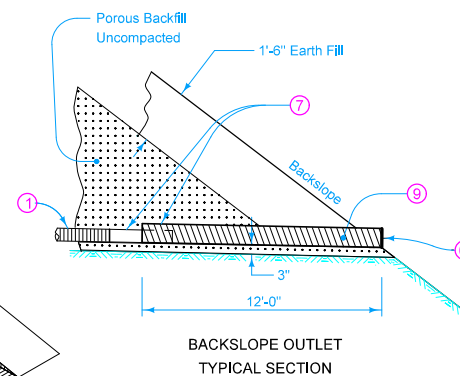
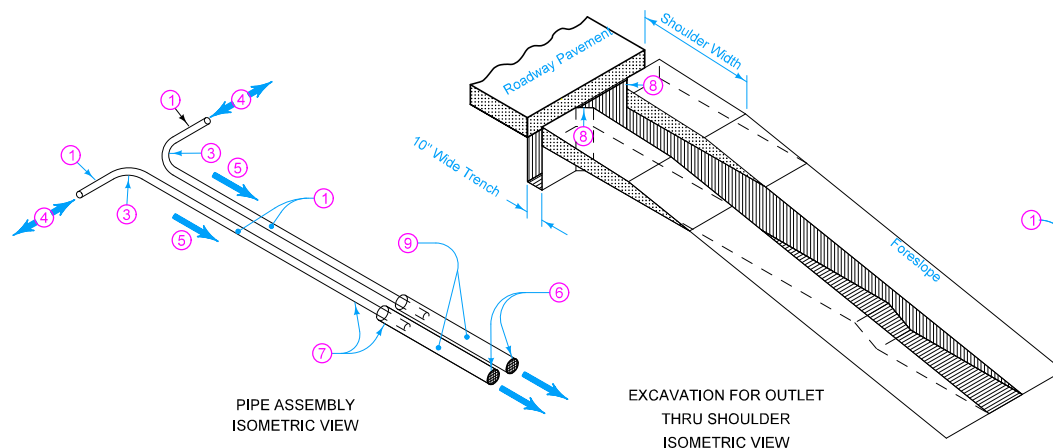


Transverse and backslope subdrains require only single outlets. Install double outlet pipes on all longitudinal subdrain systems, except at the beginning and end of the system. At these locations, install a single outlet pipe.

- ① Perforated Subdrain (Polyethylene Corrugated Tubing).
- ② On projects where existing shoulder material is removed, replace the shoulder material in accordance with Article 2502.03, C of the Standard Specifications.
- ③ 'Y' or 'T' connection will not be allowed. Place subdrain on 1 foot minimum radius.
- ④ Direction of flow.
- ⑤ 6" minimum drop in elevation between longitudinal subdrain and outlet, 12" minimum drop for projects using recycled PCC subbase.
- ⑥ On all projects except those using recycled PCC subbase, install a removable grate rodent guard fabricated from aluminum, hot-dipped galvanized steel (galvanized according to ASTM A 123), or other approved materials. For projects using recycled PCC subbase, install a removable fork rodent guard.
- ⑦ If metal pipe is used, the pipes should be coupled in one of the following ways: (1) Use an inside fit reducer coupler (coupler must be inserted a minimum of 12" into CMP); or (2) Insert 12" of the 4" subdrain into the 6" metal outlet pipe, then fully seal the entire opening with grout.
- ⑧ Bevel the trench to provide a minimum of 3" of porous backfill surrounding all portions of subdrain pipe.
- ⑨ Corrugated metal pipe outlet 2" larger than existing subdrain pipe, or corrugated double-walled PE or PVC pipe of the same diameter as the existing subdrain pipe.
- ⑩ Place class 'A' crushed stone or Special Backfill over outlet and carefully compact to avoid damaging outlet pipe.
- ⑪ Minimum 2" if attached to double walled PVC. Minimum 3.75" if attached to corrugated metal pipe.
- ⑫ Minimum 0.09" thick metal ring. Minimum 17 gauge (0.054") expanded sheet metal grate. Expanded sheet metal may be either flattened or standard.

Possible Contract Item:
Subdrain Outlet, RF-19E

Possible Tabulation:
104-5C



IOWA DOT	REVISION	
	16	10-21-14
	STANDARD ROAD PLAN	
RF-19E		SHEET 1 of 1

REVISIONS: Revised circle notes 7 and 9. Added circle notes 11 and 12. Changes made to include material from Materials I.M. 443.01.

Brian Smith
APPROVED BY DESIGN METHODS ENGINEER

**OUTLETS
FOR LONGITUDINAL, TRANSVERSE
AND BACKSLOPE SUBDRAINS**