Roadway Issues

10th Annual ASHE/PennDOT/PTC Conference

April 4, 2014

By: Charles J Buchanan, P.E.
Engineer Project Manager 3
Pennsylvania Turnpike Commission
Engineering Design – Roadway

Roadway Issues

- **2014 Roadway Resurfacing Projects**
- **Cross Slope Tolerance**
- **Stormwater Basins**
- **Temporary Barrier – Steel Option**
- **Location of Joint Sealing, Pav't Markings & SNAP**
- **Epoxy Pavement Markings**
- **Micro Surfacing**
- **Sealing with GSB-88**
- **Researching New Sealer Options**
- **Inlets**

2014 Roadway Resurfacing Projects

- Scheduled to pave 50 miles this year
  - MP 138-142, Combination of 4 ½" Mill and Pave and Full Depth Mill and Pave
  - MP 148-161, Combination of 2" Mill and Pave, 4 ½" Mill and Pave and Full Depth Mill and Pave
  - MP 255-263, Full Depth Mill and Pave
  - MP 275-282, Full Depth Mill and Pave with **Stone Matrix Asphalt Wearing Course** and Concrete Median Barrier Replacement
  - MP 340-345, Full Depth Mill and Pave Left & Center Lane & 1 ½" Mill and Pave to right lane and Concrete Median Barrier Replacement
  - MP A31-40, 2" Mill and Pave, include paving at Quakertown Interchange, Quakertown Maintenance and Quakertown Park-n-Ride
  - MP A69-73, 2" Mill and Pave
- Paving at 4 interchanges
  - Wyoming Valley Interchange – Full Depth Mill and Pave
  - Donegal Interchange
  - Willow Hill Interchange
  - Bedford Interchange along with Rock Fall Fence MP 145.81 to MP 146.58

Cross Slope Tolerance

- What is the tolerance that is used in the field to verify that the cross slope of the roadway and shoulders are being built according to the specifications?
- CS 105.03 – Preform work within close conformity to the lines, grades, dimensions and details, and/or as specfifed.
- PTC Special Provision included in the MP 44-48 and MP 220-227 Total Reconstructions this year.

Cross Slope Tolerance – cont.

- **FXX.00 PAVEMENT CROSS SLOPE**
- In accordance with Section 105.12 (Defective Work and Material), reasonably close conformity for the pavement cross slope is defined as ±0.2% of the design cross slope for travel lanes and ±0.5% of the design cross slope for shoulders and medians. The specified tolerances are applicable to each pavement structure course including subbase, asphalt treated permeable base course, base course, binder course and wearing course.

Cross Slope Tolerance – cont.

- The Representative will check the cross slope at approximately 100’ intervals for the binder course and wearing course for each travel lane and the shoulders and median. The Representative reserves the right to check and require corrective action to be performed on any other pavement structure course to comply with the specified tolerances.

Cross Slope Tolerance – cont.

- The Contractor must perform corrective actions to bring the binder course cross slope to within the specified tolerances prior to paving the wearing course.
- The Representative will check the cross slope of the wearing course following final compaction and again if any corrective action is taken to comply with the requirements of Sections 404 and 409.

Cross Slope Tolerance – cont.

- The Contractor must perform corrective actions as approved to bring the wearing course cross slope to within the specified tolerances. The Commission reserves the right to require removal and replacement of any pavement deemed defective.

Stormwater Basins

- *Construction Concerns*
  - Final Basin Elevations need to be verified and CORRECT
  - Can NOT run Heavy Equipment in any new bio-retention basins during construction since the soils are NOT to be compacted – this includes running heavy equipment on the bottom grade prior to placing any amended soil
  - Final grading – Needs to be in accordance with Roadside Clear Zone Requirements

Continue -Stormwater Basins

- *After Construction – It's just the beginning*
- Post Stormwater Management requirements begin
- PTC Roadway Unit performs annual inspections to all BMPs system-wide and issues any necessary repairs via Maintenance or Construction (Job Order Contract)

