

YEAR 2018 CCIL CORRELATION

SUPERPAVE GYRATORY COMPACTION - LAB MIX (BC, MB, NB, NL, NS and SK)

IMPORTANT NOTE: Type A Superpave Mix Design laboratories are required to carry out Gyratory Compaction and appropriate subsequent testing using **only** Lab Mix 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 2.36 mm 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.

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Sample Testing

- 1) Follow D2726 for the determination of the Bulk Relative Density (BRD) of the gyratory samples.
- 2) Follow D2041 for the determination of the Maximum Theoretical Relative Density (MRD) of the separate samples 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 on line 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

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 I-GYFA-(N)	Dust	Asphalt Cement I-GYAC-(N)
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm			
Individual		70.7	772.8	1102.2	47.4	20.2	2460.6	156.6	269.5
Cumulative		70.7	843.5	1945.7	1993.1	2013.3	4473.9	4630.5	4900.0

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 II-GYFA-(N)	Dust***	Asphalt Cement II-GYAC-(N)
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm			
Individual		72.6	793.7	1132.0	48.7	20.6	2496.6	32.0	303.8
Cumulative		72.6	866.6	1998.3	2047.0	2067.6	4564.2	4596.2	4900.0

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 BC, MB , NB, NL, NS and SK						
Testing Admin Information				your assigned CCIL Lab No.: BC99		
<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 	Apex Construction					
			enstein@apex.com			
			Frank Enstein			
			(999) 999-9999			
			Jim Dandy			
			January 5 2018			
Gyratory Compaction - Lab Mix						
Manufacturer:	Best	Model:	123	S/N:	1234	
Results for:	I-GY			II-GY		
	a	b	Average	a	b	Average
• <i>M S G (G_{mm})</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.)						