HFST Initiatives by INDOT: In-House Project Design, Special Provision Specification, and Initial Test Results

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HFST Recurring Special Provision 617-T-213

• RSP 617-T-213 Development

Adapted from Illinois DOT Special Provision

Met with Industry & Research Division in Sept. 2015

Received comments from FHWA

RSP approved at May 2016 Standards Committee Mtg
• Differences from the Illinois DOT Special Provision
  - Quality Control Plan Review of 14 days
  - Added Compressive Modulus @77°F to the Polymeric Resin Spec (lower range is better for HMA pavement and acceptable for PCCP)
  - Replaced LA Abrasion Test with Micro-Duval Abrasion Test for the Aggregate
  - Added Moh’s Hardness, Polished Stone Value, and Sodium Sulfate Soundness Requirements for the Aggregate.
• Polymeric Resin Binder
  - Cure rate (dry through time) = 3 hrs max.
  - Gel time for concrete surfaces = 10 minutes
  - Ultimate tensile strength = 1,500 to 5,000 psi
  - Mixing ratio per manufacturer (must be provided to INDOT at least 14 days before installation).
• Calcined Bauxite Aggregate
  - Aluminum oxide content = 87% min.
  - Gradation = 100% of aggregate is smaller than 4.75 mm and 95% of the aggregate is bigger than 3.35 mm
  - Hardness (Mohs Scale) = 8 min.

Source: Missouri Department of Transportation
Surface Preparation & Weather Restrictions

- Surface must be clean with PCCP surfaces being cleaned by shot blasting and HMA surfaces cleaned with an air wash of compressed air.
- New pavement or crack sealing or PCCP/HMA patches must be applied at least 30 days before HFST installation.
- Application temperature range: 60°F to 105°F
- No rain forecast during application or curing
Installation Requirements (Fully Automated Method)

- Contractor must use a truck mounted application machine.
- Polymeric resin binder minimum thickness = 50 mils
- Aggregate from a drop spreader at 11 lb/sys (min.)
- Minimum continuous application rate of 2300 sys/hr

Source: Dbi Services
HFST Unique Special Provision

• Installation Requirements (Semi-Automated Method)
  ➢ Distribution system capable of blending the polymeric resin binder in accordance with manufacturer requirements.
  ➢ Aggregate from a drop spreader to cover area within 5 min.
  ➢ Identical to requirements for polymeric bridge deck overlays in RSP 738-B-297.

Polymeric bridge deck overlay on westbound I-74 over SR 44
HFST RSP 617-T-213

• Clean-up and Acceptance
  ➢ Initial clean-up before opening to traffic.
  ➢ Second clean-up 3 to 5 days after installation.
  ➢ Field testing by INDOT
    - Mean profile depth of 1 mm (min.)
    - Dynamic friction > 0.90
  ➢ Any failing sections must be removed and replaced
<table>
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<th>Contract</th>
<th>Quantity (sys)</th>
<th>Unit Price (per sys)</th>
<th>Cost</th>
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HFST Contractor Prequalification

• Separate HFST Contractor Prequalification Category
  • Work Type 0196, Pavement High Friction Surface Treatment
  • 5 contractors currently prequalified
  • Minimum requirements for equipment and experience
Conclusion

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