DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Paul Cotter
REGISTERED CIVIL ENGINEER

July 1, 2002
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Paul Cotter
No. C34509
Exp. 9-30-03
CIVIL
STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov

2002 DUAL UNITS STD PLAN D79B

f'c = 42 MPa (6,000 psi)

ID	t	WALL B																			
		MIN COVER TO 3 m (10') MAX COVER									6 m (20') MAX COVER									12 m (40') MAX COVER	
		METHOD 1			METHOD 2			METHOD 3B			METHOD 1			METHOD 2			METHOD 3B			METHOD 3B	
		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso
600 mm (24")	75 mm (3")	250 (0.12)	---	---	210 (0.10)	---	---	190 (0.09)	---	---	380 (0.18)	---	---	250 (0.12)	---	---	190 (0.09)	---	---	380 (0.18)	---
750 mm (30")	88 mm (3½")	400 (0.19)	---	320 (0.15)	300 (0.14)	---	250 (0.12)	250 (0.12)	---	210 (0.10)	530 (0.25)	---	470 (0.22)	340 (0.16)	---	280 (0.13)	230 (0.11)	---	210 (0.10)	510 (0.24)	---
900 mm (36")	100 mm (4")	380 (0.18)	190 (0.09)	380 (0.18)	280 (0.13)	170 (0.08)	300 (0.14)	230 (0.11)	150 (0.07)	230 (0.11)	490 (0.23)	230 (0.11)	590 (0.28)	340 (0.16)	190 (0.09)	340 (0.16)	230 (0.11)	150 (0.07)	230 (0.11)	470 (0.22)	280 (0.13)
1050 mm (42")	113 mm (4½")	440 (0.21)	230 (0.11)	440 (0.21)	320 (0.15)	190 (0.09)	340 (0.16)	280 (0.13)	170 (0.08)	280 (0.13)	570 (0.27)	300 (0.14)	740 (0.35)	380 (0.18)	210 (0.10)	400 (0.19)	280 (0.13)	170 (0.08)	280 (0.13)	530 (0.25)	320 (0.15)
1200 mm (48")	125 mm (5")	510 (0.24)	280 (0.13)	510 (0.24)	380 (0.18)	230 (0.11)	380 (0.18)	300 (0.14)	190 (0.09)	320 (0.15)	660 (0.31)	340 (0.16)	910 (0.43)	440 (0.21)	250 (0.12)	470 (0.22)	320 (0.15)	190 (0.09)	320 (0.15)	610 (0.29)	380 (0.18)
1350 mm (54")	138 mm (5½")	550 (0.26)	300 (0.14)	550 (0.26)	400 (0.19)	250 (0.12)	400 (0.19)	320 (0.15)	210 (0.10)	320 (0.15)	760 (0.36)	380 (0.18)	1060 (0.50)	510 (0.24)	300 (0.14)	510 (0.24)	360 (0.17)	210 (0.10)	380 (0.18)	700 (0.33)	440 (0.21)
1500 mm (60")	150 mm (6")	570 (0.27)	320 (0.15)	590 (0.28)	420 (0.20)	280 (0.13)	420 (0.20)	340 (0.16)	210 (0.10)	340 (0.16)	850 (0.40)	440 (0.21)	1270 (0.60)	570 (0.27)	340 (0.16)	570 (0.27)	400 (0.19)	230 (0.11)	420 (0.20)	780 (0.37)	490 (0.23)
1650 mm (66")	163 mm (6½")	610 (0.29)	320 (0.15)	640 (0.30)	440 (0.21)	300 (0.14)	440 (0.21)	360 (0.17)	230 (0.11)	380 (0.18)	930 (0.44)	490 (0.23)	1550 (0.73)	640 (0.30)	380 (0.18)	640 (0.30)	440 (0.21)	300 (0.14)	440 (0.21)	870 (0.41)	550 (0.26)
1800 mm (72")	175 mm (7")	640 (0.30)	340 (0.16)	660 (0.31)	440 (0.21)	300 (0.14)	470 (0.22)	360 (0.17)	230 (0.11)	400 (0.19)	1100 (0.52)	550 (0.26)	1840 (0.87)	700 (0.33)	420 (0.20)	720 (0.34)	530 (0.25)	320 (0.15)	530 (0.25)	950 (0.45)	610 (0.29)
1950 mm (78")	188 mm (7½")	660 (0.31)	360 (0.17)	680 (0.32)	470 (0.22)	320 (0.15)	510 (0.24)	380 (0.18)	250 (0.12)	470 (0.22)	1310 (0.62)	590 (0.28)	2140 (1.01)	760 (0.36)	470 (0.22)	780 (0.37)	550 (0.26)	340 (0.16)	570 (0.27)	1040 (0.49)	680 (0.32)
2100 mm (84")	200 mm (8")	700 (0.33)	380 (0.18)	720 (0.34)	490 (0.23)	320 (0.15)	550 (0.26)	380 (0.18)	250 (0.12)	550 (0.26)	1480 (0.70)	640 (0.30)	---	830 (0.39)	510 (0.24)	870 (0.41)	590 (0.28)	360 (0.17)	610 (0.29)	1120 (0.53)	720 (0.34)
2250 mm (90")	213 mm (8½")	760 (0.36)	400 (0.19)	780 (0.37)	530 (0.25)	340 (0.16)	640 (0.30)	400 (0.19)	250 (0.12)	640 (0.30)	---	---	---	890 (0.42)	550 (0.26)	1040 (0.49)	640 (0.30)	380 (0.18)	660 (0.31)	1190 (0.56)	760 (0.36)
2400 mm (96")	225 mm (9")	830 (0.39)	420 (0.20)	850 (0.40)	570 (0.27)	340 (0.16)	720 (0.34)	420 (0.20)	250 (0.12)	720 (0.34)	---	---	---	950 (0.45)	590 (0.28)	1160 (0.55)	680 (0.32)	420 (0.20)	720 (0.34)	1250 (0.59)	800 (0.38)
2550 mm (102")	238 mm (9½")	890 (0.42)	470 (0.22)	950 (0.45)	610 (0.29)	380 (0.18)	800 (0.38)	470 (0.22)	300 (0.14)	800 (0.38)	---	---	---	1040 (0.49)	660 (0.31)	1350 (0.64)	740 (0.35)	470 (0.22)	800 (0.38)	1350 (0.64)	870 (0.41)
2700 mm (108")	250 mm (10")	950 (0.45)	510 (0.24)	1140 (0.54)	660 (0.31)	400 (0.19)	910 (0.43)	510 (0.24)	320 (0.15)	910 (0.43)	---	---	---	1100 (0.52)	680 (0.32)	1500 (0.71)	800 (0.38)	510 (0.24)	910 (0.43)	1420 (0.67)	970 (0.46)

