

### 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)															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													
132	18									50	61				44	132													
138	18									48	58				42	138													
144	18									56					50	144													

#### NOTE:

- 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.
- Fill heights exceeding 100 feet require special analysis by the CO.
- 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.
- 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 both flexible and rigid 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)															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														
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														
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									17					
83 x 57	72	9	12							12					83 x 57	72	9	24									17					
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  
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

**METAL PIPE CULVERT**

STANDARD APPROVED FOR USE 12/1993  
REVISED: 4/1994 6/2005

STANDARD  
602-1