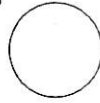


5" x 1" or 3" x 1" Height-of-Cover Limits for Corrugated Steel Pipe



H 20 and H 25 Live Loads

Diameter or Span, Inches	Minimum Cover Inches	Maximum Cover, Feet ⁽²⁾				
		Specified Thickness, Inches				
		0.064	0.079	0.109	0.138	0.168
54	12	56	70	98	126	155
60		50	63	88	114	139
66		46	57	80	103	126
72		42	52	73	95	116
78		39	48	68	87	107
84		36	45	63	81	99
90		33	42	59	76	93
96	12	31	39	55	71	87
102	18	29	37	52	67	82
108			35	49	63	77
114			32	45	58	71
120			30	41	54	66
126				39	50	62
132				36	47	57
138				33	43	53
144	18				39	49

Maximum cover heights shown are for 5" x 1".

To obtain maximum cover for 3" x 1", increase these values by 13%

E 80 Live Loads

Diameter or Span, Inches	Minimum Cover Inches	Maximum Cover, Feet ⁽²⁾				
		Specified Thickness, Inches				
		0.064	0.079	0.109	0.138	0.168
54	18	56	70	98	126	155
60		50	63	88	114	139
66		46	57	80	103	126
72	18	42	52	73	95	116
78	24	39	48	68	87	107
84		36	45	63	81	99
90		33 ⁽¹⁾	42	59	76	93
96	24	31 ⁽¹⁾	39	55	71	87
102	30	29 ⁽¹⁾	37	52	67	82
108			35	49	63	77
114			32 ⁽¹⁾	45	58	71
120	30		30 ⁽¹⁾	41	54	66
126	36			39	50	62
132				36	47	57
138				33 ⁽¹⁾	43	53
144	36				39	49

Maximum cover heights shown are for 5" x 1".

To obtain maximum cover for 3" x 1", increase these values by 13%.

⁽¹⁾ These diameters in these gages require additional minimum cover.

5" x 1" Pipe-Arch Height-of-Cover Limits for Corrugated Steel Pipe



H 20 and H 25 Live Loads

Equivalent Pipe Diameter	Size		Minimum Specified Thickness, Inches*	Minimum Cover Inches	Maximum ⁽⁷⁾ Cover, Feet
	Span x Rise Inches				
72	81 x 59		0.109	18	21
78	87 x 63		0.109	18	20
84	95 x 67		0.109	18	20
90	103 x 71		0.109	18	20
96	112 x 75		0.109	21	20
102	117 x 79		0.109	21	19
108	128 x 83		0.109	24	19
114	137 x 87		0.109	24	19
120	142 x 91		0.138	24	19

E 80 Live Loads

Equivalent Pipe Diameter	Size		Minimum Specified Thickness, Inches*	Minimum Cover Inches	Maximum ⁽⁸⁾ Cover, Feet
	Span x Rise Inches				
72	81 x 59		0.109	30	21
78	87 x 63		0.109	30	18
84	95 x 67		0.109	30	18
90	103 x 71		0.109	36	18
96	112 x 75		0.109	36	18
102	117 x 79		0.109	36	17
108	128 x 83		0.109	42	17
114	137 x 87		0.109	42	17
120	142 x 91		0.138	42	17

* Some 3" x 1" and 5" x 1" minimum gages shown for pipe-arch are due to manufacturing limitations.

Heights-of-cover notes

- These tables are for lock-seam or welded-seam construction. They are not for riveted construction. Consult your CONTECH Sales Representative for height-of-cover tables on riveted pipe.
- These values, where applicable, were calculated using K=0.86 as adopted in the AISI Handbook, Fifth Edition, 1994.
- The span and rise shown in these tables are nominal. Typically the actual rise that forms is greater than the specified nominal. This actual rise is within the tolerances as allowed by the AASHTO & ASTM specifications. The minimum covers shown above take in to consideration this plus tolerance on rise.
- The haunch areas of a pipe-arch are the most critical zone for backfilling. Extra care should be taken to provide good material and compaction to a point above the spring line.
- E 80 minimum cover is measured from top of pipe to bottom of tie.
- H 20 and H 25 minimum cover is measured from top of pipe to bottom of flexible pavement or top of rigid pavement.
- The H 20 and H 25 pipe-arch tables are based on 2 tons per square foot corner bearing pressures.
- The E 80 pipe-arch tables minimum and maximum covers are based on the corner bearing pressures shown. These values may increase or decrease with changes in allowable corner bearing pressures.
- 0.052" is 18 gage.
0.064" is 16 gage.
0.079" is 14 gage.
0.109" is 12 gage.
0.138" is 10 gage.
0.168" is 8 gage.
- For construction loads, see Page 12.
- SmoothCor has same height-of-cover properties as corrugated steel pipe. The exterior shell of SmoothCor is manufactured in either 2.2²/₃" x 1/2" or 3 x 1 corrugations; maximum exterior shell gage is 12.

Installation

Corrugated Steel Pipe

Economies in installation

Corrugated steel drainage structures from CONTECH can be installed quickly and easily. The following recommendations are based on actual experiences covering thousands of installations. While incomplete in detail, they serve to illustrate the relative simplicity with which corrugated steel structures can be installed.

Preparing the bedding

Corrugated steel structures can be installed successfully only on a properly prepared bedding. The bedding should offer uniform support to the pipe and help seat the corrugations in the underlying soil. Frozen soil, sod, large rocks or other similar objects must be removed from the bed.

Placing the pipe

Corrugated metal pipe weighs much less than other commonly used drainage structures. This is due to the efficient strength of the metal, further improved with carefully designed and formed corrugations. Even the heaviest sections of CONTECH pipe can be handled with relatively light equipment compared with equipment required for much heavier reinforced concrete pipe.

Backfilling

All suitable structural backfill materials will perform well with CONTECH Corrugated Steel Pipe and Pipe-Arches. However, backfill should be free of large stones, frozen lumps and other debris.

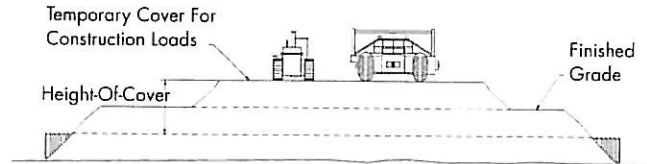
Backfill materials should be placed in layers about six inches deep, deposited alternately on opposite sides of the pipe. Each layer should be compacted carefully. Select backfill is placed and compacted until minimum cover height is reached, at which point, standard road embankment backfill procedures are used.

Complete information

For more information, see ASTM A798, AASHTO Section 26 and the Installation Manual of the National Corrugated Steel Pipe Association.

Construction Loads

For temporary construction vehicle loads, an extra amount of compacted cover may be required over the top of the pipe. The height-of-cover shall meet minimum requirements shown in the table below. The use of heavy construction equipment necessitates greater protection for the pipe than finished grade cover minimums for normal highway traffic.



General Guidelines for Minimum Cover				
Pipe Span, Inches	Minimum Cover (feet) for Indicated Axle Loads (kips)			
	18-50	50-75	75-110	110-150
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

Minimum cover may vary depending on local conditions. The contractor must provide the additional cover required to avoid damage to the pipe. Minimum cover is measured from the top of the pipe to the top of the maintained construction roadway surface.