



COMMONWEALTH of VIRGINIA

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

Charles A. Kilpatrick, P.E.
Commissioner

August 28, 2014

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 interim standard sheet will not be required in plan assemblies for the following sheets only. Changes to these sheets will not affect the basis of payment or estimates.

<u>PAGE</u>	<u>REVISION</u>
100.05	Revised index to include new EC-5 sheets
113.08	Revised title to match EC-5 sheets 1 through 3
200.01	Updated CG-12 descriptions on Index
1300.01	Revised index to remove PF-1 standard and update PF-8 sheet number
1300.02	Revised index to match current sheet numbering
1310.10	Void - Standard PF-1 Signal Pole Foundation

The following is a list of revised standards to the 2008 Road and Bridge Standards that *require* an interim standard sheet to be included in your plan assembly until the next edition of the standards is published. Please add these pages to your copy of the standards. The respective interim standard sheet number has been placed with the revised standard. The interim standard sheets are available on VDOT's web site, on the FTP server, and in Falcon DMS for VDOT personnel. These interim standard sheets will be required in plan assemblies for Tier 1 projects advertised November 25, 2014 (Non Federally Eligible), December 9, 2014 (Federally Eligible) and later, along with Tier 2 projects advertised March 10, 2015 and later.

<u>PAGE</u>	<u>INTERIM</u>	<u>STANDARD</u>	<u>REVISION</u>
104.31	IIS01_11	DI-12, 12A	ADDED NOTE STATING THAT TYPE I AND TYPE II GRATES ARE NOT TO BE USED WITHIN A PEDESTRIAN ACCESS ROUTE. REVISED NOTES FOR RURAL AND URBAN APPLICATIONS.

<u>PAGE</u>	<u>INTERIM</u>	<u>STANDARD</u>	<u>REVISION</u>
104.34	IIS01_12	DI-12B, 12C	ADDED NOTE STATING THAT TYPE I AND TYPE II GRATES ARE NOT TO BE USED WITHIN A PEDESTRIAN ACCESS ROUTE. REVISED NOTES FOR RURAL AND URBAN APPLICATIONS.
113.07	IIS01_13	EC-5	REVISED SHEET, MOVED SILT FENCE DETAILS TO PAGES 113.07A & 113.07B ADDED NOTES FOR SILT FENCE TYPES A & B.
113.07A	IIS01_14	EC-5	NEW SHEET FOR TYPE A SILT FENCE
113.07B	IIS01_15	EC-5	NEW SHEET FOR TYPE B WIRE BACKED SILT FENCE
501.04	IIS05_09	GR-2, 2A	ADDED DETAILS FOR OPTIONAL GR-2A METHODS USING NESTED W-BEAM RAIL AND W-BEAM RAIL ATTACHED TO BACK OF POST, REMOVED CRT POST DETAIL. ADDED NOTE STATING OPTIONAL GR-2A METHODS MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
501.05	IIS05_10	GR-2, 2A	ADDED CRT POST DETAIL, REMOVED CONCRETE POST AND ROUND WOOD POST, ADDED DETAIL FOR 4" WIDE BLOCKOUT.
501.39	IIS05_08	GR-INS	REMOVED OPTIONAL GUARDRAIL STIFFENING METHODS, ADJUSTED NOTES SPECIFYING GR-2A WHEN DESIGN SPEEDS ARE 45 MPH OR GREATER.
502.01	IIS05_18	MB-3	REMOVE CONCRETE POST OPTION.
1003.12	1003.12	BCD-20	UPDATED SHEET TO SHOW WINGWALL DESIGNATIONS

<u>PAGE</u>	<u>INTERIM</u>	<u>STANDARD</u>	<u>REVISION</u>
1004.06	1004.06	BCT-02	UPDATED SHEET TO SHOW WINGWALL DESIGNATIONS
1004.08	1004.08	BCT-05	UPDATED SHEET TO SHOW WINGWALL DESIGNATIONS
1004.16	1004.16	BCT-40	UPDATED SHEET TO SHOW WINGWALL DESIGNATIONS
1005.06	1005.06	BCQ-02	UPDATED SHEET TO SHOW WINGWALL DESIGNATIONS
1005.08	1005.08	BCQ-05	UPDATED SHEET TO SHOW WINGWALL DESIGNATIONS
1310.12	IIS13_02	PF-8	ELEVATED TOP OF FOUNDATION ABOVE GRADE, DELETED THE ANCHOR BOLT LAYOUT AND CAGE REINFORCING STEEL DETAILS, REVISED ANCHOR BOLT EMBEDMENT IN FOUNDATION, REVISED NOTES.
1310.13	IIS13_46	PF-8	NEW SHEET SHOWING DETAILS OF FOUNDATION ELEVATION AND PLACEMENT, INCLUDING DETAILS SHOWING REQUIRED PLACEMENT WHEN FOUNDATION IS ADJACENT TO SIDEWALK. NEW ANCHOR BOLT/BASE PLATE DETAIL ADDED
1310.20	IIS13_27	LF-1	ELEVATED TOP OF FOUNDATION ABOVE GRADE, REVISED NOTES, ADDED HEAVY HEX NUTS AT BOTTOM OF ANCHOR BOLTS, ADDED NOTE REGARDING MINIMUM COVER FOR REBAR, AND CLARIFIED DIMENSION "D" WHEN FOUNDATION IS ADJACENT TO SIDEWALK.

<u>PAGE</u>	<u>INTERIM</u>	<u>STANDARD</u>	<u>REVISION</u>
1310.21	IIS13_47	LF-1	NEW SHEET SHOWING DETAILS OF FOUNDATION ELEVATION AND PLACEMENT FOR BREAKAWAY AND NON-BREAKAWAY LIGHTING POLES, INCLUDING DETAILS SHOWING REQUIRED PLACEMENT WHEN FOUNDATION IS ADJACENT TO SIDEWALK.

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

Sincerely,

Signature on file Date: August 28, 2014

B. A. Thrasher, P.E.
State Location & Design Engineer

STANDARD	TITLE	PAGE
PP-1	DETAILS FOR BACKFILLING ABANDONED CULVERTS	107.23
UD-1	STANDARD GROUNDWATER UNDERDRAIN	108.01
UD-2	PIPE UNDERDRAIN FOR USE WITH RAISED GRASS MEDIAN STRIPS	108.02
UD-3	STANDARD SIDEWALK UNDERDRAIN	108.03
CD-1	STANDARD COMBINATION UNDERDRAINS (AT LOWER END OF CUTS)	108.04
CD-2	STANDARD COMBINATION UNDERDRAINS (AT GRADE SAGS AND BRIDGE APPROACHES)	108.05
UD-4	STANDARD PAVEMENT EDGEDRAIN	108.06
	STANDARD PAVEMENT EDGEDRAIN	108.07
UD-5	PREFABRICATED GEOCOMPOSITE RETROFIT PAVEMENT EDGEDRAIN	108.08
UD-7	STANDARD RETROFIT EDGEDRAIN	108.09
PG-2A	STANDARD PAVED DITCHES	109.01
PG-3	STANDARD RIPRAP AND SLOPE PROTECTION	109.02
PG-4	STANDARD PAVED FLUME FOR 12" - 24" PIPE CULVERTS	109.03
PG-5	STANDARD PAVED DITCHES	109.04
PG-6A, 6B	STANDARD PRECAST PAVED DITCHES	109.05
PG-7	DITCH FLUME CONNECTOR	109.06
SB-1	STANDARD SPRING BOX	110.01
SB-1 PC	PRECAST SPRING BOX	110.02
EG-1, 1A	STANDARD ENERGY DISSIPATOR FOR USE WITH PAVED FLUME	111.01
EG-1, 1A PC	PRECAST ENERGY DISSIPATOR	111.02
PS-2	STANDARD PIPE SPILLOUT FOR 12" - 18" PIPE CULVERTS	112.01
PS-3	STANDARD PIPE SPILLOUT FOR 21" - 30" PIPE CULVERTS	112.02
EC-1	CULVERT OUTLET PROTECTION	113.01
EC-2	PROTECTIVE COVERING INSTALLATION CRITERIA	113.02
EC-3	SOIL STABILIZATION MAT DITCH INSTALLATION TYPE A OR B	113.03
	SOIL STABILIZATION CULVERT OUTLET PROTECTION INSTALLATION	113.04
	SOIL STABILIZATION MAT SLOPE INSTALLATION TYPE C	113.05
EC-4	ROCK CHECK DAMS TYPE I AND II	113.06
EC-5	TEMPORARY SILT BARRIERS SILT FENCE (TYPE A & B) AND BRUSH BARRIER	113.07
	TEMPORARY SILT BARRIERS SILT FENCE (TYPE A & B) AND BRUSH BARRIER	113.07A
	TEMPORARY SILT BARRIERS SILT FENCE (TYPE A & B) AND BRUSH BARRIER	113.07B
	TEMPORARY SILT BARRIERS SILT FENCE (TYPE A & B) AND BRUSH BARRIER	113.08
EC-6	INLET PROTECTION (TYPE A AND B)	113.09
	INLET PROTECTION (TYPE C)	113.10

INDEX OF SHEETS SECTION 100-DRAINAGE

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

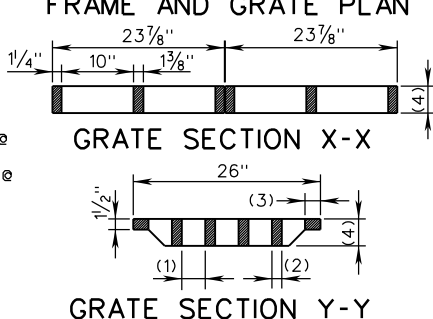
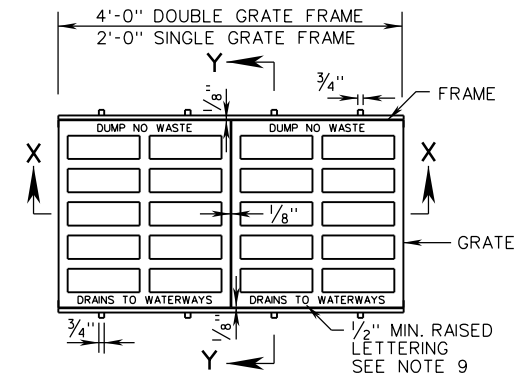
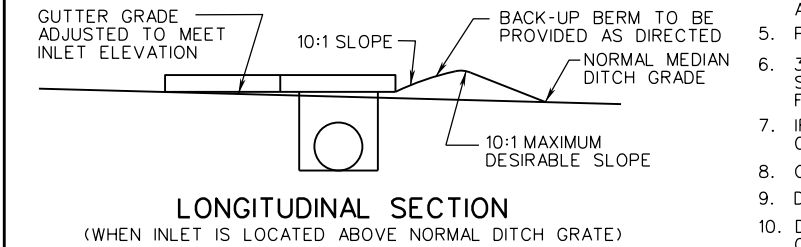
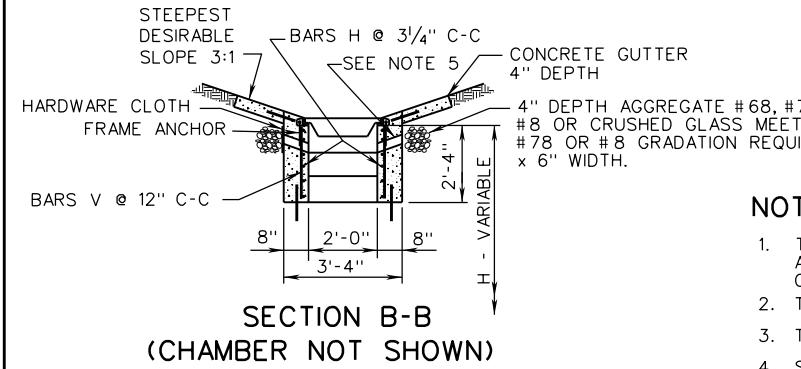
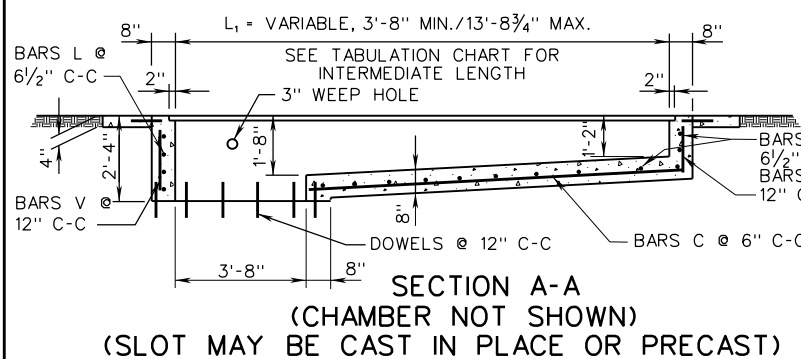
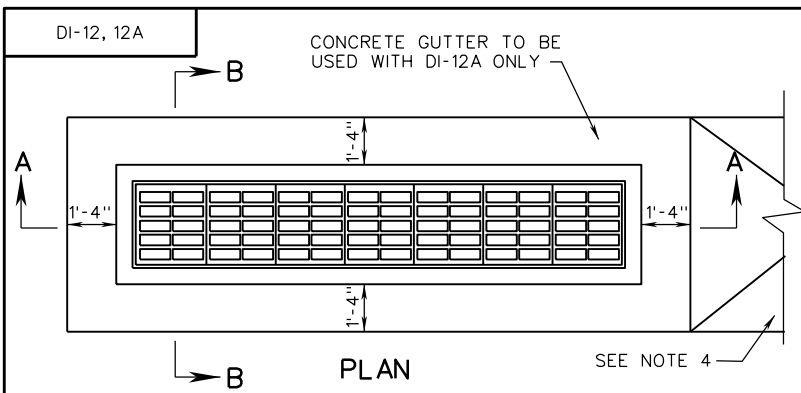
ROAD AND BRIDGE STANDARDS

REVISION DATE

08/14

SHEET 5 OF 6

100.05

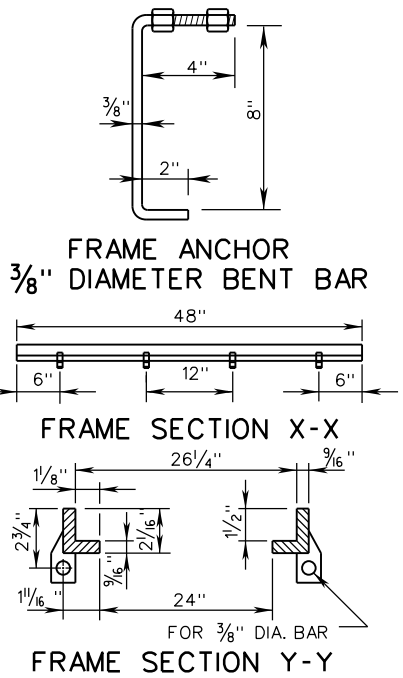


NOTE: SEE GRATE DIMENSION TABLE FOR GRATE TYPE I & II DIMENSIONS

GRATE DIMENSIONS				
GRATE TYPE	OPENING WIDTH (1)	BAR THICKNESS (2)	END SECTION WIDTH (3)	GRATE THICKNESS (4)
TYPE I	3/4" 5 OPENINGS	1 3/8" 4 BARS	2 1/8"	3 3/4"
TYPE II	1 1/2" 8 OPENINGS	1 3/8" 7 BARS	2 3/16"	3 3/4"

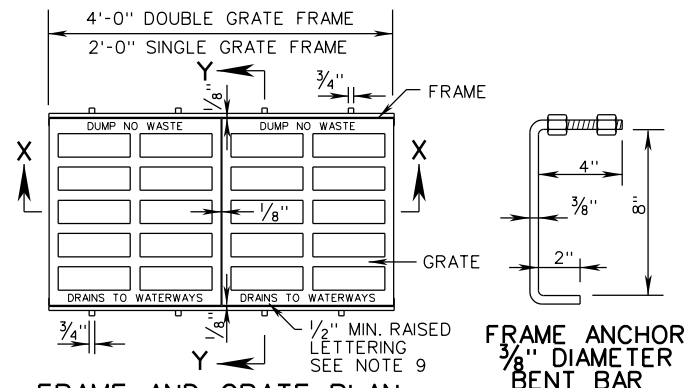
NOTES:

1. TYPE I AND TYPE II GRATES SHALL NOT BE LOCATED WITHIN THE LIMITS OF ANY PEDESTRIAN ACCESS ROUTE, SUCH AS A SIDEWALK, SHARED USE PATH, OR PEDESTRIAN CROSSING (MARKED OR UNMARKED).
2. TYPE I GRATE: LIMITED ACCESS AND RURAL UNLIMITED ACCESS
3. TYPE II GRATE: URBAN AREAS
4. SEE GRATE DIMENSION TABLE FOR SIZE AND NUMBER OF GRATE OPENINGS REQUIRED FOR TYPE I AND TYPE II GRATE.
5. PAVED DITCHES ARE TO BE TRANSITIONED TO MEET INLET GUTTER AS SHOWN IN STANDARD PG-2A.
6. 3" DIAMETER WEEP HOLE WITH 12" X 12" PLASTIC HARDWARE CLOTH 1/4" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO OUTSIDE OF STRUCTURE.
7. IF NORMAL DITCH GRADE IS TOO FLAT TO ALLOW FOR ADJUSTED GRADE TO INLET, A SPECIAL GUTTER DETAIL WILL BE REQUIRED ON PLANS.
8. GRATE BARS TO BE PARALLEL TO DITCH FLOW.
9. DI-12 AND DI-12A ARE NOT TO BE UTILIZED IN LOCATIONS NORMALLY SUBJECT TO TRAFFIC.
10. DUMP NO WASTE DRAINS TO WATERWAYS LETTERING IS REQUIRED ON ALL DI-12 GRATES. LOCATION OF LETTERING MAY VARY BY MANUFACTURER.

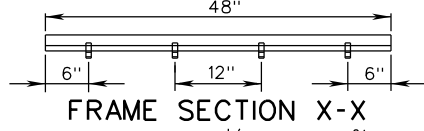


NOTES

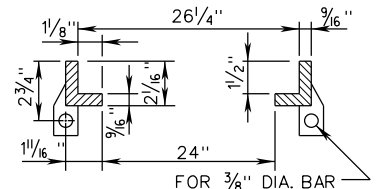
- DEPTH OF INLET (H) TO BE SHOWN ON PLANS. FOR DEPTH GREATER THAN 6'-6", USE ST'D. DI-12, DI-12A.
- LENGTH OF SLOT (L) WILL IN EVERY CASE, BE SHOWN ON PLANS.
- ALL REINFORCING BARS TO BE #4
- DI-12C CONCRETE GUTTER INCREMENT: ADD 0.07 CU. YDS CLASS A3 CONCRETE FOR EACH ADDITIONAL FOOT OF SLOT LENGTH GREATER THAN MINIMUM 3'-8".
- GRATE BARS TO BE INSTALLED SO THEY WILL BE ALIGNED PARALLEL TO THE DITCH FLOW.
- IF NORMAL DITCH GRADE IS TOO FLAT TO ALLOW FOR ADJUSTED GRADE TO INLET A SPECIAL GUTTER DETAIL WILL BE REQUIRED ON PLANS.
- DI-12B-----NO GUTTER
DI-12C-----PERIPHERAL GUTTER
- PAVED DITCHES ARE TO BE TRANSITIONED TO MEET INLET GUTTER AS SHOWN IN STANDARD PG-2A.
- QUANTITIES SHOWN ARE FOR INLETS WITHOUT PIPES. PIPE DISPLACEMENTS MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES.
- PAVED TRANSITION WHERE REQUIRED ON PLANS. TRANSITION IS TO BE SHAPED TO CONFORM TO ROUNDED CONCRETE GUTTER OF DI-12C.
- TYPE I GRATE: LIMITED ACCESS AND RURAL UNLIMITED ACCESS
- TYPE II GRATE: URBAN AREAS
- L = LENGTH ROUNDED FOR PLAN USE.
- DI-12C: FOR APPROX. QUANTITIES FOR DI-12C, ADD 0.36 CU. YDS. OF CLASS A3 CONCRETE TO DI-12B QUANTITIES FOR CONCRETE GUTTER. QUANTITY SHOWN IS FOR A MINIMUM SLOT LENGTH OF 3'-8". FOR OTHER LENGTHS SEE CONCRETE GUTTER INCREMENT BELOW.
- DI-12B AND DI-12C ARE NOT TO BE UTILIZED IN LOCATIONS NORMALLY SUBJECT TO TRAFFIC.
- DUMP NO WASTE DRAINS TO WATERWAYS LETTERING IS REQUIRED ON ALL DI-12 GRATES. LOCATION OF LETTERING MAY VARY BY MANUFACTURER.
- TYPE I AND TYPE II GRATES SHALL NOT BE LOCATED WITHIN THE LIMITS OF ANY PEDESTRIAN ACCESS ROUTE, SUCH AS A SIDEWALK, SHARED USE PATH, OR PEDESTRIAN CROSSING (MARKED OR UNMARKED).



