**Revision of Section 401**

**Roller Pass Study - Density**

**Revise Section 401 of the Standard Specifications for this project as follows:**

**Subsection 401.17 shall include the following:**

In-place density of thin lift HMA of ▲ inches thickness or less shall be determined through the completion of a Roller Pass Study (RPS). The RPS will determine the necessary roller compaction process needed to produce a target pavement density of 94 percent of theoretical maximum density (RICE). During the RPS, a minimum of three sets of three 4-inch diameter cores each shall be taken to measure mat density for the various sections of the RPS. All coring shall be completed by the contractor and submitted to the Engineer. The densities of the three cores will be averaged to produce the density for each RPS section tested.

The Contractor shall submit a plan for the thin lift RPS to the Engineer for approval. Upon approval by the Engineer, the Contractor shall perform an RPS. The plan for the RPS shall include, but is not limited to the following:

1. Number, size, and type of rollers.
2. Amplitude, frequency, size and speed of vibratory rollers.
3. Size, speed, and tire pressure of rubber tired rollers.
4. Temperature of mixture being compacted.
5. Roller patterns.

Full production of the thin lift shall not begin until density test results are determined, and the project compaction process is established by the Contractor and approved by the Engineer. The approved compaction process established from the RPS shall be used for the duration of the thin lift paving. Changes to the thin lift mixture will be reviewed and a new RPS may be required.

Using the same method for determining density during the RPS, density will be determined for the thin lift daily for each day of production and tested to confirm pavement density. Density locations will be randomly selected by the Department. If a daily density check shows density below 92 percent of RICE, the Contractor shall stop production and the Contractor will again complete a RPS to establish the necessary compaction process. The Contractor will be allowed two daily density checks below 92 percent of RICE to be addressed in this manner during the project. All subsequent daily checks that identify locations having density below 92 percent of RICE shall be removed and replaced and a new RPS shall be completed and approved before again beginning production.

Pay factors for the mat density element and the joint density element in thin lift materials placed using the RPS will be equal to 1.

If in the opinion of the Engineer, the thin RPS presented by the Contractor is inadequate, then the Contractor shall modify the compaction procedures as directed.

**In subsection 401.22, delete the sixth paragraph and replace with the following:**

Coring for longitudinal joint density testing and mat density for RPS, core hole repair and associated expenses will not be paid for separately but shall be included in the work. Traffic control for this work will be paid for per the Contract.

**Instructions to Designers (delete instructions and symbols from final draft)**

**Use on thin lift overlay projects as determined by the Region Materials Engineer.**

**▲ Region Materials Engineer will determine the lift thickness.**