REVISIONS	
DESCRIPTION	DATE
RE-ISSUE W/METRIC 1999 SPECS.	7/99

FULL CIRCLE STEEL PIPE CULVERT

PIPE DIAMETER (mm) FOR CORRUGATION PATTERN (mm x mm)				MIN. COVER TOP OF PIPE TO TOP OF SUBGRADE (mm)	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (METERS)						
					EQUIVALENT STANDARD GAGE						
68 x 12	75 x 25	125 x 25	150 x 50	HS–20 VEHICLE	16	14	12	10	8	7	6
450				300	18.59	20.42	26.21	27.43	28.65		
525				300	16.15	17.37	22.56	23.47	24.69		
600				300	14.02	15.24	19.81	20.73	21.64		
675				300	12.50	13.41	17.37	18.29	19.20		
750				300	11.28	12.19	15.85	16.46	17.07		
900				300	9.14	10.06	13.11	13.72	14.33		
	900			300	16.15	20.12	23.47	27.13	30.48		
1050				300	10.36	13.41	14.02	14.33	14.94		
	1050			300	13.72	17.07	19.51	21.64	23.77		
1200				300		12.50	13.41	13.72	14.02		
	1200			300	11.89	14.94	17.07	18.59	20.12		
		1200		300	14.94	15.85	17.07	18.59	20.12		
1350				300		10.97	13.11	13.41	13.72		
	1350			300	10.67	13.41	15.54	16.76	17.68		
		1350		300	14.33	14.63	15.85	16.76	17.68		
1500				300			12.80	13.11	13.11		
	1500			300	9.45	11.89	14.94	15.54	16.15		
		1500		300	13.11	14.02	14.94	15.54	16.15		
			1500	300			14.02	20.73	27.43	29.26	32.31
1650				300				12.80	13.11		
	1650			300	8.84	10.97	14.33	14.63	15.24		
		1650		300	11.89	13.72	14.33	14.63	15.24		
			1650	300			12.80	18.90	23.77	24.99	27.43
1800				300				12.80	12.80		
	1800			300	7.92	10.06	13.72	14.33	14.63		
		1800		300	10.97	13.41	13.72	14.33	14.63	22.25	23.77
			1800	300			11.58	17.37	21.03		
1950				300					12.80		
	1950			300	7.32	9.14	13.41	13.72	14.02		
		1950		300	10.06	3.90	13.41	13.72	14.02		
			1950	300			10.67	16.15	19.20	20.12	21.34
2100				300					12.80		
	2100			300	6.71	8.53	12.80	13.41	13.72		
		2100		300	9.45	11.89	13.11	13.41	13.72		
			2100	300			10.06	14.94	17.98	18.59	19.51
	2250			300		7.92	11.89	13.41	13.41		
		2250		300	8.84	10.97	13.11	13.41	13.41		
			2250	300			9.45	13.72	16.76	17.37	18.29
	2400			300		7.32	10.97	13.11	13.41		
		2400		300		10.36	13.11	13.11	13.41		
			2400	300			8.84	13.11	16.15	16.46	17.37
	2550			300			10.36	12.50	13.11		
		2550		300		9.75	12.80	13.11	13.11		
	2700			300			9.75	11.89	13.11		
		2700		300			12.80	12.80	13.11		
			2700	300			7.62	11.58	14.94	15.24	15.85
	2850			300			9.45	11.28	12.50		
		2850		300			12.19	12.80	12.80		
	3000			300			8.84	10.67	11.89		
		3000		300			11.58	12.80	12.80		
			3000	300			7.01	10.36	13.72	14.63	14.94

FULL CIRCLE ALUMINUM PIPE CULVERT

PIPE DIAMETER (mm) FOR CORRUGATION PATTERN (mm x mm)			MIN. COVER TOP OF PIPE TO TOP OF SUBGRADE (mm)	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (METERS)				
				EQUIV. STANDARD GAGE				
68 x 12	75 x 25	150 x 25	HS–20 VEHICLE	16	14	12	10	8
450			300	10.97	10.97	19.20		
600			300	8.23	8.23	14.33	15.24	
675			300	7.32	7.32	12.80	13.41	
750			300	6.71	6.40	11.28	11.89	
	750		300	12.19	15.24	20.73		
900			300		5.49	9.75	10.06	
	900		300	10.06	12.50	17.37	25.91	
		900	300	6.10				
1050			300			16.46	17.37	
	1050		300	8.23	10.67	14.63	22.25	
1200			300			14.33	14.94	15.54
	1200		300	7.32	9.14	12.80	19.20	24.99
1350			300			12.50	13.41	13.72
	1350		300	6.40	8.23	11.28	17.07	22.25
		1350	300		8.84	12.80	20.42	20.12
1500			300				11.89	12.50
	1500		300	5.79	7.32	10.06	7.32	20.12
		1500	300		7.62		17.98	17.68
1650			300				10.97	11.28
	1650		300	4.27	5.49		12.19	15.54
		1650	300		7.01		16.15	15.85
	1800		300		8.53		12.50	16.46
		1800	375		5.79		10.97	13.11
	1950		375		5.49		11.58	15.24
		1950	375		5.18		9.75	12.19
	2100		450		5.18		10.67	14.33
		2100	450				9.14	11.28
	2250		450				10.06	13.11
		2250	450				8.53	10.36
	2400		450				9.45	12.19
		2400	450				7.92	9.75
	2550		525				8.53	11.28
		2550	525				7.62	8.84
	2700		525				8.23	10.67
		2700	525				7.01	8.53
	2850		600				7.62	10.36
		2850	600				6.40	7.92
	3000		600				7.32	9.75
		3000	600				6.10	7.62

