

MINIMUM SHEET THICKNESS AND DESIGN DATA

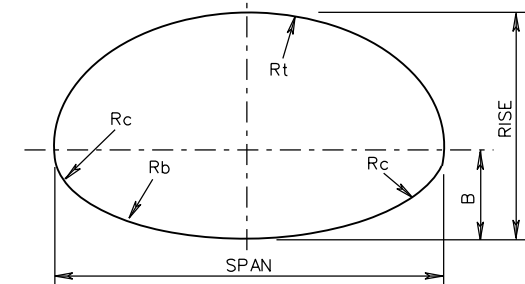
| PIPE ARCH DIMENSION              |                                    |                 |                             |              | MINIMUM SHEET THICKNESS REQUIRED<br>INCHES (GAUGE) | MAXIMUM COVER HEIGHT IN FEET         |                                      |
|----------------------------------|------------------------------------|-----------------|-----------------------------|--------------|--|--------------------------------------|--------------------------------------|
| NOMINAL SIZE SPAN-RISE<br>INCHES | EQUIVALENT PIPE DIAMETER<br>INCHES | AREA<br>SQ. FT. | B<br>INCHES<br>(SEE NOTE 9) | Rc<br>INCHES |  | MAXIMUM CORNER PRESSURE              |                                      |
|                                  |                                    |                 |                             |              |  | 4000<br>LBS./SQ. FT.<br>(SEE NOTE 4) | 6000<br>LBS./SQ. FT.<br>(SEE NOTE 6) |
| 2 2/3" x 1/2" CORRUGATIONS       |                                    |                 |                             |              |  |                                      |                                      |
| 17 x 13                          | 15                                 | 1.1             | 4 1/8                       | 3"           | 0.060 (16)   | 11                                   | 17                                   |
| 21 x 15                          | 18                                 | 1.6             | 4 7/8                       | 3"           | 0.060 (16)   | 9                                    | 14                                   |
| 24 x 18                          | 21                                 | 2.2             | 5 5/8                       | 3"           | 0.060 (16)   | 8                                    | 12                                   |
| 28 x 20                          | 24                                 | 2.8             | 6 1/2                       | 3"           | 0.075 (14)   | 7                                    | 10                                   |
| 35 x 24                          | 30                                 | 4.4             | 8 1/8                       | 3"           | 0.075 (14)   | 5                                    | 8                                    |
| 42 x 29 ⊗                        | 36                                 | 6.4             | 9 3/4                       | 3 1/2"       | 0.105 (12)   | 5                                    | 8                                    |
| 49 x 33 ⊗                        | 42                                 | 8.7             | 11 3/8                      | 4"           | 0.105 (12)   | 5                                    | 8                                    |
| 57 x 38 ⊗                        | 48                                 | 11.4            | 13                          | 5"           | 0.135 (10)   | 5                                    | 8                                    |
| 64 x 43 ⊗                        | 54                                 | 14.3            | 14 5/8                      | 6"           | 0.135 (10)   | 6                                    | 9                                    |
| 71 x 47 ⊗                        | 60                                 | 17.6            | 16 1/4                      | 7"           | 0.164 (8)  | 6                                    | 9                                    |
| 3" x 1" CORRUGATIONS             |                                    |                 |                             |              |  |                                      |                                      |
| 40 x 31 ⊗                        | 36                                 | 6.4             | —                           | 5"           | 0.060 (16)   | 8                                    | 12                                   |
| 46 x 36 ⊗                        | 42                                 | 8.7             | —                           | 6"           | 0.060 (16)   | 8                                    | 12                                   |
| 53 x 41 ⊗                        | 48                                 | 11.4            | 15 1/4                      | 7"           | 0.060 (16)   | 8                                    | 13                                   |
| 60 x 46 ⊗                        | 54                                 | 14.3            | 20 1/2                      | 8"           | 0.075 (14)   | 8                                    | 13                                   |
| 66 x 51 ⊗                        | 60                                 | 17.6            | 22 3/4                      | 9"           | 0.075 (14)   | 9                                    | 13                                   |
| 73 x 55                          | 66                                 | 22.0            | 25 5/8                      | 12"          | 0.105 (12)   | 11                                   | 16                                   |
| 81 x 59                          | 72                                 | 26.0            | 23 3/4                      | 14"          | 0.105 (12)   | 11                                   | 17                                   |
| 87 x 63                          | 78                                 | 31.0            | 25 3/4                      | 14"          | 0.135 (10)   | 10                                   | 16                                   |
| 95 x 67                          | 84                                 | 35.0            | 27 3/4                      | 16"          | 0.135 (10)   | 11                                   | 16                                   |
| 103 x 71                         | 90                                 | 40.0            | 29 3/4                      | 16"          | 0.164 (8)  | 10                                   | 15                                   |
| 112 x 75                         | 96                                 | 46.0            | 31 5/8                      | 18"          | 0.164 (8)  | 10                                   | 13                                   |
| 117 x 79                         | 102                                | 52.0            | 33 5/8                      | 18"          | 0.164 (8)  | 10                                   | 11                                   |

