



Virginia Center *for* Transportation
INNOVATION
& **RESEARCH**

We bring innovation to transportation.

Update on VDOT's Asphalt Research Activities

- VAA Spring Meeting
- April 24, 2015

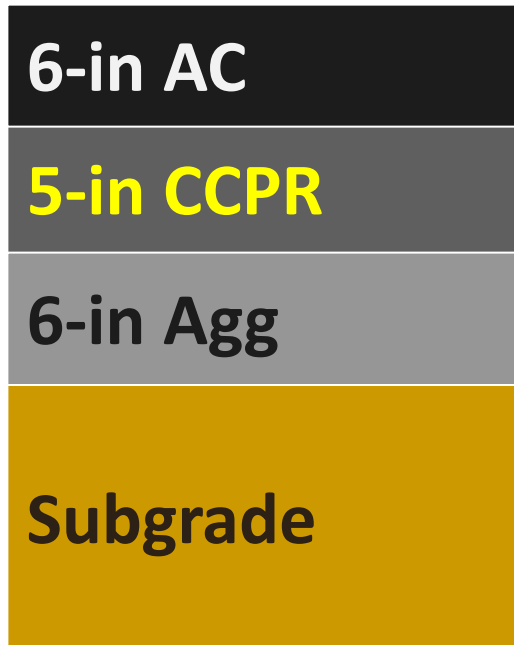
NCAT In-Place Recycling (CCPR)

- N3 & N4 => 6 inch and 4 inch overlay
- S12 => 4 inch overlay with FDR foundation

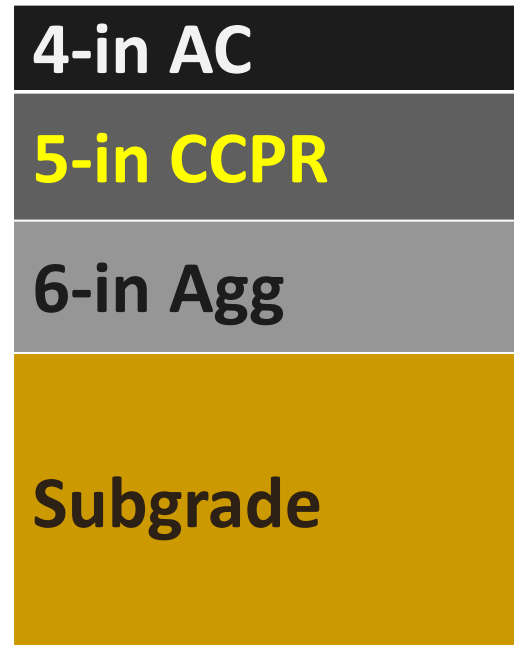


NCAT Recycled Sections

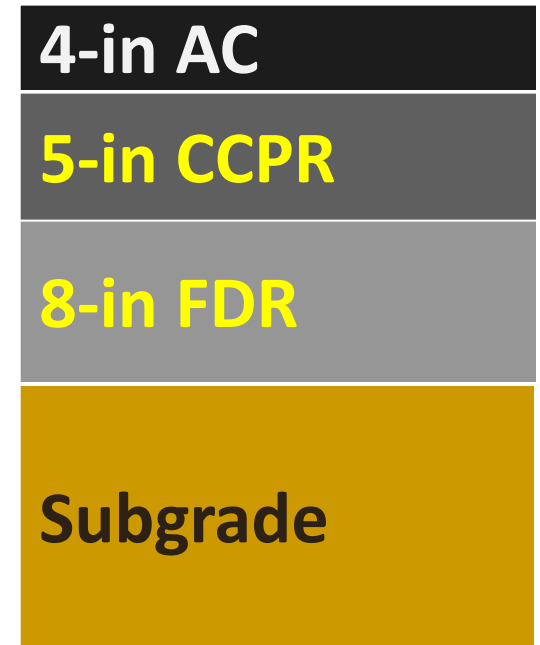
N3



N4



S12



NCAT In-Place Recycling (CCPR)

- **What we've learned**
 - **In-place recycling successful on high truck volume sites**
 - No cracking at 10 million ESALs
 - Ride quality is unchanged
 - Rutting < 0.25 inches



NCAT In-Place Recycling (CCPR)

- **Continue trafficking for 2015 Track Cycle**
 - NCAT 2 year study = 10 million ESALs
 - I-81 recycling project = 2.1 million ESALs per year
- **Where can we apply what we've already learned?**



CCPR Application

- **CCPR process can be used not only for pavement rehabilitation but also new construction**
- **A 6 inch thick CCPR base can use approximately 2100 tons of RAP per lane mile**



High RAP Efforts in Hot Mix

- **Current VDOT Specification allows up to 30% RAP in surface mixtures**
- **In 2013 and 2014 increased efforts to use more RAP**
 - Up to 45%
- **Cooperative effort between VDOT and industry**



High RAP Project

Project Scope: Can we successfully design, produce, and place mixtures with RAP contents $\geq 40\%$?

