



COMMONWEALTH of VIRGINIA

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

David S. Ekern, P.E.
COMMISSIONER

February 22, 2008

MEMORANDUM

To: All Holders of the Virginia Department of Transportation's 2001 Road and Bridge Standards

The following sheets of the 2001 Road and Bridge Standards have been revised and will be effective for all projects advertised for construction as of March 1, 2008. A copy of the revised sheet will be made available in PDF format on the VDOT website.

PAGE	INSERT	STANDARD	REVISION
107.21	NA	PC-1	See Below
501.14, 501.15	A-91	GR-8, 8A, 8B, 8C	See Below

The changes incorporated into this revision have been summarized below:

Standard PC-1, Standard sheet 107.21 :

Table A1 – Allowable Type of Storm Sewer Pipe, was revised to permit the use of pipe material other than concrete on Higher Functional Class (HFC) roadways, Statewide.

Standard GR-8, 8A, 8B, 8C, Standard sheet 501.14, 501.15 and Insertable sheet A-91 :

Added construction height tolerance of +/- 3/4"

If you have any questions or comments regarding this revision to the publication, please contact Steve Van Cleef, at (804) 786-2532, or Matt Barret, at (804) 371-2788, of the Standards and Special Design Section.

Sincerely,

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

TABLE A1 - ALLOWABLE TYPE OF STORM SEWER PIPE FOR ROADWAYS THAT ARE CONSTRUCTED, FUNDED OR WILL ULTIMATELY BE MAINTAINED BY VDOT			
FUNCTIONAL CLASSIFICATION OF ROADS SYSTEM UNDER WHICH PIPE IS TO BE INSTALLED			
HIGHER FUNCTIONAL CLASS - HFC RURAL PRINCIPAL ARTERIAL, URBAN PRINCIPAL ARTERIAL, RURAL MINOR ARTERIAL, URBAN MINOR ARTERIAL, RURAL COLLECTOR ROADS, URBAN COLLECTOR STREETS, SUBDIVISION STREETS WITH AN ADT GREATER THAN 4000		LOWER FUNCTIONAL CLASS - LFC RURAL LOCAL ROADS, URBAN LOCAL STREETS, SUBDIVISION STREETS WITH AN ADT LESS THAN OR EQUAL TO 4000	
ALLOWABLE PIPE CULVERTS NOTES 1 & 2	STATEWIDE	STATEWIDE EXCEPT LOCATIONS SHOWN IN TABLE B	LOCATION SHOWN IN TABLE B
CONCRETE	✓	✓	✓
CORRUGATED STEEL ALUMINUM COATED TYPE 2 FULLY CONCRETE LINED NOTE 3		✓	
ALUMINUM COATED TYPE 2 STEEL SPIRAL RIB NOTE 3		✓	
POLYMER COATED (10/10) CORRUGATED STEEL SPIRAL RIB NOTE 3		✓	✓
POLYMER COATED (10/10) CORRUGATED STEEL DOUBLE WALL (SMOOTH INTERIOR) NOTE 3	✓	✓	✓
ALUMINUM SPIRAL RIB NOTE 3		✓	✓
POLYVINYLCHLORIDE (PVC) RIBBED PIPE (SMOOTH INTERIOR)	✓	✓	✓
POLYETHYLENE (PE) CORRUGATED TYPE S	✓	✓	✓

TABLE B EXCEPTIONS TO STATEWIDE APPLICATIONS			
COUNTIES (INCLUDING TOWNS)		CITIES	
ARLINGTON - EAST OF AND INCLUDING RTES. 95 & 395	SURRY - EAST OF AND INCLUDING RTE. 10	SUFFOLK - EAST OF AND INCLUDING RTE. 32	
FAIRFAX - EAST OF AND INCLUDING RTES. 95 & 395	ISLE OF WIGHT - EAST OF AND INCLUDING RTE. 10	CHESAPEAKE	WILLIAMSBURG
PRINCE WILLIAM - EAST OF AND INCLUDING RTES. 95 & 395		VIRGINIA BEACH	POQUOSON
WESTMORELAND	JAMES CITY	HAMPTON	PORTSMOUTH
LANCASTER	ACCOMACK	NEWPORT NEWS	
MATTHEWS	SPOTSYLVANIA	NORFOLK	
GLOUCESTER	NORTHUMBERLAND	ALEXANDRIA	
		FREDERICKSBURG	
	ESSEX		
	NORTHAMPTON		
	MIDDLESEX		
	STAFFORD		
	YORK		
	KING GEORGE		
	RICHMOND		

