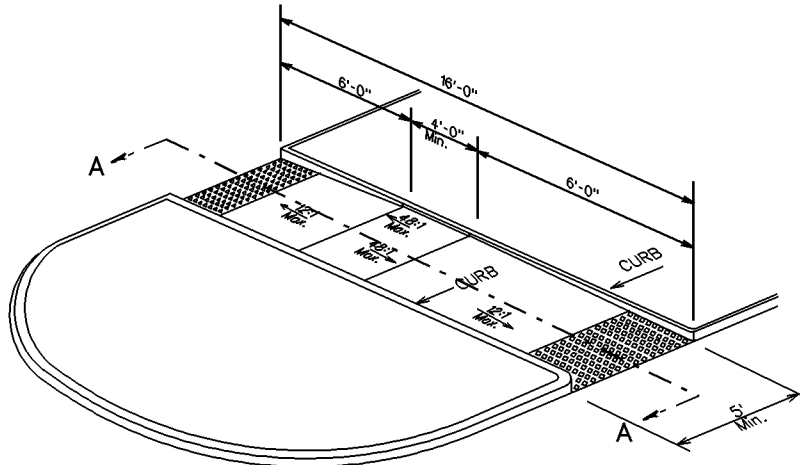
MEDIAN WITH CUT-THROUGH  
TYPE M2



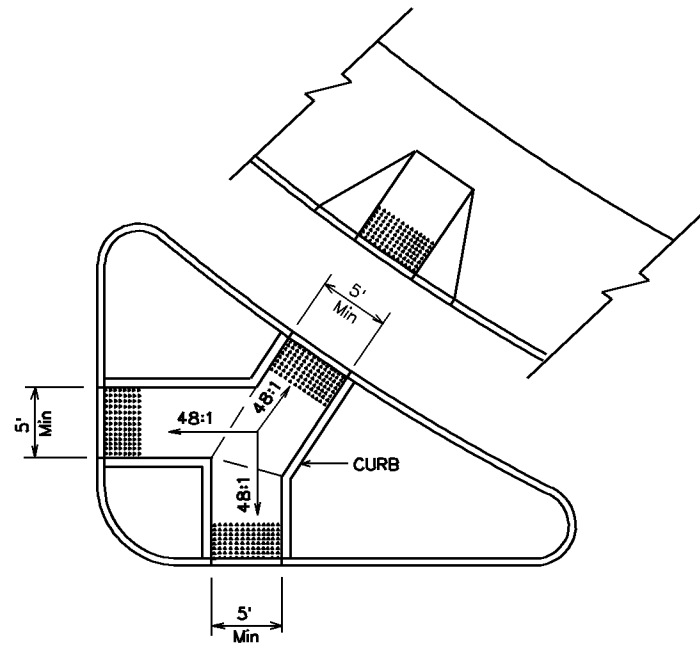
REFUGE ISLAND WITH RAMPS  
TYPE RI2



SECTION A-A  
TYPE RI2 AND M1



MEDIAN WITH RAMP  
TYPE M1



REFUGE ISLAND CUT - THROUGH  
TYPE RI1

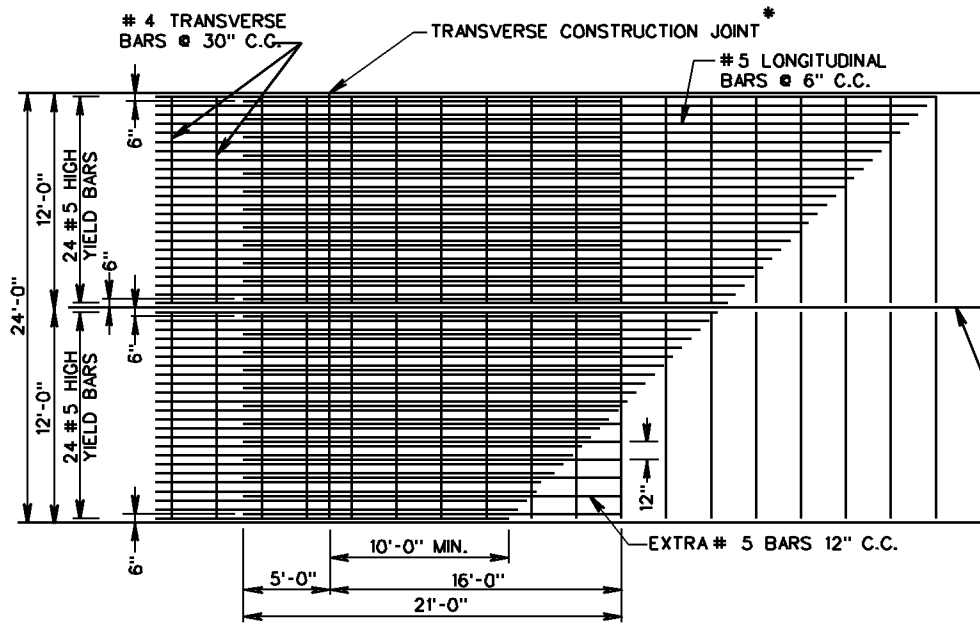
NOTE: FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE,  
SEE SHEET 1 OF 5.  
CURB SHALL BE SHAPED TO MATCH THE FACE OF ROADWAY CURB.

<b>VDOT</b>	
ROAD AND BRIDGE STANDARDS	
SHEET 5 OF 5	REVISION DATE
203.08A	New 4/09

**CG-12 DETECTABLE WARNING SURFACE**  
**MEDIAN AND REFUGE ISLAND APPLICATIONS**  
 VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION  
REFERENCE

105  
502

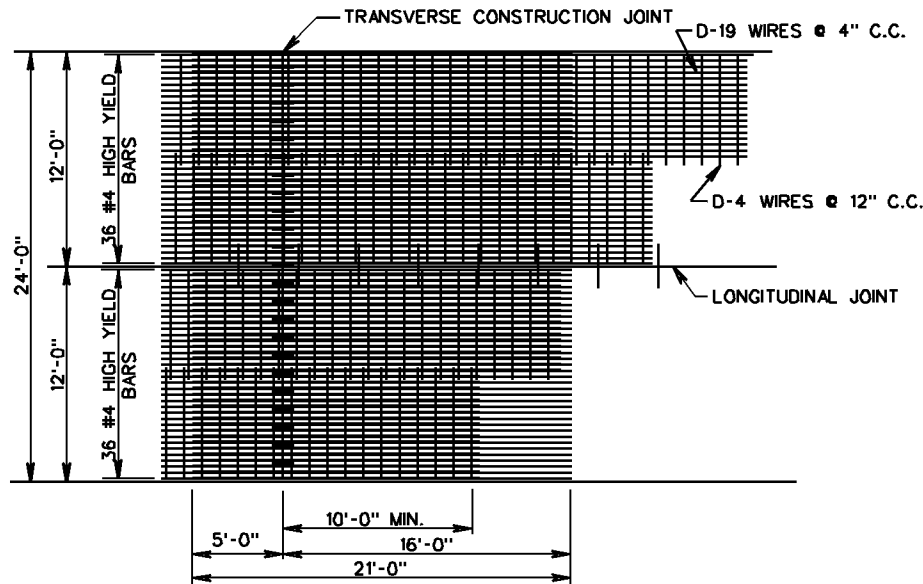


\* LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT.

EXTRA # 5 (GRADE 60) BARS (21' LONG) SHALL BE SPACED AT 12" C.C.

LONGITUDINAL JOINT

LEAVE OUT JOINT  
FOR USE WITH STEEL BAR REINFORCEMENT



LEAVE OUT JOINT  
FOR USE WITH WIRE MESH REINFORCEMENT

SPECIFICATION  
REFERENCE

316

# 8" THICK CONTINUOUSLY REINFORCED CONC. PAVE.

(LEAVE OUT JOINT DETAIL)

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

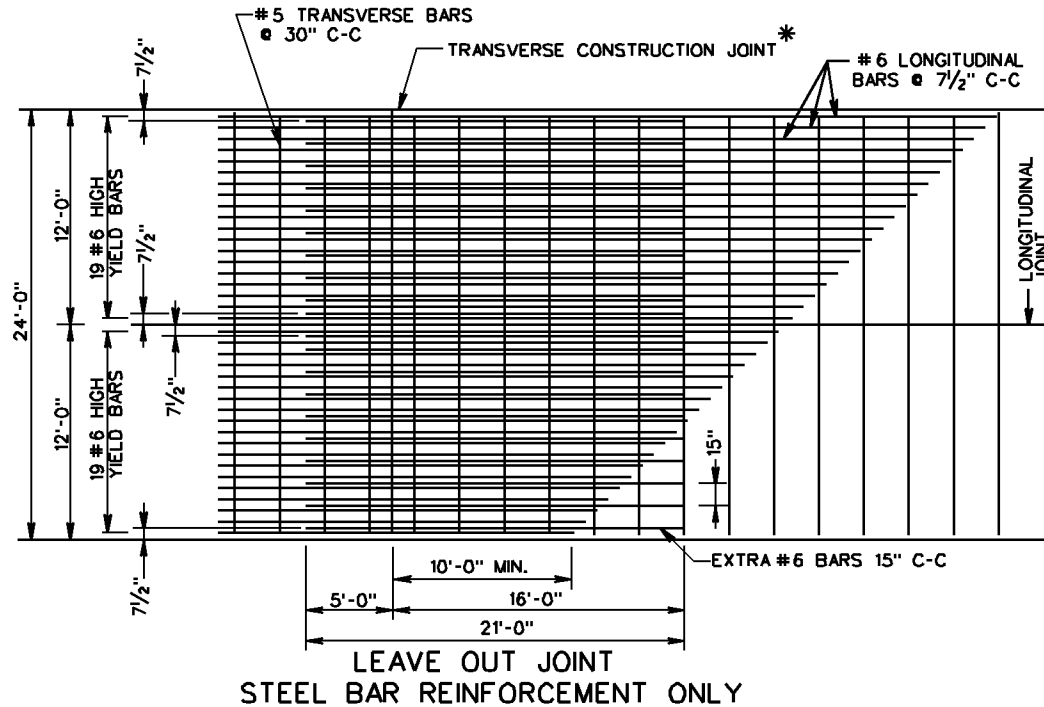
ROAD AND BRIDGE STANDARDS

REVISION DATE

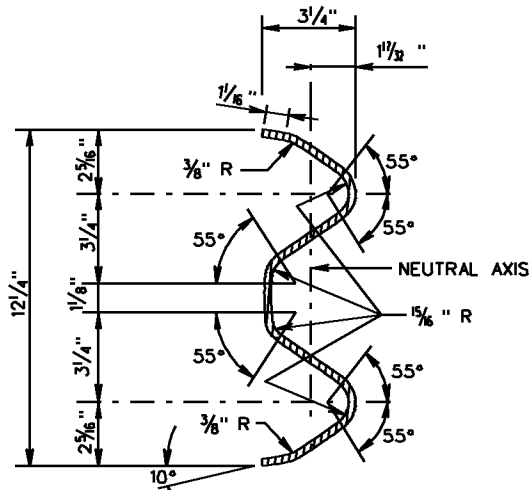
4/09

SHEET 4 OF 4

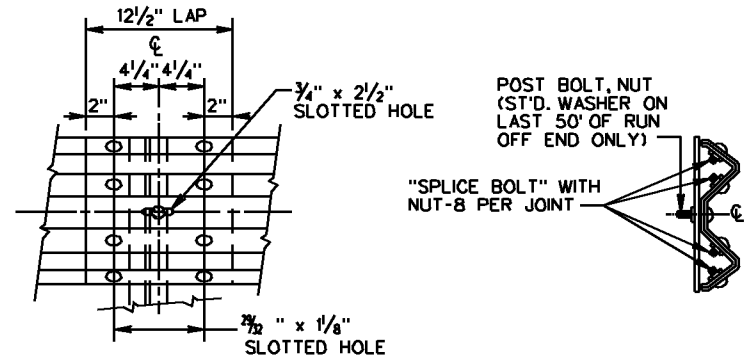
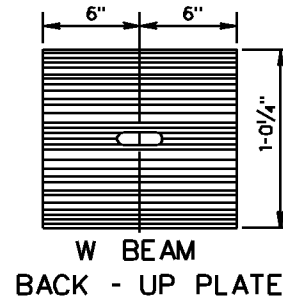
301.09



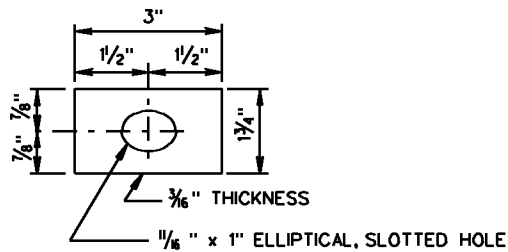
\* LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT.  
EXTRA # 6 (GRADE 60) BARS (21' LONG) SHALL BE SPACED AT 15" C-C.



