



# 55<sup>th</sup> Annual PAPA Conference Bituminous Initiatives

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- ADE-Construction Quality Improvement Team
  - Reduce number of mix Designs
  - Improve bituminous mix designs



10 year old pavement

## Bituminous Initiatives-Reduce number of mix designs

- Surveyed and solicited DME's/DMM's
  - 11,652 mix designs submitted
  - 1,846 mix designs used: **16% !**
  - Average time to review = 30 minutes
    - 530 hrs/DME/year- (REALLY?)
    - Producer's time? Priceless....

TR-448A (11-08)



### JOB MIX FORMULA REPORT

JMF NO.

|      |        |
|------|--------|
| Year | Number |
|------|--------|

SUPPLIER CODE      MATERIAL CLASS

|                         |  |
|-------------------------|--|
| Design ESAL'S           |  |
| AGGREGATE SRL           |  |
| ORIGINAL APPROVAL DATE: |  |

**PennDOT! Grrrrrr.....!!!**



## Bituminous Initiatives-Reduce number of mix designs

- So what did we consider?
  - Charge for each design submitted – No
  - Only submit designs used in previous year(s) – Yes
  - Only allow a fixed percentage of RAP designs – No
  - Reduce the number of mix designs in plans – agree but...
  - Go to only 65 gyration statewide – No

*“....off like a herd of turtles....”*

## Bituminous Initiatives-Reduce number of mix designs

- Issued Clearance Transmittal (CT) October 16<sup>th</sup>
  - Submit designs from previous year that had production for state or municipal work
  - “Attempted” to standardize JMF numbers
- 59 Comments received
- Team meeting Jan. 26<sup>th</sup> – review comments

## Bituminous Initiatives-Improve Bituminous Mix Designs

- Team
  - Department and Industry (PAPA)
- First meeting was July 2014
- Team Objective
  - **“Improve long-term durability of asphalt pavement mixes”**
- Concern with long-term performance
  - Raveling, premature oxidation, cracking

## Bituminous Initiatives-Improve Bituminous Mix Designs

- Brainstorming
  - Minimum Asphalt Content
  - Adjustment to VMA
  - Bailey Method
  - Pay AC separately
  - Lab performance testing for mix design approval
  - Modify Gyration levels
  - Use of SMA on Interstates
  - Binder Modification
  - Eliminate use of 12.5mm mixes
  - Accounting for AC in RAP/RAS mixes
  - Anti-strip in wearing course regardless of geology

