

## YEAR 2019 CCIL CORRELATION

### MIX COMPLIANCE (Alberta and Yukon)

#### SAMPLES

Two bulk samples, one identified as Material **MC-I-(N)** and the other as Material **MC-II-(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 **MC-I-(N)**, use a briquette mass  $1245 \pm 25$  g and the compaction temperature of  $138^{\circ}\text{C}$   
For **MC-II-(N)**, use a briquette mass  $1240 \pm 25$  g and the compaction temperature of  $138^{\circ}\text{C}$

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

For mechanical hammers, each lab shall determine and use its own equivalency to this compaction effort.

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 2:** 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 3:** 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.

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**Note 4: Type B Partial Mix Compliance laboratories are only required to report the BRD and VMA in the online reporting form. If your lab is not equipped for the Maximum Theoretical Density (MTD) and Stability and Flow testing, please ensure that you are using the correct form for reporting your test results.**

All test results shall be reported and submitted online by **January 4 2019**. Examples of completed reporting forms for Type B Full Mix Compliance and Type B Partial Mix Compliance laboratories are shown on pages 5 and 6 respectively.

Hard copies of the report forms and work sheets must be submitted by **January 4 2019** 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](mailto:nkamel@ccil.com)

**DO NOT** send reports and worksheets by fax.

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**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

## 2019 CCIL CORRELATION - EXAMPLE FORM – AB and YT (Full Compliance)

### Testing Admin Information

your assigned CCIL Asphalt Lab No.: **AB999**

<ul style="list-style-type: none"> <li>• Lab Name (include Branch or Mobile #)</li> <li>• E-mail Address</li> <li>• Reported by (Contact Name)</li> <li>• Phone Number (Contact)</li> <li>• Tested by (Name(s))</li> <li>• Results Reporting Date</li> </ul>	<div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; height: 20px; margin-bottom: 5px; text-align: center;"><b>(999) 999-9999</b></div> <div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; height: 20px; text-align: center;"><b>January 4 2019</b></div>
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\* For Type B Laboratories.

### Mix Compliance MC-I & MC-II

Results for:	RECOMPACTED MARSHALL TESTS							
	Material I				Material II			
	Replicate	(i)	(ii)	(iii)	Average	(i)	(ii)	(iii)
• <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

## 2019 CCIL CORRELATION - EXAMPLE FORM – AB and YT (Partial Compliance)

### Testing Admin Information

your assigned CCIL Asphalt Lab No.:

**AB999**

• Lab Name (include Branch or Mobile #)	
• E-mail Address	
• Reported by (Contact Name)	
• Phone Number (Contact)	<b>(999) 999-9999</b>
• Tested by (Name(s))	
• Results Reporting Date	<b>January 4 2019</b>

**\* For Type B Partial Mix Compliance 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>	<b>2.376</b>	<b>2.380</b>	<b>2.379</b>	<b>2.378</b>	<b>2.421</b>	<b>2.430</b>	<b>2.426</b>	<b>2.426</b>
• <i>% VMA</i>	<b>15.6</b>	<b>15.8</b>	<b>15.7</b>	<b>15.7</b>	<b>14.2</b>	<b>14.4</b>	<b>14.3</b>	<b>14.3</b>