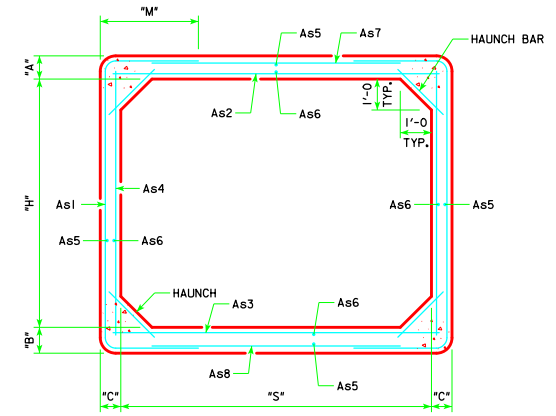
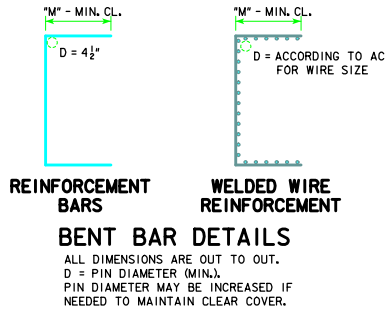


ENGL1SHSIGNPRECASTCULVERTS.DGN - PRCB 10-13 - THIS SHEET ISSUED 01-13.

