③ STEEL ARCH PIPE
68 mm x 13 mm Corrugations

Span mm	Rise mm	R_c* mm	Minimum cover above pipe mm	(H) Maximum Allowable Cover in Meters — Steel Thickness 1.6 mm	2.0 mm	2.8 mm	3.5 mm	4.3 mm
425	325	89	450	1.8	1.8	-	-	-
525	375	105	450	1.8	1.8	-	-	-
600	450	124	450	1.5	1.5	-	-	-
700	500	140	450	1.5	1.5	-	-	-
875	600	175	450	1.5	1.5	-	-	-
1050	725	210	450	1.2	1.2	-	-	-
1225	825	244	450	-	-	1.2	1.2	1.2
1425	950	279	450	-	-	1.2	1.2	1.2
1600	1075	314	450	-	-	1.2	1.2	1.2
1775	1175	349	450	-	-	-	1.2	1.2
1925	1300	384	450	-	-	-	-	1.2
2075	1425	419	450	-	-	-	-	1.2

* R_c is the radius of the lower corners of the arch pipe.

④ STEEL ARCH PIPE
125 mm x 25 mm and 76 mm x 25 mm Corrugations

Span mm	Rise mm	R_c* mm	Minimum cover above pipe mm	(H) Max. Allowable Cover in Meters — Steel Thickness 1.6 mm	2.0 mm	2.8 mm	3.5 mm
1500	1150	476	450	1.8	1.8	-	-
1650	1275	527	450	1.8	1.8	-	-
1825	1375	581	450	2.4	2.4	-	-
2025	1475	530	450	-	2.1	2.1	-
2175	1575	575	450	-	2.1	2.1	-
2375	1675	619	450	-	1.8	1.8	-
2575	1775	664	600	-	-	1.8	-
2800	1875	705	600	-	-	1.5	-
2925	1975	749	600	-	-	1.5	-
3200	2075	794	600	-	-	-	1.5

* R_c is the radius of the lower corners of the arch pipe.

⑤ STRUCTURAL STEEL ARCH PIPE
152 mm x 51 mm Corrugations

Span mm	Rise mm	R_c* mm	Minimum cover above pipe mm	(H) Max. allowable cover in meters — Steel Thickness 2.8 mm	3.5 mm	4.3 mm	5.5 mm
1825	1375	457	450	2.4	-	-	-
2100	1525	457	450	2.1	-	-	-
2375	1675	457	450	1.8	-	-	-
2650	1825	457	600	1.8	-	-	-
2925	1975	457	600	1.5	-	-	-
3275	2125	457	600	1.5	-	-	-
3550	2275	457	600	1.2	-	-	-
3850	2500	457	600	1.2	-	-	-
3975	2800	787	600	1.8	-	-	-
4250	2950	787	600	1.8	-	-	-
4600	3100	787	600	-	1.8	-	-
4875	3250	787	900	-	1.5	-	-
5150	3400	787	900	-	1.5	-	-
5425	3550	787	900	-	-	1.5	-
5775	3700	787	900	-	-	1.2	-
5975	3850	787	900	-	-	1.2	-
6175	3950	787	900	-	-	-	1.2

* R_c is the radius of the lower corners of the arch pipe.

