| REG | STATE | PROJECT | SHEET NO. |
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# STRUCTURAL PLATE PIPE ARCH CULVERT

## FILL HEIGHT AND METAL THICKNESS TABLE

### STEEL

152 x 51 CORRUGATIONS

2 Bolts per corrugation

| PIPE ARCH SIZE SPAN X RISE | CORNER RADIUS | MINIMUM COVER | METAL THICKNESS | MAX. FILL HEIGHT ABOVE TOP OF PIPE METERS |
|---|---|---|---|---|
| 1850 x 1400 | 460 | 300 | 2.82 | 4.9 |
| 1930 x 1450 | 460 | 300 | 2.82 | 4.6 |
| 2060 x 1500 | 460 | 300 | 2.82 | 4.3 |
| 2130 x 1550 | 460 | 300 | 2.82 | 4.3 |
| 2210 x 1600 | 460 | 300 | 2.82 | 4.0 |
| 2340 x 1650 | 460 | 300 | 2.82 | 4.0 |
| 2410 x 1700 | 460 | 300 | 2.82 | 3.7 |
| 2490 x 1750 | 460 | 450 | 2.82 | 3.7 |
| 2620 x 1800 | 460 | 450 | 2.82 | 3.4 |
| 2690 x 1850 | 460 | 450 | 2.82 | 3.4 |
| 2840 x 1910 | 460 | 450 | 2.82 | 3.0 |
| 2900 x 1960 | 460 | 450 | 2.82 | 3.0 |
| 2970 x 2010 | 460 | 450 | 2.82 | 3.0 |
| 3120 x 2060 | 460 | 450 | 2.82 | 2.7 |
| 3250 x 2110 | 460 | 450 | 2.82 | 2.7 |
| 3330 x 2160 | 460 | 450 | 2.82 | 2.7 |
| 3480 x 2210 | 460 | 450 | 2.82 | 2.4 |
| 3530 x 2260 | 460 | 450 | 2.82 | 2.4 |
| 3610 x 2310 | 460 | 450 | 2.82 | 2.4 |
| 3760 x 2360 | 460 | 600 | 2.82 | 2.1 |
| 3810 x 2410 | 460 | 600 | 2.82 | 2.1 |
| 3860 x 2460 | 460 | 600 | 2.82 | 2.1 |
| 3910 x 2540 | 460 | 600 | 2.82 | 1.8 |
| 4090 x 2570 | 460 | 600 | 2.82 | 1.8 |
| 4240 x 2620 | 460 | 600 | 2.82 | 1.8 |
| 4290 x 2670 | 460 | 600 | 2.82 | 1.5 |
| 4340 x 2720 | 460 | 600 | 2.82 | 1.5 |
| 4040 x 2840 | 790 | 750 | 2.82 | 3.7 |
| 4110 x 2900 | 790 | 750 | 2.82 | 3.7 |
| 4270 x 2950 | 790 | 750 | 2.82 | 3.7 |
| 4320 x 3000 | 790 | 750 | 2.82 | 3.7 |
| 4390 x 3050 | 790 | 750 | 2.82 | 3.4 |
| 4550 x 3100 | 790 | 750 | 2.82 | 3.4 |
| 4670 x 3150 | 790 | 750 | 2.82 | 3.4 |
| 4750 x 3200 | 790 | 750 | 2.82 | 3.4 |
| 4830 x 3250 | 790 | 750 | 2.82 | 3.0 |
| 4950 x 3300 | 790 | 750 | 2.82 | 3.0 |
| 5030 x 3350 | 790 | 750 | 2.82 | 3.0 |
| 5180 x 3400 | 790 | 750 | 2.82 | 3.0 |
| 5230 x 3450 | 790 | 750 | 2.82 | 3.0 |
| 5310 x 3510 | 790 | 750 | 2.82 | 2.7 |
| 5460 x 3560 | 790 | 750 | 2.82 | 2.7 |
| 5510 x 3610 | 790 | 750 | 2.82 | 2.7 |
| 5660 x 3660 | 790 | 750 | 2.82 | 2.7 |
| 5720 x 3710 | 790 | 750 | 2.82 | 2.7 |
| 5870 x 3760 | 790 | 750 | 3.56 | 2.4 |
| 5940 x 3810 | 790 | 750 | 3.56 | 2.4 |
| 5990 x 3860 | 790 | 750 | 3.56 | 2.4 |
| 6070 x 3910 | 790 | 750 | 3.56 | 2.4 |
| 6220 x 3960 | 790 | 750 | 3.56 | 2.1 |
| 6270 x 4010 | 790 | 750 | 3.56 | 2.1 |

