

GENERAL NOTE

Capacity: HS20-44 Loading and Alternate Military Loading.

Specifications:

Construction - Va. Department of Transportation Road and Bridge Specifications, 1991.

Design - AASHTO Standard Specifications for Highway Bridges, 1983, including Interim Specifications, 1984, 1985 and VDOT Modifications, using Load Factor Design.

All concrete shall be Class A4.

Deformed reinforcing bars shall conform to ASTM A615, Grade 60. All reinforcing bar dimensions on the detailed drawings are to centers of bars except where otherwise noted and are subject to fabrication and construction tolerances.

Construction joints shall be constructed and bonded in accordance with the current Road and Bridge Specifications.

Barrels more than 35' in length shall be poured in sections by providing vertical construction joints, not exceeding 25' between joints nor more than 30' from ends of barrels.

\*\*Bars BH1 & BH3 shall have a pin diameter of 24 bar diameters.

Dimensions on bar diagrams are out-to-out of bars. Bars are straight and #4 in size unless otherwise shown. BL2 shall be #3 in size.

The number of BL1 & BL2 bars shown in the table is the number of longitudinal bars shown in the Typical Section and may not equal the total number of bars required. BL1 & BL2 shall have a lap of 30 bar diameters at splices. At construction joints, first placed bars shall project 30 bar diameters beyond the joint. Estimated QUAN./LF shown for reinforcing steel does not include quantity for laps of BL1 & BL2 bars. The additional weight per longitudinal lap is shown in the table.

The centers of main reinforcing bars shall be 2" from the face of the concrete.

When concrete protective coating is required, all steel shall be epoxy-coated. All reinforcing steel for culverts under 0 to 2 foot fills shall be epoxy-coated.

At the Contractor's option, BVI bars may be spliced at the permissible construction joint in order to facilitate construction. No additional compensation shall be provided for the increase in reinforcing steel quantity due to the splices.

Headwall quantities shown assume wingwalls are to be built at a 45° angle to the headwall.

The designs are applicable to the fill height and other conditions indicated. Any change in the conditions invalidates these designs.

Wingwalls referenced by letter apply when the acceptable foundation level is the same for both box and wings. If foundation levels are different, the height of the wingwall shall be adjusted by selection of another lettered wingwall of appropriate height. For wingwall details, refer to standard series BCW for the appropriate fill slope.

For details of extending existing boxes, refer to Standard BCE-01.

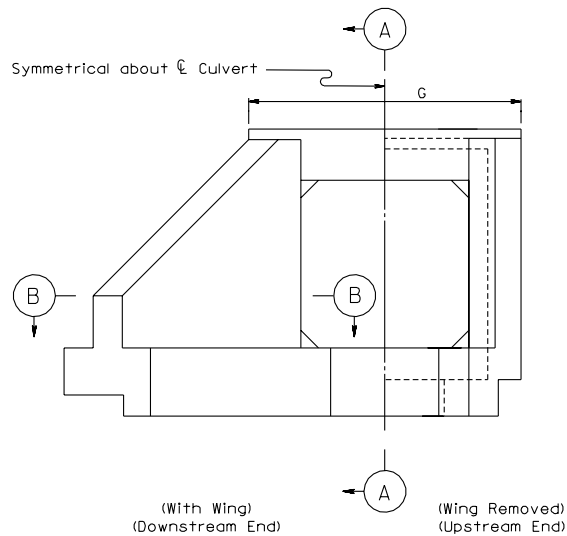
For modification of details for skewed culverts, see the Skewed Box Details included in the road plans.

This standard shall be used with the the BCS standard series.

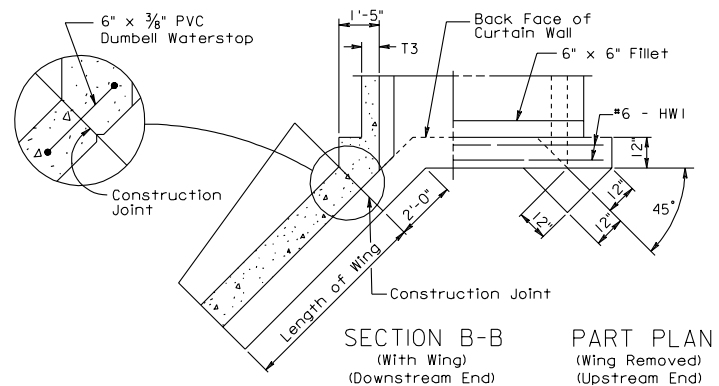
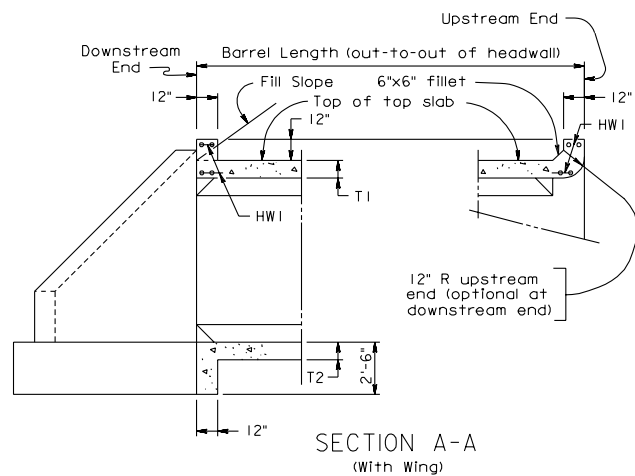
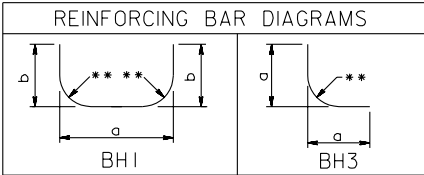
SINGLE BOX CULVERTS  
STANDARD DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE  
AND  
BRIDGE  
DIVISION



END ELEVATION



DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3	WALL (IN.)	A	B	C	D	E	F	BH1				BH2			BH3			BV1			NO. BL1 BARS	NO. BL2 BARS	
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	SIZE								SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH	SIZE	SPACING C-C			LENGTH
3	3	8 1/2"	8 1/2"	8"	2	2'- 0"	4	2'- 0"	1	1'- 0"	4	12"	4'- 0"	2'- 8 1/2"	8'- 11"	5	12"	4'- 0"	4	12"	2'- 1 1/4"	3'- 11"	4	12"	4'- 1"	18	8
3	4	8 1/2"	8 1/2"	8"	2	2'- 0"	4	2'- 0"	2	2'- 0"	4	12"	4'- 0"	3'- 2 1/2"	9'- 11"	6	12"	4'- 0"	--	--	--	--	4	12"	5'- 1"	18	12
4	3	9"	9"	8"	3	3'- 0"	6	3'- 0"	1	1'- 0"	4	12"	5'- 0"	2'- 9"	10'- 0"	6	12"	5'- 0"	--	--	--	--	4	10 1/2"	4'- 2"	23	8
4	4	9"	9"	8"	3	3'- 0"	6	3'- 0"	2	2'- 0"	4	12"	5'- 0"	3'- 3"	11'- 0"	6	12"	5'- 0"	--	--	--	--	4	12"	5'- 2"	23	12
4	5	9"	9"	8"	3	3'- 0"	6	3'- 0"	3	3'- 0"	4	12"	5'- 0"	3'- 9"	12'- 0"	6	12"	5'- 0"	--	--	--	--	4	12"	6'- 2"	23	16
4	6	9"	9"	8"	3	3'- 0"	6	3'- 0"	4	4'- 0"	4	11"	5'- 0"	4'- 3"	13'- 0"	6	11"	5'- 0"	--	--	--	--	4	12"	7'- 2"	23	20
5	3	9 1/4"	9 1/4"	8"	4	4'- 0"	8	4'- 0"	1	1'- 0"	4	11"	6'- 0"	2'- 9 1/4"	11'- 0"	6	11"	6'- 0"	--	--	--	--	4	12"	4'- 2"	28	8
5	4	9 1/4"	9 1/4"	8"	4	4'- 0"	8	4'- 0"	2	2'- 0"	4	11"	6'- 0"	3'- 3 1/4"	12'- 0"	6	11"	6'- 0"	--	--	--	--	4	12"	5'- 2"	28	12
5	5	9 1/4"	9 1/4"	8"	4	4'- 0"	8	4'- 0"	3	3'- 0"	4	10"	6'- 0"	3'- 9 1/4"	13'- 0"	6	10"	6'- 0"	--	--	--	--	4	12"	6'- 2"	28	16
5	6	9"	9"	8"	4	4'- 0"	8	4'- 0"	4	4'- 0"	4	10"	6'- 0"	4'- 3"	14'- 0"	6	10"	6'- 0"	--	--	--	--	4	12"	7'- 2"	28	20
5	7	9"	9"	8"	4	4'- 0"	8	4'- 0"	5	5'- 0"	4	9"	6'- 0"	4'- 9"	15'- 0"	6	9"	6'- 0"	--	--	--	--	4	12"	8'- 2"	28	24
6	4	9 1/4"	9 1/4"	8"	5	5'- 0"	10	5'- 0"	2	2'- 0"	4	9"	7'- 0"	3'- 3 1/4"	13'- 0"	6	9"	7'- 0"	--	--	--	--	4	12"	5'- 2"	33	12
6	5	9 1/4"	9 1/4"	8"	5	5'- 0"	10	5'- 0"	3	3'- 0"	4	9"	7'- 0"	3'- 9 1/4"	14'- 0"	6	9"	7'- 0"	--	--	--	--	4	12"	6'- 2"	33	16
6	6	9 1/4"	9 1/4"	8"	5	5'- 0"	10	5'- 0"	4	4'- 0"	4	9"	7'- 0"	4'- 3 1/4"	15'- 0"	6	9"	7'- 0"	--	--	--	--	4	12"	7'- 2"	33	20
6	7	9 1/4"	9 1/4"	8"	5	5'- 0"	10	5'- 0"	5	5'- 0"	4	8"	7'- 0"	4'- 9 1/4"	16'- 0"	6	8"	7'- 0"	--	--	--	--	4	12"	8'- 2"	33	24
6	8	9 1/4"	9 1/4"	8"	5	5'- 0"	10	5'- 0"	6	6'- 0"	4	12"	7'- 0"	5'- 3 1/4"	17'- 0"	8	12"	7'- 0"	4	12"	2'- 8 3/8"	5'- 2"	4	12"	9'- 2"	33	28
7	4	9 1/2"	9 1/2"	8"	6	6'- 0"	12	6'- 0"	2	2'- 0"	4	9"	8'- 0"	3'- 3 1/2"	14'- 1"	6	9"	8'- 0"	--	--	--	--	4	12"	5'- 3"	38	12
7	6	9 1/2"	9 1/2"	8"	6	6'- 0"	12	6'- 0"	4	4'- 0"	4	8"	8'- 0"	4'- 3 1/2"	16'- 1"	6	8"	8'- 0"	--	--	--	--	4	12"	7'- 3"	38	20
7	8	9 1/2"	9 1/2"	8"	6	6'- 0"	12	6'- 0"	6	6'- 0"	4	7"	8'- 0"	5'- 3 1/2"	18'- 1"	6	7"	8'- 0"	--	--	--	--	4	12"	9'- 3"	38	28
7	10	9 1/2"	9 1/2"	8"	6	6'- 0"	12	6'- 0"	8	8'- 0"	4	6"	8'- 0"	6'- 3 1/2"	20'- 1"	6	6"	8'- 0"	--	--	--	--	4	12"	11'- 3"	38	36
8	4	9 3/4"	9 3/4"	8"	7	7'- 0"	14	7'- 0"	2	2'- 0"	4	8"	9'- 0"	3'- 3 3/4"	15'- 1"	6	8"	9'- 0"	--	--	--	--	4	12"	5'- 3"	43	12
8	6	9 3/4"	9 3/4"	8"	7	7'- 0"	14	7'- 0"	4	4'- 0"	5	12"	9'- 0"	4'- 3 3/4"	17'- 0"	8	12"	9'- 0"	3	12"	3'- 1 1/4"	6'- 0"	4	12"	7'- 3"	43	20
8	8	9 3/4"	9 3/4"	8"	7	7'- 0"	14	7'- 0"	6	6'- 0"	5	7"	9'- 0"	5'- 3 3/4"	19'- 0"	6	7"	9'- 0"	--	--	--	--	4	12"	9'- 3"	43	28
8	10	9 1/2"	9 1/2"	8"	7	7'- 0"	14	7'- 0"	8	8'- 0"	4	9"	9'- 0"	6'- 3 1/2"	21'- 1"	8	9"	9'- 0"	4	9"	3'- 1 1/4"	5'- 11"	4	12"	11'- 3"	43	36
9	4	9 3/4"	9 3/4"	8"	8	8'- 0"	16	8'- 0"	2	2'- 0"	6	12"	10'- 0"	3'- 3 3/4"	15'- 10"	8	12"	10'- 0"	5	12"	3'- 3 5/8"	6'- 3"	4	12"	5'- 3"	48	12
9	6	9 3/4"	9 3/4"	8"	8	8'- 0"	16	8'- 0"	4	4'- 0"	5	7"	10'- 0"	4'- 3 3/4"	18'- 0"	6	7"	10'- 0"	--	--	--	--	4	12"	7'- 3"	48	20
9	8	9 3/4"	9 3/4"	8"	8	8'- 0"	16	8'- 0"	6	6'- 0"	4	6"	10'- 0"	5'- 3 3/4"	20'- 1"	6	6"	10'- 0"	--	--	--	--	4	12"	9'- 3"	48	28
9	10	9 3/4"	9 3/4"	8"	8	8'- 0"	16	8'- 0"	8	8'- 0"	5	10 1/2"	10'- 0"	6'- 3 3/4"	22'- 0"	8	10 1/2"	10'- 0"	3	10 1/2"	3'- 3 5/8"	6'- 5"	4	12"	11'- 3"	48	36
9	12	9 3/4"	9 3/4"	8"	8	8'- 0"	16	8'- 0"	10	10'- 0"	5	8"	10'- 0"	7'- 3 3/4"	24'- 0"	8	8"	10'- 0"	4	8"	3'- 3 5/8"	6'- 4"	4	11 1/2"	13'- 3"	48	44
10	4	10"	10"	8"	9	9'- 0"	18	9'- 0"	2	2'- 0"	4	7"	11'- 0"	3'- 4"	17'- 2"	6	7"	11'- 0"	4	7"	3'- 6"	6'- 9"	4	12"	5'- 4"	53	12
10	6	10"	10"	8"	9	9'- 0"	18	9'- 0"	4	4'- 0"	5	10"	11'- 0"	4'- 4"	19'- 0"	7	10"	11'- 0"	--	--	--	--	4	12"	7'- 4"	53	20
10	8	10"	10"	8"	9	9'- 0"	18	9'- 0"	6	6'- 0"	5	10"	11'- 0"	5'- 4"	21'- 0"	8	10"	11'- 0"	3	10"	3'- 6"	6'- 10"	4	12"	9'- 4"	53	28
10	10	10"	10"	8"	9	9'- 0"	18	9'- 0"	8	8'- 0"	4	8"	11'- 0"	6'- 4"	23'- 2"	7	8"	11'- 0"	4	8"	3'- 6"	6'- 9"	4	12"	11'- 4"	53	36
10	12	10"	10"	8"	9	9'- 0"	18	9'- 0"	10	10'- 0"	4	7"	11'- 0"	7'- 4"	25'- 2"	8	7"	11'- 0"	4	7"	3'- 6"	6'- 9"	4	12"	13'- 4"	53	44
12	6	10 1/4"	10 1/4"	8"	11	11'- 0"	22	11'- 0"	4	4'- 0"	6	9"	13'- 0"	4'- 4 1/4"	20'- 11"	8	9"	13'- 0"	4	9"	3'- 10 3/4"	7'- 6"	4	12"	7'- 5"	63	20
12	8	10"	10"	8"	11	11'- 0"	22	11'- 0"	6	6'- 0"	5	8"	13'- 0"	5'- 4"	23'- 0"	8	8"	13'- 0"	3	8"	3'- 10 3/4"	7'- 7"	4	12"	9'- 4"	63	28
12	10	10"	10"	8"	11	11'- 0"	22	11'- 0"	8	8'- 0"	5	7"	13'- 0"	6'- 4"	25'- 0"	7	7"	13'- 0"	--	--	--	--	4	12"	11'- 4"	63	36
12	12	10 1/4"	10 1/4"	8"	11	11'- 0"	22	11'- 0"	10	10'- 0"	5	8"	13'- 0"	7'- 4 1/4"	27'- 1"	8	8"	13'- 0"	4	8"	3'- 10 3/4"	7'- 6"	4	12"	13'- 5"	63	44

SINGLE BOX CULVERTS  
0 TO 2 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE  
AND  
BRIDGE  
DIVISION

SPAN (FT.)	HGHT (FT.)	QUAN./LF			HEADWALLS								
		REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH					
3	3	17.854	0.413	51.209	5'-10"	6	5'- 6"	1.041	33.044	1.045	33.044	A	
3	4	19.266	0.463	48.592	5'-10"	6	5'- 6"	1.134	33.044	1.137	33.044	C	
4	3	22.029	0.482	53.114	6'-10"	6	6'- 6"	1.142	39.052	1.149	39.052	A	
4	4	23.441	0.531	56.495	6'-10"	6	6'- 6"	1.235	39.052	1.242	39.052	C	
4	5	24.853	0.580	60.671	6'-10"	6	6'- 6"	1.328	39.052	1.335	39.052	E	
4	6	26.265	0.629	67.791	6'-10"	6	6'- 6"	1.420	39.052	1.427	39.052	G	
5	3	26.204	0.547	62.973	7'-10"	6	7'- 6"	1.259	45.060	1.269	45.060	B	
5	4	27.616	0.596	67.271	7'-10"	6	7'- 6"	1.351	45.060	1.362	45.060	D	
5	5	29.028	0.645	75.429	7'-10"	6	7'- 6"	1.444	45.060	1.455	45.060	F	
5	6	30.440	0.684	79.872	7'-10"	6	7'- 6"	1.518	45.060	1.529	45.060	G	
5	7	31.852	0.732	89.391	7'-10"	6	7'- 6"	1.611	45.060	1.621	45.060	I	
6	4	31.791	0.652	84.653	8'-10"	6	8'- 6"	1.449	51.068	1.463	51.068	D	
6	5	33.203	0.701	89.275	8'-10"	6	8'- 6"	1.542	51.068	1.555	51.068	F	
6	6	34.615	0.750	93.896	8'-10"	6	8'- 6"	1.634	51.068	1.648	51.068	H	
6	7	36.027	0.798	105.585	8'-10"	6	8'- 6"	1.727	51.068	1.741	51.068	J	
6	8	37.439	0.846	118.716	8'-10"	6	8'- 6"	1.820	51.068	1.833	51.068	L	
7	4	35.966	0.721	94.040	9'-10"	6	9'- 6"	1.545	57.076	1.562	57.076	D	
7	6	38.790	0.818	110.869	9'-10"	6	9'- 6"	1.730	57.076	1.747	57.076	H	
7	8	41.614	0.916	130.884	9'-10"	6	9'- 6"	1.915	57.076	1.933	57.076	L	
7	10	44.438	1.012	155.677	9'-10"	6	9'- 6"	2.101	57.076	2.118	57.076	P	
8	4	40.141	0.793	111.031	10'-10"	6	10'- 6"	1.639	63.084	1.659	63.084	D	
8	6	42.965	0.890	133.800	10'-10"	6	10'- 6"	1.824	63.084	1.845	63.084	H	
8	8	45.789	0.986	161.225	10'-10"	6	10'- 6"	2.010	63.084	2.030	63.084	L	
8	10	48.613	1.069	180.006	10'-10"	6	10'- 6"	2.197	63.084	2.218	63.084	P	
9	4	44.316	0.849	165.284	11'-10"	6	11'- 6"	1.735	69.092	1.758	69.092	D	
9	6	47.140	0.948	159.791	11'-10"	6	11'- 6"	1.920	69.092	1.944	69.092	H	
9	8	49.964	1.046	168.693	11'-10"	6	11'- 6"	2.105	69.092	2.129	69.092	L	
9	10	52.788	1.144	179.792	11'-10"	6	11'- 6"	2.291	69.092	2.315	69.092	P	
9	12	55.612	1.238	242.316	11'-10"	6	11'- 6"	2.476	69.092	2.500	69.092	T	
10	4	48.491	0.926	173.924	12'-10"	6	12'- 6"	1.826	75.100	1.853	75.100	D	
10	6	51.315	1.026	154.244	12'-10"	6	12'- 6"	2.012	75.100	2.039	75.100	H	
10	8	54.139	1.122	187.777	12'-10"	6	12'- 6"	2.197	75.100	2.224	75.100	L	
10	10	56.963	1.220	205.013	12'-10"	6	12'- 6"	2.383	75.100	2.410	75.100	P	
10	12	59.787	1.314	259.016	12'-10"	6	12'- 6"	2.568	75.100	2.595	75.100	T	
12	6	59.665	1.162	255.223	14'-10"	6	14'- 6"	2.197	87.116	2.230	87.116	H	
12	8	62.489	1.241	250.938	14'-10"	6	14'- 6"	2.387	87.116	2.421	87.116	L	
12	10	65.313	1.340	251.265	14'-10"	6	14'- 6"	2.573	87.116	2.606	87.116	P	
12	12	68.137	1.456	295.486	14'-10"	6	14'- 6"	2.753	87.116	2.786	87.116	T	