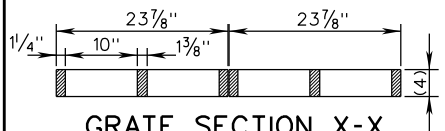
FRAME AND GRATE PLAN



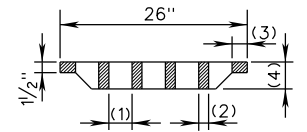
FRAME SECTION X-X



FRAME SECTION Y-Y



GRATE SECTION X-X



GRATE SECTION Y-Y

NOTE: SEE GRATE DIMENSION TABLE FOR GRATE TYPE I & II DIMENSIONS

GRATE DIMENSIONS				
GRATE TYPE	OPENING WIDTH (1)	BAR THICKNESS (2)	END SECTION WIDTH (3)	GRATE THICKNESS (4)
TYPE I	3 1/4"	1 3/8"	2 1/8"	3 3/4"
	5 OPENINGS	4 BARS		
TYPE II	1 1/2"	1 3/8"	2 3/16"	3 3/4"
	8 OPENINGS	7 BARS		

TABULATION CHARTS

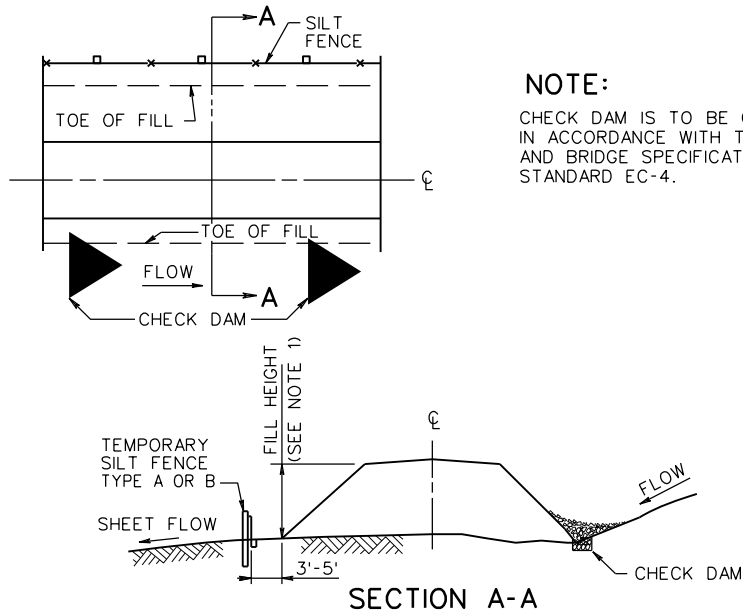
APPROXIMATE QUANTITIES DI-12B ONLY (SEE NOTES 19 & 24)					
(MINIMUM HEIGHT) SLOT 4' TO 14' (SEE NOTE 23)					
L (SEE NOTE 23)	L1	CONCRETE CU. YDS.	REINFORCING STEEL LBS.	NUMBER GRATES	CONCRETE CHAMBER INCREMENTS PER FOOT CU. YDS.
4	3'-8"	0.99	81.27	2	.35
6	5'-8 3/4"	1.28	122.81	3	
8	7'-8"	1.48	161.90	4	
10	9'-8 3/4"	1.79	203.37	5	
12	11'-8"	2.09	242.45	6	
14	13'-8 3/4"	2.40	283.93	7	

SPECIFICATION REFERENCE
241 503

MULTIGRATE DROP INLET
FOR PIPE SIZES 12" TO 36"
VIRGINIA DEPARTMENT OF TRANSPORTATION

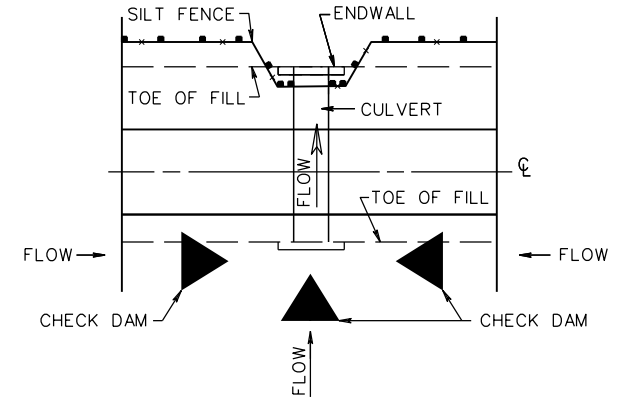
VDOT ROAD AND BRIDGE STANDARDS	
REVISION DATE 07/14	SHEET 2 OF 2 104.34

TYPICAL DETAIL FOR TEMPORARY SILT FENCE/CHECK DAM AT TOE OF FILL



NOTE:
CHECK DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.

TYPICAL DETAIL FOR TEMPORARY SILT FENCE/CHECK DAM AT CULVERT



NOTE:
CHECK DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.

NOTES FOR SILT FENCE TYPE A & B:

1. USE OF TYPE A SILT FENCE IS LIMITED TO A FILL HEIGHT OF 20 FEET OR LESS. TYPE B SILT FENCE MUST BE USED WHERE THE FILL HEIGHT EXCEEDS 20 FEET.
2. ALL POSTS SHALL BE DRIVEN 24" MIN. INTO THE GROUND AND SHALL EXTEND 6" ABOVE THE FILTER FABRIC (TYPE A) OR WIRE FENCE (TYPE B). WOODEN POSTS SHALL BE OAK AND HAVE MIN. DIMENSIONS OF 2" BY 2". STEEL POSTS SHALL HAVE A MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT.
3. GEOTEXTILE FABRIC SHALL BE EMBEDDED 12" INTO THE GROUND (6" VERTICALLY AND 6" HORIZONTALLY ALONG THE BOTTOM OF TRENCH) AS SHOWN IN DETAILS A(2) & B(2) ON SHEETS 2 AND 3.
4. SLICING IS AN APPROVED ALTERNATIVE TO TRENCHING FOR ANCHORING THE GEOTEXTILE FABRIC INTO THE GROUND SHOWN IN DETAILS A(2) & B(2) ON SHEETS 2 AND 3. SLICING SHALL BE ACCOMPLISHED IN ACCORDANCE WITH SECTION 303 OF THE ROAD AND BRIDGE SPECIFICATIONS.
5. WHEN TWO SEPARATE SECTIONS OF GEOTEXTILE FABRIC ADJOIN EACH OTHER, THEY SHALL OVERLAP BY 6" AND BE DOUBLE FOLDED.
6. GEOTEXTILE FABRIC SHALL BE FASTENED SECURELY TO THE POSTS (TYPE A & B) AND WIRE FENCE (TYPE B ONLY). THE ATTACHMENTS TO THE WIRE FENCE SHALL BE MADE WITH TIES SPACED EVERY 24" HORIZONTALLY AT BOTH THE TOP AND VERTICAL MIDPOINT OF THE GEOTEXTILE FABRIC.
7. WIRE FENCE (TYPE B ONLY) SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES AND EMBEDDED A MINIMUM OF 2" IN THE GROUND.
8. WIRE FENCE (TYPE B ONLY) SHALL BE A MINIMUM OF 14 GAUGE WELDED WIRE WITH A MESH SPACING OF 2" BY 4". ALTERNATIVE MESH SPACING MAY BE APPROVED BY THE ENGINEER, BUT MUST BE NO MORE THAN 6" BY 6".
9. FOR AREAS REQUIRING TYPE B SILT FENCE, A MINIMUM LENGTH OF 100 LINEAR FEET SHALL BE INSTALLED.
10. AS AN ALTERNATIVE TO UTILIZING TYPE B SILT FENCE, TWO ROWS OF TYPE A SILT FENCE MAY BE PLACED PARALLEL TO EACH OTHER WITH 3' TO 5' BETWEEN THE TWO ROWS. THIS OPTION MAY BE USED AT ALL LOCATIONS SPECIFYING TYPE B SILT FENCE UNLESS OTHERWISE PROHIBITED BY THE PLANS. SEE DETAIL ON SHEET 3 (BOTTOM RIGHT).
11. MATERIALS FOR ALL SILT FENCE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 242 OF THE VDOT ROAD & BRIDGE SPECIFICATIONS.

SPECIFICATION REFERENCE

107
242
245
303

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

TEMPORARY SILT BARRIERS
SILT FENCE (TYPE A & B) AND BRUSH BARRIER

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

ROAD AND BRIDGE STANDARDS

REVISION DATE

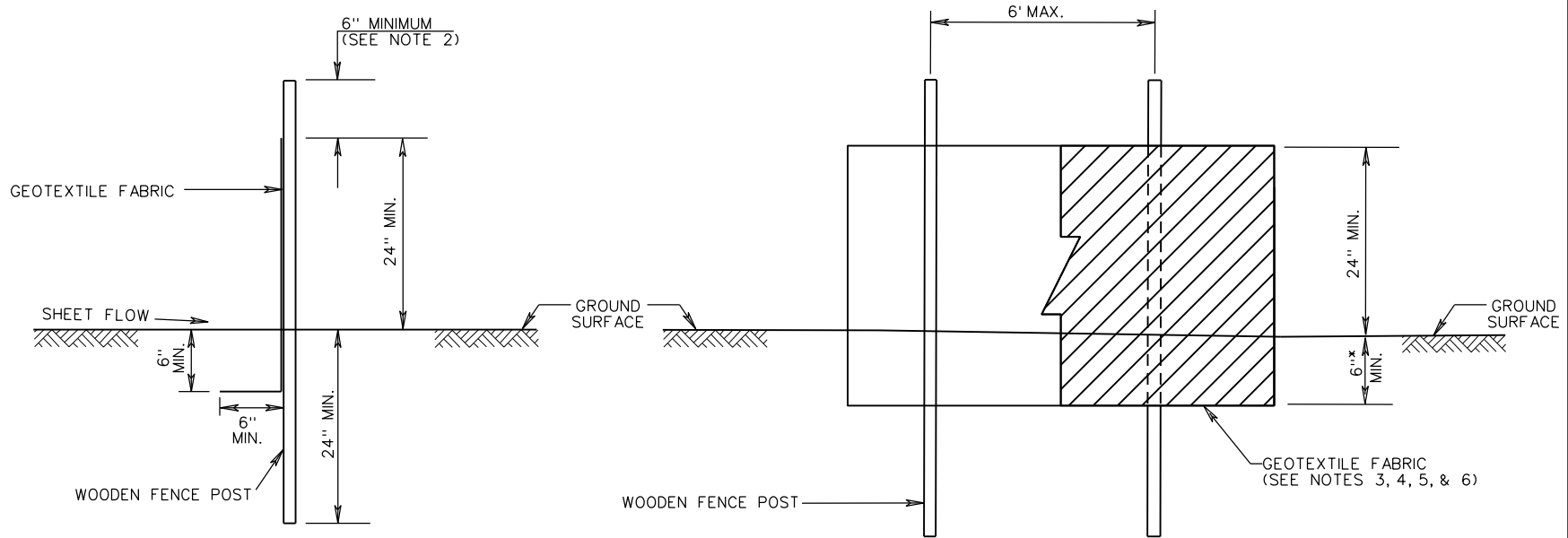
08/14

SHEET 1 OF 4

113.07

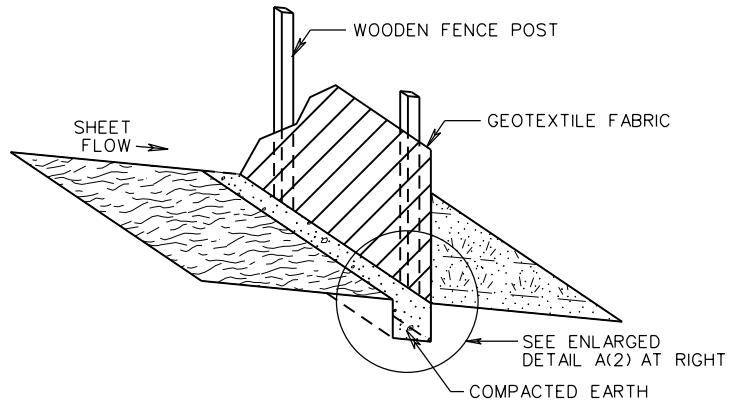
SILT FENCE TYPE A

SEE SHEET 1 FOR NOTES

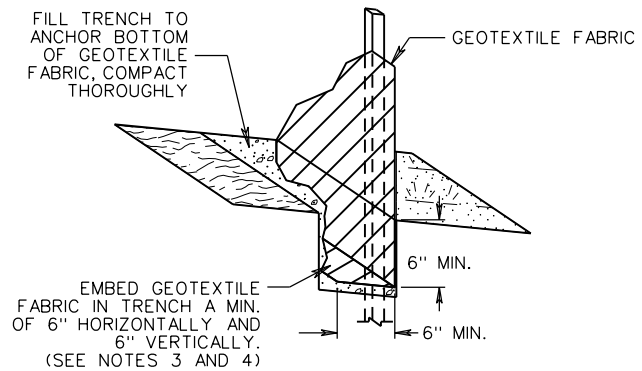


SECTION VIEW

PROFILE VIEW



DETAIL A(1)



DETAIL A(2)



ROAD AND BRIDGE STANDARDS

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

TEMPORARY SILT BARRIERS
SILT FENCE (TYPE A & B) AND BRUSH BARRIER

SPECIFICATION REFERENCE

SHEET 2 OF 4

REVISION DATE

107
242
245
303

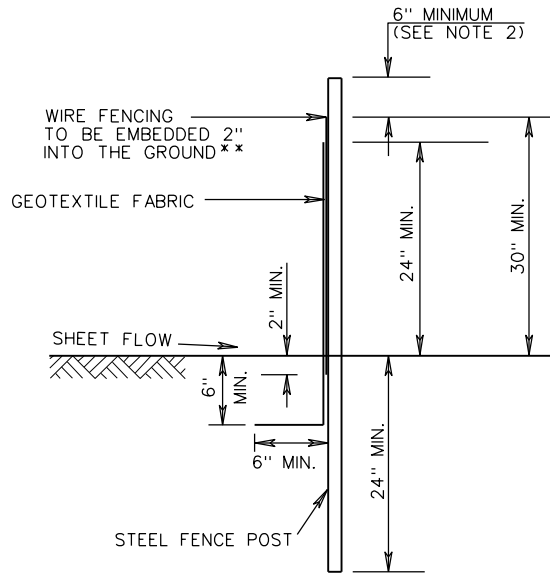
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08/14

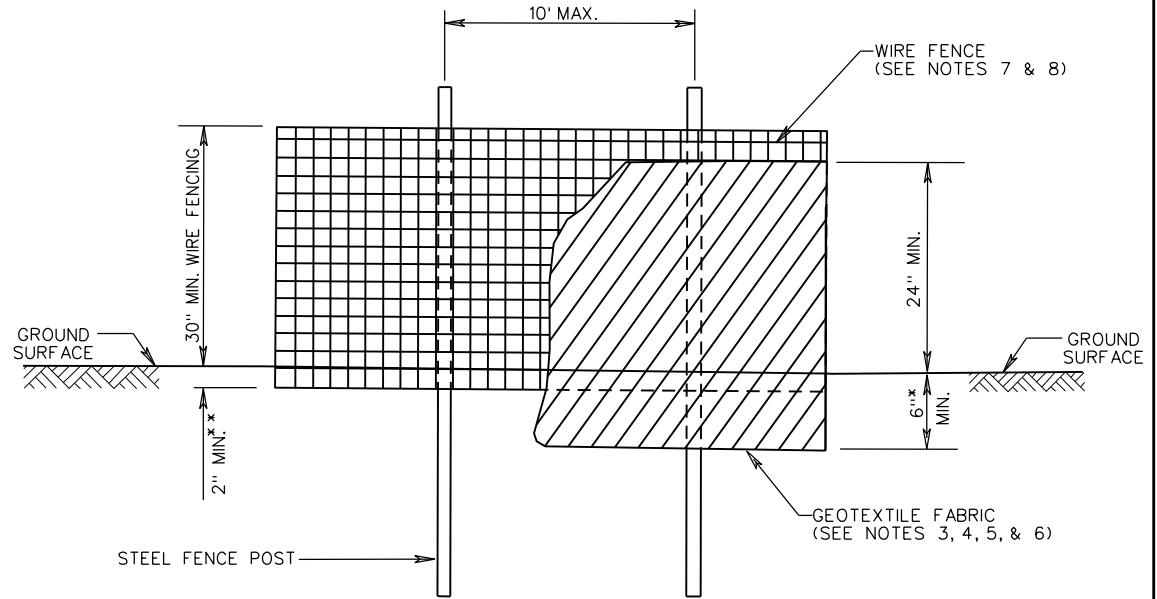
VIRGINIA DEPARTMENT OF TRANSPORTATION

SILT FENCE TYPE B

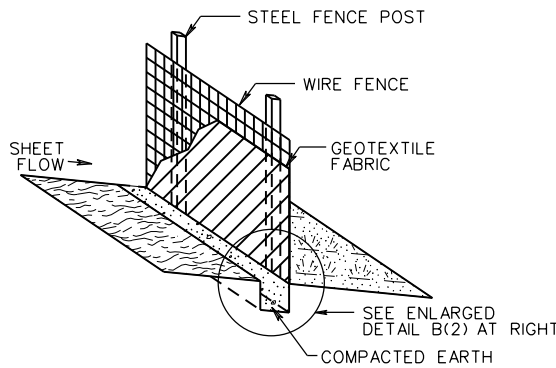
SEE SHEET 1 FOR NOTES



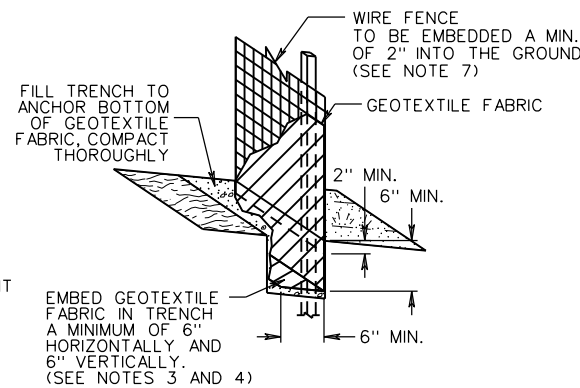
SECTION VIEW



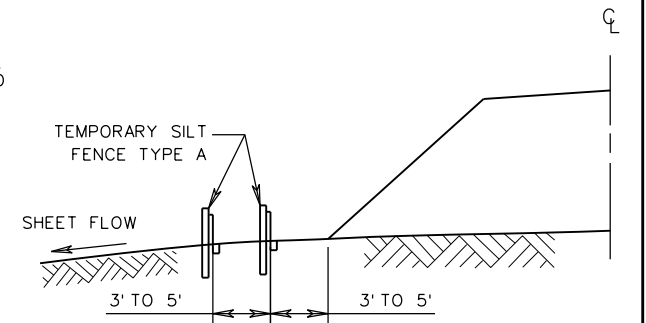
PROFILE VIEW



DETAIL B(1)



DETAIL B(2)



ALTERNATIVE SILT FENCE TYPE B
(SEE NOTE 10)

