

**STATE**

**OF**

**TENNESSEE**

(Rev. 4-28-97)  
(Rev. 3-1-00)  
(Rev. 8-1-01)

March 1, 2006

**SPECIAL PROVISION**

**REGARDING**

**PORTLAND CEMENT CONCRETE PAVEMENT**

**(ULTRA-THIN)**

**Description.** This work shall consist of the construction of portland cement concrete pavement in accordance with the Standard Specifications for Road and Bridge Construction except as modified herein.

**Materials.** Materials used in this construction shall meet the following requirements:

<u>Material</u>	<u>Requirement</u>
Portland Cement, Type I or Type III	AASHTO M 85
Fly Ash, Type C or Type F	AASHTO M 295
Fibers	

Fibers shall be a monofilament produced from virgin homopolymer polypropylene and shall be 38 ± 7 millimeters (1.5 ± 0.3 inches) in length. Fibers used in this application shall be suitable for secondary reinforcement of concrete and shall be added at rate of 2.0 kilograms/cubic meter (3.0 pounds/cubic yard).

When requested by the Contractor, a high range admixture Type F or Type G may be used, subject to approval of the Engineer. When an approved high range admixture is used, the slump of the concrete, achieved with water, shall not exceed 75 millimeters (3 inches) before the high range admixture is added to the mix. After the high range admixture is added to the mix, the slump may be increased to a maximum of 150 millimeters (6 inches) at the time of placement. Admixtures shall be incorporated into the concrete in accordance with the manufacturer's recommendations, subject to approval by the Engineer.

Fly ash may be substituted for cement at maximum rate of 10 percent by weight and shall be included with the cement when determining the water/cement ratio.

**Proportioning.** It shall be the responsibility of the Contractor to furnish a concrete mix design. Concrete used in this application shall develop a compressive strength of 20.7 MPa (3000 psi) within 24 hours after placement. The Contractor shall furnish the Engineer with test results from an independent testing laboratory or certified mix design technician verifying that the mix design submitted will produce a concrete pavement meeting the above requirements prior to beginning work.

**Curing.** Curing compound shall be applied at 1.5 times the normal application rate. In addition to curing compound, the concrete shall be covered with an insulating blanket-type cover if the concrete temperature or the ambient air temperature falls below 5° C (40° F) during the 24 hour period following placement. The blanket shall consist of a layer of closed cell polystyrene foam and shall be protected on one side by a plastic film. The blanket shall have a minimum R-value rating of 0.5. The blanket shall remain in place until the concrete attains the compressive strength required for opening to traffic.

**General.** The surface of the concrete pavement shall be tined as specified in Section 501 of the Standard Specifications.

Sawing of the joints shall commence as soon as concrete has hardened sufficiently to permit sawing without excessive raveling. The concrete pavement joints may be cut utilizing a soft cut saw. The joints shall be spaced equidistant between 1 and 1.25 meter (3 and 4 feet) (longitudinally and transversely). The depth of the joints shall be 20 millimeters (3/4 inch) and the width of the joint shall be 3 millimeters (1/8 inch). The joints are not to be sealed but shall be cleaned of all deleterious material after sawing.

Cores shall be taken as specified in Subsection 501.24 except that two cores shall be taken per intersection. The measurement of the cores for the thin overlay shall not be deficient more than 6 millimeters (0.25 inch) from the Plan thickness. Areas that are deficient in thickness by more than 0.25 inch shall be removed and replaced at the Contractor's expense.

**Acceptance and Opening to Traffic.** The Engineer will determine when the pavement will be opened to traffic. No traffic will be allowed on the completed pavement until the concrete has attained a compressive strength of 20.7 MPa (3000 pounds per square inch), unless otherwise directed by the Engineer.

Concrete that fails to develop a compressive strength of 27.6 MPa (4000 pounds per square inch) within 3 days shall be removed and replaced at the Contractor's expense or accepted at a reduced price. The Engineer at his discretion may allow concrete which fails to develop a compressive strength of 27.6 MPa (4000 psi) in the three (3) day time period required above to remain in place, but payment for this concrete will be made at a reduced price as provided in Subsection 604.32 as revised except that "fc" shall be defined as the three (3) day compressive strength of the affected concrete. However, any concrete which fails to develop a compressive strength of 24.2 MPa (3500psi) within the three (3) day time period shall be removed and replaced at the Contractor's expense. Any reduction in payment because of low strength will be in addition to any reduction in payment which may be made because of deficiencies in pavement thickness or rideability.

**Compensation.** Measurement and payment shall be made in accordance with Subsections 501.25 and 501.26 of the Standard Specifications, except as modified below.

If the bid schedule contains items for payment by the square meter (square yard), payment for additional concrete used for leveling will be based on the invoice price of the concrete when the concrete is purchased from a ready-mix producer. If the concrete is mixed on the project by the Contractor, the price per cubic meter (cubic yard) will be based on the invoice price of the materials plus 20 per cent. Payment will be made on only that portion of additional concrete that exceeds 4 per cent of the theoretical quantity; further, no payment will be made for additional concrete exceeding 15 percent of the theoretical quantity.

If the bid schedule contains items for payment by cubic meter (cubic yard), the accepted quantities of these items will be paid for at the contact unit price per cubic meter (cubic yard)

measured in place. Depth measurements will be made at whatever intervals necessary to accurately determine the volume of concrete placed. All concrete measured in this manner will be paid for at the contract unit price except that a reduction in price may be made for failure to achieve the compressive strength specified above.