DIMENSIONS						REINFORCING STEEL																					
SPAN (FT.)	HGHT (FT.)	T1 TOP SLAB (IN.)	T2 BOTTOM SLAB (IN.)	T3 WALL (IN.)	A	B	C	D	E	F	SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH	SIZE	SPACING C-C	LENGTH	NO. BL1 BARS	NO. BL2 BARS
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	12"	4'- 0"	2'- 8"	8'- 10"	4	12"	4'- 0"	--	----	----	----	4	12"	4'- 0"	16	8
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	12"	4'- 0"	3'- 2"	9'- 10"	4	12"	4'- 0"	--	----	----	----	4	12"	5'- 0"	16	12
4	3	8"	8"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	12"	5'- 0"	2'- 8"	9'- 10"	5	12"	5'- 0"	--	----	----	----	4	12"	4'- 0"	20	8
4	4	8"	8"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	12"	5'- 0"	3'- 2"	10'- 10"	5	12"	5'- 0"	--	----	----	----	4	12"	5'- 0"	20	12
4	5	8"	8"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	12"	5'- 0"	3'- 8"	11'- 10"	5	12"	5'- 0"	--	----	----	----	4	12"	6'- 0"	20	16
4	6	8"	8"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	12"	5'- 0"	4'- 2"	12'- 10"	5	12"	5'- 0"	--	----	----	----	4	12"	7'- 0"	20	20
5	3	8"	8"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	4	12"	6'- 0"	2'- 8"	10'- 10"	5	12"	6'- 0"	4	12"	2'- 6"	4'- 9"	4	12"	4'- 0"	24	8
5	4	8"	8"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	12"	6'- 0"	3'- 2"	11'- 10"	5	12"	6'- 0"	--	----	----	----	4	12"	5'- 0"	24	12
5	5	8"	8"	8"	4	4'- 0"	4	4'- 0"	3	3'- 0"	4	12"	6'- 0"	3'- 8"	12'- 10"	5	12"	6'- 0"	--	----	----	----	4	12"	6'- 0"	24	16
5	6	8"	8"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	12"	6'- 0"	4'- 2"	13'- 10"	6	12"	6'- 0"	--	----	----	----	4	12"	7'- 0"	24	20
5	7	8"	8"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	12"	6'- 0"	4'- 8"	14'- 10"	6	12"	6'- 0"	--	----	----	----	4	12"	8'- 0"	24	24
6	4	8"	8"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	5	12"	7'- 0"	3'- 2"	12'- 8"	6	12"	7'- 0"	--	----	----	----	4	12"	5'- 0"	28	12
6	5	8"	8"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	12"	7'- 0"	3'- 8"	13'- 10"	6	12"	7'- 0"	4	12"	2'- 8 <sup>3</sup> / <sub>8</sub> "	5'- 2"	4	12"	6'- 0"	28	16
6	6	8"	8"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	12"	7'- 0"	4'- 2"	14'- 10"	6	12"	7'- 0"	4	12"	2'- 8 <sup>3</sup> / <sub>8</sub> "	5'- 2"	4	12"	7'- 0"	28	20
6	7	8"	8"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	10"	7'- 0"	4'- 8"	15'- 10"	6	10"	7'- 0"	4	10"	2'- 8 <sup>3</sup> / <sub>8</sub> "	5'- 2"	4	12"	8'- 0"	28	24
6	8	8"	8"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	4	9"	7'- 0"	5'- 2"	16'- 10"	6	9"	7'- 0"	4	9"	2'- 8 <sup>3</sup> / <sub>8</sub> "	5'- 2"	4	12"	9'- 0"	28	28
7	4	8"	8"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	5	11"	8'- 0"	3'- 2"	13'- 8"	6	11"	8'- 0"	--	----	----	----	4	12"	5'- 0"	32	12
7	6	8"	8"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	9"	8'- 0"	4'- 2"	15'- 10"	6	9"	8'- 0"	4	9"	2'- 10 <sup>3</sup> / <sub>4</sub> "	5'- 6"	4	12"	7'- 0"	32	20
7	8	8"	8"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	4	8"	8'- 0"	5'- 2"	17'- 10"	6	8"	8'- 0"	3	8"	2'- 10 <sup>3</sup> / <sub>4</sub> "	5'- 7"	4	12"	9'- 0"	32	28
7	10	8"	8"	8"	6	6'- 0"	6	6'- 0"	8	8'- 0"	5	6"	8'- 0"	6'- 2"	19'- 8"	6	6"	8'- 0"	--	----	----	----	4	12"	11'- 0"	32	36
8	4	8"	8"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	5	9"	9'- 0"	3'- 2"	14'- 8"	6	9"	9'- 0"	3	9"	3'- 1 <sup>1</sup> / <sub>4</sub> "	6'- 0"	4	11 <sup>1</sup> / <sub>2</sub> "	5'- 0"	36	12
8	6	8"	8"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	4	8"	9'- 0"	4'- 2"	16'- 10"	6	8"	9'- 0"	4	8"	3'- 1 <sup>1</sup> / <sub>4</sub> "	5'- 11"	4	12"	7'- 0"	36	20
8	8	8"	8"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	5	7"	9'- 0"	5'- 2"	18'- 8"	6	7"	9'- 0"	--	----	----	----	4	12"	9'- 0"	36	28
8	10	8"	8"	8"	7	7'- 0"	7	7'- 0"	8	8'- 0"	5	11"	9'- 0"	6'- 2"	20'- 8"	8	11"	9'- 0"	4	11"	3'- 1 <sup>1</sup> / <sub>4</sub> "	5'- 11"	4	12"	11'- 0"	36	36
9	4	8"	8"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	5	8"	10'- 0"	3'- 2"	15'- 8"	6	8"	10'- 0"	3	8"	3'- 3 <sup>5</sup> / <sub>8</sub> "	6'- 5"	4	8"	5'- 0"	40	12
9	6	8"	8"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	4	7"	10'- 0"	4'- 2"	17'- 10"	6	7"	10'- 0"	4	7"	3'- 3 <sup>5</sup> / <sub>8</sub> "	6'- 4"	4	11"	7'- 0"	40	20
9	8	8 <sup>1</sup> / <sub>4</sub> "	8 <sup>1</sup> / <sub>4</sub> "	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	5	10 <sup>1</sup> / <sub>2</sub> "	10'- 0"	5'- 2 <sup>1</sup> / <sub>4</sub> "	19'- 9"	8	10 <sup>1</sup> / <sub>2</sub> "	10'- 0"	3	10 <sup>1</sup> / <sub>2</sub> "	3'- 3 <sup>5</sup> / <sub>8</sub> "	6'- 5"	4	12"	9'- 0"	40	28
9	10	8"	8"	8"	8	8'- 0"	8	8'- 0"	8	8'- 0"	5	10"	10'- 0"	6'- 2"	21'- 8"	8	10"	10'- 0"	4	10"	3'- 3 <sup>5</sup> / <sub>8</sub> "	6'- 4"	4	12"	11'- 0"	40	36
9	12	8 <sup>1</sup> / <sub>4</sub> "	8 <sup>1</sup> / <sub>4</sub> "	8"	8	8'- 0"	8	8'- 0"	10	10'- 0"	5	9 <sup>1</sup> / <sub>2</sub> "	10'- 0"	7'- 2 <sup>1</sup> / <sub>4</sub> "	23'- 9"	8	9 <sup>1</sup> / <sub>2</sub> "	10'- 0"	3	9 <sup>1</sup> / <sub>2</sub> "	3'- 3 <sup>5</sup> / <sub>8</sub> "	6'- 5"	4	11 <sup>1</sup> / <sub>2</sub> "	13'- 0"	40	44
10	4	8 <sup>3</sup> / <sub>4</sub> "	8 <sup>3</sup> / <sub>4</sub> "	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	6	7"	11'- 0"	3'- 2 <sup>3</sup> / <sub>4</sub> "	16'- 8"	6	7"	11'- 0"	--	----	----	----	5	9 <sup>1</sup> / <sub>2</sub> "	5'- 2"	44	12
10	6	8 <sup>3</sup> / <sub>4</sub> "	8 <sup>3</sup> / <sub>4</sub> "	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	6	10"	11'- 0"	4'- 2 <sup>3</sup> / <sub>4</sub> "	18'- 8"	8	10"	11'- 0"	--	----	----	----	4	9"	7'- 2"	44	20
10	8	8 <sup>3</sup> / <sub>4</sub> "	8 <sup>3</sup> / <sub>4</sub> "	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	6	6"	11'- 0"	5'- 2 <sup>3</sup> / <sub>4</sub> "	20'- 8"	6	6"	11'- 0"	--	----	----	----	4	10"	9'- 2"	44	28
10	10	8 <sup>3</sup> / <sub>4</sub> "	8 <sup>3</sup> / <sub>4</sub> "	8"	9	9'- 0"	9	9'- 0"	8	8'- 0"	6	9 <sup>1</sup> / <sub>2</sub> "	11'- 0"	6'- 2 <sup>3</sup> / <sub>4</sub> "	22'- 8"	8	9 <sup>1</sup> / <sub>2</sub> "	11'- 0"	3	9 <sup>1</sup> / <sub>2</sub> "	3'- 6"	6'- 10"	4	12"	11'- 2"	44	36
10	12	9 <sup>1</sup> / <sub>4</sub> "	9 <sup>1</sup> / <sub>4</sub> "	8"	9	9'- 0"	9	9'- 0"	10	10'- 0"	5	8 <sup>1</sup> / <sub>2</sub> "	11'- 0"	7'- 3 <sup>1</sup> / <sub>4</sub> "	24'- 11"	8	8 <sup>1</sup> / <sub>2</sub> "	11'- 0"	4	8 <sup>1</sup> / <sub>2</sub> "	3'- 6"	6'- 9"	4	12"	13'- 2"	44	44
12	6	9 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	6	8"	13'- 0"	4'- 3 <sup>1</sup> / <sub>2</sub> "	20'- 9"	7	8"	13'- 0"	4	8"	3'- 10 <sup>3</sup> / <sub>4</sub> "	7'- 6"	4	6 <sup>1</sup> / <sub>2</sub> "	7'- 3"	52	20
12	8	9 <sup>3</sup> / <sub>4</sub> "	9 <sup>3</sup> / <sub>4</sub> "	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	6	8"	13'- 0"	5'- 3 <sup>3</sup> / <sub>4</sub> "	22'- 10"	8	8"	13'- 0"	3	8"	3'- 10 <sup>3</sup> / <sub>4</sub> "	7'- 7"	4	8 <sup>1</sup> / <sub>2</sub> "	9'- 3"	52	28
12	10	9 <sup>3</sup> / <sub>4</sub> "	9 <sup>3</sup> / <sub>4</sub> "	8"	11	11'- 0"	11	11'- 0"	8	8'- 0"	5	8"	13'- 0"	6'- 3 <sup>3</sup> / <sub>4</sub> "	25'- 0"	8	8"	13'- 0"	4	8"	3'- 10 <sup>3</sup> / <sub>4</sub> "	7'- 6"	4	12"	11'- 3"	52	36
12	12	10 <sup>1</sup> / <sub>2</sub> "	10 <sup>1</sup> / <sub>2</sub> "	8"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	7"	13'- 0"	7'- 4 <sup>1</sup> / <sub>2</sub> "	26'- 11"	8	7"	13'- 0"	--	----	----	----	4	12"	13'- 5"	52	44

SINGLE BOX CULVERTS  
2 TO 5 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGH (FT.)	REINFORCING STEEL (LBS./LONG. JT)	QUAN./LF		HEADWALLS									
			CONCRETE CLASS. A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL	
					HEADWALL LENGTH	SIZE	LENGTH							
3	3	16.184	0.401	36.185	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A		
3	4	17.596	0.450	40.361	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C		
4	3	19.524	0.450	45.279	6'-10"	6	6'- 6"	1.139	39.052	1.146	39.052	A		
4	4	20.936	0.499	49.455	6'-10"	6	6'- 6"	1.232	39.052	1.239	39.052	C		
4	5	22.348	0.548	53.631	6'-10"	6	6'- 6"	1.324	39.052	1.332	39.052	E		
4	6	23.760	0.597	57.807	6'-10"	6	6'- 6"	1.417	39.052	1.424	39.052	G		
5	3	22.864	0.498	64.065	7'-10"	6	7'- 6"	1.240	45.060	1.251	45.060	A		
5	4	24.276	0.548	55.549	7'-10"	6	7'- 6"	1.333	45.060	1.343	45.060	C		
5	5	25.688	0.597	59.725	7'-10"	6	7'- 6"	1.426	45.060	1.436	45.060	E		
5	6	27.100	0.645	69.409	7'-10"	6	7'- 6"	1.518	45.060	1.529	45.060	G		
5	7	28.512	0.695	73.585	7'-10"	6	7'- 6"	1.611	45.060	1.621	45.060	I		
6	4	27.616	0.595	77.347	8'-10"	6	8'- 6"	1.434	51.068	1.448	51.068	C		
6	5	29.028	0.644	86.051	8'-10"	6	8'- 6"	1.527	51.068	1.541	51.068	E		
6	6	30.440	0.693	90.227	8'-10"	6	8'- 6"	1.620	51.068	1.633	51.068	G		
6	7	31.852	0.742	105.600	8'-10"	6	8'- 6"	1.712	51.068	1.726	51.068	I		
6	8	33.264	0.790	117.686	8'-10"	6	8'- 6"	1.805	51.068	1.819	51.068	K		
7	4	30.956	0.644	89.885	9'-10"	6	9'- 6"	1.535	57.076	1.552	57.076	C		
7	6	33.780	0.741	118.090	9'-10"	6	9'- 6"	1.721	57.076	1.738	57.076	G		
7	8	36.604	0.839	128.310	9'-10"	6	9'- 6"	1.906	57.076	1.923	57.076	K		
7	10	39.428	0.933	179.721	9'-10"	6	9'- 6"	2.092	57.076	2.109	57.076	O		
8	4	34.296	0.691	125.067	10'-10"	6	10'- 6"	1.636	63.084	1.657	63.084	C		
8	6	37.120	0.788	138.922	10'-10"	6	10'- 6"	1.822	63.084	1.842	63.084	G		
8	8	39.944	0.886	159.699	10'-10"	6	10'- 6"	2.007	63.084	2.028	63.084	K		
8	10	42.768	0.984	168.985	10'-10"	6	10'- 6"	2.193	63.084	2.213	63.084	O		
9	4	37.636	0.738	149.809	11'-10"	6	11'- 6"	1.738	69.092	1.761	69.092	C		
9	6	40.460	0.836	165.793	11'-10"	6	11'- 6"	1.923	69.092	1.947	69.092	G		
9	8	43.284	0.950	168.414	11'-10"	6	11'- 6"	2.105	69.092	2.129	69.092	K		
9	10	46.108	1.031	193.575	11'-10"	6	11'- 6"	2.294	69.092	2.318	69.092	O		
9	12	48.932	1.145	203.610	11'-10"	6	11'- 6"	2.476	69.092	2.500	69.092	S		
10	4	40.976	0.837	189.993	12'-10"	6	12'- 6"	1.827	75.100	1.854	75.100	C		
10	6	43.800	0.936	187.456	12'-10"	6	12'- 6"	2.013	75.100	2.040	75.100	G		
10	8	46.624	1.030	244.869	12'-10"	6	12'- 6"	2.198	75.100	2.225	75.100	K		
10	10	49.448	1.130	231.036	12'-10"	6	12'- 6"	2.383	75.100	2.411	75.100	O		
10	12	52.272	1.263	245.294	12'-10"	6	12'- 6"	2.580	75.100	2.607	75.100	T		
12	6	50.480	1.100	263.413	14'-10"	6	14'- 6"	2.213	87.116	2.246	87.116	H		
12	8	53.304	1.218	286.836	14'-10"	6	14'- 6"	2.393	87.116	2.426	87.116	L		
12	10	56.128	1.317	275.717	14'-10"	6	14'- 6"	2.578	87.116	2.612	87.116	P		
12	12	58.952	1.474	326.824	14'-10"	6	14'- 6"	2.747	87.116	2.781	87.116	T		