SPECIFICATION REFERENCE

- 107
- 242
- 245
- 303

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

TEMPORARY SILT BARRIERS
SILT FENCE (TYPE A & B) AND BRUSH BARRIER
VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

ROAD AND BRIDGE STANDARDS

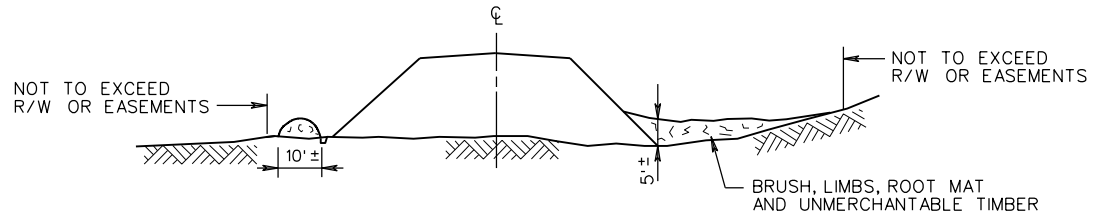
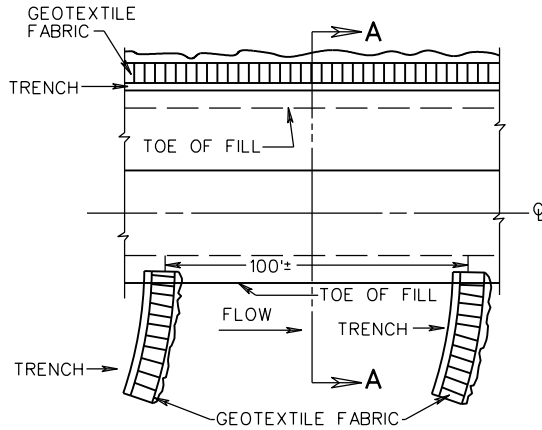
REVISION DATE

08/14

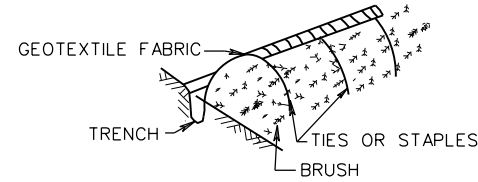
SHEET 3 OF 4

113.07B

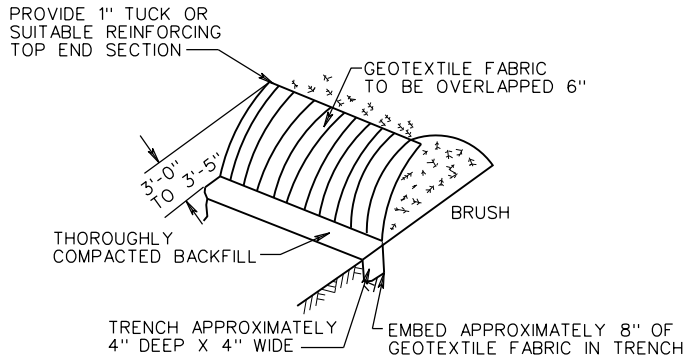
SILT BARRIERS
TYPICAL DETAIL FOR BRUSH BARRIER
 (TO BE USED AT ALL APPLICABLE LOCATIONS)



SECTION A-A



BACK ISOMETRIC



FRONT ISOMETRIC

NOTES:

1. BRUSH BARRIERS SHALL BE CONSTRUCTED AT LOCATION SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. BRUSH SHALL BE PILED AGAINST EXISTING TREES TO PREVENT MOVEMENT OF BARRIER. BRUSH SHALL BE PILED AS TIGHTLY AS POSSIBLE AND WEIGHTED DOWN BY UNMERCHANTABLE LOGS.
2. GEOTEXTILE FABRIC CONFORMING TO THE ROAD AND BRIDGE SPECIFICATIONS SHALL BE INSTALLED AS DETAILED ABOVE. GEOTEXTILE FABRIC MAY ALSO BE ATTACHED TO EXISTING FENCES WHEN SPECIFIED ON THE PLANS OR DIRECTED BY THE ENGINEER.
3. NO BRUSH WILL BE DESTROYED OR REMOVED FROM THE PROJECT UNTIL ALL BRUSH SILT BARRIERS ARE IN PLACE AND HAVE BEEN INSPECTED AND APPROVED BY THE ENGINEER.
4. DIMENSIONS SHOWN ARE APPROXIMATE ONLY.



ROAD AND BRIDGE STANDARDS

SHEET 4 OF 4

REVISION DATE

113.08

08/14

TEMPORARY SILT BARRIERS
SILT FENCE (TYPE A & B), AND BRUSH BARRIER

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

107
303

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 - (MEDIAN AND REFUGE ISLAND APPLICATIONS) TYPE M1, M2, & R11, & R12	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

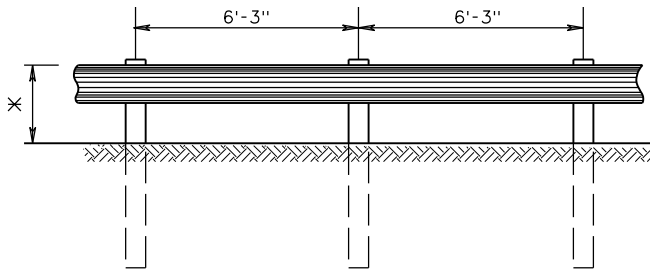
REVISION DATE

SHEET 1 OF 1

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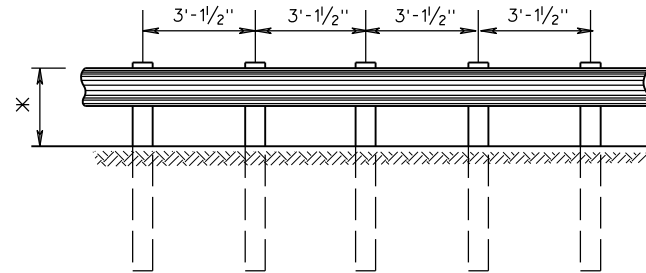
200.01

* 27³/₄" MIN - 28³/₄" MAX RAIL HEIGHT



GR-2

(6'-3" POST SPACING)
MAX DYNAMIC DEFLECTION = 3'



GR-2A

(3'-1/2" POST SPACING)
MAX DYNAMIC DEFLECTION = 2'

NOTES:

GUARDRAIL LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY AND CAN BE ADJUSTED DURING CONSTRUCTION IF AND AS DIRECTED BY THE ENGINEER.

FOR DETAILS OF POST AND BLOCKOUTS SEE SHEET NO. 501.05.

FOR DETAILS OF RAIL ELEMENT, RAIL SPLICE JOINT, AND ASSOCIATED HARDWARE SEE SHEET NOS. 501.01 AND 501.02.

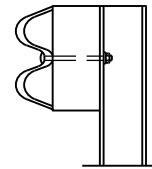
RAIL ELEMENTS ARE FURNISHED SHOP CURVED FOR RADII BETWEEN 5 FEET AND 150 FEET.

ALL GUARDRAIL POSTS SHALL BE SET PLUMB. POST SHALL NOT BE SET WITH A VARIATION OF MORE THAN 1/8" PER FOOT FROM VERTICAL. W-BEAM, BLOCKOUTS, AND POSTS SHALL BE SET AND ALIGNED WITHOUT ALTERATION OR FORCE, AS PER SECTION 505 OF THE SPECIFICATIONS.

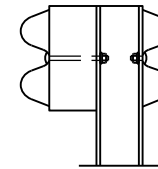
ALL GR-2 AND GR-2A RAIL SHALL BE MAINTAINED AT A HEIGHT OF 27³/₄" MIN - 28³/₄" MAX AS MEASURED PER STANDARD GR-INS.

ALL W-BEAM RAILS SHALL BE LAPPED IN THE DIRECTION OF VEHICULAR TRAVEL FOR THE FINISHED ROADWAY.

THE OPTIONAL GR-2A METHODS OF NESTING THE RAIL OR USE OF AN ADDITIONAL RAIL ON THE BACK OF THE POST FOR STANDARD GR-2A SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.



* OPTIONAL GR-2A METHOD USING NESTED RAIL



* OPTIONAL GR-2A METHOD USING ADDITIONAL RAIL ON BACK OF POST

* WHEN NESTED RAIL OR ADDITIONAL RAIL IS PLACED ON BACK OF POST FOR GR-2A THE POST SPACING WILL BE 6'-3".

DESIGN SPEED	FLARE RATES		
	INSIDE SHY LINE	BEYOND SHY LINE	
MPH	SHY LINE LS	FLARE RATE	FLARE RATE
70	9'	30:1	15:1 *
60	8'	26:1	14:1 *
50	6.5'	21:1	11:1 *
40	5'	16:1	8:1 *
30	4'	13:1	7:1 *

* SUGGESTED MAXIMUM FLARE RATE FOR SEMI-RIGID BARRIER SYSTEMS.



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 2

REVISION DATE

501.04

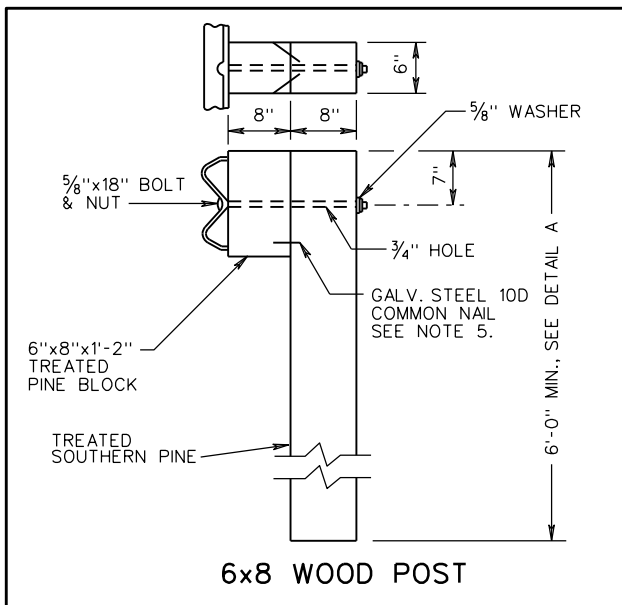
08/14

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.
STANDARD BLOCKED-OUT W-BEAM GUARDRAIL
(STRONG POST SYSTEM)

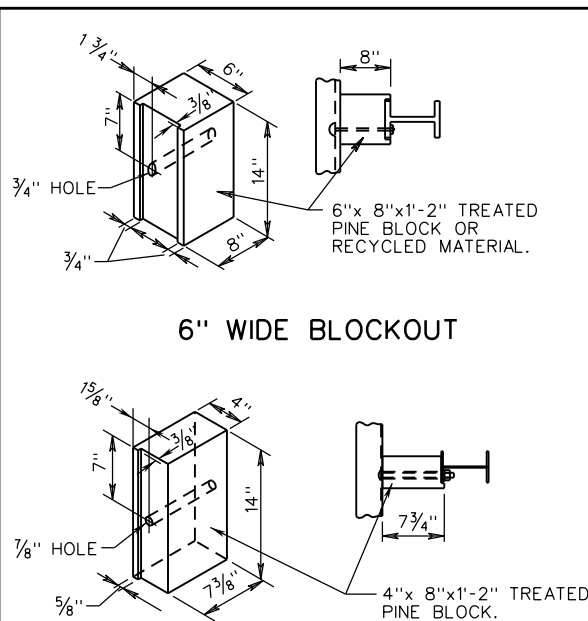
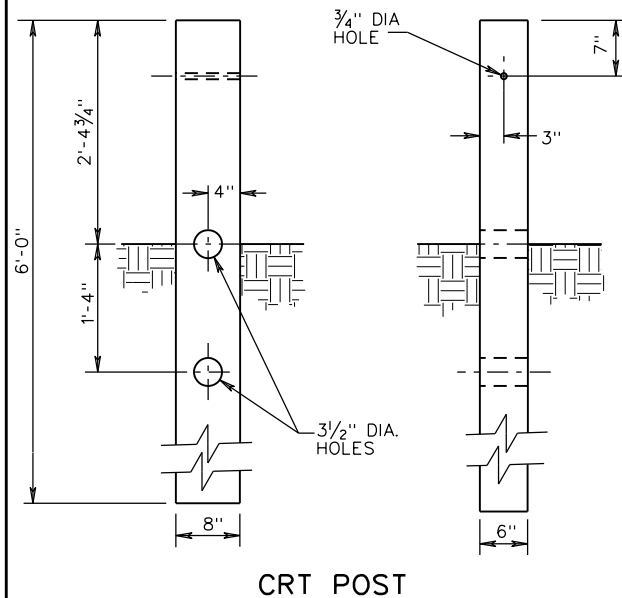
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

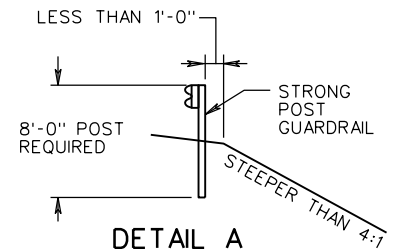
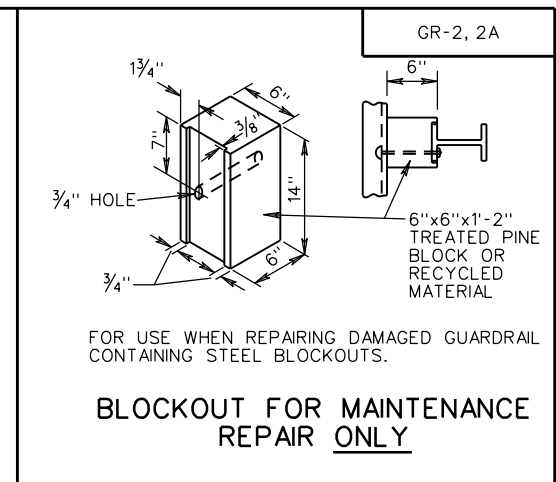
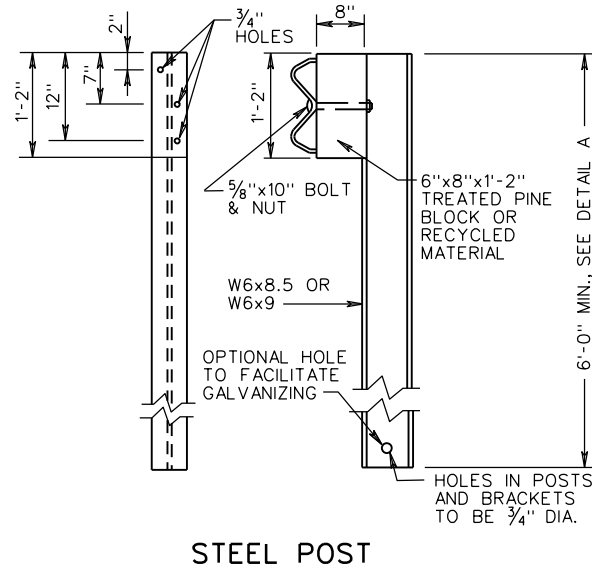
221
505



THE CRT POST IS FOR USE WITH THE STANDARD GR-10 TYPE III OR WHERE SPECIFIED BY THE ENGINEER IN THE PLANS.



POST MAY BE HOT ROLLED OR WELDED.



GUARDRAIL INSTALLATION SITES REQUIRING LONGER GUARDRAIL POSTS

NOTES:

1. ALL BOLTS, NUTS, WASHERS, AND OTHER STEEL ITEMS ARE TO BE GALVANIZED.
2. ALTERNATE TYPE POSTS AND BLOCKOUT MAY BE INTERCHANGED ON ANY ONE PROJECT WITH THE RESTRICTION THAT THE SAME TYPE OF POST AND BLOCKOUT MUST BE USED IN ANY SINGLE RUN OF GUARDRAIL.
3. FOR DETAILS OF GUARDRAIL ELEMENT SPLICE JOINT, HARDWARE, ETC. SEE SHEET NOS. 501.01 AND 501.02.
4. DRIVE NAIL ON BOTH SIDES WITHIN 2" OF THE TOP OR BOTTOM OF BLOCKOUT AFTER 5/8" x 18 BOLT IS INSTALLED.

SPECIFICATION REFERENCE

221
236
505

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

STANDARD BLOCKED-OUT W-BEAM GUARDRAIL
(STRONG POST SYSTEM, POST AND BLOCKOUT DETAILS)

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

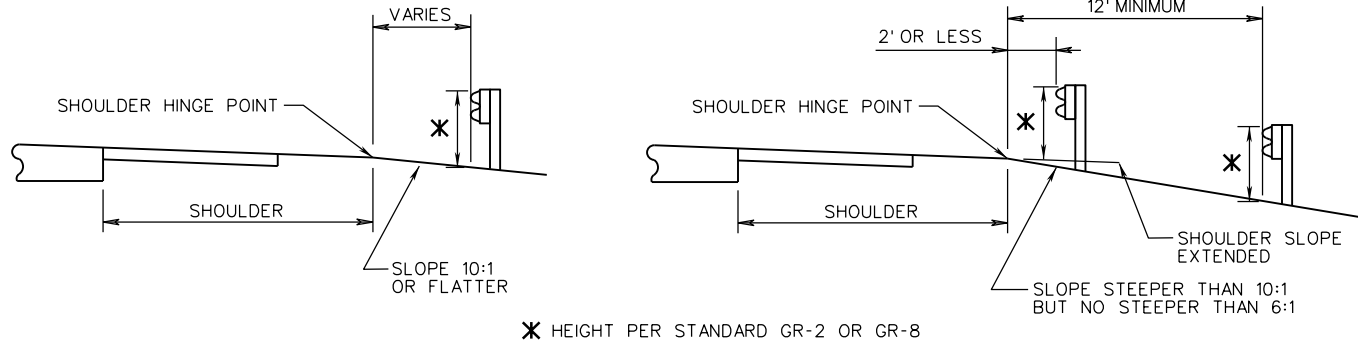
ROAD AND BRIDGE STANDARDS

REVISION DATE

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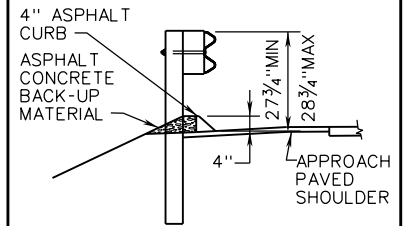
SHEET 2 OF 2

501.05



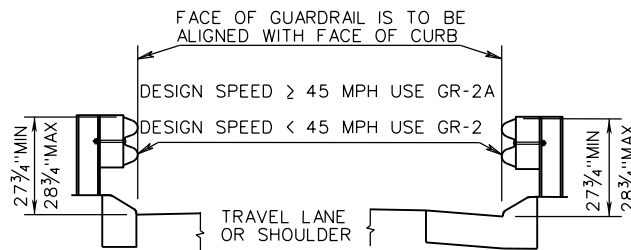
FACE OF GUARDRAIL IS TO BE ALIGNED WITH FACE OF CURB.
 DESIGN SPEED ≥ 45 MPH
 USE GR-2A

DESIGN SPEED < 45 MPH
 USE GR-2.



