Construction Lesson Learned

March 2013

Achieving Rideability

Lesson
Attention to detail and teamwork in a problem-solving mode to find an innovative and responsive solution during construction achieved the ultimate rideability specification.

VDOT Specification Numbers and Title
2007 Road and Bridge Specifications - Sections 211 - Asphalt Concrete, 248 - Stone Matrix Asphalt Concrete, 315 - Asphalt Concrete Pavement, and 317 - Stone Matrix Asphalt Concrete Pavement

Explanation
A Design/Build project was recently awarded and completed to remove and replace deteriorated sections of concrete pavement on a section of I-66 from 0.25 miles west of Rte. 50 Lee Jackson Highway overpass to the Capital Beltway I-495. The scope was to patch badly deteriorated concrete pavement with full-depth concrete patches using cast-in-place or precast concrete and seal joints.

The contract documents included a tight rideability specification of “an average IRI <70 ins./mi. with no individual 0.1 mile > 80 ins./mi.” The contractor asserted that it would be almost impossible to obtain this rideability due to the condition of the existing concrete pavement and the newly placed concrete patches.

When the project got underway it was apparent the initial design was insufficient, so close collaboration was required during construction to re-design and find workable solutions to achieve the rideability specification. There were many meetings held with all stakeholders—the Design/Build Team, District Materials, FHWA, the Contractor, and the Paving Sub-Contractor—to overcome the obstacles that were encountered. The final product was created by using a combination of materials customized specifically for this project.

This document does not represent an official VDOT statement or policy or replace contractual requirements. It is intended to be an informal communication tool for staff to share information that will help in accomplishing our agency goals. Reasonable efforts are made to review content and portray information accurately, however, official sources are the final authority.
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Explanation

Once the concrete patches were completed the final riding surface consisted of a 5/8” Thin Hot Mix Asphalt Concrete Overlay (THMACO) to provide a stress-absorbing membrane interface layer; a 2-inch layer of SMA-12.5 (PG-76-22 polymer modified); a 1-1/2” layer of SMA-9.5 (PG 76-22, polymer modified); and a layer of High Friction Surface Coating to delineate the auxiliary travel lane.

The lesson is that nothing is impossible when we work as a team and use everyone’s expertise to achieve a goal. The underlying success of this project was the placement of the (THMACO) and subsequent asphalt courses to achieve a final riding surface with an average IRI of 48 ins./mi with a cost comparable to a typical design-bid-build project.

Audience
Designers, Materials, Area Construction Engineers, Construction Managers, and Inspectors

Contributors
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