Asphalt Quality Task Force Update
Regional Asphalt Seminar

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Asphalt Quality Task Force

**Background – Authorized by Chief Engineer**

“The purpose of the Task Force is to discuss and suggest possible improvements to enhance asphalt quality by reviewing the VDOT rideability program and proposing other simple measures and positive contract language that would increase the quality of our projects and provide for a level playing field for our contractors. In other words, a simple workable contracting mechanism that would help encourage quality.”
Task Force Team

**Industry**
*David Helmick, Superior Paving Company*
*David Branscome, Branscome Paving Company*
*Trenton Clark, Virginia Asphalt Association*
*Ed Dalrymple, Chemung Contracting Company*
*David Horton, Virginia Paving Company*
*Richard Schreck, Virginia Asphalt Association*

**VDOT/VCTIR**
*David Shiells, NoVa District Materials Engineer*
*Ron Crandol, Asphalt Program Manager*
*Jon Dowell, Maintenance Contract Manager*
*Rick Kibler, Construction Manager*
*David Lee, Salem District Materials Engineer*
*Kevin McGhee, Associate Principal Research Scientist*

*Co-Chairman*
How Do We Define Asphalt Quality?

Road and Bridge Specifications

Special Provisions

Road and Bridge Standards

Consistency!
Measures of Asphalt Quality

Laboratory Test Results (Mix)

- Meet job mix formula
- Consistent
Measures of Asphalt Quality

Field Density

✓ Meets minimum specification
✓ Uniform and consistent
Measures of Asphalt Quality

Smoothness/Rideability

✓ No bumps, IRI less than 70 ins/mile
Measures of Asphalt Quality

Longitudinal Joints

✓ Straight, good density
Measures of Asphalt Quality

Transverse Joints

- Smooth, straight, barely visible
- Length of transition
Measures of Asphalt Quality

Uniformity of Texture

✓ No texture variation, no segregation
Good Quality Paving Practices

Use of MTV

- Reduces mix segregation
- Reduces thermal segregation
- Minimizes trucks bumping into paver
Good Quality Paving Practices

Use of Automation/Skis

- Pavers
- Milling Machines
Good Quality Paving Practices

Performance Milling

- Smoother pavement surface
- More teeth on milling drums
- Safer for motorists
Good Quality Paving Practices

Uniform and Sufficient Tack

- All exposed surfaces
- Longitudinal joints
- Transverse joints
Good Quality Inspection Practices

Straight Edge

- Transverse joints
- Frequent checks
How Do We Achieve Quality?

Incentives/Disincentives
• Appropriate incentives for high quality work
• Appropriate disincentives for poor quality work

Enforcement of Specifications
• Ensures minimum level of quality
• Discourages poor performance

Education
• Inspectors, foremen, managers, roller operators

Good Specifications
• Encourage quality work
• Measurable and achievable

Accurate Testing
• Incentives/disincentives based on test results
Goals for Recommendations

• Immediate impact
• End result wherever possible
• Cost effective
• Easy to implement
• Simple/easy to understand
Task Force Recommendations

#1 - Make the “incentive only” specification a default on all maintenance and construction projects with speed limits ≥45 mph not subject to the incentive/disincentive specification; complete a pilot project with “before” and “after” ride testing to evaluate effectiveness of the “incentive only” specification

- Pilot projects completed on the Fairfax County Parkway in 2012 and on the Prince William Parkway in NoVa in 2013
- Incentive >$530,000 on FCP
- PM-7A-13, PM-7C-13 and PM-7E-13 (various routes) completed in Culpeper district in 2013
- Control sites completed in Fredericksburg, Staunton, Hampton Roads and Richmond
- VCTIR evaluating results
- Target completion date: February 28, 2015
#2 - Evaluate the cost effectiveness of making the “incentive only” ride spec. a default spec. and evaluate the effect on ride quality; review the rideability test data to determine if there is a benefit to making the incentive only spec. a default and make adjustments if bonuses are being paid for rough pavements

- Research Project “An assessment of Incentive-Only Ride Specification for Asphalt Pavements” has been initiated
- Criteria for application of rideability specification (minimum traffic volume, speed, etc.)
- Target completion date: February 28, 2015
#3 - Review the rideability test data and incentive/disincentive payments to determine if incentives/disincentives are set at appropriate levels to encourage quality asphalt construction

- Archive data has been assembled and is under review
- VDOT has some of the highest incentives of all state DOTs
- Target completion date: February 28, 2015
Task Force Recommendations

