Aggregate - Asphalt Supply Issues Facing the HMA Industry

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SUPERPAVE in Theory

- Basic Design Concept of SUPERPAVE - High Integrity Aggregate Structure within the Mix
- Liquid Asphalt Graded Much More Precisely
- Remember of original $50 Million Spent on Research - Exactly $0 was spent on Aggregates!!
SUPERPAVE 10 Years Later

- Still Awaiting Aggregate Research Results
- Trending Back Toward Finer Grading
- Elimination or Relaxation of Some of the Unfounded Concensus Specifications
- Realization that we were not that wrong to begin with
- Performance based Specification Changes
Why are there Supply Issues?

- No One Size Fits All
  - Liquid Binder
  - Aggregate
- To Many Mixes
  - 37.5, 25, 19, 12.5, 9.5, 6.3, 4.75
- Multiply by EASL Levels
- Multiply by Varying PG Grades
- Too Many Choices!
Simple Production Day Issues?

3 Contracts Going - 1500 tons Each
All Want 12.5mm Top – Excellent!
But Wait a Minute
  – Job#1 - <100M EASL – PG64-28P - 4% Voids
  – Job#2 - <3.0M EASL – PG64-28 - 3.5% Voids
  – Job#3 - <10M EASL – PG64-28 - 4% Voids
Historical Issues facing Aggregate Producers

- Available Reserves
- Quality of Reserves
- Permitting Property
- Environmental Concerns
- Marketing Pressures
SUPERPAVE Aggregate Requirements

**Consensus Properties**
- Fine Agg. Angularity
- Coarse Agg. Angularity
- Flat or Elongated
- Clay Content

**Source Properties**
- Friction
- Soundness
- Toughness
- Deleterious Materials

Gradation – Varies by DOT Requirement
HMA Grading Trends

- Finer Top Sized Mixes
  - 25mm to 19mm
  - 12.5mm to 9.5mm
  - 9.5mm to 6.3mm

- Finer Grading of Mixes
  - Denser mixes more impermeable

- SMA – OGFC Mixes
  - Uniform Aggregate Size
Variable Aggregate Quality Requirements

- Friction Requirements
  - Change at State Lines
- Crush Count Requirements
  - Change at Interchanges
- DOT – Municipal Requirements
  - Same Highway who is Specifying
“What Aggregate Meets All Specifications.”

Readily Available
Inexpensive, But
High in -200

High Friction, But Limited Supply

Highly Angular, But Poor Friction

Can We Make Base and Top Mix With This Agg.

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Can We Make Base and Top Mix With This Agg.
We Can Deal With It Several Ways
Asphalt Binder Grades Specified

- PG 58-28
- PG 64-22
- PG 64-28
- PG 64-28P
- PG 70-22
- PG 70-28
- PG 76-22
- PG 82-22
- Grade +2% SBR
- Grade + Anti-Strip
Asphalt Binder Supply Issues

- Supply Logistics
  - Grade Availability
  - Terminal Location
  - Plant Tank Capacity

- Compatibility
  - Varying Sources React Differently

- Additives
  - Cost Prohibitive to Use Unless Required
HMA Producers Solution?

- No easy answer
- Flexibility important
- Aggregate key component – cheapest not always least expensive
- Often forced to use higher grade PG because of HMA plant issues
- All alternatives have economic ramifications
Ideal HMA Plant

Not Really!
Ideal Plant Specification

- 500 TPH
- 35% RAP Capability
- 3 RAP Feed Bins
- 12 Aggregate Cold Feed Bins
- 3 Liquid Asphalt Tanks
- 2 Additive Systems
- 5 -300 Ton Silos
- Large Paved Agg. Stockpile Area-
- 5000 Tons/Day Business -1 Mix
Your Thoughts?

- What are your issues?
- How is your DOT addressing these items?
- Future Concerns?
- Are we headed in the right direction?
We Still Have Options!!