

Section 814. PAVED DITCHES

814.01 Description. This work consists of constructing paved ditches.

814.02 Materials. Materials shall meet the following requirements.

HMA Mixture	501
Concrete, Grade P2	601
Mortar, Type R-3	702
Curing Compound	903
Steel Reinforcement	905
Geotextile Liner	910
Cobblestones	916

Hot mixed asphalt (HMA) mixture for paved ditches must be approved by the Engineer. The maximum air void content of the HMA shall not exceed two percent. Asphalt cement shall be performance grade 52 - 34 or as approved by the Engineer.

For concrete, the maximum time interval between introduction of the mixing water and placement of the concrete in the work shall not exceed one and one half hours. If additional time is required, a retarding admixture selected from the Qualified Products List may be used to delay the set time. The maximum time interval shall not exceed the manufacturer's recommendations for maximum initial time of set. Retempering is not allowed. No additional compensation will be allowed for any admixture.

814.03 Construction.

- A. **Preparation of Base.** The base shall be excavated, shaped, and compacted to the required cross section and elevation. For concrete paved ditches, the excavation shall be of sufficient width to permit the installation and bracing of forms. The excavated surplus subgrade material shall be disposed of according to subsection 205.03.P.

Where specified, the ditch bottom shall be lined with a geotextile. The geotextile shall be wide enough to cover the ditch bottom. Longitudinal seams are not permitted. Laps in lengths of geotextiles shall be a minimum of 24 inches and shall have the upgrade section overlapping the downgrade section (shingle lap).

- B. **Plain Cobble Ditch.** The cobblestones or broken concrete shall be placed on the prepared base with their longest dimensions parallel with the centerline of the ditch, with their smallest faces upward. The outer rows shall be placed first and shall consist of the larger stones. The stones or broken concrete shall be placed by hand, with staggered joints, and then tamped with a tamper weighing not less than 30 pounds until they are firmly and uniformly bedded in the base.

- C. **Grouted Cobble Ditch.** The mortar for grouting shall be of a consistency that it can be placed with a mason's trowel.

A layer of the mortar shall be placed on the prepared base from the bottom up, in a sufficient amount to embed the lower half of the cobblestones or broken concrete and fill the spaces between the stones. The stones or broken concrete shall be placed according to subsection 814.03.B. Sufficient mortar shall then be added and consolidated to fill all voids to one inch from the top of the stones or pieces of broken concrete, but leaving the

top surface exposed. Grout for cobbled ditch shall be cured and protected according to subsection 814.03.E.5.

- D. **HMA Paved Ditch.** Material shall be placed on the prepared base at a rate of not less than 220 pounds per square yard. Pavement shall not be placed on frozen grade. The thickness of the pavement shall not be less than 2 inches and shall cover the ditch bottom and each side slope.

The mixture may be placed by either mechanical or hand methods, as approved by the Engineer. After placement, the material shall be compacted to a reasonably smooth finish by means of a roller, mechanical compactor, or hand tamper. The ditch grade shall be checked during paving to assure positive drainage and no resultant ponding of water.

E. **Concrete Paved Ditches.**

- 1. **Forms.** The forms shall be wood or metal, straight and free from warp, and shall resist deflection during concrete placement. The forms shall be the full depth of the concrete. However, concrete placed at a depth below the elevation of the ditch subgrade may be cast neat to the earth, as approved by the Engineer.
- 2. **Steel Reinforcement.** Steel reinforcement shall be placed according to subsection 802.03.C.
- 3. **Placing and Finishing Concrete.** The base shall be thoroughly wetted immediately prior to concrete placement. The concrete shall be thoroughly consolidated along the faces of the forms and adjacent to the joints. The concrete surface shall then be tamped to remove all voids and struck off and floated to the required grade and cross section. All edges and joints shall be rounded to a radius of ¼ inch with an approved finishing tool. Edging and finishing tool marks shall be removed with a float and soft bristle brush.

Weather and temperature limitations for placing and curing concrete shall be according to subsection 602.03.T.

- 4. **Joints.** Construct plane-of-weakness joints according to subsection 803.03.D, except that they shall be located as shown on the plans.
- 5. **Curing and Protection.** The concrete shall be cured for a minimum period of 4 days by being kept continuously wet, or by the application of transparent membrane curing compound meeting of subsection 903.06.B.

814.04 Measurement and Payment.

Contract Item (Pay Item)	Pay Unit
Ditch, Plain Cobble	Square Yard
Ditch, Grouted Cobble	Square Yard
Paved Ditch, HMA	Square Yard
Paved Ditch, Conc	Square Yard

Ditch, Plain Cobble; Ditch, Grouted Cobble; Paved Ditch, HMA; and Paved Ditch, Conc will be measured in place. Furnishing and placing a geotextile liner, when specified, and removing and disposing of surplus materials for the installation of the liner, cobble, bituminous, and concrete is included in the cost of the ditch.