MEASURING GUARDRAIL HEIGHT ON FRONT SLOPE RELATIVE TO SHOULDER HINGE POINT

ASPHALT CURB SECTION



GR-2 INSTALLATION WITH CG-3 OR CG-7 CURB

FOR GUARDRAIL DESIGN POLICIES USING CURB & GUTTER OR URBAN DESIGNS WITH SIDEWALK OR SIDEWALK SPACE SEE APPENDIX A OF THE ROAD DESIGN MANUAL

TABLE I

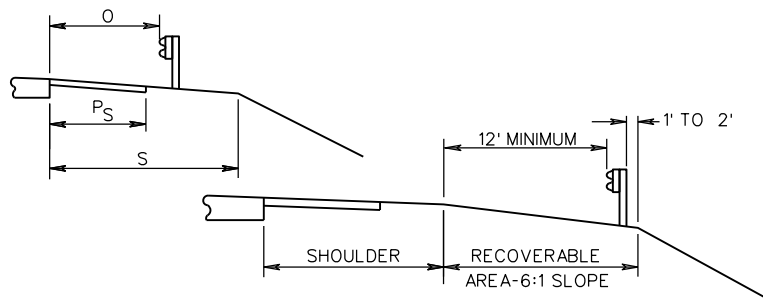
NORMAL GUARDRAIL LOCATION-THROUGH TRAFFIC LANES LEFT OF TRAFFIC

TOTAL SHOULDER WIDTH (S) (PAVED & GRADING)	PAVED SHOULDER WIDTH (P _S)	OFFSET FROM EDGE OF PAVEMENT TO FACE OF GUARDRAIL (O)
17'	12'	14'
15'	3', 4', OR 10'	12'
13'	3'	10'
11'	3'	8'
8' (MED.)	3' or 4'	5'

TABLE II

NORMAL GUARDRAIL LOCATION-THROUGH TRAFFIC LANES RIGHT OF TRAFFIC

TOTAL SHOULDER WIDTH (S) (PAVED & GRADING)	PAVED SHOULDER WIDTH (P _S)	OFFSET FROM EDGE OF PAVEMENT TO FACE OF GUARDRAIL (O)
17'	12'	14'
15'	6' or 10'	12'
13'	8'	10'
11'	0, 3', 4' or 6'	8'
9'	0, 3' or 4'	6'
8'	3'	5'
7'	2'	4'
5'	0	2'



GUARDRAIL LOCATION ON RECOVERABLE SLOPE

SPECIFICATION REFERENCE

221
505

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

W-BEAM GUARDRAIL INSTALLATION CRITERIA

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

ROAD AND BRIDGE STANDARDS

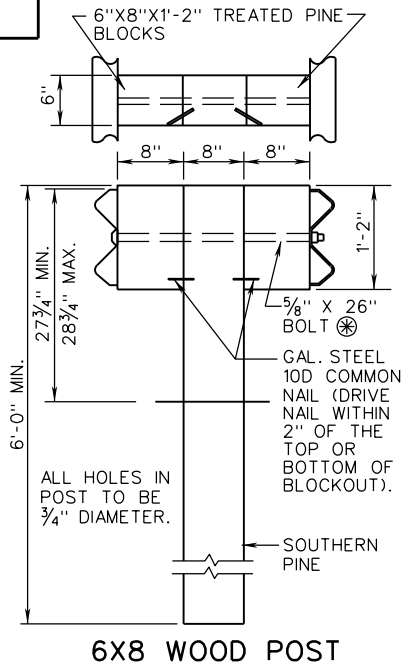
REVISION DATE

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SHEET 6 OF 8

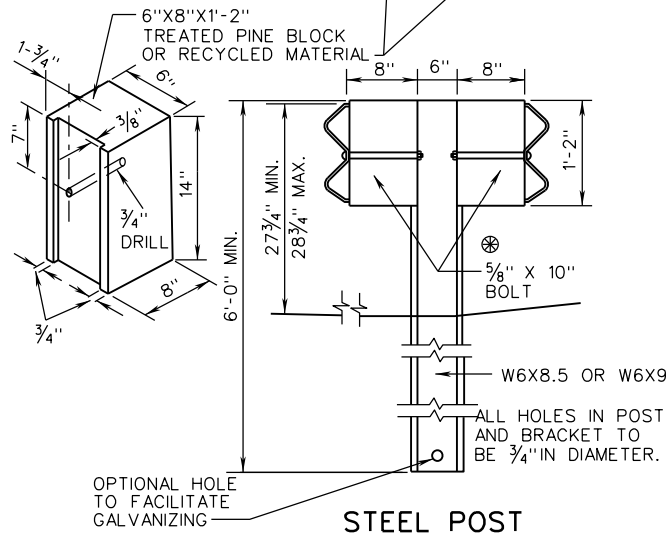
501.39

MB-3

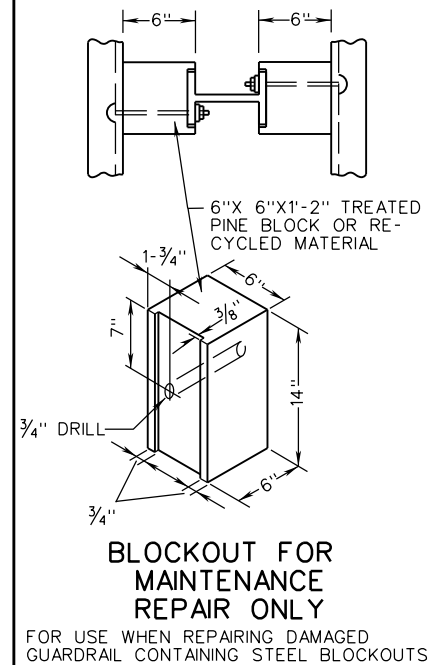


6X8 WOOD POST

POST MAY BE HOT ROLLED OR WELDED



STEEL POST



NOTES:

STANDARD MB-3 POST SPACING IS 6'-3".

FOR DETAILS OF RAIL ELEMENT, RAIL SPLICE JOINT, W BEAM BACK UP PLATE, AND ASSOCIATED HARDWARE SEE SHEET NO. 501.01.

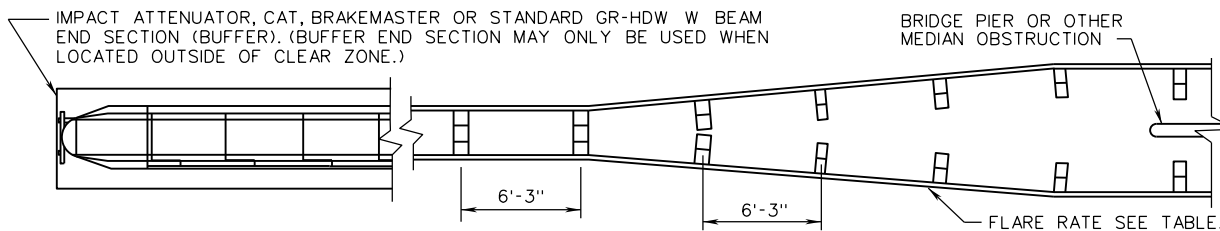
ALTERNATE TYPE POSTS AND BLOCKOUTS MAY BE INTERCHANGED ON ANY ONE PROJECT WITH THE RESTRICTION THAT THE SAME TYPE OF POST AND BLOCKOUT MUST BE USED IN ANY SINGLE RUN OF MEDIAN BARRIER.

ALL BOLTS, NUTS, WASHERS, STEEL POSTS, BENT PLATE POST, AND BLOCKOUTS ARE TO BE GALVANIZED.

⊗ STANDARD WASHERS ARE TO BE USED ON LAST 50' OF RUN OFF END ONLY.

FLARE RATES			
DESIGN SPEED	INSIDE SHY LINE		BEYOND SHY LINE
	SHY LINE LS	FLARE RATE	FLARE RATE
70	9'	30:1	15:1 *
60	8'	26:1	14:1 *
50	6.5'	21:1	11:1 *
40	5'	16:1	8:1 *
30	4'	13:1	7:1 *

* SUGGESTED MAXIMUM FLARE RATE FOR SEMI-RIGID BARRIER SYSTEMS.



METHOD OF TREATMENT AT BRIDGE PIER OR MEDIAN OBSTRUCTION

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

BLOCKED-OUT W-BEAM MEDIAN BARRIER

SPECIFICATION REFERENCE

221
505



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

502.01

08/14

VIRGINIA DEPARTMENT OF TRANSPORTATION

FOR TYPICAL SECTION, NOTES AND OTHER DETAILS, REFER TO STANDARD BCD-DT.

BCD-20

SPAN		HGHT		REINFORCING STEEL											QUAN./LF		HEADWALLS								WINGWALL		
(FT.)	(FT.)	SIZE	SPACING C-C	BT I								NO. BL1 #4 BARS	NO. BL2 #3 BARS	REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		NO. HW2 BARS	NO. HW3 BARS	INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)		OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)
				a	b	c	d	e	f	g	LENGTH						HEADWALL LENGTH	SIZE	LENGTH								
3	3	4	12"	2'- 7"	0'- 4"	1'- 10"	0'- 5/8"	0'- 3/4"	7'- 8"	-----	7'-10"	32	12	30.956	0.695	78.691	9'- 6"	6	9'- 2"	I	4	1.433	67.988	1.425	55.073	A	
3	4	4	12"	2'- 7"	0'- 4"	1'- 10"	0'- 5/8"	0'- 3/4"	7'- 8"	-----	7'-10"	32	18	33.065	0.768	84.955	9'- 6"	6	9'- 2"	I	5	1.531	71.439	1.517	55.073	C	
4	3	4	12"	3'- 5"	0'- 4"	2'- 3"	0'- 5/8"	0'- 3/4"	9'- 8"	-----	9'-10"	40	12	37.636	0.792	92.051	11'- 6"	6	11'- 2"	I	4	1.635	80.004	1.634	67.089	A	
4	4	4	12"	3'- 5"	0'- 4"	2'- 3"	0'- 5/8"	0'- 3/4"	9'- 8"	-----	9'-10"	40	18	39.745	0.866	98.315	11'- 6"	6	11'- 2"	I	5	1.734	83.455	1.726	67.089	C	
4	5	4	12"	3'- 5"	0'- 4"	2'- 3"	0'- 5/8"	0'- 3/4"	9'- 8"	-----	9'-10"	40	24	41.860	0.940	104.579	11'- 6"	6	11'- 2"	I	6	1.833	86.907	1.819	67.089	E	
4	6	4	12"	3'- 5"	0'- 4"	2'- 3"	0'- 5/8"	0'- 3/4"	9'- 8"	-----	9'-10"	40	30	43.975	1.013	110.843	11'- 6"	6	11'- 2"	I	7	1.932	90.358	1.912	67.089	G	
5	3	4	12"	4'- 2"	0'- 4"	2'- 8"	0'- 5/8"	0'- 3/4"	11'- 8"	-----	11'-10"	48	12	44.310	0.891	98.023	13'- 6"	6	13'- 2"	I	4	1.837	92.020	1.843	79.105	A	
5	4	4	12"	4'- 2"	0'- 4"	2'- 8"	0'- 5/8"	0'- 3/4"	11'- 8"	-----	11'-10"	48	18	46.425	0.965	98.856	13'- 6"	6	13'- 2"	I	5	1.936	95.471	1.935	79.105	C	
5	5	4	12"	4'- 2"	0'- 4"	2'- 8"	0'- 5/8"	0'- 3/4"	11'- 8"	-----	11'-10"	48	24	48.540	1.038	105.120	13'- 6"	6	13'- 2"	I	6	2.035	98.923	2.028	79.105	E	
5	6	4	12"	4'- 2"	0'- 4"	2'- 8"	0'- 5/8"	0'- 3/4"	11'- 8"	-----	11'-10"	48	30	50.655	1.112	111.986	13'- 6"	6	13'- 2"	I	7	2.134	102.374	2.121	79.105	G	
5	7	4	12"	4'- 2"	0'- 4"	2'- 8"	0'- 5/8"	0'- 3/4"	11'- 8"	-----	11'-10"	48	36	52.770	1.185	131.216	13'- 6"	6	13'- 2"	I	8	2.233	105.825	2.214	79.105	I	
6	4	4	12"	4'- 11"	0'- 5/4"	3'- 0"	0'- 7"	0'- 4/2"	13'- 8"	-----	13'-11"	56	18	53.105	1.168	139.704	15'- 6"	6	15'- 2"	I	5	2.127	107.487	2.133	91.121	D	
6	5	4	12"	4'- 11"	0'- 5/2"	3'- 0"	0'- 7/4"	0'- 4 3/4"	13'- 8"	-----	13'-11"	56	24	55.220	1.264	146.158	15'- 6"	6	15'- 2"	I	6	2.220	110.939	2.220	91.121	F	
6	6	4	12"	4'- 11"	0'- 5/2"	3'- 0"	0'- 7/4"	0'- 4 3/4"	13'- 8"	-----	13'-11"	56	30	57.335	1.337	153.090	15'- 6"	6	15'- 2"	I	7	2.319	114.390	2.313	91.121	H	
6	7	4	12"	4'- 11"	0'- 5/2"	3'- 0"	0'- 7/4"	0'- 4 3/4"	13'- 8"	-----	13'-11"	56	36	59.450	1.410	166.611	15'- 6"	6	15'- 2"	I	8	2.418	117.841	2.406	91.121	J	
6	8	4	12"	4'- 10"	0'- 5 3/4"	3'- 0"	0'- 7 5/8"	0'- 5"	13'- 8"	-----	14'- 0"	56	42	61.586	1.505	175.026	15'- 6"	6	15'- 2"	I	9	2.511	121.293	2.492	91.121	L	
7	4	4	10"	5'- 7"	0'- 6/2"	3'- 5"	0'- 8 3/4"	0'- 5 3/4"	15'- 8"	-----	16'- 0"	64	18	59.785	1.404	165.663	17'- 6"	6	17'- 2"	I	5	2.285	119.503	2.297	103.137	D	
7	6	4	10"	5'- 7"	0'- 6 3/4"	3'- 5"	0'- 9"	0'- 6"	15'- 8"	-----	16'- 0"	64	30	64.015	1.577	168.822	17'- 6"	6	17'- 2"	I	7	2.475	126.406	2.475	103.137	H	
7	8	4	10"	5'- 7"	0'- 7"	3'- 5"	0'- 9 3/8"	0'- 6 1/4"	15'- 8"	-----	16'- 1"	64	42	68.245	1.747	200.948	17'- 6"	6	17'- 2"	I	9	2.666	133.309	2.653	103.137	L	
7	10	4	10"	5'- 6"	0'- 7/4"	3'- 5"	0'- 9 3/4"	0'- 6 1/2"	15'- 8"	-----	16'- 1"	64	54	72.475	1.916	248.796	17'- 6"	6	17'- 2"	I	11	2.856	140.211	2.831	103.137	P	
8	4	4	9"	6'- 3"	0'- 7 3/4"	3'- 10"	0'- 10 1/2"	0'- 7"	17'- 8"	-----	18'- 1"	72	18	66.465	1.669	212.942	19'- 6"	6	19'- 2"	I	5	2.427	131.519	2.446	115.153	D	
8	6	4	9"	6'- 3"	0'- 8"	3'- 10"	0'- 10 7/8"	0'- 7 1/4"	17'- 8"	-----	18'- 1"	72	30	70.695	1.845	214.543	19'- 6"	6	19'- 2"	I	7	2.616	138.422	2.622	115.153	H	
8	8	4	9"	6'- 3"	0'- 8 1/4"	3'- 10"	0'- 11 1/8"	0'- 7 1/2"	17'- 8"	-----	18'- 2"	72	42	74.925	2.018	248.913	19'- 6"	6	19'- 2"	I	9	2.804	145.325	2.799	115.153	L	
8	10	4	9"	6'- 3"	0'- 8 1/2"	3'- 10"	0'- 11 1/2"	0'- 7 3/4"	17'- 8"	-----	18'- 2"	72	54	79.155	2.191	294.798	19'- 6"	6	19'- 2"	I	11	2.993	152.227	2.975	115.153	P	
9	4	5	9"	7'- 0"	0'- 9"	4'- 3"	1'- 1/8"	0'- 8 1/8"	19'- 8"	-----	20'- 2"	80	18	73.145	1.964	273.054	21'- 6"	6	21'- 2"	I	5	2.553	143.535	2.579	127.169	D	
9	6	5	9"	7'- 0"	0'- 9 1/4"	4'- 3"	1'- 1/2"	0'- 8 3/8"	19'- 8"	-----	20'- 2"	80	30	77.375	2.143	273.531	21'- 6"	6	21'- 2"	I	7	2.740	150.438	2.754	127.169	H	
9	8	5	9"	7'- 0"	0'- 9 1/4"	4'- 3"	1'- 1/2"	0'- 8 3/8"	19'- 8"	-----	20'- 2"	80	42	81.605	2.288	308.145	21'- 6"	6	21'- 2"	I	9	2.938	157.341	2.939	127.169	L	
9	10	5	9"	6'- 11"	0'- 9 1/2"	4'- 3"	1'- 7/8"	0'- 8 5/8"	19'- 8"	-----	20'- 3"	80	54	85.835	2.464	358.625	21'- 6"	6	21'- 2"	I	11	3.126	164.243	3.114	127.169	P	
9	12	5	9"	7'- 1"	0'- 9 3/4"	4'- 3"	1'- 1/8"	0'- 8 7/8"	19'- 11"	-----	20'- 6"	80	66	90.065	2.769	439.648	21'- 6"	6	21'- 2"	I	13	3.313	171.146	3.289	127.169	T	
10	4	5	9"	7'- 8"	0'- 10 1/2"	4'- 8"	1'- 2/4"	0'- 9 5/8"	21'- 8"	-----	22'- 3"	88	18	79.825	2.324	323.981	23'- 6"	6	23'- 2"	I	5	2.652	155.551	2.685	139.185	D	
10	6	5	9"	7'- 7"	0'- 11"	4'- 8"	1'- 3"	0'- 10 1/8"	21'- 8"	-----	22'- 4"	88	30	84.055	2.539	337.513	23'- 6"	6	23'- 2"	I	7	2.850	162.454	2.870	139.185	H	
10	8	5	9"	7'- 8"	0'- 10 3/4"	4'- 8"	1'- 2 5/8"	0'- 9 7/8"	21'- 8"	-----	22'- 4"	88	42	88.285	2.652	358.944	23'- 6"	6	23'- 2"	I	9	3.036	169.357	3.043	139.185	L	
10	10	5	9"	7'- 7"	0'- 11"	4'- 8"	1'- 3"	0'- 10 1/8"	21'- 8"	-----	22'- 4"	88	54	92.515	2.830	410.490	23'- 6"	6	23'- 2"	I	11	3.221	176.259	3.217	139.185	P	
10	12	5	9"	7'- 9"	0'- 11"	4'- 8"	1'- 3"	0'- 10 1/8"	21'- 11"	-----	22'- 7"	88	66	96.745	3.106	492.783	23'- 6"	6	23'- 2"	I	13	3.419	183.162	3.402	139.185	T	
12	6	6	8"	9'- 0"	1'- 1 3/4"	5'- 5"	1'- 6 3/4"	1'- 3/4"	25'- 8"	-----	26'- 6"	104	30	97.415	3.343	445.840	27'- 6"	6	27'- 2"	I	7	2.996	186.486	3.029	163.217	I	
12	8	6	8"	9'- 0"	1'- 1 3/4"	5'- 5"	1'- 6 3/4"	1'- 3/4"	25'- 8"	-----	26'- 6"	104	42	101.645	3.489	467.673	27'- 6"	6	27'- 2"	I	9	3.194	193.389	3.215	163.217	M	
12	10	6	8"	9'- 0"	1'- 2"	5'- 5"	1'- 7 1/8"	1'- 1"	25'- 8"	-----	26'- 6"	104	54	105.875	3.672	535.887	27'- 6"	6	27'- 2"	I	11	3.376	200.291	3.385	163.217	Q	
12	12	6	8"	9'- 2"	1'- 2"	5'- 5"	1'- 7 1/8"	1'- 1"	25'- 11"	-----	26'- 9"	104	66	110.105	3.954	615.152	27'- 6"	6	27'- 2"	I	13	3.574	207.194	3.570	163.217	U	

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

SPECIFICATION REFERENCE	<h2>DOUBLE BOX CULVERTS</h2> <h3>10 TO 20 FT. FILLS</h3> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	 ROAD AND BRIDGE STANDARDS	REVISION DATE	SHEET 2 OF 2
			08/14	1003.12

FOR TYPICAL SECTION, NOTES AND OTHER DETAILS, REFER TO STANDARD BCT-DT.