TABLE C					
PIPE TYPE	ALLOWABLE pH RANGE (SEE NOTE 6)		ALLOWABLE RESISTIVITY RANGE		ALLOWABLE VELOCITY (FPS) (SEE NOTE 5)
	MIN.	MAX.	MIN.	MAX.	MAXIMUM
ALUMINUM COATED TYPE 2 CORRUGATED STEEL	5.0	9.0	1500	-	5
GALVANIZED STEEL STRUCTURAL PLATE WITH CONCRETE INVERT	6.0	9.0	2000	10000	15
GALVANIZED STEEL STRUCTURAL PLATE	6.0	9.0	2000	7000	5
POLYMER COATED (10/10) CORRUGATED STEEL	4.0	9.0	750	-	15
UNCOATED GALVANIZED CORRUGATED STEEL	6.0	10.0	2000	7000	5
CORRUGATED ALUMINUM ALLOY	4.0	9.0	500	-	5
CORRUGATED ALUMINUM ALLOY STRUCTURAL PLATE	4.0	9.0	500	-	5
ALUMINUM SPIRAL RIB	4.0	9.0	500	-	5
ALUMINUM COATED TYPE 2 SPIRAL RIB	5.0	9.0	1500	-	5
CORRUGATED STEEL ALUMINUM COATED TYPE 2 FULLY CONCRETE LINED	5.0	9.0	1500	-	15
POLYMER COATED CORRUGATED STEEL SPIRAL RIB	4.0	9.0	750	-	15
POLYMER COATED CORRUGATED STEEL DOUBLE WALL	4.0	9.0	750	-	15

NOTES:

1. ALLOWABLE TYPES OF PIPES FOR A SPECIFIC AREA ARE TO CONFORM TO THE CRITERIA SHOWN IN TABLES A, A1, B, AND C. ANY DEVIATION MUST BE APPROVED BY THE STATE LOCATION AND DESIGN ENGINEER AND THE DISTRICT MATERIALS ENGINEER.
2. SEE HEIGHT OF COVER TABLES FOR MINIMUM AND MAXIMUM COVER LIMITATIONS FOR EACH TYPE OF PIPE.
3. SEE TABLE C FOR MINIMUM AND MAXIMUM pH, RESISTIVITY, AND VELOCITY LIMITATIONS FOR METAL PIPES.
4. USE ONLY UNDER ENTRANCES WHERE THE PIPE SIZE IS LESS THAN OR EQUAL TO 30" DIAMETER (OR EQUIVALENT) AND THE HEIGHT OF COVER IS LESS THAN OR EQUAL TO 15' AND AS AN OUTLET PIPE FOR STANDARD DI-13 SHOULDER SLOT INLETS.
5. ALLOWABLE VELOCITY WHERE ABRASIVE BEDLOAD IS PRESENT OR ANTICIPATED. MAXIMUM VELOCITY BASED ON 10 YEAR DESIGN DISCHARGE (Q).
6. pH VALUES APPLY TO BOTH THE SOIL AND WATER.