Final Roadside Clear Zone Grading

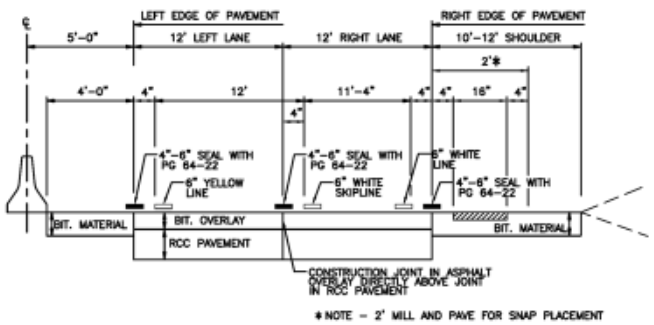
Temporary Barrier – Steel Option

- Allowing on some projects as an option. In 2014 allowed on two Resurfacing projects. Allowed in three projects last year but have not seen a roadway contractor go with this option to date – one bridge contactor used last year with success.
- If used in a project it would be a Special Provision – Temporary Barrier NOT the Standard CS 627 Spec - Temporary Concrete Barrier

Location of Joint Sealing, Pavement Markings & SNAP

Issues for Proper Placement

- Sealant over paint lines
- Shoulder settlement or premature shoulder joint failure due to traffic running on shoulder pavement versus lane pavement
- Raveling of shoulder if SNAP placed on older shoulder pavement surface



PLACEMENT OF JOINT SEALING, PAVEMENT MARKINGS AND SNAP

Epoxy Pavement Markings

- Triple Drop Epoxy Pav't Markings
  - 2013 Issues
    - Groove not CLEAN and DRY prior to epoxy operations commencing


22 9:04AM


22 10:34AM

Cont. - Pavement Markings

- In 2013 - All resurfacing projects installed Triple Drop Epoxy Pav't Markings – including in gores
- In 2014 – continuing to place Triple Drop Epoxy Pav't Markings in all projects - gores changed to waterborne

Micro Surfacing

- Preventive maintenance (PM) seals & protects

  Extend pavement life

  Delay future deterioration

  Enhance pavement performance

Micro Surfacing

- Used a Double Application – Type A, SRL-E (35 – 40 Lbs. / SY) - ½" total thickness
- In 2011 - MP 85 – 94 & MP 109-122
- In 2013 - MP 306 – 319

Micro Surfacing Problems MP 109-122

- In December of 2012, delamination issues developed for the first time. Areas were between MP 117 and MP 113 WB Left Lane and between MP 112.1 and 114.25 EB Right Lane. These areas were repaired in June 2013 by the contractor.
- In December of 2013, delamination issues developed for the second time – including areas that were repaired 6 months earlier.

Micro Surfacing Problems
MP 109-122

- Coordination with contractor concerning newest failures still ongoing – looking to repair this summer.

Micro Surfacing Problems
MP 109-122

Micro Surfacing Problems
MP 109-122

Micro Surfacing Problems
MP 109-122

Micro Surfacing Problems
MP 109-122

Sealing with GSB-88

- 1:1 or 2:1 Dilution – Dilution rate will be specified in Contract
- Test Strip Area
- Paid per Gallon – Application rate determined by test strip x SY
- Sand - Black Beauty
  - Extra Fine gradation for 1:1 Dilution
  - Fine Gradation for 2:1 Dilution
- Sanding with highly fractured sand at a rate of 0.25 to 0.50 pounds per SY
- Seal cracks with PG 64-22


ETC

Researching New Sealer Options

- Projects in 2014 that will place a **FIBER REINFORCED POLYMER MODIFIED ASPHALT EMULSION WITH SAND**
  - T138-142 – SHOULDERS – OPEN END
  - A69-73 – LEHIGH TUNNEL PORTAL ROADWAY AND MP A73 NB ACCESS RAMP
  - WYOMING VALLEY INTERCHANGE – BACK DRIVEWAY TO MAINTENANCE SHED

Researching New Sealer Options
Placed Fall 2012

Researching New Sealer Options
Skid Testing Preformed Fall 2013

Researching New Sealer Options

- Researching a Fog Seal – test strip has been completed and preforming well – will be looking for first full application project
- Intent is to get to bidding either/ or products and get market competition

Inlets

- CS 605.3
  - Set frames, concrete top units and grade adjustment rings in full mortar beds on non-shrink grout.
  - Brick or Brick and Mortar are not allowed for grade adjustment of inlets.
  - For new inlets or manholes use available sizes of adjustment rings to accommodate a maximum elevation difference of 12 inches and a maximum 1-inch non-shrink grout bed to achieve the correct elevation.


05/14/2007

THANK YOU

PENNA TURN PIKE