

## YEAR 2023 CCIL CORRELATION

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

**IMPORTANT NOTE:** Type A Superpave Mix Design laboratories are required to carry out Gyratory Compaction and appropriate subsequent testing using **only** Lab prepared Mix samples as the starting material. Type A laboratories are **NOT** required to carry out additional testing on Mix compliance plant mix 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 2.36 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 A and Material B. 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:**  $N_{ini} = 8, N_{des} = 100$

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

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 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.

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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 **2023 January 6, Friday**. An example of a completed report form is shown on page 4.

**Remember:** Your lab's worksheets must be submitted through the portal with your proficiency report. Please combine all worksheets for each portal report into a single pdf prior to uploading. You are required to keep all original worksheet hard copies in a secure dedicated location such as a sealed envelope that is available to CCIL upon request. Do not courier/mail/fax/e-mail the worksheets to CCIL.

**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	Dust	Asphalt Cement
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm	GYCA-I-N		GYCA-I-N
Individual		88.4	940.6	1,135.5	72.0	30.0	2,221.6	157.1	254.8
Cumulative		88.4	1,029.0	2,164.5	2,236.5	2,266.5	4,488.1	4,645.2	4,900.0

Mixing Temperature: **145°C**                      Compaction Temperature: **134°C**  
 AC Content (by Total Mix Mass): **5.20%**    This Equates to **5.49%** by Aggregate Mass

Notes:

- \* Is material retained on the 12.5mm sieve to be discarded? **No**
- \*\* 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**
- \*\*\* Has dust been supplied separately? **Yes. In a separate bag with the fine aggregate.**
- 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	Dust***	Asphalt Cement
		12.5mm *	9.5mm	4.75mm	2.36mm	Pass ** 2.36mm	GYFA-II-N		GYAC-II-N
Individual		44	888.1	1,043.0	45.6	21.0	2,495.3	118.0	245.0
Cumulative		44	932.1	1,975.1	2,020.7	2,041.7	4,537.0	4,655.0	4,900.0

Mixing Temperature: **148°C**                      Compaction Temperature: **135°C**  
 AC Content (by Total Mix Mass): **5.00%**    This Equates to **5.26%** by Aggregate Mass

Notes:

- \* Is material retained on the 12.5mm sieve to be discarded? **No**
- \*\* 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**
- \*\*\* Has dust been supplied separately? **Yes, In a separate bag with the fine aggregate.**
- 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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## 2020 Asphalt Reporting Form Gyratory Lab Mix

**Gyratory Lab Mix Report - Certification Program**

- ▶ **CCIL Confidential Lab #** CCIL 999
- ▶ **Lab Name:** Demo Lab
- ▶ **Tested by:**
  - Lab Technician
  - Supervisor / Manager
  - Not listed

**Please specify**

Super Technician

**Gyratory Lab Mix Report**

Test	A-GY-xxx a	A-GY-xxx b	- Avg	B-GY-xxx a	B-GY-xxx b	- Avg
<b>MSG (G<sub>mm</sub> by ASTM 2041)</b>	2.510	2.508	2.509	2.515	2.519	2.517
<b>BRD @ N<sub>des</sub></b>	2.425	2.416	2.420	2.431	2.431	2.431
<b>BRD @ N<sub>ini</sub></b>	2.146	2.150	2.148	2.168	2.156	2.162
<b>% G<sub>mm</sub> @ N<sub>ini</sub></b>	85.5	85.7	85.6	86.2	85.6	85.9
<b>% Air Voids (@ N<sub>des</sub>)</b>	3.4	3.7	3.6	3.3	3.5	3.4

**Compactor Calibration**

Internal Angle (1.16 deg.)

**Comments**