DIMENSIONS						REINFORCING STEEL																					
SPAN (FT.)	HGHT (FT.)	T1 TOP SLAB (IN.)	T2 BOTTOM SLAB (IN.)	T3 WALL (IN.)	A	B	C	D	E	F	SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH	SIZE	SPACING C-C	LENGTH	NO. BL 1 BARS	NO. BL 2 BARS
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	12"	4'- 0"	2'- 8"	8'- 10"	4	12"	4'- 0"	--	----	----	----	4	12"	4'- 0"	16	8
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	12"	4'- 0"	3'- 2"	9'- 10"	4	12"	4'- 0"	--	----	----	----	4	12"	5'- 0"	16	12
4	3	8"	8"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	11 1/2"	5'- 0"	2'- 8"	9'- 10"	4	11 1/2"	5'- 0"	--	----	----	----	4	12"	4'- 0"	20	8
4	4	8"	8"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	11"	5'- 0"	3'- 2"	10'- 10"	4	11"	5'- 0"	--	----	----	----	4	12"	5'- 0"	20	12
4	5	8"	8"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	12"	5'- 0"	3'- 8"	11'- 10"	5	12"	5'- 0"	3	12"	2'- 3 5/8"	4'- 5"	4	12"	6'- 0"	20	16
4	6	8"	8"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	12"	5'- 0"	4'- 2"	12'- 10"	5	12"	5'- 0"	3	12"	2'- 3 5/8"	4'- 5"	4	12"	7'- 0"	20	20
5	3	8"	8"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	4	12"	6'- 0"	2'- 8"	10'- 10"	5	12"	6'- 0"	--	----	----	----	4	12"	4'- 0"	24	8
5	4	8"	8"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	11 1/2"	6'- 0"	3'- 2"	11'- 10"	5	11 1/2"	6'- 0"	--	----	----	----	4	12"	5'- 0"	24	12
5	5	8"	8"	8"	4	4'- 0"	4	4'- 0"	3	3'- 0"	4	11"	6'- 0"	3'- 8"	12'- 10"	5	11"	6'- 0"	--	----	----	----	4	12"	6'- 0"	24	16
5	6	8"	8"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	10 1/2"	6'- 0"	4'- 2"	13'- 10"	5	10 1/2"	6'- 0"	--	----	----	----	4	12"	7'- 0"	24	20
5	7	8"	8"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	10"	6'- 0"	4'- 8"	14'- 10"	5	10"	6'- 0"	--	----	----	----	4	12"	8'- 0"	24	24
6	4	8"	8"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	4	9 1/2"	7'- 0"	3'- 2"	12'- 10"	5	9 1/2"	7'- 0"	--	----	----	----	4	12"	5'- 0"	28	12
6	5	8"	8"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	11 1/2"	7'- 0"	3'- 8"	13'- 10"	6	11 1/2"	7'- 0"	4	11 1/2"	2'- 8 3/8"	5'- 2"	4	12"	6'- 0"	28	16
6	6	8"	8"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	11"	7'- 0"	4'- 2"	14'- 10"	6	11"	7'- 0"	3	11"	2'- 8 3/8"	5'- 2"	4	12"	7'- 0"	28	20
6	7	8"	8"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	10 1/2"	7'- 0"	4'- 8"	15'- 10"	6	10 1/2"	7'- 0"	3	10 1/2"	2'- 8 3/8"	5'- 2"	4	12"	8'- 0"	28	24
6	8	8"	8"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	4	10"	7'- 0"	5'- 2"	16'- 10"	6	10"	7'- 0"	4	10"	2'- 8 3/8"	5'- 2"	4	12"	9'- 0"	28	28
7	4	8"	8"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	5	10"	8'- 0"	3'- 2"	13'- 8"	6	10"	8'- 0"	3	10"	2'- 10 3/4"	5'- 7"	4	9"	5'- 0"	32	12
7	6	8"	8"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	9"	8'- 0"	4'- 2"	15'- 10"	6	9"	8'- 0"	3	9"	2'- 10 3/4"	5'- 7"	4	12"	7'- 0"	32	20
7	8	8"	8"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	4	8 1/2"	8'- 0"	5'- 2"	17'- 10"	6	8 1/2"	8'- 0"	3	8 1/2"	2'- 10 3/4"	5'- 7"	4	12"	9'- 0"	32	28
7	10	8"	8"	8"	6	6'- 0"	6	6'- 0"	8	8'- 0"	4	7 1/2"	8'- 0"	6'- 2"	19'- 10"	6	7 1/2"	8'- 0"	3	7 1/2"	2'- 10 3/4"	5'- 7"	4	12"	11'- 0"	32	36
8	4	8"	8"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	5	8 1/2"	9'- 0"	3'- 2"	14'- 8"	6	8 1/2"	9'- 0"	3	8 1/2"	3'- 1 1/4"	6'- 0"	4	6"	5'- 0"	36	12
8	6	8"	8"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	4	7 1/2"	9'- 0"	4'- 2"	16'- 10"	6	7 1/2"	9'- 0"	3	7 1/2"	3'- 1 1/4"	6'- 0"	4	9"	7'- 0"	36	20
8	8	8"	8"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	4	7"	9'- 0"	5'- 2"	18'- 10"	6	7"	9'- 0"	3	7"	3'- 1 1/4"	6'- 0"	4	12"	9'- 0"	36	28
8	10	8"	8"	8"	7	7'- 0"	7	7'- 0"	8	8'- 0"	4	6 1/2"	9'- 0"	6'- 2"	20'- 10"	6	6 1/2"	9'- 0"	3	6 1/2"	3'- 1 1/4"	6'- 0"	4	12"	11'- 0"	36	36
9	4	8"	8"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	5	7 1/2"	10'- 0"	3'- 2"	15'- 8"	6	7 1/2"	10'- 0"	3	7 1/2"	3'- 3 5/8"	6'- 5"	4	5 1/2"	5'- 0"	40	12
9	6	8 1/4"	8 1/4"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	5	6 1/2"	10'- 0"	4'- 2 1/4"	17'- 9"	6	6 1/2"	10'- 0"	--	----	----	----	4	7 1/2"	7'- 0"	40	20
9	8	8 1/4"	8 1/4"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	4	6"	10'- 0"	5'- 2 1/4"	19'- 10"	6	6"	10'- 0"	3	6"	3'- 3 5/8"	6'- 5"	4	10 1/2"	9'- 0"	40	28
9	10	8 1/2"	8 1/2"	8"	8	8'- 0"	8	8'- 0"	8	8'- 0"	5	7 1/2"	10'- 0"	6'- 2 1/2"	21'- 9"	7	7 1/2"	10'- 0"	3	7 1/2"	3'- 3 5/8"	6'- 5"	4	12"	11'- 1"	40	36
9	12	9"	9"	8"	8	8'- 0"	8	8'- 0"	10	10'- 0"	6	8 1/2"	10'- 0"	7'- 3"	23'- 8"	8	8 1/2"	10'- 0"	--	----	----	----	4	10"	13'- 2"	40	44
10	4	8 1/4"	8 1/4"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	5	6 1/2"	11'- 0"	3'- 2 1/4"	16'- 9"	6	6 1/2"	11'- 0"	3	6 1/2"	3'- 6"	6'- 10"	5	6"	5'- 0"	44	12
10	6	8 1/2"	8 1/2"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	6	7 1/2"	11'- 0"	4'- 2 1/2"	18'- 7"	7	7 1/2"	11'- 0"	--	----	----	----	4	6"	7'- 1"	44	20
10	8	8 3/4"	8 3/4"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	4	5 1/2"	11'- 0"	5'- 2 3/4"	20'- 11"	6	5 1/2"	11'- 0"	3	5 1/2"	3'- 6"	6'- 10"	4	9"	9'- 2"	44	28
10	10	9 1/4"	9 1/4"	8"	9	9'- 0"	9	9'- 0"	8	8'- 0"	4	5"	11'- 0"	6'- 3 1/4"	23'- 0"	6	5"	11'- 0"	--	----	----	----	4	12"	11'- 2"	44	36
10	12	9 3/4"	9 3/4"	8"	9	9'- 0"	9	9'- 0"	10	10'- 0"	4	8"	11'- 0"	7'- 3 1/4"	25'- 0"	8	8"	11'- 0"	4	8"	3'- 6"	6'- 9"	4	12"	13'- 2"	44	44
12	6	10 3/4"	10 3/4"	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	6	7 1/2"	13'- 0"	4'- 4 3/4"	21'- 0"	8	7 1/2"	13'- 0"	3	7 1/2"	3'- 10 3/4"	7'- 7"	4	5 1/2"	7'- 5"	52	20
12	8	10 3/4"	10 3/4"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	5	6"	13'- 0"	5'- 4 3/4"	23'- 2"	7	6"	13'- 0"	--	----	----	----	4	7 1/2"	9'- 5"	52	28
12	10	11"	11"	8"	11	11'- 0"	11	11'- 0"	8	8'- 0"	5	7"	13'- 0"	6'- 5"	25'- 2"	8	7"	13'- 0"	3	7"	3'- 10 3/4"	7'- 7"	4	10 1/2"	11'- 6"	52	36
12	12	11 1/4"	11 1/4"	8"	11	11'- 0"	11	11'- 0"	10	10'- 0"	5	6 1/2"	13'- 0"	7'- 5 1/4"	27'- 3"	8	6 1/2"	13'- 0"	3	6 1/2"	3'- 10 3/4"	7'- 7"	4	12"	13'- 6"	52	44

SINGLE BOX CULVERTS  
5 TO 10 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE  
AND  
BRIDGE  
DIVISION

SPAN (FT.)	HGHT (FT.)	QUAN./LF		HEADWALLS									
		REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH					
3	3	16.184	0.401	36.185	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A	
3	4	17.596	0.450	40.361	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C	
4	3	19.524	0.450	42.391	6'-10"	6	6'- 6"	1.139	39.052	1.146	39.052	A	
4	4	20.936	0.499	47.628	6'-10"	6	6'- 6"	1.232	39.052	1.239	39.052	C	
4	5	22.348	0.547	60.274	6'-10"	6	6'- 6"	1.324	39.052	1.332	39.052	E	
4	6	23.760	0.596	64.450	6'-10"	6	6'- 6"	1.417	39.052	1.424	39.052	G	
5	3	22.864	0.499	51.373	7'-10"	6	7'- 6"	1.240	45.060	1.251	45.060	A	
5	4	24.276	0.548	56.781	7'-10"	6	7'- 6"	1.333	45.060	1.343	45.060	C	
5	5	25.688	0.597	62.422	7'-10"	6	7'- 6"	1.426	45.060	1.436	45.060	E	
5	6	27.100	0.646	68.330	7'-10"	6	7'- 6"	1.518	45.060	1.529	45.060	G	
5	7	28.512	0.694	74.544	7'-10"	6	7'- 6"	1.611	45.060	1.621	45.060	I	
6	4	27.616	0.596	69.998	8'-10"	6	8'- 6"	1.434	51.068	1.448	51.068	C	
6	5	29.028	0.644	88.369	8'-10"	6	8'- 6"	1.527	51.068	1.541	51.068	E	
6	6	30.440	0.693	88.612	8'-10"	6	8'- 6"	1.620	51.068	1.633	51.068	G	
6	7	31.852	0.742	95.504	8'-10"	6	8'- 6"	1.712	51.068	1.726	51.068	I	
6	8	33.264	0.791	110.043	8'-10"	6	8'- 6"	1.805	51.068	1.819	51.068	K	
7	4	30.956	0.643	107.920	9'-10"	6	9'- 6"	1.535	57.076	1.552	57.076	C	
7	6	33.780	0.741	109.692	9'-10"	6	9'- 6"	1.721	57.076	1.738	57.076	G	
7	8	36.604	0.839	123.346	9'-10"	6	9'- 6"	1.906	57.076	1.923	57.076	K	
7	10	39.428	0.936	143.891	9'-10"	6	9'- 6"	2.092	57.076	2.109	57.076	O	
8	4	34.296	0.690	136.021	10'-10"	6	10'- 6"	1.636	63.084	1.657	63.084	C	
8	6	37.120	0.788	137.716	10'-10"	6	10'- 6"	1.822	63.084	1.842	63.084	G	
8	8	39.944	0.886	151.551	10'-10"	6	10'- 6"	2.007	63.084	2.028	63.084	K	
8	10	42.768	0.984	170.237	10'-10"	6	10'- 6"	2.193	63.084	2.213	63.084	O	
9	4	37.636	0.737	161.601	11'-10"	6	11'- 6"	1.738	69.092	1.761	69.092	C	
9	6	40.460	0.851	173.018	11'-10"	6	11'- 6"	1.920	69.092	1.944	69.092	G	
9	8	43.284	0.949	183.366	11'-10"	6	11'- 6"	2.105	69.092	2.129	69.092	K	
9	10	46.108	1.062	208.505	11'-10"	6	11'- 6"	2.288	69.092	2.311	69.092	O	
9	12	48.932	1.190	240.130	11'-10"	6	11'- 6"	2.467	69.092	2.491	69.092	S	
10	4	40.976	0.801	199.247	12'-10"	6	12'- 6"	1.835	75.100	1.862	75.100	C	
10	6	43.800	0.916	217.106	12'-10"	6	12'- 6"	2.016	75.100	2.043	75.100	G	
10	8	46.624	1.033	211.738	12'-10"	6	12'- 6"	2.198	75.100	2.225	75.100	K	
10	10	49.448	1.167	210.899	12'-10"	6	12'- 6"	2.394	75.100	2.421	75.100	P	
10	12	52.272	1.264	228.791	12'-10"	6	12'- 6"	2.580	75.100	2.607	75.100	T	
12	6	50.480	1.201	294.130	14'-10"	6	14'- 6"	2.186	87.116	2.219	87.116	H	
12	8	53.304	1.301	268.332	14'-10"	6	14'- 6"	2.371	87.116	2.405	87.116	L	
12	10	56.128	1.419	294.385	14'-10"	6	14'- 6"	2.551	87.116	2.585	87.116	P	
12	12	58.952	1.536	323.474	14'-10"	6	14'- 6"	2.731	87.116	2.765	87.116	T	



DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3	A	B	C	D	E	F	BH1			BH2			BH3			BV1			NO. BL1 BARS	NO. BL2 BARS			
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	WALL (IN.)							SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH			SIZE	SPACING C-C	LENGTH
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	12"	4'- 0"	2'- 8"	8'- 10"	4	12"	4'- 0"	--	----	----	4	12"	4'- 0"	16	8	
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	12"	4'- 0"	3'- 2"	9'- 10"	4	12"	4'- 0"	--	----	----	4	12"	5'- 0"	16	12	
4	3	8"	8"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	12"	5'- 0"	2'- 8"	9'- 10"	5	12"	5'- 0"	--	----	----	4	12"	4'- 0"	20	8	
4	4	8"	8"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	12"	5'- 0"	3'- 2"	10'- 10"	5	12"	5'- 0"	--	----	----	4	12"	5'- 0"	20	12	
4	5	8"	8"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	11 1/2"	5'- 0"	3'- 8"	11'- 10"	5	11 1/2"	5'- 0"	--	----	----	4	12"	6'- 0"	20	16	
4	6	8"	8"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	11"	5'- 0"	4'- 2"	12'- 10"	5	11"	5'- 0"	--	----	----	4	12"	7'- 0"	20	20	
5	3	8"	8"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	4	9 1/2"	6'- 0"	2'- 8"	10'- 10"	5	9 1/2"	6'- 0"	--	----	----	4	11 1/2"	4'- 0"	24	8	
5	4	8"	8"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	9"	6'- 0"	3'- 2"	11'- 10"	5	9"	6'- 0"	--	----	----	4	12"	5'- 0"	24	12	
5	5	8"	8"	8"	4	4'- 0"	4	4'- 0"	3	3'- 0"	4	11 1/2"	6'- 0"	3'- 8"	12'- 10"	6	11 1/2"	6'- 0"	3	11 1/2"	2'- 6"	4'- 10"	4	12"	6'- 0"	24	16
5	6	8"	8"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	11"	6'- 0"	4'- 2"	13'- 10"	6	11"	6'- 0"	--	----	----	4	12"	7'- 0"	24	20	
5	7	8"	8"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	10 1/2"	6'- 0"	4'- 8"	14'- 10"	6	10 1/2"	6'- 0"	--	----	----	4	12"	8'- 0"	24	24	
6	4	8"	8"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	5	9 1/2"	7'- 0"	3'- 2"	12'- 8"	6	9 1/2"	7'- 0"	--	----	----	4	9"	5'- 0"	28	12	
6	5	8"	8"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	9"	7'- 0"	3'- 8"	13'- 10"	6	9"	7'- 0"	3	9"	2'- 8 3/8"	5'- 2"	4	12"	6'- 0"	28	16
6	6	8"	8"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	8 1/2"	7'- 0"	4'- 2"	14'- 10"	6	8 1/2"	7'- 0"	3	8 1/2"	2'- 8 3/8"	5'- 2"	4	12"	7'- 0"	28	20
6	7	8"	8"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	8 1/2"	7'- 0"	4'- 8"	15'- 10"	6	8 1/2"	7'- 0"	3	8 1/2"	2'- 8 3/8"	5'- 2"	4	12"	8'- 0"	28	24
6	8	8"	8"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	4	8"	7'- 0"	5'- 2"	16'- 10"	6	8"	7'- 0"	3	8"	2'- 8 3/8"	5'- 2"	4	12"	9'- 0"	28	28
7	4	8"	8"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	5	8"	8'- 0"	3'- 2"	13'- 8"	6	8"	8'- 0"	--	----	----	4	6"	5'- 0"	32	12	
7	6	8 1/4"	8 1/4"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	7 1/2"	8'- 0"	4'- 2 1/4"	15'- 10"	6	7 1/2"	8'- 0"	3	7 1/2"	2'- 10 3/4"	5'- 7"	4	11"	7'- 0"	32	20
7	8	8 1/4"	8 1/4"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	4	7"	8'- 0"	5'- 2 1/4"	17'- 10"	6	7"	8'- 0"	3	7"	2'- 10 3/4"	5'- 7"	4	12"	9'- 0"	32	28
7	10	8 1/4"	8 1/4"	8"	6	6'- 0"	6	6'- 0"	8	8'- 0"	4	6 1/2"	8'- 0"	6'- 2 1/4"	19'- 10"	6	6 1/2"	8'- 0"	3	6 1/2"	2'- 10 3/4"	5'- 7"	4	12"	11'- 0"	32	36
8	4	9"	9"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	5	7"	9'- 0"	3'- 3"	14'- 10"	6	7"	9'- 0"	--	----	----	4	6"	5'- 2"	36	12	
8	6	9"	9"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	4	6 1/2"	9'- 0"	4'- 3"	17'- 0"	6	6 1/2"	9'- 0"	3	6 1/2"	3'- 1 1/4"	6'- 0"	4	8"	7'- 2"	36	20
8	8	9 1/4"	9 1/4"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	5	6"	9'- 0"	5'- 3 1/4"	18'- 11"	6	6"	9'- 0"	--	----	----	4	12"	9'- 2"	36	28	
8	10	9 1/4"	9 1/4"	8"	7	7'- 0"	7	7'- 0"	8	8'- 0"	5	9"	9'- 0"	6'- 3 1/4"	20'- 11"	8	9"	9'- 0"	3	9"	3'- 1 1/4"	6'- 0"	4	12"	11'- 2"	36	36
9	4	9 3/4"	9 3/4"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	5	6"	10'- 0"	3'- 3 3/4"	16'- 0"	6	6"	10'- 0"	--	----	----	6	9 1/2"	5'- 3"	40	12	
9	6	10"	10"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	5	9"	10'- 0"	4'- 4"	18'- 0"	8	9"	10'- 0"	3	9"	3'- 3 5/8"	6'- 5"	4	7 1/2"	7'- 4"	40	20
9	8	10"	10"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	5	9"	10'- 0"	5'- 4"	20'- 0"	8	9"	10'- 0"	3	9"	3'- 3 5/8"	6'- 5"	4	9 1/2"	9'- 4"	40	28
9	10	10 1/4"	10 1/4"	8"	8	8'- 0"	8	8'- 0"	8	8'- 0"	6	8"	10'- 0"	6'- 4 1/4"	21'- 11"	8	8"	10'- 0"	--	----	----	4	12"	11'- 5"	40	36	
9	12	10 1/4"	10 1/4"	8"	8	8'- 0"	8	8'- 0"	10	10'- 0"	5	7 1/2"	10'- 0"	7'- 4 1/4"	24'- 1"	8	7 1/2"	10'- 0"	4	7 1/2"	3'- 3 5/8"	6'- 4"	4	7 1/2"	13'- 5"	40	44
10	4	10 1/2"	10 1/2"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	5	5 1/2"	11'- 0"	3'- 4 1/2"	17'- 1"	6	5 1/2"	11'- 0"	--	----	----	6	8"	5'- 5"	44	12	
10	6	10 3/4"	10 3/4"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	6	8"	11'- 0"	4'- 4 3/4"	19'- 0"	8	8"	11'- 0"	--	----	----	4	6 1/2"	7'- 5"	44	20	
10	8	11"	11"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	6	6"	11'- 0"	5'- 5"	21'- 0"	7	6"	11'- 0"	--	----	----	4	11"	9'- 6"	44	28	
10	10	11"	11"	8"	9	9'- 0"	9	9'- 0"	8	8'- 0"	5	7 1/2"	11'- 0"	6'- 5"	23'- 2"	8	7 1/2"	11'- 0"	3	7 1/2"	3'- 6"	6'- 10"	4	12"	11'- 6"	44	36
10	12	11 1/4"	11 1/4"	8"	9	9'- 0"	9	9'- 0"	10	10'- 0"	6	6"	11'- 0"	7'- 5 1/4"	25'- 1"	7	6"	11'- 0"	--	----	----	4	9"	13'- 6"	44	44	
12	6	12 3/4"	12 3/4"	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	5	5 1/2"	13'- 0"	4'- 6 3/4"	21'- 6"	7	5 1/2"	13'- 0"	--	----	----	5	8"	7'- 9"	52	20	
12	8	12 3/4"	12 3/4"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	6	6 1/2"	13'- 0"	5'- 6 3/4"	23'- 4"	8	6 1/2"	13'- 0"	--	----	----	4	9"	9'- 9"	52	28	
12	10	13"	13"	8"	11	11'- 0"	11	11'- 0"	8	8'- 0"	5	6 1/2"	13'- 0"	6'- 7"	25'- 6"	8	6 1/2"	13'- 0"	3	6 1/2"	3'- 10 3/4"	7'- 7"	4	12"	11'- 10"	52	36
12	12	13"	13"	8"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	5"	13'- 0"	7'- 7"	27'- 4"	7	5"	13'- 0"	--	----	----	4	12"	13'- 10"	52	44	