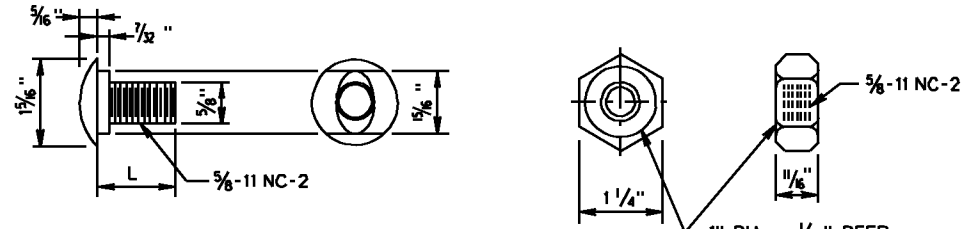
SECTION THRU RAIL ELEMENT AND W BEAM BACK-UP PLATE



DETAIL OF SPlice JOINT



DETAIL OF STANDARD WASHER



- L = 1/4" FOR SPlice BOLT-FULL LENGTH THREADS
  - L = 2" FOR STEEL POST BOLT-1 1/2" MIN. THREADS
  - L = 18" FOR WOOD AND CONCRETE POST BOLT-2 1/2" MIN. THREADS
  - L = 26" FOR MB WOOD OR CONCRETE POST-2" MIN. THREADS
- 1" DIA. x 1/16" DEEP. RECESS ONE OR BOTH SIDES

DETAIL OF BUTTON HEAD BOLT AND RECESS NUT

NOTES:

ALL HARDWARE IS TO BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

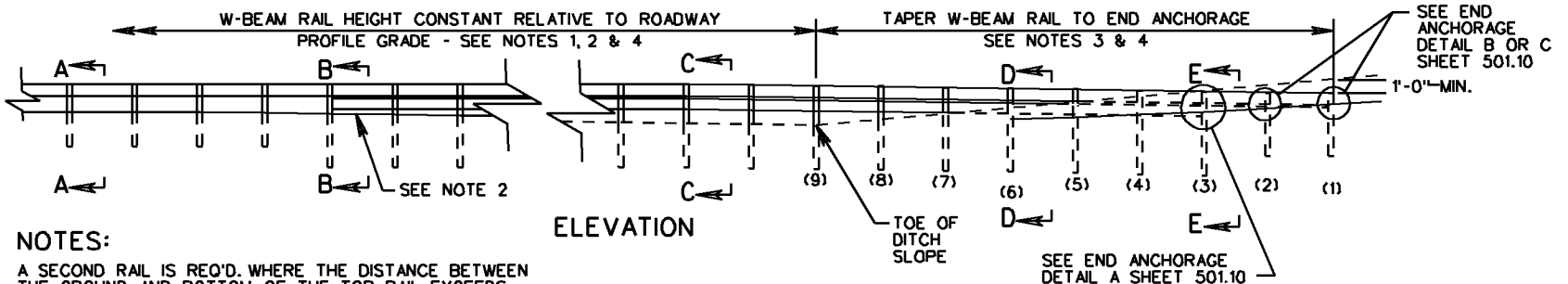
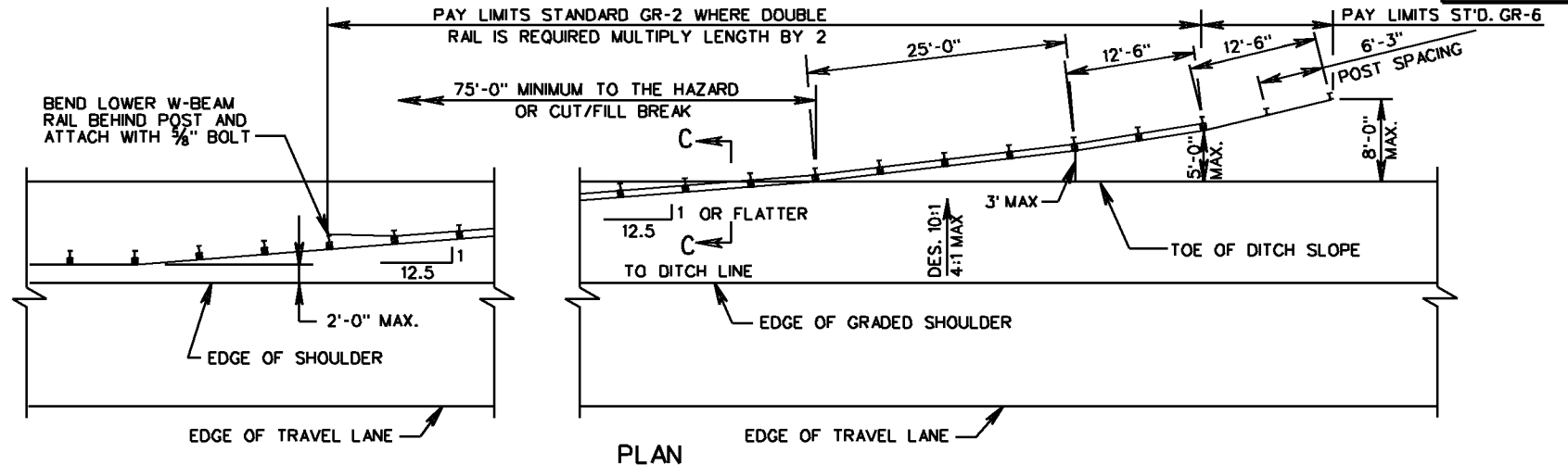
THE GUARDRAIL AND MEDIAN BARRIER COMPONENTS DEPICTED IN ARTBA TECHNICAL BULLETIN NUMBER 268B MAY BE SUBSTITUTED IF INTERCHANGEABLE WITH THE STANDARDS FOR GUARDRAIL (GR) OR MEDIAN BARRIER (MB) AND APPROVED BY THE ENGINEER.

SPECIFICATION REFERENCE
221
505

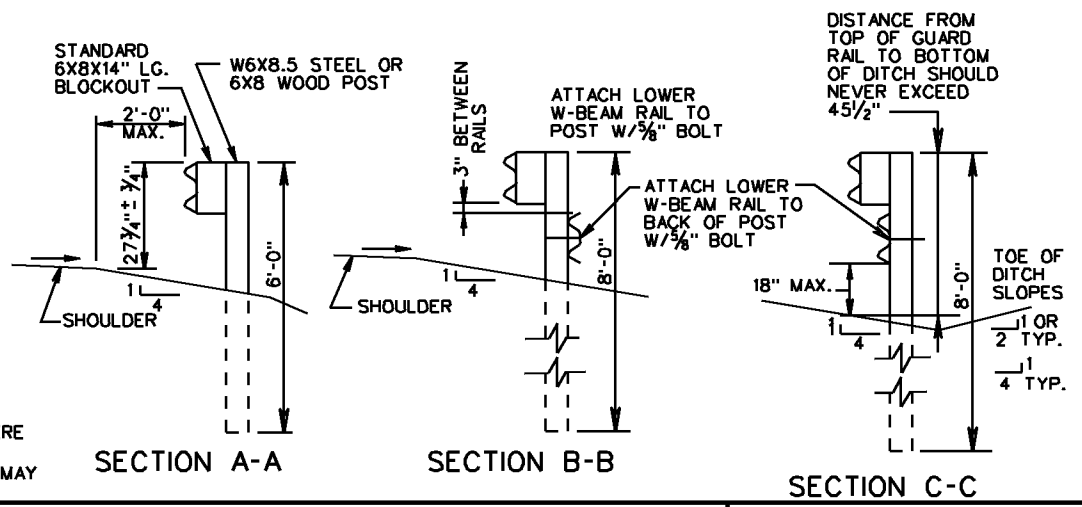
# STANDARD GUARDRAIL HARDWARE

VIRGINIA DEPARTMENT OF TRANSPORTATION

<p>ROAD AND BRIDGE STANDARDS</p>	
REVISION DATE	SHEET 1 OF 3
4/09	501.01

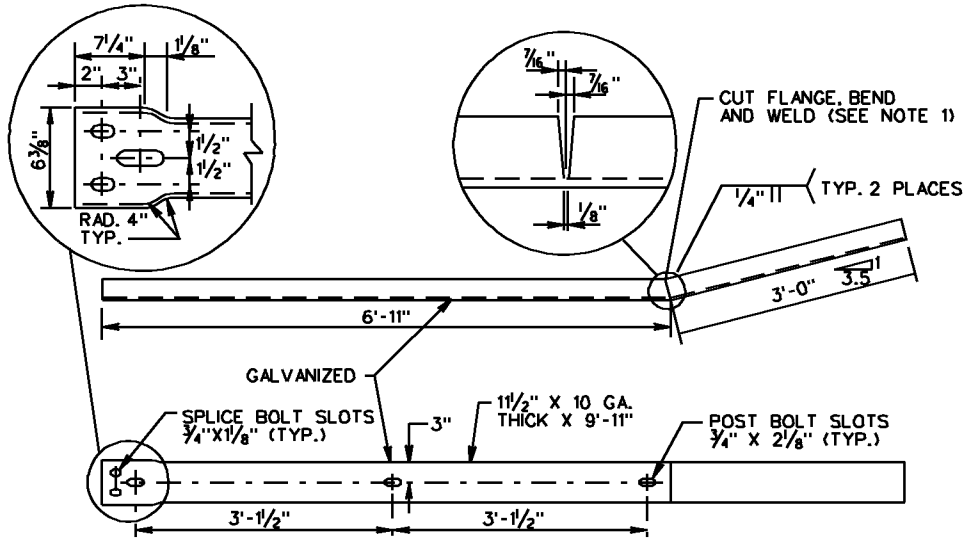


- NOTES:**
1. A SECOND RAIL IS REQ'D. WHERE THE DISTANCE BETWEEN THE GROUND AND BOTTOM OF THE TOP RAIL EXCEEDS 18" (UP TO THE POINT WHERE THE RAIL CROSSES THE DITCH LINE). THE DOUBLE RAIL WILL EXTEND TO POST #3.
  2. MAXIMUM DISTANCE BETWEEN BOTTOM OF THE LOWER W-BEAM RAIL AND GROUND LINE IS 18". WHEN DOUBLE RAIL IS REQ'D., TAPER BOTH W-BEAM RAILS TO MAINTAIN THE 18" DISTANCE FROM THE GROUND.
  3. BOTH W-BEAM RAILS TO BE 1'-0" BELOW FINISHED GRADE AT POST #1 (8'-0" OFFSET).
  4. A 8'-0" LONG POST MUST BE USED WHEN UPPER AND LOWER W-BEAM RAILS ARE REQUIRED. FROM THE BEGINNING OF THE LOWER RAIL THROUGH POST #3.
  5. STANDARD GR-6 TERMINAL TREATMENT MAY BE USED AT THE RUN-ON END OF DIVIDED HIGHWAYS (LEFT AND RIGHT OF TRAFFIC) AND AT THE RUN-ON AND RUN-OFF ENDS ON UNDIVIDED HIGHWAYS.
  6. ALL POST SPACING 6'-3" C-C UNLESS OTHERWISE NOTED. THE POST MAY BE W6 X 8.5 STEEL OR 6 X 8 WOOD EXCEPT THE LAST 3 TERMINAL POSTS MUST BE W6 X 8.5 STEEL.
  7. FOR SECTIONS D-D & E-E, AND END ANCHORAGE DETAILS SEE SHEET 501.10.
  8. ALL TERMINAL RUN-ON OR RUN-OFF MUST BE INSTALLED WITH LAPPING THE RAILS IN THE DIRECTION THAT THE TERMINALS WERE INSTALLED WHEN TESTED TO NCHRP 350 REQUIREMENTS.
  9. IF THE BACKSLOPE IS ROCK AND 1:1 OR STEEPER, THE W-BEAM MAY BE ANCHORED PER SOLID ROCK CUT INSTALLATION (DETAIL F).



