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

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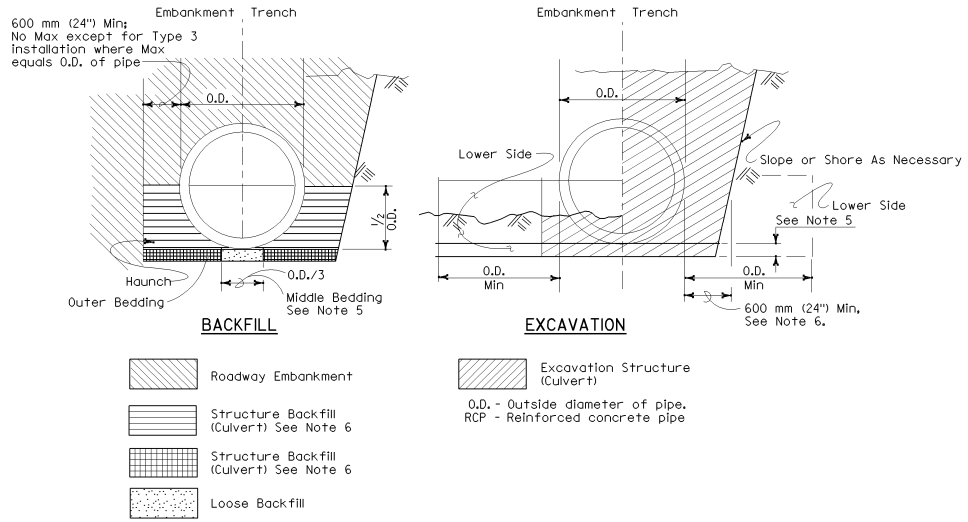

INSTALLATION TYPE 1

Cover		Minimum Class & D-Load
2700 mm (108") DIA AND SMALLER	OVER 2700 mm (108") DIA	
4.50 m (14.9')	4.00 m (12.9')	Class II ,50D (1000D)
4.51 m - 6.40 m (15.0' - 20.9')	4.01 m - 5.80 m (13.0' - 18.9')	Class III,65D (1350D)
6.41 m - 8.20 m (21.0' - 26.9')	5.81 m - 7.60 m (19.0' - 24.9')	Class III,Special 80D (1700D)
8.21 m - 9.70 m (27.0' - 31.9')	7.61 m - 9.10 m (25.0' - 29.9')	Class IV ,100D (2000D)
9.71 m - 12.50 m (32.0' - 40.9')	9.11 m - 11.90 m (30.0' - 38.9')	Class IV ,Special 120D (2500D)
12.51 m - 15.20 m (41.0' - 49.9')	11.91 m - 14.30 m (39.0' - 46.9')	Class V ,140D (3000D)
15.21 m - 18.00 m (50.0' - 59.0')	14.31 m - 17.70 m (47.0' - 58.0')	Class V ,Special 170D (3500D)

INSTALLATION TYPE 2

Cover	Minimum Class & D-Load
3.00 m (9.9')	Class II ,50D (1000D)
3.01 m - 4.60 m (10.0' - 14.9')	Class III,65D (1350D)
4.61 m - 6.10 m (15.0' - 19.9')	Class III,Special 80D (1700D)
6.11 m - 7.60 m (20.0' - 24.9')	Class IV ,100D (2000D)
7.61 m - 9.80 m (25.0' - 31.9')	Class IV ,Special 120D (2500D)
9.81 m - 11.90 m (32.0' - 38.9')	Class V ,140D (3000D)
11.91 m - 14.30 m (39.0' - 47.0')	Class V ,Special 170D (3500D)

