Title: Constructability Review of Surface Treatments Constructed on Base Courses

RMC Number: 1

Developed By: RMC 1 TAP, Revised by Dr Claros RTI

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Project Monitoring Committee (PMC) (Project Advisors Optional) to be determined

Duration (# of years): 2  Total Budget: $  Budget by year:

First Year FY $  Second Year FY $  Additional FYs $

Project Description: It is common practice for TxDOT to construct surface treatments (1-, 2- or 3- CST) directly over base courses. Such surface treatments may act as either wearing surfaces or underseals. There are also many other states that use surface treatments directly over base. The decision to use surface treatments is based on a number of factors including the following:

- Low life-cycle cost
- Low initial cost
- Inexpensive maintenance
- Years of favorable experience
- Availability of experienced contractors
- Availability of materials

These surface treatments have a significant influence on pavement performance. Problems associated with surface treatments include flushing/bleeding in wearing courses, debonding at the interface with the base layer, poor ride, loss of aggregate (raveling) and ineffective sealing of the pavement. When surface treatments are used as underseals, failure of the underseal may lead to failure of the surface layer. Constructability issues related to surface treatments often dictate its performance. However, a formal statewide constructability review of surface treatments over base has not been conducted either by TxDOT or by other state highway agencies in the recent past.

Recently concluded TxDOT research project 0-1787: Seal Coat Constructability Review was well received by TxDOT personnel as well as the contracting community. It resulted in a number of operational changes in seal coating procedures including a specifications update. A similar study on surface treatments placed on prepared base could make the surface treatment construction operations more effective, resulting in longer lasting and higher quality pavements. Factors related to the performance of surface treatments constructed directly over base include the following:

- Selection of projects for surface treatments over base (ADT/Truck percentage and types of traffic/Amount of stopping and turning movements/Number of intersections and ramps)
- Type of surface treatment (1-, 2- or 3-course)
- Surface preparation/moisture/ride/quality of base course
- Type, application and penetration of prime coat/binder
- Issues of special significance to stabilized bases
This research project should include the following activities as a minimum.

- A review of technical literature on the role of surface treatments on pavement performance
- A state-of-the-art review of practices in other highway agencies and in all TxDOT districts. The constructability review should include all the factors described above.
- An on-site constructability review of selected surface treatments on base for construction projects in FY 2005. The sample of projects should include the different environments and materials representing the conditions in Texas.
- Monitoring the performance of selected construction projects for the remaining duration of research project
- Recommendation to update existing specification
- Development a Design and Construction Guide for surface treatments on base courses. This document is intended for TxDOT and Contractor personnel who design surface treatments, inspect and perform work. It is intended to capture and provide pertinent information gathered or developed during the research project.

**Deliverable Products and Reports:**

Minimum deliverables Products and Reports:

1. Recommendation to update specification for construction of surface treatments over base.
4. Final Research Report that fully documents the research performed, findings and recommendations.
5. Project Summary Report (PSR) of a maximum of 4 pages to summarize work accomplished, findings and conclusions.

**Implementation:**

There is a wide variety of practices adopted by districts in the design and construction of surface treatments on base courses. In addition, there are many factors that influence the way a surface treatment would perform. An updated specification for the construction of surface treatments directly over base could result in more effective design and construction practices.

Since a specification update cannot entirely transfer all of the knowledge base produced from the research project, the guidance document will aid the TxDOT professionals in project selection, design, preparation of plans and general notes.