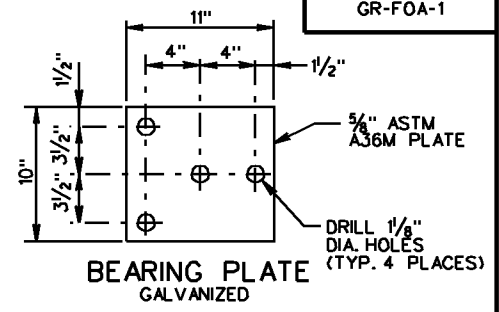
SPECIFICATION REFERENCE	<b>TERMINAL TREATMENT FOR W-BEAM GUARDRAIL</b>	<b>VDOT</b> ROAD AND BRIDGE STANDARDS	
		REVISION DATE 4/09	SHEET 1 OF 2 501.09
221 505	VIRGINIA DEPARTMENT OF TRANSPORTATION		





NOTE:  
CAN BE FIELD CUT AND BENT USING HEAT.  
IF SHOP CUT AND BENT, RIGHT HAND OR LEFT  
HAND MUST BE SPECIFIED DEPENDING ON  
WHICH SIDE OF THE ROADWAY THE TRANSITION  
IS USED.

ITEM 7 DETAIL



☆ CAN BE FIELD CUT AND BENT USING HEAT.

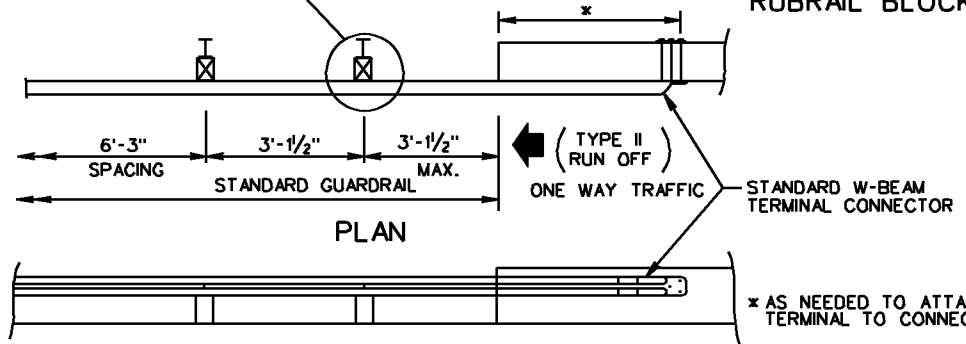
WOOD POSTS  
RUBRAIL BLOCKOUTS  
7" X 4" X THICKNESS

STEEL POSTS  
RUBRAIL BLOCKOUTS  
7" X 4" X THICKNESS

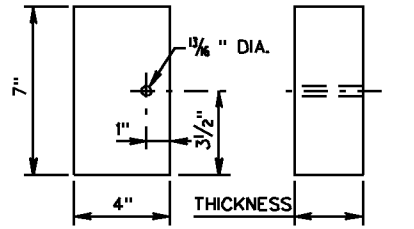
POST	THICKNESS
1	6 7/8"
2	4 5/8"
3	3 3/4"
4	1 3/4"

POST	THICKNESS
1	5 3/4"
2	4 1/4"
3	2 7/8"
4	1 3/8"

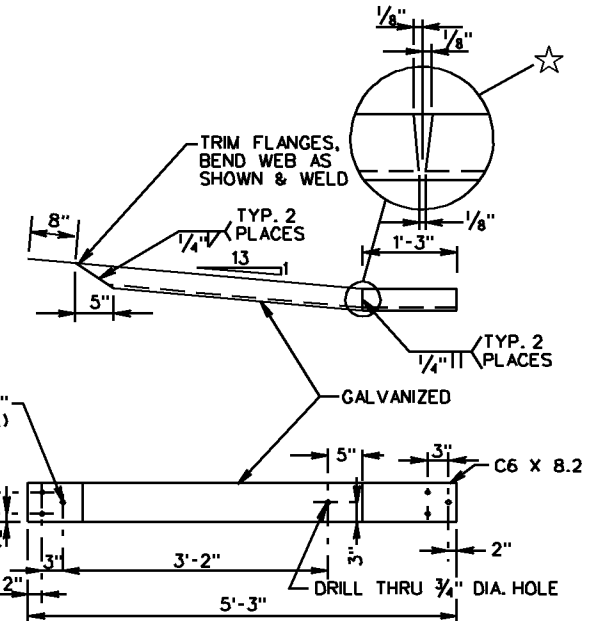
INDICATES EXTRA POST REQ'D FOR  
RUN-OFF FIXED OBJECT ATTACHMENT  
ST'D. GR-FOA-1 TYPE II



ELEVATION



RUBRAIL BLOCKOUT DETAIL



ITEM 8 DETAIL

SPECIFICATION REFERENCE	505	<p><b>W-BEAM GUARDRAIL - FIXED OBJECT ATTACHMENT</b> (RUBRAIL AND HARDWARE DETAILS)</p> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	<p><b>VDOT</b> ROAD AND BRIDGE STANDARDS</p>	
			REVISION DATE	SHEET 3 OF 3
			4/09	501.27

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CF-1	CONTROLLER CABINET FOUNDATION AND CONDUIT	1301.10
CF-2	CONTROLLER CENTER CABINET FOUNDATION AND CABINET	1301.20
CF-3	CONTROLLER CABINET FOUNDATION AND CABINET	1301.30
MP-1	SIGNAL POLE DETAILS	1302.10
MP-2	SIGNAL POLE DETAILS	1302.20
PF-2	PEDESTAL POLE AND FOUNDATION	1302.30
SW-1	SIGNAL HEAD MOUNTING DETAILS	1303.10
SW-2	SIGNAL HEAD MOUNTING DETAILS	1303.20
SM-3	SIGNAL HEAD MOUNTING DETAILS	1303.30
SMB-1,2,3	SIGNAL HEAD MOUNTING DETAILS	1303.40
TA-1	TETHER WIRE DETAILS	1304.10
SMD-1,2	SIGN MOUNTING DETAILS	1305.10
WD-1	STEEL SIGNAL POLE WIRING AND RIGGING	1306.10
WD-2	WOOD POLE WIRING AND RIGGING	1306.20
PA-1,2,3	PEDESTRIAN ACTUATION	1307.10
SPD-5,6,7,8,9	PEDESTRIAN SIGNAL INDICATION	1308.10
FB-2	FLASHING BEACON	1309.10
PF-1	SIGNAL POLE FOUNDATION	1310.10
PF-8	SIGNAL POLE FOUNDATION	1310.11
LF-1	LIGHTING POLE FOUNDATION	1310.20
LP-1,2	LIGHTING POLE	1311.10
LP-3	HIGH MAST LIGHT POLE	1311.20
SE-1	ELECTRICAL SERVICE	1312.10
SE-2	ELECTRICAL SERVICE	1312.20
SE-3	ELECTRICAL SERVICE	1312.30
SE-4	ELECTRICAL SERVICE	1312.40
SE-5	ELECTRICAL SERVICE	1312.50
SE-6	ELECTRICAL SERVICE	1312.60
SE-7	ELECTRICAL SERVICE	1312.70
SE-8	ELECTRICAL SERVICE	1312.80
SE-9	ELECTRICAL SERVICE	1312.90
SE-10	ELECTRICAL SERVICE	1313.10
SE-11	ELECTRICAL SERVICE	1313.20
CCW-1	CONTROL CENTER WIRING	1314.10
TD-1A,B,C	LOOP DETECTOR	1315.10
TS-1	TYPICAL ONE-WAY BRIDGE SIGNAL	1316.10

