City of Newport News Turn Lane Whitetopping

2009 Virginia Concrete Conference
Count on Concrete: The Strong Investment

Sheraton Park South Hotel
Richmond, Virginia

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Presented by Bob Long
American Concrete Pavement Association
Mid-Atlantic Chapter
Family of Concrete Overlays

Concrete Overlays

Bondered Resurfacing Family

- Bonded Concrete Resurfacing of Concrete Pavements
- Bonded Concrete Resurfacing of Asphalt Pavements
- Bonded Concrete Resurfacing of Composite Pavements

Unbonded Resurfacing Family

- Unbonded Concrete Resurfacing of Concrete Pavements
- Unbonded Concrete Resurfacing of Asphalt Pavements
- Unbonded Concrete Resurfacing of Composite Pavements

Thinner

Old pavement is base

Thicker

Bond is integral to design
Bonded Resurfacing Family

- Thin Overlays (2” – 6”)
- Over concrete, asphalt, and composites
- Bond is critical
Uses and Advantages - Bonded Resurfacing of Asphalt or Composite Pavements

- Use when existing pavement is in fair or better structural condition with surface distress.
- Use to eliminate any surface defects; increase structural capacity; and improve surface friction, noise, and ride.

2”–6” thickness
Uses and Advantages- Bonded Resurfacing of Asphalt or Composite Pavements

- Typically used directly over asphalt without additional repairs except for milling.
- Used with lower traffic volumes
- Working cracks in existing pavement will not reflect through.

2”–6” thickness
Bonded Concrete Resurfacing of Asphalt Pavements

CONCRETE RESURFACING OF ASPHALT PAVEMENTS
Bonded Concrete Resurfacing of Composite Pavements

- New 2–5 in. (5.1–12.7 cm) thick bonded resurfacing with square panels
- Milled and cleaned surface
- Full-depth repair patches
- Normal cracks with openings less than the maximum size overlay aggregate do not need to be filled
- Normal longitudinal & transverse thermal cracking
- Localized fatigue cracks (alligator cracking)
- Shoving
- Slippage
- Rutting
- Pothole
- Bleeding

Existing composite pavement with asphalt surface distresses
Milling: Bonded Resurfacing of Asphalt or Composite Pavements

The three main objectives of milling:

1. to remove significant surface distortions that contain soft asphalt material, resulting in an inadequate bonding surface
2. to reduce high spots to help ensure minimum resurfacing depth and reduce the quantity of concrete needed to fill low spots or to maintain final surface elevation; and
3. to roughen a portion of the surface to enhance bond development between the new concrete overlay and the existing asphalt. (don’t leave a thin lift)
Important Elements-Bonded Resurfacing of Asphalt/Composite Pavement

- Clean Surface/Bond is important for good performance
- Thin milling may be required to eliminate significant surface distortions of 2” or more and provide good bond.
- Leave at least 3” remaining asphalt after milling.

- Control surface temperature of existing asphalt to below 120°F.
- Try to keep joints out of wheel paths.
- Curing should be timely and adequate.
- Small joint spacing to minimize bonding shear stress
Evaluations of Existing Pavements for Overlays

- Evaluation establishes if existing pavement is a good candidate for an overlay.
  - The condition of the existing concrete pavement can be initially assessed through:
    - a visual examination of the type, severity, and extent of existing distresses.
    - Concrete material condition can be obtained through analysis of cores taken from the existing pavement.
  - Can it provide an uniform and stable support system for the overlay?
    - Surface deflects can be overcome.
    - Does the condition of the pavement fit the type of overlay proposed?
    - Is the existing slab or joints moving?
Other Project Considerations:

- Curb & gutter and other geometric issues
- For composite pavements, is the thickness of the asphalt overlay adequate for the desired overlay type?
- Jointing
- Traffic count
- Maintenance of traffic
J. Clyde Morris Blvd at Thimble Shoals

- 7:00 AM → Lane Closure
- 7:35 – 8:10 AM → Perimeter Saw Cutting
- 8:30 AM – 12:00 PM → Milling
- 12:00 – 1:30 PM → Paving Prep
- 1:30 – 3:40 PM → Concrete Placement
- 7:00 – 10:00 PM → Joint Saw Cutting
J. Clyde Morris Blvd. at Thimble Shoals

• 11:30 PM → Contractor Leaves Site
• May 4th, 2:00 PM → Concrete = 2,000 psi
• May 5th, by 5:45 AM → Lane Opened
Northbound Jefferson Ave. at Fort Eustis Blvd.

- 7:00 AM → Lane Closure
- 7:30 AM – 9:50 AM → Milling
- 9:00 – 11:05 PM → Paving Prep
- 10:30 – 12:00 PM → Concrete Placement
- 10:50 – 11:35 → Placement of Loop Detectors
- 5:10 – 7:00 PM → Joint Saw Cutting
Northbound Jefferson Ave. at Fort Eustis Blvd.

- 8:30 PM → Contractor Leaves Site
- November 2\textsuperscript{nd}, 12:30 PM → Concrete = 2,000 psi
- November 3\textsuperscript{rd}, by 6:00 AM → Lane Opened
Questions??
THANK YOU!

www.midatlantic.pavement.com
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