



**SPECIAL PROVISIONS  
FOR  
HIGH PERFORMANCE CONCRETE DECK OVERLAY WITH METAKAOLIN**

**Lee County  
BRFN-218-1(74)--39-56**

**Effective Date  
October 18, 2011**

**THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**090148.01 DESCRIPTION.**

This work shall consist of developing and providing high performance concrete deck overlay (HPC-O) utilizing metakaolin.

Sections 2403, 2412, 2413, and Division 41 of the Standard Specifications shall apply with the following modifications.

**090148.02 MATERIALS.**

A high performance concrete overlay (HPC-O) with the following proportions shall be used:

- A.** The HPC-O mix shall have the following characteristics and absolute volumes per unit volume:
  - Cement 0.134
  - Fly ash (Class C) 20% replacement by weight maximum
  - Metkaolin 5.65% replacement by weight (40 pounds replacement)
  - Water 0.168 (w/c ratio of 0.40)
  - Coarse aggregate 0.317
  - Fine aggregate 0.316
  - Air 0.065
- B.** Basic w/c ratio of 0.40, with a maximum w/c ratio of 0.42.
- C.** A mid-range water reducing admixture meeting the requirements of Materials I.M. 403, Appendix C, shall be used. Dosage rate shall be based on manufacturer's recommendations with metakaolin used in the mix. Other admixtures may be approved by the Engineer.
- D.** Air content shall be in accordance with Article 2413.02, A, of the Standard Specifications, except the target shall be 6.5%, with a maximum variation of plus 2.0% and minus 1.0%.

- E. Use a dry undensified, high reactivity metakaolin meeting the requirements of ASTM C 618 Class N and the following modifications:
- SiO<sub>2</sub> shall be 50-55%
  - The sum of SiO<sub>2</sub> + Al<sub>2</sub>O<sub>3</sub> + Fe<sub>2</sub>O<sub>3</sub> shall be at least 85%
  - The loss on ignition shall be less than 3.0%
  - The available alkalis, as equivalent Na<sub>2</sub>O, shall not exceed 1.0%
  - The amount of material retained on a No. 325 sieve, when wet-sieved shall not exceed 10.0%
  - The Strength Activity Index, at 7 days, shall be at least 85%.

**090148.03 CONSTRUCTION.**

Keep bagged HRM dry. Do not allow bag or material containing moisture to be introduced into the concrete mixer. Batching and mixing procedure will be based on manufacturer's recommendation.

**090148.04 METHOD OF MEASUREMENT.**

Measurement for Deck Overlay (Class HPC-O PCC with Metakaolin) will be in square yards calculated from measurements of the areas overlaid.

**090148.05 BASIS OF PAYMENT.**

Payment for Deck Overlay (Class HPC-O PCC with Metakaolin) will be at the contract unit price per square yard. Payment is full compensation for furnishing all material, equipment, forms, and labor necessary to complete this work according to the contract documents.