INDEX OF SHEETS  
SECTION 1300-TRAFFIC CONTROL

VIRGINIA DEPARTMENT OF TRANSPORTATION



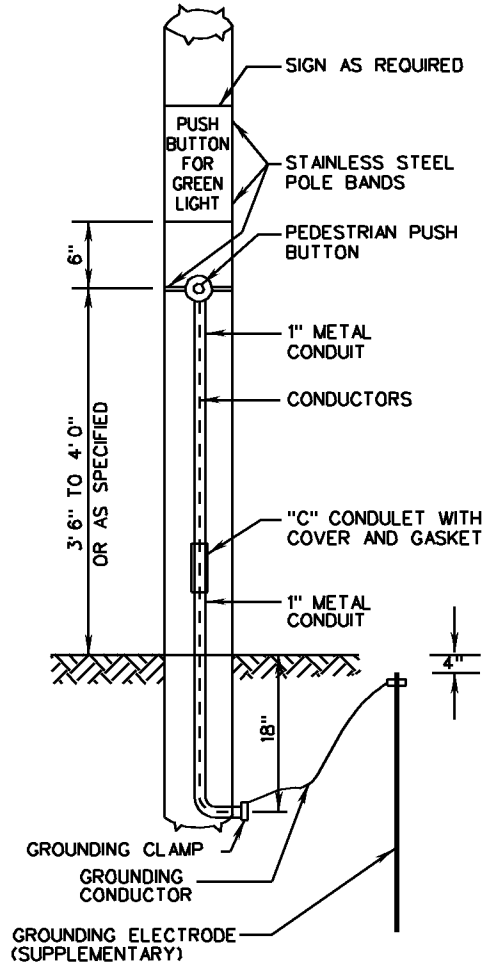
ROAD AND BRIDGE STANDARDS

REVISION DATE

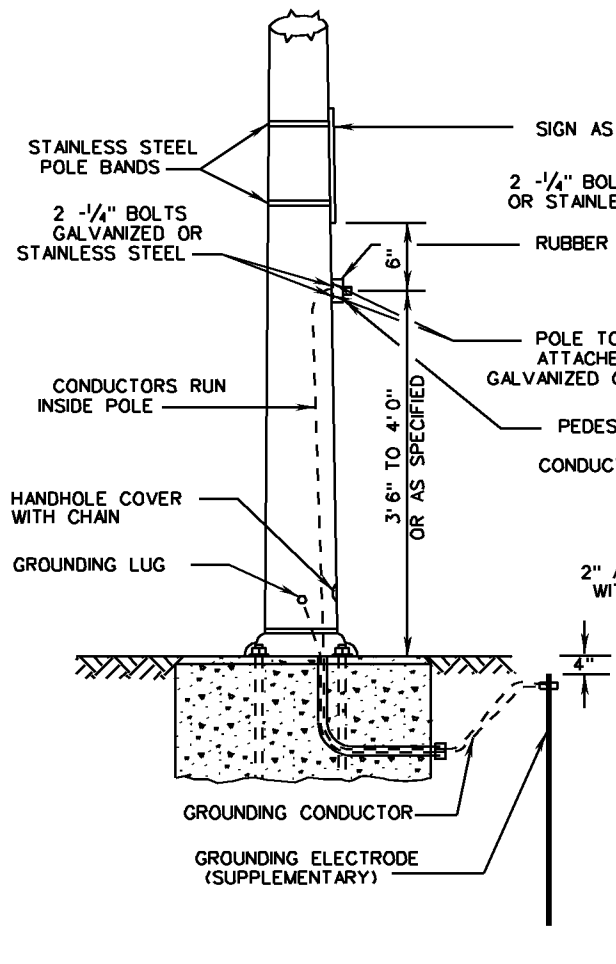
SHEET 1 OF 2

04/09

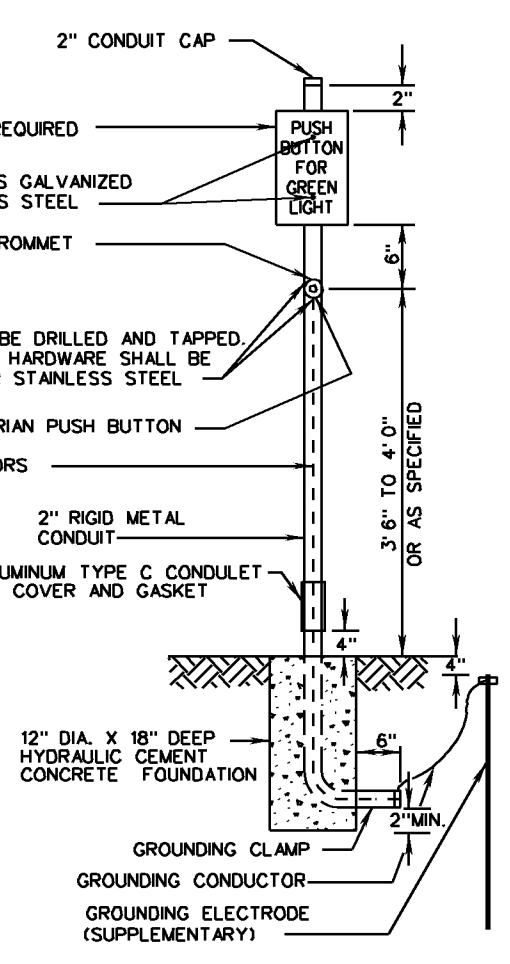
1300.01



PA-1  
WOOD/CONCRETE POLE



PA-2  
SIGNAL/PEDESTAL POLE

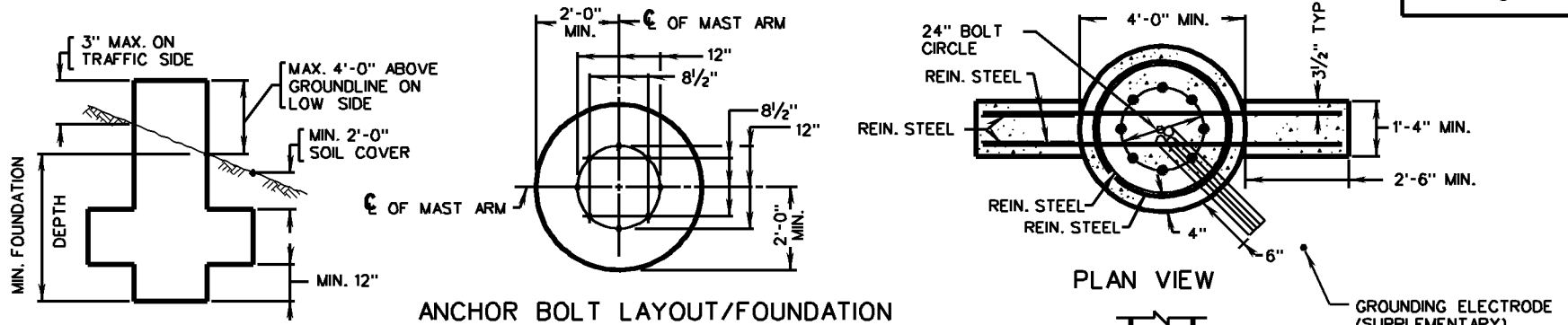


PA-3  
METAL

NOTE:

REFER TO STANDARD MP-2 FOR GROUNDING LUG DETAIL.

<p>SPECIFICATION REFERENCE</p> <p>700 703</p>	<p><b>PEDESTRAIN ACTUATION</b></p> <p><b>DETAILS</b></p> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	<p><b>VDOT</b></p> <p>ROAD AND BRIDGE STANDARDS</p> <p>REVISION DATE 4/09</p> <p>SHEET 1 OF 1</p> <p>1307.10</p>
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ANCHOR BOLT LAYOUT/FOUNDATION

**NOTES:**

ANCHOR BOLTS SHALL HAVE A THREADED PLATE OR A PLATE WITH NUT AND WASHER ON THE END OF BOLT EMBEDDED IN FOUNDATION.

ANCHOR BOLT LAYOUT SHALL BE CHECKED AGAINST LATEST APPROVED STRUCTURE DRAWINGS. WHEN EIGHT ANCHOR BOLTS ARE REQUIRED, MINIMUM OF 5'-0" AND 7'-6" EMBEDMENT LENGTHS SHALL BE USED ALTERNATING IN BOLT CIRCLE.

MINIMUM REINFORCEMENT SHOWN, DESIGNER SHALL VERIFY.

ALL CONDUITS AS SPECIFIED ON PLANS. IN ADDITION 1" CONDUIT REQUIRED FOR GROUNDING CONDUCTOR, 2 - 2" PVC CONDUITS REQUIRED FOR FUTURE USE. NOTE THAT ADDITIONAL SPARE CONDUITS MAY BE REQUIRED BY PLANS.

BOLT PROJECTION AS REQUIRED BY SIGNAL POLE MANUFACTURER; HOWEVER, DISTANCE BETWEEN BOTTOM OF BASE PLATE AND TOP OF PEDESTAL SHALL BE NO GREATER THAN THE DIAMETER OF ANCHOR BOLT PLUS ONE INCH.

SQUARE OR HEX NUTS UNDER BASE SERVE AS A MEANS OF LEVELING OR RAKING POLE.

WINGS SHALL BE USED FOR TORSIONAL RESISTANCE.

ANCHOR BOLTS AND BOLT PATTERN SHALL BE FURNISHED WITH POLE. POLE SHALL BE CENTERED ON FOUNDATION.

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 MARKING.

WHEN FOUNDATION EXTENDS 4" ABOVE FINISHED GRADE ALL EDGES SHALL BE CHAMFERED 3/4" AND FOR SIDEWALKS SHALL BE FLUSH.

GROUNDING BUSHINGS SHALL BE INSTALLED ON EACH END OF METAL CONDUITS.

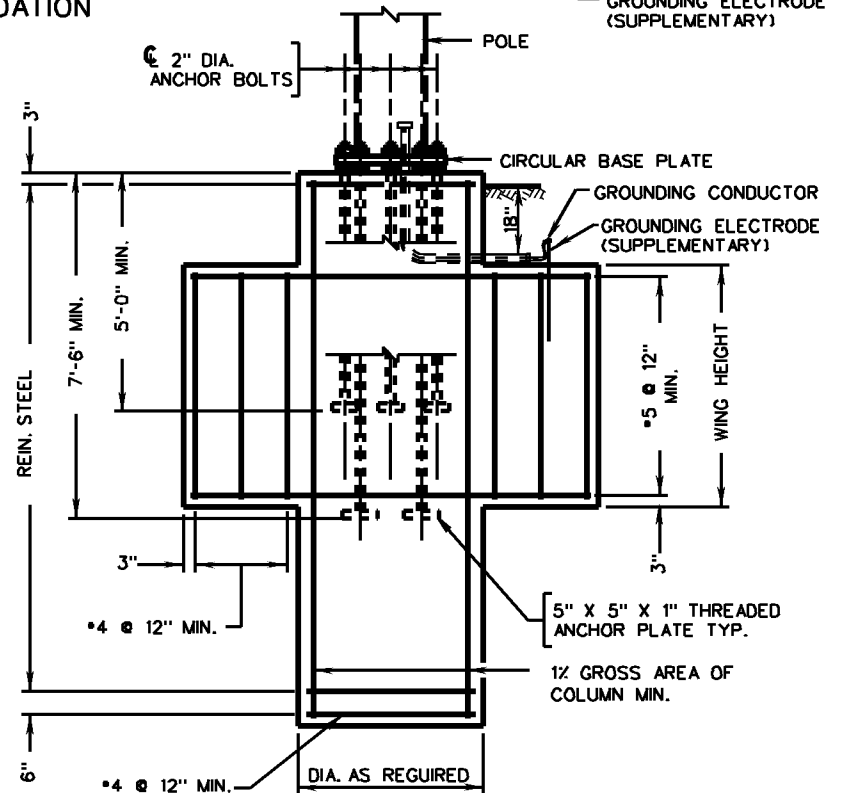
EMPTY CONDUITS SHALL BE PLUGGED TO PREVENT MOISTURE AND RODENT ENTRY.

BELL ENDS SHALL BE INSTALLED ON EACH END OF PVC CONDUITS.

OPEN ENDS OF CONDUITS WITH CONDUCTORS INSTALLED SHALL BE SEALED WITH AN APPROVED SOFT, PLIABLE, AND EASILY REMOVABLE WATERPROOF SEALANT. THE SEALANT SHALL NOT HAVE A DELETERIOUS EFFECT ON CABLE COVERINGS.

NO MORTAR, GROUT, OR CONCRETE SHALL BE PLACED BETWEEN BOTTOM OF BASE PLATE AND TOP OF FOUNDATION.

HEIGHT, WIDTH, AND DEPTH OF FOUNDATION SHALL BE AS REQUIRED BY FOUNDATION DESIGNER



ELEVATION



CAGE REINFORCING STEEL

SPECIFICATION REFERENCE	700	<h2 style="text-align: center;">SIGNAL POLE FOUNDATION</h2> <h3 style="text-align: center;">INSTALLATION DETAILS</h3> <p style="text-align: center;">VIRGINIA DEPARTMENT OF TRANSPORTATION</p>		<p>ROAD AND BRIDGE STANDARDS</p>	
				REVISION DATE	SHEET 1 OF 1
				NEW 04/09	1310.11

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ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

1310.12

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION  
REFERENCE

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.

