

YEAR 2018 CCIL CORRELATION

MIX COMPLIANCE (BC, MB, NB, NL, NS and SK)

PLEASE NOTE: Type B Marshall Only and Type B Marshall and Superpave laboratories are required to carry out Marshall Compliance testing using two Plant Mix samples.

SAMPLES

Two bulk samples, one identified as Material **III-MC-(N)** and the other as Material **IV-MC-(N)**, have been provided. Each of these samples shall be tested individually, i.e. do not combine them.

TESTING

On receipt, each sample shall be warmed and a representative portion obtained by quartering or using a riffle splitter. Two replicates of this representative portion shall then be tested as per ASTM D2041 "Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures".

Sufficient material from each sample shall then be heated to the appropriate temperature to prepare three briquettes. The briquette specimens shall be prepared for each sample as per Laboratory test method ASTM D6926 "Preparation of Bituminous Specimens Using Marshall Apparatus".

Trough, moulds and hammers shall be preheated to $135 \pm 5^{\circ}\text{C}$.

For **III-MC-(N)**, use a briquette mass 1280 ± 25 g and the compaction temperature of 144°C
For **IV-MC-(N)**, use a briquette mass 1250 ± 25 g and the compaction temperature of 138°C

Note 1: With the manual hammer, the following should be noted: (a) the compaction effort shall be 75 blows per side; (b) the timing of blows should be 60 blows per minute (plus or minus 5 blows); (c) the hammer should be allowed to rebound between successive blows.

Note 2: For mechanical hammers, the lab shall determine its own equivalency to the 75 blows of the manual hammer.

Thereafter the specimens shall be tested for:

1. Bulk relative density, D2726, "Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures"
2. Marshall stability and flow, D6927, "Marshall Stability and Flow of Bituminous Mixtures".

Note 3: Stability must be reported in Newtons and Flow in 0.25mm units.

3. Air voids, D3203 "Percent Air Voids in Compacted Dense and Open Bituminous Pavement Mixtures"
4. Voids in mineral aggregate, AI-MS2 basis total mix, "Determination of V.M.A. in Compacted Bituminous Mixtures"

Note 4: For calculation of the V.M.A. use the values for aggregate bulk relative densities

and asphalt cement provided on Page 3. . An example of a completed work sheet is shown on Page 4. A hard copy of this sheet must be submitted with the laboratory work sheets. The VMA values shall be reported in the designated spaces on the Mix Compliance Report form.

All test results shall be reported **online** by **January 5 2018**.

Hard copies of the report forms and work sheets must be submitted by **January 5 2018** by mail or courier to:

Nabil Kamel, M.A.Sc., P.Eng.
CCIL Program Manager
3410 South Service Road, Suite 104
Burlington, Ontario, L7N 3T2
Tel: 289-337-8888: Fax: 289-337-8889: email: nkamel@ccil.com

DO NOT send reports and worksheets by fax.

MIX COMPLIANCE - % VMA WORK SHEET (Samples III and IV)

LABORATORY No. :

LABORATORY NAME

MATERIAL III

| | | |
|------------------|-------|-------|
| Coarse Aggregate | (CA) | 47.0% |
| Fine Aggregate 1 | (FA1) | 43.0% |
| Fine Aggregate 2 | (FA2) | 10.0% |

| | | |
|----------------------|-------|-------|
| BRD Coarse Aggregate | (CA1) | 2.925 |
| BRD Fine Aggregate 1 | (FA1) | 2.775 |
| BRD Fine Aggregate 2 | (FA2) | 2.764 |

Compacted Mix BRD (Db) SAMPLE # _____
(1) _____
(2) _____
(3) _____

% AC 4.7 (by mass of total mix)

Combined Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____

MATERIAL IV

| | | |
|------------------|-------|-------|
| Coarse Aggregate | (CA1) | 42.0% |
| Fine Aggregate 1 | (FA1) | 38.0% |
| Fine Aggregate 2 | (FA2) | 20.0% |

| | | |
|----------------------|-------|-------|
| BRD Coarse Aggregate | (CA1) | 2.680 |
| BRD Fine Aggregate 1 | (FA1) | 2.767 |
| BRD Fine Aggregate 2 | (FA2) | 2.765 |

Compacted Mix BRD (Db) SAMPLE # _____
(1) _____
(2) _____
(3) _____

% AC 5.10 (by mass of total mix)

Combined Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____

2018 CCIL CORRELATION - EXAMPLE FORM – BC MB NB NL NS SK

Testing Admin Information

your assigned CCIL Asphalt Lab No.:

SK999

| | | | | | | | |
|--|---|--|--|--|----------------|--|----------------|
| <ul style="list-style-type: none"> • Lab Name (include Branch or Mobile #) • E-mail Address • Reported by (Contact Name) • Phone Number (Contact) • Tested by (Name(s)) • Results Reporting Date | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;">(999) 999-9999</td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;">January 5 2018</td></tr> </table> | | | | (999) 999-9999 | | January 5 2018 |
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| (999) 999-9999 | | | | | | | |
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| January 5 2018 | | | | | | | |

* For Type B Laboratories.

Mix Compliance III-MC & IV-MC

| RECOMPACTED MARSHALL TESTS | | | | | | | | |
|------------------------------|--------------|--------|--------|---------|-------------|-------|-------|---------|
| Results for: | Material III | | | | Material IV | | | |
| Replicate | (i) | (ii) | (iii) | Average | (i) | (ii) | (iii) | Average |
| • <i>BRD</i> | 2.376 | 2.380 | 2.379 | 2.378 | 2.421 | 2.430 | 2.426 | 2.426 |
| • <i>M RD</i> | 2.485 | 2.484 | | 2.485 | 2.501 | 2.504 | | 2.503 |
| • <i>% Voids</i> | | | | 4.3 | | | | 4.5 |
| • <i>% VMA</i> | 15.6 | 15.8 | 15.7 | 15.7 | 14.2 | 14.4 | 14.3 | 14.3 |
| • <i>Stability (N)</i> | 10,864 | 11,625 | 11,425 | 11,305 | 9424 | 9821 | 9720 | 9655 |
| • <i>Flow</i> (0.25mm units) | 10.4 | 10.2 | 10.3 | 10.3 | 9.6 | 10.2 | 9.9 | 9.9 |