Superpave5 Implementation in Indiana

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Superpave5 Implementation

• Based on successful results of SR 13 follow up testing:
  • 2019
    • Contractor option, Superpave4 or Superpave5
    • 45% Superpave4
    • 55% Superpave5
  • 2020
    • All mixtures Superpave5
INDOT Specs (pre-2019)

- PWL Specification
- Air Voids at Ndes = 4.0%
- Gyration levels
  - > 3M ESALs = 100 gyrations
  - < 3M ESALs = 75 gyrations
- Density LSL = 91.0%
INDOT Specification Revisions

- Air Voids at Ndes = 5.0%
- Design Gyrations
  - 100 → 50
  - 75 → 30
- Density LSL = 93.0%
2019 Air Voids

- Superpave4
  - 3.92%
  - 1735 sublots
- Superpave5
  - 4.86%
  - 2105 sublots
2019 Density

- **Superpave4**
  - Average = 93.19%
  - 1735 sublots

- **Superpave5**
  - Average = 94.42%
  - 2105 sublots

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Based on prior studies, a 1% increase to in-place asphalt pavement density achieved through improved compaction was estimated to improve the fatigue performance of asphalt pavements between 8 and 44% and improve rutting resistance by 7 to 66%. A 1% increase in in-place density was estimated to extend the service life by 10%, conservatively.

~FHWA-HIF-19-052
Superpave5 Density

- 2019 = 94.42%
- 2020 = 94.64%
- 2021 = 94.25%

- $N_{des} = 50$
  - 2019 = 94.30%
  - 2020 = 94.53%
  - 2021 = 94.52%

- $N_{des} = 30$
  - 2019 = 94.82%
  - 2020 = 95.16%
  - 2021 = 94.98%
Pay Factors

- **2016 and earlier**
  - Air Voids = 35%
  - Binder Content = 20%
  - VMA = 10%
  - Density = 35%

- **2017-2018**
  - VMA = 35%
  - Air Voids = 30%
  - Density = 35%

- **2019-now**
  - Vbe = 35%
  - Air Voids = 30%
  - Density = 35%
<table>
<thead>
<tr>
<th>Year</th>
<th>Air Voids</th>
<th>Vbe</th>
<th>Density</th>
<th>LCPF</th>
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Thank you!

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