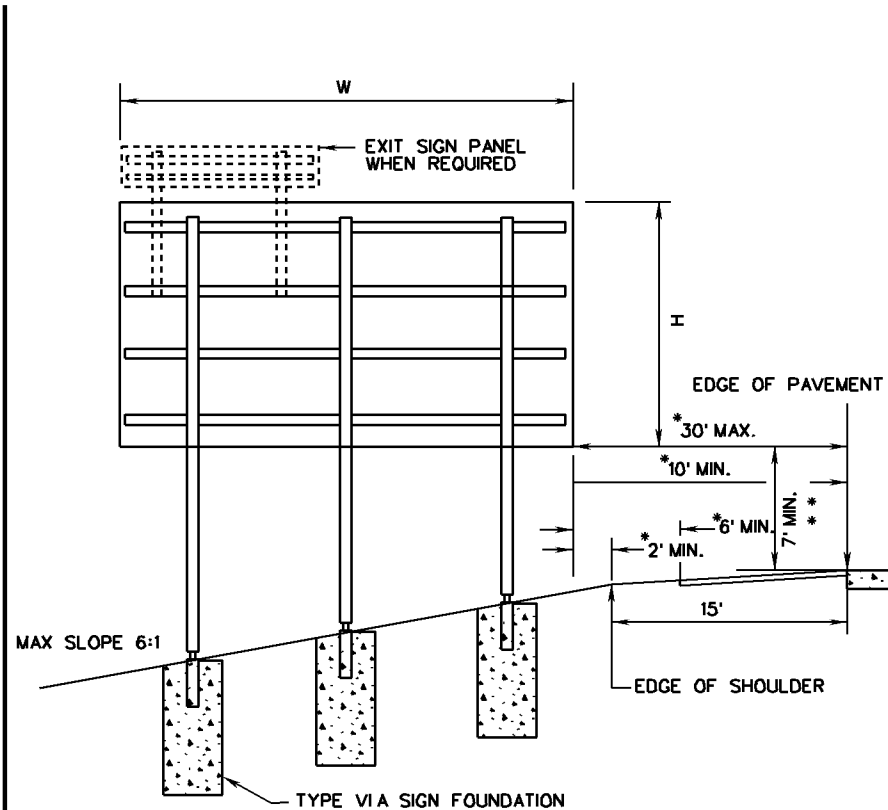
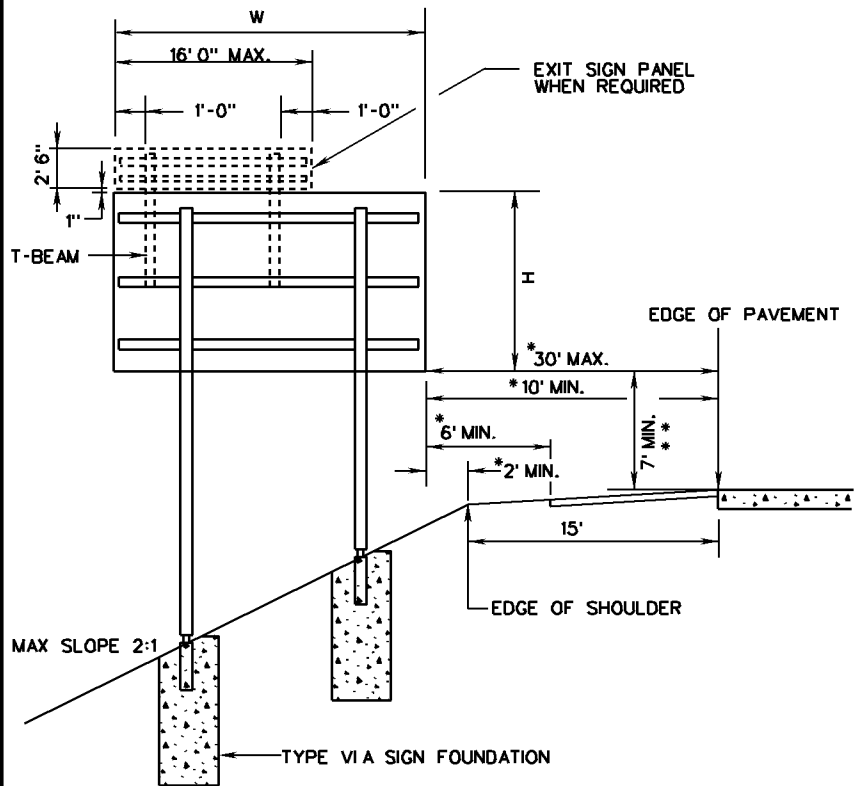
\*\* IN CUT SLOPES, THE MINIMUM CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND THE GROUND SHALL BE 7'-0" FOR ANY PORTION OF THE SIGN WITHIN THE CLEAR ZONE. THIS REQUIREMENT WILL NOT APPLY TO SIGNS OR PORTIONS OF SIGNS LOCATED MORE THAN 10'-0" UP A SLOPE GREATER THAN 3:1.

SIGN PANEL SHALL BE DESIGNED IN ACCORDANCE WITH SPD-2, SPD-3 OR SPD-7

THE VERTICAL T-BEAM SHALL BE 2"W X 2"D X 1/4" THICK STRUCTURAL ALUMINUM ALLOY 6061-T6 AT A MINIMUM LENGTH OF 6'-0" AND EXTENDED TO THE NEXT HORIZONTAL SUPPORT BAR ON THE SSP-VIA STRUCTURE

THE T-BEAM SHALL BE ATTACHED TO THE SSP-VIA STRUCTURE BY THE FOLLOWING METHODS:

1. T-BEAM FOR THE SPD-2 SIGN PANEL SHALL BE ATTACHED BY USING POST CLIP BOLTS A MINIMUM OF TWO AT EACH CROSS MEMBER.
2. T-BEAM FOR THE SPD-3 SIGN PANEL SHALL BE ATTACHED BY USING TWO ASTM F593, ALLOY 304 STAINLESS STEEL 3/8" DIAMETER-16 UNC BOLT WITH STAINLESS STEEL NUT AND FLAT WASHER AT ZEE BAR CONNECTIONS AND TWO POST CLAMP AND BOLT AT EACH TEE-BAR CONNECTION.
3. T-BEAM FOR THE SPD-7 SIGN PANEL SHALL BE ATTACHED BY USING POST CLAMP AND POST CLAMP BOLTS, A MINIMUM OF TWO AT EACH STIFFENER.



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 10

REVISION DATE

1323.10

4/09

# INTERSTATE SIGN STRUCTURE

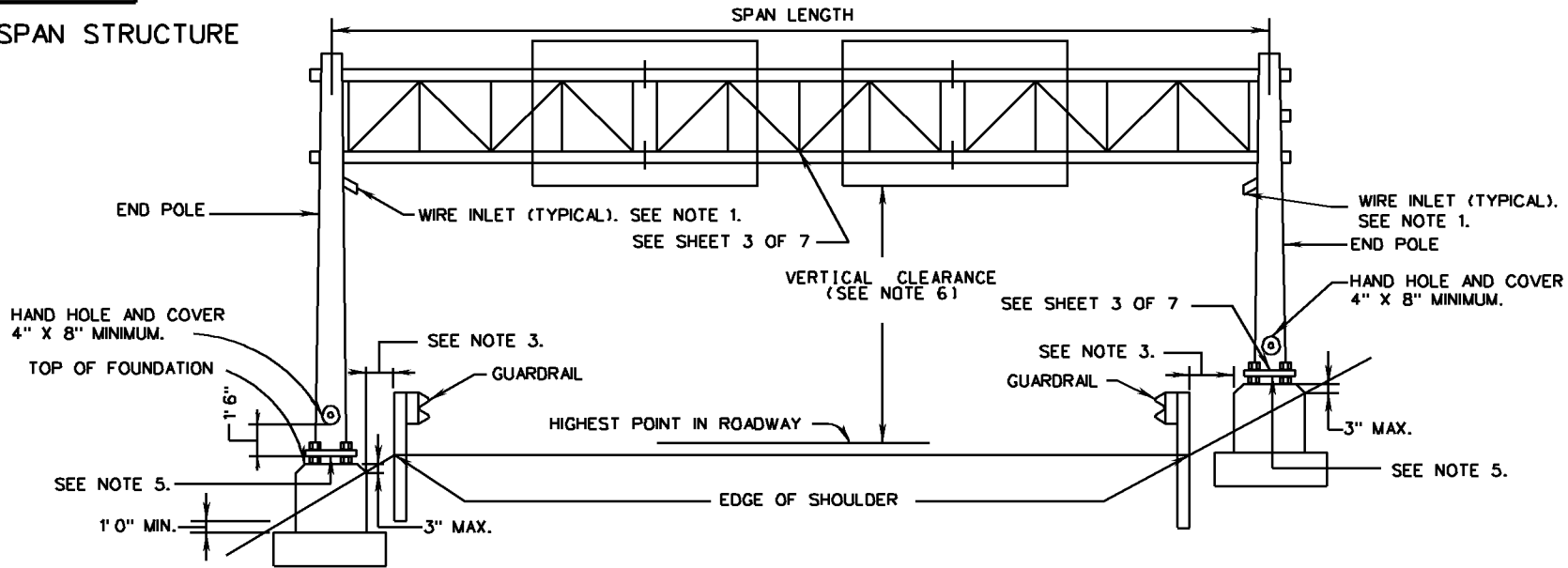
## INSTALLATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

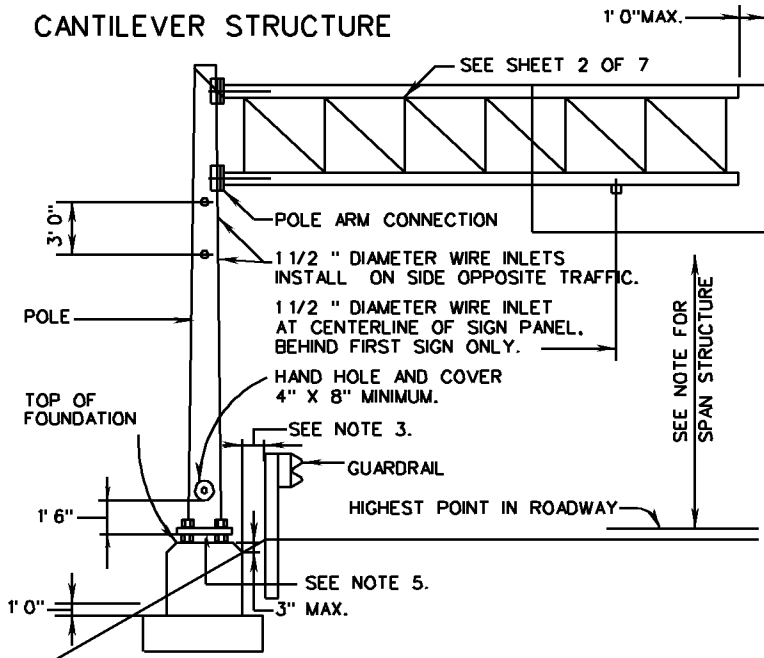
SPECIFICATION REFERENCE

700

SPAN STRUCTURE



CANTILEVER STRUCTURE



NOTES:

1. 1 1/2" 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 GUARDRAIL STANDARDS.
4. NO MORTAR, GROUT, OR CONCRETE SHALL BE PLACED BETWEEN BOTTOM OF BASE PLATE AND TOP OF PEDESTAL.
5. THE MAXIMUM SPACE BETWEEN THE BOTTOM OF THE BASE PLATE AND THE TOP OF THE FOUNDATION SHALL BE NO MORE THAN THE DIAMETER OF THE ANCHOR BOLT PLUS ONE INCH.
6. VERTICAL CLEARANCE FOR OVERHEAD AND BRIDGE MOUNTED SIGN STRUCTURES SHALL BE NO LESS THAN 19 FEET 0 INCH AND NO MORE THAN 21 FEET 0 INCH FROM THE BOTTOM OF THE LOWEST MOUNTED SIGN PANEL TO THE CROWN OF THE ROADWAY, UNLESS OTHERWISE SPECIFIED ON THE PLANS. LUMINAIRE ASSEMBLIES SHALL HAVE A VERTICAL CLEARANCE OF NO LESS THAN 17 FEET SIX INCHES FROM THE BOTTOM OF THE ASSEMBLY TO THE CROWN OF THE ROADWAY.



