

YEAR 2010 CCIL CORRELATION

PART B: MIX COMPLIANCE (Province of Alberta)

RECOMPACTED MARSHALL TESTS

Four (4) bulk samples, two (2) identified as Materials **(A-C-E)-MC-#** and two identified as Materials **(B-D-F)-MC-#**, have been provided.

TESTING

On receipt of the Materials **(A-C-E)-MC-#** and **(B-D-F)-MC-#**, (2 x approximately 7500 g samples for each material), the samples shall be warmed and a representative portion obtained by quartering. The representative portion shall then be tested as per AASHTO T209, Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)”

The remaining material from each sample shall then be heated to the appropriate temperature. Indicate on Test Report Form 2-4 what type of oven was used (Microwave ovens shall not be used for this purpose). Three briquette specimens shall be prepared for each sample as per Laboratory test method D6926 “Preparation of Bituminous Specimens Using Marshall Apparatus” **using 75 blows per side.**

The **compaction temperature** shall be **140°C. Trough, moulds and hammers** shall be preheated to **135 ± 5°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, D2726, “Bulk Specific Density and Gravity of Non-Absorptive Compacted Bituminous Mixes”
2. Marshall stability and flow, D6927, “Marshall Stability and Flow and Flow of Bituminous Mixtures”
3. Maximum Specific Gravity, T209 “Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)”
4. Air voids, D3203 “Percent Air Voids in Compacted Dense and Open Bituminous Pavement Mixtures”
5. VMA, TLT301, “Determination of VMA in Compacted Bituminous Mixtures”

Note 1. For calculation of the V.M.A. use the values for aggregate bulk relative densities and asphalt cement provided on page **2 - 2 to 2 - 5.**

All test results shall be reported by e-mail in the designated spaces on the (MS-Excel) Mix Compliance Report form. Please use the appropriate form for the samples that were shipped to your laboratory.

The completed Mix Compliance Report form shall be e-mailed to **ibullen@ccil.com** by **January 8, 2010** (listed separately on CCIL Web Site). An example of a completed report form is shown on page 2 - 6. Hard copies of the report forms and work sheets must be submitted by **January 8, 2010** by mail or courier to:

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CCIL Program Manager
3166 Lakeshore Road
Burlington, Ontario, L7n 1A4
Tel: 905-632-6456; Fax: 905-632-1990; e-mail: nkamel@ccil.com

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DO NOT send reports and worksheets by fax.

MIX COMPLIANCE - % VOIDS IN MINERAL AGGREGATE WORK SHEET

LABORATORY No. : _____ LABORATORY NAME _____

MATERIAL A-MC

Coarse Aggregate (CA) 42.0%
Fine Aggregate (FA) 58.0%

BRD Coarse Aggregate (CA) BRD 2.647
BRD Fine Aggregate (FA) BRD 2.666

Compacted Mix BRD (Db) SAMPLE # _____ SAMPLE # _____
(1) _____ (4) _____
(2) _____ (5) _____
(3) _____ (6) _____

% AC 4.95 5.00

Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____

MATERIAL B-MC

Coarse Aggregate (CA) % 44.0
Fine Aggregate (FA) % 56.0

Coarse Aggregate (CA) BRD 2.682
Fine Aggregate (FA) BRD 2.670

Compacted Mix BRD (Db) SAMPLE # _____ SAMPLE # _____
(1) _____ (4) _____
(2) _____ (5) _____
(3) _____ (6) _____

% AC 5.05 5.10

Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____

An example of a completed work sheet is shown on page **2- 6**. A hard copy of this sheet must be submitted with the laboratory work sheets. The VMA values for Material **(A-C-E)MC-#**, and Material **(B-D-F)-MC-#**, shall be reported in the designated spaces on the (MS-Excel) Mix Compliance Report form.

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MIX COMPLIANCE - % VOIDS IN MINERAL AGGREGATE WORK SHEET

LABORATORY No. : _____ LABORATORY NAME _____

MATERIAL C-MC

Coarse Aggregate (CA) 47.8%
Fine Aggregate (FA) 52.2 %

BRD Coarse Aggregate (CA) 2.998
BRD Fine Aggregate (FA) 2.724

Compacted Mix BRD (Db) SAMPLE # _____ SAMPLE # _____
(1) _____ (4) _____
(2) _____ (5) _____
(3) _____ (6) _____

% AC 5.18 5.22

Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____

MATERIAL D-MC

Coarse Aggregate (CA) 50.0%
Fine Aggregate (FA) 50.0%

Coarse Aggregate (CA) 2.994
Fine Aggregate (FA) 2.728

Compacted Mix BRD (Db) SAMPLE # _____ SAMPLE # _____
(1) _____ (4) _____
(2) _____ (5) _____
(3) _____ (6) _____

% AC 5.15 5.25

Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____

An example of a completed work sheet is shown on page 2- 6. A hard copy of this sheet must be submitted with the laboratory work sheets. The VMA values for Material **(A-C-E)MC-#**, and Material **(B-D-F)-MC-#**, shall be reported in the designated spaces on the (MS-Excel) Mix Compliance Report form.