f'c = 42 MPa (6,000 psi)

ID	t	WALL X														
		MIN COVER TO 3 m (10') MAX COVER						3.1 m (10.1') TO 6 m (20') MAX COVER						6.1 m (20.1') TO 9 m (30') MAX COVER		
		METHOD 3B			METHOD 3C			METHOD 3B			METHOD 3C			METHOD 3B		METHOD 3C	
		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Asi	Aso
600 mm (24")	47 mm (1⅞")	280 (0.13)	---	---	250 (0.12)	---	---	250 (0.12)	---	---	210 (0.10)	---	---	380 (0.18)	---	320 (0.15)	---
750 mm (30")	53 mm (2⅛")	380 (0.18)	---	---	360 (0.17)	---	---	320 (0.15)	---	---	250 (0.12)	---	---	490 (0.23)	---	400 (0.19)	---
900 mm (36")	59 mm (2⅜")	400 (0.19)	320 (0.15)	400 (0.19)	380 (0.18)	280 (0.13)	380 (0.18)	360 (0.17)	---	300 (0.14)	300 (0.14)	---	250 (0.12)	440 (0.21)	320 (0.15)	450 (0.21)	---
1050 mm (42")	63 mm (2½")	610 (0.29)	490 (0.23)	610 (0.29)	570 (0.27)	440 (0.21)	570 (0.27)	420 (0.20)	---	420 (0.20)	340 (0.16)	---	340 (0.16)	660 (0.31)	490 (0.23)	510 (0.24)	380 (0.18)
1200 mm (48")	69 mm (2⅝")	660 (0.31)	510 (0.24)	660 (0.31)	590 (0.28)	470 (0.22)	610 (0.29)	530 (0.25)	---	490 (0.23)	420 (0.20)	---	380 (0.18)	740 (0.35)	550 (0.26)	590 (0.28)	440 (0.21)
1350 mm (54")	75 mm (2⅞")	660 (0.31)	530 (0.25)	660 (0.31)	610 (0.29)	490 (0.23)	610 (0.29)	590 (0.28)	---	510 (0.24)	490 (0.23)	---	400 (0.19)	760 (0.36)	550 (0.26)	590 (0.28)	440 (0.21)
1500 mm (60")	88 mm (3½")	610 (0.29)	490 (0.23)	640 (0.30)	570 (0.27)	440 (0.21)	590 (0.28)	680 (0.32)	---	530 (0.25)	550 (0.26)	---	420 (0.20)	780 (0.37)	570 (0.27)	610 (0.29)	470 (0.22)
1650 mm (66")	94 mm (3¾")	610 (0.29)	490 (0.23)	610 (0.29)	570 (0.27)	440 (0.21)	590 (0.28)	590 (0.28)	420 (0.20)	590 (0.28)	490 (0.23)	360 (0.17)	490 (0.23)	890 (0.42)	640 (0.30)	700 (0.33)	530 (0.25)
1800 mm (72")	105 mm (4¼")	570 (0.27)	440 (0.21)	570 (0.27)	530 (0.25)	400 (0.19)	550 (0.26)	590 (0.28)	420 (0.20)	590 (0.28)	490 (0.23)	340 (0.16)	490 (0.23)	870 (0.41)	610 (0.29)	700 (0.33)	510 (0.24)
1950 mm (78")	119 mm (4¾")	530 (0.25)	400 (0.19)	550 (0.26)	510 (0.24)	380 (0.18)	510 (0.24)	590 (0.28)	420 (0.20)	610 (0.29)	490 (0.23)	360 (0.17)	510 (0.24)	870 (0.41)	610 (0.29)	700 (0.33)	510 (0.24)