BCT-02

SPAN		HIGHT		REINFORCING STEEL											QUAN./LF		HEADWALLS							WINGWALL		
(FT.)	(FT.)	SIZE	SPACING C-C	a	b	c	d	e	f	g	LENGTH	NO. BL1 #4 BARS	NO. BL2 #3 BARS	REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G HEADWALL LENGTH	HW I SIZE	HW I LENGTH	NO. HW2 BARS	NO. HW3 BARS	INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)		OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)
3	3	4	12"	2'- 8 3/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	11'- 3 7/8"	1'- 5 7/8"	11'- 10"	53	16	49.903	0.989	115.345	13'- 2"	6	12'- 10"	2	8	1.827	102.932	1.808	77.103	A
3	4	4	12"	2'- 8 7/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	11'- 3 7/8"	1'- 5 7/8"	11'- 10"	53	24	52.727	1.087	123.697	13'- 2"	6	12'- 10"	2	10	1.932	109.835	1.901	77.103	C
4	3	4	12"	3'- 6 3/8"	0'- 4 3/4"	1'- 11 1/4"	0'- 6 1/4"	0'- 4"	14'- 4"	2'- 3/4"	14'- 11"	68	16	62.428	1.157	149.191	16'- 2"	6	15'- 10"	2	8	2.124	120.956	2.115	95.127	A
4	4	4	12"	3'- 6 3/8"	0'- 4 3/4"	1'- 11 1/4"	0'- 6 1/4"	0'- 4"	14'- 4"	2'- 3/4"	14'- 11"	68	24	65.252	1.255	157.543	16'- 2"	6	15'- 10"	2	10	2.229	127.859	2.208	95.127	C
4	5	4	12"	3'- 6 3/8"	0'- 4 3/4"	1'- 11 1/4"	0'- 6 1/4"	0'- 4"	14'- 4"	2'- 3/4"	14'- 11"	68	32	68.076	1.353	171.947	16'- 2"	6	15'- 10"	2	12	2.334	134.761	2.300	95.127	E
4	6	4	12"	3'- 6 3/8"	0'- 4 3/4"	1'- 11 1/4"	0'- 6 1/4"	0'- 4"	14'- 4"	2'- 3/4"	14'- 11"	68	40	70.900	1.451	182.365	16'- 2"	6	15'- 10"	2	14	2.440	141.664	2.393	95.127	G
5	3	4	11"	4'- 4"	0'- 4 3/4"	2'- 4"	0'- 6 1/4"	0'- 4"	17'- 4"	2'- 8"	17'- 11"	83	16	74.953	1.306	195.032	19'- 2"	6	18'- 10"	2	8	2.425	138.980	2.426	113.151	A
5	4	4	10"	4'- 4"	0'- 4 3/4"	2'- 4"	0'- 6 1/4"	0'- 4"	17'- 4"	2'- 8"	17'- 11"	83	24	77.777	1.404	202.477	19'- 2"	6	18'- 10"	2	10	2.531	145.883	2.519	113.151	C
5	5	4	10"	4'- 4"	0'- 4 3/4"	2'- 4"	0'- 6 1/4"	0'- 4"	17'- 4"	2'- 8"	17'- 11"	83	32	80.601	1.503	211.630	19'- 2"	6	18'- 10"	2	12	2.636	152.785	2.611	113.151	E
5	6	4	10"	4'- 4"	0'- 4 3/4"	2'- 4"	0'- 6 1/4"	0'- 4"	17'- 4"	2'- 8"	17'- 11"	83	40	83.425	1.600	229.318	19'- 2"	6	18'- 10"	2	14	2.741	159.688	2.704	113.151	G
5	7	4	9"	4'- 4"	0'- 4 3/4"	2'- 4"	0'- 6 1/4"	0'- 4"	17'- 4"	2'- 8"	17'- 11"	83	48	86.249	1.697	258.484	19'- 2"	6	18'- 10"	2	16	2.846	166.591	2.797	113.151	I
6	4	4	11"	5'- 7/8"	0'- 6 1/4"	2'- 7 1/4"	0'- 8 3/8"	0'- 5 1/2"	20'- 4"	3'- 1 3/4"	21'- 1"	98	24	90.302	1.747	218.090	22'- 2"	6	21'- 10"	2	10	2.784	163.907	2.782	131.175	D
6	5	4	10"	5'- 7/8"	0'- 6 1/4"	2'- 7 1/4"	0'- 8 3/8"	0'- 5 1/2"	20'- 4"	3'- 1 3/4"	21'- 1"	98	32	93.126	1.844	246.684	22'- 2"	6	21'- 10"	2	12	2.889	170.809	2.875	131.175	F
6	6	4	10"	5'- 7/8"	0'- 6 1/4"	2'- 7 1/4"	0'- 8 3/8"	0'- 5 1/2"	20'- 4"	3'- 1 3/4"	21'- 1"	98	40	95.950	1.942	257.738	22'- 2"	6	21'- 10"	2	14	2.994	177.712	2.968	131.175	H
6	7	4	9"	5'- 7/8"	0'- 6 1/4"	2'- 7 1/4"	0'- 8 3/8"	0'- 5 1/2"	20'- 4"	3'- 1 3/4"	21'- 1"	98	48	98.774	2.039	285.731	22'- 2"	6	21'- 10"	2	16	3.099	184.615	3.060	131.175	J
6	8	4	9"	5'- 7/8"	0'- 6 1/4"	2'- 7 1/4"	0'- 8 3/8"	0'- 5 1/2"	20'- 4"	3'- 1 3/4"	21'- 1"	98	56	101.598	2.137	297.193	22'- 2"	6	21'- 10"	2	18	3.204	191.517	3.153	131.175	L
7	4	4	9"	5'- 10 5/8"	0'- 6"	3'- 3/8"	0'- 8"	0'- 5 1/4"	23'- 4 1/8"	3'- 9 1/8"	24'- 1"	113	24	102.827	1.885	287.324	25'- 2"	6	24'- 10"	2	10	3.085	181.931	3.093	149.199	D
7	6	4	9"	5'- 10 5/8"	0'- 6"	3'- 3/8"	0'- 8"	0'- 5 1/4"	23'- 4 1/8"	3'- 9 1/8"	24'- 1"	113	40	108.475	2.081	328.424	25'- 2"	6	24'- 10"	2	14	3.295	195.736	3.278	149.199	H
7	8	4	8"	5'- 10 1/2"	0'- 6 1/4"	3'- 1/8"	0'- 8 3/8"	0'- 5 1/2"	23'- 4 1/8"	3'- 8 7/8"	24'- 1"	113	56	114.123	2.313	348.715	25'- 2"	6	24'- 10"	2	18	3.492	209.541	3.450	149.199	L
7	10	4	8"	5'- 10 1/2"	0'- 6 1/4"	3'- 1/8"	0'- 8 3/8"	0'- 5 1/2"	23'- 4 1/8"	3'- 8 7/8"	24'- 1"	113	72	119.771	2.509	371.229	25'- 2"	6	24'- 10"	2	22	3.702	223.347	3.636	149.199	P
8	4	4	8"	6'- 8 3/8"	0'- 5 1/2"	3'- 5 3/8"	0'- 7 1/4"	0'- 4 3/4"	26'- 3 7/8"	4'- 4 7/8"	27'- 0"	128	24	115.352	1.976	337.721	28'- 2"	6	27'- 10"	2	10	3.387	199.955	3.405	167.223	C
8	6	5	12"	6'- 8 3/8"	0'- 5 5/8"	3'- 5 3/8"	0'- 7 3/8"	0'- 4 3/4"	26'- 3 7/8"	4'- 4 7/8"	27'- 0"	128	40	121.000	2.171	368.255	28'- 2"	6	27'- 10"	2	14	3.597	213.760	3.591	167.223	G
8	8	5	11"	6'- 8 1/4"	0'- 5 7/8"	3'- 5 3/8"	0'- 7 3/4"	0'- 5"	26'- 3 7/8"	4'- 4 5/8"	27'- 0"	128	56	126.648	2.406	415.143	28'- 2"	6	27'- 10"	2	18	3.810	227.565	3.779	167.223	L
8	10	5	10"	6'- 8"	0'- 6 3/8"	3'- 4 7/8"	0'- 8 3/8"	0'- 5 1/2"	26'- 3 7/8"	4'- 4 1/8"	27'- 1"	128	72	132.296	2.683	460.552	28'- 2"	6	27'- 10"	2	22	3.989	241.371	3.933	167.223	P
9	4	5	11"	7'- 5 7/8"	0'- 5 7/8"	3'- 10 1/4"	0'- 7 3/4"	0'- 5"	29'- 4"	4'- 11 3/4"	30'- 0"	143	24	127.877	2.183	409.438	31'- 2"	6	30'- 10"	2	10	3.682	217.979	3.710	185.247	D
9	6	5	10"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	29'- 4"	4'- 11 1/2"	30'- 1"	143	40	133.525	2.424	439.558	31'- 2"	6	30'- 10"	2	14	3.874	231.784	3.877	185.247	H
9	8	5	10"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	29'- 4"	4'- 11 1/2"	30'- 1"	143	56	139.173	2.619	474.426	31'- 2"	6	30'- 10"	2	18	4.084	245.589	4.063	185.247	L
9	10	5	9"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	29'- 4"	4'- 11 1/2"	30'- 1"	143	72	144.821	2.812	534.465	31'- 2"	6	30'- 10"	2	22	4.295	259.395	4.248	185.247	P
9	12	6	12"	7'- 5 5/8"	0'- 6 1/2"	3'- 9 3/4"	0'- 8 1/2"	0'- 5 1/2"	29'- 4"	4'- 11 1/4"	30'- 1"	143	88	150.469	3.050	605.750	31'- 2"	6	30'- 10"	2	26	4.487	273.200	4.416	185.247	T
10	4	5	9"	8'- 3 3/8"	0'- 6 1/8"	4'- 2 3/4"	0'- 8 1/8"	0'- 5 1/4"	32'- 4"	5'- 6 3/4"	33'- 1"	158	24	140.402	2.401	460.612	34'- 2"	6	33'- 10"	2	10	3.953	236.003	3.991	203.271	D
10	6	5	10"	8'- 3 3/8"	0'- 6 1/8"	4'- 2 3/4"	0'- 8 1/8"	0'- 5 1/4"	32'- 4"	5'- 6 3/4"	33'- 1"	158	40	146.050	2.597	477.560	34'- 2"	6	33'- 10"	2	14	4.164	249.808	4.177	203.271	H
10	8	5	9"	8'- 3 3/8"	0'- 6 1/8"	4'- 2 3/4"	0'- 8 1/8"	0'- 5 1/4"	32'- 4"	5'- 6 3/4"	33'- 1"	158	56	151.698	2.790	535.891	34'- 2"	6	33'- 10"	2	18	4.374	263.613	4.362	203.271	L
10	10	5	9"	8'- 3 1/4"	0'- 6 3/8"	4'- 2 1/2"	0'- 8 3/8"	0'- 5 1/2"	32'- 4"	5'- 6 1/2"	33'- 1"	158	72	157.346	3.037	558.313	34'- 2"	6	33'- 10"	2	22	4.564	277.419	4.527	203.271	P
10	12	6	12"	8'- 3 1/4"	0'- 6 1/2"	4'- 2 1/2"	0'- 8 1/2"	0'- 5 1/2"	32'- 4"	5'- 6 1/2"	33'- 1"	158	88	162.994	3.229	624.268	34'- 2"	6	33'- 10"	2	26	4.774	291.224	4.713	203.271	T
12	6	5	9"	9'- 10 3/8"	0'- 6 5/8"	4'- 11 7/8"	0'- 8 3/4"	0'- 5 3/4"	38'- 4 1/8"	6'- 8 5/8"	39'- 1"	188	40	171.100	3.060	593.399	40'- 2"	6	39'- 10"	2	14	4.693	285.856	4.726	239.319	H
12	8	6	12"	9'- 10 3/8"	0'- 6 3/4"	4'- 11 7/8"	0'- 8 3/8"	0'- 5 3/4"	38'- 4 1/8"	6'- 8 5/8"	39'- 1"	188	56	176.748	3.253	652.706	40'- 2"	6	39'- 10"	2	18	4.903	299.661	4.912	239.319	L
12	10	5	8"	9'- 10 3/8"	0'- 6 5/8"	4'- 11 7/8"	0'- 8 3/4"	0'- 5 3/4"	38'- 4 1/8"	6'- 8 5/8"	39'- 1"	188	72	182.396	3.446	703.628	40'- 2"	6	39'- 10"	2	22	5.114	313.467	5.097	239.319	P
12	12	6	11"	9'- 10 1/4"	0'- 7"	4'- 11 5/8"	0'- 9 1/4"	0'- 6"	38'- 4 1/8"	6'- 8 3/8"	39'- 2"	188	88	188.044	3.701	742.832	40'- 2"	6	39'- 10"	2	26	5.299	327.272	5.257	239.319	T

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

SPECIFICATION REFERENCE	<h2>TRIPLE BOX CULVERTS</h2> <h3>0 TO 2 FT. FILLS</h3> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	 ROAD AND BRIDGE STANDARDS	REVISION DATE	SHEET 2 OF 2
			08/14	1004.06

FOR TYPICAL SECTION, NOTES AND OTHER DETAILS, REFER TO STANDARD BCT-DT.

BCT-05

SPAN		HIGHT		REINFORCING STEEL											QUAN./LF		HEADWALLS							WINGWALL			
(FT.)	(FT.)	SIZE	SPACING C-C	BT I							LENGTH	NO. BL1 #4 BARS	NO. BL2 #3 BARS	REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		NO. HW2 BARS	NO. HW3 BARS	INLET CONCRETE CL. A4 (CY)		INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)
				a	b	c	d	e	f	g							HEADWALL LENGTH	SIZE	LENGTH								
3	3	4	12"	2'- 8 7/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	11'- 3 7/8"	1'- 5 7/8"	11'- 10"	44	16	42.388	0.989	109.333	13'- 2"	6	12'- 10"	2	8	1.827	102.932	1.808	77.103	A	
3	4	4	12"	2'- 8 7/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	11'- 3 7/8"	1'- 5 7/8"	11'- 10"	44	24	45.212	1.087	117.685	13'- 2"	6	12'- 10"	2	10	1.932	109.835	1.901	77.103	C	
4	3	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	14'- 4"	2'- 1"	14'- 10"	56	16	52.408	1.136	129.262	16'- 2"	6	15'- 10"	2	8	2.131	120.956	2.121	95.127	A	
4	4	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	14'- 4"	2'- 1"	14'- 10"	56	24	55.232	1.234	137.614	16'- 2"	6	15'- 10"	2	10	2.236	127.859	2.214	95.127	C	
4	5	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	14'- 4"	2'- 1"	14'- 10"	56	32	58.056	1.332	145.966	16'- 2"	6	15'- 10"	2	12	2.341	134.761	2.307	95.127	E	
4	6	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	14'- 4"	2'- 1"	14'- 10"	56	40	60.880	1.430	154.318	16'- 2"	6	15'- 10"	2	14	2.446	141.664	2.399	95.127	G	
5	3	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	17'- 4"	2'- 8 1/4"	17'- 10"	68	16	62.428	1.281	162.105	19'- 2"	6	18'- 10"	2	8	2.434	138.980	2.435	113.151	A	
5	4	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	17'- 4"	2'- 8 1/4"	17'- 10"	68	24	65.252	1.380	170.457	19'- 2"	6	18'- 10"	2	10	2.539	145.883	2.527	113.151	C	
5	5	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	17'- 4"	2'- 8 1/4"	17'- 10"	68	32	68.076	1.478	178.809	19'- 2"	6	18'- 10"	2	12	2.644	152.785	2.620	113.151	E	
5	6	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	17'- 4"	2'- 8 1/4"	17'- 10"	68	40	70.900	1.575	194.389	19'- 2"	6	18'- 10"	2	14	2.750	159.688	2.713	113.151	G	
5	7	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	17'- 4"	2'- 8 1/4"	17'- 10"	68	48	73.724	1.673	203.673	19'- 2"	6	18'- 10"	2	16	2.855	166.591	2.806	113.151	I	
6	4	4	12"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	20'- 4"	3'- 3 1/2"	20'- 10"	80	24	75.272	1.526	191.451	22'- 2"	6	21'- 10"	2	10	2.843	163.907	2.841	131.175	C	
6	5	4	12"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	20'- 4"	3'- 3 1/2"	20'- 10"	80	32	78.096	1.624	202.435	22'- 2"	6	21'- 10"	2	12	2.948	170.809	2.934	131.175	E	
6	6	4	12"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	20'- 4"	3'- 3 1/2"	20'- 10"	80	40	80.920	1.722	212.059	22'- 2"	6	21'- 10"	2	14	3.053	177.712	3.026	131.175	G	
6	7	4	12"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	20'- 4"	3'- 3 1/2"	20'- 10"	80	48	83.744	1.820	221.683	22'- 2"	6	21'- 10"	2	16	3.158	184.615	3.119	131.175	I	
6	8	4	11"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	20'- 4"	3'- 3 1/2"	20'- 10"	80	56	86.568	1.917	247.827	22'- 2"	6	21'- 10"	2	18	3.263	191.517	3.212	131.175	K	
7	4	4	9"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	23'- 4 1/8"	3'- 10 5/8"	23'- 10"	92	24	85.292	1.669	266.347	25'- 2"	6	24'- 10"	2	10	3.146	181.931	3.154	149.199	C	
7	6	4	9"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	23'- 4 1/8"	3'- 10 5/8"	23'- 10"	92	40	90.940	1.865	285.595	25'- 2"	6	24'- 10"	2	14	3.357	195.736	3.340	149.199	G	
7	8	4	9"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	23'- 4 1/8"	3'- 10 5/8"	23'- 10"	92	56	96.588	2.061	307.293	25'- 2"	6	24'- 10"	2	18	3.567	209.541	3.525	149.199	K	
7	10	4	9"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	23'- 4 1/8"	3'- 10 5/8"	23'- 10"	92	72	102.236	2.254	359.149	25'- 2"	6	24'- 10"	2	22	3.777	223.347	3.711	149.199	O	
8	4	5	11"	6'- 8 7/8"	0'- 4 5/8"	3'- 6 5/8"	0'- 6"	0'- 3 3/4"	26'- 3 7/8"	4'- 5 7/8"	26'- 10"	104	24	95.312	1.812	335.428	28'- 2"	6	27'- 10"	2	10	3.450	199.955	3.468	167.223	C	
8	6	5	11"	6'- 8 7/8"	0'- 4 5/8"	3'- 6 5/8"	0'- 6"	0'- 3 3/4"	26'- 3 7/8"	4'- 5 7/8"	26'- 10"	104	40	100.960	2.007	359.349	28'- 2"	6	27'- 10"	2	14	3.660	213.760	3.653	167.223	G	
8	8	5	11"	6'- 8 7/8"	0'- 4 5/8"	3'- 6 5/8"	0'- 6"	0'- 3 3/4"	26'- 3 7/8"	4'- 5 7/8"	26'- 10"	104	56	106.608	2.203	381.727	28'- 2"	6	27'- 10"	2	18	3.870	227.565	3.839	167.223	K	
8	10	5	11"	6'- 8 7/8"	0'- 4 5/8"	3'- 6 5/8"	0'- 6"	0'- 3 3/4"	26'- 3 7/8"	4'- 5 7/8"	26'- 10"	104	72	112.256	2.397	430.737	28'- 2"	6	27'- 10"	2	22	4.081	241.371	4.024	167.223	O	
9	4	5	11"	7'- 5 7/8"	0'- 5 7/8"	3'- 10 1/4"	0'- 7 3/4"	0'- 5"	29'- 4"	4'- 11 3/4"	30'- 0"	116	24	105.332	2.185	387.151	31'- 2"	6	30'- 10"	2	10	3.682	217.979	3.710	185.247	D	
9	6	5	10"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	29'- 4"	4'- 11 1/2"	30'- 1"	116	40	110.980	2.426	415.921	31'- 2"	6	30'- 10"	2	14	3.874	231.784	3.877	185.247	H	
9	8	5	10"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	29'- 4"	4'- 11 1/2"	30'- 1"	116	56	116.628	2.621	452.011	31'- 2"	6	30'- 10"	2	18	4.084	245.589	4.063	185.247	L	
9	10	5	9"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	29'- 4"	4'- 11 1/2"	30'- 1"	116	72	122.276	2.813	519.719	31'- 2"	6	30'- 10"	2	22	4.295	259.395	4.248	185.247	P	
9	12	5	9"	7'- 5 5/8"	0'- 6 3/8"	3'- 9 3/4"	0'- 8 3/8"	0'- 5 1/2"	29'- 4"	4'- 11 1/4"	30'- 1"	116	88	127.924	3.053	561.492	31'- 2"	6	30'- 10"	2	26	4.487	273.200	4.416	185.247	T	
10	4	5	9"	8'- 3 3/8"	0'- 6 1/8"	4'- 2 3/4"	0'- 8 1/8"	0'- 5 1/4"	32'- 4"	5'- 6 3/4"	33'- 1"	128	24	115.352	2.403	436.712	34'- 2"	6	33'- 10"	2	10	3.953	236.003	3.991	203.271	D	
10	6	5	10"	8'- 3 3/8"	0'- 6 1/8"	4'- 2 3/4"	0'- 8 1/8"	0'- 5 1/4"	32'- 4"	5'- 6 3/4"	33'- 1"	128	40	121.000	2.599	454.319	34'- 2"	6	33'- 10"	2	14	4.164	249.808	4.177	203.271	H	
10	8	5	9"	8'- 3 3/8"	0'- 6 1/8"	4'- 2 3/4"	0'- 8 1/8"	0'- 5 1/4"	32'- 4"	5'- 6 3/4"	33'- 1"	128	56	126.648	2.792	508.554	34'- 2"	6	33'- 10"	2	18	4.374	263.613	4.362	203.271	L	
10	10	5	9"	8'- 3 1/4"	0'- 6 1/8"	4'- 2 1/2"	0'- 8 3/8"	0'- 5 1/2"	32'- 4"	5'- 6 1/2"	33'- 1"	128	72	132.296	3.038	535.338	34'- 2"	6	33'- 10"	2	22	4.564	277.419	4.527	203.271	P	
10	12	6	12"	8'- 3 1/4"	0'- 6 1/2"	4'- 2 1/2"	0'- 8 1/2"	0'- 5 1/2"	32'- 4"	5'- 6 1/2"	33'- 1"	128	88	137.944	3.229	624.508	34'- 2"	6	33'- 10"	2	26	4.774	291.224	4.713	203.271	T	
12	6	5	9"	9'- 10 3/8"	0'- 6 5/8"	4'- 11 7/8"	0'- 8 3/4"	0'- 5 3/4"	38'- 4 1/8"	6'- 8 5/8"	39'- 1"	152	40	141.040	3.062	562.160	40'- 2"	6	39'- 10"	2	14	4.693	285.856	4.726	239.319	H	
12	8	6	12"	9'- 10 3/8"	0'- 6 3/4"	4'- 11 7/8"	0'- 8 3/8"	0'- 5 3/4"	38'- 4 1/8"	6'- 8 5/8"	39'- 1"	152	56	146.688	3.255	618.563	40'- 2"	6	39'- 10"	2	18	4.903	299.661	4.912	239.319	L	
12	10	5	8"	9'- 10 3/8"	0'- 6 5/8"	4'- 11 7/8"	0'- 8 3/4"	0'- 5 3/4"	38'- 4 1/8"	6'- 8 5/8"	39'- 1"	152	72	152.336	3.449	673.750	40'- 2"	6	39'- 10"	2	22	5.114	313.467	5.097	239.319	P	
12	12	6	11"	9'- 10 1/4"	0'- 7"	4'- 11 5/8"	0'- 9 1/4"	0'- 6"	38'- 4 1/8"	6'- 8 3/8"	39'- 2"	152	88	157.984	3.702	725.364	40'- 2"	6	39'- 10"	2	26	5.299	327.272	5.257	239.319	T	

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

SPECIFICATION REFERENCE	<h2 style="margin: 0;">TRIPLE BOX CULVERTS</h2> <h3 style="margin: 0;">2 TO 5 FT. FILLS</h3> <p style="margin: 0;">VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	<p style="margin: 0;">ROAD AND BRIDGE STANDARDS</p>	REVISION DATE	SHEET 2 OF 2
			08/14	1004.08

FOR TYPICAL SECTION, NOTES AND OTHER DETAILS, REFER TO STANDARD BCT-DT.

