

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

BCD-10

| SPAN | | HIGHT | | REINFORCING STEEL | | | | | | | | | | | QUAN./LF | | HEADWALLS | | | | | | | WINGWALL | | | | |
|-------|-------|-------|-------------|-------------------|------------|-------------|-------------|------------|-------------|-------|----------|-----------------|-----------------|----------------------------------|---------------------------|----------------------------|-----------------|------|---------|---|--------------|--------------|----------------------------|----------|-------------------------------|-----------------------------|--------------------------------|---|
| (FT.) | (FT.) | SIZE | SPACING C-C | BT I | | | | | | | | | | | CONCRETE CLASS #4 (CY/LF) | REINFORCING STEEL (LBS/LF) | G | | HW I | | NO. HW2 BARS | NO. HW3 BARS | INLET CONCRETE CL. #4 (CY) | | INLET REINFORCING STEEL (LBS) | OUTLET CONCRETE CL. #4 (CY) | OUTLET REINFORCING STEEL (LBS) | |
| | | | | a | b | c | d | e | f | g | LENGTH | NO. BL1 #4 BARS | NO. BL2 #3 BARS | REINFORCING STEEL (LBS/LONG. JT) | | | HEADWALL LENGTH | SIZE | LENGTH | | | | | | | | | |
| 3 | 3 | 4 | 12" | 2'- 8 1/8" | 0'- 4 1/2" | 1'- 6 5/8" | 0'- 5 7/8" | 0'- 3 3/4" | 7'- 7 7/8" | ----- | 7'- 11" | 32 | 12 | 30.956 | 0.695 | 79.439 | 9'- 6" | 6 | 9'- 2" | 6 | 9'- 2" | 1 | 4 | 1.433 | 67.988 | 1.425 | 55.073 | A |
| 3 | 4 | 4 | 12" | 2'- 8 1/8" | 0'- 4 1/2" | 1'- 6 5/8" | 0'- 5 7/8" | 0'- 3 3/4" | 7'- 7 7/8" | ----- | 7'- 11" | 32 | 18 | 33.074 | 0.768 | 85.703 | 9'- 6" | 6 | 9'- 2" | 6 | 9'- 2" | 1 | 5 | 1.531 | 71.439 | 1.517 | 55.073 | C |
| 4 | 3 | 4 | 12" | 3'- 6 1/2" | 0'- 4 1/2" | 1'- 11 1/2" | 0'- 5 7/8" | 0'- 3 3/4" | 9'- 8" | ----- | 9'- 11" | 40 | 12 | 37.636 | 0.792 | 92.688 | 11'- 6" | 6 | 11'- 2" | 6 | 11'- 2" | 1 | 4 | 1.635 | 80.004 | 1.634 | 67.089 | A |
| 4 | 4 | 4 | 12" | 3'- 6 1/2" | 0'- 4 1/2" | 1'- 11 1/2" | 0'- 5 7/8" | 0'- 3 3/4" | 9'- 8" | ----- | 9'- 11" | 40 | 18 | 39.754 | 0.866 | 98.952 | 11'- 6" | 6 | 11'- 2" | 6 | 11'- 2" | 1 | 5 | 1.734 | 83.455 | 1.726 | 67.089 | C |