### ALUMINUM

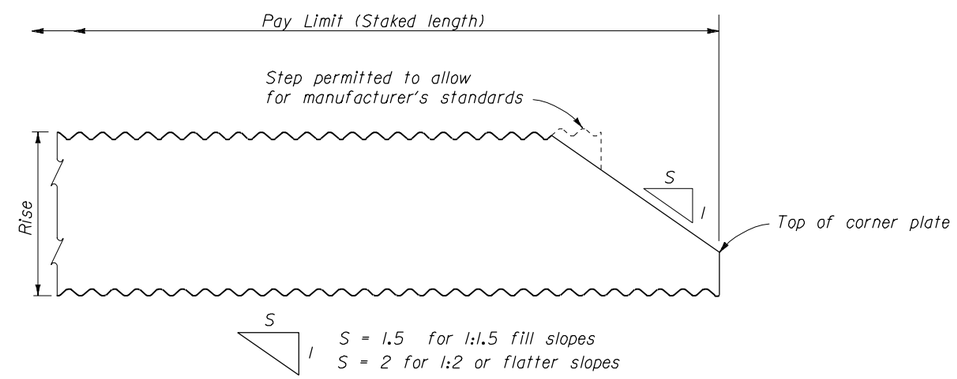
230 x 64 CORRUGATIONS

4 Bolts per corrugation

| PIPE ARCH SIZE SPAN X RISE | CORNER RADIUS | MINIMUM COVER | METAL THICKNESS | MAX. FILL HEIGHT ABOVE TOP OF PIPE METERS |
|---|---|---|---|---|
| 2010 x 1730 | 805 | 450 | 2.54 | 7.0 |
| 2110 x 1750 | 805 | 450 | 2.54 | 6.7 |
| 2210 x 1800 | 805 | 450 | 2.54 | 6.4 |
| 2360 x 1830 | 805 | 450 | 2.54 | 6.1 |
| 2460 x 1850 | 805 | 525 | 2.54 | 5.8 |
| 2570 x 1910 | 805 | 525 | 2.54 | 5.5 |
| 2690 x 1930 | 805 | 525 | 2.54 | 5.2 |
| 2820 x 1960 | 805 | 600 | 2.54 | 4.9 |
| 2920 x 1980 | 805 | 600 | 2.54 | 4.9 |
| 3020 x 2030 | 805 | 675 | 2.54 | 4.6 |
| 3120 x 2060 | 805 | 675 | 2.54 | 4.6 |
| 3280 x 2080 | 805 | 675 | 2.54 | 4.3 |
| 3380 x 2130 | 805 | 750 | 2.54 | 4.3 |
| 3480 x 2160 | 805 | 750 | 2.54 | 4.0 |
| 3580 x 2180 | 805 | 750 | 2.54 | 4.0 |
| 3730 x 2210 | 805 | 825 | 2.54 | 3.7 |
| 3840 x 2260 | 805 | 825 | 2.54 | 3.7 |
| 3940 x 2290 | 805 | 900 | 2.54 | 3.7 |
| 3990 x 2490 | 805 | 900 | 2.54 | 3.4 |
| 3990 x 2540 | 805 | 900 | 2.54 | 3.4 |
| 4240 x 2570 | 805 | 900 | 2.54 | 3.4 |
| 4240 x 2870 | 805 | 900 | 2.54 | 3.4 |
| 4240 x 2620 | 805 | 900 | 2.54 | 3.4 |
| 4340 x 2920 | 805 | 900 | 2.54 | 3.0 |
| 4470 x 2950 | 805 | 900 | 3.18 | 3.7 |
| 4550 x 3000 | 805 | 900 | 3.18 | 3.4 |
| 4670 x 3050 | 805 | 900 | 3.18 | 3.4 |
| 4750 x 3100 | 805 | 900 | 3.18 | 3.4 |
| 4900 x 3150 | 805 | 900 | 3.18 | 3.0 |
| 4980 x 3200 | 805 | 900 | 3.81 | 3.0 |
| 5110 x 3250 | 805 | 900 | 3.81 | 3.0 |
| 5180 x 3300 | 805 | 900 | 3.81 | 3.0 |
| 5260 x 3350 | 805 | 900 | 3.81 | 3.0 |
| 5410 x 3400 | 805 | 900 | 4.44 | 2.7 |
| 5490 x 3450 | 805 | 900 | 4.44 | 2.7 |
| 5610 x 3510 | 805 | 900 | 4.44 | 2.7 |
| 5690 x 3560 | 805 | 900 | 5.08 | 2.7 |
| 5840 x 3580 | 805 | 900 | 5.08 | 2.7 |
| 5920 x 3630 | 805 | 900 | 5.08 | 2.7 |
| 6050 x 3680 | 805 | 900 | 5.08 | 2.4 |
| 6120 x 3730 | 805 | 900 | 5.08 | 2.4 |
| 6120 x 3810 | 805 | 900 | 5.08 | 2.4 |
| 6350 x 3840 | 805 | 900 | 5.72 | 2.1 |
| 6430 x 3890 | 805 | 900 | 5.72 | 2.1 |
| 6550 x 3940 | 805 | 750 | 5.72 | 2.1 |

NOTES:

1. Unless otherwise shown, dimensions are in millimeters
2. Fabricate the bottom plates one (1) thickness heavier than the side plates but not heavier than 4.32 mm for steel or 4.44 mm for aluminum.
3. Fasten plates with galvanized steel M20 bolts and nuts conforming to AASHTO M167M. Imperial sized ¾ inch bolts and nuts conforming to AASHTO M167 may be used until metric fasteners are available.
4. When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
5. Measure minimum cover from the top of the pipe culvert to the subgrade for flexible pavements, and to the top of the pavement for rigid pavements. Measure maximum fill height from the top of the pipe to the top of the pavement for flexible and rigid pavement.




END TREATMENT DIAGRAM

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

METRIC STANDARD

STRUCTURAL PLATE PIPE ARCH CULVERT

STANDARD APPROVED FOR USE --/----

REVISED: 07/98

STANDARD M603-02

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