SINGLE BOX CULVERTS  
10 TO 15 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGHT (FT.)	REINFORCING STEEL (LBS./LONG. JT)	QUAN./LF		HEADWALLS									
			CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL	
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH						
3	3	16.184	0.401	36.185	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A		
3	4	17.596	0.450	40.361	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C		
4	3	19.524	0.450	45.279	6'-10"	6	6'- 6"	1.139	39.052	1.146	39.052	A		
4	4	20.936	0.499	49.455	6'-10"	6	6'- 6"	1.232	39.052	1.239	39.052	C		
4	5	22.348	0.548	54.772	6'-10"	6	6'- 6"	1.324	39.052	1.332	39.052	E		
4	6	23.760	0.597	60.314	6'-10"	6	6'- 6"	1.417	39.052	1.424	39.052	G		
5	3	22.864	0.498	58.708	7'-10"	6	7'- 6"	1.240	45.060	1.251	45.060	A		
5	4	24.276	0.547	64.991	7'-10"	6	7'- 6"	1.333	45.060	1.343	45.060	C		
5	5	25.688	0.596	74.348	7'-10"	6	7'- 6"	1.426	45.060	1.436	45.060	E		
5	6	27.100	0.645	72.728	7'-10"	6	7'- 6"	1.518	45.060	1.529	45.060	G		
5	7	28.512	0.694	78.991	7'-10"	6	7'- 6"	1.611	45.060	1.621	45.060	I		
6	4	27.616	0.594	92.060	8'-10"	6	8'- 6"	1.434	51.068	1.448	51.068	C		
6	5	29.028	0.643	95.776	8'-10"	6	8'- 6"	1.527	51.068	1.541	51.068	E		
6	6	30.440	0.692	104.210	8'-10"	6	8'- 6"	1.620	51.068	1.633	51.068	G		
6	7	31.852	0.741	108.936	8'-10"	6	8'- 6"	1.712	51.068	1.726	51.068	I		
6	8	33.264	0.790	118.188	8'-10"	6	8'- 6"	1.805	51.068	1.819	51.068	K		
7	4	30.956	0.642	118.059	9'-10"	6	9'- 6"	1.535	57.076	1.552	57.076	C		
7	6	33.780	0.753	124.830	9'-10"	6	9'- 6"	1.719	57.076	1.736	57.076	G		
7	8	36.604	0.851	140.365	9'-10"	6	9'- 6"	1.905	57.076	1.922	57.076	K		
7	10	39.428	0.948	158.396	9'-10"	6	9'- 6"	2.090	57.076	2.107	57.076	O		
8	4	34.296	0.747	141.757	10'-10"	6	10'- 6"	1.627	63.084	1.648	63.084	C		
8	6	37.120	0.845	154.432	10'-10"	6	10'- 6"	1.813	63.084	1.833	63.084	G		
8	8	39.944	0.956	179.815	10'-10"	6	10'- 6"	2.014	63.084	2.035	63.084	L		
8	10	42.768	1.054	186.791	10'-10"	6	10'- 6"	2.200	63.084	2.220	63.084	P		
9	4	37.636	0.848	177.985	11'-10"	6	11'- 6"	1.735	69.092	1.758	69.092	D		
9	6	40.460	0.962	184.047	11'-10"	6	11'- 6"	1.917	69.092	1.941	69.092	H		
9	8	43.284	1.060	192.693	11'-10"	6	11'- 6"	2.102	69.092	2.126	69.092	L		
9	10	46.108	1.172	234.365	11'-10"	6	11'- 6"	2.285	69.092	2.308	69.092	P		
9	12	48.932	1.268	264.840	11'-10"	6	11'- 6"	2.470	69.092	2.494	69.092	T		
10	4	40.976	0.958	208.158	12'-10"	6	12'- 6"	1.819	75.100	1.846	75.100	D		
10	6	43.800	1.073	228.929	12'-10"	6	12'- 6"	2.000	75.100	2.027	75.100	H		
10	8	46.624	1.186	269.870	12'-10"	6	12'- 6"	2.182	75.100	2.209	75.100	L		
10	10	49.448	1.286	246.041	12'-10"	6	12'- 6"	2.367	75.100	2.394	75.100	P		
10	12	52.272	1.398	310.621	12'-10"	6	12'- 6"	2.549	75.100	2.576	75.100	T		
12	6	50.480	1.366	280.309	14'-10"	6	14'- 6"	2.143	87.116	2.176	87.116	H		
12	8	53.304	1.462	320.195	14'-10"	6	14'- 6"	2.328	87.116	2.362	87.116	L		
12	10	56.128	1.582	311.500	14'-10"	6	14'- 6"	2.508	87.116	2.542	87.116	P		
12	12	58.952	1.674	394.369	14'-10"	6	14'- 6"	2.693	87.116	2.727	87.116	T		

DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3	A	B	C	D	E	F	BH1			BH2			BH3			BV1			NO. BL1 BARS	NO. BL2 BARS			
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	WALL (IN.)							SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH			SIZE	SPACING C-C	LENGTH
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	12"	4'- 0"	2'- 8"	8'- 10"	5	12"	4'- 0"	3	12"	2'- 1 1/4"	4'- 0"	4	12"	4'- 0"	16	8
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	12"	4'- 0"	3'- 2"	9'- 10"	5	12"	4'- 0"	--	--	--	--	4	12"	5'- 0"	16	12
4	3	8"	8"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	10 1/2"	5'- 0"	2'- 8"	9'- 10"	5	10 1/2"	5'- 0"	--	--	--	--	4	12"	4'- 0"	20	8
4	4	8"	8"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	10"	5'- 0"	3'- 2"	10'- 10"	5	10"	5'- 0"	--	--	--	--	4	12"	5'- 0"	20	12
4	5	8"	8"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	9 1/2"	5'- 0"	3'- 8"	11'- 10"	5	9 1/2"	5'- 0"	--	--	--	--	4	12"	6'- 0"	20	16
4	6	8"	8"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	9 1/2"	5'- 0"	4'- 2"	12'- 10"	5	9 1/2"	5'- 0"	--	--	--	--	4	12"	7'- 0"	20	20
5	3	8"	8"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	5	10 1/2"	6'- 0"	2'- 8"	10'- 8"	6	10 1/2"	6'- 0"	--	--	--	--	4	9"	4'- 0"	24	8
5	4	8"	8"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	10"	6'- 0"	3'- 2"	11'- 10"	6	10"	6'- 0"	3	10"	2'- 6"	4'- 10"	4	12"	5'- 0"	24	12
5	5	8"	8"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	9 1/2"	6'- 0"	3'- 8"	12'- 10"	6	9 1/2"	6'- 0"	3	9 1/2"	2'- 6"	4'- 10"	4	12"	6'- 0"	24	16
5	6	8"	8"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	9"	6'- 0"	4'- 2"	13'- 10"	6	9"	6'- 0"	--	--	--	--	4	12"	7'- 0"	24	20
5	7	8"	8"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	9"	6'- 0"	4'- 8"	14'- 10"	6	9"	6'- 0"	--	--	--	--	4	12"	8'- 0"	24	24
6	4	8 3/4"	8 3/4"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	5	8"	7'- 0"	3'- 2 3/4"	12'- 10"	6	8"	7'- 0"	--	--	--	--	4	9"	5'- 2"	28	12
6	5	8 3/4"	8 3/4"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	8"	7'- 0"	3'- 8 3/4"	13'- 11"	6	8"	7'- 0"	3	8"	2'- 8 3/8"	5'- 2"	4	12"	6'- 2"	28	16
6	6	8 3/4"	8 3/4"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	7 1/2"	7'- 0"	4'- 2 3/4"	14'- 11"	6	7 1/2"	7'- 0"	3	7 1/2"	2'- 8 3/8"	5'- 2"	4	12"	7'- 2"	28	20
6	7	8 3/4"	8 3/4"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	7 1/2"	7'- 0"	4'- 8 3/4"	15'- 11"	6	7 1/2"	7'- 0"	3	7 1/2"	2'- 8 3/8"	5'- 2"	4	12"	8'- 2"	28	24
6	8	8 3/4"	8 3/4"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	5	7"	7'- 0"	5'- 2 3/4"	16'- 10"	6	7"	7'- 0"	--	--	--	--	4	12"	9'- 2"	28	28
7	4	9 3/4"	9 3/4"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	4	7"	8'- 0"	3'- 3 3/4"	14'- 1"	6	7"	8'- 0"	3	7"	2'- 10 3/4"	5'- 7"	4	7 1/2"	5'- 3"	32	12
7	6	10"	10"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	6 1/2"	8'- 0"	4'- 4"	16'- 2"	6	6 1/2"	8'- 0"	--	--	--	--	4	12"	7'- 4"	32	20
7	8	10"	10"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	5	6 1/2"	8'- 0"	5'- 4"	18'- 0"	6	6 1/2"	8'- 0"	--	--	--	--	4	12"	9'- 4"	32	28
7	10	10"	10"	8"	6	6'- 0"	6	6'- 0"	8	8'- 0"	5	7 1/2"	8'- 0"	6'- 4"	20'- 0"	7	7 1/2"	8'- 0"	3	7 1/2"	2'- 10 3/4"	5'- 7"	4	9 1/2"	11'- 4"	32	36
8	4	10 3/4"	10 3/4"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	4	6"	9'- 0"	3'- 4 3/4"	15'- 3"	6	6"	9'- 0"	3	6"	3'- 1 1/4"	6'- 0"	4	6 1/2"	5'- 5"	36	12
8	6	11"	11"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	5	7"	9'- 0"	4'- 5"	17'- 2"	7	7"	9'- 0"	--	--	--	--	4	11"	7'- 6"	36	20
8	8	11 1/4"	11 1/4"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	5	9"	9'- 0"	5'- 5 1/4"	19'- 3"	8	9"	9'- 0"	3	9"	3'- 1 1/4"	6'- 0"	4	12"	9'- 6"	36	28
8	10	11 1/4"	11 1/4"	8"	7	7'- 0"	7	7'- 0"	8	8'- 0"	5	5 1/2"	9'- 0"	6'- 5 1/4"	21'- 3"	6	5 1/2"	9'- 0"	--	--	--	--	4	10 1/2"	11'- 6"	36	36
9	4	12"	12"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	4	5 1/2"	10'- 0"	3'- 6"	16'- 6"	6	5 1/2"	10'- 0"	3	5 1/2"	3'- 3 5/8"	6'- 5"	4	6"	5'- 8"	40	12
9	6	12 1/4"	12 1/4"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	5	8"	10'- 0"	4'- 6 1/4"	18'- 5"	8	8"	10'- 0"	--	--	--	--	4	10"	7'- 9"	40	20
9	8	12 1/4"	12 1/4"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	4	6 1/2"	10'- 0"	5'- 6 1/4"	20'- 6"	7	6 1/2"	10'- 0"	3	6 1/2"	3'- 3 5/8"	6'- 5"	4	12"	9'- 9"	40	28
9	10	12 1/2"	12 1/2"	8"	8	8'- 0"	8	8'- 0"	8	8'- 0"	5	6"	10'- 0"	6'- 6 1/2"	22'- 5"	7	6"	10'- 0"	--	--	--	--	4	12"	11'- 9"	40	36
9	12	12 1/2"	12 1/2"	8"	8	8'- 0"	8	8'- 0"	10	10'- 0"	6	7 1/2"	10'- 0"	7'- 6 1/2"	24'- 3"	8	7 1/2"	10'- 0"	3	7 1/2"	3'- 3 5/8"	6'- 5"	4	5 1/2"	13'- 9"	40	44
10	4	13"	13"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	5	6"	11'- 0"	3'- 7"	17'- 6"	7	6"	11'- 0"	--	--	--	--	4	5"	5'- 10"	44	12
10	6	13"	13"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	5	7 1/2"	11'- 0"	4'- 7"	19'- 6"	8	7 1/2"	11'- 0"	3	7 1/2"	3'- 6"	6'- 10"	4	8"	7'- 10"	44	20
10	8	13"	13"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	5	7 1/2"	11'- 0"	5'- 7"	21'- 6"	8	7 1/2"	11'- 0"	3	7 1/2"	3'- 6"	6'- 10"	4	12"	9'- 10"	44	28
10	10	13"	13"	8"	9	9'- 0"	9	9'- 0"	8	8'- 0"	5	5 1/2"	11'- 0"	6'- 7"	23'- 6"	7	5 1/2"	11'- 0"	--	--	--	--	4	12"	11'- 10"	44	36
10	12	13"	13"	8"	9	9'- 0"	9	9'- 0"	10	10'- 0"	7	7"	11'- 0"	7'- 7"	25'- 3"	8	7"	11'- 0"	--	--	--	--	4	6"	13'- 10"	44	44
12	6	15"	15"	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	5	6 1/2"	13'- 0"	4'- 9"	21'- 10"	8	6 1/2"	13'- 0"	--	--	--	--	4	6"	8'- 2"	52	20
12	8	15 1/4"	15 1/4"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	6	6"	13'- 0"	5'- 9 1/4"	23'- 9"	8	6"	13'- 0"	--	--	--	--	4	10"	10'- 3"	52	28
12	10	15 1/4"	15 1/4"	8"	11	11'- 0"	11	11'- 0"	8	8'- 0"	4	6"	13'- 0"	6'- 9 1/4"	26'- 0"	8	6"	13'- 0"	4	6"	3'- 10 3/4"	7'- 6"	4	12"	12'- 3"	52	36
12	12	15 1/4"	15 1/4"	8"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	6"	13'- 0"	7'- 9 1/4"	27'- 9"	8	6"	13'- 0"	--	--	--	--	4	6 1/2"	14'- 3"	52	44

SINGLE BOX CULVERTS  
15 TO 20 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGHT (FT.)	QUAN./LF		HEADWALLS									
		REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH					
3	3	16.184	0.400	45.201	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A	
3	4	17.596	0.450	43.361	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C	
4	3	19.524	0.450	48.646	6'-10"	6	6'- 6"	1.139	39.052	1.146	39.052	A	
4	4	20.936	0.498	54.436	6'-10"	6	6'- 6"	1.232	39.052	1.239	39.052	C	
4	5	22.348	0.547	60.536	6'-10"	6	6'- 6"	1.324	39.052	1.332	39.052	E	
4	6	23.760	0.596	65.064	6'-10"	6	6'- 6"	1.417	39.052	1.424	39.052	G	
5	3	22.864	0.497	72.194	7'-10"	6	7'- 6"	1.240	45.060	1.251	45.060	A	
5	4	24.276	0.546	76.547	7'-10"	6	7'- 6"	1.333	45.060	1.343	45.060	C	
5	5	25.688	0.595	83.671	7'-10"	6	7'- 6"	1.426	45.060	1.436	45.060	E	
5	6	27.100	0.645	81.578	7'-10"	6	7'- 6"	1.518	45.060	1.529	45.060	G	
5	7	28.512	0.694	86.199	7'-10"	6	7'- 6"	1.611	45.060	1.621	45.060	I	
6	4	27.616	0.627	104.117	8'-10"	6	8'- 6"	1.432	51.068	1.446	51.068	C	
6	5	29.028	0.677	104.046	8'-10"	6	8'- 6"	1.524	51.068	1.538	51.068	E	
6	6	30.440	0.725	113.762	8'-10"	6	8'- 6"	1.617	51.068	1.631	51.068	G	
6	7	31.852	0.774	118.740	8'-10"	6	8'- 6"	1.710	51.068	1.724	51.068	I	
6	8	33.264	0.822	137.723	8'-10"	6	8'- 6"	1.803	51.068	1.816	51.068	K	
7	4	30.956	0.731	124.958	9'-10"	6	9'- 6"	1.543	57.076	1.560	57.076	D	
7	6	33.780	0.843	122.935	9'-10"	6	9'- 6"	1.727	57.076	1.744	57.076	H	
7	8	36.604	0.939	158.059	9'-10"	6	9'- 6"	1.912	57.076	1.929	57.076	L	
7	10	39.428	1.036	186.552	9'-10"	6	9'- 6"	2.098	57.076	2.115	57.076	P	
8	4	34.296	0.847	154.788	10'-10"	6	10'- 6"	1.630	63.084	1.650	63.084	D	
8	6	37.120	0.959	166.959	10'-10"	6	10'- 6"	1.813	63.084	1.833	63.084	H	
8	8	39.944	1.072	176.921	10'-10"	6	10'- 6"	1.996	63.084	2.016	63.084	L	
8	10	42.768	1.168	210.845	10'-10"	6	10'- 6"	2.181	63.084	2.202	63.084	P	
9	4	37.636	0.991	181.067	11'-10"	6	11'- 6"	1.707	69.092	1.731	69.092	D	
9	6	40.460	1.105	184.391	11'-10"	6	11'- 6"	1.889	69.092	1.913	69.092	H	
9	8	43.284	1.203	194.124	11'-10"	6	11'- 6"	2.075	69.092	2.098	69.092	L	
9	10	46.108	1.315	231.236	11'-10"	6	11'- 6"	2.257	69.092	2.281	69.092	P	
9	12	48.932	1.409	300.780	11'-10"	6	11'- 6"	2.442	69.092	2.466	69.092	T	
10	4	40.976	1.132	215.554	12'-10"	6	12'- 6"	1.780	75.100	1.807	75.100	D	
10	6	43.800	1.230	228.121	12'-10"	6	12'- 6"	1.966	75.100	1.993	75.100	H	
10	8	46.624	1.328	235.243	12'-10"	6	12'- 6"	2.151	75.100	2.178	75.100	L	
10	10	49.448	1.425	263.804	12'-10"	6	12'- 6"	2.337	75.100	2.364	75.100	P	
10	12	52.272	1.516	360.548	12'-10"	6	12'- 6"	2.522	75.100	2.549	75.100	T	
12	6	50.480	1.552	276.319	14'-10"	6	14'- 6"	2.094	87.116	2.128	87.116	H	
12	8	53.304	1.666	343.227	14'-10"	6	14'- 6"	2.293	87.116	2.326	87.116	M	
12	10	56.128	1.767	313.030	14'-10"	6	14'- 6"	2.478	87.116	2.512	87.116	Q	
12	12	58.952	1.860	391.989	14'-10"	6	14'- 6"	2.663	87.116	2.697	87.116	U	

DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3	WALL (IN.)	A	B	C	D	E	F	BH1				BH2			BH3			BV1			NO. BL1 BARS	NO. BL2 BARS	
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	SIZE								SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH	SIZE	SPACING C-C			LENGTH
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	12"	4'- 0"	2'- 8"	8'- 10"	5	12"	4'- 0"	3	12"	2'- 1 1/4"	4'- 0"	4	12"	4'- 0"	16	8
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	12"	4'- 0"	3'- 2"	9'- 10"	5	12"	4'- 0"	3	12"	2'- 1 1/4"	4'- 0"	4	12"	5'- 0"	16	12
4	3	8"	8"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	9"	5'- 0"	2'- 8"	9'- 10"	5	9"	5'- 0"	--	--	--	--	4	12"	4'- 0"	20	8
4	4	8"	8"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	11"	5'- 0"	3'- 2"	10'- 10"	6	11"	5'- 0"	3	11"	2'- 3 5/8"	4'- 5"	4	12"	5'- 0"	20	12
4	5	8"	8"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	11"	5'- 0"	3'- 8"	11'- 10"	6	11"	5'- 0"	3	11"	2'- 3 5/8"	4'- 5"	4	12"	6'- 0"	20	16
4	6	8"	8"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	10 1/2"	5'- 0"	4'- 2"	12'- 10"	6	10 1/2"	5'- 0"	3	10 1/2"	2'- 3 5/8"	4'- 5"	4	12"	7'- 0"	20	20
5	3	8 1/2"	8 1/2"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	5	9"	6'- 0"	2'- 8 1/2"	10'- 9"	6	9"	6'- 0"	--	--	--	--	4	9"	4'- 1"	24	8
5	4	8 1/2"	8 1/2"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	5	8 1/2"	6'- 0"	3'- 2 1/2"	11'- 9"	6	8 1/2"	6'- 0"	--	--	--	--	4	11 1/2"	5'- 1"	24	12
5	5	8 1/2"	8 1/2"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	8 1/2"	6'- 0"	3'- 8 1/2"	12'- 11"	6	8 1/2"	6'- 0"	3	8 1/2"	2'- 6"	4'- 10"	4	12"	6'- 1"	24	16
5	6	8 3/4"	8 3/4"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	8 1/2"	6'- 0"	4'- 2 3/4"	13'- 11"	6	8 1/2"	6'- 0"	--	--	--	--	4	12"	7'- 2"	24	20
5	7	8 3/4"	8 3/4"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	8"	6'- 0"	4'- 8 3/4"	14'- 11"	6	8"	6'- 0"	--	--	--	--	4	12"	8'- 2"	24	24
6	4	10"	10"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	4	7 1/2"	7'- 0"	3'- 4"	13'- 2"	6	7 1/2"	7'- 0"	3	7 1/2"	2'- 8 3/8"	5'- 2"	4	9"	5'- 4"	28	12
6	5	10 1/4"	10 1/4"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	7 1/2"	7'- 0"	3'- 10 1/4"	14'- 2"	6	7 1/2"	7'- 0"	--	--	--	--	4	12"	6'- 5"	28	16
6	6	10 1/4"	10 1/4"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	7"	7'- 0"	4'- 4 1/4"	15'- 2"	6	7"	7'- 0"	--	--	--	--	4	12"	7'- 5"	28	20
6	7	10 1/4"	10 1/4"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	7"	7'- 0"	4'- 10 1/4"	16'- 2"	6	7"	7'- 0"	--	--	--	--	4	12"	8'- 5"	28	24
6	8	10 1/4"	10 1/4"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	5	7"	7'- 0"	5'- 4 1/4"	17'- 1"	6	7"	7'- 0"	--	--	--	--	4	12"	9'- 5"	28	28
7	4	11 1/2"	11 1/2"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	4	6 1/2"	8'- 0"	3'- 5 1/2"	14'- 5"	6	6 1/2"	8'- 0"	--	--	--	--	4	8"	5'- 7"	32	12
7	6	11 3/4"	11 3/4"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	6"	8'- 0"	4'- 5 3/4"	16'- 5"	6	6"	8'- 0"	--	--	--	--	4	12"	7'- 8"	32	20
7	8	11 3/4"	11 3/4"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	4	6"	8'- 0"	5'- 5 3/4"	18'- 5"	6	6"	8'- 0"	--	--	--	--	4	12"	9'- 8"	32	28
7	10	11 3/4"	11 3/4"	8"	6	6'- 0"	6	6'- 0"	8	8'- 0"	5	7 1/2"	8'- 0"	6'- 5 3/4"	20'- 4"	7	7 1/2"	8'- 0"	3	7 1/2"	2'- 10 3/4"	5'- 7"	4	6 1/2"	11'- 8"	32	36
8	4	12 3/4"	12 3/4"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	5	8 1/2"	9'- 0"	3'- 6 3/4"	15'- 6"	8	8 1/2"	9'- 0"	3	8 1/2"	3'- 1 1/4"	6'- 0"	4	7 1/2"	5'- 9"	36	12
8	6	13"	13"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	5	8 1/2"	9'- 0"	4'- 7"	17'- 6"	8	8 1/2"	9'- 0"	--	--	--	--	4	12"	7'- 10"	36	20
8	8	13"	13"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	5	8 1/2"	9'- 0"	5'- 7"	19'- 6"	8	8 1/2"	9'- 0"	3	8 1/2"	3'- 1 1/4"	6'- 0"	4	12"	9'- 10"	36	28
8	10	13"	13"	8"	7	7'- 0"	7	7'- 0"	8	8'- 0"	5	5"	9'- 0"	6'- 7"	21'- 6"	6	5"	9'- 0"	--	--	--	--	5	10 1/2"	11'- 10"	36	36
9	4	13 1/2"	13 1/2"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	5	6"	10'- 0"	3'- 7 1/2"	16'- 7"	7	6"	10'- 0"	--	--	--	--	4	6 1/2"	5'- 11"	40	12
9	6	13 1/2"	13 1/2"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	4	7 1/2"	10'- 0"	4'- 7 1/2"	18'- 9"	8	7 1/2"	10'- 0"	4	7 1/2"	3'- 3 5/8"	6'- 4"	4	11 1/2"	7'- 11"	40	20
9	8	13 1/2"	13 1/2"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	5	7 1/2"	10'- 0"	5'- 7 1/2"	20'- 7"	8	7 1/2"	10'- 0"	3	7 1/2"	3'- 3 5/8"	6'- 5"	4	12"	9'- 11"	40	28
9	10	13 1/2"	13 1/2"	8"	8	8'- 0"	8	8'- 0"	8	8'- 0"	5	6"	10'- 0"	6'- 7 1/2"	22'- 7"	7	6"	10'- 0"	--	--	--	--	4	9"	11'- 11"	40	36
9	12	13 1/4"	13 1/4"	8"	8	8'- 0"	8	8'- 0"	10	10'- 0"	6	7"	10'- 0"	7'- 7 1/4"	24'- 5"	8	7"	10'- 0"	--	--	--	--	4	4 1/2"	13'- 10"	40	44
10	4	14 3/4"	14 3/4"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	4	6"	11'- 0"	3'- 8 3/4"	17'- 11"	7	6"	11'- 0"	4	6"	3'- 6"	6'- 9"	4	6"	6'- 1"	44	12
10	6	15"	15"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	5	5 1/2"	11'- 0"	4'- 9"	19'- 10"	7	5 1/2"	11'- 0"	--	--	--	--	4	11"	8'- 2"	44	20
10	8	15"	15"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	4	7"	11'- 0"	5'- 9"	22'- 0"	8	7"	11'- 0"	4	7"	3'- 6"	6'- 9"	4	12"	10'- 2"	44	28
10	10	15"	15"	8"	9	9'- 0"	9	9'- 0"	8	8'- 0"	6	6 1/2"	11'- 0"	6'- 9"	23'- 8"	8	6 1/2"	11'- 0"	--	--	--	--	4	9"	12'- 2"	44	36
10	12	15"	15"	8"	9	9'- 0"	9	9'- 0"	10	10'- 0"	6	6 1/2"	11'- 0"	7'- 9"	25'- 8"	8	6 1/2"	11'- 0"	--	--	--	--	4	4 1/2"	14'- 2"	44	44
12	6	17 1/2"	17 1/2"	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	4	6"	13'- 0"	4'- 11 1/2"	22'- 5"	8	6"	13'- 0"	3	6"	3'- 10 3/4"	7'- 7"	4	10"	8'- 7"	52	20
12	8	17 3/4"	17 3/4"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	5	4 1/2"	13'- 0"	5'- 11 3/4"	24'- 4"	7	4 1/2"	13'- 0"	--	--	--	--	4	12"	10'- 7"	52	28
12	10	17 3/4"	17 3/4"	8"	11	11'- 0"	11	11'- 0"	8	8'- 0"	6	6"	13'- 0"	6'- 11 3/4"	26'- 2"	8	6"	13'- 0"	--	--	--	--	4	10"	12'- 7"	52	36
12	12	17 3/4"	17 3/4"	8"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	6"	13'- 0"	7'- 11 3/4"	28'- 2"	8	6"	13'- 0"	--	--	--	--	5	7 1/2"	14'- 7"	52	44

SINGLE BOX CULVERTS  
20 TO 25 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGHT (FT.)	REINFORCING STEEL (LBS./LONG. JT)	QUAN./LF		HEADWALLS									
			CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL	
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH						
3	3	16.184	0.400	45.201	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A		
3	4	17.596	0.449	49.377	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C		
4	3	19.524	0.449	53.135	6'-10"	6	6'- 6"	1.139	39.052	1.146	39.052	A		
4	4	20.936	0.498	63.973	6'-10"	6	6'- 6"	1.232	39.052	1.239	39.052	C		
4	5	22.348	0.547	68.271	6'-10"	6	6'- 6"	1.324	39.052	1.332	39.052	E		
4	6	23.760	0.596	74.584	6'-10"	6	6'- 6"	1.417	39.052	1.424	39.052	G		
5	3	22.864	0.516	80.245	7'-10"	6	7'- 6"	1.240	45.060	1.251	45.060	A		
5	4	24.276	0.565	87.679	7'-10"	6	7'- 6"	1.333	45.060	1.343	45.060	C		
5	5	25.688	0.614	90.246	7'-10"	6	7'- 6"	1.426	45.060	1.436	45.060	E		
5	6	27.100	0.674	84.821	7'-10"	6	7'- 6"	1.518	45.060	1.529	45.060	G		
5	7	28.512	0.722	92.896	7'-10"	6	7'- 6"	1.611	45.060	1.621	45.060	I		
6	4	27.616	0.684	106.939	8'-10"	6	8'- 6"	1.446	51.068	1.460	51.068	D		
6	5	29.028	0.745	97.220	8'-10"	6	8'- 6"	1.538	51.068	1.552	51.068	F		
6	6	30.440	0.794	106.917	8'-10"	6	8'- 6"	1.631	51.068	1.645	51.068	H		
6	7	31.852	0.843	112.047	8'-10"	6	8'- 6"	1.724	51.068	1.738	51.068	J		
6	8	33.264	0.890	138.951	8'-10"	6	8'- 6"	1.817	51.068	1.830	51.068	L		
7	4	30.956	0.822	117.002	9'-10"	6	9'- 6"	1.532	57.076	1.549	57.076	D		
7	6	33.780	0.932	131.068	9'-10"	6	9'- 6"	1.716	57.076	1.733	57.076	H		
7	8	36.604	1.030	142.092	9'-10"	6	9'- 6"	1.902	57.076	1.919	57.076	L		
7	10	39.428	1.125	197.314	9'-10"	6	9'- 6"	2.087	57.076	2.104	57.076	P		
8	4	34.296	0.961	167.087	10'-10"	6	10'- 6"	1.611	63.084	1.631	63.084	D		
8	6	37.120	1.075	161.419	10'-10"	6	10'- 6"	1.794	63.084	1.815	63.084	H		
8	8	39.944	1.172	185.729	10'-10"	6	10'- 6"	1.980	63.084	2.000	63.084	L		
8	10	42.768	1.266	238.319	10'-10"	6	10'- 6"	2.165	63.084	2.185	63.084	P		
9	4	37.636	1.085	196.771	11'-10"	6	11'- 6"	1.688	69.092	1.712	69.092	D		
9	6	40.460	1.184	197.873	11'-10"	6	11'- 6"	1.874	69.092	1.897	69.092	H		
9	8	43.284	1.281	220.077	11'-10"	6	11'- 6"	2.059	69.092	2.083	69.092	L		
9	10	46.108	1.379	237.461	11'-10"	6	11'- 6"	2.245	69.092	2.268	69.092	P		
9	12	48.932	1.456	309.829	11'-10"	6	11'- 6"	2.433	69.092	2.457	69.092	T		
10	4	40.976	1.254	224.040	12'-10"	6	12'- 6"	1.753	75.100	1.780	75.100	D		
10	6	43.800	1.369	237.193	12'-10"	6	12'- 6"	1.935	75.100	1.962	75.100	H		
10	8	46.624	1.468	235.505	12'-10"	6	12'- 6"	2.120	75.100	2.147	75.100	L		
10	10	49.448	1.562	304.296	12'-10"	6	12'- 6"	2.306	75.100	2.333	75.100	P		
10	12	52.272	1.657	347.194	12'-10"	6	12'- 6"	2.491	75.100	2.518	75.100	T		
12	6	50.480	1.757	277.565	14'-10"	6	14'- 6"	2.059	87.116	2.092	87.116	I		
12	8	53.304	1.872	336.479	14'-10"	6	14'- 6"	2.239	87.116	2.272	87.116	M		
12	10	56.128	1.969	364.495	14'-10"	6	14'- 6"	2.424	87.116	2.458	87.116	Q		
12	12	58.952	2.064	408.019	14'-10"	6	14'- 6"	2.609	87.116	2.643	87.116	U		

DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3	A	B	C	D	E	F	BH1			BH2			BH3			BV1			NO. BL1 BARS	NO. BL2 BARS			
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	WALL (IN.)							SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH			SIZE	SPACING C-C	LENGTH
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	1 1/2"	4'- 0"	2'- 8"	8'- 10"	5	1 1/2"	4'- 0"	--	----	----	4	12"	4'- 0"	16	8	
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	1 1/2"	4'- 0"	3'- 2"	9'- 10"	5	1 1/2"	4'- 0"	--	----	----	4	12"	5'- 0"	16	12	
4	3	8"	8"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	10/2"	5'- 0"	2'- 8"	9'- 10"	6	10/2"	5'- 0"	4	10/2"	2'- 3 5/8"	4'- 4"	4	11/2"	4'- 0"	20	8
4	4	8"	8"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	10/2"	5'- 0"	3'- 2"	10'- 10"	6	10"	5'- 0"	3	10"	2'- 3 5/8"	4'- 5"	4	12"	5'- 0"	20	12
4	5	8"	8"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	9/2"	5'- 0"	3'- 8"	11'- 10"	6	9/2"	5'- 0"	3	9/2"	2'- 3 5/8"	4'- 5"	4	12"	6'- 0"	20	16
4	6	8"	8"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	9/2"	5'- 0"	4'- 2"	12'- 10"	6	9/2"	5'- 0"	3	9/2"	2'- 3 5/8"	4'- 5"	4	12"	7'- 0"	20	20
5	3	9 1/2"	9 1/2"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	4	8/2"	6'- 0"	2'- 9 1/2"	11'- 1"	6	8/2"	6'- 0"	3	8/2"	2'- 6"	4'- 10"	4	9"	4'- 3"	24	8
5	4	9 3/4"	9 3/4"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	8"	6'- 0"	3'- 3 3/4"	12'- 1"	6	8"	6'- 0"	--	----	----	4	12"	5'- 3"	24	12	
5	5	9 3/4"	9 3/4"	8"	4	4'- 0"	4	4'- 0"	3	3'- 0"	4	8"	6'- 0"	3'- 9 3/4"	13'- 1"	6	8"	6'- 0"	--	----	----	4	12"	6'- 3"	24	16	
5	6	9 3/4"	9 3/4"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	8"	6'- 0"	4'- 3 3/4"	14'- 1"	6	8"	6'- 0"	--	----	----	4	12"	7'- 3"	24	20	
5	7	9 3/4"	9 3/4"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	8"	6'- 0"	4'- 9 3/4"	15'- 1"	6	8"	6'- 0"	--	----	----	4	12"	8'- 3"	24	24	
6	4	11 1/2"	11 1/2"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	4	7"	7'- 0"	3'- 5 1/2"	13'- 5"	6	7"	7'- 0"	--	----	----	4	12"	5'- 7"	28	12	
6	5	11 1/2"	11 1/2"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	6 1/2"	7'- 0"	3'- 11 1/2"	14'- 5"	6	6 1/2"	7'- 0"	--	----	----	4	12"	6'- 7"	28	16	
6	6	11 1/2"	11 1/2"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	6 1/2"	7'- 0"	4'- 5 1/2"	15'- 5"	6	6 1/2"	7'- 0"	--	----	----	4	12"	7'- 7"	28	20	
6	7	11 1/2"	11 1/2"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	6 1/2"	7'- 0"	4'- 11 1/2"	16'- 5"	6	6 1/2"	7'- 0"	--	----	----	4	12"	8'- 7"	28	24	
6	8	11 1/2"	11 1/2"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	4	6 1/2"	7'- 0"	5'- 5 1/2"	17'- 5"	6	6 1/2"	7'- 0"	--	----	----	4	10 1/2"	9'- 7"	28	28	
7	4	13"	13"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	4	6"	8'- 0"	3'- 7"	14'- 8"	6	6"	8'- 0"	--	----	----	4	10 1/2"	5'- 10"	32	12	
7	6	13"	13"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	5	7 1/2"	8'- 0"	4'- 7"	16'- 6"	8	7 1/2"	8'- 0"	--	----	----	4	12"	7'- 10"	32	20	
7	8	13"	13"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	5	7"	8'- 0"	5'- 7"	18'- 6"	7	7"	8'- 0"	--	----	----	4	12"	9'- 10"	32	28	
7	10	13"	13"	8"	6	6'- 0"	6	6'- 0"	8	8'- 0"	5	5 1/2"	8'- 0"	6'- 7"	20'- 6"	6	5 1/2"	8'- 0"	--	----	----	4	5 1/2"	11'- 10"	32	36	
8	4	13 3/4"	13 3/4"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	5	8"	9'- 0"	3'- 7 3/4"	15'- 8"	8	8"	9'- 0"	3	8"	3'- 1 1/4"	6'- 0"	4	8"	6'- 0"	36	12
8	6	13 3/4"	13 3/4"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	4	8"	9'- 0"	4'- 7 3/4"	17'- 9"	8	8"	9'- 0"	3	8"	3'- 1 1/4"	6'- 0"	4	12"	8'- 0"	36	20
8	8	13 3/4"	13 3/4"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	5	6"	9'- 0"	5'- 7 3/4"	19'- 8"	7	6"	9'- 0"	--	----	----	4	12"	10'- 0"	36	28	
8	10	13 1/2"	13 1/2"	8"	7	7'- 0"	7	7'- 0"	8	8'- 0"	5	6"	9'- 0"	6'- 7 1/2"	21'- 7"	7	6"	9'- 0"	--	----	----	4	6"	11'- 11"	36	36	
9	4	15 1/4"	15 1/4"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	4	7 1/2"	10'- 0"	3'- 9 1/4"	17'- 0"	8	7 1/2"	10'- 0"	4	7 1/2"	3'- 3 5/8"	6'- 4"	4	7 1/2"	6'- 3"	40	12
9	6	15 1/2"	15 1/2"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	4	7 1/2"	10'- 0"	4'- 9 1/2"	19'- 1"	8	7 1/2"	10'- 0"	3	7 1/2"	3'- 3 5/8"	6'- 5"	4	12"	8'- 3"	40	20
9	8	15 1/2"	15 1/2"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	4	7 1/2"	10'- 0"	5'- 9 1/2"	21'- 1"	8	7 1/2"	10'- 0"	4	7 1/2"	3'- 3 5/8"	6'- 4"	4	12"	10'- 3"	40	28
9	10	15 1/2"	15 1/2"	8"	8	8'- 0"	8	8'- 0"	8	8'- 0"	5	5 1/2"	10'- 0"	6'- 9 1/2"	22'- 11"	7	5 1/2"	10'- 0"	--	----	----	4	6"	12'- 3"	40	36	
9	12	15 1/4"	15 1/4"	8 1/2"	8	8'- 0"	8	8'- 0"	10	10'- 0"	6	5 1/2"	10'- 1"	7'- 9 1/4"	24'- 10"	7	5 1/2"	10'- 1"	--	----	----	6	9"	14'- 3"	40	44	
10	4	17"	17"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	5	5 1/2"	11'- 0"	3'- 11"	18'- 2"	7	5 1/2"	11'- 0"	--	----	----	4	7 1/2"	6'- 6"	44	12	
10	6	17 1/4"	17 1/4"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	5	7"	11'- 0"	4'- 11 1/4"	20'- 3"	8	7"	11'- 0"	--	----	----	4	12"	8'- 6"	44	20	
10	8	17 1/4"	17 1/4"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	5	7"	11'- 0"	5'- 11 1/4"	22'- 3"	8	7"	11'- 0"	--	----	----	4	12"	10'- 6"	44	28	
10	10	17 1/4"	17 1/4"	8"	9	9'- 0"	9	9'- 0"	8	8'- 0"	6	6 1/2"	11'- 0"	6'- 11 1/4"	24'- 1"	8	6 1/2"	11'- 0"	--	----	----	4	6"	12'- 6"	44	36	
10	12	17"	17"	8 3/4"	9	9'- 0"	9	9'- 0"	10	10'- 0"	6	6"	11'- 1 1/2"	7'- 11"	26'- 2"	8	6"	11'- 1"	--	----	----	6	9 1/2"	14'- 6"	44	44	
12	6	19 1/2"	19 1/2"	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	4	5 1/2"	13'- 0"	5'- 1 1/2"	22'- 9"	8	5 1/2"	13'- 0"	--	----	----	4	12"	8'- 11"	52	20	
12	8	20"	20"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	5	6"	13'- 0"	6'- 2"	24'- 8"	8	6"	13'- 0"	--	----	----	4	12"	11'- 0"	52	28	
12	10	20 1/4"	20 1/4"	8"	11	11'- 0"	11	11'- 0"	8	8'- 0"	6	5 1/2"	13'- 0"	7'- 2 1/4"	26'- 7"	8	5 1/2"	13'- 0"	--	----	----	5	9 1/2"	13'- 0"	52	36	
12	12	20 1/4"	20 1/4"	8 3/4"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	5 1/2"	13'- 1 1/2"	8'- 2 1/4"	28'- 8"	8	5 1/2"	13'- 1"	--	----	----	6	9 1/2"	15'- 0"	52	44	

