



# Minimum Effective Asphalt Content

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

## Minimum Effective Asphalt Content

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  - 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



# Minimum Effective Asphalt Content

Minimum Pbe for 9.5mm Superpave Mixes

Gsb	Pbe
2.250 to 2.274	6.2
2.275 to 2.324	6.1
2.325 to 2.374	6.0
2.375 to 2.424	5.9
2.425 to 2.474	5.8
2.475 to 2.524	5.7
2.525 to 2.574	5.6
2.575 to 2.624	5.5
2.625 to 2.674	5.4
2.675 to 2.724	5.3
2.725 to 2.774	5.2
2.775 to 2.824	5.1
2.825 to 2.874	5.0
2.875 to 2.924	4.9
2.925 to 2.974	4.8
2.975 to 3.024	4.7
3.025 to 3.074	4.6

## Minimum Effective Asphalt Content

- 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
- Feb. 11, 2015 Implementation letter
- All contracts let after Feb. 12 2015 containing 9.5mm wearing course must contain the special provision.

## Minimum Effective Asphalt Content

- For mixes that must have the asphalt content adjusted make 2 gyratory samples.
  - Voids allowed to be 3.5 to 4.0%
  - Maximum VFA revised to 80%
  - Changes to gradation allowed if they are not greater than multiple sieve tolerances in 409.2(e) Table A.
- If any of these conditions are not met a complete redesign must be done.

## Minimum Effective Asphalt Content

- Long term asphalt mixture optimization solutions.
- Performance testing of mix design for approval
  - Other states pursuing this option
  - Combination of rut testing and fatigue testing



## Minimum Effective Asphalt Content

- 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?**