


Virginia Department of Transportation

**VDOT High Polymer Asphalt – Implementation of NCAT Test Track Research**

**Southeastern Asphalt User Producer Group  
Williamsburg, VA**

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**What is Hi-Polymer Asphalt ?**

**Material**

- Most binder is typically PG64-22
- Polymer modification to get PG76-22 (typically 3% - 3.5%)
- Hi-Polymers (SBS) are typically about 7.5%
- HP spec. requires PG76-28E with min. elastic recovery of 90%


**Properties**

- More flexible
- Stiff but not brittle

**Performance**

- Improved resistance to rutting
- Improved resistance to thermal (environmental) cracking
- Improved resistance to fatigue cracking


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**NCAT Experience**


**Test Section N7 (2009)**

- Hi-Polymer mixes
- 5.75" Hi-Polymer section
- 7" control section
- Hi-Polymer section - less rutting




**Test Section N8 (2010)**

- OK heavy pavement
- Original section failed
- Hi-Polymer mix used
- Performed very well



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**Why Hi-Polymer Asphalt ?**

**Potential Benefits – Low Volume Roadways**

- Reduce the amount of patching
- Improve performance (less cracking)
- Longer life cycle


**Potential Benefits – High Volume Roadways**

- Delay the onset of reflective cracking (composite pavements)
- Improve fatigue resistance = improved performance
- Reduced pavement thickness for same performance

**Potential Challenges**

- Increased cost of polymer modified binder
- Hand work is very difficult with some mixes

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**Hi-Polymer Applications in NoVa**

**Subdivision**

- Summerwood Circle and cul-de-sacs
- Completed paving in August, 2014
- SM-9.5A HP and control SM-9.5A HR

**Interstate**

- I-95 in Prince William County
- Paving in Summer/Fall, 2015
- SM-12.5E HP, SM-9.0E HP, SMA-9.5 HP

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**Summerwood Subdivision**



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### Summerwood Subdivision

**Background**

- Typical subdivision streets
- CCI ratings 6 to 34, average 20



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### Summerwood Subdivision

**Pavement Structures**

- Cul-de-sac
- Typically 3" AC over 6" aggregate
- Fatigue and thermal/environmental cracking



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### Summerwood Subdivision

**Pavement Structures**

- Summerwood Circle
- Typically 4.5" AC over 8" aggregate
- Thermal /environmental cracking



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### Summerwood Subdivision

**Milled Surfaces (Cul-de-sacs)**

- Thin structures
- Base layers cracked



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### Summerwood Subdivision

**Milled Surfaces – Summerwood Circle**

- Thicker structure
- Mostly block cracking



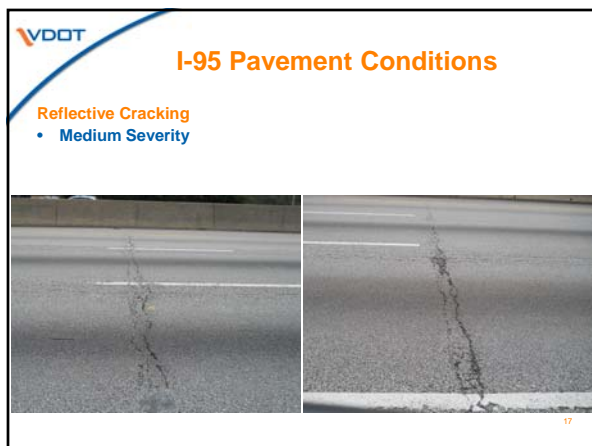
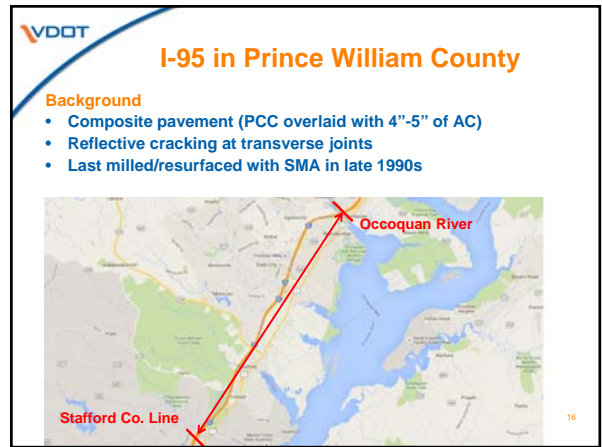
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### Summerwood Subdivision



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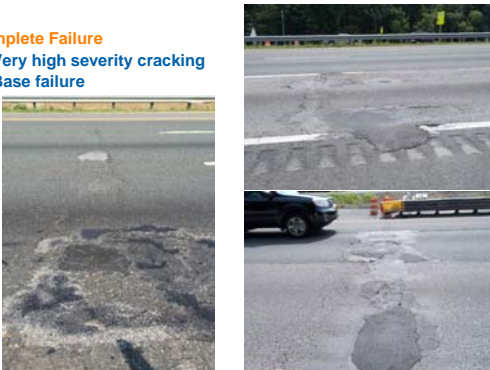


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### I-95 Pavement Conditions

**Complete Failure**

- Very high severity cracking
- Base failure



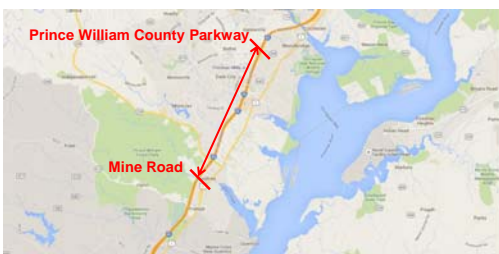
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### I-95 in Prince William County

**Current Projects**

- Prince William County Parkway to Mine Road, SB and NB
- Mill 2"
- Resurface with 2" SM-12.5E



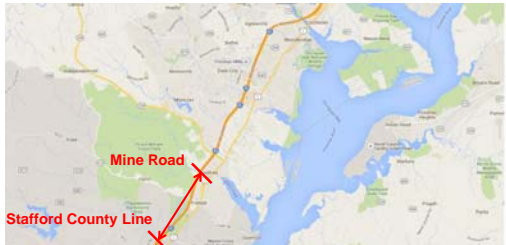
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### I-95 in Prince William County

**Current Projects**

- Mine Road to Stafford County Line, SB and NB
- Mill 2", patch at joints
- Resurface with 2" SM-12.5E (HP)



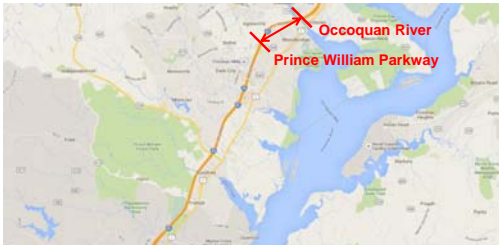
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### I-95 in Prince William County

**Current Projects**

- Occoquan River Bridge to Prince William Parkway, SB
- Mill 2", patch at joints
- Resurface with 1" SM-9.0 (HP) and 1.5" SMA-9.5 (HP)



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