SINGLE BOX CULVERTS  
25 TO 30 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGHT (FT.)	REINFORCING STEEL (LBS./LONG. JT)	QUAN./LF		HEADWALLS									
			CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS/LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL	
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH						
3	3	16.184	0.401	40.061	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A		
3	4	17.596	0.450	45.314	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C		
4	3	19.524	0.448	67.357	6'-10"	6	6'- 6"	1.139	39.052	1.146	39.052	A		
4	4	20.936	0.497	67.915	6'-10"	6	6'- 6"	1.232	39.052	1.239	39.052	C		
4	5	22.348	0.546	74.725	6'-10"	6	6'- 6"	1.324	39.052	1.332	39.052	E		
4	6	23.760	0.595	79.253	6'-10"	6	6'- 6"	1.417	39.052	1.424	39.052	G		
5	3	22.864	0.555	83.223	7'-10"	6	7'- 6"	1.259	45.060	1.269	45.060	B		
5	4	24.276	0.614	78.809	7'-10"	6	7'- 6"	1.352	45.060	1.362	45.060	D		
5	5	25.688	0.663	83.653	7'-10"	6	7'- 6"	1.444	45.060	1.455	45.060	F		
5	6	27.100	0.712	88.497	7'-10"	6	7'- 6"	1.537	45.060	1.547	45.060	H		
5	7	28.512	0.761	93.341	7'-10"	6	7'- 6"	1.630	45.060	1.640	45.060	J		
6	4	27.616	0.752	97.451	8'-10"	6	8'- 6"	1.442	51.068	1.456	51.068	D		
6	5	29.028	0.801	107.894	8'-10"	6	8'- 6"	1.535	51.068	1.548	51.068	F		
6	6	30.440	0.850	113.201	8'-10"	6	8'- 6"	1.627	51.068	1.641	51.068	H		
6	7	31.852	0.899	118.507	8'-10"	6	8'- 6"	1.720	51.068	1.734	51.068	J		
6	8	33.264	0.948	125.643	8'-10"	6	8'- 6"	1.813	51.068	1.827	51.068	L		
7	4	30.956	0.899	122.048	9'-10"	6	9'- 6"	1.523	57.076	1.540	57.076	D		
7	6	33.780	0.994	162.784	9'-10"	6	9'- 6"	1.708	57.076	1.726	57.076	H		
7	8	36.604	1.093	167.261	9'-10"	6	9'- 6"	1.894	57.076	1.911	57.076	L		
7	10	39.428	1.188	215.140	9'-10"	6	9'- 6"	2.079	57.076	2.096	57.076	P		
8	4	34.296	1.018	175.231	10'-10"	6	10'- 6"	1.602	63.084	1.622	63.084	D		
8	6	37.120	1.118	163.453	10'-10"	6	10'- 6"	1.787	63.084	1.808	63.084	H		
8	8	39.944	1.214	203.569	10'-10"	6	10'- 6"	1.973	63.084	1.993	63.084	L		
8	10	42.768	1.296	233.055	10'-10"	6	10'- 6"	2.160	63.084	2.181	63.084	P		
9	4	37.636	1.197	193.447	11'-10"	6	11'- 6"	1.685	69.092	1.709	69.092	E		
9	6	40.460	1.313	186.936	11'-10"	6	11'- 6"	1.868	69.092	1.891	69.092	I		
9	8	43.284	1.410	208.526	11'-10"	6	11'- 6"	2.053	69.092	2.077	69.092	M		
9	10	46.108	1.504	266.481	11'-10"	6	11'- 6"	2.239	69.092	2.262	69.092	Q		
9	12	48.932	1.625	353.038	11'-10"	6	11'- 6"	2.383	69.092	2.406	69.092	U		
10	4	40.976	1.411	228.592	12'-10"	6	12'- 6"	1.737	75.100	1.764	75.100	E		
10	6	43.800	1.528	221.379	12'-10"	6	12'- 6"	1.919	75.100	1.946	75.100	I		
10	8	46.624	1.626	234.211	12'-10"	6	12'- 6"	2.104	75.100	2.131	75.100	M		
10	10	49.448	1.718	318.334	12'-10"	6	12'- 6"	2.290	75.100	2.317	75.100	Q		
10	12	52.272	1.864	376.536	12'-10"	6	12'- 6"	2.411	75.100	2.437	75.100	U		
12	6	50.480	1.922	271.945	14'-10"	6	14'- 6"	2.015	87.116	2.049	87.116	I		
12	8	53.304	2.060	301.709	14'-10"	6	14'- 6"	2.190	87.116	2.224	87.116	M		
12	10	56.128	2.171	408.220	14'-10"	6	14'- 6"	2.370	87.116	2.404	87.116	Q		
12	12	58.952	2.338	449.488	14'-10"	6	14'- 6"	2.485	87.116	2.518	87.116	U		



DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3	A	B	C	D	E	F	BH1				BH2			BH3			BV1			NO. BL1 BARS	NO. BL2 BARS		
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	WALL (IN.)							SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH	SIZE			SPACING C-C	LENGTH
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	10"	4'- 0"	2'- 8"	8'- 10"	5	10"	4'- 0"	--	---	---	---	4	12"	4'- 0"	16	8
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	10"	4'- 0"	3'- 2"	9'- 10"	5	10"	4'- 0"	--	---	---	---	4	12"	5'- 0"	16	12
4	3	8 1/2"	8 1/2"	8 1/2"	3	3'- 0"	3	3'- 0"	1	1'- 0"	5	9 1/2"	5'- 1"	2'- 8 1/2"	9'- 10"	6	9 1/2"	5'- 1"	3	9 1/2"	2'- 4 1/8"	4'- 6"	4	11"	4'- 1"	20	8
4	4	8 1/2"	8 1/2"	8 1/2"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	9 1/2"	5'- 1"	3'- 2 1/2"	11'- 0"	6	9 1/2"	5'- 1"	3	9 1/2"	2'- 4 1/8"	4'- 6"	4	12"	5'- 1"	20	12
4	5	8 1/2"	8 1/2"	8 1/2"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	9"	5'- 1"	3'- 8 1/2"	12'- 0"	6	9"	5'- 1"	--	---	---	---	4	12"	6'- 1"	20	16
4	6	8 3/4"	8 3/4"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	9"	5'- 0"	4'- 2 3/4"	12'- 11"	6	9"	5'- 0"	--	---	---	---	4	12"	7'- 2"	20	20
5	3	10 3/4"	10 3/4"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	4	8"	6'- 0"	2'- 10 3/4"	11'- 3"	6	8"	6'- 0"	--	---	---	---	4	10 1/2"	4'- 5"	24	8
5	4	10 3/4"	10 3/4"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	7 1/2"	6'- 0"	3'- 4 3/4"	12'- 3"	6	7 1/2"	6'- 0"	--	---	---	---	4	12"	5'- 5"	24	12
5	5	10 3/4"	10 3/4"	8"	4	4'- 0"	4	4'- 0"	3	3'- 0"	4	7 1/2"	6'- 0"	3'- 10 3/4"	13'- 3"	6	7 1/2"	6'- 0"	--	---	---	---	4	12"	6'- 5"	24	16
5	6	11"	11"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	7 1/2"	6'- 0"	4'- 5"	14'- 4"	6	7 1/2"	6'- 0"	--	---	---	---	4	12"	7'- 6"	24	20
5	7	11"	11"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	7 1/2"	6'- 0"	4'- 11"	15'- 4"	6	7 1/2"	6'- 0"	--	---	---	---	4	12"	8'- 6"	24	24
6	4	12 3/4"	12 3/4"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	4	6 1/2"	7'- 0"	3'- 6 3/4"	13'- 7"	6	6 1/2"	7'- 0"	--	---	---	---	4	12"	5'- 9"	28	12
6	5	13"	13"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	6 1/2"	7'- 0"	4'- 1"	14'- 8"	6	6 1/2"	7'- 0"	--	---	---	---	4	12"	6'- 10"	28	16
6	6	13"	13"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	6 1/2"	7'- 0"	4'- 7"	15'- 8"	6	6 1/2"	7'- 0"	--	---	---	---	4	12"	7'- 10"	28	20
6	7	13"	13"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	6 1/2"	7'- 0"	5'- 1"	16'- 8"	6	6 1/2"	7'- 0"	--	---	---	---	4	12"	8'- 10"	28	24
6	8	13"	13"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	4	6 1/2"	7'- 0"	5'- 7"	17'- 8"	6	6 1/2"	7'- 0"	--	---	---	---	5	12"	9'- 10"	28	28
7	4	13 1/4"	13 1/4"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	4	5 1/2"	8'- 0"	3'- 7 1/4"	14'- 8"	6	5 1/2"	8'- 0"	--	---	---	---	4	9"	5'- 10"	32	12
7	6	13 1/2"	13 1/2"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	5"	8'- 0"	4'- 7 1/2"	16'- 9"	6	5"	8'- 0"	--	---	---	---	4	12"	7'- 11"	32	20
7	8	13 1/4"	13 1/4"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	4	5"	8'- 0"	5'- 7 1/4"	18'- 8"	6	5"	8'- 0"	--	---	---	---	4	11"	9'- 10"	32	28
7	10	13"	13"	8"	6	6'- 0"	6	6'- 0"	8	8'- 0"	5	8"	8'- 0"	6'- 7"	20'- 6"	8	8"	8'- 0"	3	8"	2'- 10 3/4"	5'- 7"	4	5"	11'- 10"	32	36
8	4	15 1/2"	15 1/2"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	5	6"	9'- 0"	3'- 9 1/2"	15'- 11"	7	6"	9'- 0"	--	---	---	---	4	10"	6'- 3"	36	12
8	6	15 1/2"	15 1/2"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	4	6"	9'- 0"	4'- 9 1/2"	18'- 1"	7	6"	9'- 0"	--	---	---	---	4	12"	8'- 3"	36	20
8	8	15 1/2"	15 1/2"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	5	6"	9'- 0"	5'- 9 1/2"	19'- 11"	7	6"	9'- 0"	--	---	---	---	4	10 1/2"	10'- 3"	36	28
8	10	15 1/4"	15 1/4"	8"	7	7'- 0"	7	7'- 0"	8	8'- 0"	6	6"	9'- 0"	6'- 9 1/4"	21'- 9"	7	6"	9'- 0"	--	---	---	---	4	5"	12'- 3"	36	36
9	4	17 1/4"	17 1/4"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	5	6"	10'- 0"	3'- 11 1/4"	17'- 3"	7	6"	10'- 0"	--	---	---	---	4	10"	6'- 6"	40	12
9	6	17 1/2"	17 1/2"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	5	6"	10'- 0"	4'- 11 1/2"	19'- 3"	7	6"	10'- 0"	--	---	---	---	4	12"	8'- 7"	40	20
9	8	17 1/2"	17 1/2"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	4	7 1/2"	10'- 0"	5'- 11 1/2"	21'- 5"	8	7 1/2"	10'- 0"	4	7 1/2"	3'- 3 5/8"	6'- 4"	4	10"	10'- 7"	40	28
9	10	17 1/4"	17 1/4"	8"	8	8'- 0"	8	8'- 0"	8	8'- 0"	6	5 1/2"	10'- 0"	6'- 11 1/4"	23'- 1"	7	5 1/2"	10'- 0"	--	---	---	---	4	5"	12'- 6"	40	36
9	12	17"	17"	9 1/4"	8	8'- 0"	8	8'- 0"	10	10'- 0"	6	5 1/2"	10'- 2 1/2"	7'- 11"	25'- 3"	7	5 1/2"	10'- 3"	--	---	---	---	6	8 1/2"	14'- 6"	40	44
10	4	18 1/2"	18 1/2"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	5	6 1/2"	11'- 0"	4'- 1 1/2"	18'- 5"	8	6 1/2"	11'- 0"	--	---	---	---	4	9"	6'- 9"	44	12
10	6	18 3/4"	18 3/4"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	5	6 1/2"	11'- 0"	5'- 3 3/4"	20'- 6"	8	6 1/2"	11'- 0"	--	---	---	---	4	12"	8'- 9"	44	20
10	8	19 1/4"	19 1/4"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	5	6 1/2"	11'- 0"	6'- 1 1/4"	22'- 7"	8	6 1/2"	11'- 0"	--	---	---	---	4	10 1/2"	10'- 10"	44	28
10	10	19 1/4"	19 1/4"	8"	9	9'- 0"	9	9'- 0"	8	8'- 0"	6	6 1/2"	11'- 0"	7'- 1 1/4"	24'- 5"	8	6 1/2"	11'- 0"	--	---	---	---	5	7 1/2"	12'- 10"	44	36
10	12	19"	19"	9 1/4"	9	9'- 0"	9	9'- 0"	10	10'- 0"	7	6"	11'- 2 1/2"	8'- 1"	26'- 5"	8	6"	11'- 3"	--	---	---	---	4	4"	14'- 10"	44	44
12	6	21 1/4"	21 1/4"	8 1/2"	11	11'- 0"	11	11'- 0"	4	4'- 0"	4	5 1/2"	13'- 1"	5'- 3 1/4"	23'- 1"	8	5 1/2"	13'- 1"	--	---	---	---	4	12"	9'- 3"	52	20
12	8	21 1/4"	21 1/4"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	4	5 1/2"	13'- 0"	6'- 3 1/4"	25'- 0"	8	5 1/2"	13'- 0"	--	---	---	---	4	12"	11'- 3"	52	28
12	10	21 1/4"	21 1/4"	8"	11	11'- 0"	11	11'- 0"	8	8'- 0"	5	5"	13'- 0"	7'- 3 1/4"	26'- 11"	8	5"	13'- 0"	--	---	---	---	6	11 1/2"	13'- 3"	52	36
12	12	21 1/4"	21 1/4"	9 1/4"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	5 1/2"	13'- 2 1/2"	8'- 3 1/4"	28'- 11"	8	5 1/2"	13'- 3"	--	---	---	---	6	9 1/2"	15'- 3"	52	44

SINGLE BOX CULVERTS  
30 TO 35 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGHT (FT.)	REINFORCING STEEL (LBS./LONG. JT)	QUAN./LF		HEADWALLS									
			CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL	
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH						
3	3	16.184	0.401	43.214	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A		
3	4	17.596	0.450	47.658	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C		
4	3	19.524	0.478	76.067	6'-10"	6	6'- 6"	1.127	39.052	1.134	39.052	A		
4	4	20.936	0.530	71.065	6'-10"	6	6'- 6"	1.217	39.052	1.224	39.052	C		
4	5	22.348	0.583	69.240	6'-10"	6	6'- 6"	1.307	39.052	1.313	39.052	E		
4	6	23.760	0.620	73.490	6'-10"	6	6'- 6"	1.420	39.052	1.427	39.052	G		
5	3	22.864	0.604	75.365	7'-10"	6	7'- 6"	1.259	45.060	1.269	45.060	B		
5	4	24.276	0.653	82.805	7'-10"	6	7'- 6"	1.352	45.060	1.362	45.060	D		
5	5	25.688	0.702	87.782	7'-10"	6	7'- 6"	1.444	45.060	1.455	45.060	F		
5	6	27.100	0.761	93.049	7'-10"	6	7'- 6"	1.537	45.060	1.547	45.060	H		
5	7	28.512	0.810	98.027	7'-10"	6	7'- 6"	1.630	45.060	1.640	45.060	J		
6	4	27.616	0.809	103.222	8'-10"	6	8'- 6"	1.438	51.068	1.452	51.068	D		
6	5	29.028	0.869	108.845	8'-10"	6	8'- 6"	1.530	51.068	1.544	51.068	F		
6	6	30.440	0.918	114.151	8'-10"	6	8'- 6"	1.623	51.068	1.636	51.068	H		
6	7	31.852	0.967	119.458	8'-10"	6	8'- 6"	1.715	51.068	1.729	51.068	J		
6	8	33.264	1.015	132.139	8'-10"	6	8'- 6"	1.808	51.068	1.822	51.068	L		
7	4	30.956	0.911	131.465	9'-10"	6	9'- 6"	1.521	57.076	1.539	57.076	D		
7	6	33.780	1.021	150.857	9'-10"	6	9'- 6"	1.705	57.076	1.722	57.076	H		
7	8	36.604	1.106	163.765	9'-10"	6	9'- 6"	1.892	57.076	1.909	57.076	L		
7	10	39.428	1.188	213.675	9'-10"	6	9'- 6"	2.079	57.076	2.096	57.076	P		
8	4	34.296	1.119	178.568	10'-10"	6	10'- 6"	1.604	63.084	1.625	63.084	E		
8	6	37.120	1.219	164.493	10'-10"	6	10'- 6"	1.790	63.084	1.810	63.084	I		
8	8	39.944	1.314	206.903	10'-10"	6	10'- 6"	1.975	63.084	1.995	63.084	M		
8	10	42.768	1.393	281.120	10'-10"	6	10'- 6"	2.163	63.084	2.183	63.084	Q		
9	4	37.636	1.325	195.380	11'-10"	6	11'- 6"	1.661	69.092	1.684	69.092	E		
9	6	40.460	1.439	207.778	11'-10"	6	11'- 6"	1.843	69.092	1.867	69.092	I		
9	8	43.284	1.537	212.512	11'-10"	6	11'- 6"	2.028	69.092	2.052	69.092	M		
9	10	46.108	1.612	320.821	11'-10"	6	11'- 6"	2.217	69.092	2.241	69.092	Q		
9	12	48.932	1.806	360.930	11'-10"	6	11'- 6"	2.292	69.092	2.315	69.092	U		
10	4	40.976	1.516	225.295	12'-10"	6	12'- 6"	1.714	75.100	1.741	75.100	E		
10	6	43.800	1.632	235.992	12'-10"	6	12'- 6"	1.896	75.100	1.923	75.100	I		
10	8	46.624	1.764	251.874	12'-10"	6	12'- 6"	2.073	75.100	2.100	75.100	M		
10	10	49.448	1.857	329.615	12'-10"	6	12'- 6"	2.259	75.100	2.286	75.100	Q		
10	12	52.272	2.047	440.631	12'-10"	6	12'- 6"	2.332	75.100	2.358	75.100	U		
12	6	50.480	2.096	274.333	14'-10"	6	14'- 6"	1.967	87.116	2.000	87.116	J		
12	8	53.304	2.164	284.629	14'-10"	6	14'- 6"	2.182	87.116	2.215	87.116	N		
12	10	56.128	2.255	391.169	14'-10"	6	14'- 6"	2.367	87.116	2.401	87.116	R		
12	12	58.952	2.469	452.075	14'-10"	6	14'- 6"	2.434	87.116	2.466	87.116	V		

