2020 Asphalt Specification Update
SC-M Specifications

SC-M-400 (01/20)
**Asphalt Mixture Quality Acceptance**

SC-M-401 (07/19)
**Mixing Plants for Hot-Mix Asphalt**

SC-M-402 (01/18)
**Materials Properties for Asphalt Mixtures**

SC-M-403 (04/16) – 2020??
**Rideability for Asphalt Mixtures**

SC-M-404 (05/10)
**Inspection of Asphalt Field Laboratories**
SC-M Specifications

SC-M-405 (07/19)
Inspection & Approval Mix Design Laboratories

SC-M-406 (01/20)
HMA Liquid Anti-Strip Additives (LASA)

SC-M-407 (06/11)
Recycled Asphalt Pavement (RAP) & Asphalt Shingles (RAS)

SC-M-408 (04/15)
Warm Mix Asphalt (WMA)
Asphalt Mixture Quality Acceptance

- SMA - added as a new mix type
- Removed old language with 310 forms
- Job mix validation → 3 days - re-validation is required.
- QC Tests – Mineral Filler – checked twice/day
- Continuous 1500 feet require to obtain cores or gauge reading for acceptance, clarify gore areas are not mainline – travel lanes.
- Minimum sample tons to sample HMA is 18.0 tons, cannot exceed 50.0 tons, or sample will be required.
- Added 1 additional critical sieve to all mixtures....No. 4.
- Gradation can now qualify for up to a 5% bonus on LPF.
• Lime can be introduced by auguring or blowing into drum, pug mill will not be required – contractor will have choice when using lime.

• Lime is introduced based on total aggregate including RAP.

• Language added for mineral filler (SMA), auger or blowing into drum – similar to lime.
SC-M-405

Inspection & Approval Mix Design Laboratories

Automatic MSG Test Controller to monitor test and ensure proper vacuum is applied.
HMA Liquid Anti-Strip Additives (LASA)

- Allow 0.70% Amine based and 0.15% organosilane based product to be used.
- QPL # 104 added
- Reduce field testing to at least every 90 calendar days after initial testing has been completed.
- Reminder – Terminal blend are required and the LASA must be added over 85% of the load.
Asphalt Binder and Additives

- No Changes
- Same PG 64-22 and PG 76-22 (64V)
- Make sure all additives are compatible
- No Signs of REOB
- **IMO 2020 – International Maritime Organization**
  Sulphur on all fuel used on ships 3.50% to < 0.50%
  Why?
  Marine sector, which consumed 3.8 million barrels per day of fuel oil in 2017, is responsible for half of global fuel oil demand.
  Estimated that 0.5M lives will be saved in just 5 years worldwide with this regulation.
  Options moving forward to maritime industry:
  A) Install scrubbers (Exhaust Gas Cleaning Systems) – $3M-10 plus down time to install
  B) Buy more expensive fuel that complies with < 0.50% Sulphur
  c) Use LNP – very unlikely

  Where does this Sulphur go if not in these fuels?
  Refineries have to deal with Sulphur, cannot buy oil without it.
  One possibility is it could show up in asphalt, but refineries will need to change process.

Good Reference to learn more on IMO 2020: [Argusmedia.com](http://Argusmedia.com)
IA Sampling

• Continue with System Based Approach
• Check each “active” plant and roadway tech a minimum of once per year.
• Important to notify IA Dept. when you have a new technician on staff. – A updated list required and submitted annually in January to Chris Lybarker (lybarkercl@scdot.org).
• Inspectors will be checking to see that proper procedures are being followed and the testing equipment is operational and calibrated.
• Split samples will be taken and run at the OMR labs, if the samples fail, the process will need to be repeated.
IA Sampling – QC Managers
Do you need to update your list?

