HMA Guide Specifications for Local Government

Industry Recommendations

Why Use a Local Spec?
- Standardized Specification
- Ease of Use by Locals
- Credibility of HMA Producer Program
- Increase the Bar (Quality)
- Longer Lasting Roads
- Elimination of “personal specs”

Background of Proposed Specification
Association Committee

★ Binder Suppliers
★ Aggregate Suppliers
★ HMA Producers
★ Researchers

Basis for Local Specification
New INDOT 402 Specification (09/02)
- Some Exceptions to meet local needs

Mix Design mixtures (No cookbook recipes)

INDOT 402 Exceptions for Local Specification
(Industry Recommendations)

3 Types of Mixtures
Type “A” - < 4,000 AADT
  • Low Volume (200,000 ESALS)

Type “B” - 4,000 - 30,000 AADT
  • Medium Volume (1,000,000 ESALS)

Type “C” - > 30,000 AADT
  • High Volume (11,000,000 ESALS)
TYPE A, B, & C MIXTURES

• Surface = 9.5 or 12.5 mm
• Intermediate = 9.5, 12.5, or 19.0 mm
• Base = 25.0 mm

TYPE “A” & “B” MIXTURES

• Use any type of aggregate
  – Stone, Gravel, Dolomite, Slag, etc.

• Use PG 64-22 Binder
  – Up to 15.0% RAP
• Use PG 58-28 Binder
  – From 15.1 - 25.0% RAP

(d) Surface Aggregate Requirements. The surface mixture aggregate selection shall be based on the ESAL category as follows:

<table>
<thead>
<tr>
<th>Coarse Aggregate Type</th>
<th>Traffic ESAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000,000</td>
<td>≤ 10,000,000</td>
</tr>
<tr>
<td>Air-Cooled Blast Furnace Slag</td>
<td>Yes</td>
</tr>
<tr>
<td>Steel Furnace Slag</td>
<td>Yes</td>
</tr>
<tr>
<td>Sandstone</td>
<td>Yes</td>
</tr>
<tr>
<td>Crushed Dolomite</td>
<td>Yes</td>
</tr>
<tr>
<td>Polished Resistant Aggregates</td>
<td>Yes</td>
</tr>
<tr>
<td>Crushed Stone</td>
<td>Yes</td>
</tr>
<tr>
<td>Gravel</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note 1. Polished resistant aggregates or crushed dolomite may be used when blended with ACBF or sandstone but cannot exceed 50% of the coarse aggregate by mass (weight), or cannot exceed 40% of the coarse aggregate by mass (weight) when blended with steel furnace slag.

Type “C” Mixtures

Can only use the following Coarse Aggregates in Surface Mixtures

Crushed Dolomite
Sandstone
Blast or Steel Furnace Slag
Polished Resistant Aggregates

Crushed Stone or Gravel not Allowed

(d) Surface Aggregate Requirements. The surface mixture aggregate selection shall be based on the ESAL category as follows:

<table>
<thead>
<tr>
<th>Coarse Aggregate Type</th>
<th>Traffic ESAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000,000</td>
<td>≤ 10,000,000</td>
</tr>
<tr>
<td>Air-Cooled Blast Furnace Slag</td>
<td>Yes</td>
</tr>
<tr>
<td>Steel Furnace Slag</td>
<td>Yes</td>
</tr>
<tr>
<td>Sandstone</td>
<td>Yes</td>
</tr>
<tr>
<td>Crushed Dolomite</td>
<td>Yes</td>
</tr>
<tr>
<td>Polished Resistant Aggregates</td>
<td>Yes</td>
</tr>
<tr>
<td>Crushed Stone</td>
<td>Yes</td>
</tr>
<tr>
<td>Gravel</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note 1. Polished resistant aggregates or crushed dolomite may be used when blended with ACBF or sandstone but cannot exceed 50% of the coarse aggregate by mass (weight), or cannot exceed 40% of the coarse aggregate by mass (weight) when blended with steel furnace slag.
TYPE “C” MIXTURES

- Use PG 76-22 Binder
  - Surface (Up to 15.0% RAP)
  - Intermediate (Up to 15.0% RAP)

- Use PG 70-28 Binder
  - Surface (From 15.1 - 25.0% RAP)
  - Intermediate (From 15.1 - 25.0% RAP)

TYPE “C” MIXTURES for Base

- Use PG 64-22 Binder
  - Base (Up to 15.0% RAP)

- Use PG 58-28 Binder
  - Base (From 15.1 - 25.0% RAP)

