

## YEAR 2018 CCIL CORRELATION

### SUPERPAVE GYRATORY COMPACTION LAB MIX (Ontario)

**IMPORTANT NOTE:** Type A Superpave laboratories are required to carry out Gyratory compaction and appropriate subsequent testing using **only** Lab samples as the starting material. Type A laboratories are **NOT** required to carry out additional testing on Mix compliance samples.

Also please note Clause 5) under Mix Preparation pertaining to Material I.

#### Lab Mix Samples

One bag of coarse aggregate each (**I-GYCA-(N)** and **II-GYCA-(N)**) and one bag of fine aggregate each (**I-GYFA-(N)** and **II-GYFA-(N)**) along with asphalt cement (**I-GYAC-(N)** and **II-GYAC-(N)**) have been provided.

#### Aggregate Preparation

On receipt of the bulk samples of coarse and fine aggregate, dry the samples to constant mass and size the **coarse** aggregate (down to 2.36 mm size) and pass 2.36mm portion.

**Note 1:** To ensure that all laboratories receive identical samples, the fine aggregate samples have been recombined from individual sieve sizes. Before commencing any testing, these samples should be **carefully but thoroughly mixed** (each fine aggregate separately) by running through a mini-splitter several times.

**Note 2:** Pay attention to the notes included with the weigh cards for each mix

#### Mix Preparation

- 1) For Gyratory samples (**two samples for each mix**) combine the dried aggregate and asphalt cement in the proportions indicated in the Weigh Card tables for Material I and Material II. Mass of the sample to be consistent with those included in the appropriate weigh card.
- 2) An additional sample using the same proportions of dried aggregate and asphalt cement shall be produced for Maximum Theoretical Relative Density (MRD); minimum mass of 1500g.
- 3) The mixing temperature and compaction temperature shall be as indicated on the appropriate mix design weigh card form.
- 4) Mixture conditioning for both Gyratory and MRD samples shall be carried out at the mixture compaction temperature indicated on the weighcard  $\pm 3^{\circ}\text{C}$  for  $2\text{h} \pm 5$  minutes (as indicated in AASHTO R30). Proceed immediately with compaction.

**For Material I:**             $N_{ini} = 7, N_{des} = 75$   
**For Material II:**         $N_{ini} = 8, N_{des} = 100$

The same Superpave Gyratory Compactor shall be used to compact both materials.

- 5) The specimens can be extruded from the mold immediately after compaction for Material II. However, a cooling period of 5 to 10 minutes in front of a fan is highly recommended before extruding specimens for Material I to ensure the specimens are not damaged.

#### Sample Testing

- 1) Follow LS-262 (latest revision) for the determination of the Bulk Relative Density (BRD) of the gyratory samples.

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- 2) Follow LS-264 (latest revision) for the determination of the Maximum Theoretical Relative Density (MRD) of the separate sample blended for this purpose.

### **Report**

- 1) Maximum Theoretical Relative Density (MRD) for gyratory mix
- 2) Bulk Relative Density for gyratory compacted samples
- 3) Percent  $G_{mm}$  at  $N_{ini}$
- 4) The calculated percent air voids of the compacted specimen ( $N_{design}$ ) to nearest 0.1%
- 5) Manufacturer, Model, and Serial number of the Superpave Gyratory Compactor used to compact the samples.

All test results shall be reported online and submitted by **January 5 2018**. An example of a completed report form is shown on page 4.

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: e-mail: [nkamel@ccil.com](mailto:nkamel@ccil.com)

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

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**Superpave Gyratory Specimens – Material I**

Weigh Card (mass in grams)									
Mass Type	Coarse Aggregate I-GYCA-(N)						Fine Aggregate	Dust	Asphalt Cement I-GYAC-(N)
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm	I-GYFA-(N)		
Individual		<b>70.7</b>	<b>772.8</b>	<b>1102.2</b>	<b>47.4</b>	<b>20.2</b>	<b>2460.6</b>	<b>156.6</b>	<b>269.5</b>
Cumulative		<b>70.7</b>	<b>843.5</b>	<b>1945.7</b>	<b>1993.1</b>	<b>2013.3</b>	<b>4473.9</b>	<b>4630.5</b>	<b>4900.0</b>

**Mixing Temperature = 148°C      Compaction Temperature = 135°C**  
**AC Content = 5.5%**

Notes:

1. \* **Is** material retained on the 12.5mm sieve to be discarded? **No**
2. \*\* **Is** material passing the 2.36mm sieve material from coarse aggregate to be discarded? **No**  
**OR**  
 has the pass 2.36mm sieve material been included in the component package? **No**
3. \*\*\* Has dust been supplied separately? **Yes. In a separate bag with the fine aggregate.**
4. Masses provided for Superpave Gyratory Specimens are to be adjusted proportionally to provide for Maximum Theoretical Relative Density (MRD) test samples.