BCS-40

DIMENSIONS						REINFORCING STEEL																					
SPAN (FT.)	HGHT (FT.)	T1 TOP SLAB (IN.)	T2 BOTTOM SLAB (IN.)	T3 WALL (IN.)	A	B	C	D	E	F	SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH	SIZE	SPACING C-C	LENGTH	NO. BL 1 BARS	NO. BL 2 BARS
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	9"	4'- 0"	2'- 8"	8'- 10"	5	9"	4'- 0"	3	9"	2'- 1 1/4"	4'- 0"	4	12"	4'- 0"	16	8
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	9"	4'- 0"	3'- 2"	9'- 10"	5	9"	4'- 0"	--	--	----	----	4	12"	5'- 0"	16	12
4	3	9 1/4"	9 1/4"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	9"	5'- 0"	2'- 9 1/4"	10'- 0"	6	9"	5'- 0"	--	--	----	----	4	12"	4'- 2"	20	8
4	4	9"	9"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	8 1/2"	5'- 0"	3'- 3"	11'- 0"	6	8 1/2"	5'- 0"	--	--	----	----	4	12"	5'- 2"	20	12
4	5	9"	9"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	8 1/2"	5'- 0"	3'- 9"	12'- 0"	6	8 1/2"	5'- 0"	--	--	----	----	4	12"	6'- 2"	20	16
4	6	9 1/4"	9 1/4"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	8 1/2"	5'- 0"	4'- 3 1/4"	13'- 0"	6	8 1/2"	5'- 0"	--	--	----	----	4	12"	7'- 2"	20	20
5	3	11 3/4"	11 3/4"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	4	7 1/2"	6'- 0"	2'- 11 3/4"	11'- 5"	6	7 1/2"	6'- 0"	--	--	----	----	4	11 1/2"	4'- 8"	24	8
5	4	11 3/4"	11 3/4"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	7"	6'- 0"	3'- 5 3/4"	12'- 5"	6	7"	6'- 0"	--	--	----	----	4	12"	5'- 8"	24	12
5	5	12"	12"	8"	4	4'- 0"	4	4'- 0"	3	3'- 0"	4	7"	6'- 0"	4'- 0"	13'- 6"	6	7"	6'- 0"	--	--	----	----	4	12"	6'- 8"	24	16
5	6	12"	12"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	7"	6'- 0"	4'- 6"	14'- 6"	6	7"	6'- 0"	--	--	----	----	4	12"	7'- 8"	24	20
5	7	11 1/4"	11 1/4"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	7"	6'- 0"	4'- 11 1/4"	15'- 4"	6	7"	6'- 0"	--	--	----	----	4	10 1/2"	8'- 6"	24	24
6	4	13"	13"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	4	6"	7'- 0"	3'- 7"	13'- 8"	6	6"	7'- 0"	--	--	----	----	4	12"	5'- 10"	28	12
6	5	13"	13"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	4	6"	7'- 0"	4'- 1"	14'- 8"	6	6"	7'- 0"	--	--	----	----	4	12"	6'- 10"	28	16
6	6	13"	13"	8"	5	5'- 0"	5	5'- 0"	4	4'- 0"	4	6"	7'- 0"	4'- 7"	15'- 8"	6	6"	7'- 0"	--	--	----	----	4	12"	7'- 10"	28	20
6	7	13"	13"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	6"	7'- 0"	5'- 1"	16'- 8"	6	6"	7'- 0"	--	--	----	----	4	12"	8'- 10"	28	24
6	8	13"	13"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	4	6"	7'- 0"	5'- 7"	17'- 8"	6	6"	7'- 0"	--	--	----	----	5	10 1/2"	9'- 10"	28	28
7	4	14 3/4"	14 3/4"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	4	5"	8'- 0"	3'- 8 3/4"	14'- 11"	6	5"	8'- 0"	--	--	----	----	4	12"	6'- 1"	32	12
7	6	14 3/4"	14 3/4"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	5"	8'- 0"	4'- 8 3/4"	16'- 11"	6	5"	8'- 0"	--	--	----	----	4	12"	8'- 1"	32	20
7	8	14 3/4"	14 3/4"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	4	5"	8'- 0"	5'- 8 3/4"	18'- 11"	6	5"	8'- 0"	--	--	----	----	4	7 1/2"	10'- 1"	32	28
7	10	14 1/2"	14 1/2"	8 1/2"	6	6'- 0"	6	6'- 0"	8	8'- 0"	6	8"	8'- 1"	6'- 8 1/2"	20'- 8"	8	8"	8'- 1"	--	--	----	----	5	7"	12'- 1"	32	36
8	4	17"	17"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	4	6"	9'- 0"	3'- 11"	16'- 4"	7	6"	9'- 0"	--	--	----	----	4	12"	6'- 6"	36	12
8	6	17 1/4"	17 1/4"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	4	6"	9'- 0"	4'- 11 1/4"	18'- 4"	7	6"	9'- 0"	--	--	----	----	4	12"	8'- 6"	36	20
8	8	17 1/4"	17 1/4"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	5	6"	9'- 0"	5'- 11 1/4"	20'- 3"	7	6"	9'- 0"	--	--	----	----	4	7"	10'- 6"	36	28
8	10	17"	17"	8 1/2"	7	7'- 0"	7	7'- 0"	8	8'- 0"	6	7 1/2"	9'- 1"	6'- 11"	22'- 1"	8	7 1/2"	9'- 1"	--	--	----	----	5	7"	12'- 6"	36	36
9	4	18 3/4"	18 3/4"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	4	5 1/2"	10'- 0"	4'- 3 3/4"	17'- 7"	7	5 1/2"	10'- 0"	--	--	----	----	4	12"	6'- 9"	40	12
9	6	18 3/4"	18 3/4"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	4	5 1/2"	10'- 0"	5'- 3 3/4"	19'- 7"	7	5 1/2"	10'- 0"	--	--	----	----	4	12"	8'- 9"	40	20
9	8	18 3/4"	18 3/4"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	4	5 1/2"	10'- 0"	6'- 3 3/4"	21'- 7"	7	5 1/2"	10'- 0"	--	--	----	----	4	7 1/2"	10'- 9"	40	28
9	10	18 1/2"	18 1/2"	8 1/2"	8	8'- 0"	8	8'- 0"	8	8'- 0"	6	7"	10'- 1"	7'- 1 1/2"	23'- 4"	8	7"	10'- 1"	--	--	----	----	4	4 1/2"	12'- 9"	40	36
9	12	18 1/2"	18 1/2"	10"	8	8'- 0"	8	8'- 0"	10	10'- 0"	7	7"	10'- 4"	8'- 1 1/2"	25'- 6"	8	7"	10'- 4"	--	--	----	----	5	6"	14'- 9"	40	44
10	4	20"	20"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	5	6 1/2"	11'- 0"	4'- 2"	18'- 8"	8	6 1/2"	11'- 0"	--	--	----	----	4	11"	7'- 0"	44	12
10	6	20 1/4"	20 1/4"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	5	6 1/2"	11'- 0"	5'- 2 1/4"	20'- 9"	8	6 1/2"	11'- 0"	--	--	----	----	4	12"	9'- 0"	44	20
10	8	20 1/2"	20 1/2"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	5	6"	11'- 0"	6'- 2 1/2"	22'- 9"	8	6"	11'- 0"	--	--	----	----	4	7 1/2"	11'- 1"	44	28
10	10	20 3/4"	20 3/4"	8 1/2"	9	9'- 0"	9	9'- 0"	8	8'- 0"	6	6"	11'- 1"	7'- 2 3/4"	24'- 9"	8	6"	11'- 1"	--	--	----	----	4	4 1/2"	13'- 1"	44	36
10	12	20 1/2"	20 1/2"	10"	9	9'- 0"	9	9'- 0"	10	10'- 0"	6	5 1/2"	11'- 4"	8'- 2 1/2"	26'- 11"	8	5 1/2"	11'- 4"	--	--	----	----	5	6"	15'- 1"	44	44
12	6	23 1/4"	23 1/4"	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	5	5 1/2"	13'- 0"	5'- 5 1/4"	23'- 3"	8	5 1/2"	13'- 0"	--	--	----	----	4	9 1/2"	9'- 6"	52	20
12	8	23 1/4"	23 1/4"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	5	5 1/2"	13'- 0"	6'- 5 1/4"	25'- 3"	8	5 1/2"	13'- 0"	--	--	----	----	4	8"	11'- 6"	52	28
12	10	23"	23"	8 1/2"	11	11'- 0"	11	11'- 0"	8	8'- 0"	5	5"	13'- 1"	7'- 5"	27'- 3"	8	5"	13'- 1"	--	--	----	----	4	5"	13'- 6"	52	36
12	12	22 3/4"	22 3/4"	10"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	5"	13'- 4"	8'- 4 3/4"	29'- 4"	8	5"	13'- 4"	--	--	----	----	6	9 1/2"	15'- 6"	52	44

Sheet 1 of 2

For Typical Section, notes and other details, refer to standard BCS-DT.

# SINGLE BOX CULVERTS

## 35 TO 40 FT. FILLS

VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE  
AND  
BRIDGE  
DIVISION

1002.19

SPAN (FT.)	HGHT (FT.)	QUAN./LF		HEADWALLS									
		REINFORCING STEEL (LBS./LONG. JT)	CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH					
3	3	16.184	0.400	55.258	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A	
3	4	17.596	0.449	50.522	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C	
4	3	19.524	0.490	59.775	6'-10"	6	6'- 6"	1.161	39.052	1.169	39.052	B	
4	4	20.936	0.530	66.727	6'-10"	6	6'- 6"	1.235	39.052	1.242	39.052	C	
4	5	22.348	0.579	71.453	6'-10"	6	6'- 6"	1.328	39.052	1.335	39.052	E	
4	6	23.760	0.637	76.179	6'-10"	6	6'- 6"	1.440	39.052	1.447	39.052	H	
5	3	22.864	0.643	78.788	7'-10"	6	7'- 6"	1.259	45.060	1.269	45.060	B	
5	4	24.276	0.692	87.451	7'-10"	6	7'- 6"	1.352	45.060	1.362	45.060	D	
5	5	25.688	0.751	92.772	7'-10"	6	7'- 6"	1.444	45.060	1.455	45.060	F	
5	6	27.100	0.800	97.902	7'-10"	6	7'- 6"	1.537	45.060	1.547	45.060	H	
5	7	28.512	0.819	106.722	7'-10"	6	7'- 6"	1.630	45.060	1.640	45.060	J	
6	4	27.616	0.819	109.583	8'-10"	6	8'- 6"	1.437	51.068	1.451	51.068	D	
6	5	29.028	0.868	115.095	8'-10"	6	8'- 6"	1.530	51.068	1.544	51.068	F	
6	6	30.440	0.917	120.607	8'-10"	6	8'- 6"	1.623	51.068	1.636	51.068	H	
6	7	31.852	0.966	126.119	8'-10"	6	8'- 6"	1.715	51.068	1.729	51.068	J	
6	8	33.264	1.014	141.936	8'-10"	6	8'- 6"	1.808	51.068	1.822	51.068	L	
7	4	30.956	0.987	139.521	9'-10"	6	9'- 6"	1.512	57.076	1.529	57.076	D	
7	6	33.780	1.085	151.614	9'-10"	6	9'- 6"	1.698	57.076	1.715	57.076	H	
7	8	36.604	1.182	171.789	9'-10"	6	9'- 6"	1.883	57.076	1.900	57.076	L	
7	10	39.428	1.302	240.002	9'-10"	6	9'- 6"	2.032	57.076	2.049	57.076	P	
8	4	34.296	1.207	154.471	10'-10"	6	10'- 6"	1.590	63.084	1.611	63.084	E	
8	6	37.120	1.319	165.495	10'-10"	6	10'- 6"	1.773	63.084	1.794	63.084	I	
8	8	39.944	1.414	221.367	10'-10"	6	10'- 6"	1.959	63.084	1.979	63.084	M	
8	10	42.768	1.534	266.033	10'-10"	6	10'- 6"	2.107	63.084	2.127	63.084	Q	
9	4	37.636	1.422	180.697	11'-10"	6	11'- 6"	1.642	69.092	1.666	69.092	E	
9	6	40.460	1.519	192.206	11'-10"	6	11'- 6"	1.828	69.092	1.851	69.092	I	
9	8	43.284	1.617	212.333	11'-10"	6	11'- 6"	2.013	69.092	2.037	69.092	M	
9	10	46.108	1.733	298.146	11'-10"	6	11'- 6"	2.162	69.092	2.185	69.092	Q	
9	12	48.932	1.972	378.099	11'-10"	6	11'- 6"	2.202	69.092	2.224	69.092	U	
10	4	40.976	1.621	224.436	12'-10"	6	12'- 6"	1.691	75.100	1.718	75.100	E	
10	6	43.800	1.737	237.289	12'-10"	6	12'- 6"	1.872	75.100	1.899	75.100	I	
10	8	46.624	1.850	276.005	12'-10"	6	12'- 6"	2.054	75.100	2.081	75.100	M	
10	10	49.448	2.002	356.608	12'-10"	6	12'- 6"	2.194	75.100	2.221	75.100	Q	
10	12	52.272	2.227	417.324	12'-10"	6	12'- 6"	2.236	75.100	2.262	75.100	U	
12	6	50.480	2.228	315.567	14'-10"	6	14'- 6"	1.953	87.116	1.987	87.116	J	
12	8	53.304	2.325	334.691	14'-10"	6	14'- 6"	2.138	87.116	2.172	87.116	N	
12	10	56.128	2.441	395.659	14'-10"	6	14'- 6"	2.287	87.116	2.320	87.116	R	
12	12	58.952	2.664	492.457	14'-10"	6	14'- 6"	2.327	87.116	2.359	87.116	V	

DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3								BH1			BH2			BH3			BV1						
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	WALL (IN.)	A	B	C	D	E	F	SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH	SIZE	SPACING C-C	LENGTH	NO. BL1 BARS	NO. BL2 BARS
3	3	8"	8"	8"	2	2'- 0"	2	2'- 0"	1	1'- 0"	4	11"	4'- 0"	2'- 8"	8'- 10"	6	11"	4'- 0"	4	11"	2'- 1 1/4"	3'- 11"	4	12"	4'- 0"	16	8
3	4	8"	8"	8"	2	2'- 0"	2	2'- 0"	2	2'- 0"	4	10 1/2"	4'- 0"	3'- 2"	9'- 10"	6	10 1/2"	4'- 0"	4	10 1/2"	2'- 1 1/4"	3'- 11"	4	12"	5'- 0"	16	12
4	3	10"	10"	8"	3	3'- 0"	3	3'- 0"	1	1'- 0"	4	8 1/2"	5'- 0"	2'- 10"	10'- 2"	6	8 1/2"	5'- 0"	--	--	--	--	4	12"	4'- 4"	20	8
4	4	9 1/2"	9 1/2"	8"	3	3'- 0"	3	3'- 0"	2	2'- 0"	4	8"	5'- 0"	3'- 3/2"	11'- 1"	6	8"	5'- 0"	--	--	--	--	4	12"	5'- 3"	20	12
4	5	9 1/2"	9 1/2"	8"	3	3'- 0"	3	3'- 0"	3	3'- 0"	4	8"	5'- 0"	3'- 9/2"	12'- 1"	6	8"	5'- 0"	--	--	--	--	4	12"	6'- 3"	20	16
4	6	9 3/4"	9 3/4"	8"	3	3'- 0"	3	3'- 0"	4	4'- 0"	4	8"	5'- 0"	4'- 3 3/4"	13'- 1"	6	8"	5'- 0"	--	--	--	--	4	12"	7'- 3"	20	20
5	3	13"	13"	8"	4	4'- 0"	4	4'- 0"	1	1'- 0"	4	7"	6'- 0"	3'- 1"	11'- 8"	6	7"	6'- 0"	--	--	--	--	4	12"	4'- 10"	24	8
5	4	13"	13"	8"	4	4'- 0"	4	4'- 0"	2	2'- 0"	4	7"	6'- 0"	3'- 7"	12'- 8"	6	7"	6'- 0"	--	--	--	--	4	12"	5'- 10"	24	12
5	5	13"	13"	8"	4	4'- 0"	4	4'- 0"	3	3'- 0"	4	7"	6'- 0"	4'- 1"	13'- 8"	6	7"	6'- 0"	--	--	--	--	4	12"	6'- 10"	24	16
5	6	11 3/4"	11 3/4"	8"	4	4'- 0"	4	4'- 0"	4	4'- 0"	4	6 1/2"	6'- 0"	4'- 5 3/4"	14'- 5"	6	6 1/2"	6'- 0"	--	--	--	--	4	12"	7'- 8"	24	20
5	7	11 3/4"	11 3/4"	8"	4	4'- 0"	4	4'- 0"	5	5'- 0"	4	6 1/2"	6'- 0"	4'- 11 3/4"	15'- 5"	6	6 1/2"	6'- 0"	--	--	--	--	4	8 1/2"	8'- 8"	24	24
6	4	13 1/4"	13 1/4"	8"	5	5'- 0"	5	5'- 0"	2	2'- 0"	4	9"	7'- 0"	3'- 7 1/4"	13'- 8"	8	9"	7'- 0"	3	9"	2'- 8 3/8"	5'- 2"	4	12"	5'- 10"	28	12
6	5	13 1/2"	13 1/2"	8"	5	5'- 0"	5	5'- 0"	3	3'- 0"	5	7"	7'- 0"	4'- 1 1/2"	14'- 7"	7	7"	7'- 0"	--	--	--	--	4	12"	6'- 11"	28	16
6	6	13 1/2"	13 1/2"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	4	9"	7'- 0"	4'- 7 1/2"	15'- 9"	8	9"	7'- 0"	3	9"	2'- 8 3/8"	5'- 2"	4	12"	7'- 11"	28	20
6	7	13 1/2"	13 1/2"	8"	5	5'- 0"	5	5'- 0"	5	5'- 0"	5	8 1/2"	7'- 0"	5'- 1 1/2"	16'- 7"	8	8 1/2"	7'- 0"	3	8 1/2"	2'- 8 3/8"	5'- 2"	4	10 1/2"	8'- 11"	28	24
6	8	13 1/2"	13 1/2"	8"	5	5'- 0"	5	5'- 0"	6	6'- 0"	5	7"	7'- 0"	5'- 7 1/2"	17'- 7"	7	7"	7'- 0"	--	--	--	--	4	6"	9'- 11"	28	28
7	4	16"	16"	8"	6	6'- 0"	6	6'- 0"	2	2'- 0"	4	8"	8'- 0"	3'- 10"	15'- 2"	8	8"	8'- 0"	3	8"	2'- 10 3/4"	5'- 7"	4	12"	6'- 4"	32	12
7	6	16 1/4"	16 1/4"	8"	6	6'- 0"	6	6'- 0"	4	4'- 0"	4	8"	8'- 0"	4'- 10 1/4"	17'- 2"	8	8"	8'- 0"	4	8"	2'- 10 3/4"	5'- 6"	4	12"	8'- 4"	32	20
7	8	16 1/4"	16 1/4"	8"	6	6'- 0"	6	6'- 0"	6	6'- 0"	5	8"	8'- 0"	5'- 10 1/4"	19'- 1"	8	8"	8'- 0"	3	8"	2'- 10 3/4"	5'- 7"	4	6"	10'- 4"	32	28
7	10	16"	16"	9"	6	6'- 0"	6	6'- 0"	8	8'- 0"	5	8"	8'- 0"	6'- 10"	21'- 2"	8	8"	8'- 2"	4	8"	2'- 11 3/4"	5'- 8"	6	9 1/2"	12'- 4"	32	36
8	4	18"	18"	8"	7	7'- 0"	7	7'- 0"	2	2'- 0"	4	7 1/2"	9'- 0"	4'- 0"	16'- 6"	8	7 1/2"	9'- 0"	4	7 1/2"	3'- 1 1/4"	5'- 11"	4	12"	6'- 8"	36	12
8	6	18 1/4"	18 1/4"	8"	7	7'- 0"	7	7'- 0"	4	4'- 0"	4	7 1/2"	9'- 0"	5'- 1/4"	18'- 6"	8	7 1/2"	9'- 0"	4	7 1/2"	3'- 1 1/4"	5'- 11"	4	12"	8'- 9"	36	20
8	8	18 1/2"	18 1/2"	8"	7	7'- 0"	7	7'- 0"	6	6'- 0"	4	7 1/2"	9'- 0"	6'- 1/2"	20'- 7"	8	7 1/2"	9'- 0"	4	7 1/2"	3'- 1 1/4"	5'- 11"	4	6"	10'- 9"	36	28
8	10	18 1/2"	18 1/2"	9"	7	7'- 0"	7	7'- 0"	8	8'- 0"	5	7 1/2"	9'- 2"	7'- 1/2"	22'- 7"	8	7 1/2"	9'- 2"	3	7 1/2"	3'- 2 1/4"	6'- 2"	6	9 1/2"	12'- 9"	36	36
9	4	20"	20"	8"	8	8'- 0"	8	8'- 0"	2	2'- 0"	5	7"	10'- 0"	4'- 2"	17'- 8"	8	7"	10'- 0"	--	--	--	--	4	12"	7'- 0"	40	12
9	6	20"	20"	8"	8	8'- 0"	8	8'- 0"	4	4'- 0"	5	6 1/2"	10'- 0"	5'- 2"	19'- 8"	8	6 1/2"	10'- 0"	--	--	--	--	4	12"	9'- 0"	40	20
9	8	20 1/4"	20 1/4"	8"	8	8'- 0"	8	8'- 0"	6	6'- 0"	5	7"	10'- 0"	6'- 2 1/4"	21'- 9"	8	7"	10'- 0"	--	--	--	--	4	6"	11'- 0"	40	28
9	10	20 1/4"	20 1/4"	9"	8	8'- 0"	8	8'- 0"	8	8'- 0"	5	5"	10'- 2"	7'- 2 1/4"	23'- 11"	7	5"	10'- 2"	--	--	--	--	6	9 1/2"	13'- 0"	40	36
9	12	20 1/4"	20 1/4"	10 1/2"	8	8'- 0"	8	8'- 0"	10	10'- 0"	6	6"	10'- 5"	8'- 2 1/4"	26'- 0"	8	6"	10'- 5"	--	--	--	--	5	5 1/2"	15'- 0"	40	44
10	4	21"	21"	8"	9	9'- 0"	9	9'- 0"	2	2'- 0"	4	6"	11'- 0"	4'- 3"	19'- 0"	8	6"	11'- 0"	--	--	--	--	4	12"	7'- 2"	44	12
10	6	21"	21"	8"	9	9'- 0"	9	9'- 0"	4	4'- 0"	4	6"	11'- 0"	5'- 3"	21'- 0"	8	6"	11'- 0"	--	--	--	--	4	12"	9'- 2"	44	20
10	8	21 1/4"	21 1/4"	8"	9	9'- 0"	9	9'- 0"	6	6'- 0"	5	5 1/2"	11'- 0"	6'- 3/4"	22'- 11"	8	5 1/2"	11'- 0"	--	--	--	--	5	9 1/2"	11'- 3"	44	28
10	10	21 1/4"	21 1/4"	9"	9	9'- 0"	9	9'- 0"	8	8'- 0"	6	5 1/2"	11'- 2"	7'- 3/4"	24'- 11"	8	5 1/2"	11'- 2"	--	--	--	--	4	4 1/2"	13'- 3"	44	36
10	12	21 1/2"	21 1/2"	10 1/2"	9	9'- 0"	9	9'- 0"	10	10'- 0"	6	5 1/2"	11'- 5"	8'- 3/2"	27'- 2"	8	5 1/2"	11'- 5"	--	--	--	--	6	8"	15'- 3"	44	44
12	6	25 1/2"	25 1/2"	8"	11	11'- 0"	11	11'- 0"	4	4'- 0"	4	5"	13'- 0"	5'- 7 1/2"	23'- 9"	8	5"	13'- 0"	--	--	--	--	4	12"	9'- 11"	52	20
12	8	25 1/2"	25 1/2"	8"	11	11'- 0"	11	11'- 0"	6	6'- 0"	5	5"	13'- 0"	6'- 7 1/2"	25'- 7"	8	5"	13'- 0"	--	--	--	--	4	6"	11'- 11"	52	28
12	10	25 1/4"	25 1/4"	9 1/4"	11	11'- 0"	11	11'- 0"	8	8'- 0"	5	5"	13'- 2 1/2"	7'- 7 1/4"	27'- 9"	8	5"	13'- 3"	--	--	--	--	5	7 1/2"	13'- 11"	52	36
12	12	25 1/4"	25 1/4"	10 1/2"	11	11'- 0"	11	11'- 0"	10	10'- 0"	6	4 1/2"	13'- 5"	8'- 7 1/4"	29'- 10"	8	4 1/2"	13'- 5"	--	--	--	--	6	8"	15'- 11"	52	44

