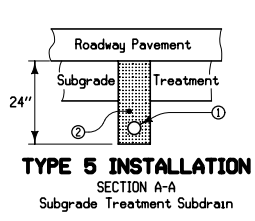
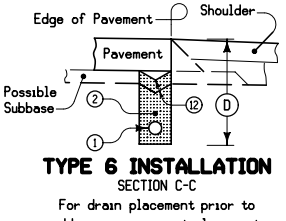


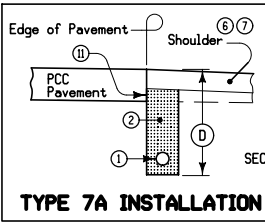
PLAN VIEW OF TYPICAL LONGITUDINAL SUBDRAIN INSTALLATIONS



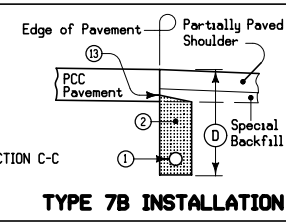
TYPE 5 INSTALLATION
SECTION A-A
Subgrade Treatment Subdrain



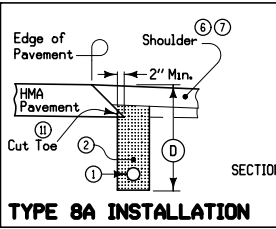
TYPE 6 INSTALLATION
SECTION C-C
For drain placement prior to subbase or pavement placement.



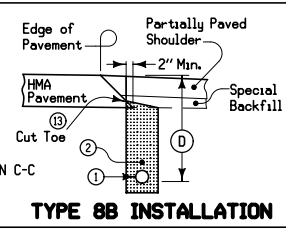
TYPE 7A INSTALLATION



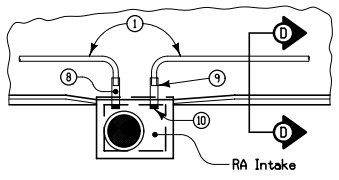
TYPE 7B INSTALLATION



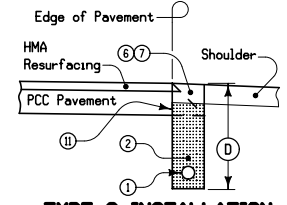
TYPE 8A INSTALLATION



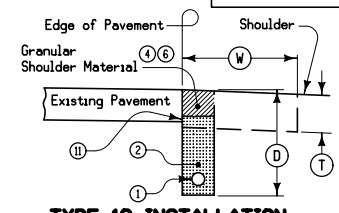
TYPE 8B INSTALLATION



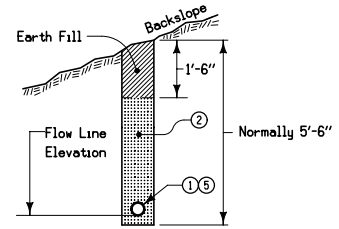
INTAKE OUTLET DETAIL



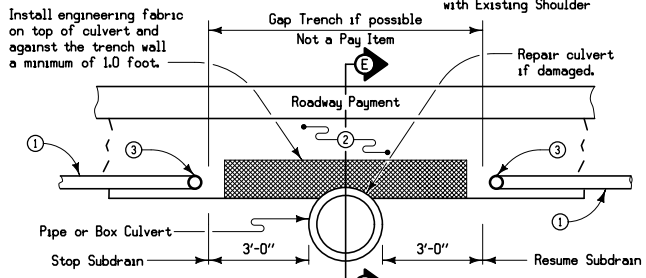
TYPE 9 INSTALLATION
SECTION C-C
Composite Pavement with Existing Shoulder



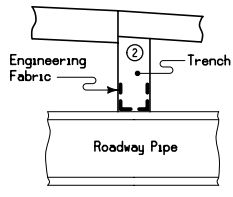
TYPE 10 INSTALLATION
SECTION C-C
HMA Base Widening



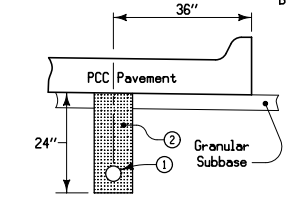
TYPE 11 INSTALLATION
SECTION B-B
Backslope



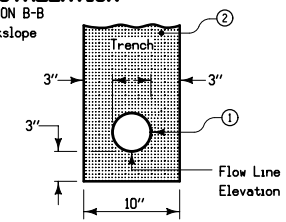
TRENCH REPAIR AT PIPE CULVERT



SECTION E-E



TYPE 12 INSTALLATION
SECTION D-D



TUBING PLACEMENT DETAIL ALL TYPES

When RCB culverts or RF-1 concrete pipe culverts which are less than 1 foot below the trench bottom are encountered within a tabulated subdrain, stop the trench 3 feet from the culvert and resume 3 feet beyond the culvert. If the trench is inadvertently carried over the culvert, repair the trench as detailed on this sheet. Exercise care so as not to destroy the tops of culverts with the trenching machine. If obstruction is 1 foot or more below trench bottom, carry subdrain line over in continuous alignment.

Locate subdrain trench adjacent to edge of roadway pavement. On new construction projects, place the subdrain after the earth shoulder fill and special backfill, if required, and prior to granular or paved shoulder material.

- 1 4" Perforated Subdrain (Polyethylene, Corrugated Tubing).
- 2 Porous Backfill for Subdrain (compacted).
- 3 Subdrain outlets. See RF-19E.
- 4 Backfill of this area is not required if base widening is placed the same day of subdrain construction.
- 5 Install subdrain as cut proceeds.
- 6 On existing Granular or Earth Shoulders, replace with 4" 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 6" corrugated metal pipe or 4" corrugated double-walled PE or PVC pipe (2'-0" long) will be paid for as "Subdrain Outlet (RF-19C)".
- 9 Connect PE or PVC outlet with an appropriate coupler. Connect CMP outlet one of two ways: (1) Insert fit reducer coupler (10" min. fit inside CMP); or (2) Insert 1'-0" of the 4" subdrain into 6" CMP and fully seal entire opening with grout.
- 10 Removable Grate Rodent Guard. See Materials I.M. 443.01.
- 11 Place porous backfill in direct contact with a minimum of 2.0" of pavement and continuous to shoulder material as per note 6 or 7.
- 12 Cut "W" notch just prior to subbase (if proposed) or pavement placement to assure uncontaminated contact.
- 13 Place top of subdrain trench at the bottom of pavement. Backfill trench so that a wedge of porous backfill has a minimum vertical contact of 2 inches with the pavement.

Possible Contract Items:
Subdrain, Longitudinal
Subdrain Outlet (RF-19C)
Possible Tabulation: 104-9

<p>Iowa Department of Transportation</p> <p>STANDARD ROAD PLAN</p> <p>REVISIONS: Labeled shoulder subdrain.</p> <p style="text-align: right;"><i>Deanna Milford</i> APPROVED BY DESIGN METHODS ENGINEER</p>	<small>REVISION</small> <table border="1"> <tr> <td>14</td> <td>10-20-09</td> </tr> </table>	14	10-20-09
	14	10-20-09	
	<p>RF-19C</p> <p>SHEET 1 of 1</p>		
<p>SUBDRAINS (LONGITUDINAL)</p>			