| 4 | 5 | 4 | 12" | 3'- 6 1/2" | 0'- 4 1/2" | 1'- 11 1/2" | 0'- 5 7/8" | 0'- 3 3/4" | 9'- 8" | ----- | 9'- 11" | 40 | 24 | 41.872 | 0.940 | 105.216 | 11'- 6" | 6 | 11'- 2" | 6 | 11'- 2" | 1 | 6 | 1.833 | 86.907 | 1.819 | 67.089 | E |
| 4 | 6 | 4 | 12" | 3'- 6 1/2" | 0'- 4 1/2" | 1'- 11 1/2" | 0'- 5 7/8" | 0'- 3 3/4" | 9'- 8" | ----- | 9'- 11" | 40 | 30 | 43.990 | 1.013 | 111.480 | 11'- 6" | 6 | 11'- 2" | 6 | 11'- 2" | 1 | 7 | 1.932 | 90.358 | 1.912 | 67.089 | G |
| 5 | 3 | 3 | 12" | 4'- 4" | 0'- 4 3/8" | 2'- 4 1/8" | 0'- 5 7/8" | 0'- 3 7/8" | 11'- 7 7/8" | ----- | 11'- 11" | 48 | 12 | 44.316 | 0.891 | 99.200 | 13'- 6" | 6 | 13'- 2" | 6 | 13'- 2" | 1 | 4 | 1.837 | 92.020 | 1.843 | 79.105 | A |
| 5 | 4 | 3 | 12" | 4'- 4" | 0'- 4 3/8" | 2'- 4 1/8" | 0'- 5 7/8" | 0'- 3 7/8" | 11'- 7 7/8" | ----- | 11'- 11" | 48 | 18 | 46.434 | 0.964 | 105.464 | 13'- 6" | 6 | 13'- 2" | 6 | 13'- 2" | 1 | 5 | 1.936 | 95.471 | 1.935 | 79.105 | C |
| 5 | 5 | 4 | 12" | 4'- 4 1/8" | 0'- 4 1/2" | 2'- 4 1/4" | 0'- 5 7/8" | 0'- 3 3/4" | 11'- 8" | ----- | 11'- 11" | 48 | 24 | 48.552 | 1.037 | 118.687 | 13'- 6" | 6 | 13'- 2" | 6 | 13'- 2" | 1 | 6 | 2.035 | 98.923 | 2.028 | 79.105 | E |
| 5 | 6 | 4 | 12" | 4'- 4 1/8" | 0'- 4 1/2" | 2'- 4 1/4" | 0'- 5 7/8" | 0'- 3 3/4" | 11'- 8" | ----- | 11'- 11" | 48 | 30 | 50.670 | 1.111 | 124.951 | 13'- 6" | 6 | 13'- 2" | 6 | 13'- 2" | 1 | 7 | 2.134 | 102.374 | 2.121 | 79.105 | G |
| 5 | 7 | 4 | 12" | 4'- 4 1/8" | 0'- 4 1/2" | 2'- 4 1/4" | 0'- 5 7/8" | 0'- 3 3/4" | 11'- 8" | ----- | 11'- 11" | 48 | 36 | 52.788 | 1.185 | 131.215 | 13'- 6" | 6 | 13'- 2" | 6 | 13'- 2" | 1 | 8 | 2.233 | 105.825 | 2.214 | 79.105 | I |
| 6 | 4 | 4 | 12" | 5'- 1 3/4" | 0'- 4 1/2" | 2'- 9" | 0'- 5 7/8" | 0'- 3 3/4" | 13'- 8" | ----- | 13'- 11" | 56 | 18 | 53.114 | 1.061 | 129.872 | 15'- 6" | 6 | 15'- 2" | 6 | 15'- 2" | 1 | 5 | 2.138 | 107.487 | 2.144 | 91.121 | C |
| 6 | 5 | 4 | 12" | 5'- 1 3/4" | 0'- 4 1/2" | 2'- 9" | 0'- 5 7/8" | 0'- 3 3/4" | 13'- 8" | ----- | 13'- 11" | 56 | 24 | 55.232 | 1.135 | 136.324 | 15'- 6" | 6 | 15'- 2" | 6 | 15'- 2" | 1 | 6 | 2.237 | 110.939 | 2.237 | 91.121 | E |