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 7

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1324.10

04/09

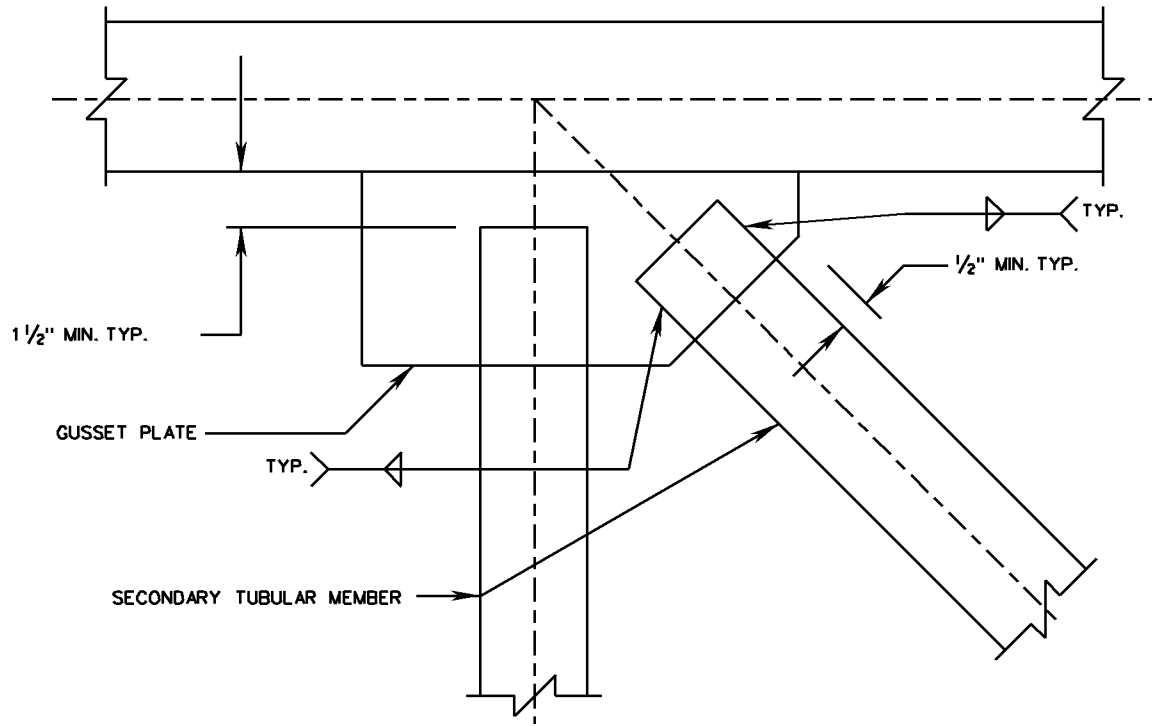
OVERHEAD SIGN STRUCTURE

TYPICAL DETAILS

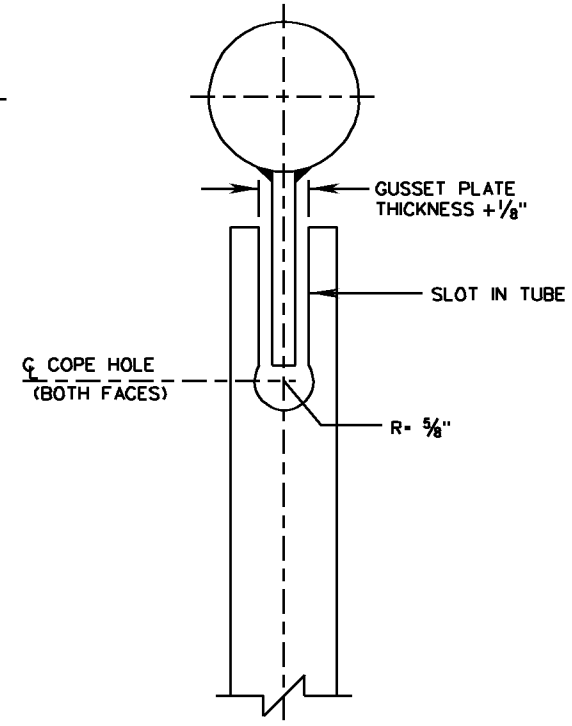
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

700



TYPICAL GUSSET PLATE CONNECTION



SECTION VIEW

NOTES:

1. ALL SECONDARY MEMBERS IN BOTH TUBULAR AND NON-TUBULAR STRUCTURES IN THE OVERHEAD TRUSS AND THE END POLE SUPPORTS SHALL BE JOINED TO PRIMARY MEMBERS USING A GUSSET CONNECTION PLATE.
2. CONTRACTOR SHALL SPECIFY THE WIDTH, LENGTH, AND THICKNESS OF GUSSET PLATE.
3. CONTRACTOR SHALL SPECIFY THE MINIMUM WELD SIZE AND LENGTH OF WELD.
4. COPE HOLES TO BE PROVIDED AT BOTH ENDS AND BOTH FACES OF ALL SECONDARY MEMBER CONNECTIONS.



ROAD AND BRIDGE STANDARDS

SHEET 3 OF 7

REVISION DATE

1324.12

4/09

# OVERHEAD SIGN STRUCTURE

## GUSSET PLATE CONNECTION

VIRGINIA DEPARTMENT OF TRANSPORTATION

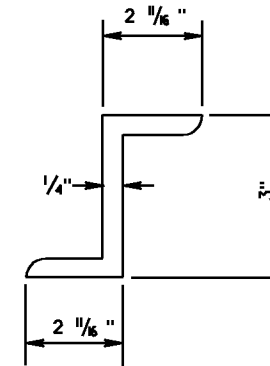
SPECIFICATION REFERENCE

700



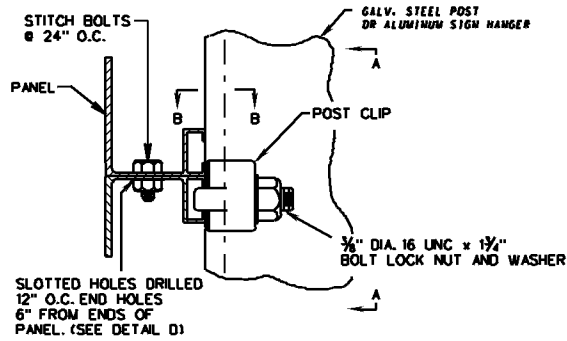
SIGN PANEL DIMENSIONS					ZEE BAR	SIGN PANEL DIMENSIONS					ZEE BAR
W	H	c	d	NO.		W	H	c	d	NO.	
12'	4'	14"	20"	2		26'	10'	18"	3'-6"	3	
11'	5'	16"	28"	2		28'	10'	18"	3'-6"	3	
10'	6'	12"	4'-0"	2		30'	10'	18"	3'-6"	3	
12'	6'	12"	4'-0"	2		10'	9'	18"	3'-0"	3	
14'	6'	12"	4'-0"	2		12'	9'	18"	3'-0"	3	
16'	6'	12"	4'-0"	2		14'	9'	18"	3'-0"	3	
18'	6'	12"	4'-0"	2		16'	9'	18"	3'-0"	3	
20'	6'	12"	4'-0"	2		18'	9'	18"	3'-0"	3	
22'	6'	12"	4'-0"	2		20'	9'	18"	3'-0"	3	
24'	6'	12"	4'-0"	2		22'	9'	18"	3'-0"	3	
26'	6'	12"	4'-0"	2		24'	9'	18"	3'-0"	3	
28'	6'	12"	4'-0"	2		26'	9'	18"	3'-0"	3	
30'	6'	12"	4'-0"	2		28'	9'	18"	3'-0"	3	
10'	8'	12"	3'-0"	3		30'	9'	18"	3'-0"	3	
12'	8'	12"	3'-0"	3		12'	12'	18"	3'-0"	4	
14'	8'	12"	3'-0"	3		14'	12'	18"	3'-0"	4	
16'	8'	12"	3'-0"	3		16'	12'	18"	3'-0"	4	
18'	8'	12"	3'-0"	3		18'	12'	18"	3'-0"	4	
20'	8'	12"	3'-0"	3		20'	12'	21"	4'-3"	3	
22'	8'	12"	3'-0"	3		22'	12'	21"	4'-3"	3	
24'	8'	12"	3'-0"	3		24'	12'	21"	4'-3"	3	
26'	8'	12"	3'-0"	3		26'	12'	21"	4'-3"	3	
28'	8'	12"	3'-0"	3		28'	12'	21"	4'-3"	3	
30'	8'	12"	3'-0"	3		30'	12'	21"	4'-3"	3	
10'	10'	18"	3'-6"	3		14'	14'	18"	3'-8"	4	
12'	10'	18"	3'-6"	3		16'	14'	18"	3'-8"	4	
14'	10'	18"	3'-6"	3		18'	14'	18"	3'-8"	4	
16'	10'	18"	3'-6"	3		20'	14'	18"	3'-8"	4	
18'	10'	18"	3'-6"	3		22'	14'	18"	3'-8"	4	
20'	10'	18"	3'-6"	3		24'	14'	18"	3'-8"	4	
22'	10'	18"	3'-6"	3		26'	14'	18"	3'-8"	4	
24'	10'	18"	3'-6"	3		28'	14'	18"	3'-8"	4	

SIGN PANEL DIMENSIONS					ZEE BAR
W	H	c	d	NO.	
30'	14'	18"	3'-8"	4	
16'	16'	18"	3'-3"	5	
18'	16'	18"	3'-3"	5	
20'	16'	18"	3'-3"	5	
22'	16'	18"	3'-3"	5	
24'	16'	18"	3'-3"	5	
26'	16'	18"	3'-3"	5	
28'	16'	18"	3'-3"	5	
30'	16'	18"	3'-3"	5	
VARIES	2'-6'	9"	12"	2	

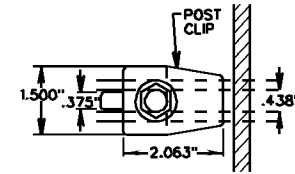
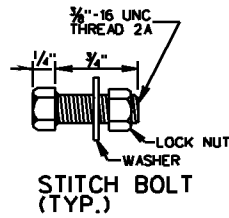


ZEE BAR

**SIGN PANEL DESIGN**

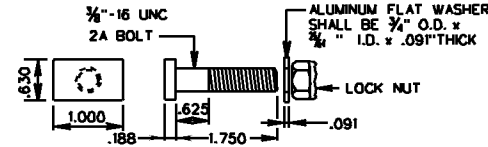


SIGN PANEL ASSEMBLY

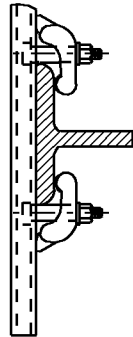


SECTION A-A

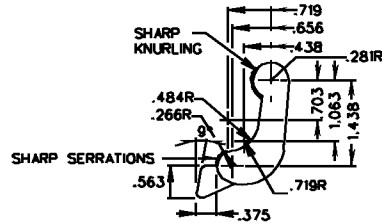
SLOTTED HOLES DRILLED  
12" O.C. END HOLES  
6" FROM ENDS OF  
PANEL. (SEE DETAIL D)



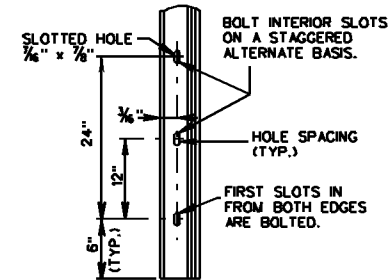
POST CLIP BOLT  
(TYP.)