METAL PIPE ARCH – FILLS TO 3 METERS MAX.

APPROX. EQUIV. ROUND PIPE (mm)	68 mm x 12 mm CORRUGATION PATTERN				
		STEEL		ALUMINUM	
	SIZE SPAN x RISE (mm x mm)	MIN. GAGE	MIN. COVER (mm)	MIN. GAGE	MIN. COVER (mm)
375	430 x 330	16	300	16	300
400	460 x 340	16	300	16	300
450	510 x 380 (530 x 380)	16	300	16	300
500	560 x 420	16	300	16	300
525	610 x 460	16	300	16	300
600	680 x 500 (710 x 510)	16	300	14	300
700	800 x 580	16	300	14	300
750	885 x 610 (910 x 660)	14 ◒	300	14	300
800	910 x 660	14	300	12	375
900	1030 x 740 (1060 x 740)	14	300	12	375
1000	1150 x 820	12	300	10	375
1050	1240 x 840	12	300	10	375
1200	1390 x 970 (1440 x 970)	12	300	10	450
1350	1620 x 1100	10	300	10	450
1400	1630 x 1120	10	300	8	450
1500	1800 x 1200	10	300	8	450
1600	1880 x 1260	8	300	8	450
1650	1950 x 1320	8	300	8	450
1800	2130 x 1400 (2100 x 1450)	8	300	8	450
	75 x 25 mm & 125 x 25 mm CORRUGATION PATTERN				
900	1000 x 770 (1010 x 790)	14	300	—	—
1000	1100 x 850	14	300	—	—
1050	1160 x 920	14	300	—	—
1200	1330 x 1030 (1340 x 1050)	14	300	14	375
1350	1520 x 1170	14	300	14	375
1400	1550 x 1200	14	300	14	375
1500	1670 x 1300	14	300	14	375
1600	1780 x 1360	14	300	14	450
1650	1850 x 1400	14	300	14	450
1800	2080 x 1530 (2050 x 1500)	14	300	12	450
1950	2200 x 1620	14	300	12	450
2000	2230 x 1700	14	300	12	475
2200	2500 x 1830	12	300	12	600
2400	2800 x 1950 (2840 x 1920)	12	450	10	675
2700	3300 x 2080 (3270 x 2120)	10	450	—	—
3000	3650 x 2280 (3600 x 2320)	10	600	—	—

◒ 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 AN INSTALLATION REQUIRING 750 mm (30") 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.

EQUIVALENT METAL THICKNESS AND GAGE

GAGE NUMBER	METAL THICKNESS – (mm) / INCHES	
	① STEEL	② ALUMINUM
16	(1.63) / 0.064	(1.52) / 0.060
14	(2.01) / 0.079	(1.91) / 0.075
12	(2.77) / 0.109	(2.67) / 0.105
10	(3.51) / 0.138	(3.43) / 0.135
8	(4.27) / 0.168	(4.16) / 0.164
7	(4.78) / 0.188	— —
5	(5.54) / 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.

GENERAL NOTES

1. FILL HEIGHT DESIGNS ARE BASED ON A CLASS B BEDDING, NEGATIVE PROJECTION, HS–20 LIVE LOADING AND 1925 kg/m^3 SOIL WEIGHT.
2. 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 1.25 METERS OF COVER OVER THE PIPE AT WHEEL OR TRACK PATHS.
3. PROPER INSTALLATION PRACTICES MUST BE ADHERED TO AS SHOWN ON 1999 METRIC ROADWAY STANDARD DRAWING SPI–3.
4. 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.
5. MAXIMUM FILL HEIGHTS ARE MEASURED TO TOP OF SUBGRADE.

APPROVED BY ROADWAY ENGINEER DATE

OKLAHOMA DEPT. OF TRANSPORTATION
ROADWAY STANDARD (METRIC)

FILL HEIGHT TABLES METAL PIPE CULVERTS

1999 SPECIFICATIONS	FHTMP–4	00M
ALL DIMENSIONS ON THIS SHEET IN MILLIMETERS UNLESS OTHERWISE NOTED.		R–110M