| 6 | 6 | 4 | 12" | 5'- 1 3/4" | 0'- 4 1/2" | 2'- 9" | 0'- 5 7/8" | 0'- 3 3/4" | 13'- 8" | ----- | 13'- 11" | 56 | 30 | 57.350 | 1.208 | 142.777 | 15'- 6" | 6 | 15'- 2" | 6 | 15'- 2" | 1 | 7 | 2.336 | 114.390 | 2.330 | 91.121 | G |
| 6 | 7 | 4 | 12" | 5'- 1 3/4" | 0'- 4 1/2" | 2'- 9" | 0'- 5 7/8" | 0'- 3 3/4" | 13'- 8" | ----- | 13'- 11" | 56 | 36 | 59.468 | 1.282 | 149.229 | 15'- 6" | 6 | 15'- 2" | 6 | 15'- 2" | 1 | 8 | 2.435 | 117.841 | 2.423 | 91.121 | I |
| 6 | 8 | 4 | 12" | 5'- 1 3/4" | 0'- 4 1/2" | 2'- 9" | 0'- 5 7/8" | 0'- 3 3/4" | 13'- 8" | ----- | 13'- 11" | 56 | 42 | 61.586 | 1.355 | 164.914 | 15'- 6" | 6 | 15'- 2" | 6 | 15'- 2" | 1 | 9 | 2.534 | 121.293 | 2.515 | 91.121 | K |
| 7 | 4 | 4 | 12" | 5'- 11 3/8" | 0'- 4 1/2" | 3'- 1 7/8" | 0'- 5 7/8" | 0'- 3 3/4" | 15'- 8 1/8" | ----- | 15'- 11" | 64 | 18 | 59.794 | 1.158 | 152.712 | 17'- 6" | 6 | 17'- 2" | 6 | 17'- 2" | 1 | 5 | 2.341 | 119.503 | 2.353 | 103.137 | C |
| 7 | 6 | 4 | 12" | 5'- 11 3/8" | 0'- 4 1/2" | 3'- 1 7/8" | 0'- 5 7/8" | 0'- 3 3/4" | 15'- 8 1/8" | ----- | 15'- 11" | 64 | 30 | 64.030 | 1.305 | 172.209 | 17'- 6" | 6 | 17'- 2" | 6 | 17'- 2" | 1 | 7 | 2.539 | 126.406 | 2.539 | 103.137 | G |
| 7 | 8 | 4 | 12" | 5'- 11 3/8" | 0'- 4 1/2" | 3'- 1 7/8" | 0'- 5 7/8" | 0'- 3 3/4" | 15'- 8 1/8" | ----- | 15'- 11" | 64 | 42 | 68.266 | 1.452 | 186.929 | 17'- 6" | 6 | 17'- 2" | 6 | 17'- 2" | 1 | 9 | 2.736 | 133.309 | 2.724 | 103.137 | K |
| 7 | 10 | 4 | 11" | 5'- 11 3/8" | 0'- 4 1/2" | 3'- 1 7/8" | 0'- 5 7/8" | 0'- 3 3/4" | 15'- 8 1/8" | ----- | 15'- 11" | 64 | 54 | 72.502 | 1.598 | 218.493 | 17'- 6" | 6 | 17'- 2" | 6 | 17'- 2" | 1 | 11 | 2.934 | 140.211 | 2.910 | 103.137 | O |
| 8 | 4 | 4 | 10" | 6'- 8 3/4" | 0'- 4 3/4" | 3'- 6 3/8" | 0'- 6 1/4" | 0'- 4" | 17'- 7 7/8" | ----- | 17'- 11" | 72 | 18 | 66.474 | 1.282 | 189.026 | 19'- 6" | 6 | 19'- 2" | 6 | 19'- 2" | 1 | 5 | 2.534 | 131.519 | 2.553 | 115.153 | C |
| 8 | 6 | 4 | 10" | 6'- 8 5/8" | 0'- 5" | 3'- 6 1/8" | 0'- 6 1/2" | 0'- 4 1/4" | 17'- 7 7/8" | ----- | 17'- 11" | 72 | 30 | 70.710 | 1.457 | 200.594 | 19'- 6" | 6 | 19'- 2" | 6 | 19'- 2" | 1 | 7 | 2.723 | 138.422 | 2.730 | 115.153 | G |
