

# Special Specification 3013

## Thin Whitetopping (Concrete Overlay)



### 1. DESCRIPTION

Construct 4 in. to 7 in. thick bonded concrete overlay of an asphaltic surface in accordance with the details shown on the plans and the requirements of this Item.

### 2. MATERIALS

- 2.1. **Hydraulic Cement Concrete** Provide Class K hydraulic cement concrete in accordance with Item 421, "Hydraulic Cement Concrete." Unless otherwise shown on the plans or directed by the Engineer, design the concrete mix with a maximum water cement ratio of 0.40, Grade No.4 coarse aggregate, and a minimum average compressive strength of 3,000 psi at 24 hours. Test in accordance with Tex-418-A, "Compressive Strength of Cylindrical Concrete Specimens."
- 2.2. **Joint Sealants and Fillers.** Provide joint sealants and fillers in accordance with Section 360.2.7, "Joint Sealants and Fillers."
- 2.3. **Curing Materials.** Provide membrane curing compound conforming to Section 360.2.4, "Curing Materials."
- 2.4. **Reinforcing Fibers.** When shown on the plans, provide fibers as follows, unless otherwise approved by the Engineer:
- 2.4.1 **Synthetic Fibers,** ASTM C 1116-03 Type III, Polypropylene or Nylon, 3/4" to 1 1/2" in length. Mix 3 lb. synthetic fibers for each cubic yard concrete as per manufactures recommendation.
- 2.4.2 **Steel Fibers,** ASTM C 1116-03 Type I, and certified to meet ASTM A 820-01 Type I, cold-drawn crimped-end wire, 1 1/2" to 2" in length, collated into bundles to facilitate handing and mixing. Mix 30 lb. steel fibers for each cubic yard concrete as per manufactures recommendation. Do not use steel fibers where deicing salts may be used.

### 3. EQUIPMENT

Furnish equipment as per Article 360.3, "Equipment."

### 4. CONSTRUCTION

Submit a paving plan for approval before beginning pavement construction operations. Include details of all operations in the concrete paving process, including construction method and sequence of construction operation, construction and contraction joint layout, sawing plan and sequence, curing, other details and description of all equipment.

- 4.1. **Preparation of Surface.**
- 4.1.1 When shown on the plans, mill the pavement surface to the depth specified on the plans, in accordance with Item 354, "Planing and Texturing Pavement."
- 4.1.2 Adjust the screed to provide an approved grade line and overlay thickness, as specified on the plans. To identify areas with deficient thickness prior to concrete placement, use the following or other approved methods. Attach a filler block having a thickness 1/4 in. less than the overlay thickness to the bottom of the

screed and pass the screed over the area to be overlaid. Correct areas which have deficient thickness by adjustments of the screed and/or rail system or by chipping or scarifying of the milled asphalt prior to the overlay as approved by the Engineer.

- 4.1.3 Immediately prior to concrete placement, prepare the pavement surface such that the surface is free of all contaminants and material detrimental to achieving an adequate bond between the asphaltic surface and the concrete overlay.
- 4.2 **Placing and Removing Forms.** When needed, place and remove forms in accordance with Section 360.4.5, "Placing and Removing Forms."
- 4.3 **Concrete Delivery.** Deliver concrete in accordance with Section 360.4.6, "Concrete Delivery."
- 4.4 **Temperature Restrictions for Concrete Placement.** Place concrete at temperatures in accordance with Section 360.4.7.3, "Temperature Restrictions."
- 4.5 **Spreading and Finishing.** Spread and finish concrete in accordance with Section 360.4.8, "Spreading and Finishing."
- 4.6 **Construction Joints.** Saw and seal all construction joints using a Class 5 joint seal, in accordance with Section 360.2.7, "Joint Sealants and Fillers." When placing of concrete is stopped, install a bulkhead of sufficient cross sectional area at a planned transverse contraction joint location and remove the excess of concrete. Place the bulkhead at right angles to the centerline of the pavement, perpendicular to the surface and at the required elevation. Saw and seal this joint.
- 4.7 **Curing.** Cure concrete in accordance with Section 360.4.9, "Curing," except apply curing compound at a rate of not more than 120 sq. ft per gallon.
- 4.8 **Saw Cutting Contraction Joints.** Unless otherwise shown on the plans, saw joints to a minimum depth of one-third the concrete thickness or for dry, early saw cuts, saw to a minimum depth of 1 inch. Saw cuts in lines that are perpendicular and parallel to the centerline of the travel lanes. Saw cuts perpendicular to the surface of the overlay. Saw joints for radii as detailed in the plans. Use a chalk line, offset string line, sawing template or other approved methods to provide a true joint alignment. Do not seal the saw cuts; remove all debris after sawing. The Contractor is fully responsible for the timing and order of the saw cutting to prevent uncontrolled cracking, spalling, or raveling. If excess spalling or raveling occurs at the top of the saw cuts or the intersection of saw cuts, or if uncontrolled cracking occurs before opening to traffic, remove and replace all damaged concrete panels without any additional compensation.
- 4.9 **Deficient Thickness.** The Engineer will determine the overlay thickness in accordance with Test Method Tex-423-A, "Determining Pavement Thickness by Direct Measurement," at selected locations. If the thickness of the overlay measured is deficient by more than 0.40 in. of the plan thickness, the Contractor may verify the thickness by cores taken in accordance with Test Method Tex-424-A, "Obtaining and Testing Drilled Cores of Concrete," at the locations selected by the Engineer. Remove and replace any concrete panel deficient by more than 0.40 in. of plan thickness without any additional compensation.
- 4.10 **Opening to Traffic.** The completed overlay may be opened to traffic after the concrete has been cured for 36 hours and has obtained a minimum compressive strength of 2,800 psi or as directed by the Engineer. Determine the compressive strength in accordance with Tex-418-A, "Compressive Strength of Cylindrical Concrete Specimens" using concrete cylinders cured at the job site under the same conditions as the pavement, or in accordance with Tex-426-A, "Estimating Concrete Strength by the Maturity Method".
- 4.11 **Ride Quality.** When shown on the plans, achieve ride quality in accordance with Item 585, "Ride Quality for Pavement Surfaces," Surface Test Type B.

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**5. MEASUREMENT**

This Item will be measured by the square yard of surface area in place. The surface area includes the area of the thickened ends as shown on the plans.

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**6. PAYMENT**

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Thin Whitetopping (Concrete Overlay)" of the thickness specified. This price is full compensation for materials, equipment, labor, tools, and incidentals.