GENERAL NOTE

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 drawing 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 centers of main reinforcing bars shall be 2" from the face of the concrete unless otherwise shown.

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

When concrete protective coating is required, all steel shall be epoxycoated.

Bearing capacity of foundations shall be 1.5 Tons/Sq. Ft. minimum for wings A - X and 2 Tons/Sq. Ft. minimum for wings Y - EE.

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

Four Type I Wings are to be used for straight crossings and skews up to 20%. Two Type I & 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 Concrete Reinforcing Steel A 2.917 182.454 B 3.499 233.188 C 3.939 252.894 D 4.573 286.711 E 5.233 341.981 F 6.145 383.724 G 6.881 445.681 H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 0 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W | | Quantity | (One Wing) |
|--|------|----------|----------------------|
| A 2.917 182.454 B 3.499 233.188 C 3.939 252.894 D 4.573 286.711 E 5.233 341.981 F 6.145 383.724 G 6.881 445.681 H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | | Concrete | Reinforcing Steel |
| B 3.499 233.188 C 3.939 252.894 D 4.573 286.711 E 5.233 341.981 F 6.145 383.724 G 6.881 445.681 H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35 | WING | Cu. Yd. | 1 |
| C 3,939 252,894 D 4,573 286,711 E 5,233 341,981 F 6,145 383,724 G 6,881 445,681 H 7,910 489,811 I 8,512 517,004 J 9,643 613,342 K 10,529 655,405 L 11,777 771,234 M 13,099 837,992 N 14,106 919,335 O 15,275 1017,802 P 16,355 1093,189 Q 17,891 1292,357 R 19,035 1525,633 S 20,691 1704,239 T 21,910 1952,852 U 23,368 2116,654 V 24,678 2112,153 W 28,412 2270,223 X 32,434 3904,347 Y 35,972 2730,572 Z | Α | 2.917 | 182.454 |
| D 4.573 286.711 E 5.233 341.981 F 6.145 383.724 G 6.881 445.681 H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA < | В | 3.499 | 233.188 |
| E 5.233 341.981 F 6.145 383.724 G 6.881 445.681 H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | С | 3.939 | 252.894 |
| F 6.145 383.724 G 6.881 445.681 H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | D | 4.573 | 286.711 |
| G 6.881 445.681 H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | E | 5.233 | 341.981 |
| H 7.910 489.811 I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | F | 6.145 | 383.724 |
| I 8.512 517.004 J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | G | 6.881 | 445.681 |
| J 9.643 613.342 K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | Н | 7.910 | 489.811 |
| K 10.529 655.405 L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | 1 | 8.512 | 517.004 |
| L 11.777 771.234 M 13.099 837.992 N 14.106 919.335 O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | J | 9.643 | 613.342 |
| M 13.099 837.992 N 14.106 919.335 0 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | K | 10.529 | 655.405 |
| N 14.106 919.335 0 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | L | 11.777 | 771.234 |
| O 15.275 1017.802 P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | М | 13.099 | 837.992 |
| P 16.355 1093.189 Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | N | 14.106 | 919.335 |
| Q 17.891 1292.357 R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | 0 | 15.275 | 1017.802 |
| R 19.035 1525.633 S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | Р | 16.355 | 1093.189 |
| S 20.691 1704.239 T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | Q | 17.891 | 1292.357 |
| T 21.910 1952.852 U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | R | 19.035 | 1525.633 |
| U 23.368 2116.654 V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | S | 20.691 | 1704.239 |
| V 24.678 2112.153 W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | T | 21.910 | 1952.852 |
| W 28.412 2270.223 X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | U | 23.368 | 2116.654 |
| X 32.434 3904.347 Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | ٧ | 24.678 | 2112.153 |
| Y 35.972 2730.572 Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | W | 28.412 | 2270.223 |
| Z 37.707 2849.343 AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | Χ | 32.434 | 3904.347 |
| AA 39.857 3392.164 BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | Υ | 35.972 | 2730.572 |
| BB 42.547 3594.334 CC 46.155 4755.614 DD 49.940 5500.464 | Z | 37.707 | 2849.343 |
| CC 46.155 4755.614 DD 49.940 5500.464 | AA | 39.857 | 3392.164 |
| DD 49.940 5500.464 | BB | 42.547 | 3594.334 |
| | CC | 46.155 | 4755.614 |
| EE 51.922 6808.705 | DD | 49.940 | 5500.464 |
| | EE | 51.922 | 6808.705 |

Sheet 2 of 7

STRUCTURE AND BRIDGE DIVISION WING DETAILS

2: I FILL SLOPE - TYPE II

VIRGINIA DEPARTMENT OF TRANSPORTATION