| 8 | 8 | 4 | 9" | 6'- 8 1/2" | 0'- 5 1/4" | 3'- 5 7/8" | 0'- 6 7/8" | 0'- 4 1/2" | 17'- 7 7/8" | ----- | 18'- 0" | 72 | 42 | 74.946 | 1.631 | 230.003 | 19'- 6" | 6 | 19'- 2" | 6 | 19'- 2" | 1 | 9 | 2.912 | 145.325 | 2.906 | 115.153 | K |
| 8 | 10 | 4 | 10" | 6'- 8 3/8" | 0'- 5 1/2" | 3'- 5 5/8" | 0'- 7 1/4" | 0'- 4 3/4" | 17'- 7 7/8" | ----- | 18'- 0" | 72 | 54 | 79.182 | 1.805 | 258.190 | 19'- 6" | 6 | 19'- 2" | 6 | 19'- 2" | 1 | 11 | 3.101 | 152.227 | 3.083 | 115.153 | O |
| 9 | 4 | 4 | 9" | 7'- 5 7/8" | 0'- 5 3/4" | 3'- 10 1/4" | 0'- 7 5/8" | 0'- 5" | 19'- 8" | ----- | 20'- 0" | 80 | 18 | 73.154 | 1.503 | 250.774 | 21'- 6" | 6 | 21'- 2" | 6 | 21'- 2" | 1 | 5 | 2.711 | 143.535 | 2.737 | 127.169 | D |
| 9 | 6 | 4 | 9" | 7'- 5 3/4" | 0'- 6" | 3'- 10" | 0'- 8" | 0'- 5 1/4" | 19'- 8" | ----- | 20'- 0" | 80 | 30 | 77.390 | 1.682 | 251.871 | 21'- 6" | 6 | 21'- 2" | 6 | 21'- 2" | 1 | 7 | 2.899 | 150.438 | 2.912 | 127.169 | H |
| 9 | 8 | 4 | 9" | 7'- 5 5/8" | 0'- 6 1/4" | 3'- 9 3/4" | 0'- 8 3/8" | 0'- 5 1/2" | 19'- 8" | ----- | 20'- 1" | 80 | 42 | 81.626 | 1.860 | 266.494 | 21'- 6" | 6 | 21'- 2" | 6 | 21'- 2" | 1 | 9 | 3.086 | 157.341 | 3.087 | 127.169 | L |
| 9 | 10 | 4 | 9" | 7'- 5 5/8" | 0'- 6 1/4" | 3'- 9 3/4" | 0'- 8 3/8" | 0'- 5 1/2" | 19'- 8" | ----- | 20'- 1" | 80 | 54 | 85.862 | 2.005 | 301.091 | 21'- 6" | 6 | 21'- 2" | 6 | 21'- 2" | 1 | 11 | 3.284 | 164.243 | 3.272 | 127.169 | P |
| 9 | 12 | 4 | 8" | 7'- 5 1/2" | 0'- 6 1/2" | 3'- 9 1/2" | 0'- 8 5/8" | 0'- 5 3/4" | 19'- 8" | ----- | 20'- 1" | 80 | 66 | 90.098 | 2.179 | 363.528 | 21'- 6" | 6 | 21'- 2" | 6 | 21'- 2" | 1 | 13 | 3.471 | 171.146 | 3.447 | 127.169 | T |
| 10 | 4 | 4 | 8" | 8'- 3 1/8" | 0'- 6 1/2" | 4'- 2 1/4" | 0'- 8 5/8" | 0'- 5 3/4" | 21'- 8" | ----- | 22'- 1" | 88 | 18 | 79.834 | 1.715 | 295.784 | 23'- 6" | 6 | 23'- 2" | 6 | 23'- 2" | 1 | 5 | 2.870 | 155.551 | 2.902 | 139.185 | D |
| 10 | 6 | 5 | 9" | 8'- 3" | 0'- 6 7/8" | 4'- 2" | 0'- 9 1/8" | 0'- 6" | 21'- 8" | ----- | 22'- 1" | 88 | 30 | 84.070 | 1.896 | 317.091 | 23'- 6" | 6 | 23'- 2" | 6 | 23'- 2" | 1 | 7 | 3.055 | 162.454 | 3.075 | 139.185 | H |
