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**Supplemental Technical Specification for**

**Liquid Anti-Strip Additives (LASA) for Asphalt Mixtures**

**SCDOT Designation: SC-M-406 (January 1, 2020)**

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**1. SCOPE**

1.1 Provide an Asphalt Binder that is pre-blended at the terminal with a liquid anti-strip additive (LASA) and adhere to all applicable sections of the Standard Specifications and appropriate Special Provisions.

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**2. REFERENCED DOCUMENTS**

- 2.1 SCDOT Standard Specifications
    - 2.1.1 Division 400
  - 2.2 SCDOT Supplemental Technical Specifications
    - 2.2.1 SC-M-402
  - 2.3 AASHTO Standards
    - 2.3.1 M 320
  - 2.4 SCDOT Test Methods
    - 2.4.1 SC T 70
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<p><b>APPROVED:</b> <b>Division Administrator</b></p> <p><b>By: _____</b> <b>FEDERAL HIGHWAY ADMINISTRATION</b></p>
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**3. MATERIALS**

- 3.1 Asphalt Binder
    - 3.1.1 Ensure that the Asphalt Binder is PG64-22, conforming to the requirements of AASHTO M 320 unless otherwise specified.
  - 3.2 Liquid Anti-Strip Additives
    - 3.2.1 Ensure that the LASA is storage and heat stable and is compatible with the crude source of binder selected.
    - 3.2.2 Ensure that the LASA is added at the asphalt terminal at a rate of 0.70% (amine based), or 0.15% (organosilane based) by weight of the PG 64-22 asphalt binder regardless of mix type allowing the use of LASA per SC-M-402 or any other Supplemental Specification regarding mix type, and the amount of recycled asphalt product.
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**4. QUALITY CONTROL**

- 4.1 Binder Supplier
  - 4.1.1 Certification of Liquid Anti-strip additive must be submitted to the Asphalt Materials Engineer (AME) prior to use. This includes a SDS of the product and a full report stating the supplier's PG 64-22 binder with the anti-strip added at the required dosage will meet AASHTO M 320.

- 4.1.2 Add the correct dosage of LASA product to at least 85% of the load of PG Binder at the asphalt terminal through inline blending during loadout to ensure the material is mixed properly. No dosing will be permitted by adding the LASA on top or bottom of the asphalt binder tanker.
- 4.1.3 Bill of Laden (BOL) must include percentage or amount of LASA added, manufacturer, and type used.
- 4.2 HMA Contractor
  - 4.2.1 When using LASA in various mix types per SC-M-402, perform Indirect Tensile Strength (ITS) testing using SC-T-70 at least one time during the first day's production, then at least once every 90 calendar days thereafter.
  - 4.2.2 Utilize an X-Y recorder (or similar) to document the tensile strengths of the gyratory compaction specimens.
  - 4.2.3 Submit the results to the AME and District Asphalt Manager (DAM) upon completion of the ITS test and include the results along with the plant workbook report that is submitted to the DAM.
  - 4.2.4 Retain each BOL from each tanker in the field laboratory or plant control room.
  - 4.2.5 Ensure there is no dilution of LASA-modified binder. When it is necessary to add LASA-modified binder to a tank containing unmodified binder, either:
    - a) add 1% hydrated lime to the mixture until all the original unmodified binder has been moved out of the tank, or
    - b) strap the binder storage tank to determine the amount of unmodified binder, and determine the additional amount of LASA needed to bring the contents of the tank up to the minimum requirement. Include the necessary additional LASA in the added binder to achieve the proper dosage.When using method (b), perform a TSR test during the first day the combined binder is used to verify sufficient LASA is in the binder.
  - 4.2.6 Ensure when the type of LASA is changed, the job mix formula is either re-designed or verified again through the mix design lab at the Office of Materials and Research (OMR). Submit gyratory specimens or results showing that the change in additive will meet TSR requirements.

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**5. CONSTRUCTION REQUIREMENTS**

- 5.1 Conform all work to Section 401 of the Standard Specifications and other applicable special provisions except when noted herein.

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**6. ACCEPTANCE**

- 6.1 Mix design acceptance parameters for the LASA will be based on passing TSR results (85% TSR, 65% WTS). Ensure that ITS field requirements are being met in accordance to 401.2.3.4. If failing results are obtained at any time, 1% hydrated lime must be added to the mix at no additional cost to the department until the AME can perform an evaluation. This evaluation will include reheating retained mixed material from that day's production and making TSR specimens in OMR's Central Laboratory and/or testing roadway cores. If evaluated samples are not acceptable, the representative material will be removed and replaced at no additional expense to the Department.