Hot Topics - Indiana

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4.75 mm Surface

- History of poor friction performance
- Modifications to 4.75 mm mixture to increase macrotexture
  - Fineness modulus ≥ 3.30
  - Reduced P_{200} from 6.0-12.0 to 3.0-8.0
  - Designed at 5.0% air voids
- Improved Friction by average of 11 FN

4.75 mm Surface

- **“Old” spec project**

4.75 mm Surface

- **“New” spec project**

Longitudinal Joints

- 2 step method-based approach
- Hot applied joint adhesive
- Fog seal 1’ on each side of joint
  - Also serves to seal centerline rumble strips

Durability Issues

- **Many contributing factors**

Tack Coat

- **Ongoing Application Problem**

Tack Coat

- INDOT Specs state “tack coat shall be uniformly applied”
- Should be easy, right?
- But…
  - Contractors don’t want to do it
  - Agency staff don’t want to enforce it
- Research to determine feasibility of tack performance tests underway

5% Mix Design

- **Optimizing Laboratory Mixture Design as it Relates to Field Compaction in order to Improve Hot-Mix Asphalt Durability**
  - **Design mix at 5% air voids and compact in field to 5% air voids**
  - **Lower design gyrations (30-50)**
  - **Improve durability/reduce oxidation**
  - **Initial results positive**
  - **2 field trials done, further study ongoing**

Recycled Materials / Durability

Maximum Binder Replacement, %								
Mixture Category	Base and Intermediate					Surface		
	Dense Graded			Open Graded		Dense Graded		
	25.0 mm	19.0 mm	12.5 mm	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.75 mm
1	40.0			25.0		40.0		
2								
3						25.0		
4								
5								

Recycled Materials / Durability

- Grade bump at 25% BR
- Maximum 25% BR from RAS
- Will modify RAS specs based on PP-78

- But INDOT is not seeing performance issues with RAP or RAS mixtures

Recycled Materials / Durability

- **INDOT has an HMA durability problem**
- **No evidence of a link to amount of RAP / RAS in mixture**
- **So what's going on?**

15% RAP

35% RAP

Aggregate Gsb

- Previously, INDOT distributed list of aggregate Gsb values
- Contractor was allowed a tolerance from these values
- Significant pattern of Contractor values higher than INDOT values

Aggregate Gsb

- **“Inflated” Gsb in mix design leads to:**
  - **Overestimated VMA**
  - **Underestimated Pba**
  - **Overall lack of binder**

Aggregate Gsb

- INDOT now requires agency-tested Gsb to be used in mix design
- This doesn't solve everything
- How to get more binder into the mix?

Acceptance Procedures

- The current method isn't working
- Performance Related Specs?
- How to get Contractor goals in line with Agency goals?
  - Incentive to innovate
  - Or just the incentive to do it right!

Questions?

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