**Superpave Gyratory Specimens – Material II**

Weigh Card (mass in grams)									
Type Mass	Coarse Aggregate II-GYCA-(N)						Fine Aggregate	Dust***	Asphalt Cement
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm	II-GYFA-(N)		II-GYAC-(N)
Individual		<b>72.6</b>	<b>793.7</b>	<b>1132.0</b>	<b>48.7</b>	<b>20.6</b>	<b>2496.6</b>	<b>32.0</b>	<b>303.8</b>
Cumulative		<b>72.6</b>	<b>866.3</b>	<b>1998.3</b>	<b>2047.0</b>	<b>2067.6</b>	<b>4564.2</b>	<b>4596.2</b>	<b>4900.0</b>

**Mixing Temperature = 148°C      Compaction Temperature = 135°C**  
**AC Content = 6.2%**

Notes:

1. \* **Is** material retained on the 12.5mm sieve to be discarded? **No**
2. \*\* **Is** material passing the 2.36mm sieve material from coarse aggregate to be discarded? **No**  
**OR**  
 has the pass 2.36mm sieve material been included in the component package? **No**
3. \*\*\* Has dust been supplied separately? **Yes**
4. Masses provided for Superpave Gyratory Specimens are to be adjusted proportionally to provide for Maximum Theoretical Relative Density (MRD) test samples.

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**2018 CCIL CORRELATION - EXAMPLE REPORT ONTARIO**

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

<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>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;"><b>Apex Construction</b></td></tr> <tr><td style="text-align: center;"><a href="mailto:enstein@apex.com">enstein@apex.com</a></td></tr> <tr><td style="text-align: center;"><b>Frank Enstein</b></td></tr> <tr><td style="text-align: center;"><b>(999) 999-9999</b></td></tr> <tr><td style="text-align: center;"><b>Jim Dandy</b></td></tr> <tr><td style="text-align: center;"><b>January 5 2018</b></td></tr> </table>	<b>Apex Construction</b>	<a href="mailto:enstein@apex.com">enstein@apex.com</a>	<b>Frank Enstein</b>	<b>(999) 999-9999</b>	<b>Jim Dandy</b>	<b>January 5 2018</b>
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<b>January 5 2018</b>							

**Gyratory Compaction - Lab Mix**

Manufacturer:	Best	Model:	123	S/N:	1234	
Results for:	<b>I-GY</b>			<b>II-GY</b>		
	a	b	Average	a	b	Average
• <i>M S G (G<sub>mm</sub> by LS-264)</i>	<b>2.510</b>	<b>2.508</b>	<b>2.509</b>	<b>2.515</b>	<b>2.519</b>	<b>2.517</b>
• <i>B R D @ N<sub>des</sub></i>	<b>2.425</b>	<b>2.416</b>	<b>2.421</b>	<b>2.431</b>	<b>2.431</b>	<b>2.431</b>
• <i>B R D @ N<sub>ini</sub></i>	<b>2.146</b>	<b>2.150</b>	<b>2.148</b>	<b>2.168</b>	<b>2.156</b>	<b>2.162</b>
• <i>% G<sub>mm</sub> @ N<sub>ini</sub></i>	<b>85.5</b>	<b>85.7</b>	<b>85.6</b>	<b>86.2</b>	<b>85.6</b>	<b>85.9</b>
• <i>% Air Voids (@ N<sub>des</sub>)</i>	<b>3.4</b>	<b>3.7</b>	<b>3.6</b>	<b>3.3</b>	<b>3.5</b>	<b>3.4</b>

<b>Compactor Calibration (Indicate with an "X" the applicable setting).</b>	
Internal Angle (1.16 deg.)	<b>x</b>
External Angle (1.25 deg.)	