SOUTH CAROLINA
ORGANIZATIONAL CHART FOR QC/QA

QC Manager - Gordon L. Wright (803) 513-3638 Gordon.Wright@Eurovia.us (Level III)
Assistant QC Manager - Richard (Ricky) Ard (843)687-9927 Richard.Ard@Eurovia.us (Level III)
Senior QC Technician - Mark Madigan (803)309-0894 Mark.Madigan@Eurovia.us (Level III)
Design Lab (803) 936-1101
Design Lab Fax (803) 936-1881

<table>
<thead>
<tr>
<th>QC Technicians</th>
<th>Cell Phone</th>
<th>Email</th>
<th>ART</th>
<th>Asphalt Certifications</th>
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<tbody>
<tr>
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## Full Depth Patching

Reminder of available options

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<tr>
<th>Depth of FDP</th>
<th>Select mixture type below based on Depth of FDP</th>
<th>Typical Mixture</th>
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<tr>
<td></td>
<td><strong>Alternate Mixture Options</strong></td>
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<tr>
<td>4” or Less</td>
<td>Surface Type B / C</td>
<td>Intermediate C</td>
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<tr>
<td></td>
<td>2 Lifts</td>
<td>2 Lifts</td>
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<tr>
<td>6”</td>
<td>Surface Type B / C</td>
<td>Intermediate C</td>
</tr>
<tr>
<td></td>
<td>2 Lifts</td>
<td>2 Lifts</td>
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<tr>
<td>8”</td>
<td>Intermediate B Special</td>
<td>Intermediate C</td>
</tr>
<tr>
<td></td>
<td>2 Lifts</td>
<td>3 Lifts</td>
</tr>
<tr>
<td>10”</td>
<td>Intermediate B Special</td>
<td>Intermediate C</td>
</tr>
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<td>2 Lifts</td>
<td>3 Lifts</td>
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<tr>
<td>12” or More</td>
<td>Consult with the State Pavement Design Engineer</td>
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Consult with the State Pavement Design Engineer.
<table>
<thead>
<tr>
<th>COURSE</th>
<th>TYPE FACILITY</th>
<th>TYPE</th>
<th>EST. % BINDER</th>
<th>BINDER GRADE</th>
<th>RECOM. RATE (LBS/SY)</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>SURFACE</td>
<td>Interstate &amp; Problem intersections and areas (severe rutting and shoving potential)</td>
<td>A</td>
<td>5.0</td>
<td>PG 76-22</td>
<td>200</td>
<td>Consult with OMR Pavement Design Unit when other facilities are being considered</td>
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<tr>
<td></td>
<td>High volume primary &amp; secondary</td>
<td>B</td>
<td>5.3</td>
<td>PG 64-22</td>
<td>175 - 200</td>
<td>Use only on high volume and / or high % Truck traffic roads</td>
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<tr>
<td></td>
<td>Low volume primary &amp; secondary</td>
<td>C</td>
<td>6.0</td>
<td>PG 64-22</td>
<td>150 - 175</td>
<td>Truck traffic ≥ 20%, use Surface Type B</td>
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<tr>
<td></td>
<td>Low volume secondary routes</td>
<td>D</td>
<td>6.3</td>
<td>PG 64-22</td>
<td>125 - 150</td>
<td>Truck traffic ≥ 20%, use</td>
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<td></td>
<td>Multiple facility usage</td>
<td>E</td>
<td>6.5</td>
<td>PG 64-22</td>
<td>45 - 80</td>
<td>Used for ride correction and seal course</td>
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<tr>
<td>INTERMEDIATE</td>
<td>Interstate &amp; High volume primary (New Construction)</td>
<td>A</td>
<td>4.6</td>
<td>PG 64-22</td>
<td>250 - 300</td>
<td>Use when no drop off restrictions</td>
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<td></td>
<td>High volume primary &amp; secondary</td>
<td>B</td>
<td>5.1</td>
<td>PG 64-22</td>
<td>200</td>
<td>Old Surface Type B Mixture</td>
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<tr>
<td></td>
<td>Interstate &amp; High volume primary</td>
<td>B Special</td>
<td>5.4</td>
<td>PG 64-22</td>
<td>200 - 500</td>
<td>Specially warm mix – only used on high volume routes for partial –full depth rehabilitation and FDP (2 Lifts)</td>
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<tr>
<td></td>
<td>Primary to low volume secondary</td>
<td>C</td>
<td>4.8</td>
<td>PG 64-22</td>
<td>200 - 300</td>
<td>Use for build-up and non-mainline paving and FDP</td>
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<tr>
<td>BASE</td>
<td>Intersections &amp; problem areas</td>
<td>A</td>
<td>4.5</td>
<td>PG 64-22</td>
<td>300 - 450</td>
<td></td>
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<tr>
<td></td>
<td>Primary &amp; secondary routes with ADT ≥ 5,000</td>
<td>B</td>
<td>4.5</td>
<td>PG 64-22</td>
<td>300 - 450</td>
<td></td>
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<tr>
<td></td>
<td>Special - Consult with OMR Pavement Design Unit</td>
<td>C</td>
<td>5.5</td>
<td>PG 64-22</td>
<td>200 - 300</td>
<td>Screening asphalt base – high stability</td>
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<tr>
<td></td>
<td>Special – Consult with OMR Pavement Design Unit</td>
<td>D</td>
<td>5.0</td>
<td>PG 64-22</td>
<td>200 - 300</td>
<td>Sand asphalt base – low stability</td>
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<tr>
<td>SPECIALTY MIXES</td>
<td>Interstate</td>
<td>OGFC</td>
<td>6.5</td>
<td>PG 76-22</td>
<td>125</td>
<td>Open graded friction course</td>
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<td></td>
<td>Primary and secondary</td>
<td>PMTLSC</td>
<td>6.0</td>
<td>PG 64-22</td>
<td>0.75” Uncompacted</td>
<td>Preventative maintenance thin lift seal course – select only for good roads</td>
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<tr>
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<td>Primary and Secondary</td>
<td>SHOULDER WIDENING</td>
<td>5.0</td>
<td>PG 64-22</td>
<td>400 - 600</td>
<td>Non-structural mix</td>
</tr>
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</table>