| VARIABLE DIMENSIONS AND QUANTITIES FOR 10' SPAN BARREL SECTIONS |       |           |       |    |    |    |    |    |  |         |        |      |        |      |        |      |                |         |        |      |
|---|-------|-----------|-------|----|----|----|----|----|--|---------|--------|------|--------|------|--------|------|----------------|---------|--------|------|
| DIMENSIONS  |       |           |       |    |    |    |    |    | REINFORCEMENT REQUIREMENTS (IN <sup>2</sup> /FT) |         |        |      |        |      |        |      | WEIGHT (LB/FT) |         |        |      |
| SIZE  | CLASS | f'c (ksi) | FILL  | S  | H  | A  | B  | C  | As1  |         | As2    |      | As3    |      | As4    |      |                | As7/As8 |        |      |
|   |       |           |       |    |    |    |    |    | AREA   | LENGTH  | M      | AREA | LENGTH | AREA | LENGTH | AREA | LENGTH         | AREA    | LENGTH |      |
| 10x4  | 1     | 5.0       | 2-11  | 10 | 4  | 9  | 10 | 8  | 0.72   | 10'-9"  | 2'-10" | 0.62 | 10'-6" | 0.63 | 10'-6" | 0.20 | 4'-6"          | 0.24    | 7'-4"  | 3795 |
|   | 2     | 5.0       | 12-21 | 10 | 4  | 9  | 10 | 8  | 1.24   | 13'-9"  | 4'-4"  | 1.04 | 10'-6" | 1.05 | 10'-6" | 0.20 | 4'-6"          | 0.24    | 7'-0"  | 3795 |
|   | 3     | 5.0       | 22-25 | 10 | 4  | 10 | 11 | 9  | 1.23   | 12'-1"  | 3'-5"  | 1.03 | 10'-6" | 1.07 | 10'-6" | 0.22 | 4'-6"          | 0.27    | 9'-0"  | 4220 |
| 10x5  | 1     | 5.0       | 2-11  | 10 | 5  | 9  | 10 | 8  | 0.64   | 11'-9"  | 2'-10" | 0.69 | 10'-6" | 0.71 | 10'-6" | 0.20 | 5'-6"          | 0.24    | 7'-4"  | 3995 |
|   | 2     | 5.0       | 12-22 | 10 | 5  | 9  | 10 | 8  | 1.15   | 12'-5"  | 3'-2"  | 1.20 | 10'-6" | 1.21 | 10'-6" | 0.20 | 5'-6"          | 0.24    | 9'-0"  | 3995 |
|   | 3     | 5.0       | 23-25 | 10 | 5  | 10 | 11 | 9  | 1.09   | 12'-7"  | 3'-2"  | 1.13 | 10'-6" | 1.19 | 10'-6" | 0.22 | 5'-6"          | 0.27    | 9'-0"  | 4445 |
| 10x6  | 1     | 5.0       | 2-11  | 10 | 6  | 9  | 10 | 8  | 0.58   | 12'-9"  | 2'-10" | 0.74 | 10'-6" | 0.76 | 10'-6" | 0.20 | 6'-6"          | 0.24    | 7'-4"  | 4195 |
|   | 2     | 5.0       | 12-22 | 10 | 6  | 9  | 10 | 8  | 1.03   | 13'-1"  | 3'-0"  | 1.28 | 10'-6" | 1.30 | 10'-6" | 0.20 | 6'-6"          | 0.24    | 9'-0"  | 4195 |
|   | 3     | 5.0       | 23-25 | 10 | 6  | 10 | 11 | 9  | 0.98   | 13'-3"  | 3'-0"  | 1.21 | 10'-6" | 1.27 | 10'-6" | 0.22 | 6'-6"          | 0.24    | 9'-0"  | 4670 |
| 10x7  | 1     | 5.0       | 2-11  | 10 | 7  | 9  | 10 | 8  | 0.54   | 13'-9"  | 2'-10" | 0.78 | 10'-6" | 0.81 | 10'-6" | 0.20 | 7'-6"          | 0.24    | 7'-4"  | 4395 |
|   | 2     | 5.0       | 12-22 | 10 | 7  | 9  | 10 | 8  | 0.94   | 13'-9"  | 2'-10" | 1.34 | 10'-6" | 1.36 | 10'-6" | 0.20 | 7'-6"          | 0.24    | 9'-0"  | 4395 |
|   | 3     | 5.0       | 23-25 | 10 | 7  | 10 | 11 | 9  | 0.90   | 13'-11" | 2'-10" | 1.26 | 10'-6" | 1.34 | 10'-6" | 0.22 | 7'-6"          | 0.27    | 9'-0"  | 4895 |
| 10x8  | 1     | 5.0       | 2-10  | 10 | 8  | 9  | 10 | 8  | 0.50   | 14'-9"  | 2'-10" | 0.76 | 10'-6" | 0.80 | 10'-6" | 0.20 | 8'-6"          | 0.24    | 7'-4"  | 4595 |
|   | 2     | 5.0       | 11-21 | 10 | 8  | 9  | 10 | 8  | 0.83   | 14'-9"  | 2'-10" | 1.33 | 10'-6" | 1.36 | 10'-6" | 0.20 | 8'-6"          | 0.24    | 9'-0"  | 4595 |
|   | 3     | 5.0       | 22-25 | 10 | 8  | 10 | 11 | 8  | 0.83   | 14'-11" | 2'-10" | 1.41 | 10'-6" | 1.50 | 10'-6" | 0.20 | 8'-6"          | 0.27    | 9'-0"  | 4875 |
| 10x9  | 1     | 5.0       | 2-11  | 10 | 9  | 9  | 10 | 8  | 0.46   | 15'-9"  | 2'-10" | 0.83 | 10'-6" | 0.88 | 10'-6" | 0.20 | 9'-6"          | 0.24    | 7'-4"  | 4795 |
|   | 2     | 5.0       | 12-21 | 10 | 9  | 9  | 10 | 8  | 0.78   | 17'-1"  | 3'-6"  | 1.35 | 10'-6" | 1.39 | 10'-6" | 0.20 | 9'-6"          | 0.24    | 7'-0"  | 4795 |
|   | 3     | 5.0       | 22-25 | 10 | 9  | 10 | 11 | 8  | 0.79   | 15'-11" | 2'-10" | 1.43 | 10'-6" | 1.52 | 10'-6" | 0.20 | 9'-6"          | 0.27    | 9'-0"  | 5075 |
| 10x10   | 1     | 5.0       | 2-11  | 10 | 10 | 9  | 10 | 8  | 0.46   | 17'-1"  | 3'-0"  | 0.85 | 10'-6" | 0.91 | 10'-6" | 0.20 | 10'-6"         | 0.24    | 7'-0"  | 4995 |
|   | 2     | 5.0       | 12-21 | 10 | 10 | 9  | 10 | 8  | 0.76   | 18'-1"  | 3'-6"  | 1.37 | 10'-6" | 1.41 | 10'-6" | 0.24 | 10'-6"         | 0.24    | 7'-0"  | 4995 |
|   | 3     | 5.0       | 22-25 | 10 | 10 | 10 | 11 | 9  | 0.75   | 18'-5"  | 3'-7"  | 1.35 | 10'-6" | 1.43 | 10'-6" | 0.22 | 10'-6"         | 0.27    | 7'-0"  | 5570 |
| 10x11   | 1     | 5.0       | 2-9   | 10 | 11 | 9  | 10 | 8  | 0.46   | 18'-1"  | 3'-0"  | 0.85 | 10'-6" | 0.85 | 10'-6" | 0.28 | 11'-6"         | 0.24    | 7'-0"  | 5195 |
|   | 2     | 5.0       | 10-16 | 10 | 11 | 9  | 10 | 8  | 0.63   | 19'-9"  | 3'-10" | 1.12 | 10'-6" | 1.17 | 10'-6" | 0.34 | 11'-6"         | 0.24    | 5'-10" | 5195 |
|   | 3     | 5.0       | 17-20 | 10 | 11 | 9  | 10 | 9  | 0.68   | 20'-1"  | 4'-0"  | 1.24 | 10'-6" | 1.29 | 10'-6" | 0.32 | 11'-6"         | 0.24    | 5'-10" | 5510 |
| 10x12   | 1     | 5.0       | 21-25 | 10 | 11 | 10 | 11 | 11 | 0.72   | 19'-7"  | 3'-8"  | 1.19 | 10'-6" | 1.28 | 10'-6" | 0.27 | 11'-6"         | 0.27    | 7'-0"  | 6435 |
|   | 2     | 5.0       | 2-12  | 10 | 12 | 9  | 10 | 8  | 0.54   | 21'-3"  | 4'-1"  | 0.93 | 10'-6" | 1.00 | 10'-6" | 0.41 | 12'-6"         | 0.24    | 5'-2"  | 5395 |
|   | 3     | 5.0       | 13-19 | 10 | 12 | 9  | 10 | 10 | 0.61   | 21'-7"  | 4'-3"  | 1.12 | 10'-6" | 1.18 | 10'-6" | 0.39 | 12'-6"         | 0.24    | 5'-4"  | 6075 |
|   |       |           |       |    |    |    |    |    | 0.69   | 22'-1"  | 4'-5"  | 1.12 | 10'-6" | 1.22 | 10'-6" | 0.36 | 12'-6"         | 0.27    | 5'-8"  | 7050 |