SPECIFICATION
REFERENCE

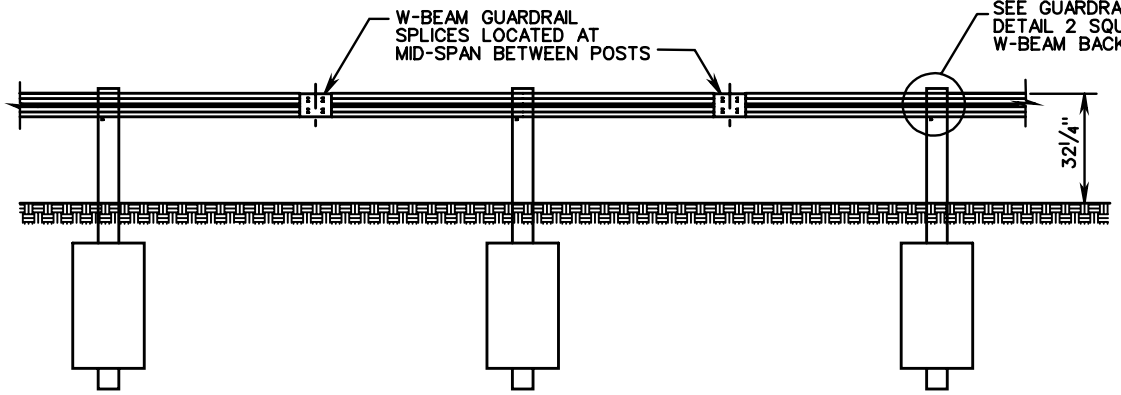
302
232

ALLOWABLE PIPE CRITERIA FOR CULVERTS AND STORM SEWERS

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REV. 2/ 08

107.21



STANDARD	POST SPACING	DEFLECTION
GR-8	12' - 6"	7' - 0"
GR-8A	6' - 3"	5' - 0"
GR-8B	3' - 1/2"	4' - 0"
GR-8C	4' - 2"	4' - 6"

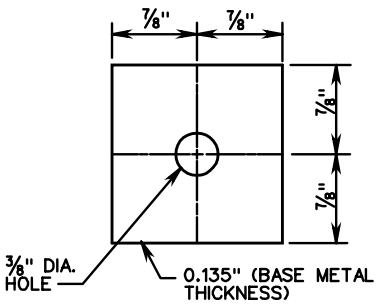
FOR ROCK INSTALLATION, 8" X 24" X 1/4" PLATE IS TO BE ELIMINATED. DRILL OR EXCAVATE HOLE FOR POST, PLACE POST AND BACKFILL WITH CRUSHER RUN AGGREGATE TO LEVEL OF ROCK.

ALL POSTS, BOLTS, NUTS AND WASHERS ARE TO BE GALVANIZED.

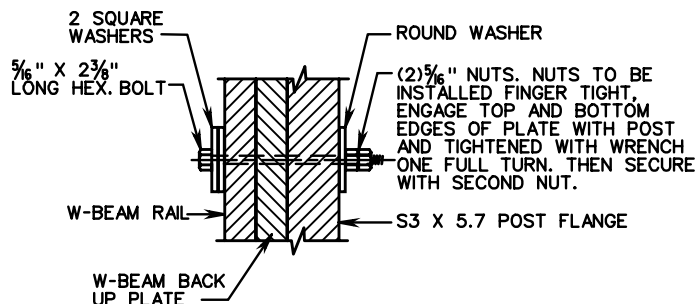
FOR DETAILS OF GUARDRAIL ELEMENT, SPLICE JOINT, HARDWARE, ETC. SEE SHEET NO. 501.01.