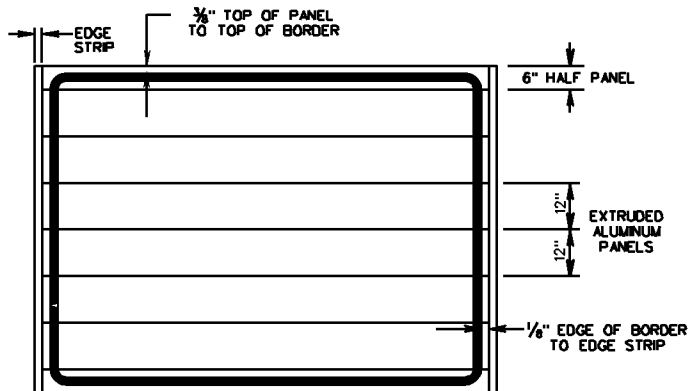
SECTION B-B



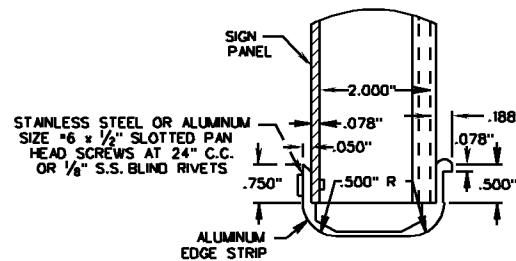
POST CLIP  
(TYP.)



DETAIL D



BORDER DETAIL



DETAIL OF EDGE STRIP

**NOTE:**

EDGE STRIP SHALL BE PLACED ON BOTH SIDES OF ALL EXTRUDED PANEL SIGNS.

DOUBLE POST CLIPS SHALL BE INSTALLED ON ALL SIGN HANGERS.

ALL SIGN PANELS INSTALLED ON OVERHEAD SIGN STRUCTURES SHALL BE BOLTED DIRECTLY TO THE SIGN HANGER MEMBERS AT THE BOTTOM AND TOP ROW AND POST CLIPS SHALL BE USED AT ALL OTHER MOUNTING POINTS.



ROAD AND BRIDGE STANDARDS

SHEET 2 OF 2

REVISION DATE

1325.21

4/09

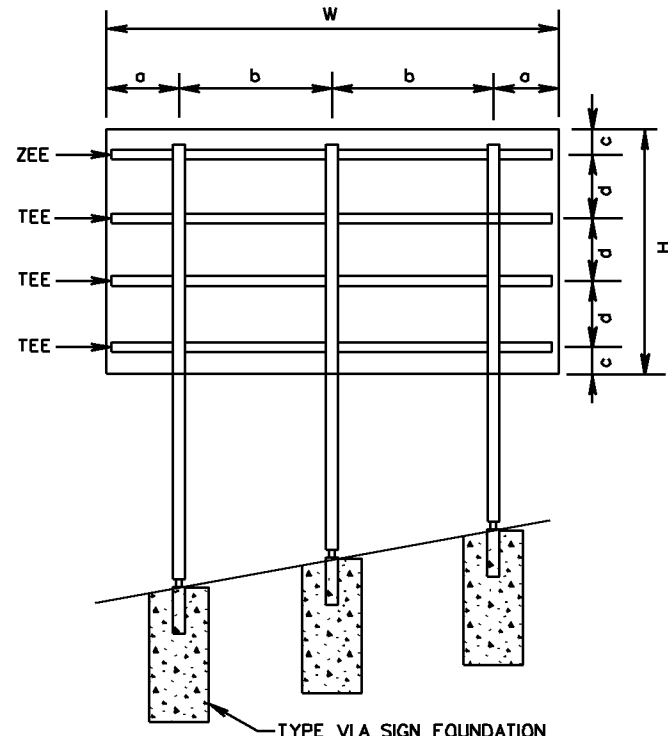
EXTRUDED SIGN PANEL DESIGN

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

701

SIGN PANEL DIMENSIONS		SIGN PANEL ATTACHMENT DETAILS								SIGN PANEL DIMENSIONS		SIGN PANEL ATTACHMENT DETAILS											
		a	b	c	d	ZEE BAR		TEE				CLAMPS		a	b	c	d	ZEE BAR		TEE		CLAMPS	
						NO.	SIZE	NO.	NO.			NO.	SIZE					NO.	NO.	NO.	SIZE	NO.	NO.
24'	10'	5'-4"	13'-4"	18"	3'-6"	3	D	0	0	28'	14'	4'-2"	9'-10"	18"	3'-8"	1	B	3	18				
26'	10'	5'-10"	14'-4"	18"	3'-6"	3	D	0	0	30'	14'	4'-6"	10'-6"	18"	3'-8"	1	B	3	18				
28'	10'	6'-3"	15'-6"	18"	3'-6"	3	D	0	0	16'	16'	3'-6"	9'-0"	18"	3'-3"	1	B	4	16				
30'	10'	7'-3"	15'-6"	18"	3'-6"	3	D	0	0	18'	16'	4'-0"	10'-0"	18"	3'-3"	1	B	4	16				
10'	9'	1'-0"	8'-0"	18"	3'-0"	1	B	2	8	20'	16'	2'-0"	8'-0"	18"	3'-3"	1	B	4	24				
12'	9'	2'-0"	8'-0"	18"	3'-0"	1	B	2	8	22'	16'	3'-0"	8'-0"	18"	3'-3"	1	B	4	24				
14'	9'	3'-0"	8'-0"	18"	3'-0"	1	B	2	8	24'	16'	3'-7"	8'-5"	18"	3'-3"	1	B	4	24				
16'	9'	3'-6"	9'-0"	18"	3'-0"	3	C	0	0	26'	16'	3'-10"	9'-2"	18"	3'-3"	1	B	4	24				
18'	9'	4'-0"	10'-0"	18"	3'-0"	3	C	0	0	28'	16'	4'-2"	9'-10"	18"	3'-3"	1	B	4	24				
20'	9'	4'-6"	11'-0"	18"	3'-0"	3	C	0	0	30'	16'	4'-6"	10'-6"	18"	3'-3"	1	B	4	24				
22'	9'	4'-10"	12'-4"	18"	3'-0"	3	D	0	0	VARIES	2'-6"	-	-	9"	12"	2	B	-	-				
24'	9'	5'-4"	13'-4"	18"	3'-0"	3	D	0	0														
26'	9'	5'-10"	14'-4"	18"	3'-0"	3	D	0	0														
28'	9'	6'-10"	14'-4"	18"	3'-0"	3	D	0	0														
30'	9'	7'-10"	14'-4"	18"	3'-0"	3	D	0	0														
12'	12'	2'-0"	8'-0"	18"	3'-0"	1	B	3	12														
14'	12'	3'-0"	8'-0"	18"	3'-0"	1	B	3	12														
16'	12'	3'-6"	9'-0"	18"	3'-0"	1	B	3	12														
18'	12'	4'-0"	10'-0"	18"	3'-0"	1	B	3	12														
20'	12'	4'-6"	11'-0"	21"	4'-3"	3	B	0	0														
22'	12'	4'-10"	12'-4"	21"	4'-3"	3	C	0	0														
24'	12'	5'-4"	13'-4"	21"	4'-3"	3	C	0	0														
26'	12'	3'-10"	9'-2"	21"	4'-3"	1	B	2	12														
28'	12'	4'-2"	9'-10"	21"	4'-3"	1	B	2	12														
30'	12'	4'-6"	10'-6"	21"	4'-3"	1	B	2	12														
14'	14'	3'-0"	8'-0"	18"	3'-8"	1	B	3	12														
16'	14'	3'-6"	9'-0"	18"	3'-8"	1	B	3	12														
18'	14'	4'-0"	10'-0"	18"	3'-8"	1	B	3	12														
20'	14'	4'-6"	11'-0"	18"	3'-8"	1	B	3	12														
22'	14'	3'-0"	8'-0"	18"	3'-8"	1	B	3	18														
24'	14'	3'-7"	8'-5"	18"	3'-8"	1	B	3	18														
26'	14'	3'-10"	9'-2"	18"	3'-8"	1	B	3	18														



SIGN PANEL DIMENSIONS		SIGN PANEL ATTACHMENT DETAILS						SIGN PANEL DIMENSIONS		SIGN PANEL ATTACHMENT DETAILS						SPD-7	
		a	b	c	d	STIFFENER				a	b	c	d	STIFFENER			
W	H					NO.	SIZE	W	H					NO.	SIZE		
12'	4'	2'-0"	8'-0"	11 1/2"	2'-1"	2	LARGE	12'	10'	2'-0"	8'-0"	4"	2'-4"	5	LARGE		
11'	5'	1'-6"	8'-0"	1 1/2"	2'-0"	3	LARGE	14'	10'	2'-10"	8'-5"	6"	3'-0"	4	LARGE		
10'	6'	1'-0"	8'-0"	4"	1'-8"	4	LARGE	16'	10'	3'-2"	9'-7"	4"	2'-4"	5	LARGE		
12'	6'	2'-0"	8'-0"	11"	1'-8"	4	LARGE	18'	10'	3'-7"	10'-10"	0	1'-8"	7	LARGE		
14'	6'	2'-10"	8'-5"	0	3'-0"	3	LARGE	20'	10'	4'-0"	12'-0"	4"	1'-4"	8	LARGE		
16'	6'	3'-2"	9'-7"	0"	3'-0"	3	LARGE	22'	10'	4'-5"	13'-2"	4"	1'-2"	9	LARGE		
18'	6'	3'-7"	10'-10"	6"	1'-8"	4	LARGE	24'	10'	4'-10"	14'-5"	5"	10"	12	LARGE		
20'	6'	4'-0"	12'-0"	4"	1'-4"	5	LARGE	26'	10'	5'-2"	15'-7"	0	8"	16	LARGE		
22'	6'	4'-5"	13'-2"	1"	1'-2"	6	LARGE	10'	9'	1'-0"	8'-0"	4"	1'-8"	6	LARGE		
24'	6'	4'-10"	14'-5"	3"	11"	7	LARGE	12'	9'	2'-0"	8'-0"	4"	2'-1"	5	LARGE		
26'	6'	5'-2"	15'-7"	0"	8"	10	LARGE	14'	9'	2'-10"	8'-5"	0	3'-0"	4	LARGE		
10'	8'	1'-0"	8'-0"	8"	1'-8"	5	LARGE	16'	9'	3'-2"	9'-7"	1'-0"	2'-4"	4	LARGE		
12'	8'	2'-0"	8'-0"	6"	2'-4"	4	LARGE	18'	9'	3'-7"	10'-10"	4"	1'-8"	6	LARGE		
14'	8'	2'-10"	8'-5"	1'-0"	3'-0"	3	LARGE	20'	9'	4'-0"	12'-0"	0	1'-6"	7	LARGE		
16'	8'	3'-2"	9'-7"	6"	2'-4"	4	LARGE	22'	9'	4'-5"	13'-2"	5"	1'-2"	8	LARGE		
18'	8'	3'-7"	10'-10"	3"	1'-6"	6	LARGE	22'	9'	4'-5"	13'-2"	5"	1'-2"	8	LARGE		
20'	8'	4'-0"	12'-0"	3"	1'-6"	6	LARGE	24'	9'	4'-10"	14'-5"	4"	10"	11	LARGE		
22'	8'	4'-5"	13'-2"	6"	12"	8	LARGE	26'	9'	5'-2"	15'-7"	2"	8"	14	LARGE		
24'	8'	4'-10"	14'-5"	3"	9"	11	LARGE	12'	12'	2'-0"	8'-0"	2"	2'-1"	6	LARGE		
26'	8'	5'-2"	15'-7"	0"	8"	13	LARGE	14'	12'	2'-10"	8'-5"	0	3'-0"	5	LARGE		
10'	8'	1'-0"	8'-0"	8"	1'-8"	5	LARGE	16'	12'	3'-2"	9'-7"	2"	2'-4"	6	LARGE		
12'	8'	2'-0"	8'-0"	6"	2'-4"	4	LARGE	18'	12'	3'-7"	10'-10"	2"	1'-8"	8	LARGE		
14'	8'	2'-10"	8'-5"	1'-0"	3'-0"	3	LARGE	20'	12'	4'-0"	12'-0"	8"	1'-4"	9	LARGE		
16'	8'	3'-2"	9'-7"	6"	2'-4"	4	LARGE	22'	12'	4'-5"	13'-2"	2"	1'-2"	11	LARGE		
18'	8'	3'-7"	10'-10"	3"	1'-6"	6	LARGE	24'	12'	4'-10"	14'-5"	1 1/2"	11"	14	LARGE		
18'	8'	3'-7"	10'-10"	3"	1'-6"	6	LARGE	14'	14'	2'-10"	8'-5"	1'-0"	3'-0"	5	LARGE		
20'	8'	4'-0"	12'-0"	3"	1'-6"	6	LARGE	16'	14'	3'-2"	9'-7"	0	2'-4"	7	LARGE		
22'	8'	4'-5"	13'-2"	6"	12"	8	LARGE	18'	14'	3'-7"	10'-10"	4"	1'-8"	9	LARGE		
24'	8'	4'-10"	14'-5"	3"	9"	11	LARGE	20'	14'	4'-0"	12'-0"	4"	1'-4"	11	LARGE		
26'	8'	5'-2"	15'-7"	0	8"	13	LARGE	16'	16'	3'-2"	9'-7"	1'-0"	2'-4"	7	LARGE		
10'	10'	1'-0"	8'-0"	0	2'-0"	6	LARGE	18'	16'	3'-7"	10'-10"	6"	1'-8"	10	LARGE		
								VARIES	2'-6"	-	-	9"	12"	2	LARGE		

