

YEAR 2019 CCIL CORRELATION

SUPERPAVE GYRATORY COMPACTION LAB MIX (ON QC)

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.

Lab Mix Samples

One bag of coarse aggregate each (**GYCA-I-(N)** and **GYCA-II-(N)**) and one bag of fine aggregate each (**GYFA-I-(N)** and **GYFA-II-(N)**) along with asphalt cement (**GYAC-I-(N)** and **GYAC-II-(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: $N_{\text{ini}} = 8, N_{\text{des}} = 100$

For Material II: $N_{\text{ini}} = 9, N_{\text{des}} = 125$

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

- 5) The specimens can be extruded from the mold immediately after compaction.

Sample Testing

- 1) Follow LS-262 (latest revision) for the determination of the Bulk Relative Density (BRD) of the gyratory samples.
- 2) Follow LS-264 (latest revision) for the determination of the Maximum Theoretical Relative Density (MRD) of the separate sample blended for this purpose.

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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 4 2019**. 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 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: e-mail: 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 GYCA-I-(N)						Fine Aggregate GYFA-I-(N)	Dust	Asphalt Cement GYAC-I-(N)
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm			
Individual		73.1	735.0	1276.6	53.7	10.8	2328.2	143.3	279.3
Cumulative		73.1	808.1	2084.7	2138.4	2149.2	4477.4	4620.7	4900.0

Mixing Temperature = 148°C Compaction Temperature = 135°C
AC Content = 5.7%

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 GYCA-II-(N)						Fine Aggregate GYFA-II-(N)	Dust***	Asphalt Cement GYAC-II-(N)
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm			
Individual		14.9	768.9	1143.2	17.6	37.4	2492.0	156.6	269.5
Cumulative		14.9	783.8	1927.0	1944.6	1982.0	4474.0	4630.6	4900.1

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.

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2019 CCIL CORRELATION - EXAMPLE REPORT 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="text-align: center;">Apex Construction</td></tr> <tr><td style="text-align: center;">enstein@apex.com</td></tr> <tr><td style="text-align: center;">Frank Enstein</td></tr> <tr><td style="text-align: center;">(999) 999-9999</td></tr> <tr><td style="text-align: center;">Jim Dandy</td></tr> <tr><td style="text-align: center;">January 4 2019</td></tr> </table>	Apex Construction	enstein@apex.com	Frank Enstein	(999) 999-9999	Jim Dandy	January 4 2019
Apex Construction							
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January 4 2019							

Gyratory Compaction - Lab Mix

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

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