

FULL CIRCLE STEEL PIPE CULVERT											
PIPE DIAMETER (INCHES) FOR CORRUGATION PATTERN (IN.)				MIN. COVER TOP OF PIPE TO TOP OF SUBGRADE (INCHES)	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)						
2 2/3 x 1/2	3 x 1	5 x 1	6 x 2		EQUIV. STANDARD GAGE						
				HS-20 VEHICLE	16	14	12	10	8	7	5
18				12	61	67	86	90	94		
21				12	53	57	74	77	81		
24				12	46	50	65	68	71		
27				12	41	44	57	60	63		
30				12	37	40	52	54	56		
36				12	30	33	43	45	47		
	36			12	53	66	77	89	100		
42				12	34	44	46	47	49		
	42			12	45	56	64	71	78		
48				12		41	44	45	46		
	48			12	39	49	56	61	66		
		48		12	49	52	56	61	66		
54				12		36	43	44	45		
	54			12	35	44	51	55	58		
		54		12	47	48	52	55	58		
60				12			42	43	43		
	60			12	31	39	49	51	53		
		60		12	43	46	49	51	53		
			60	12			46	68	90	96	106
66				12				42	43		
	66			12	29	36	47	48	50		
		66		12	39	45	47	48	50		
			66	12			42	62	78	82	90
72				12				42	42		
	72			12	26	33	45	47	48		
		72		12	36	44	45	47	48	73	78
			72	12			38	57	69		
78				12					42		
	78			12	24	30	44	45	46		
		78		12	33	42	44	45	46		
			78	12			35	53	63	66	70
84				12					42		
	84			12	22	28	42	44	45		
		84		12	31	39	43	44	45		
			84	12			33	49	59	61	64
90				12		26	39	44	44		
	90			12	29	36	43	44	44		
		90		12			31	45	55	57	60
	96			12		24	36	43	44		
		96		12		34	43	43	44		
			96	12		29	43	43	53	54	57
102				24			34	41	43		
	102			24		32	42	43	43		
108				24			32	39	43		
	108			24			42	42	43		
		108		24			25	38	49	50	52
114				24			31	37	41		
	114			24			40	42	42		
120				24			29	35	39		
	120			24			38	42	42		
		120		24			23	34	45	48	49

FULL CIRCLE ALUMINUM PIPE CULVERT											
PIPE DIAMETER (INCHES) FOR CORRUGATION PATTERN (IN.)				MIN. COVER TOP OF PIPE TO TOP OF SUBGRADE (INCHES)	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)						
2 2/3 x 1/2	3 x 1	6 x 1			EQUIV. STANDARD GAGE						
				HS-20 VEHICLE	16	14	12	10	8		
18				12		36	36	63			
24				12		27	27	47	50		
27				12		24	24	42	44		
30				12		22	21	37	39		
	30			12		40	50	68			
36				12			18	32	33		
	36			12		33	41	57	85		
		36		12		20					
42				12				54	57		
	42			12		27	35	48	73		
48				12				47	49	51	
	48			12		24	30	42	63	82	
54				12				41	44	45	
	54			12		21	27	37	56	73	
		54		12				29	42	67	66
60				12					39	41	
	60			12		19	24	33	24	66	
		60		12			25	37	59	58	
66				12					36	37	
	66			12		14	18	26	40	51	
		66		12			23	33	53	52	
72				12				28	27	41	54
	72			12				19	27	36	43
78				12				18	25	38	50
	78			12				17	25	32	40
		78		12				17	23	35	47
84				12					23	30	37
	84			12					18	28	37
		84		12					18	25	29
102				21					17	27	35
	102			21					17	23	28
114				24					16	21	26
	114			24						24	32
120				24						20	25
	120			24							