BCT-40

SPAN		HCHT		REINFORCING STEEL											QUAN./LF		HEADWALLS							WINGWALL		
(FT.)	(FT.)	SIZE	SPACING C-C	a	b	c	d	e	f	g	LENGTH	NO. BL1 #4 BARS	NO. BL2 #3 BARS	REINFORCING STEEL (LBS./LONG. FT)	CONCRETE CLASS #4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G HEADWALL LENGTH	HW1 SIZE	HW1 LENGTH	NO. HW2 BARS	NO. HW3 BARS	INLET CONCRETE CL. #4 (CY)	INLET REINFORCING STEEL (LBS)		OUTLET CONCRETE CL. #4 (CY)	OUTLET REINFORCING STEEL (LBS)
3	3	4	12"	2'-7"	0'- 4"	1'-10"	0'- 5/8"	0'- 3/4"	11'-3"	1'-3"	11'-9"	44	16	42,388	0.988	119.117	13'- 2"	6	12'-10"	2	8	1.827	102.932	1.808	77.103	A
3	4	4	12"	2'-7"	0'- 4"	1'-10"	0'- 5/8"	0'- 3/4"	11'-3"	1'-3"	11'-9"	44	24	45,212	1.087	123.575	13'- 2"	6	12'-10"	2	10	1.932	109.835	1.901	77.103	C
4	3	4	12"	3'-3"	0'- 5 3/4"	2'-3"	0'- 7 7/8"	0'- 5"	14'-3"	1'-6"	15'-0"	56	16	52,408	1.294	130.522	16'- 2"	6	15'-10"	2	8	2.104	120.956	2.095	95.127	B
4	4	4	12"	3'-3"	0'- 5 3/4"	2'-3"	0'- 7 7/8"	0'- 5"	14'-3"	1'-6"	15'-0"	56	24	55,232	1.392	138.874	16'- 2"	6	15'-10"	2	10	2.209	127.859	2.188	95.127	D
4	5	4	12"	3'-3"	0'- 5 3/4"	2'-3"	0'- 7 7/8"	0'- 5"	14'-3"	1'-6"	15'-0"	56	32	58,056	1.490	147.226	16'- 2"	6	15'-10"	2	12	2.315	134.761	2.280	95.127	F
4	6	4	12"	3'-3"	0'- 5 3/4"	2'-3"	0'- 7 7/8"	0'- 5"	14'-3"	1'-6"	15'-0"	56	40	60,880	1.587	175.546	16'- 2"	6	15'-10"	2	14	2.420	141.664	2.373	95.127	H
5	3	4	11"	3'-10"	0'- 8"	2'-8"	0'- 10 7/8"	0'- 7 1/4"	17'-4"	1'-9"	18'-3"	68	16	62,428	1.718	160.509	19'- 2"	6	18'-10"	2	8	2.313	138.980	2.313	113.151	B
5	4	4	11"	3'-10"	0'- 8"	2'-8"	0'- 10 7/8"	0'- 7 1/4"	17'-4"	1'-9"	18'-3"	68	24	65,252	1.816	168.982	19'- 2"	6	18'-10"	2	10	2.418	145.883	2.406	113.151	D
5	5	4	10"	3'-10"	0'- 7 3/4"	2'-8"	0'- 10 1/2"	0'- 7"	17'-4"	1'-9"	18'-3"	68	32	68,076	1.886	186.495	19'- 2"	6	18'-10"	2	12	2.532	152.785	2.508	113.151	F
5	6	4	10"	3'-10"	0'- 7 3/4"	2'-8"	0'- 10 1/2"	0'- 7"	17'-4"	1'-9"	18'-3"	68	40	70,900	1.984	200.833	19'- 2"	6	18'-10"	2	14	2.637	159.688	2.600	113.151	H
5	7	4	10"	3'-10"	0'- 7 3/4"	2'-8"	0'- 10 1/2"	0'- 7"	17'-4"	1'-9"	18'-3"	68	48	73,724	2.080	230.967	19'- 2"	6	18'-10"	2	16	2.742	166.591	2.693	113.151	J
6	4	4	9"	4'-6"	0'-10"	3'-0"	1'- 1 5/8"	0'- 9/4"	20'-4"	2'-1"	21'-7"	80	24	75,272	2.289	215.855	22'- 2"	6	21'-10"	2	10	2.607	163.907	2.605	131.175	D
6	5	4	10"	4'-6"	0'-10"	3'-0"	1'- 1 5/8"	0'- 9/4"	20'-4"	2'-1"	21'-7"	80	32	78,096	2.387	229.840	22'- 2"	6	21'-10"	2	12	2.712	170.809	2.698	131.175	F
6	6	4	10"	4'-6"	0'-10"	3'-0"	1'- 1 5/8"	0'- 9/4"	20'-4"	2'-1"	21'-7"	80	40	80,920	2.485	244.460	22'- 2"	6	21'-10"	2	14	2.817	177.712	2.791	131.175	H
6	7	4	10"	4'-6"	0'-9 3/4"	3'-0"	1'- 1 1/4"	0'- 9"	20'-4"	2'-1"	21'-6"	80	48	83,744	2.550	271.576	22'- 2"	6	21'-10"	2	16	2.922	184.615	2.883	131.175	J
6	8	4	9"	4'-7"	0'-10"	3'-0"	1'- 1 5/8"	0'- 9/4"	20'-5"	2'-1"	21'-8"	80	56	86,568	2.711	292.291	22'- 2"	6	21'-10"	2	18	3.039	191.517	2.987	131.175	L
7	4	5	9"	5'-2"	1'- 0"	3'-5"	1'- 4 3/8"	0'-11 1/8"	23'-4"	2'-4"	24'-10"	92	24	85,292	2.833	314.260	25'- 2"	6	24'-10"	2	10	2.769	181.931	2.777	149.199	E
7	6	5	9"	5'-2"	0'-11 3/4"	3'-5"	1'- 4"	0'-10 7/8"	23'-4"	2'-5"	24'-9"	92	40	90,940	2.993	337.736	25'- 2"	6	24'-10"	2	14	2.979	195.736	2.962	149.199	I
7	8	5	9"	5'-2"	0'-11 3/4"	3'-5"	1'- 4"	0'-10 7/8"	23'-4"	2'-5"	24'-9"	92	56	96,588	3.185	404.045	25'- 2"	6	24'-10"	2	18	3.189	209.541	3.148	149.199	M
7	10	5	9"	5'-5"	0'-11 3/4"	3'-5"	1'- 4"	0'-10 7/8"	23'-9"	2'-5"	25'-2"	92	72	102,236	3.573	457.227	25'- 2"	6	24'-10"	2	22	3.361	223.347	3.294	149.199	Q
8	4	5	8"	5'-9"	1'- 2 1/2"	3'-10"	1'- 7 7/8"	1'- 1 5/8"	26'-4"	2'-6"	28'-2"	104	24	95,312	3.536	383.895	28'- 2"	6	27'-10"	2	10	2.875	199.955	2.893	167.223	E
8	6	5	8"	5'-9"	1'- 2"	3'-10"	1'- 7 7/8"	1'- 1 5/8"	26'-4"	2'-7"	28'-1"	104	40	100,960	3.649	408.450	28'- 2"	6	27'-10"	2	14	3.085	213.760	3.079	167.223	I
8	8	5	8"	5'-9"	1'- 2"	3'-10"	1'- 7 7/8"	1'- 1 5/8"	26'-4"	2'-7"	28'-1"	104	56	106,608	3.842	468.303	28'- 2"	6	27'-10"	2	18	3.280	227.565	3.248	167.223	M
8	10	5	8"	6'-0"	1'- 2"	3'-10"	1'- 7 7/8"	1'- 1 5/8"	26'-9"	2'-7"	28'-6"	104	72	112,256	4.236	518.258	28'- 2"	6	27'-10"	2	22	3.451	241.371	3.394	167.223	Q
9	4	6	9"	6'-5"	1'- 4"	4'-3"	1'- 9 7/8"	1'- 3"	29'-4"	2'-11"	31'-4"	116	24	105,332	4.144	499.880	31'- 2"	6	30'-10"	2	10	2.944	217.979	2.972	185.247	E
9	6	6	9"	6'-5"	1'- 4"	4'-3"	1'- 9 7/8"	1'- 3"	29'-4"	2'-11"	31'-4"	116	40	110,980	4.340	525.293	31'- 2"	6	30'-10"	2	14	3.155	231.784	3.158	185.247	I
9	8	6	9"	6'-5"	1'- 3 3/4"	4'-3"	1'- 9 1/2"	1'- 2 3/4"	29'-4"	2'-11"	31'-4"	116	56	116,628	4.487	586.121	31'- 2"	6	30'-10"	2	18	3.365	245.589	3.343	185.247	M
9	10	6	9"	6'-8"	1'- 4"	4'-3"	1'- 9 7/8"	1'- 3"	29'-9"	2'-11"	31'-9"	116	72	122,276	4.932	641.784	31'- 2"	6	30'-10"	2	22	3.553	259.395	3.506	185.247	Q
9	12	6	9"	6'-10"	1'- 3 3/4"	4'-3"	1'- 9 1/2"	1'- 2 3/4"	30'-1"	2'-11"	32'-1"	116	88	127,924	5.294	747.331	31'- 2"	6	30'-10"	2	26	3.598	273.200	3.525	185.247	U
10	4	6	9"	7'-1"	1'- 6"	4'-8"	2'- 3/4"	1'- 5"	32'-3"	3'-2"	34'-7"	128	24	115,352	4.914	547.156	34'- 2"	6	33'-10"	2	10	2.975	236.003	3.013	203.271	F
10	6	6	9"	7'-1"	1'- 6"	4'-8"	2'- 3/4"	1'- 5"	32'-3"	3'-2"	34'-7"	128	40	121,000	5.110	572.819	34'- 2"	6	33'-10"	2	14	3.185	249.808	3.198	203.271	J
10	8	6	9"	7'-1"	1'- 6"	4'-8"	2'- 3/4"	1'- 5"	32'-3"	3'-2"	34'-7"	128	56	126,648	5.302	635.237	34'- 2"	6	33'-10"	2	18	3.395	263.613	3.384	203.271	N
10	10	7	9"	7'-3"	1'- 6"	4'-8"	2'- 3/8"	1'- 4 3/4"	32'-7"	3'-2"	34'-11"	128	72	132,296	5.657	790.481	34'- 2"	6	33'-10"	2	22	3.564	277.419	3.527	203.271	R
10	12	6	9"	7'-5"	1'- 6 1/4"	4'-8"	2'- 1/8"	1'- 5 1/4"	33'-0"	3'-1"	35'-5"	128	88	137,944	6.175	756.073	34'- 2"	6	33'-10"	2	26	3.603	291.224	3.540	203.271	V
12	6	6	8"	8'-4"	1'-10 1/2"	5'-5"	2'- 7 7/8"	1'- 9/2"	38'-3"	3'-8"	41'-3"	152	40	141,040	6.986	732.789	40'- 2"	6	39'-10"	2	14	3.184	285.856	3.217	239.319	J
12	8	6	8"	8'-4"	1'-10 1/2"	5'-5"	2'- 7 7/8"	1'- 9/2"	38'-3"	3'-8"	41'-3"	152	56	146,688	7.179	797.422	40'- 2"	6	39'-10"	2	18	3.394	299.661	3.402	239.319	N
12	10	6	8"	8'-5"	1'-10 1/2"	5'-5"	2'- 7 7/8"	1'- 9/2"	38'-6"	3'-8"	41'-5"	152	72	152,336	7.460	872.364	40'- 2"	6	39'-10"	2	22	3.535	313.467	3.518	239.319	R
12	12	6	8"	8'-8"	1'-10 1/2"	5'-5"	2'- 7 7/8"	1'- 9/2"	39'-0"	3'-8"	41'-11"	152	88	157,984	7.970	921.845	40'- 2"	6	39'-10"	2	26	3.590	327.272	3.547	239.319	V

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

SPECIFICATION REFERENCE	<h2>TRIPLE BOX CULVERTS</h2> <h3>30 TO 40 FT. FILLS</h3> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	 ROAD AND BRIDGE STANDARDS

FOR TYPICAL SECTION, NOTES AND OTHER DETAILS, REFER TO STANDARD BCQ-DT.