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

TYPICAL INSTALLATION

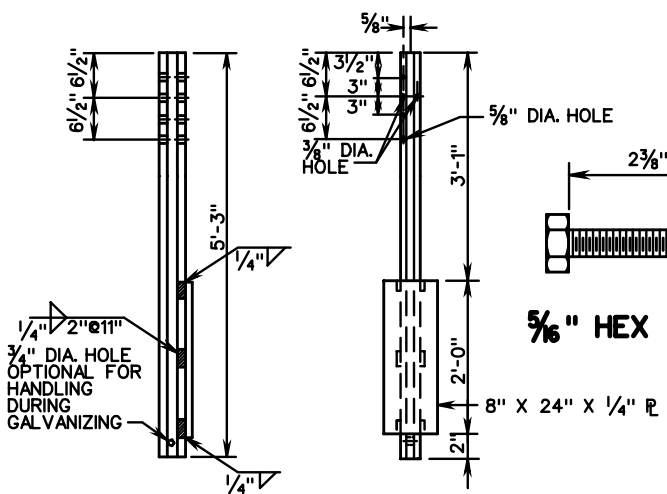


SQUARE WASHER

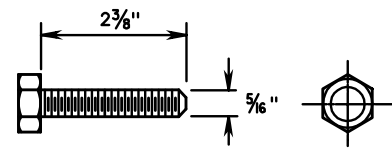


GUARDRAIL POST CONNECTION DETAIL

POST SPACING ON CURVES	
PAVEMENT ϕ RADIUS	POST SPACING
> 220 FT. R	12' - 6"
219 FT. - 111 FT.	6' - 3"
110 FT. - 76 FT.	4' - 2"
75 FT. - 50 FT.	3' - 1/2"
< 50 FT.	USE NOT RECOMMENDED

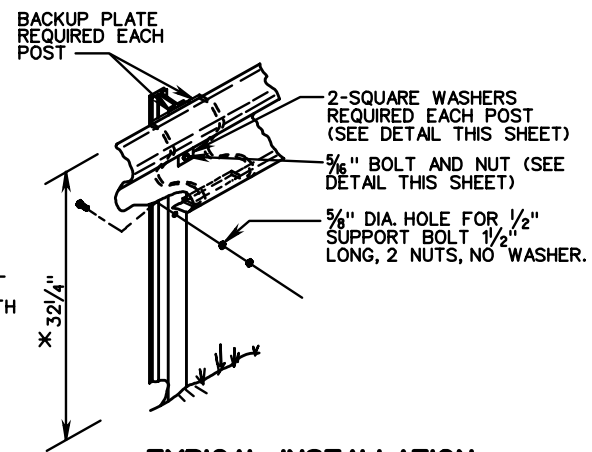


S 3 X 5.7 STEEL POST



5/16" HEX BOLT AND NUT

BOLT AND NUT SHALL HAVE 4000 POUNDS MIN. TENSILE STRENGTH



TYPICAL INSTALLATION

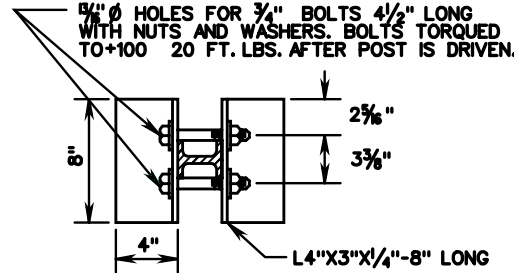
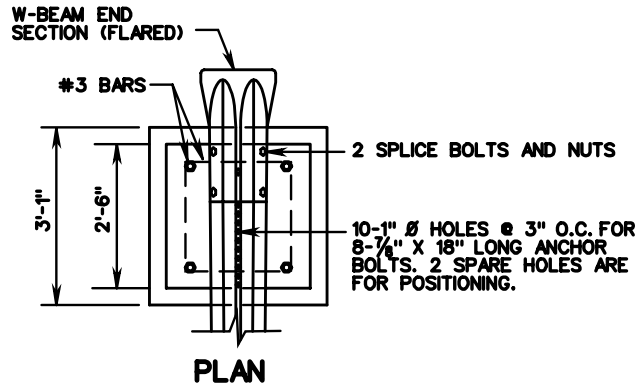
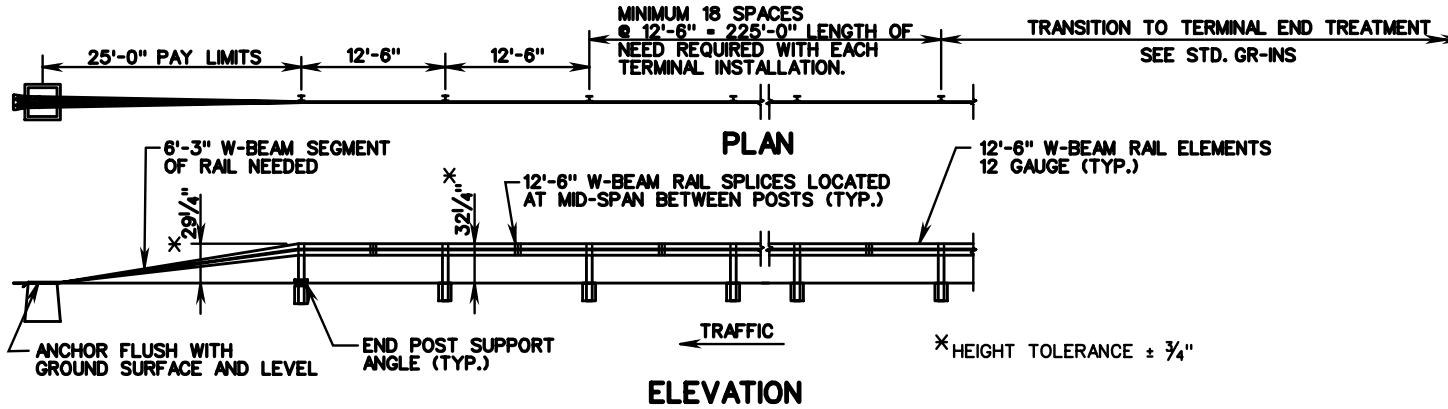
× HEIGHT TOLERANCE ± 3/4"