MIX COMPLIANCE - % VOIDS IN MINERAL AGGREGATE WORK SHEET

LABORATORY No. : _____ LABORATORY NAME _____

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MATERIAL E-MC

Coarse Aggregate (CA) % 53.0
Fine Aggregate (FA) % 47.0

BRD Coarse Aggregate (CA) BRD 2.669
BRD Fine Aggregate (FA) BRD 2.648

Compacted Mix BRD (Db) SAMPLE # _____ SAMPLE # _____
(1) _____ (4) _____
(2) _____ (5) _____
(3) _____ (6) _____

% AC 4.98 5.52

Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____

MATERIAL F-MC

Coarse Aggregate (CA) % 48.0
Fine Aggregate (FA) % 52.0

Coarse Aggregate (CA) BRD 2.669
Fine Aggregate (FA) BRD 2.648

Compacted Mix BRD (Db) SAMPLE # _____ SAMPLE # _____
(1) _____ (4) _____
(2) _____ (5) _____
(3) _____ (6) _____

% AC 5.00 5.10

Aggregate BRD (Gb): _____

% VMA = (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____

An example of a completed work sheet is shown on page 2- 6. A hard copy of this sheet must be submitted with the laboratory work sheets. The VMA values for Material **(A-C-E)MC-#**, and Material **(B-D-F)-MC-#**, shall be reported in the designated spaces on the (MS-Excel) Mix Compliance Report form.

MIX COMPLIANCE - % VOIDS IN MINERAL AGGREGATE WORK SHEET (EXAMPLE)

LABORATORY No. : 175 LABORATORY NAME Apex Construction

MATERIAL MC-XYZ

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Coarse Aggregate	(CA)	45.3%		
Fine Aggregate #1	(FA-1)	54.8%		
BRD Coarse Aggregate	(CA)	BRD	2.697	
BRD Fine Aggregate #1	(FA-1)	BRD	2.659	
Compacted Mix BRD (Db)	SAMPLE <u>14</u>	SAMPLE <u>65</u>		
	(1) <u>2.372</u>	(4) <u>2.377</u>		
	(2) <u>2.369</u>	(5) <u>2.371</u>		
	(3) <u>2.374</u>	(6) <u>2.373</u>		
% AC	<u>5.27</u>		<u>5.35</u>	

Aggregate BRD (Gb): 2.673

% VMA = (1) 15.9 (2) 16.1 (3) 15.9 (4) 15.8 (5) 16.1 (6) 16.0

2010 CCIL CORRELATION – EXAMPLE MIX COMPLIANCE REPORT						
Testing Admin Information				Enter your assigned Lab No.: AB-XX		
• Lab Name (include Branch or Mobile #)	Apex Construction					
• E-mail Address	enstein@apex.com					
• Reported by (Contact Name)	Frank Enstein					
• Phone Number (Contact)	(999) 999-9999					
• Tested by (Name(s))	Frank Enstein, Joe Blow					
• Results Reporting Date	Jan 8, 2010					
* For Type B Laboratories.						
MIX COMPLIANCE (A-MC & B-MC)						
RECOMPACTED MARSHALL TESTS						
Results for:	A-MC			B-MC		
Sample Number	x	y	Average	x	y	Average
• BRD	2.376	2.380	2.378	2.421	2.430	2.426
• MRD	2.485	2.484	2.485	2.501	2.504	2.503
• % Voids	4.5	4.4	4.5	3.2	3.0	3.1
• % VMA	15.6	15.8	15.7	14.2	14.4	14.3
• Stability (N)	10864	11625	11245	9424	9821	9623
• Flow (0.25mm units)	10.4	10.2	10.3	9.6	10.2	9.9

Save as **Mix Compliance A&B Report - Lab ###** (where ### is your code number).

Please e-mail the completed form to:
ibullen@ccil.com [Phone: (905) 688-7497]

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