REG	STATE	PROJECT	SHEET NO.

METAL ROUND PIPE CULVERT

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

STEEL

PIPE SIZE DIAMETER	MINIMUM COVER	68 x 13 CORRUGATIONS					75 x 25 CORRUGATIONS					125 x 25 CORRUGATIONS				
		METAL THICKNESS														
		1.63	2.01	2.77	3.51	4.27	1.63	2.01	2.77	3.51	4.27	1.63	2.01	2.77	3.51	4.27
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN METERS														
300	300	30.0	30.0	30.0	30.0	30.0										
375	300	30.0	30.0	30.0	30.0	30.0										
450	300	30.0	30.0	30.0	30.0	30.0										
525	300	30.0	30.0	30.0	30.0	30.0										
600	300	30.0	30.0	30.0	30.0	30.0										
750	300	25.9	30.0	30.0	30.0	30.0										
900	300	21.6	27.0	30.0	30.0	30.0	24.8	30.0	30.0	30.0	30.0					
1050	300	18.5	23.1	30.0	30.0	30.0	21.2	26.6	30.0	30.0	30.0					
1200	300	16.2	20.2	28.4	30.0	30.0	18.5	23.2	30.0	30.0	30.0	16.5	20.7	29.0	30.0	30.0
1350	300		18.0	25.2	30.0	30.0	16.5	20.6	29.0	30.0	30.0	14.7	18.4	25.8	30.0	30.0
1500	300			22.7	29.5	30.0	14.8	18.6	26.1	30.0	30.0	13.2	16.5	23.2	29.9	30.0
1650	300				26.5	30.0	13.5	16.9	23.7	30.0	30.0	12.0	15.0	21.1	27.1	30.0
1800	300				24.3	29.7	12.3	15.4	21.7	28.0	30.0	11.0	13.8	19.3	24.9	30.0
1950	300					26.4	11.4	14.3	20.0	25.8	30.0	10.1	12.7	17.8	23.0	28.1
2100	300					22.8	10.6	13.2	18.6	23.9	29.3	9.4	11.8	16.5	21.3	26.1
2250	300						9.8	12.3	17.3	22.3	27.4	8.8	11.0	15.4	19.9	24.3
2400	300							11.6	16.2	20.9	25.7		10.3	14.5	18.6	22.8
2550	350							10.9	15.3	19.7	24.1		9.7	13.6	17.5	21.5
2700	350								14.4	18.6	22.8			12.8	16.6	20.3
2850	450								13.7	17.6	21.6			12.2	15.7	19.2
3000	450								13.0	16.7	20.5			11.6	14.9	18.2
3150	450									15.9	19.5				14.2	17.4
3300	450									15.2	18.6				13.5	16.6
3450	450									14.5	17.8				12.9	15.8
3600	450										17.1					15.2

ALUMINUM

PIPE SIZE DIAMETER	MINIMUM COVER	68 x 13 CORRUGATIONS					75 x 25 CORRUGATIONS				
		METAL THICKNESS									
		1.52	1.91	2.67	3.43	4.17	1.52	1.91	2.67	3.43	4.17
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN METERS									
300	300	30.0	30.0	30.0	30.0	30.0					
375	300	30.0	30.0	30.0	30.0	30.0					
450	300	30.0	30.0	30.0	30.0	30.0					
525	300	26.9	30.0	30.0	30.0	30.0					
600	300	23.6	29.5	30.0	30.0	30.0					
750	300	18.8	23.6	30.0	30.0	30.0	21.7	27.2	30.0	30	30.0
900	300	15.7	19.6	27.5	30.0	30.0	18.0	22.7	30.0	30	30.0
1050	300	13.4	16.8	23.6	30.3	30.0	15.5	19.4	27.1	30	30.0
1200	300			20.3	26.4	30.0	13.5	17	23.7	30	30.0
1350	300			16.5	21.6	26.7	12.0	15.1	21.1	28.2	30.0
1500	300				17.5	21.8	10.8	13.6	19.0	25.4	29.9
1650	300					17.6	9.8	12.3	17.2	23.1	27.2
1800	300					13.8	9.0	11.3	16.8	21.2	24.9
1950	300							10.4	14.6	19.5	23.0
2100	300								13.5	18.1	21.4
2250	300								12.6	18.9	19.9
2400	300								11.6	15.6	18.5
2550	350									14..1	16.7
2700	350									12.7	15.1
2850	400										13.6
3000	400										12.2

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 30 meters 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. 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

PIPE ARCH SIZE SPAN x RISE	EQUIV-ALENT DIAMETER	MINIMUM CORNER RADIUS	MINIMUM COVER	68 x 13 CORRUGATIONS					75 x 25 CORRUGATIONS					125 x 25 CORRUGATIONS				
				METAL THICKNESS														
				1.63	2.01	2.77	3.51	4.27	2.01	2.77	3.51	4.27		2.01	2.77	3.51	4.27
				MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN METERS														
430 x 330	375	75	300	4.0														
530 x 380	450	75	300	3.5														
610 x 460	525	75	300	4.0														
710 x 510	600	75	300	4.0														
885 x 610	750	75	300	3.5														
1060 x 740	900	90	300	3.5														
1240 x 840	1050	100	300		3.5													
1440 x 970	1200	130	300			3.5												
1520 x 1170	1350	205	300							6.5					6.5			
1620 x 1100	1350	155	300			3.5									6.5			
1670 x 1300	1500	230	300							6.5					6.0			
1800 x 1200	1500	180	300				3.5											
1850 x 1400	1650	305	300							6.0								
1950 x 1320	1650	205	300					3.5										
2050 x 1500	1800	355	300						5.0					5.0				
2100 x 1450	1800	230	300					3.5										
2200 x 1620	1950	365	300						5.0					5.0				
2400 x 1720	2100	410	300						5.0					5.0				
2600 x 1820	2250	410	450							5.0				5.0				
2840 x 1920	2400	460	450							5.0					5.0			
2970 x 2020	2550	460	450							5.0					5.0			
3240 x 2120	2700	460	600								5.0					5.0		
3470 x 2220	2850	460	600								5.0					5.0		
3600 x 2320	3000	460	600									5.0						5.0

ALUMINUM

PIPE ARCH SIZE SPAN x RISE	EQUIV-ALENT DIAMETER	MINIMUM CORNER RADIUS	MINIMUM COVER	68 x 13 CORRUGATIONS				75 x 25 CORRUGATIONS			
				METAL THICKNESS							
				1.52	1.91	2.67	3.43	1.52	1.91	2.67	3.43
				MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN METERS							
430 x 330	375	75	300	4.0							
530 x 380	450	75	300	3.5							
610 x 460	525	75	300	4.0							
710 x 510	600	75	300		4.0						
885 x 610	750	75	300		3.5						
1060 x 740	900	90	375			3.5					
1240 x 840	1050	100	375			3.5					
1440 x 970	1200	130	375				3.5				
1520 x 1170	1350	205	375					6.5			
1620 x 1100	1350	155	450				3.5				
1670 x 1300	1500	230	450					6.5			
1850 x 1400	1650	355	450						6.0		
2050 x 1500	1800	365	525							5.0	
2200 x 1620	1950	365	525							5.0	
2400 x 1720	2100	410	600							5.0	
2600 x 1820	2250	410	600								5.0

NO SCALE

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

METRIC STANDARD

METAL PIPE CULVERT

STANDARD APPROVED FOR USE --/----

REVISED: 10/97 07/98

STANDARD
M602-01

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