METHOD OF TEST FOR RESISTANCE TO PLASTIC FLOW OF BITUMINOUS MIXTURES USING MARSHALL APPARATUS

1. SCOPE

1.1 This method describes the procedure for determining the Marshall stability and Marshall flow values of bituminous mixes in the form of Marshall briquettes. The stability, defined as the maximum load developed during the test, is expressed in newtons. The flow, defined as the deformation of the sample up to the moment ***just*** past the peak load, i.e., the movement of the upper head relative to the lower head, is expressed in 0.25 mm units.

1.2 The Marshall briquettes are brought to test temperature in a water bath and then tested by means of the Marshall testing apparatus.

2. RELEVANT DOCUMENTS

2.1 ASTM Designation D6926-10

2.2 ASTM Designation D6927-06

2.3 MTO Method LS-261

3. PROCEDURE

3.1 Procedure of ASTM D 6927-06 shall be followed, except as noted below.

4. EXCEPTIONS

4.1 Prepare specimens as outlined in MTO Method LS-261.

4.2 The flow values may be determined by the timing method. The calculation is as follows:

where T = time in s (average of two measurements taken by two different technicians)

D = deflection of proving ring in 0.00254 mm increments (this is the Marshall stability reading)

C = .007 (this constant must be determined for each test machine and may vary slightly)

4.3 Results are recorded on the Bituminous Mix Form (Figure 1).

5. REPORTING OF RESULTS

5.1 Marshall stability is reported in Newtons and is generally the average of three specimens, except when a briquette is discarded based on BRD (see LS-262).

5.2 Marshall flow is reported in increments of 0.25 mm.

5.3 Note the number of specimens used to obtain the average value of stability and flow recorded.

6. GENERAL NOTES

6.1 All metal parts of the testing machine, the breaking head and the surface of the briquettes, must be free from foreign matter and loose particles.

6.2 The jack head base plate must be kept tight on the elevating screw.

6.3 The briquettes must be allowed to cure for at least 12 h before testing.

6.4 Centre the briquette on the breaking head before testing.

6.5 To assure that the Marshall breaking heads meet ASTM dimensional requirements, a clear plastic template with scribed reference lines is available.

6.6 At no time should any solution be used to coat the inside of the breaking head.

6.7 Equipment should be calibrated a minimum of once every twelve months.

BITUMINOUS MIX FORM

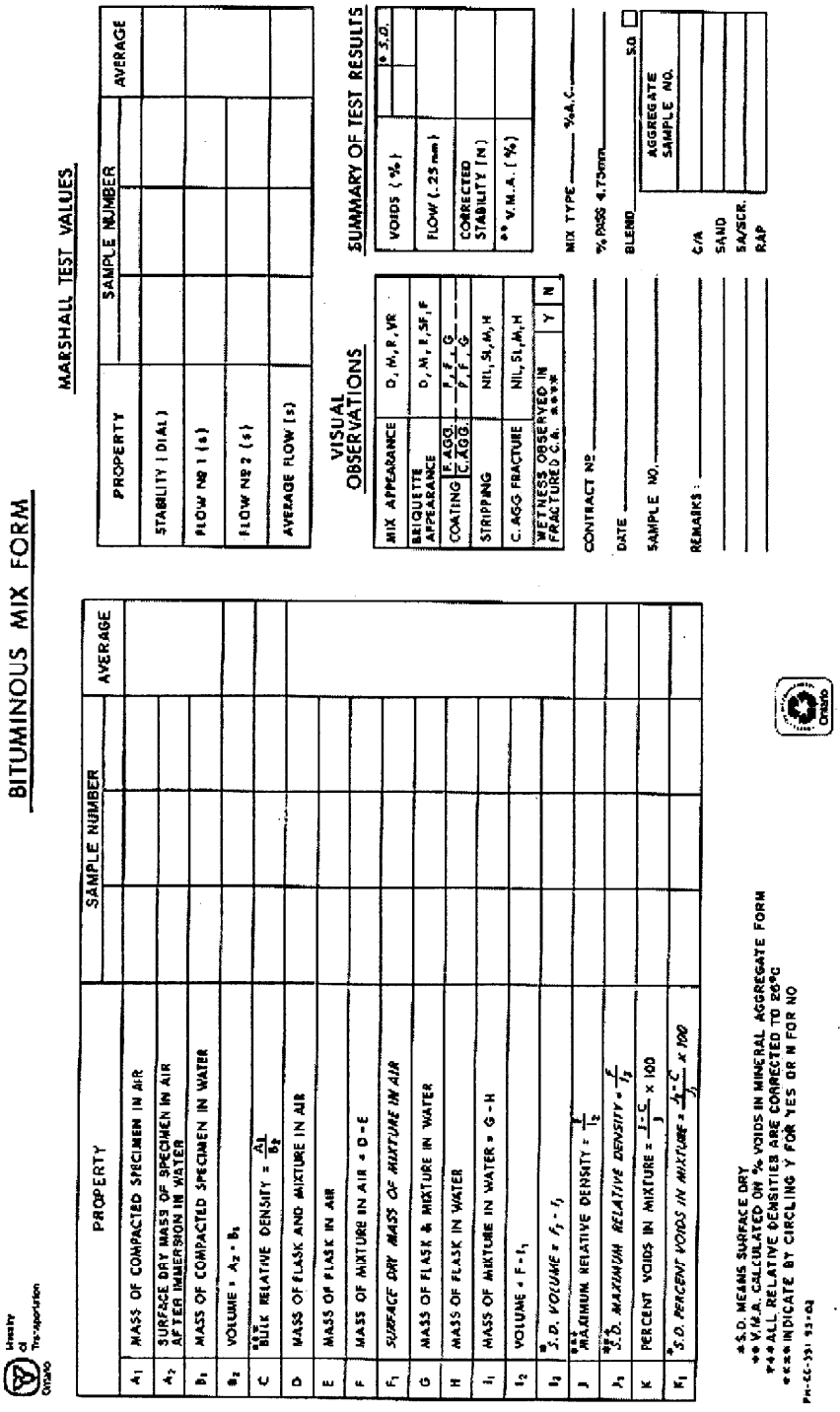

Figure 1