STATE	PROJECT	SHEET NUMBER

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 (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	450							10.9	15.3	19.7	24.1		9.7	13.6	17.5	21.5
2700	450								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 (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	30.0	30.0
900	300	15.7	19.6	27.5	30.0	30.0	18.0	22.7	30.0	30.0	30.0
1050	300	13.4	16.8	23.6	30.3	30.0	15.5	19.4	27.1	30.0	30.0
1200	300			20.3	26.4	30.0	13.5	17.0	23.7	30.0	30.0
1350	450			16.5	21.6	26.7	12.0	15.1	21.1	28.2	30.0
1500	450				17.5	21.8	10.8	13.6	19.0	25.4	29.9
1650	450					17.6	9.8	12.3	17.2	23.1	27.2
1800	450					13.8	9.0	11.3	16.8	21.2	24.9
1950	600							10.4	14.6	19.5	23.0
2100	600								13.5	18.1	21.4
2250	600								12.6	18.9	19.9
2400	600								11.6	15.6	18.5
2550	600									14.1	16.7
2700	600									12.7	15.1
2850	600										13.6
3000	600										12.2

NOTE:

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.
5. Dimensions without units are millimeters.

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	EQUI-VALENT 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 (METERS)												
430 x 330	375	75	300	4.0												
530 x 380	450	75	300	3.7												
610 x 460	525	75	300	4.0												
710 x 510	600	75	300	4.0												
890 x 610	750	75	300	3.7												
1070 x 740	900	90	300	3.7												
1240 x 840	1050	100	300		3.7											
1450 x 970	1200	125	300			3.7										
1520 x 1170	1350	205	375							6.4				6.4		
1630 x 1090	1350	150	300			3.7										
1680 x 1300	1500	230	375							6.4				6.4		
1800 x 1190	1500	180	300				3.7									
1850 x 1400	1650	305	450							6.1				6.1		
1960 x 1320	1650	205	300					3.7								
2060 x 1500	1800	355	450						5.2				5.2			
2110 x 1450	1800	230	300					3.7								
2210 x 1600	1950	355	450						5.2				5.2			
2410 x 1700	2100	405	450						5.2				5.2			
2620 x 1800	2250	405	450							5.2			5.2			
2840 x 1910	2400	455	525							4.9				4.9		
2970 x 2010	2550	455	525							4.9				4.9		
3250 x 2110	2700	455	600								4.9				4.9	
3480 x 2210	2850	455	600								4.9				4.9	
3610 x 2310	3000	455	600									4.9				4.9

ALUMINUM

PIPE ARCH SIZE SPAN x RISE	EQUI-VALENT 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 (METERS)							
430 x 330	375	75	300	4.0							
530 x 380	450	75	300	3.7							
610 x 460	525	75	300	4.0							
710 x 510	600	75	300		4.0						
890 x 610	750	75	300		3.7						
1070 x 740	900	90	375			3.7					
1240 x 840	1050	100	375			3.7					
1450 x 970	1200	125	375				3.7				
1520 x 1170	1350	205	375					6.4			
1630 x 1090	1350	150	450				3.7				
1680 x 1300	1500	230	450					6.4			
1850 x 1400	1650	305	450						6.1		
2060 x 1500	1800	355	525							5.2	
2210 x 1600	1950	355	525							5.2	
2410 x 1700	2100	405	600							5.2	
2620 x 1800	2250	405	600								5.2

NO SCALE

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

METRIC STANDARD

METAL PIPE CULVERT

STANDARD APPROVED FOR USE 3/1996
REVISED: 10/1997 6/2005

STANDARD
M602-1

27-Sep-2005 07:40 AM
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