SPECIFICATION REFERENCE
221 505

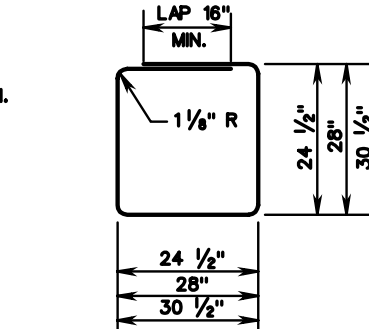
STANDARD W BEAM GUARDRAIL (WEAK POST SYSTEM)

TL-3 (>45 MPH)

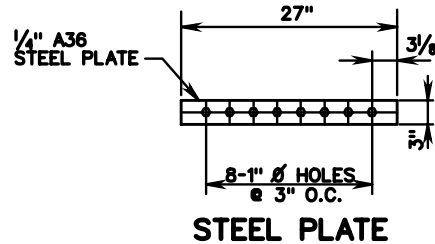
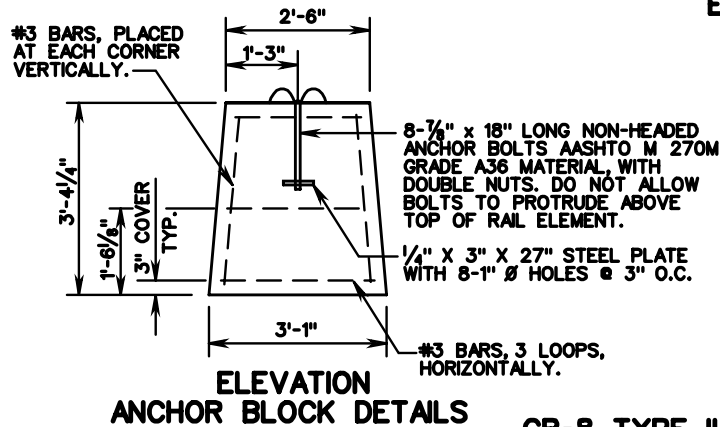
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END POST SUPPORT ANGLES



3 LOOP BAR REINFORCING DETAILS



GR-8 TYPE II TERMINAL TREATMENT (RUN-OFF ANCHORAGE)

STANDARD W BEAM GUARDRAIL (WEAK POST SYSTEM) TL-3 (>45 MPH)

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