TYPICAL BARREL SECTION



**NOTES:**

- DIMENSIONS "A", "B" & "C" LISTED IN THE BAR LIST ARE IN INCHES.
- LONGITUDINAL REINFORCEMENT DENOTED AS As5 AND As6 MUST BE PLACED IN SLAB, FLOOR, AND WALLS AND MUST BE 0.06 IN<sup>2</sup>/FT MINIMUM.
- ALL REINFORCEMENT LENGTHS AND AREAS ARE MINIMUM REQUIREMENTS.
- IF REINFORCING BARS ARE SUBSTITUTED FOR WELDED WIRE REINFORCING, DIMENSION "M" AND/OR LENGTH OF THE As7/As8 REINFORCEMENT SHALL BE ADJUSTED TO ENSURE ADEQUATE LAP LENGTH IS PROVIDED.
- WEIGHT OF SECTIONS ASSUMES A DENSITY OF 150 PCF AND SQUARED CORNERS.
- SEE PRCB G1-13 AND G2-13 FOR ADDITIONAL INFORMATION AND NOTES.

|                      |                                 |   |
|----------------------|---------------------------------|---|
| LATEST REVISION DATE | <br>APPROVED BY BRIDGE ENGINEER | <br>Iowa Department of Transportation<br>Highway Division   |
|                      |                                 | STANDARD DESIGN<br><b>SINGLE PRECAST REINFORCED<br/>                 CONCRETE BOX CULVERTS</b><br>JANUARY, 2013 |
|                      |                                 | <b>CULVERT BARREL<br/>                 DETAILS</b><br>10' SPAN BARREL SECTIONS                                  |

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