METAL PIPE ARCH - FILLS TO 10 FT. MAX.					
APPROX. EQUIV. ROUND PIPE (INCHES)	2 2/3 x 1/2 CORRUGATION PATTERN (INCHES)				
	SIZE SPAN x RISE (INCHES)	STEEL		ALUMINUM	
		MIN. GAGE	MIN. COVER (INCHES)	MIN. GAGE	MIN. COVER (INCHES)
15	17 x 13	16	12	16	12
18	21 x 15	16	12	16	12
21	24 x 18	16	12	16	12
24	28 x 20	16	12	14	12
30	35 x 24	14	12	14	12
36	42 x 29	14	12	12	15
42	49 x 33	14	12	12	15
48	57 x 38	12	12	10	15
54	64 x 43	12	12	10	18
60	71 x 47	10	12	8	18
66	77 x 52	8	12	8	18
72	83 x 57	8	12	8	18
3 x 1 & 5 x 1 CORRUGATION PATTERN					
36	40 x 31	14	12		
42	46 x 36	14	12		
48	53 x 41	14	12		
54	60 x 46	14	12	14	15
60	66 x 51	14	12	14	18
66	73 x 55	14	12	14	18
72	81 x 59	14	12	12	21
78	87 x 63	14	12	12	21
84	95 x 67	12	12	12	24
90	103 x 71	12	18	10	24
96	112 x 75	12	18	10	27
102	117 x 79	12	18		
108	128 x 83	10	24		
114	137 x 87	10	24		
120	142 x 91	10	24		

WHEN INSTALLED UNDER PAVEMENT INCLUDING ALL P.C. OR A.C. SURFACING UNDER MAINLINE TRAFFIC AND MAJOR STREET RETURNS, A MINIMUM PIPE GAGE OF 16 MAY BE USED FOR INSTALLATION REQUIRING 30 INCH EQUIVALENT ROUND CONDUITS (MAX.) AND LIMITED TO LOW VOLUME COUNTY OR OFF-SYSTEM ROADS, MINOR STREET RETURNS, DRIVEWAYS OR TEMPORARY DETOURS, AS APPROVED BY THE ENGINEER.

GENERAL NOTES

- FILL HEIGHT DESIGNS ARE BASED ON A CLASS B BEDDING, NEGATIVE PROJECTION, HS-20 LIVE LOADING AND 120 LBS/C.F. SOIL WEIGHT.
- IN THE EVENT LOADS IN EXCESS OF HS-20 ARE TO BE OPERATED OVER OR ADJACENT TO THE PIPE INSTALLATION DURING THE CONSTRUCTION PHASE, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A MINIMUM OF FOUR FEET OF COVER OVER THE PIPE AT WHEEL OR TRACK PATHS.
- PROPER INSTALLATION PRACTICES MUST BE ADHERED TO AS SHOWN ON 1999 ENGLISH ROADWAY STANDARD, PIPE INSTALLATION, SPI-3.
- ANY PIPE DEFORMED PRIOR TO FINAL ACCEPTANCE SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE. SURFACE DISTRESS MUST BE REPAIRED TO THE SATISFACTION OF THE ENGINEER OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- MAXIMUM FILL HEIGHTS ARE MEASURED TO TOP OF SUBGRADE.

EQUIVALENT METAL THICKNESS AND GAGE		
GAGE NUMBER	METAL THICKNESS (INCHES)	
	① STEEL	② ALUMINUM
16	0.064	0.060
14	0.079	0.075
12	0.109	0.105
10	0.138	0.135
8	0.168	0.164
7	0.188	—
5	0.218	—

① THE THICKNESS OF THE SHEET INCLUDES BOTH THE BASE STEEL AND THE COATING.
 ② THE THICKNESS SHOWN REFERS TO THE CLAD SHEET.

APPROVED BY ROADWAY ENGINEER *C.M. Sankowski* DATE 9/1/99

OKLAHOMA DEPT. OF TRANSPORTATION
 ROADWAY STANDARD (ENGLISH)
 FILL HEIGHT TABLES
 METAL PIPE CULVERTS