- **Methodology**
 - **Construct field projects**
 - **Document processes and collect materials for testing**
 - **Laboratory analysis and performance testing**
 - **Long-term field performance monitoring**



Project Locations

2013

- Rte. 3, Fredericksburg
(20%, 30%, 40% and 45% RAP)
- City of Hampton
(30% and 40% RAP)

2014

- Rte. 639, Fredericksburg
(40% RAP)
- Rte. 60, Lynchburg
(0%, 30%, 40% and 45% RAP)



Other Potential Uses of RAP

- Working with Materials Division to develop a Special Provision to use RAP in unbound pavement layers (the first step will be a laboratory based study as a technical “proof of concept” that it can be done successfully)
- Working with Materials Division and residency offices to consider RAP/Virgin aggregate blend on unpaved roads to assist with stabilization and dust control. (*Loudon County in the NOVA district has been targeted*)
- Working as part of the VDOT-VAA co-op to identify other ways to use RAP, either in lieu of or in addition to conventional materials:
 - Possible sale of RAP to VDOT area headquarters for their every day operational needs
 - Possible allowance of RAP for use as shoulder stone on VDOT contracts
 - Others?



VDOT Accelerated Pavement Testing Program

- **A means to study pavement performance**
 - **Under controlled conditions, more rapidly**
 - **Less risk to the public / agency/ industry**
 - **Simulate loading and temperature**



VDOT Heavy Vehicle Simulator

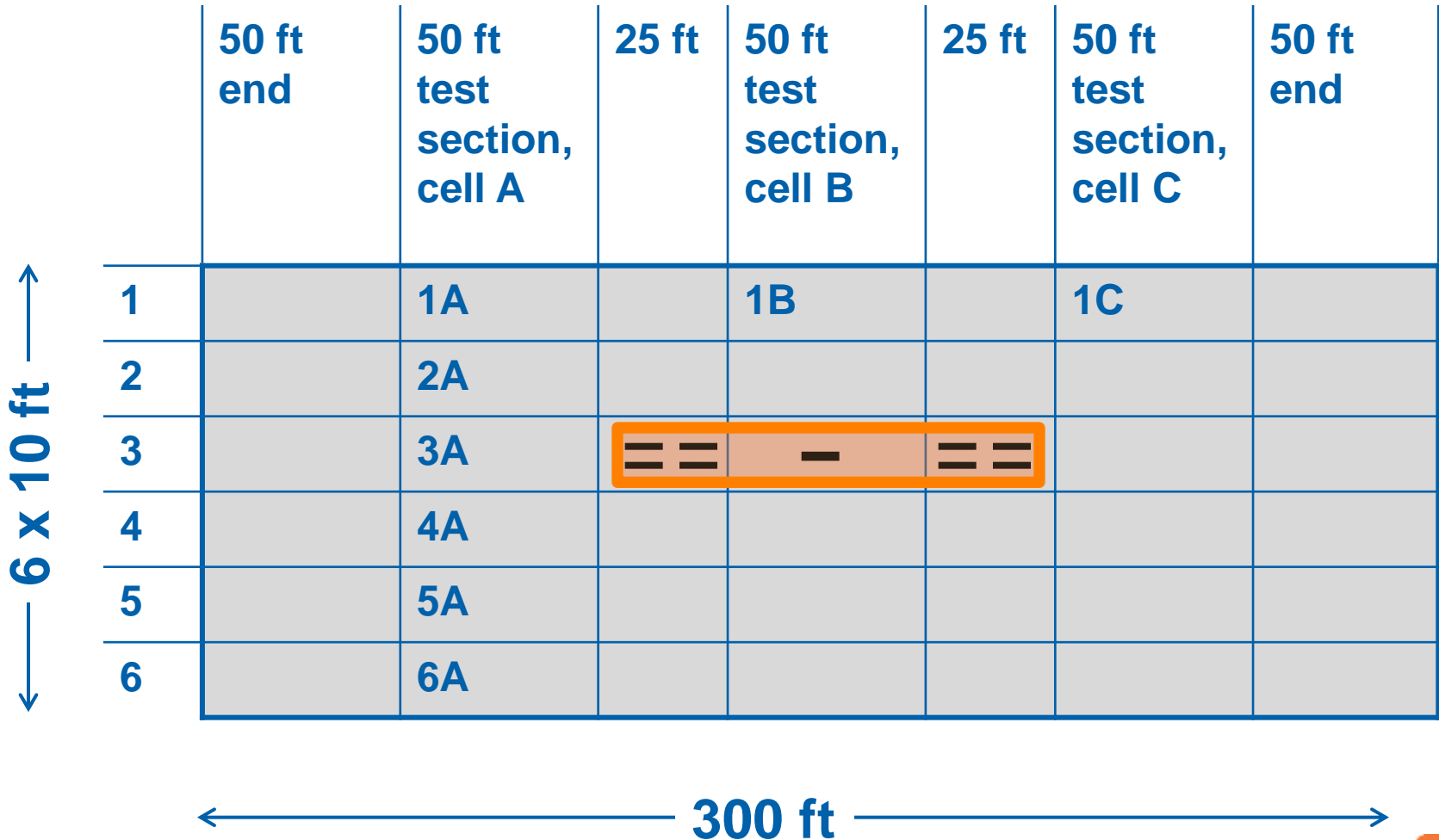
- Expect delivery Fall 2015



Location, VTTI



Test Yard Layout



Administration

Technical Working Group

(Co-Chaired by Babish, Gregg, Gomez)

– VDOT

- Rob Crandol, Tanveer Chowdhury, David Lee, David Shiells, Michael Sprinkel, Brian Diefenderfer, + one District Maintenance Engineer

– Industry

- Trenton Clark, Bob Long, Ed Dalrymple

– Virginia Tech

- Gerardo Flintsch

• Executive Oversight

- Deputy Commissioner and Chief Engineer





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Thank You!

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