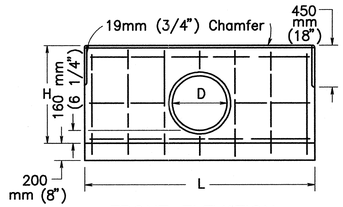
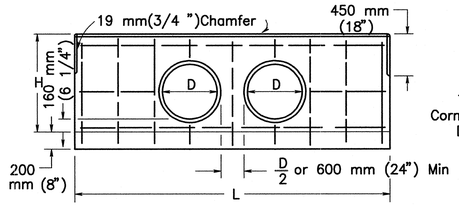
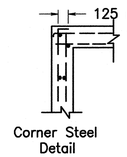
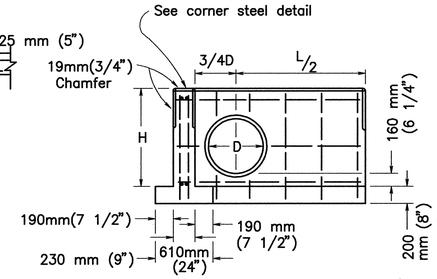


FRONT ELEVATION
SINGLE HEADWALL

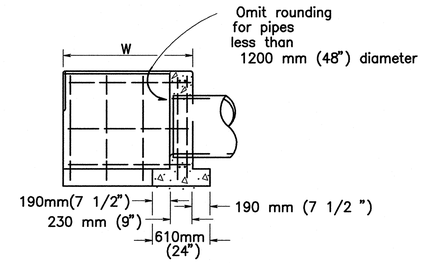


FRONT ELEVATION
DOUBLE HEADWALL

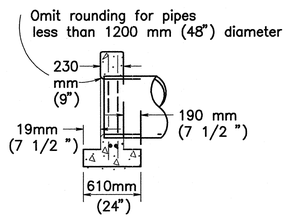




FRONT ELEVATION "L" HEADWALL



SECTION "L" HEADWALL



SECTION, SINGLE & DOUBLE HEADWALLS

D	H	SINGLE			DOUBLE		
		L	Steel	Conc	L	Steel	Conc
300 mm (12")	810 mm (32")	1500 mm (5.0')	16 kg (35 lb)	0.45 m^3 (0.60 CY)	2500 mm (8.0')	24 kg (50 lb)	0.74 m^3 (0.94 CY)
375 mm (15")	885 mm (35")	1800 mm (6.0')	18 kg (40 lb)	0.56 m^3 (0.75 CY)	2950 mm (9.5')	28 kg (60 lb)	0.91 m^3 (1.17 CY)
450 mm (18")	960 mm (38")	2100 mm (7.0')	22 kg (50 lb)	0.68 m^3 (0.91 CY)	3250 mm (10.5')	34 kg (75 lb)	1.04 m^3 (1.35 CY)
525 mm (21")	1035 mm (41")	2250 mm (7.5')	26 kg (60 lb)	0.76 m^3 (1.02 CY)	3550 mm (11.5')	40 kg (90 lb)	1.18 m^3 (1.52 CY)
600 mm (24")	1110 mm (44")	2550 mm (8.5')	34 kg (75 lb)	0.90 m^3 (1.20 CY)	3850 mm (12.5')	46 kg (100 lb)	1.32 m^3 (1.72 CY)
675 mm (27")	1185 mm (47")	2850 mm (9.5')	38 kg (85 lb)	1.04 m^3 (1.39 CY)	4300 mm (14.0')	52 kg (115 lb)	1.53 m^3 (2.00 CY)
750 mm (30")	1260 mm (50")	3000 mm (10.0')	40 kg (85 lb)	1.13 m^3 (1.52 CY)	4600 mm (15.0')	54 kg (126 lb)	1.69 m^3 (2.21 CY)
825 mm (33")	1335 mm (53")	3300 mm (11.0')	44 kg (100 lb)	1.29 m^3 (1.73 CY)	4900 mm (16.0')	58 kg (130 lb)	1.86 m^3 (2.42 CY)
900 mm (36")	1410 mm (56")	3600 mm (12.0')	46 kg (105 lb)	1.46 m^3 (1.95 CY)	5200 mm (17.0')	66 kg (145 lb)	2.03 m^3 (2.65 CY)
975 mm (39")	1485 mm (59")	3750 mm (12.5')	58 kg (130 lb)	1.57 m^3 (2.09 CY)	5500 mm (18.0')	78 kg (170 lb)	2.21 m^3 (2.88 CY)
1050 mm (42")	1560 mm (62")	4050 mm (13.5')	62 kg (140 lb)	1.75 m^3 (2.34 CY)	5800 mm (19.0')	84 kg (185 lb)	2.39 m^3 (3.13 CY)
1125 mm (45")	1635 mm (65")	4350 mm (14.5')	66 kg (150 lb)	1.94 m^3 (2.60 CY)	6100 mm (20.0')	88 kg (195 lb)	2.58 m^3 (3.38 CY)
1200 mm (48")	1710 mm (68")	4500 mm (15.0')	70 kg (160 lb)	2.06 m^3 (2.75 CY)	6400 mm (21.0')	90 kg (200 lb)	2.78 m^3 (3.64 CY)
1275 mm (51")	1785 mm (71")	4800 mm (16.0')	80 kg (180 lb)	2.26 m^3 (3.03 CY)	6850 mm (22.5')	102 kg (225 lb)	3.06 m^3 (4.02 CY)
1350 mm (54")	1860 mm (74")	5100 mm (17.0')	84 kg (190 lb)	2.47 m^3 (3.31 CY)	7150 mm (23.5')	108 kg (240 lb)	3.27 m^3 (4.30 CY)

STRAIGHT HEADWALLS

NOTES

1. No deduction made in quantities for thickness of pipe walls.
2. All reinforcing steel #13M (#4) bars. All vertical and horizontal tie bars 450 mm (18") maximum spacing.
3. Length of wall "W" may be varied to suit conditions encountered in the field, and straight line interpolation may be used to calculate quantities.
4. Quantities are for design purposes only.
5. Cable railing to be installed on top of headwall when shown on Project Plans. See Standard Plan B11-47 for cable railing details.

