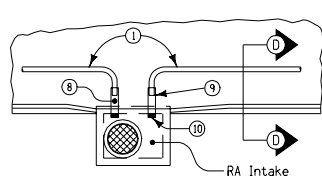
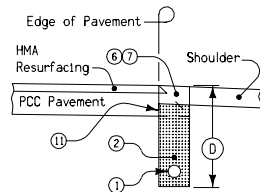


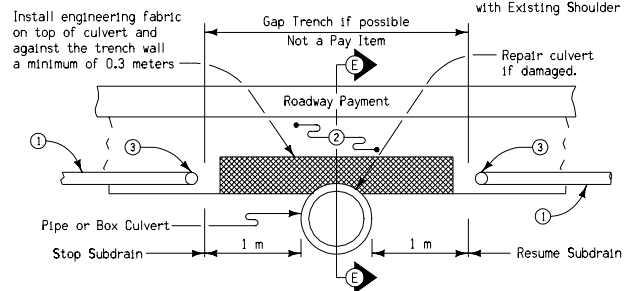
PLAN VIEW OF TYPICAL LONGITUDINAL SUBDRAIN INSTALLATIONS



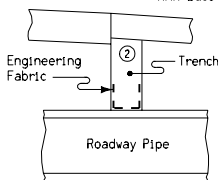
INTAKE OUTLET DETAIL



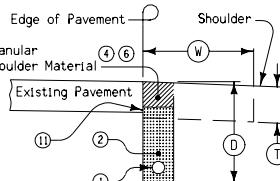
TYPE 9 INSTALLATION
SECTION C-C
Composite Pavement
with Existing Shoulder



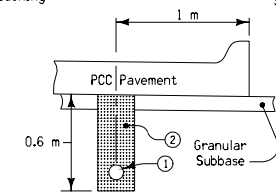
TRENCH REPAIR AT PIPE CULVERT



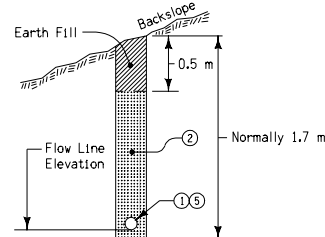
SECTION E-E



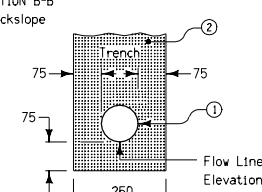
TYPE 10 INSTALLATION
SECTION C-C
HMA Base Widening



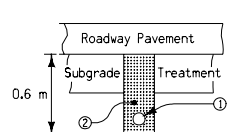
TYPE 12 INSTALLATION
SECTION D-D



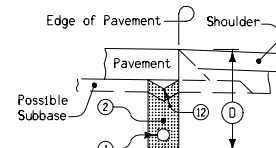
TYPE 11 INSTALLATION
SECTION B-B



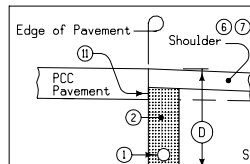
TUBING PLACEMENT DETAIL
ALL TYPES



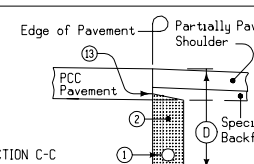
TYPE 5 INSTALLATION
SECTION A-A
Subgrade Treatment Subdrain



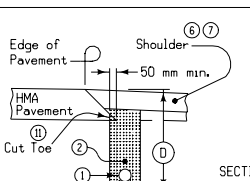
TYPE 6 INSTALLATION
SECTION C-C
For drain placement prior to
subbase or pavement placement.



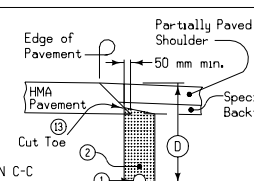
TYPE 7A INSTALLATION



TYPE 7B INSTALLATION



TYPE 8A INSTALLATION



TYPE 8B INSTALLATION

When RCB culverts or RF-1 concrete pipe culverts which are less than 0.3 meters below the trench bottom are encountered within a tabulated subdrain, the trench shall stop 1 meter from the culvert and resume 1 meter beyond the culvert. If the trench is inadvertently carried over the culvert, the trench shall be repaired as detailed on this sheet. Care must be exercised so as not to destroy the tops of culverts with the trenching machine. If obstruction is 0.3 meters or more below trench bottom, carry subdrain line over in continuous alignment.

Subdrain trench shall typically be located adjacent to edge of roadway pavement. On new construction projects, the subdrain shall be placed after the earth shoulder fill and special backfill, if required, and prior to granular or paved shoulder material.

Contract Items:

Subdrain, Longitudinal
Subdrain Outlet (RF-19C)

Tabulation: 104-9

- 1 100 millimeter Perforated Subdrain (Polyethylene, Corrugated Tubing).
- 2 Porous Backfill for Subdrain (compacted).
- 3 Subdrain outlets. See Standard Road Plan RF-19C.
- 4 Backfill of this area is not required if base widening is placed the same day of subdrain construction.
- 5 Subdrain is to be installed as cut proceeds.
- 6 On existing Granular or Earth Shoulders, replace with 100 millimeter minimum depth granular shoulder material. Shoulder material will be incidental to the longitudinal subdrain bid item.
- 7 On Paved Shoulders, refer to "Subdrains" in the current Standard Specifications for finishing shoulder.
- 8 150 millimeter corrugated metal pipe or 100 millimeter corrugated double-walled, PE or PVC pipe (0.6 meters long) will be paid for as "Subdrain Outlet (RF-19C)."
- 9 PE or PVC outlet to be connected with an appropriate coupler. CMP outlet to be connected in one of two ways: (1) Inside-fit reducer coupler (0.3 meters min. fit inside CMP); or (2) Insert 0.3 meters of the 100 millimeter subdrain into 150 millimeter CMP and fully seal entire opening with gROUT.
- 10 Removable Grate Rodent Guard. See Materials I. M. 443.01.
- 11 The porous backfill shall be in direct contact with a minimum of 50 millimeters of pavement and continuous to shoulder material as per note 6 or 7.
- 12 "V" notch shall be cut just prior to subbase (if proposed) or pavement placement to assure unconfined contact.
- 13 Top of subdrain trench shall be at the bottom of pavement. Backfill trench so that a wedge of porous backfill has a minimum vertical contact of 50 millimeters with the pavement.

All dimensions given in millimeters unless noted.

| | | |
|----------------|---|---------------------------|
| METRIC VERSION | Iowa Department of Transportation Highway Division | |
| | STANDARD ROAD PLAN RF-19C | |
| | REVISION: Add Type 7B and 8B Installations for partially paved shoulders. | REVISION NO. 12 |
| | APPROVED BY DESIGN METHODS ENGINEER <i>William J. Sten</i> | REVISION DATE 10-18-05 |
| | SUBDRAINS (LONGITUDINAL) | |