BCQ-02

SPAN		HGHT		REINFORCING STEEL											QUAN./LF		HEADWALLS							WINGWALL			
(FT.)	(FT.)	SIZE	SPACING C-C	BT I							LENGTH	NO. BL1 #4 BARS	NO. BL2 #3 BARS	REINFORCING STEEL (LBS/LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS/LF)	G		HW I		NO. HW2 BARS	NO. HW3 BARS	INLET CONCRETE CL. A4 (CY)		INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)
				a	b	c	d	e	f	g							HEADWALL LENGTH	SIZE	LENGTH								
3	3	4	12"	2'- 8 7/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	14'- 11 7/8"	1'- 5 7/8"	15'- 9"	73	20	68.015	1.283	150.583	16'- 10"	6	16'- 6"	3	12	2.222	137.876	2.191	99.132	A	
3	4	4	12"	2'- 8 7/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	14'- 11 7/8"	1'- 5 7/8"	15'- 9"	73	30	71.545	1.404	182.264	16'- 10"	6	16'- 6"	3	15	2.333	148.230	2.284	99.132	C	
4	3	4	12"	3'- 5 7/8"	0'- 5 3/4"	1'- 10 1/4"	0'- 7 5/8"	0'- 5"	19'- 0"	1'- 11 3/4"	20'- 0"	93	20	84.715	1.626	193.113	20'- 10"	6	20'- 6"	3	12	2.595	161.908	2.577	123.164	B	
4	4	4	12"	3'- 5 7/8"	0'- 5 3/4"	1'- 10 1/4"	0'- 7 5/8"	0'- 5"	19'- 0"	1'- 11 3/4"	20'- 0"	93	30	88.245	1.749	209.002	20'- 10"	6	20'- 6"	3	15	2.706	172.262	2.670	123.164	D	
4	5	4	12"	3'- 5 3/4"	0'- 6"	1'- 10"	0'- 8"	0'- 5 1/4"	19'- 0"	1'- 11 1/2"	20'- 1"	93	40	91.775	1.901	225.081	20'- 10"	6	20'- 6"	3	18	2.808	182.616	2.753	123.164	F	
4	6	4	12"	3'- 5 3/4"	0'- 6"	1'- 10"	0'- 8"	0'- 5 1/4"	19'- 0"	1'- 11 1/2"	20'- 1"	93	50	95.305	2.023	245.516	20'- 10"	6	20'- 6"	3	21	2.919	192.970	2.845	123.164	H	
5	3	4	11"	4'- 3 5/8"	0'- 5 1/2"	2'- 3 1/4"	0'- 7 1/4"	0'- 4 3/4"	23'- 0"	2'- 7 1/4"	24'- 0"	113	20	101.415	1.815	237.595	24'- 10"	6	24'- 6"	3	12	2.979	185.940	2.974	147.196	A	
5	4	4	11"	4'- 3 5/8"	0'- 5 1/2"	2'- 3 1/4"	0'- 7 1/4"	0'- 4 3/4"	23'- 0"	2'- 7 1/4"	24'- 0"	113	30	104.945	1.937	257.242	24'- 10"	6	24'- 6"	3	15	3.090	196.294	3.067	147.196	C	
5	5	4	11"	4'- 3 5/8"	0'- 5 1/2"	2'- 3 1/4"	0'- 7 1/4"	0'- 4 3/4"	23'- 0"	2'- 7 1/4"	24'- 0"	113	40	108.475	2.060	273.033	24'- 10"	6	24'- 6"	3	18	3.201	206.648	3.160	147.196	E	
5	6	4	11"	4'- 3 5/8"	0'- 5 1/2"	2'- 3 1/4"	0'- 7 1/4"	0'- 4 3/4"	23'- 0"	2'- 7 1/4"	24'- 0"	113	50	112.005	2.180	316.776	24'- 10"	6	24'- 6"	3	21	3.313	217.002	3.253	147.196	G	
5	7	4	10"	4'- 3 5/8"	0'- 5 1/2"	2'- 3 1/4"	0'- 7 1/4"	0'- 4 3/4"	23'- 0"	2'- 7 1/4"	24'- 0"	113	60	115.535	2.302	329.987	24'- 10"	6	24'- 6"	3	24	3.424	227.356	3.345	147.196	I	
6	4	4	9"	5'- 1 3/8"	0'- 5 1/4"	2'- 8 1/4"	0'- 6 7/8"	0'- 4 1/2"	27'- 0"	3'- 2 3/4"	27'- 11"	133	30	121.645	2.112	329.861	28'- 10"	6	28'- 6"	3	15	3.499	220.326	3.489	171.228	C	
6	5	4	9"	5'- 1 3/8"	0'- 5 1/4"	2'- 8 1/4"	0'- 6 7/8"	0'- 4 1/2"	27'- 0"	3'- 2 3/4"	27'- 11"	133	40	125.175	2.233	359.273	28'- 10"	6	28'- 6"	3	18	3.610	230.680	3.582	171.228	E	
6	6	4	9"	5'- 1 3/8"	0'- 5 1/4"	2'- 8 1/4"	0'- 6 7/8"	0'- 4 1/2"	27'- 0"	3'- 2 3/4"	27'- 11"	133	50	128.705	2.355	379.181	28'- 10"	6	28'- 6"	3	21	3.721	241.034	3.674	171.228	G	
6	7	4	9"	5'- 1 3/8"	0'- 5 1/4"	2'- 8 1/4"	0'- 6 7/8"	0'- 4 1/2"	27'- 0"	3'- 2 3/4"	27'- 11"	133	60	132.235	2.477	397.761	28'- 10"	6	28'- 6"	3	24	3.833	251.388	3.767	171.228	I	
6	8	4	8"	5'- 1 3/8"	0'- 5 1/4"	2'- 8 1/4"	0'- 6 7/8"	0'- 4 1/2"	27'- 0"	3'- 2 3/4"	27'- 11"	133	70	135.765	2.598	438.628	28'- 10"	6	28'- 6"	3	27	3.944	261.742	3.860	171.228	K	
7	4	4	8"	5'- 11"	0'- 5 1/4"	3'- 1 1/8"	0'- 6 7/8"	0'- 4 1/2"	31'- 1/8"	3'- 9 7/8"	31'- 11"	153	30	138.345	2.323	397.868	32'- 10"	6	32'- 6"	3	15	3.894	244.358	3.898	195.260	C	
7	6	4	8"	5'- 11"	0'- 5 1/4"	3'- 1 1/8"	0'- 6 7/8"	0'- 4 1/2"	31'- 1/8"	3'- 9 7/8"	31'- 11"	153	50	145.405	2.568	426.453	32'- 10"	6	32'- 6"	3	21	4.117	265.066	4.083	195.260	G	
7	8	5	11"	5'- 11"	0'- 5 3/8"	3'- 1 1/8"	0'- 7"	0'- 4 1/2"	31'- 1/8"	3'- 9 7/8"	31'- 11"	153	70	152.465	2.810	481.580	32'- 10"	6	32'- 6"	3	27	4.339	285.774	4.268	195.260	K	
7	10	5	11"	5'- 10 7/8"	0'- 5 5/8"	3'- 7/8"	0'- 7 3/8"	0'- 4 3/4"	31'- 1/8"	3'- 9 5/8"	32'- 0"	153	90	159.525	3.104	507.590	32'- 10"	6	32'- 6"	3	33	4.543	306.482	4.435	195.260	O	
8	4	5	12"	6'- 8 3/8"	0'- 5 5/8"	3'- 5 3/8"	0'- 7 3/8"	0'- 4 3/4"	34'- 11 7/8"	4'- 4 7/8"	35'- 11"	173	30	155.045	2.590	442.425	36'- 10"	6	36'- 6"	3	15	4.267	268.390	4.284	219.292	C	
8	6	5	11"	6'- 8 3/8"	0'- 5 5/8"	3'- 5 3/8"	0'- 7 3/8"	0'- 4 3/4"	34'- 11 7/8"	4'- 4 7/8"	35'- 11"	173	50	162.105	2.833	501.470	36'- 10"	6	36'- 6"	3	21	4.490	289.098	4.469	219.292	G	
8	8	5	11"	6'- 8 1/4"	0'- 5 5/8"	3'- 5 3/8"	0'- 7 3/4"	0'- 5"	34'- 11 7/8"	4'- 4 5/8"	36'- 0"	173	70	169.165	3.132	531.756	36'- 10"	6	36'- 6"	3	27	4.708	309.806	4.651	219.292	L	
8	10	5	10"	6'- 8 1/4"	0'- 5 5/8"	3'- 5 3/8"	0'- 7 3/4"	0'- 5"	34'- 11 7/8"	4'- 4 5/8"	36'- 0"	173	90	176.225	3.374	587.781	36'- 10"	6	36'- 6"	3	33	4.931	330.514	4.836	219.292	P	
9	4	5	11"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	39'- 0"	4'- 11 1/2"	40'- 1"	193	30	171.745	2.928	517.402	40'- 10"	6	40'- 6"	3	15	4.627	292.422	4.657	243.324	D	
9	6	5	10"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	39'- 0"	4'- 11 1/2"	40'- 1"	193	50	178.805	3.170	581.291	40'- 10"	6	40'- 6"	3	21	4.850	313.130	4.843	243.324	H	
9	8	5	10"	7'- 5 3/4"	0'- 6 1/8"	3'- 10"	0'- 8 1/8"	0'- 5 1/4"	39'- 0"	4'- 11 1/2"	40'- 1"	193	70	185.865	3.414	614.912	40'- 10"	6	40'- 6"	3	27	5.072	333.838	5.028	243.324	L	
9	10	5	9"	7'- 6"	0'- 5 5/8"	3'- 10 1/2"	0'- 7 3/8"	0'- 4 3/4"	39'- 0"	5'- 0"	39'- 11"	193	90	192.925	3.534	695.825	40'- 10"	6	40'- 6"	3	33	5.327	354.546	5.246	243.324	O	
9	12	6	12"	7'- 6"	0'- 5 3/4"	3'- 10 1/2"	0'- 7 1/2"	0'- 4 3/4"	39'- 0"	5'- 0"	39'- 11"	193	110	199.985	3.775	776.824	40'- 10"	6	40'- 6"	3	39	5.550	375.254	5.431	243.324	S	
10	4	5	10"	8'- 3 1/4"	0'- 6 3/8"	4'- 2 1/2"	0'- 8 3/8"	0'- 5 1/2"	43'- 0"	5'- 6 1/2"	44'- 1"	213	30	188.445	3.224	595.266	44'- 10"	6	44'- 6"	3	15	4.985	316.454	5.028	267.356	D	
10	6	5	9"	8'- 3 1/4"	0'- 6 3/8"	4'- 2 1/2"	0'- 8 3/8"	0'- 5 1/2"	43'- 0"	5'- 6 1/2"	44'- 1"	213	50	195.505	3.466	651.157	44'- 10"	6	44'- 6"	3	21	5.207	337.162	5.213	267.356	H	
10	8	6	12"	8'- 3 1/4"	0'- 6 1/2"	4'- 2 1/2"	0'- 8 1/2"	0'- 5 1/2"	43'- 0"	5'- 6 1/2"	44'- 1"	213	70	202.565	3.706	739.583	44'- 10"	6	44'- 6"	3	27	5.430	357.870	5.399	267.356	L	
10	10	5	8"	8'- 3 1/4"	0'- 6 3/8"	4'- 2 1/2"	0'- 8 3/8"	0'- 5 1/2"	43'- 0"	5'- 6 1/2"	44'- 1"	213	90	209.625	3.948	809.034	44'- 10"	6	44'- 6"	3	33	5.653	378.578	5.584	267.356	P	
10	12	5	8"	8'- 3 1/4"	0'- 6 3/8"	4'- 2 1/2"	0'- 8 3/8"	0'- 5 1/2"	43'- 0"	5'- 6 1/2"	44'- 1"	213	110	216.685	4.191	862.850	44'- 10"	6	44'- 6"	3	39	5.875	399.286	5.770	267.356	T	
12	6	5	8"	9'- 10 1/4"	0'- 6 7/8"	4'- 11 5/8"	0'- 9 1/8"	0'- 6"	51'- 1/8"	6'- 8 3/8"	52'- 3"	253	50	228.905	4.085	928.213	52'- 10"	6	52'- 6"	3	21	5.904	385.226	5.937	315.420	H	
12	8	5	8"	9'- 10 1/4"	0'- 6 7/8"	4'- 11 5/8"	0'- 9 1/8"	0'- 6"	51'- 1/8"	6'- 8 3/8"	52'- 3"	253	70	235.965	4.334	906.204	52'- 10"	6	52'- 6"	3	27	6.127	405.934	6.122	315.420	L	
12	10	6	11"	9'- 10 1/4"	0'- 7"	4'- 11 5/8"	0'- 9 1/4"	0'- 6"	51'- 1/8"	6'- 8 3/8"	52'- 3"	253	90	243.025	4.577	949.949	52'- 10"	6	52'- 6"	3	33	6.349	426.642	6.308	315.420	P	
12	12	6	10"	9'- 10 1/4"	0'- 7"	4'- 11 5/8"	0'- 9 1/4"	0'- 6"	51'- 1/8"	6'- 8 3/8"	52'- 3"	253	110	250.085	4.815	1,069.659	52'- 10"	6	52'- 6"	3	39	6.572	447.350	6.493	315.420	T	

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

SPECIFICATION REFERENCE	<h2>QUADRUPLE BOX CULVERTS</h2> <h3>0 TO 2 FT. FILLS</h3> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	 ROAD AND BRIDGE STANDARDS	REVISION DATE	SHEET 2 OF 2
			08/14	1005.06

FOR TYPICAL SECTION, NOTES AND OTHER DETAILS, REFER TO STANDARD BCQ-DT.

BCQ-05

SPAN		HGHT		REINFORCING STEEL											QUAN./LF		HEADWALLS							WINGWALL		
(FT.)	(FT.)	SIZE	SPACING C-C	a	b	c	d	e	f	g	LENGTH	NO. BL1 #4 BARS	NO. BL2 #3 BARS	REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G HEADWALL LENGTH	HW I SIZE	HW I LENGTH	NO. HW2 BARS	NO. HW3 BARS	INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)		OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)
3	3	4	12"	2'- 8 7/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	14'- 11 7/8"	1'- 5 7/8"	15'- 9"	60	20	57.160	1.284	141.899	16'- 10"	6	16'- 6"	3	12	2.222	137.876	2.191	99.132	A
3	4	4	12"	2'- 8 7/8"	0'- 4 1/2"	1'- 6 5/8"	0'- 5 7/8"	0'- 3 3/4"	14'- 11 7/8"	1'- 5 7/8"	15'- 9"	60	30	60.690	1.406	152.339	16'- 10"	6	16'- 6"	3	15	2.333	148.230	2.284	99.132	C
4	3	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	19'- 0"	2'- 1"	19'- 9"	76	20	70.520	1.479	168.508	20'- 10"	6	20'- 6"	3	12	2.626	161.908	2.609	123.164	A
4	4	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	19'- 0"	2'- 1"	19'- 9"	76	30	74.050	1.601	190.527	20'- 10"	6	20'- 6"	3	15	2.738	172.262	2.702	123.164	C
4	5	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	19'- 0"	2'- 1"	19'- 9"	76	40	77.580	1.723	209.164	20'- 10"	6	20'- 6"	3	18	2.849	182.616	2.794	123.164	E
4	6	4	12"	3'- 6 1/2"	0'- 4 1/2"	1'- 11 1/2"	0'- 5 7/8"	0'- 3 3/4"	19'- 0"	2'- 1"	19'- 9"	76	50	81.110	1.845	223.366	20'- 10"	6	20'- 6"	3	21	2.960	192.970	2.887	123.164	G
5	3	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	23'- 0"	2'- 8 1/4"	23'- 9"	92	20	83.880	1.674	208.031	24'- 10"	6	24'- 6"	3	12	3.031	185.940	3.027	147.196	A
5	4	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	23'- 0"	2'- 8 1/4"	23'- 9"	92	30	87.410	1.796	222.479	24'- 10"	6	24'- 6"	3	15	3.142	196.294	3.120	147.196	C
5	5	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	23'- 0"	2'- 8 1/4"	23'- 9"	92	40	90.940	1.919	233.721	24'- 10"	6	24'- 6"	3	18	3.254	206.648	3.212	147.196	E
5	6	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	23'- 0"	2'- 8 1/4"	23'- 9"	92	50	94.470	2.041	253.896	24'- 10"	6	24'- 6"	3	21	3.365	217.002	3.305	147.196	G
5	7	4	12"	4'- 4 1/8"	0'- 4 1/2"	2'- 4 1/4"	0'- 5 7/8"	0'- 3 3/4"	23'- 0"	2'- 8 1/4"	23'- 9"	92	60	98.000	2.163	267.779	24'- 10"	6	24'- 6"	3	24	3.476	227.356	3.398	147.196	I
6	4	4	12"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	27'- 0"	3'- 3 1/2"	27'- 9"	108	30	100.770	1.991	254.634	28'- 10"	6	28'- 6"	3	15	3.547	220.326	3.537	171.228	C
6	5	4	12"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	27'- 0"	3'- 3 1/2"	27'- 9"	108	40	104.300	2.113	271.240	28'- 10"	6	28'- 6"	3	18	3.658	230.680	3.630	171.228	E
6	6	4	12"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	27'- 0"	3'- 3 1/2"	27'- 9"	108	50	107.830	2.236	287.643	28'- 10"	6	28'- 6"	3	21	3.770	241.034	3.723	171.228	G
6	7	4	11"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	27'- 0"	3'- 3 1/2"	27'- 9"	108	60	111.360	2.357	315.391	28'- 10"	6	28'- 6"	3	24	3.881	251.388	3.816	171.228	I
6	8	4	11"	5'- 1 3/4"	0'- 4 1/2"	2'- 9"	0'- 5 7/8"	0'- 3 3/4"	27'- 0"	3'- 3 1/2"	27'- 9"	108	70	114.890	2.478	348.013	28'- 10"	6	28'- 6"	3	27	3.992	261.742	3.908	171.228	K
7	4	4	8"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	31'- 1/8"	3'- 10 5/8"	31'- 10"	124	30	114.130	2.179	375.974	32'- 10"	6	32'- 6"	3	15	3.952	244.358	3.955	195.260	C
7	6	4	8"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	31'- 1/8"	3'- 10 5/8"	31'- 10"	124	50	121.190	2.424	411.704	32'- 10"	6	32'- 6"	3	21	4.174	265.066	4.141	195.260	G
7	8	4	8"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	31'- 1/8"	3'- 10 5/8"	31'- 10"	124	70	128.250	2.668	446.891	32'- 10"	6	32'- 6"	3	27	4.397	285.774	4.326	195.260	K
7	10	4	8"	5'- 11 3/8"	0'- 4 1/2"	3'- 1 7/8"	0'- 5 7/8"	0'- 3 3/4"	31'- 1/8"	3'- 10 5/8"	31'- 10"	124	90	135.310	2.912	490.787	32'- 10"	6	32'- 6"	3	33	4.620	306.482	4.512	195.260	O
8	4	5	10"	6'- 8 7/8"	0'- 4 7/8"	3'- 6 3/8"	0'- 6"	0'- 3 3/4"	34'- 11 7/8"	4'- 5 7/8"	35'- 9"	140	30	127.490	2.370	469.730	36'- 10"	6	36'- 6"	3	15	4.356	268.390	4.373	219.292	C
8	6	5	11"	6'- 8 3/4"	0'- 4 7/8"	3'- 6 3/8"	0'- 6 1/4"	0'- 4"	34'- 11 7/8"	4'- 5 5/8"	35'- 9"	140	50	134.550	2.670	482.589	36'- 10"	6	36'- 6"	3	21	4.557	289.098	4.536	219.292	G
8	8	5	11"	6'- 8 3/4"	0'- 4 7/8"	3'- 6 3/8"	0'- 6 1/4"	0'- 4"	34'- 11 7/8"	4'- 5 5/8"	35'- 9"	140	70	141.610	2.910	573.014	36'- 10"	6	36'- 6"	3	27	4.779	309.806	4.722	219.292	K
8	10	5	10"	6'- 8 5/8"	0'- 5 1/8"	3'- 6 1/8"	0'- 6 5/8"	0'- 4 1/4"	34'- 11 7/8"	4'- 5 3/8"	35'- 10"	140	90	148.670	3.210	593.975	36'- 10"	6	36'- 6"	3	33	4.980	330.514	4.885	219.292	O
9	4	5	9"	7'- 6 1/4"	0'- 5 1/8"	3'- 11"	0'- 6 5/8"	0'- 4 1/4"	39'- 0"	5'- 1/2"	39'- 10"	156	30	140.850	2.683	551.081	40'- 10"	6	40'- 6"	3	15	4.710	292.422	4.740	243.324	C
9	6	5	9"	7'- 6 1/4"	0'- 5 1/8"	3'- 11"	0'- 6 5/8"	0'- 4 1/4"	39'- 0"	5'- 1/2"	39'- 10"	156	50	147.910	2.927	589.585	40'- 10"	6	40'- 6"	3	21	4.933	313.130	4.926	243.324	G
9	8	5	9"	7'- 6 1/4"	0'- 5 1/8"	3'- 11"	0'- 6 5/8"	0'- 4 1/4"	39'- 0"	5'- 1/2"	39'- 10"	156	70	154.970	3.171	624.975	40'- 10"	6	40'- 6"	3	27	5.156	333.838	5.111	243.324	K
9	10	5	9"	7'- 6"	0'- 5 5/8"	3'- 10 1/2"	0'- 7 3/8"	0'- 4 3/4"	39'- 0"	5'- 0"	40'- 0"	156	90	162.030	3.536	665.872	40'- 10"	6	40'- 6"	3	33	5.327	354.546	5.246	243.324	O
9	12	6	12"	7'- 6"	0'- 5 3/4"	3'- 10 1/2"	0'- 7 1/2"	0'- 4 3/4"	39'- 0"	5'- 0"	39'- 11"	156	110	169.090	3.777	741.709	40'- 10"	6	40'- 6"	3	39	5.550	375.254	5.431	243.324	S
10	4	6	12"	8'- 3 5/8"	0'- 5 3/4"	4'- 3 1/4"	0'- 7 1/2"	0'- 4 3/4"	43'- 0"	5'- 7 1/4"	43'- 11"	172	30	154.210	3.020	638.478	44'- 10"	6	44'- 6"	3	15	5.052	316.454	5.095	267.356	C
10	6	6	12"	8'- 3 5/8"	0'- 5 3/4"	4'- 3 1/4"	0'- 7 1/2"	0'- 4 3/4"	43'- 0"	5'- 7 1/4"	43'- 11"	172	50	161.270	3.263	679.789	44'- 10"	6	44'- 6"	3	21	5.274	337.162	5.280	267.356	G
10	8	5	8"	8'- 3 1/2"	0'- 5 1/8"	4'- 3"	0'- 7 3/4"	0'- 5"	43'- 0"	5'- 7"	44'- 0"	172	70	168.330	3.572	743.548	44'- 10"	6	44'- 6"	3	27	5.487	357.870	5.456	267.356	L
10	10	6	11"	8'- 3 3/8"	0'- 6 1/4"	4'- 2 3/4"	0'- 8 1/8"	0'- 5 1/4"	43'- 0"	5'- 6 3/4"	44'- 0"	172	90	175.390	3.882	793.552	44'- 10"	6	44'- 6"	3	33	5.681	378.578	5.613	267.356	P
10	12	6	11"	8'- 3 1/4"	0'- 6 1/2"	4'- 2 1/2"	0'- 8 1/2"	0'- 5 1/2"	43'- 0"	5'- 6 1/2"	44'- 1"	172	110	182.450	4.192	850.755	44'- 10"	6	44'- 6"	3	39	5.875	399.286	5.770	267.356	T
12	6	6	12"	9'- 10 1/8"	0'- 7 1/4"	4'- 11 3/8"	0'- 9 5/8"	0'- 6 1/4"	51'- 1/8"	6'- 8 1/8"	52'- 3"	204	50	187.990	4.175	782.755	52'- 10"	6	52'- 6"	3	21	5.869	385.226	5.902	315.420	H
12	8	5	8"	9'- 10 1/4"	0'- 6 3/8"	4'- 11 5/8"	0'- 9 1/8"	0'- 6"	51'- 1/8"	6'- 8 3/8"	52'- 3"	204	70	195.050	4.332	932.213	52'- 10"	6	52'- 6"	3	27	6.127	405.934	6.122	315.420	L
12	10	6	10"	9'- 10 1/4"	0'- 7"	4'- 11 5/8"	0'- 9 1/4"	0'- 6"	51'- 1/8"	6'- 8 3/8"	52'- 3"	204	90	202.110	4.576	966.832	52'- 10"	6	52'- 6"	3	33	6.349	426.642	6.308	315.420	P
12	12	6	9"	9'- 10 3/8"	0'- 6 3/4"	4'- 11 7/8"	0'- 8 7/8"	0'- 5 3/4"	51'- 1/8"	6'- 8 5/8"	52'- 2"	204	110	209.170	4.733	1112.599	52'- 10"	6	52'- 6"	3	39	6.607	447.350	6.528	315.420	T

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SPECIFICATION REFERENCE	<h2>QUADRUPLE BOX CULVERTS</h2> <h3>2 TO 5 FT. FILLS</h3> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	 ROAD AND BRIDGE STANDARDS

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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
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PF-2	PEDESTAL POLE AND FOUNDATION	1302.30
SW-1	SIGNAL HEAD MOUNTING DETAILS	1303.10
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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
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VIRGINIA DEPARTMENT OF TRANSPORTATION