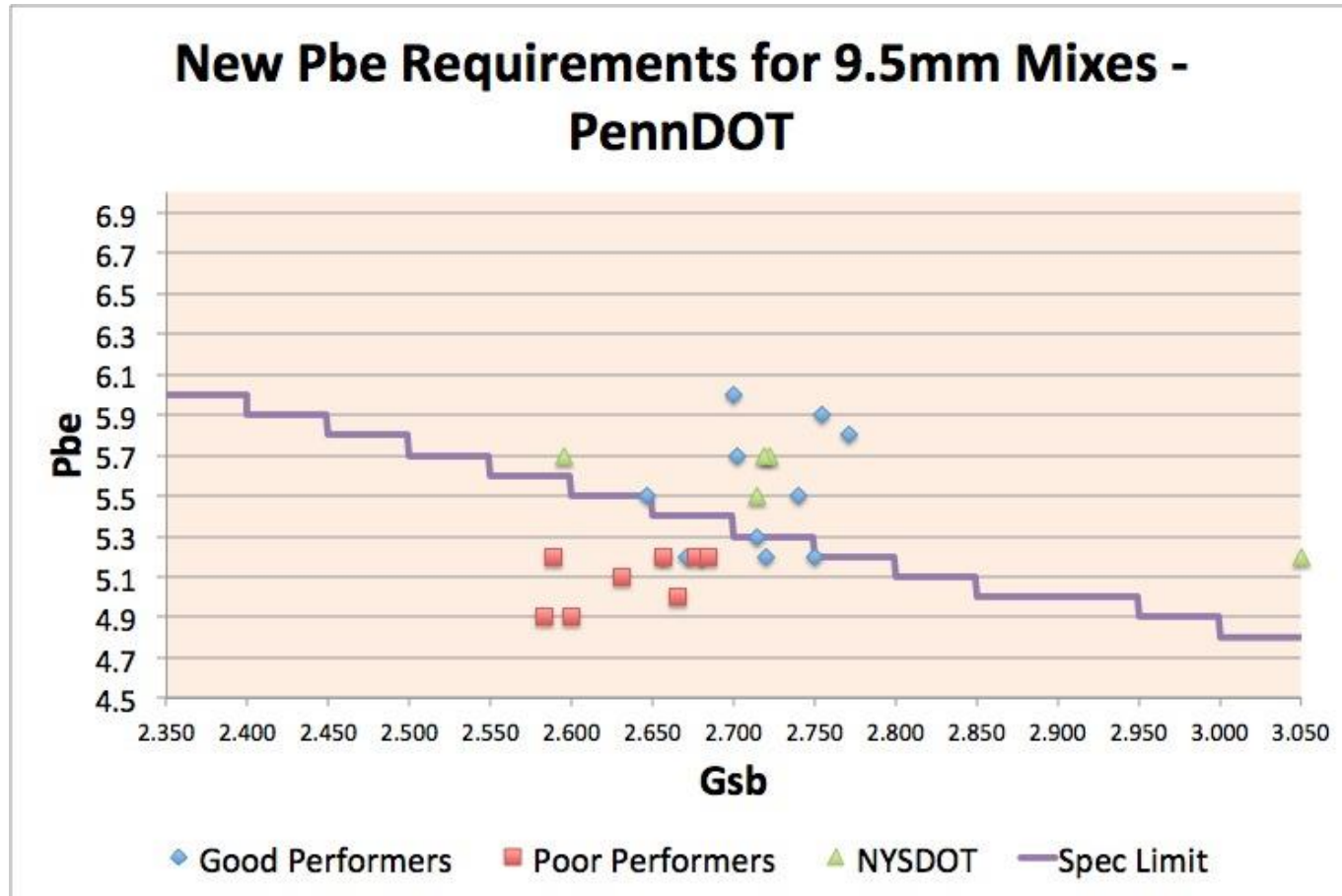
## Bituminous Initiatives-Improve Bituminous Mix Designs

- Team Agreement:
  - **Short-term:** Minimum effective asphalt content
  - **Long-term:** Performance testing for mix design approval



- Minimum Effective Asphalt Content
  - Reviewed District 1-0(total) and District 4-0 approach
  - Extracted CAMM's 9.5 mm Mix Design Information
    - Applied Minimum effective asphalt targets
    - **32%** of existing mixes did not meet
  - Reviewed known good and bad performing mixes
  - Discussed how target values derived
  - How do we implement and consider workload?
  - No change to previously approved JMF if it meets requirements

# Bituminous Initiatives-Improve Bituminous Mix Designs



## Bituminous Initiatives-Improve Bituminous Mix Designs

- CT issued Dec. 10, 2014
  - Creates standard special provision for 9.5mm
  - Minimum effective asphalt content based on Gsb
- Comments due Jan. 9, 2015
- Team meeting Jan. 12, 2015
  - Reviewed comments
  - Revised table to provide range
- Anticipate issuance of Strike off letter mid-February

## Bituminous Initiatives-Improve Bituminous Mix Designs

- How do we best “optimize” asphalt content to improve long-term performance without creating a rutting problem?
- Performance testing of mix design for approval
  - Other states pursuing this option
  - Combination of rut testing and fatigue testing

## Bituminous Initiatives-Improve Bituminous Mix Designs

- Performance Testing
  - Currently testing (3) different existing PA mixes
    - Aggregates of different geology
  - Rut testing: PennDOT lab
  - Fatigue: Asphalt institute
  - **Expected outcome?**
    - Determine:
      - Where are existing mixes now?
      - Test methods
      - Specification limits
      - Implementation
    - Preliminary test data due this spring

**Questions?**