2100 mm (84")	132 mm (5¼")	530 (0.25)	400 (0.19)	570 (0.27)	490 (0.23)	360 (0.17)	530 (0.25)	610 (0.29)	440 (0.21)	640 (0.30)	510 (0.24)	360 (0.17)	530 (0.25)	890 (0.42)	640 (0.30)	720 (0.34)	510 (0.24)
2250 mm (90")	144 mm (5¾")	510 (0.24)	380 (0.18)	590 (0.28)	470 (0.22)	340 (0.16)	590 (0.28)	700 (0.33)	490 (0.23)	720 (0.34)	590 (0.28)	400 (0.19)	590 (0.28)	990 (0.47)	720 (0.34)	830 (0.39)	590 (0.28)
2400 mm (96")	150 mm (6")	510 (0.24)	380 (0.18)	680 (0.32)	490 (0.23)	340 (0.16)	680 (0.32)	720 (0.34)	510 (0.24)	740 (0.35)	590 (0.28)	420 (0.20)	680 (0.32)	990 (0.47)	720 (0.34)	830 (0.39)	590 (0.28)
2550 mm (102")	163 mm (6½")	510 (0.24)	380 (0.18)	760 (0.36)	530 (0.25)	340 (0.16)	760 (0.36)	780 (0.37)	550 (0.26)	800 (0.38)	660 (0.31)	470 (0.22)	760 (0.36)	1120 (0.53)	780 (0.37)	910 (0.43)	660 (0.31)
2700 mm (108")	175 mm (7")	550 (0.26)	380 (0.18)	870 (0.41)	490 (0.23)	340 (0.16)	870 (0.41)	850 (0.40)	590 (0.28)	890 (0.42)	720 (0.34)	510 (0.24)	870 (0.41)	1250 (0.59)	850 (0.40)	990 (0.47)	720 (0.34)

	ID	t	WALL BB	
			24 m (80') MAX COVER	
			METHOD 3C	
			Asi	Aso
f'c = 35 MPa (5,000 psi)	600 mm (24")	163 mm (6½")	230 (0.11)	150 (0.07)
	750 mm (30")	175 mm (7")	340 (0.16)	150 (0.07)
	900 mm (36")	188 mm (7½")	440 (0.21)	150 (0.07)
	1050 mm (42")	200 mm (8")	530 (0.25)	150 (0.07)
	1200 mm (48")	213 mm (8½")	660 (0.31)	190 (0.09)
	1350 mm (54")	225 mm (9")	780 (0.37)	280 (0.13)
	1500 mm (60")	238 mm (9½")	870 (0.41)	340 (0.16)
	1650 mm (66")	250 mm (10")	1140 (0.54)	420 (0.20)
f'c = 42 MPa (6,000 psi)	1800 mm (72")	265 mm (10½")	1230 (0.58)	510 (0.24)
	1950 mm (78")	280 mm (11")	1310 (0.62)	570 (0.27)
f'c = 49 mPa (7,000 psi)	2100 mm (84")	290 mm (11½")	1330 (0.63)	610 (0.29)
	2250 mm (90")	305 mm (12")	1440 (0.68)	700 (0.33)

t = Pipe barrel wall thickness, mm (inches)

Asi = Inner cage reinforcement, or single circular cage reinforcement, square mm/m (inches/LF)

Aso = Outer cage reinforcement, square mm/m (square inches/LF)

Ase = Elliptical single cage reinforcement, square mm/m (square inches/LF)

ID = Inside Diameter, mm (inches)

OD = Outside Diameter, mm (inches)

Clr = Design clearance, mm (inches) (see Note 6)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE PIPE DIRECT DESIGN METHOD

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

D79B