

SECTION 615—SUBSURFACE DRAIN OUTLETS

615.1 DESCRIPTION—This work is construction of subsurface drain outlets.

615.2 MATERIAL—

- Pipe—[Section 610.2\(a\)](#); except, without perforations. Unless otherwise directed, use outlet pipe of the same materials as the underdrain or pavement base drain. Provide smooth walled PE or PVC outlet pipe, for use with PE, PVC, or ABS underdrain or pavement base drain, conforming to the above requirements and having a minimum stiffness of 483 kPa (70 pounds per square inch) at 5% deflection at all pipe diameters.
- Class A Cement Concrete—[Section 704](#)
- Red Subsurface Drain Outlet Marker—From a manufacturer listed in [Bulletin 15](#). Reflective sheeting material is not required.

615.3 CONSTRUCTION—As shown on the [Standard Drawings](#) and as follows:

Excavate the trench, leaving the bottom uniformly firm and smooth, ensuring positive gravity flow in outlet. Lay pipe on top of 50 mm (2 inches) of satisfactorily tamped embankment material. Join pipe with connecting bands or with split couplings. After the outlet pipe has been laid and accepted, backfill the trench in 100 mm (4-inch) layers, using satisfactory embankment material, then thoroughly tamp. Compact the portion of the outlet under pavement or shoulder, as specified in [Section 601.3\(f\)](#). Provide outlet opening protection as shown on the [Standard Drawings](#).

Connect to the pipe underdrain or pavement base drain using suitable couplings and fittings or special connectors; connect with a maximum 45-degree bend or series of 45-degree bends. If indicated or directed, provide satisfactory connections to join outlets to existing drainage structures.

If indicated, construct concrete endwalls to protect outlets not connected to new or existing drainage structures. If plastic pipe is used, protect ends from exposure to the deteriorating effects of sunlight, using satisfactory endwalls and trench backfill material.

Mark subsurface drain outlet using a red subsurface drain outlet marker on the side of opening facing approaching traffic. Embed the markers a minimum of 450 mm (18 inches) or as recommended by the manufacturer.

615.4 MEASUREMENT AND PAYMENT—

- (a) **Subsurface Drain Outlets.** Meter (Linear Foot)
- (b) **Class 4 Excavation.** Cubic Meter (Cubic Yard)
For subsurface drain outlet excavation in excess of that shown on the [Standard Drawings](#).
- (c) **Subsurface Drain Outlet Endwall.** Each
- (d) **Red Subsurface Drain Outlet Marker.** Each