D	H	L/2	LENGTH OF W									
			1000 mm (40")		1450 mm (58")		1900 mm (76")		2350 mm (94")		2800 mm (1 12")	
			Steel	Conc	Steel	Conc	Steel	Conc	Steel	Conc	Steel	Conc
300 mm (12")	810 mm (32")	750 mm (30")	22 kg (50 lb)	0.59 m^3 (0.79 CY)	26 kg (60 lb)	0.73 m^3 (0.98 CY)	---	---	---	---	---	---
375 mm (15")	885 mm (35")	900 mm (36")	24 kg (55 lb)	0.68 m^3 (0.91 CY)	28 kg (65 lb)	0.83 m^3 (1.11 CY)	---	---	---	---	---	---
450 mm (18")	960 mm (38")	1050 mm (42")	28 kg (65 lb)	0.78 m^3 (1.04 CY)	32 kg (75 lb)	0.94 m^3 (1.25 CY)	---	---	---	---	---	---
525 mm (21")	1035 mm (41")	1125 mm (45")	32 kg (75 lb)	0.86 m^3 (1.15 CY)	40 kg (90 lb)	1.02 m^3 (1.36 CY)	---	---	---	---	---	---
600 mm (24")	1110 mm (44")	1275 mm (51")	38 kg (85 lb)	0.96 m^3 (1.29 CY)	44 kg (100 lb)	1.13 m^3 (1.51 CY)	48 kg (110 lb)	1.30 m^3 (1.74 CY)	---	---	---	---
675 mm (27")	1185 mm (47")	1425 mm (57")	40 kg (90 lb)	1.07 m^3 (1.44 CY)	46 kg (105 lb)	1.25 m^3 (1.67 CY)	50 kg (115 lb)	1.43 m^3 (1.91 CY)	---	---	---	---
750 mm (30")	1260 mm (50")	1500 mm (60")	42 kg (95 lb)	1.16 m^3 (1.55 CY)	48 kg (110 lb)	1.34 m^3 (1.80 CY)	52 kg (120 lb)	1.53 m^3 (2.05 CY)	60 kg (135 lb)	1.72 m^3 (2.29 CY)	---	---
825 mm (33")	1335 mm (53")	1650 mm (66")	46 kg (105 lb)	1.28 m^3 (1.71 CY)	52 kg (120 lb)	1.47 m^3 (1.97 CY)	60 kg (135 lb)	1.67 m^3 (2.23 CY)	66 kg (150 lb)	1.86 m^3 (2.48 CY)	---	---
900 mm (36")	1410 mm (56")	1800 mm (72")	48 kg (110 lb)	1.40 m^3 (1.88 CY)	54 kg (125 lb)	1.61 m^3 (2.15 CY)	62 kg (140 lb)	1.81 m^3 (2.41 CY)	68 kg (155 lb)	2.01 m^3 (2.68 CY)	74 kg (170 lb)	2.21 m^3 (2.95 CY)
975 mm (39")	1485 mm (59")	1875 mm (75")	---	---	66 kg (150 lb)	1.71 m^3 (2.28 CY)	74 kg (170 lb)	1.92 m^3 (2.56 CY)	80 kg (185 lb)	2.13 m^3 (2.84 CY)	88 kg (200 lb)	2.33 m^3 (3.12 CY)
1050 mm (42")	1560 mm (62")	2025 mm (81")	---	---	68 kg (155 lb)	1.85 m^3 (2.42 CY)	76 kg (175 lb)	2.07 m^3 (2.76 CY)	84 kg (190 lb)	2.28 m^3 (3.05 CY)	92 kg (210 lb)	2.50 m^3 (3.34 CY)
1125 mm (45")	1635 mm (65")	2175 mm (87")	---	---	---	---	78 kg (180 lb)	2.22 m^3 (2.97 CY)	88 kg (200 lb)	2.45 m^3 (3.27 CY)	94 kg (215 lb)	2.67 m^3 (3.57 CY)
1200 mm (48")	1710 mm (68")	2250 mm (90")	---	---	---	---	84 kg (190 lb)	2.34 m^3 (3.13 CY)	94 kg (216 lb)	2.57 m^3 (3.44 CY)	100 kg (230 lb)	2.81 m^3 (3.75 CY)
1275 mm (51")	1785 mm (71")	2400 mm (96")	---	---	---	---	---	---	96 kg (220 lb)	2.75 m^3 (3.67 CY)	102 kg (235 lb)	2.98 m^3 (3.99 CY)
1350 mm (54")	1860 mm (74")	2550 mm (102")	---	---	---	---	---	---	102 kg (235 lb)	2.92 m^3 (3.91 CY)	110 kg (250 lb)	3.17 m^3 (4.24 CY)

"L" HEADWALLS

CIRCULAR PIPE CULVERT HEADWALLS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PIPE HEADWALLS

These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses ( ) . The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

FONTANA-RIALTO DRAINAGE SYSTEM

PIPE HEADWALL
CALTRANS STD.- D89

DATE DEC. , 2007
SCALE NO SCALE
FILE NO. 2-104-
SHEET NO. S-11

2002 DUAL UNITS STD PLAN D89