

YEAR 2019 CCIL CORRELATION

MIX COMPLIANCE (ON QC)

SAMPLES

Two (2) bulk samples, identified as Materials **MC- I-II-III-IV-(N)** have been provided. The two samples will be either I and II or III and IV or II and III. 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 LS-264, (latest revision) "Method of Test for Theoretical Maximum Relative 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 as per LS-261 (latest revision), "Method of Test for Preparation of Marshall Specimens". Trough, moulds and hammers shall be preheated to $140 \pm 5^{\circ}\text{C}$.

For MC-I-(N), use a briquette mass 1245 ± 25 g and the compaction temperature of 138°C
For MC-II-(N), use a briquette mass 1240 ± 25 g and the compaction temperature of 138°C
For MC-III-(N), use a briquette mass 1240 ± 25 g and the compaction temperature of 138°C
For MC-IV-(N), use a briquette mass 1245 ± 25 g and the compaction temperature of 138°C

Note 1: With the manual hammer, the following should be noted: (a) the compaction pedestal must be secured; (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.

Thereafter the specimens shall be tested for:

1. Bulk relative density, LS-262 (latest revision) "Bulk Relative Density of compacted Bituminous Mixes"
2. Marshall stability and flow, LS-263 (latest revision), "Resistance to Plastic Flow of Bituminous Mixtures using the Marshall Apparatus"
3. Air voids, LS-265, (latest revision) "Determination of Percent Air Voids in Compacted Dense Bituminous Pavement Mixtures"
4. Voids in mineral aggregate, LS-266 (latest revision), "Determination of V.M.A. in Compacted Bituminous Mixtures"

Note 2: For calculation of the V.M.A. use the values for aggregate bulk relative densities and asphalt cement provided on Pages 3 and/or Page 4. 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.

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All test results shall be reported online and submitted by **January 4 2019**. An example of a completed report form is shown on Page 6.

Hard copies of the report forms and work sheets must be submitted by **January 4 2019** by mail or courier to the following address. **DO NOT** send reports and worksheets by fax.

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YEAR 2019 CCIL CORRELATION

MIX COMPLIANCE - % VMA WORK SHEET (Samples I and II)

LABORATORY No. :

LABORATORY NAME

MATERIAL I

| | | |
|--------------------|-------|-------|
| Coarse Aggregate 1 | (CA1) | 46.0% |
| Fine Aggregate 1 | (FA1) | 12.0% |
| Fine Aggregate 2 | (FA2) | 32.0% |
| Fine Aggregate 3 | (FA3) | 10.0% |

| | | |
|----------------------|-------|-------|
| BRD Coarse Aggregate | (CA) | 2.764 |
| BRD Fine Aggregate 1 | (FA1) | 2.683 |
| BRD Fine Aggregate 2 | (FA2) | 2.674 |
| BRD Fine Aggregate 3 | (FA3) | 2.779 |

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

% AC 5.10% (by mass of total mix)

Combined Aggregate BRD (Gb): _____

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

MATERIAL II

| | | |
|------------------|-------|-------|
| Coarse Aggregate | (CA1) | 25.0% |
| Fine Aggregate 1 | (FA1) | 57.0% |
| Fine Aggregate 2 | (FA2) | 18.0% |

| | | |
|----------------------|-------|-------|
| BRD Coarse Aggregate | (CA1) | 2.655 |
| BRD Fine Aggregate 1 | (FA1) | 2.673 |
| BRD Fine Aggregate 2 | (FA2) | 2.731 |

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

% AC 5.50 (by mass of total mix)

Combined Aggregate BRD (Gb): _____

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

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MIX COMPLIANCE - % VMA WORK SHEET (EXAMPLE)

LABORATORY No. : 175 LABORATORY NAME Apex Construction

MATERIAL I

| | | |
|-------------------|------|-------|
| Coarse Aggregate | (CA) | 45.2% |
| Fine Aggregate #1 | (FA) | 54.8% |

| | | |
|-----------------------|------|-----------|
| BRD Coarse Aggregate | (CA) | BRD 2.697 |
| BRD Fine Aggregate #1 | (FA) | BRD 2.659 |

Compacted Mix BRD (Db) SAMPLE MC-I-14

(1) 2.372
(2) 2.369
(3) 2.374

% AC 5.27 (by mass of total mix)

Combined Aggregate BRD (Gb): 2.673

% VMA = (1) 15.9 (2) 16.1 (3) 15.9

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2019 CCIL CORRELATION - EXAMPLE FORM - ONTARIO

Testing Admin Information your assigned CCIL Asphalt Lab No.: **ON999**

| | | | | | | |
|--|---|--|--|-----------------------|--|-----------------------|
| <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; text-align: center;">(999) 999-9999</td></tr> <tr><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px; text-align: center;">January 4 2019</td></tr> </table> | | | (999) 999-9999 | | January 4 2019 |
| | | | | | | |
| | | | | | | |
| (999) 999-9999 | | | | | | |
| | | | | | | |
| January 4 2019 | | | | | | |

* For Type B Laboratories.

Mix Compliance MC-I & MC-II

| RECOMPACTED MARSHALL TESTS | | | | | | | | |
|-----------------------------------|------------|--------|--------|---------|-------------|-------|-------|---------|
| Results for: | Material I | | | | Material II | | | |
| 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>MRD</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 |