#4 - Make joint density measurement, recording and reporting mandatory for all maintenance work in 2013 and review the data at the end of the year to determine if incentives/disincentives are appropriate

Plant Mix Schedules, 2013, Vol. 2 of 2, Section 315.05 (e)1.b

“At each test site in the sublot, the longitudinal joints shall also be tested for density using a nuclear density gauge. For surface and intermediate mixes, the gauge shall be placed within 4 inches of the joint. For base mixes, the gauge shall be placed within 6 inches of the joint. The gauge shall not be placed over top of the joint. The joint density shall be recorded. If a single longitudinal joint density reading is less than 95 percent of the target control strip density, the Contractor shall institute corrective action. The values obtained from the joint readings will not be used in payment calculation. By the end of the day’s operations, the Contractor shall furnish the test data developed during the day’s paving to the Engineer.”
#4 - Make joint density measurement, recording and reporting mandatory for all maintenance work in 2013 and review the data at the end of the year to determine if incentives/disincentives are appropriate.
#5 - Revise the current specifications to clarify that performance milled surfaces can be left open to traffic over weekends and up to 14 days total.

Plant Mix Schedules, 2013, Vol. 2 of 2, Special Provision for Cold Planing (Milling) Asphalt Concrete Operations, October 1, 2012, Section III.A:

“Performance planed surfaces must be paved back within 14 calendar days from the start of the performance planing operation....The Contractor is required to perform pavement surface testing in accordance with Section 515.04 of the specifications to verify he has achieved the acceptable surface texture prior to opening the performance planed surface to traffic.”
#6 (Revised 10/14/13) – Review available methods to evaluate pavements and determine depth of milling and other repairs necessary to produce a long lasting pavement

- Very difficult to evaluate depth of milling during planning stages
- What is the best way to evaluate patching type and quantity?
- Draft research needs statement (RNS) to evaluate potential use of falling weight deflectometer (FWD) and ground penetrating radar (GPR) under review
Task Force Recommendations

#7 - Review available technologies to measure surface uniformity and develop a specification for surface uniformity

Transportation Research Board SHRP 2, Project R06C, published December 31, 2013

- High speed ground penetrating radar (GPR) and infra-red (IR) technologies to measure surface uniformity
- IR system can measure thermal segregation
- GPR system can measure density and density variability across full mat width and length
#8 - Perform an independent QA review of all paving schedules by experienced personnel to include field reviews prior to advertisement

- Schedule for contract submissions provides limited time for making adjustments/corrections
- Good process to ensure that changes after award of contract are minimized
- Target completion date: August 1, 2014
Task Force Recommendations

#9 - Develop corridor/subdivision strategy to encourage repaving of corridors and subdivisions at one time

- Informally being applied in some districts
- Maintenance Division will provide further guidance
- Target completion date: August 1, 2014
Task Force Recommendations

#10 - Develop policies/guidelines for use/application of high performance asphalt mixes and guidelines for pavement markings consistent with those mixes

- Guidelines are currently in place for most mixes
- SMA mixes and special mixes for intersections
- Work needed to align life cycles of pavement markings with life cycles for mixes
- Target completion date: July 1, 2014
Task Force Recommendations

#11 - Review alternative non-intrusive technologies for vehicle detection

- Loop detectors are problematic in new pavement surfaces
- Accuracy of loop detectors is excellent with low initial cost
- Alternative non-intrusive technologies include video, radar, microwave and infrared
- Accuracy of video detection is an issue at night and in adverse weather conditions
Task Force Recommendations

#12 - Re-establish the Regional Asphalt Field Engineer positions to provide advice, training and quality assurance to field personnel (VDOT, contractor and consultant)

- Two positions have been approved and assigned to the Central Office Materials Division
- Each position will cover 3 districts on a regional basis
- Goal is to provide field support to all field personnel (VDOT, consultant, county, etc.) on all types of projects (design-bid-build, design-build, PPTA, locally administered, county, permit and land development)
Task Force Recommendations

#13 - Continue the Asphalt Quality Task Force to promote asphalt quality and review new technologies as well as application of existing technologies related to asphalt quality

- Group of experienced and knowledgeable professionals from VDOT, industry and research that is dedicated to improving the quality of asphalt concrete in Virginia
- Implement quality initiatives and champion quality
Who is Responsible for Asphalt Quality?
Who is Responsible for Asphalt Quality?

Not Me!
Questions ?