Section 814. PAVED DITCHES

814.01. Description. This work consists of constructing paved ditches using cobble, concrete, or Hot Mix Asphalt (HMA).

814.02. Materials. Provide materials in accordance with the following:

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

A. HMA Paved Ditches. Provide HMA with an air void content of no greater than 2 percent and performance Grade 52-34 asphalt cement. Obtain the Engineer’s approval for the HMA mixture in accordance with section 501.

B. Concrete Paved Ditches. Provide a retarding admixture, selected from the Qualified Products List, if placing concrete more than 1½ hours after adding water to the concrete mixture, but do not exceed the manufacturer’s recommended maximum initial set time.

814.03. Construction.

A. Preparation of Base. Excavate, shape, and compact the base to the required cross section and elevation. For concrete paved ditches, excavate to allow for installing and bracing forms. Dispose of surplus excavated material in accordance with subsection 205.03.P.

If required, line the width of the ditch bottom, as shown on the plans, with geotextile. Do not use longitudinal seams. Begin placement at the down slope end of the ditch and shingle lap geotextile at least 2 feet.

B. Plain Cobble Ditch. Place cobblestones or broken concrete on the prepared base with the longest dimensions parallel with the centerline of the ditch and smallest faces upward. Place the outer rows first, using the larger stones. Place the stones or broken concrete by hand and stagger the joints. Use a tamper of at least 30 pounds to uniformly bed cobblestones and broken concrete in the base.

C. Grouted Cobble Ditch. Place mortar with a mason’s trowel.

Begin work at the lowest elevation of the ditch. Place a layer of mortar on the prepared base to embed the lower half of the cobblestones or broken concrete and fill the spaces between the stones with mortar.
Place the stones or broken concrete in accordance with subsection 814.03.B. Add and consolidate mortar to fill voids to within 1 inch of the top of the stones or pieces of broken concrete, leaving the top surface exposed. Cure and protect the grout in accordance with subsection 814.03.E.5.

D. **HMA Paved Ditch.** Do not place HMA on frozen material. Place the HMA mixture on the prepared base to a thickness of at least 2 inches, and to at least 220 pounds per cubic yard. Cover the ditch bottom and side slopes.

Place HMA using mechanical or hand methods, as approved by the Engineer. Compact the material using a roller, mechanical compactor, or hand tamper. Check the ditch grade during paving to ensure drainage.

E. **Concrete Paved Ditches.**

1. **Forms.** Use wood or metal forms, straight and not warped, and capable of resisting deflection during concrete placement. Provide forms with a vertical face equal to the required concrete thickness.

   If concrete placement is required below the ditch subgrade, the Contractor may cast the concrete neat to the earth, as approved by the Engineer.

2. **Steel Reinforcement.** Place steel reinforcement in accordance with subsection 802.03.C.

3. **Placing and Finishing Concrete.** Place concrete in accordance with the temperature and weather limitations specified in subsection 602.03.T. Wet the base immediately before placing concrete. Consolidate the concrete along the faces of the forms and next to the joints. Tamp the concrete surface to remove voids, strike off, and float to the required grade and cross section. Do not retemper the concrete.

   Round the edges and joints of the pavement to a ¼-inch radius with a Department-approved finishing tool. Remove edging and finishing tool marks with a float and soft bristle brush.

4. **Joints.** Construct plane-of-weakness joints in accordance with subsection 803.03.D.

5. **Curing and Protection.** Cure the concrete for at least 4 days by keeping it continuously wet, or applying a transparent membrane curing compound specified in subsection 903.06.B.
814.04. Measurement and Payment.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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<tbody>
<tr>
<td>Ditch, Plain Cobble</td>
<td>Square Yard</td>
</tr>
<tr>
<td>Ditch, Grouted Cobble</td>
<td>Square Yard</td>
</tr>
<tr>
<td>Paved Ditch, HMA</td>
<td>Square Yard</td>
</tr>
<tr>
<td>Paved Ditch, Conc</td>
<td>Square Yard</td>
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</tbody>
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Conduct concrete quality control as specified in section 604. The Engineer will conduct quality assurance as specified in section 605. The Department will pay for **Paved Ditch, Conc** based on the quality assurance results and this section.

The cost of concrete or grout admixtures is included in the unit price of related paved ditch pay items.

The Engineer will measure cobble and paved ditch items in place.

The cost of providing and placing geotextile liner, and removing and disposing of surplus materials for the installation of the liner, cobble, HMA, and concrete is included in the unit prices for related cobble and paved ditch items.