INSTALLATION TYPE 3

Cover		Minimum Class & D-Load
1200 mm (48") DIA AND SMALLER	OVER 1200 mm (48") DIA	
2.40 m (7.9')	1.80 m (5.9')	Class II ,50D (1000D)
2.41 m - 3.40 m (8.0' - 10.9')	1.81 m - 2.70 m (6.0' - 8.9')	Class III,65D (1350D)
3.41 m - 4.60 m (11.0' - 14.9')	2.71 m - 4.00 m (9.0' - 12.9')	Class III,Special 80D (1700D)
4.61 m - 9.70 m (15.0' - 17.9')	4.01 m - 4.90 m (13.0' - 15.9')	Class IV ,100D (2000D)
5.51 m - 5.50 m (18.0' - 21.9')	4.91 m - 6.10 m (16.0' - 19.9')	Class IV ,Special 120D (2500D)
6.71 m - 6.70 m (22.0' - 26.9')	6.11 m - 7.60 m (20.0' - 24.9')	Class V ,140D (3000D)
8.21 m - 10.00 m (30.0' - 33.0')	7.61 m - 9.50 m (25.0' - 31.0')	Class V ,Special 170D (3500D)

TYPE 1 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 90% relative compaction. In addition, the minimum sand equivalent in these areas shall be 30 and the maximum percentage passing the 75 µm (No. 200) sieve size shall be 12. Lower sides shall be suitable material as determined by the Engineer. Otherwise it shall be considered unsuitable as set forth in Section 19-2.02 of the Standard Specifications. See Note 9.

TYPE 2 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 90% relative compaction. In addition, the minimum sand equivalent in these areas shall be 25. Lower side shall be suitable material as determined by the Engineer. Otherwise it shall be considered unsuitable as set forth in Section 19-2.02 of the Standard Specifications. See Note 9.

TYPE 3 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 85% relative compaction. In addition, the minimum sand equivalent in these areas shall be 25. If the sand equivalent is between 20 and 25, 90% relative compaction will be required. This installation may not be used where the fill over the pipe is less than 1/2 O.D. Lower side shall be suitable material as determined by the Engineer. Otherwise it shall be considered unsuitable as set forth in Section 19-2.02 of the Standard Specifications. See Note 9.

NOTES

1. Unless otherwise shown on the plans or specified in the Special Provisions, the Contractor shall have the option of selecting the class of RCP and the type of installation to be used, provided the height of cover does not exceed the value shown for the RCP selected.
   Example:
   600 mm (24") RCP culvert with maximum cover of 5.80 m (19.0')
   the options are:
   a) Class III or stronger with Installation Type 1.
   b) Class III Special or stronger with Installation Type 2.
   c) Class IV Special or stronger with Installation Type 3.
   Cover is defined as the maximum vertical distance from top of the pipe to finished grade within the length of any given culvert.
2. The class of RCP and Installation Type selected shall be the same throughout the length of any given culvert.
3. The "length of any culvert" is defined as the culvert between:
   a) Successive drainage structure (inlets, junction boxes, headwalls, etc.).
   b) A drainage structure and the inlet or outlet end of the culvert.
   c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
4. Oval and arch shaped RCP shall not be used.
5. O.D./25 Min, not less than 75 mm (3")
6. Slurry cement backfill may be substituted for backfill in the outer bedding and haunch areas. If slurry is used the outer and middle beddings shall be omitted. Prior to installation the soil under the middle 1/3 of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of O.D./25, but not less than 75 mm (3"). Where slurry cement backfill is used, clear distance to trench wall may be reduced as set forth in Section 19-3.062 of the Standard Specifications.
7. Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimum.
8. Minimum cover over top of pipe at edge of traveled way shall be 600 mm (24") for AC pavement and 300 mm (12") for PCC pavement.
9. Where the pipe is placed in a trench, if the trench walls are sloped at 5 vertical to 1 horizontal or steeper for at least 90% of the trench height, or sloped up to not less than 300 mm (12") from the grading plane, the firmness of the soil in the lower side need not be considered.
10. Non-reinforced precast concrete pipe sizes 900 mm (36") or smaller may be placed under installation Types 1, 2 or 3.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

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

A62DA

2002 DUAL UNITS STD PLAN A62DA

THIS STANDARD PLAN A62DA INCLUDES CHANGES THAT WERE INCORPORATED IN REVISED STANDARD PLAN RSP A62DA, DATED OCTOBER 26, 2000, AND ISSUED AS A PART OF ERRATUM NO. 99-1 FOR THE 1999 METRIC STANDARD PLANS.