MIX DESIGN METHOD FOR HIGH FLOAT EMULSION MIXTURES

1.0 SCOPE

1.1 This Method of Mix Design is used to provide guidance in designing mixtures using HF-500M or HF-1000M emulsified asphalts intended to be produced by plant mixing at elevated temperatures. These design procedures are similar to those used for Cutback Asphalt mixtures which are modifications of the Marshall Method of Design and are based on the Asphalt Institute's Asphalt Cold-Mix Manual, MS-14.

1.2 These methods allow the designer a visual evaluation of the mix at various high float emulsified asphalt contents, as well as determining density, stability and voids data.

2.0 APPLICABLE DOCUMENTS

2.1 TLT-301 Mix Design Method for Asphalt Concrete Pavement

2.2 TLT-302 Mix Design Method for Cutback Asphalt Mixtures

3.0 TEST SPECIMENS

3.1 Refer to TLT-301 for sample preparation.

3.2 Aggregates with more than 8% passing the 80 μm sieve or having a Plasticity Index greater than 3 are not suitable for high float emulsion mixtures.

4.0 APPARATUS AND PROCEDURES

4.1 The equipment and procedures are as per those used in the above mentioned publication and design methods with the following modifications:

4.1.1 The test specimens are mixed at 90◦C and compacted with 75 blows/face at 60◦C.

4.1.2 Moisture Content - Briquettes are formed at 1.5% moisture content.

4.1.3 Curing - Briquettes are placed on a perforated metal sheet and cured in a forced air oven at 60◦C for 12 hours.

4.1.4 Stability - Use a water bath at 25◦C - soak time is 35 minutes.

4.1.5 Maximum Theoretical Density is performed on the cured briquettes at the three asphalt contents.

4.1.6 Tests are based on 1.0% increments of high float emulsified asphalt content one above optimum, one near optimum and one below optimum. Generally contents are 5.5%, 6.5% and 7.5% for high float emulsion mixtures.

5.0 REPORT

5.1 Design high float emulsified asphalt and residual asphalt contents based on dry weight of aggregate.

5.2 Residual asphalt is determined at the design high float emulsified asphalt content.

5.3 Void calculations are based upon the high float emulsified asphalt content with 100% of the water removed.

5.4 Design gradings are provided highlighting any modification (e.g., blend sand addition).

5.5 Mix properties at the design high float emulsified asphalt content.

6.0 DESIGN CRITERIA

6.1 The mix design shall meet the following criteria at the recommended design high float emulsified asphalt content.

Blow/face	75
Marshall Stability (N) at 25◦C	3000+
Flow (mm)	2-4
Air Voids %	3-6

NOTE: Only non-plastic aggregates are suitable for High Float Emulsion mixtures.