SPECIFICATION REFERENCE
701

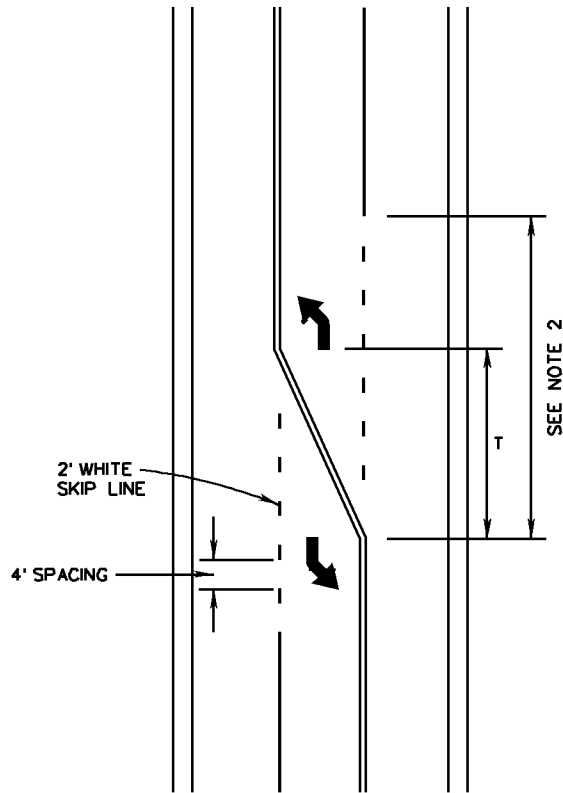
## SIGN PANEL DESIGN

VIRGINIA DEPARTMENT OF TRANSPORTATION

<b>VDOT</b>	
ROAD AND BRIDGE STANDARDS	
REVISION DATE	SHEET 3 OF 3
4/09	1325.72

**NOTES:**

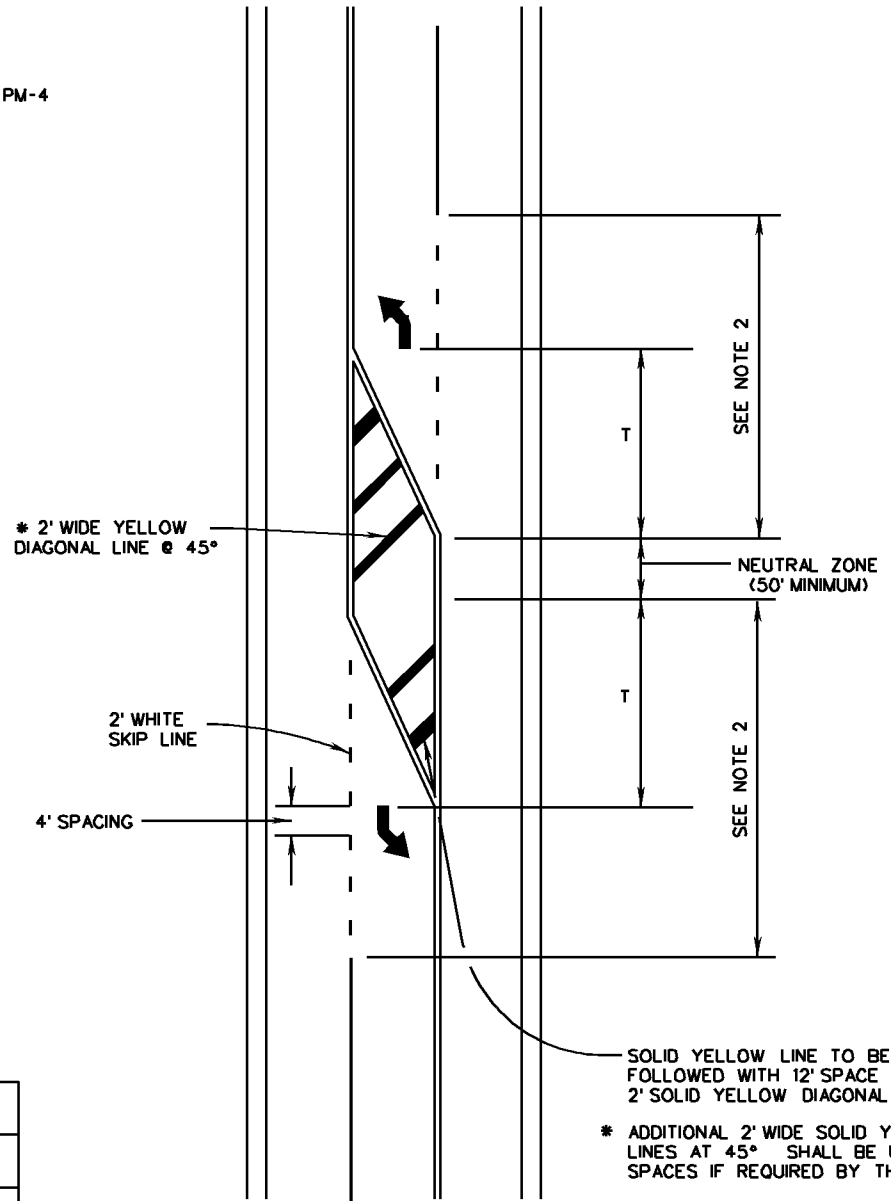
1. TAPER DESIGN USED SHALL BE AS DIRECTED BY THE ENGINEER.
2. TAPER OPENINGS SHALL BE AS FOLLOWS:  
 150' IF  $T \leq 150'$   
 $T$  IF  $T > 150'$   
 OR AS DIRECTED BY THE ENGINEER
3. TURN LANE ARROWS SHALL BE IN ACCORDANCE WITH PM-3 & PM-4



**WITHOUT NEUTRAL ZONE**

**TAPER LENGTH (T) TABLE**

SPEED	TAPER	TURN LANE WIDTH		
		10 FT	11 FT	12 FT
≤ 30 MPH	8:1	80'	90'	100'
> 30 MPH	15:1	150'	175'	200'



**WITH NEUTRAL ZONE**

SOLID YELLOW LINE TO BE 3' WIDE FOLLOWED WITH 12' SPACE AND ONE 2' SOLID YELLOW DIAGONAL LINE.

\* ADDITIONAL 2' WIDE SOLID YELLOW DIAGONAL LINES AT 45° SHALL BE USED WITH 12' SPACES IF REQUIRED BY THE ENGINEER.

SPECIFICATION REFERENCE

704

**TYPICAL PAVEMENT MARKING  
 LEFT TURN PAVEMENT MARKED MEDIAN**

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

ROAD AND BRIDGE STANDARDS

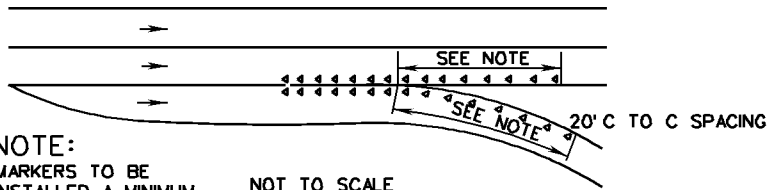
REVISION DATE

04/09

SHEET 1 OF 1

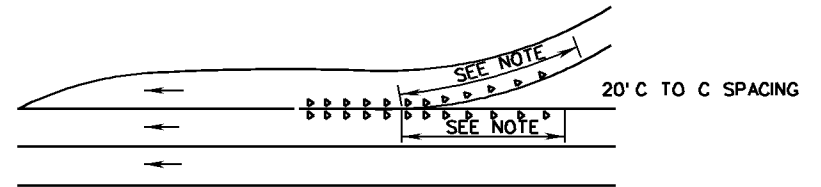
1330.50

EXIT RAMP



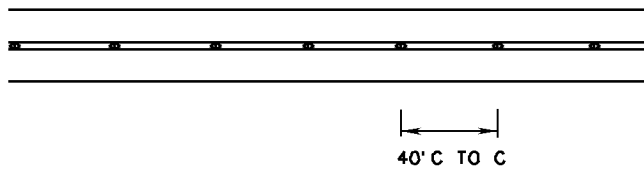
NOTE:  
 MARKERS TO BE  
 INSTALLED A MINIMUM  
 OF 80' BEYOND  
 PHYSICAL GORE.  
 NOT TO SCALE

ENTRANCE RAMP

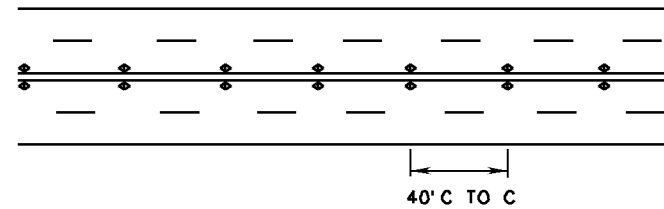


NOTE:  
 MARKERS TO BE  
 INSTALLED A MINIMUM  
 OF 80' BEYOND  
 PHYSICAL GORE.  
 NOT TO SCALE

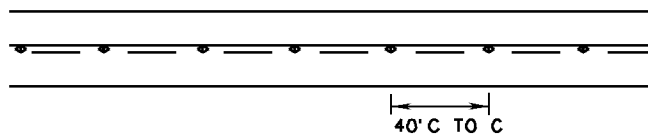
NO PASSING  
 TWO-LANE



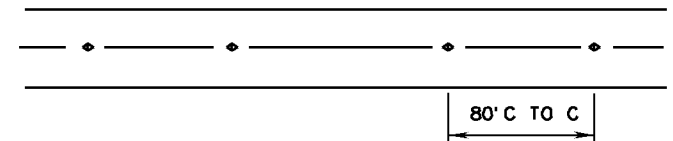
MULTI-LANE (3+ LANES)



PASSING ONE DIRECTION



PASSING TWO DIRECTIONS



SPECIFICATION  
 REFERENCE

704

TYPICAL PAVEMENT MARKER  
 LOCATION DETAILS  
 VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

ROAD AND BRIDGE STANDARDS

REVISION DATE

04/09

SHEET 1 OF 1

1330.90