<table>
<thead>
<tr>
<th>Mixture Type</th>
<th>Type A</th>
<th>Type B</th>
<th>Type C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design ESAL</td>
<td>200,000</td>
<td>1,000,000</td>
<td>11,000,000</td>
</tr>
<tr>
<td>AADT</td>
<td>8-2000</td>
<td>4000-10,200</td>
<td>20,000</td>
</tr>
<tr>
<td>Surface, PG Binder</td>
<td>9.5, 12.5 mm</td>
<td>9.5, 12.5 mm</td>
<td>9.5, 12.5 mm</td>
</tr>
<tr>
<td>Intermediate, PG Binder</td>
<td>9.5, 12.5 x 0.8 mm</td>
<td>9.5, 12.5 x 0.8 mm</td>
<td>9.5, 12.5 x 0.8 mm</td>
</tr>
<tr>
<td>Base, PG Binder</td>
<td>25.0 mm</td>
<td>25.0 mm</td>
<td>25.0 mm</td>
</tr>
</tbody>
</table>

Type “A, B, & C” Mixtures Acceptance Requirement

Mixture Acceptance based on 402.09

- Air Voids
- Binder Content
- Type “D” Certification

Frequency of Tests
- Per Quality Control Plan at HMA Plant

Type “A, B, & C” Density Acceptance Requirement

402.15 Standard Roller Train

- Equipment in accordance with 409.03(d)

- Project Quality Control Plan
Advantages 402 Specification

**Primary Reasons**
- All mixtures are designed by a Certified Mix Design Laboratory
- HMA produced by an INDOT Certified Volumetric Hot Mix Asphalt Producer
- Improve Quality
- Provide Uniformity (economical)

Certified Volumetric Hot Mix Asphalt Producer

What is it and what does it mean

*A COMMITMENT TO QUALITY*

WHAT IS IT?

- A program whereby the producer takes responsibility for all aspects of the production of Quality HMA in accordance with contract/specification requirements.
- INDOT monitors the Producers production, sampling, & testing procedures.

REQUIREMENTS

- Certified Asphalt Technicians
- Laboratory
- Calibrated Testing Equipment
- Maintain a Daily Diary

Aggregate & Binder Testing

Designate a Materials Sampling and Testing Program. This program MUST be approved by the Department.
- Aggregates
  - Stockpile
  - Blended (Belt sample or Extracted/Burn agg)
- Binder (Liquid Sampling)

RAP Testing

Recycled Materials
- Binder Content
- Gradation
- Moisture
- Coarse Aggregate Angularity
HMA Testing
HMA Sampled at plant
- Binder Content of Mix
- Moisture
- Temperature

More HMA Testing
HMA Sampled from Pavement
- Air Voids
- VMA
- Binder Content
- Moisture

Production Requirements
- Binder Management
- Aggregate Management
- RAP Management
- HMA Plant Calibrations
- Mix Temperature Management
- Mix Moisture Management
- HMA Storage

Truck Management
- Truck Bed Maintenance
- Truck Loading
- Tarping
- Truck Unloading

CONTROL CHARTS
- Charts must be maintained on certain items
- Action Limits on Charts
- Corrective Action Plan
- Documented in Daily Diary

Written Quality Control Plan
☐ This is the contractors working document for a Certified Volumetric HMA Plant.
☐ Each HMA plant has its own unique plan.
☐ Required to do what your plan says (Do what you say you’re going to do)
CERTIFIED HMA PRODUCER ADVANTAGES FOR LOCALS

- Oversight is Managed by INDOT
- Compliance Monitored by INDOT

Because of Trust and Partnering Between the INDOT, FHWA, and Industry…

Certified Accepted HMA Mixes

- 304.04 HMA Patching
- 304.05 Widening with HMA
- 402.04 HMA Mixtures Type A, B, or C
- 402.07(a) HMA Rumble Strips
- 402.07(b) HMA Wedge and Leveling
- 402.07(c) Temporary HMA Mixtures

Certified HMA Mixes

- 503.03(e) HMA Terminal Joints
- 507.05(b) HMA for Partial Depth Patching
- 604.07(c) HMA for Sidewalk
- 605.07(c) HMA for Curbing
- 610.02 HMA for Approaches
- 611 HMA for Crossovers
- 718.04 HMA for Underdrains
- 801.11 HMA for Temporary Crossovers

Why Use a Local Spec?

- Standardized Specification
- Ease of Use by Locals
- Credibility of HMA Producer Program
- Increase the Bar (Quality)
- Longer Lasting Roads
- Elimination of “personal specs”

SUMMARY

- Use INDOT’s New 402 Specification As a Base Document With Listed Exceptions.
- 3 Types of Mixtures, Type A, B, and C.
- Acceptance by Type “D” Certification.
- Controlled use of RAP.
- INDOT Certified Volumetric HMA Producer Program.
Asphalt Pavements Are Versatile