⊗ INDICATES PIPE ARCHES FOR WHICH DIMENSIONS FOR EITHER CORRUGATION MAY BE USED WITHIN HEIGHT OF COVER LIMITATIONS.

NOTES:

- COVER HEIGHTS INDICATED IN TABLES ARE FOR FINISHED CONSTRUCTION WHICH MATCH FORMER VDOT ALLOWABLE STRESS DESIGN TABLES. COVER HEIGHTS WERE NOT RE-CALCULATED USING LRFCD
- TO PROTECT PIPE DURING CONSTRUCTION, MINIMUM HEIGHT OF COVER TO BE IN ACCORDANCE WITH TABLE A PRIOR TO ALLOWING CONSTRUCTION TRAFFIC TO CROSS INSTALLATION. THE COVER SHALL EXTEND THE FULL LENGTH OF THE PIPE ARCH. THE APPROACH FILL RAMP IS TO EXTEND A MINIMUM OF 10'(HEIGHT + 1/2 SPAN) ON EACH SIDE OF THE STRUCTURE OR TO THE INTERSECTION WITH A CUT.
- STANDARD MINIMUM FINISHED HEIGHT OF COVER FOR ALL PIPES SHALL BE 2'0" OR 1/8 SPAN, WHICHEVER IS GREATER. IN CASES IN WHICH THESE COVER HEIGHTS CANNOT BE ACHIEVED, AN ABSOLUTE MINIMUM FINISHED COVER HEIGHT OF 1.0' OR 1/8 SPAN, WHICHEVER IS GREATER, WILL BE ALLOWED ONLY IF ALL POSSIBLE MEANS TO OBTAIN THE STANDARD VALUE HAVE BEEN EXHAUSTED.
- SEE STANDARD PB-1 FOR PIPE BEDDING AND BACKFILL REQUIREMENTS.
- THE MAXIMUM HEIGHT OF COVER SHOWN IN THE TABLES IS BASED ON A SOIL MODULUS OF 700 PSI. ALL OTHER DESIGN CRITERIA ARE IN ACCORDANCE WITH THE AASHTO SPECIFICATIONS AND VDOT MODIFICATIONS FOR SOIL CORRUGATED METAL STRUCTURE INTERACTION SYSTEMS.
- WHEN DESIGN HEIGHT OF COVER REQUIRES THE USE OF THIS CATEGORY OF PIPE BEDDING FOUNDATION AND BACKFILL MUST BE APPROVED BY THE ENGINEER.
- LAPPED LONGITUDINAL SEAMS SHALL BE STAGGERED SO AS TO ALTERNATE ON EACH SIDE OF THE CENTER OF ARCH TOP BY APPROXIMATELY 15 PERCENT OF THE PERIPHERY.
- A TOLERANCE OF PLUS, OR MINUS, 1" IS PERMISSIBLE FOR DIMENSIONS OF SPAN, RISE, AND CORNER RADIUS.
- SPAN OF PIPE ARCHES IS MEASURED "B" INCHES ABOVE THE INVERT. SEE DIAGRAM BELOW FOR ILLUSTRATION OF "B" DIMENSION.

| PIPE DIAMETER | MINIMUM COVER HEIGHT DURING CONSTRUCTION (SEE NOTE 2) |
|---------------|---|
| 17" TO 35"    | 18"   |
| 42" AND ABOVE | 1/2 SPAN  |



SPECIFICATION REFERENCE

232  
302

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

**CORRUGATED ALUMINUM ALLOY PIPE ARCH**  
**HEIGHT OF COVER TABLE FOR HL-93 LIVE LOAD**

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

ROAD AND BRIDGE STANDARDS

REVISION DATE  
07/16

SHEET 6 OF 18

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