ROAD AND BRIDGE STANDARDS

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ROAD AND BRIDGE STANDARDS

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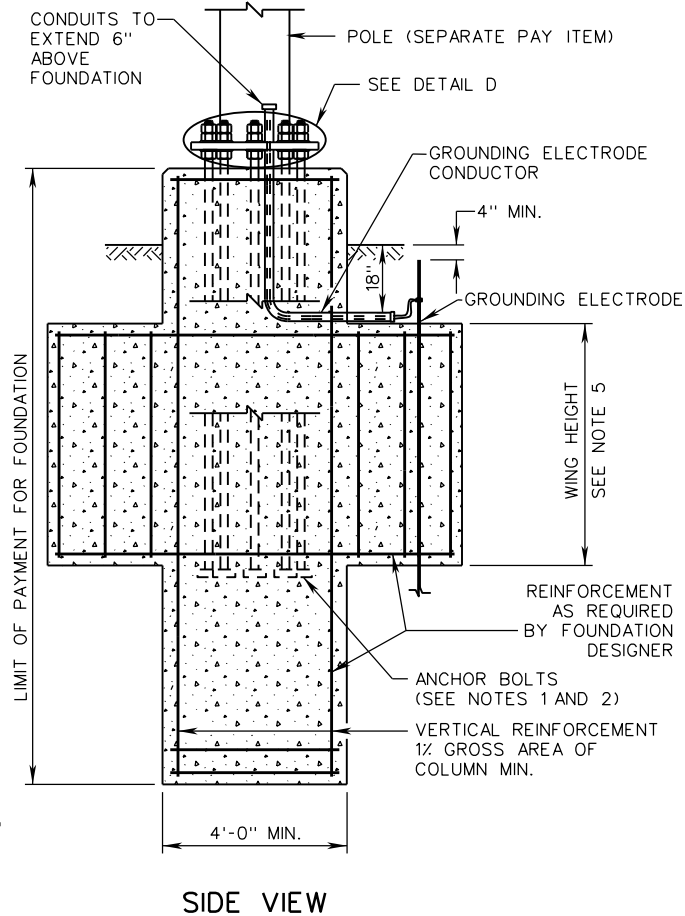
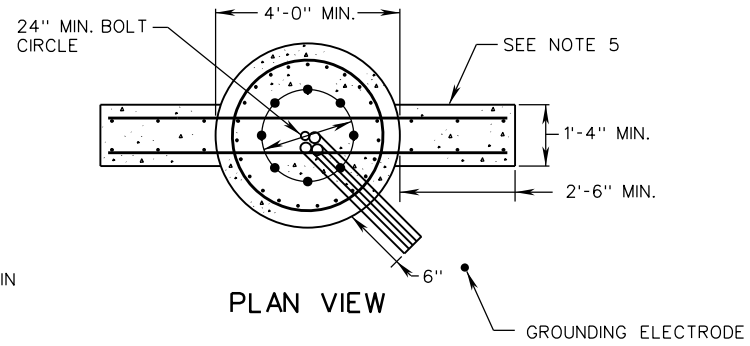
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SECTION 1300 - TRAFFIC CONTROL

VIRGINIA DEPARTMENT OF TRANSPORTATION

NOTES:

1. ANCHOR BOLTS SHALL HAVE A RING OR NUTS AND WASHERS ON THE ENDS OF BOLTS EMBEDDED IN FOUNDATION.
2. ANCHOR BOLT LAYOUT SHALL BE CHECKED AGAINST LATEST APPROVED STRUCTURE DRAWINGS. A MINIMUM OF EIGHT 2" DIAMETER ANCHOR BOLTS ARE REQUIRED.
3. ALL CONDUITS AS SPECIFIED IN THE CONTRACT DOCUMENTS. IN ADDITION 1 - 1" MIN. CONDUIT REQUIRED FOR GROUNDING ELECTRODE CONDUCTOR. 2 - 2" PVC CONDUITS REQUIRED FOR FUTURE USE. NOTE THAT ADDITIONAL SPARE CONDUITS MAY BE REQUIRED BY THE CONTRACT DOCUMENTS.
4. IF NEEDED IN SLOPED CONDITIONS TO MAINTAIN POSITIVE DRAINAGE AROUND THE FOUNDATION AND TO PROVIDE THE CLEARANCES SHOWN IN DETAIL A, THE CONTRACTOR SHALL RE-GRADE AND ADD RETAINING CURB OR MATERIAL ON THE UP SLOPE WHEN APPROVED BY THE ENGINEER. RE-GRADING AND RETAINING CURB SHALL BE INCLUDED IN THE PRICE BID FOR FOUNDATION.
5. FOUNDATION SHALL BE DESIGNED FOR TORSION. WINGS MAY BE USED FOR TORSIONAL RESISTANCE IF REQUIRED.
6. ANCHOR BOLTS AND BOLT TEMPLATE SHALL BE FURNISHED WITH POLE. POLE SHALL BE CENTERED ON FOUNDATION.
7. 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.
8. FOUNDATION SHALL EXTEND 2' MINIMUM ABOVE FINISHED GRADE EXCEPT WHERE NOTED OTHERWISE.
9. GROUNDING BUSHINGS SHALL BE INSTALLED ON EACH END OF METAL CONDUITS.
10. EMPTY CONDUITS SHALL BE PLUGGED TO PREVENT MOISTURE AND RODENT ENTRY.
11. BELL ENDS SHALL BE INSTALLED ON EACH END OF PVC CONDUITS.
12. NO MORTAR, GROUT, OR CONCRETE SHALL BE PLACED BETWEEN BOTTOM OF BASE PLATE AND TOP OF FOUNDATION.
13. HEIGHT, WIDTH, DEPTH, AND REINFORCEMENT OF FOUNDATION SHALL BE AS REQUIRED BY FOUNDATION DESIGNER.
14. OPEN ENDS OF CONDUITS WITH CONDUCTORS INSTALLED SHALL BE SEALED WITH AN APPROVED OUTDOOR, WATERPROOF, SILICONE SEALANT. THE SEALANT SHALL NOT HAVE A DELETERIOUS EFFECT ON CABLE COVERINGS.
15. FOUNDATIONS SHALL NOT BE INSTALLED IN THE CENTER OF A DRAINAGE DITCH. IF APPROVED BY THE ENGINEER, FOUNDATIONS MAY BE INSTALLED IN THE SLOPE OF A DRAINAGE DITCH, BUT SHALL NOT IMPEDE THE DRAINAGE FLOWS. THE FOUNDATION SHALL NOT BE PLACED IN THE FRONT SLOPE UNLESS BACK SLOPE PLACEMENT IS NOT FEASIBLE.
16. THE EDGE OF THE FOUNDATION SHALL BE 1'-0" MIN. FROM THE EDGE OF A PEDESTRIAN PATH, OR 3'-0" MIN. FROM THE EDGE OF A SHARED USE PATH (SEE DETAIL B). IF APPROVED BY THE ENGINEER, FOUNDATIONS MAY BE PLACED IMMEDIATELY ADJACENT TO PEDESTRIAN PATH.
17. SPREAD FOOTING MAY BE USED IF APPROVED BY THE ENGINEER.



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SIGNAL POLE FOUNDATION

INSTALLATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

700



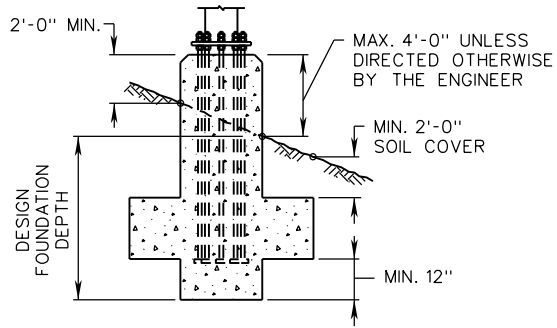
ROAD AND BRIDGE STANDARDS

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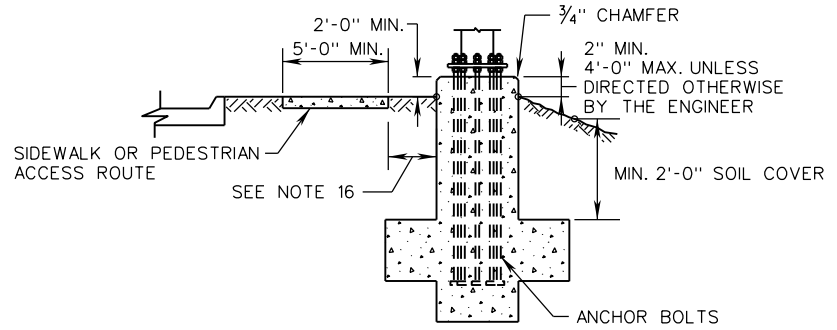
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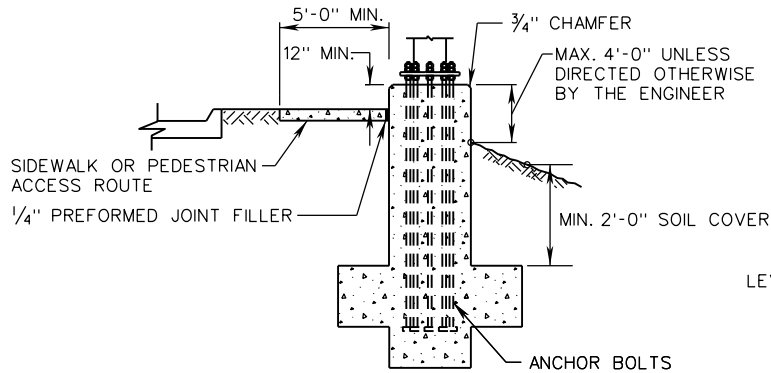
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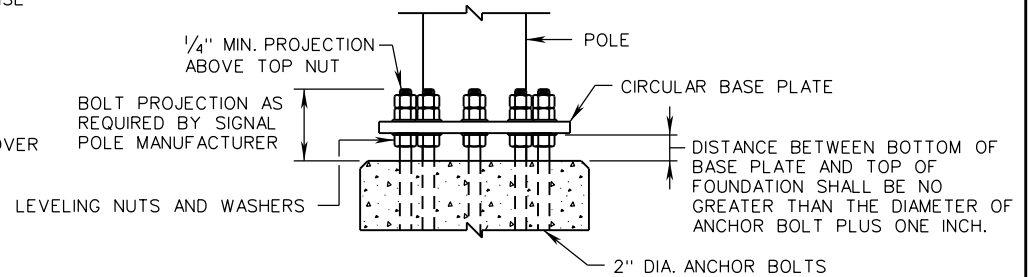
DETAIL A
FOUNDATION NOT IN
SIDEWALK DETAIL



DETAIL B
FOUNDATION ADJACENT
TO SIDEWALK DETAIL



DETAIL C
ALTERNATE FOUNDATION
ADJACENT TO SIDEWALK DETAIL
(IF APPROVED BY THE ENGINEER)



DETAIL D
ANCHOR BOLT AND BASE
PLATE CONNECTION DETAIL

SPECIFICATION
REFERENCE

700

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SIGNAL POLE FOUNDATION

INSTALLATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

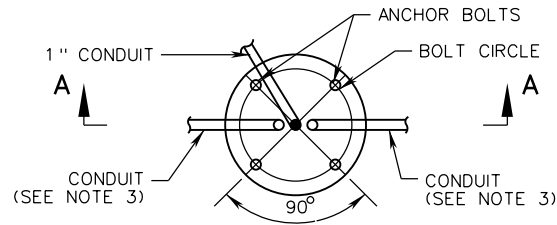
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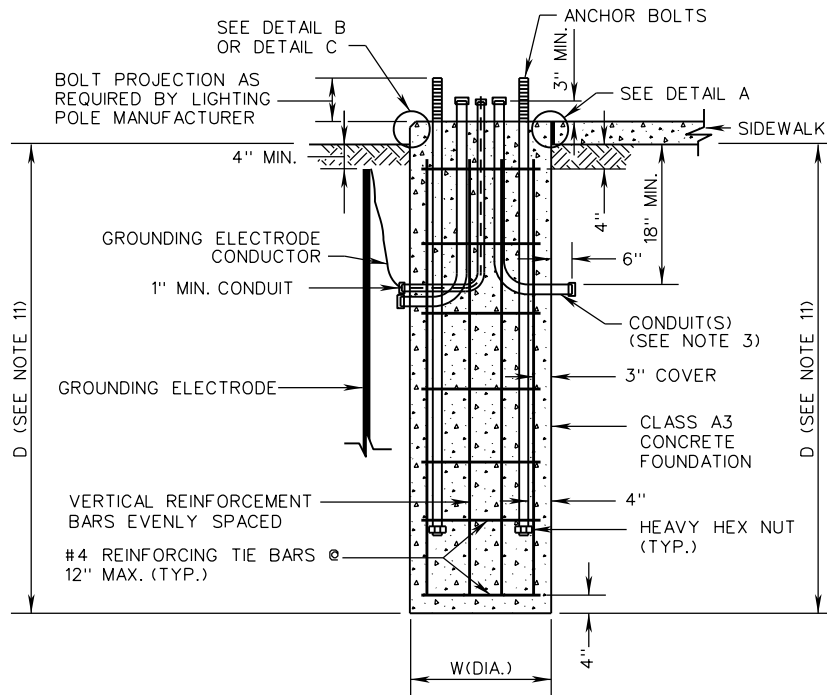
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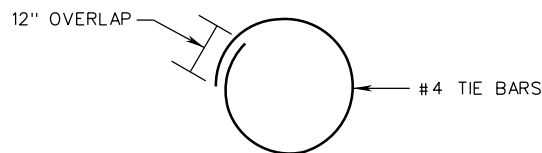
1310.13



PLAN VIEW



SECTION A-A



PLAN VIEW OF TIE BAR

TYPE	W	D	VERTICAL BARS
A	2' 6"	8'	8 - # 8

NOTES:

1. CONDUIT ELBOWS SHALL HAVE A 90° BEND. THE BEND RADIUS SHALL BE IN ACCORDANCE WITH THE N.E.C.
2. THE BOLT TEMPLATE SHALL BE FURNISHED BY THE LIGHTING POLE MANUFACTURER. POLE SHALL BE CENTERED ON FOUNDATION.
3. THE NUMBER, ORIENTATION AND SIZE OF CONDUITS ENTERING AND EXITING FOUNDATIONS SHALL BE AS SHOWN IN THE CONTRACT DOCUMENTS. 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.
4. NO MORTAR, GROUT, OR CONCRETE SHALL BE PLACED BETWEEN BOTTOM OF BASE PLATE AND TOP OF FOUNDATION.
5. GROUNDING BUSHINGS SHALL BE INSTALLED ON EACH END OF METAL CONDUITS.
6. EMPTY CONDUITS SHALL BE PLUGGED TO PREVENT MOISTURE AND RODENT ENTRY.
7. BELL ENDS SHALL BE INSTALLED ON EACH END OF PVC CONDUITS.
8. 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.
9. ANCHOR BOLTS SHALL BE STRAIGHT. THREADED REINFORCING STEEL IS NOT ALLOWED.
10. FOUNDATIONS SHALL NOT BE INSTALLED IN THE CENTER OF A DRAINAGE DITCH. FOUNDATIONS MAY BE INSTALLED IN THE FRONT OR BACK SLOPE OF A DRAINAGE DITCH, BUT SHALL NOT IMPEDE THE DRAINAGE FLOWS. TOPS OF FOUNDATIONS ADJACENT TO ANY DITCH SHALL BE ABOVE GRADE AND ABOVE THE ANTICIPATED WATER LEVELS.
11. D IS THE MINIMUM DISTANCE FROM THE BOTTOM OF THE POLE FOUNDATION TO THE BOTTOM OF THE SIDEWALK OR THE POINT OF LOWEST GRADED ELEVATION ADJACENT TO THE FOUNDATION.

SPECIFICATION REFERENCE

700

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LIGHTING POLE FOUNDATION

INSTALLATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION



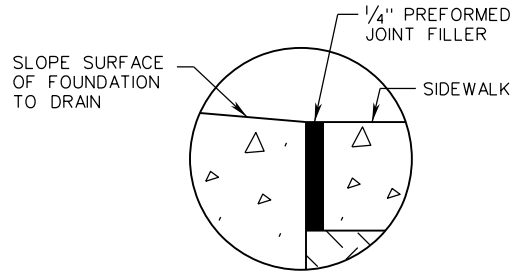
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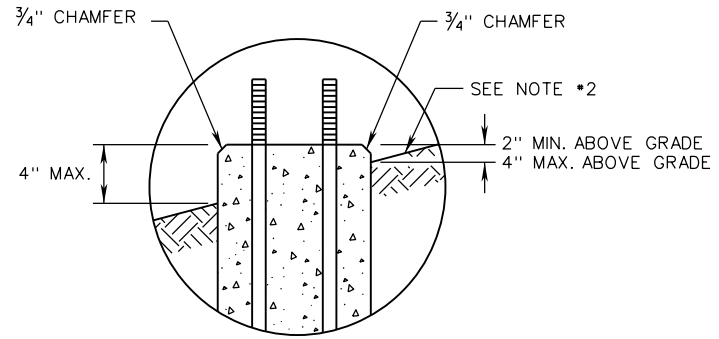
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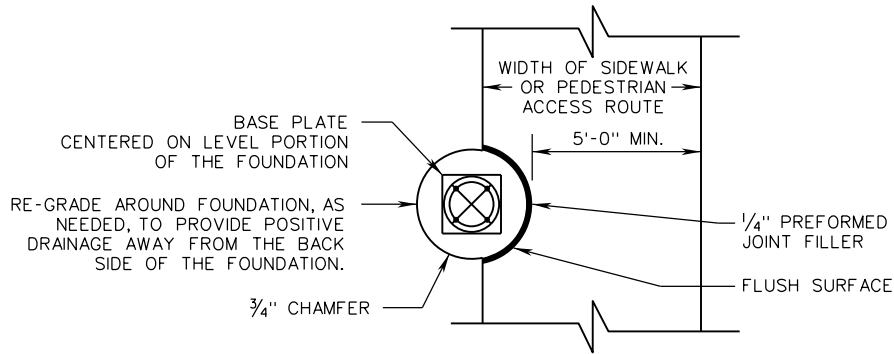
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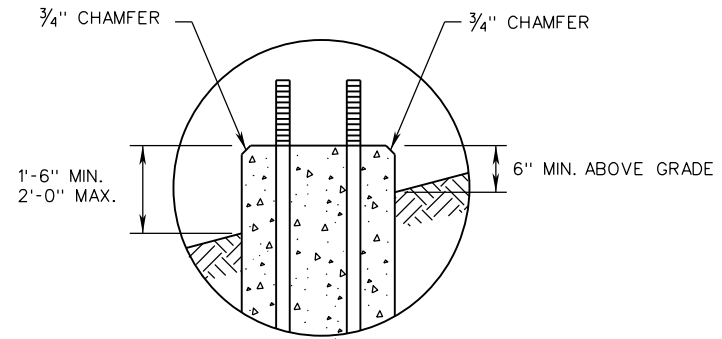
**DETAIL A
SIDEWALK**



**DETAIL B
BREAKAWAY BASE**



**PARTIAL PLAN
OF DETAIL A**



**DETAIL C
NON-BREAKAWAY BASE**

NOTES:

1. WHERE THE FOUNDATION EXTENDS INTO THE SIDEWALK, THE EDGES OF THE FOUNDATION SHALL BE FLUSH WITH THE SIDEWALK (DETAIL A). WHERE THE FOUNDATION IS OUTSIDE OF THE SIDEWALK, THE EDGES OF THE FOUNDATION SHALL HAVE A 3/4" CHAMFER (DETAIL B AND C). UNDER ALL CIRCUMSTANCES THE CONCRETE SHALL BE SLOPED TO ENSURE THE FOUNDATION SURFACE IS NOT AN AREA OF PONDING WATER.
2. IF NEEDED IN SLOPED CONDITIONS TO MAINTAIN POSITIVE DRAINAGE AROUND THE FOUNDATION AND TO PROVIDE THE CLEARANCES SHOWN IN DETAIL B, THE CONTRACTOR SHALL RE-GRADE AND ADD RETAINING CURB OR MATERIAL ON THE UP SLOPE WHEN APPROVED BY THE ENGINEER. RE-GRAIDING AND RETAINING CURB SHALL BE INCLUDED IN THE PRICE BID FOR FOUNDATION.
3. WHEN FOUNDATION IS ADJACENT TO THE BACK EDGE OF SIDEWALK BUT NOT WITHIN THE SIDEWALK, AND A BREAKAWAY BASE IS REQUIRED, THE TOP OF THE FOUNDATION SHALL BE ELEVATED 2 INCHES MINIMUM ABOVE THE SIDEWALK GRADE.



ROAD AND BRIDGE STANDARDS

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LIGHTING POLE FOUNDATION

SPECIFICATION
REFERENCE

SHEET 2 OF 2

REVISION DATE

INSTALLATION DETAILS

1310.21

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VIRGINIA DEPARTMENT OF TRANSPORTATION

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