http://www.scdot.org/doing/technicalPDFs/materialsResearch/Guidelines_Asphalt_Mix_Selection.pdf
SMA - Special Provision

- 2 Projects in 2019 – I-20 and I-95
- Stone Matrix Asphalt (9.5 and 12.5mm)
- Requires Good Coarse Aggregate and High Dust Content as a filler and PG 76-22.
- Select projects will likely be identified by the State Pavement Design Engineer each year.
- Projects may or may not have OGFC applied.
- Good opportunity for industry to prove they can step up to this challenge to produce and place a extraordinary longer lasting asphalt mixture.
OGFC - 2019

• Continues to be a part of our Interstate program.
• WMA is required for OGFC.
• 9.5mm design added as an option for pavement design.
• Seasonal restrictions lifted, placement must be a minimum 55 degrees F, no placement if forecast is expected to below 32 degrees the day prior.
SC Test Procedures

• SC T-65- “Field Determination of Target Density for Plant Produced Asphalt Mix by Use of the Control Strip Technique”

• Requires documentation of gauge offsets if they are being used on Form 400.02.

• All measurements taken for acceptance must be documented on the roadway surface with a lumber crayon by marking the perimeter around the gauge and the actual gauge reading.
SC Test Procedures

- **SC T-75 – “Determination of Asphalt Binder Content of Asphalt Mixtures using the Ignition Oven”**

<table>
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<tr>
<th>Nominal Maximum Aggregate Size (see job mix formula)</th>
<th>Sample Size, g</th>
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<tbody>
<tr>
<td>No. 4</td>
<td>1200 – 1600000</td>
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<tr>
<td>3/8 in.</td>
<td>1200 – 1600000</td>
</tr>
<tr>
<td>1/2 in.</td>
<td>1500 – 1900000</td>
</tr>
<tr>
<td>3/4 in.</td>
<td>2000 – 2400000</td>
</tr>
<tr>
<td>1.0 in.</td>
<td>3000 – 3400000</td>
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</tbody>
</table>

- Samples must be identified as the acceptance test sample within 5 minutes of being placed in the ignition oven, and ticket must be labeled with the Lot-Sample number. (i.e.: 3-1)
- Sample re-burn clarification – when power outage, scale issues occur.
- Tickets must show 0.01% loss difference for 3 consecutive minutes prior to oven shut off.
Questions?

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