⑥ STRUCTURAL STEEL ROUND PIPE
152 mm x 51 mm Corrugations

Diameter of pipe 'D' mm	Minimum cover above pipe mm	(H) Maximum Allowable Cover in Meters — Steel Thickness 2.8 mm Round	2.8 mm Elongated	3.5 mm Round	3.5 mm Elongated	4.3 mm Round	4.3 mm Elongated	5.5 mm Round	5.5 mm Elongated	6.5 mm Round	6.5 mm Elongated	7.0 mm Round	7.0 mm Elongated
1500	300	10.7	10.7	13.1	15.8	15.5	20.4	-	-	-	-	-	-
1650	300	8.8	9.8	10.7	13.7	12.5	18.6	-	-	-	-	-	-
1800	300	7.6	8.8	8.8	13.1	10.4	17.1	-	-	-	-	-	-
1950	300	6.7	8.2	7.6	12.2	8.8	15.8	-	-	-	-	-	-
2100	300	5.8	7.6	6.7	11.3	7.6	14.6	-	-	-	-	-	-
2250	300	5.5	7.0	6.1	10.4	6.7	13.4	-	-	-	-	-	-
2400	300	4.9	6.7	5.5	9.8	6.1	12.2	-	-	-	-	-	-
2550	600	4.6	6.4	5.2	9.1	5.5	11.0	-	-	-	-	-	-
2850	600	4.3	5.5	4.6	8.2	4.9	9.8	5.5	11.0	-	-	-	-
3000	600	4.0	5.5	4.3	7.9	4.6	9.1	5.2	10.1	-	-	-	-
3150	600	4.0	-	4.0	7.6	4.3	8.8	4.9	9.4	-	-	-	-
3300	600	3.7	-	4.0	7.3	4.3	8.2	4.6	9.1	-	-	-	-
3450	600	3.7	-	4.0	7.0	4.0	7.9	4.3	8.8	-	-	-	-
3600	600	3.7	-	3.7	6.7	4.0	7.9	4.3	8.2	-	-	-	-
3750	600	3.7	-	3.7	6.4	3.7	7.6	4.0	8.2	4.3	8.5	-	-
3900	600	3.4	-	3.7	6.1	3.7	7.3	4.0	7.9	4.0	8.2	-	-
4050	600	3.4	-	3.7	5.8	3.7	7.3	4.0	7.6	4.0	7.9	4.0	8.2
4200	600	3.4	-	3.4	5.8	3.7	7.0	3.7	7.6	4.0	7.6	4.0	7.9
4350	600	3.4	-	3.4	5.5	3.7	7.0	3.7	7.3	3.7	7.6	4.0	7.6
4500	600	3.4	-	3.4	5.2	3.4	7.0	3.7	7.3	3.7	7.3	3.7	7.6

GENERAL NOTES:

The maximum allowable cover values indicated hereon for the various kind of pipe culvert installations are design values based on current Standard and Supplemental Specifications (Class "C" Bedding and other normal conditions).

Unless specified otherwise, the Contractor may choose the type of corrugated pipe and installation to furnish as long as the selection conforms to the limits indicated for the type specified.

Refer to tabulation of culvert installations and other detail project plans as well as appropriate other Standard Road Plans for additional information regarding individual culvert installations.

For culverts shown in elongated column, the installation shall be made in accordance with current Standard and Supplemental Specifications. Minimum allowable cover for roadway culverts H = 600 millimeters.

DESIGN CRITERIA:

These height of cover tables have been prepared from data in the "AASHTO Standard Specifications for Highway Bridges," Section 8 with exceptions only as stated.

W = density of soil = 1920 kilograms per cubic meters.

CIRCULAR CORRUGATED METAL PIPE

(A) Seam strength
(B) Handling and installation strength
(C) Failure of conduit wall (buckling)
(D) Deflection of flattening

K = Soil stiffness factor = 0.55
E' = Modulus of passive earth pressure = 109 megapascals per meter

CORRUGATED METAL ARCH PIPE

Allowable corner pressure 96 kilopascals.

SPECIAL NOTE:

Special installations may be designed to exceed indicated maximum allowable cover by specific modification of one or more of the following conditions:

1. Bedding class
2. Pipe strength (including special design pipe)
3. Type of backfill or cover material
4. Compaction requirements for backfill or cover material
5. Controlled trench width

Where site conditions favor such modifications significant economy may result from special design installations and these should be considered. Special designs shall specify particular modifications of construction requirements or design criteria as applicable. Necessary modifications of normal requirements will not ordinarily be paid for separately but will be included in the price bid for that culvert pipe.

All dimensions given in millimeters unless noted.

M — METRIC VERSION

Iowa Department of Transportation
Project Development Division

STANDARD ROAD PLAN **RF-33**

REVISION: Metric conversion of Standard Road Plan RF-33 no. 1 (dated 2-17-87).

REVISION NO. 1

David P. Little 11-18-94
APPROVED BY DESIGN METHODS ENGINEER

REVISION DATE 03-28-95

DEPTH OF COVER TABLES FOR CORRUGATED PIPE