

## GENERAL NOTES

## Specifications:

AASHTO LRFD Bridge Design Specifications 5th Edition 2010; 2011 Interim Revisions; and VDOT Modifications

## Limits of validity for Standard Wingwall design

The standard wingwall designs are based on the following assumptions:

there is no structural connection between the wall and the box culvert traffic surcharge loading is neglected.

## Backfill

Backfill shall comprise granular material with an internal friction angle  $\Phi'$  of at least 32°. Cohesive backfill shall not be permitted. Compaction of the backfill material within a distance of one-half the height of the wall shall be by hand compactors only.

## Drainage

The Contractor shall provide the drainage system indicated on Sheet 1.

The cost for the drainage system (including porous backfill, 6" diameter non-rigid tubing and other items required) shall be incidental to the cost bid for Concrete.

## Concrete

All concrete shall be Class A4.

## Reinforcement

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.

Dimensions on bar diagrams are out-to-out of bars. Bars are straight unless otherwise shown.

The concrete cover to the outermost reinforcement bars shall be as follows:

Wall footing (all faces) 3" minimum cover  
Wall stem (all faces) 2 1/2" minimum cover

At the Contractor's option WV Series bars may be spliced at top of the footing in order to facilitate construction. Splice lengths shall be in accordance with Table C on Sheet 1. No additional compensation shall be provided for the increase in reinforcing steel quantity due to the splices.

## Miscellaneous

Weepholes shall be placed at the lowest point feasible for free drainage away from the wing.

Four Type I Wings are to be used for straight crossings and skews up to 20°. Two Type I and two Type II Wings are to be used for skews from 25° to 45°. For skews above 45°, special design wings are required. The wingwall to be used for each culvert is shown on the BC series sheets.

The designs shown are applicable for a 45° skew with the roadway and other conditions indicated. Any change in these conditions invalidates these designs.

Quantities shown are for one wing.

WING	Wall Quantities		qr_min	qr_min
	Concrete CY	Reinforcement LB	ksf High End	ksf Low End
A	2.3	209	0.91	0.46
B	2.8	245	1.05	0.46
C	3.2	273	1.21	0.49
D	4.0	306	1.49	0.52
E	4.4	346	1.49	0.52
F	4.9	376	1.71	0.52
G	5.6	434	1.79	0.55
H	6.2	463	2.03	0.55
I	7.1	552	2.10	0.60
J	7.7	589	2.36	0.60
K	8.6	672	2.43	0.65
L	9.3	738	2.70	0.65
M	10.3	870	2.76	0.71
N	10.7	950	3.05	0.85
O	11.7	1014	3.10	0.85
P	13.2	1172	3.17	0.88
Q	14.0	1337	3.45	0.88
R	15.3	1444	3.51	0.95
S	16.5	1591	3.58	0.95
T	17.5	1695	3.86	1.03
U	18.8	2002	3.92	1.03
v	20.3	2238	3.99	1.11
W	21.7	2403	4.07	1.11
X	27.0	2884	4.28	1.27
Y	31.7	3334	4.36	1.30
Z	33.9	3578	4.46	1.39
AA	35.9	3876	4.56	1.39
BB	38.8	4522	4.56	1.48
CC	41.0	4747	4.66	1.48
DD	50.0	5689	4.99	1.71
EE	52.6	6313	5.10	1.71

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

 ROAD AND BRIDGE STANDARDS		<h2 style="margin: 0;">WING DETAIL</h2> <h3 style="margin: 0;">2:1 FILL SLOPE - TYPE I</h3> <p style="margin: 0;">VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	SPECIFICATION REFERENCE
SHEET 1 OF 8	REVISION DATE		
1007.01	07/12		