

METAL ROUND PIPE CULVERT

FILL HEIGHT AND METAL THICKNESS TABLE FOR HELICAL LOCKSEAM AND WELDED SEAM PIPE CULVERT

STEEL																	ALUMINUM																
PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	2 2/3" x 1/2" CORRUGATIONS					3" x 1" CORRUGATIONS					5" x 1" CORRUGATIONS					PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	2 2/3" x 1/2" CORRUGATIONS					3" x 1" CORRUGATIONS									
		METAL THICKNESS (INCH/GAGE)										METAL THICKNESS (INCH/GAGE)																					
		0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8			0.060/16	0.075/14	0.105/12	0.135/10	0.164/8	0.060/16	0.075/14	0.105/12	0.135/10	0.164/8					
MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)																																	
12	12	100	100	100	100	100										12	12	100	100	100	100	100											
15	12	100	100	100	100	100										15	12	100	100	100	100	100											
18	12	100	100	100	100	100										18	12	100	100	100	100	100											
21	12	100	100	100	100	100										21	12	88	100	100	100	100											
24	12	100	100	100	100	100										24	12	77	97	100	100	100											
30	12	85	100	100	100	100										30	12	62	77	100	100	100	71	89	100	100	100						
36	12	71	89	100	100	100	81	100	100	100	100					36	12	52	64	90	100	100	59	74	100	100	100						
42	12	61	76	100	100	100	70	87	100	100	100					42	12	44	55	77	99	100	51	64	89	100	100						
48	12	53	66	93	100	100	61	76	100	100	100	54	68	95	100	48	12			67	87	100	44	56	78	100	100						
54	12		59	83	100	100	54	68	95	100	100	48	60	85	100	54	18			54	71	88	39	50	69	93	100						
60	12			74	97	100	49	61	86	100	100	43	54	76	98	60	18				57	72	35	45	62	83	98						
66	12				87	100	44	55	78	100	100	39	49	69	89	66	18					58	32	40	56	76	89						
72	12				80	97	40	51	71	92	100	36	45	63	82	72	18					45	30	37	55	70	82						
78	12					87	37	47	66	85	100	33	42	58	75	78	24						34	48	64	75							
84	12					75	35	43	61	78	96	31	39	54	70	84	24							44	59	70							
90	12						32	40	57	73	90	29	36	51	65	90	24							41	62	65							
96	12							38	53	69	84		34	48	61	96	24							38	51	61							
102	18							36	50	65	79		32	45	57	102	24								46	55							
108	18								47	61	75			42	54	108	24								42	50							
114	18								45	58	71			40	52	114	24								45								
120	18								43	55	67			38	49	120	24								40								
126	18									52	64				47	126									47	57							
132	18									50	61				44	132									44	54							
138	18									48	58				42	138									42	52							
144	18									56					50	144									50								

NOTES:

1. 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.
2. Fill heights exceeding 100 feet require special analysis by the CO.
3. The fill heights in the table are for helical lockseam and welded seam pipe only. Fill heights for culvert pipe with annular corrugations are more restrictive than those of helical lockseam and welded seam pipe. Obtain approval before furnishing annular corrugation pipe.
4. For flexible pavement and aggregate surface roadways, measure minimum cover from the top of the pipe culvert to the bottom of the roadway subgrade. For rigid pavement, measure minimum cover from the top of the pipe culvert to the top of the pavement. For all roadway surface types, measure maximum fill height from the top of the pipe culvert to the top of the pavement.

METAL PIPE ARCH CULVERT

FILL HEIGHT AND METAL THICKNESS TABLE FOR HELICAL LOCKSEAM AND WELDED SEAM PIPE CULVERT

STEEL																	ALUMINUM																
PIPE ARCH SIZE SPAN x RISE INCHES	EQUI-VALENT DIAMETER INCHES	MINIMUM CORNER RADIUS INCHES	MINIMUM COVER INCHES	2 2/3" x 1/2" CORRUGATIONS					3" x 1" CORRUGATIONS					5" x 1" CORRUGATIONS					PIPE ARCH SIZE SPAN x RISE INCHES	EQUI-VALENT DIAMETER INCHES	MINIMUM CORNER RADIUS INCHES	MINIMUM COVER INCHES	2 2/3" x 1/2" CORRUGATIONS					3" x 1" CORRUGATIONS					
				METAL THICKNESS (INCH/GAGE)										METAL THICKNESS (INCH/GAGE)																			
				0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10	0.168/8	0.060/16	0.075/14					0.105/12	0.135/10	0.164/8	0.060/16	0.075/14	0.105/12	0.135/10	0.164/8			
MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)																																	
17 x 13	15	3	12	13														17 x 13	15	3	12	13											
21 x 15	18	3	12	12														21 x 15	18	3	12	12											
24 x 18	21	3	12	13														24 x 18	21	3	12	13											
28 x 20	24	3	12	13														28 x 20	24	3	12		13										
35 x 24	30	3	12	12														35 x 24	30	3	12		12										
42 x 29	36	3.5	12	12														42 x 29	36	3.5	15		12										
49 x 33	42	4	12		12													49 x 33	42	4	15		12										
57 x 38	48	5	12			12												57 x 38	48	5	15			12									
60 x 46	54	8	15									21				21		60 x 46	54	8	15				21								
64 x 43	54	6	12		12													64 x 43	54	6	18			12									
66 x 51	60	9	15									21				21		66 x 51	60	9	18				21								
71 x 47	60	7	12			12												71 x 47	60	7	18												
73 x 55	66	12	18									20				20		73 x 55	66	12	18					20							
77 x 52	66	8	12						12									77 x 52	66	8	18												
81 x 59	72	14	18									17				17		81 x 59	72	14	21												
83 x 57	72	9	12								12							83 x 57	72	9	24												
87 x 63	78	14	18									17				17		87 x 63	78	14	21												
95 x 67	84	16	18									17				17		95 x 67	84	16	24												
103 x 71	90	16	18										17			17		103 x 71	90	16	24												
112 x 75	96	18	21										16			16		112 x 75	96	18	24												
117 x 79	102	18	21											16		16		117 x 79	102	18	24												
128 x 83	108	18	24										16			16		128 x 83	108	18	24												
137 x 87	114	18	24											16		16		137 x 87	114	18	24												
142 x 91	120	18	24												16		16		142 x 91	120	18	24											

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION OFFICE OF FEDERAL LANDS HIGHWAY	
EFLHD DETAIL	
METAL PIPE CULVERT	
DETAIL APPROVED FOR USE REVISED: SEPTEMBER 2020	DETAIL E602-01