| 10 | 8 | 5 | 9" | 8'- 2 7/8" | 0'- 7 1/8" | 4'- 1 3/4" | 0'- 9 1/2" | 0'- 6 1/4" | 21'- 8" | ----- | 22'- 1" | 88 | 42 | 88.306 | 2.077 | 334.039 | 23'- 6" | 6 | 23'- 2" | 6 | 23'- 2" | 1 | 9 | 3.241 | 169.357 | 3.249 | 139.185 | L |
| 10 | 10 | 5 | 10" | 8'- 2 3/4" | 0'- 7 3/8" | 4'- 1 1/2" | 0'- 9 7/8" | 0'- 6 1/2" | 21'- 8" | ----- | 22'- 1" | 88 | 54 | 92.542 | 2.258 | 344.909 | 23'- 6" | 6 | 23'- 2" | 6 | 23'- 2" | 1 | 11 | 3.427 | 176.259 | 3.422 | 139.185 | P |
| 10 | 12 | 5 | 10" | 8'- 2 3/4" | 0'- 7 3/8" | 4'- 1 1/2" | 0'- 9 7/8" | 0'- 6 1/2" | 21'- 8" | ----- | 22'- 1" | 88 | 66 | 96.778 | 2.402 | 403.179 | 23'- 6" | 6 | 23'- 2" | 6 | 23'- 2" | 1 | 13 | 3.625 | 183.162 | 3.608 | 139.185 | T |
| 12 | 6 | 5 | 9" | 9'- 9 3/8" | 0'- 8 5/8" | 4'- 9 7/8" | 0'- 11 5/8" | 0'- 7 3/4" | 25'- 8 1/8" | ----- | 26'- 2" | 104 | 30 | 97.430 | 2.423 | 407.615 | 27'- 6" | 6 | 27'- 2" | 6 | 27'- 2" | 1 | 7 | 3.326 | 186.486 | 3.359 | 163.217 | H |
| 12 | 8 | 5 | 9" | 9'- 9 1/4" | 0'- 8 7/8" | 4'- 9 5/8" | 1'- 0" | 0'- 8" | 25'- 8 1/8" | ----- | 26'- 3" | 104 | 42 | 101.666 | 2.610 | 420.889 | 27'- 6" | 6 | 27'- 2" | 6 | 27'- 2" | 1 | 9 | 3.509 | 193.389 | 3.530 | 163.217 | L |
| 12 | 10 | 5 | 9" | 9'- 9 1/8" | 0'- 9 1/8" | 4'- 9 3/8" | 1'- 1/4" | 0'- 8 1/4" | 25'- 8 1/8" | ----- | 26'- 3" | 104 | 54 | 105.902 | 2.797 | 434.886 | 27'- 6" | 6 | 27'- 2" | 6 | 27'- 2" | 1 | 11 | 3.691 | 200.291 | 3.700 | 163.217 | P |
| 12 | 12 | 5 | 9" | 9'- 9 1/8" | 0'- 9 1/8" | 4'- 9 3/8" | 1'- 1/4" | 0'- 8 1/4" | 25'- 8 1/8" | ----- | 26'- 3" | 104 | 66 | 110.138 | 2.938 | 531.734 | 27'- 6" | 6 | 27'- 2" | 6 | 27'- 2" | 1 | 13 | 3.889 | 207.194 | 3.885 | 163.217 | T |

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

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| SPECIFICATION REFERENCE | <h2>DOUBLE BOX CULVERTS</h2> <h3>5 TO 10 FT. FILLS</h3> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p> |  ROAD AND BRIDGE STANDARDS | |
| | | REVISION DATE | SHEET 2 OF 2 |
| | | 07/11 | 1003.10 |