SINGLE BOX CULVERTS  
40 TO 45 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGHT (FT.)	REINFORCING STEEL (LBS./LONG. JT)	QUAN./LF		HEADWALLS									
			CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL	
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH						
3	3	16.184	0.400	56.439	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A		
3	4	17.596	0.448	62.587	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C		
4	3	19.524	0.514	62.538	6'-10"	6	6'- 6"	1.164	39.052	1.171	39.052	B		
4	4	20.936	0.547	69.627	6'-10"	6	6'- 6"	1.255	39.052	1.262	39.052	D		
4	5	22.348	0.596	74.471	6'-10"	6	6'- 6"	1.348	39.052	1.355	39.052	F		
4	6	23.760	0.653	79.315	6'-10"	6	6'- 6"	1.441	39.052	1.448	39.052	H		
5	3	22.864	0.692	83.116	7'-10"	6	7'- 6"	1.259	45.060	1.269	45.060	B		
5	4	24.276	0.741	88.246	7'-10"	6	7'- 6"	1.352	45.060	1.362	45.060	D		
5	5	25.688	0.790	93.376	7'-10"	6	7'- 6"	1.444	45.060	1.455	45.060	F		
5	6	27.100	0.790	102.628	7'-10"	6	7'- 6"	1.537	45.060	1.547	45.060	H		
5	7	28.512	0.838	112.702	7'-10"	6	7'- 6"	1.630	45.060	1.640	45.060	J		
6	4	27.616	0.830	115.555	8'-10"	6	8'- 6"	1.437	51.068	1.450	51.068	D		
6	5	29.028	0.889	135.167	8'-10"	6	8'- 6"	1.528	51.068	1.542	51.068	F		
6	6	30.440	0.940	125.058	8'-10"	6	8'- 6"	1.621	51.068	1.635	51.068	H		
6	7	31.852	0.987	153.922	8'-10"	6	8'- 6"	1.714	51.068	1.728	51.068	J		
6	8	33.264	1.035	167.663	8'-10"	6	8'- 6"	1.807	51.068	1.820	51.068	L		
7	4	30.956	1.052	141.419	9'-10"	6	9'- 6"	1.523	57.076	1.540	57.076	E		
7	6	33.780	1.162	160.555	9'-10"	6	9'- 6"	1.707	57.076	1.724	57.076	I		
7	8	36.604	1.258	195.902	9'-10"	6	9'- 6"	1.892	57.076	1.910	57.076	M		
7	10	39.428	1.419	236.069	9'-10"	6	9'- 6"	2.002	57.076	2.018	57.076	Q		
8	4	34.296	1.263	174.928	10'-10"	6	10'- 6"	1.581	63.084	1.601	63.084	E		
8	6	37.120	1.375	184.995	10'-10"	6	10'- 6"	1.764	63.084	1.785	63.084	I		
8	8	39.944	1.487	209.490	10'-10"	6	10'- 6"	1.947	63.084	1.968	63.084	M		
8	10	42.768	1.663	254.498	10'-10"	6	10'- 6"	2.053	63.084	2.072	63.084	Q		
9	4	37.636	1.500	195.303	11'-10"	6	11'- 6"	1.627	69.092	1.650	69.092	E		
9	6	40.460	1.597	220.586	11'-10"	6	11'- 6"	1.812	69.092	1.836	69.092	I		
9	8	43.284	1.711	235.961	11'-10"	6	11'- 6"	1.995	69.092	2.018	69.092	M		
9	10	46.108	1.886	309.068	11'-10"	6	11'- 6"	2.098	69.092	2.121	69.092	Q		
9	12	48.932	2.135	378.991	11'-10"	6	11'- 6"	2.130	69.092	2.152	69.092	U		
10	4	40.976	1.692	211.727	12'-10"	6	12'- 6"	1.675	75.100	1.702	75.100	E		
10	6	43.800	1.790	222.751	12'-10"	6	12'- 6"	1.861	75.100	1.888	75.100	I		
10	8	46.624	1.901	302.023	12'-10"	6	12'- 6"	2.061	75.100	2.088	75.100	N		
10	10	49.448	2.077	383.544	12'-10"	6	12'- 6"	2.164	75.100	2.190	75.100	R		
10	12	52.272	2.347	425.722	12'-10"	6	12'- 6"	2.190	75.100	2.215	75.100	V		
12	6	50.480	2.414	298.265	14'-10"	6	14'- 6"	1.904	87.116	1.938	87.116	J		
12	8	53.304	2.507	371.794	14'-10"	6	14'- 6"	2.090	87.116	2.123	87.116	N		
12	10	56.128	2.693	402.392	14'-10"	6	14'- 6"	2.172	87.116	2.205	87.116	R		
12	12	58.952	2.921	553.039	14'-10"	6	14'- 6"	2.218	87.116	2.250	87.116	V		

DIMENSIONS						REINFORCING STEEL																					
SPAN	HGHT	T1	T2	T3	A	B	C	D	E	F	BH1			BH2			BH3			BV1			NO. BL1 BARS	NO. BL2 BARS			
(FT.)	(FT.)	TOP SLAB (IN.)	BOTTOM SLAB (IN.)	WALL (IN.)							SIZE	SPACING C-C	a	b	LENGTH	SIZE	SPACING C-C	LENGTH	SIZE	SPACING C-C	a	LENGTH			SIZE	SPACING C-C	LENGTH
3	3	8"	8"	8"	2	2'-0"	2	2'-0"	1	1'-0"	4	10"	4'-0"	2'-8"	8'-10"	6	10"	4'-0"	4	10"	2'-1 1/4"	3'-11"	4	12"	4'-0"	16	8
3	4	8"	8"	8"	2	2'-0"	2	2'-0"	2	2'-0"	4	10"	4'-0"	3'-2"	9'-10"	6	10"	4'-0"	4	10"	2'-1 1/4"	3'-11"	4	12"	5'-0"	16	12
4	3	10 1/4"	10 1/4"	8"	3	3'-0"	3	3'-0"	1	1'-0"	4	8"	5'-0"	2'-10 1/4"	10'-2"	6	8"	5'-0"	--	--	--	--	4	12"	4'-5"	20	8
4	4	10"	10"	8"	3	3'-0"	3	3'-0"	2	2'-0"	4	7 1/2"	5'-0"	3'-4"	11'-2"	6	7 1/2"	5'-0"	--	--	--	--	4	12"	5'-4"	20	12
4	5	10 1/4"	10 1/4"	8"	3	3'-0"	3	3'-0"	3	3'-0"	4	8"	5'-0"	3'-10 1/4"	12'-2"	6	8"	5'-0"	--	--	--	--	4	12"	6'-5"	20	16
4	6	10 1/4"	10 1/4"	8"	3	3'-0"	3	3'-0"	4	4'-0"	4	8"	5'-0"	4'-4 1/4"	13'-2"	6	8"	5'-0"	--	--	--	--	4	12"	7'-5"	20	20
5	3	13"	13"	8"	4	4'-0"	4	4'-0"	1	1'-0"	4	6 1/2"	6'-0"	3'-1"	11'-8"	6	6 1/2"	6'-0"	--	--	--	--	4	12"	4'-10"	24	8
5	4	13"	13"	8"	4	4'-0"	4	4'-0"	2	2'-0"	4	6 1/2"	6'-0"	3'-7"	12'-8"	6	6 1/2"	6'-0"	--	--	--	--	4	12"	5'-10"	24	12
5	5	13"	13"	8"	4	4'-0"	4	4'-0"	3	3'-0"	4	6 1/2"	6'-0"	4'-1"	13'-8"	6	6 1/2"	6'-0"	--	--	--	--	4	12"	6'-10"	24	16
5	6	12 1/4"	12 1/4"	8"	4	4'-0"	4	4'-0"	4	4'-0"	4	6"	6'-0"	4'-6 1/4"	14'-6"	6	6"	6'-0"	--	--	--	--	4	12"	7'-9"	24	20
5	7	12 1/4"	12 1/4"	8"	4	4'-0"	4	4'-0"	5	5'-0"	4	6 1/2"	6'-0"	5'-1 1/4"	15'-6"	6	6 1/2"	6'-0"	--	--	--	--	5	12"	8'-9"	24	24
6	4	14 1/2"	14 1/2"	8"	5	5'-0"	5	5'-0"	2	2'-0"	4	9"	7'-0"	3'-8 1/2"	13'-11"	8	9"	7'-0"	3	9"	2'-8 3/8"	5'-2"	4	12"	6'-1"	28	12
6	5	14 1/2"	14 1/2"	8"	5	5'-0"	5	5'-0"	3	3'-0"	4	5"	7'-0"	4'-2 1/2"	14'-11"	6	5"	7'-0"	--	--	--	--	4	12"	7'-1"	28	16
6	6	14 3/4"	14 3/4"	8"	5	5'-0"	5	5'-0"	4	4'-0"	4	9"	7'-0"	4'-8 3/4"	15'-11"	8	9"	7'-0"	3	9"	2'-8 3/8"	5'-2"	4	12"	8'-1"	28	20
6	7	14 3/4"	14 3/4"	8"	5	5'-0"	5	5'-0"	5	5'-0"	5	8 1/2"	7'-0"	5'-2 3/4"	16'-10"	8	8 1/2"	7'-0"	3	8 1/2"	2'-8 3/8"	5'-2"	5	12"	9'-1"	28	24
6	8	14 1/2"	14 1/2"	8"	5	5'-0"	5	5'-0"	6	6'-0"	5	8 1/2"	7'-0"	5'-8 1/2"	17'-9"	8	8 1/2"	7'-0"	3	8 1/2"	2'-8 3/8"	5'-2"	4	5 1/2"	10'-1"	28	28
7	4	17 1/2"	17 1/2"	8"	6	6'-0"	6	6'-0"	2	2'-0"	5	8"	8'-0"	3'-11 1/2"	15'-3"	8	8"	8'-0"	--	--	--	--	4	12"	6'-7"	32	12
7	6	17 3/4"	17 3/4"	8"	6	6'-0"	6	6'-0"	4	4'-0"	4	8"	8'-0"	4'-11 3/4"	17'-5"	8	8"	8'-0"	4	8"	2'-10 3/4"	5'-6"	4	12"	8'-7"	32	20
7	8	17 1/2"	17 1/2"	8"	6	6'-0"	6	6'-0"	6	6'-0"	5	8"	8'-0"	5'-11 1/2"	19'-3"	8	8"	8'-0"	3	8"	2'-10 3/4"	5'-7"	6	11 1/2"	10'-7"	32	28
7	10	17 1/2"	17 1/2"	8"	6	6'-0"	6	6'-0"	8	8'-0"	5	8"	8'-0"	6'-11 1/2"	21'-3"	8	8"	8'-0"	3	8"	2'-10 3/4"	5'-7"	8	12'-7"	32	36	
8	4	18 1/4"	18 1/4"	8"	7	7'-0"	7	7'-0"	2	2'-0"	4	5 1/2"	9'-0"	4'-1/4"	16'-6"	7	5 1/2"	9'-0"	--	--	--	--	4	12"	6'-9"	36	12
8	6	18 1/2"	18 1/2"	8"	7	7'-0"	7	7'-0"	4	4'-0"	4	5 1/2"	9'-0"	5'-1/2"	18'-7"	7	5 1/2"	9'-0"	--	--	--	--	4	12"	8'-9"	36	20
8	8	18 3/4"	18 3/4"	8"	7	7'-0"	7	7'-0"	6	6'-0"	5	5 1/2"	9'-0"	6'-3/4"	20'-6"	7	5 1/2"	9'-0"	--	--	--	--	4	5 1/2"	10'-9"	36	28
8	10	19"	19"	9 3/4"	7	7'-0"	7	7'-0"	8	8'-0"	5	5 1/2"	9'-3 1/2"	7'-1"	22'-10"	7	5 1/2"	9'-3"	--	--	--	--	4	4 1/2"	12'-10"	36	36
9	4	20"	20"	8"	8	8'-0"	8	8'-0"	2	2'-0"	5	6 1/2"	10'-0"	4'-2"	17'-8"	8	6 1/2"	10'-0"	--	--	--	--	4	12"	7'-0"	40	12
9	6	20 1/2"	20 1/2"	8"	8	8'-0"	8	8'-0"	4	4'-0"	5	6 1/2"	10'-0"	5'-2 1/2"	19'-9"	8	6 1/2"	10'-0"	--	--	--	--	4	12"	9'-1"	40	20
9	8	20 3/4"	20 3/4"	8"	8	8'-0"	8	8'-0"	6	6'-0"	5	6"	10'-0"	6'-2 3/4"	21'-10"	8	6"	10'-0"	--	--	--	--	5	8"	11'-1"	40	28
9	10	20 3/4"	20 3/4"	9 3/4"	8	8'-0"	8	8'-0"	8	8'-0"	6	6 1/2"	10'-3 1/2"	7'-2 3/4"	23'-11"	8	6 1/2"	10'-3"	--	--	--	--	4	4 1/2"	13'-1"	40	36
9	12	21"	21"	11 1/4"	8	8'-0"	8	8'-0"	10	10'-0"	6	5 1/2"	10'-6 1/2"	8'-3"	26'-3"	8	5 1/2"	10'-6"	--	--	--	--	6	8"	15'-2"	40	44
10	4	22 1/2"	22 1/2"	8"	9	9'-0"	9	9'-0"	2	2'-0"	4	6"	11'-0"	4'-4 1/2"	19'-3"	8	6"	11'-0"	--	--	--	--	4	12"	7'-5"	44	12
10	6	22 1/4"	22 1/4"	8"	9	9'-0"	9	9'-0"	4	4'-0"	4	6"	11'-0"	5'-4 1/4"	21'-2"	8	6"	11'-0"	--	--	--	--	4	12"	9'-4"	44	20
10	8	22 1/4"	22 1/4"	8"	9	9'-0"	9	9'-0"	6	6'-0"	5	6"	11'-0"	6'-4 1/4"	23'-1"	8	6"	11'-0"	--	--	--	--	4	5 1/2"	11'-4"	44	28
10	10	22"	22"	9 3/4"	9	9'-0"	9	9'-0"	8	8'-0"	5	5 1/2"	11'-3 1/2"	7'-4"	25'-4"	8	5 1/2"	11'-3"	--	--	--	--	4	5"	13'-4"	44	36
10	12	22"	22"	11 1/4"	9	9'-0"	9	9'-0"	10	10'-0"	7	5 1/2"	11'-6 1/2"	8'-4"	27'-3"	8	5 1/2"	11'-6"	--	--	--	--	5	6"	15'-4"	44	44
12	6	27 1/2"	27 1/2"	8 1/2"	11	11'-0"	11	11'-0"	4	4'-0"	4	5"	13'-1"	5'-9 1/2"	24'-2"	8	5"	13'-1"	--	--	--	--	4	12"	10'-3"	52	20
12	8	27 1/2"	27 1/2"	8"	11	11'-0"	11	11'-0"	6	6'-0"	5	5"	13'-0"	6'-9 1/2"	25'-11"	8	5"	13'-0"	--	--	--	--	5	7 1/2"	12'-3"	52	28
12	10	27 1/2"	27 1/2"	9 3/4"	11	11'-0"	11	11'-0"	8	8'-0"	5	4 1/2"	13'-3 1/2"	7'-9 1/2"	28'-3"	8	4 1/2"	13'-3"	--	--	--	--	6	9 1/2"	14'-3"	52	36
12	12	27 1/2"	27 1/2"	11 1/4"	11	11'-0"	11	11'-0"	10	10'-0"	6	4 1/2"	13'-6 1/2"	8'-9 1/2"	30'-4"	8	4 1/2"	13'-6"	--	--	--	--	6	8"	16'-3"	52	44

SINGLE BOX CULVERTS  
45 TO 50 FT. FILLS  
VIRGINIA DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SPAN (FT.)	HGHT (FT.)	REINFORCING STEEL (LBS./LONG. JT)	QUAN./LF		HEADWALLS									
			CONCRETE CLASS A4 (CY/LF)	REINFORCING STEEL (LBS./LF)	G		HW I		INLET CONCRETE CL. A4 (CY)	INLET REINFORCING STEEL (LBS)	OUTLET CONCRETE CL. A4 (CY)	OUTLET REINFORCING STEEL (LBS)	WINGWALL	
					HEADWALL LENGTH	SIZE	LENGTH	LENGTH						
3	3	16.184	0.399	60.179	5'-10"	6	5'- 6"	1.038	33.044	1.042	33.044	A		
3	4	17.596	0.448	64.622	5'-10"	6	5'- 6"	1.131	33.044	1.134	33.044	C		
4	3	19.524	0.522	65.173	6'-10"	6	6'- 6"	1.165	39.052	1.172	39.052	B		
4	4	20.936	0.563	72.899	6'-10"	6	6'- 6"	1.257	39.052	1.264	39.052	D		
4	5	22.348	0.620	74.861	6'-10"	6	6'- 6"	1.350	39.052	1.357	39.052	F		
4	6	23.760	0.669	79.705	6'-10"	6	6'- 6"	1.443	39.052	1.450	39.052	H		
5	3	22.864	0.691	87.548	7'-10"	6	7'- 6"	1.259	45.060	1.269	45.060	B		
5	4	24.276	0.740	92.854	7'-10"	6	7'- 6"	1.352	45.060	1.362	45.060	D		
5	5	25.688	0.789	98.161	7'-10"	6	7'- 6"	1.444	45.060	1.455	45.060	F		
5	6	27.100	0.809	108.698	7'-10"	6	7'- 6"	1.537	45.060	1.547	45.060	H		
5	7	28.512	0.858	114.814	7'-10"	6	7'- 6"	1.630	45.060	1.640	45.060	J		
6	4	27.616	0.887	116.334	8'-10"	6	8'- 6"	1.433	51.068	1.446	51.068	D		
6	5	29.028	0.935	132.479	8'-10"	6	8'- 6"	1.525	51.068	1.539	51.068	F		
6	6	30.440	0.996	125.577	8'-10"	6	8'- 6"	1.617	51.068	1.631	51.068	H		
6	7	31.852	1.043	159.991	8'-10"	6	8'- 6"	1.710	51.068	1.724	51.068	J		
6	8	33.264	1.080	174.639	8'-10"	6	8'- 6"	1.804	51.068	1.817	51.068	L		
7	4	30.956	1.128	146.481	9'-10"	6	9'- 6"	1.514	57.076	1.531	57.076	E		
7	6	33.780	1.239	161.390	9'-10"	6	9'- 6"	1.698	57.076	1.715	57.076	I		
7	8	36.604	1.322	201.988	9'-10"	6	9'- 6"	1.885	57.076	1.902	57.076	M		
7	10	39.428	1.417	246.667	9'-10"	6	9'- 6"	2.070	57.076	2.087	57.076	Q		
8	4	34.296	1.278	165.947	10'-10"	6	10'- 6"	1.579	63.084	1.599	63.084	E		
8	6	37.120	1.390	177.700	10'-10"	6	10'- 6"	1.762	63.084	1.782	63.084	I		
8	8	39.944	1.499	239.486	10'-10"	6	10'- 6"	1.945	63.084	1.965	63.084	M		
8	10	42.768	1.752	269.729	10'-10"	6	10'- 6"	1.987	63.084	2.006	63.084	Q		
9	4	37.636	1.499	207.204	11'-10"	6	11'- 6"	1.627	69.092	1.650	69.092	E		
9	6	40.460	1.629	221.019	11'-10"	6	11'- 6"	1.806	69.092	1.830	69.092	I		
9	8	43.284	1.740	269.816	11'-10"	6	11'- 6"	1.988	69.092	2.012	69.092	M		
9	10	46.108	1.980	320.555	11'-10"	6	11'- 6"	2.030	69.092	2.052	69.092	Q		
9	12	48.932	2.254	405.987	11'-10"	6	11'- 6"	2.048	69.092	2.069	69.092	U		
10	4	40.976	1.797	212.729	12'-10"	6	12'- 6"	1.671	75.100	1.698	75.100	F		
10	6	43.800	1.878	223.419	12'-10"	6	12'- 6"	1.860	75.100	1.887	75.100	J		
10	8	46.624	1.973	286.739	12'-10"	6	12'- 6"	2.046	75.100	2.073	75.100	N		
10	10	49.448	2.197	332.052	12'-10"	6	12'- 6"	2.089	75.100	2.114	75.100	R		
10	12	52.272	2.451	486.942	12'-10"	6	12'- 6"	2.109	75.100	2.133	75.100	V		
12	6	50.480	2.611	301.114	14'-10"	6	14'- 6"	1.847	87.116	1.881	87.116	K		
12	8	53.304	2.671	382.507	14'-10"	6	14'- 6"	2.065	87.116	2.099	87.116	O		
12	10	56.128	2.922	451.173	14'-10"	6	14'- 6"	2.094	87.116	2.127	87.116	S		
12	12	58.952	3.188	559.733	14'-10"	6	14'- 6"	2.106	87.116	2.137	87.116	W		