CCIL / LABORATORY INSPECTION CHECKLIST

Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means Of the Superpave Gyratory Compactor - AASHTO T312-11

APPARATUS:

1. SP Gyratory Compactor (Electrohydraulic or electromechanical compactor) / Clause 4.1

   - Axis of ram shall be perpendicular to the platen of compactor? ……. ____
   - Apply and maintain a pressure of 600 ± 18kPa? …… ____
   - Specimen mold titled at an average internal angle of 1.16 ± 0.02 degrees? ….. ____
   - Apply a gyration rate to molds of 30.0 ± 0.5 gyrations per minute? …… ____

2. Specimen Height Measurement and Recording Device: To continuously measure and record height of specimen to the nearest 0.1 mm once per gyration? ……. ____
3. Printer: System may include a connected printer capable of printing test information? …….. ____
4. Specimen Molds - Dimensional requirements verified **<u>between 18 to 28°C (64 to 82°F)</u>**:

   - Thickness: minimum of 7.5 mm? …….. ____
   - Inside diameter: 149.90 to 150.00 mm? …….. ____
   - Height: Minimum of 250 mm? …….. ____
   - Rockwell hardness: Minimum of C48? …… ____
   - Initial inside finish: root mean square (rms) of 1.60µm or smoother? …… ____

5. Ram Heads and End Plates (fabricated from steel):

   - Diameter: 149.50 to 149.75 mm? …… ____
   - Flat / initial inside finish = root mean square (rms) of 1.60µm or smoother? …. ____
   - Rockwell hardness: Minimum of C48? …… ____

6. Thermometers: Armored, glass or dial-type thermometers with metal stems for determining the temperature of aggregates, binder, and HMA between 10 and 232°C? …….. ____
7. Balance: Complying with M 231, Class G 5? …… ____
8. Oven: Thermostatically controlled to ± 3.0° C for heating aggregates, binder, HMA and equipment + maintaining temperature required for mixture condition in accordance with R30 …….. ____
9. Wetting Agent: Dispersing agent (e.g. liquid dishwashing detergents) to promote separation of the fine material? …….. ____
10. Miscellaneous:

    - Flat-bottom pans for heating aggregates? ..... ____
    - Flat-bottom scoop for batching aggregates? ..... ____
    - Containers for heating asphalt (grill-type tins, beakers)? ..... ____
    - Large mixing spoon or small trowel? ..... ____
    - Paper disks? ..... ____
    - Mechanical mixer (optional)? ..... ____
    - Lubricating materials recommended by the compactor manufacturer? ..... ____

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STANDARDIZATION (Verification of Calibration) / Section 6.0

To Include:

1. Ram pressure? ..... ____
2. Angle of gyration (internal angle in accordance with TP 71)? ..... ____
3. Gyration frequency? ..... ____
4. Oven temperatures? ..... ____
5. LVDT: to continuously record specimen height (height calibration)? ..... ____
6. Dimensional verification of molds, platen and inside smoothness? ..... ____

Note 1: Frequency to follow manufacturer's recommendations.

PREPARATION OF APPARATUS :

1. Main power for compactor turned on for required warm-up period? ..... ____
2. Verify correct settings for angle, pressure and number of gyrations? ..... ____
3. If needed, lubricate bearing surfaces? ..... ____
4. Verify specimen height requirements? ..... ____

HMA MIXTURE PREPARATION:

1. Aggregate sized and recombined to the desired batch weight (single batches) for (Gmb) and (Gmm) determinations? ..... ____

   - For a targeted air void level: batch weights adjusted to create a given density in a known volume as for mix analysis and performance specimens? ..... ____
   - For volumetric properties resulting in a compacted specimen having dimensions of 150 mm in diameter and 115 ± 5 mm in height the desired number of gyrations? ..... ____

   Note 2: Trial mix may be required to achieve height requirements.

2. Aggregate and binder placed in oven and heated to required mixing temperature? ____
3. Mixing temperature in accordance with T 316? ..... ____
4. Charged mixing bowl with heated aggregate and dry mix thoroughly? ..... ____
5. Formed crater in mixed aggregate? ..... ____
6. Poured binder into the mix at required mass? ..... ____
7. Aggregate and binder mixed thoroughly and quickly by hand or mechanical means to produce a homogeneous mix? ..... ____
8. Mix conditioned in accordance with R 30? ..... ____
9. During condition period, compaction mold and base plate to be placed in oven at compaction temperature for 30 min. (minimum) prior to start of compaction? ..... ____
10. Compaction temperature in accordance with T316? ..... ____

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COMPACTION PROCEDURE:

11. Removed heated mold, base plate and upper plate (if required) from oven? …..... ____
12. Base plate and paper disk set in the bottom of the mold? …… ____
13. Placed mixture into mold in one lift to avoid segregation? …… ____
14. Mix leveled - paper disk and upper plate (if required) placed on top of mix? ……. ____
15. Mix and mold loaded into compactor – loading ram centered? …… ____
16. Initiated gyratory compaction - pressure at 600 ± 18 kPa? ……..... ____
17. Number of gyrations reached as specified in R35? …… ____
18. Specimen height recorded to the nearest 0.1 mm after each revolution? …… ____
19. Removed mold from compactor (if required) and extrude specimen from mold? …. ____

COMMENTS:

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