

FULL CIRCLE STEEL PIPE CULVERT											
PIPE DIAMETER FOR CORRUGATION PATTERN				MIN. COVER	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE						
					EQUIV. STANDARD GAGE						
2 2/3" x 1/2"	3" x 1"	5" x 1"	6" x 2"	TOP OF PIPE TO TOP OF SUBGRADE	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'	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 FOR CORRUGATION PATTERN			MIN. COVER	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE						
				EQUIV. STANDARD GAGE						
2 2/3" x 1/2"	3" x 1"	6" x 1"	TOP OF PIPE TO TOP OF SUBGRADE	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"		15"		19'	27'	36'	43'		
78"			15"		18'	25'	38'	50'		
	78"		15"		17'	25'	32'	40'		
84"			18"		17'	23'	35'	47'		
	84"		18"			23'	30'	37'		
90"			18"			21'	33'	43'		
	90"		18"			21'	28'	34'		
96"			18"			20'	31'	40'		
	96"		18"			19'	26'	32'		
102"			21"			18'	28'	37'		
	102"		21"			18'	25'	29'		
108"			21"				27'	35'		
	108"		21"			17'	23'	28'		
114"			24"				25'	34'		
	114"		24"			16'	21'	26'		
120"			24"				24'	32'		
	120"		24"				20'	25'		

METAL PIPE ARCH - FILLS TO 10 FT. MAX.					
APPROX. EQUIV. ROUND PIPE	SIZE SPAN x RISE	2 2/3" x 1/2" CORRUGATION PATTERN			
		STEEL		ALUMINUM	
		MIN. GAGE	MIN. COVER	MIN. GAGE	MIN. COVER
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"		

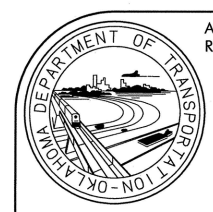
WHEN INSTALLED UNDER PAVEMENT INCLUDING ALL P.C. OR A.C. SURFACING UNDER MAINLINE TRAFFIC AND MAJOR STREET RETURNS. A MINIMUM PIPE GAGE OF 16 MAY BE USED FOR INSTALLATION REQUIRING 30 INCH EQUIVALENT ROUND CONDUITS (MAX.) AND LIMITED TO LOW VOLUME COUNTY OR OFF-SYSTEM ROADS, MINOR STREET RETURNS, DRIVEWAYS 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 ROADWAY STANDARDS SPI-4, FPI-3 AND SPB-1.
- 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	----

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



APPROVED BY ROADWAY ENGINEER: *Nimothy A. Pegula* DATE: 12/2/09
ROADWAY STANDARD

FILL HEIGHT TABLES (METAL PIPES)